0012371

SINGLE-SHELL TANK WASTE CHARACTERIZATION FOR TANK 241-U-110 CORE 7
COMPOSITE SEGMENTS 1 2 3 4

DATA PACKAGE

SECTION

5 OF 12

012371

5 of 12

Westinghouse
Hanford Company

P.O. Box 1970 Richland, WA 99352

OCT 1990
RECEIVED
J.H. KESSNER

222-S/RCRA Analytical Laboratories

Project:	Single-Shell Tank Waste Characterization
Tank:	241-U-110
Core:	7
Segment:	3
Customer Id. Number:	89-048
Report Revision:	1
Date Printed:	October 4, 1990

54 7600 075

Hanford Operations and Engineering Contractor for the US Department of Energy

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This report consists of pages 1 - 165.
The appendix consists of pages 1 - 35.

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 Enviromental 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 October 5, 1990

Shirley A. Cervantes
Data Coordinator

Cary M Seidel — Date October 5, 1990

Cary M. Seidel
Unit Manager

Date October 8, 1990

Larry H. Taylor
Laboratory Q.A. Officer

INTRODUCTION

INTRODUCTION

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

Tank 241-U-110 has a 500,000 gallon capacity. 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.

Analytical Laboratories performs all analytical analysis to the specifications of the "Quality Assurance Project Plan for the Chemical Analysis of Highly Radioactive Samples in Support of Environmental Activities on the Hanford Site", 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 7 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.

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. In order to minimize errors due to loss of moisture, the percent moisture was determined at the earliest opportunity. Attemps to dry the sample before analysis resulted in approximately a ten fold increase in radiation levels. In order to reduce and control radiation exposure to laboratory personnel, the samples were not dried before aliquoting 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 are noted on the batch report. Any notable observations regarding an analysis are noted on the batch report for that analysis. Copies of laboratory travelers can be found in Appendix A.

SAMPLING AND CUSTODY DATA

CHAIN-OF-CUSTODY RECORD FOR CORE SAMPLING

(1) Shipment Number S-025-89 (2) Sample Number 89-048 (3) Supervisor D.C. Hartley

(4) Tank 110U (5) Riser #7 (6) Segment #3 (7) Cask Serial Number 1014C

Radiation Survey Data:	(8) FIELD	(20) LABORATORY
Over Top Dose Rate	.8 mV/HR	.8 mR/hr
Side Dose Rate	.5 mV/HR	2 mR/hr
Bottom Dose Rate	2.0 mV/HR	2 mR/hr
Smearable Contamination	LDET. (alpha)	LDet (alpha)
	LDET. (beta-gamma)	LDet (beta-gamma)
	RPT [signature] (Signature)	RPT D. Arnold (Signature)

(9) Shipment Description:

A. Work Package Number	2W89-00955-W
B. Cask Seal Number	For Future Use
C. Sampler Number Used	52
D. Date and Time Sampler Unseated	11-16-89, 1419
E. Expected Liquid Content	20%
F. Expected Solid Content	80%
G. Dose Rate Through Drill String	110 mV/HR
H. Expected Sample Length	19"

(10) INFORMATION (Include statement of laboratory tests to be performed.*)
Core #007, 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 / SENDER SIGNATURE	(13) DATE AND TIME RELEASED	(14) DESTINATION	(16) RECIPIENT NAME / RECIPIENT SIGNATURE	(17) DATE AND TIME RECEIVED
241-U 110	D.C. Hartley / DCHartley	11-17-89 0930	2225 LABS. 200 abst	Vida Boyle / Vida Boyle	11/17/89 10:00 AM

(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

Tank ID:	241-U-110
Riser ID:	7
Core ID:	#7

Date Sampling Initiated:	11-15-89
Date Sampling Completed:	11-16-89

Segment		
1	Lab Serial No.	F0197
	Customer ID No.	89-046
	Last Segment?	NO
2	Lab Serial No.	F0125
	Customer ID No.	89-047
	Last Segment?	NO
3	Lab Serial No.	F0149
	Customer ID No.	89-048
	Last Segment?	NO
4	Lab Serial No.	F-0173
	Customer ID No.	89-049
	Last Segment?	YES
5	Lab Serial No.	
	Customer ID No.	
	Last Segment?	
6	Lab Serial No.	
	Customer ID No.	
	Last Segment?	
7	Lab Serial No.	
	Customer ID No.	
	Last Segment?	

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

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SAMPLE DATA SUMMARY

Summary Data Report

Reported results are wet sample weight.

Single Shell Tank Project

Tank:	241-U-110
Core:	7
Segment:	3
Customer ID:	89-048

Undigested Sample Results

	Sample	Duplicate
pH	12.54	12.79
%Water	47.20%	47.70%

Fusion Dissolution Results

	Sample		Duplicate	
Fusion Digestion	1.98	g/L	2.22	g/L
Total Alpha	3.18	uci/g	2.50	uci/g
Total Beta	1.56E+03	uci/g	1.59E+03	uci/g
GEA Cs-137	22.40	uci/g	23.30	uci/g
Uranium	<5.25E+03	ug/g	<5.00E+03	ug/g

Water Digestion Results

	Sample		Duplicate	
Water Digestion	9.32	g/L	7.78	g/L
Ion Chromatograph				
Fluoride	3.43E+03	ug/g	2.62E+03	ug/g
Chloride	<1.08E+03	ug/g	<1.30E+03	ug/g
Nitrate	3.95E+04	ug/g	4.01E+04	ug/g
Phosphate	2.25E+04	ug/g	1.44E+04	ug/g
Sulfate	<1.08E+04	ug/g	<1.30E+04	ug/g
Total Organic Carbon	2.09E+03	ug/g	2.44E+03	ug/g

Acid Digestion

ICP Results

	Sample	Duplicate
Aluminum	76209 ug/g	91743 ug/g
Antimony	455 ug/g	LT
Barium	45 ug/g	17 ug/g
Beryllium	2 ug/g	LT
Bismuth	12709 ug/g	12057 ug/g
Boron	LT	LT
Cadmium	LT	LT
Calcium	568 ug/g	761 ug/g
Cerium	LT	LT
Chromium	450 ug/g	492 ug/g
Copper	1012 ug/g	1357 ug/g
Europium	LT	LT
Iron	12131 ug/g	13308 ug/g
Lanthanum	LT	LT
Lead	742 ug/g	352 ug/g
Lithium	LT	LT
Magnesium	1155 ug/g	13743 ug/g
Manganese	5823 ug/g	5851 ug/g
Mercury	LT	LT
Molybdenum	25 ug/g	LT
Nickel	151 ug/g	105 ug/g
Potassium	LT	LT
Samarium	LT	LT
Selenium	517 ug/g	LT
Silver	LT	LT
Sodium	86006 ug/g	85640 ug/g
Strontium	578 ug/g	593 ug/g
Sulfur	321 ug/g	2043 ug/g
Tantalum	LT	LT
Thallium	783 ug/g	LT
Thorium	162 ug/g	LT
Tin	73 ug/g	LT
Titanium	27 ug/g	LT
Uranium	6091 ug/g	LT
Vanadium	47 ug/g	LT
Zinc	242 ug/g	627 ug/g
Zirconium	LT	LT

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

Last revised 10/3/90

PHYSICAL TEST RESULTS

Single Shell Tank
Extrusion of Segment -- Physical Tests

LAB SEGMENT SERIAL #: F0149 CUSTOMER ID: 89-048

ANALYST: Richard L. Weiss DATE EXTRUDED: November 21, 1989

DRAINABLE LIQUID Liquid Submitted for Segment Analysis? -- NO

GROSS <10ml	TARE			NET
SERIAL	DATE/TIME			ESTIMATED
SPECIFIC	CALCULATED			

APPEARANCE OF LIQUID: No liquid was collected

DIMENSIONS OF SEGMENT

Completed Segment Obtained?	No	LENGTH: 6.0 in.	CALCULATED VOLUME: 4.7 in^3
REMARKS	None		

APPEARANCE OF SOLIDS: Sample dark brown except for bottom chunk (which is medium brown) of about 3/4 inches. Granular texture throughout the sample with some hard "bits". Semi-cohesive consistency with bottom portion much less cohesive than rest of sample, almost runny.

PENETROMETER	9.37 lbs/sq in	REMARKS: None

HOMOGENIZATION

PROCEDURE: T038A-00712	REVISION: F	QUANTITY OF MATERIAL: 118.09	GRAMS
DATE HOMOGENIZED: 12-29-89		TIME HOMOGENIZED: 5.0	MINUTES
OPERATOR: John R. Smith			

LABORATORY NOTEBOOK REFERENCE	WHC-N-313-4	14
	Notebook No.	Page No.

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Single Shell Tank
Segment -- Subsamples

Lab Segment Serial #:	F0149	Customer ID:	89-048

Volatile Organic Analysis

VOA Sample	Lab Serial #: 89-048-77	Date Sampled: 11-21-89
Sample shipped to PNL		

Particle Size Distribution Analysis

Particle Size Sample	Lab Serial #: F0149	Date Sampled: 11-21-89

Homogenized Solids

Undigested Solids Analysis

Laboratory Serial Number For Sample:	F0149	Date Sampled: 12-29-89
Laboratory Serial Number of Duplicate Sample:	F0150	

Fusion Analysis of Solids

Laboratory Serial Number of Sample:	F0154	Date Sampled: 12-29-89
Laboratory Serial Number of Duplicate Sample:	F0155	
Laboratory Serial Number of Spiked Sample:	F0156	

Acid Digestion Analysis of Solids

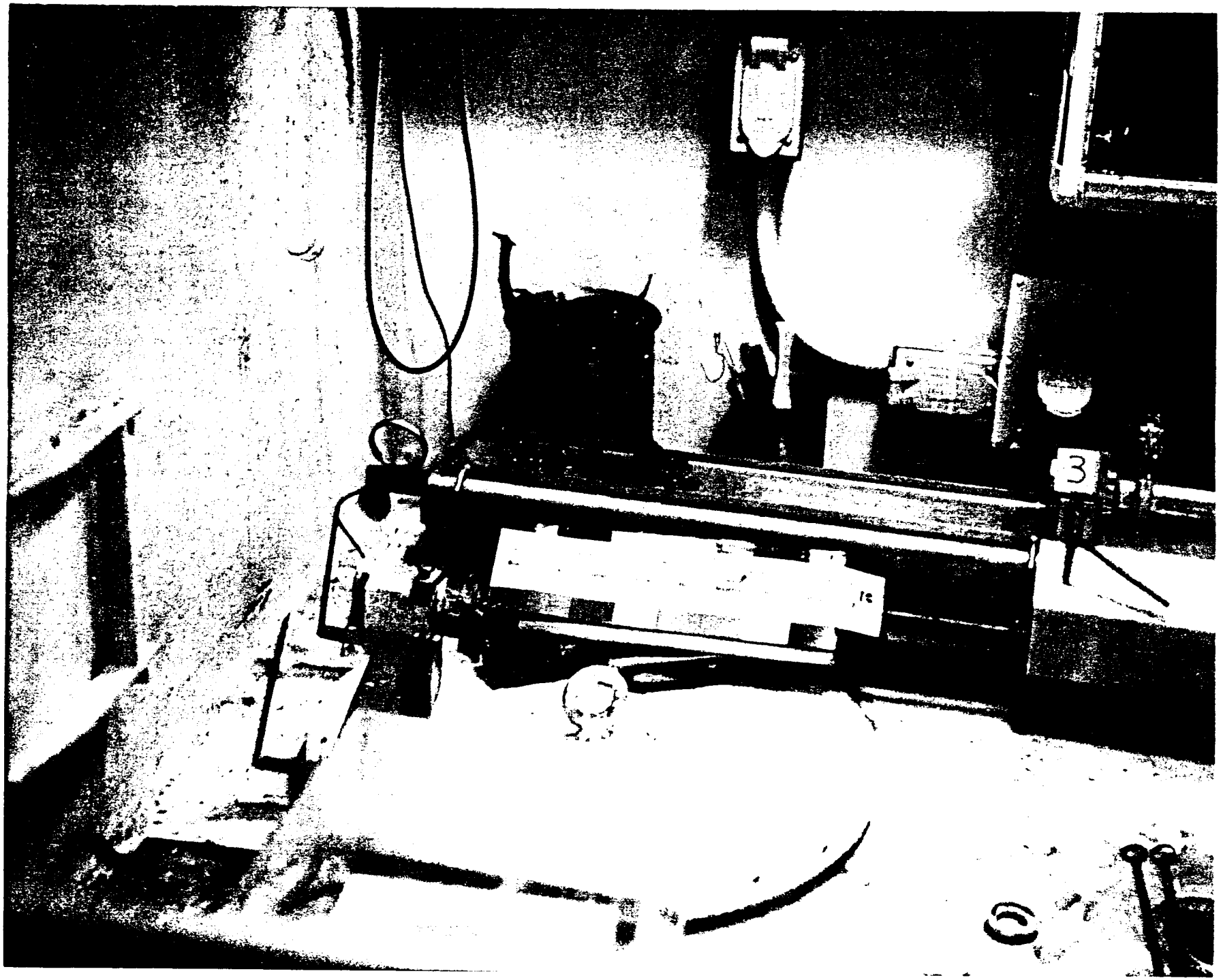
Laboratory Serial Number of Sample:	F0164	Date Sampled: 12-29-89
Laboratory Serial Number of Duplicate Sample:	F0165	
Laboratory Serial Number of Spiked Sample:	F0166	

Water Digestion Analysis of Solids

Laboratory Serial Number of Sample:	F0159	Date Sampled: 12-29-89
Laboratory Serial Number of Duplicate Sample:	F0160	
Laboratory Serial Number of Spiked Sample:	F0161	

Laboratory Notebook Reference	WHC-N-313-4	14
	Notebook No.	Page No.

SST-5 Rev. D 9/7/90 Interim



TANK 241-U-110, CORE 7, 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,B000076,F0149,H2O,SBK
FILE NAME : F0149.002

DATE	: 30/11/1989	ACQ. RANGE	: 0.5-60	COUNTS	: 77089
TIME	: 13:59	ACQ. MODE	: SAMPLE	S.N.F.	: 0.56
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 385 SEC	S.D.U.	: 5199
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 4	CONCENTR.	: 6.7E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 1.6E-02 %

		MEAN Diameter	S.D.
Number, Length	:	1.49 µm	1.64 µm
Number, Area	:	2.22 µm	1.79 µm
Number, Volume	:	3.59 µm	2.66 µm
Length, Area	:	3.29 µm	4.48 µm
Length, Volume	:	5.56 µm	5.02 µm
Area, Volume	:	9.40 µm	12.09 µm
Volume, Moment	:	24.94 µm	18.19 µm

		MEDIAN Diameter	MODE	CONFIDENCE
Number	:	0.93 µm	0.55 µm	100.00%
Area	:	4.31 µm	4.86 µm	90.77%
Volume	:	21.80 µm	41.93 µm	99.70%

Brown suspension - some balled up in cuvette corners.
Particles disperse well in H_2O - nil agglomeration
All particles < 150 µ

SAMPLE NAME : SST,B000076,F0149,H2O,SBK
FILE NAME : F0149.001

DATE	: 30/11/1989	ACQ. RANGE	: 0.5-150	COUNTS	: 82012
TIME	: 13:46	ACQ. MODE	: SAMPLE	S.N.F.	: 0.62
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 411 SEC	S.D.U.	: 4978
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 4	CONCENTR.	: 6.1E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 2.2E-02 %

		MEAN Diameter	S.D.
Number, Length	:	1.54 µm	1.74 µm
Number, Area	:	2.33 µm	1.91 µm
Number, Volume	:	4.07 µm	3.07 µm
Length, Area	:	3.51 µm	5.60 µm
Length, Volume	:	6.61 µm	6.39 µm
Area, Volume	:	12.43 µm	17.87 µm
Volume, Moment	:	39.13 µm	30.56 µm

		MEDIAN Diameter	MODE	CONFIDENCE
Number	:	0.94 µm	0.75 µm	100.00%
Area	:	5.22 µm	4.75 µm	86.78%
Volume	:	37.14 µm	45.76 µm	99.31%

B r i n k m a n n

Particle Size Analyzer

PROCESS CHEMISTRY LABS PARTICLE ANALYSIS VIA BRINKMANN 2010

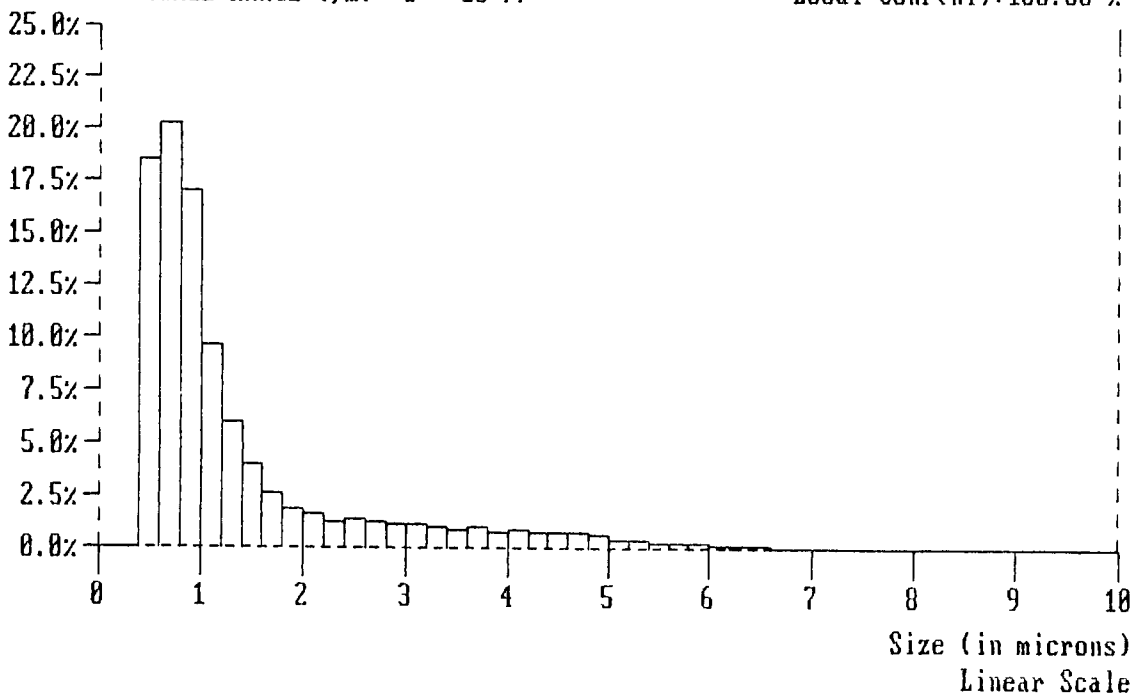
SAMPLE NAME : SST,B000076,F0149,H20,SBK
FILE NAME : F0149.002

DATE	: 30/11/1989	ACQ. RANGE	: 0.5-60	COUNTS	: 77089
TIME	: 13:59	ACQ. MODE	: SAMPLE	S.N.F.	: 0.56
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 385 SEC	S.D.U.	: 5199
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 4	CONCENTR.	: 6.7E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 1.6E-02 %

PROBABILITY NUMBER DENSITY GRAPH

Name: SST,B000076,F0149,H20,SBK
6.7E+06 #/ml(99.7%)
Mode at 0.70 µm
<< SCALE RANGE (µm): 0 - 10 >>

Local Median : 0.93µm
Local Mean(nl): 1.44µm
Local S.D.(nl): 1.32µm
Local Conf(nl):100.00 %



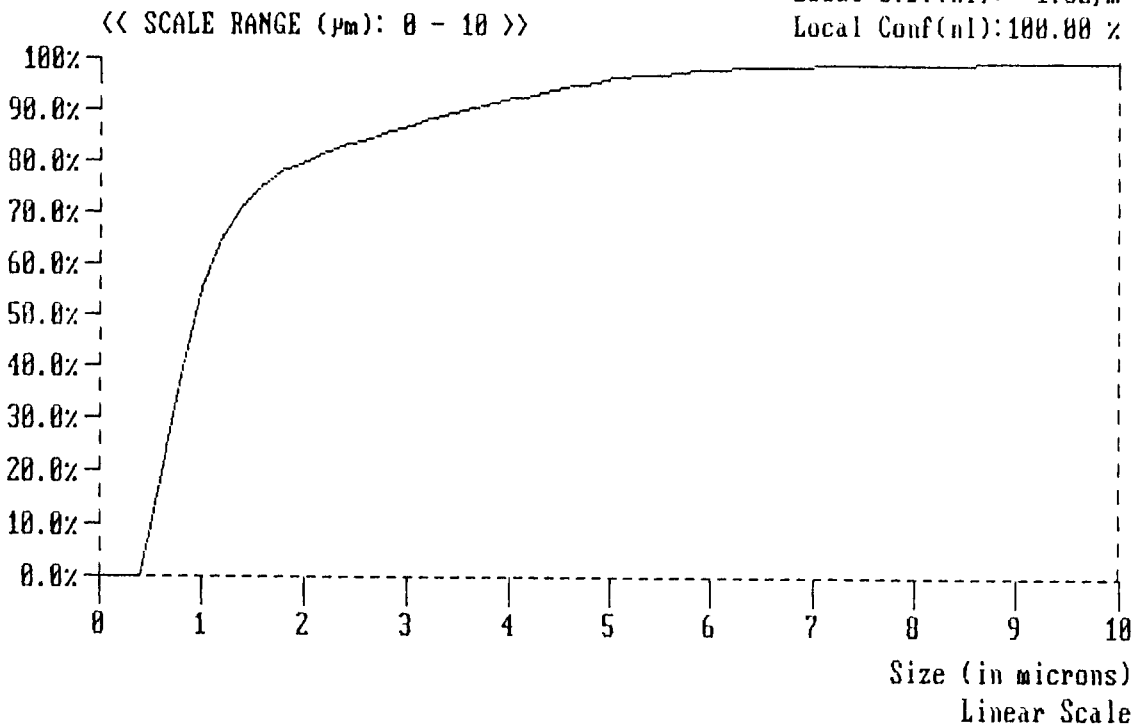
SAMPLE NAME : SST,B000076,F0149,H20,SBK
FILE NAME : F0149.002

DATE	: 30/11/1989	ACQ. RANGE	: 0.5-60	COUNTS	: 77089
TIME	: 13:59	ACQ. MODE	: SAMPLE	S.N.F.	: 0.56
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 385 SEC	S.D.U.	: 5199
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 4	CONCENTR.	: 6.7E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 1.6E-02 %

PROBABILITY NUMBER DISTRIBUTION GRAPH

Name: SST,B000076,F0149,H20,SBK
6.7E+06 #/ml(99.7%)

Local Median : 0.93µm
Local Mean(nl): 1.44µm
Local S.D.(nl): 1.32µm
Local Conf(nl):100.00 %



B r i n k m a n n

Particle Size Analyzer

PROCESS CHEMISTRY LABS PARTICLE ANALYSIS
VIA BRINKMANN 2010

SAMPLE NAME : SST,B000076,F0149,H20,SBK
FILE NAME : F0149.001

DATE	: 30/11/1989	ACQ. RANGE	: 0.5-150	COUNTS	: 82012
TIME	: 13:46	ACQ. MODE	: SAMPLE	S.N.F.	: 0.62
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 411 SEC	S.D.U.	: 4978
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 4	CONCENTR.	: 6.1E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 2.2E-02 %

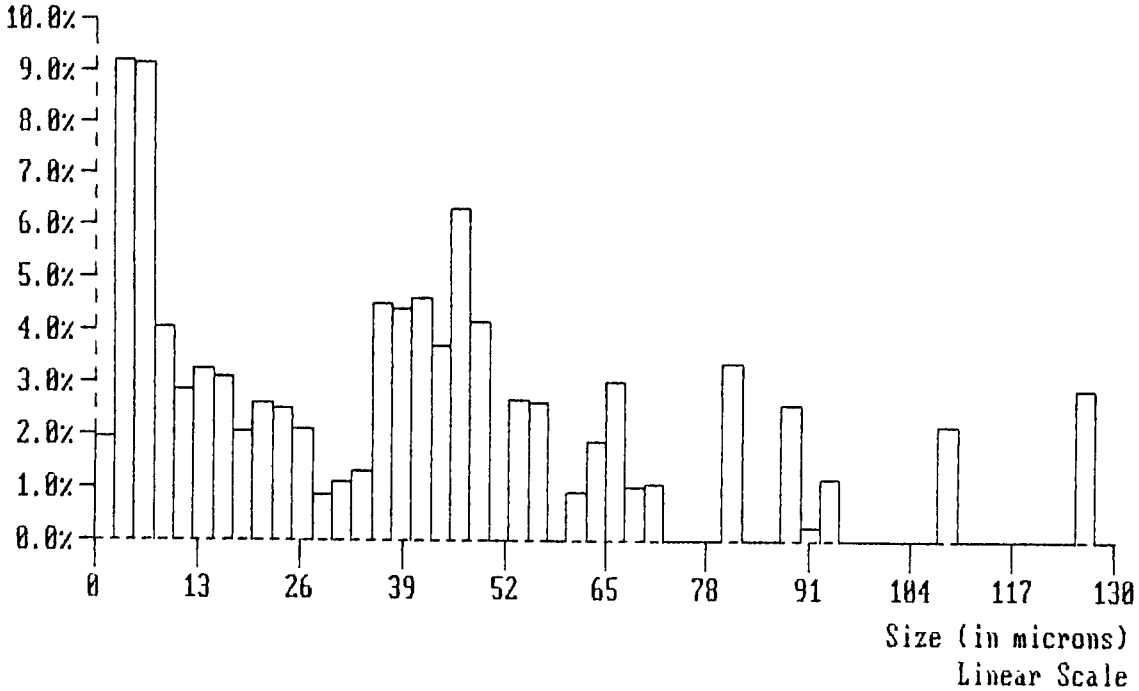
PROBABILITY VOLUME DENSITY GRAPH

Name: SST,B000076,F0149,H20,SBK
2.2E-04 cc/ml(100.0%)
Mode at 3.75 µm

Mean(nv): 4.07µm
S.D.(nv): 3.07µm

Median : 37.14µm
Mean(vm): 38.13µm
S.D.(vm): 30.56µm
Conf(vm): 99.31 %

<< SCALE RANGE (µm): ADJUSTED >>



B r i n k m a n n

Particle Size Analyzer

PROCESS CHEMISTRY LABS PARTICLE ANALYSIS
VIA BRINKMANN PC10

SAMPLE NAME : SST,B000076,F0149,H20,SBK
FILE NAME : F0149.001

DATE	: 30/11/1989	ACQ. RANGE	: 0.5-150	COUNTS	: 82012
TIME	: 13:46	ACQ. MODE	: SAMPLE	S.N.F.	: 0.62
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 411 SEC	S.D.U.	: 4978
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 4	CONCENTR.	: 6.1E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 8.2E-02 %

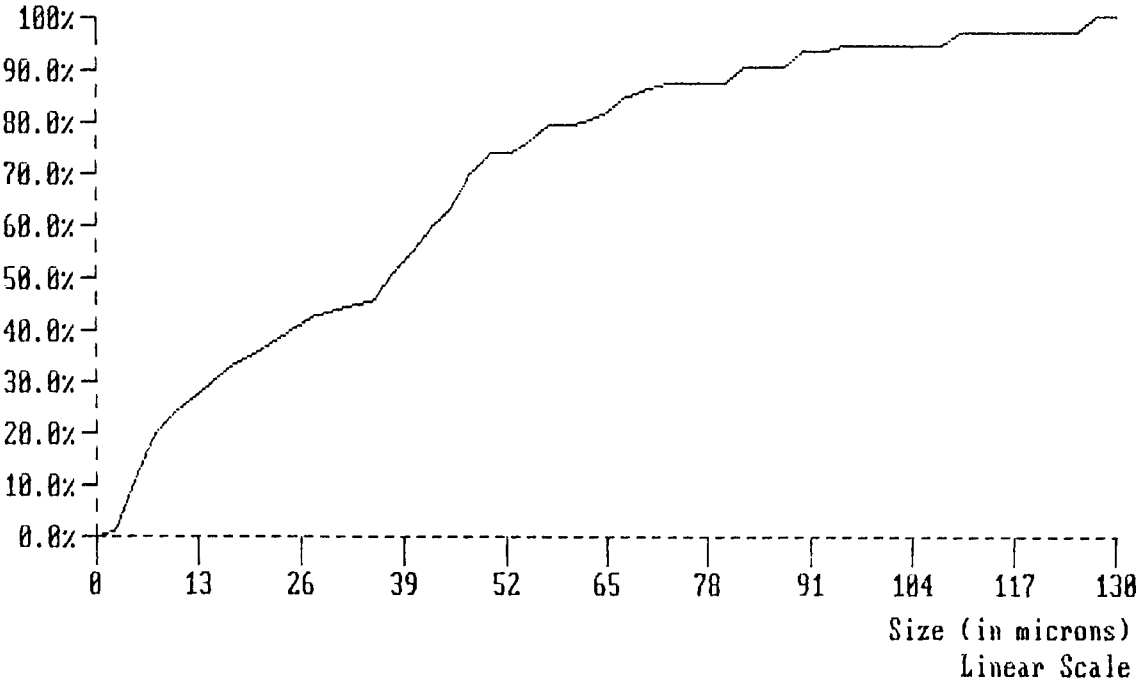
PROBABILITY VOLUME DISTRIBUTION GRAPH

Name: SST,B000076,F0149,H20,SBK
2.2E-04 cc/ml(100.0%)

Mean(nv): 4.07µm
S.D.(nv): 3.07µm

Median : 37.14µm
Mean(vm): 38.13µm
S.D.(vm): 30.56µm
Conf(vm): 99.31 %

<< SCALE RANGE (µm): ADJUSTED >>



UNDIGESTED SAMPLE ANALYSIS

Single Shell Tank Project

Untreated Sample Results

Tank: 241-U-110
Core: 7
Segment: 3
Customer ID 89-048

	Check Standard	Blank	Sample	Sample Duplicate	Check Standard
Laboratory ID:	F0100	F0121	F0149	F0150	F0292
pH	101.00%	6.83	12.54	12.79	100.90%
Laboratory ID:	F0100	F0309	F0149	F0150	F0292
%Water	96.63%	6.5 mg	47.20%	47.70%	96.80%

Analytical Batch

LAB SEGMENT SERIAL #:F0149

CUSTOMER ID:89-048

INSTRUMENT	N/A
PROCEDURE/REV	LA-212-103/A-0
TECHNOLOGIST	Mary Franz
DATE	January 02, 1990
TEMPERATURE	23.6 C
STARTING TIME	1530
ENDING TIME	2000
CHEMIST	R. E. Brandt

pH Analysis of the Solid Samples

	DESCRIPTION	LAB ID
1	Initial LMCS Check Std.	F0100
2	Reagent Blank	F0121
3	Sample 89-045	F0101
4	Duplicate Sample 89-045	F0102
5	Sample 89-047	F0125
6	Duplicate Sample 89-047	F0126
7	Sample 89-048	F0149
8	Duplicate Sample 89-048	F0150
9	Sample 89-050	F0289
10	Duplicate Sample 89-050	F0290
11	Final LMCS Check Std.	F0292

	DESCRIPTION	LAB ID
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		

STANDARD TYPE	PRIMARY BOOK # & ALIQUOT VOL.	SECOND BOOK # & ALIQUOT VOL.	THIRD BK# & ALQT. VOL.	FINAL VOL. OF STD.
LMCS Check Standard	72C11A/5.0ml			5.0 ml

SST-102 Rev. F 9/7/90 Interim

Analytical Batch

LAB SEGMENT SERIAL #:F0149

CUSTOMER ID:89-048

INSTRUMENT	N/A
PROCEDURE/REV	LA-564-101/D-0
TECHNOLOGIST	R. D. Hale
DATE	January 3, 1990
TEMPERATURE	120 C
STARTING TIME	1100 01-02-90
ENDING TIME	1100 01-03-90
CHEMIST	R. E. Brandt

% Water in Sample

	DESCRIPTION	LAB ID
1	Initial LMCS Check Std.	F0100
2	Reagent Blank	F0309
3	Sample 89-047	F0125
4	Duplicate Sample 89-047	F0126
5	Sample 89-048	F0149
6	Duplicate Sample 89-048	F0150
7	Sample 89-050	F0289
8	Duplicate Sample 89-050	F0290
9	Sample 89-045	F0101
10	Duplicate Sample 89-045	F0102
11	Final LMCS Check Std.	F0292

	DESCRIPTION	LAB ID
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		

STANDARD TYPE	PRIMARY BOOK # & ALIQUOT VOL.	SECOND BOOK # & ALIQUOT VOL.	THIRD BK# & ALQT.VOL.	FINAL VOL. OF STD.
LMCS Check Standard	11C11AG/1.0ml			1.0 ml

SST-102 Rev. F 9/7/90 Interim

KOH FUSION ANALYSIS

Single Shell Tank Project

Fusion Analysis

Results of the Laboratory Digestions

Tank: 241-U-110
Core: 7
Segment: 3
Customer ID: 89-048

	Check Standard	Blank	Sample	Sample Duplicate	Spike of Sample	Check Standard
Laboratory ID:	N/A	F0168	F0154	F0155	N/A	N/A
Fusion Dissolution	N/A	Complete	1.98 g/L	2.22 g/L	N/A	N/A
Laboratory ID:	F0105	F0308	F0154	F0155	F0296	F0297
Total Alpha	111.90%	<1.00E-04 uci/L	6.30 uci/L	5.54 uci/L	97.00%	100.30%
Total Beta	98.80%	<2.58E-04 uci/L	3.09E+03 uci/L	3.53E+03 uci/L	*	96.50%
Laboratory ID:	F0129	F0308	F0154	F0155	F0296	F0297
GEA Cs-137	98.10%	2.49E-01 uci/L	44.40 uci/L	51.70 uci/L	99.10%	99.10%
Laboratory ID:	F0105	F0120	F0154	F0155	F0108	F0297
Uranium	98.70%	<1.04E+04 ug/L	<1.04E-02 g/L	<1.11E-02 g/L	1.71%	108.30%

* Spike Is Too Low To Calculate.

Single Shell Tank Project

Fusion Analysis
Laboratory Results Of Solids
Units Are Sample Wet Weight

Tank: 241-U-110
Core: 7
Segment: 3
Customer ID: 89-048

	Check Standard	Blank	Sample	Sample Duplicate	Spike of Sample	Check Standard
Laboratory ID:	N/A	F0168	F0154	F0155	N/A	N/A
Fusion Digestion	N/A	Complete	1.98 g/L	2.22 g/L	N/A	N/A
Laboratory ID:	F0105	F0308	F0154	F0155	F0296	F0297
Total Alpha	111.90%	<1.00E-04 uci/L	3.18 uci/g	2.50 uci/g	97.00%	100.30%
Total Beta	98.80%	<2.58E-04 uci/L	1.56E+03 uci/g	1.59E+03 uci/g	*	96.50%
Laboratory ID:	F0129	F0308	F0154	F0155	F0296	F0297
GEA Cs-137	98.10%	2.49E-01 uci/L	22.42 uci/g	23.29 uci/g	99.17%	99.10%
Laboratory ID:	F0105	F0120	F0154	F0155	F0108	F0297
Uranium	98.70%	<1.04E+04 ug/L	<5.25E+03 ug/g	<5.00E+03 ug/g	1.71%	108.30%

* Spike Too Low To Calculate.

Analytical Batch

Lab Segment Serial #:F0149

Customer ID:89-048

Instrument	N/A
Procedure/Rev	LA-549-141/A-0
Technologist	R. D. Hale
Date	January 03, 1990
Temperature	23 C
Starting Time	1000
Ending Time	1200
Chemist	S. A. Catlow

Fusion Dissolution

	Description		Lab ID
1	Reagent Blank		F0168
2	Sample	89-045	F0106
3	Duplicate Sample	89-045	F0107
4	Sample	89-047	F0130
5	Duplicate Sample	89-047	F0131
6	Sample	89-048	F0154
7	Duplicate Sample	89-048	F0155
8	Sample	89-050	F0294
9	Duplicate Sample	89-050	F0295
10			
11			

	Description	Lab ID
12		
13		
14		
15		
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17		
18		
19		
20		
21		
22		

Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Bk# & Alqt.Vol.	Final Vol. of Std.
N/A				

SST-102 Rev. F 9/7/90 Interim

Analytical Batch

LAB SEGMENT SERIAL #:F0149

CUSTOMER ID:89-048

INSTRUMENT	WA93415
PROCEDURE/REV	LA-508-101/C-1
TECHNOLOGIST	J. A. Hopkins
DATE	January 05, 1990
TEMPERATURE	70 C
STARTING TIME	0930
ENDING TIME	1400
CHEMIST	S. A. Catlow

Total Alpha and Total Beta
Fusion Dissolution Analysis
Detector 18

	DESCRIPTION		LAB ID
1	Initial LMCS Check Std.		F0105
2	Reagent Blank		F0308
3	Sample	89-045	F0106
4	Duplicate Sample	89-045	F0107
5	Sample	89-047	F0130
6	Duplicate of Sample	89-047	F0131
7	Sample	89-048	F0154
8	Duplicate of Sample	89-048	F0155
9	Sample	89-050	F0294
10	Duplicate of Sample	89-050	F0295
11	Spike of Sample	89-050	F0296

	DESCRIPTION	LAB ID
12	Final LMCS Check Std	F0297
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		

STANDARD TYPE	PRIMARY BOOK # & ALIQUOT VOL.	SECOND BOOK # & ALIQUOT VOL.	THIRD BK# & ALQT. VOL.	FINAL VOL. OF STD.
LMCS Check Standard	83B44/10mL			N/A
Spike of 89-050	83B44/10mL	F0294/.100mL		N/A

SST-102 Rev. F 9/7/90 Interim

Single Shell Tank

Calibration Record

ANALYTE:	Co^{60}		
PROCEDURE:	LQ-508-002	REVISION:	A-0
INSTRUMENT:	Detector #18	PROPERTY NUMBER:	WA93415
TECHNOLOGIST:	R.A. Jones	PAYROLL NUMBER:	65801
DATE:	June 28, 1989		
CALIBRATION STANDARD ID:	100B40A2; 100B40B1; 100B40C1; 32B40A4; 32B40B3; 32B40C4; 32B40A5; 32B40B6; 32B40C5		
ANALYTE CONCENTRATION:	N/A		
TYPE OF CALIBRATION:	Efficiency		

SST-103 Rev. (Draft) 9/15/90 Short Interim

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

DETECTOR No. 18

		2",5" STD	TIME ZERO DATE (HD):	15883
RADIONUCLIDE:	Co-60	1" STD	TIME ZERO DATE (HD):	16573
HALF LIFE:	1925		DATE COUNTED (HD):	16347
COUNT TIME:	5		DATE COUNTED 1" (HD)	
CPM BKG:	5			
CPM 1" BKG:				

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

NOTE: Date of calibration for two inch and five inch size discs is a counting room error. It should read 06-28-89 not 06-28-80.

STANDARD ID	SIZE	DATE	TIME	COUNTS @ 0 DEG.	COUNTS @ 90 DEG.	COUNTS @ 180 DEG.	COUNTS @ 270 DEG.
32B40A4	2	06/28/80	1510	95552	95030	96367	94943
32B40B3	2	06/28/80	1515	179993	179923	180564	179845
32B40C4	2	06/28/80	1521	266251	266109	266791	262848
32B40A5	5	06/28/80	1526	80056	79664	81559	79720
32B40B6	5	06/28/80	1531	159760	162820	161429	163674
32B40C5	5	06/28/80	1536	234482	235955	237348	236432

STANDARD ID	SIZE	STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
100B40A2	1"	67290	0	0.00	0	0.0000
100B40B1	1"	137800	0	0.00	0	0.0000
100B40C1	1"	199700	0	0.00	0	0.0000

AVERAGE, 1" = 0.0000 +/- @95% 0.0000 ERR % ON 05/28/89

STANDARD ID		STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
32B40A4	2"	70480	19090	1.18	22561	0.3201
32B40B3	2"	135100	36011	1.18	42560	0.3150
32B40C4	2"	202400	53095	1.18	62750	0.3100

AVERAGE, 2" = 0.3151 +/- @95% 0.0099 3.13 % ON 06/28/89

STANDARD ID		STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
32B40A5	5"	70160	16045	1.18	18963	0.2703
32B40B6	5"	135700	32379	1.18	38267	0.2820
32B40C5	5"	201900	47206	1.18	55790	0.2763

AVERAGE, 5" = 0.2762 +/- @95% 0.0115 4.16 % ON 06/28/89

NEW EFFS FOR DET 18 Co-60 1" = 0.0000 2" = 0.3151

5" = 0.2762

Single Shell Tank

Calibration Record

ANALYTE:	Am^{241}		
PROCEDURE:	LQ-508-002	REVISION:	A-0
INSTRUMENT:	Detector #18	PROPERTY NUMBER:	WA93415
TECHNOLOGIST:	R.A. Jones	PAYROLL NUMBER:	65801
DATE:	June 28, 1989		
CALIBRATION STANDARD ID:	36B40A3; 36B40B3; 36B40C3; 36B40A6; 36B40B6; 36B40C5; 36B40A8; 36B40B7; 36B40C7		
ANALYTE CONCENTRATION:	N/A		
TYPE OF CALIBRATION:	Efficiency		

SST-103 Rev. (Draft) 9/15/90 Short Interim

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

DETECTOR No. 18

TIME ZERO DATE (HD): 15897

RADIONUCLIDE: Am-241
HALF LIFE: 154497
COUNT TIME: 5
CPM BKG: 0.2

DATE COUNTED (HD): 16347

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

NOTE: Date of calibration for two inch and five inch size discs is a counting room error. It should read 06-28-89 not 06-28-80.

STANDARD ID	SIZE	DATE	TIME	COUNTS @ 0 DEG.	COUNTS @ 90 DEG.	COUNTS @ 180 DEG.	COUNTS @ 270 DEG.
36B40A3	2	06/28/80	1542	67207	66768	67025	66645
36B40B3	2	06/28/80	1547	115573	116337	116289	116143
36B40C3	2	06/28/80	1552	162269	162819	162370	161593
36B40A6	5	06/28/80	1558	61627	62404	61970	61272
36B40B6	5	06/28/80	1603	118582	119217	118566	119430
36B40C5	5	06/28/80	1608	164322	165699	166216	166176

STANDARD ID	SIZE	STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
36B40A8	1"	60570	0	1.00	0	0.0000
36B40B7	1"	109900	0	1.00	0	0.0000
36B40C7	1"	159700	0	1.00	0	0.0000

AVERAGE, 1" = 0.0000 +/- @95% 0.0000 -97.62 % ON 06/28/89

STANDARD ID		STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
36B40A3	2"	61800	13382	1.00	13409	0.2170
36B40B3	2"	110700	23217	1.00	23264	0.2102
36B40C3	2"	161400	32452	1.00	32518	0.2015

AVERAGE, 2" = 0.2095 +/- @95% 0.0152 7.27 % ON 06/28/89

STANDARD ID		STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
36B40A6	5"	59470	12363	1.00	12388	0.2083
36B40B6	5"	109800	23790	1.00	23838	0.2171
36B40C5	5"	160100	33120	1.00	33187	0.2073

AVERAGE, 5" = 0.2109 +/- @95% 0.0106 5.01 % ON 06/28/89

NEW EFFS FOR DET 18 Am-241 1" = 0.0000 2" = 0.2095

5" = 0.2109

Analytical Batch

LAB SEGMENT SERIAL #:F0149

CUSTOMER ID:89-048

INSTRUMENT	401934/WA77228
PROCEDURE/REV	LA-548-121/C-1
TECHNOLOGIST	D. M. Southwick
DATE	January 09, 1990
TEMPERATURE	72 F
STARTING TIME	1230
ENDING TIME	1400
CHEMIST	S. A. Catlow

GEA Analysis
Fusion Dissolution
Detectors 1, 2, 3, & 4
Samples are prepared in batch, but counted randomly.

	DESCRIPTION		LAB ID
1	Initial LMCS Check Std.		F0129
2	Reagent Blank		F0308
3	Sample	89-047	F0130
4	Duplicate Sample	89-047	F0131
5	Sample	89-048	F0154
6	Duplicate Sample	89-048	F0155
7	Sample	89-050	F0294
8	Duplicate Sample	89-050	F0295
9	Spike of Sample	89-050	F0296
10	Final LMCS Check Std		F0297
11			

	DESCRIPTION	LAB ID
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		

STANDARD TYPE	PRIMARY BOOK # & ALIQUOT VOL.	SECOND BOOK # & ALIQUOT VOL.	THIRD BK# & ALQT. VOL.	FINAL VOL. OF STD.
LMCS Check Standard	89B44/.5mL			22mL
Spike	89B44/.1mL	F0294/1.0ml		22mL

SST-102 Rev. F 9/7/90 Interim

Single Shell Tank
Calibration Record

ANALYTE:	Isotope, Mixed Gamma		
PROCEDURE:	LQ-508-003	REVISION:	A-0
INSTRUMENT:	GEA Detector #1	PROPERTY NUMBER:	401934
TECHNOLOGIST:	J. L. Anderson	PAYROLL NUMBER:	61413
DATE:	See attached sheets		

CALIBRATION STANDARD ID: 56B40 D1

ANALYTE CONCENTRATION: N/A

TYPE OF CALIBRATION: Gamma Energy Analysis (Efficiency)

COMMENTS:

SST-103 Rev. (Draft) 9/4/90 Interim

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

ANALYTE:	Mixed Isotope Standards		
PROCEDURE:	LQ-508-003	REVISION:	A-3
INSTRUMENT:	GEA Detector #2	PROPERTY NUMBER:	401934
TECHNOLOGIST:	J. L. Anderson	PAYROLL NUMBER:	61413
DATE:	See attached sheets		

CALIBRATION STANDARD ID: 56B40 D1

ANALYTE CONCENTRATION: N/A

TYPE OF CALIBRATION: Gamma Energy Analysis (Efficiency)

COMMENTS:

SST-103 Rev. (Draft) 9/4/90 Interim

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

Analyte:	Mixed Isotope Standards		
Procedure:	LQ-508-003	Revision:	A-3
Instrument:	GEA Detector #3	Property Number:	401934
Technologist:	J. L. Anderson	Payroll Number:	61413
Date:	July 02, 1989		

Calibration Standard ID: 56B40 D1

Analyte Concentration: N/A

Type of Calibration: Gamma Energy Analysis (Efficiency)

Comments:

SST-103 Rev. (Draft) 9/4/90 Interim

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

ANALYTE:	Mixed Isotope Standards		
PROCEDURE:	LQ-508-003	REVISION:	A-0
INSTRUMENT:	GEA Detector #4	PROPERTY NUMBER:	401934
TECHNOLOGIST:	J. L. Anderson	PAYROLL NUMBER:	61413
DATE:	September 01, 1989		

CALIBRATION STANDARD ID: 56B40 D1

ANALYTE CONCENTRATION: N/A

TYPE OF CALIBRATION: Gamma Energy Analysis (Efficiency)

COMMENTS:

SST-103 Rev. (Draft) 9/4/90 Interim

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: 56B40 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 WESTINGHOUSE HANFORD 27-AUG-90 10:12:00

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: SD4885
ANALYZED BY: VR

SAMPLE DESCRIPTION: F129 SEGMENT F
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 10-JAN-90 AT 07:02:02

COLLECT LIVE TIME: 3000. SECONDS
REAL TIME: 3032. SECONDS
DEAD TIME: 1.06 %

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 27-AUG-90 10:12:00

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	53.64	27.00	1.09	2713.	1439.	11.3	
1B		27.06			123.	34.3	
2	951.26	475.55	1.69	4680.	813.	25.0	CS-134
3C	1126.89	563.35	1.52	3130.	3613.	5.7	CS-134, EU-152
4C	1139.08	569.44	1.52	3058.	6581.	4.5	CS-134, BI-207
5	1209.84	604.81	1.58	3039.	41942.	1.0	CS-134
6	1323.69	661.73	1.64	1970.	65129.	0.8	CS-137
6B		661.35			379.	12.7	
7?	1591.95	795.86	1.72	1709.	30466.	1.5	CS-134
8?	1604.14	801.95	1.72	1656.	2943.	9.1	CS-134
9?	2335.95	1167.96	2.04	1036.	578.	28.6	CS-134
10?	2346.41	1173.19	2.04	916.	27276.	1.5	CO-60
11	2664.98	1332.57	2.28	257.	24755.	1.3	CO-60
12	2730.39	1365.30	2.46	111.	796.	8.2	CS-134
13	2801.12	1400.69	2.37	109.	399.	13.1	BI-214
14	2921.56	1460.96	2.47	90.	813.	7.9	K-40
14B		1460.80			854.	7.1	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

C - MULTIPLET ANALYSIS CONVERGED NORMALLY
? - MULTIPLET ANALYSIS CONVERGED BUT GFIT > 4
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

222-S COUNTING ROOM WESTINGHOUSE HANFORD 27-AUG-90 10:12:00

SAMPLE: F129 SEGMENT F
DATA COLLECTED ON 10-JAN-90 AT 07:02:02
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				ENERGY COMPARISON (KEV)	
	MEASURED	ERROR	DECAY CORRECTED	ERROR	EXPECT	DIFF
AC-228	LLD<3.89E-01		LLD<3.89E-01		911.07	
AG-108M	LLD<8.41E-02		LLD<8.41E-02		433.94	
AG-110M	LLD<4.06E-01		LLD<4.06E-01		657.76	
AM-241	LLD<3.93E-01		LLD<3.93E-01		59.54	
AM-243	LLD<9.32E-02		LLD<9.32E-02		74.67	
AR-41	LLD<6.76E-02		LLD<6.76E-02		1293.64	
AU-198	LLD<8.50E-02		LLD<8.50E-02		411.80	
BA-133	LLD<1.05E-01		LLD<1.05E-01		356.02	
BA-139	LLD<2.09E-01		LLD<2.09E-01		165.85	
BA-140	LLD<3.11E-01		LLD<3.11E-01		537.27	
BA-141	LLD<2.03E-01		LLD<2.03E-01		190.23	
BE-7	LLD<8.10E-01		LLD<8.10E-01		477.59	
BI-207	LLD<8.03E-02		LLD<8.03E-02		569.70	
BI-212	LLD<1.09E+00		LLD<1.09E+00		727.27	
BI-214	LLD<6.01E-01		LLD<6.01E-01		609.32	
CD-109	LLD<1.30E+00		LLD<1.30E+00		88.03	
CE-139	LLD<4.73E-02		LLD<4.73E-02		165.85	
CE-141	LLD<7.07E-02		LLD<7.07E-02		145.44	
CEPR144	LLD<6.03E-01		LLD<6.03E-01		133.51	
CO-56	LLD<8.80E-02		LLD<8.80E-02		846.76	
CO-57	LLD<3.83E-02		LLD<3.83E-02		122.06	
CO-58	LLD<8.01E-02		LLD<8.01E-02		810.75	
CO-60	2.28E+01	+-3.30E-01	2.28E+01	+-3.30E-01	1332.50	0.07
					1173.24	-0.04
CR-51	LLD<5.78E-01		LLD<5.78E-01		320.09	
CS-134	2.08E+01	+-3.56E-01	2.08E+01	+-3.56E-01	795.84	0.02
					604.70	0.12
CS-136	LLD<7.79E-02		LLD<7.79E-02		818.51	
CS-137	3.74E+01	+-4.12E-01	3.74E+01	+-4.12E-01	661.65	0.08
CS-138	LLD<8.08E-02		LLD<8.08E-02		1435.86	
EU-152	LLD<2.08E-01		LLD<2.08E-01		1408.01	
EU-154	LLD<1.58E-01		LLD<1.58E-01		1274.45	
EU-155	LLD<1.65E-01		LLD<1.65E-01		105.31	
FE-59	LLD<1.99E-01		LLD<1.99E-01		1099.25	
HF-181	LLD<9.82E-02		LLD<9.82E-02		482.20	
HG-203	LLD<6.67E-02		LLD<6.67E-02		279.20	
I-131	LLD<8.12E-02		LLD<8.12E-02		364.48	
I-132	LLD<9.54E-02		LLD<9.54E-02		667.69	
I-133	LLD<8.96E-02		LLD<8.96E-02		529.69	
I-134	LLD<1.18E-01		LLD<1.18E-01		847.03	
I-135	LLD<2.16E-01		LLD<2.16E-01		1260.41	
K-40	LLD<9.13E-01		LLD<9.13E-01		1460.75	
KR-85	LLD<1.67E+01		LLD<1.67E+01		513.99	
KR-85M	LLD<4.95E-02		LLD<4.95E-02		151.17	
KR-87	LLD<1.81E-01		LLD<1.81E-01		402.58	
KR-89	LLD<2.57E+00		LLD<2.57E+00		220.90	
LA-140	LLD<3.10E-02		LLD<3.10E-02		1596.20	

LA-142	LLD<1.84E-01	LLD<1.84E-01	641.83
MN-54	LLD<8.70E-02	LLD<8.70E-02	834.83
MN-56	LLD<9.93E-02	LLD<9.93E-02	846.76
NA-22	LLD<5.24E-02	LLD<5.24E-02	1274.55
NA-24	LLD<7.27E-02	LLD<7.27E-02	1368.60
NB-94	LLD<6.95E-02	LLD<6.95E-02	702.63
NB-95	LLD<8.08E-02	LLD<8.08E-02	765.78
NB-97	LLD<5.79E-01	LLD<5.79E-01	657.92
NP-238	LLD<3.64E-01	LLD<3.64E-01	984.45
NP-239	LLD<3.80E-01	LLD<3.80E-01	277.60
PA-233	LLD<1.61E-01	LLD<1.61E-01	311.98
PA-234M	LLD<1.85E+01	LLD<1.85E+01	1001.03
PB-210	LLD<1.97E+00	LLD<1.97E+00	465.03
PB-212	LLD<1.30E-01	LLD<1.30E-01	239.00
PB-214	LLD<1.76E-01	LLD<1.76E-01	351.92
PO-210	LLD<7.29E+03	LLD<7.29E+03	804.00
PO-214	LLD<3.77E+03	LLD<3.77E+03	799.70
PO-216	LLD<6.39E+03	LLD<6.39E+03	804.90
PU-239	LLD<5.16E+02	LLD<5.16E+02	129.30
PU-241	LLD<1.85E+04	LLD<1.85E+04	148.57
RA-224	LLD<1.31E+00	LLD<1.31E+00	240.99
RA-226	LLD<1.31E+00	LLD<1.31E+00	186.10
RB-88	LLD<4.01E-01	LLD<4.01E-01	1836.00
RB-89	LLD<4.47E-01	LLD<4.47E-01	1031.88
RN-220	LLD<6.99E+01	LLD<6.99E+01	549.73
RU-103	LLD<8.31E-02	LLD<8.31E-02	497.08
RURH106	LLD<1.46E+00	LLD<1.46E+00	621.80
SB-124	LLD<2.01E-01	LLD<2.01E-01	602.72
SB-125	LLD<5.67E-01	LLD<5.67E-01	176.33
SC-46	LLD<1.10E-01	LLD<1.10E-01	1120.45
SE-75	LLD<9.00E-02	LLD<9.00E-02	264.66
SN-113	LLD<1.10E-01	LLD<1.10E-01	391.67
SR-85	LLD<7.34E-02	LLD<7.34E-02	513.99
SR-91	LLD<1.43E-01	LLD<1.43E-01	555.60
SR-92	LLD<4.88E-02	LLD<4.88E-02	1383.94
TA-182	LLD<2.99E-01	LLD<2.99E-01	1121.30
TC-99M	LLD<3.95E-02	LLD<3.95E-02	140.51
TE-123M	LLD<4.32E-02	LLD<4.32E-02	159.00
TE-125M	LLD<1.25E+01	LLD<1.25E+01	109.27
TE-132	LLD<5.77E-02	LLD<5.77E-02	228.16
TH-228	LLD<4.03E+00	LLD<4.03E+00	84.37
TL-208	LLD<9.94E-02	LLD<9.94E-02	583.14
U-235	LLD<7.27E-02	LLD<7.27E-02	185.71
U-237	LLD<2.34E-01	LLD<2.34E-01	208.00
W-187	LLD<2.38E-01	LLD<2.38E-01	685.74
XE-131M	LLD<1.97E+00	LLD<1.97E+00	163.98
XE-133	LLD<1.46E-01	LLD<1.46E-01	81.00
XE-133M	LLD<4.71E-01	LLD<4.71E-01	233.21
XE-135	LLD<5.38E-02	LLD<5.38E-02	249.79
XE-138	LLD<4.52E-01	LLD<4.52E-01	258.41
Y-88	LLD<3.78E-02	LLD<3.78E-02	1836.06
Y-91	LLD<2.46E+01	LLD<2.46E+01	1204.90
Y-91M	LLD<1.08E-01	LLD<1.08E-01	555.60
ZN-65	LLD<2.35E-01	LLD<2.35E-01	1115.55
ZR-95	LLD<1.36E-01	LLD<1.36E-01	756.73
ZR-97	LLD<7.81E-02	LLD<7.81E-02	743.33
TOTAL	8.10E+01 +-6.36E-01	8.10E+01 +-6.36E-01	

STANDARD DEVIATION = 0.06

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.45E-09 UC/LI
TOTAL MEASURED ACTIVITY = 8.10E+01 (+-6.36E-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
53.64	27.00	1316.	12.8	1.37E+03
951.26	475.55	813.	25.0	5.46E+00
1126.89	563.35	3613.	5.7	2.83E+01
1139.08	569.44	6581.	4.5	5.21E+01
1604.14	801.95	2943.	9.1	3.19E+01
2335.95	1167.96	578.	28.6	8.80E+00
2730.39	1365.30	796.	8.2	1.39E+01
2801.12	1400.69	399.	13.1	7.10E+00

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2921.56	1460.96	813.	7.9	1.50E+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 27-AUG-90 09:55:27

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: 95.0%
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: SD3888
ANALYZED BY: DM

SAMPLE DESCRIPTION: F-308 SEGMENT-U
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 10-JAN-90 AT 09:24:49

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 27-AUG-90 09:55:27

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	2921.30	1460.75	1.81	32.	603.	8.6	K-40
1B		1460.58			611.	5.5	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 95.0%

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

222-S COUNTING ROOM WESTINGHOUSE HANFORD 27-AUG-90 09:55:27

SAMPLE: F-308 SEGMENT-U
DATA COLLECTED ON 10-JAN-90 AT 09:24:49
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

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

NUCLIDE	ACTIVITY CONCENTRATION IN uCi/LI MEASURED	ERROR	DECAY CORRECTED	ERROR	ENERGY COMPARISON (KEV) EXPECT	DIFF
AC-228	LLD<1.18E+00		LLD<1.18E+00		911.07	
AG-108M	LLD<1.95E-01		LLD<1.95E-01		433.94	
AG-110M	LLD<2.98E-01		LLD<2.98E-01		657.76	
AM-241	LLD<2.89E-01		LLD<2.89E-01		59.54	
AM-243	LLD<2.27E-01		LLD<2.27E-01		74.67	
AR-41	LLD<3.19E-01		LLD<3.19E-01		1293.64	
AU-198	LLD<1.82E-01		LLD<1.82E-01		411.80	
BA-133	LLD<3.07E-01		LLD<3.07E-01		356.02	
BA-139	LLD<7.16E-01		LLD<7.16E-01		165.85	
BA-140	LLD<8.17E-01		LLD<8.17E-01		537.27	
BA-141	LLD<7.54E-01		LLD<7.54E-01		190.23	
BE-7	LLD<1.74E+00		LLD<1.74E+00		477.59	
BI-207	LLD<1.90E-01		LLD<1.90E-01		569.70	
BI-212	LLD<3.10E+00		LLD<3.10E+00		727.27	
BI-214	LLD<6.11E-01		LLD<6.11E-01		609.32	
CD-109	LLD<3.62E+00		LLD<3.62E+00		88.03	
CE-139	LLD<1.62E-01		LLD<1.62E-01		165.85	
CE-141	LLD<2.83E-01		LLD<2.83E-01		145.44	
CEPR144	LLD<2.49E+00		LLD<2.49E+00		133.51	
CO-56	LLD<2.15E-01		LLD<2.15E-01		846.76	
CO-57	LLD<1.57E-01		LLD<1.57E-01		122.06	
CO-58	LLD<2.19E-01		LLD<2.19E-01		810.75	
CO-60	LLD<2.64E-01		LLD<2.64E-01		1332.50	
CR-51	LLD<1.62E+00		LLD<1.62E+00		320.09	
CS-134	LLD<2.57E-01		LLD<2.57E-01		795.84	
CS-136	LLD<2.05E-01		LLD<2.05E-01		818.51	
CS-137	LLD<3.20E-01		LLD<3.20E-01		661.65	
CS-138	LLD<4.38E-01		LLD<4.38E-01		1435.86	
EU-152	LLD<1.35E+00		LLD<1.35E+00		1408.01	
EU-154	LLD<7.68E-01		LLD<7.68E-01		1274.45	
EU-155	LLD<6.08E-01		LLD<6.08E-01		105.31	
FE-59	LLD<5.21E-01		LLD<5.21E-01		1099.25	
HF-181	LLD<2.30E-01		LLD<2.30E-01		482.20	
HG-203	LLD<1.85E-01		LLD<1.85E-01		279.20	
I-131	LLD<2.15E-01		LLD<2.15E-01		364.48	
I-132	LLD<2.06E-01		LLD<2.06E-01		667.69	
I-133	LLD<2.14E-01		LLD<2.14E-01		529.69	
I-134	LLD<3.02E-01		LLD<3.02E-01		847.03	
I-135	LLD<9.96E-01		LLD<9.96E-01		1260.41	
K-40	LLD<7.39E+00		LLD<7.39E+00		1460.75	
KR-85	LLD<5.58E+01		LLD<5.58E+01		513.99	
KR-85M	LLD<2.13E-01		LLD<2.13E-01		151.17	
KR-87	LLD<4.19E-01		LLD<4.19E-01		402.58	
KR-89	LLD<7.87E+00		LLD<7.87E+00		220.90	
LA-140	LLD<2.91E-01		LLD<2.91E-01		1596.20	
LA-142	LLD<4.85E-01		LLD<4.85E-01		641.83	
MN-54	LLD<2.31E-01		LLD<2.31E-01		834.83	

MN-56	LLD<2.43E-01	LLD<2.43E-01	846.76
NA-22	LLD<3.03E-01	LLD<3.03E-01	1274.55
NA-24	LLD<2.20E-01	LLD<2.20E-01	1368.60
NB-94	LLD<2.23E-01	LLD<2.23E-01	702.63
NB-95	LLD<2.03E-01	LLD<2.03E-01	765.78
NB-97	LLD<3.61E-01	LLD<3.61E-01	657.92
NP-238	LLD<9.29E-01	LLD<9.29E-01	984.45
NP-239	LLD<1.13E+00	LLD<1.13E+00	277.60
PA-233	LLD<4.34E-01	LLD<4.34E-01	311.98
PA-234M	LLD<4.11E+01	LLD<4.11E+01	1001.03
PB-210	LLD<4.80E+00	LLD<4.80E+00	465.03
PB-212	LLD<3.88E-01	LLD<3.88E-01	239.00
PB-214	LLD<6.20E-01	LLD<6.20E-01	351.92
PO-210	LLD<1.58E+04	LLD<1.58E+04	804.00
PO-214	LLD<2.01E+03	LLD<2.01E+03	799.70
PO-216	LLD<1.05E+04	LLD<1.05E+04	804.90
PU-239	LLD<2.07E+03	LLD<2.07E+03	129.30
PU-241	LLD<7.12E+04	LLD<7.12E+04	148.57
RA-224	LLD<4.28E+00	LLD<4.28E+00	240.99
RA-226	LLD<4.43E+00	LLD<4.43E+00	186.10
RB-88	LLD<2.61E+00	LLD<2.61E+00	1836.00
RB-89	LLD<1.19E+00	LLD<1.19E+00	1031.88
RN-220	LLD<1.84E+02	LLD<1.84E+02	549.73
RU-103	LLD<2.00E-01	LLD<2.00E-01	497.08
RURH106	LLD<3.92E+00	LLD<3.92E+00	621.80
SB-124	LLD<1.84E-01	LLD<1.84E-01	602.72
SB-125	LLD<1.98E+00	LLD<1.98E+00	176.33
SC-46	LLD<3.85E-01	LLD<3.85E-01	1120.45
SE-75	LLD<2.71E-01	LLD<2.71E-01	264.66
SN-113	LLD<2.69E-01	LLD<2.69E-01	391.67
SR-85	LLD<2.45E-01	LLD<2.45E-01	513.99
SR-91	LLD<3.54E-01	LLD<3.54E-01	555.60
SR-92	LLD<4.47E-01	LLD<4.47E-01	1383.94
TA-182	LLD<8.15E-01	LLD<8.15E-01	1121.30
TC-99M	LLD<1.58E-01	LLD<1.58E-01	140.51
TE-123M	LLD<1.57E-01	LLD<1.57E-01	159.00
TE-125M	LLD<4.71E+01	LLD<4.71E+01	109.27
TE-132	LLD<1.81E-01	LLD<1.81E-01	228.16
TH-228	LLD<9.83E+00	LLD<9.83E+00	84.37
TL-208	LLD<3.02E-01	LLD<3.02E-01	583.14
U-235	LLD<2.71E-01	LLD<2.71E-01	185.71
U-237	LLD<7.54E-01	LLD<7.54E-01	208.00
W-187	LLD<7.58E-01	LLD<7.58E-01	685.74
XE-131M	LLD<6.93E+00	LLD<6.93E+00	163.98
XE-133	LLD<3.12E-01	LLD<3.12E-01	81.00
XE-133M	LLD<1.60E+00	LLD<1.60E+00	233.21
XE-135	LLD<1.71E-01	LLD<1.71E-01	249.79
XE-138	LLD<1.38E+00	LLD<1.38E+00	258.41
Y-88	LLD<2.48E-01	LLD<2.48E-01	1836.06
Y-91	LLD<9.78E+01	LLD<9.78E+01	1204.90
Y-91M	LLD<2.67E-01	LLD<2.67E-01	555.60
ZN-65	LLD<6.72E-01	LLD<6.72E-01	1115.55
ZR-95	LLD<3.79E-01	LLD<3.79E-01	756.73
ZR-97	LLD<2.26E-01	LLD<2.26E-01	743.33
TOTAL	0.00E-01 +-0.00E-01	0.00E-01 +-0.00E-01	

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 95.0%

ALL DETECTED PEAKS WERE USED IN THE ANALYSIS

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2921.30	1460.75	603.	8.6	1.64E+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            *
*                                                                   *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *

CANBERRA SPECTRAN-F V2.06  SOFTWARE

222-S COUNTING ROOM                                 27-AUG-90  08:53:04


                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: SD1008
ANALYZED BY:        DM

SAMPLE DESCRIPTION: F-154 SEGMENT-G
GEOMETRY DESCRIPTION:
SAMPLE SIZE:   1.0000E-03 LI       / CONVERSION FACTOR: 5.0000E-02
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL000

COLLECT STARTED ON 10-JAN-90 AT 08:13:24

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
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222-S COUNTING ROOM 27-AUG-90 08:53:04

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	1022.34	510.66	2.15	61.	99.	29.8	RN-222,I-133,
1B		510.84			74.	27.6	TL-208,NA-22,
							ZN-65,RH-106
2	1218.75	608.83	0.89	41.	56.	42.9	BI-214,
2B		609.26			49.	31.5	RU-103
3	1323.47	661.17	1.53	51.	1465.	5.3	CS-137
3B		661.82			35.	46.4	
4	2921.31	1460.46	1.88	2.	183.	14.6	K-40
4B		1461.77			182.	11.2	
5	3528.28	1764.37	0.92	9.	15.	80.6	BI-214

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

B - ENVIRONMENTAL BACKGROUND PEAK

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

222-S COUNTING ROOM 27-AUG-90 08:53:04

SAMPLE: F-154 SEGMENT-G
DATA COLLECTED ON 10-JAN-90 AT 08:13:24
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				ENERGY COMPARISON (KEV)	
	MEASURED	ERROR	DECAY CORRECTED	ERROR	EXPECT	DIFF
AC-228	LLD<1.87E+00		LLD<1.87E+00		911.07	
AG-108M	LLD<7.54E-01		LLD<7.54E-01		433.94	
AG-110M	LLD<3.70E+00		LLD<3.70E+00		657.76	
AM-241	LLD<4.45E+00		LLD<4.45E+00		59.54	
AM-243	LLD<1.31E+00		LLD<1.31E+00		74.67	
AR-41	LLD<6.11E-01		LLD<6.11E-01		1293.64	
AU-198	LLD<6.28E-01		LLD<6.28E-01		411.80	
BA-133	LLD<1.02E+00		LLD<1.02E+00		356.02	
BA-139	LLD<2.58E+00		LLD<2.58E+00		165.85	
BA-140	LLD<2.11E+00		LLD<2.11E+00		537.27	
BA-141	LLD<2.45E+00		LLD<2.45E+00		190.23	
BE-7	LLD<7.03E+00		LLD<7.03E+00		477.59	
BI-207	LLD<6.47E-01		LLD<6.47E-01		569.70	
BI-212	LLD<8.62E+00		LLD<8.62E+00		727.27	
BI-214	LLD<1.69E+00		LLD<1.69E+00		609.32	
CD-109	LLD<1.85E+01		LLD<1.85E+01		88.03	
CE-139	LLD<5.83E-01		LLD<5.83E-01		165.85	
CE-141	LLD<9.07E-01		LLD<9.07E-01		145.44	
CEPR144	LLD<8.28E+00		LLD<8.28E+00		133.51	
CO-56	LLD<5.94E-01		LLD<5.94E-01		846.76	
CO-57	LLD<5.40E-01		LLD<5.40E-01		122.06	
CO-58	LLD<5.89E-01		LLD<5.89E-01		810.75	
CO-60	LLD<5.64E-01		LLD<5.64E-01		1332.50	
CR-51	LLD<5.09E+00		LLD<5.09E+00		320.09	
CS-134	LLD<5.85E-01		LLD<5.85E-01		795.84	
CS-136	LLD<5.92E-01		LLD<5.92E-01		818.51	
CS-137	4.44E+01	+-2.53E+00	4.44E+01	+-2.53E+00	661.65	-0.48
CS-138	LLD<1.07E+00		LLD<1.07E+00		1435.86	
EU-152	LLD<3.41E+00		LLD<3.41E+00		1408.01	
EU-154	LLD<1.93E+00		LLD<1.93E+00		1274.45	
EU-155	LLD<2.22E+00		LLD<2.22E+00		105.31	
FE-59	LLD<9.64E-01		LLD<9.64E-01		1099.25	
HF-181	LLD<7.16E-01		LLD<7.16E-01		482.20	
HG-203	LLD<6.21E-01		LLD<6.21E-01		279.20	
I-131	LLD<7.20E-01		LLD<7.20E-01		364.48	
I-132	LLD<6.42E-01		LLD<6.42E-01		667.69	
I-133	LLD<7.83E-01		LLD<7.83E-01		529.69	
I-134	LLD<9.26E-01		LLD<9.26E-01		847.03	
I-135	LLD<2.22E+00		LLD<2.22E+00		1260.41	
K-40	LLD<1.80E+01		LLD<1.80E+01		1460.75	
KR-85	LLD<1.99E+02		LLD<1.99E+02		513.99	
KR-85M	LLD<6.06E-01		LLD<6.06E-01		151.17	
KR-87	LLD<1.40E+00		LLD<1.40E+00		402.58	
KR-89	LLD<2.94E+01		LLD<2.94E+01		220.90	
LA-140	LLD<5.72E-01		LLD<5.72E-01		1596.20	
LA-142	LLD<1.26E+00		LLD<1.26E+00		641.83	
MN-54	LLD<6.53E-01		LLD<6.53E-01		834.83	

MN-56	LLD<6.70E-01	LLD<6.70E-01	846.76
NA-22	LLD<7.05E-01	LLD<7.05E-01	1274.55
NA-24	LLD<4.32E-01	LLD<4.32E-01	1368.60
NB-94	LLD<6.37E-01	LLD<6.37E-01	702.63
NB-95	LLD<6.36E-01	LLD<6.36E-01	765.78
NB-97	LLD<4.48E+00	LLD<4.48E+00	657.92
NP-238	LLD<2.26E+00	LLD<2.26E+00	984.45
NP-239	LLD<4.02E+00	LLD<4.02E+00	277.60
PA-233	LLD<1.65E+00	LLD<1.65E+00	311.98
PA-234M	LLD<1.21E+02	LLD<1.21E+02	1001.03
PB-210	LLD<1.76E+01	LLD<1.76E+01	465.03
PB-212	LLD<1.23E+00	LLD<1.23E+00	239.00
PB-214	LLD<1.59E+00	LLD<1.59E+00	351.92
PO-210	LLD<4.07E+04	LLD<4.07E+04	804.00
PO-214	LLD<4.75E+03	LLD<4.75E+03	799.70
PO-216	LLD<2.85E+04	LLD<2.85E+04	804.90
PU-239	LLD<6.94E+03	LLD<6.94E+03	129.30
PU-241	LLD<2.41E+05	LLD<2.41E+05	148.57
RA-224	LLD<1.44E+01	LLD<1.44E+01	240.99
RA-226	LLD<1.35E+01	LLD<1.35E+01	186.10
RB-88	LLD<6.32E+00	LLD<6.32E+00	1836.00
RB-89	LLD<2.49E+00	LLD<2.49E+00	1031.88
RN-220	LLD<4.39E+02	LLD<4.39E+02	549.73
RU-103	LLD<7.08E-01	LLD<7.08E-01	497.08
RURH106	LLD<1.21E+01	LLD<1.21E+01	621.80
SB-124	LLD<5.48E-01	LLD<5.48E-01	602.72
SB-125	LLD<6.69E+00	LLD<6.69E+00	176.33
SC-46	LLD<4.94E-01	LLD<4.94E-01	1120.45
SE-75	LLD<9.46E-01	LLD<9.46E-01	264.66
SN-113	LLD<8.00E-01	LLD<8.00E-01	391.67
SR-85	LLD<8.74E-01	LLD<8.74E-01	513.99
SR-91	LLD<1.04E+00	LLD<1.04E+00	555.60
SR-92	LLD<5.99E-01	LLD<5.99E-01	1383.94
TA-182	LLD<1.88E+00	LLD<1.88E+00	1121.30
TC-99M	LLD<5.59E-01	LLD<5.59E-01	140.51
TE-123M	LLD<5.36E-01	LLD<5.36E-01	159.00
TE-125M	LLD<1.68E+02	LLD<1.68E+02	109.27
TE-132	LLD<5.87E-01	LLD<5.87E-01	228.16
TH-228	LLD<5.84E+01	LLD<5.84E+01	84.37
TL-208	LLD<6.96E-01	LLD<6.96E-01	583.14
U-235	LLD<9.04E-01	LLD<9.04E-01	185.71
U-237	LLD<2.46E+00	LLD<2.46E+00	208.00
W-187	LLD<2.08E+00	LLD<2.08E+00	685.74
XE-131M	LLD<2.50E+01	LLD<2.50E+01	163.98
XE-133	LLD<2.03E+00	LLD<2.03E+00	81.00
XE-133M	LLD<5.19E+00	LLD<5.19E+00	233.21
XE-135	LLD<6.35E-01	LLD<6.35E-01	249.79
XE-138	LLD<4.60E+00	LLD<4.60E+00	258.41
Y-88	LLD<6.00E-01	LLD<6.00E-01	1836.06
Y-91	LLD<2.63E+02	LLD<2.63E+02	1204.90
Y-91M	LLD<7.87E-01	LLD<7.87E-01	555.60
ZN-65	LLD<1.78E+00	LLD<1.78E+00	1115.55
ZR-95	LLD<1.06E+00	LLD<1.06E+00	756.73
ZR-97	LLD<5.45E-01	LLD<5.45E-01	743.33
	---	---	
TOTAL	4.44E+01 +-2.53E+00	4.44E+01 +-2.53E+00	

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.16E-08 UC/LI
TOTAL MEASURED ACTIVITY = 4.44E+01 (+-2.53E+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
3528.28	1764.37	15.	80.6	1.68E+00

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
1022.34	510.66	99.	29.8	3.93E+00
1218.75	608.83	56.	42.9	2.54E+00
2921.31	1460.46	183.	14.6	1.74E+01

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

222-S COUNTING ROOM                                 27-AUG-90  09:40:44


                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: SD2748
ANALYZED BY:        DM

SAMPLE DESCRIPTION: F-155 SEGMENT-H
GEOMETRY DESCRIPTION:
SAMPLE SIZE:   1.0000E-03 LI       / CONVERSION FACTOR: 5.0000E-02
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL000

COLLECT STARTED ON 10-JAN-90 AT 08:15:08

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
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222-S COUNTING ROOM 27-AUG-90 09:40:44

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	1324.36	661.79	1.67	36.	1233.	5.8	CS-137
1B		661.85			36.	13.9	
2	2921.65	1460.37	2.31	10.	146.	17.8	K-40
2B		1460.85			156.	3.8	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

B - ENVIRONMENTAL BACKGROUND PEAK

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

222-S COUNTING ROOM 27-AUG-90 09:40:44

SAMPLE: F-155 SEGMENT-H
DATA COLLECTED ON 10-JAN-90 AT 08:15:08
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				ENERGY COMPARISON (KEV)	
	MEASURED	ERROR	DECAY CORRECTED	ERROR	EXPECT	DIFF
AC-228	LLD<3.92E+00		LLD<3.92E+00		911.07	
AG-108M	LLD<1.06E+00		LLD<1.06E+00		433.94	
AG-110M	LLD<5.11E+00		LLD<5.11E+00		657.76	
AM-241	LLD<7.16E+00		LLD<7.16E+00		59.54	
AM-243	LLD<1.93E+00		LLD<1.93E+00		74.67	
AR-41	LLD<1.14E+00		LLD<1.14E+00		1293.64	
AU-198	LLD<8.84E-01		LLD<8.84E-01		411.80	
BA-133	LLD<1.24E+00		LLD<1.24E+00		356.02	
BA-139	LLD<3.28E+00		LLD<3.28E+00		165.85	
BA-140	LLD<3.47E+00		LLD<3.47E+00		537.27	
BA-141	LLD<3.05E+00		LLD<3.05E+00		190.23	
BE-7	LLD<9.71E+00		LLD<9.71E+00		477.59	
BI-207	LLD<8.57E-01		LLD<8.57E-01		569.70	
BI-212	LLD<1.35E+01		LLD<1.35E+01		727.27	
BI-214	LLD<1.78E+00		LLD<1.78E+00		609.32	
CD-109	LLD<2.51E+01		LLD<2.51E+01		88.03	
CE-139	LLD<7.41E-01		LLD<7.41E-01		165.85	
CE-141	LLD<1.35E+00		LLD<1.35E+00		145.44	
CEPR144	LLD<1.12E+01		LLD<1.12E+01		133.51	
CO-56	LLD<6.69E-01		LLD<6.69E-01		846.76	
CO-57	LLD<7.20E-01		LLD<7.20E-01		122.06	
CO-58	LLD<9.16E-01		LLD<9.16E-01		810.75	
CO-60	LLD<9.93E-01		LLD<9.93E-01		1332.50	
CR-51	LLD<7.21E+00		LLD<7.21E+00		320.09	
CS-134	LLD<1.07E+00		LLD<1.07E+00		795.84	
CS-136	LLD<7.75E-01		LLD<7.75E-01		818.51	
CS-137	5.17E+01	+-3.15E+00	5.17E+01	+-3.15E+00	661.65	0.14
CS-138	LLD<2.07E+00		LLD<2.07E+00		1435.86	
EU-152	LLD<4.57E+00		LLD<4.57E+00		1408.01	
EU-154	LLD<2.98E+00		LLD<2.98E+00		1274.45	
EU-155	LLD<3.39E+00		LLD<3.39E+00		105.31	
FE-59	LLD<1.65E+00		LLD<1.65E+00		1099.25	
HF-181	LLD<9.96E-01		LLD<9.96E-01		482.20	
HG-203	LLD<8.25E-01		LLD<8.25E-01		279.20	
I-131	LLD<9.09E-01		LLD<9.09E-01		364.48	
I-132	LLD<2.66E+00		LLD<2.66E+00		667.69	
I-133	LLD<8.89E-01		LLD<8.89E-01		529.69	
I-134	LLD<1.06E+00		LLD<1.06E+00		847.03	
I-135	LLD<3.61E+00		LLD<3.61E+00		1260.41	
K-40	LLD<1.94E+01		LLD<1.94E+01		1460.75	
KR-85	LLD<2.25E+02		LLD<2.25E+02		513.99	
KR-85M	LLD<8.21E-01		LLD<8.21E-01		151.17	
KR-87	LLD<1.98E+00		LLD<1.98E+00		402.58	
KR-89	LLD<3.55E+01		LLD<3.55E+01		220.90	
LA-140	LLD<1.07E+00		LLD<1.07E+00		1596.20	
LA-142	LLD<1.97E+00		LLD<1.97E+00		641.83	
MN-54	LLD<7.65E-01		LLD<7.65E-01		834.83	

MN-56	LLD<7.55E-01	LLD<7.55E-01	846.76
NA-22	LLD<1.06E+00	LLD<1.06E+00	1274.55
NA-24	LLD<8.31E-01	LLD<8.31E-01	1368.60
NB-94	LLD<7.52E-01	LLD<7.52E-01	702.63
NB-95	LLD<7.95E-01	LLD<7.95E-01	765.78
NB-97	LLD<5.78E+00	LLD<5.78E+00	657.92
NP-238	LLD<3.73E+00	LLD<3.73E+00	984.45
NP-239	LLD<5.02E+00	LLD<5.02E+00	277.60
PA-233	LLD<1.74E+00	LLD<1.74E+00	311.98
PA-234M	LLD<1.60E+02	LLD<1.60E+02	1001.03
PB-210	LLD<2.15E+01	LLD<2.15E+01	465.03
PB-212	LLD<1.59E+00	LLD<1.59E+00	239.00
PB-214	LLD<2.08E+00	LLD<2.08E+00	351.92
PO-210	LLD<7.88E+04	LLD<7.88E+04	804.00
PO-214	LLD<8.29E+03	LLD<8.29E+03	799.70
PO-216	LLD<4.74E+04	LLD<4.74E+04	804.90
PU-239	LLD<9.88E+03	LLD<9.88E+03	129.30
PU-241	LLD<3.08E+05	LLD<3.08E+05	148.57
RA-224	LLD<1.53E+01	LLD<1.53E+01	240.99
RA-226	LLD<1.68E+01	LLD<1.68E+01	186.10
RB-88	LLD<8.48E+00	LLD<8.48E+00	1836.00
RB-89	LLD<4.62E+00	LLD<4.62E+00	1031.88
RN-220	LLD<6.94E+02	LLD<6.94E+02	549.73
RU-103	LLD<8.78E-01	LLD<8.78E-01	497.08
RURH106	LLD<1.69E+01	LLD<1.69E+01	621.80
SB-124	LLD<7.16E-01	LLD<7.16E-01	602.72
SB-125	LLD<9.41E+00	LLD<9.41E+00	176.33
SC-46	LLD<1.11E+00	LLD<1.11E+00	1120.45
SE-75	LLD<1.23E+00	LLD<1.23E+00	264.66
SN-113	LLD<1.25E+00	LLD<1.25E+00	391.67
SR-85	LLD<9.89E-01	LLD<9.89E-01	513.99
SR-91	LLD<1.49E+00	LLD<1.49E+00	555.60
SR-92	LLD<1.47E+00	LLD<1.47E+00	1383.94
TA-182	LLD<2.97E+00	LLD<2.97E+00	1121.30
TC-99M	LLD<7.14E-01	LLD<7.14E-01	140.51
TE-123M	LLD<7.21E-01	LLD<7.21E-01	159.00
TE-125M	LLD<2.38E+02	LLD<2.38E+02	109.27
TE-132	LLD<7.61E-01	LLD<7.61E-01	228.16
TH-228	LLD<8.03E+01	LLD<8.03E+01	84.37
TL-208	LLD<1.05E+00	LLD<1.05E+00	583.14
U-235	LLD<1.12E+00	LLD<1.12E+00	185.71
U-237	LLD<2.97E+00	LLD<2.97E+00	208.00
W-187	LLD<3.21E+00	LLD<3.21E+00	685.74
XE-131M	LLD<3.25E+01	LLD<3.25E+01	163.98
XE-133	LLD<2.88E+00	LLD<2.88E+00	81.00
XE-133M	LLD<6.71E+00	LLD<6.71E+00	233.21
XE-135	LLD<7.27E-01	LLD<7.27E-01	249.79
XE-138	LLD<5.74E+00	LLD<5.74E+00	258.41
Y-88	LLD<8.05E-01	LLD<8.05E-01	1836.06
Y-91	LLD<3.61E+02	LLD<3.61E+02	1204.90
Y-91M	LLD<1.12E+00	LLD<1.12E+00	555.60
ZN-65	LLD<2.99E+00	LLD<2.99E+00	1115.55
ZR-95	LLD<1.40E+00	LLD<1.40E+00	756.73
ZR-97	LLD<9.09E-01	LLD<9.09E-01	743.33
	---	---	
TOTAL	5.17E+01 +-3.15E+00	5.17E+01 +-3.15E+00	

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.16E-08 UC/LI
TOTAL MEASURED ACTIVITY = 5.17E+01 (+-3.15E+00) UC/LI

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

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 85.0%

ALL DETECTED PEAKS WERE USED IN THE ANALYSIS

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2921.65	1460.37	146.	17.8	1.91E+01

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

222-S COUNTING ROOM 27-AUG-90 09:32:44

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: SD1009
ANALYZED BY: DM

SAMPLE DESCRIPTION: F-296 SEGMENT-I
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 10-JAN-90 AT 09:18:56

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 27-AUG-90 09:32:44

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	1126.55	562.75	1.40	158.	198.	21.1	CS-134, EU-152
2C	1138.99	568.97	1.40	143.	321.	18.3	CS-134, BI-207
3C	1209.70	604.31	1.41	135.	1733.	5.8	CS-134
4C	1218.83	608.87	1.41	126.	36.	33.0	BI-214, RU-103
5	1323.55	661.22	1.57	105.	3132.	3.6	CS-137
5B		661.82			35.	46.4	
6C	1591.90	795.38	1.54	68.	1260.	6.4	CS-134
7C	1604.08	801.47	1.54	70.	118.	13.7	CS-134
8	2346.30	1172.70	1.78	66.	1128.	6.2	CO-60
9	2664.77	1332.06	1.93	7.	1107.	5.9	CO-60
10	2730.32	1364.87	2.34	11.	31.	49.8	CS-134
11	2921.09	1460.35	1.56	5.	166.	15.8	K-40
11B		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 27-AUG-90 09:32:44

SAMPLE: F-296 SEGMENT-I
DATA COLLECTED ON 10-JAN-90 AT 09:18:56
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<2.18E-01		LLD<2.18E-01		911.07	
AG-108M	LLD<6.07E-02		LLD<6.07E-02		433.94	
AG-110M	LLD<2.70E-01		LLD<2.70E-01		657.76	
AM-241	LLD<2.65E-01		LLD<2.65E-01		59.54	
AM-243	LLD<6.45E-02		LLD<6.45E-02		74.67	
AR-41	LLD<3.67E-02		LLD<3.67E-02		1293.64	
AU-198	LLD<5.20E-02		LLD<5.20E-02		411.80	
BA-133	LLD<8.08E-02		LLD<8.08E-02		356.02	
BA-139	LLD<1.65E-01		LLD<1.65E-01		165.85	
BA-140	LLD<2.00E-01		LLD<2.00E-01		537.27	
BA-141	LLD<1.61E-01		LLD<1.61E-01		190.23	
BE-7	LLD<5.10E-01		LLD<5.10E-01		477.59	
BI-207	LLD<5.12E-02		LLD<5.12E-02		569.70	
BI-212	LLD<6.79E-01		LLD<6.79E-01		727.27	
BI-214	LLD<2.38E-01		LLD<2.38E-01		609.32	
CD-109	LLD<1.03E+00		LLD<1.03E+00		88.03	
CE-139	LLD<3.73E-02		LLD<3.73E-02		165.85	
CE-141	LLD<5.54E-02		LLD<5.54E-02		145.44	
CEPR144	LLD<4.71E-01		LLD<4.71E-01		133.51	
CO-56	LLD<5.17E-02		LLD<5.17E-02		846.76	
CO-57	LLD<3.12E-02		LLD<3.12E-02		122.06	
CO-58	LLD<5.26E-02		LLD<5.26E-02		810.75	
CO-60	2.63E+00	+-1.59E-01	2.63E+00	+-1.59E-01	1332.50	-0.44
					1173.24	-0.54
CR-51	LLD<4.26E-01		LLD<4.26E-01		320.09	
CS-134	2.27E+00	+-1.49E-01	2.27E+00	+-1.49E-01	795.84	-0.47
					604.70	-0.39
CS-136	LLD<4.99E-02		LLD<4.99E-02		818.51	
CS-137	4.81E+00	+-1.88E-01	4.81E+00	+-1.88E-01	661.65	-0.43
CS-138	LLD<6.42E-02		LLD<6.42E-02		1435.86	
EU-152	LLD<1.30E-01		LLD<1.30E-01		1408.01	
EU-154	LLD<9.67E-02		LLD<9.67E-02		1274.45	
EU-155	LLD<1.22E-01		LLD<1.22E-01		105.31	
FE-59	LLD<1.11E-01		LLD<1.11E-01		1099.25	
HF-181	LLD<5.98E-02		LLD<5.98E-02		482.20	
HG-203	LLD<4.99E-02		LLD<4.99E-02		279.20	
I-131	LLD<6.21E-02		LLD<6.21E-02		364.48	
I-132	LLD<5.81E-02		LLD<5.81E-02		667.69	
I-133	LLD<5.73E-02		LLD<5.73E-02		529.69	
I-134	LLD<7.22E-02		LLD<7.22E-02		847.03	
I-135	LLD<1.49E-01		LLD<1.49E-01		1260.41	
K-40	LLD<9.06E-01		LLD<9.06E-01		1460.75	
KR-85	LLD<1.31E+01		LLD<1.31E+01		513.99	
KR-85M	LLD<3.55E-02		LLD<3.55E-02		151.17	
KR-87	LLD<1.31E-01		LLD<1.31E-01		402.58	
KR-89	LLD<2.02E+00		LLD<2.02E+00		220.90	
LA-140	LLD<3.91E-02		LLD<3.91E-02		1596.20	

LA-142	LLD<1.28E-01	LLD<1.28E-01	641.83
MN-54	LLD<5.15E-02	LLD<5.15E-02	834.83
MN-56	LLD<5.83E-02	LLD<5.83E-02	846.76
NA-22	LLD<3.24E-02	LLD<3.24E-02	1274.55
NA-24	LLD<5.26E-02	LLD<5.26E-02	1368.60
NB-94	LLD<4.51E-02	LLD<4.51E-02	702.63
NB-95	LLD<4.59E-02	LLD<4.59E-02	765.78
NB-97	LLD<3.27E-01	LLD<3.27E-01	657.92
NP-238	LLD<1.94E-01	LLD<1.94E-01	984.45
NP-239	LLD<2.84E-01	LLD<2.84E-01	277.60
PA-233	LLD<1.19E-01	LLD<1.19E-01	311.98
PA-234M	LLD<1.01E+01	LLD<1.01E+01	1001.03
PB-210	LLD<1.41E+00	LLD<1.41E+00	465.03
PB-212	LLD<9.29E-02	LLD<9.29E-02	239.00
PB-214	LLD<1.31E-01	LLD<1.31E-01	351.92
PO-210	LLD<5.05E+03	LLD<5.05E+03	804.00
PO-214	LLD<1.93E+03	LLD<1.93E+03	799.70
PO-216	LLD<4.01E+03	LLD<4.01E+03	804.90
PU-239	LLD<4.03E+02	LLD<4.03E+02	129.30
PU-241	LLD<1.49E+04	LLD<1.49E+04	148.57
RA-224	LLD<9.95E-01	LLD<9.95E-01	240.99
RA-226	LLD<8.94E-01	LLD<8.94E-01	186.10
RB-88	LLD<3.69E-02	LLD<3.69E-02	1836.00
RB-89	LLD<2.54E-01	LLD<2.54E-01	1031.88
RN-220	LLD<4.40E+01	LLD<4.40E+01	549.73
RU-103	LLD<5.29E-02	LLD<5.29E-02	497.08
RURH106	LLD<8.84E-01	LLD<8.84E-01	621.80
SB-124	LLD<6.69E-02	LLD<6.69E-02	602.72
SB-125	LLD<4.61E-01	LLD<4.61E-01	176.33
SC-46	LLD<5.84E-02	LLD<5.84E-02	1120.45
SE-75	LLD<6.48E-02	LLD<6.48E-02	264.66
SN-113	LLD<7.31E-02	LLD<7.31E-02	391.67
SR-85	LLD<5.75E-02	LLD<5.75E-02	513.99
SR-91	LLD<9.13E-02	LLD<9.13E-02	555.60
SR-92	LLD<2.99E-02	LLD<2.99E-02	1383.94
TA-182	LLD<1.52E-01	LLD<1.52E-01	1121.30
TC-99M	LLD<3.11E-02	LLD<3.11E-02	140.51
TE-123M	LLD<3.60E-02	LLD<3.60E-02	159.00
TE-125M	LLD<8.79E+00	LLD<8.79E+00	109.27
TE-132	LLD<4.28E-02	LLD<4.28E-02	228.16
TH-228	LLD<3.13E+00	LLD<3.13E+00	84.37
TL-208	LLD<6.31E-02	LLD<6.31E-02	583.14
U-235	LLD<5.90E-02	LLD<5.90E-02	185.71
U-237	LLD<1.67E-01	LLD<1.67E-01	208.00
W-187	LLD<1.59E-01	LLD<1.59E-01	685.74
XE-131M	LLD<1.58E+00	LLD<1.58E+00	163.98
XE-133	LLD<1.11E-01	LLD<1.11E-01	81.00
XE-133M	LLD<3.83E-01	LLD<3.83E-01	233.21
XE-135	LLD<4.23E-02	LLD<4.23E-02	249.79
XE-138	LLD<3.23E-01	LLD<3.23E-01	258.41
Y-88	LLD<3.50E-03	LLD<3.50E-03	1836.06
Y-91	LLD<1.32E+01	LLD<1.32E+01	1204.90
Y-91M	LLD<6.90E-02	LLD<6.90E-02	555.60
ZN-65	LLD<1.33E-01	LLD<1.33E-01	1115.55
ZR-95	LLD<9.94E-02	LLD<9.94E-02	756.73
ZR-97	LLD<4.96E-02	LLD<4.96E-02	743.33
	---	---	
TOTAL	9.71E+00 +-2.87E-01	9.71E+00 +-2.87E-01	

STANDARD DEVIATION = 0.05

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.53E-09 UC/LI
TOTAL MEASURED ACTIVITY = 9.71E+00 (+-2.87E-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
1126.55	562.75	198.	21.1	8.47E+00
1138.99	568.97	321.	18.3	1.39E+01
1604.08	801.47	118.	13.7	6.74E+00
2730.32	1364.87	31.	49.8	2.75E+00

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
1218.83	608.87	36.	33.0	1.63E+00
2921.09	1460.35	166.	15.8	1.58E+01

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

222-S COUNTING ROOM 27-AUG-90 09:45:56

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: SD2749
ANALYZED BY: DM

SAMPLE DESCRIPTION: F-297 SEGMENT-J
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 10-JAN-90 AT 09:21:40

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

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

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

222-S COUNTING ROOM 27-AUG-90 09:45:56

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	1127.84	563.55	1.49	552.	502.	14.2	CS-134, EU-152
2C	1139.68	569.47	1.49	485.	956.	11.6	CS-134, BI-207
3	1210.48	604.86	1.70	502.	5996.	2.8	CS-134
4	1324.35	661.79	1.70	366.	8782.	2.2	CS-137
4B		661.85			36.	13.9	
5C	1592.56	795.87	1.70	266.	4293.	3.7	CS-134
6C	1604.64	801.91	1.70	270.	387.	12.5	CS-134
7	2347.01	1173.06	1.94	221.	3775.	3.4	CO-60
8	2665.46	1332.27	2.16	36.	3437.	3.4	CO-60
8B		1332.24			9.	37.4	
9	2731.09	1365.09	2.99	19.	113.	22.4	CS-134
10	2921.55	1460.32	2.32	22.	128.	21.3	K-40
10B		1460.85			156.	3.8	

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

222-S COUNTING ROOM 27-AUG-90 09:45:56

SAMPLE: F-297 SEGMENT-J
DATA COLLECTED ON 10-JAN-90 AT 09:21:40
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				ENERGY COMPARISON (KEV)	
	MEASURED	ERROR	DECAY CORRECTED	ERROR	EXPECT	DIFF
AC-228	LLD<1.12E+00		LLD<1.12E+00		911.07	
AG-108M	LLD<2.84E-01		LLD<2.84E-01		433.94	
AG-110M	LLD<1.35E+00		LLD<1.35E+00		657.76	
AM-241	LLD<1.32E+00		LLD<1.32E+00		59.54	
AM-243	LLD<3.41E-01		LLD<3.41E-01		74.67	
AR-41	LLD<2.19E-01		LLD<2.19E-01		1293.64	
AU-198	LLD<2.56E-01		LLD<2.56E-01		411.80	
BA-133	LLD<3.36E-01		LLD<3.36E-01		356.02	
BA-139	LLD<7.17E-01		LLD<7.17E-01		165.85	
BA-140	LLD<1.03E+00		LLD<1.03E+00		537.27	
BA-141	LLD<6.88E-01		LLD<6.88E-01		190.23	
BE-7	LLD<2.47E+00		LLD<2.47E+00		477.59	
BI-207	LLD<2.57E-01		LLD<2.57E-01		569.70	
BI-212	LLD<3.76E+00		LLD<3.76E+00		727.27	
BI-214	LLD<2.05E+00		LLD<2.05E+00		609.32	
CD-109	LLD<4.30E+00		LLD<4.30E+00		88.03	
CE-139	LLD<1.62E-01		LLD<1.62E-01		165.85	
CE-141	LLD<2.59E-01		LLD<2.59E-01		145.44	
CEPR144	LLD<2.06E+00		LLD<2.06E+00		133.51	
CO-56	LLD<2.46E-01		LLD<2.46E-01		846.76	
CO-57	LLD<1.33E-01		LLD<1.33E-01		122.06	
CO-58	LLD<2.38E-01		LLD<2.38E-01		810.75	
CO-60	2.25E+01	+-8.14E-01	2.25E+01	+-8.14E-01	1332.50	-0.23
					1173.24	-0.18
CR-51	LLD<1.94E+00		LLD<1.94E+00		320.09	
CS-134	2.16E+01	+-8.27E-01	2.16E+01	+-8.27E-01	795.84	0.03
					604.70	0.16
CS-136	LLD<2.71E-01		LLD<2.71E-01		818.51	
CS-137	3.78E+01	+-9.55E-01	3.78E+01	+-9.55E-01	661.65	0.14
CS-138	LLD<2.37E-01		LLD<2.37E-01		1435.86	
EU-152	LLD<4.57E-01		LLD<4.57E-01		1408.01	
EU-154	LLD<4.77E-01		LLD<4.77E-01		1274.45	
EU-155	LLD<6.04E-01		LLD<6.04E-01		105.31	
FE-59	LLD<5.62E-01		LLD<5.62E-01		1099.25	
HF-181	LLD<2.98E-01		LLD<2.98E-01		482.20	
HG-203	LLD<2.09E-01		LLD<2.09E-01		279.20	
I-131	LLD<2.65E-01		LLD<2.65E-01		364.48	
I-132	LLD<7.54E-01		LLD<7.54E-01		667.69	
I-133	LLD<2.71E-01		LLD<2.71E-01		529.69	
I-134	LLD<3.69E-01		LLD<3.69E-01		847.03	
I-135	LLD<5.49E-01		LLD<5.49E-01		1260.41	
K-40	LLD<2.21E+00		LLD<2.21E+00		1460.75	
KR-85	LLD<5.81E+01		LLD<5.81E+01		513.99	
KR-85M	LLD<1.64E-01		LLD<1.64E-01		151.17	
KR-87	LLD<5.89E-01		LLD<5.89E-01		402.58	
KR-89	LLD<8.53E+00		LLD<8.53E+00		220.90	
LA-140	LLD<1.40E-01		LLD<1.40E-01		1596.20	

LA-142	LLD<5.70E-01	LLD<5.70E-01	641.83
MN-54	LLD<2.34E-01	LLD<2.34E-01	834.83
MN-56	LLD<2.78E-01	LLD<2.78E-01	846.76
NA-22	LLD<1.69E-01	LLD<1.69E-01	1274.55
NA-24	LLD<2.34E-01	LLD<2.34E-01	1368.60
NB-94	LLD<2.25E-01	LLD<2.25E-01	702.63
NB-95	LLD<2.39E-01	LLD<2.39E-01	765.78
NB-97	LLD<1.53E+00	LLD<1.53E+00	657.92
NP-238	LLD<1.05E+00	LLD<1.05E+00	984.45
NP-239	LLD<1.26E+00	LLD<1.26E+00	277.60
PA-233	LLD<5.16E-01	LLD<5.16E-01	311.98
PA-234M	LLD<5.09E+01	LLD<5.09E+01	1001.03
PB-210	LLD<6.30E+00	LLD<6.30E+00	465.03
PB-212	LLD<3.92E-01	LLD<3.92E-01	239.00
PB-214	LLD<5.51E-01	LLD<5.51E-01	351.92
PO-210	LLD<2.06E+04	LLD<2.06E+04	804.00
PO-214	LLD<9.92E+03	LLD<9.92E+03	799.70
PO-216	LLD<1.55E+04	LLD<1.55E+04	804.90
PU-239	LLD<1.98E+03	LLD<1.98E+03	129.30
PU-241	LLD<6.31E+04	LLD<6.31E+04	148.57
RA-224	LLD<4.15E+00	LLD<4.15E+00	240.99
RA-226	LLD<3.73E+00	LLD<3.73E+00	186.10
RB-88	LLD<1.02E+00	LLD<1.02E+00	1836.00
RB-89	LLD<1.28E+00	LLD<1.28E+00	1031.88
RN-220	LLD<2.12E+02	LLD<2.12E+02	549.73
RU-103	LLD<2.59E-01	LLD<2.59E-01	497.08
RURH106	LLD<4.54E+00	LLD<4.54E+00	621.80
SB-124	LLD<5.40E-01	LLD<5.40E-01	602.72
SB-125	LLD<2.03E+00	LLD<2.03E+00	176.33
SC-46	LLD<2.87E-01	LLD<2.87E-01	1120.45
SE-75	LLD<3.02E-01	LLD<3.02E-01	264.66
SN-113	LLD<3.62E-01	LLD<3.62E-01	391.67
SR-85	LLD<2.55E-01	LLD<2.55E-01	513.99
SR-91	LLD<4.78E-01	LLD<4.78E-01	555.60
SR-92	LLD<1.72E-01	LLD<1.72E-01	1383.94
TA-182	LLD<8.32E-01	LLD<8.32E-01	1121.30
TC-99M	LLD<1.37E-01	LLD<1.37E-01	140.51
TE-123M	LLD<1.53E-01	LLD<1.53E-01	159.00
TE-125M	LLD<4.21E+01	LLD<4.21E+01	109.27
TE-132	LLD<1.84E-01	LLD<1.84E-01	228.16
TH-228	LLD<1.44E+01	LLD<1.44E+01	84.37
TL-208	LLD<3.02E-01	LLD<3.02E-01	583.14
U-235	LLD<2.48E-01	LLD<2.48E-01	185.71
U-237	LLD<7.17E-01	LLD<7.17E-01	208.00
W-187	LLD<8.09E-01	LLD<8.09E-01	685.74
XE-131M	LLD<6.84E+00	LLD<6.84E+00	163.98
XE-133	LLD<4.89E-01	LLD<4.89E-01	81.00
XE-133M	LLD<1.64E+00	LLD<1.64E+00	233.21
XE-135	LLD<1.85E-01	LLD<1.85E-01	249.79
XE-138	LLD<1.42E+00	LLD<1.42E+00	258.41
Y-88	LLD<9.63E-02	LLD<9.63E-02	1836.06
Y-91	LLD<6.86E+01	LLD<6.86E+01	1204.90
Y-91M	LLD<3.62E-01	LLD<3.62E-01	555.60
ZN-65	LLD<6.91E-01	LLD<6.91E-01	1115.55
ZR-95	LLD<4.14E-01	LLD<4.14E-01	756.73
ZR-97	LLD<2.41E-01	LLD<2.41E-01	743.33
TOTAL	8.19E+01 +-1.50E+00	8.19E+01 +-1.50E+00	

STANDARD DEVIATION = 0.18

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.44E-09 UC/LI
TOTAL MEASURED ACTIVITY = 8.19E+01 (+-1.50E+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
1127.84	563.55	502.	14.2	2.96E+01
1139.68	569.47	956.	11.6	5.69E+01
1604.64	801.91	387.	12.5	3.10E+01
2731.09	1365.09	113.	22.4	1.40E+01

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2921.55	1460.32	128.	21.3	1.68E+01

Analytical Batch

Lab Segment Serial #:F0149

Customer ID:89-048

Instrument	WA77344
Procedure/Rev	LA-925-106/A-1
Technologist	M. Franz
Date	January 05, 1990
Temperature	N/A
Starting Time	0800
Ending Time	1500
Chemist	S. A. Catlow

Uranium Analysis

Fusion Dissolution

	Description		Lab ID
1	Initial LMCS Check Std.		F0105
2	Reagent Blank		F0120
3	Sample	89-045	F0106
4	Duplicate Sample	89-045	F0107
5	Spike of Sample	89-045	F0108
6	Sample	89-047	F0130
7	Duplicate Sample	89-047	F0131
8	Sample	89-048	F0154
9	Duplicate Sample	89-048	F0155
10	Sample	89-050	F0294
11	Duplicate Sample	89-050	F0295

	Description	Lab ID
12	Final LMCS Check Std	F0297
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		

Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Bk# & Alqt. Vol.	Final Vol. of Std.
LMCS Check Standard	58B38/100 uL			5.7 mL
Spike	58B38/100 uL	F0106/100 uL		5.80 mL

SST-102 Rev. F 9/7/90 Interim

WATER DIGESTION TEST ANALYSIS

Single Shell Tank Project

Water Digestion
Sample Results on Laboratory Digestion

Tank: 241-U-110
Core: 7
Segment: 3
Customer ID: 89-048

Laboratory Segment Serial No.: F0149

	Check Standard	Blank		Sample		Sample Duplicate		Spike of Sample		Check Standard
Laboratory ID:	N/A	F0170		F0159		F0160		F0161		F0742
Water Digestion	N/A	Completed		9.32	g/L	7.78	g/L	7.87	g/L	N/A
Laboratory ID:	F0158	F0170		F0159		F0160		F0741		F0742
Ion Chromatograph										
Fluoride	95.50%	<0.1	ppm	3.20E+01	ppm	2.04E+01	ppm	108.40%		92.70%
Chloride	107.80%	<0.1	ppm	<1.01E+01	ppm	<1.01E+01	ppm	110.90%		101.20%
Nitrate	103.10%	<1.0	ppm	3.68E+02	ppm	3.12E+02	ppm	106.70%		98.20%
Phosphate	96.70%	<1.0	ppm	2.10E+02	ppm	1.12E+02	ppm	104.80%		94.70%
Sulfate	99.20%	<1.0	ppm	<1.01E+02	ppm	<1.01E+02	ppm	107.70%		94.10%
Laboratory ID:	F0158	F0170		F0159		F0160		F0161		F0162
Total Organic Carbon	98.10%	3.70	ug	1.95E-02	g/L	1.90E-02	g/L	90.70%		100.50%

Single Shell Tank Project

Water Digestion
Laboratory Results of Solids
Units are Sample Wet Weight

Tank : 241-U-110
Core: 7
Segment: 3
Customer ID: 89-048

Laboratory Segment Serial No.: F0149

	Check Standard	Blank		Sample		Sample Duplicate		Spike of Sample		Check Standard
Laboratory ID	F0158	F0170		F0159		F0160		F0161		F0742
Water Digestion	N/A	N/A		9.32	g/L	7.78	g/L	7.87	g/L	N/A
Laboratory ID:	F0158	F0170		F0159		F0160		F0741		F0742
Ion Chromatograph										
Fluoride	95.50%	<0.1	ppm	3.43E+03	ug/g	2.62E+03	ug/g	108.40%		92.70%
Chloride	107.80%	<0.1	ppm	<1.08E+03	ug/g	<1.30E+03	ug/g	110.90%		101.20%
Nitrate	103.10%	<1.0	ppm	3.95E+04	ug/g	4.01E+04	ug/g	106.70%		98.20%
Phosphate	96.70%	<1.0	ppm	2.25E+04	ug/g	1.44E+04	ug/g	104.80%		94.70%
Sulfate	99.20%	<1.0	ppm	<1.08E+04	ug/g	<1.30E+04	ug/g	107.70%		94.10%
Laboratory ID:	F0158	F0170		F0159		F0160		F0161		F0162
Total Organic Carbon	98.10%	3.70	ug	2.09E+03	ug/g	2.44E+03	ug/g	90.70%		100.50%

Analytical Batch

LAB SEGMENT SERIAL #:F0149

CUSTOMER ID:89-048

INSTRUMENT	N/A
PROCEDURE/REV	LA-504-101/A-1
TECHNOLOGIST	L. Hughes
DATE	January 04, 1990
TEMPERATURE	25 C
STARTING TIME	2200 01-04-90
ENDING TIME	0500 01-05-90
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	Reagent Blank	F0170
2	Sample 89-048	F0159
3	Duplicate Sample 89-048	F0160
4	Spike of Sample 89-048	F0161
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 # & ALIQUOT VOL.	SECOND BOOK # & ALIQUOT VOL.	THIRD BK# & ALQT.VOL.	FINAL VOL. OF STD.
N/A				
Spike (See Note)				

SST-102 Rev. F 9/7/90 Interim

Single Shell Tank
Calibration Record

ANALYTE:	Ion Chromatograph		
PROCEDURE:	LA-533-105	REVISION:	A-3
INSTRUMENT:	DIONEX 4000	PROPERTY NUMBER:	WB24721
TECHNOLOGIST:	Nora Wright	PAYROLL NUMBER:	6B107
DATE:	January 02, 1990		

CALIBRATION STANDARD ID: 35C9-61 issued 12-08-89

ANALYTE CONCENTRATION: F 50.0 Cl 61.0 NO_3 501.0 PO_4 509.0 SO_4 501.0

TYPE OF CALIBRATION: Linear

COMMENTS:

SST-103 Rev. (Draft) 9/4/90 Interim

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

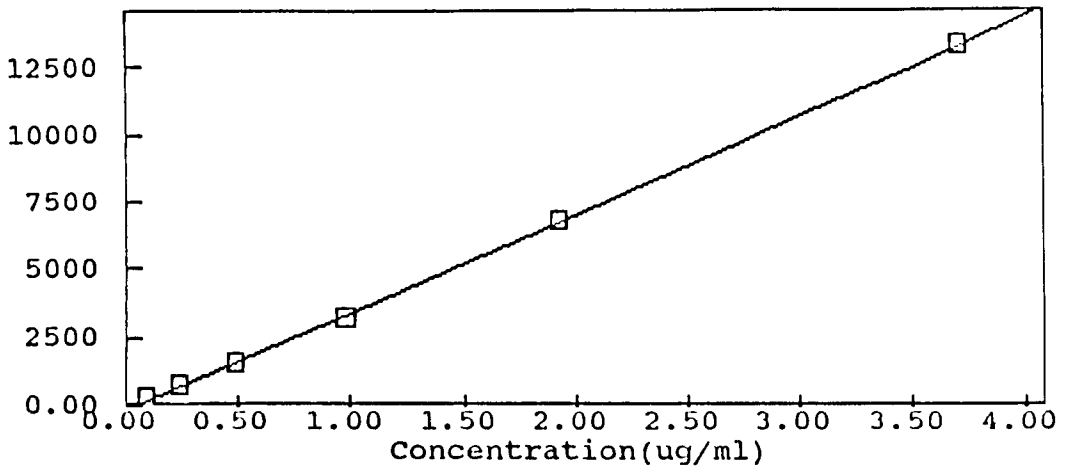
Level	Amount	Area	Height
1	9.99000E-001	2494	179
2	2.49000E+000	7725	511
3	4.95500E+000	16061	1043
4	9.81400E+000	33837	2134
5	1.92500E+001	71926	4526
6	3.70740E+001	156060	9414

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

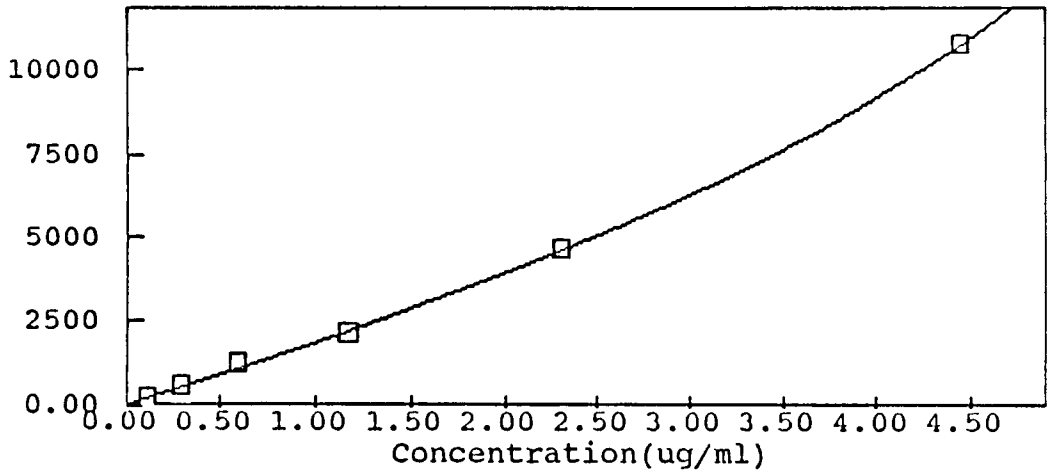
Level	Amount	Area	Height
1	9.99000E-001	7667	464
2	2.49000E+000	19957	1147
3	4.95500E+000	41209	2360
4	9.81400E+000	86948	4959
5	1.92500E+001	178459	10251
6	3.70740E+001	375814	20962

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

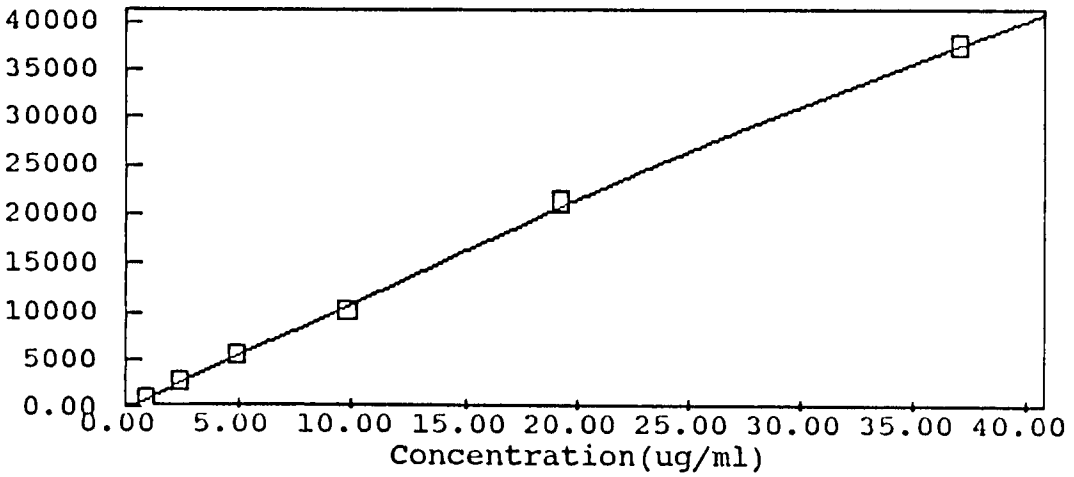
Level	Amount	Area	Height
1	0.00000E+000	0	0
2	0.00000E+000	0	0
3	0.00000E+000	0	0
4	0.00000E+000	0	0
5	0.00000E+000	0	0
6	0.00000E+000	98993	5848



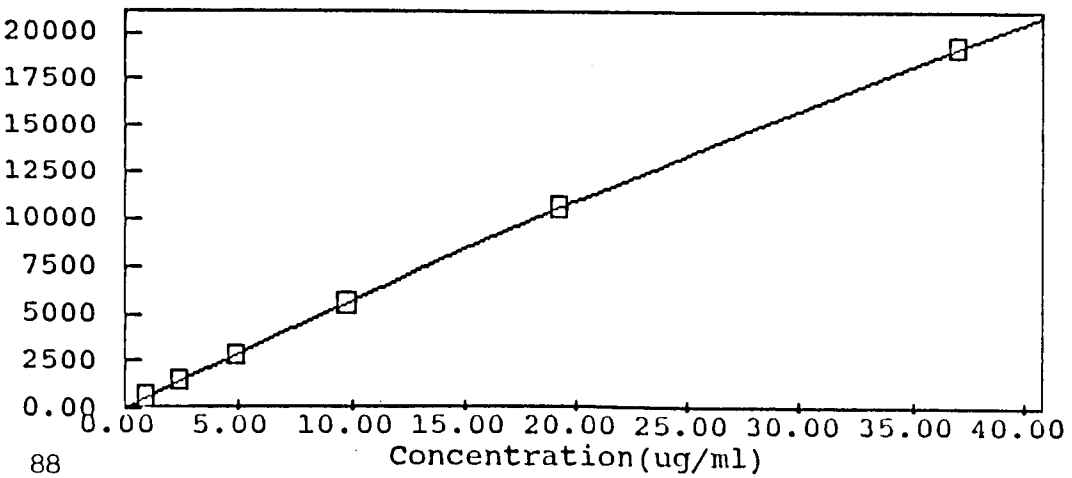
Component: FLUOR
Fit Type: Quadr
Conc = (-7.012105e-
(2.856637e-004 * Res
Standardization:
Calibration: Heigh



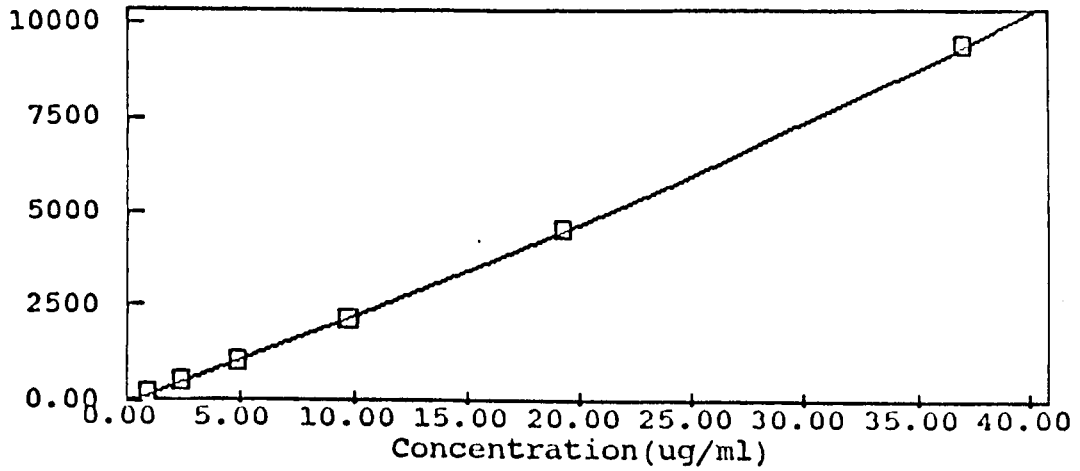
Component: CHLOR
Fit Type: Quadr
Conc = (-1.423720e-
(5.690421e-004 * Res
Standardization:
Calibration: Heigh



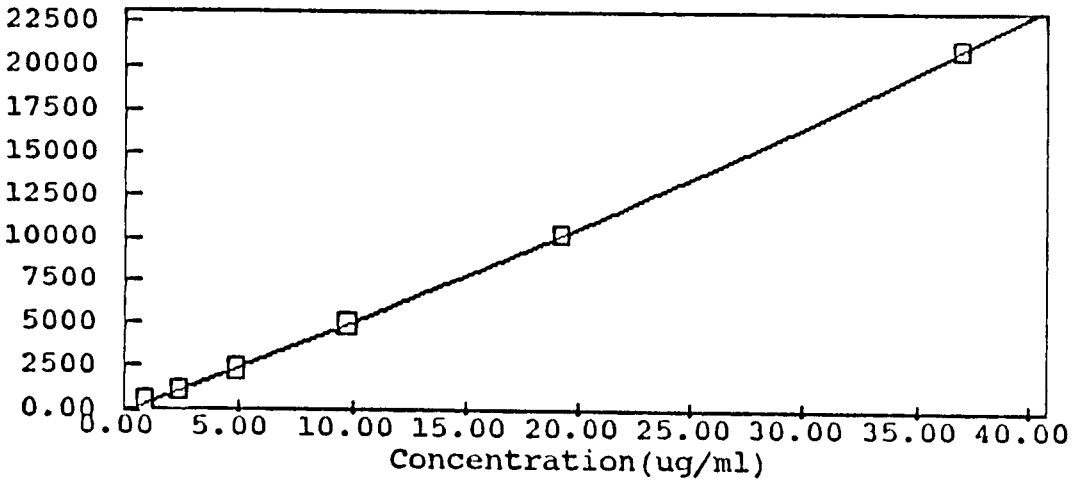
Component: NITRI
Fit Type: Quadr
Conc = (4.245484e-0
(8.191672e-004 * Res
Standardization:
Calibration: Heigh



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

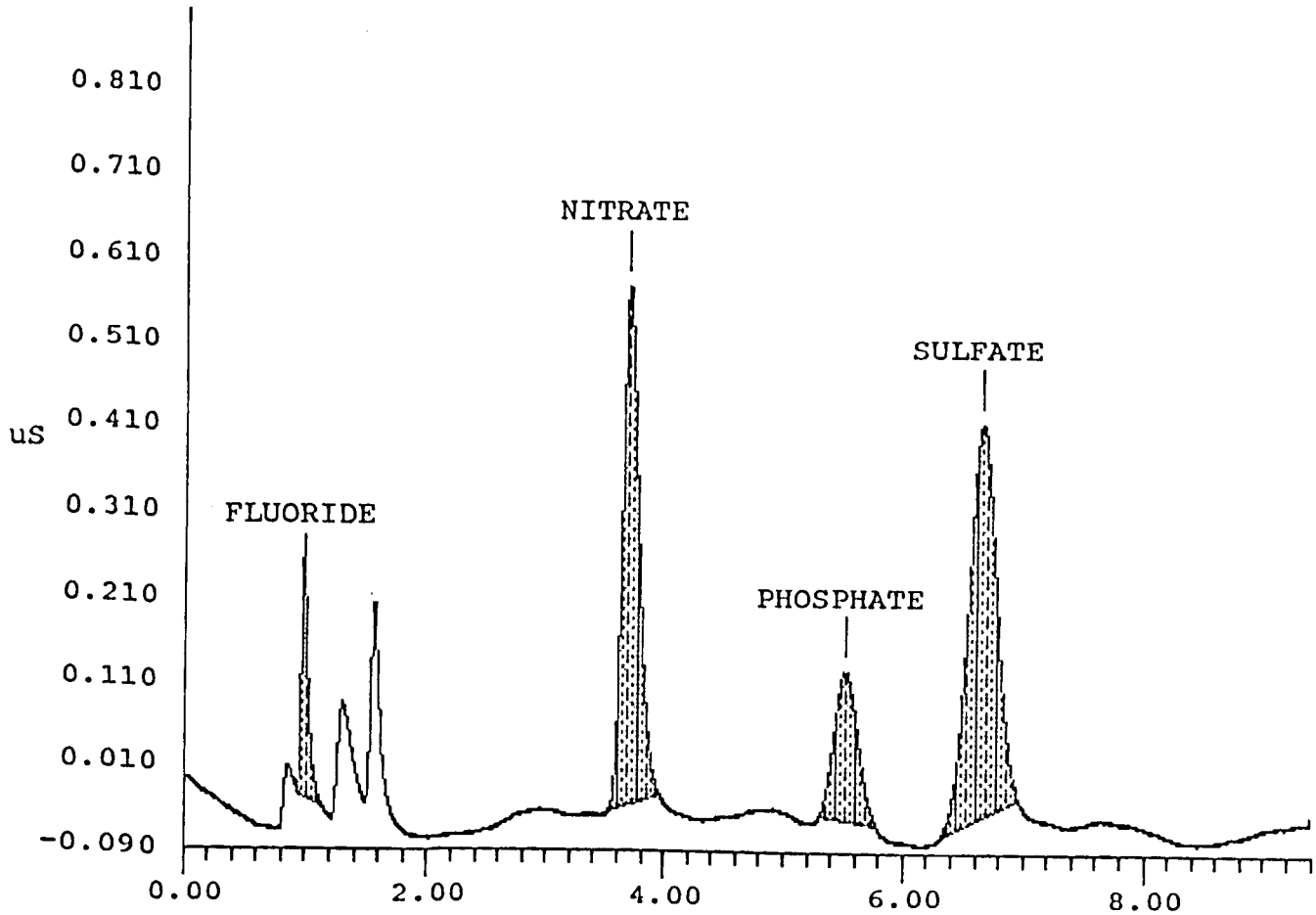
```
==============================================================================
| Sample Name: AUTOCAL1R                          Date: Tue Jan 02 10:21:45 1990 |
| Data File  : A:\90010200.D03                                                   |
| Method     : c:\windows\ai400\method\GROUT01.met                               |
| 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

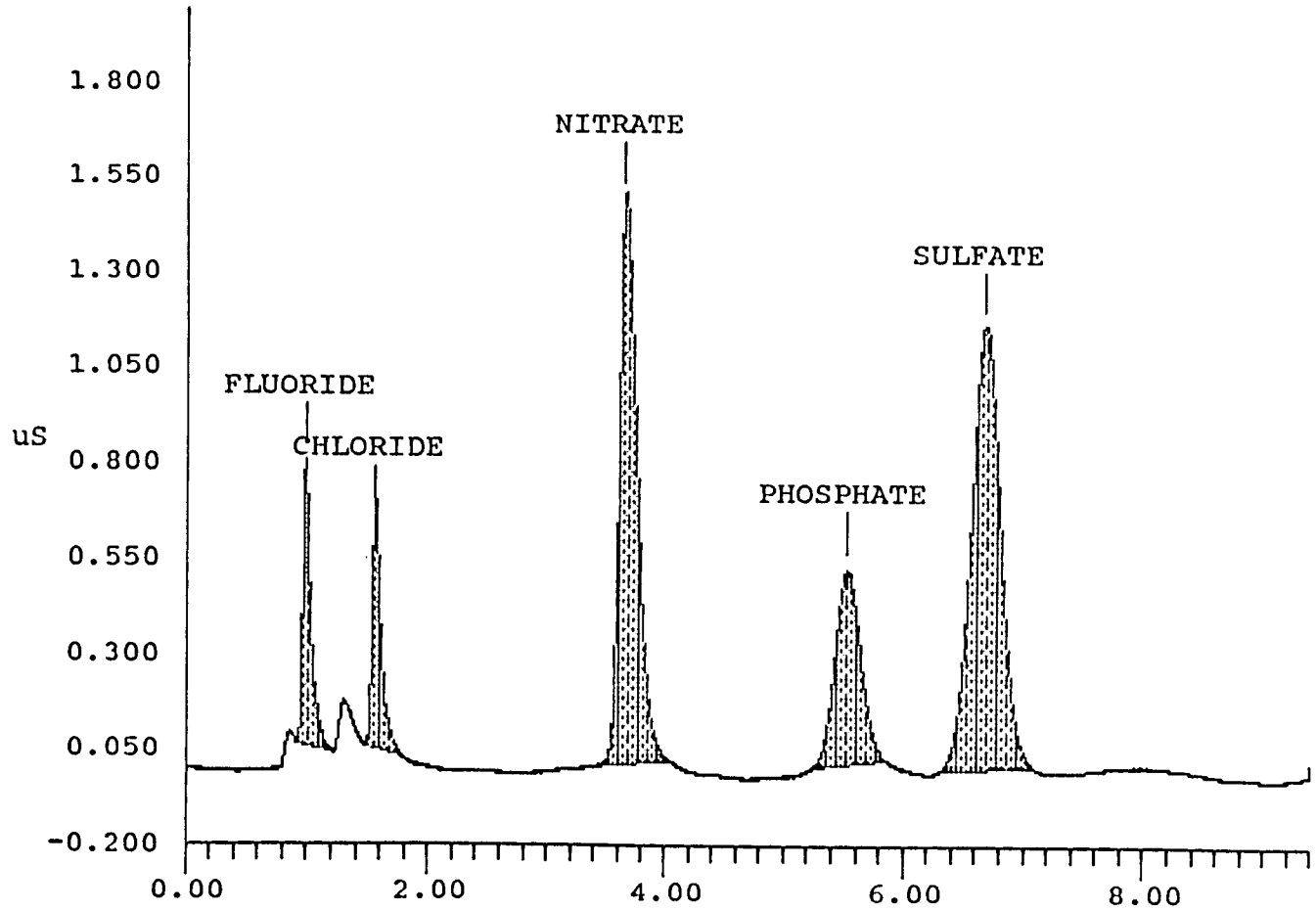
```
Sample Name: AUTOCAL2R                          Date: Tue Jan 02 10:31:54 1990
Data File  : A:\90010200.D04
Method     : c:\windows\ai400\method\GROUT01.met
ACI Address: 1        System : 1        Inject#:   4      Detector: CDM
```

********** 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

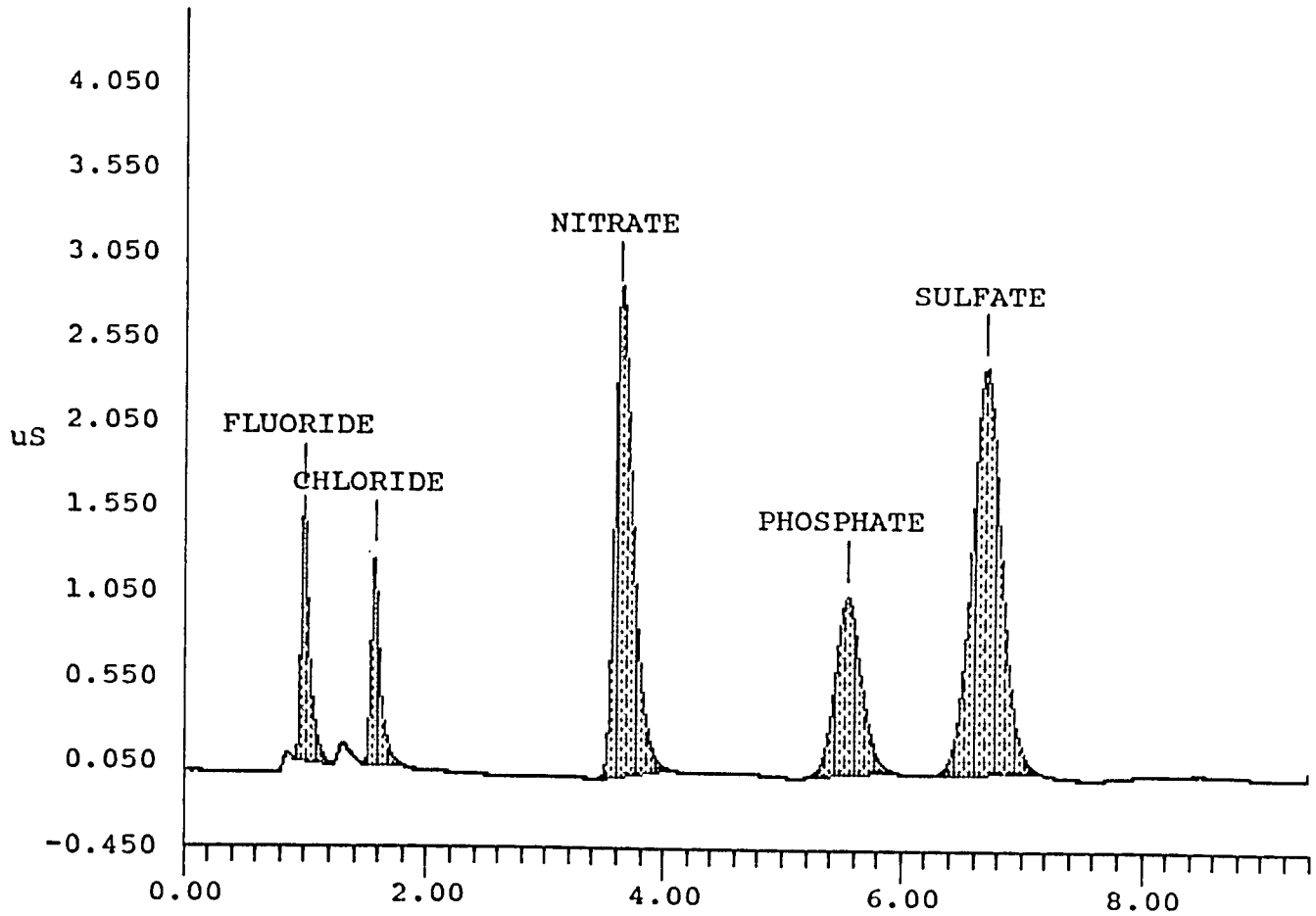
```
Sample Name: AUTOCAL3R                          Date: Tue Jan 02 10:42:02 1990
Data File  : A:\90010200.D05
Method     : c:\windows\ai400\method\GROUT01.met
ACI Address: 1        System : 1        Inject#:   5       Detector: CDM
```

********** 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

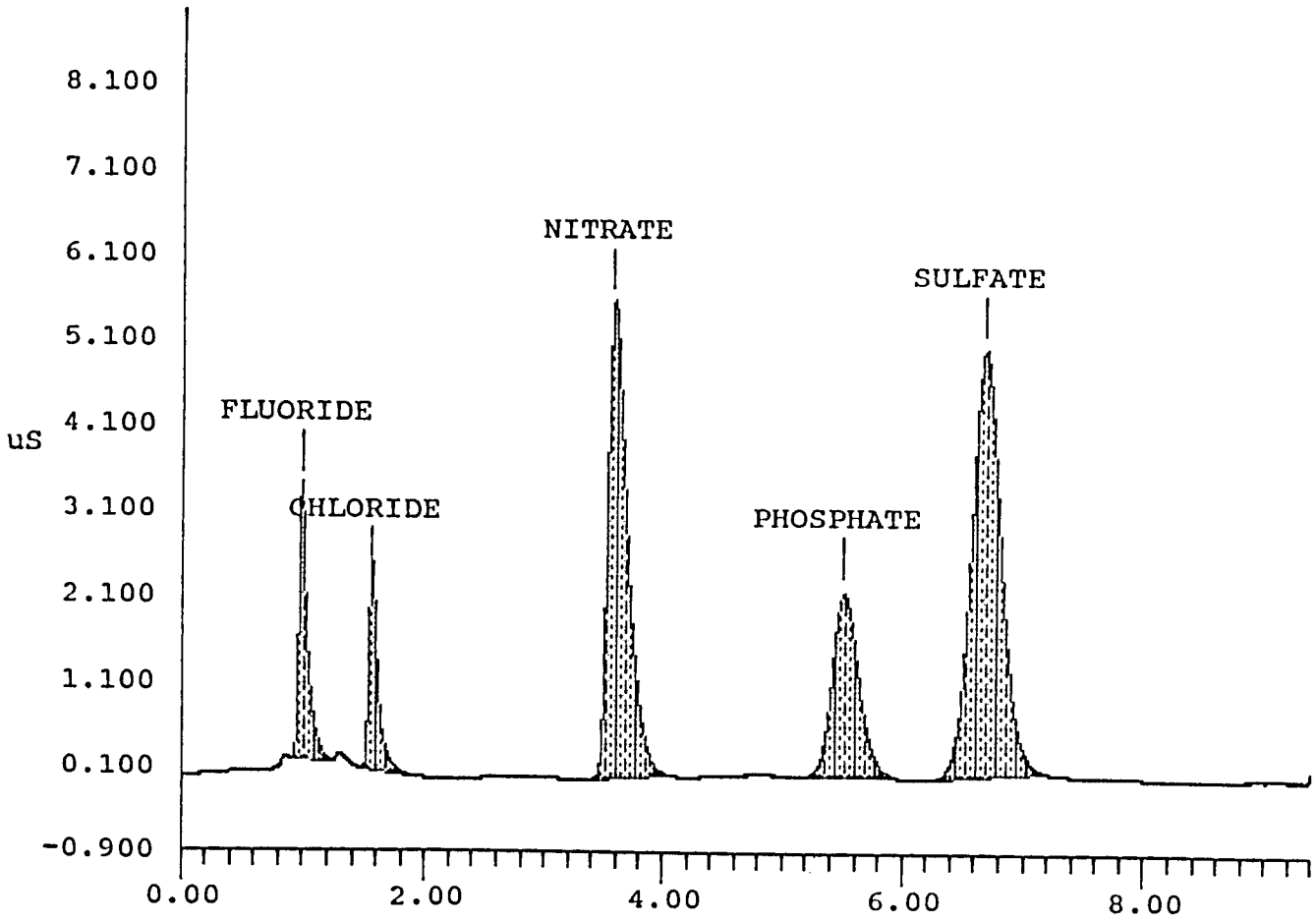
Sample Name: AUTOCAL4R	Date: Tue Jan 02 10:52:10 1990
Data File : A:\90010200.D06	
Method : c:\windows\ai400\method\GROUT01.met	
ACI Address: 1 System : 1 Inject#: 6	Detector: CDM

********** 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

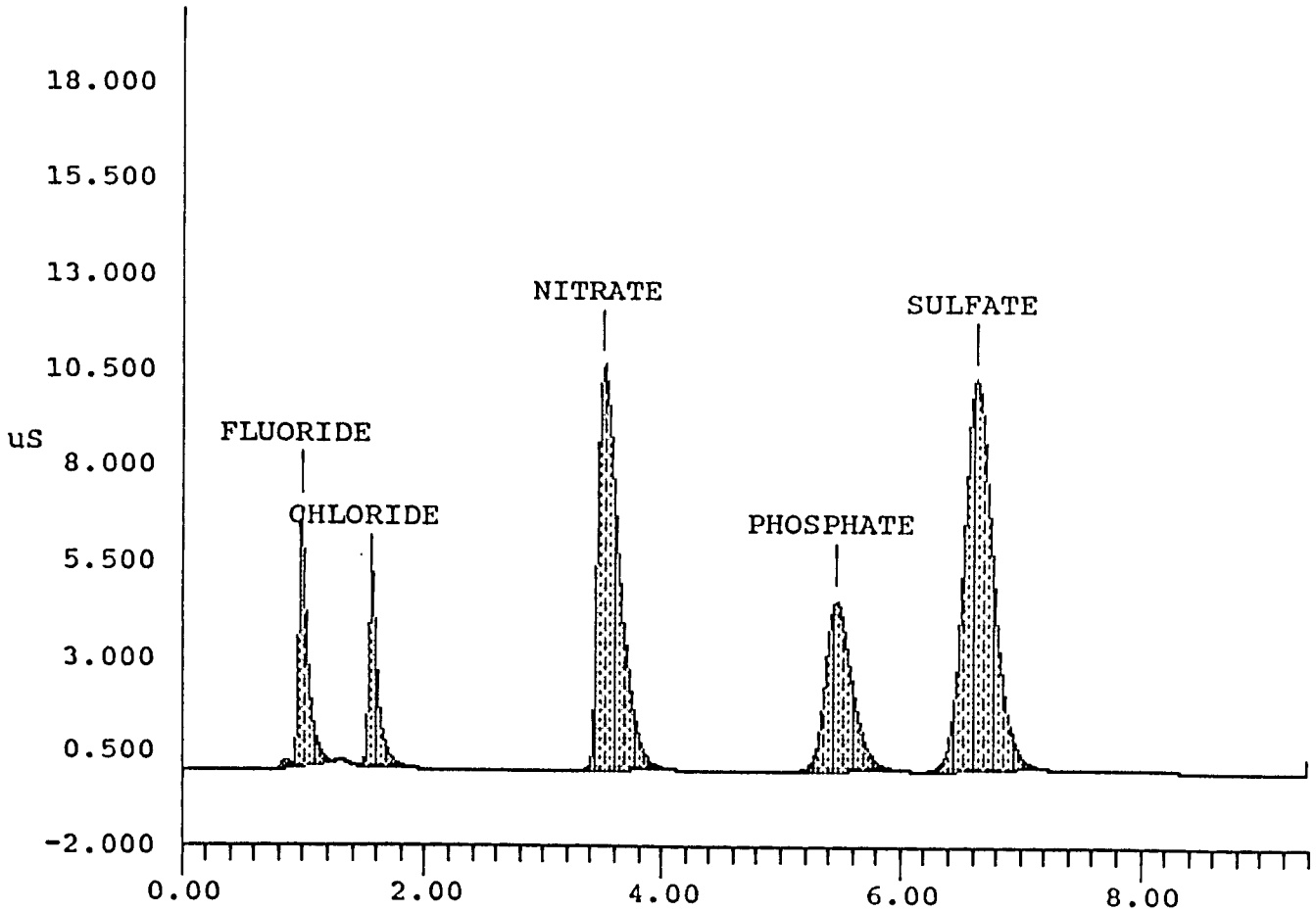
```
==================================================================================
| Sample Name: AUTOCAL5R                          Date: Tue Jan 02 11:02:18 1990 |
| Data File  : A:\90010200.D07                                                   |
| Method     : c:\windows\ai400\method\GROUT01.met                               |
| 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

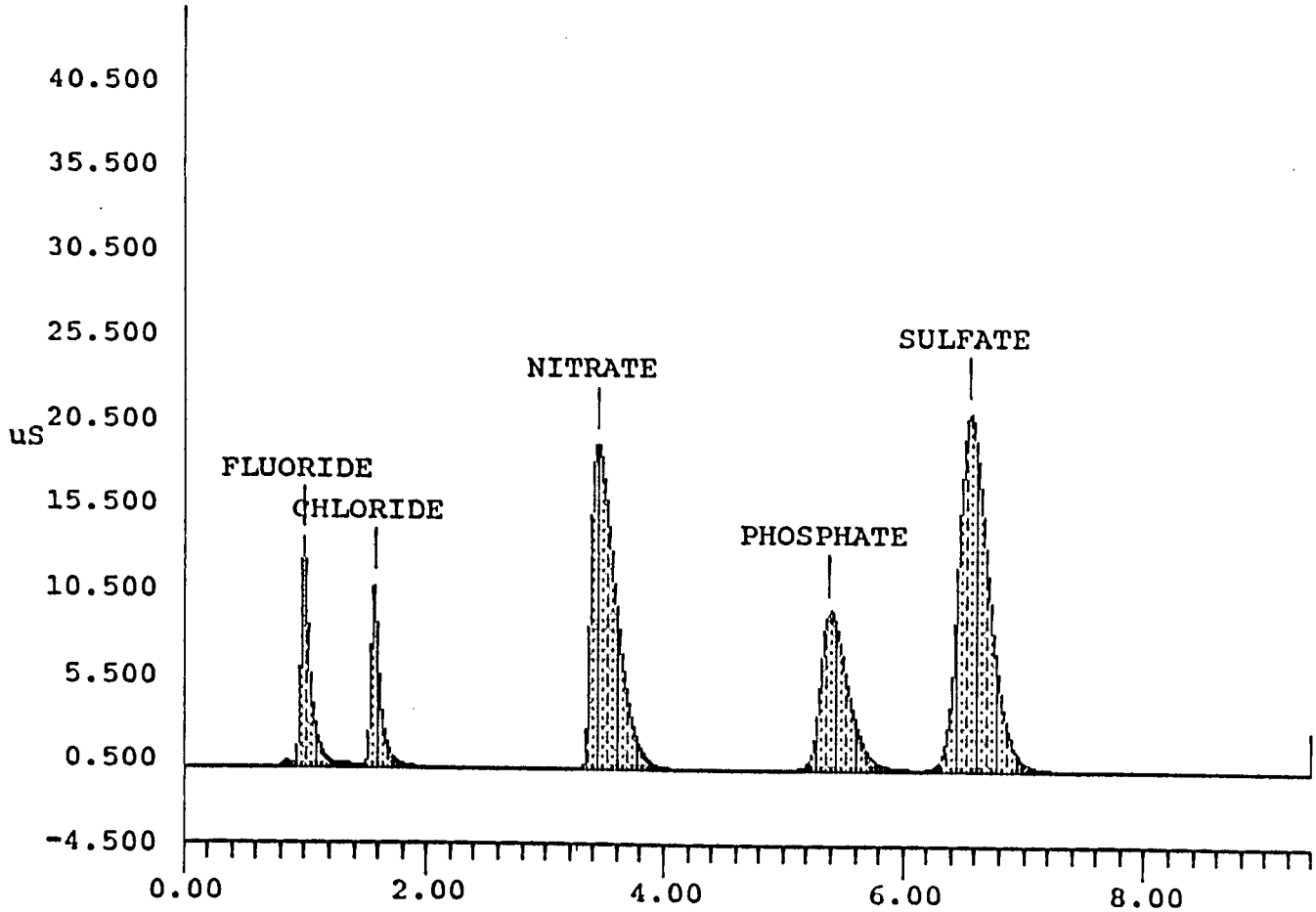
Sample Name: AUTOCAL6R Date: Tue Jan 02 11:12:31 1990
Data File : A:\90010200.D08
Method : c:\windows\ai400\method\GROUT01.met
ACI Address: 1 System : 1 Inject#: 8 Detector: CDM

********** 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



Analytical Batch

LAB SEGMENT SERIAL #:F0149

CUSTOMER ID:89-048

INSTRUMENT	WB24721
PROCEDURE/REV	LA-533-105/A-3
TECHNOLOGIST	N. E. Wright
DATE	January 05, 1990
TEMPERATURE	23 C
STARTING TIME	1330
ENDING TIME	1600
CHEMIST	H. S. Rich

Ion Chromatograph Analysis from Water Digestion

	DESCRIPTION	LAB ID
1	Initial LMCS Check Std.	F0158
2	Reagent Blank	F0170
3	Sample 89-048	F0159
4	Duplicate Sample 89-048	F0160
5	Sample 89-083	F0739
6	Duplicate Sample 89-083	F0740
7	Spike 89-083	F0741
8	Final LMCS Check Std	F0742
9		
10		
11		

	DESCRIPTION	LAB ID
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		

STANDARD TYPE	PRIMARY BOOK # & ALIQUOT VOL.	SECOND BOOK # & ALIQUOT VOL.	THIRD BK# & ALQT. VOL.	FINAL VOL. OF STD.
LMCS Check Std.	6C11HF/100 uL			10.1 mL
Spike	35C9-61/300 uL	F0739/50 uL		5.3 mL

SST-102 Rev. F 9/7/90 Interim

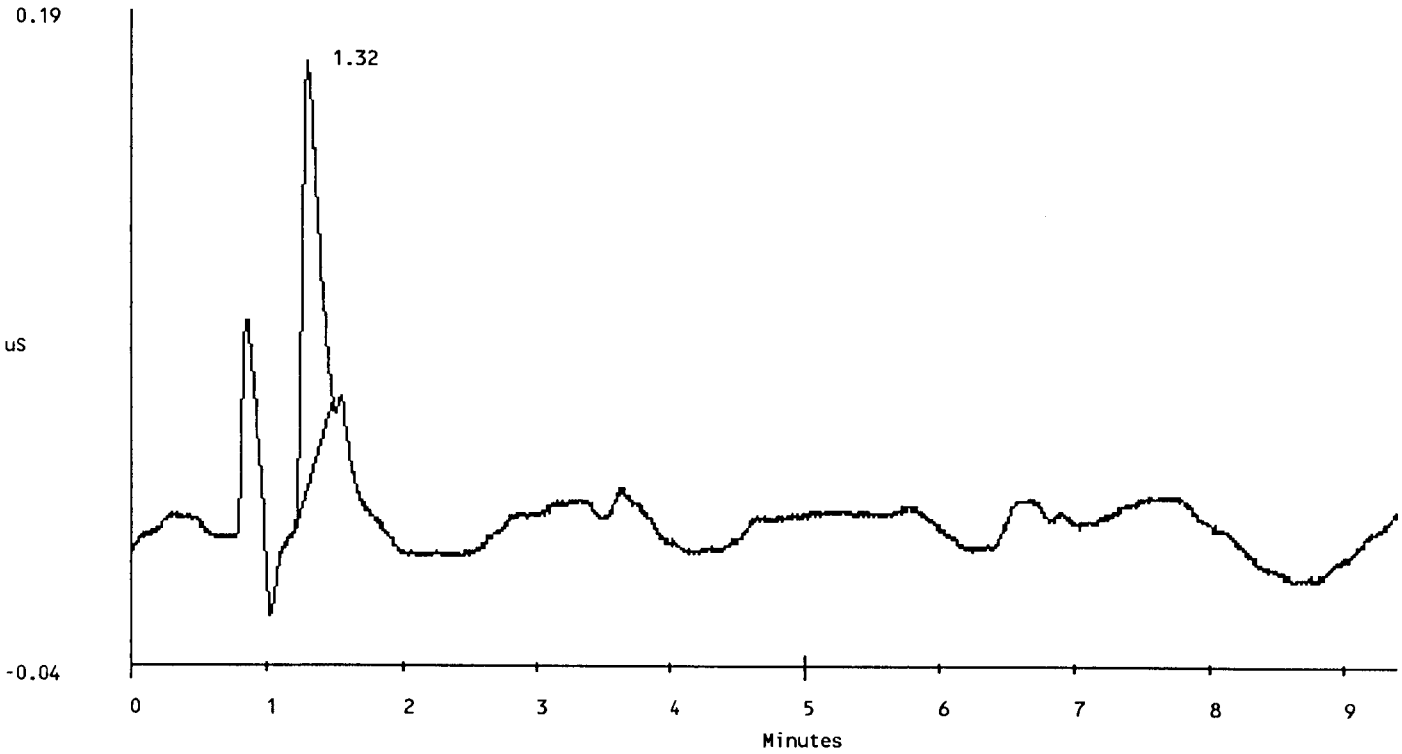
DIONEX SCHEDULE - A:\90010500.SCH

Inject	Sample Name	Method Name	Data File	Volume	Dilution	Int Std
1	SETUP	c:\windows\ai	c:\windows\ai	1	1	0
2	BLANK	c:\windows\ai	c:\windows\ai	1	1	0
3	LMCS/6C11HF	c:\windows\ai	c:\windows\ai	1	101	0
4	LMCS/73C11F	c:\windows\ai	c:\windows\ai	1	101	0
5	170b	c:\windows\ai	c:\windows\ai	1	1	0
6	159	c:\windows\ai	c:\windows\ai	1	101	0
7	160d	c:\windows\ai	c:\windows\ai	1	101	0
8	739	c:\windows\ai	c:\windows\ai	1	101	0
9	740d	c:\windows\ai	c:\windows\ai	1	101	0
10	741s	c:\windows\ai	c:\windows\ai	1	101	0
11	LMCS/6C11HF	c:\windows\ai	c:\windows\ai	1	101	0
12	LMCS/73C11F	c:\windows\ai	c:\windows\ai	1	101	0

```
==============================================================================
| Sample Name: BLANK                          Date: Fri Jan 05 14:20:21 1990|
| Data File  : 90010500.D02                                                 |
| Method     : c:\windows\ai400\method\GROUT01.met                          |
| CIM Address: 1        System : 1        Cycle#:   2       Detector: CDM  |
==============================================================================
**********************  EXTERNAL STANDARD REPORT  *************************

Start Time =  0.00 minutes            Stop time =  9.40 Minutes
Number of Data Points  =  2820         One Data Point per 0.2 seconds
Areareject = 1000
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	1.107e+003	137	1		

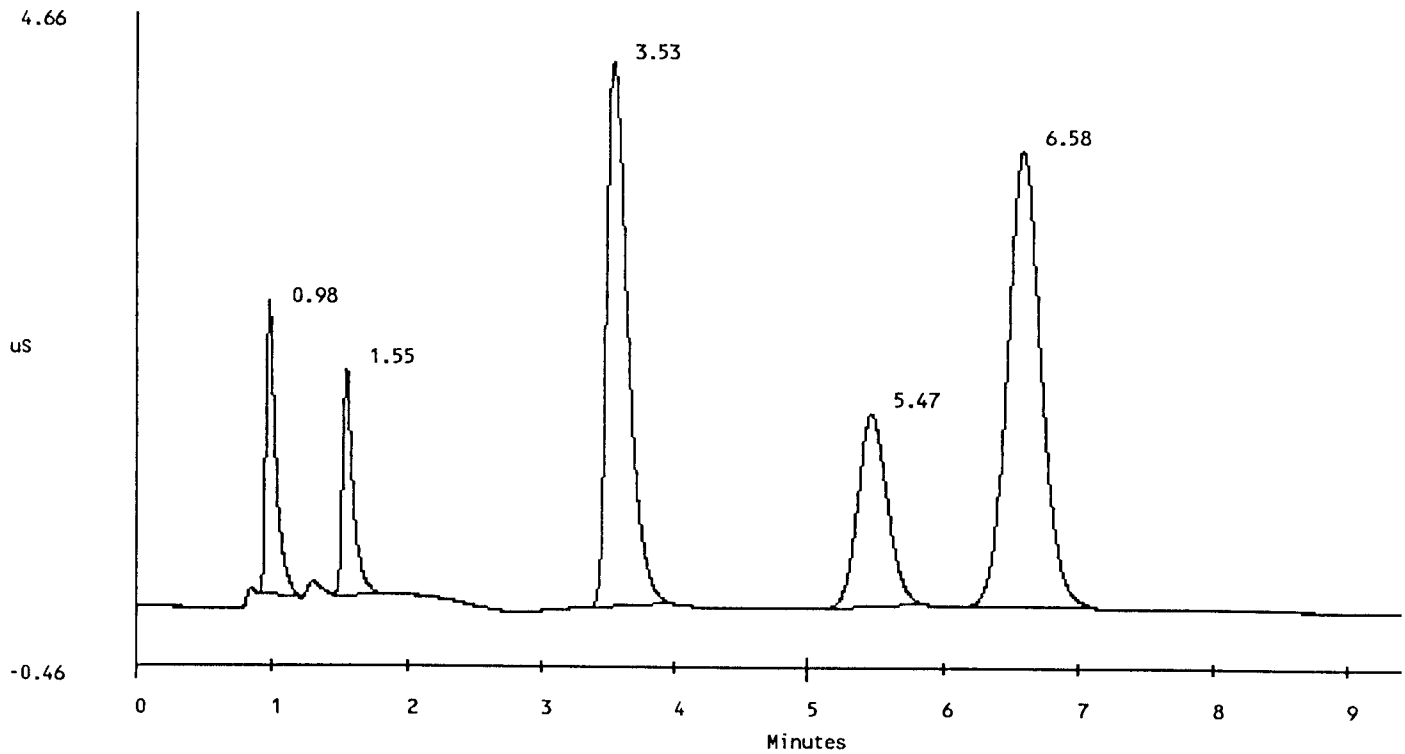


```
==========================================================================
| Sample Name: LMCS/6C11HF                    Date: Fri Jan 05 14:30:25 1990|
| Data File  : 90010500.D03                                                |
| Method     : c:\windows\ai400\method\GROUT01.met                         |
| CIM Address: 1        System : 1        Cycle#:   3      Detector: CDM  |
==========================================================================
```

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

Start Time = 0.00 minutes Stop time = 9.40 Minutes
Number of Data Points = 2821 One Data Point per 0.2 seconds
Areareject = 1000
Amount Injected = 1 Dilution factor = 101

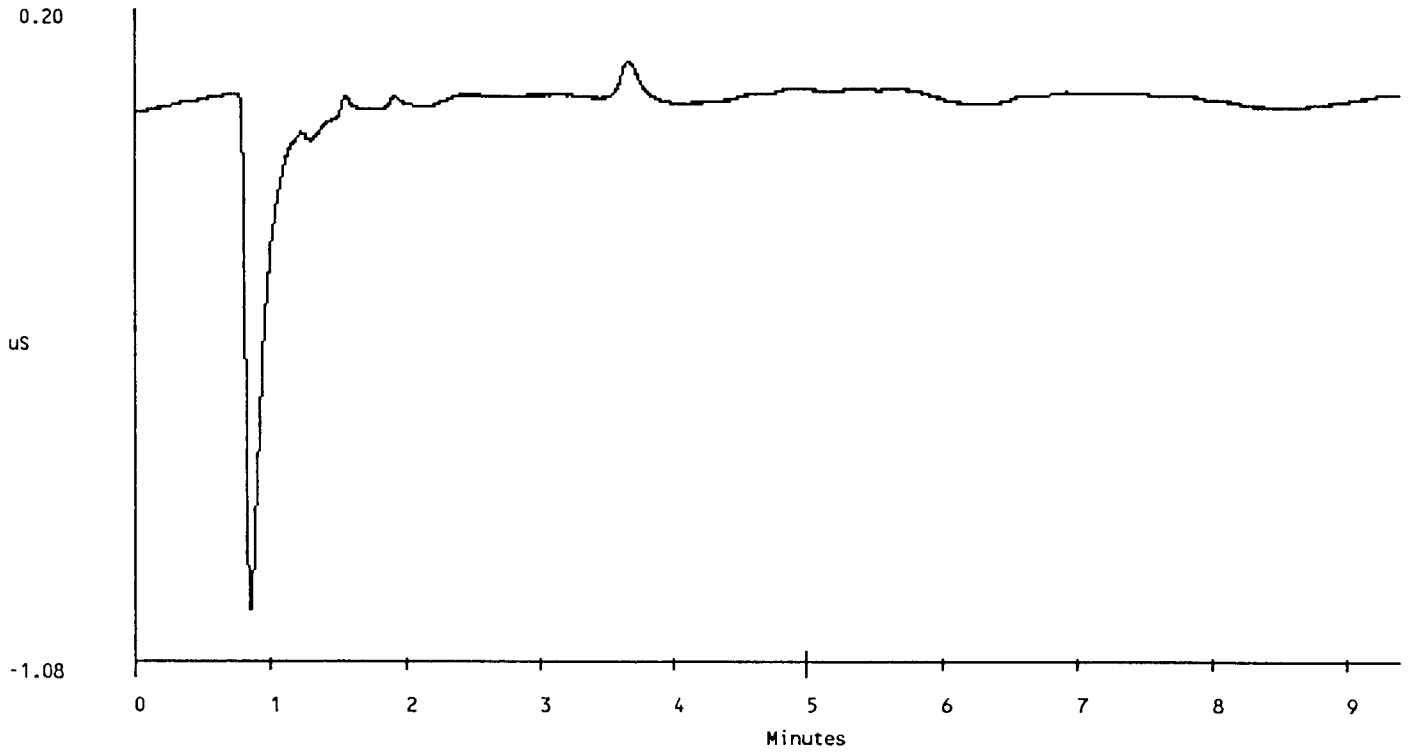
PEAK NUM	RET TIME	PEAK NAME	CONC. in ug/ml	AREA	HEIGHT	BL	REF PEAK	% DELTA RET TIME
1	0.98	FLUORIDE	6.878e+001	1.141e+004	2235	1	0	0.00%
2	1.55	CHLORIDE	9.382e+001	9.250e+003	1754	1	0	-1.06%
3	3.53	NITRATE	7.443e+002	4.666e+004	4218	1	0	2.91%
4	5.47	PHOSPHATE	6.981e+002	2.279e+004	1504	1	0	1.55%
5	6.58	SULFATE	7.159e+002	6.074e+004	3549	1	0	0.51%



```
==========================================================================
| Sample Name: 170B                          Date: Fri Jan 05 14:50:34 1990|
| Data File  : 90010500.D05                                                |
| Method     : c:\windows\ai400\method\GROUT01.met                         |
| CIM Address: 1       System : 1       Cycle#:   5      Detector: CDM    |
==========================================================================
**********************  EXTERNAL STANDARD REPORT  **************************

Start Time =  0.00 minutes            Stop time =  9.40 Minutes
Number of Data Points  =  2821         One Data Point per 0.2 seconds
Areareject = 1000
Amount Injected = 1       Dilution factor = 1

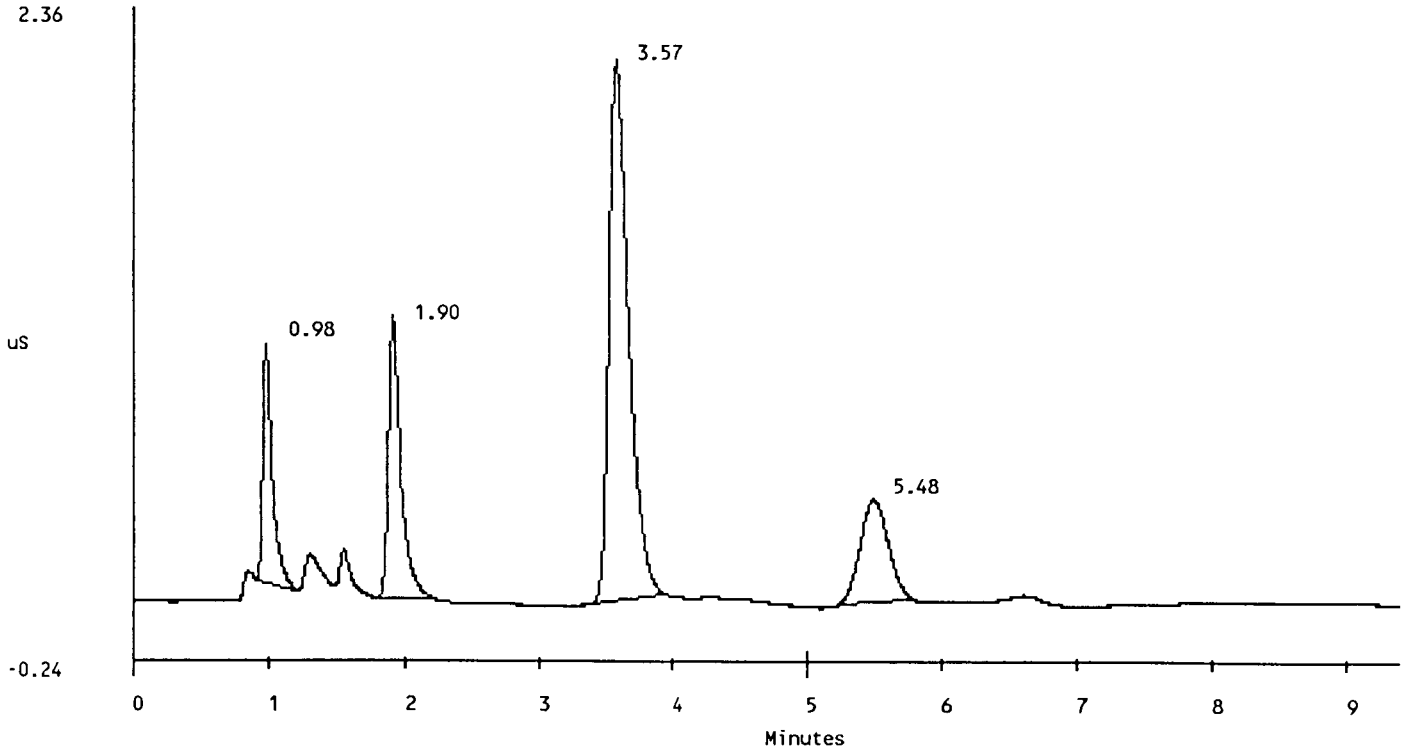
PEAK RET    PEAK              CONC. in                          REF   % DELTA
NUM  TIME   NAME              ug/ml          AREA     HEIGHT BL PEAK RET TIME
--------------------------------------------------------------------------
```



```
==============================================================================
| Sample Name: 159                              Date: Fri Jan 05 15:00:37 1990|
| Data File  : 90010500.D06                                                   |
| Method     : c:\windows\ai400\method\GROUT01.met                            |
| CIM Address: 1        System : 1        Cycle#:   6       Detector: CDM     |
==============================================================================
***********************  EXTERNAL STANDARD REPORT  **************************
```

Start Time = 0.00 minutes Stop time = 9.40 Minutes
Number of Data Points = 2820 One Data Point per 0.2 seconds
Areareject = 1000
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	3.204e+001	4.652e+003	952	1	0	0.00%
2	1.90	NITRITE	1.188e+002	6.986e+003	1076	1	0	-3.39%
3	3.57	NITRATE	3.685e+002	2.202e+004	2120	1	0	3.88%
4	5.48	PHOSPHATE	2.103e+002	5.947e+003	406	1	0	1.86%

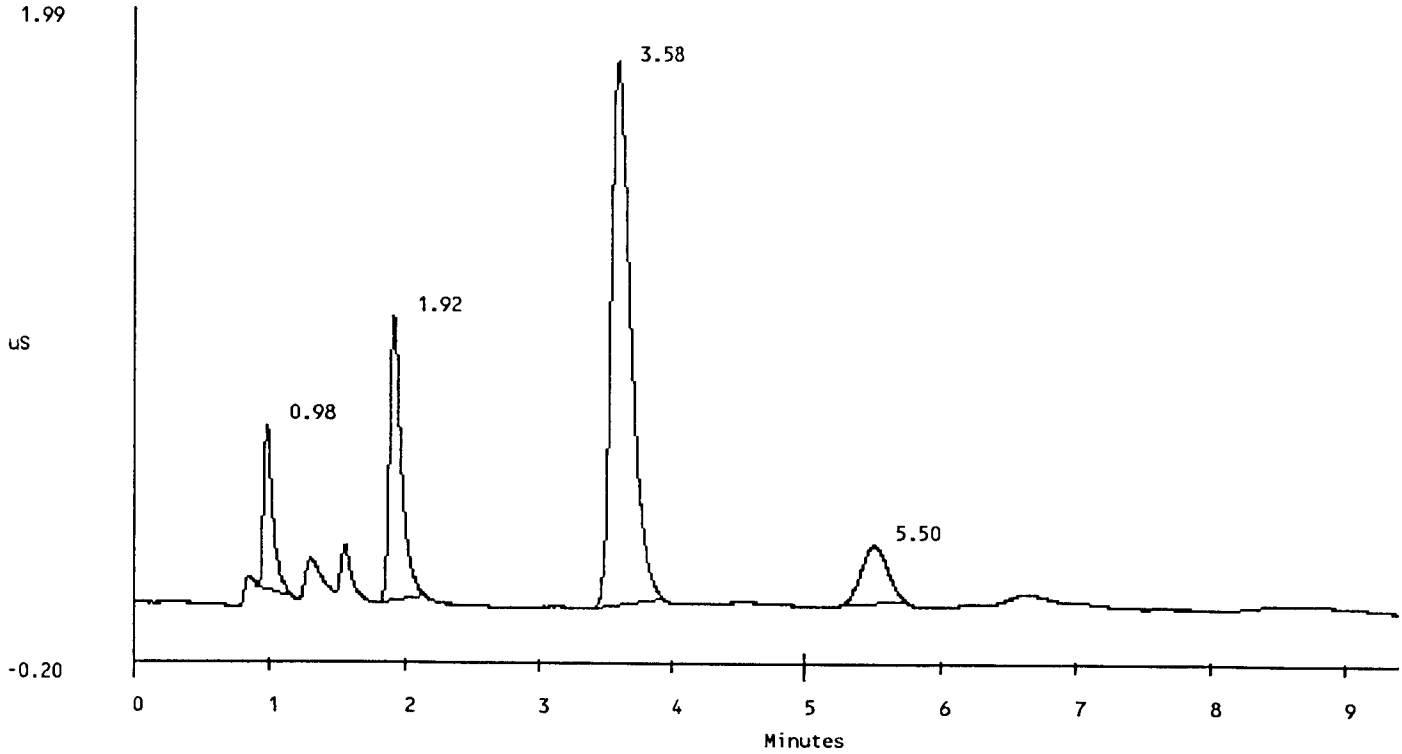


Sample Name: 160D Date: Fri Jan 05 15:10:41 1990
Data File : 90010500.D07
Method : c:\windows\ai400\method\GROUT01.met
CIM Address: 1 System : 1 Cycle#: 7 Detector: CDM

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

Start Time = 0.00 minutes Stop time = 9.40 Minutes
Number of Data Points = 2821 One Data Point per 0.2 seconds
Arearject = 1000
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	2.039e+001	2.622e+003	547	1	0	0.00%
2	1.92	NITRITE	1.084e+002	5.834e+003	945	1	0	-2.54%
3	3.58	NITRATE	3.118e+002	1.859e+004	1797	1	0	4.37%
4	5.50	PHOSPHATE	1.120e+002	2.612e+003	189	1	0	2.17%

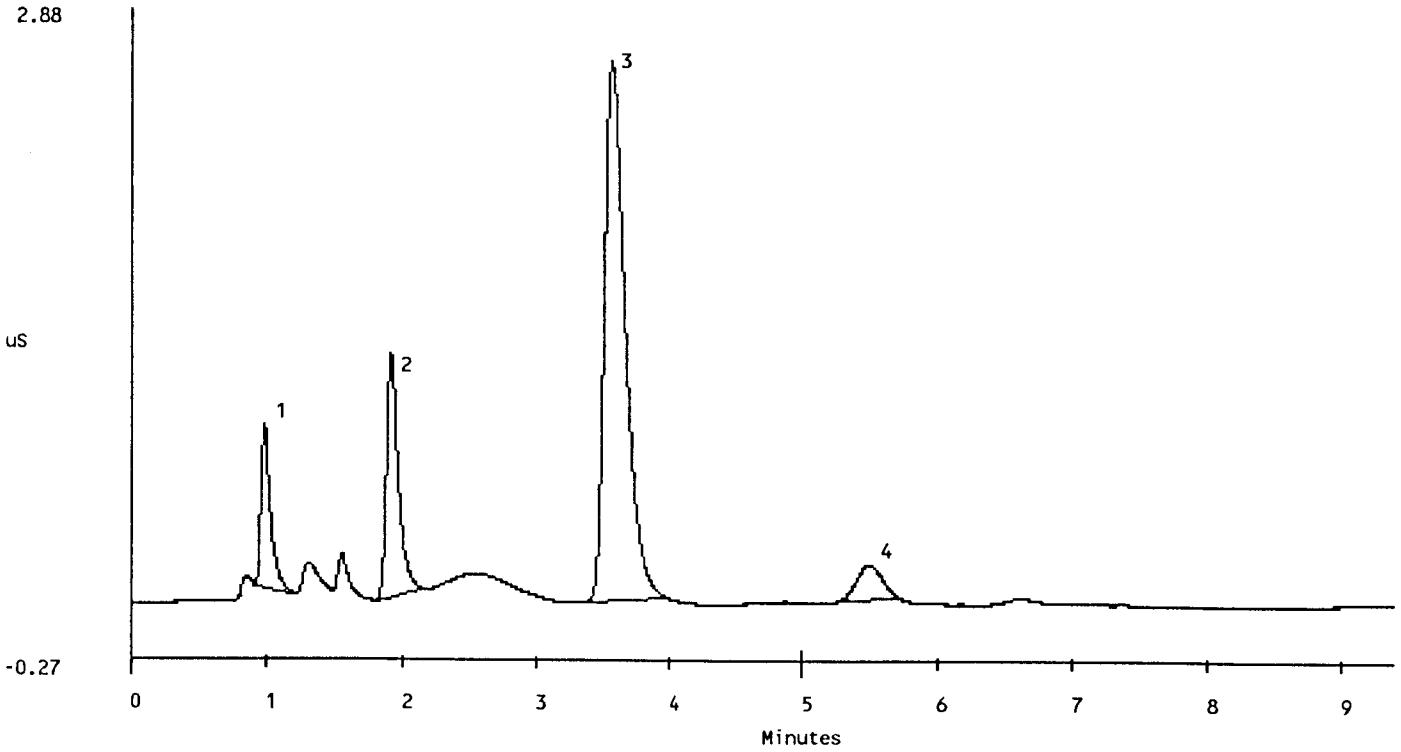


```
Sample Name: 739                                  Date: Fri Jan 05 15:20:44 1990
Data File   : 90010500.D08
Method      : c:\windows\ai400\method\GROUT01.met
CIM Address: 1        System : 1        Cycle#:   8       Detector: CDM
```

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

Start Time = 0.00 minutes Stop time = 9.40 Minutes
Number of Data Points = 2821 One Data Point per 0.2 seconds
Areareject = 1000
Amount Injected = 1 Dilution factor = 101

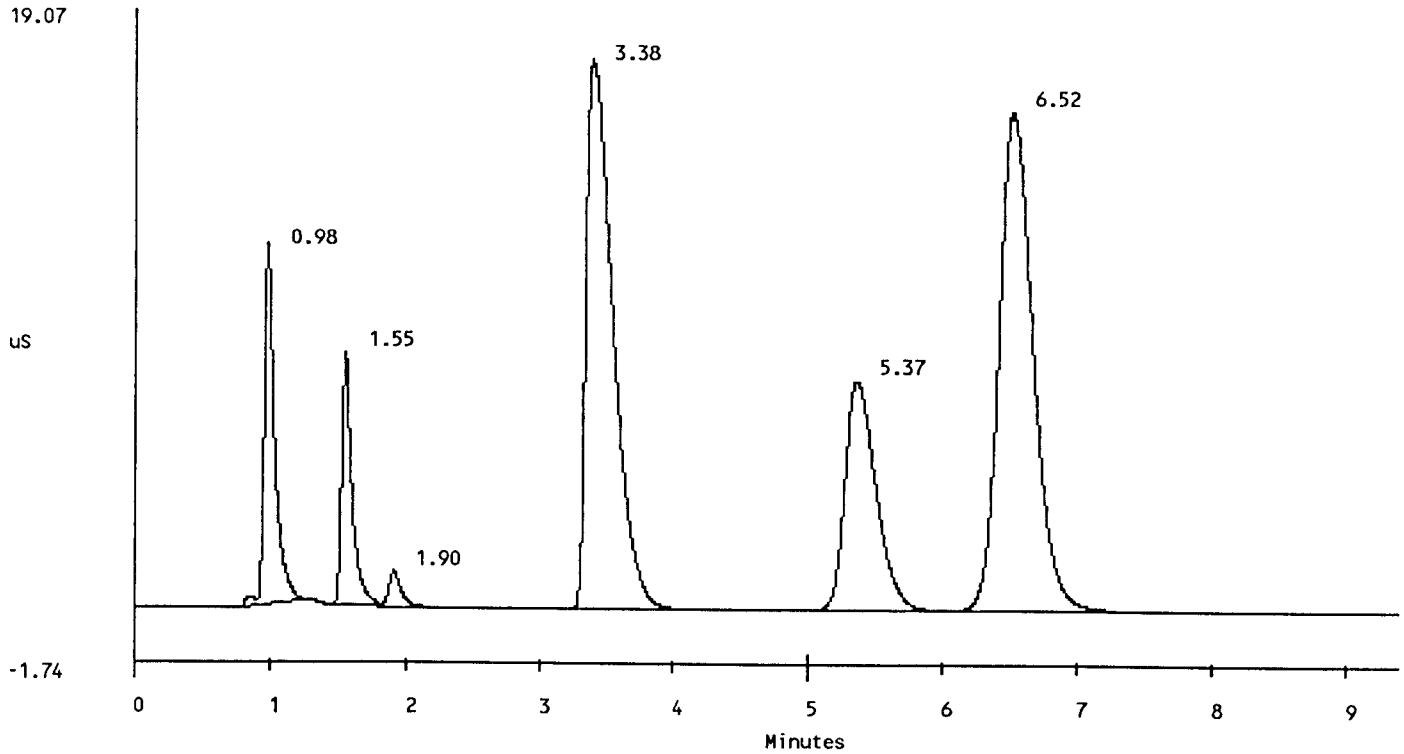
PEAK NUM	RET TIME	PEAK NAME	CONC. in ug/ml	AREA	HEIGHT	BL	REF PEAK	% DELTA RET TIME
1	0.98	FLUORIDE	2.707e+001	3.749e+003	779	1	0	0.00%
2	1.90	NITRITE	1.169e+002	6.884e+003	1052	1	0	-3.39%
3	3.55	NITRATE	4.432e+002	2.792e+004	2542	1	0	3.40%
4	5.50	PHOSPHATE	1.033e+002	2.324e+003	170	1	0	2.17%



```
==============================================================================
| Sample Name: 741S                          Date: Fri Jan 05 15:40:49 1990 |
| Data File  : 90010500.D10                                                 |
| Method     : c:\windows\ai400\method\GROUT01.met                          |
| CIM Address: 1        System : 1        Cycle#:  10      Detector: CDM    |
==============================================================================
***********************  EXTERNAL STANDARD REPORT  **************************

Start Time =  0.00 minutes            Stop time =  9.40 Minutes
Number of Data Points  =  2820         One Data Point per 0.2 seconds
Arearject = 1000
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	3.191e+002	6.123e+004	11205	1	0	0.00%
2	1.55	CHLORIDE	3.650e+002	4.194e+004	7995	2	0	-1.06%
3	1.90	NITRITE	1.206e+002	7.129e+003	1098	2	0	-3.39%
4	3.38	NITRATE	3.316e+003	2.433e+005	17250	1	0	-1.46%
5	5.37	PHOSPHATE	2.983e+003	1.157e+005	7225	1	0	-0.31%
6	6.52	SULFATE	2.909e+003	2.746e+005	15796	1	0	-0.51%

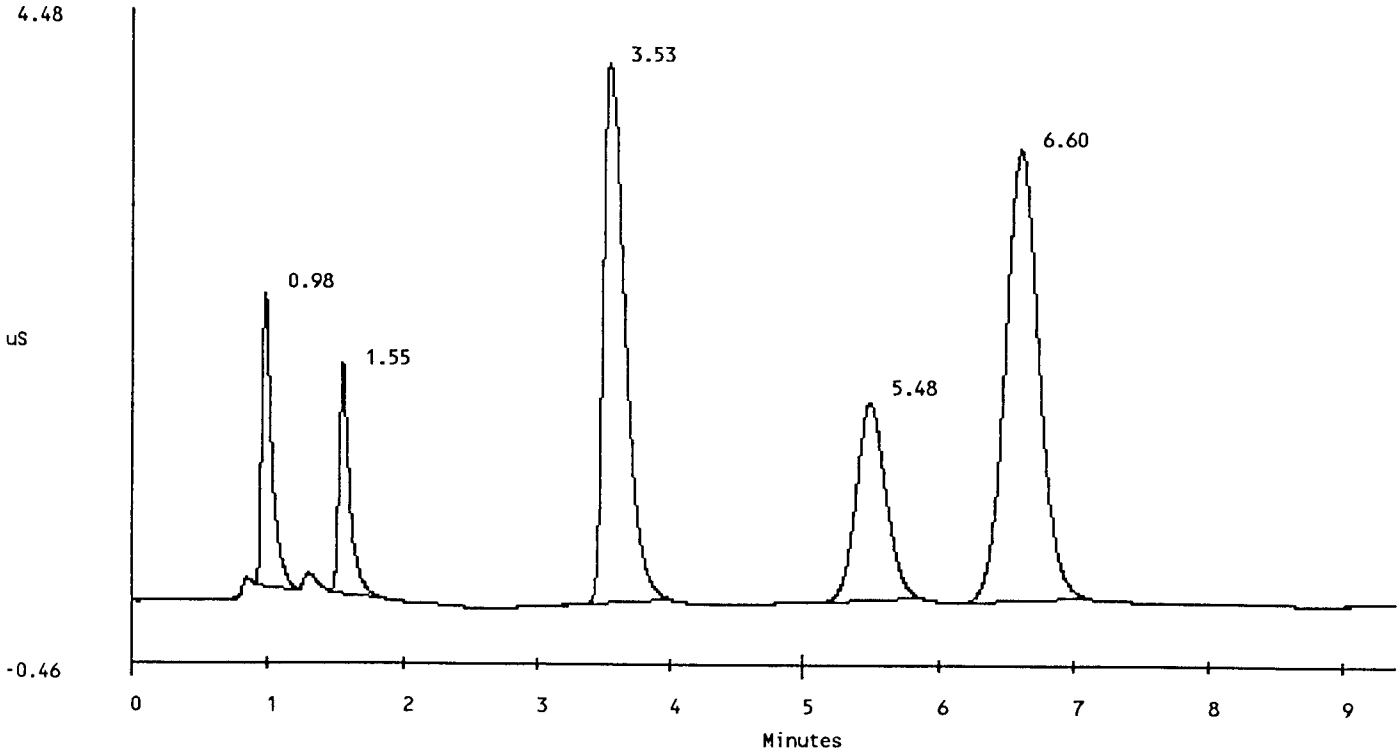


```
Sample Name: LMCS/6C11HF                    Date: Fri Jan 05 15:50:55 1990
Data File  : 90010500.D11
Method     : c:\windows\ai400\method\GROUT01.met
CIM Address: 1        System : 1        Cycle#:  11       Detector: CDM
```

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

Start Time = 0.00 minutes Stop time = 9.40 Minutes
Number of Data Points = 2821 One Data Point per 0.2 seconds
Areareject = 1000
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	6.677e+001	1.091e+004	2165	1	0	0.00%
2	1.55	CHLORIDE	8.805e+001	8.942e+003	1644	1	0	-1.06%
3	3.53	NITRATE	7.092e+002	4.572e+004	4025	1	0	2.91%
4	5.48	PHOSPHATE	6.838e+002	2.252e+004	1471	1	0	1.86%
5	6.60	SULFATE	6.792e+002	5.798e+004	3358	1	0	0.76%



Analytical Batch

LAB SEGMENT SERIAL #:F0149

CUSTOMER ID:89-048

INSTRUMENT	WB39937
PROCEDURE/REV	LA-344-105/A-1
TECHNOLOGIST	E. Colvin
DATE	January 16, 1990
TEMPERATURE	Not Reported
STARTING TIME	0800
ENDING TIME	1130
CHEMIST	R. E. Brandt

Total Organic Carbon from Water Digestion.

Samples were not acidified before analysis.
Results reported are TOC and Carbonate combined.

	DESCRIPTION	LAB ID
1	Initial LMCS Check Std.	F0158
2	Reagent Blank	F0170
3	Sample 89-048	F0159
4	Duplicate Sample 89-048	F0160
5	Spike of sample 89-048	F0161
6	Final LMCS Check Std	F0162
7		
8		
9		
10		
11		

	DESCRIPTION	LAB ID
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		

STANDARD TYPE	PRIMARY BOOK # & ALIQUOT VOL.	SECOND BOOK # & ALIQUOT VOL.	THIRD BK# & ALQT. VOL.	FINAL VOL. OF STD.
LMCS Check Std.	70C11B/200uL			2.2 mL
Spike of 89-048	70C11B/100uL	F0159/200uL		.3 mL

SST-102 Rev. F 9/7/90 Interim

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-158 Date: 01-16-1990 Time: 08:40:43

Blank = .528134 Sample Size = 200 Dilution Factor = 11
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading =====	Analysis Time =====	Coulometer =====	% Difference ==
1	1.01	0.00	0.00
2	2.01	31.10	100.00
3	3.01	44.10	29.48
4	4.01	50.20	12.15
5	5.01	53.90	6.86
6	6.01	55.70	3.23
7	7.01	57.20	2.62

(57.2 - 3.699936)(11)/(200) = 2.942504 g/L Carbon

(57.2 - 3.699936)(11)/(200)(12) = .2452086 Molar Carbon

Sample Run By: 80028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-170

Date: 01-16-1990 Time: 08:32:05

Blank = N/A
% Difference = 10

Sample Size = 200 Dilution Factor = 1
Min Readings = 7 Max Readings = 7

== Reading ====	Analysis Time ====	Coulometer ====	% Difference ==
1	1.01	0.50	%-1100.00
2	2.01	1.10	54.55
3	3.01	1.60	31.25
4	4.01	2.10	23.81
5	5.01	2.70	22.22
6	6.01	3.30	18.18
7	7.01	3.70	10.81

BLANK VALUE = 3.7 / 7.005799 = .528134 ug/minute

Sample Run By: 80028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-159 Date: 01-16-1990 Time: 09:41:19

Blank = .528134 Sample Size = 200 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading =====	Analysis Time ====	Coulometer =====	% Difference ==
1	1.01	0.00	0.00
2	2.01	2.70	100.00
3	3.01	4.40	38.64
4	4.01	5.50	20.00
5	5.01	6.30	12.70
6	6.01	7.00	10.00
7	7.01	7.60	7.89

(7.6 - 3.699936)(1)/(200) = 1.950032E-02 g/L Carbon

(7.6 - 3.699936)(1)/(200)(12) = 1.625027E-03 Molar Carbon

Sample Run By: 80028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-160 Date: 01-16-1990 Time: 10:09:05

Blank = .528134 Sample Size = 200 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	2.90	100.00
3	3.01	4.30	32.56
4	4.01	5.30	18.87
5	5.01	6.10	13.11
6	6.01	6.80	10.29
7	7.01	7.50	9.33

(7.5 - 3.700033)(1)/(200) = 1.899984E-02 g/L Carbon

(7.5 - 3.700033)(1)/(200)(12) = 1.58332E-03 Molar Carbon

Sample Run By: 80028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-161 Date: 01-16-1990 Time: 10:24:14

Blank = .528134 Sample Size = 200 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading =====	Analysis Time =====	Coulometer =====	% Difference ==
1	1.01	0.00	0.00
2	2.01	84.10	100.00
3	3.01	144.20	41.68
4	4.00	168.30	14.32
5	5.01	179.90	6.45
6	6.01	185.50	3.02
7	7.01	188.40	1.54

(188.4 - 3.699936)(1)/(200) = .9235003 g/L Carbon

(188.4 - 3.699936)(1)/(200)(12) = 7.695836E-02 Molar Carbon

Sample Run By: 80028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-162 Date: 01-16-1990 Time: 10:42:43

Blank = .528134 Sample Size = 200 Dilution Factor = 11
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	===== % Difference ==
1	1.01	0.00	0.00
2	2.01	32.50	100.00
3	3.01	46.00	29.35
4	4.01	52.30	12.05
5	5.01	55.50	5.77
6	6.01	57.20	2.97
7	7.01	58.50	2.22

(58.5 - 3.700451)(11)/(200) = 3.013975 g/L Carbon

(58.5 - 3.700451)(11)/(200)(12) = .2511646 Molar Carbon

Sample Run By: 80028_____

ACID DIGESTION TEST ANALYSIS

ICP Results Data Summary

		Acid Digested LMCS Standard	F1083
Date Analyzed:	April 19, 1990	Reagent Blank	F1084
Procedure:	LA-505-151/A-0	Segment 89-048	F0164
Analyst:	J. A. White	Duplicate of Segment 89-048	F0165
Digestion	Acid Digestion	Spike of F1085	F1087
Procedure:	LA-505-159/A-0	Acid Digested LMCS 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	99.98%		0.07 LT	76209	91743	NOT CALC.	100.63%	100.78%
Antimony	103.50%		-0.01 LT	455	122 LT			105.02%
Barium	102.40%		-0.01 LT	45	17	103.28%	92.28%	99.56%
Beryllium	96.97%		0.00 LT	2	-1 LT			98.05%
Bismuth	106.71%	102.12%	-0.01 LT	12709	12057	NOT CALC.		109.03%
Boron	99.14%	94.43%	0.03	23 LT	-1 LT	134.81%		96.83%
Cadmium	98.49%	93.46%	0.00 LT	0 LT	-14 LT	89.32%		97.75%
Calcium	104.77%	102.58%	0.09	568	761	146.72%		101.53%
Cerium	90.42%		-0.31 LT	65 LT	-1075 LT	15.40%	88.66%	92.18%
Chromium	93.24%		-0.03 LT	450	492	235.92%	84.79%	91.92%
Copper	103.21%	99.09%	-0.01 LT	1012	1357	100.71%		101.11%
Europium	97.97%		-0.01 LT	1 LT	-21 LT			97.72%
Iron	101.68%		0.03	12131	13308	NOT CALC.	94.41%	99.61%
Lanthanum	93.47%	91.05%	-0.02 LT	43 LT	-46 LT	89.51%		93.84%
Lead	105.24%	99.04%	0.01 LT	742	352	93.18%		107.33%
Lithium	103.05%		-0.01 LT	-3 LT	-54 LT	91.11%	93.39%	99.74%
Magnesium	102.66%	97.56%	0.02	1155	13743	4138.61%		100.47%
Manganese	100.82%		0.01	5823	5851	NOT CALC.	92.70%	98.92%
Mercury	100.82%		-0.05 LT	-62 LT	-62 LT			100.39%
Molybdenum	96.06%	93.73%	0.00 LT	25	-5 LT	85.72%		96.93%
Nickel	99.55%		-0.01 LT	151	105	98.98%	92.68%	98.62%
Potassium	97.56%	82.65%	-0.53 LT	-361 LT	-1893 LT	73.37%		98.69%
Samarium	96.12%		-0.35 LT	23 LT	-1293 LT			100.19%
Selenium	103.71%		-0.06 LT	517	201 LT			104.80%
Silver	106.46%		-0.02 LT	11 LT	-67 LT	53.52%		107.84%
Sodium	100.29%	94.66%	0.06 LT	86006	85640	NOT CALC.		99.08%
Strontium	104.00%	100.02%	0.00 LT	578	593	86.77%		101.11%
Sulfur	106.83%		0.03	321	2043			101.62%
Tantalum	94.99%		-0.04 LT	28 LT	-146 LT	27.57%	73.62%	96.37%
Thallium	104.72%		-0.33 LT	783	-476 LT			106.69%
Thorium	105.11%		-0.18 LT	162	-729 LT			106.32%
Tin	99.38%		0.02 LT	73	26 LT	102.74%	93.54%	99.14%
Titanium	100.59%		0.13	27	-13 LT	90.61%	92.17%	100.87%
Uranium	102.73%		-2.40 LT	6091	-1102 LT			107.92%
Vanadium	99.30%		-0.02 LT	47	-7 LT			101.25%
Zinc	99.24%	93.05%	0.23	242	627	66.80%		98.76%
Zirconium	99.66%		-0.04 LT	38 LT	-78 LT	46.04%	93.47%	99.94%

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

Analytical Batch

LAB SEGMENT SERIAL #:F0149

CUSTOMER ID:89-048

INSTRUMENT	N/A
PROCEDURE/REV	LA-505-159/A-1
TECHNOLOGIST	D. M. Southwick
DATE	02-01-90
TEMPERATURE	72 C
STARTING TIME	0800
ENDING TIME	1400
CHEMIST	S. A. Jones

Acid Digestion of Sample 89-048

	DESCRIPTION		LAB ID
1	Reagent Blank		F0147
2	Sample	89-047	F0140
3	Duplicate Sample	89-047	F0141
4	Spike of Sample	89-047	F0142
5	Sample	89-048	F0164
6	Duplicate Sample	89-048	F0165
7			
8			
9			
10			
11			

	DESCRIPTION	LAB ID
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		

STANDARD TYPE	PRIMARY BOOK # & ALIQUOT VOL.	SECOND BOOK # & ALIQUOT VOL.	THIRD BK# & ALQT.VOL.	FINAL VOL. OF STD.
Spike of 89-047	103C15C/mL	104C15D/5mL		50mL

SST-102 Rev. F 9/7/90 Interim

Analytical Batch

LAB SEGMENT SERIAL #:F0149

CUSTOMER ID:89-048

INSTRUMENT	WB39939
PROCEDURE/REV	LA-505-151/A-0
TECHNOLOGIST	J. A. White
DATE	April 19, 1990
TEMPERATURE	70 F
STARTING TIME	0747
ENDING TIME	1500
CHEMIST	S. A. Jones

ICP analysis of sample 89-048.

Acid Digestion.

Only data directly related to the analysis of 89-048 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	Digested Std. (81C11A)	F1083
3	Reagent Blank	F1084
4	Sample Comp. Core 13	F1085
5	Duplicate of Core 13	F1086
6	Spike of F1085	F1087
7	Digested Std. (82C11A)	F1088
8	LMCS Check Std.	N/A
9	Sample Comp. Core 5	F0899
10	Duplicate Core 5	F0900
11	Acid Blank	N/A

	DESCRIPTION		LAB ID
12	Sample	89-043	F0068
13	Duplicate Sample	89-043	F0069
14	Sample	89-044	F0092
15	Duplicate Sample	89-044	F0093
16	LMCS Check Std.		N/A
17	Sample	89-047	F0140
18	Duplicate Sample	89-047	F0141
19	Sample	89-048	F0164
20	Duplicate Sample	89-048	F0165
21	Sample Comp. Core 8		F0959
22	Duplicate of Core 8		F0960

STANDARD TYPE	PRIMARY BOOK # & ALIQUOT VOL.	SECOND BOOK # & ALIQUOT VOL.	THIRD BK# & ALQT.VOL.	FINAL VOL. OF STD.
LMCS Check Std.	78C11J/1.0 mL	82B38F/1.0 mL	77C11I/1.0 mL	11.00 mL
Digested LMCS (1)	81C11A/5.0 mL			50.0 mL
Digested LMCS (2)	82C11A/5.0 mL			50.0 mL
Spike F0187	34C11CO/5.0 mL	34C11CK/5.0 mL	F1085/0.5143g	50.0 mL

SST-102 Rev. F 9/7/90 Interim

Analytical Batch

LAB SEGMENT SERIAL #: F0149

CUSTOMER ID: 89-048

INSTRUMENT	WB39939
PROCEDURE/REV	LA-505-151/A-0
TECHNOLOGIST	J. A. White
DATE	April 19, 1990
TEMPERATURE	70 F
STARTING TIME	0747
ENDING TIME	1500
CHEMIST	S. A. Jones

ICP analysis of sample 89-048.
Acid Digestion.
89-048 will be included in this
No inter-element corrections

	DESCRIPTION	LAB ID
1	LMCS Check Std.	N/A
2	Sample Comp. Core 15	F1037
3	Duplicate of Core 15	F1038
4	Closing LMCS Check Std.	N/A
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 # & ALIQUOT VOL.	SECOND BOOK # & ALIQUOT VOL.	THIRD BK# & ALQT. VOL.	FINAL VOL. OF STD.
LMCS Check Std.	78C11J/1.0 mL	82B38F/1.0 mL	77C11I/1.0 mL	11.0 mL
Digested LMCS (1)	81C11A/5.0 mL			50.0 mL
Digested LMCS (2)	82C11A/5.0 mL			50.0 mL
Spike F1087	34C11CO/5.0 mL	34C11CK/5.0 mL	F1085/0.5143g	50.00 mL

SST-102 Rev. H 9/27/90 Interim

ICP Results Raw Data Summary

		Acid Digested LMCS Standard	F1083
Date Analyzed:	April 19, 1990	Reagent Blank	F1084
Procedure:	LA-505-151/A-0	Segment 89-048	F0164
Analyst:	J. A. White	Duplicate of Segment 89-048	F0165
Digestion	Acid Digestion	Spike of F1085	F1087
Procedure:	LA-505-159/A-0	Acid Digested LMCS 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	99.98%			0.07 LT	76209	91743	NOT CALC.	100.63%	100.78%	
Antimony	103.50%			-0.01 LT	455	122 LT			105.02%	
Arsenic	114.41%	#		-0.02 LT	82	-2 LT			114.33%	#
Barium	102.40%			-0.01 LT	45	17	103.28%	92.28%	99.56%	
Beryllium	96.97%			0.00 LT	2	-1 LT			98.05%	
Bismuth	106.71%		102.12%	-0.01 LT	12709	12057	NOT CALC.		109.03%	
Boron	99.14%		94.43%	0.03	23 LT	-1 LT	134.81%		96.83%	
Cadmium	98.49%		93.46%	0.00 LT	0 LT	-14 LT	89.32%		97.75%	
Calcium	104.77%		102.58%	0.09	568	761	146.72%		101.53%	
Cerium	90.42%			-0.31 LT	65 LT	-1075 LT	15.40%	88.66%	92.18%	
Chromium	93.24%			-0.03 LT	450	492	235.92%	84.79%	91.92%	
Cobalt	91.88%			0.02 LT	65 LT	-67 LT	85.08%	86.00%	81.23%	#
Copper	103.21%		99.09%	-0.01 LT	1012	1357	100.71%		101.11%	
Europium	97.97%			-0.01 LT	1 LT	-21 LT			97.72%	
Iron	101.68%			0.03	12131	13308	NOT CALC.	94.41%	99.61%	
Lanthanum	93.47%		91.05%	-0.02 LT	43 LT	-46 LT	89.51%		93.84%	
Lead	105.24%		99.04%	0.01 LT	742	352	93.18%		107.33%	
Lithium	103.05%			-0.01 LT	-3 LT	-54 LT	91.11%	93.39%	99.74%	
Magnesium	102.66%		97.56%	0.02	1155	13743	4138.61%		100.47%	
Manganese	100.82%			0.01	5823	5851	NOT CALC.	92.70%	98.92%	
Mercury	100.82%			-0.05 LT	-62 LT	-62 LT			100.39%	
Molybdenum	96.06%		93.73%	0.00 LT	25	-5 LT	85.72%		96.93%	
Neodymium	85.58%	#		-0.64 LT	-951 LT	-2087 LT	NOT CALC.	77.36%	88.11%	#
Nickel	99.55%			-0.01 LT	151	105	98.98%	92.68%	98.62%	
Phosphorous	114.91%	#	93.37%	0.11	14347	12990	NOT CALC.		99.24%	
Potassium	97.56%		82.65%	-0.53 LT	-361 LT	-1893 LT	73.37%		98.69%	
Samarium	96.12%			-0.35 LT	23 LT	-1293 LT			100.19%	
Selenium	103.71%			-0.06 LT	517	201 LT			104.80%	
Silicon	89.48%	#	75.18%	0.63	3780	4807	-114.70%		90.19%	
Silver	106.46%			-0.02 LT	11 LT	-67 LT	53.52%		107.84%	
Sodium	100.29%		94.66%	0.06 LT	86006	85640	NOT CALC.		99.08%	
Strontium	104.00%		100.02%	0.00 LT	578	593	86.77%		101.11%	
Sulfur	106.83%			0.03	321	2043			101.62%	
Tantalum	94.99%			-0.04 LT	28 LT	-146 LT	27.57%	73.62%	96.37%	
Thallium	104.72%			-0.33 LT	783	-476 LT			106.69%	
Thorium	105.11%			-0.18 LT	162	-729 LT			106.32%	
Tin	99.38%			0.02 LT	73	26 LT	102.74%	93.54%	99.14%	
Titanium	100.59%			0.13	27	-13 LT	90.61%	92.17%	100.87%	
Tungsten	82.47%	#		-0.02 LT	208	77 LT			82.74%	#
Uranium	102.73%			-2.40 LT	6091	-1102 LT			107.92%	
Vanadium	99.30%			-0.02 LT	47	-7 LT			101.25%	
Zinc	99.24%		93.05%	0.23	242	627	66.80%		98.76%	
Zirconium	99.66%			-0.04 LT	38 LT	-78 LT	46.04%	93.47%	99.94%	

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

ICP Results

RAW DATA

		Acid Digested LMCS Standard	F1083
Date Analyzed:	April 19, 1990	Reagent Blank	F1084
Procedure:	LA-505-151/A-0	Segment 89-048	F0164
Analyst:	J. A. White	Duplicate of Segment 89-048	F0165
Digestion	Acid Digestion	Spike of F1085	F1087
Procedure:	LA-505-159/A-0	Acid Digested LMCS Standard	F1088

	SST-1	SST-2	Starting LMCS Instrument Standard ppm	Standard Recovery %		LMCS Acid Digestion Standard ppm	Acid Digestion Standard Recovery %	Reagent Blank ppm	Digestion Weight Volume Sample Dilution Three ppm
Aluminum			49.99	99.98%				0.07 LT	
Antimony	10.35			103.50%				-0.01 LT	
Arsenic			57.21	114.41%	#			-0.02 LT	
Barium	10.24			102.40%				-0.01 LT	
Beryllium			9.70	96.97%				0.00 LT	
Bismuth		53.46		106.71%		10.21	102.12%	-0.01 LT	
Boron	9.91			99.14%		9.44	94.43%	0.03	
Cadmium	9.85			98.49%		9.35	93.46%	0.00 LT	
Calcium	10.48			104.77%		10.26	102.58%	0.09	
Cerium	9.04			90.42%				-0.31 LT	
Chromium	9.32			93.24%				-0.03 LT	
Cobalt	9.19			91.88%				0.02 LT	
Copper	10.32			103.21%		9.91	99.09%	-0.01 LT	
Europium		9.80		97.97%				-0.01 LT	
Iron	10.17			101.68%				0.03	
Lanthanum		46.83		93.47%		9.11	91.05%	-0.02 LT	
Lead		52.72		105.24%		9.90	99.04%	0.01 LT	
Lithium	10.31			103.05%				-0.01 LT	
Magnesium	10.27			102.66%		9.76	97.56%	0.02	
Manganese	10.08			100.82%				0.01	
Mercury			25.21	100.82%				-0.05 LT	
Molybdenum			48.03	96.06%		9.35	93.73%	0.00 LT	
Neodymium	8.56			85.58%	#			-0.64 LT	
Nickel	9.96			99.55%				-0.01 LT	
Phosphorous			57.45	114.91%	#	9.34	93.37%	0.11	
Potassium	24.39			97.56%		8.27	82.65%	-0.53 LT	
Samarium		9.61		96.12%				-0.35 LT	
Selenium			51.86	103.71%				-0.06 LT	
Silicon			44.74	89.48%	#	7.52	75.18%	0.63	
Silver		10.65		106.46%		7.42		-0.02 LT	
Sodium	25.07			100.29%		9.47	94.66%	0.06 LT	
Strontium	10.40			104.00%		10.00	100.02%	0.00 LT	
Sulfur			53.41	106.83%				0.03	
Tantalum			47.50	94.99%				-0.04 LT	
Thallium			52.36	104.72%				-0.33 LT	
Thorium		52.66		105.11%				-0.18 LT	
Tin	49.69			99.38%				0.02 LT	
Titanium			50.30	100.59%				0.13	
Tungsten			20.62	82.47%	#			-0.02 LT	
Uranium		51.47		102.73%				-2.40 LT	
Vanadium			9.93	99.30%				-0.02 LT	
Zinc	9.92			99.24%		9.31	93.05%	0.23	
Zirconium			49.83	99.66%				-0.04 LT	
Dilution Factor	1.00	1.00	1.00			10.00		1.00	1.00

	0.00884 g/mL 0.4420 g 50.00 mL Sample Dilution Two ppm	Sample Dilution One ppm	Digestion Weight Volume Sample Duplicate Dilution Three ppm	0.00932 g/mL 0.4659 g 50.00 mL Sample Duplicate Dilution Two ppm	Sample Duplicate Dilution One ppm	Digestion Weight Volume Spike of Sample Dilution Three ppm	0.01029 g/mL 0.5143 g 50.00 mL Spike of Sample Dilution Two ppm	Spike of Sample Dilution One ppm
Aluminum	673.69	694.48		854.86	804.13		507.09	473.99
Antimony	2.98	4.03		2.98	1.14 LT		13.40	14.24
Arsenic	-0.80	0.73		-1.61	-0.02 LT		-0.58	1.02
Barium	-0.38	0.40		0.15	0.16		10.83	10.57
Beryllium	-0.01	0.02		-0.04	-0.01 LT		0.02	0.03
Bismuth	112.35	123.11		112.35	116.60		160.79	176.36
Boron	-0.36	0.20 LT		0.43	-0.01 LT		14.10	10.25
Cadmium	-0.54	0.00 LT		-0.67	-0.13 LT		9.00	10.03
Calcium	5.02	4.65		7.09	5.31		20.40	14.91
Cerium	-24.26	0.58 LT		-32.46	-10.02 LT		-30.01	1.54 LT
Chromium	-0.39	3.98		4.59	4.15		30.54	19.37
Cobalt	1.13	0.58 LT		-0.25	-0.63 LT		8.30	9.83
Copper	7.42	8.95		11.59	12.64		9.26	10.82
Europium	-0.50	0.01 LT		-0.62	-0.19 LT		-0.57	0.04 LT
Iron	107.24	108.35		124.00	117.39		218.35	212.56
Lanthanum	-0.78	0.38 LT		-0.65	-0.43 LT		7.16	9.85
Lead	8.61	6.56		10.76	3.28		17.21	20.87
Lithium	-1.12	-0.03 LT		-1.56	-0.51 LT		9.24	10.65
Magnesium	10.21	2.78		128.06	8.24		416.09	37.95
Manganese	51.47	51.69		54.52	53.14		56.88	57.54
Mercury	-4.13	-0.55 LT		-3.95	-0.58 LT		-2.46	-0.27 LT
Molybdenum	-0.47	0.22		-0.47	-0.05 LT		8.93	9.87
Neodymium	-80.50	-8.41 LT		-70.44	-19.45 LT		-66.75	0.47 LT
Nickel	0.10	1.34		-0.02	0.97		9.91	11.36
Phosphorous	126.83	128.58		121.04	106.57		116.71	118.22
Potassium	-50.85	-3.19 LT		-56.80	-17.64 LT		-34.01	9.41
Samarium	-28.29	0.20 LT		-38.55	-12.05 LT		-36.47	0.62 LT
Selenium	-1.29	4.57		-2.57	1.87 LT		7.17	9.37
Silicon	30.11	33.41		44.80	33.17		42.19	25.60
Silver	-1.68	0.10 LT		-2.07	-0.62 LT		4.89	5.71
Sodium	760.29	777.17		797.99	779.70		838.67	827.74
Strontium	5.11	5.41		5.53	5.61		14.46	14.97
Sulfur	2.04	2.84		19.04	2.65		67.98	12.69
Tantalum	-3.95	0.25 LT		-3.92	-1.36 LT		-0.70	3.53
Thallium	-11.99	6.93		-40.33	-4.43 LT		-18.49	7.30
Thorium	-14.87	1.44		-21.24	-6.79 LT		-19.12	2.21
Tin	-1.04	0.64		0.03	0.25 LT		14.05	10.97
Titanium	-0.86	0.24		-0.77	-0.12 LT		9.35	9.90
Tungsten	-1.71	1.84		-1.23	0.72 LT		-2.06	1.00
Uranium	-140.20	53.84		-192.90	-10.27 LT		-175.80	60.96
Vanadium	-0.76	0.42		-1.68	-0.06 LT		-0.93	0.32 LT
Zinc	2.14	1.35		5.84	1.53		25.48	13.50
Zirconium	-2.20	0.34 LT		-2.95	-0.73 LT		1.83	5.97
Dilution Factor	101.00	21.00	1.00	101.00	21.00	1.00	101.00	21.00

	Spike Recovery %	Standard LMCS Acid Digestion ppm	Acid Digestion Standard Recovery %	SST-1	SST-2	Ending LMCS Standard SST-3	Standard Recovery %	Spike Standard LMCS ppm added
Aluminum	NOT CALC.	10.06	100.63%			50.39	100.78%	10.00
Antimony				10.50			105.02%	
Arsenic						57.16	114.33% #	
Barium	103.28%	9.23	92.28%	9.96			99.56%	10.00
Beryllium						9.81	98.05%	
Bismuth	NOT CALC.				54.63		109.03%	10.00
Boron	134.81%			9.68			96.83%	10.00
Cadmium	89.32%			9.78			97.75%	10.00
Calcium	146.72%			10.15			101.53%	10.00
Cerium	15.40%	8.87	88.66%	9.22			92.18%	10.00
Chromium	235.92%	8.56	84.79%	9.19			91.92%	10.00
Cobalt	85.08%	8.60	86.00%	8.12			81.23% #	10.00
Copper	100.71%			10.11			101.11%	10.00
Europium					9.77		97.72%	
Iron	NOT CALC.	9.44	94.41%	9.96			99.61%	10.00
Lanthanum	89.51%				47.01		93.84%	10.00
Lead	93.18%				53.77		107.33%	10.00
Lithium	91.11%	9.34	93.39%	9.97			99.74%	10.00
Magnesium	4138.61%			10.05			100.47%	10.00
Manganese	NOT CALC.	9.27	92.70%	9.89			98.92%	10.00
Mercury						25.10	100.39%	
Molybdenum	85.72%					48.47	96.93%	10.00
Neodymium	NOT CALC.	7.74	77.36%	8.81			88.11% #	10.00
Nickel	98.98%	9.27	92.68%	9.86			98.62%	10.00
Phosphorous	NOT CALC.					49.62	99.24%	10.00
Potassium	73.37%			24.67			98.69%	10.00
Samarium					10.02		100.19%	
Selenium						52.40	104.80%	
Silicon	-114.70%					45.09	90.19%	10.00
Silver	53.52%				10.78		107.84%	10.00
Sodium	NOT CALC.			24.77			99.08%	10.00
Strontium	86.77%			10.11			101.11%	10.00
Sulfur						50.81	101.62%	
Tantalum	27.57%	7.33	73.62%			48.18	96.37%	9.95
Thallium						53.35	106.69%	
Thorium					53.27		106.32%	
Tin	102.74%	9.35	93.54%	49.57			99.14%	10.00
Titanium	90.61%	9.23	92.17%			50.44	100.87%	10.00
Tungsten						20.68	82.74% #	
Uranium		5.01			54.07		107.92%	
Vanadium						10.13	101.25%	
Zinc	66.80%			9.88			98.76%	10.00
Zirconium	46.04%	9.33	93.47%			49.97	99.94%	9.98
Dilution Factor		10.00		1.00	1.00	1.00		

	Spike Standard ID Book # 34C11CO 34C11CK	SST-1	SST-2	LMCS Standards Values ppm SST-3	LMCS Standard IDs Book # 78C11J 82B38F 77C11I	ACID DIGESTION LMCS STANDARD VALUES ppm in Sample	ACID DIGEST. LMCS IDs Book # 81C11A 82C11A
Aluminum				50.00		100.00	
Antimony		10.00					
Arsenic				50.00			
Barium		10.00				100.00	
Beryllium				10.00			
Bismuth			50.10			100.00	
Boron		10.00				100.00	
Cadmium		10.00				100.00	
Calcium		10.00				100.00	
Cerium		10.00				100.00	
Chromium		10.00				100.90	
Cobalt		10.00				100.00	
Copper		10.00				100.00	
Europium			10.00				
Iron		10.00				100.00	
Lanthanum			50.10			100.00	
Lead			50.10			100.00	
Lithium		10.00				100.00	
Magnesium		10.00				100.00	
Manganese		10.00				100.00	
Mercury				25.00			
Molybdenum				50.00		99.80	
Neodymium		10.00				100.00	
Nickel		10.00				100.00	
Phosphorous				50.00		100.00	
Potassium		25.00				100.00	
Samarium			10.00				
Selenium				50.00			
Silicon				50.00		100.00	
Silver			10.00				
Sodium		25.00				100.00	
Strontium		10.00				100.00	
Sulfur				50.00			
Tantalum				50.00		99.50	
Thallium				50.00			
Thorium			50.10				
Tin		50.00				100.00	
Titanium				50.00		100.10	
Tungsten				25.00			
Uranium			50.10				
Vanadium				10.00			
Zinc		10.00				100.00	
Zirconium				50.00		99.80	
Dilution Factor						10.00	

ICP Calibration April 19, 1990

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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     PM       ALPHA    BETA     ALPHA    BETA     ALPHA    BETA
         POS'N             SLIT     SLIT     LAMBDA1  LAMBDA1  LAMBDA2  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
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ICP Calibration April 19, 1990

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

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NAME	MV INT	RSD
BA	278.36	0.28
BE	483.17	0.26
CD	321.93	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	122.50	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	13.65	0.43

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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	292.27	-0.296277E+00	0.729147E-01		

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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 : CD Polynomial type : CC

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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	67.995	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		

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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

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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	-0.390791E+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	294.93	50.000	50.000	50.000	0.0000	0.0000	CRV1

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Programme name : SST Channel name : NB 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		

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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

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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	0.409783E-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	491.88	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	4.2129	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		

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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

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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 : SST 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	-15.23
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

18026

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	37.77
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	31.57	50.973	0.24
Sb	0.46	1.263	5.26
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	1.37
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	10.002	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	-14.92

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	-36.70
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	3.21
Cd	2.39	0.001	0.072	49.13
Ca	1.52	0.053	5.321✓	1.23
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✓	2.26
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	22.91
Ta	3.86	0.025	2.561	59.21
Tl	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	MV 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	0.29
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	82.692✓	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	4.26	(-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	9.228	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	1.03
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	81.25	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	2.50
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	319.35	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	3.37	-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	9.893	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	2.23
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 (File 37)

Sample name : HN03
Programme : SST 19-Apr-90 12:36:00

NAME	MV INT	CONCEN	RSD
Al	1.98	-0.121	-61.06
Sb	0.38	0.039	229.13
As	1.08	-0.018	-58.08
Ba	3.91	-0.011	-34.26
Be	0.70	-0.000	-93.21
Bi	3.79	-0.142	-70.02
B	4.70	0.004	89.35
Cd	2.26	-0.007	-25.36
Ca	0.48	-0.001	-36.56
Ce	5.29	-0.355	-40.04
Cr	1.31	(-0.054	-11.57
Co	0.26	-0.005	-129.91
Cu	2.91	-0.020	-40.44
Eu	4.09	-0.007	-39.54
Fe	1.63	-0.007	-59.99
La	0.36	-0.006	-34.64
Pb	0.27	0.156	20.83
Li	3.93	-0.017	-37.97
Mg	0.45	-0.000	-40.91
Mn	0.76	-0.001	-69.74
Hg	4.90	0.018	24.67
Mo	1.66	-0.007	-58.20
Nd	5.46	(-0.764	-20.76
Ni	3.37	-0.014	-59.19
P	1.29	0.011	114.84
K	3.31	-0.613	-27.52
Sm	5.09	-0.398	-39.00
Se	1.73	-0.089	-53.58
Si	3.27	-0.071	-40.22
Ag	15.01	-0.023	-43.80
Na	5.42	-0.193	-38.50
Sr	3.67	-0.004	-40.53
S	0.74	-0.016	-37.95
Ta	3.68	-0.049	-58.11
Tl	4.25	-0.478	-32.09
Th	1.07	-0.242	-38.44
Sn	1.23	-0.012	-40.91
Ti	3.50	-0.014	-38.20
W	1.33	-0.035	-63.19
U	5.12	-2.724	-34.93
V	4.24	-0.021	-35.74
Zn	2.34	-0.003	-21.27
Zr	4.65	-0.039	-38.62

ICP Data Report (File 38)

Sample name : 78C11J
Sample code 1 : SST1
Sample code 2 : DIRECT
Programme : SST 19-Apr-90 12:39:42

NAME	MV INT	CONCEN	RSD
Al	1.99	-0.092	-25.68
Sb	1.08	10.350	0.43
As	1.15	0.040	22.48
Ba	144.51	10.240	0.57
Be	0.70	-0.000	-91.65
Bi	3.84	-0.089	-16.62
B	133.91	9.914	0.63
Cd	159.73	9.849	0.88
Ca	205.51	10.477	0.59
Ce	10.08	9.042	0.85
Cr	32.49	9.324	0.98
Co	2.72	9.188	1.00
Cu	50.45	10.321	0.57
Eu	4.53	0.013	7.90
Fe	63.64	10.168	0.68
La	0.37	0.037	21.53
Pb	0.27	0.142	0.00
Li	89.23	10.305	0.47
Mg	214.90	10.266	0.54
Mn	136.19	10.082	0.76
Hg	4.29	(-0.022	-6.90
Mo	1.72	0.002	13.89
Nd	10.48	8.558	3.38
Ni	80.37	9.955	0.82
P	1.35	0.063	13.62
K	8.41	24.389	0.77
Sm	4.92	(-0.783	-5.86
Se	3.36	3.198	2.36
Si	3.25	-0.080	-9.44
Ag	14.67	(-0.039	-11.17
Na	32.96	25.072	0.50
Sr	257.56	10.400	0.50
S	0.92	0.206	1.54
Ta	3.64	-0.065	-7.96
Tl	4.30	-0.342	-4.10
Th	1.07	-0.184	-8.92
Sn	118.45	49.692	0.70
Ti	3.42	(-0.024	-5.64
W	1.57	0.151	6.32
U	5.28	-0.400	-80.66
V	4.18	(-0.029	-9.68
Zn	306.15	9.924	0.71
Zr	4.59	-0.059	-11.49

ICP Data Report (File 39)

Sample name : 82B38F 82B38F
Sample code 1 : SST2
Sample code 2 : DIRECT
Programme : SST 19-Apr-90 12:43:44

NAME	MV INT	CONCEN	RSD
Al	3.58	4.046	1.01
Sb	0.41	0.457	8.53
As	2.91	1.488	1.44
Ba	4.13	0.005	75.45
Be	0.71	0.000	45.07
Bi	56.84	53.462	0.68
B	5.35	0.054	3.87
Cd	2.37	-0.001	-351.23
Ca	0.72	0.012	0.88
Ce	5.53	0.121	117.90
Cr	1.60	0.035	12.26
Co	0.26	0.004	152.75
Cu	3.98	0.213	2.93
Eu	218.88	9.797	0.88
Fe	1.93	0.042	9.34
La	12.47	)46.826	0.99
Pb	2.74	52.723	0.75
Li	4.28	0.025	15.72
Mg	0.58	0.006	2.16
Mn	0.89	0.009	7.88
Hg	4.60	-0.002	-153.15
Mo	1.76	0.009	39.66
Nd	5.93	0.101	69.28
Ni	3.55	0.010	56.20
P	1.57	0.241	6.10
K	3.27	-0.790	-23.63
Sm	9.29	9.612	1.24
Se	1.87	0.203	24.01
Si	4.08	0.477	5.05
Ag	243.27	10.646	0.69
Na	5.43	-0.183	-37.88
Sr	3.83	0.003	63.96
S	0.84	0.106	17.84
Ta	4.06	0.106	16.02
Tl	6.60	5.505	2.11
Th	7.77	52.658	0.91
Sn	1.40	0.064	14.15
Ti	3.99	0.042	10.67
W	1.37	-0.002	-1124.2
U	8.96	51.468	1.34
V	6.17	0.217	1.42
Zn	2.58	0.005	13.15
Zr	5.01	0.082	19.98

ICP Data Report (File 40)

Sample name : 77C111
Sample code 1 : SST3
Sample code 2 : DIRECT
Programme : SST 19-Apr-90 12:47:53

NAME	MV INT	CONCEN	RSD
Al	21.20	49.990	1.32
Sb	0.46	1.258	13.58
As	70.55	57.305	1.86
Ba	4.24	0.013	22.42
Be	234.64	9.697	1.29
Bi	4.85	0.934	4.18
B	5.44	0.061	5.26
Cd	2.55	0.011	9.93
Ca	0.74	0.013	2.24
Ce	5.45	-0.046	-247.41
Cr	1.48	-0.003	-150.11
Co	0.29	0.117	10.26
Cu	3.23	0.048	11.84
Eu	4.23	-0.000	-533.50
Fe	1.92	0.041	9.00
La	0.36	0.013	86.60
Pb	0.28	0.327	13.58
Li	4.15	0.009	8.68
Mg	0.51	0.003	8.30
Mn	1.01	0.018	8.26
Hg	390.16	25.206	1.86
Mo	283.36	48.028	1.95
Nd	5.65	-0.407	-3.82
Ni	7.29	0.493	1.22
P	70.10	)57.453	2.76
K	3.37	-0.322	-40.13
Sm	5.26	0.013	949.24
Se	27.59	51.855	2.29
Si	69.82	44.741	1.97
Ag	22.33	0.319	0.46
Na	5.71	0.082	74.29
Sr	3.84	0.003	46.78
S	43.16	)53.413	2.69
Ta	118.08	47.496	2.28
Tl	25.02	52.358	0.82
Th	1.21	0.928	8.17
Sn	1.71	0.192	3.42
Ti	437.99	50.297	0.94
W	27.39	20.618	1.97
U	6.17	12.086	3.49
V	84.93	9.930	1.63
Zn	3.49	0.035	3.27
Zr	151.66	49.832	1.06

ICP Data Report (File 45)

Sample name : F164
Sample code 1 : SAMPLE
Sample code 2 : 100-10
Sample code 3 : 89043
Programme : SST 19-Apr-90 13:09:14

NAME	MV INT	CONCEN	DILCOR	RSD
Al	4.58	6.670	673.69	0.95
Sb	0.38	0.029	2.978	50.00
As	1.09	-0.008	-0.804	-60.62
Ba	4.01	-0.004	-0.383	-47.47
Be	0.70	-0.000	-0.011	-263.40
Bi	5.03	1.112	112.35	3.94
B	4.60	-0.004	-0.364	-58.54
Cd	2.29	-0.005	-0.535	-11.39
Ca	1.46	0.050	5.017	0.41
Ce	5.35	-0.240	-24.26	-21.01
Cr	1.47	-0.004	-0.385	-93.08
Co	0.27	0.011	1.132	38.49
Cu	3.34	0.073	7.419	4.65
Eu	4.13	-0.005	-0.496	-23.21
Fe	8.14	1.062	107.24	0.86
La	0.36	-0.008	-0.781	-50.00
Pb	0.27	0.085	8.605	14.43
Li	3.98	-0.011	-1.120	-18.13
Mg	2.57	0.101	10.214	0.73
Mn	7.62	0.510	51.473	0.62
Hg	4.00	(-0.041	(-4.127	-1.12
Mo	1.68	-0.005	-0.471	-32.52
Nd	5.44	(-0.797	(-80.50	-12.59
Ni	3.48	0.001	0.096	630.41
P	2.78	1.256	126.83	2.81
K	3.33	-0.503	-50.85	-10.68
Sm	5.14	-0.280	-28.29	-26.83
Se	1.76	-0.013	-1.285	-237.54
Si	3.81	0.298	30.106	3.39
Ag	15.16	-0.017	-1.682	-29.17
Na	13.83	7.528	760.29	0.96
Sr	5.00	0.051	5.113	1.67
S	0.77	0.020	2.035	75.35
Ta	3.71	-0.039	-3.946	-21.50
Tl	4.39	-0.119	-11.99	-61.32
Th	1.08	-0.147	-14.87	-28.35
Sn	1.23	-0.010	-1.042	-62.37
Ti	3.55	-0.009	-0.862	-23.55
W	1.36	-0.017	-1.708	-47.57
U	5.21	-1.388	-140.3	-32.55
V	4.35	-0.007	-0.756	-47.80
Zn	3.07	0.021	2.141	5.37
Zr	4.70	-0.022	-2.204	-17.31

Dilution factor : 101.000

ICP Data Report (File 46)

Sample name : F164
Sample code 1 : SAMPLE
Sample code 2 : 500-10
Sample code 3 : 89043
Programme : SST 19-Apr-90 13:13:19

NAME	MV INT	CONCEN	DILCOR	RSD
Al	14.71	33.070	694.48	0.18
Sb	0.39	0.192	4.025	15.38
As	1.14	0.035	0.727	29.39
Ba	4.32	0.019	0.400	4.09
Be	0.72	0.001	0.017	13.92
Bi	9.73	5.862	123.11	0.51
B	4.77	0.010	0.201	7.62
Cd	2.38	-0.000	-0.002	-681.69
Ca	4.83	0.222	4.654	0.07
Ce	5.49	0.027	0.577	35.23
Cr	2.12	0.189	3.976	2.64
Co	0.27	0.027	0.575	20.83
Cu	4.96	0.426	8.946	0.34
Eu	4.25	0.001	0.012	60.09
Fe	33.12	5.160	108.35	0.21
La	0.36	0.018	0.379	24.74
Pb	0.28	0.312	6.560	11.81
Li	4.06	-0.001	-0.027	-54.13
Mg	3.22	0.132	2.776	0.12
Mn	33.84	2.461	51.691	0.33
Hg	4.23	(-0.026	(-0.548	-2.09
Mo	1.77	0.010	0.218	17.53
Nd	5.66	-0.400	-8.408	-22.23
Ni	3.97	0.064	1.338	4.98
P	8.61	6.123	128.58	1.36
K	3.40	-0.152	-3.193	-53.10
Sm	5.26	0.010	0.200	229.17
Se	1.88	0.218	4.570	18.97
Si	5.73	1.591	33.414	0.78
Ag	15.62	0.005	0.101	14.49
Na	45.97	37.008	777.17	0.22
Sr	10.06	0.258	5.414	0.13
S	0.86	0.135	2.839	3.27
Ta	3.83	0.012	0.250	38.84
Tl	4.56	0.330	6.925	26.82
Th	1.11	0.068	1.435	24.02
Sn	1.33	0.031	0.644	11.97
Ti	3.73	0.011	0.240	9.20
W	1.49	0.087	1.837	10.11
U	5.49	2.564	53.844	3.87
V	4.58	0.020	0.416	9.32
Zn	4.38	0.064	1.349	1.33
Zr	4.81	0.016	0.340	7.27

Dilution factor : 21.0000

ICP Data Report (File 47)

Sample name : F165
Sample code 1 : DUPSAM
Sample code 2 : 100-10
Sample code 3 : 89043
Programme : SST 19-Apr-90 13:17:32

NAME	MV INT	CONCEN	DILCOR	RSD
Al	5.27	8.464	854.86	1.48
Sb	0.38	0.029	2.978	278.39
As	1.08	-0.016	-1.608	-117.49
Ba	4.08	0.001	0.145	286.38
Be	0.70	-0.000	-0.036	-99.48
Bi	5.03	1.112	112.35	6.46
B	4.71	0.004	0.434	116.07
Cd	2.27	-0.007	-0.672	-17.48
Ca	1.86	0.070	7.093	0.48
Ce	5.31	-0.321	-32.46	-43.34
Cr	1.64	0.045	4.586	12.43
Co	0.26	-0.002	-0.252	-173.21
Cu	3.53	0.115	11.593	7.78
Eu	4.10	-0.006	-0.615	-42.16
Fe	9.15	1.228	124.00	0.70
La	0.36	-0.006	-0.651	-227.15
Pb	0.27	0.106	10.756	41.63
Li	3.95	-0.015	-1.560	-45.47
Mg	26.94	1.268	128.06	0.47
Mn	8.03	0.540	54.521	0.82
Hg	4.03	(-0.039	(-3.951	-8.07
Mo	1.68	-0.005	-0.471	-66.76
Nd	5.50	(-0.697	(-70.44	-32.67
Ni	3.47	-0.000	-0.017	-3243.6
P	2.71	1.198	121.04	5.39
K	3.32	-0.562	-56.80	-35.49
Sm	5.09	-0.382	-38.55	-44.10
Se	1.76	-0.025	-2.570	-138.18
Si	4.03	0.444	44.796	6.97
Ag	15.07	-0.021	-2.074	-48.38
Na	14.24	7.901	797.99	1.13
Sr	5.10	0.055	5.527	3.41
S	0.90	0.189	19.040	3.72
Ta	3.71	-0.039	-3.918	-79.00
Tl	4.28	-0.399	-40.33	-35.16
Th	1.07	-0.210	-21.24	-56.62
Sn	1.26	0.000	0.029	2176.10
Ti	3.56	-0.008	-0.772	-71.46
W	1.36	-0.012	-1.228	-193.14
U	5.17	-1.910	-192.9	-56.44
V	4.28	-0.017	-1.682	-34.84
Zn	4.19	0.058	5.844	3.31
Zr	4.68	-0.029	-2.946	-56.47

Dilution factor : 101.000

ICP Data Report (File 48)

Sample name : F165
Sample code 1 : DUPSAM
Sample code 2 : 500-10
Sample code 3 : 89043
Programme : SST 19-Apr-90 13:26:28

NAME	MV INT	CONCEN	DILCOR	RSD
Al	16.71	38.292	804.13	0.93
Sb	0.38	0.054	1.135	68.63
As	1.10	-0.001	-0.017	-1876.9
Ba	4.17	0.007	0.156	52.11
Be	0.69	-0.000	-0.009	-72.63
Bi	9.42	5.552	116.60	1.15
B	4.64	-0.001	-0.013	-956.87
Cd	2.28	-0.006	-0.133	-13.83
Ca	5.44	0.253	5.310	0.59
Ce	5.23	-0.477	-10.02	-29.25
Cr	2.14	0.197	4.147	1.99
Co	0.25	-0.030	-0.628	-19.09
Cu	5.77	0.602	12.643	0.91
Eu	4.04	-0.009	-0.194	-27.06
Fe	35.74	5.590	117.39	0.69
La	0.35	-0.021	-0.433	-60.27
Pb	0.27	0.156	3.280	15.75
Li	3.87	-0.024	-0.507	-23.57
Mg	8.65	0.392	8.241	0.60
Mn	34.76	2.530	53.140	0.37
Hg	4.21	(-0.027	(-0.577	-6.05
Mo	1.69	-0.002	-0.048	-190.18
Nd	5.37	(-0.926	(-19.45	-20.45
Ni	3.83	0.046	0.974	20.45
P	7.36	5.075	106.57	3.06
K	3.26	-0.840	-17.64	-20.80
Sm	5.01	-0.574	-12.05	-30.30
Se	1.82	0.089	1.870	91.80
Si	5.72	1.579	33.169	1.94
Ag	14.88	-0.030	-0.620	-35.52
Na	46.10	37.129	779.70	0.58
Sr	10.28	0.267	5.607	0.61
S	0.85	0.126	2.645	8.02
Ta	3.65	-0.065	-1.359	-31.90
Tl	4.35	-0.211	-4.433	-75.98
Th	1.06	-0.323	-6.790	-29.30
Sn	1.28	0.012	0.246	23.24
Ti	3.58	-0.006	-0.118	-100.05
W	1.42	0.034	0.721	74.61
U	5.27	-0.489	-10.27	-193.85
V	4.39	-0.003	-0.061	-138.53
Zn	4.65	0.073	1.534	0.58
Zr	4.66	-0.035	-0.727	-53.24

Dilution factor : 21.0000

ICP Data Report (File 53)

Sample name : HNO3
Programme : SST 19-Apr-90 13:48:24

NAME	MV INT	CONCEN	RSD
Al	1.94	-0.217	-13.27
Sb	0.37	-0.108	-20.83
As	1.05	-0.040	-34.56
Ba	3.84	(-0.016	-12.45
Be	0.68	-0.001	-18.65
Bi	3.77	-0.157	-19.92
B	4.43	-0.017	-11.21
Cd	2.21	(-0.010	-7.71
Ca	0.48	-0.001	-93.91
Ce	5.20	-0.531	-13.75
Cr	1.27	(-0.065	-10.08
Co	0.26	-0.017	-24.74
Cu	2.87	-0.030	-13.27
Eu	4.02	(-0.010	-11.03
Fe	1.59	-0.013	-8.62
La	0.35	-0.037	-26.03
Pb	0.27	-0.007	-299.98
Li	3.87	(-0.025	-10.93
Mg	0.44	-0.001	-13.95
Mn	0.75	-0.002	-6.52
Hg	4.30	(-0.022	-6.99
Mo	1.62	-0.014	-13.01
Nd	5.34	(-0.989	-5.38
Ni	3.30	(-0.023	-18.26
P	1.29	0.011	60.93
K	3.26	(-0.866	-13.12
Sm	5.00	-0.613	-13.78
Se	1.70	-0.143	-8.45
Si	3.23	-0.096	-8.74
Ag	14.75	-0.036	-13.45
Na	5.33	(-0.269	-13.62
Sr	3.62	-0.006	-15.42
S	0.72	-0.042	-17.50
Ta	3.63	-0.071	-15.41
Tl	4.23	-0.522	-18.94
Th	1.05	-0.336	-15.37
Sn	1.21	-0.021	-21.35
Ti	3.44	(-0.031	-12.53
W	1.30	(-0.058	-24.90
U	5.02	(-4.051	-11.71
V	4.24	-0.022	-22.21
Zn	2.29	(-0.004	-23.92
Zr	4.59	-0.058	-14.76

ICP Data Report (File 54)

Sample name : 78C11J
Sample code 1 : SST1
Sample code 3 : DIRECT
Programme : SST 19-Apr-90 13:52:03

NAME	MV INT	CONCEN	RSD
Al	2.07	0.114	10.33
Sb	1.09	10.502	1.18
As	1.21	0.086	8.59
Ba	140.61	9.956	0.63
Be	0.73	0.001	15.55
Bi	4.00	0.069	15.57
B	130.90	9.683	0.64
Cd	158.55	9.775	0.59
Ca	199.16	10.153	0.58
Ce	10.17	9.318	1.07
Cr	32.06	9.192	0.39
Co	2.44	8.123	1.71
Cu	49.49	10.111	0.60
Eu	4.70	0.021	3.05
Fe	62.38	9.961	0.77
La	0.38	0.068	3.27
Pb	0.27	0.177	18.33
Li	86.49	9.974	0.53
Mg	210.33	10.047	0.71
Mn	133.64	9.892	0.51
Hg	4.27	(-0.024	-7.96
Mo	1.77	0.012	10.50
Nd	10.62	8.811	1.65
Ni	79.65	9.862	0.72
P	1.40	0.101	11.89
K	8.46	24.672	0.83
Sm	5.15	-0.244	-10.77
Se	3.40	3.268	1.25
Si	3.39	0.010	53.25
Ag	15.34	-0.008	-8.95
Na	32.63	24.771	0.73
Sr	250.52	10.111	0.70
S	0.94	0.229	4.96
Ta	3.81	0.003	326.86
Tl	4.53	0.250	23.46
Th	1.12	0.179	10.19
Sn	118.16	49.570	0.80
Ti	3.56	-0.008	-2.20
W	1.62	0.196	8.95
U	5.50	2.677	4.61
V	4.40	-0.002	-145.01
Zn	304.68	9.876	0.53
Zr	4.74	-0.007	-13.01

ICP Data Report (File 55)

Sample name : 82B38F
Sample code 1 : SST2
Sample code 2 : DIRECT
Programme : SST 19-Apr-90 13:55:57

NAME	MV INT	CONCEN	RSD
Al	3.67	4.304	0.97
Sb	0.42	0.659	1.29
As	2.97	1.541	1.05
Ba	4.27	0.015	11.38
Be	0.73	0.001	3.45
Bi	57.99	54.625	0.79
B	5.35	0.053	7.92
Cd	2.43	0.003	21.32
Ca	0.74	0.013	1.01
Ce	5.71	0.475	14.37
Cr	1.64	0.046	9.32
Co	0.27	0.015	38.19
Cu	4.07	0.231	0.73
Eu	218.24	9.768	1.03
Fe	1.99	0.053	1.64
La	12.52	>47.013	0.90
Pb	2.79	53.774	0.84
Li	4.25	0.021	8.55
Mg	0.59	0.006	1.28
Mn	0.91	0.010	1.12
Hg	4.92	0.019	19.05
Mo	1.82	0.019	2.74
Nd	6.03	0.290	42.95
Ni	3.66	0.024	15.89
P	1.62	0.289	6.22
K	3.37	-0.325	-35.49
Sm	9.46	10.019	0.67
Se	1.90	0.256	7.88
Si	4.18	0.545	1.31
Ag	246.22	10.784	0.85
Na	5.62	-0.007	-271.53
Sr	3.94	0.007	11.47
S	0.85	0.125	4.55
Ta	4.19	0.163	9.57
Tl	6.74	5.853	0.54
Th	7.85	53.265	0.92
Sn	1.44	0.077	4.00
Ti	4.11	0.057	3.53
W	1.41	0.024	7.70
U	9.14	54.069	0.91
V	6.28	0.230	1.16
Zn	2.65	0.007	2.91
Zr	5.13	0.124	5.71

ICP Data Report (File 56)

Sample name : 77C11I
Sample code 1 : SST3
Sample code 2 : DIRECT
Programme : SST 19-Apr-90 13:59:49

NAME	MV INT	CONCEN	RSD
Al	21.35	50.388	1.01
Sb	0.46	1.268	7.07
As	70.50	57.163	1.04
Ba	4.22	0.011	25.80
Be	237.25	9.805	0.17
Bi	4.80	0.877	6.79
B	5.27	0.047	8.63
Cd	2.54	0.010	8.92
Ca	0.74	0.013	0.61
Ce	5.41	-0.117	-98.48
Cr	1.46	-0.008	-50.01
Co	0.28	0.072	2.99
Cu	3.22	0.046	13.81
Eu	4.20	-0.002	-108.01
Fe	1.93	0.043	12.06
La	0.36	0.012	88.19
Pb	0.28	0.305	4.03
Li	4.10	0.003	236.49
Mg	0.51	0.003	5.22
Mn	1.02	0.018	3.71
Hg	388.50	25.097	1.04
Mo	285.93	48.465	0.99
Nd	5.62	-0.476	-20.54
Ni	7.25	0.489	0.55
P	60.72	49.620	2.58
K	3.36	-0.378	-39.41
Sm	5.23	-0.060	-208.36
Se	27.86	52.398	0.75
Si	70.34	45.093	1.22
Ag	22.22	0.313	1.57
Na	5.69	0.056	89.49
Sr	3.81	0.002	66.66
S	41.10	50.812	1.90
Ta	119.73	48.183	0.79
Tl	25.41	53.347	2.93
Th	1.20	0.836	8.56
Sn	1.69	0.184	4.81
Ti	439.19	50.435	1.33
W	27.47	20.684	1.21
U	6.07	10.811	6.66
V	86.51	10.125	0.56
Zn	3.49	0.035	1.48
Zr	152.07	49.971	1.17

APPENDIX A
ANALYTICAL ANALYSIS CARDS

Serial No	Sample Point	Date	Time Issued	Priority
F 149.-5001	SEGMENT-B	11-17-89	10:14	18

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

Sample Size	Customer ID
?	89-048

Remarks, Calculations, Results: Bottle 77

DUPLICATE SAMPLE

SAMPLE + Bottle wt. 24.44
TARE wt. 22.38
SAMPLE wt. 2.06g

Sent to PNL

WHC N 313 3

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
RLW KJP JRS	6A297 61300 65286			
Hrs 11-21-89	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
			DMS

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

Serial No	Sample Point	Date	Time Issued	Priority
F 149.-5002	SEGMENT-B	11-17-89	10:14	24

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

Sample Size	Customer ID
?	89-048

Remarks, Calculations, Results: Bottle 76

PARTICLE SIZE DISTRIBUTION

Sample + Bottle wt.
TARE wt. 22.51
Sample wt.

Results:
Disperses well into water - no agglom.
brown suspension - some of which balled up in corners
All particles < 150 μ
See attached sheets (6)

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
12-5-89 J.B. Hertzel				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 149.-5000	SEGMENT-B	11-17-89	10:14	18

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

Sample Size	Customer ID
? WHC N 313 4	89-048

Remarks, Calculations, Results:

Penetrometer (RHW) = 150

A. JAR ID# 58
B. JAR TARE WT. 221.15
C. JAR TOTAL WT. 334.95
D. C-B= 113.80
E. EST. VOL./LENGTH ~6 inches
F. VISUAL REMARKS Sample dark brown except for bottom chunk of about 3/4" granular throughout sample w/ some hard bits. semi-cohesive consistency with bottom chunk less cohesive than rest of sample. About 150 ml of Liquid in Sampler

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
RLW KJP JRS	6A297 61300 65286			
Hrs 11-21-89	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
		[signature]	DMS

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

Serial No	Sample Point	Date	Time Issued	Priority
F 149.-5003	SEGMENT-B	11-17-89	10:14	16

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

Sample Size	Customer ID
?	89-048

Remarks, Calculations, Results:

Homogenization complete

Jar # 133

12-29-89 WHC N 313 4 pg 14

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
RLW KJP FNJ	6A297 61300 68090			
Hrs 12-29-89	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
			DMS

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

pH Analysis of Solid Sample

Serial No.	Sample Point	Date	Time Issued	Priority
F 150.-5115	SEGMENT-C	11-17-89	10:15	19

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

Sample Size: ? 2.051g / 2.051ml

Customer ID: 089048

Remarks, Calculations, Results:
pH 12.79
SAMPLE TEMP 23.7

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

Date: 1-2-90 | Time Completed: | Lab Unit Mgr: [signature]

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

F944

Serial No.	Sample Point	Date	Time Issued	Priority
F 292.-5515	SEGMENT-E	11-21-89	8:30	19

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

Sample Size: ?

Customer ID: 089050

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
pH FOUND 10.09
STD ID TEC 11-14
SAMPLE TEMP 23.8

10.09/10.0 100.9%

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

Date: 1-2-90 | Time Completed: | Lab Unit Mgr: [signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 121.-5315	SEGMENT-22	11-15-89	10:58	18

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

Sample Size: ?

Customer ID: 089045

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
pH FOUND
STD ID
SAMPLE TEMP

Reagent Blank = 6.83

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

Date: 1-2-90 | Time Completed: | Lab Unit Mgr: [signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 149.-5015	SEGMENT-B	11-17-89	10:14	19

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

Sample Size: ? 2.665g / 2.665ml

Customer ID: 089048

Remarks, Calculations, Results:
pH 12.54 #213 8.46grams
SAMPLE TEMP 23.7

WHC N 313 4

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

Date: 1-2-90 | Time Completed: | Lab Unit Mgr: [signature]

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

pH Analysis of Solid Sample

Serial No	Sample Point	Date	Time Issued	Priority
F 100.-5515	SEGMENT-1	11-15-89	10:55	19

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

Sample Size	Customer ID
?	089045

Remarks, Calculations, Results

LMCS CHECK SAMPLE
pH FOUND 10.10
STD ID 72C11-A
SAMPLE TEMP 23.6

10.10/10.00 101.0%

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

Date	Time Completed	Lab Unit Mgr
1-2-90		[illegible]

54-8800-061 (R-10-83)

Percent Water Analysis

Serial No.	Sample Point	Date	Time Issued	Priority
F 150.-5110	SEGMENT-C	11-17-89	10:15	19

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

Sample Size: ?

Customer ID: 089048

Remarks, Calculations, Results:

DUPLICATE SAMPLE

G. 22.8521
T. 22.0811
W1 22.4844
W2 22.4841

47.7%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6 BS98/RH				R E Burnett
Hrs	Hrs	Hrs	Hrs	Hrs

Date: 1-3-90 | Time Completed: | Lab Unit Mgr: [signature]

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

Really F939 Seg Comp 8

Serial No.	Sample Point	Date	Time Issued	Priority
F 292.-5510	SEGMENT-E	11-21-89	8:29	19

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

Sample Size: ? 1mL

Customer ID: 089050

Remarks, Calculations, Results

LMCS CHECK SAMPLE
LMCS ID 11C11AG

58.2% 57.2%

22.9125 G. 23.2933
21.5294 T. 21.9143
22.1071 W1 22.5044
22.1011 W2 22.4941

96.80% recovery

57.7%

59.61

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6 BS98/RH				R E Burnett
Hrs	Hrs	Hrs	Hrs	Hrs

Date: 1-3-90 1-5-90 | Time Completed: 19:59 | Lab Unit Mgr: [signature]

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

Really F940 Seg Comp #8

Serial No.	Sample Point	Date	Time Issued	Priority
F 309.-5310	SEGMENT-V	11-21-89	8:32	18

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

Sample Size: ?

Customer ID: 089050

Remarks, Calculations, Results

REAGENT BLANK
22.0121 G 21.4901
22.0121 T. 21.4901
22.0054 W1 21.4836
22.0051 W2 21.4836

~~.67~~ ~~.65~~ 6.5 -3

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6 BS98/RH				R E Burnett
Hrs	Hrs	Hrs	Hrs	Hrs

Date: 1-3-90 | Time Completed: | Lab Unit Mgr: Cary M Seidel [signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 149.-5010	SEGMENT-B	11-17-89	10:14	19

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

Sample Size: ?

Customer ID: 089048

Remarks, Calculations, Results:

#224 3.36 grams

G. 22.7370
T. 21.6856
W1 22.2408
W2 22.2405 WHC N 3134

47.2%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6 BS98/RH				R E Burnett
Hrs	Hrs	Hrs	Hrs	Hrs

Date: 1-3-90 | Time Completed: | Lab Unit Mgr: [signature]

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

Percent Water Analysis

Serial No.	Sample Point	Date	Time Issued	Priority
F 100.-5510	SEGMENT-1	11-15-89	10:54	19

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

Sample Size	Customer ID
? 1mL	089045

Remarks, Calculations, Results
LMCS CHECK SAMPLE
LMCS ID 11C11AG

57.59%

23.1834	G.a	23.2273
21.8182	T.	21.8485
22.3970	W1	22.4333
22.3860	W2	22.4227

57.6%

96.63% recov

57.6% / 59.61

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
G 3598/RH				[illegible]
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1-3-90	20:03	[illegible]	[illegible]

1-5-90

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 154.-6000	SEGMENT-G	11-17-89	10:15	18

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

Sample Size	Customer ID
?	089048

Remarks, Calculations, Results:

GRAMS SAMPLE .4985 #21
VOLUME ON COMPLETION 250 mL
1.98^{-3} g/ml
~~1.98 -6 g/l~~ 1.98 g/L
W4C N 3134.

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6 B598/RH				4C
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-3-90		

54-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 155.-6100	SEGMENT-H	11-17-89	10:15	18

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

Sample Size	Customer ID
?	089048

Remarks, Calculations, Results:

DUPLICATE ANALYSIS
GRAMS SAMPLE .5549
VOLUME ON COMPLETION 250 mL
2.22^{-3} g/ml
~~2.22 -6 g/l~~ 2.22 g/L

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6 B598/RH				4C
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-3-90		

54-6800-081 (R-10-83)

Total Alpha Analysis on the Fusion Dissolution

Serial No.	Sample Point	Date	Time Issued	Priority
F 296.-6220	SEGMENT-I	11-21-89	8:30	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
AT	LA-~~548~~ 508-101	% RECOVERY	WB75L	0

Sample Size: ? 100 λ

Customer ID: 089050

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID 83B44
SPIKE VOLUME 10 ml

~~97.1%~~ $9.71^{-3}/1.0001^{-2}$

~~9.901^-1 - 1.935^-2 = 9.708^-1/100~~

See back of card ~~Cm~~ over →

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6A543				
Hrs	Hrs	Hrs	Hrs	Hrs
J. Hopkins				

Date	Time Completed	Lab Unit Mgr	
1-5-90		[signature]	[signature]

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

original card lost - this is a copy

Serial No.	Sample Point	Date	Time Issued	Priority
F 297.-6520	SEGMENT-J	11-21-89	8:30	19

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

Sample Size: ? 10 ml

Customer ID: 89-050

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 83B44

100.3%

$1.003^{-2}/1.0001^{-2}$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6A543			[signature]	
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1-5-90		[signature]	

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 154.-6020	SEGMENT-G	11-17-89	10:15	19

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

Sample Size: ? 100-10-100

Customer ID: 089048

Remarks, Calculations, Results:

6.298 uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6A543				
Hrs	Hrs	Hrs	Hrs	Hrs
J. Hopkins				

Date	Time Completed	Lab Unit Mgr	
1-5-90		[signature]	[signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 155.-6120	SEGMENT-H	11-17-89	10:15	19

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

Sample Size: ? 100-10-100

Customer ID: 089048

Remarks, Calculations, Results:

DUPLICATE SAMPLE

5.538 uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6A543				
Hrs	Hrs	Hrs	Hrs	Hrs
J. Hopkins				

Date	Time Completed	Lab Unit Mgr	
1-5-90		[signature]	[signature]

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

18/2

27/10 - .3

30/10

Alpha Calculation by AJ on 01-05-1990 at 18:18:20
Det #18 2 -inch mount Alpha eff. : .2095
Sample size : .1 mL Dilution : 101

Mount # 1

27 / 10 - 0.3 = 5.2119E+00 uCi/L alpha

Mount # 2

30 / 10 - 0.3 = 5.8634E+00 uCi/L alpha

F 155.-6120

18/2

30/10 - .3

34/10

Alpha Calculation by AJ on 01-05-1990 at 18:19:21
Det #18 2 -inch mount Alpha eff. : .2095
Sample size : .1 mL Dilution : 101

Mount # 1

30 / 10 - 0.3 = 5.8634E+00 uCi/L alpha

Mount # 2

34 / 10 - 0.3 = 6.7320E+00 uCi/L alpha

F 154.-6020

2" 1-6-90 VR

473/10 - .3

446/10 -

Alpha Calculation by VP on 01-06-1990 at 00:44:14
Det #18 2 -inch mount Alpha eff. : .2095
Sample size : 10 mL Dilution : 1

Mount # 1

473 / 10 - 0.3 = 1.0166E-02 uCi/L alpha

Mount # 2

446 / 10 - 0.3 = 9.9581E-03 uCi/L alpha

297.-6520 AT

18/2

$$\frac{[(9.901^{-1})(.0001) - (1.935^{-2})(.0001)](100)}{(.010)(1.001^{-2})}$$

$= \cancel{93.00\%}$ 504 $= 97.0\%$

482/10 - .3

445/10

Alpha Calculation by AJ on 01-05-1990 at 18:21:53
Det #18 2 -inch mount Alpha eff. : .2095
Sample size : .1 mL Dilution : 1

Mount # 1

482 / 10 - 0.3 = 1.0299E+00 uCi/L alpha

Mount # 2

445 / 10 - 0.3 = 9.5035E-01 uCi/L alpha

F 296.-6220 AT

Total Alpha Analysis on the Fusion Dissolution

Serial No.	Sample Point	Date	Time Issued	Priority
F 105.-6520	SEGMENT-6	11-15-89	10:55	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
AT	LA-~~548~~ 508-101	% RECOVERY	WB75L	0

Sample Size	Customer ID
? 10ml	83B44 089045

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID_____

111.9%

1.119-2/~~1.119-2~~ 1.001-2

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6A543				
Hrs	Hrs	Hrs	Hrs	Hrs
J. Hopkins				

Date	Time Completed	Lab Unit Mgr	
1-5-90		[signature]	JM 8

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 308.-6320	SEGMENT-U	11-21-89	8:32	18

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

Sample Size	Customer ID
? 10ml	089050

Remarks, Calculations, Results:
REAGENT BLANK

<.100-4 ucil

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6A543				
Hrs	Hrs	Hrs	Hrs	Hrs
J. Hopkins				

Date	Time Completed	Lab Unit Mgr	
1-5-90		[signature]	JM 8

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

18 2" 1-6-90 VR

$\frac{4}{10} - .4$

$\frac{1}{10} -$

Alpha Calculation by VR on 01-06-1990 at 02:38:47
Det #18 2 -inch mount Alpha eff. : .2095
Sample size : 1 mL Dilution : 1

Mount # 1

$\frac{4}{10}$ - 0.4 (1.0034E-06 uCi/mL alpha /100

Mount # 2

$\frac{1}{10}$ - 0.4 (1.0020E-06 uCi/mL alpha /100

F 308.-6320 AT

18 2" 1-6-90 VR

$\frac{500}{10} - .3$

$\frac{547}{10} -$

Alpha Calculation by VR on 01-06-1990 at 00:41:44
Det #18 2 -inch mount Alpha eff. : .2095
Sample size : 10 mL Dilution : 1

Mount # 1

$\frac{500}{10}$ - 0.3 = 1.0686E-02 uCi/L alpha

Mount # 2

$\frac{547}{10}$ - 0.3 = 1.1697E-02 uCi/L alpha

F 105.-6520

Total Beta Analysis on the Fusion Dissolution

7, 8 F 444 See Comp 8

Serial No.	Sample Point	Date	Time Issued	Priority
F 296.-6225	SEGMENT-I	11-21-89	8:30	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TB	LA-~~548~~ 508-101	% RECOVERY	WB75L	0

Sample Size: ? 100 λ

Customer ID: 089050

Remarks, Calculations, Results:
SPIKE SAMPLE F294
SPIKE ID 83B44
SPIKE VOLUME 10 ml

~~118%~~

2.154' - 5.493 = 1.60' / 100 = 1.60⁻¹ / 1.3904⁻¹

See back of card →

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6A543				
Hrs	Hrs	Hrs	Hrs	Hrs
J. Hopkins				

Date	Time Completed	Lab Unit Mgr	
1-5-90		[signature]	DMS

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

1 & 2 F 950 See Com 8

Serial No.	Sample Point	Date	Time Issued	Priority
F 297.-6525	SEGMENT-J	11-21-89	8:30	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TB	LA-~~548~~ 508-101	% RECOVERY	WB75L	0

Sample Size: ? 10 ml

Customer ID: 83B44 089050

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

96.5%

1.344⁻¹ / 1.3923⁻¹

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6A543				
Hrs	Hrs	Hrs	Hrs	Hrs
J. Hopkins				

Date	Time Completed	Lab Unit Mgr	
1-5-90		[signature]	DMS

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

5, 6

Serial No.	Sample Point	Date	Time Issued	Priority
F 154.-6025	SEGMENT-G	11-17-89	10:15	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TB	LA-~~548~~ 508-101	uCI/L	WB75L	0

Sample Size: ? 100-10-100

Customer ID: 089048

Remarks, Calculations, Results:

3.091³ uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6A543				
Hrs	Hrs	Hrs	Hrs	Hrs
J. Hopkins				

Date	Time Completed	Lab Unit Mgr	
1-5-90		[signature]	DMS

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

3, 4

Serial No.	Sample Point	Date	Time Issued	Priority
F 155.-6125	SEGMENT-H	11-17-89	10:15	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TB	LA-~~548~~ 508-101	uCI/L	WB75L	0

Sample Size: ? 100-10-100

Customer ID: 089048

Remarks, Calculations, Results:
DUPLICATE SAMPLE

3.533³ uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6A543				
Hrs	Hrs	Hrs	Hrs	Hrs
J. Hopkins				

Date	Time Completed	Lab Unit Mgr	
1-5-90		[signature]	DMS

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

8/2

DF 101
.100

24555 / 10 - 6

24503 / 10 -

Beta Calculation by AJ on 01-05-1990 at 18:18:18
Det #18 2 -inch mount Beta eff. : .3151
Sample size : .1 mL Dilution : 101

Mount # 1

24555 / 10 - 6.0 = 3.5367E+03 uCi/L beta

Mount # 2

24503 / 10 - 6.0 = 3.5292E+03 uCi/L beta

F 155.-6125

18/2

DF 101
.100

21211 / 10 - 6

21722 / 10

Beta Calculation by AJ on 01-05-1990 at 18:19:19
Det #18 2 -inch mount Beta eff. : .3151
Sample size : .1 mL Dilution : 101

Mount # 1

21211 / 10 - 6.0 = 3.0539E+03 uCi/L beta

Mount # 2

21722 / 10 - 6.0 = 3.1277E+03 uCi/L beta

F 154.-6025

18 2" 1-6-90 R

9410 / 10 - 6

9517 / 10

Beta Calculation by VB on 01-06-1990 at 00:44:12
Det #18 2 -inch mount Beta eff. : .3151
Sample size : 10 mL Dilution : 1

Mount # 1

9410 / 10 - 6.0 = 1.3366E-01 uCi/L beta

Mount # 2

9517 / 10 - 6.0 = 1.3519E-01 uCi/L beta

F 297.-6525 TB

18/2

Spike too low to calculate

.100

15124 / 10 - 6

14892 / 10

Beta Calculation by AJ on 01-05-1990 at 18:21:51
Det #18 2 -inch mount Beta eff. : .3151
Sample size : .1 mL Dilution : 1

Mount # 1

15124 / 10 - 6.0 = 2.1535E+01 uCi/L beta

Mount # 2

14892 / 10 - 6.0 = 2.1203E+01 uCi/L beta

F 296.-6225 TB

Total Beta Analysis on the Fusion Dissolution

9 & 10

Serial No.	Sample Point	Date	Time Issued	Priority
F 105.-6525	SEGMENT-6	11-15-89	10:55	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TB	LA-~~548~~ 508-101	% RECOVERY	WB75L	0

Sample Size	Customer ID
? 10 ml	089045 83B44 Eng Cnd

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

98.8%

1.376-1 / 1.3923-1

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6A543				
Hrs	Hrs	Hrs	Hrs	Hrs
J. Hopkins				

Date	Time Completed	Lab Unit Mgr	
1-5-90		[signature]	[signature]

84-8800-061 (R-10-83)

7-8 F948 Seg Com 8

Serial No.	Sample Point	Date	Time Issued	Priority
F 308.-6325	SEGMENT-U	11-21-89	8:32	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
TB	LA-~~548~~ 508-101	uCI/L	WB75L	0

Sample Size	Customer ID
? 10 ml	089050

Remarks, Calculations, Results:
REAGENT BLANK

<2.58-4 uCi/L

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6A543				
Hrs	Hrs	Hrs	Hrs	Hrs
J. Hopkins				

Date	Time Completed	Lab Unit Mgr	
1-5-90		[signature]	[signature]

84-8800-061 (R-10-83)

8 2" 1-6-90 VR

$\frac{56}{10} - 6$

$\frac{50}{10} -$

Beta Calculation by VR on 01-06-1990 at 02:38:45
Det #18 2 -inch mount Beta eff. : .3151
Sample size : 1 ea Dilution : 1

Mount # 1

$\frac{56}{10} - 6.0 \times 2.5801E-06$ uCi/ea beta / 100

Mount # 2

$\frac{50}{10} - 6.0 \times 2.5801E-06$ uCi/ea beta / 100

18 2" 1-6-90 VR

$\frac{9489}{10} -$

$\frac{9879}{10} -$

Beta Calculation by VR on 01-06-1990 at 00:41:41
Det #18 2 -inch mount Beta eff. : .3157
Sample size : 10 mL Dilution : 1

Mount # 1

$\frac{9489}{10} - 6.0 = 1.3479E-01$ uCi/L beta

Mount # 2

$\frac{9879}{10} - 6.0 = 1.4037E-01$ uCi/L beta

F 308.-6325 TB

F 105.-6525

Gamma Energy Analysis on the Fusion Dissolution

1009 F949 Sep Comp 8

Serial No	Sample Point	Date	Time Issued	Priority
F 296.-6230	SEGMENT-I	11-21-89	8:30	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	% RECOVERY	WB75L	0

Sample Size: ? 1 ml

Customer ID: 089050

Remarks, Calculations, Results:
SPIKE SAMPLE F994
SPIKE ID 8828
SPIKE VOLUME 100 ml
481-1.03 = (3.78/3.8123) x 100 = 99.1%

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
69769/DMS				GR
Hrs	Hrs	Hrs	Hrs	Hrs

Date: 1-9-90 | Time Completed | Lab Unit Mgr: DMS

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

2749 F950 Sep Comp 8

Serial No	Sample Point	Date	Time Issued	Priority
F 297.-6530	SEGMENT-J	11-21-89	8:30	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	% RECOVERY	WB75L	0

Sample Size: ? 50 ml

Customer ID

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 8769
Cs137 3.78'/3.8123' 99.1%
Co60 2.25'/2.34' 101.1%

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
DMS/69769				GR
Hrs	Hrs	Hrs	Hrs	Hrs

Date: 1-9-90 | Time Completed | Lab Unit Mgr: DMS

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

1008

Serial No.	Sample Point	Date	Time Issued	Priority
F 154.-6030	SEGMENT-G	11-17-89	10:15	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	uCI/L	WB75L	0

Sample Size: ? 50 ml

Customer ID: 089048

Remarks, Calculations, Results:
Cs137 4.44' uCi/L

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
69769/DMS				GR
Hrs	Hrs	Hrs	Hrs	Hrs

Date: 1-9-90 | Time Completed | Lab Unit Mgr: DMS

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

2748

Serial No	Sample Point	Date	Time Issued	Priority
F 155.-6130	SEGMENT-H	11-17-89	10:15	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	uCI/L	WB75L	0

Sample Size: ? 50 ml

Customer ID: 089048

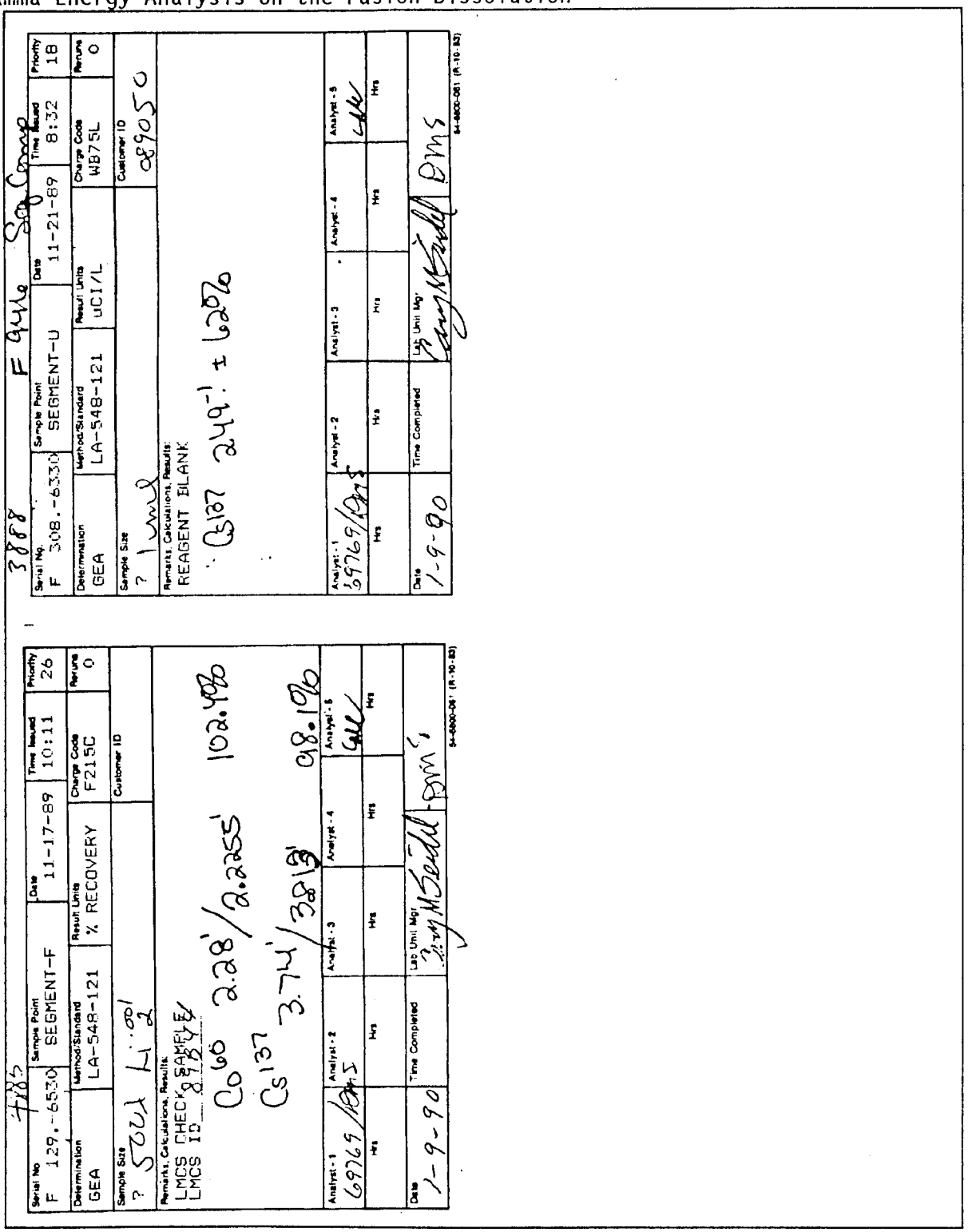
Remarks, Calculations, Results:
DUPLICATE SAMPLE
Cs137 5.17' uCi/L

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
69769/DMS				GR
Hrs	Hrs	Hrs	Hrs	Hrs

Date: 1-9-90 | Time Completed | Lab Unit Mgr: DMS

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

4185



Serial No	Sample Point	Date	Time Issued	Priority
F 129.-6530	SEGMENT-F	11-17-89	10:11	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	% RECOVERY	F215C	0

Sample Size: ? 500λ Li 2 .001

Customer ID:

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 89844

Co^{60} 2.28'/2.2255' 102.4%

Cs^{137} 3.74'/3.813' 98.1%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
69769/DMS				[illegible]
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-9-90		Cary M Seidel DMS

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

3888 F 9416 Seg Comp

Serial No.	Sample Point	Date	Time Issued	Priority
F 308.-6330	SEGMENT-U	11-21-89	8:32	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	uCI/L	WB75L	0

Sample Size: ? 1 ml

Customer ID: 089050

Remarks, Calculations, Results:
REAGENT BLANK

Cs^{137} 249.-! ± 62%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
69769/DMS				[illegible]
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-9-90		Cary M Seidel DMS

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 108.-6240	SEGMENT-9	11-15-89	10:56	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	WB75L	0

Sample Size: ? 100-10-100

Customer ID: 89-045

Remarks, Calculations, Results:
SPIKE SAMPLE F106
SPIKE ID 54838
SPIKE VOLUME 100-10-100
Spk vol: 100λ
Spk ID: 5.113-5
Smp: .20
Smp+Spk: .46

$$\frac{(.00059)(.00516)(.20) = .001032 - (.00059)(3.34^{-3})}{(.00059)\left[.46\left(\frac{5.8}{5.7}\right) - .20\right]} \times 100 = 117.6\%$$

1.7%

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

Date	Time Completed	Lab Unit Mgr
1-5-90		

54-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 297.-6540	SEGMENT-J	11-21-89	8:30	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	WB75L	0

Sample Size: ? 100-10-100

Customer ID: 089050

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 54838
Spk Vol: 100λ
Spk ID: 5.62-4
Sample: 17
Sample+Spk: 46

$$\frac{(.17)(5.624)(.1)(1010)}{108.3} = 3.33^{-2}$$

(over for recalculation) .46-.17

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

Date	Time Completed	Lab Unit Mgr
1-5-90		

54-6800-081 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
F 154.-6040	SEGMENT-G	11-17-89	10:15	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	G/L	WB75L	0

Sample Size: ? 100-10ml-100

Customer ID: 089048

Remarks, Calculations, Results:
spike Vol: ~~100ml~~ 100-10ml-100
Sample: .06
Sample + Spike: .38
Spike ID: 54838

$$\frac{(.06)(9.9^{-4})(5.68^{-2})}{(9.9^{-4})\left[(.38)\left(\frac{5.7}{5.6}\right) - (.06)\right]} = <1.04 \times 10^{-2}\ g/L$$

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

Date	Time Completed	Lab Unit Mgr
1-5-90		

54-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 155.-6140	SEGMENT-H	11-17-89	10:15	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	G/L	WB75L	0

Sample Size: ? 100-10ml-100

Customer ID: 089048

Remarks, Calculations, Results:
DUPLICATE SAMPLE
Spike Vol.: 100-10ml-100
Spike ID: 54838
Sample: .06
Sample + Spike: .36

$$\frac{(.06)(9.9^{-4})(5.68^{-2})}{(9.9^{-4})\left[(.36)\left(\frac{5.7}{5.6}\right) - (.06)\right]} = <1.11 \times 10^{-2}\ g/L$$

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

Date	Time Completed	Lab Unit Mgr
1-5-90		

54-6800-081 (R-10-83)

$$\frac{(.00059)(5.676E-02)(.17)}{(.00059)\left[.46\left(\frac{5.7}{5.6}\right)-.17\right]} = 3.24E-02$$

$$\frac{3.24E-02}{2.99E-02} = 108.30\%$$

F 297.6540

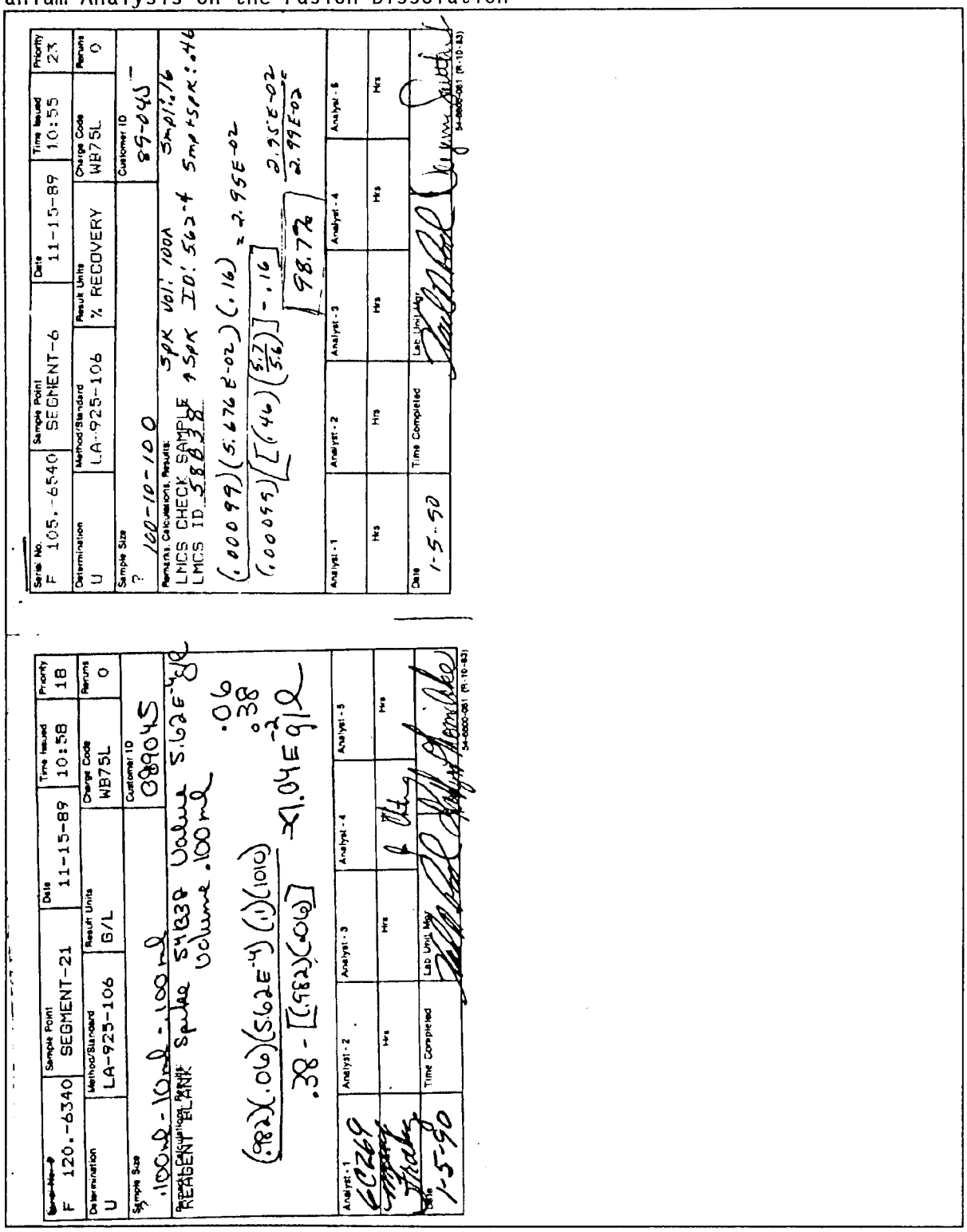
$$\frac{(.00059)(.00516)(.20)}{(.00059)\left[.46\left(\frac{5.8}{5.7}\right)-.20\right]} = \frac{.001032}{.268} - \frac{(.00059)(.3349)}{(.00059)}$$

$$3.85E-03 - 3.34E-03 = 5.11E-4$$

$$\frac{5.11E-04}{2.99E-02} = 1.71\%$$

F 108.-6240

Uranium Analysis on the Fusion Dissolution



Serial No.	Sample Point	Date	Time Issued	Priority
F 120.-6340	SEGMENT-21	11-15-89	10:58	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	G/L	WB75L	0

Sample Size: .100ml - 10ml - .100ml

Customer ID: 089045

Remarks, Calculations, Results: REAGENT BLANK Spike 54B38 Value 5.62E-4 g/l Volume .100ml

$(.982)(.06)(5.62E^{-4})(.1)(1010)$ .06

$.38 - [(.982)(.06)]$ .38

$\approx 1.04E^{-2}$ g/l

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

Date: 1-5-90 | Time Completed | Lab Unit Mgr

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 105.-6540	SEGMENT-6	11-15-89	10:55	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	WB75L	0

Sample Size: ? 100-10-100

Customer ID: 89-045

Remarks, Calculations, Results: LMCS CHECK SAMPLE SPK Vol: 100A Smpl: .16 LMCS ID 58B38 + SPK ID: 562-4 Smp+SPK: .46

$(.00099)(5.676E-02)(.16) = 2.95E-02$

$(.00099)\left[(.46)\left(\frac{5.7}{5.6}\right)\right] - .16$ $\boxed{98.7\%}$ $\frac{2.95E-02}{2.99E-02}$

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

Date: 1-5-90 | Time Completed | Lab Unit Mgr

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 160.-7100	SEGMENT-M	11-17-89	10:16	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
H2O-DGST	LA-504-101	G/L	WB75L	0

Sample Size: ?

Customer ID: 089048

Remarks, Calculations, Results:

DUPLICATE ANALYSIS
GRAMS SAMPLE ~~.4660~~ .3891
VOLUME ON COMPLETION 50ml

7.78^{-3} g/ml

Filtered by analyst-2 ~~7.78^{-6} g/l~~

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
#1098	80725			
Hrs: 20 min	Hrs: 10 min	Hrs	Hrs	Hrs

Date: 1/4/90 | Time Completed | Lab Unit Mgr

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 161.-7200	SEGMENT-N	11-17-89	10:16	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
H2O-DGST	LA-504-101	% RECOVERY	WB75L	0

Sample Size: ?

Customer ID: 089048

Remarks, Calculations, Results:

SPIKED ANALYSIS
GRAMS SAMPLE ~~.4660~~ .3937
VOLUME ON COMPLETION 50ml
VOLUME SPIKE
SPIKE ID

7.87^{-3} g/ml

Filtered by analyst-2 ~~7.87^{-6} g/l~~

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
#1098	80725			
Hrs: 20 min	Hrs: 10 min	Hrs	Hrs	Hrs

Date: 1/4/90 | Time Completed | Lab Unit Mgr

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 159.-7000	SEGMENT-L	11-17-89	10:16	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
H2O-DGST	LA-504-101	G/L	WB75L	0

Sample Size: ?

Customer ID: 089048

Remarks, Calculations, Results:

GRAMS SAMPLE .4660 #220 2.91 grams
VOLUME ON COMPLETION 50ml

9.32^{-3} g/ml

Filtered by analyst-2 ~~9.32^{-6} g/l~~

WHC N 3134

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
#1098	80725			
Hrs: 20 min	Hrs: 10 min	Hrs	Hrs	Hrs

Date: 1/4/90 | Time Completed | Lab Unit Mgr

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 741.-7271	SEGMENT-N	12-11-89	9: 5	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
F	LA-533-105	% RECOVERY	WB75L	0

Sample Size: ? .100-10 mL

Customer ID: 089083

Remarks, Calculations, Results:
SPIKE SAMPLE
SPIKE ID 3509-61
SPIKE VOLUME .300/5mL

$$\frac{\frac{5.3}{5.0}(3.9)-(27.1)\left(\frac{10.1\ g/L}{9.65\ g/L}\right)}{\frac{.300\ mL\ (50\ ppm)}{5.3\ mL}\ (101)} \times 100 = 108.4\%$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68107/NEW				
Hrs: 1600	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-5-90		

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 742.-7571	SEGMENT-O	12-11-89	9: 5	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
F	LA-533-105	% RECOVERY	WB75L	0

Sample Size: 100-10

Customer ID:

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 6217HF

6.677 ppm/72 92.7%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68107/NEW				94171
Hrs: 1600	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/5/90			DMS

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 159.-7071	SEGMENT-L	11-17-89	10:16	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
F	LA-533-105	PPM	WB75L	0

Sample Size: ? 100-10

Customer ID: 089048

Remarks, Calculations, Results:

3.20 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68107/NEW				94171
Hrs: 1600	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/5/90			DMS

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 160.-7171	SEGMENT-M	11-17-89	10:16	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
F	LA-533-105	PPM	WB75L	0

Sample Size: ? 100-10

Customer ID: 089048

Remarks, Calculations, Results:
DUPLICATE SAMPLE

2.04 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68107/NEW				94171
Hrs: 1600	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/5/90			DMS

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

Ion Chromatographic Analysis of the Water Digestion - Fluoride Analysis

Serial No	Sample Point	Date	Time Issued	Priority
F 158.-7571	SEGMENT-K	11-17-89	10:16	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
F	LA-533-105	% RECOVERY	WB75L	0

Sample Size: 100-10

Customer ID: 089048

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 6C11HF

95.5%

68.78/72

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/NEW				Chemist 94171
Hrs 1600	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/5/90		[signature]	[signature]

54-6800-081 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
F 170.-7371	SEGMENT-W	11-17-89	10:18	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
F	LA-533-105	PPM	WB75L	0

Sample Size: ? Direct

Customer ID: 089048

Remarks, Calculations, Results:

REAGENT BLANK

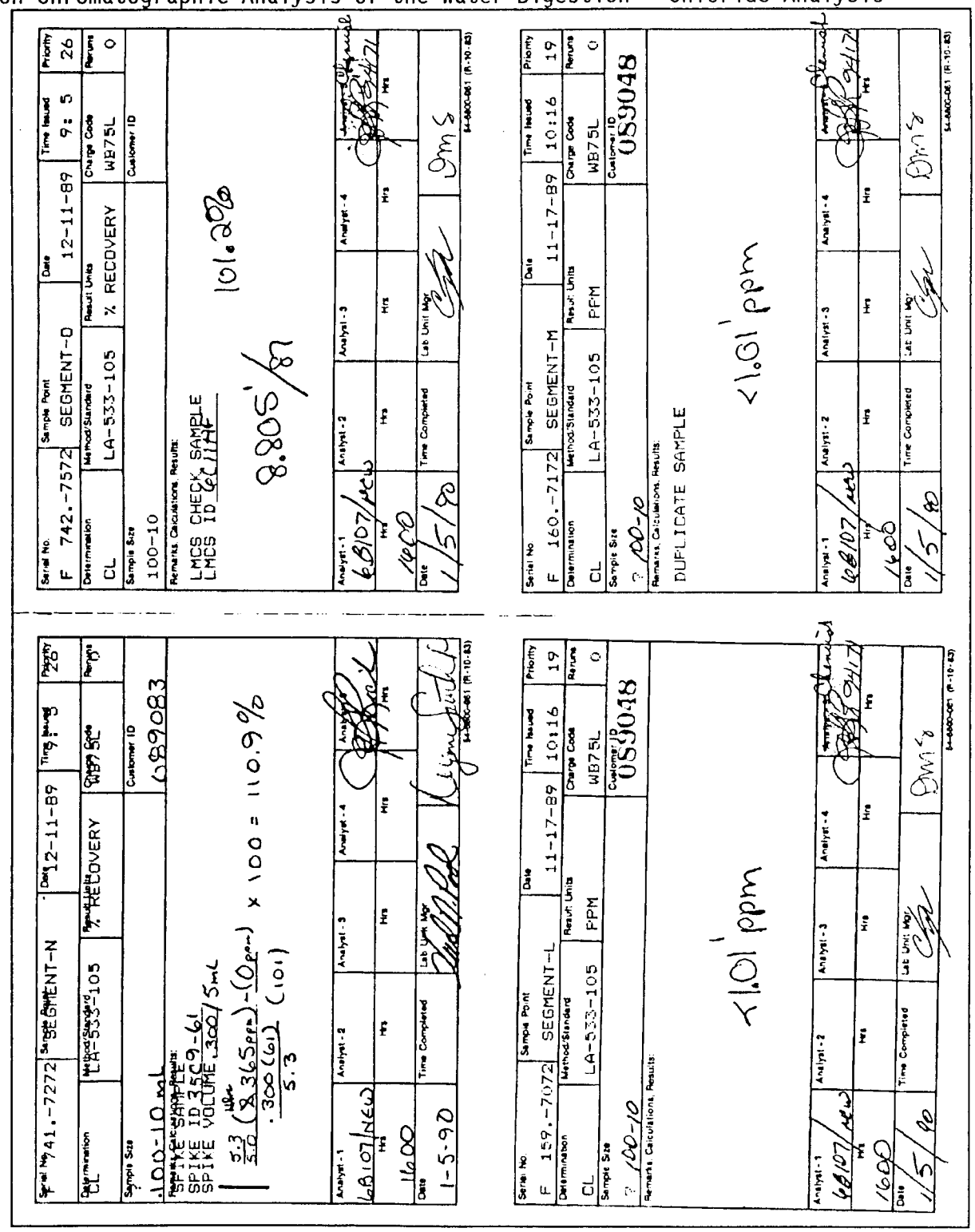
<.1ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/NEW				Chemist 94171
Hrs 1600	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/5/90		[signature]	[signature]

54-6800-081 (R-10-83)

Ion Chromatographic Analysis of the Water Digestion - Chloride Analysis



Serial No. F 741.-7272 | Sample Point SEGMENT-N | Date 12-11-89 | Time Issued 9:5 | Priority 26
Determination CL | Method/Standard LA-533-105 | Result Units % RECOVERY | Charge Code WB75L | Reruns 0
Sample Size ? 100-10 mL | Customer ID 089083
Remarks, Calculations, Results:
SPIKE SAMPLE
SPIKE ID 35C9-61
SPIKE VOLUME .300/5mL
$\frac{5.3}{5.0}(8.365ppm) - (0ppm) \times 100 = 110.9\%$
$\frac{.300(61)}{5.3}(101)$
Analyst-1 6B107/NEW Hrs 1600 | Analyst-2 Hrs | Analyst-3 Hrs | Analyst-4 Hrs
Date 1-5-90 | Time Completed | Lab Unit Mgr | Analyst-5 Hrs
54-6800-061 (R-10-83)

Serial No. F 742.-7572 | Sample Point SEGMENT-O | Date 12-11-89 | Time Issued 9:5 | Priority 26
Determination CL | Method/Standard LA-533-105 | Result Units % RECOVERY | Charge Code WB75L | Reruns 0
Sample Size 100-10 | Customer ID
Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 6C11AF
8.805'/8 101.2%
Analyst-1 6B107/NEW Hrs 1600 | Analyst-2 Hrs | Analyst-3 Hrs | Analyst-4 Hrs
Date 1/5/90 | Time Completed | Lab Unit Mgr | Analyst-5 Hrs
54-6800-061 (R-10-83)

Serial No. F 159.-7072 | Sample Point SEGMENT-L | Date 11-17-89 | Time Issued 10:16 | Priority 19
Determination CL | Method/Standard LA-533-105 | Result Units PPM | Charge Code WB75L | Reruns 0
Sample Size ? 100-10 | Customer ID 089048
Remarks, Calculations, Results:
<1.01' ppm
Analyst-1 6B107/NEW Hrs 1600 | Analyst-2 Hrs | Analyst-3 Hrs | Analyst-4 Hrs
Date 1/5/90 | Time Completed | Lab Unit Mgr | Analyst-5 Hrs
54-6800-061 (R-10-83)

Serial No. F 160.-7172 | Sample Point SEGMENT-M | Date 11-17-89 | Time Issued 10:16 | Priority 19
Determination CL | Method/Standard LA-533-105 | Result Units PPM | Charge Code WB75L | Reruns 0
Sample Size ? 100-10 | Customer ID 089048
Remarks, Calculations, Results:
DUPLICATE SAMPLE
<1.01' ppm
Analyst-1 6B107/NEW Hrs 1600 | Analyst-2 Hrs | Analyst-3 Hrs | Analyst-4 Hrs
Date 1/5/90 | Time Completed | Lab Unit Mgr | Analyst-5 Hrs
54-6800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 158.-7572	SEGMENT-K	11-17-89	10:16	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
CL	LA-533-105	% RECOVERY	WB75L	0

Sample Size: 100-10

Customer ID: 089048

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 6C11AF

107.8%

93.82/87.

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/new				94171
Hrs 1600	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/5/90			DMS

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 170.-7372	SEGMENT-W	11-17-89	10:18	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
CL	LA-533-105	PPM	WB75L	0

Sample Size: ? Direct

Customer ID: 089048

Remarks, Calculations, Results:

REAGENT BLANK

<.1ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/new				94171
Hrs 1600	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/5/90			DMS

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 160.-7173	SEGMENT-M	11-17-89	10:16	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	PPM	WB75L	0

Sample Size: ? 100-10

Customer ID: 089048

Remarks, Calculations, Results:

DUPLICATE SAMPLE

3.12 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/NEW				94171
Hrs: 1600	Hrs	Hrs	Hrs	Hrs

Date: 1/5/90 | Time Completed | Lab Unit Mgr | DMS

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 742.-7573	SEGMENT-O	12-11-89	9: 5	26

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 UC11AF

98.2%

7.092/7.22

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/NEW				94171
Hrs: 1600	Hrs	Hrs	Hrs	Hrs

Date: 1/5/90 | Time Completed | Lab Unit Mgr | DMS

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 159.-7073	SEGMENT-L	11-17-89	10:16	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	PPM	WB75L	0

Sample Size: ? 100-10

Customer ID: 089048

Remarks, Calculations, Results:

3.68 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/NEW				94171
Hrs: 1600	Hrs	Hrs	Hrs	Hrs

Date: 1/5/90 | Time Completed | Lab Unit Mgr | DMS

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 741.-7273	SEGMENT-N	12-11-89	9: 5	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	% RECOVERY	WB75L	0

Sample Size: ? .100-10mL

Customer ID: 089083

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID 3509-61
SPIKE VOLUME .300/5mL

$$\frac{(5.3/5.0)(3320) - (443)\left(\frac{10.1}{9.65}\right)}{\frac{.300(501)}{5.3}(101)} \times 100 = 106.7\%$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/NEW				
Hrs: 1600	Hrs	Hrs	Hrs	Hrs

Date: 1-5-90 | Time Completed | Lab Unit Mgr

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

Ion Chromatographic Analysis of the Water Digesiton - Nitrate Analysis

Serial No.	Sample Point	Date	Time Issued	Priority
F 170.-7373	SEGMENT-W	11-17-89	10:18	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	PPM	WB75L	0

Sample Size	Customer ID
? Direct	089048

Remarks, Calculations, Results:

REAGENT BLANK

<1ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/NEW				Chemist 74171
Hrs 1600	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1/5/90		[signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 158.-7573	SEGMENT-K	11-17-89	10:16	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	% RECOVERY	WB75L	0

Sample Size	Customer ID
100-10	089048

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 6C11[illegible]

744.3/722

103.1%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/NEW				Chemist 74171
Hrs 1600	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1/5/90		[signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 741.-7274	SEGMENT-N	12-11-89	9: 5	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
PO4	LA-533-105	% RECOVERY	WB75L	0

Sample Size: ? 100 - 10 mL

Customer ID: 089083

Remarks, Calculations, Results:
SPIKE SAMPLE
SPIKE ID 3509-61
SPIKE VOLUME .300/5mL

$$\frac{\left(\frac{5.3}{5.0}\right)(2980) - (103)\left(\frac{10.1}{9.65}\right)}{\frac{.300\,(509)}{5.3}\,(101)} \times 100 = 104.8\%$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/NEW				
Hrs: 16:00	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-5-90		

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 742.-7574	SEGMENT-O	12-11-89	9: 5	26

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 6C11AF

94.7%

6.838²/722

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/NEW				94171
Hrs: 1600	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/5/90			DMS

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 159.-7074	SEGMENT-L	11-17-89	10:16	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
PO4	LA-533-105	PPM	WB75L	0

Sample Size: ? 100-10

Customer ID: 089048

Remarks, Calculations, Results:

2.10² ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/NEW				94171
Hrs: 1600	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/5/90			DMS

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 160.-7174	SEGMENT-M	11-17-89	10:16	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
PO4	LA-533-105	PPM	WB75L	0

Sample Size: ? 100-10

Customer ID: 089048

Remarks, Calculations, Results:
DUPLICATE SAMPLE

1.12² ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/NEW				94171
Hrs: 1600	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/5/90			DMS

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

Ion Chromatographic Analysis of the Water Digestion - Phosphate Analysis

Serial No.	Sample Point	Date	Time Issued	Priority
F 158.-7574	SEGMENT-K	11-17-89	10:16	19

Determination	Method/Standard	Result Units	Charge Code	Rerune
PO4	LA-533-105	% RECOVERY	WB75L	0

Sample Size	Customer ID
100-10	089048

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 6C11HF

96.7%

6981/722

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/NEW				94171
Hrs 1600	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/5/90			DMS

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 170.-7374	SEGMENT-W	11-17-89	10:18	18

Determination	Method/Standard	Result Units	Charge Code	Rerune
PO4	LA-533-105	PPM	WB75L	0

Sample Size	Customer ID
? Direct	089048

Remarks, Calculations, Results:

REAGENT BLANK

<1ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/NEW				94171
Hrs 1600	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/5/90			DMS

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

Ion Chromatographic Analysis of the Water Digestion - Sulphate Analysis

Serial No.	Sample Point	Date	Time Issued	Priority
F 741.-7275	SEGMENT-N	12-11-89	9: 5	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
SO4	LA-533-105	% RECOVERY	WB75L	0

Sample Size	Customer ID
? .100-10mL	089083

Remarks, Calculations, Results:
SPIKE SAMPLE
SPIKE ID 35C9-61
SPIKE VOLUME 300/5mL

$$\frac{(5.3/5.0)(2910) - 0\,ppm}{\frac{.300(501)}{5.3}(101)} \times 100 = 107.7$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/NEW				[signature]
Hrs 16:00	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1-5-90		[signature]	[signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 742.-7575	SEGMENT-O	12-11-89	9: 5	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
SO4	LA-533-105	% RECOVERY	WB75L	0

Sample Size	Customer ID
100-10	

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 6C11HF

94.1%

~~5.958~~ 6.792² / 722

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/NEW				[signature] 94171
Hrs 1600	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/5/90		[signature]	DMS

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 159.-7075	SEGMENT-L	11-17-89	10:16	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
SO4	LA-533-105	PPM	WB75L	0

Sample Size	Customer ID
? 100-10	089048

Remarks, Calculations, Results:

<1.01² ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/NEW				[signature] 94171
Hrs 1600	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/5/90		[signature]	DMS

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 160.-7175	SEGMENT-M	11-17-89	10:16	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
SO4	LA-533-105	PPM	WB75L	0

Sample Size	Customer ID
? 100-10	089048

Remarks, Calculations, Results:
DUPLICATE SAMPLE

<1.01² ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/NEW				[signature] 94171
Hrs 1600	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/5/90		[signature]	DMS

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

Ion Chromatogrpahic Analysis of the Water Digestion - Sulphate Analysis

Serial No.	Sample Point	Date	Time Issued	Priority
F 158.-7575	SEGMENT-K	11-17-89	10:16	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
SO4	LA-533-105	% RECOVERY	WB75L	0

Sample Size: 100-10

Customer ID: 089048

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 6C11HF

715.9/722

99.2%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/NEW				Chemist 94171
Hrs 1600	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/5/90		[signature]	DMS

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

Serial No	Sample Point	Date	Time Issued	Priority
F 170.-7375	SEGMENT-W	11-17-89	10:18	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
SO4	LA-533-105	PPM	WB75L	0

Sample Size: ? Direct

Customer ID: 089048

Remarks, Calculations, Results:

REAGENT BLANK

<1ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/NEW				Chemist 94171
Hrs 1600	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1/5/90		[signature]	DMS

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

Total Organic Carbon Analysis on the Water Digestion

Serial No.	Sample Point	Date	Time Issued	Priority
F 170.-7326	SEGMENT-W	11-17-89	10:18	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	G/L	WB75L	0

Sample Size: ? 200 uL

Customer ID: 089048

Remarks, Calculations, Results:

REAGENT BLANK

.528 mg/min

3.896 mg

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
80028				Rfbank
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Pola				

Date: 1-16-90 Time Completed: Lab Unit Mgr:

SL-6000-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 161.-7226	SEGMENT-N	11-17-89	10:16	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	WB75L	0

Sample Size: ? 200 uL

Customer ID: 089048

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID 70C118
SPIKE VOLUME 100 uL

90.20 Lo

188.4

184.7 - 400

90.7%

200 uL Lack flask

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
80028				Rfbank
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Pola				

Date: 1-16-90 Time Completed: Lab Unit Mgr:

SL-6000-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 162.-7526	SEGMENT-O	11-17-89	10:17	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	WB75L	0

Sample Size: ? 200 uL - 2 mL - 200 uL

Customer ID: 089048

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 70C118

3.014/3.00

100.5%

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
80028				Rfbank
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Pola				

Date: 1-16-90 Time Completed: Lab Unit Mgr:

SL-6000-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 160.-7126	SEGMENT-M	11-17-89	10:16	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	G/L	WB75L	0

Sample Size: ? 200 uL

Customer ID: 089048

Remarks, Calculations, Results:

DUPLICATE SAMPLE

1.90 g/L

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
80028				Rfbank
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Pola				

Date: 1-16-90 Time Completed: Lab Unit Mgr:

SL-6000-081 (R-10-83)

Total Organic Carbon Analysis on the Water Digestion

Serial No.	Sample Point	Date	Time Issued	Priority
F 158.-7526	SEGMENT-K	11-17-89	10:16	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	WB75L	0

Sample Size: ? 200uL-2mL-200uL

Customer ID: 089048

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 70C118

2.9425/3.00 98.1%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				R E Barnett
Hrs: Ed Cohn	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-16-90		[signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 159.-7026	SEGMENT-L	11-17-89	10:16	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	G/L	WB75L	0

Sample Size: ? 200uL

Customer ID: 089048

Remarks, Calculations, Results:

1.95-2 g/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				R E Barnett
Hrs: Ed Cohn	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-16-90		[signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 164.-8000	SEGMENT-Q	11-17-89	10:17	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
ACD-DGST	LA-505-159	~~G/L~~ g/ml	WB75L	0

Sample Size	Customer ID
?	089048

Remarks, Calculations, Results:

GRAMS SAMPLE _____
VOLUME ON
COMPLETION 50ml
8.84 -3 g/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
69769				
Hrs	Hrs	Hrs	Hrs	Hrs
K. Sauthuck			[signature]	

Date	Time Completed	Lab Unit Mgr
2/1/90		[signature]

54-8800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 147.-8300	SEGMENT-X	11-17-89	10:14	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
ACD-DGST	LA-505-159	~~G/L~~ g/ml	WB75L	0

Sample Size	Customer ID
?	089047

Remarks, Calculations, Results:

REAGENT BLANK
VOLUME ON
COMPLETION 50ml

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
69769				
Hrs	Hrs	Hrs	Hrs	Hrs
K. Sauthuck				

Date	Time Completed	Lab Unit Mgr
2/1/90		[signature]

54-8800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 165.-8100	SEGMENT-R	11-17-89	10:17	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
ACD-DGST	LA-505-159	~~G/L~~ g/ml	WB75L	0

Sample Size	Customer ID
?	089048

Remarks, Calculations, Results:

DUPLICATE ANALYSIS
GRAMS SAMPLE _____
VOLUME ON
COMPLETION 50ml
9.32 -3 g/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
69769				
Hrs	Hrs	Hrs	Hrs	Hrs
K. Sauthuck				

Date	Time Completed	Lab Unit Mgr
2/1/90		[signature]

54-8800-061 (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		Paul M. Pool		
Date	Time Completed	Lab Unit Mgr		
4-19-90		AP	Lynne Southick	

54-6800-081 (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		Paul M. Pool		
Date	Time Completed	Lab Unit Mgr		
4-19-90		AP	Lynne Southick	

54-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1083.-8550	SEG.COMP#19	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 81C11A

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65283				
Hrs	Hrs	Hrs	Hrs	Hrs
4-19-90		Paul M. Pool		
Date	Time Completed	Lab Unit Mgr		
J. White		AP	Lynne Southick	

54-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1085.-8050	SEG.COMP#21	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:

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65283				
Hrs	Hrs	Hrs	Hrs	Hrs
J. White		Paul M. Pool		
Date	Time Completed	Lab Unit Mgr		
4-19-90		AP	Lynne Southick	

54-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 165.-8150	SEGMENT-R	11-17-89	10:17	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	PPM	WB75L	0

Sample Size: ? 100-10 & 500-10

Customer ID: 89048

Remarks, Calculations, Results:
DUPLICATE SAMPLE

RERUN

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				

54-8600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 164.-8050	SEGMENT-Q	11-17-89	10:17	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	PPM	WB75L	0

Sample Size: ? 100-10 & 500-10

Customer ID: 89048

Remarks, Calculations, Results:

RERUN

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				

54-8600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1084.-8750	SEG.COMP#20	2-16-90	8:16	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	PPM	E21D1	0

Sample Size: ? Direct

Customer ID: 600013

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				

54-8600-061 (R-10-83)