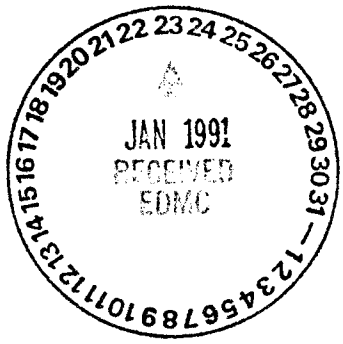
24 1182

Westinghouse
Hanford Company

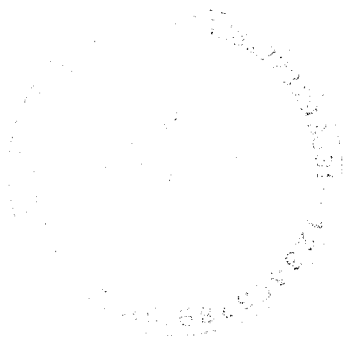
P.O. Box 1970 Richland, WA 99352

1 of 8



222-S/RCRA Analytical Laboratories

Project:	Single-Shell Tank Waste Characterization
Tank:	241-U-110
Core:	13
Customer Id. Number:	Core 13 Composite
Report Revision:	1
Date Printed:	October 23, 1990



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This report consists of pages 1 through 466.
Appendix A consists of pages A-1 through A-116.
Appendix B consists of pages B-1 through B-3.

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.

Dennis K. Sato
Data Coordinator

Date Nov 20, 1990

Cary M. Seidel
Unit Manager

Date Nov. 20, 1990

Larry H. Taylor
Laboratory Q.A. Officer

Date Nov 21, 1990

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 (Reduction-Oxidation) 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 was 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 scientist. 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 (IC), Inductively Coupled Plasma (ICP), Mercury Hydride, Total Organic Carbon (TOC), 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 radioisotopic 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 gamma energy analysis (GEA) analysis reports has no relationship to the sampling activities or the sample identification. All results in this data package relate only to the composite of Sample 89-073, Sample 89-074, Sample 89-075 and Sample 89-076 which comprises core 13 from riser 2 of tank 241-U-110. The Core 13 Composite Sample was prepared by compositing 4 grams of segment 1 (89-073), 9 grams of segment 2 (89-074), 63 grams of segment 3 (89-075), and 43 grams of segment 4 (89-076).

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.

Carbon-14 analysis on the undigested sample was not performed as the 222-S laboratory does not have analytical procedures that will analyze low levels of Carbon 14 in solids. Neptunium 237 analysis was not run on the water digestion. The Chrome-VI analysis on the water digestion was not performed because sufficient sample to complete this analysis was not available. Sample for additional digestions was not available as this sample was completely consumed performing other analyses.

All sample results reported here by weight are reported as the "wet weight" of the sample. Some samples noticeably lost moisture during the process of aliquoting and weighing for digestion. In order to minimize errors due to loss of moisture, the percent moisture was determined at the earliest opportunity. Attempts to dry the sample before analysis resulted in approximately a tenfold 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 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 DATA

Single Shell Tank Waste Characterization
Summary of Core Sample

TANK ID:	241-U-110
RISER ID:	#2
CORE ID:	#13

DATE SAMPLING INITIATED:	11-30-89
DATE SAMPLING COMPLETED:	11-30-89

SEGMENT		
1	Lab Serial No.	F0489
	Customer ID No.	89-073
	Last Segment?	No
2	Lab Serial No.	F0513
	Customer ID No.	89-074
	Last Segment?	No
3	Lab Serial No.	F0537
	Customer ID No.	89-075
	Last Segment?	No
4	Lab Serial No.	F0561
	Customer ID No.	89-076
	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?

SST-1 Rev. E 9/27/90 Interim

Single Shell Tank
Core Composite

Lab Segment Serial #: F1067		Customer ID: 000013
Simi-Volatile Organic Analysis		
Simi-VOA Sample	Lab Serial #: N/A	Date Sampled: N/A
Particle Size Distribution Analysis		
Particle Size Sample	Lab Serial #: N/A	Date Sampled: N/A

Homogenized Solids

Undigested Solids Analysis		
Laboratory Serial Number for Sample:	F1067	Date Sampled: 11-30-89
Laboratory Serial Number of Duplicate Sample:	F1068	
Fusion Analysis of Solids		
Laboratory Serial Number for Sample:	F1073	Date Sampled: 11-30-89
Laboratory Serial Number of Duplicate Sample:	F1074	
Laboratory Serial Number of Spiked Sample:	F1075	
Acid Digestion Analysis of Solids		
Laboratory Serial Number for Sample:	F1085	Date Sampled: 11-30-89
Laboratory Serial Number of Duplicate Sample:	F1086	
Laboratory Serial Number of Spiked Sample:	F1087	
Water Digestion Analysis of Solids		
Laboratory Serial Number for Sample:	F1079	Date Sampled: 11-30-89
Laboratory Serial Number of Duplicate Sample:	F1080	
Laboratory Serial Number of Spiked Sample:	F1081	

Laboratory Notebook Reference	WHC-N-313-4	29
	Notebook No.	Page No.

SST-17 Rev. D 9/27/90 Interim

SAMPLE DATA SUMMARY

Analytical Laboratory Data Summary

SINGLE SHELL TANK PROJECT

The next four pages of this report (including this page) summarizes the results for the analysis of the

Core 13 Composite Sample
Tank 241-U-110

UNTREATED SAMPLE RESULTS

	Sample	Duplicate
pH	12.60	12.73
% Water	39.70%	40.01%
Mercury	1.21 ug/g	1.07 ug/g
Cyanide	<1.00E+01 ug/g	<9.00E+00 ug/g
Carbon 14	This Analysis was not completed	

DATA SUMMARY

Sample units are Wet Weight

Core 13 Composite
Fusion Dissolution

Tank: 241-U-110
Customer ID: Core Composite 13

Radiological Analysis

	Sample		Duplicate Sample	
Fusion	1.72	g/L	2.16	g/L
Total Alpha	<1.13	uci/g	<7.78E-01	uci/g
Total Beta	1.58E+03	uci/g	1.50E+03	uci/g
GEA Cs-137	3.06E+01	uci/g	2.93E+01	uci/g
Uranium	6.10E+03	ug/g	5.14E+03	ug/g
Plutonium	2.85E-01	uci/g	2.50E-01	uci/g
Americium 241	1.28E-01	uci/g	<2.96E-02	uci/g
Neptunium 237	<6.28E-01	uci/g	<5.00E-01	uci/g
Technetium 99	<1.20E-02	uci/g	<9.49E-03	uci/g
Iodine 129	<1.10E-02	uci/g	<6.94E-03	uci/g
Strontium 90	5.34E+02	uci/g	5.14E+02	uci/g

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

ICP Results

	Sample	Duplicate
Aluminum	28065 ug/g	30125 ug/g
Antimony	LT	LT
Barium	LT	LT
Beryllium	LT	LT
Boron	153 ug/g	113 ug/g
Cadmium	LT	LT
Calcium	737 ug/g	1005 ug/g
Chromium	177 ug/g	139 ug/g
Cobalt	LT	LT
Copper	LT	LT
Europium	LT	LT
Iron	3239 ug/g	3263 ug/g
Lithium	LT	LT
Magnesium	472 ug/g	221 ug/g
Manganese	912 ug/g	890 ug/g
Mercury	LT	LT
Molybdenum	LT	LT
Neodymium	LT	LT
Nickel	1449 ug/g	1600 ug/g
Phosphorous	813 ug/g	522 ug/g
Potassium	NA	NA
Samarium	LT	LT
Selenium	LT	LT
Silicon	7151 ug/g	6832 ug/g
Silver	LT	LT
Sodium	14124 ug/g	17280 ug/g
Strontium	97 ug/g	130 ug/g
Sulfur	195 ug/g	102 ug/g
Tantalum	LT	LT
Thallium	LT	LT
Thorium	LT	LT
Tin	LT	LT
Titanium	LT	LT
Vanadium	LT	LT
Zinc	88 ug/g	77 ug/g
Zirconium	LT	LT

DATA SUMMARY

Units For Samples Are Wet Weight

Core 13 Composite
Water Digestion

Tank: 241-U-110
Customer Id.: Core 13 Composite

	Sample	Duplicate
Water Digestion	8.33 g/L	11.19 g/L
Water Digestion **	10.18 g/L	10.05 g/L
pH	11.64	11.71

Anion Analysis

Fluoride	4.99E+03 ug/g	3.55E+03 ug/g
Chloride	9.41E+02 ug/g	9.03E+02 ug/g
Nitrate	5.88E+04 ug/g	6.14E+04 ug/g
Phosphate	2.32E+04 ug/g	7.04E+03 ug/g
Sulfate	1.21E+04 ug/g	5.16E+03 ug/g
Total Organic Carbon	1.31E+02 ug/g	2.46E+02 ug/g
Ammonia	<4.85E+03 ug/g	<3.61E+03 ug/g
Carbonate	9.48E+03 ug/g	7.15E+03 ug/g
Nitrite	1.17E+04 ug/g	1.24E+04 ug/g

Radiological Analysis

Total Alpha	<2.99E-03 uci/g	<2.23E-03 uci/g
Total Beta	1.93E+01 uci/g	1.37 uci/g
GEA Cs-137	9.29 uci/g	9.20 uci/g
Americium 241	<1.58E-03 uci/g	<1.30E-03 uci/g
Carbon 14	5.89E-04 uci/g	4.08E-04 uci/g
Iodine 129	<7.92E-03 uci/g	<5.09E-03 uci/g
Neptunium 237 *	not analyzed	
Plutonium	<7.66E-04 uci/g	<5.77E-04 uci/g
Strontium 90	5.94E-02 uci/g	3.32E-02 uci/g
Technetium 99	5.92E-03 uci/g	5.94E-03 uci/g
Tritium	2.29E-03 uci/g	1.76E-03 uic/g

Atomic Absorption Spectroscopy

Arsenic **	<4.91E-01 ug/g	<4.98E-01 ug/g
Mercury	<1.2E-02 ug/g	2.28E-02 ug/g
Selenium **	<4.91E-01 ug/g	<4.98E-01 ug/g

* Analysis Was Not Run.
** Analysis performed on second digestion.

ICP Results

	Sample	Duplicate
Aluminum	3009 ug/g	2657 ug/g
Antimony	LT	LT
Arsenic	LT	LT
Beryllium	1 ug/g	LT
Bismuth	LT	LT
Boron	226 ug/g	231 ug/g
Cadmium	LT	LT
Calcium	21 ug/g	24 ug/g
Cerium	LT	LT
Chromium	740 ug/g	727 ug/g
Cobalt	LT	LT
Copper	LT	LT
Europium	5 ug/g	LT
Iron	18 ug/g	16 ug/g
Lanthanum	LT	LT
Lead	177 ug/g	LT
Lithium	10 ug/g	6 ug/g
Magnesium	90 ug/g	75 ug/g
Manganese	LT	LT
Mercury	15 ug/g	11 ug/g
Molybdenum	12 ug/g	LT
Neodymium	LT	LT
Nickel	LT	LT
Phosphorous	2956 ug/g	2720 ug/g
Potassium	LT	LT
Samarium	273 ug/g	LT
Selenium	267 ug/g	276 ug/g
Silicon	1111 ug/g	1075 ug/g
Silver	LT	LT
Sodium	63099 ug/g	62398 ug/g
Strontium	3 ug/g	2 ug/g
Sulfur	777 ug/g	744 ug/g
Tantalum	LT	LT
Thallium	418 ug/g	298 ug/g
Thorium	161 ug/g	69 ug/g
Tin	LT	LT
Titanium	10 ug/g	7 ug/g
Uranium	LT	LT
Vanadium	21 ug/g	10 ug/g
Zinc	7 ug/g	6 ug/g
Zirconium	27 ug/g	LT

DATA SUMMARY

Units For Samples Are Wet Weight

Core 13 Composite
Acid Digestion

Tank: 241-U-110
Customer Id.: Core 13 Composite

Atomic Absorption Spectroscopy

Hydride Analysis

	Sample	Duplicate
Acid Digestion	9.56 g/L	10.04 g/L
Arsenic	<1.05 ug/g	<9.96E-01 ug/g
Mercury	6.28E-01 ug/g	4.99E-01 ug/g
Selenium	2.90E-01 ug/g	2.76E-01 ug/g

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

ICP Results

	Sample	Duplicate
Aluminum	57262 ug/g	56255 ug/g
Antimony	572 ug/g	LT
Barium	49 ug/g	LT
Beryllium	3 ug/g	LT
Bismuth	15713 ug/g	14154 ug/g
Boron	60 ug/g	55 ug/g
Cadmium	LT	LT
Calcium	557 ug/g	512 ug/g
Cerium	LT	LT
Chromium	676 ug/g	458 ug/g
Cobalt	129 ug/g	LT
Copper	73 ug/g	LT
Europium	LT	LT
Iron	14141 ug/g	16036 ug/g
Lanthanum	88 ug/g	LT
Lead	1123 ug/g	520 ug/g
Lithium	13 ug/g	LT
Magnesium	217 ug/g	231 ug/g
Manganese	5703 ug/g	5270 ug/g
Mercury	LT	LT
Molybdenum	35 ug/g	LT
Nickel	142 ug/g	65 ug/g
Potassium	LT	LT
Samarium	LT	LT
Selenium	677 ug/g	244 ug/g
Silicon	5217 ug/g	2760 ug/g
Silver	LT	LT
Sodium	75809 ug/g	71589 ug/g
Strontium	563 ug/g	475 ug/g
Sulfur	883 ug/g	706 ug/g
Tantalum	LT	LT
Thallium	816 ug/g	LT
Thorium	2112 ug/g	LT
Tin	67 ug/g	LT
Titanium	28 ug/g	LT
Uranium	8653 ug/g	LT
Vanadium	LT	LT
Zinc	1828 ug/g	437 ug/g
Zirconium	134 ug/g	LT

PHYSICAL TEST RESULTS

Single Shell Tank
Extrusion of Segment -- Physical Tests

LAB SEGMENT SERIAL #: F1067 CUSTOMER ID: 000013

ANALYST: K. J. Patterson DATE EXTRUDED:

DRAINABLE LIQUID Liquid Submitted for Segment Analysis? -- No

GROSS	TARE	NET
SERIAL	DATE/TIME	ESTIMATED
SPECIFIC	CALCULATED	

APPEARANCE OF LIQUID:

DIMENSIONS OF SEGMENT

Completed Segment Obtained?	LENGTH:	CALC. VOL.
REMARKS		

APPEARANCE OF SOLIDS:

Samples were consolidated from four jars. The composite was labeled as jar #397.

Sample was damp, granular and dark brown in color.

PENETROMETER	N/A lbs/sq in	REMARKS:

HOMOGENIZATION

PROCEDURE: T038A-00712 REVISION: F	QUANTITY OF MATERIAL: 120.0	GRAMS
DATE HOMOGENIZED:	TIME HOMOGENIZED: 20	MINUTES
OPERATOR: Fran Steen		

LABORATORY NOTEBOOK REFERENCE	WHC-N-313-4	29
	Notebook No.	Page No.

SST-3 Rev. F 9/27/90 Interim

Analytical Batch

LAB SEGMENT SERIAL #: F1067

CUSTOMER ID: 000013

INSTRUMENT	WA63090/WA58053
PROCEDURE/REV	LI-000-200
TECHNOLOGIST	D. B. Bechtold
DATE	March 13, 1990
TEMPERATURE	<50 C
STARTING TIME	0830 03-08-90
ENDING TIME	1500 03-13-90
CHEMIST	D. B. Bechtold

Thermo-Gravimetric/Differential Scanning Calorimeter Analysis

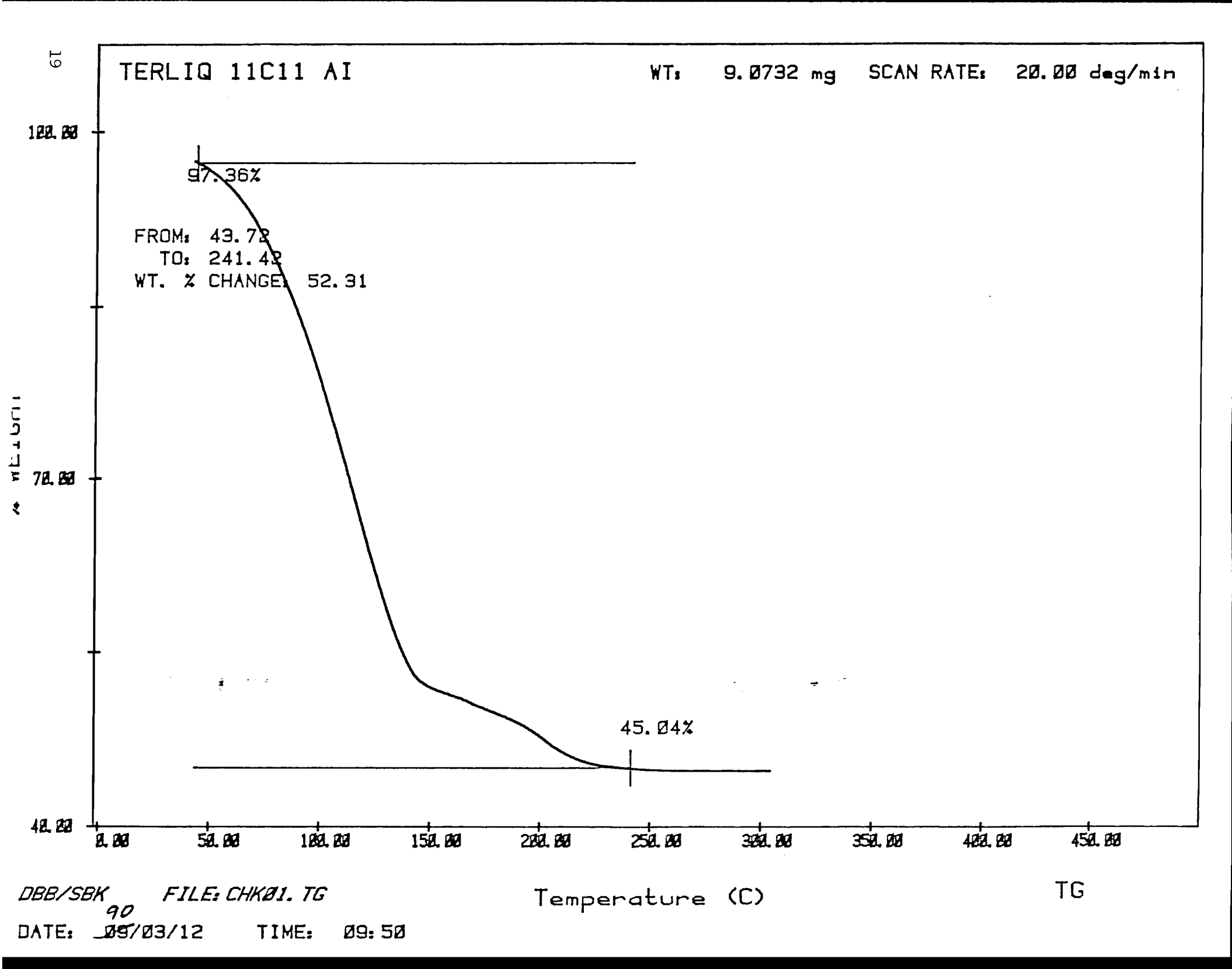
Perkin-Elmer

	DESCRIPTION	LAB ID
1	Thermographic Analysis	F1067
2	Diff. Scanning Calorimeter	F1067
3		
4		
5		
6		
7		
8		
9		
10		
11		

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

STANDARD TYPE	PRIMARY BOOK # & ALIQUOT VOL.	SECOND BOOK # & ALIQUOT VOL.	THIRD BOOK # & ALIQUOT VOL.	FINAL VOL. OF STD.
N/A				

SST-102 Rev. I 10/2/90 Interim



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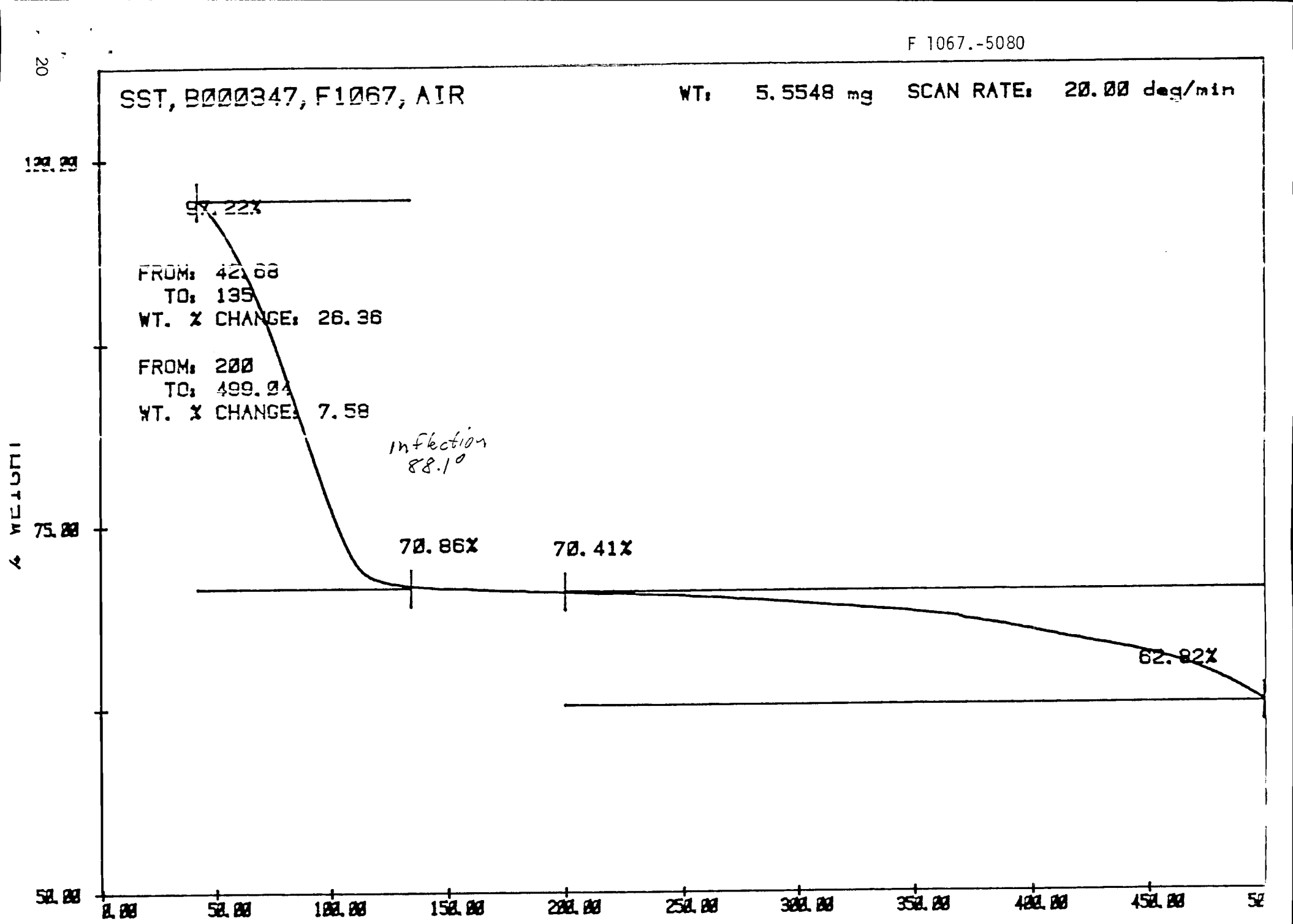

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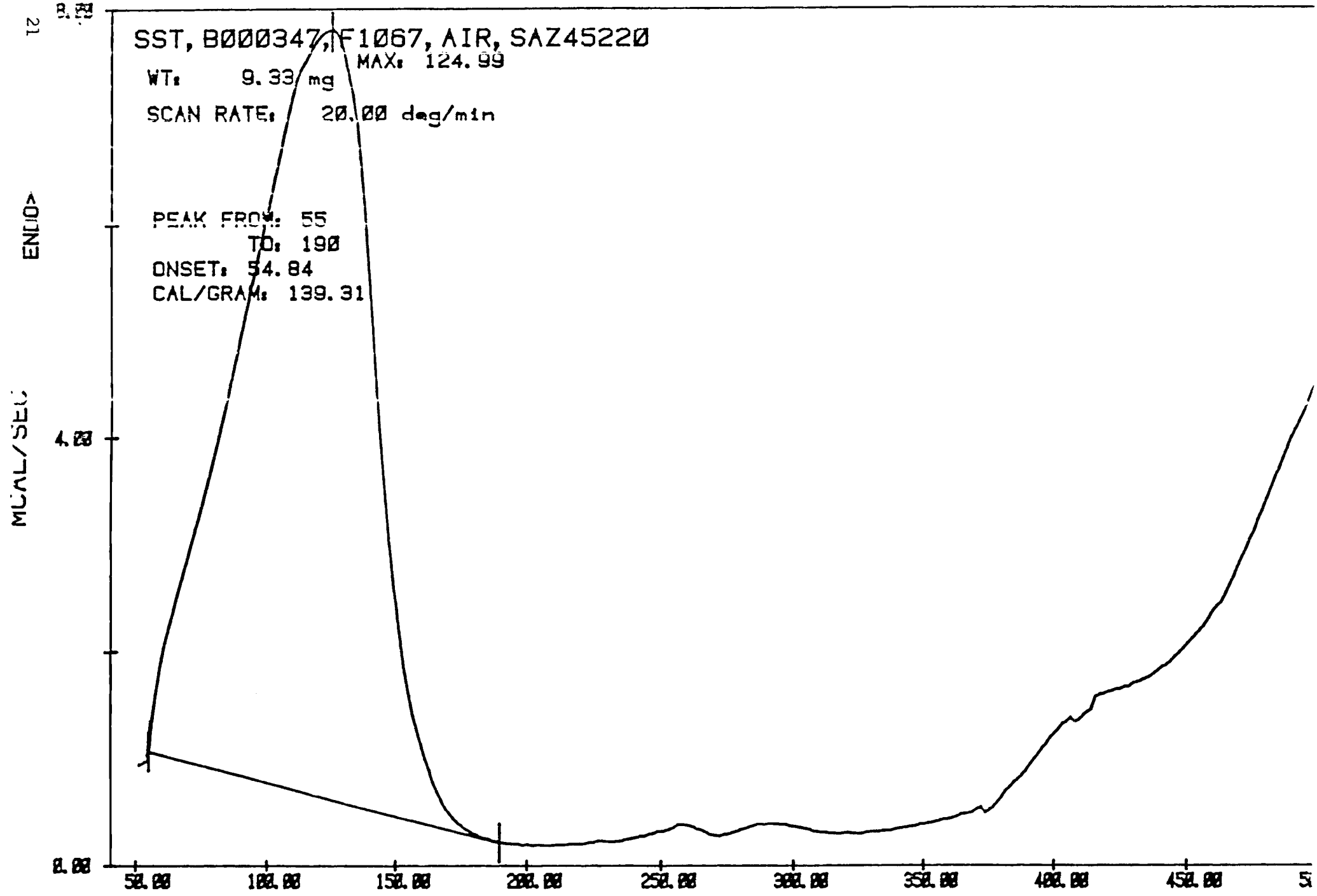
DATE: 00/03/13 TIME: 10:43



DBB, SBK FILE: F1067.04

TEMPERATURE (C)

DSC

DATE: 90/03/08 TIME: 15:14

UNDIGESTED SAMPLE ANALYSIS

Single Shell Tank Project

Undigested Sample
Analysis Results
Units For Samples Are Wet Weight

Tank: 241-U-110
Customer ID: Core 13 Composite

	Check Standard	Blank		Sample		Duplicate Sample		Spike of Sample	Check Standard
Laboratory ID:	F1065	F1066		F1067		F1068		N/A	F1070
pH	100.40%	6.34		12.60		12.73		N/A	100.70%
Laboratory ID:	F1065	F1066		F1067		F1068		N/A	F1070
% Water	96.60%	3.60E-03	g	39.70%		40.01%		N/A	99.00%
Laboratory ID:	F1065	F1066		F1067		F1068		F1069	F1070
Mercury	104.80%	<1.00E-02	ug/g	1.21	ug/g	1.07	ug/g	136.10%	106.70%
Laboratory ID:	F1065	F1066		F1067		F1068		F1069	F1070
Cyanide	97.50%	<5.00E-01	mg	<10.00	ug/g	<9.00	ug/g	98.40%	99.10%

Analytical Batch

LAB SEGMENT SERIAL #: F1067

CUSTOMER ID: 000013

pH Analysis of Solid Sample

INSTRUMENT	AL10653
PROCEDURE/REV	LA-212-103/A-1
TECHNOLOGIST	M. Franz
DATE	March 01, 1990
TEMPERATURE	23.5 C
STARTING TIME	0740
ENDING TIME	1330
CHEMIST	R. E. Brandt

	DESCRIPTION	LAB ID
1	Initial LMCS Check Std	F1065
2	Reagent Blank	F1066
3	Sample Comp 13	F1067
4	Duplicate Sample Comp 13	F1068
5	Final LMCS Check Std	F1070
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 BOOK # & ALIQUOT VOL.	FINAL VOL. OF STD.
LMCS Check Std	72C11B/1.0 mL			1.0 mL

Analytical Batch

Lab Segment Serial #: F1067

Customer ID: 000013

% Water in Composite Undigested Sample

Instrument	N/A
Procedure/Rev	LA-564-101/D-2
Technologist	R. D. Hale
Date	February 23, 1990
Temperature	420 C
Starting Time	1800
Ending Time	1900
Chemist	R. E. Brandt

	Description	Lab ID
1	Initial LMCS Check Std	F1065
2	Reagent Blank	F1066
3	Sample Comp 13	F1067
4	Duplicate Sample Comp 13	F1068
5	Final LMCS Check Std	F1070
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 Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std	11C11AH/1.0 g			1 g

SST-102 Rev. I 10/2/90 Interim

Analytical Batch

Lab Segment Serial #: F1067

Customer ID: 000013

Instrument	WA77479
Procedure/Rev	LA-325-102/A-2
Technologist	M. Meyers
Date	July 16, 1990
Temperature	N/A
Starting Time	1300
Ending Time	1430
Chemist	K. Fuller

Mercury Analysis by Atomic Absorption.

Manual Cold Vapor Technique

Undigested Sample

Perkin-Elmer 2280AAS

	Description	Lab ID
1	Initial LMCS Check Std	F1065
2	Reagent Blank	F1066
3	Sample Comp 13	F1067
4	Duplicate Sample Comp 13	F1068
5	Spike Sample Comp 13	F1069
6	Final LMCS Check Std	F1070
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 Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std	58C11CD/25 uL			25 mL
Spike	58C11CD/15 uL	F1067/.0388 g		25 mL

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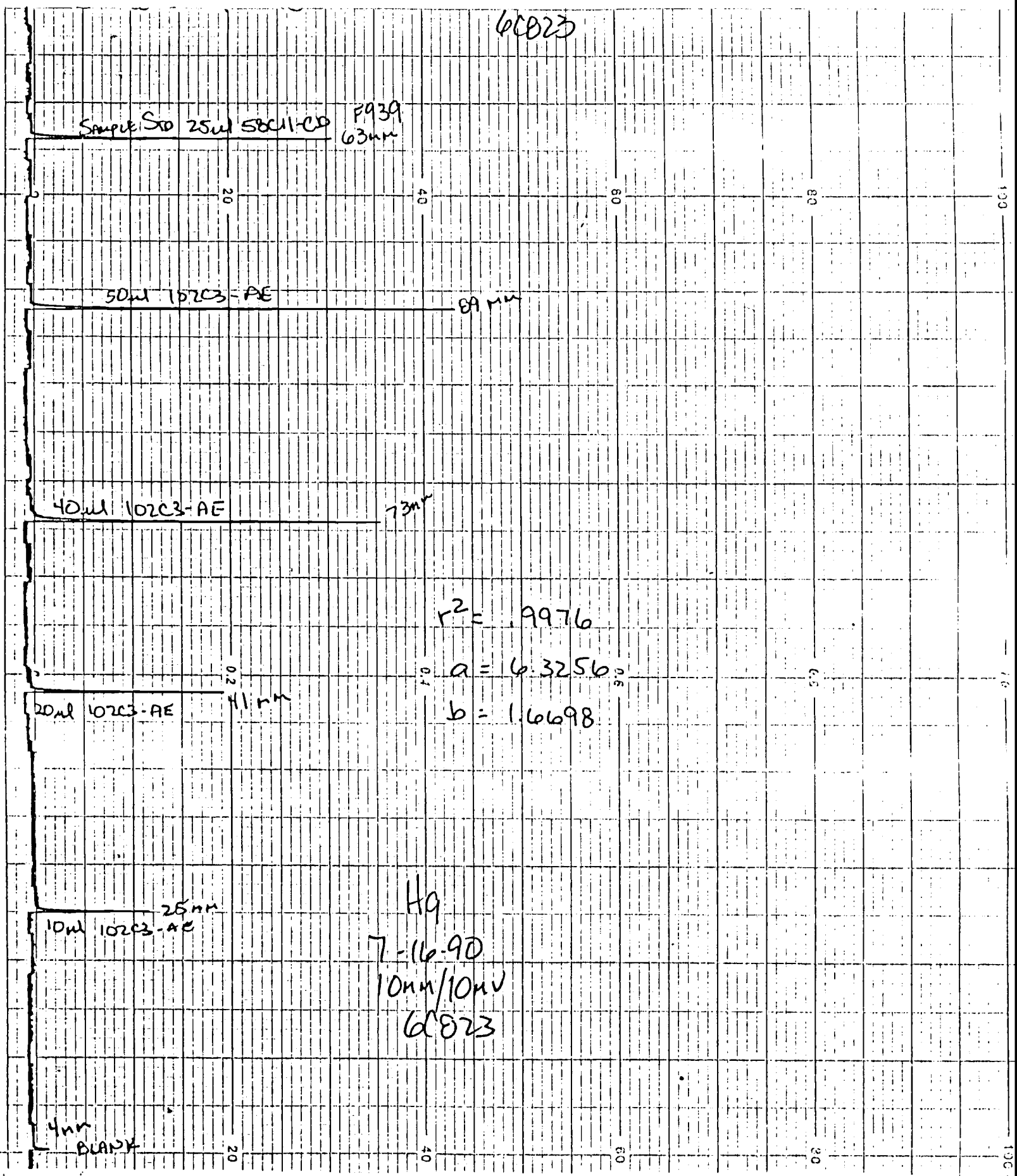
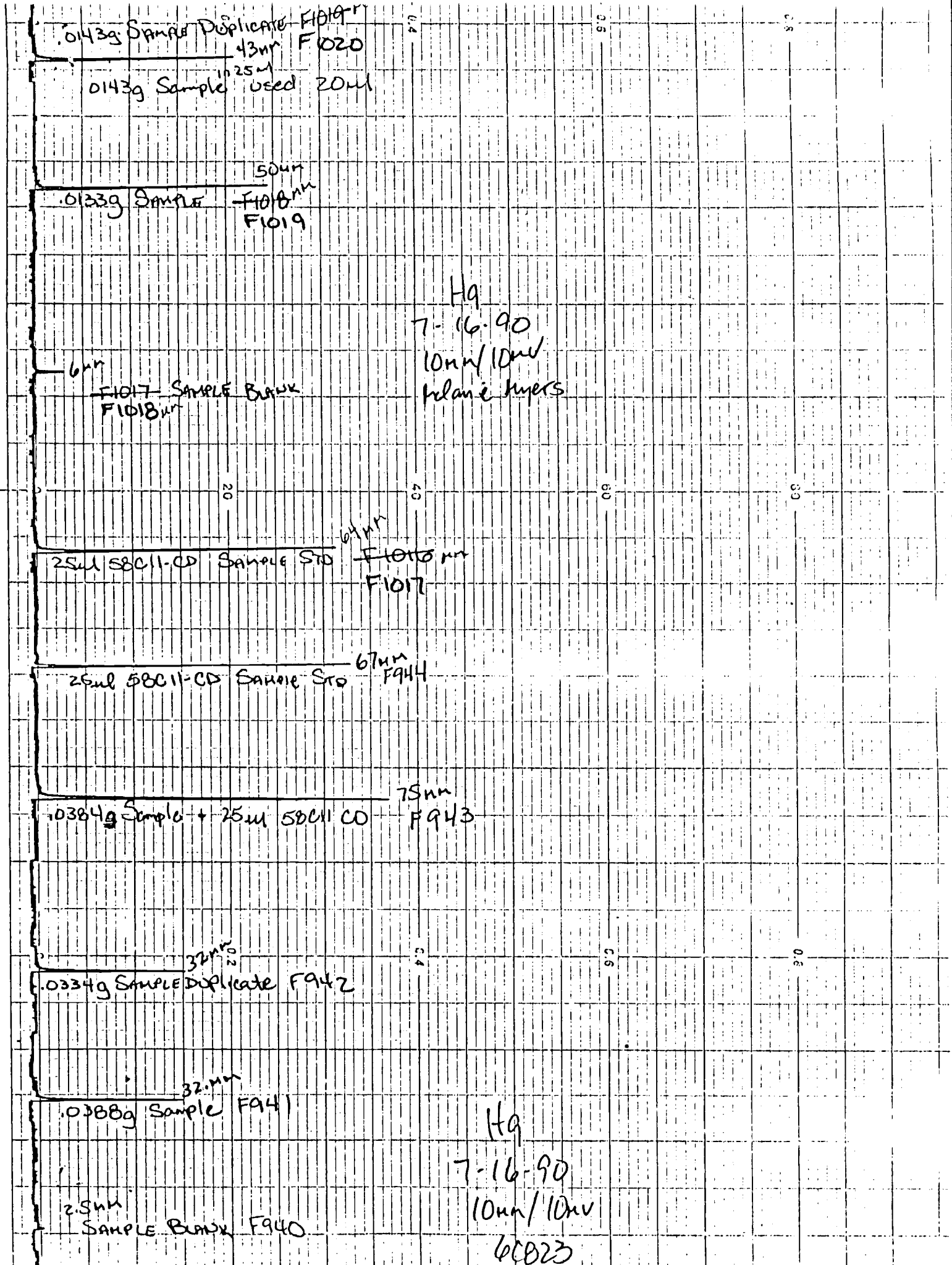

6C823
Sample Std 25µl 58C11-CD
F939
63mm
50µl 102C3-AE
89 mm
40µl 102C3-AE
73mm
20µl 102C3-AE
41mm
10µl 102C3-AE
25mm
4mm
BLANK
r² = .9976
a = 6.3256
b = 1.6698
Hg
7-16-90
10mM/10mV
6C823


.0143g Sample Duplicate ~~F1019~~ F1020
43mm
.0143g Sample in 25ml used 20ml
50mm
.0133g Sample ~~F1018~~ F1019
Hg
7-16-90
10mm/10mV
Melanie Myers
6mm
~~F1017~~ Sample Blank
F1018mm
64mm
25ul 58C11-CD Sample STD ~~F1016~~ F1017
67mm
25ul 58C11-CD Sample STD F944
75mm
.0384g Sample + 25ul 58C11 CD F943
32mm
.0334g Sample Duplicate F942
32mm
.0388g Sample F941
Hg
7-16-90
10mm/10mV
6C023
2.5mm
Sample Blank F940

69nm
.0388g Sample F1067
.0388g Sample in 25ml used 20ml

7nm Sample Blank F1066

61nm F1065
25ml 58C11-CD Sample STD

61.5nm F1022
25ml 58C11-CD Sample STD

1-9
7-16-90
10nm/10mV
6C823

38nm
.0143g Sample 2ml ~~10ml~~ + 15ml 58C11 CD F1023
.0143g in 25ml used 2ml

.0224g Sample + 25ml 58C11-CD ~~F1020~~ 150nm F1021

.0143g Sample Duplicate F1019
43nm F1020
.0143g Sample in 25ml used 20ml

50nm
.0233g Sample F1018
F1019

25ml 58C11-CD F1070 62mm

.0388g Sample 2ml-10ml + 15ml 58C11-CD F1069

1.0388g Sample in 25ml used 2ml

.0344g Sample Duplicate F1068 67.5mm

Hg
7-16-90
10mm/10mV
6C823

69mm

.0388g Sample F1067

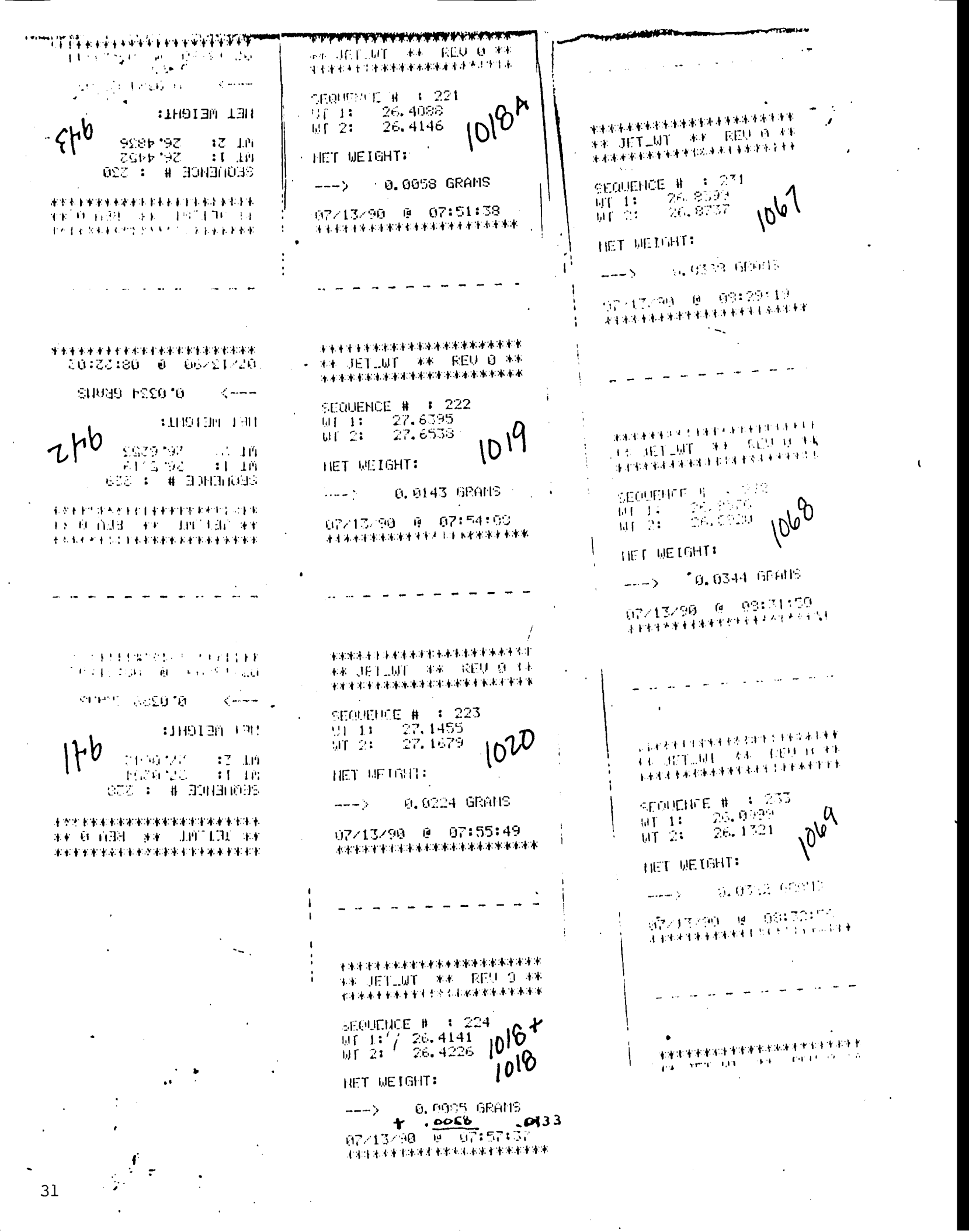
.0388g Sample in 25ml used 20ml

7mm Sample Blank F1066

25ml 58C11-CD Sample STD 61mm F1065

25ml 58C11-CD Sample STD 61.5mm F1022

Hg
7-16-90
10mm/10mV
6C823


** JET_WT ** REV 0 **
SEQUENCE # : 221
WT 1: 26.4088
WT 2: 26.4146
1018A
NET WEIGHT:
---> 0.0058 GRAMS
07/13/90 @ 07:51:38
** JET_WT ** REV 0 **
SEQUENCE # : 222
WT 1: 27.6385
WT 2: 27.6538
1019
NET WEIGHT:
---> 0.0143 GRAMS
07/13/90 @ 07:54:00
** JET_WT ** REV 0 **
SEQUENCE # : 223
WT 1: 27.1455
WT 2: 27.1679
1020
NET WEIGHT:
---> 0.0224 GRAMS
07/13/90 @ 07:55:49
** JET_WT ** REV 0 **
SEQUENCE # : 224
WT 1: 26.4141
WT 2: 26.4226
1018+
1018
NET WEIGHT:
---> 0.0085 GRAMS
+ .0058
.0133
07/13/90 @ 07:57:37
** JET_WT ** REV 0 **
SEQUENCE # : 231
WT 1: 26.8529
WT 2: 26.8737
1067
NET WEIGHT:
---> 0.0208 GRAMS
07/13/90 @ 08:29:19
** JET_WT ** REV 0 **
SEQUENCE # : 232
WT 1: 26.6575
WT 2: 26.6919
1068
NET WEIGHT:
---> 0.0344 GRAMS
07/13/90 @ 08:31:50
** JET_WT ** REV 0 **
SEQUENCE # : 233
WT 1: 25.0999
WT 2: 26.1321
1069
NET WEIGHT:
--->

Analytical Batch

LAB SEGMENT SERIAL #: F1067

CUSTOMER ID: 000013

INSTRUMENT	WA66684
PROCEDURE/REV	LA-695-101/A-2
TECHNOLOGIST	E. Colvin
DATE	June 20, 1990
TEMPERATURE	10 C to 14 C
STARTING TIME	0800
ENDING TIME	1130
CHEMIST	R. E. Brandt

Cyanide Analysis
Undigested Sample

	DESCRIPTION	LAB ID
1	Initial LMCS Check Std	F1065
2	Reagent Blank	F1066
3	Sample Comp 13	F1067
4	Duplicate Sample Comp 13	F1068
5	Spike Sample Comp 13	F1069
6	Final LMCS Check Std	F1070
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 BOOK # & ALIQUOT VOL.	FINAL VOL. OF STD.
LMCS Check Std	75C11F/5 uL			N/A
Spike	75C11F/5 uL	F1067/.0621 g		N/A

SST-102 Rev. I 10/2/90 Interim

Single Shell Tank
Calibration Record

Analyte:	CN-		
Procedure:	LA-695-101	Revision:	A-1
Instrument:	Baush & Lomb Spectronic 21	Property Number:	WA66684
Technologist:	R.Brandt	Payroll Number:	69090
Date:	July 20, 1989		

Calibration Standard ID: 88C15C

Analyte Concentration: 817 ug/ml

Type of Calibration: Least Square Linear Regression

Dilution	Concentration	Instrument Reading Units= Abs.
Blank	0	0.016
100 ul	0.82 ug	0.091
200 ul	1.63 ug	0.150
500 ul	4.08 ug	0.354
1000 ul	8.17 ug	0.663
2000 ul	16.34 ug	1.275
3000 ul	24.51 ug	1.720

Comments: Y - intercept - 0.01682

Slope - 0.076317

Correlation Coefficient - 0.999874

SST-103 Rev. A 9/25/90 Interim

KOH FUSION ANALYSIS

Single Shell Tank Project

Fusion Analysis
Laboratory Results Of Solids
Units Are Sample Wet Weight

Tank: 241-U-110
Customer ID: Core 13 Composite

	Standard	Blank		Sample		Duplicate Sample		Spike of Sample	Standard Sample
Laboratory ID:		F1072		F1073		F1074			
Fusion		Complete		1.72	g/L	2.16	g/L		
Laboratory ID:	F1047	F1048		F1073		F1074		F1075	F1076
Total Alpha	99.10%	<2.81E-02	uci/L	<1.13	uci/g	<7.78E-01	uci/g	92.90%	98.60%
Total Beta	102.20%	<1.93E-01	uci/L	1.58E+03	uci/g	1.50E+03	uci/g	106.20%	104.40%
Laboratoy ID:	F1076	F1078		F1073		F1074		F1075	F1077
Gea Cs-137	103.70%	<6.28E-02	uci/L	3.06E+01	uci/g	2.93E+01	uci/g	104.00%	102.40%
Laboratory ID:	F1071	F1072		F1073		F1074		F1075	F1076
Uranium	90.00%	<7.11E+01	ug/L	6.10E+03	ug/g	5.14E+03	ug/g	98.30%	88.90%
Laboratory ID:	F1047	F1048		F1073		F1074		F1081	F1082
Plutonium	105.60%	<8.29E-03	uci/L	2.85E-01	uci/g	2.50E-01	uci/g	101.70%	98.10%
Laboratory ID:	F1047	F1048		F1073		F1074		F1075	F1076
Americium	105.99%	<2.28E-02	uci/L	1.28E-01	uci/g	<2.96E-02	uci/g	101.30%	106.60%
Laboratory ID:	F0999	F1000		F1073		F1074		F1075	F1076
Neptunium	67.00%	<1.08	uci/L	<6.28E-01	uci/g	<5.00E-01	uci/g	61.50%	65.50%
Laboratory ID:	F1071	F1072		F1073		F1074		F1075	F1076
Technetium 99	123.30%	<2.61E-02	uci/L	<1.20E-02	uci/g	<9.49E-03	uci/g	98.10%	99.80%
Laboratory ID:	F0921	F0922		F1073		F1074		F1075	F1076
Iodine 129	98.00%	<1.50E-02	uci/L	<1.10E-02	uci/g	<6.94E-03	uci/g	89.80%	95.70%
Laboratory ID:	F1071	F1072		F1073		1074		F1075	F1076
Strontium	99.70%	9.96E-02	uci/L	5.34E+02	uci/g	5.14E+02	uci/g	65.00%	101.50%

ICP Results

DATA SUMMARY

Fusion Dissolution

Date Analyzed:	April 27,1990		
Procedure:	LA-505-151/A-0	Reagent Blank	F1072
Analyst:	J. A. White	Core 13 Composite	F1073
Digestion	Acid Digestion	Duplicate of Core 13 Comp.	F1074
Procedure:	LA-505-159/A-0	Spike of Core 13 Comp.	F1075

	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	105.37%		-2.08 LT	28065	30125	NOT CALC.		109.38%
Antimony	101.78%		-2.32 LT	38 LT	-166 LT	19.62%		107.72%
Barium	100.31%		-0.27 LT	-2 LT	-21 LT	NOT CALC.		103.35%
Beryllium	99.10%		-0.04 LT	-1 LT	-3 LT	NOT CALC.		105.63%
Boron	102.98%		0.84	153	113	94.74%		106.68%
Cadmium	97.77%		-0.15 LT	-7 LT	-15 LT	NOT CALC.		102.96%
Calcium	103.34%		1.19	737	1005	NOT CALC.		106.26%
Chromium	92.10%		-0.28 LT	177	139	78.98%		95.69%
Cobalt	101.08%		-0.42 LT	21 LT	-11 LT	93.15%		108.78%
Copper	101.90%		-0.69 LT	39 LT	-6 LT	87.95%		105.93%
Europium	93.20%		-0.19 LT	-8 LT	-20 LT	NOT CALC.		98.13%
Iron	104.02%		0.26	3239	3263	NOT CALC.		108.86%
Lithium	95.05%		-0.49 LT	-20 LT	-52 LT	NOT CALC.		97.11%
Magnesium	102.22%		2.33	472	221	90.99%		106.23%
Manganese	101.36%		0.00 LT	912	890	NOT CALC.		105.38%
Mercury	103.77%		-0.17 LT	-4 LT	-26 LT	NOT CALC.		103.80%
Molybdenum	98.33%		-0.33 LT	-6 LT	-27 LT	NOT CALC.		102.84%
Neodymium	94.58%		-8.83 LT	-498 LT	-915 LT	NOT CALC.		95.97%
Nickel	98.00%		13.53	1449	1600	NOT CALC.		102.81%
Phosphorous	103.55%		-1.40 LT	813	522	-0.23%		96.39%
Potassium	97.37%		NA	NA	NA	NA		100.58%
Samarium	98.35%		-11.29 LT	-420 LT	-1162 LT	NOT CALC.		101.55%
Selenium	102.42%		-4.14 LT	-96 LT	-277 LT	NOT CALC.		103.85%
Silicon	90.44%		16.82	7151	6832	NOT CALC.		94.99%
Silver	104.29%		-0.81 LT	-29 LT	-84 LT	NOT CALC.		108.99%
Sodium	96.64%		10.52	14124	17280	NOT CALC.		99.31%
Strontium	101.93%		-0.10 LT	97	130	91.10%		105.21%
Sulfur	100.97%		-0.53 LT	195	102	0.02%		99.29%
Tantalum	98.33%		-1.62 LT	-55 LT	-158 LT	NOT CALC.		101.45%
Thallium	104.56%		-14.56 LT	-198 LT	4887 LT	NOT CALC.		106.33%
Thorium	101.05%		-6.72 LT	-213 LT	2302 LT	NOT CALC.		107.48%
Tin	97.17%		-0.43 LT	10 LT	-29 LT	84.54%		102.77%
Titanium	103.57%		-0.39 LT	-2 LT	-26 LT	NOT CALC.		109.98%
Vanadium	103.19%		-0.68 LT	-13 LT	-63 LT	NOT CALC.		108.33%
Zinc	100.17%		0.09	88	77	87.98%		105.24%
Zirconium	102.72%		-1.18 LT	-20 LT	-95 LT	NOT CALC.		108.49%

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

Single Shell Tank Project

Fusion Analysis
Laboratory Results Of Solids
Results of the Laboratory Digestion

Tank: 241-U-110
Customer ID: Core 13 Composite

	Standard	Blank		Sample		Duplicate Sample		Spike of Sample	Standard Sample
Laboratory ID:		F1072		F1073		F1074			
Fusion		Complete		1.72	g/L	2.16	g/L		
Laboratory ID:	F1047	F1048		F1073		F1074		F1075	F1076
Total Alpha	99.10%	<2.81E-02	uci/L	<1.94	uci/L	<1.68	uci/L	92.90%	98.60%
Total Beta	102.20%	<1.93E-01	uci/L	2.71E+03	uci/L	3.23E+03	uci/L	106.20%	104.40%
Laboratoy ID:	F1076	F1078		F1073		F1074		F1075	F1077
Gea Cs-137	103.70%	<6.28E-02	uci/L	5.27E+01	uci/L	6.33E+01	uci/L	104.00%	102.40%
Laboratory ID:	F1071	F1072		F1073		F1074		F1075	F1076
Uranium	90.00%	<7.11E+01	ug/L	1.05E-02	g/L	1.11E-02	g/L	98.30%	88.90%
Laboratory ID:	F1047	F1048		F1073		F1074		F1081	F1082
Plutonium	105.60%	<8.29E-03	uci/L	4.90E-01	uci/L	5.41E-01	uci/L	101.70%	98.10%
Laboratory ID:	F1047	F1048		F1073		F1074		F1075	F1076
Americium	105.99%	<2.28E-02	uci/L	2.21E-01	uci/L	<6.39E-02	uci/L	101.30%	106.60%
Laboratory ID:	F0999	F1000		F1073		F1074		F1075	F1076
Neptunium	67.00%	<1.08	uci/L	<1.08	uci/L	<1.08	uci/L	61.50%	65.50%
Laboratory ID:	F1071	F1072		F1073		F1074		F1075	F1076
Technetium 99	123.30%	<2.61E-02	uci/L	<2.07E-02	uci/L	<2.05E-02	uci/L	98.10%	99.80%
Laboratory ID:	F0921	F0922		F1073		F1074		F1075	F1076
Iodine 129	98.00%	<1.50E-02	uci/L	<1.89E-02	uci/L	<1.50E-02	uci/L	89.80%	95.70%
Laboratory ID:	F1071	F1072		F1073		1074		F1075	F1076
Strontium	99.70%	9.96E-02	uci/L	9.19E+02	uci/L	1.11E+03	uci/L	65.00%	101.50%

Analytical Batch

LAB SEGMENT SERIAL #: F1067

CUSTOMER ID: 000013

Fusion Dissolution

INSTRUMENT	N/A
PROCEDURE/REV	LA-549-141/A-1
TECHNOLOGIST	R. D. Hale
DATE	February 22, 1990
TEMPERATURE	450 C
STARTING TIME	1730
ENDING TIME	1830
CHEMIST	S. A. Catlow

	DESCRIPTION	LAB ID
1	Reagent Blank	F1072
2	Sample Comp 12	F1049
3	Duplicate Sample Comp 12	F1050
4	Sample Comp 13	F1073
5	Duplicate Sample Comp 13	F1074
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 BOOK # & ALIQUOT VOL.	FINAL VOL. OF STD.
N/A				

SST-102 Rev. I 10/2/90 Interim

Analytical Batch

Lab Segment Serial #: F1067

Customer ID: 000013

Instrument	WA57276
Procedure/Rev	LA-508-101/C-2
Technologist	R. D. Hale
Date	February 23, 1990
Temperature	N/A
Starting Time	1100
Ending Time	1200
Chemist	S. A. Catlow

Total Alpha & Total Beta
Fusion Dissolution

Detector 14

Tennelec

	Description	Lab ID
1	Initial LMCS Check Std	F1047
2	Reagent Blank	F1048
3	Sample Comp 12	F1049
4	Duplicate Sample Comp 12	F1050
5	Sample Comp 13	F1073
6	Duplicate Sample Comp 13	F1074
7	Spike Sample Comp 13	F1075
8	Final LMCS Check Std	F1076
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 Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std	102B44/10 mL			N/A
Spike	102B44/10 mL	F1049/1.0 uL		N/A

SST-102 Rev. I 10/2/90 Interim

Single Shell Tank
Calibration Record

ANALYTE:	Am^{241}		
PROCEDURE:	LQ-508-002	REVISION:	A-0
INSTRUMENT:	Detector #14	PROPERTY NUMBER:	WA57276
TECHNOLOGIST:	R.A. Jones	PAYROLL NUMBER:	65801
DATE:	November 28,1988		
CALIBRATION STANDARD ID:	36B40A8; 36B40B7; 36B40C7; 36B40A3; 36B40B3; 36B40C3; 36B40A6;36B40B6; 36B40C5		
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. 14

RADIONUCLIDE: Am-241
HALF LIFE: 154497
COUNT TIME: 5
CPM BKG: 0.5

TIME ZERO DATE (HD): 15897

DATE COUNTED (HD): 16135

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

STANDARD ID	SIZE	DATE	TIME	COUNTS @ 0 DEG.	COUNTS @ 90 DEG.	COUNTS @ 180 DEG.	COUNTS @ 270 DEG.
36B40A8	1	11/28/88	1115	83719	83889	83820	84087
36B40B7	1	11/28/88	1128	147778	147414	147378	147313
36B40C7	1	11/28/88	1142	212324	211727	211106	211442
36B40A3	2	11/28/88	1155	67029	66485	66532	66137
36B40B3	2	11/28/88	1207	116432	117580	116643	116507
36B40C3	2	11/28/88	1221	167025	166472	166682	166167
36B40A6	5	11/28/88	1234	64835	64744	63542	64860
36B40B6	5	11/28/88	1246	132366	127335	127267	127511
36B40C5	5	11/28/88	1300	176904	172226	170187	173840

STANDARD ID	SIZE	STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
36B40A8	1"	60570	16775	1.00	16793	0.2773
36B40B7	1"	109900	29494	1.00	29525	0.2687
36B40C7	1"	159700	42329	1.00	42375	0.2653

AVERAGE, 1" = 0.2704 +/- @95% 0.0121 4.46 % ON 11/28/88

STANDARD ID	SIZE	STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
36B40A3	2"	61800	13309	1.00	13323	0.2156
36B40B3	2"	110700	23358	1.00	23383	0.2112
36B40C3	2"	161400	33317	1.00	33352	0.2066

AVERAGE, 2" = 0.2111 +/- @95% 0.0088 4.15 % ON 11/28/88

STANDARD ID	SIZE	STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
36B40A6	5"	59470	12899	1.00	12912	0.2171
36B40B6	5"	109800	25723	1.00	25751	0.2345
36B40C5	5"	160100	34657	1.00	34694	0.2167

AVERAGE, 5" = 0.2228 +/- @95% 0.0199 8.95 % ON 11/28/88

NEW EFFS FOR DET 14 Am-241 1" = 0.2704 2" = 0.2111

5" = 0.2228

Single Shell Tank
Calibration Record

Analyte:	Co^{60}		
Procedure:	LQ-508-002	Revision:	A-0
Instrument:	Detector #14	Property Number:	WA57276
Technologist:	R.A. Jones	Payroll Number:	65801
Date:	November 28, 1988		
Calibration Standard ID:	32B40A8; 32B40B7; 32B40C7; 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. 14

		2",5" STD TIME ZERO DATE (HD):	15883
RADIONUCLIDE:	Co-60	1" STD TIME ZERO DATE (HD):	15883
HALF LIFE:	1925	DATE COUNTED (HD):	16135
COUNT TIME:	5	DATE COUNTED 1" (HD)	16135
CPM BKG:	19		
CPM 1" BKG:	19		

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

STANDARD ID	SIZE	DATE	TIME	COUNTS @ 0 DEG.	COUNTS @ 90 DEG.	COUNTS @ 180 DEG.	COUNTS @ 270 DEG.
32B40A8	1	11/28/88	1313	94851	93909	94136	94073
32B40B7	1	11/28/88	1325	180320	178550	178878	179065
32B40C7	1	11/28/88	1338	260104	258654	259795	259469
32B40A4	2	11/28/88	1349	90411	89596	89705	90717
32B40B3	2	11/28/88	1527	170657	169556	169500	170301
32B40C4	2	11/28/88	1540	244082	244246	243016	249016
32B40A5	5	11/28/88	1551	83403	82448	82728	84312
32B40B6	5	11/28/88	1603	160402	163149	162823	159622
32B40C5	5	11/28/88	1616	237343	232578	231827	23179

STANDARD ID	SIZE	STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
32B40A8	1"	69550	18829	1.09	20618	0.2964
32B40B7	1"	134700	35822	1.09	39224	0.2912
32B40C7	1"	201000	51882	1.09	56810	0.2826

AVERAGE, 1" = 0.2901 +/- @95% 0.0137 4.71 % ON 11/28/88

STANDARD ID		STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
32B40A4	2"	70480	18002	1.09	19712	0.2797
32B40B3	2"	135100	33982	1.09	37209	0.2754
32B40C4	2"	202400	48999	1.09	53653	0.2651

AVERAGE, 2" = 0.2734 +/- @95% 0.0147 5.38 % ON 11/28/88

STANDARD ID		STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
32B40A5	5"	70160	16626	1.09	18205	0.2595
32B40B6	5"	135700	32281	1.09	35347	0.2605
32B40C5	5"	201900	46658	1.09	51090	0.2530

AVERAGE, 5" = 0.2577 +/- @95% 0.0079 3.07 % ON 11/28/88

NEW EFFS FOR DET 14 Co-60 1" = 0.2901 2" = 0.2734

5" = 0.2577

Analytical Batch

Lab Segment Serial #: F1067

Customer ID: 000013

Instrument	WA401934/WA77228
Procedure/Rev	LA-548-121/C-2
Technologist	R. D. Hale
Date	February 23, 1990
Temperature	N/A
Starting Time	1300
Ending Time	1400
Chemist	S. A. Catlow

GEA Analysis
Fusion Dissolution

Samples are prepared in batch, but counted randomly.

	Description		Lab ID
1	Initial LMCS Check Std		F1076
2	Reagent Blank		F1078
3	Sample	Comp 13	F1073
4	Duplicate Sample	Comp 13	F1074
5	Sample	Comp 13	F1079
6	Duplicate Sample	Comp 13	F1080
7	Spike Sample	Comp 13	F1075
8	Final LMCS Check Std		F1077
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 Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std	122B44/500 uL			22 mL
Spike	122B44/500 uL	F1049/50 uL		22 mL

SST-102 Rev. I 10/2/90 Interim

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

CANBERRA SPECTRAN-F V2.06  SOFTWARE

222-S COUNTING ROOM WESTINGHOUSE HANFORD           28-SEP-90  10:41:24


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

MCA UNIT NUMBER:   2     /     ADC UNIT NUMBER: 3.0
DETECTOR NUMBER:    3    /     GEOMETRY NUMBER:  41
SPECTRUM SIZE:  4096 CHANNELS
ORDER OF SMOOTHING FUNCTION:     5
NUMBER OF BACKGROUND CHANNELS:  4 ON EACH SIDE OF PEAK
PEAK CONFIDENCE FACTOR: 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: SD3189
ANALYZED BY:        VR

SAMPLE DESCRIPTION: F1076 SEG/COMP/#12
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 23-FEB-90 AT 18:25:32

COLLECT LIVE TIME:    3000. SECONDS
        REAL TIME:    3010. SECONDS
        DEAD TIME:     0.33 %

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

ENERGY CALIBRATION PERFORMED 17-OCT-89
EFFICIENCY CALIBRATION PERFORMED 31-JUL-89
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222-S COUNTING ROOM WESTINGHOUSE HANFORD 28-SEP-90 10:41:24

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	63.89	32.53	1.06	1731.	2249.	10.0	CE-144
2C	72.61	36.88	1.06	1271.	466.	26.3	TE-125M
3C	1126.16	563.13	1.44	711.	552.	12.7	CS-134, EU-152
4C	1138.49	569.30	1.44	686.	991.	11.8	CS-134, BI-207
5	1209.20	604.63	1.54	857.	6164.	2.9	CS-134
6	1322.99	661.49	1.50	583.	11237.	2.0	CS-137
6B		661.41			81.	28.8	
7C	1591.19	795.54	1.57	424.	4406.	3.9	CS-134
8C	1603.23	801.56	1.57	419.	374.	14.4	CS-134
9	2345.55	1172.73	1.94	414.	5823.	2.8	CO-60
10	2664.15	1332.09	1.97	94.	5448.	2.7	CO-60
11	2920.51	1460.36	1.96	47.	618.	8.8	K-40
11B		1460.58			611.	5.5	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 95.0%

C - MULTIPLET ANALYSIS CONVERGED NORMALLY
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 28-SEP-90 10:41:24

SAMPLE: F1076 SEG/COMP/#12
DATA COLLECTED ON 23-FEB-90 AT 18:25:32
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<1.54E+00		LLD<1.54E+00		911.07	
AG-108M	LLD<2.88E-01		LLD<2.88E-01		433.94	
AG-110M	LLD<1.44E+00		LLD<1.44E+00		657.76	
AM-241	LLD<2.80E-01		LLD<2.80E-01		59.54	
AM-243	LLD<1.75E-01		LLD<1.75E-01		74.67	
AR-41	LLD<3.00E-01		LLD<3.00E-01		1293.64	
AU-198	LLD<2.67E-01		LLD<2.67E-01		411.80	
BA-133	LLD<3.43E-01		LLD<3.43E-01		356.02	
BA-139	LLD<7.43E-01		LLD<7.43E-01		165.85	
BA-140	LLD<1.14E+00		LLD<1.14E+00		537.27	
BA-141	LLD<8.07E-01		LLD<8.07E-01		190.23	
BE-7	LLD<2.74E+00		LLD<2.74E+00		477.59	
BI-207	LLD<3.03E-01		LLD<3.03E-01		569.70	
BI-212	LLD<4.07E+00		LLD<4.07E+00		727.27	
BI-214	LLD<1.99E+00		LLD<1.99E+00		609.32	
CD-109	LLD<2.99E+00		LLD<2.99E+00		88.03	
CE-139	LLD<1.68E-01		LLD<1.68E-01		165.85	
CE-141	LLD<2.71E-01		LLD<2.71E-01		145.44	
CEPR144	LLD<2.26E+00		LLD<2.26E+00		133.51	
CO-56	LLD<3.26E-01		LLD<3.26E-01		846.76	
CO-57	LLD<1.39E-01		LLD<1.39E-01		122.06	
CO-58	LLD<3.20E-01		LLD<3.20E-01		810.75	
CO-60	2.29E+01	+-6.90E-01	2.29E+01	+-6.90E-01	1332.50	-0.41
					1173.24	-0.50
CR-51	LLD<1.90E+00		LLD<1.90E+00		320.09	
CS-134	1.40E+01	+-5.81E-01	1.40E+01	+-5.81E-01	795.84	-0.30
					604.70	-0.07
CS-136	LLD<3.27E-01		LLD<3.27E-01		818.51	
CS-137	3.01E+01	+-7.33E-01	3.01E+01	+-7.33E-01	661.65	-0.16
CS-138	LLD<3.39E-01		LLD<3.39E-01		1435.86	
EU-152	LLD<1.26E+00		LLD<1.26E+00		1408.01	
EU-154	LLD<5.76E-01		LLD<5.76E-01		1274.45	
EU-155	LLD<5.21E-01		LLD<5.21E-01		105.31	
FE-59	LLD<7.94E-01		LLD<7.94E-01		1099.25	
HF-181	LLD<3.41E-01		LLD<3.41E-01		482.20	
HG-203	LLD<2.30E-01		LLD<2.30E-01		279.20	
I-131	LLD<2.91E-01		LLD<2.91E-01		364.48	
I-132	LLD<3.82E-01		LLD<3.82E-01		667.69	
I-133	LLD<2.97E-01		LLD<2.97E-01		529.69	
I-134	LLD<4.91E-01		LLD<4.91E-01		847.03	
I-135	LLD<8.43E-01		LLD<8.43E-01		1260.41	
K-40	LLD<4.65E+00		LLD<4.65E+00		1460.75	
KR-85	LLD<6.63E+01		LLD<6.63E+01		513.99	
KR-85M	LLD<2.05E-01		LLD<2.05E-01		151.17	
KR-87	LLD<6.30E-01		LLD<6.30E-01		402.58	
KR-89	LLD<8.71E+00		LLD<8.71E+00		220.90	
LA-140	LLD<1.96E-01		LLD<1.96E-01		1596.20	

LA-142	LLD<6.90E-01	LLD<6.90E-01	641.83
MN-54	LLD<3.65E-01	LLD<3.65E-01	834.83
MN-56	LLD<3.68E-01	LLD<3.68E-01	846.76
NA-22	LLD<2.26E-01	LLD<2.26E-01	1274.55
NA-24	LLD<1.97E-01	LLD<1.97E-01	1368.60
NB-94	LLD<2.87E-01	LLD<2.87E-01	702.63
NB-95	LLD<2.93E-01	LLD<2.93E-01	765.78
NB-97	LLD<1.75E+00	LLD<1.75E+00	657.92
NP-237	LLD<8.41E-01	LLD<8.41E-01	86.50
NP-238	LLD<1.51E+00	LLD<1.51E+00	984.45
NP-239	LLD<1.29E+00	LLD<1.29E+00	277.60
PA-233	LLD<5.26E-01	LLD<5.26E-01	311.98
PA-234M	LLD<7.02E+01	LLD<7.02E+01	1001.03
PB-210	LLD<7.27E+00	LLD<7.27E+00	465.03
PB-212	LLD<4.23E-01	LLD<4.23E-01	239.00
PB-214	LLD<6.85E-01	LLD<6.85E-01	351.92
PO-210	LLD<2.64E+04	LLD<2.64E+04	804.00
PO-214	LLD<1.05E+04	LLD<1.05E+04	799.70
PO-216	LLD<2.05E+04	LLD<2.05E+04	804.90
PU-239	LLD<1.95E+03	LLD<1.95E+03	129.30
PU-241	LLD<6.99E+04	LLD<6.99E+04	148.57
RA-224	LLD<4.60E+00	LLD<4.60E+00	240.99
RA-226	LLD<4.73E+00	LLD<4.73E+00	186.10
RB-88	LLD<1.66E+00	LLD<1.66E+00	1836.00
RB-89	LLD<1.73E+00	LLD<1.73E+00	1031.88
RN-220	LLD<2.62E+02	LLD<2.62E+02	549.73
RU-103	LLD<2.87E-01	LLD<2.87E-01	497.08
RURH106	LLD<5.41E+00	LLD<5.41E+00	621.80
SB-124	LLD<4.74E-01	LLD<4.74E-01	602.72
SB-125	LLD<2.10E+00	LLD<2.10E+00	176.33
SC-46	LLD<4.57E-01	LLD<4.57E-01	1120.45
SE-75	LLD<3.09E-01	LLD<3.09E-01	264.66
SN-113	LLD<3.86E-01	LLD<3.86E-01	391.67
SR-85	LLD<2.91E-01	LLD<2.91E-01	513.99
SR-91	LLD<5.04E-01	LLD<5.04E-01	555.60
SR-92	LLD<2.50E-01	LLD<2.50E-01	1383.94
TA-182	LLD<1.23E+00	LLD<1.23E+00	1121.30
TC-99M	LLD<1.51E-01	LLD<1.51E-01	140.51
TE-123M	LLD<1.57E-01	LLD<1.57E-01	159.00
TE-125M	LLD<4.11E+01	LLD<4.11E+01	109.27
TE-132	LLD<2.03E-01	LLD<2.03E-01	228.16
TH-228	LLD<8.08E+00	LLD<8.08E+00	84.37
TL-208	LLD<3.58E-01	LLD<3.58E-01	583.14
U-235	LLD<2.86E-01	LLD<2.86E-01	185.71
U-237	LLD<8.10E-01	LLD<8.10E-01	208.00
W-187	LLD<9.68E-01	LLD<9.68E-01	685.74
XE-131M	LLD<6.95E+00	LLD<6.95E+00	163.98
XE-133	LLD<2.72E-01	LLD<2.72E-01	81.00
XE-133M	LLD<1.78E+00	LLD<1.78E+00	233.21
XE-135	LLD<2.06E-01	LLD<2.06E-01	249.79
XE-138	LLD<1.55E+00	LLD<1.55E+00	258.41
Y-88	LLD<1.58E-01	LLD<1.58E-01	1836.06
Y-91	LLD<1.06E+02	LLD<1.06E+02	1204.90
Y-91M	LLD<3.81E-01	LLD<3.81E-01	555.60
ZN-65	LLD<8.52E-01	LLD<8.52E-01	1115.55
ZR-95	LLD<5.41E-01	LLD<5.41E-01	756.73
ZR-97	LLD<2.94E-01	LLD<2.94E-01	743.33
TOTAL	6.70E+01 +-1.16E+00	6.70E+01 +-1.16E+00	

STANDARD DEVIATION = 0.18

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.44E-09 UC/LI
TOTAL MEASURED ACTIVITY = 6.70E+01 (+-1.16E+00) UC/LI
% TECH. SPEC. = ****** (+-****)

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 95.0%

PEAKS NOT USED IN ANALYSIS

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
63.89	32.53	2249.	10.0	3.50E+01
72.61	36.88	466.	26.3	6.69E+00
1126.16	563.13	552.	12.7	2.02E+01
1138.49	569.30	991.	11.8	3.66E+01
1603.23	801.56	374.	14.4	1.89E+01

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2920.51	1460.36	618.	8.8	5.16E+01

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

222-S COUNTING ROOM WESTINGHOUSE HANFORD           04-OCT-90  12:53:01


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

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

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

ANALYSIS OF SPECTRUM SAVED IN DISK FILE: SD3190
ANALYZED BY:        VR

SAMPLE DESCRIPTION: F1078 SEG/COMP/#14
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 23-FEB-90 AT 19:26:04

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

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

ENERGY CALIBRATION PERFORMED 17-OCT-89
EFFICIENCY CALIBRATION PERFORMED 31-JUL-89
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222-S COUNTING ROOM WESTINGHOUSE HANFORD 04-OCT-90 12:53:01

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	477.33	238.99	0.90	438.	85.	71.5	PB-212
2	1020.68	510.43	3.15	98.	168.	23.0	RN-222,I-133,
2B		510.92			134.	19.6	TL-208,NA-22, ZN-65,RH-106
3	1166.08	583.08	1.96	108.	91.	39.5	EU-154,
3B		583.13			94.	24.1	TL-208
4	1218.37	609.21	1.50	118.	133.	30.0	BI-214,
4B		609.19			122.	21.0	RU-103
5	1821.02	910.44	2.63	70.	96.	34.1	
5B		910.98			84.	23.3	
6	2920.52	1460.36	2.07	29.	662.	8.1	K-40
6B		1460.58			611.	5.5	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

B - ENVIRONMENTAL BACKGROUND PEAK

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

222-S COUNTING ROOM WESTINGHOUSE HANFORD 04-OCT-90 12:53:01

SAMPLE: F1078 SEG/COMP/#14
DATA COLLECTED ON 23-FEB-90 AT 19:26:04
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

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

NUCLIDE	ACTIVITY CONCENTRATION IN uCi/LI				ENERGY COMPARISON (KEV)	
	MEASURED	ERROR	DECAY CORRECTED	ERROR	EXPECT	DIFF
AC-228	LLD<2.29E-01		LLD<2.29E-01		911.07	
AG-108M	LLD<3.34E-02		LLD<3.34E-02		433.94	
AG-110M	LLD<5.47E-02		LLD<5.47E-02		657.76	
AM-241	LLD<5.13E-02		LLD<5.13E-02		59.54	
AM-243	LLD<4.03E-02		LLD<4.03E-02		74.67	
AR-41	LLD<6.19E-02		LLD<6.19E-02		1293.64	
AU-198	LLD<3.44E-02		LLD<3.44E-02		411.80	
BA-133	LLD<4.99E-02		LLD<4.99E-02		356.02	
BA-139	LLD<1.48E-01		LLD<1.48E-01		165.85	
BA-140	LLD<1.54E-01		LLD<1.54E-01		537.27	
BA-141	LLD<1.51E-01		LLD<1.51E-01		190.23	
BE-7	LLD<3.28E-01		LLD<3.28E-01		477.59	
BI-207	LLD<3.61E-02		LLD<3.61E-02		569.70	
BI-212	LLD<5.57E-01		LLD<5.57E-01		727.27	
BI-214	LLD<1.23E-01		LLD<1.23E-01		609.32	
CD-109	LLD<6.39E-01		LLD<6.39E-01		88.03	
CE-139	LLD<3.36E-02		LLD<3.36E-02		165.85	
CE-141	LLD<5.58E-02		LLD<5.58E-02		145.44	
CEPR144	LLD<4.73E-01		LLD<4.73E-01		133.51	
CO-56	LLD<3.60E-02		LLD<3.60E-02		846.76	
CO-57	LLD<2.98E-02		LLD<2.98E-02		122.06	
CO-58	LLD<4.35E-02		LLD<4.35E-02		810.75	
CO-60	LLD<5.64E-02		LLD<5.64E-02		1332.50	
CR-51	LLD<2.94E-01		LLD<2.94E-01		320.09	
CS-134	LLD<5.10E-02		LLD<5.10E-02		795.84	
CS-136	LLD<4.21E-02		LLD<4.21E-02		818.51	
CS-137	LLD<6.28E-02		LLD<6.28E-02		661.65	
CS-138	LLD<9.95E-02		LLD<9.95E-02		1435.86	
EU-152	LLD<2.46E-01		LLD<2.46E-01		1408.01	
EU-154	LLD<1.90E-01		LLD<1.90E-01		1274.45	
EU-155	LLD<1.06E-01		LLD<1.06E-01		105.31	
FE-59	LLD<1.12E-01		LLD<1.12E-01		1099.25	
HF-181	LLD<4.16E-02		LLD<4.16E-02		482.20	
HG-203	LLD<3.62E-02		LLD<3.62E-02		279.20	
I-131	LLD<3.67E-02		LLD<3.67E-02		364.48	
I-132	LLD<4.34E-02		LLD<4.34E-02		667.69	
I-133	LLD<3.99E-02		LLD<3.99E-02		529.69	
I-134	LLD<5.33E-02		LLD<5.33E-02		847.03	
I-135	LLD<2.19E-01		LLD<2.19E-01		1260.41	
K-40	LLD<1.43E+00		LLD<1.43E+00		1460.75	
KR-85	LLD<1.06E+01		LLD<1.06E+01		513.99	
KR-85M	LLD<4.18E-02		LLD<4.18E-02		151.17	
KR-87	LLD<8.01E-02		LLD<8.01E-02		402.58	
KR-89	LLD<1.52E+00		LLD<1.52E+00		220.90	
LA-140	LLD<5.32E-02		LLD<5.32E-02		1596.20	
LA-142	LLD<9.32E-02		LLD<9.32E-02		641.83	
MN-54	LLD<4.52E-02		LLD<4.52E-02		834.83	

MN-56	LLD<4.06E-02		LLD<4.06E-02	846.76	
NA-22	LLD<6.72E-02		LLD<6.72E-02	1274.55	
NA-24	LLD<4.40E-02		LLD<4.40E-02	1368.60	
NB-94	LLD<4.51E-02		LLD<4.51E-02	702.63	
NB-95	LLD<4.33E-02		LLD<4.33E-02	765.78	
NB-97	LLD<6.63E-02		LLD<6.63E-02	657.92	
NP-237	LLD<1.66E-01		LLD<1.66E-01	86.50	
NP-238	LLD<1.89E-01		LLD<1.89E-01	984.45	
NP-239	LLD<2.05E-01		LLD<2.05E-01	277.60	
PA-233	LLD<8.42E-02		LLD<8.42E-02	311.98	
PA-234M	LLD<8.19E+00		LLD<8.19E+00	1001.03	
PB-210	LLD<8.68E-01		LLD<8.68E-01	465.03	
PB-212	9.92E-02	+-7.11E-02	9.92E-02 +-7.11E-02	239.00	-0.01
PB-214	LLD<1.18E-01		LLD<1.18E-01	351.92	
PO-210	LLD<3.42E+03		LLD<3.42E+03	804.00	
PO-214	LLD<4.46E+02		LLD<4.46E+02	799.70	
PO-216	LLD<2.23E+03		LLD<2.23E+03	804.90	
PU-239	LLD<4.15E+02		LLD<4.15E+02	129.30	
PU-241	LLD<1.44E+04		LLD<1.44E+04	148.57	
RA-224	LLD<8.19E-01		LLD<8.19E-01	240.99	
RA-226	LLD<8.87E-01		LLD<8.87E-01	186.10	
RB-88	LLD<5.19E-01		LLD<5.19E-01	1836.00	
RB-89	LLD<2.00E-01		LLD<2.00E-01	1031.88	
RN-220	LLD<3.71E+01		LLD<3.71E+01	549.73	
RU-103	LLD<3.98E-02		LLD<3.98E-02	497.08	
RURH106	LLD<7.35E-01		LLD<7.35E-01	621.80	
SB-124	LLD<3.93E-02		LLD<3.93E-02	602.72	
SB-125	LLD<4.02E-01		LLD<4.02E-01	176.33	
SC-46	LLD<7.71E-02		LLD<7.71E-02	1120.45	
SE-75	LLD<4.99E-02		LLD<4.99E-02	264.66	
SN-113	LLD<4.91E-02		LLD<4.91E-02	391.67	
SR-85	LLD<4.66E-02		LLD<4.66E-02	513.99	
SR-91	LLD<6.88E-02		LLD<6.88E-02	555.60	
SR-92	LLD<7.90E-02		LLD<7.90E-02	1383.94	
TA-182	LLD<1.52E-01		LLD<1.52E-01	1121.30	
TC-99M	LLD<3.18E-02		LLD<3.18E-02	140.51	
TE-123M	LLD<3.22E-02		LLD<3.22E-02	159.00	
TE-125M	LLD<8.74E+00		LLD<8.74E+00	109.27	
TE-132	LLD<3.52E-02		LLD<3.52E-02	228.16	
TH-228	LLD<1.68E+00		LLD<1.68E+00	84.37	
TL-208	LLD<5.77E-02		LLD<5.77E-02	583.14	
U-235	LLD<5.35E-02		LLD<5.35E-02	185.71	
U-237	LLD<1.47E-01		LLD<1.47E-01	208.00	
W-187	LLD<1.40E-01		LLD<1.40E-01	685.74	
XE-131M	LLD<1.40E+00		LLD<1.40E+00	163.98	
XE-133	LLD<5.46E-02		LLD<5.46E-02	81.00	
XE-133M	LLD<3.03E-01		LLD<3.03E-01	233.21	
XE-135	LLD<3.36E-02		LLD<3.36E-02	249.79	
XE-138	LLD<2.55E-01		LLD<2.55E-01	258.41	
Y-88	LLD<4.92E-02		LLD<4.92E-02	1836.06	
Y-91	LLD<2.07E+01		LLD<2.07E+01	1204.90	
Y-91M	LLD<5.21E-02		LLD<5.21E-02	555.60	
ZN-65	LLD<1.26E-01		LLD<1.26E-01	1115.55	
ZR-95	LLD<6.75E-02		LLD<6.75E-02	756.73	
ZR-97	LLD<4.45E-02		LLD<4.45E-02	743.33	
TOTAL	9.92E-02	+-7.11E-02	9.92E-02 +-7.11E-02		

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 7.19E-13 UC/LI

TOTAL MEASURED ACTIVITY = 9.92E-02 (+-7.11E-02) 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
1020.68	510.43	168.	23.0	5.61E+00
1166.08	583.08	91.	39.5	3.42E+00
1218.37	609.21	133.	30.0	5.22E+00
1821.02	910.44	96.	34.1	5.44E+00
2920.52	1460.36	662.	8.1	5.52E+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                                  17-OCT-90  17:44:45


                    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: SD1935
ANALYZED BY:         VR

SAMPLE DESCRIPTION: F1073 SEG/COMP/#9
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 23-FEB-90 AT 16:53:37

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 23-NOV-89
EFFICIENCY CALIBRATION PERFORMED  2-MAR-89
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222-S COUNTING ROOM 17-OCT-90 17:44:45

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	1323.50	661.19	1.59	58.	1730.	4.9	CS-137
1B		661.82			35.	46.4	
2	2921.29	1460.45	1.59	13.	151.	17.7	K-40
2B		1461.77			182.	11.2	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

B - ENVIRONMENTAL BACKGROUND PEAK

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

222-S COUNTING ROOM 17-OCT-90 17:44:45

SAMPLE: F1073 SEG/COMP/#9
DATA COLLECTED ON 23-FEB-90 AT 16:53:37
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<2.33E+00		LLD<2.33E+00		911.07	
AG-108M	LLD<7.91E-01		LLD<7.91E-01		433.94	
AG-110M	LLD<3.99E+00		LLD<3.99E+00		657.76	
AM-241	LLD<4.53E+00		LLD<4.53E+00		59.54	
AM-243	LLD<1.29E+00		LLD<1.29E+00		74.67	
AR-41	LLD<6.55E-01		LLD<6.55E-01		1293.64	
AU-198	LLD<6.41E-01		LLD<6.41E-01		411.80	
BA-133	LLD<1.12E+00		LLD<1.12E+00		356.02	
BA-139	LLD<2.54E+00		LLD<2.54E+00		165.85	
BA-140	LLD<2.33E+00		LLD<2.33E+00		537.27	
BA-141	LLD<2.43E+00		LLD<2.43E+00		190.23	
BE-7	LLD<7.14E+00		LLD<7.14E+00		477.59	
BI-207	LLD<5.85E-01		LLD<5.85E-01		569.70	
BI-212	LLD<8.44E+00		LLD<8.44E+00		727.27	
BI-214	LLD<1.78E+00		LLD<1.78E+00		609.32	
CD-109	LLD<1.96E+01		LLD<1.96E+01		88.03	
CE-139	LLD<5.75E-01		LLD<5.75E-01		165.85	
CE-141	LLD<9.29E-01		LLD<9.29E-01		145.44	
CEPR144	LLD<8.07E+00		LLD<8.07E+00		133.51	
CO-56	LLD<6.21E-01		LLD<6.21E-01		846.76	
CO-57	LLD<5.07E-01		LLD<5.07E-01		122.06	
CO-58	LLD<5.18E-01		LLD<5.18E-01		810.75	
CO-60	LLD<4.71E-01		LLD<4.71E-01		1332.50	
CR-51	LLD<5.57E+00		LLD<5.57E+00		320.09	
CS-134	LLD<6.69E-01		LLD<6.69E-01		795.84	
CS-136	LLD<4.38E-01		LLD<4.38E-01		818.51	
CS-137	5.27E+01	+-2.75E+00	5.27E+01	+-2.75E+00	661.65	-0.46
CS-138	LLD<1.18E+00		LLD<1.18E+00		1435.86	
EU-152	LLD<2.36E+00		LLD<2.36E+00		1408.01	
EU-154	LLD<1.75E+00		LLD<1.75E+00		1274.45	
EU-155	LLD<2.23E+00		LLD<2.23E+00		105.31	
FE-59	LLD<1.14E+00		LLD<1.14E+00		1099.25	
HF-181	LLD<7.79E-01		LLD<7.79E-01		482.20	
HG-203	LLD<6.67E-01		LLD<6.67E-01		279.20	
I-131	LLD<7.81E-01		LLD<7.81E-01		364.48	
I-132	LLD<7.46E-01		LLD<7.46E-01		667.69	
I-133	LLD<6.49E-01		LLD<6.49E-01		529.69	
I-134	LLD<8.88E-01		LLD<8.88E-01		847.03	
I-135	LLD<2.46E+00		LLD<2.46E+00		1260.41	
K-40	LLD<1.91E+01		LLD<1.91E+01		1460.75	
KR-85	LLD<1.95E+02		LLD<1.95E+02		513.99	
KR-85M	LLD<5.43E-01		LLD<5.43E-01		151.17	
KR-87	LLD<1.66E+00		LLD<1.66E+00		402.58	
KR-89	LLD<2.89E+01		LLD<2.89E+01		220.90	
LA-140	LLD<8.66E-01		LLD<8.66E-01		1596.20	
LA-142	LLD<1.32E+00		LLD<1.32E+00		641.83	
MN-54	LLD<6.01E-01		LLD<6.01E-01		834.83	

MN-56	LLD<7.01E-01	LLD<7.01E-01	846.76
NA-22	LLD<6.17E-01	LLD<6.17E-01	1274.55
NA-24	LLD<5.42E-01	LLD<5.42E-01	1368.60
NB-94	LLD<4.93E-01	LLD<4.93E-01	702.63
NB-95	LLD<6.07E-01	LLD<6.07E-01	765.78
NB-97	LLD<4.84E+00	LLD<4.84E+00	657.92
NP-237	LLD<4.95E+00	LLD<4.95E+00	86.50
NP-238	LLD<1.87E+00	LLD<1.87E+00	984.45
NP-239	LLD<3.43E+00	LLD<3.43E+00	277.60
PA-233	LLD<1.61E+00	LLD<1.61E+00	311.98
PA-234M	LLD<1.29E+02	LLD<1.29E+02	1001.03
PB-210	LLD<1.95E+01	LLD<1.95E+01	465.03
PB-212	LLD<1.31E+00	LLD<1.31E+00	239.00
PB-214	LLD<1.77E+00	LLD<1.77E+00	351.92
PO-210	LLD<4.19E+04	LLD<4.19E+04	804.00
PO-214	LLD<5.81E+03	LLD<5.81E+03	799.70
PO-216	LLD<2.99E+04	LLD<2.99E+04	804.90
PU-239	LLD<6.62E+03	LLD<6.62E+03	129.30
PU-241	LLD<2.21E+05	LLD<2.21E+05	148.57
RA-224	LLD<1.46E+01	LLD<1.46E+01	240.99
RA-226	LLD<1.31E+01	LLD<1.31E+01	186.10
RB-88	LLD<5.29E+00	LLD<5.29E+00	1836.00
RB-89	LLD<3.21E+00	LLD<3.21E+00	1031.88
RN-220	LLD<5.48E+02	LLD<5.48E+02	549.73
RU-103	LLD<7.32E-01	LLD<7.32E-01	497.08
RURH106	LLD<1.06E+01	LLD<1.06E+01	621.80
SB-124	LLD<5.84E-01	LLD<5.84E-01	602.72
SB-125	LLD<6.90E+00	LLD<6.90E+00	176.33
SC-46	LLD<7.01E-01	LLD<7.01E-01	1120.45
SE-75	LLD<9.13E-01	LLD<9.13E-01	264.66
SN-113	LLD<9.29E-01	LLD<9.29E-01	391.67
SR-85	LLD<8.56E-01	LLD<8.56E-01	513.99
SR-91	LLD<1.11E+00	LLD<1.11E+00	555.60
SR-92	LLD<5.99E-01	LLD<5.99E-01	1383.94
TA-182	LLD<1.74E+00	LLD<1.74E+00	1121.30
TC-99M	LLD<5.19E-01	LLD<5.19E-01	140.51
TE-123M	LLD<5.42E-01	LLD<5.42E-01	159.00
TE-125M	LLD<1.65E+02	LLD<1.65E+02	109.27
TE-132	LLD<6.09E-01	LLD<6.09E-01	228.16
TH-228	LLD<5.67E+01	LLD<5.67E+01	84.37
TL-208	LLD<7.72E-01	LLD<7.72E-01	583.14
U-235	LLD<8.88E-01	LLD<8.88E-01	185.71
U-237	LLD<2.50E+00	LLD<2.50E+00	208.00
W-187	LLD<1.86E+00	LLD<1.86E+00	685.74
XE-131M	LLD<2.52E+01	LLD<2.52E+01	163.98
XE-133	LLD<2.03E+00	LLD<2.03E+00	81.00
XE-133M	LLD<5.21E+00	LLD<5.21E+00	233.21
XE-135	LLD<5.92E-01	LLD<5.92E-01	249.79
XE-138	LLD<4.49E+00	LLD<4.49E+00	258.41
Y-88	LLD<5.03E-01	LLD<5.03E-01	1836.06
Y-91	LLD<2.24E+02	LLD<2.24E+02	1204.90
Y-91M	LLD<8.37E-01	LLD<8.37E-01	555.60
ZN-65	LLD<2.14E+00	LLD<2.14E+00	1115.55
ZR-95	LLD<9.67E-01	LLD<9.67E-01	756.73
ZR-97	LLD<5.45E-01	LLD<5.45E-01	743.33
TOTAL	5.27E+01 +-2.75E+00	5.27E+01 +-2.75E+00	

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.16E-08 UC/LI

TOTAL MEASURED ACTIVITY = 5.27E+01 (+-2.75E+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
2921.29	1460.45	151.	17.7	1.43E+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                                  17-OCT-90  17:52:41


               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: SD2080
ANALYZED BY:        VR

SAMPLE DESCRIPTION: F1074 SEG/COMP/#10
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 23-FEB-90 AT 16:54:57

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 17-OCT-90 17:52:41

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	1324.56	661.89	1.66	54.	1501.	5.3	CS-137
1B		661.85			36.	13.9	
2	2922.33	1460.71	2.41	14.	164.	17.2	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 17-OCT-90 17:52:41

SAMPLE: F1074 SEG/COMP/#10
DATA COLLECTED ON 23-FEB-90 AT 16:54:57
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<3.68E+00		LLD<3.68E+00		911.07	
AG-108M	LLD<1.02E+00		LLD<1.02E+00		433.94	
AG-110M	LLD<5.46E+00		LLD<5.46E+00		657.76	
AM-241	LLD<6.97E+00		LLD<6.97E+00		59.54	
AM-243	LLD<1.81E+00		LLD<1.81E+00		74.67	
AR-41	LLD<1.26E+00		LLD<1.26E+00		1293.64	
AU-198	LLD<8.79E-01		LLD<8.79E-01		411.80	
BA-133	LLD<1.29E+00		LLD<1.29E+00		356.02	
BA-139	LLD<3.64E+00		LLD<3.64E+00		165.85	
BA-140	LLD<3.61E+00		LLD<3.61E+00		537.27	
BA-141	LLD<3.14E+00		LLD<3.14E+00		190.23	
BE-7	LLD<9.37E+00		LLD<9.37E+00		477.59	
BI-207	LLD<7.30E-01		LLD<7.30E-01		569.70	
BI-212	LLD<1.19E+01		LLD<1.19E+01		727.27	
BI-214	LLD<2.04E+00		LLD<2.04E+00		609.32	
CD-109	LLD<2.53E+01		LLD<2.53E+01		88.03	
CE-139	LLD<8.25E-01		LLD<8.25E-01		165.85	
CE-141	LLD<1.38E+00		LLD<1.38E+00		145.44	
CEPR144	LLD<1.06E+01		LLD<1.06E+01		133.51	
CO-56	LLD<9.25E-01		LLD<9.25E-01		846.76	
CO-57	LLD<6.82E-01		LLD<6.82E-01		122.06	
CO-58	LLD<9.71E-01		LLD<9.71E-01		810.75	
CO-60	LLD<1.10E+00		LLD<1.10E+00		1332.50	
CR-51	LLD<6.77E+00		LLD<6.77E+00		320.09	
CS-134	LLD<7.11E-01		LLD<7.11E-01		795.84	
CS-136	LLD<9.99E-01		LLD<9.99E-01		818.51	
CS-137	6.33E+01	+-3.51E+00	6.33E+01	+-3.51E+00	661.65	0.24
CS-138	LLD<1.51E+00		LLD<1.51E+00		1435.86	
EU-152	LLD<4.57E+00		LLD<4.57E+00		1408.01	
EU-154	LLD<3.71E+00		LLD<3.71E+00		1274.45	
EU-155	LLD<3.23E+00		LLD<3.23E+00		105.31	
FE-59	LLD<1.96E+00		LLD<1.96E+00		1099.25	
HF-181	LLD<1.13E+00		LLD<1.13E+00		482.20	
HG-203	LLD<8.00E-01		LLD<8.00E-01		279.20	
I-131	LLD<9.59E-01		LLD<9.59E-01		364.48	
I-132	LLD<3.41E+00		LLD<3.41E+00		667.69	
I-133	LLD<8.42E-01		LLD<8.42E-01		529.69	
I-134	LLD<1.50E+00		LLD<1.50E+00		847.03	
I-135	LLD<3.21E+00		LLD<3.21E+00		1260.41	
K-40	LLD<2.10E+01		LLD<2.10E+01		1460.75	
KR-85	LLD<2.27E+02		LLD<2.27E+02		513.99	
KR-85M	LLD<8.20E-01		LLD<8.20E-01		151.17	
KR-87	LLD<2.10E+00		LLD<2.10E+00		402.58	
KR-89	LLD<3.49E+01		LLD<3.49E+01		220.90	
LA-140	LLD<1.07E+00		LLD<1.07E+00		1596.20	
LA-142	LLD<2.01E+00		LLD<2.01E+00		641.83	
MN-54	LLD<9.73E-01		LLD<9.73E-01		834.83	

MN-56	LLD<1.04E+00	LLD<1.04E+00	846.76
NA-22	LLD<1.32E+00	LLD<1.32E+00	1274.55
NA-24	LLD<9.03E-01	LLD<9.03E-01	1368.60
NB-94	LLD<8.72E-01	LLD<8.72E-01	702.63
NB-95	LLD<1.00E+00	LLD<1.00E+00	765.78
NB-97	LLD<6.18E+00	LLD<6.18E+00	657.92
NP-237	LLD<7.28E+00	LLD<7.28E+00	86.50
NP-238	LLD<3.24E+00	LLD<3.24E+00	984.45
NP-239	LLD<4.91E+00	LLD<4.91E+00	277.60
PA-233	LLD<1.93E+00	LLD<1.93E+00	311.98
PA-234M	LLD<1.74E+02	LLD<1.74E+02	1001.03
PB-210	LLD<2.30E+01	LLD<2.30E+01	465.03
PB-212	LLD<1.72E+00	LLD<1.72E+00	239.00
PB-214	LLD<2.06E+00	LLD<2.06E+00	351.92
PO-210	LLD<6.44E+04	LLD<6.44E+04	804.00
PO-214	LLD<8.48E+03	LLD<8.48E+03	799.70
PO-216	LLD<5.47E+04	LLD<5.47E+04	804.90
PU-239	LLD<1.02E+04	LLD<1.02E+04	129.30
PU-241	LLD<2.99E+05	LLD<2.99E+05	148.57
RA-224	LLD<1.81E+01	LLD<1.81E+01	240.99
RA-226	LLD<1.63E+01	LLD<1.63E+01	186.10
RB-88	LLD<1.16E+01	LLD<1.16E+01	1836.00
RB-89	LLD<5.14E+00	LLD<5.14E+00	1031.88
RN-220	LLD<7.86E+02	LLD<7.86E+02	549.73
RU-103	LLD<9.43E-01	LLD<9.43E-01	497.08
RURH106	LLD<1.80E+01	LLD<1.80E+01	621.80
SB-124	LLD<9.00E-01	LLD<9.00E-01	602.72
SB-125	LLD<8.90E+00	LLD<8.90E+00	176.33
SC-46	LLD<1.14E+00	LLD<1.14E+00	1120.45
SE-75	LLD<1.09E+00	LLD<1.09E+00	264.66
SN-113	LLD<1.31E+00	LLD<1.31E+00	391.67
SR-85	LLD<9.96E-01	LLD<9.96E-01	513.99
SR-91	LLD<1.50E+00	LLD<1.50E+00	555.60
SR-92	LLD<1.40E+00	LLD<1.40E+00	1383.94
TA-182	LLD<2.97E+00	LLD<2.97E+00	1121.30
TC-99M	LLD<7.01E-01	LLD<7.01E-01	140.51
TE-123M	LLD<7.91E-01	LLD<7.91E-01	159.00
TE-125M	LLD<2.41E+02	LLD<2.41E+02	109.27
TE-132	LLD<7.65E-01	LLD<7.65E-01	228.16
TH-228	LLD<7.97E+01	LLD<7.97E+01	84.37
TL-208	LLD<1.05E+00	LLD<1.05E+00	583.14
U-235	LLD<1.13E+00	LLD<1.13E+00	185.71
U-237	LLD<2.99E+00	LLD<2.99E+00	208.00
W-187	LLD<2.83E+00	LLD<2.83E+00	685.74
XE-131M	LLD<3.38E+01	LLD<3.38E+01	163.98
XE-133	LLD<2.64E+00	LLD<2.64E+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<5.28E+00	LLD<5.28E+00	258.41
Y-88	LLD<1.10E+00	LLD<1.10E+00	1836.06
Y-91	LLD<3.48E+02	LLD<3.48E+02	1204.90
Y-91M	LLD<1.14E+00	LLD<1.14E+00	555.60
ZN-65	LLD<2.72E+00	LLD<2.72E+00	1115.55
ZR-95	LLD<1.44E+00	LLD<1.44E+00	756.73
ZR-97	LLD<9.09E-01	LLD<9.09E-01	743.33
TOTAL	6.33E+01 +-3.51E+00	6.33E+01 +-3.51E+00	

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.16E-08 UC/LI

TOTAL MEASURED ACTIVITY = 6.33E+01 (+-3.51E+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
2922.33	1460.71	164.	17.2	2.15E+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                *
*                                                                       *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *

CANBERRA SPECTRAN-F V2.06  SOFTWARE

222-S COUNTING ROOM                                  28-SEP-90  12:21:31

               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: SD2081
ANALYZED BY:        VR

SAMPLE DESCRIPTION: F1075 SEG/COMP/#11
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 23-FEB-90 AT 18:34:34

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
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222-S COUNTING ROOM 28-SEP-90 12:21:31

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	1127.91	563.59	1.66	449.	416.	15.3	CS-134, EU-152
2C	1139.90	569.58	1.66	494.	790.	12.9	CS-134, BI-207
3	1210.67	604.96	1.56	418.	4009.	3.5	CS-134
4	1324.52	661.87	1.75	272.	9966.	2.0	CS-137
4B		661.85			36.	13.9	
5C	1592.78	795.99	1.71	286.	2809.	4.8	CS-134
6C	1605.01	802.10	1.71	258.	259.	13.2	CS-134
7	2347.20	1173.15	1.85	184.	3633.	3.5	CO-60
8	2665.65	1332.37	2.27	34.	3193.	3.5	CO-60
8B		1332.24			9.	37.4	
9	2731.42	1365.25	1.56	13.	70.	29.1	CS-134
10	2922.01	1460.55	1.87	18.	137.	19.8	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 28-SEP-90 12:21:31

SAMPLE: F1075 SEG/COMP/#11
DATA COLLECTED ON 23-FEB-90 AT 18:34:34
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<1.15E+01		LLD<1.15E+01		911.07	
AG-108M	LLD<2.82E+00		LLD<2.82E+00		433.94	
AG-110M	LLD<1.40E+01		LLD<1.40E+01		657.76	
AM-241	LLD<1.32E+01		LLD<1.32E+01		59.54	
AM-243	LLD<3.40E+00		LLD<3.40E+00		74.67	
AR-41	LLD<1.90E+00		LLD<1.90E+00		1293.64	
AU-198	LLD<2.32E+00		LLD<2.32E+00		411.80	
BA-133	LLD<3.26E+00		LLD<3.26E+00		356.02	
BA-139	LLD<6.97E+00		LLD<6.97E+00		165.85	
BA-140	LLD<9.61E+00		LLD<9.61E+00		537.27	
BA-141	LLD<6.76E+00		LLD<6.76E+00		190.23	
BE-7	LLD<2.27E+01		LLD<2.27E+01		477.59	
BI-207	LLD<2.45E+00		LLD<2.45E+00		569.70	
BI-212	LLD<3.60E+01		LLD<3.60E+01		727.27	
BI-214	LLD<1.73E+01		LLD<1.73E+01		609.32	
CD-109	LLD<4.39E+01		LLD<4.39E+01		88.03	
CE-139	LLD<1.58E+00		LLD<1.58E+00		165.85	
CE-141	LLD<2.64E+00		LLD<2.64E+00		145.44	
CEPR144	LLD<2.05E+01		LLD<2.05E+01		133.51	
CO-56	LLD<2.57E+00		LLD<2.57E+00		846.76	
CO-57	LLD<1.30E+00		LLD<1.30E+00		122.06	
CO-58	LLD<2.29E+00		LLD<2.29E+00		810.75	
CO-60	2.09E+02	+-7.82E+00	2.09E+02	+-7.82E+00	1332.50	-0.13
					1173.24	-0.08
CR-51	LLD<1.80E+01		LLD<1.80E+01		320.09	
CS-134	1.41E+02	+-7.00E+00	1.41E+02	+-7.00E+00	795.84	0.14
					604.70	0.26
CS-136	LLD<2.60E+00		LLD<2.60E+00		818.51	
CS-137	4.29E+02	+-1.02E+01	4.29E+02	+-1.02E+01	661.65	0.22
CS-138	LLD<2.22E+00		LLD<2.22E+00		1435.86	
EU-152	LLD<3.80E+00		LLD<3.80E+00		1408.01	
EU-154	LLD<4.32E+00		LLD<4.32E+00		1274.45	
EU-155	LLD<6.18E+00		LLD<6.18E+00		105.31	
FE-59	LLD<5.76E+00		LLD<5.76E+00		1099.25	
HF-181	LLD<2.90E+00		LLD<2.90E+00		482.20	
HG-203	LLD<2.01E+00		LLD<2.01E+00		279.20	
I-131	LLD<2.48E+00		LLD<2.48E+00		364.48	
I-132	LLD<8.70E+00		LLD<8.70E+00		667.69	
I-133	LLD<2.50E+00		LLD<2.50E+00		529.69	
I-134	LLD<4.02E+00		LLD<4.02E+00		847.03	
I-135	LLD<5.49E+00		LLD<5.49E+00		1260.41	
K-40	LLD<2.18E+01		LLD<2.18E+01		1460.75	
KR-85	LLD<5.54E+02		LLD<5.54E+02		513.99	
KR-85M	LLD<1.64E+00		LLD<1.64E+00		151.17	
KR-87	LLD<5.48E+00		LLD<5.48E+00		402.58	
KR-89	LLD<7.95E+01		LLD<7.95E+01		220.90	
LA-140	LLD<8.48E-01		LLD<8.48E-01		1596.20	

LA-142	LLD<5.54E+00	LLD<5.54E+00	641.83
MN-54	LLD<2.36E+00	LLD<2.36E+00	834.83
MN-56	LLD<2.90E+00	LLD<2.90E+00	846.76
NA-22	LLD<1.54E+00	LLD<1.54E+00	1274.55
NA-24	LLD<1.38E+00	LLD<1.38E+00	1368.60
NB-94	LLD<2.10E+00	LLD<2.10E+00	702.63
NB-95	LLD<2.19E+00	LLD<2.19E+00	765.78
NB-97	LLD<1.58E+01	LLD<1.58E+01	657.92
NP-237	LLD<1.25E+01	LLD<1.25E+01	86.50
NP-238	LLD<1.16E+01	LLD<1.16E+01	984.45
NP-239	LLD<1.21E+01	LLD<1.21E+01	277.60
PA-233	LLD<4.48E+00	LLD<4.48E+00	311.98
PA-234M	LLD<5.28E+02	LLD<5.28E+02	1001.03
PB-210	LLD<6.15E+01	LLD<6.15E+01	465.03
PB-212	LLD<3.76E+00	LLD<3.76E+00	239.00
PB-214	LLD<5.04E+00	LLD<5.04E+00	351.92
PO-210	LLD<2.04E+05	LLD<2.04E+05	804.00
PO-214	LLD<7.98E+04	LLD<7.98E+04	799.70
PO-216	LLD<1.50E+05	LLD<1.50E+05	804.90
PU-239	LLD<1.88E+04	LLD<1.88E+04	129.30
PU-241	LLD<6.19E+05	LLD<6.19E+05	148.57
RA-224	LLD<3.94E+01	LLD<3.94E+01	240.99
RA-226	LLD<3.68E+01	LLD<3.68E+01	186.10
RB-88	LLD<8.48E+00	LLD<8.48E+00	1836.00
RB-89	LLD<1.44E+01	LLD<1.44E+01	1031.88
RN-220	LLD<2.13E+03	LLD<2.13E+03	549.73
RU-103	LLD<2.45E+00	LLD<2.45E+00	497.08
RURH106	LLD<4.47E+01	LLD<4.47E+01	621.80
SB-124	LLD<4.87E+00	LLD<4.87E+00	602.72
SB-125	LLD<1.91E+01	LLD<1.91E+01	176.33
SC-46	LLD<3.01E+00	LLD<3.01E+00	1120.45
SE-75	LLD<2.95E+00	LLD<2.95E+00	264.66
SN-113	LLD<3.32E+00	LLD<3.32E+00	391.67
SR-85	LLD<2.43E+00	LLD<2.43E+00	513.99
SR-91	LLD<4.14E+00	LLD<4.14E+00	555.60
SR-92	LLD<1.53E+00	LLD<1.53E+00	1383.94
TA-182	LLD<9.01E+00	LLD<9.01E+00	1121.30
TC-99M	LLD<1.36E+00	LLD<1.36E+00	140.51
TE-123M	LLD<1.50E+00	LLD<1.50E+00	159.00
TE-125M	LLD<4.11E+02	LLD<4.11E+02	109.27
TE-132	LLD<1.70E+00	LLD<1.70E+00	228.16
TH-228	LLD<1.49E+02	LLD<1.49E+02	84.37
TL-208	LLD<2.82E+00	LLD<2.82E+00	583.14
U-235	LLD<2.42E+00	LLD<2.42E+00	185.71
U-237	LLD<6.86E+00	LLD<6.86E+00	208.00
W-187	LLD<8.24E+00	LLD<8.24E+00	685.74
XE-131M	LLD<6.63E+01	LLD<6.63E+01	163.98
XE-133	LLD<4.98E+00	LLD<4.98E+00	81.00
XE-133M	LLD<1.58E+01	LLD<1.58E+01	233.21
XE-135	LLD<1.81E+00	LLD<1.81E+00	249.79
XE-138	LLD<1.34E+01	LLD<1.34E+01	258.41
Y-88	LLD<8.05E-01	LLD<8.05E-01	1836.06
Y-91	LLD<6.93E+02	LLD<6.93E+02	1204.90
Y-91M	LLD<3.13E+00	LLD<3.13E+00	555.60
ZN-65	LLD<7.00E+00	LLD<7.00E+00	1115.55
ZR-95	LLD<4.21E+00	LLD<4.21E+00	756.73
ZR-97	LLD<2.18E+00	LLD<2.18E+00	743.33
TOTAL	7.79E+02 +-1.46E+01	7.79E+02 +-1.46E+01	

STANDARD DEVIATION = 0.18

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.71E-09 UC/LI
TOTAL MEASURED ACTIVITY = 7.79E+02 (+-1.46E+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
1127.91	563.59	416.	15.3	2.45E+01
1139.90	569.58	790.	12.9	4.71E+01
1605.01	802.10	259.	13.2	2.08E+01
2731.42	1365.25	70.	29.1	8.65E+00

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2922.01	1460.55	137.	19.8	1.79E+01

```
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*                                                                       *
*          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                                  28-SEP-90  12:30:00


               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: SD1937
ANALYZED BY:        VR

SAMPLE DESCRIPTION: F1077 SEG/COMP/#13
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 23-FEB-90 AT 19:20:10

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

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

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

222-S COUNTING ROOM 28-SEP-90 12:30:00

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
1C	1126.73	562.84	1.39	455.	465.	12.6	CS-134, EU-152
2C	1138.94	568.94	1.39	479.	869.	11.5	CS-134, BI-207
3	1209.68	604.30	1.40	480.	5362.	2.9	CS-134
4	1323.51	661.20	1.59	319.	9587.	2.1	CS-137
4B		661.82			35.	46.4	
5C	1591.82	795.34	1.52	240.	3816.	3.9	CS-134
6C	1604.05	801.45	1.52	231.	377.	13.1	CS-134
7	2346.32	1172.71	1.90	195.	5043.	2.9	CO-60
8	2664.72	1332.03	1.97	18.	4547.	2.9	CO-60
9	2730.17	1364.79	2.17	13.	101.	22.6	CS-134
10	2920.99	1460.30	1.74	19.	184.	16.4	K-40
10B		1461.77			182.	11.2	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

C - MULTIPLET ANALYSIS CONVERGED NORMALLY
B - ENVIRONMENTAL BACKGROUND PEAK

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

222-S COUNTING ROOM 28-SEP-90 12:30:00

SAMPLE: F1077 SEG/COMP/#13
DATA COLLECTED ON 23-FEB-90 AT 19:20:10
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<7.78E-01		LLD<7.78E-01		911.07	
AG-108M	LLD<2.01E-01		LLD<2.01E-01		433.94	
AG-110M	LLD<9.35E-01		LLD<9.35E-01		657.76	
AM-241	LLD<8.03E-01		LLD<8.03E-01		59.54	
AM-243	LLD<2.10E-01		LLD<2.10E-01		74.67	
AR-41	LLD<1.27E-01		LLD<1.27E-01		1293.64	
AU-198	LLD<1.75E-01		LLD<1.75E-01		411.80	
BA-133	LLD<2.61E-01		LLD<2.61E-01		356.02	
BA-139	LLD<5.31E-01		LLD<5.31E-01		165.85	
BA-140	LLD<7.16E-01		LLD<7.16E-01		537.27	
BA-141	LLD<5.25E-01		LLD<5.25E-01		190.23	
BE-7	LLD<1.77E+00		LLD<1.77E+00		477.59	
BI-207	LLD<1.81E-01		LLD<1.81E-01		569.70	
BI-212	LLD<2.48E+00		LLD<2.48E+00		727.27	
BI-214	LLD<7.96E-01		LLD<7.96E-01		609.32	
CD-109	LLD<3.09E+00		LLD<3.09E+00		88.03	
CE-139	LLD<1.20E-01		LLD<1.20E-01		165.85	
CE-141	LLD<1.87E-01		LLD<1.87E-01		145.44	
CEPR144	LLD<1.54E+00		LLD<1.54E+00		133.51	
CO-56	LLD<1.80E-01		LLD<1.80E-01		846.76	
CO-57	LLD<1.01E-01		LLD<1.01E-01		122.06	
CO-58	LLD<1.83E-01		LLD<1.83E-01		810.75	
CO-60	2.16E+01	+-6.73E-01	2.16E+01	+-6.73E-01	1332.50	-0.47
					1173.24	-0.52
CR-51	LLD<1.40E+00		LLD<1.40E+00		320.09	
CS-134	1.38E+01	+-5.61E-01	1.38E+01	+-5.61E-01	795.84	-0.51
					604.70	-0.40
CS-136	LLD<1.88E-01		LLD<1.88E-01		818.51	
CS-137	2.97E+01	+-7.17E-01	2.97E+01	+-7.17E-01	661.65	-0.45
CS-138	LLD<1.55E-01		LLD<1.55E-01		1435.86	
EU-152	LLD<3.89E-01		LLD<3.89E-01		1408.01	
EU-154	LLD<2.80E-01		LLD<2.80E-01		1274.45	
EU-155	LLD<3.83E-01		LLD<3.83E-01		105.31	
FE-59	LLD<4.07E-01		LLD<4.07E-01		1099.25	
HF-181	LLD<1.96E-01		LLD<1.96E-01		482.20	
HG-203	LLD<1.63E-01		LLD<1.63E-01		279.20	
I-131	LLD<2.02E-01		LLD<2.02E-01		364.48	
I-132	LLD<2.04E-01		LLD<2.04E-01		667.69	
I-133	LLD<1.98E-01		LLD<1.98E-01		529.69	
I-134	LLD<2.67E-01		LLD<2.67E-01		847.03	
I-135	LLD<4.13E-01		LLD<4.13E-01		1260.41	
K-40	LLD<1.91E+00		LLD<1.91E+00		1460.75	
KR-85	LLD<3.98E+01		LLD<3.98E+01		513.99	
KR-85M	LLD<1.22E-01		LLD<1.22E-01		151.17	
KR-87	LLD<4.45E-01		LLD<4.45E-01		402.58	
KR-89	LLD<6.66E+00		LLD<6.66E+00		220.90	
LA-140	LLD<7.35E-02		LLD<7.35E-02		1596.20	

LA-142	LLD<3.90E-01	LLD<3.90E-01	641.83
MN-54	LLD<1.85E-01	LLD<1.85E-01	834.83
MN-56	LLD<2.03E-01	LLD<2.03E-01	846.76
NA-22	LLD<1.03E-01	LLD<1.03E-01	1274.55
NA-24	LLD<1.91E-01	LLD<1.91E-01	1368.60
NB-94	LLD<1.56E-01	LLD<1.56E-01	702.63
NB-95	LLD<1.59E-01	LLD<1.59E-01	765.78
NB-97	LLD<1.13E+00	LLD<1.13E+00	657.92
NP-237	LLD<8.95E-01	LLD<8.95E-01	86.50
NP-238	LLD<8.09E-01	LLD<8.09E-01	984.45
NP-239	LLD<9.26E-01	LLD<9.26E-01	277.60
PA-233	LLD<4.15E-01	LLD<4.15E-01	311.98
PA-234M	LLD<3.85E+01	LLD<3.85E+01	1001.03
PB-210	LLD<4.64E+00	LLD<4.64E+00	465.03
PB-212	LLD<2.90E-01	LLD<2.90E-01	239.00
PB-214	LLD<4.42E-01	LLD<4.42E-01	351.92
PO-210	LLD<1.84E+04	LLD<1.84E+04	804.00
PO-214	LLD<6.72E+03	LLD<6.72E+03	799.70
PO-216	LLD<1.48E+04	LLD<1.48E+04	804.90
PU-239	LLD<1.32E+03	LLD<1.32E+03	129.30
PU-241	LLD<4.70E+04	LLD<4.70E+04	148.57
RA-224	LLD<3.16E+00	LLD<3.16E+00	240.99
RA-226	LLD<2.87E+00	LLD<2.87E+00	186.10
RB-88	LLD<7.95E-01	LLD<7.95E-01	1836.00
RB-89	LLD<9.12E-01	LLD<9.12E-01	1031.88
RN-220	LLD<1.56E+02	LLD<1.56E+02	549.73
RU-103	LLD<1.90E-01	LLD<1.90E-01	497.08
RURH106	LLD<3.18E+00	LLD<3.18E+00	621.80
SB-124	LLD<2.34E-01	LLD<2.34E-01	602.72
SB-125	LLD<1.47E+00	LLD<1.47E+00	176.33
SC-46	LLD<2.03E-01	LLD<2.03E-01	1120.45
SE-75	LLD<2.07E-01	LLD<2.07E-01	264.66
SN-113	LLD<2.51E-01	LLD<2.51E-01	391.67
SR-85	LLD<1.75E-01	LLD<1.75E-01	513.99
SR-91	LLD<3.04E-01	LLD<3.04E-01	555.60
SR-92	LLD<7.70E-02	LLD<7.70E-02	1383.94
TA-182	LLD<6.21E-01	LLD<6.21E-01	1121.30
TC-99M	LLD<1.03E-01	LLD<1.03E-01	140.51
TE-123M	LLD<1.11E-01	LLD<1.11E-01	159.00
TE-125M	LLD<2.77E+01	LLD<2.77E+01	109.27
TE-132	LLD<1.43E-01	LLD<1.43E-01	228.16
TH-228	LLD<9.59E+00	LLD<9.59E+00	84.37
TL-208	LLD<2.23E-01	LLD<2.23E-01	583.14
U-235	LLD<1.90E-01	LLD<1.90E-01	185.71
U-237	LLD<5.43E-01	LLD<5.43E-01	208.00
W-187	LLD<5.92E-01	LLD<5.92E-01	685.74
XE-131M	LLD<4.90E+00	LLD<4.90E+00	163.98
XE-133	LLD<3.37E-01	LLD<3.37E-01	81.00
XE-133M	LLD<1.25E+00	LLD<1.25E+00	233.21
XE-135	LLD<1.43E-01	LLD<1.43E-01	249.79
XE-138	LLD<1.04E+00	LLD<1.04E+00	258.41
Y-88	LLD<7.54E-02	LLD<7.54E-02	1836.06
Y-91	LLD<5.07E+01	LLD<5.07E+01	1204.90
Y-91M	LLD<2.30E-01	LLD<2.30E-01	555.60
ZN-65	LLD<4.96E-01	LLD<4.96E-01	1115.55
ZR-95	LLD<3.07E-01	LLD<3.07E-01	756.73
ZR-97	LLD<1.64E-01	LLD<1.64E-01	743.33
TOTAL	6.50E+01 +-1.13E+00	6.50E+01 +-1.13E+00	

STANDARD DEVIATION = 0.05

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.45E-09 UC/LI
TOTAL MEASURED ACTIVITY = 6.50E+01 (+-1.13E+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
1126.73	562.84	465.	12.6	1.99E+01
1138.94	568.94	869.	11.5	3.75E+01
1604.05	801.45	377.	13.1	2.16E+01
2730.17	1364.79	101.	22.6	9.06E+00

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2920.99	1460.30	184.	16.4	1.74E+01

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)		

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-0
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)		

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
          +   -9.660420E-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 2, 1989		
Calibration Standard ID:	56B40 D1		
Analyte Concentration:	N/A		
Type of Calibration:	Gamma Energy Analysis (Efficiency)		

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: 56840 01

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

EQUATION 0-165 KEV

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

EQUATION 165-1836 KEV

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

GEA CALIBRATION RECORD PROCEDURE LQ-508-003

DETECTOR: 3
GEOMETRY CODE: 42
GEOMETRY DECSRIPTION: 22 ML LIQUID, POS 2
CALIBRATION DATE: 2-Jul-89
ANALYST(S): J. L. ANDERSON/M. R. DOWELL
STANDARD ID: 56840 01

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)
+ -9.970520E-02 *LOG(ENERGY)^2

EQUATION 165-1836 KEV

LOG(EFF) = 3.082260E-01
+ -1.410839E+00 *LOG(ENERGY)
+ 1.042098E-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 01

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)
+ -4.420877E-01 *LOG(ENERGY)^2
+ 2.059131E-02 *LOG(ENERGY)^3

Analytical Batch

LAB SEGMENT SERIAL #: F1067

CUSTOMER ID: 000013

INSTRUMENT	WA77344
PROCEDURE/REV	LA-925-106/A-2
TECHNOLOGIST	S. Lai
DATE	June 26, 1990
TEMPERATURE	N/A
STARTING TIME	1300
ENDING TIME	1510
CHEMIST	S. A. Catlow

Uranium Analysis
Fusion Dissolution

	DESCRIPTION	LAB ID
1	Initial LMCS Check Std	F1071
2	Reagent Blank	F1072
3	Sample Comp 13	F1073
4	Duplicate Sample Comp 13	F1074
5	Spike Sample Comp 13	F1075
6	Final LMCS Check Std	F1076
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 BOOK # & ALIQUOT VOL.	FINAL VOL. OF STD.
LMCS Check Std	58B38/1 uL			5.7 mL
Spike	54B38/1 uL	F1073/1 uL		5.8 mL

SST-102 Rev. I 10/2/90 Interim

Analytical Batch

Lab Segment Serial #: F1067

Customer ID: 000013

Instrument	WB39939
Procedure/Rev	LA-505-151/A-0
Technologist	J. A. White
Date	April 27, 1990
Temperature	N/A
Starting Time	0745
Ending Time	1400
Chemist	S. A. Jones

ICP
Fusion Dissolution

No inter-element corrections were made on this data.

	Description	Lab ID
1	Initial LMCS Check Std	N/A
2	Reagent Blank	F1072
3	Sample Comp 13	F1073
4	Duplicate Sample Comp 13	F1074
5	Spike Sample Comp 13	F1075
6	Final LMCS Check Std	N/A
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 Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std	78C11K/1.0 mL	82B38G/1.0 mL	77C11J/1.0 mL	11.0 mL
Spike	78C11K/5.0 mL	82B38G/5.0 mL	77C11J/5.0 mL	
spike cont	F1072/0.5143 g			50.0 mL

SST-102 Rev. I 10/2/90 Interim

ICP Results

RAW DATA SUMMARY

Fusion Dissolution

Date Analyzed:	April 27,1990		
Procedure:	LA-505-151/A-0	Reagent Blank	F1072
Analyst:	J. A. White	Core 13 Composite	F1073
Digestion	Acid Digestion	Duplicate of Core 13 Comp.	F1074
Procedure:	LA-505-159/A-0	Spike of Core 13 Comp.	F1075

	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	105.37%				-2.08 LT	28065	30125	NOT CALC.		109.38%	
Antimony	101.78%				-2.32 LT	38 LT	-166 LT	19.62%		107.72%	
Arsenic	106.73%				-0.96 LT	-25 LT	-91 LT	NOT CALC.		114.45%	#
Barium	100.31%				-0.27 LT	-2 LT	-21 LT	NOT CALC.		103.35%	
Beryllium	99.10%				-0.04 LT	-1 LT	-3 LT	NOT CALC.		105.63%	
Bismuth	106.04%				-5.10 LT	2978	2547	NOT CALC.		110.28%	#
Boron	102.98%				0.84	153	113	94.74%		106.68%	
Cadmium	97.77%				-0.15 LT	-7 LT	-15 LT	NOT CALC.		102.96%	
Calcium	103.34%				1.19	737	1005	NOT CALC.		106.26%	
Cerium	87.39%	#			-9.94 LT	-365 LT	-1002 LT	NOT CALC.		92.75%	
Chromium	92.10%				-0.28 LT	177	139	78.98%		95.69%	
Cobalt	101.08%				-0.42 LT	21 LT	-11 LT	93.15%		108.78%	
Copper	101.90%				-0.69 LT	39 LT	-6 LT	87.95%		105.93%	
Europium	93.20%				-0.19 LT	-8 LT	-20 LT	NOT CALC.		98.13%	
Iron	104.02%				0.26	3239	3263	NOT CALC.		108.86%	
Lanthanum	89.09%	#			-0.38 LT	-6 LT	-30 LT	NOT CALC.		93.43%	
Lead	106.23%				-1.04 LT	69 LT	-9 LT	0.10%		110.04%	#
Lithium	95.05%				-0.49 LT	-20 LT	-52 LT	NOT CALC.		97.11%	
Magnesium	102.22%				2.33	472	221	90.99%		106.23%	
Manganese	101.36%				0.00 LT	912	890	NOT CALC.		105.38%	
Mercury	103.77%				-0.17 LT	-4 LT	-26 LT	NOT CALC.		103.80%	
Molybdenum	98.33%				-0.33 LT	-6 LT	-27 LT	NOT CALC.		102.84%	
Neodymium	94.58%				-8.83 LT	-498 LT	-915 LT	NOT CALC.		95.97%	
Nickel	98.00%				13.53	1449	1600	NOT CALC.		102.81%	
Phosphorous	103.55%				-1.40 LT	813	522	-0.23%		96.39%	
Potassium	97.37%				NA	NA	NA	NA		100.58%	
Samarium	98.35%				-11.29 LT	-420 LT	-1162 LT	NOT CALC.		101.55%	
Selenium	102.42%				-4.14 LT	-96 LT	-277 LT	NOT CALC.		103.85%	
Silicon	90.44%				16.82	7151	6832	NOT CALC.		94.99%	
Silver	104.29%				-0.81 LT	-29 LT	-84 LT	NOT CALC.		108.99%	
Sodium	96.64%				10.52	14124	17280	NOT CALC.		99.31%	
Strontium	101.93%				-0.10 LT	97	130	91.10%		105.21%	
Sulfur	100.97%				-0.53 LT	195	102	0.02%		99.29%	
Tantalum	98.33%				-1.62 LT	-55 LT	-158 LT	NOT CALC.		101.45%	
Thallium	104.56%				-14.56 LT	-198 LT	4887 LT	NOT CALC.		106.33%	
Thorium	101.05%				-6.72 LT	-213 LT	2302 LT	NOT CALC.		107.48%	
Tin	97.17%				-0.43 LT	10 LT	-29 LT	84.54%		102.77%	
Titanium	103.57%				-0.39 LT	-2 LT	-26 LT	NOT CALC.		109.98%	
Tungsten	85.99%	#			-1.15 LT	-18 LT	-82 LT	NOT CALC.		88.86%	#
Uranium	107.07%				-72.49 LT	-2025 LT	-6423 LT	NOT CALC.		110.92%	#
Vanadium	103.19%				-0.68 LT	-13 LT	-63 LT	NOT CALC.		108.33%	
Zinc	100.17%				0.09	88	77	87.98%		105.24%	
Zirconium	102.72%				-1.18 LT	-20 LT	-95 LT	NOT CALC.		108.49%	

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

ICP Results RAW DATA

	0.00956 g/mL 0.4778 g 50.00 mL Sample Dilution Two ppm	Sample Dilution One ppm	Digestion Weight Volume Sample Duplicate Dilution Three ppm	0.01004 g/mL 0.5018 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	268.19	278.30		302.33	285.60		235.09	252.20
Antimony	-13.60	0.36 LT		14.29	-1.67 LT		72.51	20.01
Arsenic	-5.76	-0.24 LT		2.74	-0.92 LT		-5.20	0.01 LT
Barium	-1.45	-0.02 LT		0.78	-0.21 LT		88.69	18.22
Beryllium	-0.18	-0.01 LT		0.12	-0.03 LT		-0.17	0.01 LT
Bismuth	6.58	28.46		43.65	25.57		1.40	26.34
Boron	5.58	1.47		7.71	1.14		96.32	19.91
Cadmium	-0.77	-0.06 LT		0.27	-0.15 LT		84.71	17.78
Calcium	7.04	6.16		10.09	9.82		100.16	24.40
Cerium	-53.93	-3.49 LT		24.81	-10.06 LT		23.81	14.01
Chromium	-0.72	1.69		2.28	1.40		80.80	18.06
Cobalt	-2.82	0.20 LT		3.90	-0.11 LT		93.36	20.22
Copper	-3.21	0.37 LT		2.19	-0.06 LT		88.35	18.80
Europium	-1.08	-0.07 LT		0.44	-0.20 LT		-0.88	0.00 LT
Iron	30.96	31.32		32.74	31.63		120.45	46.66
Lanthanum	-2.76	-0.05 LT		3.10	-0.31 LT		-2.41	0.29 LT
Lead	-9.53	0.66 LT		11.34	-0.09 LT		-10.43	1.23
Lithium	-2.78	-0.20 LT		1.17	-0.52 LT		79.33	17.03
Magnesium	4.51	2.14		2.22	2.33		95.84	19.44
Manganese	8.71	8.61		8.93	8.81		97.64	26.14
Mercury	-0.92	-0.04 LT		0.63	-0.26 LT		-1.34	-0.01 LT
Molybdenum	-1.75	-0.06 LT		0.75	-0.27 LT		-1.71	0.01 LT
Neodymium	-52.13	-4.76 LT		12.55	-9.18 LT		30.86	14.35
Nickel	12.53	13.85		16.06	13.71		97.31	30.28
Phosphorous	-0.92	7.77		12.91	5.24		-1.16	7.23
Potassium	NA	NA		NA	NA		NA	NA
Samarium	-62.66	-4.01 LT		27.83	-11.66 LT		-64.23	-2.70 LT
Selenium	-22.26	-0.92 LT		8.66	-2.78 LT		9.08	6.38
Silicon	68.34	25.43		68.57	24.71		43.04	23.87
Silver	-4.52	-0.28 LT		2.21	-0.85 LT		-4.77	-0.20 LT
Sodium	134.97	127.58		173.42	127.39		334.91	160.91
Strontium	0.35	0.93		1.31	0.89		92.10	19.41
Sulfur	-3.07	1.87		5.24	1.02		-1.40	2.11
Tantalum	-8.71	-0.53 LT		3.96	-1.58 LT		-8.77	-0.27 LT
Thallium	-67.46	-1.89 LT		49.05	-15.01 LT		-60.61	1.41
Thorium	-38.03	-2.03 LT		23.10	-7.06 LT		-37.32	-0.26 LT
Tin	-2.13	0.10 LT		2.29	-0.29 LT		422.79	89.22
Titanium	-2.05	-0.02 LT		0.95	-0.26 LT		-2.12	0.00 LT
Tungsten	-5.74	-0.17 LT		3.63	-0.82 LT		-3.70	0.44 LT
Uranium	-391.60	-19.35 LT		170.27	-64.46 LT		-365.50	-1.23 LT
Vanadium	-2.88	-0.12 LT		2.24	-0.64 LT		-2.62	0.07 LT
Zinc	0.48	0.85		1.28	0.78		88.89	19.34
Zirconium	-6.20	-0.19 LT		3.56	-0.95 LT		-6.28	0.00 LT
Dilution Factor	101.00	21.00	1.00	101.00	21.00	1.00	101.00	21.00

ICP Results

RAW DATA

Date Analyzed: April 27,1990
Procedure: LA-505-151/A-0
Analyst: J. A. White
Digestion Procedure: Acid Digestion LA-505-159/A-0

Reagent Blank F1072
Core 13 Composite F1073
Duplicate of Core 13 Comp. F1074
Spike of Core 13 Comp. F1075

	SST-1	SST-2	Starting LMCS Instrument Standard ppm	LMCS Standard Recovery %		LMCS Acid Digestion Standard ppm	Acid Digestion Standard Recovery %	Reagent Blank ppm	Digestion Weight Volume Sample Dilution Three ppm
Aluminum			52.69	105.37%		NOT RUN		-2.08 LT	
Antimony	10.18			101.78%				-2.32 LT	
Arsenic			53.37	106.73%				-0.96 LT	
Barium	10.03			100.31%				-0.27 LT	
Beryllium			9.91	99.10%				-0.04 LT	
Bismuth		53.12		106.04%				-5.10 LT	
Boron	10.30			102.98%				0.84	
Cadmium	9.78			97.77%				-0.15 LT	
Calcium	10.33			103.34%				1.19	
Cerium	8.74			87.39%	#			-9.94 LT	
Chromium	9.21			92.10%				-0.28 LT	
Cobalt	10.11			101.08%				-0.42 LT	
Copper	10.19			101.90%				-0.69 LT	
Europium		9.32		93.20%				-0.19 LT	
Iron	10.40			104.02%				0.26	
Lanthanum		44.63		89.09%	#			-0.38 LT	
Lead		53.22		106.23%				-1.04 LT	
Lithium	9.51			95.05%				-0.49 LT	
Magnesium	10.22			102.22%				2.33	
Manganese	10.14			101.36%				0.00 LT	
Mercury			25.94	103.77%				-0.17 LT	
Molybdenum			49.16	98.33%				-0.33 LT	
Neodymium	9.46			94.58%				-8.83 LT	
Nickel	9.80			98.00%				13.53	
Phosphorous			51.78	103.55%				-1.40 LT	
Potassium	24.34			97.37%				NA	
Samarium		9.84		98.35%				-11.29 LT	
Selenium			51.21	102.42%				-4.14 LT	
Silicon			45.22	90.44%				16.82	
Silver		10.43		104.29%				-0.81 LT	
Sodium	24.16			96.64%				10.52	
Strontium	10.19			101.93%				-0.10 LT	
Sulfur			50.49	100.97%				-0.53 LT	
Tantalum			49.17	98.33%				-1.62 LT	
Thallium			52.28	104.56%				-14.56 LT	
Thorium		50.63		101.05%				-6.72 LT	
Tin	48.58			97.17%				-0.43 LT	
Titanium			51.78	103.57%				-0.39 LT	
Tungsten			21.50	85.99%	#			-1.15 LT	
Uranium		53.64		107.07%				-72.49 LT	
Vanadium			10.32	103.19%				-0.68 LT	
Zinc	10.02			100.17%				0.09	
Zirconium			51.36	102.72%				-1.18 LT	
Dilution Factor	1.00	1.00	1.00			10.00		21.00	1.00

ICP Results RAW DATA

	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.	NOT RUN				54.69	109.38%	50.00
Antimony	19.62%			10.77			107.72%	10.00
Arsenic	NOT CALC.					57.23	114.45% #	50.00
Barium	NOT CALC.			10.34			103.35%	10.00
Beryllium	NOT CALC.					10.56	105.63%	10.00
Bismuth	NOT CALC.				55.25		110.28% #	50.10
Boron	94.74%			10.67			106.68%	10.00
Cadmium	NOT CALC.			10.30			102.96%	10.00
Calcium	NOT CALC.			10.63			106.26%	10.00
Cerium	NOT CALC.			9.28			92.75%	10.00
Chromium	78.98%			9.57			95.69%	10.00
Cobalt	93.15%			10.88			108.78%	10.00
Copper	87.95%			10.59			105.93%	10.00
Europium	NOT CALC.				9.81		98.13%	10.00
Iron	NOT CALC.			10.89			108.86%	10.00
Lanthanum	NOT CALC.				46.81		93.43%	50.10
Lead	0.10%				55.13		110.04% #	50.10
Lithium	NOT CALC.			9.71			97.11%	10.00
Magnesium	90.99%			10.62			106.23%	10.00
Manganese	NOT CALC.			10.54			105.38%	10.00
Mercury	NOT CALC.					25.95	103.80%	25.00
Molybdenum	NOT CALC.					51.42	102.84%	50.00
Neodymium	NOT CALC.			9.60			95.97%	10.00
Nickel	NOT CALC.			10.28			102.81%	10.00
Phosphorous	-0.23%					48.19	96.39%	50.00
Potassium	NA			25.15			100.58%	25.00
Samarium	NOT CALC.				10.16		101.55%	10.00
Selenium	NOT CALC.					51.93	103.85%	50.00
Silicon	NOT CALC.					47.50	94.99%	50.00
Silver	NOT CALC.				10.90		108.99%	10.00
Sodium	NOT CALC.			24.83			99.31%	25.00
Strontium	91.10%			10.52			105.21%	10.00
Sulfur	0.02%					49.65	99.29%	50.00
Tantalum	NOT CALC.					50.73	101.45%	50.00
Thallium	NOT CALC.					53.16	106.33%	50.00
Thorium	NOT CALC.				53.85		107.48%	50.10
Tin	84.54%			51.39			102.77%	50.00
Titanium	NOT CALC.					54.99	109.98%	50.00
Tungsten	NOT CALC.					22.22	88.86% #	25.00
Uranium	NOT CALC.				55.57		110.92% #	50.10
Vanadium	NOT CALC.					10.83	108.33%	10.00
Zinc	87.98%			10.52			105.24%	10.00
Zirconium	NOT CALC.					54.25	108.49%	50.00
Dilution Factor				1.00	1.00	1.00		10.00

ICP Results RAW DATA

	Spike Standard ID Book # 78C11K 82B38G 77C11J			LMCS Standards Values ppm SST-3	LMCS Standard IDs Book # 78C11K 82B38G 77C11J	ACID DIGESTION LMCS STANDARD VALUES ppm in Sample	ACID DIGEST. LMCS IDs Book # not analyzed
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 Report

Procedure: LA-505-151 Revision: A-0
Instrument: WB39939
Technologist: J. A. White
Date: April 27, 1990 Time: 07:45

Calibration Standards for ICP Program "SST"

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

ICP Standard Formulations

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

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

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

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

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

SM-10 Li, Na, K, Rb, Cs, Be, Mg, Ca, Sr, & Ba 100 ppm Lot# 0-119A

SM-20 V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ag, & Cd 100 ppm Lot# 0-119B

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

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

Al Al 10,000 ppm in 10% HCl Lot# 9-053A

B H_3BO_3 10,000 ppm in 1% NH_4OH Lot# 9-335A

Hg Hg 10,000 ppm in 5% HNO_3 Lot# 8-656S

Mo Mo 10,000 ppm in 5% HCl Lot# 9-159T

P P 10,000 ppm in 5% HNO3 Lot# 9-160A

Si Si 1000 ppm in KOH Lot# 086DM Spex Industries, Edison, NJ

S $(NH_4)_2SO_4$ in H_2O Lot# 9-231M

Ta TaCl5 10,000 ppm in 5% HCl/tr HF Lot# 9-335M

Ti Ti 10,000 ppm in 5% HF Lot# 9-079EE

W W 10,000 ppm in 5% HF/tr HNO_3 Lot# 8-685L

Zr $ZrCl_2O$ 10,100 ppm in 5% HCl Lot# 9-078G

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

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

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

Solution is used directly for calibration.

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

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

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

ICP Calibration - April 27, 1990

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27-Apr-90       07:47:01

Condition     Value               Min      /  Max

VACUUM   =     19.16               7.000    /  50.00
SPTEMP   =     38.60               37.00    /  39.00
MAINS    =     235.8               220.0    /  247.0
-1000V   =     -1005               -1010    /  -990
CTEMP    =     25.05               19.00    /  35.00
+5V      =     5.165               4.750    /  5.250
+12V     =     12.16               11.70    /  12.30
-12V     =     -12.2               -12.3    /  -11.7
+24V     =     23.19               22.50    /  26.50
-100V    =     -100                -101     /  -99.0
+5VSQ    =     5.155               4.750    /  5.250
+15VSQ   =     15.16               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 587.408 1.00099 0.29102 1.00009 -0.0671 0.00000 0.00000
Current data  :
INSTR    0.00000 587.408 1.00099 0.29102 1.00009 -0.0671 0.00000 0.00000
START THE PLASMA NOW, PLEASE.27-Apr-90       07:52:18
>RPOS
         SLIT     PM       ALPHA    BETA     ALPHA    BETA     ALPHA    BETA
         POS'N             SLIT     SLIT     LAMBDA1  LAMBDA1  LAMBDA2  LAMBDA2
Previous data :
INSTR    0.00000 587.403 1.00099 0.29102 1.00009 -0.0671 0.00000 0.00000
Current data  :
INSTR    0.00000 589.586 1.00107 0.26807 1.00010 -0.0752 0.00000 0.00000
>LGE

Sample name     : SSI0
Programme       : SST              27-Apr-90  09:57:42

NAME       MV INT       RSD

AL           2.06      0.90
SB           0.50      1.29
AS           1.43      1.35
BA           3.68      1.42
BE           0.89      0.06
BI           5.70      1.28
B            5.10      1.42
CD           3.19      1.69
CA           0.49      0.74
CE           5.21      1.25
CR           1.47      0.14
CO           0.24      0.63
CU           2.96      1.12
EU           3.94      1.31
FE           1.71      0.96
LA           0.35      1.48
PB           0.30      0.76
LI           3.66      1.46
MG           0.46      0.66
MN           0.94      2.21
HG           5.24      1.61
```

ICP Calibration - April 27, 1990

Sample name : SSI0
Programme : SST 27-Apr-90 09:57:42

NAME	MV INT	RSD
AL	2.06	0.90
BE	0.50	1.29
AS	1.43	1.35
BA	3.68	1.42
BE	0.89	0.06
BI	5.70	1.28
B	5.10	1.42
CD	3.19	1.69
CA	0.49	0.74
CE	5.21	1.25
CK	1.47	0.14
CO	0.24	0.63
CU	2.96	1.12
EU	3.94	1.31
FE	1.71	0.96
LA	0.35	1.48
PB	0.30	0.76
LI	3.66	1.46
MG	0.46	0.66
MN	0.94	2.21
HG	5.24	1.61
MO	3.59	1.00
ND	5.26	1.06
NI	4.85	2.00
P	1.52	2.24
K	2.96	1.27
SM	4.74	1.37
SE	2.31	1.45
SI	3.42	1.29
AG	15.15	1.40
NA	5.11	1.39
SR	3.54	1.23
S	0.86	0.70
TA	4.19	0.94
TL	4.58	2.24
TH	1.06	1.29
SN	1.82	1.49
TI	3.93	1.10
W	1.94	1.27
U	4.91	1.49
VI	4.67	1.31
ZN	4.36	1.10
ZR	4.64	1.05

Sample name : SSI1
Programme : SST 27-Apr-90 10:01:55

NAME	MV INT	RSD
LI	543.30	0.36
K	16.19	0.22
NA	73.55	0.34

Sample name : SSI2
Programme : SST 27-Apr-90 10:03:53

NAME	MV INT	RSD

ICP Calibration - April 27, 1990

Sample name : SST2
Programme : SST 27-Apr-90 10:03:53

NAME	MV INT	RSD
BA	406.05	1.12
BE	506.11	1.33
CD	530.66	1.05
CA	547.26	1.19
CR	105.11	4.24
CO	5.26	1.35
CU	132.24	1.21
FE	164.80	1.36
MG	596.69	1.10
MN	384.22	1.16
NI	242.00	1.19
AG	571.84	1.08
SR	720.80	1.14
VI	213.23	1.15
ZN	777.56	1.10

Sample name : SST3
Programme : SST 27-Apr-90 10:06:29

NAME	MV INT	RSD
AL	24.74	0.45
B	710.16	0.90
HG	1099.69	0.22
MO	431.79	0.40
P	76.74	1.22
SI	97.45	0.49
S	49.04	0.45
TA	192.75	0.36
TI	613.42	0.59
W	96.99	0.62
ZR	224.55	0.64

Sample name : SST4
Programme : SST 27-Apr-90 10:08:31

NAME	MV INT	RSD
SB	10.16	1.32
AS	168.55	1.13
BI	149.56	1.23
PB	7.73	1.25
SE	74.62	0.87
TL	55.24	0.57
TH	20.01	1.48
SN	371.38	1.05
U	15.73	1.91

Sample name : SST5
Programme : SST 27-Apr-90 10:11:07

NAME	MV INT	RSD
CE	31.42	0.45

ICP Calibration - April 27, 1990

Sample name : SST5
Programme : SST 27-Apr-90 10:11:07

NAME	MV INT	RSD
CE	21.42	0.45
EU	654.51	0.72
LA	8.16	0.67
ND	24.94	1.31
SM	17.61	0.54

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.9567	25.981	-0.453998E+01	0.220423E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	2.0597	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	24.743	50.000	50.000	50.000	0.0000	0.0000	CRV1

Programme name : SST Channel name : BA1 Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.4794	10.670	-0.522555E+01	0.103545E+02		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.5047	0.0000	0.0000	0.0000	0.0000		CRV1
SST4	0	10.163	100.00	100.00	100.00	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.3579	176.98	-0.855253E+00	0.598358E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.4293	0.0000	0.0000	0.0000	0.0000		CRV1
SST4	0	168.55	100.00	100.00	100.00	0.0000	0.0000	CRV1

ICP Calibration - April 27, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.4985	426.35	-0.183052E+00	0.497064E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	3.6827	0.0000	0.0000	0.0000	0.0000		CRV1
SSI2	0	406.05	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	0.8461	531.42	-0.352583E-01	0.395864E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	0.9907	0.0000	0.0000	0.0000	0.0000		CRV1
SSI2	0	506.11	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	5.4191	157.04	-0.396535E+01	0.695146E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	5.7043	0.0000	0.0000	-0.000	-0.000		CRV1
SSI4	0	149.56	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	4.8437	745.66	-0.361579E+00	0.709163E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve

ICP Calibration - April 27, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.8437	745.66	-0.361579E+00	0.709163E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	5.0987	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	710.16	50.000	50.000	50.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.0299	546.69	-0.123256E+00	0.386496E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	3.1893	0.0000	0.0000	-0.000	-0.000		CRV1
SST2	0	520.66	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	574.62	-0.178870E-01	0.365787E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.4899	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	547.26	20.000	20.000	20.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.9498	22.486	-0.643053E+01	0.123419E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve

ICP Calibration - April 27, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.9498	22.486	-0.643053E+01	0.123419E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSTO	0	5.2103	0.0000	0.0000	-0.000	-0.000		CRV1
SST5	0	21.415	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.3971	110.36	-0.283816E+00	0.192904E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSTO	0	1.4707	0.0000	0.0000	-0.000	-0.000		CRV1
SST2	0	105.11	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.2302	5.5178	-0.966984E+00	0.398989E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSTO	0	0.2423	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	5.2550	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	2.8101	128.35	-0.495968E+00	0.167670E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve

ICP Calibration - April 27, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	2.8101	138.35	-0.495968E+00	0.167670E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	2.9580	0.0000	0.0000	-0.000	-0.000		CRV1
SST2	0	122.24	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.7392	687.23	-0.121002E+00	0.307423E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	3.9360	0.0000	0.0000	0.0000	0.0000		CRV1
SST5	0	654.51	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.6236	173.04	-0.209578E+00	0.122632E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.7090	0.0000	0.0000	-0.000	-0.000		CRV1
SST2	0	164.80	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	0.3303	8.5649	-0.890388E+00	0.256104E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve

ICP Calibration - April 27, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.3303	8.5649	-0.890388E+00	0.256104E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	0.3477	0.0000	0.0000	-0.000	-0.000		CRV1
SSI5	0	8.1570	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	0.2872	8.1105	-0.407348E+01	0.134735E+02		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	0.3023	0.0000	0.0000	0.0000	0.0000		CRV1
SSI4	0	7.7243	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	3.4770	570.36	-0.339179E+00	0.926719E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	3.6600	0.0000	0.0000	0.0000	0.0000		CRV1
SSI1	0	543.20	50.000	50.000	50.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.4411	626.53	-0.155757E-01	0.335442E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve

ICP Calibration - April 27, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.4411	626.53	-0.155757E-01	0.335442E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.4643	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	596.69	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	0.8959	403.43	-0.492072E-01	0.521815E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.9430	0.0000	0.0000	-0.000	-0.000		CRV1
SST2	0	384.22	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	4.9758	1154.7	-0.239283E+00	0.456851E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	5.2377	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	1099.7	50.000	50.000	50.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	2.4602	453.38	-0.301687E+00	0.116496E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve

ICP Calibration - April 27, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	2.4602	453.38	-0.301687E+00	0.116496E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	2.5897	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	431.79	50.000	50.000	50.000	0.0000	0.0000	CRV1

Programme name : SST Channel name : NO Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.9922	26.186	-0.533945E+01	0.101607E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	5.2550	0.0000	0.0000	0.0000	0.0000		CRV1
SST5	0	24.939	20.000	20.000	20.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.6043	254.10	-0.408732E+00	0.845326E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.8467	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	242.09	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.4538	80.577	-0.101738E+01	0.664808E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve

ICP Calibration - April 27, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.4538	80.577	-0.101738E+01	0.664808E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.5303	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	76.740	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	2.8107	17.002	-0.111783E+02	0.377815E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	2.9587	0.0000	0.0000	0.0000	0.0000		CRV1
SST1	0	16.193	50.000	50.000	50.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.4992	18.489	-0.735804E+01	0.155364E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.7360	0.0000	0.0000	0.0000	0.0000		CRV1
SST5	0	17.609	20.000	20.000	20.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	2.1932	78.348	-0.319280E+01	0.138296E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve

ICP Calibration - April 27, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	2.1932	78.348	-0.319280E+01	0.138296E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	2.3087	0.0000	0.0000	-0.000	-0.000		CRV1
SST4	0	74.617	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	3.2525	102.32	-0.182030E+01	0.531770E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	3.4237	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	97.449	50.000	50.000	50.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	14.405	600.43	-0.544773E+00	0.359278E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	15.163	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	571.84	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	4.8586	77.224	-0.373676E+01	0.730643E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve

ICP Calibration - April 27, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.8586	77.224	-0.373676E+01	0.730645E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	5.1143	0.0000	0.0000	0.0000	0.0000		CRV1
SST1	0	73.547	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	3.3586	756.84	-0.985776E-01	0.278035E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	3.5353	0.0000	0.0000	-0.000	-0.000		CRV1
SST2	0	720.80	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.8132	51.495	-0.888206E+00	0.103762E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.8560	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	49.043	50.000	50.000	50.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.9770	202.39	-0.111007E+01	0.265165E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve

ICP Calibration - April 27, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.9770	202.39	-0.111007E+01	0.265165E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.1863	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	192.75	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	4.3526	58.000	-0.904461E+01	0.197409E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.5817	0.0000	0.0000	-0.000	-0.000		CRV1
SST4	0	55.238	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	1.0067	21.006	-0.559309E+01	0.527815E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.0597	0.0000	0.0000	0.0000	0.0000		CRV1
SST4	0	20.006	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	1.7334	389.95	-0.493743E+00	0.270593E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve

ICP Calibration - April 27, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.7334	389.95	-0.493743E+00	0.330593E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.8247	0.0000	0.0000	-0.000	-0.000		CRV1
SST4	0	371.38	100.00	100.00	100.00	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.7345	644.09	-0.333485E+00	0.830365E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	3.9310	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	613.42	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	1.8395	101.83	-0.101960E+01	0.526046E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.9363	0.0000	0.0000	-0.000	-0.000		CRV1
SST3	0	96.985	50.000	50.000	50.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.6677	16.515	-0.454294E+02	0.924614E+01		

Name	Number	Int.	Conc	True	Calc	Conc	% Error	Curve

ICP Calibration - April 27, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.6677	16.515	-0.454294E+02	0.924614E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	4.9133	0.0000	0.0000	-0.000	-0.000		CRV1
SSI4	0	15.729	100.00	100.00	100.00	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.4365	223.90	-0.447836E+00	0.958941E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.6700	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	213.23	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	4.1426	816.44	-0.112795E+00	0.259665E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.3607	0.0000	0.0000	-0.000	-0.000		CRV1
SST2	0	777.56	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	4.4036	235.78	-0.105389E+01	0.237360E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve

ICP Calibration - April 27, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.4036	235.78	-0.105089E+01	0.227360E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.6353	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	224.55	50.000	50.000	50.000	-0.000	-0.000	CRV1

ICP Analysis - April 27, 1990 Acid Blank

Sample name : HNO3
Programme : SST 27-Apr-90 12:46:31

NAME	MV INT	CONCEN	RSD
Al	1.93	(-0.201	-20.48
Sb	0.49	-0.135	-32.03
As	1.34	(-0.053	-22.74
Ba	3.40	(-0.014	-20.27
Be	0.85	-0.002	-15.74
Bi	5.40	(-0.212	-16.44
B	4.89	-0.015	-27.57
Cd	3.00	(-0.007	-9.79
Ca	0.46	(-0.001	-12.25
Ce	4.82	(-0.478	-20.96
Cr	1.36	(-0.021	-26.73
Co	0.24	-0.020	-23.09
Cu	2.76	(-0.034	-18.79
Eu	3.64	(-0.009	-21.88
Fe	1.62	(-0.011	-33.48
La	0.34	-0.019	-34.32
Pb	0.30	-0.058	-92.31
Li	3.39	(-0.025	-18.11
Mg	0.44	-0.001	-15.90
Mn	0.90	-0.002	-19.36
Hg	5.06	-0.008	-44.60
Mo	2.46	-0.015	-17.91
Nd	4.82	(-0.447	-20.49
Ni	4.64	-0.018	-25.62
P	1.40	(-0.087	-25.62
K	2.76	(-0.746	-23.03
Sm	4.38	(-0.556	-21.34
Se	2.16	(-0.203	-27.37
Si	3.19	(-0.122	-17.68
Ag	14.00	(-0.042	-21.84
Na	4.71	(-0.297	-18.94
Sr	3.32	(-0.006	-21.36
S	0.80	(-0.058	-21.58
Ta	3.90	(-0.077	-20.61
Tl	4.22	(-0.724	-26.96
Th	0.99	(-0.341	-22.46
Sn	1.74	-0.023	-18.56
Ti	3.70	(-0.019	-20.33
W	1.84	-0.050	-26.76
U	4.53	(-3.547	-19.11
V	4.35	(-0.030	-22.91
Zn	4.20	-0.004	-32.61
Zr	4.38	(-0.058	-20.73

ICP Analysis - April 27, 1990 LMCS Check Standard

F1071

Sample name : 78C11K
Sample code 1 : SSI1
Sample code 2 : DIRECT
Programme : SST 27-Apr-90 12:50:30

NAME	MV INT	CONCEN	%SD
Al	2.11	0.105	71.59
Sb	1.49	10.178	0.46
As	1.57	0.084	14.60
Ba	205.48	10.031	1.43
Be	0.91	0.001	68.24
Bi	5.72	0.008	954.09
B	150.31	10.398	1.10
Cd	256.14	9.777	0.39
Ca	383.01	10.334	1.53
Ce	12.29	8.739	0.75
Cr	49.20	9.210	0.67
Co	2.78	10.108	0.23
Cu	63.73	10.190	1.16
Eu	4.63	0.021	11.92
Fe	86.53	10.402	0.90
La	0.38	0.070	7.32
Pb	0.31	0.054	87.80
Li	106.22	9.505	0.88
Mg	305.19	10.222	1.03
Mn	195.18	10.136	0.96
Hg	5.44	0.009	20.23
Mo	2.68	0.010	50.92
Nd	14.56	9.458	1.70
Ni	121.05	9.800	0.50
P	1.60	0.046	59.94
K	9.40	24.343	0.49
Sm	4.59	-0.224	-73.98
Se	4.95	3.513	0.14
Si	3.42	0.001	6499.98
Ag	14.82	-0.012	-96.55
Na	38.18	24.160	0.82
Sr	369.11	10.193	1.38
S	1.16	0.314	6.25
Ta	4.18	-0.002	-1063.6
Tl	4.74	0.309	63.94
Th	1.09	0.143	68.53
Sn	181.37	48.584	0.52
Ti	3.85	-0.007	-79.56
W	2.23	0.157	7.38
U	5.36	3.205	30.44
V	4.66	-0.002	-489.02
Zn	391.62	10.017	0.56
Zr	4.61	0.006	-304.89

ICP Analysis - April 27, 1990 LMCS Check Standard

Sample name : 82B38G B107/
Sample code 1 : SST2
Sample code 2 : DIRREC
Programme : SST 27-Apr-90 12:54:46

NAME	MV INT	CONCEN	RSD
Al	4.69	5.789	0.47
Sb	0.57	0.704	9.45
As	4.68	1.947	0.12
Ba	4.22	0.027	11.07
Be	0.96	0.009	11.37
Bi	82.13	53.124	1.08
B	6.37	0.090	5.41
Cd	3.48	0.011	17.19
Ca	0.97	0.018	1.15
Ce	5.91	0.863	11.95
Cr	1.99	0.099	1.67
Co	0.26	0.059	6.82
Cu	4.73	0.398	1.31
Eu	307.10	9.320	1.92
Fe	2.27	0.069	2.01
La	17.78	344.632	1.82
Pb	4.25	58.220	0.94
Li	3.84	0.017	30.41
Mg	0.76	0.010	0.20
Mn	1.19	0.013	3.27
Hg	6.62	0.063	5.65
Mo	2.84	0.029	12.53
Nd	6.16	0.918	10.55
Ni	5.38	0.045	17.57
P	2.05	0.346	5.48
K	3.05	0.359	41.58
Sm	11.07	9.635	0.73
Se	2.59	0.391	6.45
Si	4.86	0.762	2.42
Ag	305.44	10.429	1.33
Na	5.41	0.213	28.35
Sr	3.97	0.013	10.75
S	1.07	0.225	3.02
Ta	5.08	0.238	6.52
Tl	8.09	6.929	1.47
Th	10.65	50.638	1.80
Sn	2.20	0.102	9.41
Ti	4.87	0.077	4.16
W	2.08	0.074	12.58
U	10.71	53.640	0.52
V	7.35	0.257	1.47
Zn	4.90	0.014	2.77
Zr	5.41	0.176	6.63

ICP Analysis - April 27, 1990 LMCS Check Standard

R1071

Sample name : 77C11J
Sample code 1 : SSI3
Sample code 2 : DIRECT
Programme : SSI 27-Apr-90 12:58:36

NAME	MV INT	CONCEN	RSD
Al	25.96	)52.685	1.10
Sb	0.66	1.564	2.33
As	95.63	56.367	0.55
Ba	4.19	0.025	10.29
Be	351.24	9.910	2.31
Bi	7.39	1.152	4.68
B	6.17	0.076	7.79
Cd	3.62	0.017	16.69
Ca	1.30	0.030	0.98
Ce	5.48	0.330	29.78
Cr	1.73	0.050	10.87
Co	0.28	0.141	4.22
Cu	3.41	0.076	9.33
Eu	4.16	0.007	26.43
Fe	2.18	0.058	3.02
La	0.37	0.044	29.80
Pb	0.33	0.305	4.41
Li	3.80	0.013	39.24
Mg	0.72	0.009	0.59
Mn	1.32	0.020	1.67
Hg	573.07	25.042	0.64
Mo	424.60	49.163	1.24
Nd	5.58	0.230	29.62
Ni	11.21	0.537	0.41
P	79.41	)51.777	2.12
K	3.06	0.390	34.02
Sm	5.09	0.416	26.90
Se	39.34	51.298	1.04
Si	88.46	45.218	1.39
Ag	26.34	0.401	1.66
Na	6.42	0.950	5.29
Sr	3.81	0.008	15.80
S	49.51	50.485	0.85
Ta	189.60	49.166	1.24
Tl	31.07	52.281	0.67
Th	1.28	1.154	5.14
Sn	2.61	0.212	3.60
Ti	635.16	51.784	1.15
W	42.80	21.497	1.10
U	6.62	15.758	4.91
V	112.28	10.319	0.99
Zn	5.99	0.042	1.50
Zr	230.54	51.361	1.17

ICP Analysis - April 27, 1990 Regent Blank

Sample name : F1072
Sample code 1 : BLANK
Sample code 2 : 500-10
Sample code 3 : 000013
Programme : SST 27-Apr-90 13:03:11

NAME	MV INT	CONCEN	DILCOR	RSD
Al	2.01	-0.099	-2.083	-65.33
Sb	0.49	-0.110	-2.319	-28.13
As	1.35	(-0.045	(-0.955	-24.63
Ba	3.42	(-0.013	(-0.272	-19.40
Be	0.85	-0.002	-0.037	-10.74
Bi	5.36	(-0.243	(-5.095	-7.03
B	5.67	0.040	0.844	13.22
Cd	3.01	(-0.007	(-0.147	-19.66
Ca	2.04	0.057	1.190	0.59
Ce	4.83	(-0.473	(-9.935	-19.81
Cr	1.40	-0.013	-0.281	-15.89
Co	0.24	-0.020	-0.419	-11.55
Cu	2.76	(-0.033	(-0.690	-19.04
Eu	3.64	(-0.009	(-0.191	-12.67
Fe	1.81	0.013	0.263	17.09
La	0.34	-0.018	-0.376	-45.92
Pb	0.30	-0.049	-1.037	-41.66
Li	3.41	(-0.023	(-0.480	-20.42
Mg	3.77	0.111	2.329	0.53
Mn	0.94	0.000	0.001	998.89
Hg	5.06	-0.008	-0.173	-33.07
Mo	2.46	(-0.016	(-0.339	-13.75
Nd	4.84	(-0.420	(-8.827	-14.79
Ni	12.49	0.644	13.534	0.55
P	1.43	(-0.066	(-1.396	-41.02
K	341.49	)1279.0	) 26860	0.69
Sm	4.39	(-0.538	(-11.29	-19.46
Se	2.17	(-0.197	(-4.143	-14.07
Si	4.93	0.801	16.821	6.99
Ag	14.09	(-0.039	(-0.809	-30.33
Na	5.80	0.501	10.515	7.91
Sr	3.36	(-0.005	(-0.104	-20.33
S	0.83	-0.025	-0.530	-51.05
Ta	3.90	(-0.077	(-1.617	-16.14
Tl	4.23	(-0.694	(-14.56	-15.24
Th	1.00	(-0.320	(-6.724	-19.99
Sn	1.75	-0.021	-0.432	-29.93
Ti	3.70	(-0.019	(-0.393	-17.31
W	1.83	(-0.055	(-1.153	-7.67
U	4.54	(-3.452	(-72.49	-17.90
V	4.34	(-0.032	(-0.675	-14.18
Zn	4.53	0.004	0.089	19.21
Zr	4.39	(-0.056	(-1.181	-15.46

Dilution factor : 21.0000

ICP Analysis - April 27, 1990 Core 13 Composite

Sample name : F1073
Sample code 1 : SAMPLE
Sample code 2 : 100-10
Sample code 3 : 000013
Programme : SST 27-Apr-90 10:07:24

NAME	MV INT	CONCEN	DILCOR	RSD
Al	3.26	2.655	268.19	1.71
Sb	0.49	-0.135	-13.60	-43.74
As	1.33	(-0.057	(-5.761	-14.42
Ba	3.39	(-0.014	(-1.448	-20.58
Be	0.85	-0.002	-0.175	-38.53
Bi	5.80	0.065	6.576	103.97
B	5.88	0.055	5.584	11.45
Cd	2.99	(-0.008	(-0.768	-26.21
Ca	2.39	0.070	7.039	0.59
Ce	4.78	(-0.534	(-53.93	-32.44
Cr	1.43	-0.007	-0.715	-73.53
Co	3.24	-0.029	-2.821	-21.82
Cu	2.77	(-0.032	(-3.206	-25.64
Eu	3.59	(-0.011	(-1.077	-23.49
Fe	4.21	0.306	30.956	1.13
La	0.34	-0.027	-2.759	-18.75
Pb	0.30	-0.094	-9.526	-35.95
Li	3.36	(-0.028	(-2.783	-21.23
Mg	1.80	0.045	4.508	0.39
Mn	3.60	0.086	8.714	0.40
Hg	5.04	-0.009	-0.917	-42.91
Mo	2.44	(-0.017	(-1.753	-30.44
Nd	4.75	(-0.516	(-52.13	-22.17
Ni	6.32	0.124	12.527	4.75
P	1.52	-0.009	-0.918	-377.12
K	36.66	)127.33	) 12860	0.65
Sm	4.84	(-0.620	(-62.66	-22.45
Se	2.15	(-0.220	(-22.26	-32.02
Si	4.70	0.677	68.335	3.50
Ag	13.92	(-0.045	(-4.517	-35.01
Na	6.94	1.336	134.97	4.01
Sr	3.66	0.003	0.353	40.33
S	0.83	-0.030	-3.074	-54.79
Ta	3.86	(-0.086	(-8.713	-18.08
Tl	4.24	(-0.668	(-67.46	-33.21
Th	0.99	(-0.377	(-38.03	-26.01
Sn	1.75	-0.021	-2.132	-33.54
Ti	3.68	(-0.020	(-2.049	-19.61
W	1.83	(-0.057	(-5.738	-21.95
U	4.49	(-3.877	(-391.6	-21.95
V	4.37	(-0.029	(-2.883	-24.67
Zn	4.54	0.005	0.477	45.84
Zr	4.37	(-0.061	(-6.200	-23.80

Dilution factor : 101.000

ICP Analysis - April 27, 1990 Core 13 Composite

```
Sample name     : F1073
Sample code 1   : SAMPLE
Sample code 2   : 500-10
Sample code 3   : 000913
Programme       : SST                    27-Apr-90  13:11:11

NAME        MV INT    CONCEN    DILCOR       RSD

Al            8.07    13.253    278.30      1.19
Sb            0.51     0.017     0.362    150.99
As            1.41    -0.012    -0.243   -129.21
Ba            3.67    -0.001    -0.018   -370.05
Be            0.88    -0.000    -0.005   -237.02
Bi            7.63     1.355    28.461      3.44
B             6.08     0.070     1.466      2.55
Cd            3.11    -0.003    -0.069    -91.21
Ca            8.50     0.293     6.157      1.40
Ce            5.08    -0.166    -3.490    -49.28
Cr            1.69     0.080     1.689      4.83
Co            0.24     0.009     0.196     49.49
Cu            3.06     0.018     0.369     31.65
Eu            3.82    -0.003    -0.073    -47.17
Fe           13.87     1.491    31.319      1.39
La            0.35    -0.003    -0.054   -416.36
Pb            0.30     0.031     0.660     65.47
Li            3.56    -0.009    -0.195    -45.40
Mg            3.50     0.102     2.138      1.32
Mn            8.80     0.410     8.605      1.14
Hg            5.19    -0.002    -0.042   -148.30
Mo            3.57    -0.003    -0.057    -97.07
Nd            5.03    -0.227    -4.758    -13.68
Ni           12.66     0.659    13.846      1.15
P             2.09     0.370     7.772      3.25
K           161.40   )598.61   ) 12571      1.03
Sm            4.61    -0.191    -4.013    -50.40
Se            2.28    -0.044    -0.920    -26.98
Si            5.70     1.211    25.431      1.14
Ag           14.80    -0.013    -0.276    -54.75
Na           13.43     6.075   127.58      1.08
Sr            5.12     0.044     0.926      1.81
S             0.94     0.089     1.867      4.72
Ta            4.09    -0.025    -0.527    -44.55
Tl            4.54    -0.090    -1.893   -118.43
Th            1.04    -0.097    -2.032    -66.66
Sn            1.84     0.005     0.098     55.64
Ti            3.92    -0.001    -0.019   -348.69
W             1.92    -0.008    -0.173    -48.33
U             4.81    -0.922   -19.35     -64.53
V             4.61    -0.006    -0.121   -102.16
Zn            5.92     0.040     0.845      0.34
Zr            4.60    -0.009    -0.188   -114.86

Dilution factor : 21.0000
```

ICP Analysis - April 27, 1990 Duplicate of Core 13 Composite

Sample name : F1074
Sample code 1 : DUPSAM
Sample code 2 : 100-10
Sample code 3 : 000013
Programme : SST 27-Apr-90 13:15:19

NAME	MV INT	CONCEN	DILCOR	RSD
Al	3.42	2.993	302.33	1.66
Sb	0.52	0.142	14.293	27.73
As	1.47	0.027	2.740	41.70
Ba	3.84	0.008	0.778	20.77
Be	0.92	0.001	0.117	22.35
Bi	6.33	0.432	43.647	5.99
B	6.17	0.076	7.707	2.25
Cd	3.26	0.003	0.267	16.96
Ca	3.22	0.100	10.086	0.57
Ce	5.41	0.246	24.806	22.73
Cr	1.59	0.023	2.280	13.58
Co	0.25	0.039	3.895	17.92
Cu	3.09	0.022	2.190	18.45
Eu	4.08	0.004	0.444	23.58
Fe	4.35	0.324	32.744	2.34
La	0.36	0.031	3.104	29.27
Pb	0.31	0.112	11.340	24.98
Li	3.78	0.012	1.170	22.44
Mg	1.12	0.022	2.217	1.04
Mn	2.64	0.088	8.928	0.92
Hg	5.37	0.006	0.632	25.53
Mo	2.65	0.007	0.753	29.08
Nd	5.38	0.124	12.554	33.75
Ni	6.73	0.159	16.061	1.67
P	1.72	0.128	12.914	14.58
K	36.12	)125.28	) 12653	0.14
Sm	4.91	0.276	27.827	22.84
Se	2.37	0.086	8.660	38.11
Si	4.70	0.679	68.568	2.35
Ag	15.77	0.022	2.205	16.67
Na	7.46	1.717	173.42	2.15
Sr	4.00	0.013	1.309	5.49
S	0.91	0.052	5.240	21.07
Ta	4.33	0.039	3.955	34.04
Tl	4.83	0.486	49.048	12.17
Th	1.10	0.229	23.101	33.43
Sn	1.91	0.023	2.287	17.08
Ti	4.05	0.009	0.950	23.33
W	2.00	0.036	3.631	18.59
U	5.10	1.686	170.27	23.25
V	4.90	0.022	2.241	22.23
Zn	4.85	0.013	1.284	4.09
Zr	4.79	0.035	3.559	16.83

Dilution factor : 101.000

ICP Analysis - April 27, 1990 Duplicate of Core 13 Composite

Sample name : P1074
Sample code 1 : DUPSAM
Sample code 3 : 500-10
Sample code 3 : 000013
Programme : SST 27-Apr-90 13:22:30

NAME	MV INT	CONCEN	DILCOR	RSD
Al	8.23	13.600	285.60	0.67
Sb	0.50	-0.079	-1.667	-47.03
As	1.36	(-0.044	(-0.917	12.42
Ba	3.48	(-0.010	(-0.207	-10.91
Be	0.85	-0.001	-0.031	-27.72
Bi	7.46	1.217	25.566	2.37
B	5.86	0.054	1.138	1.80
Cd	3.01	(-0.007	(-0.148	-15.07
Ca	13.27	0.467	9.816	0.55
Ce	4.82	(-0.479	(-10.06	-8.54
Cr	1.82	0.067	1.400	3.62
Co	0.24	-0.005	-0.112	-75.00
Cu	2.94	-0.003	-0.062	-102.09
Eu	3.53	(-0.009	(-0.197	-8.02
Fe	13.99	1.506	31.626	0.92
La	0.34	-0.015	-0.305	-30.57
Pb	0.30	-0.004	-0.094	-300.02
Li	3.39	(-0.025	(-0.523	-8.83
Mg	3.77	0.111	2.325	0.58
Mn	8.98	0.420	8.811	0.91
Hg	4.96	(-0.013	(-0.264	-10.94
Mo	2.48	-0.013	-0.271	-20.37
Nd	4.82	(-0.437	(-9.182	-9.52
Ni	12.59	0.653	13.706	1.08
P	1.91	0.250	5.240	6.48
K	165.29	)613.29	) 12879	0.49
Sm	4.38	(-0.555	(-11.66	-9.39
Se	2.21	-0.132	-2.778	-6.35
Si	5.64	1.177	24.709	0.97
Ag	14.04	(-0.040	(-0.846	-11.60
Na	13.42	6.066	127.39	0.53
Sr	5.06	0.042	0.892	1.25
S	0.90	0.049	1.024	21.59
Ta	3.90	(-0.075	(-1.583	-11.05
Tl	4.22	(-0.715	(-15.01	-17.62
Th	1.00	(-0.336	(-7.057	-9.42
Sn	1.77	-0.014	-0.292	-32.67
Ti	3.78	-0.012	-0.258	-20.67
W	1.86	-0.039	-0.821	-33.46
U	4.58	(-3.070	(-64.46	-9.96
V	4.35	(-0.030	(-0.636	-15.28
Zn	5.79	0.037	0.775	2.73
Zr	4.44	-0.045	-0.953	-13.72

Dilution factor : 21.0000

ICP Analysis - April 27, 1990 Spike of Core 13 Composite

Sample name : F1075
Sample code 1 : SPIKE
Sample code 2 : 100-10
Sample code 3 : 000013
Programme : SST 27-Apr-90 18:26:35

NAME	MV INT	CONCEN	DILCOR	RSD
Al	3.12	2.328	235.09	2.09
Sb	0.57	0.718	72.509	1.44
As	1.34	(-0.051	(-5.197	-48.59
Ba	21.35	0.878	88.691	0.64
Be	0.85	-0.002	-0.169	-28.18
Bi	5.72	0.014	1.404	443.21
B	18.55	0.954	96.330	1.39
Cd	24.89	0.839	84.707	1.69
Ca	27.60	0.992	100.16	0.70
Ce	5.40	0.336	33.909	36.81
Cr	5.62	0.800	80.798	1.51
Co	0.47	0.924	93.357	1.29
Cu	8.18	0.875	88.348	1.15
Eu	3.65	(-0.009	(-0.879	-30.46
Fe	11.43	1.193	120.45	0.79
La	0.34	-0.024	-2.414	-36.96
Pb	0.29	-0.102	-10.43	-27.15
Li	12.14	0.785	79.328	0.65
Mg	28.75	0.949	95.843	0.56
Mn	19.47	0.967	97.642	0.72
Hg	4.95	(-0.013	(-1.341	-27.27
Mo	2.44	(-0.017	(-1.706	-16.63
Nd	5.56	0.305	30.855	22.06
Ni	16.27	0.963	97.313	1.79
P	1.51	-0.012	-1.164	-305.93
K	34.05	)117.48	) 11866	0.55
Sm	4.33	(-0.636	(-64.23	-16.12
Se	2.37	0.090	9.079	39.65
Si	4.22	0.426	43.039	5.73
Ag	13.85	(-0.047	(-4.772	-16.50
Na	9.65	3.316	334.91	1.42
Sr	36.24	0.912	92.100	0.63
S	0.84	-0.014	-1.397	-52.68
Ta	3.86	(-0.087	(-8.767	-16.15
Tl	4.28	(-0.600	(-60.61	-32.37
Th	0.99	(-0.369	(-37.32	-17.98
Sn	17.29	4.186	422.79	1.25
Ti	3.68	(-0.021	(-2.116	-13.89
W	1.87	-0.037	-3.701	-18.18
U	4.52	(-3.618	(-365.5	-18.25
V	4.40	(-0.026	(-2.615	-22.51
Zn	38.39	0.880	88.894	1.10
Zr	4.36	(-0.062	(-6.284	-17.14

Dilution factor : 101.000

ICP Analysis - April 27, 1990 Spike of Core 13 Composite

Sample name : F1075
Sample code 1 : SPIKE
Sample code 2 : 500-10
Sample code 3 : 000013
Programme : SST 27-Apr-90 13:31:20

NAME	MV INT	CONCEN	DILCOR	RSD
Al	7.51	12.009	252.20	0.46
Sb	0.60	0.953	20.005	2.74
As	1.43	0.000	0.008	4049.71
Ba	21.14	0.868	18.219	0.56
Be	0.90	0.000	0.005	110.97
Bi	7.51	1.254	26.340	3.35
B	18.47	0.948	19.909	0.14
Cd	25.09	0.847	17.778	0.36
Ca	32.26	1.162	24.402	0.73
Ce	5.75	0.667	14.013	9.11
Cr	5.93	0.860	18.055	0.88
Co	0.48	0.963	20.221	1.27
Cu	8.30	0.895	18.804	0.26
Fu	3.94	0.000	0.001	1952.41
Fe	19.83	2.222	46.661	0.42
La	0.35	0.014	0.287	64.95
Pb	0.31	0.058	1.226	35.25
Li	12.41	0.811	17.029	0.36
Mg	28.06	0.926	19.437	0.50
Mn	24.79	1.245	26.135	0.62
Hg	5.23	-0.001	-0.011	-259.85
Mo	2.59	0.000	0.008	1155.19
Nd	5.93	0.683	14.346	3.55
Ni	21.94	1.442	30.280	0.12
P	2.05	0.344	7.227	6.36
K	146.28	)541.49	) 11371	0.59
Sm	4.65	-0.128	-2.697	-57.00
Se	2.53	0.304	6.380	7.26
Si	5.56	1.137	23.868	1.09
Ag	14.90	-0.009	-0.196	-64.58
Na	15.60	7.662	160.91	0.22
Sr	36.69	0.924	19.414	0.63
S	0.95	0.101	2.114	11.40
Ta	4.14	-0.013	-0.265	-53.99
Tl	4.62	0.067	1.409	138.28
Th	1.06	-0.012	-0.259	-462.25
Sn	17.53	4.249	89.224	0.45
Ti	3.93	0.000	0.003	3060.37
W	1.98	0.021	0.435	48.39
U	4.91	-0.059	-1.330	-697.38
V	4.71	0.003	0.072	67.60
Zn	39.96	0.921	19.340	0.48
Zr	4.64	-0.000	-0.002	-9407.4

Dilution factor : 21.0000

ICP Analysis - April 27, 1990 Acid Blank

Sample name : HNO3
Programme : SST 27-Apr-90 13:35:49

NAME	MV INT	CONCEN	RSD
Al	2.07	0.018	1078.86
Sb	0.51	0.076	200.87
As	1.42	-0.004	-573.08
Ba	3.63	-0.002	-582.36
Be	0.89	-0.000	-170.14
Bi	5.65	-0.037	-489.06
B	5.89	0.056	98.35
Cd	3.15	-0.001	-364.12
Ca	0.48	-0.000	-277.13
Ce	5.18	-0.044	-757.43
Cr	1.45	-0.003	-406.91
Co	0.25	0.041	39.11
Cu	2.95	-0.002	-1073.8
Eu	3.91	-0.001	-894.54
Fe	1.72	0.001	719.51
La	0.35	0.017	127.57
Pb	0.31	0.081	110.97
Li	3.63	-0.003	-333.17
Mg	0.47	0.000	346.41
Mn	0.94	-0.000	-1020.3
Hg	6.05	0.037	129.13
Mo	2.57	-0.003	-474.01
Nd	5.13	-0.131	-195.13
Ni	4.83	-0.002	-1318.5
P	1.52	-0.007	-689.07
K	3.17	0.795	82.51
Sm	4.71	-0.041	-875.79
Se	2.28	-0.037	-348.34
Si	3.49	0.037	160.90
Ag	15.07	-0.003	-824.97
Na	5.10	-0.013	-1438.3
Sr	3.52	-0.000	-864.45
S	0.87	0.013	366.01
Ta	4.18	-0.002	-3474.9
Tl	4.52	-0.120	-133.95
Th	1.06	0.023	1019.31
Sn	1.86	0.008	283.66
Ti	3.91	-0.002	-747.67
W	1.93	-0.005	-1142.8
U	4.88	-0.317	-696.17
V	4.63	-0.003	-179.80
Zn	4.32	-0.001	-553.36
Zr	4.62	-0.003	-1336.8

ICP Analysis - April 27, 1990 Acid Blank

Sample name : HNO3
Programme : SSI 27-Apr-90 13:40:26

NAME	MV INT	CONCEN	RSD
Al	1.94	(-0.265	-26.57
Sb	0.50	-0.007	-259.85
As	1.36	-0.042	-30.70
Ba	3.39	(-0.015	-22.24
Be	0.85	-0.002	-15.06
Bi	5.43	-0.191	-27.14
B	5.70	0.042	46.73
Cd	3.03	(-0.006	-17.16
Ca	0.46	-0.001	-19.09
Ce	4.82	(-0.476	-24.53
Cr	1.37	(-0.019	-20.73
Co	0.24	-0.005	-129.91
Cu	2.75	(-0.034	-23.49
Eu	3.62	(-0.010	-23.06
Fe	1.62	(-0.011	-14.55
La	0.34	-0.016	-71.20
Pb	0.30	-0.018	-198.44
Li	3.39	(-0.025	-22.77
Mg	0.45	-0.001	-36.17
Mn	0.91	-0.002	-31.96
Hg	6.88	0.075	60.06
Mo	2.49	-0.011	-27.59
Nd	4.79	(-0.468	-18.04
Ni	4.69	-0.013	-28.69
P	1.42	(-0.074	-36.08
K	2.99	0.130	167.49
Sm	4.37	(-0.566	-23.75
Se	2.17	(-0.192	-30.45
Si	3.20	(-0.116	-25.35
Ag	13.98	(-0.042	-23.86
Na	4.73	(-0.278	-24.79
Sr	3.32	(-0.006	-24.39
S	0.82	-0.042	-54.26
Ta	3.90	(-0.075	-18.94
Tl	4.19	(-0.778	-16.81
Th	1.00	(-0.333	-26.29
Sn	1.77	-0.016	-45.17
Ti	3.70	(-0.019	-22.42
W	1.87	-0.036	-46.49
U	4.52	(-3.606	-23.36
V	4.33	(-0.033	-13.92
Zn	4.28	-0.002	-48.53
Zr	4.38	(-0.058	-32.64

ICP Analysis - April 27, 1990 Acid Blank

Sample name : HNO3
Programme : SST 27-Apr-90 13:43:57

NAME	MV INT	CONCEN	RSD
Al	1.66	(-0.430	-5.65
Sb	0.49	-0.159	-45.81
As	1.31	(-0.072	-3.34
Ba	3.24	(-0.022	-8.53
Be	0.84	(-0.003	-17.42
Bi	5.30	(-0.284	-14.72
B	5.11	0.001	572.14
Cd	2.93	(-0.010	-1.03
Ca	0.45	(-0.001	-5.71
Ce	4.62	(-0.727	-7.98
Cr	1.32	(-0.029	-4.17
Co	0.23	-0.031	-7.53
Cu	2.65	(-0.051	-7.84
Eu	3.47	(-0.014	-7.27
Fe	1.55	(-0.019	-3.86
La	0.33	-0.038	-13.88
Pb	0.29	-0.135	-23.09
Li	3.26	(-0.037	-3.44
Mg	0.44	(-0.001	-5.27
Mn	0.88	(-0.003	-13.11
Hg	5.20	-0.002	-259.93
Mo	2.42	(-0.020	-16.81
Nd	4.63	(-0.631	-5.96
Ni	4.58	(-0.022	-24.17
P	1.33	(-0.135	-2.96
K	2.77	(-0.722	-23.73
Sm	4.19	(-0.847	-8.34
Se	2.10	(-0.295	-9.22
Si	3.09	(-0.179	-7.75
Ag	13.42	(-0.063	-8.63
Na	4.52	(-0.434	-8.78
Sr	3.31	(-0.009	-8.71
S	0.79	(-0.074	-4.88
Ta	3.76	(-0.114	-3.66
Tl	4.04	(-1.077	-12.57
Th	0.96	(-0.324	-9.03
Sn	1.71	(-0.031	-10.15
Ti	3.59	(-0.028	-9.07
W	1.79	(-0.075	-14.21
U	4.33	(-5.369	-8.10
V	4.23	(-0.042	-17.90
Zn	4.18	-0.005	-13.54
Zr	4.25	(-0.088	-8.79

ICP Analysis - April 27, 1990 Acid Blank

Sample name : HNO3
Programme : SST 27-Apr-90 13:47:36

NAME	MV INT	CONCEN	RSD
Al	1.97	-0.203	-25.30
Sb	0.50	0.003	1081.41
As	1.37	-0.033	-40.25
Ba	3.48	(-0.010	-27.09
Be	0.87	-0.001	-41.61
Bi	5.59	-0.079	-104.99
B	5.36	0.012	22.32
Cd	3.07	-0.005	-19.12
Ca	0.47	-0.001	-22.91
Ce	4.95	-0.319	-39.76
Cr	1.40	(-0.014	-38.15
Co	0.24	0.008	169.30
Cu	2.81	-0.024	-26.28
Dy	3.72	(-0.007	-37.97
Fe	1.66	-0.006	-50.95
La	0.34	-0.015	-91.79
Pb	0.90	-0.054	-52.04
Li	3.47	(-0.017	-29.55
Mg	0.45	-0.000	-34.37
Mn	0.92	-0.001	-83.01
Hg	5.54	0.014	34.10
Mo	2.54	-0.006	-62.56
Nd	4.95	(-0.307	-18.62
Ni	4.82	-0.003	-230.15
P	1.48	-0.037	-61.05
K	2.87	-0.329	-36.75
Sm	4.49	(-0.383	-28.54
Se	2.21	-0.131	-30.95
Si	3.27	-0.080	-32.86
Ag	14.35	(-0.029	-26.33
Na	4.83	(-0.211	-28.42
Sr	3.39	-0.004	-28.72
S	0.83	-0.026	-46.81
Ta	3.99	-0.051	-39.61
Tl	4.36	-0.445	-16.11
Th	1.02	-0.211	-38.19
Sn	1.81	-0.005	-177.69
Ti	3.77	-0.014	-28.69
W	1.90	-0.017	-79.85
U	4.64	(-2.549	-28.58
V	4.49	-0.017	-26.54
Zn	4.35	-0.000	-416.19
Zr	4.46	-0.039	-30.31

ICP Analysis - April 27, 1990 LMCS Check Standard

Sample name : 78C11K
Sample code 1 : SST1
Sample code 2 : DIRECT
Programme : SST 27-Apr-90 13:51:28

NAME	MV INT	CONCEN	RSD
Al	2.16	0.231	27.73
Sb	1.55	10.772	1.85
As	1.62	0.111	7.54
Ba	211.60	10.335	0.71
Be	0.93	0.002	15.21
Bi	5.95	0.171	6.82
B	155.53	10.668	0.33
Cd	269.57	10.296	0.95
Ca	290.99	10.626	0.63
Ce	12.72	9.275	1.80
Cr	51.06	9.569	0.74
Co	2.97	10.878	0.93
Cu	66.14	10.593	0.72
Eu	4.75	0.025	4.83
Fe	90.48	10.986	0.98
La	0.38	0.091	5.04
Pb	0.31	0.153	26.96
Li	108.45	9.711	0.74
Mg	317.14	10.623	0.84
Mn	302.88	10.538	0.74
Hg	5.59	0.016	6.41
Mo	2.77	0.021	19.66
Nd	14.70	9.597	1.91
Ni	136.75	10.281	0.86
P	1.67	0.092	17.20
K	9.61	25.146	1.10
Sm	4.71	-0.040	-235.78
Se	4.99	3.712	0.99
Si	3.52	0.051	36.90
Ag	15.23	0.003	184.67
Na	39.10	24.828	0.87
Sr	380.86	10.521	0.75
S	1.20	0.357	4.65
Ta	4.28	0.026	84.36
Tl	4.88	0.586	14.97
Th	1.12	0.324	18.16
Sn	191.72	51.385	1.27
Ti	3.93	0.000	2868.80
W	2.35	0.217	4.12
U	5.40	4.512	12.19
V	4.75	0.007	58.92
Zn	411.21	10.524	0.75
Zr	4.70	0.014	67.40

ICP Analysis - April 27, 1990 LMCS Check Standard

Sample name : 82B380
Sample code 1 : SST2
Sample code 2 : DIRECT
Programme : SST 27-Apr-90 13:55:07

NAME	MV INT	CONCEN	RSD
Al	4.81	6.065	0.60
Sb	0.58	0.811	7.77
As	4.76	1.993	1.17
Ba	4.13	0.022	6.05
Be	0.96	0.003	13.26
Bi	85.18	55.250	0.33
B	6.43	0.094	5.55
Cd	3.46	0.010	4.50
Ca	1.00	0.019	0.52
Ce	5.79	0.713	5.11
Cr	1.99	0.101	2.14
Co	0.26	0.078	8.81
Cu	4.75	0.300	0.86
Eu	323.13	9.813	0.41
Fe	2.27	0.069	0.98
La	18.62	46.808	0.26
Pb	4.39	55.139	0.14
Li	3.74	0.007	31.54
Mg	0.77	0.010	0.89
Mn	1.19	0.013	2.66
Hg	6.69	0.066	3.19
Mo	2.84	0.029	9.03
Nd	6.09	0.843	4.59
Ni	5.37	0.044	8.32
P	2.04	0.337	8.73
K	3.14	0.673	12.38
Sm	11.27	10.155	0.32
Se	2.58	0.382	4.37
Si	4.85	0.759	1.39
Ag	318.52	10.899	0.30
Na	5.26	0.107	27.13
Sr	3.90	0.010	5.36
S	1.07	0.219	6.13
Ta	3.03	0.223	0.83
Tl	8.19	7.123	1.10
Th	11.36	53.946	0.29
Sn	2.20	0.101	3.14
Ti	4.85	0.075	3.81
W	2.08	0.075	18.04
U	10.92	55.572	0.40
V	7.41	0.263	1.15
Zn	4.99	0.016	7.92
Zr	5.34	0.161	2.80

ICP Analysis - April 27, 1990 LMCS Check Standard

Sample name : 77C11J
Sample code 1 : SSI23
Sample code 2 : DIRECT
Programme : SSI 27-Apr-90 13:59:09

NAME	MV INT	CONCEN	RSD
Al	26.87	)54.688	0.68
Sb	0.64	1.391	4.65
As	97.07	57.226	0.49
Ba	3.79	0.005	18.64
Be	267.72	10.563	0.14
Bi	6.89	0.823	5.75
B	5.90	0.057	3.05
Cd	3.41	0.008	7.93
Ca	1.32	0.030	0.82
Ce	4.90	(-0.382	-8.74
Cr	1.61	0.026	7.76
Co	0.27	0.125	6.64
Cu	3.13	0.028	5.71
Eu	3.71	(-0.007	-11.27
Fe	2.04	0.040	5.92
La	0.35	-0.005	-104.08
Pb	0.33	0.184	14.63
Li	3.41	(-0.024	-7.20
Mg	0.70	0.008	0.24
Mn	1.25	0.016	2.18
Hg	573.24	25.949	0.42
Mo	443.96	51.416	0.79
Nd	5.02	-0.240	-7.28
Ni	10.94	0.514	0.36
P	74.02	48.193	1.17
K	2.85	-0.427	-0.95
Sm	4.48	(-0.403	-12.04
Se	39.86	51.927	0.93
Si	92.74	47.496	0.86
Ag	25.14	0.358	1.03
Na	5.90	0.574	3.27
Sr	3.49	-0.001	-42.08
S	48.70	49.645	0.54
Ta	195.48	50.725	1.18
Tl	31.51	53.163	0.29
Th	1.19	0.669	3.77
Sn	2.44	0.166	1.42
Ti	674.25	)54.991	0.54
W	44.17	22.316	0.53
U	6.13	11.265	4.27
V	117.64	10.833	1.47
Zn	5.82	0.038	0.82
Zr	243.23	)54.247	0.61

Analytical Batch

LAB SEGMENT SERIAL #: F1067

CUSTOMER ID: 000013

INSTRUMENT	E60044
PROCEDURE/REV	LA-503-156/C-2
TECHNOLOGIST	R. D. Hale
DATE	February 26, 1990
TEMPERATURE	N/A
STARTING TIME	0900 02-25-90
ENDING TIME	1300 02-26-90
CHEMIST	S. A. Catlow

Plutonium
Fusion Dissolution/Water
Digestion

Jupiter-Canberra

	DESCRIPTION		LAB ID
1	Initial LMCS Check Std		F1047
2	Reagent Blank		F1048
3	Sample	Comp 12	F1049
4	Duplicate Sample	Comp 12	F1050
5	Sample	Comp 12	F1055
6	Duplicate Sample	Comp 12	F1056
7	Sample	Comp 13	F1073
8	Duplicate Sample	Comp 13	F1074
9	Sample	Comp 13	F1079
10	Duplicate Sample	Comp 13	F1080
11	Spike Sample	Comp 13	F1081

	DESCRIPTION	LAB ID
12	Final LMCS Check Std	F1082
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		

STANDARD TYPE	PRIMARY BOOK # & ALIQUOT VOL.	SECOND BOOK # & ALIQUOT VOL.	THIRD BOOK # & ALIQUOT VOL.	FINAL VOL. OF STD.
LMCS Check Std	16B43/1 uL			N/A
Spike	10B43B/50 uL	F1055/1 mL		N/A

SST-102 Rev. I 10/2/90 Interim

G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
F-1047 SEG.COMP#7 PU
File ID: SD2770.SPC

Counted on: 2/28/90 @ 5: 0
Detector/Geometry number: 2/ 1
Count time: 30000. Sec

PEAK ANALYSIS

Peak	Peak height		Peak center		FWHM		Tau	
ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	7.5	7.4	472.982	472.982	20.000	8.574	10.000	11.457
2	1961.6	1990.9	361.219	361.219	20.000	12.114	10.000	6.024
3	267.7	271.5	303.904	303.904	20.000	11.590	10.000	4.167
4	2452.4	2458.2	231.088	231.088	20.000	11.609	10.000	6.983
5	9.9	6.3	152.832	152.832	52.000	462.923	26.000	72.922

PEAK RESULTS

Peak		AEA	Peak Centroid				Count		Activity
ID	Isotope	Fract.	Exp.	Obs.	Diff.	FWHM	Rate c/m	d/m	uCi/ea
1		0.0012		6.285		0.04	0.10	0.50	0.226E-06
2	Pu236	0.4286	5.756	5.760	-0.004	0.06	36.74	180.58	0.813E-04
3	Pu238	0.0642	5.499	5.491	0.008	0.05	5.50	36.81	0.166E-04
	Am241		5.480	5.491	-0.011				0.127E-04
4	Pu239	0.4984	5.143	5.149	-0.006	0.05	42.72	205.79	0.927E-04
	Pu240		5.144	5.149	-0.005				0.927E-04
5	Np237	0.0076	4.640	4.781	-0.141	2.18	0.65	52.40	0.236E-04
	Np237		4.781	4.781	0.000				0.163E-05

DETECTOR CALIBRATION

Energy(MEV) = 4.062 + (0.0047)*Channel
Energy range (MeV): 4.062 TO 6.469
Efficiency = 0.2076 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	42631.0	100.000
Smoothed	42630.9	100.000
Composite fit	42858.6	100.534
Residuals	-228.8	-0.537

Analyzed by: _____
DM

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          SPECTRUM SD2770.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC              8862.5
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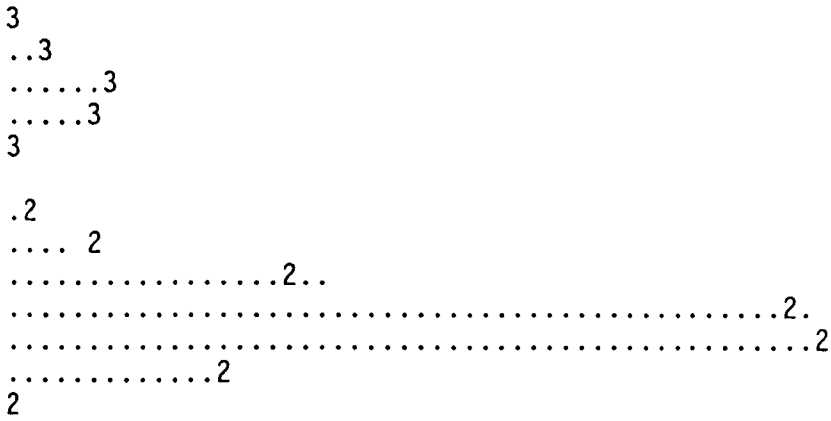

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Raw Data Dump for AEA Spectrum: SP:SD2770.SPC

1	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
11	1.	0.	0.	0.	0.	1.	0.	1.	1.	0.
21	0.	1.	0.	0.	0.	0.	0.	2.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
41	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
51	0.	0.	0.	1.	2.	0.	0.	0.	2.	1.
61	2.	0.	0.	0.	1.	0.	0.	0.	1.	0.
71	0.	0.	2.	1.	0.	1.	0.	1.	1.	0.
81	0.	1.	0.	1.	0.	1.	2.	2.	1.	0.
91	0.	0.	0.	1.	0.	1.	0.	0.	0.	2.
101	4.	0.	2.	2.	1.	1.	0.	0.	1.	1.
111	0.	1.	0.	0.	1.	1.	2.	0.	0.	1.
121	1.	1.	2.	1.	1.	0.	2.	0.	1.	3.
131	1.	1.	2.	2.	1.	3.	2.	0.	4.	3.
141	2.	2.	1.	2.	0.	1.	3.	1.	4.	2.
151	5.	1.	3.	3.	1.	2.	2.	2.	2.	1.
161	4.	2.	1.	2.	3.	3.	2.	4.	10.	5.
171	6.	7.	2.	8.	5.	12.	8.	5.	10.	11.
181	5.	7.	11.	5.	7.	9.	12.	6.	9.	8.
191	8.	7.	9.	11.	11.	8.	10.	5.	11.	9.
201	12.	19.	6.	14.	22.	22.	42.	43.	40.	64.
211	72.	70.	126.	163.	189.	253.	285.	346.	425.	509.
221	652.	730.	809.	901.	1014.	1161.	1273.	1376.	1456.	1463.
231	1415.	1293.	1198.	965.	835.	603.	463.	314.	236.	154.
241	76.	42.	26.	13.	7.	6.	3.	4.	2.	7.
251	6.	3.	6.	3.	9.	6.	3.	5.	7.	6.
261	11.	8.	4.	3.	4.	10.	7.	7.	12.	8.
271	7.	10.	7.	8.	8.	10.	13.	15.	10.	10.
281	15.	22.	17.	21.	35.	32.	37.	46.	55.	61.
291	66.	61.	50.	93.	84.	87.	118.	137.	132.	134.
301	133.	162.	136.	158.	146.	130.	113.	92.	72.	40.
311	35.	27.	18.	11.	11.	3.	7.	14.	7.	8.
321	5.	4.	2.	7.	9.	11.	15.	8.	13.	13.
331	13.	15.	19.	14.	34.	30.	31.	38.	41.	69.
341	79.	113.	121.	162.	190.	238.	287.	382.	448.	494.
351	575.	627.	737.	764.	840.	899.	1001.	1038.	1122.	1113.
361	1156.	1038.	936.	891.	724.	552.	404.	301.	206.	127.
371	52.	37.	19.	10.	1.	1.	1.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	1.	1.	1.	0.	0.	0.	4.
421	0.	2.	0.	1.	3.	3.	0.	0.	1.	1.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
461	1.	3.	0.	1.	2.	0.	3.	3.	6.	4.
471	5.	6.	4.	1.	6.	3.	0.	2.	1.	1.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
F-1048 SEG.COMP#8 PU
File ID: SD3002.SPC

Counted on: 2/28/90 @ 5: 0
Detector/Geometry number: 3/ 1
Count time: 30000. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	5.8	5.7	478.842	478.842	20.000	14.589	10.000	5.526
2	1711.9	1727.6	364.340	364.340	24.000	13.774	12.000	7.444
3	62.9	66.5	306.293	306.293	24.000	12.506	12.000	1.978
4	10.3	10.7	268.032	268.032	20.000	3.851	10.000	1.021
5	22.4	22.1	232.826	232.826	20.000	9.541	10.000	5.308

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1		0.0034		6.318		0.07	0.12	0.60	0.272E-06
2	Pu236	0.9204	5.756	5.769	-0.013	0.07	32.84	166.41	0.750E-04
	Cm243		5.786	5.769	0.017				0.101E-03
3	Pu238	0.0604	5.499	5.490	0.009	0.06	2.16	14.87	0.670E-05
	Am241		5.480	5.490	-0.010				0.513E-05
4		0.0057		5.306		0.02	0.20	1.00	0.452E-06
5	Pu239	0.0101	5.143	5.137	0.006	0.05	0.36	1.80	0.810E-06
	Pu240		5.144	5.137	0.007				0.810E-06

DETECTOR CALIBRATION

Energy(MEV) = 4.020 + (0.0048)*Channel
Energy range (MeV): 4.020 TO 6.477
Efficiency = 0.2014 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	17785.0	100.000
Smoothed	17784.3	99.996
Composite fit	17843.4	100.329
Residuals	-59.1	-0.332

Analyzed by: _____
DM

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          SPECTRUM SD3002.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC                6509.8
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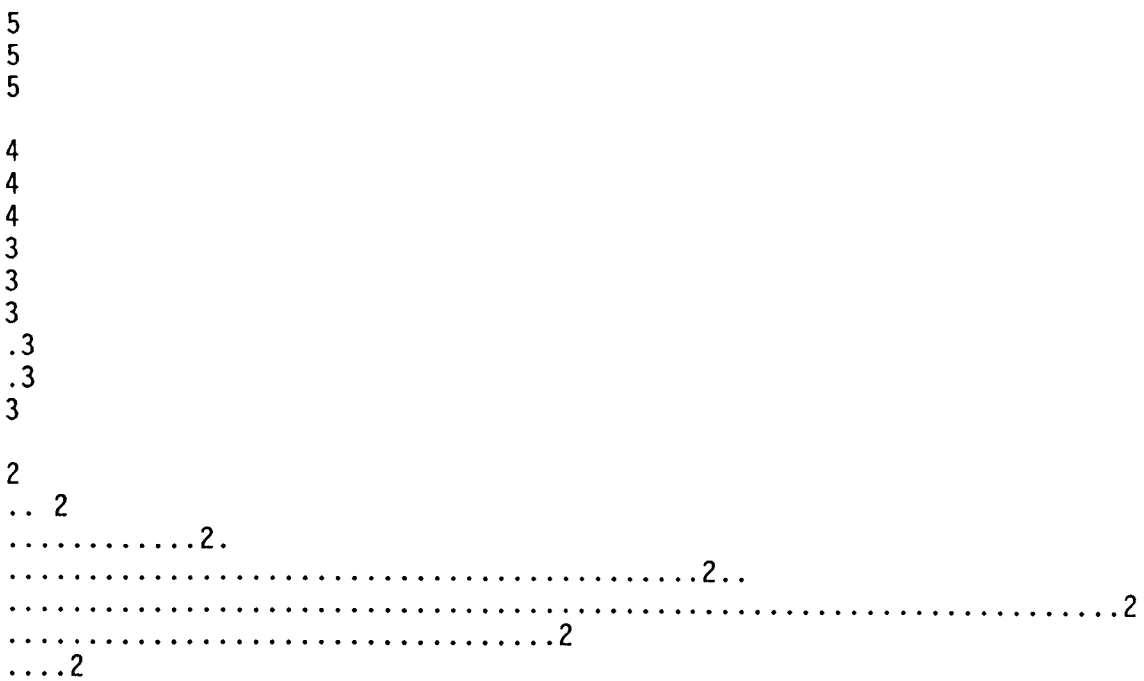

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Raw Data Dump for AEA Spectrum: SP:SD3002.SPC

1	0.	0.	0.	0.	0.	1.	0.	0.	1.	1.
11	0.	0.	2.	1.	0.	0.	2.	1.	0.	0.
21	0.	0.	1.	0.	0.	0.	0.	0.	1.	2.
31	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
41	0.	2.	0.	0.	0.	1.	0.	0.	0.	1.
51	0.	0.	0.	0.	2.	1.	1.	1.	0.	2.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	1.	0.	1.	0.	0.	0.	3.	0.	2.
81	0.	1.	2.	0.	0.	1.	0.	0.	1.	0.
91	2.	2.	1.	0.	0.	0.	0.	0.	2.	0.
101	2.	0.	0.	0.	0.	0.	0.	2.	1.	0.
111	1.	1.	0.	0.	1.	1.	0.	0.	0.	1.
121	0.	1.	2.	0.	1.	3.	0.	1.	1.	2.
131	1.	1.	0.	1.	3.	1.	1.	0.	0.	5.
141	0.	0.	1.	0.	1.	1.	1.	2.	2.	0.
151	2.	1.	1.	4.	1.	0.	0.	1.	1.	1.
161	1.	1.	0.	1.	1.	1.	0.	1.	1.	1.
171	1.	1.	1.	3.	0.	3.	2.	0.	2.	2.
181	0.	2.	1.	0.	1.	0.	0.	1.	1.	0.
191	0.	1.	1.	0.	1.	0.	2.	3.	1.	0.
201	1.	0.	0.	1.	0.	0.	2.	0.	1.	1.
211	0.	1.	0.	3.	2.	4.	3.	2.	3.	6.
221	7.	5.	7.	6.	5.	7.	15.	12.	16.	11.
231	18.	16.	15.	13.	9.	6.	12.	6.	10.	4.
241	3.	5.	5.	3.	3.	3.	1.	0.	7.	4.
251	4.	4.	4.	6.	8.	8.	8.	7.	12.	12.
261	10.	7.	10.	19.	7.	11.	18.	10.	9.	7.
271	14.	9.	11.	12.	9.	9.	6.	8.	10.	6.
281	3.	8.	7.	9.	26.	18.	18.	19.	28.	21.
291	20.	23.	18.	24.	32.	29.	19.	22.	33.	30.
301	27.	35.	26.	41.	33.	32.	34.	33.	27.	33.
311	27.	14.	16.	8.	6.	7.	0.	3.	5.	2.
321	1.	1.	1.	2.	3.	3.	5.	5.	4.	2.
331	7.	9.	13.	8.	12.	17.	12.	13.	15.	19.
341	23.	37.	55.	73.	98.	129.	149.	178.	204.	240.
351	345.	352.	396.	468.	549.	604.	702.	794.	836.	844.
361	934.	966.	970.	933.	936.	853.	753.	639.	556.	463.
371	332.	225.	173.	102.	66.	43.	19.	15.	8.	3.
381	2.	0.	1.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
411	0.	0.	0.	0.	0.	2.	1.	1.	0.	0.
421	0.	0.	1.	0.	3.	0.	1.	0.	0.	0.
431	2.	1.	0.	1.	1.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
451	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
461	1.	1.	1.	0.	0.	2.	1.	1.	3.	3.
471	5.	2.	2.	3.	3.	2.	3.	1.	3.	5.
481	4.	2.	1.	0.	3.	1.	1.	0.	0.	0.
491	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
F1073
File ID: SD8121.SPC

Counted on: 3/ 1/90 @11: 0
Detector/Geometry number: 8/ 1
Count time: 30000. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	5.2	5.4	475.826	475.826	20.000	10.150	10.000	4.373
2	1304.7	1298.1	364.932	364.932	16.000	9.617	8.000	3.062
3	102.9	101.2	307.979	307.979	16.000	6.485	8.000	1.135
4	131.4	25.7	271.040	271.040	12.000	2.750	6.000	2.857
5	1942.7	1908.9	235.586	235.586	20.000	9.324	10.000	3.715
6	14.6	14.3	155.493	155.493	24.000	16.618	12.000	2.630
7	7.0	6.5	31.080	31.080	32.000	36.980	16.000	14.280

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1		0.0015		6.931		0.05	0.10	5.01	0.226E-05
2		0.4063		6.343		0.05	26.39	1360.43	0.613E-03
3	Bi212	0.0427	6.040	6.041	-0.001	0.03	2.78	397.55	0.179E-03
4		0.0035		5.845		0.01	0.23	11.67	0.526E-05
5		0.5355		5.657		0.05	34.78	1793.04	0.808E-03
6	Am243	0.0075	5.234	5.233	0.001	0.09	0.49	227.51	0.102E-03
7		0.0029		4.573		0.20	0.19	9.79	0.441E-05

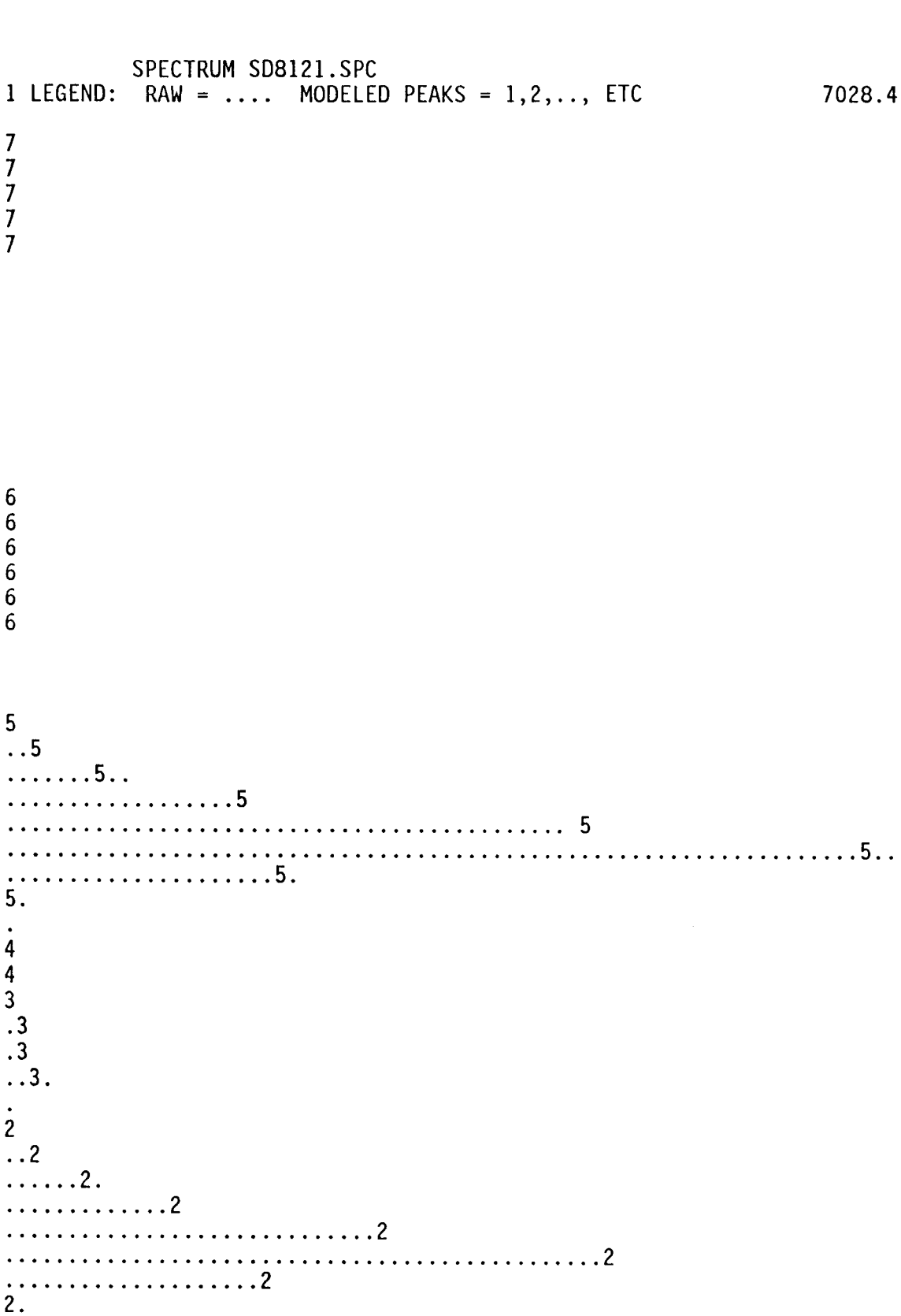
DETECTOR CALIBRATION

Energy(MEV) = 4.409 + (0.0053)*Channel
Energy range (MeV): 4.409 TO 7.122
Efficiency = 0.0194 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	32810.0	100.000
Smoothed	32809.8	99.999
Composite fit	32476.4	98.983
Residuals	333.4	1.016

Analyzed by: _____
EMB


SPECTRUM SD8121.SPC
1 LEGEND: RAW = ... MODELED PEAKS = 1,2,.., ETC 7028.4

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Raw Data Dump for AEA Spectrum: SP:SD8121.SPC

1	0.	0.	0.	0.	0.	0.	0.	2.	0.	1.
11	0.	3.	1.	3.	2.	0.	0.	0.	2.	2.
21	3.	4.	2.	6.	1.	5.	2.	4.	4.	5.
31	1.	5.	5.	3.	0.	4.	3.	2.	1.	3.
41	4.	0.	3.	1.	0.	2.	1.	1.	1.	0.
51	0.	1.	0.	3.	0.	1.	1.	1.	0.	0.
61	0.	0.	1.	0.	0.	0.	1.	0.	2.	0.
71	0.	0.	0.	1.	1.	0.	0.	1.	1.	0.
81	1.	0.	1.	2.	0.	0.	0.	0.	1.	1.
91	1.	0.	0.	1.	1.	0.	3.	0.	2.	1.
101	1.	2.	1.	0.	0.	1.	3.	1.	0.	1.
111	1.	0.	3.	0.	2.	1.	1.	3.	2.	2.
121	1.	5.	4.	0.	3.	1.	3.	2.	1.	0.
131	3.	3.	5.	2.	6.	4.	4.	1.	1.	5.
141	7.	4.	6.	5.	5.	2.	8.	8.	5.	7.
151	7.	9.	8.	9.	10.	3.	10.	7.	10.	4.
161	4.	1.	2.	1.	3.	2.	3.	3.	3.	2.
171	5.	1.	2.	1.	2.	0.	2.	1.	3.	1.
181	1.	5.	3.	3.	2.	3.	2.	1.	1.	3.
191	4.	5.	0.	7.	6.	11.	14.	17.	10.	23.
201	23.	28.	36.	45.	56.	85.	70.	91.	111.	138.
211	120.	172.	180.	180.	196.	202.	210.	230.	234.	217.
221	281.	284.	301.	335.	390.	445.	504.	570.	711.	767.
231	919.	1067.	1120.	1192.	1190.	1084.	1012.	817.	669.	449.
241	325.	195.	119.	59.	28.	28.	8.	5.	8.	6.
251	8.	5.	3.	6.	12.	7.	9.	12.	14.	11.
261	11.	13.	17.	11.	22.	11.	19.	19.	32.	20.
271	26.	16.	15.	17.	13.	17.	12.	8.	11.	15.
281	6.	8.	16.	19.	26.	28.	16.	33.	29.	35.
291	33.	31.	32.	25.	32.	30.	34.	42.	29.	36.
301	39.	34.	46.	55.	62.	76.	61.	65.	66.	50.
311	43.	29.	33.	12.	7.	13.	3.	6.	5.	2.
321	4.	6.	12.	8.	12.	16.	23.	25.	33.	44.
331	47.	55.	58.	75.	92.	85.	101.	113.	114.	131.
341	125.	158.	132.	154.	146.	143.	160.	144.	194.	227.
351	245.	269.	331.	327.	366.	376.	464.	501.	518.	569.
361	628.	711.	738.	745.	769.	782.	633.	470.	377.	253.
371	161.	96.	54.	39.	10.	3.	1.	2.	0.	1.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
401	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
421	0.	1.	0.	1.	0.	1.	1.	1.	0.	1.
431	2.	1.	2.	1.	0.	0.	0.	0.	1.	1.
441	0.	0.	0.	1.	0.	0.	0.	0.	0.	2.
451	1.	1.	0.	0.	1.	0.	0.	0.	1.	0.
461	0.	0.	0.	1.	0.	0.	2.	2.	2.	4.
471	5.	1.	3.	3.	3.	2.	3.	3.	2.	3.
481	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
F1074
File ID: SD6072.SPC

Counted on: 3/ 1/90 @11: 0
Detector/Geometry number: 6/ 1
Count time: 30000. Sec

PEAK ANALYSIS

Peak	Peak height		Peak center		FWHM		Tau	
ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	9.8	9.6	477.923	477.923	20.000	10.795	10.000	9.404
2	1757.9	1795.1	365.096	365.096	20.000	10.786	10.000	4.388
3	151.8	157.0	306.729	306.729	20.000	10.262	10.000	2.400
4	214.9	39.3	269.034	269.034	12.000	2.015	6.000	5.397
5	2936.3	2955.9	233.106	233.106	20.000	10.820	10.000	5.000
6	5.9	5.4	27.671	27.671	20.000	11.704	10.000	1.681

PEAK RESULTS

Peak		AEA	Peak Centroid				Count		Activity
ID	Isotope	Fract.	Exp.	Obs.	Diff.	FWHM	Rate c/m	d/m	uCi/ea
1		0.0017		6.253		0.05	0.15	0.76	0.344E-06
2		0.3694		5.734		0.05	33.92	168.49	0.759E-04
3	Th228	0.0417	5.430	5.465	-0.035	0.05	3.83	26.79	0.121E-04
	Am241		5.480	5.465	0.015				0.911E-05
4		0.0029		5.292		0.01	0.27	1.33	0.600E-06
5	Pu239	0.5829	5.143	5.127	0.016	0.05	53.52	265.86	0.120E-03
	Pu240		5.144	5.127	0.017				0.120E-03
6	U 238	0.0014	4.200	4.182	0.018	0.05	0.13	0.83	0.372E-06

DETECTOR CALIBRATION

Energy(MEV) = 4.054 + (0.0046)*Channel
Energy range (MeV): 4.054 TO 6.410
Efficiency = 0.2013 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	46085.0	100.000
Smoothed	46083.6	99.997
Composite fit	45907.2	99.614
Residuals	176.3	0.383

Analyzed by: _____
EMB

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          SPECTRUM SD6072.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC                9375.2
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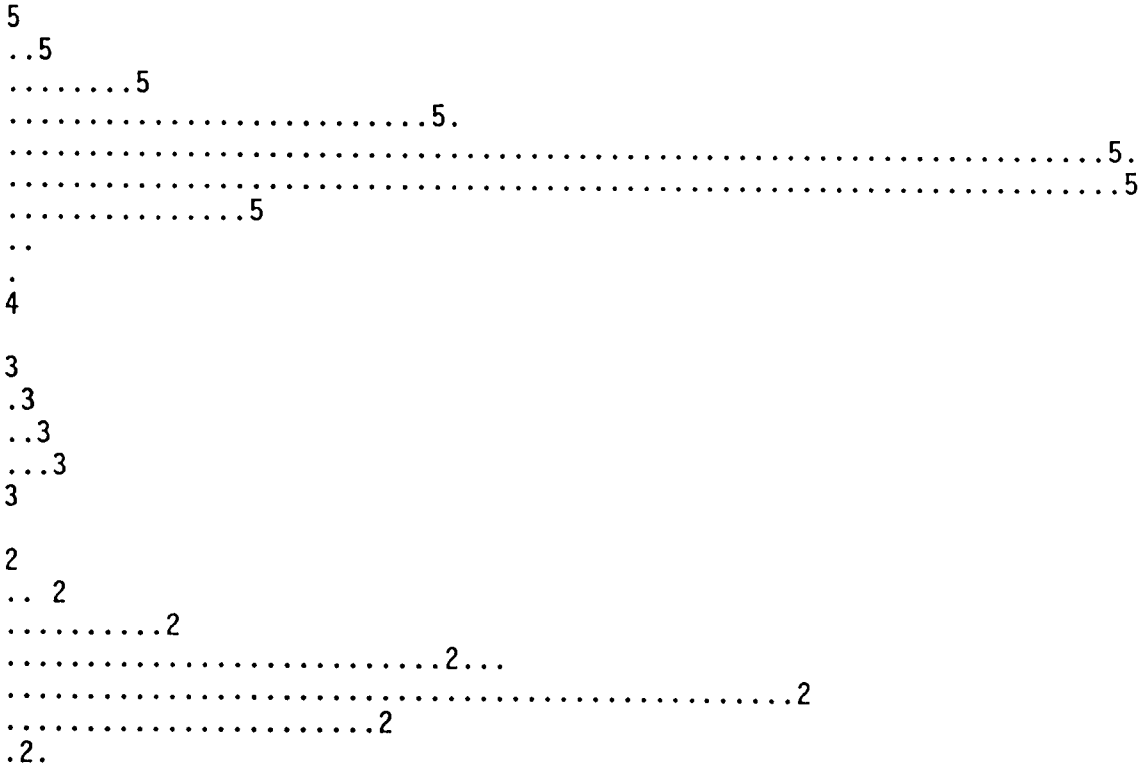

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Raw Data Dump for AEA Spectrum: SP:SD6072.SPC

1	0.	0.	0.	0.	0.	0.	1.	1.	2.	1.
11	1.	1.	4.	1.	5.	1.	1.	3.	1.	2.
21	1.	3.	5.	2.	1.	1.	5.	6.	2.	2.
31	1.	2.	2.	0.	1.	0.	0.	0.	0.	0.
41	1.	0.	0.	1.	2.	1.	1.	1.	0.	0.
51	0.	1.	1.	0.	1.	1.	0.	0.	0.	0.
61	1.	0.	0.	0.	0.	0.	2.	0.	1.	0.
71	1.	1.	0.	0.	0.	1.	1.	0.	1.	2.
81	2.	1.	0.	0.	3.	1.	1.	1.	2.	1.
91	2.	1.	2.	1.	0.	1.	0.	1.	0.	0.
101	0.	0.	2.	2.	0.	3.	0.	2.	0.	0.
111	2.	1.	0.	0.	1.	2.	0.	4.	5.	3.
121	3.	0.	2.	2.	1.	2.	3.	3.	3.	2.
131	4.	1.	6.	1.	8.	2.	6.	4.	5.	4.
141	8.	6.	7.	5.	6.	6.	10.	15.	8.	7.
151	4.	6.	10.	11.	12.	6.	10.	7.	11.	6.
161	9.	5.	6.	12.	9.	10.	7.	3.	7.	9.
171	5.	7.	7.	6.	2.	7.	10.	11.	5.	4.
181	13.	9.	8.	11.	12.	9.	6.	13.	9.	12.
191	14.	17.	14.	17.	13.	15.	17.	25.	29.	30.
201	34.	42.	41.	51.	42.	43.	70.	74.	78.	103.
211	103.	137.	184.	217.	236.	278.	299.	374.	424.	547.
221	578.	726.	791.	863.	955.	1102.	1256.	1346.	1432.	1567.
231	1746.	1722.	1701.	1626.	1440.	1177.	942.	707.	524.	351.
241	209.	118.	66.	41.	25.	12.	4.	12.	10.	7.
251	6.	6.	7.	11.	10.	7.	14.	17.	23.	17.
261	12.	19.	17.	18.	21.	17.	15.	25.	22.	22.
271	18.	20.	14.	13.	11.	10.	9.	14.	12.	13.
281	19.	11.	21.	21.	15.	18.	28.	32.	37.	38.
291	34.	38.	50.	40.	64.	54.	47.	52.	72.	73.
301	69.	65.	75.	81.	77.	94.	84.	92.	74.	70.
311	38.	45.	27.	22.	16.	7.	4.	11.	7.	9.
321	9.	8.	4.	5.	4.	5.	10.	4.	14.	12.
331	17.	15.	10.	22.	21.	34.	25.	28.	43.	57.
341	60.	70.	96.	94.	104.	120.	166.	220.	252.	279.
351	336.	378.	417.	469.	556.	604.	643.	699.	769.	795.
361	889.	861.	971.	991.	1038.	984.	862.	761.	623.	415.
371	290.	208.	125.	53.	26.	21.	1.	2.	1.	0.
381	0.	0.	1.	0.	0.	0.	0.	0.	1.	0.
391	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
401	0.	1.	0.	0.	0.	0.	1.	0.	0.	0.
411	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
421	1.	0.	1.	1.	1.	1.	1.	1.	2.	0.
431	1.	1.	1.	0.	1.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
461	0.	0.	1.	1.	0.	1.	1.	3.	1.	2.
471	2.	6.	6.	2.	9.	6.	5.	6.	5.	2.
481	6.	3.	2.	0.	2.	3.	0.	1.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	1.	0.								

G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
F-1081 PU
File ID: SD4764.SPC

Counted on: 3/ 1/90 @ 2: 0
Detector/Geometry number: 4/ 1
Count time: 30000. Sec

PEAK ANALYSIS

Peak	Peak height		Peak center		FWHM		Tau	
ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	14.2	14.6	477.094	477.094	20.000	11.283	10.000	8.448
2	5.1	4.4	429.367	429.367	28.000	19.912	14.000	7.140
3	1899.6	1958.3	364.507	364.507	20.000	10.668	10.000	4.248
4	248.9	256.5	306.588	306.588	16.000	10.784	8.000	3.158
5	2358.6	2379.9	233.638	233.638	20.000	10.789	10.000	4.743
6	6.2	7.2	127.676	127.676	152.000	2.000	76.000	0.200

PEAK RESULTS

Peak		AEA	Peak Centroid				Count		Activity
ID	Isotope	Fract.	Exp.	Obs.	Diff.	FWHM	Rate c/m	d/m	uCi/ea
1		0.0028		6.346		0.05	0.24	1.05	0.473E-06
2	Cm242	0.0012	6.115	6.122	-0.007	0.09	0.11	0.62	0.281E-06
3	Cm243	0.4265	5.786	5.817	-0.031	0.05	37.17	220.54	0.993E-04
	Cm244		5.796	5.817	-0.021				0.725E-04
4		0.0642		5.544		0.05	5.59	24.23	0.109E-04
5		0.5021		5.202		0.05	43.76	189.51	0.854E-04
6		0.0032		4.704		0.01	0.28	1.20	0.540E-06

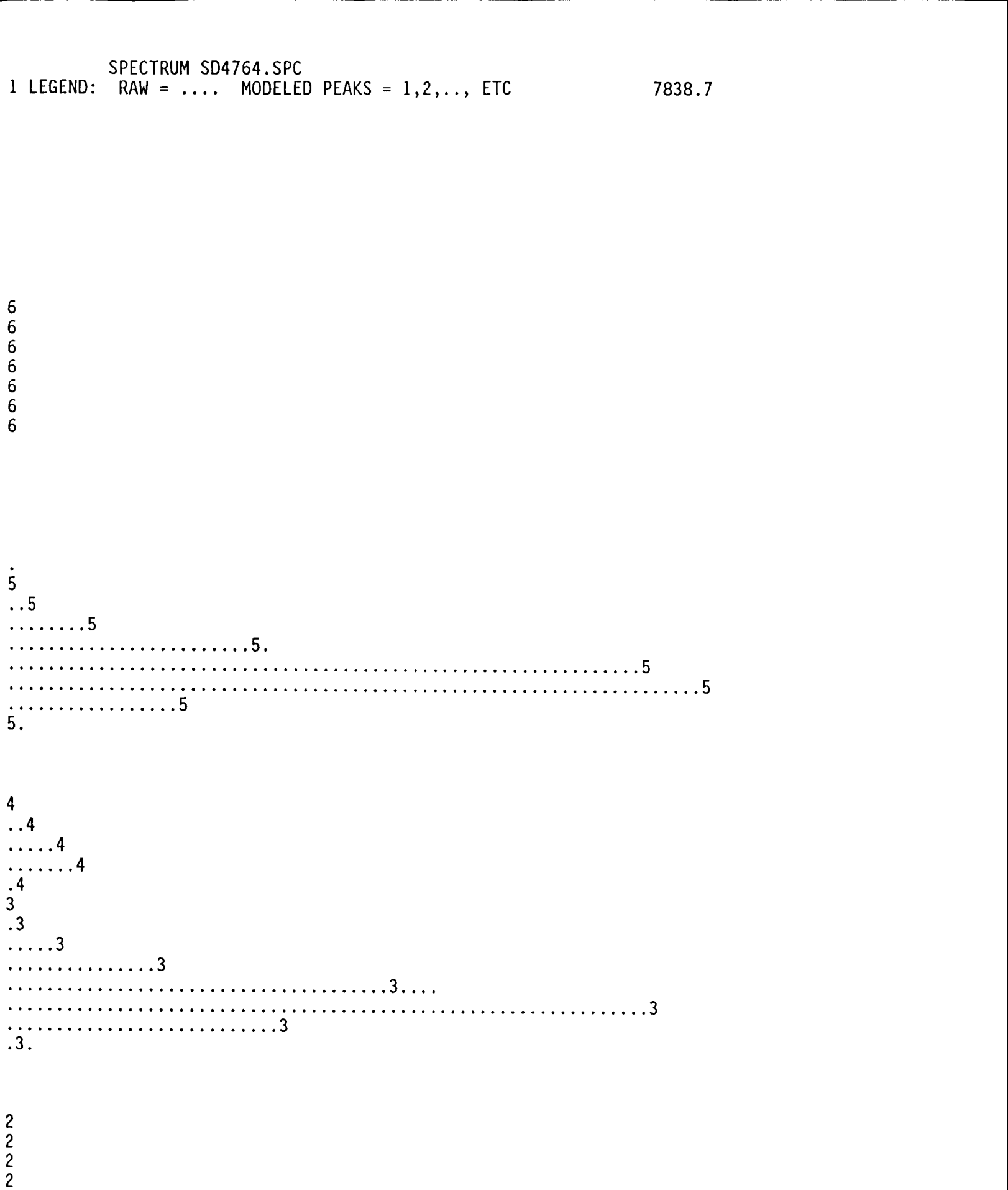
DETECTOR CALIBRATION

Energy(MEV) = 4.103 + (0.0047)*Channel
Energy range (MeV): 4.103 TO 6.510
Efficiency = 0.2309 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	43876.0	100.000
Smoothed	43875.5	99.999
Composite fit	43576.0	99.316
Residuals	299.4	0.682

Analyzed by: _____
DM


SPECTRUM SD4764.SPC
1 LEGEND: RAW = ... MODELED PEAKS = 1,2,.., ETC 7838.7
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Raw Data Dump for AEA Spectrum: SP:SD4764.SPC

1	0.	0.	0.	0.	0.	0.	1.	1.	0.	2.
11	1.	1.	0.	0.	0.	1.	0.	0.	1.	1.
21	0.	0.	0.	1.	0.	1.	0.	0.	1.	0.
31	0.	0.	0.	1.	1.	1.	3.	0.	2.	0.
41	0.	2.	0.	0.	0.	3.	1.	1.	1.	0.
51	0.	1.	1.	0.	2.	0.	0.	0.	2.	0.
61	2.	1.	2.	1.	0.	1.	0.	0.	1.	1.
71	0.	2.	1.	1.	4.	2.	0.	1.	1.	1.
81	2.	2.	1.	2.	2.	1.	1.	2.	1.	0.
91	2.	2.	0.	3.	1.	3.	2.	1.	3.	2.
101	1.	1.	2.	2.	4.	1.	2.	2.	2.	2.
111	1.	3.	2.	3.	3.	1.	3.	1.	0.	0.
121	2.	2.	4.	4.	3.	3.	4.	5.	2.	2.
131	3.	1.	1.	2.	1.	5.	0.	3.	2.	5.
141	3.	2.	3.	5.	1.	2.	3.	2.	1.	11.
151	5.	6.	6.	3.	5.	4.	4.	7.	4.	4.
161	3.	6.	5.	6.	2.	6.	4.	7.	10.	15.
171	7.	15.	10.	10.	8.	11.	10.	11.	14.	8.
181	10.	12.	19.	16.	14.	17.	17.	20.	23.	23.
191	23.	19.	24.	24.	27.	25.	34.	26.	27.	34.
201	41.	36.	47.	57.	63.	53.	59.	57.	74.	81.
211	105.	135.	125.	159.	181.	208.	262.	280.	330.	416.
221	459.	527.	584.	667.	742.	796.	947.	1059.	1172.	1246.
231	1341.	1327.	1364.	1257.	1269.	1126.	895.	678.	519.	318.
241	239.	116.	67.	34.	15.	12.	7.	8.	4.	2.
251	4.	3.	1.	4.	6.	7.	10.	5.	15.	8.
261	7.	6.	8.	6.	10.	9.	6.	11.	10.	13.
271	11.	7.	12.	14.	6.	12.	17.	14.	22.	9.
281	25.	11.	25.	30.	26.	30.	38.	42.	38.	41.
291	46.	64.	73.	64.	79.	56.	79.	101.	88.	86.
301	122.	154.	137.	130.	134.	133.	149.	135.	127.	107.
311	78.	62.	47.	25.	19.	11.	6.	14.	11.	15.
321	17.	14.	19.	18.	17.	14.	24.	25.	23.	19.
331	27.	32.	48.	45.	37.	49.	55.	55.	64.	71.
341	79.	80.	104.	141.	136.	170.	207.	235.	279.	308.
351	387.	438.	536.	549.	637.	681.	696.	784.	870.	960.
361	989.	1034.	1046.	1100.	1075.	1005.	917.	716.	560.	397.
371	239.	148.	72.	43.	24.	6.	3.	4.	2.	1.
381	3.	1.	0.	0.	1.	1.	2.	0.	0.	1.
391	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	2.	0.	0.	0.	0.	0.	0.	1.	2.
411	0.	2.	1.	0.	0.	0.	1.	0.	3.	0.
421	3.	1.	1.	1.	0.	5.	5.	4.	2.	1.
431	3.	2.	0.	2.	3.	1.	1.	0.	1.	1.
441	0.	1.	1.	0.	0.	1.	0.	0.	0.	1.
451	0.	0.	0.	0.	0.	1.	2.	0.	2.	0.
461	2.	0.	2.	1.	0.	1.	1.	5.	5.	3.
471	8.	10.	6.	11.	7.	10.	4.	9.	5.	10.
481	5.	4.	1.	1.	6.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
F1082
File ID: SD3006.SPC

Counted on: 3/ 1/90 @11: 0
Detector/Geometry number: 3/ 1
Count time: 30000. Sec

PEAK ANALYSIS

Peak	Peak height		Peak center		FWHM		Tau	
ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	12.9	13.0	483.559	483.559	16.000	9.054	8.000	2.541
2	1548.5	1574.1	366.919	366.919	20.000	13.463	10.000	5.569
3	204.6	211.2	308.722	308.722	20.000	14.382	10.000	3.642
4	1865.2	1877.5	234.449	234.449	24.000	13.453	12.000	6.348

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1		0.0038		6.341		0.04	0.28	1.38	0.622E-06
2	Cm244	0.4303	5.796	5.781	0.015	0.06	31.81	157.94	0.711E-04
	Cm243		5.786	5.781	0.005				0.975E-04
3	Pu238	0.0720	5.499	5.502	-0.003	0.07	5.32	36.72	0.165E-04
	Am241		5.480	5.502	-0.022				0.127E-04
4	Pu239	0.4939	5.143	5.145	-0.002	0.06	36.51	181.27	0.817E-04
	Pu240		5.144	5.145	-0.001				0.817E-04

DETECTOR CALIBRATION

Energy(MEV) = 4.020 + (0.0048)*Channel
Energy range (MeV): 4.020 TO 6.477
Efficiency = 0.2014 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	37434.0	100.000
Smoothed	37433.4	99.998
Composite fit	36960.3	98.734
Residuals	473.1	1.264

Analyzed by: _____
EMB

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          SPECTRUM SD3006.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC              6701.6

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Raw Data Dump for AEA Spectrum: SP:SD3006.SPC

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11	0.	2.	0.	0.	0.	0.	1.	1.	0.	1.
21	1.	1.	2.	1.	0.	0.	0.	0.	2.	1.
31	0.	1.	1.	0.	0.	0.	1.	0.	0.	0.
41	0.	0.	0.	2.	0.	0.	1.	0.	2.	0.
51	0.	1.	1.	2.	0.	0.	0.	1.	1.	1.
61	0.	0.	2.	2.	0.	0.	0.	1.	0.	2.
71	1.	0.	0.	2.	3.	2.	1.	1.	2.	1.
81	0.	0.	1.	2.	0.	1.	0.	0.	3.	0.
91	4.	0.	1.	1.	3.	1.	0.	1.	1.	3.
101	1.	1.	1.	2.	0.	2.	3.	0.	0.	0.
111	1.	2.	0.	0.	0.	0.	0.	1.	1.	4.
121	1.	1.	1.	4.	2.	4.	2.	1.	0.	4.
131	2.	2.	1.	1.	4.	4.	0.	3.	0.	2.
141	2.	1.	1.	5.	0.	5.	1.	3.	6.	3.
151	2.	8.	6.	1.	9.	3.	5.	4.	4.	4.
161	5.	4.	3.	5.	5.	4.	8.	4.	4.	9.
171	14.	12.	5.	7.	6.	7.	6.	9.	13.	10.
181	15.	12.	8.	14.	13.	13.	12.	17.	11.	21.
191	21.	16.	14.	19.	25.	22.	22.	14.	25.	33.
201	19.	34.	44.	38.	42.	34.	53.	52.	48.	74.
211	71.	78.	88.	101.	128.	142.	171.	194.	236.	286.
221	322.	356.	414.	512.	556.	683.	735.	780.	900.	950.
231	1001.	1086.	1062.	1040.	1012.	886.	893.	734.	573.	456.
241	386.	275.	184.	138.	87.	67.	38.	19.	15.	9.
251	2.	5.	5.	6.	3.	6.	4.	5.	4.	6.
261	5.	8.	8.	10.	14.	7.	11.	13.	8.	14.
271	8.	11.	11.	11.	14.	9.	13.	12.	11.	8.
281	8.	22.	21.	20.	24.	29.	29.	38.	34.	40.
291	34.	50.	46.	55.	61.	59.	67.	67.	81.	85.
301	85.	84.	107.	91.	112.	118.	116.	105.	112.	106.
311	107.	98.	72.	69.	44.	52.	25.	23.	19.	18.
321	7.	10.	11.	16.	24.	13.	18.	31.	14.	13.
331	19.	23.	20.	28.	34.	30.	37.	31.	35.	32.
341	67.	46.	72.	73.	77.	108.	122.	149.	166.	186.
351	222.	276.	306.	325.	401.	411.	482.	508.	608.	634.
361	707.	765.	774.	854.	924.	842.	862.	836.	726.	669.
371	537.	470.	332.	254.	198.	134.	93.	57.	31.	21.
381	9.	5.	1.	0.	1.	0.	0.	0.	0.	0.
391	0.	1.	0.	0.	0.	0.	1.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	2.	1.	0.	0.
411	0.	0.	0.	0.	2.	1.	1.	0.	1.	2.
421	0.	5.	0.	0.	0.	2.	0.	2.	4.	1.
431	0.	0.	4.	3.	1.	2.	2.	0.	1.	1.
441	1.	0.	0.	1.	0.	2.	1.	0.	0.	0.
451	0.	1.	0.	0.	0.	0.	0.	1.	2.	1.
461	0.	0.	1.	0.	2.	1.	1.	3.	1.	1.
471	5.	8.	4.	7.	10.	6.	6.	6.	3.	0.
481	7.	7.	7.	10.	10.	3.	3.	2.	4.	0.
491	0.	2.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Analytical Batch

LAB SEGMENT SERIAL #: F1067

CUSTOMER ID: 000013

INSTRUMENT	E60044
PROCEDURE/REV	LA-503-156/C-2
TECHNOLOGIST	R. D. Hale
DATE	February 27, 1990
TEMPERATURE	N/A
STARTING TIME	0900 02-26-90
ENDING TIME	1300 02-27-90
CHEMIST	S. A. Jones

Americium 241 Analysis
KOH Dissolution

	DESCRIPTION		LAB ID
1	Initial LMCS Check Std		F1047
2	Reagent Blank		F1048
3	Sample	Comp 12	F1049
4	Duplicate Sample	Comp 12	F1050
5	Sample	Comp 12	F1055
6	Duplicate Sample	Comp 12	F1056
7	Sample	Comp 13	F1073
8	Duplicate Sample	Comp 13	F1074
9	Sample	Comp 13	F1079
10	Duplicate Sample	Comp 13	F1080
11	Spike Sample	Comp 13	F1075

	DESCRIPTION	LAB ID
12	Final LMCS Check Std	F1076
13		
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22		

STANDARD TYPE	PRIMARY BOOK # & ALIQUOT VOL.	SECOND BOOK # & ALIQUOT VOL.	THIRD BOOK # & ALIQUOT VOL.	FINAL VOL. OF STD.
LMCS Check Std	16B43/.010 mL			N/A
Spike	16B43/.010 mL	F1055/1 mL		N/A

SST-102 Rev. I 10/2/90 Interim

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
F-1047 SEG.COMP#7 AM
File ID: SD5633.SPC

Counted on: 2/28/90 @ 5: 0
Detector/Geometry number: 5/ 1
Count time: 30000. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1635.2	1664.6	301.579	301.579	24.000	18.435	12.000	2.711
2	1984.6	2112.9	256.498	256.498	24.000	12.713	12.000	2.089

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1	Pu238	0.4746	5.499	5.510	-0.011	0.09	60.48	355.80	0.160E-03
	Am241		5.480	5.510	-0.030				0.123E-03
2		0.5254		5.298		0.06	66.95	283.55	0.128E-03

DETECTOR CALIBRATION

Energy(MEV) = 4.092 + (0.0047)*Channel
Energy range (MeV): 4.092 TO 6.499
Efficiency = 0.2361 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	64436.0	100.000
Smoothed	64434.7	99.998
Composite fit	63714.4	98.880
Residuals	720.3	1.118

Analyzed by: _____
DM

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          SPECTRUM SD5633.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC                8454.8
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Raw Data Dump for AEA Spectrum: SP:SD5633.SPC

1	0.	0.	0.	0.	0.	0.	3.	4.	0.	5.
11	0.	1.	1.	1.	2.	2.	2.	0.	0.	2.
21	3.	4.	3.	2.	1.	2.	1.	3.	1.	3.
31	0.	2.	4.	5.	3.	1.	2.	4.	3.	5.
41	1.	4.	1.	1.	5.	0.	5.	2.	3.	2.
51	5.	2.	2.	0.	2.	3.	3.	2.	2.	7.
61	3.	7.	1.	4.	7.	5.	4.	6.	4.	8.
71	4.	3.	5.	7.	7.	8.	5.	9.	10.	12.
81	5.	7.	9.	4.	6.	11.	4.	10.	9.	8.
91	4.	6.	9.	7.	13.	12.	5.	6.	12.	9.
101	4.	8.	11.	3.	9.	12.	9.	8.	8.	8.
111	12.	9.	6.	11.	10.	15.	12.	12.	10.	9.
121	11.	10.	12.	9.	11.	12.	11.	16.	10.	20.
131	9.	17.	22.	11.	18.	19.	15.	19.	13.	19.
141	21.	16.	15.	17.	23.	15.	19.	25.	19.	21.
151	18.	23.	27.	18.	27.	27.	27.	24.	28.	20.
161	24.	22.	35.	36.	24.	33.	27.	38.	28.	36.
171	22.	39.	27.	31.	30.	43.	48.	36.	40.	54.
181	35.	44.	60.	50.	47.	62.	53.	64.	73.	65.
191	89.	70.	84.	73.	87.	81.	107.	80.	93.	98.
201	108.	103.	117.	99.	123.	124.	115.	130.	139.	138.
211	135.	167.	172.	198.	189.	190.	219.	210.	241.	234.
221	278.	285.	264.	314.	307.	337.	346.	368.	395.	435.
231	466.	496.	481.	592.	546.	617.	599.	628.	677.	747.
241	697.	762.	795.	866.	874.	919.	948.	1054.	1065.	1014.
251	1097.	1114.	1118.	1180.	1160.	1207.	1235.	1205.	1124.	1021.
261	906.	763.	635.	516.	387.	339.	285.	328.	280.	310.
271	299.	287.	324.	327.	327.	321.	355.	370.	365.	405.
281	405.	439.	438.	448.	472.	507.	519.	585.	572.	635.
291	631.	636.	681.	701.	787.	779.	822.	845.	847.	867.
301	895.	807.	866.	800.	732.	673.	622.	499.	353.	286.
311	219.	199.	132.	103.	87.	64.	51.	40.	16.	9.
321	12.	2.	0.	1.	1.	1.	0.	0.	1.	0.
331	0.	0.	0.	0.	1.	0.	0.	0.	0.	2.
341	1.	0.	1.	1.	0.	0.	1.	2.	5.	0.
351	1.	4.	3.	2.	0.	0.	2.	1.	0.	0.
361	0.	0.	1.	0.	2.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
431	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
441	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
451	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
461	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
481	0.	2.	0.	1.	1.	2.	0.	0.	1.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
F-1048 SEG.COMP#8 AM
File ID: SD6068.SPC

Counted on: 2/28/90 @ 5: 0
Detector/Geometry number: 6/ 1
Count time: 30000. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	19.0	13.0	304.081	304.081	12.000	8.352	6.000	0.000
2	1739.0	1754.9	258.425	258.425	24.000	13.294	12.000	4.310
3	0.0	0.1	151.595	151.595	0.000	0.200	0.000	0.200

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1	Th228	0.0933	5.430	5.458	-0.028	0.04	3.97	28.18	0.127E-04
2	Am243	0.9067	5.234	5.248	-0.014	0.06	38.64	1767.93	0.796E-03
3		0.0000		4.756		0.00	0.00	0.00	0.112E-08

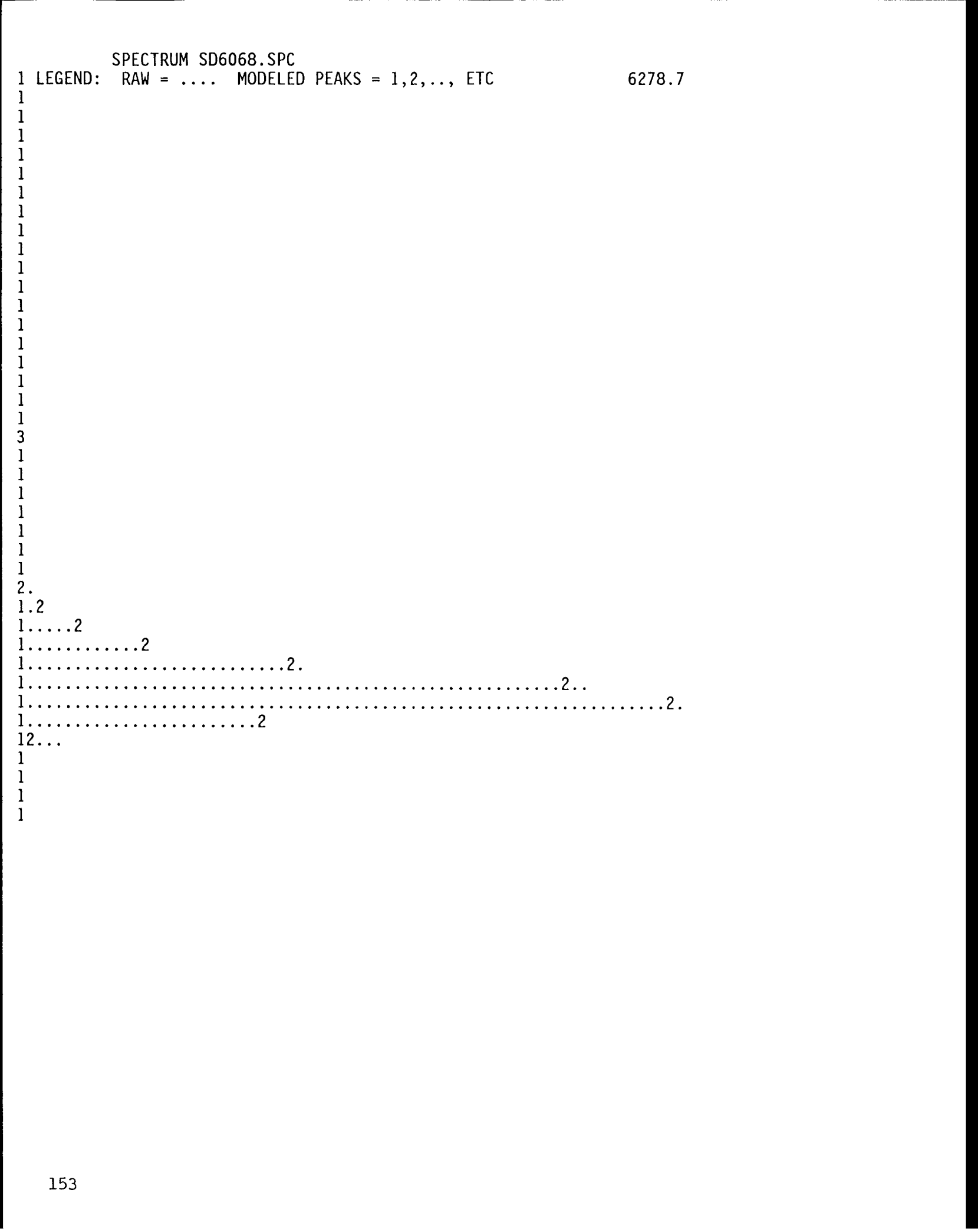
DETECTOR CALIBRATION

Energy(MEV) = 4.059 + (0.0046)*Channel
Energy range (MeV): 4.059 TO 6.414
Efficiency = 0.1987 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	20319.0	100.000
Smoothed	20318.5	99.998
Composite fit	21308.6	104.870
Residuals	-990.2	-4.873

Analyzed by: _____
DM


SPECTRUM SD6068.SPC
1 LEGEND: RAW = ... MODELED PEAKS = 1,2,.., ETC 6278.7
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Raw Data Dump for AEA Spectrum: SP:SD6068.SPC

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
51	0.	1.	0.	1.	1.	0.	0.	0.	1.	1.
61	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	1.	1.	0.	0.	0.	1.	1.	1.	1.
81	0.	0.	2.	0.	1.	0.	0.	1.	0.	0.
91	2.	0.	0.	0.	0.	0.	1.	0.	2.	0.
101	2.	1.	0.	0.	1.	1.	0.	1.	1.	1.
111	0.	2.	3.	0.	0.	1.	0.	3.	0.	2.
121	3.	1.	0.	0.	2.	0.	0.	1.	0.	0.
131	0.	2.	2.	2.	1.	1.	0.	1.	0.	1.
141	3.	3.	1.	0.	2.	1.	2.	4.	5.	0.
151	2.	3.	4.	2.	2.	0.	2.	0.	2.	3.
161	1.	0.	6.	4.	3.	4.	1.	1.	5.	2.
171	3.	1.	4.	2.	6.	6.	6.	6.	3.	6.
181	7.	8.	9.	4.	8.	5.	12.	7.	11.	10.
191	8.	8.	9.	10.	11.	4.	10.	4.	8.	21.
201	15.	11.	20.	17.	22.	23.	24.	24.	22.	20.
211	17.	31.	28.	20.	20.	45.	25.	35.	46.	39.
221	45.	42.	52.	40.	59.	62.	58.	74.	75.	114.
231	100.	117.	122.	143.	207.	158.	195.	210.	224.	267.
241	251.	304.	347.	373.	392.	422.	459.	515.	665.	648.
251	708.	747.	823.	856.	891.	955.	999.	959.	987.	940.
261	794.	689.	531.	374.	313.	213.	162.	137.	90.	94.
271	82.	55.	47.	32.	39.	22.	14.	15.	6.	3.
281	3.	3.	0.	3.	2.	1.	5.	1.	0.	4.
291	3.	3.	2.	3.	5.	2.	1.	1.	5.	3.
301	7.	3.	5.	6.	4.	0.	4.	3.	6.	1.
311	2.	0.	2.	1.	2.	2.	1.	0.	0.	0.
321	1.	0.	0.	0.	1.	2.	0.	0.	1.	0.
331	1.	0.	0.	0.	1.	0.	0.	0.	1.	0.
341	0.	2.	0.	1.	1.	0.	3.	1.	2.	1.
351	0.	2.	1.	1.	1.	1.	0.	0.	1.	2.
361	0.	0.	2.	1.	2.	2.	2.	1.	0.	1.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
421	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
431	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
441	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
471	0.	0.	1.	0.	2.	0.	0.	1.	0.	0.
481	0.	1.	0.	0.	0.	1.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
F-1073 SEG.COMP#9 AM
File ID: SD3003.SPC

Counted on: 2/28/90 @17: 0
Detector/Geometry number: 3/ 1
Count time: 30000. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	6.7	4.9	349.197	349.197	12.000	8.267	6.000	0.000
2	589.6	592.6	300.035	300.035	28.000	20.428	14.000	4.835
3	2417.4	2453.7	254.220	254.220	24.000	18.878	12.000	6.909
4	0.0	0.1	136.054	136.054	0.000	0.200	0.000	0.200

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1	Ra224	0.0223	5.680	5.696	-0.016	0.04	1.71	9.02	0.406E-05
2	Th228	0.2210	5.430	5.460	-0.030	0.10	16.90	118.20	0.532E-04
	Am241		5.480	5.460	0.020				0.402E-04
3	Am243	0.7567	5.234	5.240	-0.006	0.09	57.88	2612.58	0.118E-02
4	Np237	0.0000	4.640	4.673	-0.033	0.00	0.00	0.04	0.183E-07

DETECTOR CALIBRATION

Energy(MEV) = 4.020 + (0.0048)*Channel
Energy range (MeV): 4.020 TO 6.477
Efficiency = 0.2014 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	37527.0	100.000
Smoothed	37526.7	99.999
Composite fit	38244.9	101.913
Residuals	-718.2	-1.914

Analyzed by: _____
DM

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          SPECTRUM SD3003.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC              9434.1
1
1
1
1
1
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1
1
1
1
1
1
1
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4
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1
1
3
1.3
1......3
1................3.
1.......................................3...
1.............................................................3.
2.............................................3.
12............3...
13.2..
1.....2
1...........2
1..............2
1........2
12
1
1
1
1
1
```

Raw Data Dump for AEA Spectrum: SP:SD3003.SPC

1	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
11	1.	0.	0.	0.	0.	1.	0.	1.	0.	2.
21	1.	1.	0.	0.	1.	1.	1.	2.	1.	1.
31	0.	2.	1.	1.	3.	0.	0.	0.	0.	1.
41	1.	0.	1.	0.	0.	0.	0.	0.	1.	0.
51	0.	1.	0.	0.	2.	0.	0.	1.	0.	0.
61	0.	1.	0.	0.	1.	1.	1.	0.	0.	1.
71	2.	0.	1.	2.	2.	0.	1.	0.	0.	2.
81	1.	2.	0.	0.	1.	0.	0.	1.	3.	1.
91	0.	1.	0.	0.	1.	1.	0.	1.	0.	1.
101	0.	0.	0.	1.	0.	2.	1.	4.	0.	1.
111	4.	1.	1.	2.	0.	3.	3.	2.	1.	1.
121	2.	0.	2.	3.	2.	0.	0.	2.	1.	0.
131	1.	1.	3.	4.	1.	5.	1.	2.	0.	1.
141	1.	1.	1.	1.	0.	1.	2.	1.	1.	1.
151	1.	3.	2.	2.	2.	0.	0.	3.	1.	1.
161	1.	2.	2.	3.	0.	2.	2.	4.	3.	2.
171	2.	1.	1.	4.	4.	3.	5.	3.	3.	1.
181	3.	4.	5.	6.	5.	3.	4.	1.	2.	4.
191	4.	2.	6.	5.	8.	5.	6.	10.	9.	6.
201	15.	10.	7.	10.	11.	12.	8.	7.	8.	18.
211	18.	23.	21.	27.	25.	37.	34.	47.	44.	61.
221	54.	64.	82.	71.	102.	123.	127.	127.	159.	176.
231	175.	214.	279.	273.	325.	382.	384.	441.	480.	538.
241	616.	682.	775.	840.	929.	1004.	1069.	1164.	1226.	1269.
251	1348.	1331.	1324.	1334.	1244.	1210.	1146.	991.	930.	830.
261	678.	572.	490.	404.	270.	239.	182.	171.	131.	108.
271	113.	86.	86.	78.	72.	67.	67.	82.	73.	79.
281	89.	104.	126.	124.	163.	140.	138.	212.	212.	254.
291	248.	214.	234.	300.	305.	286.	322.	329.	327.	328.
301	283.	295.	255.	239.	246.	183.	190.	152.	129.	94.
311	63.	54.	29.	37.	37.	15.	17.	9.	8.	5.
321	2.	7.	0.	3.	0.	1.	1.	3.	0.	0.
331	0.	1.	1.	0.	1.	0.	2.	2.	2.	0.
341	5.	0.	1.	3.	2.	1.	1.	2.	2.	6.
351	3.	1.	0.	0.	0.	0.	0.	0.	0.	3.
361	1.	0.	0.	1.	0.	1.	0.	1.	1.	0.
371	0.	2.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
391	0.	0.	0.	1.	0.	0.	1.	0.	0.	0.
401	0.	1.	0.	1.	0.	0.	0.	0.	0.	0.
411	1.	0.	0.	0.	0.	0.	0.	0.	2.	1.
421	0.	4.	3.	1.	2.	0.	3.	1.	1.	0.
431	0.	1.	1.	0.	2.	1.	0.	1.	0.	0.
441	1.	1.	0.	0.	1.	1.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	1.	1.	0.	1.	1.	2.	0.	1.	0.
471	0.	1.	0.	0.	2.	0.	0.	1.	1.	0.
481	0.	2.	1.	1.	1.	0.	0.	0.	0.	0.
491	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
F-1074 SEG.COMP#10 A
File ID: SD2771.SPC

Counted on: 2/28/90 @17: 0
Detector/Geometry number: 2/ 1
Count time: 30000. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	195.1	194.5	297.619	297.619	24.000	20.714	12.000	8.095
2	627.4	644.2	253.299	253.299	24.000	16.331	12.000	6.807

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1	Th228	0.2510	5.430	5.464	-0.034	0.10	4.66	32.73	0.147E-04
	Am241		5.480	5.464	0.016				0.111E-04
2	Am243	0.7490	5.234	5.256	-0.022	0.08	13.90	630.36	0.284E-03

DETECTOR CALIBRATION

Energy(MEV) = 4.065 + (0.0047)*Channel
Energy range (MeV): 4.065 TO 6.472
Efficiency = 0.2005 CPM/DPM

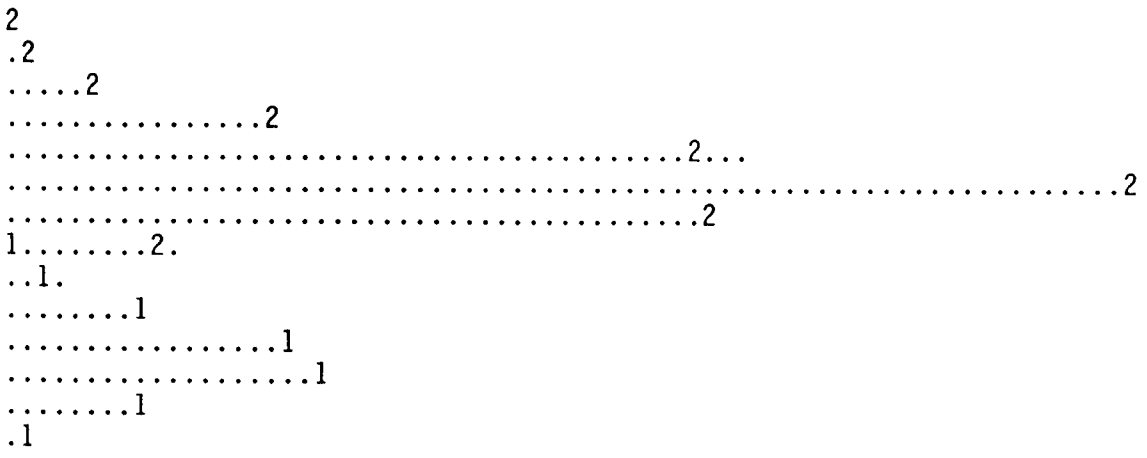
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	9372.0	100.000
Smoothed	9372.0	100.000
Composite fit	9281.1	99.030
Residuals	90.9	0.970

Analyzed by: _____
VR

SPECTRUM SD2771.SPC

1 LEGEND: RAW = ... MODELED PEAKS = 1,2,.., ETC 2445.4



Raw Data Dump for AEA Spectrum: SP:SD2771.SPC

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
41	1.	1.	2.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
61	0.	0.	1.	0.	1.	0.	1.	0.	0.	1.
71	1.	0.	2.	0.	1.	0.	0.	0.	0.	0.
81	0.	1.	1.	0.	0.	0.	0.	1.	0.	0.
91	0.	0.	0.	0.	0.	0.	2.	0.	0.	0.
101	1.	1.	0.	1.	0.	0.	1.	0.	0.	1.
111	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
121	1.	0.	0.	1.	0.	1.	1.	0.	0.	0.
131	0.	0.	1.	0.	0.	0.	1.	2.	1.	0.
141	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.
151	0.	1.	2.	1.	0.	1.	0.	1.	1.	0.
161	1.	2.	0.	0.	0.	1.	0.	2.	2.	0.
171	2.	1.	1.	1.	0.	1.	0.	3.	1.	1.
181	1.	0.	1.	2.	2.	1.	0.	2.	1.	1.
191	6.	0.	1.	4.	2.	0.	0.	7.	5.	1.
201	3.	2.	2.	5.	2.	2.	3.	3.	5.	2.
211	4.	3.	6.	6.	6.	9.	5.	6.	3.	9.
221	11.	15.	12.	23.	11.	19.	16.	22.	22.	38.
231	30.	32.	58.	54.	81.	87.	107.	113.	126.	155.
241	145.	178.	182.	239.	267.	277.	315.	292.	346.	340.
251	331.	356.	338.	321.	311.	295.	277.	242.	187.	152.
261	124.	89.	57.	34.	39.	32.	30.	27.	16.	18.
271	16.	16.	8.	10.	6.	15.	16.	13.	24.	33.
281	26.	32.	38.	42.	34.	46.	62.	54.	75.	80.
291	97.	85.	111.	114.	104.	114.	104.	95.	95.	103.
301	70.	82.	76.	57.	54.	45.	36.	30.	21.	17.
311	15.	13.	9.	6.	6.	3.	2.	1.	0.	1.
321	2.	1.	2.	0.	0.	1.	3.	0.	0.	2.
331	1.	3.	2.	2.	1.	0.	1.	3.	2.	1.
341	0.	1.	0.	1.	2.	2.	1.	0.	2.	2.
351	0.	3.	0.	0.	0.	0.	0.	1.	0.	0.
361	0.	1.	0.	1.	0.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	1.	1.	0.	0.	0.	0.	0.	0.	1.	0.
391	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.
411	0.	0.	0.	1.	0.	0.	1.	0.	0.	1.
421	0.	1.	2.	0.	1.	2.	1.	1.	1.	3.
431	2.	0.	0.	0.	0.	1.	0.	2.	0.	0.
441	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
451	0.	0.	1.	0.	0.	0.	0.	1.	0.	0.
461	1.	0.	0.	0.	1.	0.	0.	0.	1.	1.
471	2.	0.	1.	0.	0.	1.	1.	1.	1.	1.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
F-1075 AM
File ID: SD6071.SPC

Counted on: 3/ 1/90 @ 2: 0
Detector/Geometry number: 6/ 1
Count time: 30000. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1109.2	1112.8	302.991	302.991	24.000	17.400	12.000	2.441
2	1431.7	1447.8	257.455	257.455	20.000	13.514	10.000	2.044
3	3.7	2.3	103.001	103.001	16.000	128.602	8.000	2.243
4	2.8	1.8	70.898	70.898	12.000	1.484	6.000	0.256

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	45149.0	100.000
Smoothed	45148.9	100.000
Composite fit	45282.9	100.297
Residuals	-133.9	-0.297

Analyzed by: _____
DM

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          SPECTRUM SD6071.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC              5803.8
3
3
3
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1......2
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.1............2..
..1................2....
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.....1.....................................2......
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..........1.....................................................2..........
..............1...2..............
2.................1...
.........................1
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1
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Raw Data Dump for AEA Spectrum: SP:SD6071.SPC

1	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
11	0.	0.	2.	1.	0.	0.	0.	0.	0.	1.
21	1.	1.	0.	1.	2.	2.	2.	0.	0.	3.
31	1.	1.	1.	0.	2.	2.	1.	0.	0.	1.
41	0.	1.	2.	0.	2.	0.	0.	0.	2.	1.
51	2.	3.	2.	2.	1.	1.	2.	2.	2.	5.
61	2.	4.	4.	0.	1.	1.	0.	1.	4.	3.
71	3.	0.	1.	4.	1.	1.	1.	1.	1.	2.
81	2.	0.	3.	4.	3.	2.	3.	0.	3.	1.
91	1.	4.	1.	5.	1.	5.	0.	2.	0.	3.
101	6.	7.	2.	3.	0.	4.	2.	1.	1.	4.
111	3.	2.	3.	3.	3.	3.	7.	4.	6.	3.
121	6.	4.	2.	4.	4.	3.	9.	2.	5.	7.
131	9.	5.	7.	6.	6.	11.	6.	5.	6.	14.
141	9.	7.	7.	11.	7.	8.	14.	12.	12.	10.
151	10.	16.	10.	13.	4.	17.	9.	11.	11.	21.
161	11.	12.	19.	23.	18.	13.	21.	16.	25.	22.
171	25.	22.	23.	32.	28.	23.	39.	27.	37.	22.
181	32.	40.	37.	24.	38.	38.	49.	55.	53.	42.
191	62.	59.	65.	59.	57.	62.	63.	70.	91.	87.
201	86.	89.	86.	103.	93.	124.	108.	92.	105.	127.
211	112.	147.	139.	155.	170.	172.	159.	175.	183.	202.
221	205.	215.	233.	265.	263.	289.	273.	293.	300.	318.
231	328.	352.	369.	388.	379.	416.	412.	400.	432.	403.
241	433.	460.	555.	562.	521.	614.	587.	632.	706.	695.
251	737.	749.	787.	855.	819.	911.	912.	851.	826.	823.
261	683.	611.	505.	417.	353.	292.	267.	222.	224.	221.
271	232.	243.	208.	234.	238.	207.	243.	215.	217.	289.
281	285.	283.	287.	295.	290.	311.	320.	354.	354.	381.
291	407.	444.	416.	446.	460.	523.	512.	492.	582.	560.
301	573.	590.	632.	556.	563.	550.	429.	390.	308.	266.
311	198.	150.	138.	89.	63.	66.	45.	34.	19.	20.
321	10.	9.	1.	4.	1.	0.	1.	1.	0.	0.
331	1.	1.	0.	0.	1.	1.	0.	0.	0.	1.
341	0.	0.	1.	0.	2.	0.	1.	0.	0.	2.
351	0.	2.	1.	0.	1.	1.	1.	0.	0.	0.
361	2.	0.	0.	1.	0.	2.	0.	2.	0.	0.
371	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
431	0.	0.	0.	0.	2.	0.	0.	1.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	2.	0.	0.	0.	0.	1.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	1.	0.	0.	0.	0.	2.	0.	0.	1.	0.
481	0.	1.	1.	0.	3.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
F1076
File ID: SD2774.SPC

Counted on: 3/ 1/90 @11: 0
Detector/Geometry number: 2/ 1
Count time: 30000. Sec

PEAK ANALYSIS

Peak	Peak height		Peak center		FWHM		Tau	
ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	6.2	8.1	350.980	350.980	16.000	6.534	8.000	0.000
2	1094.1	1121.8	297.840	297.840	28.000	23.295	14.000	3.505
3	1332.2	1412.3	252.521	252.521	28.000	17.669	14.000	2.910
4	0.0	0.1	41.645	41.645	0.000	0.200	0.000	0.200

PEAK RESULTS

Peak		AEA	Peak Centroid				Count		Activity
ID	Isotope	Fract.	Exp.	Obs.	Diff.	FWHM	Rate c/m	d/m	uCi/ea
1	Ra224	0.0309	5.680	5.680	-0.000	0.03	2.85	15.08	0.679E-05
2	Th228	0.4552	5.430	5.436	-0.006	0.11	41.99	293.80	0.132E-03
3	Am243	0.5139	5.234	5.227	0.007	0.08	47.40	2140.67	0.964E-03
4		0.0000		4.257		0.00	0.00	0.00	0.111E-08

DETECTOR CALIBRATION

Energy(MEV) = 4.066 + (0.0046)*Channel
Energy range (MeV): 4.066 TO 6.421
Efficiency = 0.2013 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	46060.0	100.000
Smoothed	46058.6	99.997
Composite fit	46122.7	100.136
Residuals	-64.2	-0.139

Analyzed by: _____
EMB

```
          SPECTRUM SD2774.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC              6008.8
1
1
1
1
4
1
1
1
1
1
1
1
1
1
1
1
1
1
1
1.
3.
3..
13..
1.3..
1...3.
2......3
2.........3.
12.............3..
1.2.....................3...
1..2.............................3.......
1....2.........................................3.........
1......2.....................................................3.......
1..........2.........................3.............
1......3........2.........
1.....................2.
1.............................2
1.........................................2.
1.............................................2
1.......................2
1....2
1
1
1
1
1
```

Raw Data Dump for AEA Spectrum: SP:SD2774.SPC

1	0.	0.	0.	0.	0.	2.	0.	2.	0.	2.
11	1.	1.	0.	3.	1.	3.	2.	1.	3.	1.
21	0.	1.	1.	1.	4.	3.	1.	0.	5.	5.
31	0.	3.	2.	2.	1.	3.	0.	3.	3.	2.
41	3.	4.	2.	3.	1.	1.	1.	3.	1.	3.
51	0.	3.	1.	3.	3.	2.	0.	3.	0.	2.
61	4.	4.	4.	1.	4.	4.	1.	5.	4.	9.
71	1.	4.	3.	7.	2.	4.	2.	2.	1.	7.
81	6.	4.	3.	4.	3.	6.	3.	2.	6.	3.
91	4.	5.	3.	3.	6.	8.	4.	3.	3.	1.
101	6.	5.	8.	5.	7.	6.	3.	5.	8.	4.
111	8.	8.	11.	8.	10.	16.	15.	13.	14.	11.
121	7.	9.	12.	9.	17.	7.	16.	8.	10.	10.
131	21.	11.	15.	14.	16.	13.	15.	14.	16.	25.
141	7.	12.	13.	13.	12.	16.	16.	19.	13.	20.
151	17.	14.	29.	19.	26.	23.	27.	28.	26.	11.
161	22.	28.	37.	32.	29.	36.	23.	42.	35.	44.
171	30.	37.	29.	39.	38.	36.	45.	53.	49.	53.
181	40.	39.	48.	57.	43.	56.	55.	50.	65.	68.
191	62.	68.	65.	68.	79.	82.	98.	68.	67.	88.
201	90.	88.	101.	101.	89.	103.	123.	100.	112.	152.
211	140.	131.	170.	161.	163.	165.	179.	197.	206.	218.
221	226.	233.	248.	260.	274.	265.	292.	301.	309.	358.
231	388.	356.	408.	404.	441.	468.	499.	550.	567.	555.
241	606.	593.	643.	718.	748.	756.	760.	752.	796.	812.
251	762.	764.	807.	792.	759.	687.	725.	580.	553.	464.
261	406.	371.	299.	283.	258.	233.	237.	222.	208.	222.
271	199.	210.	223.	251.	284.	227.	256.	275.	304.	326.
281	331.	353.	344.	370.	385.	431.	450.	423.	519.	455.
291	511.	553.	568.	564.	590.	592.	540.	582.	564.	534.
301	534.	478.	462.	402.	360.	302.	258.	191.	171.	130.
311	95.	76.	60.	51.	47.	27.	15.	12.	11.	8.
321	4.	0.	2.	1.	4.	0.	1.	0.	2.	1.
331	0.	1.	1.	1.	1.	4.	2.	0.	0.	1.
341	3.	2.	2.	2.	2.	1.	0.	7.	5.	2.
351	5.	2.	5.	0.	2.	0.	2.	0.	1.	0.
361	0.	0.	2.	0.	1					

					.	0.	1.	1.	0.	0.
371	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
381	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
421	1.	0.	0.	1.	0.	0.	0.	1.	1.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	1.	0.	0.	0.	0.	1.	0.	0.	0.
451	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	1.	1.	0.	1.	0.	2.	0.
481	0.	0.	2.	0.	0.	0.	0.	1.	1.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Analytical Batch

LAB SEGMENT SERIAL #: F1067

CUSTOMER ID: 000013

INSTRUMENT	E60044
PROCEDURE/REV	LA-933-141/G-1
TECHNOLOGIST	R. D. Hale
DATE	March 12, 1990
TEMPERATURE	N/A
STARTING TIME	0800
ENDING TIME	1400
CHEMIST	S. A. Catlow

Neptunium
Fusion Dissolution

Jupiter-Canberra

	DESCRIPTION	LAB ID
1	Initial LMCS Check Std	F0999
2	Reagent Blank	F1000
3	Sample Comp 14	F1001
4	Duplicate Sample Comp 14	F1002
5	Sample Comp 15	F1025
6	Duplicate Sample Comp 15	F1026
7	Sample Comp 12	F1049
8	Duplicate Sample Comp 12	F1050
9	Sample Comp 13	F1073
10	Duplicate Sample Comp 13	F1074
11	Spike Sample Comp 13	F1075

	DESCRIPTION	LAB ID
12	Final LMCS Check Std	F1076
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		

STANDARD TYPE	PRIMARY BOOK # & ALIQUOT VOL.	SECOND BOOK # & ALIQUOT VOL.	THIRD BOOK # & ALIQUOT VOL.	FINAL VOL. OF STD.
LMCS Check Std	148B33/100 uL			N/A
Spike	148B33/100 uL	F1073/250 uL		N/A

SST-102 Rev. I 10/2/90 Interim

Analytical Batch

LAB SEGMENT SERIAL #: F1067

CUSTOMER ID: 000013

INSTRUMENT	WA77390
PROCEDURE/REV	LA-438-101/C-2
TECHNOLOGIST	S. Lai
DATE	February 28, 1990
TEMPERATURE	N/A
STARTING TIME	0800
ENDING TIME	1500
CHEMIST	S. A. Catlow

Technetium 99
Fusion Dissolution

Beckman Liquid Scintillator

	DESCRIPTION	LAB ID
1	Initial LMCS Check Std	F1071
2	Reagent Blank	F1072
3	Sample Comp 13	F1073
4	Duplicate Sample Comp 13	F1074
5	Spike Sample Comp 13	F1075
6	Final LMCS Check Std	F1076
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 BOOK # & ALIQUOT VOL.	FINAL VOL. OF STD.
LMCS Check Std	14B39/250 uL			20 mL
Spike	14B39/250 uL	F1073/1 mL		20 mL

SST-102 Rev. I 10/2/90 Interim

```
MODE: S TO:TC-SP, A:L   PRESET TIME: 10.00              TUE 27 FEB 1990 10:44
COUNT OPTIONS: 1 CYCLE REPEAT, 1 ROR:N   MSGS:N
HB: 2 ADC:Y DIT:N ECR:Y 2 PHASE MONITOR:Y POST CMR:N VIAL:0 VOLUME:1
DCM-TIME:  0 to INT:999.95
STANDARD 1-11-10+ UL: 5.00 DSIGMA: 0.10 BKG SUB:  0.00 BKG 2SIG:  0.00 LCT:    0

SINGLE LABEL DPM  SET UP ON  19 SEP 1989  08:32

UNKNOWN ID:TC 90 DIRECT              UNKNOWN REPLICATES: 1
UNKNOWN NORM FACTOR  [S01:0 1.00000
UNKNOWN UNITS        [S01:DPM
UNKNOWN HALF LIFE CORRECTION:N
INDIVIDUAL UNKNOWN NORM FACTORS:N     BACKGROUND QUENCH CURVES:Y
STANDARD ID:1-13-20-A 1-10          QUENCH LIMITS   LOW:72.67    HIGH:207.7
HALF LIFE(DAYS):   [S01:N
STAND:DS DPM       [S01:0.00000000


SAM  POS  CH      CPM    2SIG%  TIME   EL TIME AVG HB        RCM%  ZP          EFF

1:  ***  1   1       55.50  0.49  10.00    11.03 100.7          0.69
    HB: 100, 100, 101


BACKGROUND QUENCH CURVE:: CONSTANT


CHANNEL 1
QUENCH CURVE COEFFICIENTS
A: 55.5000       B:0.00000000       C:0.00000000       D:0.00000002000

                    BACKGROUND QUENCH CURVE CORRELATION TABLE

                                  MEASURED        CALCULATED       PERCENT
  BKG              SN              CPM.            CPM.            DIFF.          FLAG
  ---              --              ----            ----            -----          ----
    1             150.7            55.50           55.50           0.00


BACKGROUND QUENCH LIMITS   LOW:0.000     HIGH:1000.
     TOTAL QUENCH LIMITS   LOW:72.67     HIGH:207.7

SAM  POS  CH      CPM    2SIG%  TIME   EL TIME AVG HB        RCM%  ZP          EFF

  1  ***  2   1      920.30  0.08  10.00    22.22 122.7          0.92
    HB: 123, 122, 123
      [S01 STF CH1:94.5%                              [S01 DPM  :916.6475

  2  ***  4   1     3092.10  0.15  10.00    33.74 124.3          0.93
    HB: 110, 109, 107
      [S01 STF CH1:94.1%                              [S01 DPM  :3092.027
```

F1071

F1071+

SAM	POS	CH	CPM	%SIG%	TIME	EL TIME	AVG H#	RCH%	2P	ERR
3	**- 5	1	63.20	7.96	10.00	44.94	129.3	14.95		
	H#: 128, 128, 129									
	ISO1 %EFF CH1:94.65						ISO1 DPM	:8.135023		
4	**- 6	1	1995.70	1.42	10.00	56.15	130.3	0.42		
	H#: 130, 131, 130									
	ISO1 %EFF CH1:94.60						ISO1 DPM	:2050.970		
5	**- 7	1	70.70	7.52	10.00	67.35	129.3	7.71		
	H#: 129, 130, 129									
	ISO1 %EFF CH1:94.63						ISO1 DPM	:16.06304		
6	**- 8	1	2498.40	1.27	10.00	78.56	129.7	0.32		
	H#: 130, 129, 130									
	ISO1 %EFF CH1:94.62						ISO1 DPM	:2581.854		
7	**- 9	1	71.10	7.50	10.00	89.77	129.0	7.84		
	H#: 129, 129, 129									
	ISO1 %EFF CH1:94.61						ISO1 DPM	:16.48422		
8	**-10	1	2517.30	1.26	10.00	100.95	129.3	0.27		
	H#: 129, 129, 130									
	ISO1 %EFF CH1:94.63						ISO1 DPM	:2601.579		
9	**-11	1	895.20	2.11	10.00	112.12	129.3	0.72		
	H#: 129, 129, 130									
	ISO1 %EFF CH1:94.63						ISO1 DPM	:887.3776		
10	**-12	1	3403.20	1.08	10.00	123.33	129.7	0.20		
	H#: 129, 130, 130									
	ISO1 %EFF CH1:94.62						ISO1 DPM	:3538.120		
11	**- 1	1	923.30	2.08	10.00	134.61	129.3	0.75		
	H#: 129, 129, 130									
	ISO1 %EFF CH1:94.63						ISO1 DPM	:917.0731		
12	**- 2	1	3469.20	1.07	10.00	145.82	130.3	0.27		
	H#: 130, 131, 130									
	ISO1 %EFF CH1:94.60						ISO1 DPM	:3608.595		

F1072

F1072+

F1073

F1073+

F1074

F1074+

F1075

F1075+

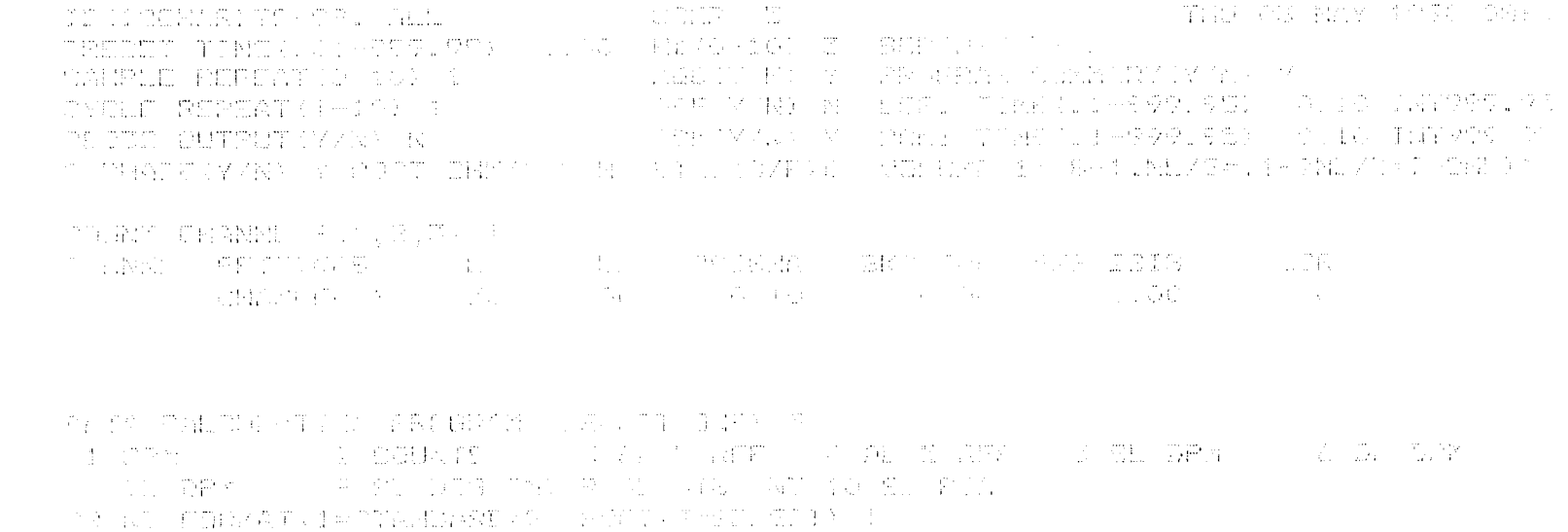
Single Shell Tank
Calibration Record

Analyte:	TC 99		
Procedure:	LA-508-121	Revision:	A-0
Instrument:	Liquid Scintillation Counter	Property Number:	WA77390
Technologist:	R. A. Jones	Payroll Number:	65801
Date:	September 02, 1988		
Calibration Standard ID:	Packard 6008502 #2		
Analyte Concentration:	See attached calibration sheets.		
Type of Calibration:	Quench Curve		

Comments: Quench Curve

SST-103 Rev. A 9/25/90 Interim

TC 99



Analytical Batch

Lab Segment Serial #: F1067

Customer ID: 000013

Instrument	E60044
Procedure/Rev	LA-378-103/A-2
Technologist	R. D. Hale
Date	July 09, 1990
Temperature	N/A
Starting Time	0900
Ending Time	1500
Chemist	S. A. Catlow

Iodine 129
Fusion Dissolution

*Total volume sent for counting

	Description	Lab ID
1	Initial LMCS Check Std	F0921
2	Reagent Blank	F0922
3	Sample Comp 06	F0923
4	Duplicate Sample Comp 06	F0924
5	Sample Comp 13	F1073
6	Duplicate Sample Comp 13	F1074
7	Spike Sample Comp 13	F1075
8	Final LMCS Check Std	F1076
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 Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std	38B46/1 mL			2 mL *
Spike	38B46/1 mL	F0923/1 mL		2 mL *

SST-102 Rev. I 10/2/90 Interim

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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

09-JUL-9019:39:21


                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: 4.0
DETECTOR NUMBER:    6    /     GEOMETRY NUMBER:   1
SPECTRUM SIZE:  4096 CHANNELS
ORDER OF SMOOTHING FUNCTION:     5
NUMBER OF BACKGROUND CHANNELS:  4 ON EACH SIDE OF PEAK
PEAK CONFIDENCE FACTOR: 80.0%
IDENTIFICATION ENERGY WINDOW: +- 1.50 KEV
ERROR QUOTATION: 1.96 SIGMA UNCERTAINTY

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

SPECTRAL DATA READ DIRECTLY FROM MULTICHANNEL ANALYZER AN1:
ANALYZED BY:        61453

SAMPLE DESCRIPTION: F-921-6585
GEOMETRY DESCRIPTION:  I-129/CULTURE TUBE
SAMPLE SIZE:   1.0000E+00 EA       / CONVERSION FACTOR: 1.0000E+00
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL129

COLLECT STARTED ON  9-JUL-90 AT 18:49:11

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 21-JUN-90
EFFICIENCY CALIBRATION PERFORMED 18-JUN-90
```

09-JUL-9019:39:21

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	99.17	19.70	1.31	279.	196.	43.8	
2C	104.73	20.81	1.31	320.	130.	58.4	
PEAK AT CHANNEL	135.7	DROPPED FROM MULTIPLET ANALYSIS					
3C	149.31	29.72	1.64	590.	9023.	2.6	
4C	169.74	33.81	1.64	418.	2035.	5.1	CE-144
5	199.69	39.79	1.54	166.	1259.	6.9	I-129,BI-212, CE-144
6	3307.07	661.76	0.87	0.	102.	19.4	CS-137

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 80.0%

C - MULTIPLET ANALYSIS CONVERGED NORMALLY

BACKGROUND SUBTRACTION PERFORMED USING FILE BK0024
BACKGROUND DESCRIPTION: BKG
BACKGROUND COLLECT STARTED ON 5-JUN-90 AT 13:00:00
BACKGROUND LIVE TIME: 3000. SECONDS
BACKGROUND WAS INSIGNIFICANT

09-JUL-9019:39:21

SAMPLE: F-921-6585
DATA COLLECTED ON 9-JUL-90 AT 18:49:11
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

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

NUCLIDE	ACTIVITY CONCENTRATION IN uCi/EA				ENERGY COMPARISON (KEV)	
	MEASURED	ERROR	DECAY CORRECTED	ERROR	EXPECT	DIFF
AM-241	LLD<9.81E-07		LLD<9.81E-07		59.54	
AM-243	LLD<3.98E-07		LLD<3.98E-07		74.67	
I-129	2.90E-04	+-2.00E-05	2.90E-04	+-2.00E-05	39.60	0.19
SB-125	LLD<9.43E-06		LLD<9.43E-06		176.33	
SE-75	LLD<8.21E-07		LLD<8.21E-07		136.00	
SN-113	LLD<1.59E-06		LLD<1.59E-06		391.67	
TOTAL	2.90E-04	+-2.00E-05	2.90E-04	+-2.00E-05		

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 5.77E-03 UC/EA
TOTAL MEASURED ACTIVITY = 2.90E-04 (+-2.00E-05) UC/EA
% TECH. SPEC. = 5.04 (+-0.35)

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 80.0%

PEAKS NOT USED IN ANALYSIS

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
99.17	19.70	196.	43.8	1.49E+00
104.73	20.81	130.	58.4	7.48E-01
149.31	29.72	9023.	2.6	1.24E+01
169.74	33.81	2035.	5.1	1.91E+00
3307.07	661.76	102.	19.4	4.36E-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

09-JUL-9020:43:37


               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: 4.0
DETECTOR NUMBER:    6     /     GEOMETRY NUMBER:   1
SPECTRUM SIZE:  4096 CHANNELS
ORDER OF SMOOTHING FUNCTION:      5
NUMBER OF BACKGROUND CHANNELS:  4 ON EACH SIDE OF PEAK
PEAK CONFIDENCE FACTOR: 80.0%
IDENTIFICATION ENERGY WINDOW: +- 1.50 KEV
ERROR QUOTATION: 1.96 SIGMA UNCERTAINTY

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

SPECTRAL DATA READ DIRECTLY FROM MULTICHANNEL ANALYZER AN1:
ANALYZED BY:        61453

SAMPLE DESCRIPTION: F-922-6385
GEOMETRY DESCRIPTION:  I-129/CULTURE TUBE
SAMPLE SIZE:   1.0000E+00 EA       / CONVERSION FACTOR: 1.0000E+00
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL129

COLLECT STARTED ON  9-JUL-90 AT 19:53:27

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 21-JUN-90
EFFICIENCY CALIBRATION PERFORMED 18-JUN-90
```

09-JUL-9020:43:37

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

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 80.0%

BACKGROUND SUBTRACTION PERFORMED USING FILE BK0024
BACKGROUND DESCRIPTION: BKG
BACKGROUND COLLECT STARTED ON 5-JUN-90 AT 13:00:00
BACKGROUND LIVE TIME: 3000. SECONDS
BACKGROUND WAS INSIGNIFICANT

09-JUL-9020:43:37

SAMPLE: F-922-6385
DATA COLLECTED ON 9-JUL-90 AT 19:53:27
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

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

NUCLIDE	ACTIVITY CONCENTRATION IN uCi/EA				ENERGY COMPARISON (KEV)	
	MEASURED	ERROR	DECAY CORRECTED	ERROR	EXPECT	DIFF
AM-241	LLD<8.86E-07		LLD<8.86E-07		59.54	
AM-243	LLD<4.38E-07		LLD<4.38E-07		74.67	
I-129	LLD<7.52E-06		LLD<7.52E-06		39.60	
SB-125	LLD<1.16E-05		LLD<1.16E-05		176.33	
SE-75	LLD<7.69E-07		LLD<7.69E-07		136.00	
SN-113	LLD<1.70E-06		LLD<1.70E-06		391.67	
TOTAL	0.00E-01	+-0.00E-01	0.00E-01	+-0.00E-01		

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 80.0%

ALL DETECTED PEAKS WERE USED IN THE ANALYSIS

1073, Case 13

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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

10-JUL-9000:07:11

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: 4.0
DETECTOR NUMBER: 6 / GEOMETRY NUMBER: 1
SPECTRUM SIZE: 4096 CHANNELS
ORDER OF SMOOTHING FUNCTION: 5
NUMBER OF BACKGROUND CHANNELS: 4 ON EACH SIDE OF PEAK
PEAK CONFIDENCE FACTOR: 80.0%
IDENTIFICATION ENERGY WINDOW: +- 1.50 KEV
ERROR QUOTATION: 1.96 SIGMA UNCERTAINTY

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

SPECTRAL DATA READ DIRECTLY FROM MULTICHANNEL ANALYZER AN1:
ANALYZED BY: 61453

SAMPLE DESCRIPTION: F-1073-6085
GEOMETRY DESCRIPTION: I-129/CULTURE TUBE
SAMPLE SIZE: 1.0000E+00 EA / CONVERSION FACTOR: 1.0000E+00
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL129

COLLECT STARTED ON 9-JUL-90 AT 23:17:01

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 21-JUN-90
EFFICIENCY CALIBRATION PERFORMED 18-JUN-90

10-JUL-9000:07:11

SAMPLE: F-1073-6085
DATA COLLECTED ON 9-JUL-90 AT 23:17:01
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

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

NUCLIDE	ACTIVITY CONCENTRATION IN uCi/EA				ENERGY COMPARISON (KEV)	
	MEASURED	ERROR	DECAY CORRECTED	ERROR	EXPECT	DIFF
AM-241	LLD<8.52E-07		LLD<8.52E-07		59.54	
AM-243	LLD<4.38E-07		LLD<4.38E-07		74.67	
I-129	LLD<9.18E-06		LLD<9.18E-06		39.60	
SB-125	LLD<9.05E-06		LLD<9.05E-06		176.33	
SE-75	LLD<7.69E-07		LLD<7.69E-07		136.00	
SN-113	LLD<1.80E-06		LLD<1.80E-06		391.67	
TOTAL	0.00E-01	+-0.00E-01	0.00E-01	+-0.00E-01		

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 80.0%

ALL DETECTED PEAKS WERE USED IN THE ANALYSIS

10-JUL-9000:07:11

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

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 80.0%

BACKGROUND SUBTRACTION PERFORMED USING FILE BK0024
BACKGROUND DESCRIPTION: BKG
BACKGROUND COLLECT STARTED ON 5-JUN-90 AT 13:00:00
BACKGROUND LIVE TIME: 3000. SECONDS
BACKGROUND WAS INSIGNIFICANT

1074 - Conc 13

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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

10-JUL-9001:36:59

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: 4.0
DETECTOR NUMBER: 6 / GEOMETRY NUMBER: 1
SPECTRUM SIZE: 4096 CHANNELS
ORDER OF SMOOTHING FUNCTION: 5
NUMBER OF BACKGROUND CHANNELS: 4 ON EACH SIDE OF PEAK
PEAK CONFIDENCE FACTOR: 80.0%
IDENTIFICATION ENERGY WINDOW: +- 1.50 KEV
ERROR QUOTATION: 1.96 SIGMA UNCERTAINTY

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

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

SAMPLE DESCRIPTION: F1074-6185
GEOMETRY DESCRIPTION: I-129/CULTURE TUBE
SAMPLE SIZE: 1.0000E+00 EA / CONVERSION FACTOR: 1.0000E+00
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL129

COLLECT STARTED ON 10-JUL-90 AT 00:46:49

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 21-JUN-90
EFFICIENCY CALIBRATION PERFORMED 18-JUN-90

10-JUL-9001:36:59

SAMPLE: F1074-6185
DATA COLLECTED ON 10-JUL-90 AT 00:46:49
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/EA				ENERGY COMPARISON (KEV)	
	MEASURED	ERROR	DECAY CORRECTED	ERROR	EXPECT	DIFF
AM-241	LLD<7.41E-07		LLD<7.41E-07		59.54	
AM-243	LLD<3.98E-07		LLD<3.98E-07		74.67	
I-129	LLD<6.78E-06		LLD<6.78E-06		39.60	
SB-125	LLD<9.92E-06		LLD<9.92E-06		176.33	
SE-75	LLD<9.07E-07		LLD<9.07E-07		136.00	
SN-113	LLD<1.48E-06		LLD<1.48E-06		391.67	
TOTAL	0.00E-01	+-0.00E-01	0.00E-01	+-0.00E-01		

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 80.0%

ALL DETECTED PEAKS WERE USED IN THE ANALYSIS

10-JUL-9001:36:59

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

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 80.0%

BACKGROUND SUBTRACTION PERFORMED USING FILE BK0024
BACKGROUND DESCRIPTION: BKG
BACKGROUND COLLECT STARTED ON 5-JUN-90 AT 13:00:00
BACKGROUND LIVE TIME: 3000. SECONDS
BACKGROUND WAS INSIGNIFICANT

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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

28-SEP-9010:05:22


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

MCA UNIT NUMBER:   2     /     ADC UNIT NUMBER: 4.0
DETECTOR NUMBER:    6    /     GEOMETRY NUMBER:   1
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: SD6237
ANALYZED BY:        EMB

SAMPLE DESCRIPTION: F1075-6285
GEOMETRY DESCRIPTION:  I-129/CULTURE TUBE
SAMPLE SIZE:   1.0000E+00 EA       / CONVERSION FACTOR: 1.0000E+00
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL129

COLLECT STARTED ON 10-JUL-90 AT 02:23:26

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

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

ENERGY CALIBRATION PERFORMED 21-JUN-90
EFFICIENCY CALIBRATION PERFORMED 18-JUN-90
```

28-SEP-9010:05:22

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

PK	CENTROID CHANNEL	ENERGY KEV	FWHM KEV	BACKGND COUNTS	NET AREA COUNTS	ERROR %	NUCLIDES
1C	149.28	29.72	1.62	738.	9110.	2.8	
2C	169.76	33.81	1.62	528.	2046.	6.5	CE-144
3	199.51	39.75	1.67	228.	1225.	7.5	I-129,BI-212, CE-144

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 95.0%

C - MULTIPLET ANALYSIS CONVERGED NORMALLY

BACKGROUND SUBTRACTION PERFORMED USING FILE BK0024
BACKGROUND DESCRIPTION: BKG
BACKGROUND COLLECT STARTED ON 5-JUN-90 AT 13:00:00
BACKGROUND LIVE TIME: 3000. SECONDS
BACKGROUND WAS INSIGNIFICANT

28-SEP-9010:05:22

SAMPLE: F1075-6285
DATA COLLECTED ON 10-JUL-90 AT 02:23:26
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

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

NUCLIDE	ACTIVITY CONCENTRATION IN uCi/EA				ENERGY COMPARISON (KEV)	
	MEASURED	ERROR	DECAY CORRECTED	ERROR	EXPECT	DIFF
AM-241	LLD<1.86E-06		LLD<1.86E-06		59.54	
AM-243	LLD<8.58E-07		LLD<8.58E-07		74.67	
I-129	2.82E-04	+-2.12E-05	2.82E-04	+-2.12E-05	39.60	0.15
SB-125	LLD<1.85E-05		LLD<1.85E-05		176.33	
SE-75	LLD<1.76E-06		LLD<1.76E-06		136.00	
SN-113	LLD<2.77E-06		LLD<2.77E-06		391.67	
TOTAL	2.82E-04	+-2.12E-05	2.82E-04	+-2.12E-05		

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 5.77E-03 UC/EA
TOTAL MEASURED ACTIVITY = 2.82E-04 (+-2.12E-05) UC/EA
% TECH. SPEC. = 4.90 (+-0.37)

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 95.0%

PEAKS NOT USED IN ANALYSIS

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
149.28	29.72	9110.	2.8	1.25E+01
169.76	33.81	2046.	6.5	1.92E+00

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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

10-JUL-9004:41:00


                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: 4.0
DETECTOR NUMBER:    6     /     GEOMETRY NUMBER:   1
SPECTRUM SIZE:  4096 CHANNELS
ORDER OF SMOOTHING FUNCTION:      5
NUMBER OF BACKGROUND CHANNELS:  4 ON EACH SIDE OF PEAK
PEAK CONFIDENCE FACTOR: 80.0%
IDENTIFICATION ENERGY WINDOW: +- 1.50 KEV
ERROR QUOTATION: 1.96 SIGMA UNCERTAINTY

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

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

SAMPLE DESCRIPTION: F1076-6585
GEOMETRY DESCRIPTION:  I-129/CULTURE TUBE
SAMPLE SIZE:   1.0000E+00 EA       / CONVERSION FACTOR: 1.0000E+00
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL129

COLLECT STARTED ON 10-JUL-90 AT 03:50:50

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

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

ENERGY CALIBRATION PERFORMED 21-JUN-90
EFFICIENCY CALIBRATION PERFORMED 18-JUN-90
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10-JUL-9004:41:00

SAMPLE: F1076-6585
DATA COLLECTED ON 10-JUL-90 AT 03:50:50
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

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

NUCLIDE	ACTIVITY CONCENTRATION IN uCi/EA				ENERGY COMPARISON (KEV)	
	MEASURED	ERROR	DECAY CORRECTED	ERROR	EXPECT	DIFF
AM-241	LLD<9.50E-07		LLD<9.50E-07		59.54	
AM-243	LLD<4.45E-07		LLD<4.45E-07		74.67	
I-129	3.20E-04	+-2.17E-05	3.20E-04	+-2.17E-05	39.60	0.03
SB-125	LLD<7.31E-06		LLD<7.31E-06		176.33	
SE-75	LLD<9.07E-07		LLD<9.07E-07		136.00	
SN-113	LLD<1.59E-06		LLD<1.59E-06		391.67	
TOTAL	3.20E-04	+-2.17E-05	3.20E-04	+-2.17E-05		

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 5.77E-03 UC/EA
TOTAL MEASURED ACTIVITY = 3.20E-04 (+-2.17E-05) UC/EA
% TECH. SPEC. = 5.55 (+-0.38)

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 80.0%

PEAKS NOT USED IN ANALYSIS

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
149.33	29.73	9855.	2.6	1.35E+01
169.85	33.83	2266.	5.9	2.12E+00

10-JUL-9004:41:00

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
PEAK AT CHANNEL 133.5 DROPPED FROM MULTIPLET ANALYSIS							
1C	149.33	29.73	1.62	731.	9855.	2.6	
2C	169.85	33.83	1.62	508.	2266.	5.9	CE-144
3	198.88	39.63	1.46	218.	1387.	6.8	I-129,BI-212, CE-144

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 80.0%

C - MULTIPLET ANALYSIS CONVERGED NORMALLY

BACKGROUND SUBTRACTION PERFORMED USING FILE BK0024
BACKGROUND DESCRIPTION: BKG
BACKGROUND COLLECT STARTED ON 5-JUN-90 AT 13:00:00
BACKGROUND LIVE TIME: 3000. SECONDS
BACKGROUND WAS INSIGNIFICANT

Single Shell Tank
Calibration Record

ANALYTE:	I-129		
PROCEDURE:	LA-508-052	REVISION:	B-3
INSTRUMENT:	Jupiter Canberra	PROPERTY NUMBER:	E60044
TECHNOLOGIST:	R. A. Jones	PAYROLL NUMBER:	65801
DATE:	May 21, 1990		
CALIBRATION STANDARD ID:	45B40A		
ANALYTE CONCENTRATION:	I^{129} = 57.8 nci		
TYPE OF CALIBRATION:	Efficiency		
COMMENTS:			

SST-103 Rev. A 9/25/90 Interim

```
RUN CALIB

CALIB  --  Version 2.06

222-S COUNTING ROOM WESTINGHOUSE HANFORD

CAL> EFF
MCA UNIT NUMBER (2):
ADC UNIT NUMBER (4.0):
DETECTOR NUMBER (   12): 16
MCA MEMORY REGION (FULL):
DATE SPECTRUM COLLECTED: 18_MAY_90

ILLEGAL DATE
DATE SPECTRUM COLLECTED: 18-MAY-90
TIME COLLECT STARTED: 12:00
GEOMETRY NUMBER ( 12): 1
GEOMETRY DESCRIPTION: 45B40-A
ACTIVITY UNITS ( uCi) :
CROSSOVER ENERGY: 0
CALIBRATION SOURCE ENERGY OPTIONS:
      TYPE A CARRIAGE RETURN FOR MANUAL ENTRY,
      TYPE AN INTEGER (0-999) TO USE A SOURCE LIBRARY,
      TYPE A PLUS SIGN BEFORE THE INTEGER (+0 - +999)
      TO CREATE A SOURCE LIBRARY DURING MANUAL ENTERY.
OPTION: 16
45B40-A/WELL
DO YOU WANT TO ENTER ANY EFFICIENCY POINTS MANUALLY (NO): N
DIMENSIONAL UNITS OF STANDARD: EA
SIZE OF STANDARD IN EA  :   1.00000
NUMBER OF POINTS:     6
ACTIVITY IN MICROCURIES [YES/NO]:

            PEAK  1
                  ENERGY:     39.600
                  ACTIVITY:   1.604200E+02
                  ACTIVITY ONE SIGMA:     0.000000E-01
                  HALF-LIFE:  D5.84E9
                  DECAY TIME ( 0.000000E-01 MINS.):  6-JUNE-88
                  TIME OF SOURCE CALIBRATION:  12:00
                  DECAY TIME:   1.023840E+06 MINS
            EFFICIENCY = 5.214146E-01 (+-  1.229902E-03)

            PEAK  2
                  ENERGY:     136.000
                  ACTIVITY:   8.863000E+01
                  ACTIVITY ONE SIGMA:     0.000000E-01
                  HALF-LIFE:  D119.77
                  DECAY TIME (1.023840E+06 MINS.):
            EFFECIENCY = 3.444963E-01 (+-  2.133579E-02)

            PEAK  3
                  ENERGY:     176.290
                  ACTIVITY:   1.175000E+01
```

```
                ACTIVITY ONE SIGMA:      0.000000E-01
                HALF-LIFE:  D1004.4
                DECAY TIME ( 1.023840E+06 MINS. ):
        EFFICIENCY = 5.669897E-01 (+-  6.718306E-03)

        PEAK  4
                ENERGY:      427.000
                ACTIVITY:    5.184000E+01
                ACTIVITY ONE SIGMA:    0.000000E-01
                HALF-LIFE:  D1004.4
                DECAY TIME ( 1.023840E+06 MINS.):
        EFFICIENCY = 1.204103E-01 (+-  1.266273E-03)


        PEAK  5
                ENERGY:      463.000
                ACTIVITY:    1.814000E+01
                ACTIVITY ONE SIGMA:      0.000000E-01
                HALF-LIFE:  D1004.4
                DECAY TIME ( 1.023840E+06 MINS.):
        EFFICIENCY = 1.984882E-01 (+-  3.204850E-03)

        PEAK  6
                ENERGY:      600.770
                ACTIVITY:    3.093000E+01
                HALF-LIFE:  D1004.4
                DECAY TIME( 1.023840E+06 MINS.):
        EFFICIENCY = 8.347035E-02 (+-  1.300690E-03)

SYSTEM EFFICIENCY COEFFICIENTS, PART 2

LOG(EFF) = -4.273833E+01  +  2.446928E+01*LOG(E) - 4.491113E+00*LOG(E)^2
           +2.581028E-01*LOG(E)^3

CAL>
```

Analytical Batch

Lab Segment Serial #: F1067

Customer ID: 000013

Instrument	WA38316
Procedure/Rev	LA-220-101/C-0
Technologist	S. Lai
Date	February 26, 1990
Temperature	N/A
Starting Time	0800
Ending Time	1500
Chemist	S. A. Catlow

Strontium 89/90
Fusion Dissolution

Detector 10

*Sample is prepared as a dry mount.

	Description	Lab ID
1	Initial LMCS Check Std	F1071
2	Reagent Blank	F1072
3	Sample Comp 13	F1073
4	Duplicate Sample Comp 13	F1074
5	Spike Sample Comp 13	F1075
6	Final LMCS Check Std	F1076
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 Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std	106B44/1 mL			N/A
Spike	106B44/1 mL	F1073/100 uL		N/A

SST-102 Rev. I 10/2/90 Interim

Single Shell Tank
Calibration Record

Analyte:	SrY^{90}		
Procedure:	LQ-508-002	Revision:	A-1
Instrument:	Detector #10	Property Number:	WA45242
Technologist:	R.A. Jones	Payroll Number:	65801
Date:	May 21, 1989		
Calibration Standard ID:	48B16T, 48B16U, 48B16TV, 48B16G, 48B16J, 48B16L		
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. 10

RADIONUCLIDE: SrY-90
HALF LIFE: 10590
COUNT TIME: 5
CPM BKG: 22

TIME ZERO DATE (HD): 13977

DATE COUNTED (HD): 16309

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

STANDARD ID	SIZE	DATE	TIME	COUNTS @ 0 DEG.	COUNTS @ 90 DEG.	COUNTS @ 180 DEG.	COUNTS @ 270 DEG.
48B16B	1	05/21/89		84795	84166	84768	83389
48B16D	1	05/21/89		107308	108714	109687	109090
48B16E	1	05/21/89		208878	200713	210979	211700
48B16G	2	05/21/89		62088	62802	61690	63053
48B16J	2	05/21/89		102092	101782	101676	101546
48B16L	2	05/21/89		192834	198242	197051	195835

STANDARD ID	SIZE	STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
48B16B	1"	40910	16834	1.16	19610	0.4793
48B16D	1"	54640	21718	1.16	25299	0.4630
48B16TE	1"	104000	41592	1.16	48450	0.4659

AVERAGE, 1" = 0.4694 +/- @95% 0.0171 3.64 % ON 05/21/89

STANDARD ID	SIZE	STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
48B16G	2"	36760	12460	1.16	14514	0.3948
48B16J	2"	58980	20333	1.16	23686	0.4016
48B16L	2"	112700	39176	1.16	45636	0.4049

AVERAGE, 2" = 0.4005 +/- @95% 0.0101 2.52 % ON 05/21/89

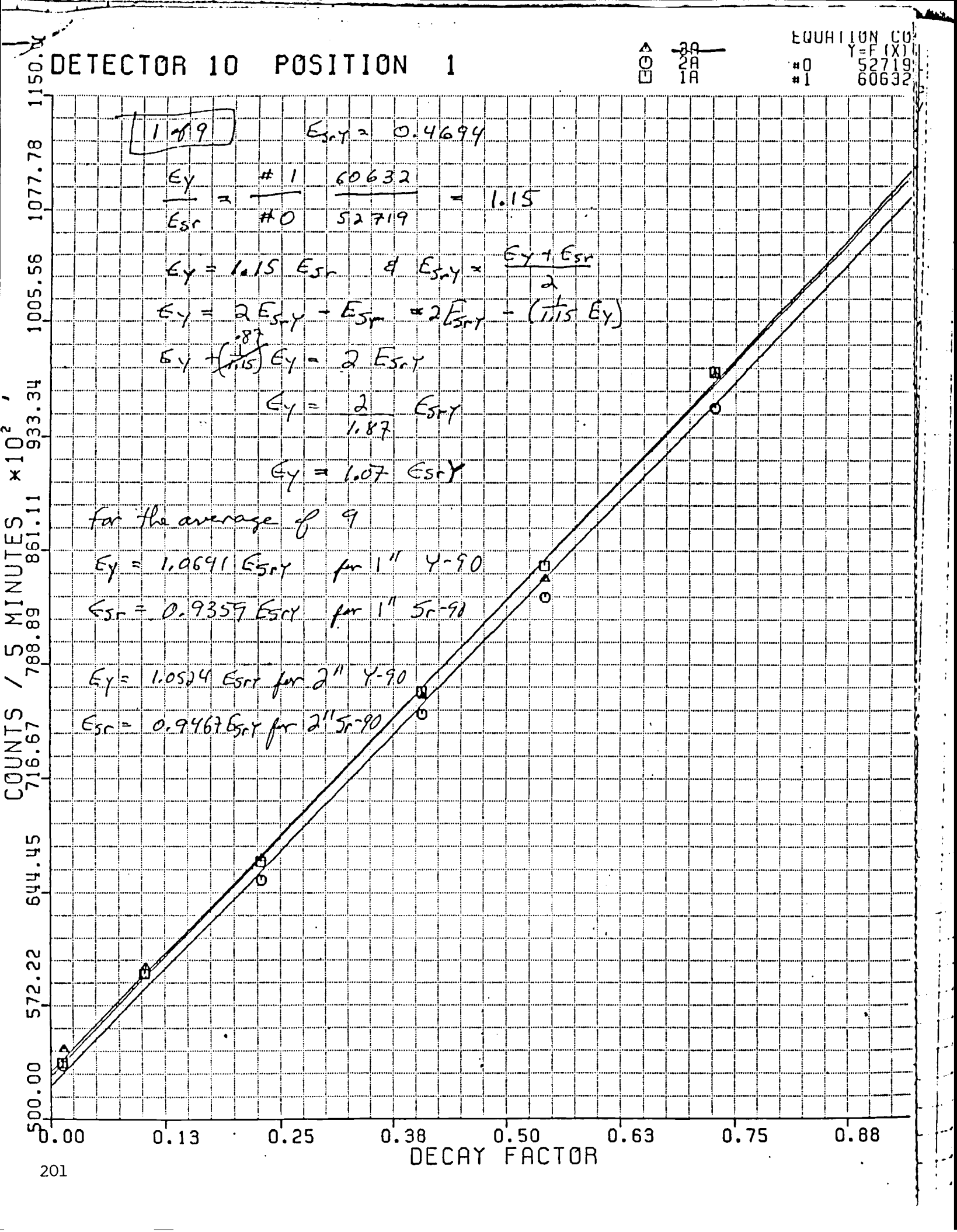
STANDARD ID	SIZE	STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
36B40A6	5"	0	0	1.16	0	ERR
36B40B6	5"	0	0	1.16	0	ERR
36B40C5	5"	0	0	1.16	0	ERR

AVERAGE, 5" = ERR +/- @95% ERR ERR % ON 05/21/89

NEW EFFS FOR DET 10 SrY-90 1" = 0.4694 2" = 0.4005

5" = ERR

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



1 of 9

$E_{SrY} = 0.4694$

$$\frac{E_Y}{E_{Sr}} = \frac{\#1}{\#0} = \frac{60632}{52719} = 1.15$$

$E_Y = 1.15\ E_{Sr}$ & $E_{SrY} = \frac{E_Y + E_{Sr}}{2}$

$E_Y = 2E_{SrY} - E_{Sr} = 2E_{SrY} - (1.15\ E_Y)$

$E_Y + (1.15)E_Y = 2\ E_{SrY}$

$E_Y = \frac{2}{1.87} E_{SrY}$

$E_Y = 1.07\ E_{SrY}$

for the average of 9

$E_Y = 1.0691\ E_{SrY}$ for 1" Y-90

$E_{Sr} = 0.9359\ E_{SrY}$ for 1" Sr-90

$E_Y = 1.0524\ E_{SrY}$ for 2" Y-90

$E_{Sr} = 0.9467\ E_{SrY}$ for 2" Sr-90

WATER DIGESTION TEST ANALYSIS

Single Shell Tank Project

Water Digestion
Units For Samples Are Wet Weight

Tank: 241-U-10
Customer ID: Core 13 Composite

	Standard	Blank		Sample		Digestion Sample		Spike of Sample		Standard Sample
Laboratory ID:		F1078		F1079		F1080		F1081		
Water Digestion I		complete		8.33	g/L	11.19	g/L	10.02		
Laboratory ID:	F1077	F1078		F1079		F1080		N/A		F1082
Ph	100.80%	9.73		11.64		11.71		N/A		100.90%
Laboratory ID:	F1053	F1054		F1079		F1080		F1057		F1082
Flouride	106.80%	<1.00E-01	ppm	4.99E+03	ug/g	3.55E+03	ppm	110.40%		104.50%
Chloride	102.90%	<1.00E-01	ppm	9.41E+02	ug/g	9.03E+02	ug/g	119.80%		96.99%
Nitrate	101.30%	<1.00	ppm	5.88E+04	ug/g	6.14E+04	ug/g	106.50%		103.40%
Phosphate	103.40%	<1.00	ppm	2.32E+04	ug/g	7.04E+03	ug/g	10.40%		106.80%
Sulfate	96.50%	<1.00	ppm	1.21E+04	ug/g	5.16E+03	ug/g	105.50%		93.80%
Laboratory ID:	F1077	F1078		F1079		F1080		F1081		F1082
Total Organic Carbon	95.50%	3.90	ug	1.31E+02	ug/g	2.46E+02	ug/g	95.75%		95.70%
Laboratory ID:	F1077	F1078		F1079		F1080		F1081		F1082
Ammonia	95.50%	<4.04E+01	ppm	<4.85E+03	ug/g	<3.61E+03	ug/g	103.30%		101.80%
Laboratory ID:	F1077	F1078		F1079		F1080		F1081		F1082
Carbonate	104.10%	2.70	ug	9.48E+03	ug/g	7.15E+03	ug/g	87.00%		103.90%
Laboratory ID:	F1077	F1078		F1079		F1080		F1081		F1082
Nitrite	99.60%	<3.59E-01	ppm	1.17E+04	ug/g	1.24E+04	ug/g	82.10%		100.80%
Laboratory ID:	F1077	F1078		F1079		F1080		F1081		F1082
Total Alpha	103.40%	1.01E-02	uic/L	<2.99E-03	uci/g	<2.23E-03	uci/g	*		106.80%
Total Beta	103.80%	8.34E-01	uci/L	1.93E+01	uci/g	1.37	uci/g	*		104.50%
Laboratory ID:	F1076	F1078		F1079		F1080		F1075		F1077
Gea Cs-137	103.70%	<6.28E-02	uic/L	9.29	uci/g	9.20	uci/g	104.00%		102.40%
Laboratory ID:	F1047	F1048		F1079		F1080		F1075		F1076
Americium 241	105.90%	<2.28E-02	uci/L	<1.58E-03	uci/g	<1.30E-03	uci/g	101.30%		106.60%
Laboratory ID:	F1047	F1048		F1079		F1080		F1081		F1082
Plutonium	105.60%	<8.29E-03	uci/L	<7.66E-04	uci/g	<5.77E-04	uci/g	101.70%		98.10%
Laboratory ID:	F1077	F1078		F1079		F1080		F1081		F1082
Carbon 14	94.20%	<1.13E-03	uci/L	5.89E-04	uci/g	4.08E-04	uci/g	91.50%		96.20%
Laboratory ID:	F1077	F1078		F1079		F1080		F1081		F1082
Iodine 129	110.70%	<8.60E-02	uic/L	<7.92E-03	uci/g	<5.09E-03	uci/g	139.30%		115.30%
Laboratory ID:	F1077	F1078		F1079		F1080		F1081		F1082
Strontium 90	88.60%	4.40E-03	uci/L	5.94E-02	uci/g	3.32E-02	uci/g	93.50%		90.90%
Laboratory ID:	F1077	F1078		F1079		F1080		F1081		F1082
Technetium 99	121.00%	1.97E-02	uci/L	5.92E-03	uci/g	5.94E-03	uci/g	115.40%		101.80%
Laboratory ID:	F1077	F1078		F1079		F1080		F1225		F1226
Tritium	95.00%	<9.01E-03	uci/L	2.29E-03	uci/g	1.76E-03	uic/g	93.50%		90.20%
Laboratory ID:	F1077	F1060		F1079		F1080		F1087		F1082
Mercury	96.00%	<1.00E-02	ppm	<1.20E-02	ug/g	2.28E-02	ug/g	95.45%		96.00%
Laboratory ID:		F1078		F1079		F1080		F1081		
Water Digestion II		Complete		10.18	g/L	10.05	g/L	10.09	g/L	
Laboratory ID:	F1077	F1078		F1079		F1080		F1081		F1082
Arsenic 2nd Leach	100.30%	<5.00E-03	ppm	<4.91E-01	ug/g	<4.98E-01	ug/g	95.90%		94.70%
Laboratory ID:	F1077	F1078		F1079		F1080		F1081		F1082
Selenium 2nd Leach	107.30%	<5.00E-03	ppm	<4.91E-01	ug/g	<4.98E-01	ug/g	83.10%		86.10%

* Analysis Was Not Run.

ICP Results DATA SUMMARY

		Acid Digested Sample	NONE
Date Analyzed:	JULY 5, 1990	Reagent Blank	F1078
Procedure:	LA-505-151/A-0	Sample Core 13	F1079
Analyst:	J. A. WHITE	Duplicate Core 13	F1080
Digestion	Acid Digestion	Spike of Core 13	F1081
Procedure:	LA-505-159/A-0	Acid Digested Standard	NONE

	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	101.82%	NA	1.64	3009	2657	65.23%	NA	101.23%
Antimony	100.44%	NA	0.73 LT	93 LT	0 LT	105.78%	NA	102.04%
Arsenic	108.11%	NA	0.23 LT	35 LT	27 LT	115.80%	NA	107.87%
Beryllium	107.78%	NA	0.01	1	0 LT	111.93%	NA	106.53%
Bismuth	106.64%	NA	0.83 LT	111 LT	72 LT	130.12%	NA	104.90%
Boron	102.86%	NA	2.77	226	231	113.21%	NA	103.33%
Cadmium	102.99%	NA	0.02 LT	3 LT	1 LT	107.30%	NA	104.43%
Calcium	105.87%	NA	0.93	21	24	112.38%	NA	106.39%
Cerium	95.15%	NA	1.98 LT	209 LT	122 LT	109.62%	NA	95.92%
Chromium	91.10%	NA	-0.10 LT	740	727	278.95%	NA	91.99%
Cobalt	99.92%	NA	1.26	25 LT	-108 LT	95.96%	NA	101.37%
Copper	105.16%	NA	0.14 LT	18 LT	12 LT	114.38%	NA	105.56%
Europium	96.28%	NA	0.04	5	3 LT	97.27%	NA	97.04%
Iron	107.32%	NA	0.14	18	16	700.63%	NA	107.96%
Lanthanum	93.26%	NA	0.18 LT	18 LT	-2 LT	92.04%	NA	92.60%
Lead	104.98%	NA	1.87	177	41 LT	75.50%	NA	103.96%
Lithium	102.49%	NA	0.10	10	6	102.25%	NA	101.51%
Magnesium	108.06%	NA	0.27	90	75	105.04%	NA	108.52%
Manganese	104.07%	NA	0.01 LT	1 LT	0 LT	134.61%	NA	105.21%
Mercury	102.07%	NA	0.14	15	11	101.67%	NA	101.87%
Molybdenum	97.66%	NA	0.06 LT	12	7 LT	114.41%	NA	97.21%
Neodymium	94.09%	NA	0.15 LT	11 LT	-16 LT	98.30%	NA	97.01%
Nickel	102.37%	NA	0.13 LT	18 LT	13 LT	364.87%	NA	103.56%
Phosphorous	101.22%	NA	0.34 LT	2956	2720	115.60%	NA	102.61%
Potassium	102.16%	NA	2.36 LT	308 LT	140 LT	119.19%	NA	103.45%
Samarium	102.58%	NA	2.62	273	147 LT	73.87%	NA	99.10%
Selenium	98.44%	NA	0.89 LT	267	276	134.31%	NA	97.98%
Silicon	92.11%	NA	2.40	1111	1075	118.28%	NA	91.68%
Silver	105.98%	NA	0.16 LT	19 LT	11 LT	105.76%	NA	105.48%
Sodium	101.94%	NA	5.07	63099	62398	NOT CALC.	NA	101.85%
Strontium	106.49%	NA	0.03	3	2	108.61%	NA	106.83%
Sulfur	99.11%	NA	0.36	777	744	100.83%	NA	99.05%
Tantalum	96.19%	NA	0.20 LT	35 LT	15 LT	102.75%	NA	95.38%
Thallium	100.40%	NA	3.16	418	298	111.40%	NA	99.24%
Thorium	101.72%	NA	2.04	161	69	99.04%	NA	100.39%
Tin	98.80%	NA	0.10 LT	14 LT	13 LT	107.00%	NA	100.02%
Titanium	102.44%	NA	0.08	10	7	109.49%	NA	102.39%
Uranium	102.64%	NA	13.83 LT	1487 LT	883 LT	153.50%	NA	98.58%
Vanadium	101.30%	NA	0.11 LT	21	10 LT	106.34%	NA	100.55%
Zinc	104.05%	NA	0.04	7	6	111.50%	NA	104.80%
Zirconium	97.13%	NA	0.23 LT	27	17 LT	102.96%	NA	97.38%

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

Single Shell Tank Project

Water Digestion
Results of the Laboratory Digestion

Tank: 241-U-10
Customer ID: Core 13 Composite

	Standard	Blank		Sample		Digestion Sample		Spike of Sample		Standard Sample
Laboratory ID:		F1078		F1079		F1080		F1081		
Water Digestion I		Complete		8.33	g/L	11.19	g/L	10.02		
Laboratory ID:	F1077	F1078		F1079		F1080		N/A		F1082
Ph	100.80%	9.73		11.64		11.71		N/A		100.90%
Laboratory ID:	F1053	F1054		F1079		F1080		F1057		F1082
Flouride	106.80%	<1.00E-01	ppm	4.16E+01	ppm	3.97E+01	ppm	110.40%		104.50%
Chloride	102.90%	<1.00E-01	ppm	7.84	ppm	1.01E+01	ppm	119.80%		96.99%
Nitrate	101.30%	<1.00	ppm	4.90E+02	ppm	6.87E+02	ppm	106.50%		103.40%
Phosphate	103.40%	<1.00	ppm	1.93E+02	ppm	7.88E+01	ppm	110.40%		106.80%
Sulfate	96.50%	<1.00	ppm	1.01E+02	ppm	5.77E+01	ppm	105.50%		93.80%
Laboratory ID:	F1077	F1078		F1079		F1080		F1081		F1082
Total Organic Carbon	95.50%	3.90	ug	1.09E-03	g/L	2.75E-03	g/L	95.75%		95.70%
Laboratory ID:	F1077	F1078		F1079		F1080		F1081		F1082
Ammonia	95.50%	<4.04E+01	ppm	<4.04E+01	pm	<4.04E+01	ppm	103.30%		101.80%
Laboratory ID:	F1077	F1078		F1079		F1080		F1081		F1082
Carbonate	104.10%	2.70	ug	7.90E-02	g/L	8.00E-02	g/L	87.00%		103.90%
Laboratory ID:	F1077	F1078		F1079		F1080		F1081		F1082
Nitrite	99.60%	<3.59E-01	ppm	9.76E+01	ppm	1.39E+02	ppm	82.10%		100.80%
Laboratory ID:	F1077	F1078		F1079		F1080		F1081		F1082
Total Alpha	103.40%	1.01E-02	uci/L	<2.49E-02	uci/L	<2.49E-02	uci/L	*		106.80%
Total Beta	103.80%	8.34E-01	uci/L	1.61E+02	uci/L	1.53E+02	uci/L	*		104.50%
Laboratory ID:	F1076	F1078		F1079		F1080		F1075		F1077
Gea Cs-137	103.70%	<6.28E-02	uci/L	7.74E+01	uci/L	1.03E+02	uci/L	104.00%		102.40%
Laboratory ID:	F1047	F1048		F1079		F1080		F1075		F1076
Americium 241	105.99%	<2.28E-02	uci/L	<1.32E-02	uci/L	<1.45E-02	uci/L	101.30%		106.60%
Laboratory ID:	F1047	F1048		F1079		F1080		F1081		F1082
Plutonium	105.60%	<8.29E-03	uci/L	<6.38E-03	uci/L	<6.46E-03	uci/L	101.70%		98.10%
Laboratory ID:	F1077	F1078		F1079		F1080		F1081		F1082
Carbon 14	94.20%	<1.13E-03	uci/L	4.91E-03	uci/L	4.57E-03	uci/L	91.50%		96.20%
Laboratory ID:	F1077	F1078		F1079		F1080		F1081		F1082
Iodine 129	110.70%	<8.60E-02	uci/L	<6.60E-02	uci/L	<5.70E-02	uci/L	139.30%		115.30%
Laboratory ID:	F1077	F1078		F1079		F1080		F1081		F1082
Strontium 90	88.60%	4.40E-03	uci/L	4.95E-01	uci/L	3.72E-01	uci/L	93.50%		90.90%
Laboratory ID:	F1077	F1078		F1079		F1080		F1081		F1082
Technetium 99	121.00%	1.97E-02	uci/L	4.93E-02	uci/L	6.65E-02	uci/L	115.40%		101.80%
Laboratory ID:	F1077	F1078		F1079		F1080		F1225		F1226
Tritium	95.00%	<9.01E-03	uci/L	1.91E-02	uci/L	1.97E-02	uci/L	93.50%		90.20%
Laboratory ID:	F1077	F1060		F1079		F1080		F1087		F1082
Mercury	96.00%	<1.00E-02	ppm	<1.00E-04	ppm	2.55E-04	ppm	95.45%		96.00%
Laboratory ID:		F1078		F1079		F1080		F1081		
Water Digestion II		Complete		10.18	g/L	10.05	g/L	10.09	g/L	
Laboratory ID:	F1077	F1078		F1079		F1080		F1081		F1082
Arsenic 2nd Leach	100.30%	<5.00E-03	ppm	<5.00E-03	ppm	<5.00E-03	ppm	95.90%		94.70%
Laboratory ID:	F1077	F1078		F1079		F1080		F1081		F1082
Selenium 2nd Leach	107.30%	<5.00E-03	ppm	<5.00E-03	ppm	<5.00E-03	ppm	83.10%		86.10%

* Analysis Was Not Run

Analytical Batch

Lab Segment Serial #: F1067

Customer ID: 000013

Instrument	N/A
Procedure/Rev	LA-504-101/A-2
Technologist	J. Kunkel
Date	February 22, 1990
Temperature	N/A
Starting Time	1330
Ending Time	N/A
Chemist	H. S. Rich

Water Digestion I

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

	Description	Lab ID
1	Reagent Blank	F1078
2	Sample Comp 13	F1079
3	Duplicate Sample Comp 13	F1080
4	Spike Sample Comp 13	F1081
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 Book # & Aliquot Vol.	Final Vol. of Std.
N/A				
Spike (see note)				

SST-102 Rev. I 10/2/90 Interim

Analytical Batch

Lab Segment Serial #: F1067

Customer ID: 000013

Instrument	N/A
Procedure/Rev	LA-504-101/A-2
Technologist	M. Franz
Date	May 30, 1990
Temperature	N/A
Starting Time	05-17-90
Ending Time	05-30-90
Chemist	H. S. Rich

Water Digestion II

NOTE: Sample is not spiked prior to digestion. This procedure provides a sample to be spiked later with the appropriate element. Analysis performed on this digestion will be identified as "2nd leaching".

	Description	Lab ID
1	Reagent Blank	F1078
2	Sample Comp 13	F1079
3	Duplicate Sample Comp 13	F1080
4	Spike Sample Comp 13	F1081
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 Book # & Aliquot Vol.	Final Vol. of Std.
N/A				
Spike (see note)				

SST-102 Rev. I 10/2/90 Interim

Analytical Batch

LAB SEGMENT SERIAL #: F1067

CUSTOMER ID: 000013

INSTRUMENT	AL10653
PROCEDURE/REV	LA-211-102/A-1
TECHNOLOGIST	M. Franz
DATE	February 27, 1990
TEMPERATURE	24.2 C
STARTING TIME	1030
ENDING TIME	1230
CHEMIST	R. E. Brandt

pH Analysis of the Water Digestion.

	DESCRIPTION	LAB ID
1	Initial LMCS Check Std	F1077
2	Reagent Blank	F1078
3	Sample Comp 13	F1079
4	Duplicate Sample Comp 13	F1080
5	Final LMCS Check Std	F1082
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 BOOK # & ALIQUOT VOL.	FINAL VOL. OF STD.
LMCS Check Std	72C11B/1 mL			1 mL

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Analytical Batch

Lab Segment Serial #: F1067

Customer ID: 000013

Instrument	WB24721
Procedure/Rev	LA-533-105/A-3
Technologist	N. E. Wright
Date	March 02, 1990
Temperature	24 C
Starting Time	1230
Ending Time	1420
Chemist	H. S. Rich

Ion Chromatograph Analysis
Water Digestion

Dionex 4000

*Chromatogram only

	Description	Lab ID
1	Eluent Blank	
2	Initial LMCS Check Std	F1053
3	Reagent Blank	F1054
4	Sample Comp 12	F1055
5	Duplicate Sample Comp 12	F1056
6	Spike Sample Comp 12	F1057
7	Sample Comp 13	F1079
8	Duplicate Sample Comp 13	F1080
9	Final LMCS Check Std	F1082
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 Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std	6C11HK/100 uL			10.1 mL
Spike	35C9-/300 uL	F1055/50 uL		5.3 mL

SST-102 Rev. I 10/2/90 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:	February 27, 1990		
Calibration Standard ID:	35C9-69 issued February 21, 1990		
Analyte Concentration:	F 55 Cl 67 NO_3 596 PO_4 601 SO_4 596 in ppm		
Type of Calibration:	Quadratic least square fit		
Comments:	See Attached Sheets		

SST-103 Rev. B 9/27/90 Interim

DIONEX METHOD PARAMETERS - SST.MET

Detector Parameters

Number of Detectors	1
Detector 1 Type	CDM

Report Options

Run Time (minutes)	11.50
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:\windows\ai400\data\90022700	
Record Result Data	No

Integration Parameters

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

Integration Timed Events

Time	Description

Calibration Parameters

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

Component # 1 FLUORIDE Retention Time 0.97
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 3.44350E-004
Least Squares Intercept = 2.72767E-002
Ka = -2.68186E-009

Level	Amount	Area	Height
1	1.09780E-001	1421	251
2	2.73600E-001	3780	712
3	5.44550E-001	8466	1502
4	1.07843E+000	21464	3149
5	2.11538E+000	39419	6374
6	4.07407E+000	88838	13086

Component # 2 CHLORIDE Retention Time 1.52
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 6.72098E-004
Least Squares Intercept = -5.77210E-002
Ka = -1.43087E-008

Level	Amount	Area	Height
1	1.33730E-001	1212	219
2	3.33330E-001	4283	624
3	6.63360E-001	7962	1150
4	1.31373E+000	16558	2147
5	2.57692E+000	28603	4281
6	4.96296E+000	60441	9327

Component # 3 NITRITE Retention Time 1.87
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 9.23046E-004
Least Squares Intercept = 3.10460E-001
Ka = 1.72129E-009

Level	Amount	Area	Height
1	1.19960E+000	7964	1145
2	2.99000E+000	21610	2777
3	5.95050E+000	45494	6200
4	1.17843E+001	91821	11705
5	2.39442E+001	184283	24761
6	4.45185E+001	360269	44188

Component # 4 NITRATE Retention Time 3.50
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 1.98985E-003
Least Squares Intercept = -3.26713E-002
Ka = 4.19044E-009

Level	Amount	Area	Height
1	1.18960E+000	7134	590
2	2.96517E+000	17924	1477
3	5.90099E+000	38591	3012
4	1.16863E+001	78261	5849
5	2.29310E+001	168437	11234
6	4.41480E+001	344772	21259

Component # 5 PHOSPHATE Retention Time 5.25
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 5.36024E-003
Least Squares Intercept = 7.83261E-003
Ka = -6.77729E-008

Level	Amount	Area	Height
1	1.19960E+000	3324	213
2	2.99000E+000	8508	525
3	5.95050E+000	20755	1176
4	1.17843E+001	39272	2278
5	2.39442E+001	83239	4723
6	4.45185E+001	173192	9434

Component # 6 SULFATE Retention Time 6.70
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 2.19678E-003
Least Squares Intercept = 3.76850E-001
Ka = -9.49801E-009

Level	Amount	Area	Height
1	1.18960E+000	8716	477
2	2.96517E+000	20979	1149
3	5.90099E+000	49099	2507
4	1.16863E+001	100230	5150
5	2.29310E+001	212010	10871
6	4.41480E+001	440178	22002

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

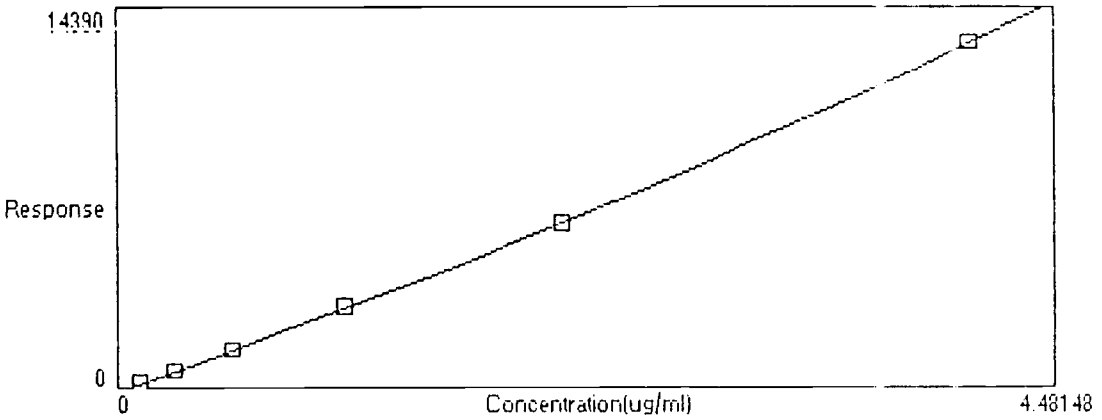
Level	Amount	Area	Height
1	0.00000E+000	0	0
2	0.00000E+000	0	0
3	0.00000E+000	0	0
4	0.00000E+000	0	0
5	0.00000E+000	0	0
6	0.00000E+000	98992	5848

IC Control File: C:\WINDOWS\AI400\METHOD\GROUTO1.TE

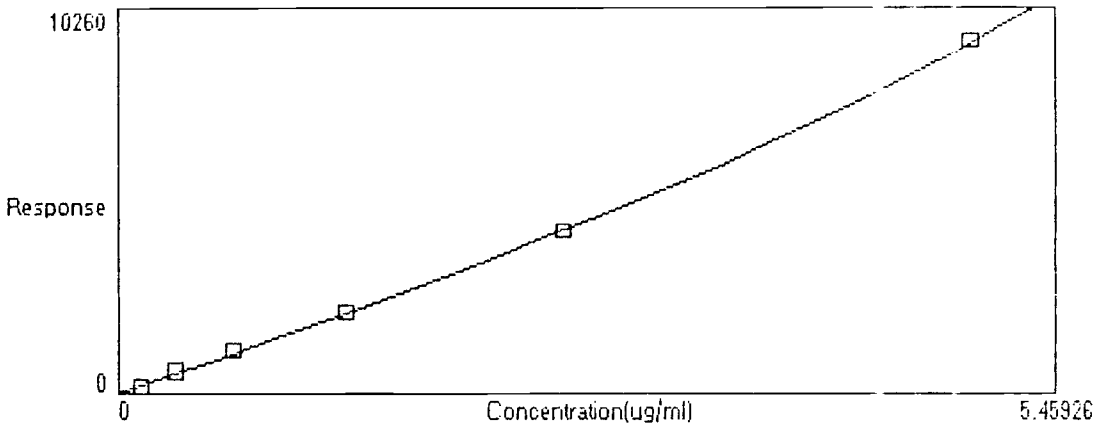
Step	Time	Description
Init		CDM AutoOffset Off
Init		CDM Recorder Mark OFF
Init		CDM Temp. Comp. = 1.7 / Deg C
Init		CDM Recorder Range = 1.000 uS
Init		CDM Cell ON
Init		CMA Heater = 25 Deg. C
Init		Valve A ON
Init		Valve B ON
Init		Inject Valve OFF
Init		CIM Relay 1 OFF
Init		CIM Relay 2 OFF
Init		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\GROUTO1.GPM
Lo Pressure Limit = 200
Hi Pressure Limit = 2000
Eluant 1 - DI WATER
Eluant 2 - BICARBONATE
Eluant 3 - CARBONATE
Eluant 4 -

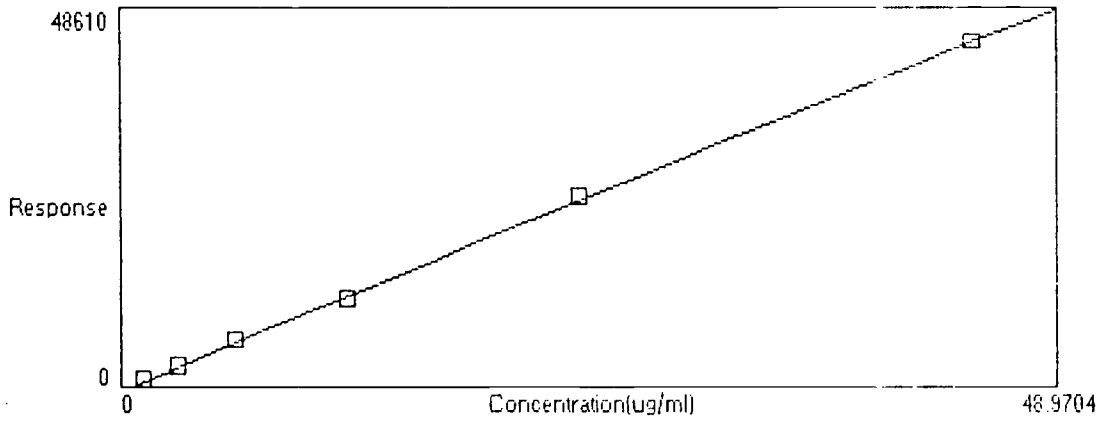
Time	Flow	%1	%2	%3	%4	Comment
0.0	2.0	84	8	8	0	
15.8	2.0	84	8	8	0	



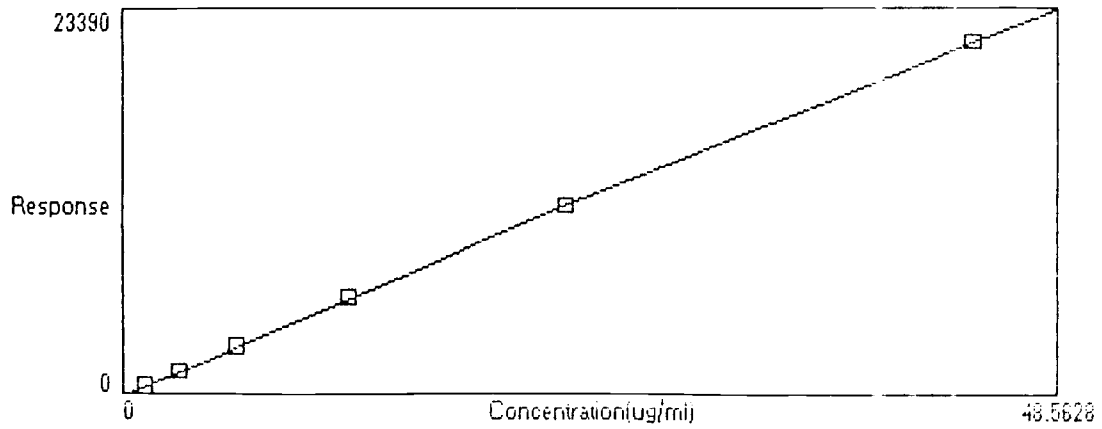
Component: FLUORIDE
Fit Type: Quadratic
Conc = (-2.681728e-009 * Resp^2)+
(3.443461e-004 * Resp)+ -0.0273



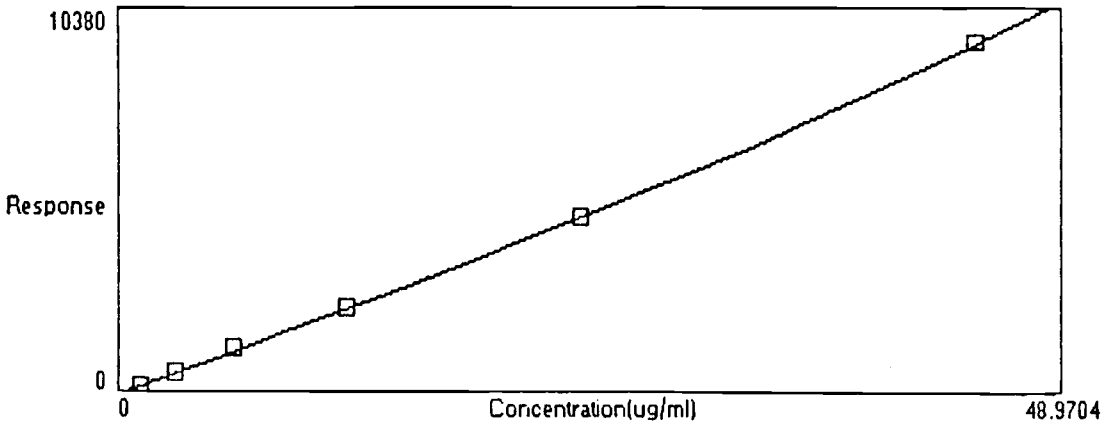
Component: CHLORIDE
Fit Type: Quadratic
Conc = (-1.480312e-008 * Resp^2)+
(6.720337e-004 * Resp)+ -0.0579



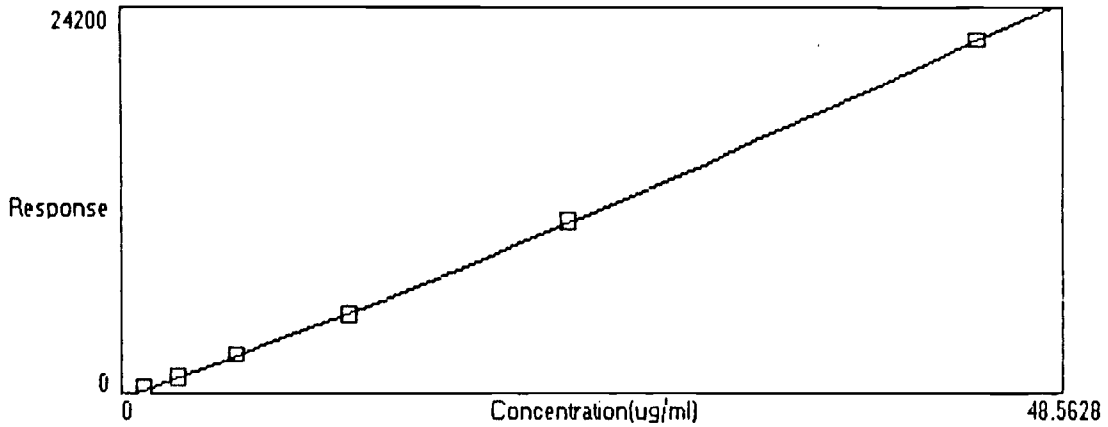
Component: NITRITE
Fit Type: Quadratic
Conc = (1.721141e-009 * Resp^2)+
(9.230539e-004 * Resp)+ 0.3104



Component: NITRATE
Fit Type: Quadratic
Conc = (4.190442e-009 * Resp^2)+
(1.969847e-003 * Resp)+ -0.0327



Component: PHOSPHATE
Fit Type: Quadratic
Conc = (-6.778298e-008 * Resp^2)+
(5.360356e-003 * Resp)+ 0.0076



Component: SULFATE
Fit Type: Quadratic
Conc = (-9.498013e-009 * Resp^2)+
(2.196780e-003 * Resp)+ 0.3768

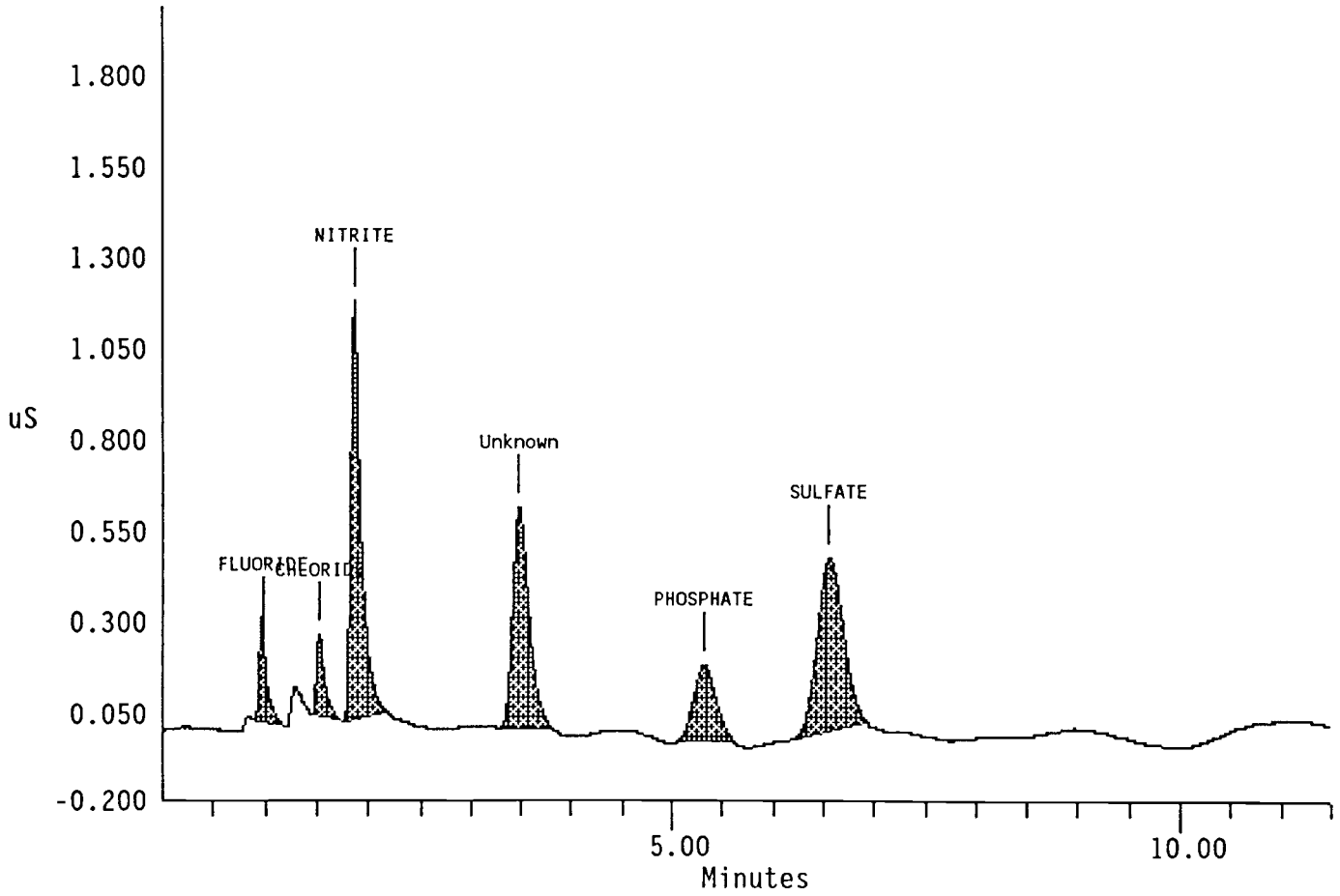
DATA REPROCESSED ON Wed Oct 10 13:09:55 1990

Sample Name: AUTOCAL1R Date: Tue Feb 27 11:40:26 1990
Data File : A:\90022700.D03
Method : c:\windows\ai400\method\sst.met
ACI Address: 1 System : 1 Inject#: 3 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	0	1	3451	5Hz	0.00	11.50	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	0.98	FLUORIDE	0.110	251	1421	1	0.00
2	1.53	CHLORIDE	0.134	219	1212	1	0.00
3	1.87	NITRITE	1.200	1145	7964	1	0.00
4	3.48		0.000	607	6951	1	
5	5.32	PHOSPHATE	1.200	213	3324	1	0.00
6	6.55	SULFATE	1.190	477	8716	1	0.00

File: A:\90022700.D03 Sample: AUTOCAL1R



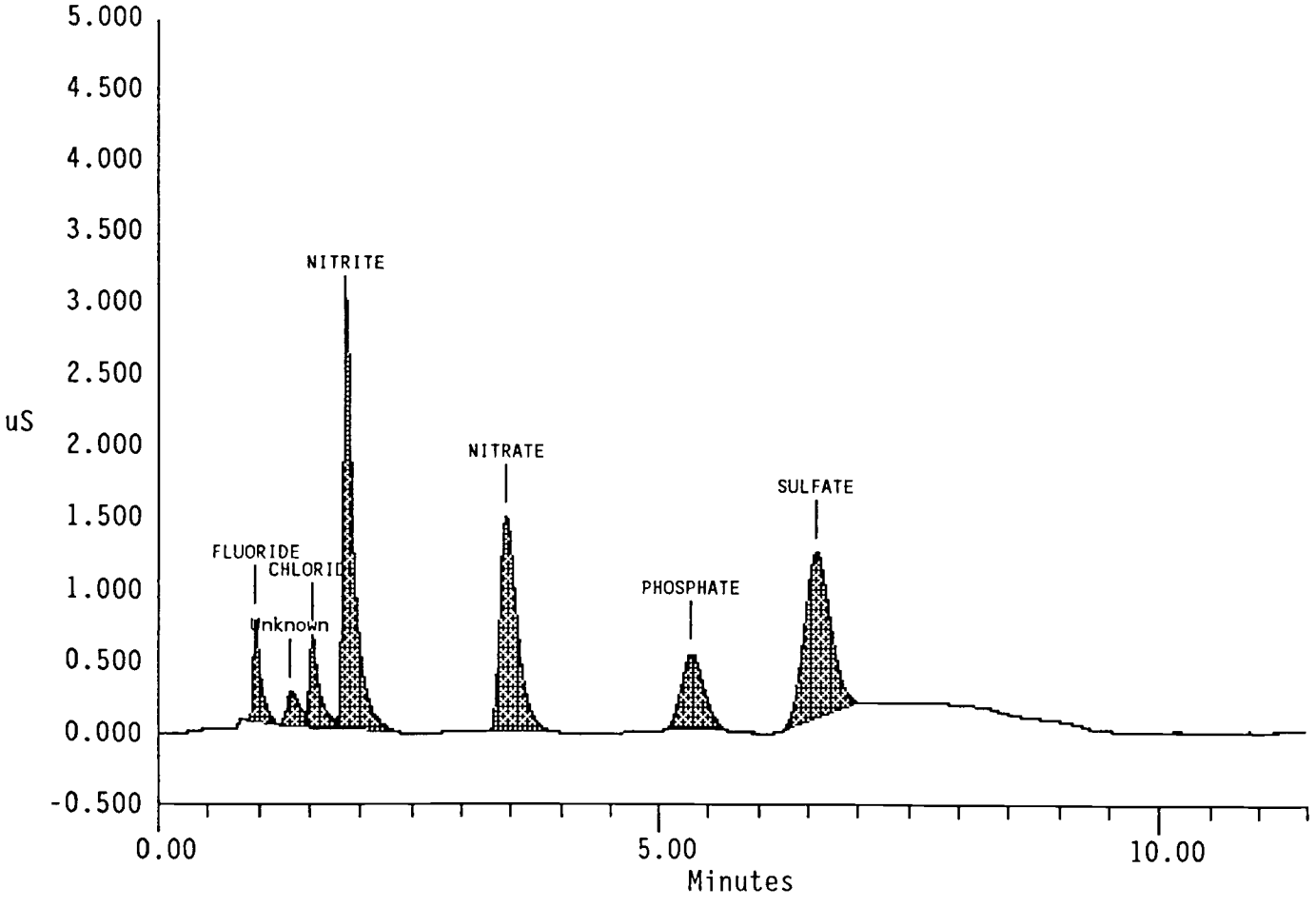
DATA REPROCESSED ON Wed Oct 10 13:11:30 1990

```
Sample Name: AUTOCAL2R                          Date: Tue Feb 27 11:52:47 1990
Data File  : A:\90022700.D04
Method     : c:\windows\ai400\method\sst.met
ACI Address: 1       System : 1       Inject#:   4  Detector: CDM-1
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	0	1	3450	5Hz	0.00	11.50	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	0.97	FLUORIDE	0.274	712	3780	1	0.00
2	1.30		0.000	231	2059	2	
3	1.53	CHLORIDE	0.333	624	4276	2	0.00
4	1.85	NITRITE	2.990	2777	21609	2	0.00
5	3.45	NITRATE	2.965	1477	17924	1	0.00
6	5.32	PHOSPHATE	2.990	525	8508	1	0.00
7	6.57	SULFATE	2.965	1149	20979	1	0.00

File: A:\90022700.D04 Sample: AUTOCAL2R



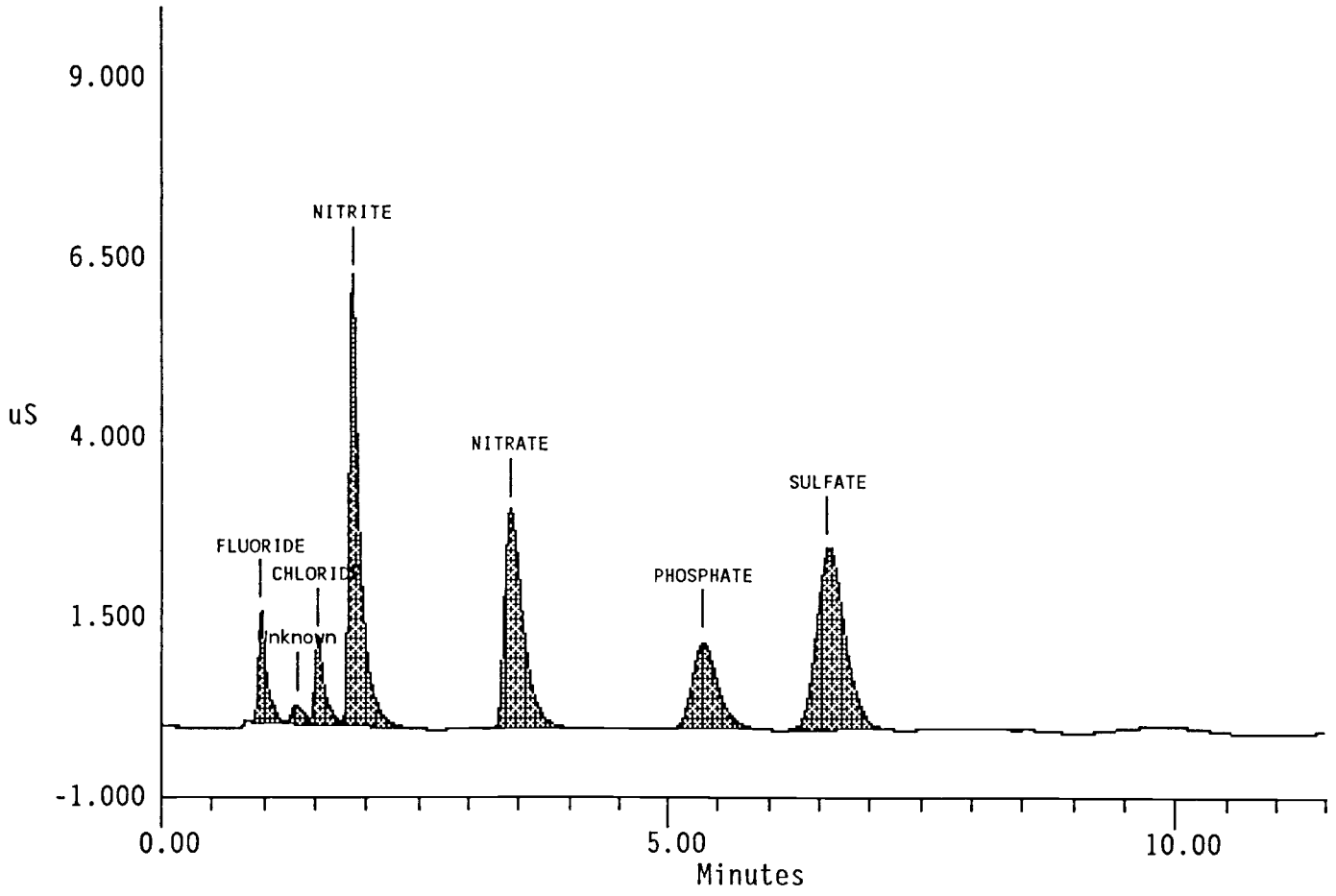
DATA REPROCESSED ON Wed Oct 10 13:07:22 1990

Sample Name: AUTOCAL3R Date: Tue Feb 27 12:05:08 1990
Data File : A:\90022700.D05
Method : c:\windows\ai400\method\sst.met
ACI Address: 1 System : 1 Inject#: 5 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	0	1	3450	5Hz	0.00	11.50	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	0.97	FLUORIDE	0.545	1502	8466	2	0.00
2	1.32		0.000	254	2086	2	
3	1.52	CHLORIDE	0.663	1150	7962	2	0.00
4	1.87	NITRITE	5.951	6200	45490	2	0.00
5	3.42	NITRATE	5.901	3012	38591	1	0.00
6	5.35	PHOSPHATE	5.951	1176	20755	1	0.00
7	6.58	SULFATE	5.901	2507	49099	1	0.00

File: A:\90022700.D05 Sample: AUTOCAL3R



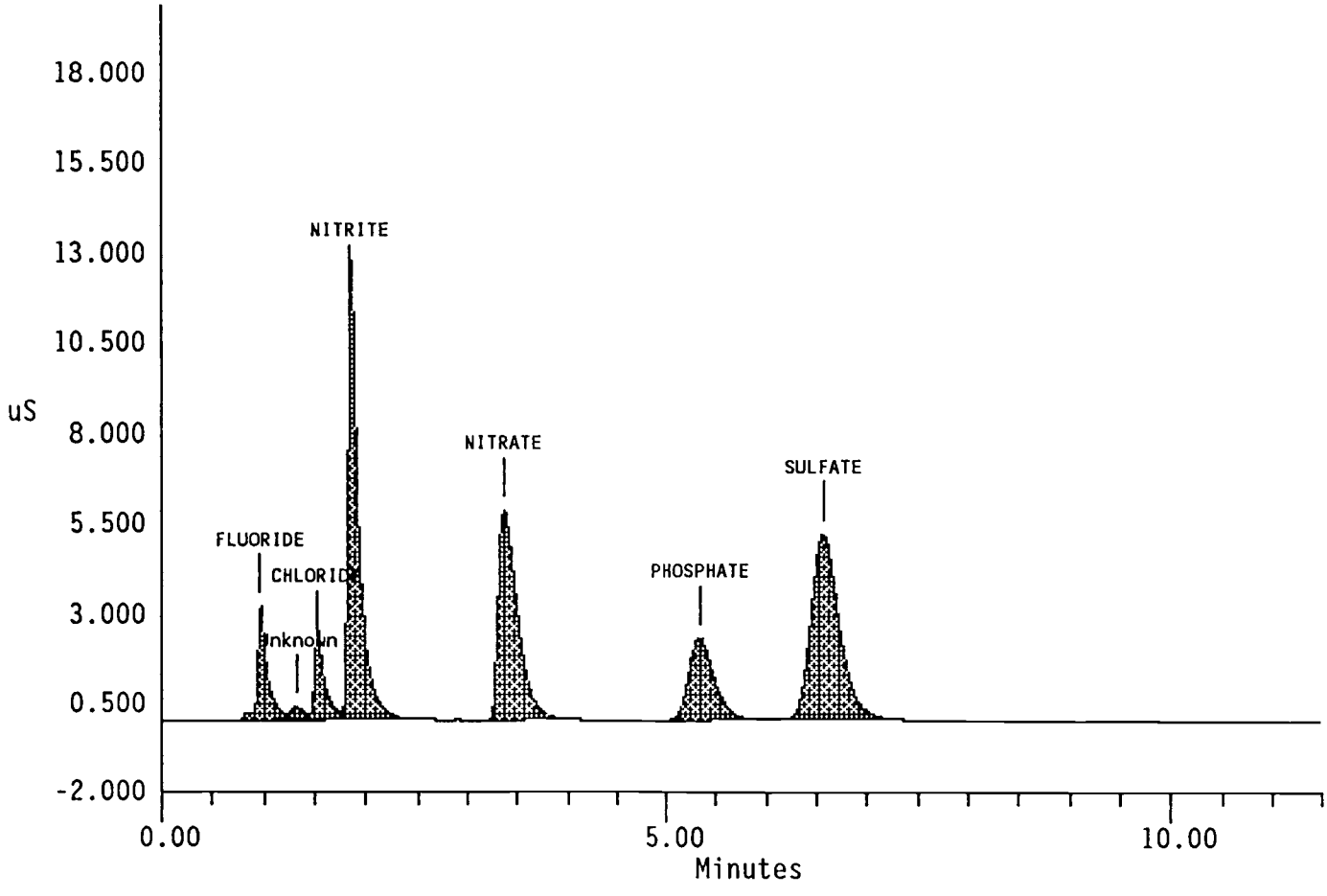
DATA REPROCESSED ON Wed Oct 10 13:14:09 1990

```
Sample Name: AUTOCAL4R                          Date: Tue Feb 27 12:17:27 1990
Data File  : A:\90022700.D06
Method     : c:\windows\ai400\method\sst.met
ACI Address: 1       System : 1       Inject#:   6  Detector: CDM-1
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	0	1	3450	5Hz	0.00	11.50	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	0.97	FLUORIDE	1.078	3149	21453	3	0.00
2	1.33		0.000	311	2719	4	
3	1.52	CHLORIDE	1.314	2147	16558	2	0.00
4	1.85	NITRITE	11.784	11705	91814	2	0.00
5	3.37	NITRATE	11.686	5849	78261	1	0.00
6	5.33	PHOSPHATE	11.784	2278	39272	1	0.00
7	6.57	SULFATE	11.686	5150	100230	1	0.00

File: A:\90022700.D06 Sample: AUTOCAL4R



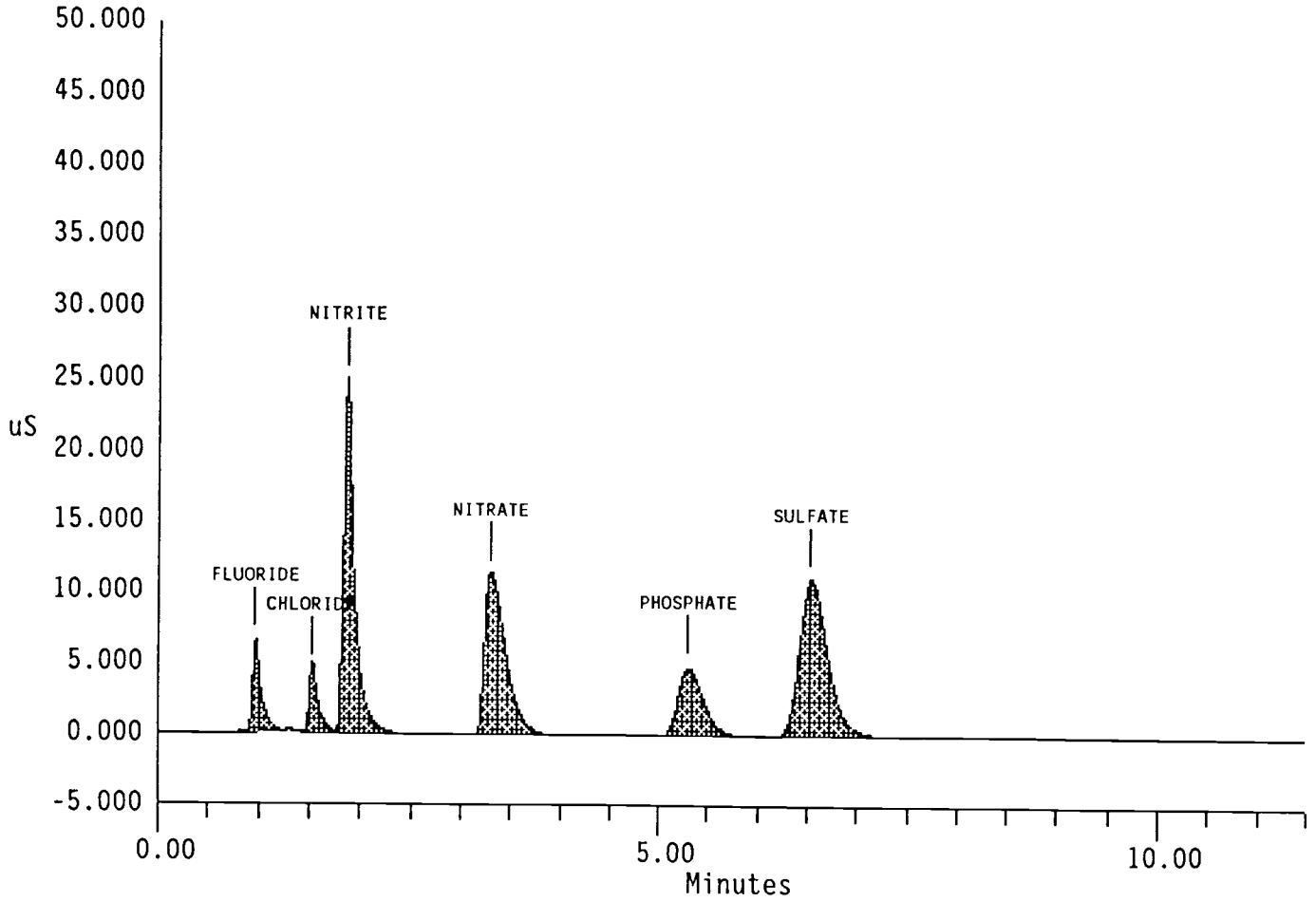
DATA REPROCESSED ON Wed Oct 10 13:16:18 1990

Sample Name: AUTOCAL5R Date: Tue Feb 27 12:29:47 1990
Data File : A:\90022700.D07
Method : c:\windows\ai400\method\sst.met
ACI Address: 1 System : 1 Inject#: 7 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	0	1	3451	5Hz	0.00	11.50	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	0.97	FLUORIDE	2.115	6374	39419	1	0.00
2	1.52	CHLORIDE	2.577	4281	28603	2	0.00
3	1.87	NITRITE	23.944	24761	184274	2	0.00
4	3.30	NITRATE	22.931	11234	168437	1	0.00
5	5.30	PHOSPHATE	23.944	4723	83239	1	0.00
6	6.53	SULFATE	22.931	10871	212010	1	0.00

File: A:\90022700.D07 Sample: AUTOCAL5R



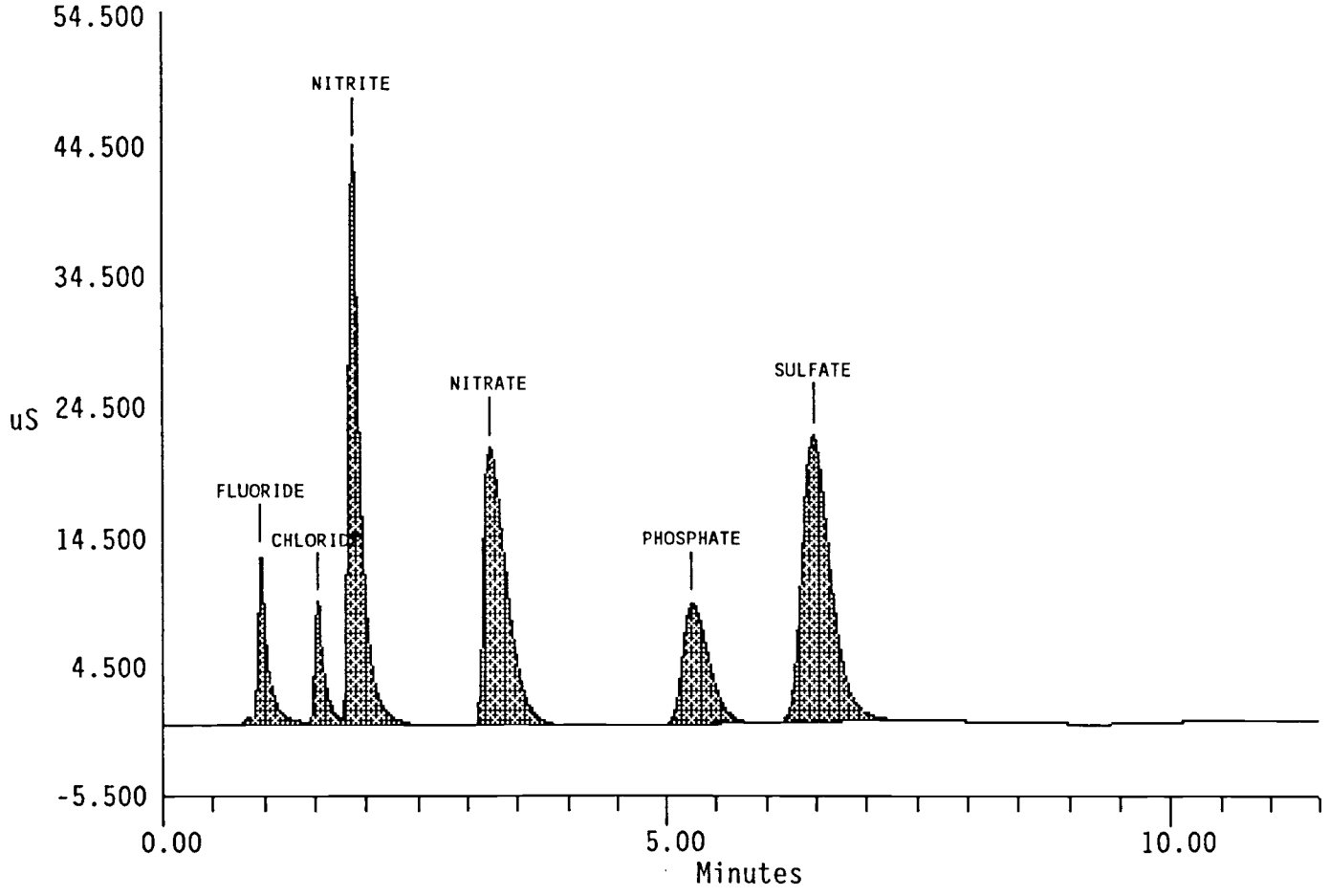
DATA REPROCESSED ON Wed Oct 10 13:18:22 1990

```
Sample Name: AUTOCAL6R                          Date: Tue Feb 27 12:42:07 1990
Data File  : A:\90022700.D08
Method     : c:\windows\ai400\method\sst.met
ACI Address: 1       System : 1       Inject#:   8  Detector: CDM-1
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	0	1	3451	5Hz	0.00	11.50	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	0.97	FLUORIDE	4.074	13086	88838	2	0.00
2	1.52	CHLORIDE	4.963	9327	60441	2	0.00
3	1.87	NITRITE	44.519	44188	360269	2	0.00
4	3.22	NITRATE	44.148	21259	344772	1	0.00
5	5.25	PHOSPHATE	44.519	9434	173193	2	0.00
6	6.47	SULFATE	44.148	22002	440178	2	0.00

File: A:\90022700.D08 Sample: AUTOCAL6R



DIONEX SCHEDULE - A:\90030100.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/6C11-HK	c:\windows\ai	c:\windows\ai	1	101	0
4	6358	c:\windows\ai	c:\windows\ai	1	1.11e+003	0
5	6359	c:\windows\ai	c:\windows\ai	1	1.11e+003	0
6	LMCS/6C11-HK	c:\windows\ai	c:\windows\ai	1	101	0
7	6373	c:\windows\ai	c:\windows\ai	1	1.11e+003	0
8	LMCS/6C11-HK	c:\windows\ai	c:\windows\ai	1	101	0
9	983	c:\windows\ai	c:\windows\ai	1	51	0
10	984D	c:\windows\ai	c:\windows\ai	1	51	0
11	1054-B	c:\windows\ai	c:\windows\ai	1	1	0
12	1055	c:\windows\ai	c:\windows\ai	1	101	0
13	1056-D	c:\windows\ai	c:\windows\ai	1	101	0
14	1057-S	c:\windows\ai	c:\windows\ai	1	101	0
15	1079	c:\windows\ai	c:\windows\ai	1	101	0
16	1080-D	c:\windows\ai	c:\windows\ai	1	101	0
17	LMCS/6C11-HK	c:\windows\ai	c:\windows\ai	1	101	0

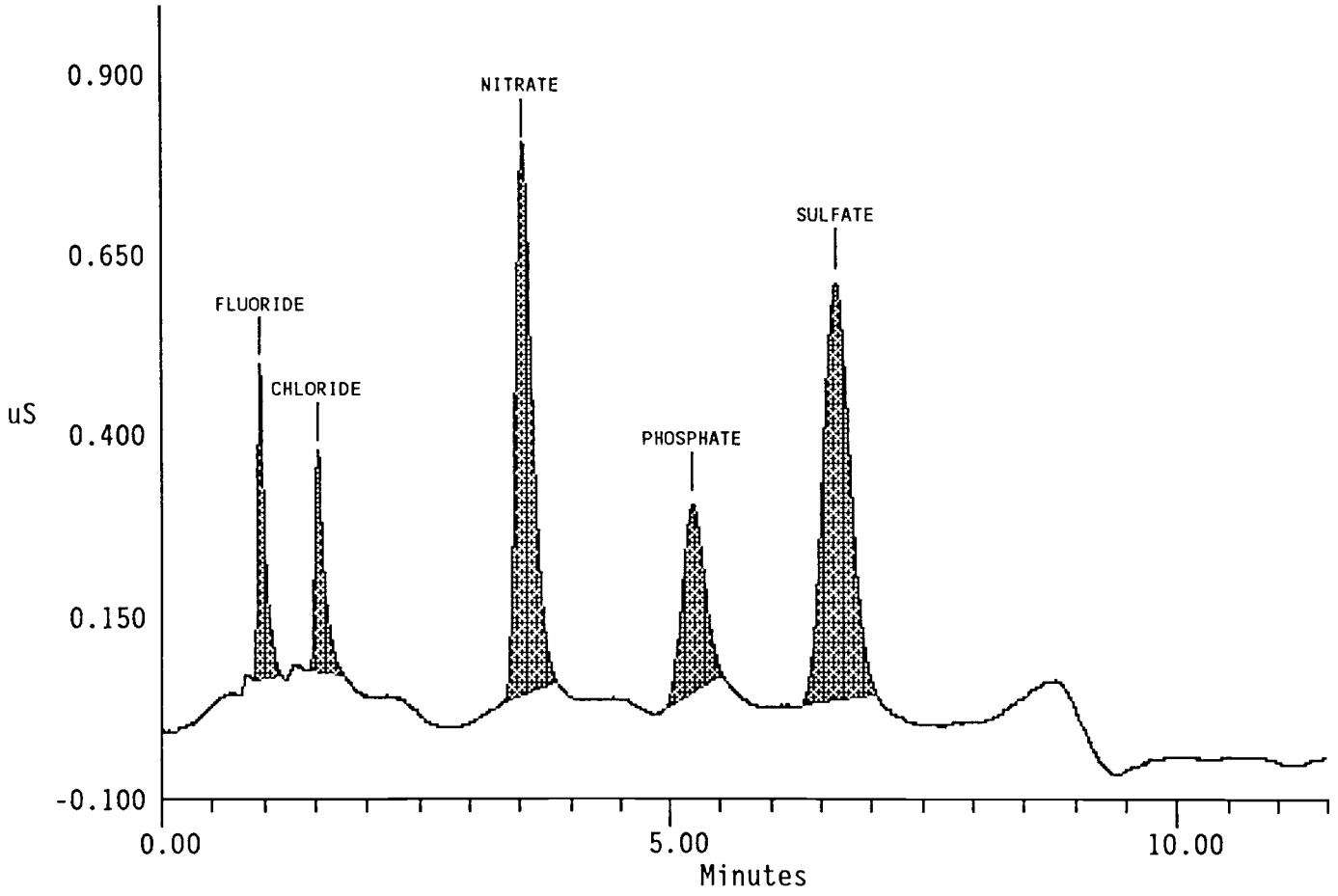
DATA REPROCESSED ON Wed Oct 10 07:46:05 1990

```
Sample Name: SETUP                                  Date: Thu Mar 01 11:05:52 1990
Data File  : A:\90030100.D01
Method     : c:\windows\ai400\method\sst.met
ACI Address: 1       System : 1       Inject#:   1  Detector: CDM-1
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	3450	5Hz	0.00	11.50	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	0.97	FLUORIDE	0.173	424	2146	1	0.00
2	1.52	CHLORIDE	0.139	295	1919	1	0.00
3	3.52	NITRATE	1.461	749	8826	1	0.00
4	5.22	PHOSPHATE	1.379	257	3951	1	0.00
5	6.65	SULFATE	1.639	576	10721	1	0.00

File: A:\90030100.D01 Sample: SETUP

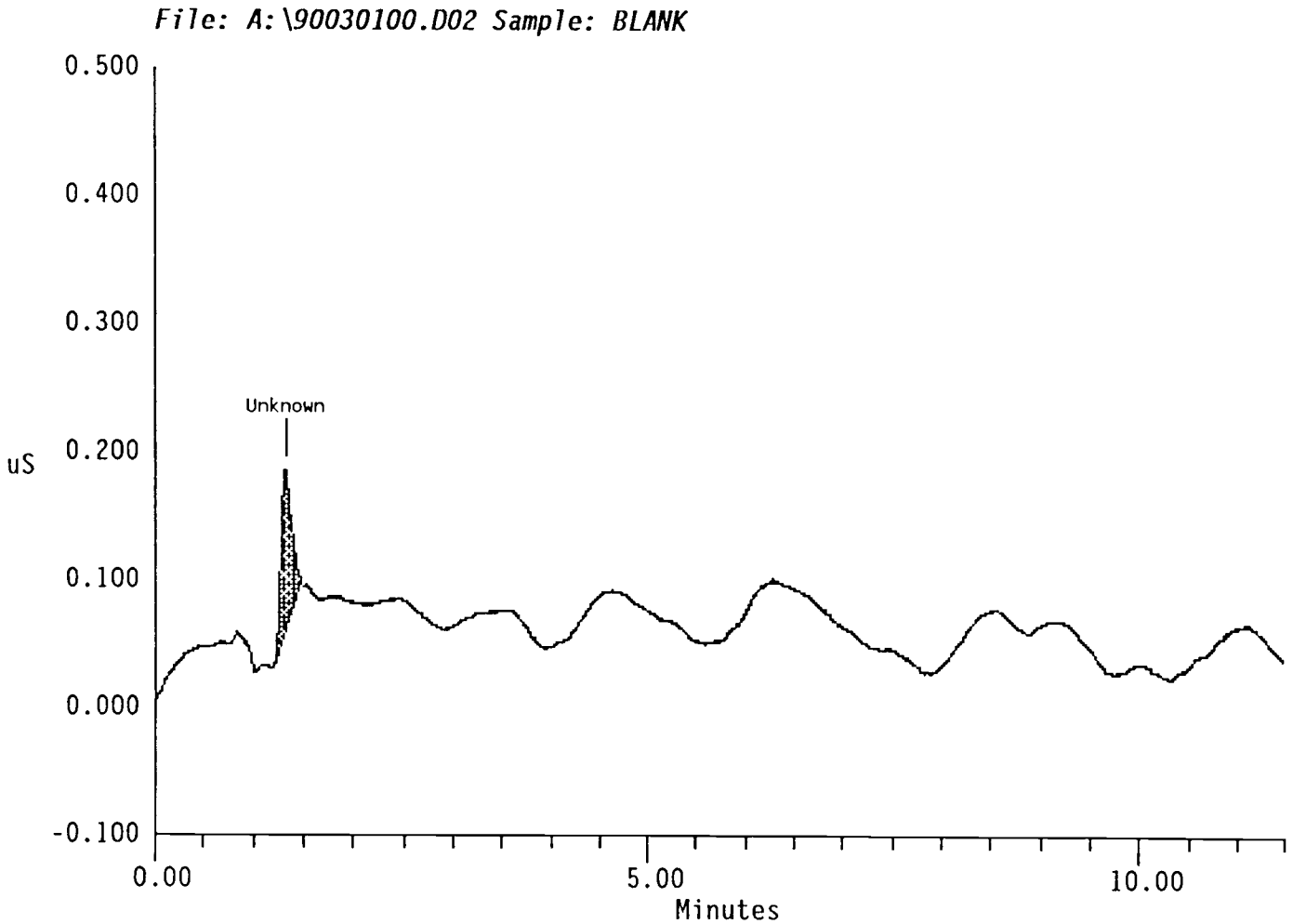


DATA REPROCESSED ON Wed Oct 10 07:48:39 1990

```
Sample Name: BLANK                                  Date: Thu Mar 01 11:18:08 1990
Data File  : A:\90030100.D02
Method     : c:\windows\ai400\method\sst.met
ACI Address: 1       System : 1       Inject#:   2  Detector: CDM-1
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	3451	5Hz	0.00	11.50	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta



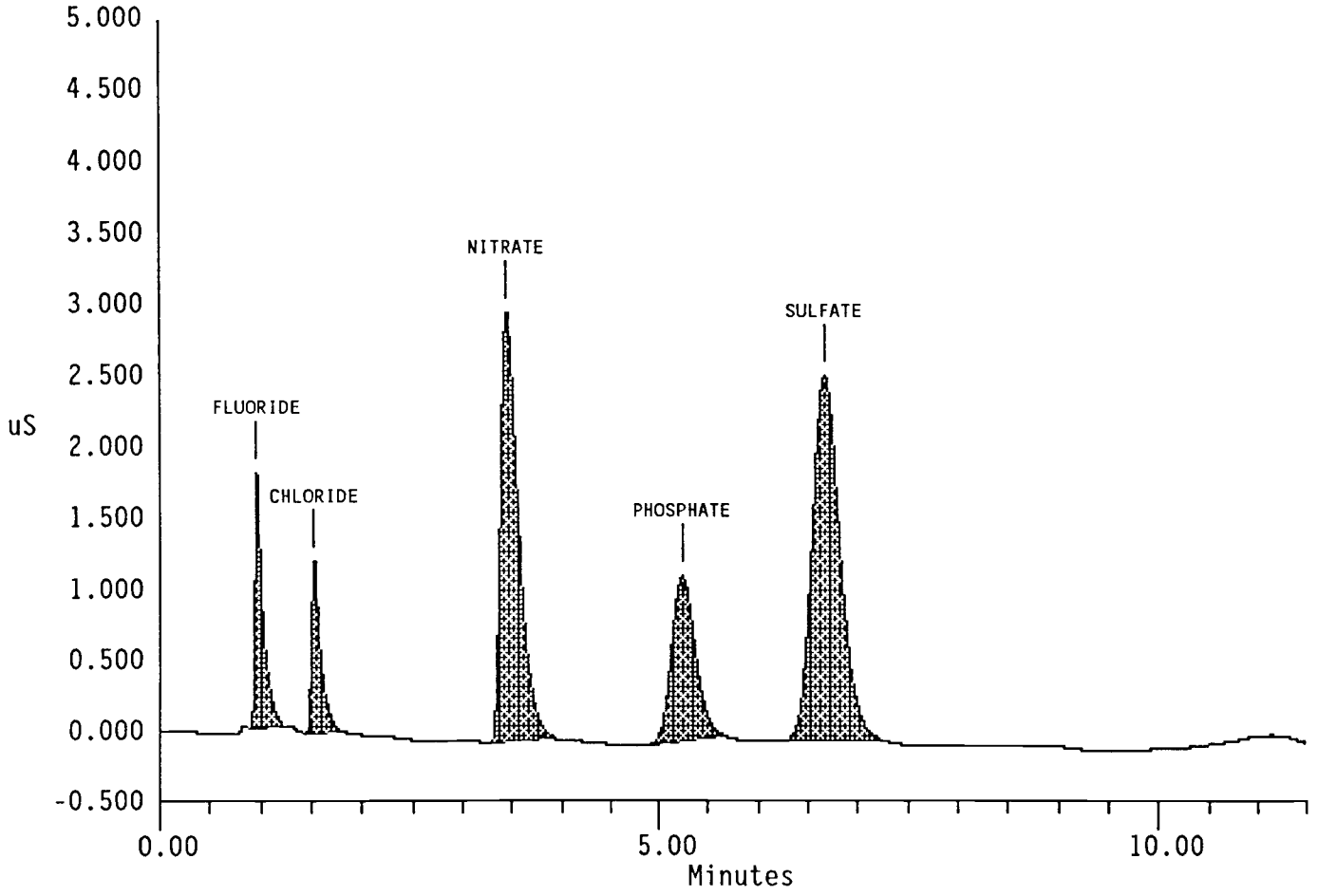
DATA REPROCESSED ON Wed Oct 10 07:42:56 1990

Sample Name: LMCS/6C11-HK			Date: Thu Mar 01 12:31:42 1990
Data File : A:\90030100.D08			
Method : c:\windows\ai400\method\sst.met			
ACI Address: 1	System : 1	Inject#: 8	Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	3450	5Hz	0.00	11.50	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	0.97	FLUORIDE	64.094	1789	9734	1	0.00
2	1.53	CHLORIDE	74.063	1208	7631	1	0.00
3	3.45	NITRATE	606.879	3017	38241	1	0.00
4	5.23	PHOSPHATE	619.300	1159	19386	1	0.00
5	6.67	SULFATE	600.159	2562	49934	1	0.00

File: A:\90030100.D08 Sample: LMCS/6C11-HK



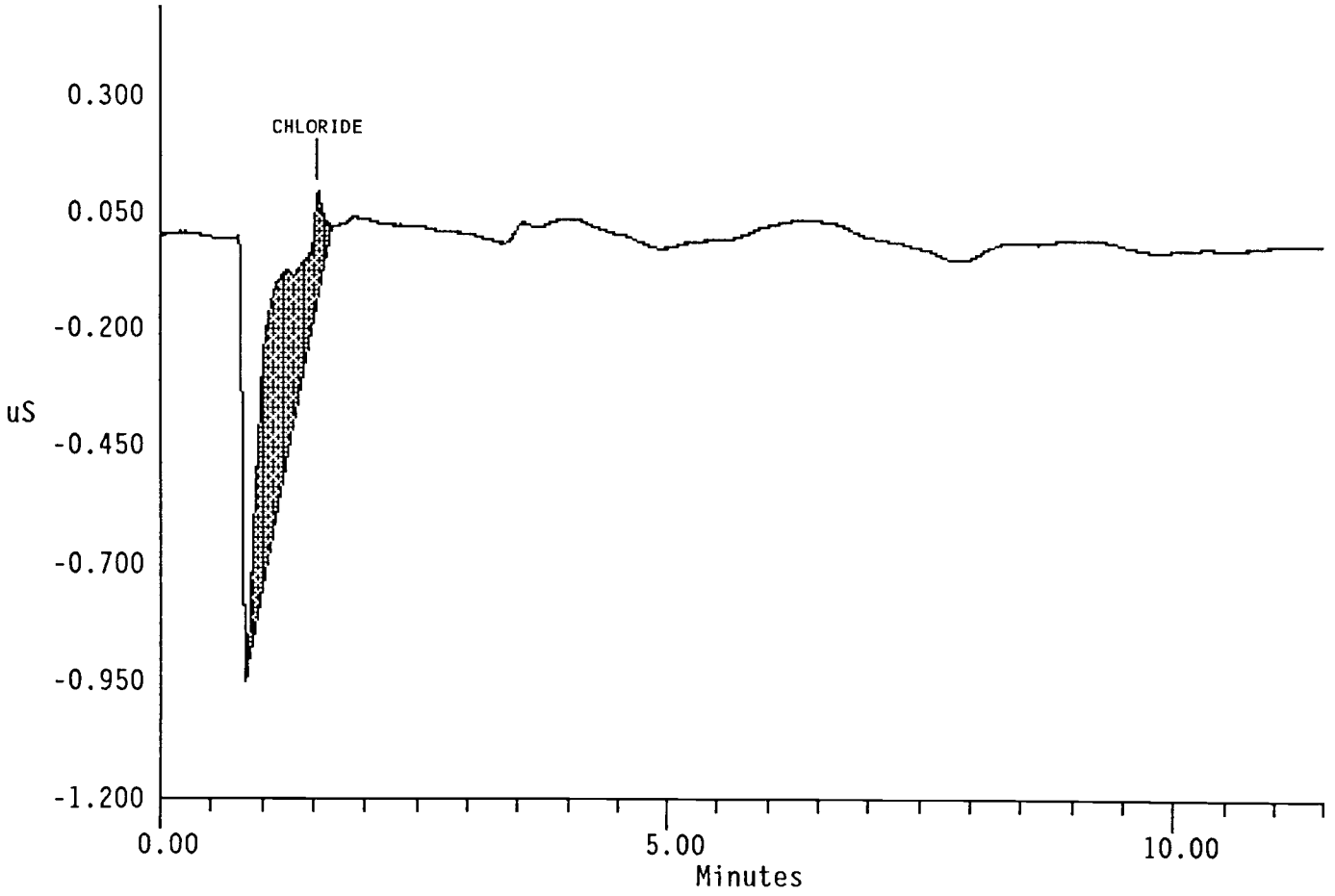
DATA REPROCESSED ON Wed Oct 10 07:54:45 1990

Sample Name: 1054-B	Date: Thu Mar 01 13:08:28 1990
Data File : A:\90030100.D11	
Method : c:\windows\ai400\method\sst.met	
ACI Address: 1 System : 1	Inject#: 11 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	3450	5Hz	0.00	11.50	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.53	CHLORIDE	0.092	224	14782	1	0.00

File: A:\90030100.D11 Sample: 1054-B



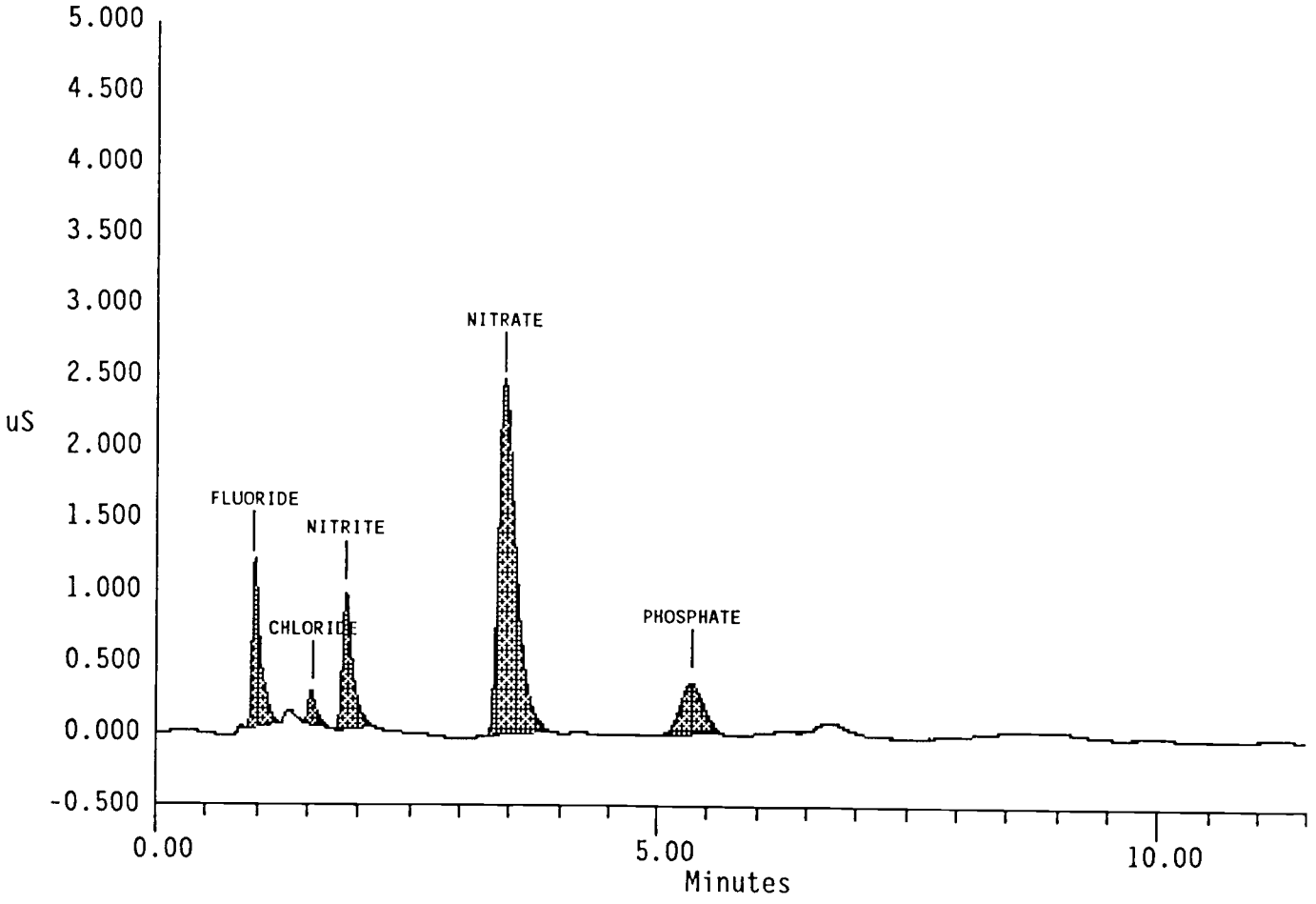
DATA REPROCESSED ON Wed Oct 10 08:00:04 1990

Sample Name: 1079 Date: Thu Mar 01 13:58:00 1990
Data File : A:\90030100.D15
Method : c:\windows\ai400\method\sst.met
ACI Address: 1 System : 1 Inject#: 15 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	3450	5Hz	0.00	11.50	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	0.97	FLUORIDE	41.615	1127	6884	1	0.00
2	1.55	CHLORIDE	7.846	202	1289	1	0.00
3	1.87	NITRITE	118.837	937	6563	1	0.00
4	3.43	NITRATE	489.758	2441	30912	1	0.00
5	5.33	PHOSPHATE	193.056	357	5733	1	0.00

File: A:\90030100.D15 Sample: 1079



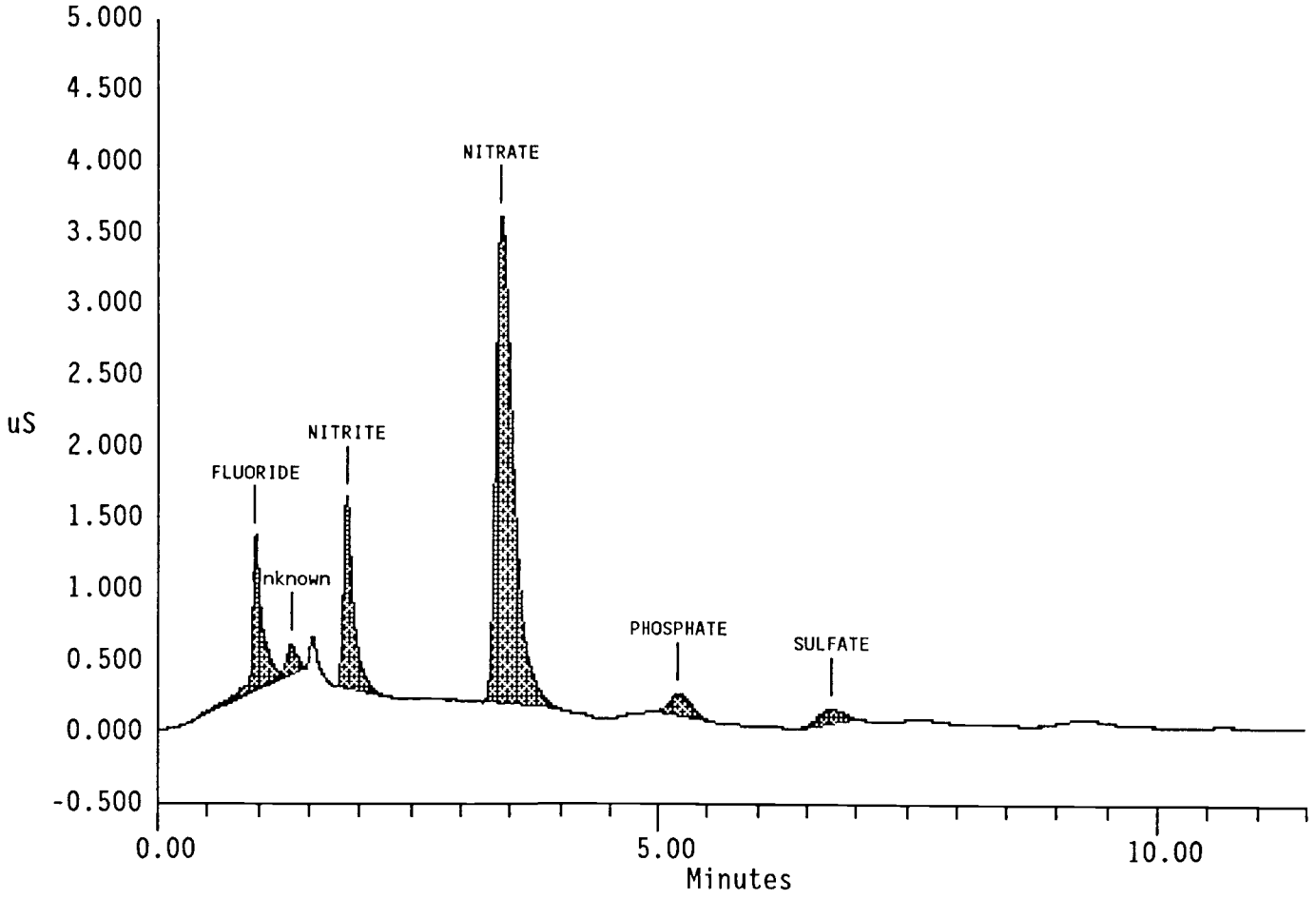
DATA REPROCESSED ON Wed Oct 10 08:01:36 1990

Sample Name: 1080-D	Date: Thu Mar 01 14:10:17 1990
Data File : A:\90030100.D16	
Method : c:\windows\ai400\method\sst.met	
ACI Address: 1 System : 1 Inject#: 16 Detector: CDM-1	

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	3451	5Hz	0.00	11.50	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	0.97	FLUORIDE	39.646	1070	7893	2	0.00
2	1.32		0.000	204	1498	2	
3	1.87	NITRITE	155.750	1331	9357	1	0.00
4	3.40	NITRATE	686.841	3409	43907	1	0.00
5	5.20	PHOSPHATE	78.772	144	2262	1	0.00
6	6.75	SULFATE	57.734	89	1496	1	0.00

File: A:\90030100.D16 Sample: 1080-D



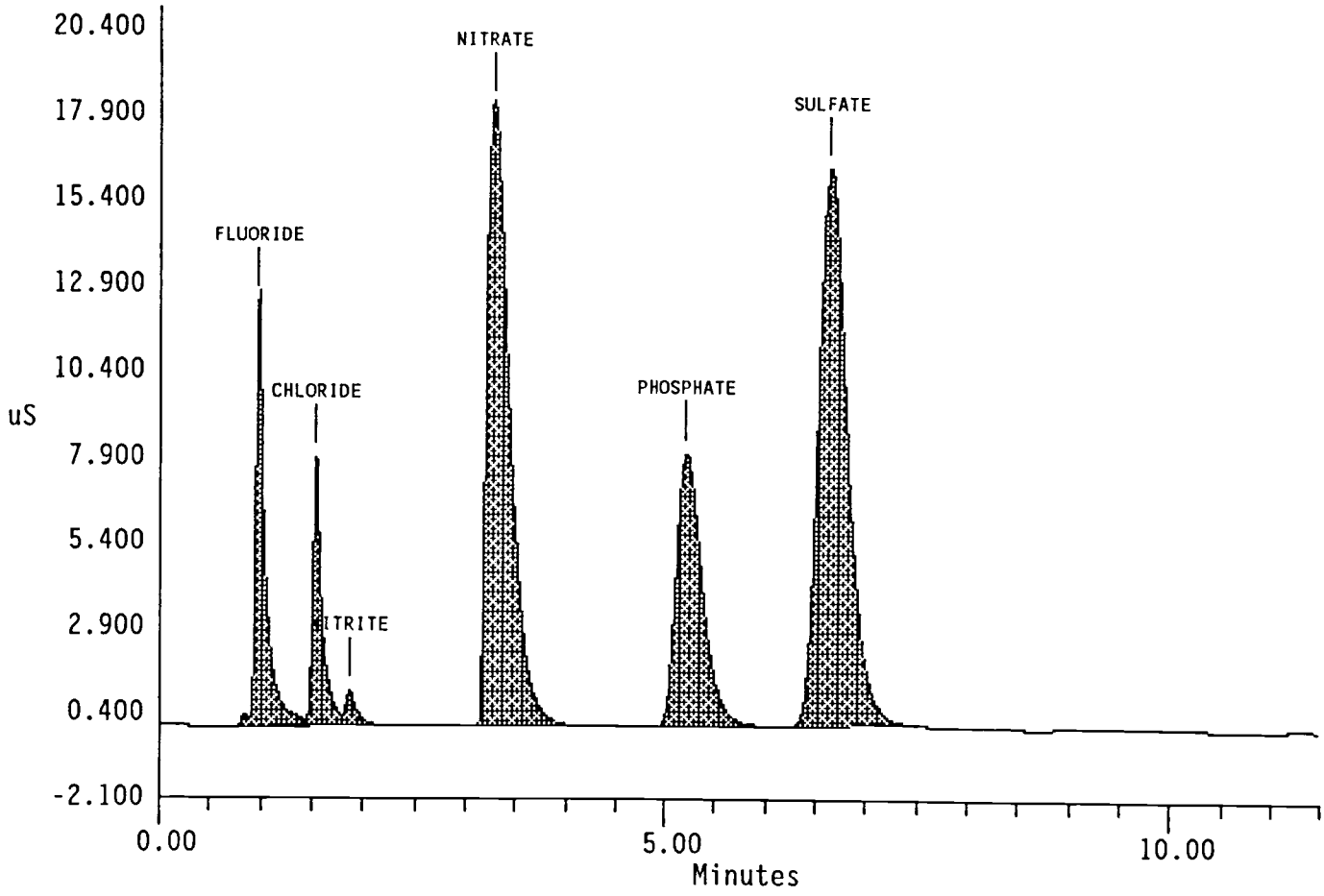
DATA REPROCESSED ON Wed Oct 10 07:58:06 1990

```
Sample Name: 1057-S                                  Date: Thu Mar 01 13:45:39 1990
Data File  : A:\90030100.D14
Method     : c:\windows\ai400\method\sst.met
ACI Address: 1       System : 1       Inject#:  14  Detector: CDM-1
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	3450	5Hz	0.00	11.50	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	0.97	FLUORIDE	392.421	12402	84441	2	0.00
2	1.53	CHLORIDE	438.614	7864	49052	2	0.00
3	1.87	NITRITE	127.028	1024	8049	2	0.00
4	3.27	NITRATE	3777.516	18121	291857	1	-6.67
5	5.20	PHOSPHATE	3897.200	8008	145501	1	0.00
6	6.63	SULFATE	3392.885	16264	328014	1	0.00

File: A:\90030100.D14 Sample: 1057-S



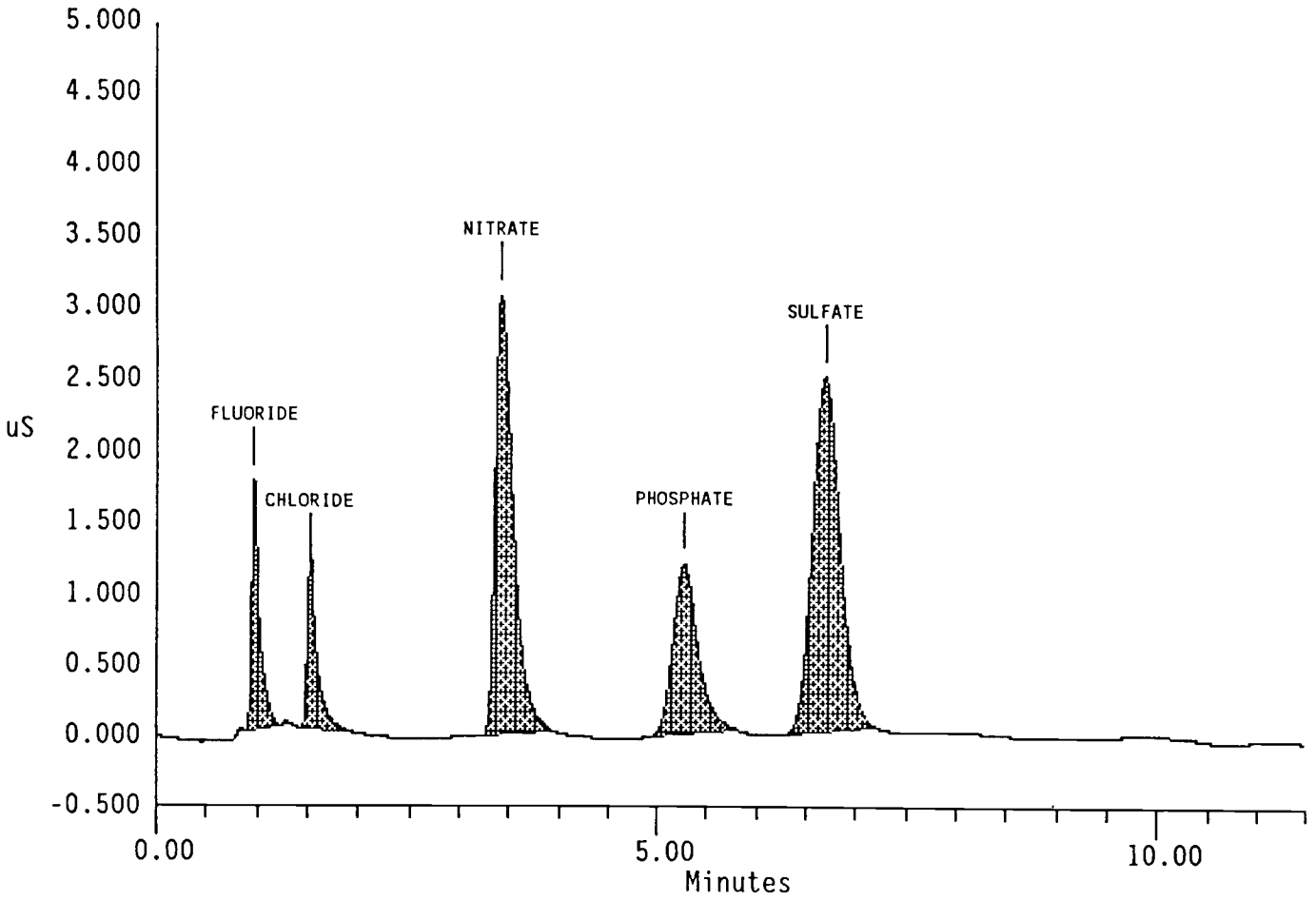
DATA REPROCESSED ON Wed Oct 10 08:03:09 1990

Sample Name: LMCS/6C11-HK	Date: Thu Mar 01 14:22:36 1990
Data File : A:\90030100.D17	
Method : c:\windows\ai400\method\sst.met	
ACI Address: 1 System : 1 Inject#: 17 Detector: CDM-1	

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	3450	5Hz	0.00	11.50	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	0.97	FLUORIDE	62.722	1748	9609	1	0.00
2	1.52	CHLORIDE	69.837	1142	7887	1	0.00
3	3.42	NITRATE	619.259	3078	39454	1	0.00
4	5.27	PHOSPHATE	639.533	1198	21203	1	0.00
5	6.68	SULFATE	583.682	2486	48498	1	0.00

File: A:\90030100.D17 Sample: LMCS/6C11-HK



Analytical Batch

LAB SEGMENT SERIAL #: F1067

CUSTOMER ID: 000013

INSTRUMENT	WB39939
PROCEDURE/REV	LA-505-151/A-0
TECHNOLOGIST	J. A. White
DATE	July 05, 1990
TEMPERATURE	N/A
STARTING TIME	0745
ENDING TIME	1445
CHEMIST	S. A. Jones

ICP
Water Digestion

No inter-element corrections were performed on this data.

	DESCRIPTION	LAB ID
1	Initial LMCS Check Std	N/A
2	Reagent Blank	F1077
3	Sample Comp 13	F1078
4	Duplicate Sample Comp 13	F1080
5	Spike Sample Comp 13	F1081
6	Final LMCS Check Std	N/A
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 BOOK # & ALIQUOT VOL.	FINAL VOL. OF STD.
LMCS Check Std	78C11S/3.0 mL	87B38A/3.0 mL	77C11R/3.0 mL	3.0 mL
Spike	78C11S/1.0 mL	87B38A/1.0 mL	77C11R/3.0 mL	
spike cont				50.0 mL

SST-102 Rev. I 10/2/90 Interim

ICP Results RAW DATA SUMMARY

		Acid Digested Sample	NONE
Date Analyzed:	JULY 5, 1990	Reagent Blank	F1078
Procedure:	LA-505-151/A-0	Sample Core 13	F1079
Analyst:	J. A. WHITE	Duplicate Core 13	F1080
Digestion	Acid Digestion	Spike of Core 13	F1081
Procedure:	LA-505-159/A-0	Acid Digested Standard	NONE

	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	101.82%		NA	1.64	3009	2657	65.23%	NA	101.23%	
Antimony	100.44%		NA	0.73 LT	93 LT	0 LT	105.78%	NA	102.04%	
Arsenic	108.11%		NA	0.23 LT	35 LT	27 LT	115.80%	NA	107.87%	
Barium	110.52%	#	NA	0.07	7	4 LT	112.39%	NA	110.96%	#
Beryllium	107.78%		NA	0.01	1	0 LT	111.93%	NA	106.53%	
Bismuth	106.64%		NA	0.83 LT	111 LT	72 LT	130.12%	NA	104.90%	
Boron	102.86%		NA	2.77	226	231	113.21%	NA	103.33%	
Cadmium	102.99%		NA	0.02 LT	3 LT	1 LT	107.30%	NA	104.43%	
Calcium	105.87%		NA	0.93	21	24	112.38%	NA	106.39%	
Cerium	95.15%		NA	1.98 LT	209 LT	122 LT	109.62%	NA	95.92%	
Chromium	91.10%		NA	-0.10 LT	740	727	278.95%	NA	91.99%	
Cobalt	99.92%		NA	1.26	25 LT	-108 LT	95.96%	NA	101.37%	
Copper	105.16%		NA	0.14 LT	18 LT	12 LT	114.38%	NA	105.56%	
Europium	96.28%		NA	0.04	5	3 LT	97.27%	NA	97.04%	
Iron	107.32%		NA	0.14	18	16	700.63%	NA	107.96%	
Lanthanum	93.26%		NA	0.18 LT	18 LT	-2 LT	92.04%	NA	92.60%	
Lead	104.98%		NA	1.87	177	41 LT	75.50%	NA	103.96%	
Lithium	102.49%		NA	0.10	10	6	102.25%	NA	101.51%	
Magnesium	108.06%		NA	0.27	90	75	105.04%	NA	108.52%	
Manganese	104.07%		NA	0.01 LT	1 LT	0 LT	134.61%	NA	105.21%	
Mercury	102.07%		NA	0.14	15	11	101.67%	NA	101.87%	
Molybdenum	97.66%		NA	0.06 LT	12	7 LT	114.41%	NA	97.21%	
Neodymium	94.09%		NA	0.15 LT	11 LT	-16 LT	98.30%	NA	97.01%	
Nickel	102.37%		NA	0.13 LT	18 LT	13 LT	364.87%	NA	103.56%	
Phosphorous	101.22%		NA	0.34 LT	2956	2720	115.60%	NA	102.61%	
Potassium	102.16%		NA	2.36 LT	308 LT	140 LT	119.19%	NA	103.45%	
Samarium	102.58%		NA	2.62	273	147 LT	73.87%	NA	99.10%	
Selenium	98.44%		NA	0.89 LT	267	276	134.31%	NA	97.98%	
Silicon	92.11%		NA	2.40	1111	1075	118.28%	NA	91.68%	
Silver	105.98%		NA	0.16 LT	19 LT	11 LT	105.76%	NA	105.48%	
Sodium	101.94%		NA	5.07	63099	62398	NOT CALC.	NA	101.85%	
Strontium	106.49%		NA	0.03	3	2	108.61%	NA	106.83%	
Sulfur	99.11%		NA	0.36	777	744	100.83%	NA	99.05%	
Tantalum	96.19%		NA	0.20 LT	35 LT	15 LT	102.75%	NA	95.38%	
Thallium	100.40%		NA	3.16	418	298	111.40%	NA	99.24%	
Thorium	101.72%		NA	2.04	161	69	99.04%	NA	100.39%	
Tin	98.80%		NA	0.10 LT	14 LT	13 LT	107.00%	NA	100.02%	
Titanium	102.44%		NA	0.08	10	7	109.49%	NA	102.39%	
Tungsten	72.39%	#	NA	0.24 LT	55	36 LT	77.91%	NA	72.16%	#
Uranium	102.64%		NA	13.83 LT	1487 LT	883 LT	153.50%	NA	98.58%	
Vanadium	101.30%		NA	0.11 LT	21	10 LT	106.34%	NA	100.55%	
Zinc	104.05%		NA	0.04	7	6	111.50%	NA	104.80%	
Zirconium	97.13%		NA	0.23 LT	27	17 LT	102.96%	NA	97.38%	

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

ICP Results Raw Data Report

Date Analyzed: JULY 5, 1990
Procedure: LA-505-151/A-0
Analyst: J. A. WHITE
Digestion Procedure: Acid Digestion LA-505-159/A-0

Acid Digested Sample	NONE
Reagent Blank	F1078
Sample Core 13	F1079
Duplicate Core 13	F1080
Spike of Core 13	F1081
Acid Digested Standard	NONE

Digestion	0.01018
Weight	1.02
Volume	100.00

	SST-1	SST-2	SST-3	Starting LMCS Instrument Standard ppm	LMCS Standard Recovery %		LMCS Acid Digestion Standard ppm	Acid Digestion Standard Recovery %	Reagent Blank ppm	Sample Dilution Three ppm	Sample Dilution Two ppm
Aluminum			10.18		101.82%			NA	1.64		
Antimony	10.04				100.44%			NA	0.73 LT		
Arsenic			21.62		108.11%			NA	0.23 LT		
Barium	11.05				110.52%	#		NA	0.07		
Beryllium			4.31		107.78%			NA	0.01		
Bismuth		5.33			106.64%			NA	0.83 LT		
Boron	10.29				102.86%			NA	2.77		
Cadmium	10.30				102.99%			NA	0.02 LT		
Calcium	10.59				105.87%			NA	0.93		
Cerium	9.52				95.15%			NA	1.98 LT		
Chromium	9.11				91.10%			NA	-0.10 LT		
Cobalt	9.99				99.92%			NA	1.26		
Copper	10.52				105.16%			NA	0.14 LT		
Europium		4.81			96.28%			NA	0.04		
Iron	10.73				107.32%			NA	0.14		
Lanthanum		4.66			93.26%			NA	0.18 LT		
Lead		5.25			104.98%			NA	1.87		
Lithium	10.25				102.49%			NA	0.10		
Magnesium	10.81				108.06%			NA	0.27		
Manganese	10.41				104.07%			NA	0.01 LT		
Mercury			10.21		102.07%			NA	0.14		
Molybdenum			9.77		97.66%			NA	0.06 LT		
Neodymium	9.41				94.09%			NA	0.15 LT		
Nickel	10.24				102.37%			NA	0.13 LT		
Phosphorous			10.12		101.22%			NA	0.34 LT		
Potassium	10.22				102.16%			NA	2.36 LT		
Samarium		5.13			102.58%			NA	2.62		
Selenium			19.69		98.44%			NA	0.89 LT		
Silicon			9.21		92.11%			NA	2.40		
Silver		5.30			105.98%			NA	0.16 LT		
Sodium	10.19				101.94%			NA	5.07		
Strontium	10.65				106.49%			NA	0.03		
Sulfur			19.82		99.11%			NA	0.36		
Tantalum			9.62		96.19%			NA	0.20 LT		
Thallium			20.08		100.40%			NA	3.16		
Thorium		25.43			101.72%			NA	2.04		
Tin	4.94				98.80%			NA	0.10 LT		
Titanium			10.24		102.44%			NA	0.08		
Tungsten			7.24		72.39%	#		NA	0.24 LT		
Uranium		25.66			102.64%			NA	13.83 LT		
Vanadium			4.05		101.30%			NA	0.11 LT		
Zinc	10.41				104.05%			NA	0.04		
Zirconium			9.71		97.13%			NA	0.23 LT		
Dilution Factor	1.00	1.00	1.00					1.00	11.00		

ICP Results Raw Data Report

	g/mL g mL Sample Dilution One ppm	Digestion Weight Volume Sample Duplicate Dilution Three ppm	0.01005 g/mL 1.00 g 100.00 mL Sample Duplicate Dilution Two ppm	Sample Duplicate Dilution One ppm	Digestion Weight Volume Spike of Sample Dilution Three ppm	0.01009 g/mL 1.01 g 100.00 mL Spike of Sample Dilution Two ppm	Spike of Sample Dilution One ppm	Spike Recovery %
Aluminum	30.62			26.69			36.88	65.23%
Antimony	0.94 LT			0.00 LT			10.58	105.78%
Arsenic	0.36 LT			0.27 LT			23.16	115.80%
Barium	0.07			0.04 LT			11.31	112.39%
Beryllium	0.01			0.00 LT			4.49	111.93%
Bismuth	1.13 LT			0.72 LT			6.51	130.12%
Boron	2.30			2.32			13.61	113.21%
Cadmium	0.03 LT			0.01 LT			10.73	107.30%
Calcium	0.21			0.24			11.45	112.38%
Cerium	2.12 LT			1.22 LT			10.96	109.62%
Chromium	7.54			7.31			35.37	278.95%
Cobalt	0.25 LT			-1.09 LT			9.60	95.96%
Copper	0.18 LT			0.12 LT			11.44	114.38%
Europium	0.05			0.03 LT			4.92	97.27%
Iron	0.19			0.16			70.25	700.63%
Lanthanum	0.18 LT			-0.02 LT			4.60	92.04%
Lead	1.80			0.42 LT			5.56	75.50%
Lithium	0.10			0.06			10.33	102.25%
Magnesium	0.92			0.76			11.41	105.04%
Manganese	0.01 LT			0.01 LT			13.46	134.61%
Mercury	0.15			0.11			10.32	101.67%
Molybdenum	0.12			0.07 LT			11.56	114.41%
Neodymium	0.12 LT			-0.16 LT			9.83	98.30%
Nickel	0.18 LT			0.13 LT			36.49	364.87%
Phosphorous	30.08			27.33			41.39	115.60%
Potassium	3.14 LT			1.41 LT			11.92	119.19%
Samarium	2.78			1.48 LT			6.45	73.87%
Selenium	2.72			2.78			29.56	134.31%
Silicon	11.30			10.80			23.03	118.28%
Silver	0.19 LT			0.11 LT			5.29	105.76%
Sodium	642.10			626.85			634.07	NOT CALC.
Strontium	0.03			0.02			10.89	108.61%
Sulfur	7.90			7.48			28.00	100.83%
Tantalum	0.35 LT			0.15 LT			10.28	102.75%
Thallium	4.26			2.99			26.50	111.40%
Thorium	1.63			0.69			26.38	99.04%
Tin	0.14 LT			0.13 LT			5.35	107.00%
Titanium	0.10			0.07			11.05	109.49%
Tungsten	0.56			0.36 LT			8.34	77.91%
Uranium	15.14 LT			8.87 LT			38.38	153.50%
Vanadium	0.21			0.10 LT			4.46	106.34%
Zinc	0.07			0.06			11.22	111.50%
Zirconium	0.28			0.17 LT			10.57	102.96%
Dilution Factor	11.00			11.00			14.00	

ICP Results Raw Data Report

	Standard LMCS Acid Digestion ppm	Acid Digestion Standard Recovery %			Ending LMCS Standard ppm	Standard Recovery %		Spike Standard LMCS ppm added	Spike Standard ID Book # 78C11S 87838A 77C11R	
			SST-1	SST-2	SST-3					SST-1
Aluminum		NA			10.12	101.23%		10.00		
Antimony		NA	10.20			102.04%		10.00		10.00
Arsenic		NA			21.57	107.87%		20.00		
Barium		NA	11.10			110.96%	#	10.00		10.00
Beryllium		NA			4.26	106.53%		4.00		
Bismuth		NA		5.25		104.90%		5.00		
Boron		NA	10.33			103.33%		10.00		10.00
Cadmium		NA	10.44			104.43%		10.00		10.00
Calcium		NA	10.64			106.39%		10.00		10.00
Cerium		NA	9.59			95.92%		10.00		10.00
Chromium		NA	9.20			91.99%		10.00		10.00
Cobalt		NA	10.14			101.37%		10.00		10.00
Copper		NA	10.56			105.56%		10.00		10.00
Europium		NA		4.85		97.04%		5.00		
Iron		NA	10.80			107.96%		10.00		10.00
Lanthanum		NA		4.63		92.60%		5.00		
Lead		NA		5.20		103.96%		5.00		
Lithium		NA	10.15			101.51%		10.00		10.00
Magnesium		NA	10.85			108.52%		10.00		10.00
Manganese		NA	10.52			105.21%		10.00		10.00
Mercury		NA			10.19	101.87%		10.00		
Molybdenum		NA			9.72	97.21%		10.00		
Neodymium		NA	9.70			97.01%		10.00		10.00
Nickel		NA	10.36			103.56%		10.00		10.00
Phosphorous		NA			10.26	102.61%		10.00		
Potassium		NA	10.35			103.45%		10.00		10.00
Samarium		NA		4.96		99.10%		5.00		
Selenium		NA			19.60	97.98%		20.00		
Silicon		NA			9.17	91.68%		10.00		
Silver		NA		5.27		105.48%		5.00		
Sodium		NA	10.19			101.85%		10.00		10.00
Strontium		NA	10.68			106.83%		10.00		10.00
Sulfur		NA			19.81	99.05%		20.00		
Tantalum		NA			9.54	95.38%		10.00		
Thallium		NA			19.85	99.24%		20.00		
Thorium		NA		25.10		100.39%		25.00		
Tin		NA	5.00			100.02%		5.00		5.00
Titanium		NA			10.24	102.39%		10.00		
Tungsten		NA			7.22	72.16%	#	10.00		
Uranium		NA		24.65		98.58%		25.00		
Vanadium		NA			4.02	100.55%		4.00		
Zinc		NA	10.48			104.80%		10.00		10.00
Zirconium		NA			9.74	97.38%		10.00		
Dilution Factor			1.00	1.00	1.00					

		LMCS Standards Values ppm	LMCS Standard IDs Book #	ACID DIGESTION LMCS STANDARD VALUES ppm in Sample	ACID DIGEST. LMCS IDs Book #
	SST-2	SST-3	78C11S 87B38A 77C11R		
Aluminum		10.00		100.00	
Antimony					
Arsenic		20.00			
Barium				100.00	
Beryllium		4.00			
Bismuth	5.00			100.00	
Boron				100.00	
Cadmium				100.00	
Calcium				100.00	
Cerium				100.00	
Chromium				100.90	
Cobalt				100.00	
Copper				100.00	
Europium	5.00				
Iron				100.00	
Lanthanum	5.00			100.00	
Lead	5.00			100.00	
Lithium				100.00	
Magnesium				100.00	
Manganese				100.00	
Mercury		10.00			
Molybdenum		10.00		99.80	
Neodymium				100.00	
Nickel				100.00	
Phosphorous		10.00		100.00	
Potassium				100.00	
Samarium	5.00				
Selenium		20.00			
Silicon		10.00		100.00	
Silver	5.00				
Sodium				100.00	
Strontium				100.00	
Sulfur		20.00			
Tantalum		10.00		99.50	
Thallium		20.00			
Thorium	25.00				
Tin				100.00	
Titanium		10.00		100.10	
Tungsten		10.00			
Uranium	25.00				
Vanadium		4.00			
Zinc				100.00	
Zirconium		10.00		99.80	
Dilution Factor				10.00	

ICP Calibration Report

Procedure: LA-505-151 Revision: A-0
Instrument: WB39939
Technologist: J. A. White
Date: July 5, 1990

Calibration Standards for ICP Program "SST"

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

ICP Standard Formulations

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

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

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

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

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

SM-10 Li, Na, K, Rb, Cs, Be, Mg, Ca, Sr, & Ba 100 ppm Lot# 0-119A

SM-20 V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ag, & Cd 100 ppm Lot# 0-119B

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

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

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

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

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

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

Solution is used directly for calibration.

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

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

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

ICP Calibration July 05, 1990

```
Sample name     : SST5
Programme       : SST                05-Jul-90  10:11:45

NAME       MV INT       RSD      BCOR

CE          20.56      0.40   0.00000
EU         427.11      0.80   0.00000
LA           7.36      0.50   0.00000
ND          47.26      0.45   0.00000
SM          16.16      0.33   0.00000


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

Curve    Min Int Max Int                    Curve Coefficients
                                 C0            C1             C2              C3

CRV1     2.0422  23.044  -0.542918E+01  0.252559E+01

Name     Number  Int.     Conc     True     Calc     Conc     % Error Curve
                 (X)      (Y)      (Y)      Conc     Error

SST0     0       2.1497   0.0000   0.0000   -0.000   -0.000           CRV1
SST3     0       21.947   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     0.3620  2.6467  -0.445163E+01  0.116841E+02

Name     Number  Int.     Conc     True     Calc     Conc     % Error Curve
                 (X)      (Y)      (Y)      Conc     Error

SST0     0       0.3810   0.0000   0.0000   0.0000   0.0000           CRV1
SST4     0       2.5207   25.000   25.000   25.000   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     1.2204  39.823  -0.876507E+00  0.682283E+00

Name     Number  Int.     Conc     True     Calc     Conc     % Error Curve
                 (X)      (Y)      (Y)      Conc     Error

SST0     0       1.2847   0.0000   0.0000   -0.000   -0.000           CRV1
SST4     0       37.926   25.000   25.000   25.000   0.0000   0.0000  CRV1
```

ICP Calibration July 05, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	5.2288	328.51	-0.358144E+00	0.650698E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	5.5040	0.0000	0.0000	0.0000	0.0000		CRV1
SSI2	0	312.87	20.000	20.000	20.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.6736	523.74	-0.284687E-01	0.401534E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	0.7090	0.0000	0.0000	0.0000	0.0000		CRV1
SSI2	0	498.80	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	4.3640	39.184	-0.350933E+01	0.763950E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	4.5937	0.0000	0.0000	0.0000	0.0000		CRV1
SSI4	0	37.318	25.000	25.000	25.000	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	5.2538	730.73	-0.400515E+00	0.724214E-01		

Name	Number	Int.	Conc	True	Calc	Conc	% Error	Curve

ICP Calibration July 05, 1990

```
Programme       : SST                    05-Jul-90  10:02:01

NAME        MV INT        RSD      BCOR

BA          312.87       0.95   0.00000
BE          408.80       1.07   0.00000
CD          389.48       0.89   0.00000
CA          440.91       0.97   0.00000
CR          105.55       1.31   0.00000
CO            1.09       0.97   0.00000
CU          102.23       0.97   0.00000
FE          115.05       0.91   0.00000
MG          517.53       0.92   0.00000
MN          293.49       0.96   0.00000
NI          179.03       0.97   0.00000
AG          139.76       1.02   0.00000
SR          589.05       0.96   0.00000
VI          137.66       0.27   0.00000
ZN          745.68       0.92   0.00000


Sample name     : SST3
Programme       : SST                    05-Jul-90  10:05:31

NAME        MV INT        RSD      BCOR

AL           21.95       0.38   0.00000
B           695.93       0.54   0.00000
HG          600.01       0.39   0.00000
MO          359.35       0.38   0.00000
P            63.64       0.96   0.00000
SI           97.51       0.70   0.00000
S            47.40       0.71   0.00000
TA          172.78       0.23   0.00000
TI          504.88       0.57   0.00000
W           177.17       0.37   0.00000
ZR          189.86       0.52   0.00000


Sample name     : SST4
Programme       : SST                    05-Jul-90  10:08:33

NAME        MV INT        RSD      BCOR

SB            2.52       0.48   0.00000
AS           37.93       0.31   0.00000
BI           37.32       0.24   0.00000
PB            1.61       0.38   0.00000
SE           17.74       0.44   0.00000
TL           13.70       0.87   0.00000
TH            5.58       0.19   0.00000
SN           98.90       0.44   0.00000
U             9.35       0.10   0.00000


Sample name     : SST5
Programme       : SST                    05-Jul-90  10:11:45

NAME        MV INT        RSD      BCOR

CE           20.56       0.40   0.00000
EU          427.11       0.80   0.00000
LA            7.36       0.50   0.00000
```

ICP Calibration July 05, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	5.2538	730.73	-0.400515E+00	0.724214E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	5.5303	0.0000	0.0000	-0.000	-0.000		CRV1
SSI3	0	695.93	50.000	50.000	50.000	0.0000	0.0000	CRV1

Programme name : SSI Channel name : CD Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	2.8034	408.96	-0.152691E+00	0.517421E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	2.9510	0.0000	0.0000	0.0000	0.0000		CRV1
SSI2	0	389.48	20.000	20.000	20.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.5526	462.95	-0.264200E-01	0.454211E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	0.5817	0.0000	0.0000	0.0000	0.0000		CRV1
SSI2	0	440.91	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	6.6633	21.588	-0.103561E+02	0.147649E+01		

Name	Number	Int.	Conc	True	Calc	Conc	% Error	Curve

ICP Calibration July 05, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	6.6633	21.588	-0.103561E+02	0.147649E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	7.0140	0.0000	0.0000	-0.000	-0.000		CRV1
SST5	0	20.560	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	2.2202	110.83	-0.452831E+00	0.193766E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	2.3370	0.0000	0.0000	-0.000	-0.000		CRV1
SST2	0	105.55	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.2039	1.1445	-0.490480E+01	0.228484E+02		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.2147	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	1.0900	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.4992	107.34	-0.747543E+00	0.202953E+00		

Name	Number	Int.	Conc	True	Calc	Conc	% Error	Curve

ICP Calibration July 05, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.4992	107.34	-0.747543E+00	0.202953E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	3.6833	0.0000	0.0000	-0.000	-0.000		CRV1
SST2	0	102.23	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	5.1009	448.46	-0.254630E+00	0.474230E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	5.3693	0.0000	0.0000	-0.000	-0.000		CRV1
SST5	0	427.11	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	1.7565	120.80	-0.326683E+00	0.176681E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.8490	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	115.05	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	0.4367	7.7235	-0.133314E+01	0.290023E+01		

ICP Calibration July 05, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.4367	7.7235	-0.133314E+01	0.290023E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.4597	0.0000	0.0000	0.0000	0.0000		CRV1
SST5	0	7.3557	20.000	20.000	20.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.2727	1.6884	-0.543149E+01	0.189251E+02		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.2870	0.0000	0.0000	-0.000	-0.000		CRV1
SST4	0	1.6080	25.000	25.000	25.000	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	4.9368	500.00	-0.551670E+00	0.106158E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	5.1967	0.0000	0.0000	0.0000	0.0000		CRV1
SST1	0	476.19	50.000	50.000	50.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.4908	543.40	-0.199867E-01	0.386839E-01		

Name	Number	Int	Conc	True	Calc	Conc	% Error	C

ICP Calibration July 05, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.4908	543.40	-0.199867E-01	0.386839E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.5167	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	517.53	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	0.8639	308.16	-0.621600E-01	0.683578E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.9093	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	293.49	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	2.9368	630.01	-0.258941E+00	0.837635E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	3.0913	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	600.01	50.000	50.000	50.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.8801	377.32	-0.276879E+00	0.139909E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve

ICP Calibration July 05, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.8801	377.32	-0.276879E+00	0.139909E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSTO	0	1.9790	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	359.35	50.000	50.000	50.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	10.855	49.623	-0.637718E+01	0.558129E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSTO	0	11.426	0.0000	0.0000	-0.000	-0.000		CRV1
SST5	0	47.260	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	3.8301	187.98	-0.460777E+00	0.114289E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSTO	0	4.0317	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	179.03	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	1.4595	66.826	-0.123684E+01	0.805058E+00		

ICP Calibration July 05, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.4595	66.826	-0.123684E+01	0.805058E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	1.5363	0.0000	0.0000	0.0000	0.0000		CRV1
SSI3	0	63.644	50.000	50.000	50.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.0917	15.623	-0.203705E+02	0.472962E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	4.3070	0.0000	0.0000	0.0000	0.0000		CRV1
SSI1	0	14.879	50.000	50.000	50.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	6.3330	16.964	-0.140497E+02	0.210756E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	6.6663	0.0000	0.0000	0.0000	0.0000		CRV1
SSI5	0	16.156	20.000	20.000	20.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.9763	18.626	-0.332131E+01	0.159653E+01		

ICP Calibration July 05, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.9763	18.626	-0.332131E+01	0.159653E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	2.0803	0.0000	0.0000	-0.000	-0.000		CRV1
SSI4	0	17.739	25.000	25.000	25.000	0.0000	0.0000	CRV1

Programme name : SSI Channel name : S1 Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.9203	102.38	-0.220960E+01	0.535445E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	4.1267	0.0000	0.0000	-0.000	-0.000		CRV1
SSI3	0	97.507	50.000	50.000	50.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	5.2665	146.75	-0.826071E+00	0.149012E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	5.5437	0.0000	0.0000	0.0000	0.0000		CRV1
SSI2	0	139.76	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	7.8160	84.490	-0.569450E+01	0.692144E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve

ICP Calibration July 05, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	7.8160	84.490	-0.569450E+01	0.692144E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	8.2273	0.0000	0.0000	0.0000	0.0000		CRV1
SST1	0	80.467	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	4.4634	618.50	-0.160806E+00	0.342262E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.6983	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	589.05	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	0.8259	49.768	-0.934184E+00	0.107460E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.8693	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	47.398	50.000	50.000	50.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.4523	181.42	-0.139405E+01	0.297450E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve

ICP Calibration July 05, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.4523	181.42	-0.139405E+01	0.297450E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.6867	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	172.78	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	4.4204	14.385	-0.128574E+02	0.276325E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.6530	0.0000	0.0000	-0.000	-0.000		CRV1
SST4	0	13.700	25.000	25.000	25.000	0.0000	0.0001	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.4095	5.8583	-0.905632E+01	0.610401E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.4837	0.0000	0.0000	0.0000	0.0000		CRV1
SST4	0	5.5793	25.000	25.000	25.000	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	1.6888	103.85	-0.457562E+00	0.257395E+00		

Name	Number	Int.	Conc	True	Calc	Conc	% Error	Curve

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.6888	103.85	-0.457562E+00	0.257395E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.7777	0.0000	0.0000	0.0000	0.0000		CRV1
SST4	0	98.905	25.000	25.000	25.000	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	4.2684	530.13	-0.448951E+00	0.999224E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.4930	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	504.88	50.000	50.000	50.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.2750	186.03	-0.992181E+00	0.287811E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	3.4473	0.0000	0.0000	-0.000	-0.000		CRV1
SST3	0	177.17	50.000	50.000	50.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	6.6763	9.8210	-0.755452E+02	0.107497E+02		

ICP Calibration July 05, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	6.6763	9.8210	-0.755452E+02	0.107497E+02		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	7.0277	0.0000	0.0000	-0.000	-0.000		CRV1
SST4	0	9.3533	25.000	25.000	25.000	0.0001	0.0004	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.2690	144.54	-0.674890E+00	0.150187E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.4937	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	137.66	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	2.8719	782.96	-0.814109E-01	0.269305E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	3.0230	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	745.68	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	5.4308	199.35	-0.155223E+01	0.271527E+00		

ICP Calibration July 05, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	5.4308	199.35	-0.155223E+01	0.271527E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	5.7167	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	189.86	50.000	50.000	50.000	-0.000	-0.000	CRV1

Sample name : HNO3
Programme : SST 05-Jul-90 10:30:05

NAME	MV INT	CONCEN	RSD	BCOR
Al	2.16	0.017	108.52	0.00000
Sb	0.38	0.01[illegible]	346.11	0.00000
As	1.29	0.001	981.52	0.00000
Ba	5.51	0.001	107.32	0.00000
Be	0.71	-0.000	-147.99	0.00000
Bi	4.60	0.007	155.62	0.00000
B	5.50	-0.002	-287.36	0.00000
Cd	2.94	-0.000	[illegible]19	0.00000
Ca	0.59	0.000		0.00000
Ce	7.04	0.03[illegible]		[illegible]0000
Cr	2.26	-0.01		
Co	0.22	0.1[illegible]		
Cu	3.69	0.0[illegible]		
Eu	5.38	0.		
Fe	1.86	0		
La	0.46	0.01[illegible]		.0
Pb	0.29	0.126		00
Li	5.22	0.002	48.[illegible]	)00
Mg	0.52	0.000	30.00	0.[illegible]000
Mn	0.91	0.000	118.88	0.00000
Hg	4.12	0.086	1.90	0.00000
Mo	1.98	0.000	2851.05	0.00000
Nd	11.31	-0.062	-54.66	0.00000
Ni	4.05	0.002	86.85	0.00000
P	1.57	0.023	67.25	0.00000

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ICP Analysis July 05, 1990 Acid Blank

Sample name : HNO3
Programme : SST 05-Jul-90 10:30:05

NAME	MV INT	CONCEN	RSD	BCOR
Al	2.16	0.017	108.52	0.00000
Sb	0.38	0.013	346.11	0.00000
As	1.29	0.001	981.52	0.00000
Ba	5.51	0.001	107.32	0.00000
Be	0.71	-0.000	-147.99	0.00000
Bi	4.60	0.007	155.62	0.00000
B	5.50	-0.002	-287.36	0.00000
Cd	2.94	-0.000	-88.19	0.00000
Ca	0.59	0.000	9.68	0.00000
Ce	7.04	0.031	84.55	0.00000
Cr	2.26	-0.014	-15.34	0.00000
Co	0.22	0.107	12.37	0.00000
Cu	3.69	0.001	269.45	0.00000
Eu	5.38	0.001	97.59	0.00000
Fe	1.86	0.001	232.02	0.00000
La	0.46	0.011	31.49	0.00000
Pb	0.29	0.126	17.32	0.00000
Li	5.22	0.002	48.87	0.00000
Mg	0.52	0.000	30.00	0.00000
Mn	0.91	0.000	118.88	0.00000
Hg	4.12	0.086	1.90	0.00000
Mo	1.98	0.000	2851.05	0.00000
Nd	11.31	-0.062	-54.66	0.00000
Ni	4.05	0.002	86.85	0.00000
P	1.57	0.023	67.25	0.00000
K	4.31	0.005	1585.98	0.00000
Sm	6.69	0.053	54.46	0.00000
Se	2.09	0.023	56.39	0.00000
Si	4.13	0.001	1060.22	0.00000
Ag	5.54	0.000	1344.21	0.00000
Na	8.25	0.017	74.87	0.00000
Sr	4.71	0.000	62.77	0.00000
S	0.87	0.004	141.77	0.00000
Ta	4.68	-0.002	-242.80	0.00000
Tl	4.64	-0.025	-192.42	0.00000
Th	1.49	0.047	84.87	0.00000
Sn	1.77	-0.003	-135.77	0.00000
Ti	4.49	0.000	2552.91	0.00000
W	3.42	-0.007	-45.52	0.00000
U	7.04	0.172	117.35	0.00000
V	4.49	-0.001	-79.36	0.00000
Zn	3.01	-0.000	-79.14	0.00000
Zr	5.72	0.001	49.61	0.00000

ICP Analysis July 05, 1990 LMCS Check Standard

Sample name : 78C11S
Sample code 1 : SST1
Sample code 2 : DIRECT
Programme : SST 05-Jul-90 10:35:03

NAME	MV INT	CONCEN	RSD	BCOR
Al	2.21	0.148	8.06	0.00000
Sb	1.24	10.044	1.45	0.00000
As	1.37	0.057	15.92	0.00000
Ba	175.36	11.052	1.46	0.00000
Be	0.74	0.001	7.61	0.00000
Bi	4.77	0.137	14.15	0.00000
B	147.56	10.286	1.28	0.00000
Cd	201.99	10.299	1.43	0.00000
Ca	233.67	10.587	1.51	0.00000
Ce	13.46	9.515	1.40	0.00000
Cr	49.35	9.110	1.54	0.00000
Co	0.65	9.992	1.73	0.00000
Cu	55.50	10.516	1.37	0.00000
Eu	5.86	0.023	1.71	0.00000
Fe	62.59	10.732	1.44	0.00000
La	0.50	0.103	6.47	0.00000
Pb	0.30	0.259	8.45	0.00000
Li	101.74	10.249	1.27	0.00000
Mg	279.86	10.806	1.47	0.00000
Mn	153.16	10.407	1.53	0.00000
Hg	3.73	0.054	9.52	0.00000
Mo	2.11	0.019	2.65	0.00000
Nd	28.28	9.409	1.44	0.00000
Ni	93.60	10.237	1.25	0.00000
P	1.68	0.115	26.42	0.00000
K	6.47	10.216	1.37	0.00000
Sm	6.70	0.068	20.59	0.00000
Se	3.71	2.595	1.60	0.00000
Si	4.22	0.052	5.49	0.00000
Ag	5.63	0.013	15.58	0.00000
Na	22.96	10.194	1.14	0.00000
Sr	315.83	10.649	1.45	0.00000
S	1.09	0.236	2.92	0.00000
Ta	4.78	0.027	16.15	0.00000
Tl	4.86	0.577	10.34	0.00000
Th	1.54	0.344	3.55	0.00000
Sn	20.97	4.940	1.36	0.00000
Ti	4.52	0.002	11.86	0.00000
W	4.41	0.277	0.85	0.00000
U	7.44	4.389	0.65	0.00000
V	4.55	0.008	11.71	0.00000
Zn	389.39	10.405	1.30	0.00000
Zr	5.79	0.021	12.34	0.00000

ICP Analysis July 05, 1990 LMCS Check Standard

Sample name : 87B38A
Sample code 1 : SST2
Sample code 2 : DIRECT
Programme : SST 05-Jul-90 10:39:14

NAME	MV INT	CONCEN	RSD	BCOR
Al	3.07	2.329	1.36	0.00000
Sb	0.40	0.245	4.76	0.00000
As	1.59	0.205	2.00	0.00000
Ba	5.74	0.015	18.25	0.00000
Be	0.73	0.001	32.87	0.00000
Bi	11.57	5.332	2.17	0.00000
B	6.27	0.054	18.70	0.00000
Cd	3.06	0.006	37.32	0.00000
Ca	0.96	0.017	4.18	0.00000
Ce	7.22	0.307	31.78	0.00000
Cr	2.52	0.035	6.10	0.00000
Co	0.22	0.122	0.00	0.00000
Cu	4.30	0.126	2.45	0.00000
Eu	106.88	4.814	2.08	0.00000
Fe	2.05	0.036	2.81	0.00000
La	2.07	4.663	2.17	0.00000
Pb	0.56	5.249	2.40	0.00000
Li	5.26	0.006	63.62	0.00000
Mg	0.65	0.005	10.17	0.00000
Mn	1.00	0.006	4.63	0.00000
Hg	3.77	0.057	8.00	0.00000
Mo	2.06	0.011	29.95	0.00000
Nd	11.81	0.213	36.72	0.00000
Ni	4.18	0.017	22.79	0.00000
P	1.75	0.173	10.34	0.00000
K	4.32	0.044	310.91	0.00000
Sm	9.10	5.129	0.27	0.00000
Se	2.16	0.134	9.98	0.00000
Si	4.63	0.271	6.24	0.00000
Ag	41.11	5.299	1.94	0.00000
Na	8.31	0.058	75.42	0.00000
Sr	4.86	0.006	16.83	0.00000
S	0.97	0.107	19.14	0.00000
Ta	4.91	0.067	22.28	0.00000
Tl	5.74	2.991	3.33	0.00000
Th	5.65	25.429	1.85	0.00000
Sn	1.92	0.038	9.77	0.00000
Ti	4.85	0.036	9.54	0.00000
W	3.52	0.021	28.63	0.00000
U	9.41	25.659	0.13	0.00000
V	5.23	0.110	4.15	0.00000
Zn	3.54	0.014	2.65	0.00000
Zr	6.01	0.078	13.24	0.00000

ICP Analysis July 05, 1990 LMCS Check Standard

Sample name : 77C11R
Sample code 1 : SST3
Sample code 2 : DIRECT
Programme : SST 05-Jul-90 10:44:09

NAME	MV INT	CONCEN	RSD	BCOR
Al	6.18	10.182	0.94	0.00000
Sb	0.42	0.413	9.94	0.00000
As	32.97	21.621	0.75	0.00000
Ba	5.72	0.014	9.93	0.00000
Be	108.07	4.311	0.58	0.00000
Bi	4.95	0.274	6.69	0.00000
B	6.79	0.091	3.57	0.00000
Cd	3.05	0.005	6.27	0.00000
Ca	0.97	0.018	1.02	0.00000
Ce	7.15	0.206	16.98	0.00000
Cr	2.57	0.045	8.16	0.00000
Co	0.22	0.145	0.00	0.00000
Cu	3.82	0.029	6.98	0.00000
Eu	5.46	0.004	22.56	0.00000
Fe	3.41	0.276	4.01	0.00000
La	0.47	0.020	16.50	0.00000
Pb	0.30	0.221	4.95	0.00000
Li	5.31	0.012	13.20	0.00000
Mg	0.60	0.003	1.96	0.00000
Mn	1.52	0.042	1.55	0.00000
Hg	124.94	10.207	0.84	0.00000
Mo	71.78	9.766	1.14	0.00000
Nd	11.47	0.026	73.80	0.00000
Ni	8.08	0.462	0.67	0.00000
P	14.11	10.122	1.66	0.00000
K	4.39	0.399	29.05	0.00000
Sm	6.79	0.268	19.64	0.00000
Se	14.41	19.687	1.01	0.00000
Si	21.33	9.211	0.55	0.00000
Ag	6.09	0.081	0.74	0.00000
Na	8.53	0.211	8.93	0.00000
Sr	4.79	0.003	13.87	0.00000
S	19.31	19.821	1.14	0.00000
Ta	37.02	9.619	1.19	0.00000
Tl	11.92	20.080	0.94	0.00000
Th	1.54	0.317	8.67	0.00000
Sn	2.15	0.096	6.41	0.00000
Ti	107.01	10.244	1.06	0.00000
W	28.60	7.239	0.85	0.00000
U	7.24	2.247	12.70	0.00000
V	31.47	4.052	0.25	0.00000
Zn	3.64	0.017	5.27	0.00000
Zr	41.49	9.713	0.94	0.00000

ICP Analysis July 05, 1990 Reagent Blank

Sample name : F1078
Sample code 1 : BLANK
Sample code 2 : 1-10
Sample code 3 : H2ODIG
Programme : SST 05-Jul-90 10:48:57

NAME	MV INT	CONCEN	DILCOR	RSD	BCOR
Al	2.21	0.149	1.639	7.06	0.00000
Sb	0.39	0.066	0.728	26.96	0.00000
As	1.32	0.021	0.230	6.79	0.00000
Ba	5.60	0.006	0.066	8.72	0.00000
Be	0.73	0.001	0.009	40.00	0.00000
Bi	4.69	0.076	0.832	25.10	0.00000
B	9.00	0.252	2.767	1.30	0.00000
Cd	2.98	0.002	0.018	72.69	0.00000
Ca	2.44	0.084	0.929	0.33	0.00000
Ce	7.14	0.180	1.976	14.80	0.00000
Cr	2.29	-0.009	-0.096	-36.99	0.00000
Co	0.22	0.114	1.257	11.55	0.00000
Cu	3.75	0.013	0.138	10.13	0.00000
Eu	5.45	0.004	0.041	7.83	0.00000
Fe	1.92	0.013	0.142	34.95	0.00000
La	0.47	0.016	0.181	26.96	0.00000
Pb	0.30	0.170	1.874	19.25	0.00000
Li	5.29	0.009	0.104	13.50	0.00000
Mg	1.16	0.025	0.274	0.09	0.00000
Mn	0.93	0.001	0.013	23.32	0.00000
Hg	3.24	0.013	0.140	20.48	0.00000
Mo	2.02	0.006	0.062	6.24	0.00000
Nd	11.45	0.013	0.147	304.17	0.00000
Ni	4.13	0.012	0.127	43.29	0.00000
P	1.57	0.031	0.339	19.58	0.00000
K	4.35	0.214	2.359	13.30	0.00000
Sm	6.78	0.238	2.620	10.26	0.00000
Se	2.13	0.081	0.890	7.12	0.00000
Si	4.53	0.218	2.397	5.59	0.00000
Ag	5.64	0.015	0.161	8.07	0.00000
Na	8.89	0.461	5.066	2.07	0.00000
Sr	4.77	0.003	0.028	11.10	0.00000
S	0.90	0.033	0.362	53.68	0.00000
Ta	4.75	0.019	0.204	32.05	0.00000
Tl	4.76	0.287	3.161	6.31	0.00000
Th	1.51	0.185	2.037	3.30	0.00000
Sn	1.01	0.009	0.098	40.52	0.00000
Ti	4.57	0.007	0.082	11.60	0.00000
W	3.52	0.022	0.238	34.88	0.00000
U	7.14	1.258	13.834	8.60	0.00000
V	4.56	0.010	0.110	29.60	0.00000
Zn	3.15	0.004	0.039	15.23	0.00000
Zr	5.79	0.021	0.226	14.50	0.00000

Dilution factor : 11.0000

ICP Analysis July 05, 1990 Core 13 Composite - Water Digestion

Sample name : F1079
Sample number : 13
Sample code 1 : SAMPLE
Sample code 2 : H2ODIG
Programme : SST 05-Jul-90 10:53:23

NAME	MV INT	CONCEN	DILCOR	RSD	BCOR
Al	3.25	2.783	30.615	0.55	0.00000
Sb	0.39	0.086	0.943	20.83	0.00000
As	1.33	0.033	0.358	23.01	0.00000
Ba	5.60	0.007	0.072	17.09	0.00000
Be	0.73	0.001	0.009	23.24	0.00000
Bi	4.73	0.103	1.129	37.31	0.00000
B	8.42	0.209	2.303	1.45	0.00000
Cd	3.00	0.003	0.031	53.11	0.00000
Ca	1.00	0.019	0.211	0.41	0.00000
Ce	7.14	0.193	2.122	19.90	0.00000
Cr	5.87	0.685	7.535	0.97	0.00000
Co	0.22	0.023	0.251	208.17	0.00000
Cu	3.76	0.016	0.180	17.88	0.00000
Eu	5.47	0.005	0.054	20.76	0.00000
Fe	1.95	0.017	0.188	28.17	0.00000
La	0.47	0.016	0.181	10.19	0.00000
Pb	0.30	0.164	1.804	6.66	0.00000
Li	5.28	0.009	0.102	22.65	0.00000
Mg	2.67	0.083	0.916	0.22	0.00000
Mn	0.93	0.001	0.013	57.45	0.00000
Hg	3.25	0.014	0.149	13.77	0.00000
Mo	2.06	0.011	0.120	6.48	0.00000
Nd	11.44	0.011	0.117	453.34	0.00000
Ni	4.18	0.017	0.184	8.81	0.00000
P	4.93	2.735	30.080	7.84	0.00000
K	4.37	0.285	3.139	15.66	0.00000
Sm	6.79	0.253	2.782	19.80	0.00000
Se	2.24	0.247	2.716	13.58	0.00000
Si	6.05	1.027	11.301	1.31	0.00000
Ag	5.66	0.018	0.193	15.77	0.00000
Na	92.56	)58.373	)642.10	0.31	0.00000
Sr	4.78	0.003	0.030	19.08	0.00000
S	1.54	0.719	7.904	3.83	0.00000
Ta	4.79	0.032	0.353	13.40	0.00000
Tl	4.79	0.387	4.255	21.10	0.00000
Th	1.51	0.149	1.634	10.87	0.00000
Sn	1.83	0.013	0.141	31.21	0.00000
Ti	4.59	0.009	0.103	27.60	0.00000
W	3.62	0.051	0.556	16.85	0.00000
U	7.16	1.376	15.135	19.40	0.00000
V	4.62	0.019	0.211	13.81	0.00000
Zn	3.25	0.006	0.069	7.60	0.00000
Zr	5.81	0.025	0.276	23.30	0.00000

Dilution factor : 11.0000

ICP Analysis July 05, 1990 Duplicate of Core 13 Composite

Sample name : E1080
Sample number : 13
Sample code 1 : DUPSAM
Sample code 2 : H2ODIG
Sample code 3 : 1-10
Programme : SSI 05-Jul-90 10:58:12

NAME	MV INT	CONCEN	DILCOR	RSD	BCOR
Al	3.11	2.426	26.689	1.62	0.00000
Sb	0.38	0.000	0.000		0.00000
As	1.32	0.025	0.273	4.77	0.00000
Ba	5.56	0.004	0.041	17.28	0.00000
Be	0.72	0.000	0.004	59.21	0.00000
Bi	4.68	0.065	0.720	16.56	0.00000
B	8.44	0.211	3.317	0.54	0.00000
Cd	2.97	0.001	0.009	83.86	0.00000
Ca	1.06	0.022	0.237	1.91	0.00000
Ce	7.09	0.111	1.224	18.12	0.00000
Cr	5.77	0.664	7.308	1.24	0.00000
Co	0.21	-0.099	-1.089	-26.65	0.00000
Cu	3.74	0.011	0.116	17.87	0.00000
Eu	5.43	0.003	0.030	16.21	0.00000
Fe	1.93	0.015	0.163	27.32	0.00000
La	0.46	-0.002	-0.021	-150.00	0.00000
Pb	0.29	0.038	0.416	50.00	0.00000
Li	5.24	0.005	0.056	22.43	0.00000
Mg	2.30	0.069	0.758	1.24	0.00000
Mn	0.92	0.000	0.005	90.73	0.00000
Hg	3.21	0.010	0.107	25.98	0.00000
Mo	2.02	0.006	0.068	13.78	0.00000
Nd	11.40	-0.015	-0.162	-120.71	0.00000
Ni	4.14	0.012	0.131	18.90	0.00000
P	4.62	2.484	27.328	6.06	0.00000
K	4.33	0.128	1.405	38.67	0.00000
Sm	6.73	0.134	1.476	24.69	0.00000
Se	2.24	0.252	2.775	10.29	0.00000
Si	5.96	0.982	10.798	1.09	0.00000
Ag	5.61	0.010	0.110	10.71	0.00000
Na	90.56	)56.986	)626.85	1.13	0.00000
Sr	4.75	0.002	0.019	11.01	0.00000
S	1.50	0.680	7.478	3.27	0.00000
Ta	4.73	0.014	0.152	35.92	0.00000
Tl	4.75	0.272	2.989	6.21	0.00000
Th	1.49	0.063	0.694	16.76	0.00000
Sn	1.82	0.011	0.126	38.54	0.00000
Ti	4.55	0.006	0.066	14.25	0.00000
W	3.56	0.033	0.364	18.76	0.00000
U	7.10	0.806	8.868	15.16	0.00000
V	4.56	0.009	0.104	19.72	0.00000
Zn	3.22	0.005	0.059	14.18	0.00000
Zr	5.77	0.015	0.167	18.06	0.00000

Dilution factor : 11.0000

ICP Analysis July 05, 1990 Spike of Core 13 Composite

Sample name : F1081
Sample number : 13
Sample code 1 : SPIKE
Sample code 2 : H2ODIG
Sample code 3 : 1-10
Programme : SST 05-Jul-90 11:02:38

NAME	MV INT	CONCEN	DILCOR	RSD	BCOR
Al	3.19	2.634	36.879	1.25	0.00000
Sb	0.45	0.756	10.578	0.89	0.00000
As	3.71	1.654	23.160	1.96	0.00000
Ba	17.92	0.808	11.310	1.30	0.00000
Be	8.69	0.320	4.486	0.66	0.00000
Bi	5.20	0.465	6.506	1.40	0.00000
B	18.95	0.972	13.605	1.65	0.00000
Cd	17.76	0.766	10.730	1.70	0.00000
Ca	18.58	0.818	11.447	1.41	0.00000
Ce	7.54	0.783	10.962	5.02	0.00000
Cr	15.37	2.526	35.366	1.76	0.00000
Co	0.24	0.685	9.596	5.09	0.00000
Cu	7.71	0.817	11.438	1.38	0.00000
Eu	12.78	0.351	4.917	1.88	0.00000
Fe	30.25	5.018	70.249	1.49	0.00000
La	0.57	0.329	4.602	1.76	0.00000
Pb	0.31	0.397	5.564	9.52	0.00000
Li	12.14	0.738	10.326	1.21	0.00000
Mg	21.59	0.815	11.412	1.32	0.00000
Mn	14.97	0.961	13.461	1.37	0.00000
Hg	11.89	0.737	10.315	1.54	0.00000
Mo	7.88	0.826	11.560	1.42	0.00000
Nd	12.68	0.702	9.830	1.61	0.00000
Ni	26.84	2.606	36.487	1.44	0.00000
P	5.21	2.956	41.386	2.15	0.00000
K	4.49	0.851	11.919	2.22	0.00000
Sm	6.89	0.461	6.452	11.89	0.00000
Se	3.40	2.111	29.556	3.59	0.00000
Si	7.20	1.645	23.033	1.16	0.00000
Ag	8.08	0.378	5.288	1.89	0.00000
Na	73.66	45.291	634.07	1.31	0.00000
Sr	27.43	0.778	10.891	1.31	0.00000
S	2.73	2.000	28.003	1.46	0.00000
Ta	7.15	0.734	10.275	1.30	0.00000
Tl	5.34	1.893	26.499	1.10	0.00000
Th	1.79	1.884	26.377	1.35	0.00000
Sn	3.26	0.382	5.350	2.00	0.00000
Ti	12.39	0.789	11.051	1.40	0.00000
W	5.52	0.596	8.342	0.91	0.00000
U	7.28	2.741	38.376	8.45	0.00000
V	6.62	0.319	4.463	0.50	0.00000
Zn	32.78	0.801	11.218	1.26	0.00000
Zr	8.50	0.755	10.570	1.50	0.00000

Dilution factor : 14.0000

ICP Analysis July 05, 1990 Acid Blank

Sample name : HNO3
Programme : SSI 05-Jul-90 11:07:48

NAME	MV INT	CONCEN	RSD	BCOR
Al	2.16	0.022	48.04	0.00000
Sb	0.38	0.016	114.56	0.00000
As	1.29	0.004	133.68	0.00000
Ba	5.52	0.001	149.99	0.00000
Be	0.71	0.000	200.00	0.00000
Bi	4.64	0.035	12.28	0.00000
B	5.53	-0.000	-1201.8	0.00000
Cd	2.96	0.000	165.23	0.00000
Ca	0.60	0.001	9.45	0.00000
Ce	7.04	0.037	96.09	0.00000
Cr	2.25	-0.017	-23.91	0.00000
Co	0.21	-0.008	-173.21	0.00000
Cu	3.70	0.004	28.35	0.00000
Eu	5.39	0.001	83.48	0.00000
Fe	1.86	0.001	513.58	0.00000
La	0.46	-0.010	-62.45	0.00000
Pb	0.29	0.044	65.47	0.00000
Li	5.21	0.001	205.41	0.00000
Mg	0.52	0.000	30.55	0.00000
Mn	0.91	0.000	70.98	0.00000
Hg	3.16	0.006	62.42	0.00000
Mo	1.99	0.001	211.65	0.00000
Nd	11.40	-0.017	-320.35	0.00000
Ni	4.06	0.003	119.39	0.00000
P	1.55	0.015	74.42	0.00000
K	4.29	-0.068	-60.96	0.00000
Sm	6.69	0.048	93.38	0.00000
Se	2.09	0.023	42.63	0.00000
Si	4.16	0.016	56.84	0.00000
Ag	5.56	0.002	113.49	0.00000
Na	8.23	0.003	519.20	0.00000
Sr	4.71	0.001	91.61	0.00000
S	0.87	0.000		0.00000
Ta	4.68	-0.001	-921.54	0.00000
Tl	4.70	0.130	7.67	0.00000
Th	1.49	0.037	41.94	0.00000
Sn	1.80	0.005	147.30	0.00000
Ti	4.51	0.001	126.40	0.00000
W	3.48	0.010	74.16	0.00000
U	7.04	0.143	167.10	0.00000
V	4.52	0.004	36.23	0.00000
Zn	3.04	0.000	181.62	0.00000
Zr	5.73	0.005	72.33	0.00000

ICP Analysis July 05, 1990 LMCS Check Standard

Sample name : 78C11S
Sample code 1 : SST1
Sample code 2 : DIRECT
Programme : SST 05-Jul-90 11:11:31

NAME	MV INT	CONCEN	RSD	BCOR
Al	2.23	0.191	2.02	0.00000
Sb	1.25	10.204	1.24	0.00000
As	1.39	0.073	5.63	0.00000
Ba	176.02	11.096	0.98	0.00000
Be	0.74	0.001	20.60	0.00000
Bi	4.85	0.197	13.45	0.00000
B	148.21	10.333	1.47	0.00000
Cd	204.78	10.443	0.99	0.00000
Ca	234.82	10.639	1.04	0.00000
Ce	13.51	9.592	0.98	0.00000
Cr	49.81	9.199	0.82	0.00000
Co	0.66	10.137	0.65	0.00000
Cu	55.70	10.556	0.98	0.00000
Eu	5.93	0.026	0.85	0.00000
Fe	62.95	10.796	1.06	0.00000
La	0.49	0.098	3.43	0.00000
Pb	0.30	0.202	10.83	0.00000
Li	100.82	10.151	1.12	0.00000
Mg	281.04	10.852	1.12	0.00000
Mn	154.81	10.521	0.86	0.00000
Hg	3.31	0.018	20.16	0.00000
Mo	2.14	0.023	2.87	0.00000
Nd	28.81	9.701	0.37	0.00000
Ni	94.65	10.356	1.13	0.00000
P	1.69	0.123	9.57	0.00000
K	6.49	10.345	0.88	0.00000
Sm	6.75	0.173	12.28	0.00000
Se	3.78	2.707	0.66	0.00000
Si	4.27	0.079	3.39	0.00000
Ag	5.66	0.018	0.48	0.00000
Na	22.94	10.185	1.19	0.00000
Sr	316.82	10.683	0.99	0.00000
S	1.11	0.260	0.83	0.00000
Ta	4.83	0.044	5.47	0.00000
Tl	4.91	0.722	2.71	0.00000
Th	1.55	0.415	2.25	0.00000
Sn	21.21	5.001	1.23	0.00000
Ti	4.57	0.007	8.87	0.00000
W	4.42	0.281	2.22	0.00000
U	7.49	5.020	0.87	0.00000
V	4.57	0.012	18.57	0.00000
Zn	392.18	10.480	0.85	0.00000
Zr	5.85	0.035	3.37	0.00000

ICP Analysis July 05, 1990 LMCS Check Standard

Sample name : 87B38B
Sample code 1 : SST2
Sample code 2 : DIRECT
Programme : SST 05-Jul-90 11:15:24

NAME	MV INT	CONCEN	RSD	BCOR
Al	3.03	2.224	5.83	0.00000
Sb	0.40	0.210	11.11	0.00000
As	1.57	0.196	4.76	0.00000
Ba	5.67	0.011	16.28	0.00000
Be	0.72	0.000	44.66	0.00000
Bi	11.46	5.245	6.83	0.00000
B	6.28	0.054	32.53	0.00000
Cd	3.04	0.005	50.75	0.00000
Ca	0.99	0.019	2.31	0.00000
Ce	7.14	0.184	21.11	0.00000
Cr	2.50	0.031	5.99	0.00000
Co	0.22	0.030	75.00	0.00000
Cu	4.26	0.118	4.96	0.00000
Eu	107.69	4.852	7.71	0.00000
Fe	2.02	0.030	18.11	0.00000
La	2.06	4.630	7.16	0.00000
Pb	0.56	5.198	6.85	0.00000
Li	5.20	0.001	653.00	0.00000
Mg	0.65	0.005	13.01	0.00000
Mn	0.99	0.006	13.07	0.00000
Hg	3.35	0.022	3.94	0.00000
Mo	2.03	0.008	14.20	0.00000
Nd	11.73	0.170	34.72	0.00000
Ni	4.17	0.015	12.16	0.00000
P	1.69	0.126	21.48	0.00000
K	4.26	-0.207	-58.00	0.00000
Sm	9.02	4.955	5.98	0.00000
Se	2.15	0.112	19.02	0.00000
Si	4.59	0.247	4.41	0.00000
Ag	40.94	5.274	6.95	0.00000
Na	8.20	-0.020	-168.07	0.00000
Sr	4.83	0.004	27.73	0.00000
S	0.94	0.081	6.99	0.00000
Ta	4.86	0.052	10.28	0.00000
Tl	5.73	2.975	0.35	0.00000
Th	5.60	)25.098	7.07	0.00000
Sn	1.92	0.037	10.44	0.00000
Ti	4.79	0.030	2.88	0.00000
W	3.48	0.011	53.72	0.00000
U	9.32	24.645	5.98	0.00000
V	5.20	0.106	3.05	0.00000
Zn	3.54	0.014	11.54	0.00000
Zr	5.95	0.063	1.74	0.00000

ICP Analysis July 05, 1990 LMCS Check Standard

Sample name : 77C11R
Sample code 1 : SST3
Sample code 2 : DIRECT
Programme : SST 05-Jul-90 11:19:57

NAME	MV INT	CONCEN	RSD	BCOR
Al	6.16	10.123	0.61	0.00000
Sb	0.41	0.397	11.76	0.00000
As	32.90	21.573	0.63	0.00000
Ba	5.64	0.009	9.50	0.00000
Be	106.83	4.261	1.14	0.00000
Bi	4.88	0.217	5.27	0.00000
B	6.70	0.085	6.12	0.00000
Cd	3.03	0.004	5.25	0.00000
Ca	0.98	0.018	1.12	0.00000
Ce	7.06	0.071	43.91	0.00000
Cr	2.54	0.039	4.09	0.00000
Co	0.22	0.076	0.00	0.00000
Cu	3.79	0.021	9.34	0.00000
Eu	5.40	0.001	59.20	0.00000
Fe	3.39	0.273	1.61	0.00000
La	0.46	0.000		0.00000
Pb	0.30	0.164	17.63	0.00000
Li	5.25	0.006	40.61	0.00000
Mg	0.60	0.003	1.83	0.00000
Mn	1.51	0.041	1.78	0.00000
Hg	124.70	10.187	0.54	0.00000
Mo	71.46	9.721	0.72	0.00000
Nd	11.31	-0.062	-32.79	0.00000
Ni	8.04	0.458	1.24	0.00000
P	14.28	10.261	0.45	0.00000
K	4.33	0.099	12.60	0.00000
Sm	6.72	0.103	35.72	0.00000
Se	14.35	19.595	0.65	0.00000
Si	21.25	9.168	0.14	0.00000
Ag	6.02	0.071	4.74	0.00000
Na	8.41	0.129	7.30	0.00000
Sr	4.75	0.002	26.26	0.00000
S	19.30	19.810	0.77	0.00000
Ta	36.75	9.538	0.61	0.00000
Tl	11.84	19.847	1.09	0.00000
Th	1.52	0.203	13.75	0.00000
Sn	2.13	0.091	6.36	0.00000
Ti	106.97	10.239	0.73	0.00000
W	28.52	7.216	0.52	0.00000
U	7.16	1.376	9.77	0.00000
V	31.28	4.022	1.12	0.00000
Zn	3.56	0.015	4.06	0.00000
Zr	41.58	9.738	0.77	0.00000

Analytical Batch

LAB SEGMENT SERIAL #: F1067

CUSTOMER ID: 000013

INSTRUMENT	WB39937
PROCEDURE/REV	LA-344-105/A-3
TECHNOLOGIST	E. Colvin
DATE	February 26, 1990
TEMPERATURE	N/A
STARTING TIME	0900
ENDING TIME	1130
CHEMIST	R. E. Brandt

Total Organic Carbon
Water Digestion

	DESCRIPTION	LAB ID
1	Initial LMCS Check Std	F1077
2	Reagent Blank	F1078
3	Sample Comp 13	F1079
4	Duplicate Sample Comp 13	F1080
5	Spike Sample Comp 13	F1081
6	Final LMCS Check Std	F1082
7		
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	DESCRIPTION	LAB ID
12		
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STANDARD TYPE	PRIMARY BOOK # & ALIQUOT VOL.	SECOND BOOK # & ALIQUOT VOL.	THIRD BOOK # & ALIQUOT VOL.	FINAL VOL. OF STD.
LMCS Check Std	70C11C/200 uL			2.2 mL
Spike	80C11/200 uL	F1079/200 uL		0.5 mL

SST-102 Rev. I 10/2/90 Interim

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-1077 Date: 02-26-1990 Time: 06:32:09

Blank = .5566115 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	30.80	100.00
3	3.01	43.90	29.84
4	4.00	49.70	11.67
5	5.01	52.90	6.05
6	6.01	54.90	3.64
7	7.01	56.00	1.96

(56 - 3.899525)(11)/(200) = 2.865526 g/L Carbon

(56 - 3.899525)(11)/(200)(12) = .2387939 Molar Carbon

Sample Run By: 80028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-1078 Date: 02-26-1990 Time: 06:22:46

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

Reading	Analysis Time	Coulometer	% Difference
1	1.01	0.00	0.00
2	2.01	1.40	100.00
3	3.01	2.20	36.36
4	4.01	2.70	18.52
5	5.01	3.10	12.90
6	6.01	3.50	11.43
7	7.01	3.90	10.26

BLANK VALUE = 3.9 / 7.006684 = .5566115 ug/minute

Sample Run By: 80028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-1079 Date: 02-26-1990 Time: 07:08:22

Blank = .5566115 Sample Size = 200 Dilution Factor = 1.1
% Difference = 10 Min Readings = 7 Max Readings = 7

Reading	Analysis Time	Coulometer	% Difference
1	1.01	0.00	0.00
2	2.01	1.50	100.00
3	3.01	2.10	28.57
4	4.01	2.70	22.22
5	5.01	3.20	15.63
6	6.01	3.50	8.57
7	7.01	4.10	14.63

(4.1 - 3.902039)(1.1)/(200) = 1.088786E-03 g/L Carbon

(4.1 - 3.902039)(1.1)/(200)(12) = 9.073216E-05 Molar Carbon

Sample Run By: 80028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-1080 Date: 02-26-1990 Time: 07:00:22

Blank = .5566115 Sample Size = 200 Dilution Factor = 1.1
% Difference = 10 Min Readings = 7 Max Readings = 7

Reading	Analysis Time	Coulometer	% Difference
1	1.01	0.20	%-2100.00
2	2.01	1.80	88.89
3	3.01	2.60	30.77
4	4.01	3.10	16.13
5	5.01	3.50	11.43
6	6.01	3.90	10.26
7	7.01	4.40	11.36

(4.4 - 3.899508)(1.1)/(200) = 2.752708E-03 g/L Carbon

(4.4 - 3.899508)(1.1)/(200)(12) = 2.293923E-04 Molar Carbon

Sample Run By: 80028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-1081 Date: 02-26-1990 Time: 07:18:01

Blank = .5566115 Sample Size = 200 Dilution Factor = 1.1
% Difference = 10 Min Readings = 7 Max Readings = 7

Reading	Analysis Time	Coulometer	% Difference
1	1.01	0.00	0.00
2	2.01	66.70	100.00
3	3.01	93.60	28.74
4	4.01	106.40	12.03
5	5.01	113.00	5.84
6	6.01	116.60	3.09
7	7.01	118.90	1.93

(118.9 - 3.89944)(1.1)/(200) = .6325031 g/L Carbon

(118.9 - 3.89944)(1.1)/(200)(12) = 5.270859E-02 Molar Carbon

Sample Run By: 80028

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-1082 Date: 02-26-1990 Time: 07:33:37

Blank = .5566115 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	34.00	100.00
3	3.01	45.30	24.94
4	4.01	50.40	10.12
5	5.01	53.40	5.62
6	6.01	54.80	2.55
7	7.01	56.10	2.32

(56.1 - 3.9)(11)/(200) = 2.871 g/L Carbon

(56.1 - 3.9)(11)/(200)(12) = .23925 Molar Carbon

Sample Run By: 80028_____

Analytical Batch

Lab Segment Serial #: F1067

Customer ID: 000013

Ammonia Analysis
Water Digestion

Instrument	AL10664/AL10665
Procedure/Rev	LA-634-102/C-7
Technologist	M. Franz
Date	February 27, 1990
Temperature	N/A
Starting Time	1230
Ending Time	1520
Chemist	R. E. Brandt

	Description	Lab ID
1	Initial LMCS Check Std	F1077
2	Reagent Blank	F1078
3	Sample Comp 13	F1079
4	Duplicate Sample Comp 13	F1080
5	Spike Sample Comp 13	F1081
6	Final LMCS Check Std	F1082
7		
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10		
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	Description	Lab ID
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Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std	4C110J/250 uL			30 mL
Spike	4C110J/250 mL	F1079/2 mL		30 mL

SST-102 Rev. I 10/2/90 Interim

Analytical Batch

LAB SEGMENT SERIAL #: F1067

CUSTOMER ID: 000013

INSTRUMENT	WB39937
PROCEDURE/REV	LA-622-102/A-1
TECHNOLOGIST	E. Colvin
DATE	February 27, 1990
TEMPERATURE	N/A
STARTING TIME	0800
ENDING TIME	1100
CHEMIST	R. E. Brandt

Carbonate Analysis
Water Digestion

	DESCRIPTION	LAB ID
1	Initial LMCS Check Std	F1077
2	Reagent Blank	F1078
3	Sample Comp 13	F1079
4	Duplicate Sample Comp 13	F1080
5	Spike Sample Comp 13	F1081
6	Final LMCS Check Std	F1082
7		
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	DESCRIPTION	LAB ID
12		
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22		

STANDARD TYPE	PRIMARY BOOK # & ALIQUOT VOL.	SECOND BOOK # & ALIQUOT VOL.	THIRD BOOK # & ALIQUOT VOL.	FINAL VOL. OF STD.
LMCS Check Std	69C11D/50 uL			50 uL
Spike	69C11D/100 uL	F1079/200 uL		300 uL

SST-102 Rev. I 10/2/90 Interim

COULOMETER ANALYSIS REPORT
TICTOC Rev. 6

Sample: F-1077 Date: 02-27-1990 Time: 06:35:17

Blank = .3853934 Sample Size = 50 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	50.30	100.00
3	3.01	77.40	35.01
4	4.01	97.80	20.80
5	5.01	111.40	12.21
6	6.01	121.00	7.93
7	7.01	127.60	5.17

(127.6 - 2.700012)(1)/(50) = 2.498 g/L Carbon

(127.6 - 2.700012)(1)/(50)(12) = .2081667 Molar Carbon

Sample Run By: 80028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-1078 Date: 02-27-1990 Time: 06:18:45

Blank = N/A 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	0.90	100.00
3	3.01	1.30	30.77
4	4.01	1.60	18.75
5	5.01	2.00	20.00
6	6.01	2.40	16.67
7	7.01	2.70	11.11

BLANK VALUE = 2.7 / 7.005829 = .3853934 ug/minute

Sample Run By: 80028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-1079 Date: 02-27-1990 Time: 07:02:06

Blank = .3853934 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	7.50	100.00
3	3.01	11.40	34.21
4	4.01	14.10	19.15
5	5.01	16.00	11.87
6	6.01	17.40	8.05
7	7.01	18.50	5.95

(18.5 - 2.7)(1)/(200) = .079 g/L Carbon

(18.5 - 2.7)(1)/(200)(12) = 6.583333E-03 Molar Carbon

Sample Run By: 80028

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-1080 Date: 02-27-1990 Time: 06:53:20

Blank = .3853934 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	8.20	100.00
3	3.01	11.90	31.09
4	4.01	14.60	18.49
5	5.01	16.40	10.98
6	6.01	17.90	8.38
7	7.01	19.70	4.28

(18.7 - 2.699942)(1)/(200) = .0800003 g/L Carbon

(18.7 - 2.699942)(1)/(200)(12) = 6.666692E-03 Molar Carbon

Sample Run By: 80028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-1081 Date: 02-27-1990 Time: 07:10:33

Blank = .3853934 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	60.60	100.00
3	3.01	97.50	37.85
4	4.01	122.20	20.21
5	5.01	139.10	12.15
6	6.01	150.40	7.51
7	7.01	157.70	4.63

(157.7 - 2.699942)(1)/(200) = .7750003 g/L Carbon

(157.7 - 2.699942)(1)/(200)(12) = 6.458336E-02 Molar Carbon

Sample Run By: 80028

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-1082 Date: 02-27-1990 Time: 07:30:26

Blank = .3853934 Sample Size = 50 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	57.00	100.00
3	3.01	83.90	32.06
4	4.01	101.90	17.66
5	5.01	114.10	10.69
6	6.01	122.10	6.55
7	7.01	127.40	4.16

(127.4 - 2.700318)(1)/(50) = 2.493994 g/L Carbon

(127.4 - 2.700318)(1)/(50)(12) = .2078328 Molar Carbon

Sample Run By: 80028_____

Analytical Batch

LAB SEGMENT SERIAL #: F1067

CUSTOMER ID: 000013

INSTRUMENT	WA93603
PROCEDURE/REV	LA-645-001/A-3
TECHNOLOGIST	M. Franz
DATE	February 27, 1990
TEMPERATURE	N/A
STARTING TIME	0730
ENDING TIME	0930
CHEMIST	R. K. Fuller

Nitrite Analysis
Water Digestion

Spectronic 1001

	DESCRIPTION	LAB ID
1	Initial LMCS Check Std	F1077
2	Reagent Blank	F1078
3	Sample Comp 13	F1079
4	Duplicate Sample Comp 13	F1080
5	Spike Sample Comp 13	F1081
6	Final LMCS Check Std	F1082
7		
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11		

	DESCRIPTION	LAB ID
12		
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22		

STANDARD TYPE	PRIMARY BOOK # & ALIQUOT VOL.	SECOND BOOK # & ALIQUOT VOL.	THIRD BOOK # & ALIQUOT VOL.	FINAL VOL. OF STD.
LMCS Check Std	8C11AU/100 uL			10.05 mL
Spike	8C11AU/100 uL	F1079/50 uL		10.15 mL

SST-102 Rev. I 10/2/90 Interim

Single Shell Tank
Calibration Record

Analyte: NO_2	
Procedure: LA-645-001	Revision: A-2
Instrument: Spectronic 1001	Property Number: WA93603
Technologist: J. Winters	Payroll Number: 80029
Date: February 22, 1989	
Calibration Standard ID: 79C15	
Analyte Concentration: 2×10^{-4}	
Type of Calibration: Linear Regression	

Dilution	Concentration	Instrument Reading Units= Absorbance
0 ul	0	0
50 ul	9.95×10^{-7} M	0.054
100 ul	1.98×10^{-6} M	0.098
500 ul	9.52×10^{-6} M	0.460
1000 ul	1.82×10^{-5} M	0.841
1500 ul	2.61×10^{-5} M	1.185
2000 ul	3.33×10^{-5} M	1.494
2500 ul	4.00×10^{-5} M	1.775

Comments: Curve fit (r^2) 0.99959

Y-intercept 0.02269

Slope 44182.30561

SST-103 Rev. B 9/27/90 Interim

Analytical Batch

Lab Segment Serial #: F1067

Customer ID: 000013

Instrument	WA57276
Procedure/Rev	LA-508-101/C-2
Technologist	M. Franz
Date	February 28, 1990
Temperature	N/A
Starting Time	0800
Ending Time	0930
Chemist	S. A. Catlow

Total Alpha & Total Beta
Water Digestion

Detector 14

	Description	Lab ID
1	Initial LMCS Check Std	F1077
2	Reagent Blank	F1078
3	Sample Comp 13	F1079
4	Duplicate Sample Comp 13	F1080
5	Spike Sample Comp 13	F1081
6	Final LMCS Check Std	F1082
7		
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	Description	Lab ID
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Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std	102B44/10 mL			N/A
Spike	102B44/10 mL	F1079/50 uL		N/A

SST-102 Rev. I 10/2/90 Interim

Single Shell Tank
Calibration Record

Analyte:	Co^{60}		
Procedure:	LQ-508-002	Revision:	A-0
Instrument:	Detector #14	Property Number:	WA57276
Technologist:	R.A. Jones	Payroll Number:	65801
Date:	November 28, 1988		
Calibration Standard ID:	32B40A8; 32B40B7; 32B40C7; 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. 14

		2",5" STD TIME ZERO DATE (HD):	15883
RADIONUCLIDE:	Co-60	1" STD TIME ZERO DATE (HD):	15883
HALF LIFE:	1925	DATE COUNTED (HD):	16135
COUNT TIME:	5	DATE COUNTED 1" (HD)	16135
CPM BKG:	19		
CPM 1" BKG:	19		

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

STANDARD ID	SIZE	DATE	TIME	COUNTS @ 0 DEG.	COUNTS @ 90 DEG.	COUNTS @ 180 DEG.	COUNTS @ 270 DEG.
32B40A8	1	11/28/88	1313	94851	93909	94136	94073
32B40B7	1	11/28/88	1325	180320	178550	178878	179065
32B40C7	1	11/28/88	1338	260104	258654	259795	259469
32B40A4	2	11/28/88	1349	90411	89596	89705	90717
32B40B3	2	11/28/88	1527	170657	169556	169500	170301
32B40C4	2	11/28/88	1540	244082	244246	243016	249016
32B40A5	5	11/28/88	1551	83403	82448	82728	84312
32B40B6	5	11/28/88	1603	160402	163149	162823	159622
32B40C5	5	11/28/88	1616	237343	232578	231827	23179

STANDARD ID	SIZE	STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
32B40A8	1"	69550	18829	1.09	20618	0.2964
32B40B7	1"	134700	35822	1.09	39224	0.2912
32B40C7	1"	201000	51882	1.09	56810	0.2826

AVERAGE, 1" = 0.2901 +/- @95% 0.0137 4.71 % ON 11/28/88

STANDARD ID		STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
32B40A4	2"	70480	18002	1.09	19712	0.2797
32B40B3	2"	135100	33982	1.09	37209	0.2754
32B40C4	2"	202400	48999	1.09	53653	0.2651

AVERAGE, 2" = 0.2734 +/- @95% 0.0147 5.38 % ON 11/28/88

STANDARD ID		STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
32B40A5	5"	70160	16626	1.09	18205	0.2595
32B40B6	5"	135700	32281	1.09	35347	0.2605
32B40C5	5"	201900	46658	1.09	51090	0.2530

AVERAGE, 5" = 0.2577 +/- @95% 0.0079 3.07 % ON 11/28/88

NEW EFFS FOR DET 14 Co-60 1" = 0.2901 2" = 0.2734

5" = 0.2577

STANDARD ID	SIZE	DATE	TIME	COUNTS @ 0 DEG.	COUNTS @ 90 DEG.	COUNTS @ 180 DEG.	COUNTS @ 270 DEG.
36B40A8	1	11/28/88	1115	83719	83889	83820	84087
36B40B7	1	11/28/88	1128	147778	147414	147378	147313
36B40C7	1	11/28/88	1142	212324	211727	211106	211442
36B40A3	2	11/28/88	1155	67029	66485	66532	66137
36B40B3	2	11/28/88	1207	116432	117580	116643	116507
36B40C3	2	11/28/88	1221	167025	166472	166682	166167
36B40A6	5	11/28/88	1234	64835	64744	63542	64860
36B40B6	5	11/28/88	1246	132366	127335	127267	127511
36B40C5	5	11/28/88	1300	176904	172226	170187	173840

STANDARD ID	SIZE	STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
36B40A8	1"	60570	16775	1.00	16793	0.2773
36B40B7	1"	109900	29494	1.00	29525	0.2687
36B40C7	1"	159700	42329	1.00	42375	0.2653

AVERAGE, 1" = 0.2704 +/- @95% 0.0121 4.46 % ON 11/28/88

STANDARD ID	SIZE	STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
36B40A3	2"	61800	13309	1.00	13323	0.2156
36B40B3	2"	110700	23358	1.00	23383	0.2112
36B40C3	2"	161400	33317	1.00	33352	0.2066

AVERAGE, 2" = 0.2111 +/- @95% 0.0088 4.15 % ON 11/28/88

STANDARD ID	SIZE	STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
36B40A6	5"	59470	12899	1.00	12912	0.2171
36B40B6	5"	109800	25723	1.00	25751	0.2345
36B40C5	5"	160100	34657	1.00	34694	0.2167

AVERAGE, 5" = 0.2228 +/- @95% 0.0199 8.95 % ON 11/28/88

NEW EFFS FOR DET 14 Am-241 1" = 0.2704 2" = 0.2111

5" = 0.2228

Analytical Batch

Lab Segment Serial #: F1067

Customer ID: 000013

Instrument	WA401934/WA77228
Procedure/Rev	LA-548-121/C-2
Technologist	R. D. Hale
Date	February 23, 1990
Temperature	N/A
Starting Time	1300
Ending Time	1400
Chemist	S. A. Catlow

GEA Analysis
Water Digestion

Samples are prepared in batch, but counted randomly.

	Description	Lab ID
1	Initial LMCS Check Std	F1076
2	Reagent Blank	F1078
3	Sample Comp 13	F1073
4	Duplicate Sample Comp 13	F1074
5	Sample Comp 13	F1079
6	Duplicate Sample Comp 13	F1080
7	Spike Sample Comp 13	F1075
8	Final LMCS Check Std	F1077
9		
10		
11		

	Description	Lab ID
12		
13		
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22		

Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std	122B44/500 uL			22 mL
Spike	122B44/500 uL	F1079/50 uL		22 mL

SST-102 Rev. I 10/2/90 Interim

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

CANBERRA SPECTRAN-F V2.06  SOFTWARE

222-S COUNTING ROOM WESTINGHOUSE HANFORD            28-SEP-90  10:41:24


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

MCA UNIT NUMBER:   2     /     ADC UNIT NUMBER: 3.0
DETECTOR NUMBER:    3    /     GEOMETRY NUMBER:  41
SPECTRUM SIZE:  4096 CHANNELS
ORDER OF SMOOTHING FUNCTION:     5
NUMBER OF BACKGROUND CHANNELS:  4 ON EACH SIDE OF PEAK
PEAK CONFIDENCE FACTOR: 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: SD3189
ANALYZED BY:        VR

SAMPLE DESCRIPTION: F1076 SEG/COMP/#12
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 23-FEB-90 AT 18:25:32

COLLECT LIVE TIME:    3000. SECONDS
        REAL TIME:    3010. SECONDS
        DEAD TIME:     0.33 %

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

ENERGY CALIBRATION PERFORMED 17-OCT-89
EFFICIENCY CALIBRATION PERFORMED 31-JUL-89
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222-S COUNTING ROOM WESTINGHOUSE HANFORD 28-SEP-90 10:41:24

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	63.89	32.53	1.06	1731.	2249.	10.0	CE-144
2C	72.61	36.88	1.06	1271.	466.	26.3	TE-125M
3C	1126.16	563.13	1.44	711.	552.	12.7	CS-134, EU-152
4C	1138.49	569.30	1.44	686.	991.	11.8	CS-134, BI-207
5	1209.20	604.63	1.54	857.	6164.	2.9	CS-134
6	1322.99	661.49	1.50	583.	11237.	2.0	CS-137
6B		661.41			81.	28.8	
7C	1591.19	795.54	1.57	424.	4406.	3.9	CS-134
8C	1603.23	801.56	1.57	419.	374.	14.4	CS-134
9	2345.55	1172.73	1.94	414.	5823.	2.8	CO-60
10	2664.15	1332.09	1.97	94.	5448.	2.7	CO-60
11	2920.51	1460.36	1.96	47.	618.	8.8	K-40
11B		1460.58			611.	5.5	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 95.0%

C - MULTIPLET ANALYSIS CONVERGED NORMALLY
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 28-SEP-90 10:41:24

SAMPLE: F1076 SEG/COMP/#12
DATA COLLECTED ON 23-FEB-90 AT 18:25:32
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<1.54E+00		LLD<1.54E+00		911.07	
AG-108M	LLD<2.88E-01		LLD<2.88E-01		433.94	
AG-110M	LLD<1.44E+00		LLD<1.44E+00		657.76	
AM-241	LLD<2.80E-01		LLD<2.80E-01		59.54	
AM-243	LLD<1.75E-01		LLD<1.75E-01		74.67	
AR-41	LLD<3.00E-01		LLD<3.00E-01		1293.64	
AU-198	LLD<2.67E-01		LLD<2.67E-01		411.80	
BA-133	LLD<3.43E-01		LLD<3.43E-01		356.02	
BA-139	LLD<7.43E-01		LLD<7.43E-01		165.85	
BA-140	LLD<1.14E+00		LLD<1.14E+00		537.27	
BA-141	LLD<8.07E-01		LLD<8.07E-01		190.23	
BE-7	LLD<2.74E+00		LLD<2.74E+00		477.59	
BI-207	LLD<3.03E-01		LLD<3.03E-01		569.70	
BI-212	LLD<4.07E+00		LLD<4.07E+00		727.27	
BI-214	LLD<1.99E+00		LLD<1.99E+00		609.32	
CD-109	LLD<2.99E+00		LLD<2.99E+00		88.03	
CE-139	LLD<1.68E-01		LLD<1.68E-01		165.85	
CE-141	LLD<2.71E-01		LLD<2.71E-01		145.44	
CEPR144	LLD<2.26E+00		LLD<2.26E+00		133.51	
CO-56	LLD<3.26E-01		LLD<3.26E-01		846.76	
CO-57	LLD<1.39E-01		LLD<1.39E-01		122.06	
CO-58	LLD<3.20E-01		LLD<3.20E-01		810.75	
CO-60	2.29E+01	+-6.90E-01	2.29E+01	+-6.90E-01	1332.50	-0.41
					1173.24	-0.50
CR-51	LLD<1.90E+00		LLD<1.90E+00		320.09	
CS-134	1.40E+01	+-5.81E-01	1.40E+01	+-5.81E-01	795.84	-0.30
					604.70	-0.07
CS-136	LLD<3.27E-01		LLD<3.27E-01		818.51	
CS-137	3.01E+01	+-7.33E-01	3.01E+01	+-7.33E-01	661.65	-0.16
CS-138	LLD<3.39E-01		LLD<3.39E-01		1435.86	
EU-152	LLD<1.26E+00		LLD<1.26E+00		1408.01	
EU-154	LLD<5.76E-01		LLD<5.76E-01		1274.45	
EU-155	LLD<5.21E-01		LLD<5.21E-01		105.31	
FE-59	LLD<7.94E-01		LLD<7.94E-01		1099.25	
HF-181	LLD<3.41E-01		LLD<3.41E-01		482.20	
HG-203	LLD<2.30E-01		LLD<2.30E-01		279.20	
I-131	LLD<2.91E-01		LLD<2.91E-01		364.48	
I-132	LLD<3.82E-01		LLD<3.82E-01		667.69	
I-133	LLD<2.97E-01		LLD<2.97E-01		529.69	
I-134	LLD<4.91E-01		LLD<4.91E-01		847.03	
I-135	LLD<8.43E-01		LLD<8.43E-01		1260.41	
K-40	LLD<4.65E+00		LLD<4.65E+00		1460.75	
KR-85	LLD<6.63E+01		LLD<6.63E+01		513.99	
KR-85M	LLD<2.05E-01		LLD<2.05E-01		151.17	
KR-87	LLD<6.30E-01		LLD<6.30E-01		402.58	
KR-89	LLD<8.71E+00		LLD<8.71E+00		220.90	
LA-140	LLD<1.96E-01		LLD<1.96E-01		1596.20	

LA-142	LLD<6.90E-01	LLD<6.90E-01	641.83
MN-54	LLD<3.65E-01	LLD<3.65E-01	834.83
MN-56	LLD<3.68E-01	LLD<3.68E-01	846.76
NA-22	LLD<2.26E-01	LLD<2.26E-01	1274.55
NA-24	LLD<1.97E-01	LLD<1.97E-01	1368.60
NB-94	LLD<2.87E-01	LLD<2.87E-01	702.63
NB-95	LLD<2.93E-01	LLD<2.93E-01	765.78
NB-97	LLD<1.75E+00	LLD<1.75E+00	657.92
NP-237	LLD<8.41E-01	LLD<8.41E-01	86.50
NP-238	LLD<1.51E+00	LLD<1.51E+00	984.45
NP-239	LLD<1.29E+00	LLD<1.29E+00	277.60
PA-233	LLD<5.26E-01	LLD<5.26E-01	311.98
PA-234M	LLD<7.02E+01	LLD<7.02E+01	1001.03
PB-210	LLD<7.27E+00	LLD<7.27E+00	465.03
PB-212	LLD<4.23E-01	LLD<4.23E-01	239.00
PB-214	LLD<6.85E-01	LLD<6.85E-01	351.92
PO-210	LLD<2.64E+04	LLD<2.64E+04	804.00
PO-214	LLD<1.05E+04	LLD<1.05E+04	799.70
PO-216	LLD<2.05E+04	LLD<2.05E+04	804.90
PU-239	LLD<1.95E+03	LLD<1.95E+03	129.30
PU-241	LLD<6.99E+04	LLD<6.99E+04	148.57
RA-224	LLD<4.60E+00	LLD<4.60E+00	240.99
RA-226	LLD<4.73E+00	LLD<4.73E+00	186.10
RB-88	LLD<1.66E+00	LLD<1.66E+00	1836.00
RB-89	LLD<1.73E+00	LLD<1.73E+00	1031.88
RN-220	LLD<2.62E+02	LLD<2.62E+02	549.73
RU-103	LLD<2.87E-01	LLD<2.87E-01	497.08
RURH106	LLD<5.41E+00	LLD<5.41E+00	621.80
SB-124	LLD<4.74E-01	LLD<4.74E-01	602.72
SB-125	LLD<2.10E+00	LLD<2.10E+00	176.33
SC-46	LLD<4.57E-01	LLD<4.57E-01	1120.45
SE-75	LLD<3.09E-01	LLD<3.09E-01	264.66
SN-113	LLD<3.86E-01	LLD<3.86E-01	391.67
SR-85	LLD<2.91E-01	LLD<2.91E-01	513.99
SR-91	LLD<5.04E-01	LLD<5.04E-01	555.60
SR-92	LLD<2.50E-01	LLD<2.50E-01	1383.94
TA-182	LLD<1.23E+00	LLD<1.23E+00	1121.30
TC-99M	LLD<1.51E-01	LLD<1.51E-01	140.51
TE-123M	LLD<1.57E-01	LLD<1.57E-01	159.00
TE-125M	LLD<4.11E+01	LLD<4.11E+01	109.27
TE-132	LLD<2.03E-01	LLD<2.03E-01	228.16
TH-228	LLD<8.08E+00	LLD<8.08E+00	84.37
TL-208	LLD<3.58E-01	LLD<3.58E-01	583.14
U-235	LLD<2.86E-01	LLD<2.86E-01	185.71
U-237	LLD<8.10E-01	LLD<8.10E-01	208.00
W-187	LLD<9.68E-01	LLD<9.68E-01	685.74
XE-131M	LLD<6.95E+00	LLD<6.95E+00	163.98
XE-133	LLD<2.72E-01	LLD<2.72E-01	81.00
XE-133M	LLD<1.78E+00	LLD<1.78E+00	233.21
XE-135	LLD<2.06E-01	LLD<2.06E-01	249.79
XE-138	LLD<1.55E+00	LLD<1.55E+00	258.41
Y-88	LLD<1.58E-01	LLD<1.58E-01	1836.06
Y-91	LLD<1.06E+02	LLD<1.06E+02	1204.90
Y-91M	LLD<3.81E-01	LLD<3.81E-01	555.60
ZN-65	LLD<8.52E-01	LLD<8.52E-01	1115.55
ZR-95	LLD<5.41E-01	LLD<5.41E-01	756.73
ZR-97	LLD<2.94E-01	LLD<2.94E-01	743.33
TOTAL	6.70E+01 +-1.16E+00	6.70E+01 +-1.16E+00	

STANDARD DEVIATION = 0.18

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.44E-09 UC/LI
TOTAL MEASURED ACTIVITY = 6.70E+01 (+-1.16E+00) UC/LI
% TECH. SPEC. = ****** (+-****)

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 95.0%

PEAKS NOT USED IN ANALYSIS

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
63.89	32.53	2249.	10.0	3.50E+01
72.61	36.88	466.	26.3	6.69E+00
1126.16	563.13	552.	12.7	2.02E+01
1138.49	569.30	991.	11.8	3.66E+01
1603.23	801.56	374.	14.4	1.89E+01

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2920.51	1460.36	618.	8.8	5.16E+01

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

222-S COUNTING ROOM WESTINGHOUSE HANFORD            28-SEP-90  12:12:34


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

MCA UNIT NUMBER:    2     /     ADC UNIT NUMBER: 3.0
DETECTOR NUMBER:    3     /     GEOMETRY NUMBER:  41
SPECTRUM SIZE:  4096 CHANNELS
ORDER OF SMOOTHING FUNCTION:      5
NUMBER OF BACKGROUND CHANNELS:  4 ON EACH SIDE OF PEAK
PEAK CONFIDENCE FACTOR: 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: SD3190
ANALYZED BY:         VR

SAMPLE DESCRIPTION: F1078 SEG/COMP/#14
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 23-FEB-90 AT 19:26:04

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

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

ENERGY CALIBRATION PERFORMED 17-OCT-89
EFFICIENCY CALIBRATION PERFORMED 31-JUL-89
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222-S COUNTING ROOM WESTINGHOUSE HANFORD 28-SEP-90 12:12:34

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

PK	CENTROID CHANNEL	ENERGY KEV	FWHM KEV	BACKGND COUNTS	NET AREA COUNTS	ERROR %	NUCLIDES
1	1218.37	609.21	1.50	118.	133.	30.0	BI-214,
1B		609.19			122.	21.0	RU-103
2	2920.52	1460.36	2.07	29.	662.	8.1	K-40
2B		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 28-SEP-90 12:12:34

SAMPLE: F1078 SEG/COMP/#14
DATA COLLECTED ON 23-FEB-90 AT 19:26:04
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

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

NUCLIDE	ACTIVITY CONCENTRATION IN uCi/LI				ENERGY COMPARISON (KEV)	
	MEASURED	ERROR	DECAY CORRECTED	ERROR	EXPECT	DIFF
AC-228	LLD<3.61E-01		LLD<3.61E-01		911.07	
AG-108M	LLD<5.26E-02		LLD<5.26E-02		433.94	
AG-110M	LLD<8.59E-02		LLD<8.59E-02		657.76	
AM-241	LLD<8.04E-02		LLD<8.04E-02		59.54	
AM-243	LLD<6.29E-02		LLD<6.29E-02		74.67	
AR-41	LLD<9.82E-02		LLD<9.82E-02		1293.64	
AU-198	LLD<5.40E-02		LLD<5.40E-02		411.80	
BA-133	LLD<7.83E-02		LLD<7.83E-02		356.02	
BA-139	LLD<2.32E-01		LLD<2.32E-01		165.85	
BA-140	LLD<2.43E-01		LLD<2.43E-01		537.27	
BA-141	LLD<2.36E-01		LLD<2.36E-01		190.23	
BE-7	LLD<5.16E-01		LLD<5.16E-01		477.59	
BI-207	LLD<5.69E-02		LLD<5.69E-02		569.70	
BI-212	LLD<8.82E-01		LLD<8.82E-01		727.27	
BI-214	LLD<1.93E-01		LLD<1.93E-01		609.32	
CD-109	LLD<9.99E-01		LLD<9.99E-01		88.03	
CE-139	LLD<5.24E-02		LLD<5.24E-02		165.85	
CE-141	LLD<8.72E-02		LLD<8.72E-02		145.44	
CEPR144	LLD<7.39E-01		LLD<7.39E-01		133.51	
CO-56	LLD<5.72E-02		LLD<5.72E-02		846.76	
CO-57	LLD<4.65E-02		LLD<4.65E-02		122.06	
CO-58	LLD<6.87E-02		LLD<6.87E-02		810.75	
CO-60	LLD<8.94E-02		LLD<8.94E-02		1332.50	
CR-51	LLD<4.61E-01		LLD<4.61E-01		320.09	
CS-134	LLD<8.05E-02		LLD<8.05E-02		795.84	
CS-136	LLD<6.66E-02		LLD<6.66E-02		818.51	
CS-137	LLD<9.85E-02		LLD<9.85E-02		661.65	
CS-138	LLD<1.59E-01		LLD<1.59E-01		1435.86	
EU-152	LLD<3.91E-01		LLD<3.91E-01		1408.01	
EU-154	LLD<3.00E-01		LLD<3.00E-01		1274.45	
EU-155	LLD<1.66E-01		LLD<1.66E-01		105.31	
FE-59	LLD<1.77E-01		LLD<1.77E-01		1099.25	
HF-181	LLD<6.55E-02		LLD<6.55E-02		482.20	
HG-203	LLD<5.67E-02		LLD<5.67E-02		279.20	
I-131	LLD<5.77E-02		LLD<5.77E-02		364.48	
I-132	LLD<6.85E-02		LLD<6.85E-02		667.69	
I-133	LLD<6.29E-02		LLD<6.29E-02		529.69	
I-134	LLD<8.45E-02		LLD<8.45E-02		847.03	
I-135	LLD<3.46E-01		LLD<3.46E-01		1260.41	
K-40	LLD<2.23E+00		LLD<2.23E+00		1460.75	
KR-85	LLD<1.67E+01		LLD<1.67E+01		513.99	
KR-85M	LLD<6.52E-02		LLD<6.52E-02		151.17	
KR-87	LLD<1.26E-01		LLD<1.26E-01		402.58	
KR-89	LLD<2.39E+00		LLD<2.39E+00		220.90	
LA-140	LLD<8.48E-02		LLD<8.48E-02		1596.20	
LA-142	LLD<1.47E-01		LLD<1.47E-01		641.83	
MN-54	LLD<7.13E-02		LLD<7.13E-02		834.83	

MN-56	LLD<6.45E-02	LLD<6.45E-02	846.76
NA-22	LLD<1.06E-01	LLD<1.06E-01	1274.55
NA-24	LLD<7.02E-02	LLD<7.02E-02	1368.60
NB-94	LLD<7.11E-02	LLD<7.11E-02	702.63
NB-95	LLD<6.83E-02	LLD<6.83E-02	765.78
NB-97	LLD<1.04E-01	LLD<1.04E-01	657.92
NP-237	LLD<2.60E-01	LLD<2.60E-01	86.50
NP-238	LLD<2.98E-01	LLD<2.98E-01	984.45
NP-239	LLD<3.22E-01	LLD<3.22E-01	277.60
PA-233	LLD<1.32E-01	LLD<1.32E-01	311.98
PA-234M	LLD<1.30E+01	LLD<1.30E+01	1001.03
PB-210	LLD<1.36E+00	LLD<1.36E+00	465.03
PB-212	LLD<1.17E-01	LLD<1.17E-01	239.00
PB-214	LLD<1.85E-01	LLD<1.85E-01	351.92
PO-210	LLD<5.41E+03	LLD<5.41E+03	804.00
PO-214	LLD<7.03E+02	LLD<7.03E+02	799.70
PO-216	LLD<3.52E+03	LLD<3.52E+03	804.90
PU-239	LLD<6.48E+02	LLD<6.48E+02	129.30
PU-241	LLD<2.25E+04	LLD<2.25E+04	148.57
RA-224	LLD<1.28E+00	LLD<1.28E+00	240.99
RA-226	LLD<1.38E+00	LLD<1.38E+00	186.10
RB-88	LLD<8.31E-01	LLD<8.31E-01	1836.00
RB-89	LLD<3.16E-01	LLD<3.16E-01	1031.88
RN-220	LLD<5.83E+01	LLD<5.83E+01	549.73
RU-103	LLD<6.27E-02	LLD<6.27E-02	497.08
RURH106	LLD<1.16E+00	LLD<1.16E+00	621.80
SB-124	LLD<6.19E-02	LLD<6.19E-02	602.72
SB-125	LLD<6.29E-01	LLD<6.29E-01	176.33
SC-46	LLD<1.21E-01	LLD<1.21E-01	1120.45
SE-75	LLD<7.82E-02	LLD<7.82E-02	264.66
SN-113	LLD<7.72E-02	LLD<7.72E-02	391.67
SR-85	LLD<7.31E-02	LLD<7.31E-02	513.99
SR-91	LLD<1.08E-01	LLD<1.08E-01	555.60
SR-92	LLD<1.25E-01	LLD<1.25E-01	1383.94
TA-182	LLD<2.41E-01	LLD<2.41E-01	1121.30
TC-99M	LLD<4.96E-02	LLD<4.96E-02	140.51
TE-123M	LLD<5.03E-02	LLD<5.03E-02	159.00
TE-125M	LLD<1.37E+01	LLD<1.37E+01	109.27
TE-132	LLD<5.50E-02	LLD<5.50E-02	228.16
TH-228	LLD<2.62E+00	LLD<2.62E+00	84.37
TL-208	LLD<9.05E-02	LLD<9.05E-02	583.14
U-235	LLD<8.35E-02	LLD<8.35E-02	185.71
U-237	LLD<2.30E-01	LLD<2.30E-01	208.00
W-187	LLD<2.21E-01	LLD<2.21E-01	685.74
XE-131M	LLD<2.19E+00	LLD<2.19E+00	163.98
XE-133	LLD<8.53E-02	LLD<8.53E-02	81.00
XE-133M	LLD<4.73E-01	LLD<4.73E-01	233.21
XE-135	LLD<5.26E-02	LLD<5.26E-02	249.79
XE-138	LLD<3.99E-01	LLD<3.99E-01	258.41
Y-88	LLD<7.88E-02	LLD<7.88E-02	1836.06
Y-91	LLD<3.26E+01	LLD<3.26E+01	1204.90
Y-91M	LLD<8.19E-02	LLD<8.19E-02	555.60
ZN-65	LLD<1.98E-01	LLD<1.98E-01	1115.55
ZR-95	LLD<1.07E-01	LLD<1.07E-01	756.73
ZR-97	LLD<7.03E-02	LLD<7.03E-02	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
1218.37	609.21	133.	30.0	5.22E+00
2920.52	1460.36	662.	8.1	5.52E+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                *
*                                                                       *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *

CANBERRA SPECTRAN-F V2.06  SOFTWARE

222-S COUNTING ROOM WESTINGHOUSE HANFORD          28-SEP-90  12:17:18


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

MCA UNIT NUMBER:   1     /     ADC UNIT NUMBER: 1.0
DETECTOR NUMBER:    4    /     GEOMETRY NUMBER:  41
SPECTRUM SIZE:  4096 CHANNELS
ORDER OF SMOOTHING FUNCTION:     5
NUMBER OF BACKGROUND CHANNELS:  4 ON EACH SIDE OF PEAK
PEAK CONFIDENCE FACTOR: 85.0%
IDENTIFICATION ENERGY WINDOW: +- 1.50 KEV
ERROR QUOTATION: 1.96 SIGMA UNCERTAINTY

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

ANALYSIS OF SPECTRUM SAVED IN DISK FILE: SD4217
ANALYZED BY:        VR

SAMPLE DESCRIPTION: F1079 SEG/COMP/#15
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 23-FEB-90 AT 19:29:47

COLLECT LIVE TIME:    3000. SECONDS
        REAL TIME:    3035. SECONDS
        DEAD TIME:     1.15 %

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

ENERGY CALIBRATION PERFORMED 26-DEC-89
EFFICIENCY CALIBRATION PERFORMED  1-SEP-89
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222-S COUNTING ROOM WESTINGHOUSE HANFORD 28-SEP-90 12:17:18

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

PK	CENTROID CHANNEL	ENERGY KEV	FWHM KEV	BACKGND COUNTS	NET AREA COUNTS	ERROR %	NUCLIDES
1	53.58	26.97	1.09	3885.	2193.	8.9	
1B		27.06			123.	34.3	
2	369.95	185.04	1.20	9957.	329.	87.4	U-235,RA-226
3	1324.43	662.10	1.70	1620.	268272.	0.4	CS-137
3B		661.35			379.	12.7	
4	1823.80	911.80	1.77	110.	122.	32.1	
4B		910.95			144.	27.4	
5	2923.08	1461.72	2.50	45.	822.	7.4	K-40
5B		1460.80			854.	7.1	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

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 28-SEP-90 12:17:18

SAMPLE: F1079 SEG/COMP/#15
DATA COLLECTED ON 23-FEB-90 AT 19:29:47
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

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

NUCLIDE	ACTIVITY CONCENTRATION IN uCi/LI				ENERGY COMPARISON (KEV)	
	MEASURED	ERROR	DECAY CORRECTED	ERROR	EXPECT	DIFF
AC-228	LLD<7.30E-02		LLD<7.30E-02		911.07	
AG-108M	LLD<5.55E-02		LLD<5.55E-02		433.94	
AG-110M	LLD<3.50E-01		LLD<3.50E-01		657.76	
AM-241	LLD<2.34E-01		LLD<2.34E-01		59.54	
AM-243	LLD<5.60E-02		LLD<5.60E-02		74.67	
AR-41	LLD<1.44E-02		LLD<1.44E-02		1293.64	
AU-198	LLD<5.16E-02		LLD<5.16E-02		411.80	
BA-133	LLD<6.22E-02		LLD<6.22E-02		356.02	
BA-139	LLD<1.23E-01		LLD<1.23E-01		165.85	
BA-140	LLD<1.54E-01		LLD<1.54E-01		537.27	
BA-141	LLD<1.28E-01		LLD<1.28E-01		190.23	
BE-7	LLD<5.55E-01		LLD<5.55E-01		477.59	
BI-207	LLD<3.24E-02		LLD<3.24E-02		569.70	
BI-212	LLD<1.68E-01		LLD<1.68E-01		727.27	
BI-214	LLD<7.54E-02		LLD<7.54E-02		609.32	
CD-109	LLD<7.72E-01		LLD<7.72E-01		88.03	
CE-139	LLD<2.78E-02		LLD<2.78E-02		165.85	
CE-141	LLD<4.19E-02		LLD<4.19E-02		145.44	
CEPR144	LLD<3.54E-01		LLD<3.54E-01		133.51	
CO-56	LLD<1.21E-02		LLD<1.21E-02		846.76	
CO-57	LLD<2.31E-02		LLD<2.31E-02		122.06	
CO-58	LLD<1.26E-02		LLD<1.26E-02		810.75	
CO-60	LLD<1.42E-02		LLD<1.42E-02		1332.50	
CR-51	LLD<3.45E-01		LLD<3.45E-01		320.09	
CS-134	LLD<1.24E-02		LLD<1.24E-02		795.84	
CS-136	LLD<1.12E-02		LLD<1.12E-02		818.51	
CS-137	7.74E+01	+-6.54E-01	7.74E+01	+-6.54E-01	661.65	0.45
CS-138	LLD<3.13E-02		LLD<3.13E-02		1435.86	
EU-152	LLD<5.97E-02		LLD<5.97E-02		1408.01	
EU-154	LLD<3.84E-02		LLD<3.84E-02		1274.45	
EU-155	LLD<9.85E-02		LLD<9.85E-02		105.31	
FE-59	LLD<2.54E-02		LLD<2.54E-02		1099.25	
HF-181	LLD<6.53E-02		LLD<6.53E-02		482.20	
HG-203	LLD<3.89E-02		LLD<3.89E-02		279.20	
I-131	LLD<4.78E-02		LLD<4.78E-02		364.48	
I-132	LLD<1.17E-01		LLD<1.17E-01		667.69	
I-133	LLD<4.61E-02		LLD<4.61E-02		529.69	
I-134	LLD<1.69E-02		LLD<1.69E-02		847.03	
I-135	LLD<5.84E-02		LLD<5.84E-02		1260.41	
K-40	LLD<4.46E-01		LLD<4.46E-01		1460.75	
KR-85	LLD<9.42E+00		LLD<9.42E+00		513.99	
KR-85M	LLD<2.93E-02		LLD<2.93E-02		151.17	
KR-87	LLD<1.09E-01		LLD<1.09E-01		402.58	
KR-89	LLD<1.50E+00		LLD<1.50E+00		220.90	
LA-140	LLD<1.19E-02		LLD<1.19E-02		1596.20	
LA-142	LLD<8.35E-02		LLD<8.35E-02		641.83	
MN-54	LLD<1.20E-02		LLD<1.20E-02		834.83	

MN-56	LLD<1.37E-02		LLD<1.37E-02	846.76	
NA-22	LLD<1.36E-02		LLD<1.36E-02	1274.55	
NA-24	LLD<1.33E-02		LLD<1.33E-02	1368.60	
NB-94	LLD<9.61E-03		LLD<9.61E-03	702.63	
NB-95	LLD<1.25E-02		LLD<1.25E-02	765.78	
NB-97	LLD<5.53E-01		LLD<5.53E-01	657.92	
NP-237	LLD<2.29E-01		LLD<2.29E-01	86.50	
NP-238	LLD<4.46E-02		LLD<4.46E-02	984.45	
NP-239	LLD<2.24E-01		LLD<2.24E-01	277.60	
PA-233	LLD<9.47E-02		LLD<9.47E-02	311.98	
PA-234M	LLD<2.05E+00		LLD<2.05E+00	1001.03	
PB-210	LLD<1.41E+00		LLD<1.41E+00	465.03	
PB-212	LLD<7.53E-02		LLD<7.53E-02	239.00	
PB-214	LLD<1.05E-01		LLD<1.05E-01	351.92	
PO-210	LLD<8.95E+02		LLD<8.95E+02	804.00	
PO-214	LLD<1.21E+02		LLD<1.21E+02	799.70	
PO-216	LLD<5.72E+02		LLD<5.72E+02	804.90	
PU-239	LLD<3.06E+02		LLD<3.06E+02	129.30	
PU-241	LLD<1.11E+04		LLD<1.11E+04	148.57	
RA-224	LLD<7.74E-01		LLD<7.74E-01	240.99	
RA-226	8.44E-01	+-7.38E-01	8.44E-01	+-7.38E-01	186.10	-1.06
RB-88	LLD<1.23E-01		LLD<1.23E-01	1836.00	
RB-89	LLD<5.60E-02		LLD<5.60E-02	1031.88	
RN-220	LLD<3.10E+01		LLD<3.10E+01	549.73	
RU-103	LLD<5.06E-02		LLD<5.06E-02	497.08	
RURH106	LLD<6.38E-01		LLD<6.38E-01	621.80	
SB-124	LLD<3.17E-02		LLD<3.17E-02	602.72	
SB-125	LLD<3.32E-01		LLD<3.32E-01	176.33	
SC-46	LLD<1.47E-02		LLD<1.47E-02	1120.45	
SE-75	LLD<5.31E-02		LLD<5.31E-02	264.66	
SN-113	LLD<6.65E-02		LLD<6.65E-02	391.67	
SR-85	LLD<4.13E-02		LLD<4.13E-02	513.99	
SR-91	LLD<6.05E-02		LLD<6.05E-02	555.60	
SR-92	LLD<1.73E-02		LLD<1.73E-02	1383.94	
TA-182	LLD<3.80E-02		LLD<3.80E-02	1121.30	
TC-99M	LLD<2.32E-02		LLD<2.32E-02	140.51	
TE-123M	LLD<2.57E-02		LLD<2.57E-02	159.00	
TE-125M	LLD<7.31E+00		LLD<7.31E+00	109.27	
TE-132	LLD<3.45E-02		LLD<3.45E-02	228.16	
TH-228	LLD<2.37E+00		LLD<2.37E+00	84.37	
TL-208	LLD<3.97E-02		LLD<3.97E-02	583.14	
U-235	LLD<4.45E-02		LLD<4.45E-02	185.71	
U-237	LLD<1.42E-01		LLD<1.42E-01	208.00	
W-187	LLD<3.43E-02		LLD<3.43E-02	685.74	
XE-131M	LLD<1.17E+00		LLD<1.17E+00	163.98	
XE-133	LLD<8.69E-02		LLD<8.69E-02	81.00	
XE-133M	LLD<2.78E-01		LLD<2.78E-01	233.21	
XE-135	LLD<3.22E-02		LLD<3.22E-02	249.79	
XE-138	LLD<2.71E-01		LLD<2.71E-01	258.41	
Y-88	LLD<1.16E-02		LLD<1.16E-02	1836.06	
Y-91	LLD<5.21E+00		LLD<5.21E+00	1204.90	
Y-91M	LLD<4.59E-02		LLD<4.59E-02	555.60	
ZN-65	LLD<3.54E-02		LLD<3.54E-02	1115.55	
ZR-95	LLD<1.99E-02		LLD<1.99E-02	756.73	
ZR-97	LLD<1.14E-02		LLD<1.14E-02	743.33	
TOTAL	7.82E+01	+-9.86E-01	7.82E+01	+-9.86E-01		

STANDARD DEVIATION = 1.07

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.17E-08 UC/LI
TOTAL MEASURED ACTIVITY = 7.82E+01 (+-9.86E-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
53.58	26.97	2070.	9.7	2.17E+03

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
1823.80	911.80	122.	32.1	1.48E+00
2923.08	1461.72	822.	7.4	1.51E+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                                  28-SEP-90  12:25:43


               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: SD2082
ANALYZED BY:        VR

SAMPLE DESCRIPTION: F1080 SEG/COMP/#16
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 23-FEB-90 AT 19:34:09

COLLECT LIVE TIME:    3000. SECONDS
        REAL TIME:    3007. SECONDS
        DEAD TIME:     0.23 %

 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 28-SEP-90 12:25:43

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	1324.53	661.88	1.71	308.	47902.	0.9	CS-137
1B		661.85			36.	13.9	
2	2922.73	1460.90	1.84	10.	166.	16.5	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 28-SEP-90 12:25:43

SAMPLE: F1080 SEG/COMP/#16
DATA COLLECTED ON 23-FEB-90 AT 19:34:09
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<1.88E-01		LLD<1.88E-01		911.07	
AG-108M	LLD<2.14E-01		LLD<2.14E-01		433.94	
AG-110M	LLD<1.52E+00		LLD<1.52E+00		657.76	
AM-241	LLD<8.54E-01		LLD<8.54E-01		59.54	
AM-243	LLD<2.13E-01		LLD<2.13E-01		74.67	
AR-41	LLD<5.68E-02		LLD<5.68E-02		1293.64	
AU-198	LLD<1.65E-01		LLD<1.65E-01		411.80	
BA-133	LLD<2.23E-01		LLD<2.23E-01		356.02	
BA-139	LLD<4.59E-01		LLD<4.59E-01		165.85	
BA-140	LLD<5.56E-01		LLD<5.56E-01		537.27	
BA-141	LLD<4.59E-01		LLD<4.59E-01		190.23	
BE-7	LLD<1.80E+00		LLD<1.80E+00		477.59	
BI-207	LLD<1.17E-01		LLD<1.17E-01		569.70	
BI-212	LLD<7.68E-01		LLD<7.68E-01		727.27	
BI-214	LLD<2.72E-01		LLD<2.72E-01		609.32	
CD-109	LLD<2.73E+00		LLD<2.73E+00		88.03	
CE-139	LLD<1.04E-01		LLD<1.04E-01		165.85	
CE-141	LLD<1.68E-01		LLD<1.68E-01		145.44	
CEPR144	LLD<1.29E+00		LLD<1.29E+00		133.51	
CO-56	LLD<4.10E-02		LLD<4.10E-02		846.76	
CO-57	LLD<8.56E-02		LLD<8.56E-02		122.06	
CO-58	LLD<4.18E-02		LLD<4.18E-02		810.75	
CO-60	LLD<4.96E-02		LLD<4.96E-02		1332.50	
CR-51	LLD<1.23E+00		LLD<1.23E+00		320.09	
CS-134	LLD<5.25E-02		LLD<5.25E-02		795.84	
CS-136	LLD<4.24E-02		LLD<4.24E-02		818.51	
CS-137	1.03E+02	+-1.58E+00	1.03E+02	+-1.58E+00	661.65	0.23
CS-138	LLD<1.18E-01		LLD<1.18E-01		1435.86	
EU-152	LLD<2.10E-01		LLD<2.10E-01		1408.01	
EU-154	LLD<1.49E-01		LLD<1.49E-01		1274.45	
EU-155	LLD<3.85E-01		LLD<3.85E-01		105.31	
FE-59	LLD<7.50E-02		LLD<7.50E-02		1099.25	
HF-181	LLD<2.09E-01		LLD<2.09E-01		482.20	
HG-203	LLD<1.31E-01		LLD<1.31E-01		279.20	
I-131	LLD<1.71E-01		LLD<1.71E-01		364.48	
I-132	LLD<9.17E-01		LLD<9.17E-01		667.69	
I-133	LLD<1.53E-01		LLD<1.53E-01		529.69	
I-134	LLD<6.40E-02		LLD<6.40E-02		847.03	
I-135	LLD<1.61E-01		LLD<1.61E-01		1260.41	
K-40	LLD<1.02E+00		LLD<1.02E+00		1460.75	
KR-85	LLD<3.72E+01		LLD<3.72E+01		513.99	
KR-85M	LLD<1.07E-01		LLD<1.07E-01		151.17	
KR-87	LLD<3.87E-01		LLD<3.87E-01		402.58	
KR-89	LLD<5.58E+00		LLD<5.58E+00		220.90	
LA-140	LLD<5.81E-02		LLD<5.81E-02		1596.20	
LA-142	LLD<3.06E-01		LLD<3.06E-01		641.83	
MN-54	LLD<4.06E-02		LLD<4.06E-02		834.83	

MN-56	LLD<4.62E-02	LLD<4.62E-02	846.76
NA-22	LLD<5.29E-02	LLD<5.29E-02	1274.55
NA-24	LLD<4.15E-02	LLD<4.15E-02	1368.60
NB-94	LLD<3.85E-02	LLD<3.85E-02	702.63
NB-95	LLD<4.26E-02	LLD<4.26E-02	765.78
NB-97	LLD<1.71E+00	LLD<1.71E+00	657.92
NP-237	LLD<8.08E-01	LLD<8.08E-01	86.50
NP-238	LLD<1.32E-01	LLD<1.32E-01	984.45
NP-239	LLD<8.17E-01	LLD<8.17E-01	277.60
PA-233	LLD<3.16E-01	LLD<3.16E-01	311.98
PA-234M	LLD<7.98E+00	LLD<7.98E+00	1001.03
PB-210	LLD<5.03E+00	LLD<5.03E+00	465.03
PB-212	LLD<2.53E-01	LLD<2.53E-01	239.00
PB-214	LLD<3.48E-01	LLD<3.48E-01	351.92
PO-210	LLD<3.86E+03	LLD<3.86E+03	804.00
PO-214	LLD<4.67E+02	LLD<4.67E+02	799.70
PO-216	LLD<2.07E+03	LLD<2.07E+03	804.90
PU-239	LLD<1.24E+03	LLD<1.24E+03	129.30
PU-241	LLD<3.90E+04	LLD<3.90E+04	148.57
RA-224	LLD<2.62E+00	LLD<2.62E+00	240.99
RA-226	LLD<2.45E+00	LLD<2.45E+00	186.10
RB-88	LLD<4.24E-01	LLD<4.24E-01	1836.00
RB-89	LLD<1.94E-01	LLD<1.94E-01	1031.88
RN-220	LLD<1.18E+02	LLD<1.18E+02	549.73
RU-103	LLD<1.69E-01	LLD<1.69E-01	497.08
RURH106	LLD<2.43E+00	LLD<2.43E+00	621.80
SB-124	LLD<1.21E-01	LLD<1.21E-01	602.72
SB-125	LLD<1.25E+00	LLD<1.25E+00	176.33
SC-46	LLD<4.81E-02	LLD<4.81E-02	1120.45
SE-75	LLD<1.91E-01	LLD<1.91E-01	264.66
SN-113	LLD<2.36E-01	LLD<2.36E-01	391.67
SR-85	LLD<1.63E-01	LLD<1.63E-01	513.99
SR-91	LLD<2.23E-01	LLD<2.23E-01	555.60
SR-92	LLD<8.88E-02	LLD<8.88E-02	1383.94
TA-182	LLD<1.32E-01	LLD<1.32E-01	1121.30
TC-99M	LLD<8.72E-02	LLD<8.72E-02	140.51
TE-123M	LLD<9.89E-02	LLD<9.89E-02	159.00
TE-125M	LLD<2.70E+01	LLD<2.70E+01	109.27
TE-132	LLD<1.17E-01	LLD<1.17E-01	228.16
TH-228	LLD<9.12E+00	LLD<9.12E+00	84.37
TL-208	LLD<1.43E-01	LLD<1.43E-01	583.14
U-235	LLD<1.61E-01	LLD<1.61E-01	185.71
U-237	LLD<4.71E-01	LLD<4.71E-01	208.00
W-187	LLD<1.42E-01	LLD<1.42E-01	685.74
XE-131M	LLD<4.31E+00	LLD<4.31E+00	163.98
XE-133	LLD<3.05E-01	LLD<3.05E-01	81.00
XE-133M	LLD<1.01E+00	LLD<1.01E+00	233.21
XE-135	LLD<1.18E-01	LLD<1.18E-01	249.79
XE-138	LLD<8.99E-01	LLD<8.99E-01	258.41
Y-88	LLD<4.02E-02	LLD<4.02E-02	1836.06
Y-91	LLD<1.52E+01	LLD<1.52E+01	1204.90
Y-91M	LLD<1.69E-01	LLD<1.69E-01	555.60
ZN-65	LLD<1.33E-01	LLD<1.33E-01	1115.55
ZR-95	LLD<7.38E-02	LLD<7.38E-02	756.73
ZR-97	LLD<4.64E-02	LLD<4.64E-02	743.33
	---	---	
TOTAL	1.03E+02 +-1.58E+00	1.03E+02 +-1.58E+00	

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.16E-08 UC/LI

TOTAL MEASURED ACTIVITY = 1.03E+02 (+-1.58E+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
2922.73	1460.90	166.	16.5	2.17E+01

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

222-S COUNTING ROOM                                  28-SEP-90  12:21:31


                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: SD2081
ANALYZED BY:         VR

SAMPLE DESCRIPTION: F1075 SEG/COMP/#11
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 23-FEB-90 AT 18:34:34

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
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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	1127.91	563.59	1.66	449.	416.	15.3	CS-134, EU-152
2C	1139.90	569.58	1.66	494.	790.	12.9	CS-134, BI-207
3	1210.67	604.96	1.56	418.	4009.	3.5	CS-134
4	1324.52	661.87	1.75	272.	9966.	2.0	CS-137
4B		661.85			36.	13.9	
5C	1592.78	795.99	1.71	286.	2809.	4.8	CS-134
6C	1605.01	802.10	1.71	258.	259.	13.2	CS-134
7	2347.20	1173.15	1.85	184.	3633.	3.5	CO-60
8	2665.65	1332.37	2.27	34.	3193.	3.5	CO-60
8B		1332.24			9.	37.4	
9	2731.42	1365.25	1.56	13.	70.	29.1	CS-134
10	2922.01	1460.55	1.87	18.	137.	19.8	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 28-SEP-90 12:21:31

SAMPLE: F1075 SEG/COMP/#11
DATA COLLECTED ON 23-FEB-90 AT 18:34:34
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<1.15E+01		LLD<1.15E+01		911.07	
AG-108M	LLD<2.82E+00		LLD<2.82E+00		433.94	
AG-110M	LLD<1.40E+01		LLD<1.40E+01		657.76	
AM-241	LLD<1.32E+01		LLD<1.32E+01		59.54	
AM-243	LLD<3.40E+00		LLD<3.40E+00		74.67	
AR-41	LLD<1.90E+00		LLD<1.90E+00		1293.64	
AU-198	LLD<2.32E+00		LLD<2.32E+00		411.80	
BA-133	LLD<3.26E+00		LLD<3.26E+00		356.02	
BA-139	LLD<6.97E+00		LLD<6.97E+00		165.85	
BA-140	LLD<9.61E+00		LLD<9.61E+00		537.27	
BA-141	LLD<6.76E+00		LLD<6.76E+00		190.23	
BE-7	LLD<2.27E+01		LLD<2.27E+01		477.59	
BI-207	LLD<2.45E+00		LLD<2.45E+00		569.70	
BI-212	LLD<3.60E+01		LLD<3.60E+01		727.27	
BI-214	LLD<1.73E+01		LLD<1.73E+01		609.32	
CD-109	LLD<4.39E+01		LLD<4.39E+01		88.03	
CE-139	LLD<1.58E+00		LLD<1.58E+00		165.85	
CE-141	LLD<2.64E+00		LLD<2.64E+00		145.44	
CEPR144	LLD<2.05E+01		LLD<2.05E+01		133.51	
CO-56	LLD<2.57E+00		LLD<2.57E+00		846.76	
CO-57	LLD<1.30E+00		LLD<1.30E+00		122.06	
CO-58	LLD<2.29E+00		LLD<2.29E+00		810.75	
CO-60	2.09E+02	+-7.82E+00	2.09E+02	+-7.82E+00	1332.50	-0.13
					1173.24	-0.08
CR-51	LLD<1.80E+01		LLD<1.80E+01		320.09	
CS-134	1.41E+02	+-7.00E+00	1.41E+02	+-7.00E+00	795.84	0.14
					604.70	0.26
CS-136	LLD<2.60E+00		LLD<2.60E+00		818.51	
CS-137	4.29E+02	+-1.02E+01	4.29E+02	+-1.02E+01	661.65	0.22
CS-138	LLD<2.22E+00		LLD<2.22E+00		1435.86	
EU-152	LLD<3.80E+00		LLD<3.80E+00		1408.01	
EU-154	LLD<4.32E+00		LLD<4.32E+00		1274.45	
EU-155	LLD<6.18E+00		LLD<6.18E+00		105.31	
FE-59	LLD<5.76E+00		LLD<5.76E+00		1099.25	
HF-181	LLD<2.90E+00		LLD<2.90E+00		482.20	
HG-203	LLD<2.01E+00		LLD<2.01E+00		279.20	
I-131	LLD<2.48E+00		LLD<2.48E+00		364.48	
I-132	LLD<8.70E+00		LLD<8.70E+00		667.69	
I-133	LLD<2.50E+00		LLD<2.50E+00		529.69	
I-134	LLD<4.02E+00		LLD<4.02E+00		847.03	
I-135	LLD<5.49E+00		LLD<5.49E+00		1260.41	
K-40	LLD<2.18E+01		LLD<2.18E+01		1460.75	
KR-85	LLD<5.54E+02		LLD<5.54E+02		513.99	
KR-85M	LLD<1.64E+00		LLD<1.64E+00		151.17	
KR-87	LLD<5.48E+00		LLD<5.48E+00		402.58	
KR-89	LLD<7.95E+01		LLD<7.95E+01		220.90	
LA-140	LLD<8.48E-01		LLD<8.48E-01		1596.20	

LA-142	LLD<5.54E+00	LLD<5.54E+00	641.83
MN-54	LLD<2.36E+00	LLD<2.36E+00	834.83
MN-56	LLD<2.90E+00	LLD<2.90E+00	846.76
NA-22	LLD<1.54E+00	LLD<1.54E+00	1274.55
NA-24	LLD<1.38E+00	LLD<1.38E+00	1368.60
NB-94	LLD<2.10E+00	LLD<2.10E+00	702.63
NB-95	LLD<2.19E+00	LLD<2.19E+00	765.78
NB-97	LLD<1.58E+01	LLD<1.58E+01	657.92
NP-237	LLD<1.25E+01	LLD<1.25E+01	86.50
NP-238	LLD<1.16E+01	LLD<1.16E+01	984.45
NP-239	LLD<1.21E+01	LLD<1.21E+01	277.60
PA-233	LLD<4.48E+00	LLD<4.48E+00	311.98
PA-234M	LLD<5.28E+02	LLD<5.28E+02	1001.03
PB-210	LLD<6.15E+01	LLD<6.15E+01	465.03
PB-212	LLD<3.76E+00	LLD<3.76E+00	239.00
PB-214	LLD<5.04E+00	LLD<5.04E+00	351.92
PO-210	LLD<2.04E+05	LLD<2.04E+05	804.00
PO-214	LLD<7.98E+04	LLD<7.98E+04	799.70
PO-216	LLD<1.50E+05	LLD<1.50E+05	804.90
PU-239	LLD<1.88E+04	LLD<1.88E+04	129.30
PU-241	LLD<6.19E+05	LLD<6.19E+05	148.57
RA-224	LLD<3.94E+01	LLD<3.94E+01	240.99
RA-226	LLD<3.68E+01	LLD<3.68E+01	186.10
RB-88	LLD<8.48E+00	LLD<8.48E+00	1836.00
RB-89	LLD<1.44E+01	LLD<1.44E+01	1031.88
RN-220	LLD<2.13E+03	LLD<2.13E+03	549.73
RU-103	LLD<2.45E+00	LLD<2.45E+00	497.08
RURH106	LLD<4.47E+01	LLD<4.47E+01	621.80
SB-124	LLD<4.87E+00	LLD<4.87E+00	602.72
SB-125	LLD<1.91E+01	LLD<1.91E+01	176.33
SC-46	LLD<3.01E+00	LLD<3.01E+00	1120.45
SE-75	LLD<2.95E+00	LLD<2.95E+00	264.66
SN-113	LLD<3.32E+00	LLD<3.32E+00	391.67
SR-85	LLD<2.43E+00	LLD<2.43E+00	513.99
SR-91	LLD<4.14E+00	LLD<4.14E+00	555.60
SR-92	LLD<1.53E+00	LLD<1.53E+00	1383.94
TA-182	LLD<9.01E+00	LLD<9.01E+00	1121.30
TC-99M	LLD<1.36E+00	LLD<1.36E+00	140.51
TE-123M	LLD<1.50E+00	LLD<1.50E+00	159.00
TE-125M	LLD<4.11E+02	LLD<4.11E+02	109.27
TE-132	LLD<1.70E+00	LLD<1.70E+00	228.16
TH-228	LLD<1.49E+02	LLD<1.49E+02	84.37
TL-208	LLD<2.82E+00	LLD<2.82E+00	583.14
U-235	LLD<2.42E+00	LLD<2.42E+00	185.71
U-237	LLD<6.86E+00	LLD<6.86E+00	208.00
W-187	LLD<8.24E+00	LLD<8.24E+00	685.74
XE-131M	LLD<6.63E+01	LLD<6.63E+01	163.98
XE-133	LLD<4.98E+00	LLD<4.98E+00	81.00
XE-133M	LLD<1.58E+01	LLD<1.58E+01	233.21
XE-135	LLD<1.81E+00	LLD<1.81E+00	249.79
XE-138	LLD<1.34E+01	LLD<1.34E+01	258.41
Y-88	LLD<8.05E-01	LLD<8.05E-01	1836.06
Y-91	LLD<6.93E+02	LLD<6.93E+02	1204.90
Y-91M	LLD<3.13E+00	LLD<3.13E+00	555.60
ZN-65	LLD<7.00E+00	LLD<7.00E+00	1115.55
ZR-95	LLD<4.21E+00	LLD<4.21E+00	756.73
ZR-97	LLD<2.18E+00	LLD<2.18E+00	743.33
TOTAL	7.79E+02 +-1.46E+01	7.79E+02 +-1.46E+01	

STANDARD DEVIATION = 0.18

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.71E-09 UC/LI
TOTAL MEASURED ACTIVITY = 7.79E+02 (+-1.46E+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
1127.91	563.59	416.	15.3	2.45E+01
1139.90	569.58	790.	12.9	4.71E+01
1605.01	802.10	259.	13.2	2.08E+01
2731.42	1365.25	70.	29.1	8.65E+00

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2922.01	1460.55	137.	19.8	1.79E+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                                  28-SEP-90  12:30:00


                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: SD1937
ANALYZED BY:         VR

SAMPLE DESCRIPTION: F1077 SEG/COMP/#13
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 23-FEB-90 AT 19:20:10

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

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

ENERGY CALIBRATION PERFORMED 23-NOV-89
EFFICIENCY CALIBRATION PERFORMED  2-MAR-89
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222-S COUNTING ROOM 28-SEP-90 12:30:00

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
1C	1126.73	562.84	1.39	455.	465.	12.6	CS-134, EU-152
2C	1138.94	568.94	1.39	479.	869.	11.5	CS-134, BI-207
3	1209.68	604.30	1.40	480.	5362.	2.9	CS-134
4	1323.51	661.20	1.59	319.	9587.	2.1	CS-137
4B		661.82			35.	46.4	
5C	1591.82	795.34	1.52	240.	3816.	3.9	CS-134
6C	1604.05	801.45	1.52	231.	377.	13.1	CS-134
7	2346.32	1172.71	1.90	195.	5043.	2.9	CO-60
8	2664.72	1332.03	1.97	18.	4547.	2.9	CO-60
9	2730.17	1364.79	2.17	13.	101.	22.6	CS-134
10	2920.99	1460.30	1.74	19.	184.	16.4	K-40
10B		1461.77			182.	11.2	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

C - MULTIPLET ANALYSIS CONVERGED NORMALLY
B - ENVIRONMENTAL BACKGROUND PEAK

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

222-S COUNTING ROOM 28-SEP-90 12:30:00

SAMPLE: F1077 SEG/COMP/#13
DATA COLLECTED ON 23-FEB-90 AT 19:20:10
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<7.78E-01		LLD<7.78E-01		911.07	
AG-108M	LLD<2.01E-01		LLD<2.01E-01		433.94	
AG-110M	LLD<9.35E-01		LLD<9.35E-01		657.76	
AM-241	LLD<8.03E-01		LLD<8.03E-01		59.54	
AM-243	LLD<2.10E-01		LLD<2.10E-01		74.67	
AR-41	LLD<1.27E-01		LLD<1.27E-01		1293.64	
AU-198	LLD<1.75E-01		LLD<1.75E-01		411.80	
BA-133	LLD<2.61E-01		LLD<2.61E-01		356.02	
BA-139	LLD<5.31E-01		LLD<5.31E-01		165.85	
BA-140	LLD<7.16E-01		LLD<7.16E-01		537.27	
BA-141	LLD<5.25E-01		LLD<5.25E-01		190.23	
BE-7	LLD<1.77E+00		LLD<1.77E+00		477.59	
BI-207	LLD<1.81E-01		LLD<1.81E-01		569.70	
BI-212	LLD<2.48E+00		LLD<2.48E+00		727.27	
BI-214	LLD<7.96E-01		LLD<7.96E-01		609.32	
CD-109	LLD<3.09E+00		LLD<3.09E+00		88.03	
CE-139	LLD<1.20E-01		LLD<1.20E-01		165.85	
CE-141	LLD<1.87E-01		LLD<1.87E-01		145.44	
CEPR144	LLD<1.54E+00		LLD<1.54E+00		133.51	
CO-56	LLD<1.80E-01		LLD<1.80E-01		846.76	
CO-57	LLD<1.01E-01		LLD<1.01E-01		122.06	
CO-58	LLD<1.83E-01		LLD<1.83E-01		810.75	
CO-60	2.16E+01	+-6.73E-01	2.16E+01	+-6.73E-01	1332.50	-0.47
					1173.24	-0.52
CR-51	LLD<1.40E+00		LLD<1.40E+00		320.09	
CS-134	1.38E+01	+-5.61E-01	1.38E+01	+-5.61E-01	795.84	-0.51
					604.70	-0.40
CS-136	LLD<1.88E-01		LLD<1.88E-01		818.51	
CS-137	2.97E+01	+-7.17E-01	2.97E+01	+-7.17E-01	661.65	-0.45
CS-138	LLD<1.55E-01		LLD<1.55E-01		1435.86	
EU-152	LLD<3.89E-01		LLD<3.89E-01		1408.01	
EU-154	LLD<2.80E-01		LLD<2.80E-01		1274.45	
EU-155	LLD<3.83E-01		LLD<3.83E-01		105.31	
FE-59	LLD<4.07E-01		LLD<4.07E-01		1099.25	
HF-181	LLD<1.96E-01		LLD<1.96E-01		482.20	
HG-203	LLD<1.63E-01		LLD<1.63E-01		279.20	
I-131	LLD<2.02E-01		LLD<2.02E-01		364.48	
I-132	LLD<2.04E-01		LLD<2.04E-01		667.69	
I-133	LLD<1.98E-01		LLD<1.98E-01		529.69	
I-134	LLD<2.67E-01		LLD<2.67E-01		847.03	
I-135	LLD<4.13E-01		LLD<4.13E-01		1260.41	
K-40	LLD<1.91E+00		LLD<1.91E+00		1460.75	
KR-85	LLD<3.98E+01		LLD<3.98E+01		513.99	
KR-85M	LLD<1.22E-01		LLD<1.22E-01		151.17	
KR-87	LLD<4.45E-01		LLD<4.45E-01		402.58	
KR-89	LLD<6.66E+00		LLD<6.66E+00		220.90	
LA-140	LLD<7.35E-02		LLD<7.35E-02		1596.20	

LA-142	LLD<3.90E-01	LLD<3.90E-01	641.83
MN-54	LLD<1.85E-01	LLD<1.85E-01	834.83
MN-56	LLD<2.03E-01	LLD<2.03E-01	846.76
NA-22	LLD<1.03E-01	LLD<1.03E-01	1274.55
NA-24	LLD<1.91E-01	LLD<1.91E-01	1368.60
NB-94	LLD<1.56E-01	LLD<1.56E-01	702.63
NB-95	LLD<1.59E-01	LLD<1.59E-01	765.78
NB-97	LLD<1.13E+00	LLD<1.13E+00	657.92
NP-237	LLD<8.95E-01	LLD<8.95E-01	86.50
NP-238	LLD<8.09E-01	LLD<8.09E-01	984.45
NP-239	LLD<9.26E-01	LLD<9.26E-01	277.60
PA-233	LLD<4.15E-01	LLD<4.15E-01	311.98
PA-234M	LLD<3.85E+01	LLD<3.85E+01	1001.03
PB-210	LLD<4.64E+00	LLD<4.64E+00	465.03
PB-212	LLD<2.90E-01	LLD<2.90E-01	239.00
PB-214	LLD<4.42E-01	LLD<4.42E-01	351.92
PO-210	LLD<1.84E+04	LLD<1.84E+04	804.00
PO-214	LLD<6.72E+03	LLD<6.72E+03	799.70
PO-216	LLD<1.48E+04	LLD<1.48E+04	804.90
PU-239	LLD<1.32E+03	LLD<1.32E+03	129.30
PU-241	LLD<4.70E+04	LLD<4.70E+04	148.57
RA-224	LLD<3.16E+00	LLD<3.16E+00	240.99
RA-226	LLD<2.87E+00	LLD<2.87E+00	186.10
RB-88	LLD<7.95E-01	LLD<7.95E-01	1836.00
RB-89	LLD<9.12E-01	LLD<9.12E-01	1031.88
RN-220	LLD<1.56E+02	LLD<1.56E+02	549.73
RU-103	LLD<1.90E-01	LLD<1.90E-01	497.08
RURH106	LLD<3.18E+00	LLD<3.18E+00	621.80
SB-124	LLD<2.34E-01	LLD<2.34E-01	602.72
SB-125	LLD<1.47E+00	LLD<1.47E+00	176.33
SC-46	LLD<2.03E-01	LLD<2.03E-01	1120.45
SE-75	LLD<2.07E-01	LLD<2.07E-01	264.66
SN-113	LLD<2.51E-01	LLD<2.51E-01	391.67
SR-85	LLD<1.75E-01	LLD<1.75E-01	513.99
SR-91	LLD<3.04E-01	LLD<3.04E-01	555.60
SR-92	LLD<7.70E-02	LLD<7.70E-02	1383.94
TA-182	LLD<6.21E-01	LLD<6.21E-01	1121.30
TC-99M	LLD<1.03E-01	LLD<1.03E-01	140.51
TE-123M	LLD<1.11E-01	LLD<1.11E-01	159.00
TE-125M	LLD<2.77E+01	LLD<2.77E+01	109.27
TE-132	LLD<1.43E-01	LLD<1.43E-01	228.16
TH-228	LLD<9.59E+00	LLD<9.59E+00	84.37
TL-208	LLD<2.23E-01	LLD<2.23E-01	583.14
U-235	LLD<1.90E-01	LLD<1.90E-01	185.71
U-237	LLD<5.43E-01	LLD<5.43E-01	208.00
W-187	LLD<5.92E-01	LLD<5.92E-01	685.74
XE-131M	LLD<4.90E+00	LLD<4.90E+00	163.98
XE-133	LLD<3.37E-01	LLD<3.37E-01	81.00
XE-133M	LLD<1.25E+00	LLD<1.25E+00	233.21
XE-135	LLD<1.43E-01	LLD<1.43E-01	249.79
XE-138	LLD<1.04E+00	LLD<1.04E+00	258.41
Y-88	LLD<7.54E-02	LLD<7.54E-02	1836.06
Y-91	LLD<5.07E+01	LLD<5.07E+01	1204.90
Y-91M	LLD<2.30E-01	LLD<2.30E-01	555.60
ZN-65	LLD<4.96E-01	LLD<4.96E-01	1115.55
ZR-95	LLD<3.07E-01	LLD<3.07E-01	756.73
ZR-97	LLD<1.64E-01	LLD<1.64E-01	743.33
TOTAL	6.50E+01 +-1.13E+00	6.50E+01 +-1.13E+00	

STANDARD DEVIATION = 0.05

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.45E-09 UC/LI
TOTAL MEASURED ACTIVITY = 6.50E+01 (+-1.13E+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
1126.73	562.84	465.	12.6	1.99E+01
1138.94	568.94	869.	11.5	3.75E+01
1604.05	801.45	377.	13.1	2.16E+01
2730.17	1364.79	101.	22.6	9.06E+00

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2920.99	1460.30	184.	16.4	1.74E+01

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)		

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	2.041950E-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
```

Single Shell Tank
Calibration Record

Analyte:	Mixed Isotope Standards		
Procedure:	LQ-508-003	Revision:	A-0
Instrument:	GEA Detector #2	Property Number:	401934
Technologist:	J. L. Anderson	Payroll Number:	61413
Date:	See Attached Sheets		
Calibration Standard ID:	56B40 D1		
Analyte Concentration:	N/A		
Type of Calibration:	Gamma Energy Analysis (Efficiency)		

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 2, 1989		
Calibration Standard ID:	56B40 D1		
Analyte Concentration:	N/A		
Type of Calibration:	Gamma Energy Analysis (Efficiency)		

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: 56840 D1

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

EQUATION 0-165 KEV

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

EQUATION 165-1836 KEV

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

GEA CALIBRATION RECORD PROCEDURE LQ-508-003

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

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

EQUATION 0-165 KEV

LOG(EFF) = -6.838496E+00
+ 8.819509E-01 *LOG(ENERGY)
+ -9.970528E-02 *LOG(ENERGY)^2

EQUATION 165-1836 KEV

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

GEA CALIBRATION RECORD PROCEDURE LQ-508-003

DETECTOR: 3
GEOMETRY CODE: 43
GEOMETRY DECSRIPTION: 22 ML LIQUID, POS 3
CALIBRATION DATE: 2-Jul-89
ANALYST(S): J. L. ANDERSON/M. R. DOWELL
STANDARD ID: 56840 01

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:	B-1
Instrument:	GEA Detector #4	Property Number:	401934
Technologist:	J. L. Anderson	Payroll Number:	61413
Date:	September 1, 1989		
Calibration Standard ID:	56B40 D1		
Analyte Concentration:	N/A		
Type of Calibration:	Gamma Energy Analysis (Efficiency)		

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

GEA CALIBRATION RECORD PROCEDURE LQ-508-003

DETECTOR:	4
GEOMETRY CODE:	41
GEOMETRY DESCRIPTION:	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

Analytical Batch

LAB SEGMENT SERIAL #: F1067

CUSTOMER ID: 000013

INSTRUMENT	E60044
PROCEDURE/REV	LA-503-156/C-2
TECHNOLOGIST	R. D. Hale
DATE	February 26, 1990
TEMPERATURE	N/A
STARTING TIME	0900 02-25-90
ENDING TIME	1300 02-26-90
CHEMIST	S. A. Catlow

Plutonium
Water Digestion/Fusion
Dissolution

Jupiter-Canberra

	DESCRIPTION		LAB ID
1	Initial LMCS Check Std		F1047
2	Reagent Blank		F1048
3	Sample	Comp 12	F1049
4	Duplicate Sample	Comp 12	F1050
5	Sample	Comp 12	F1055
6	Duplicate Sample	Comp 12	F1056
7	Sample	Comp 13	F1073
8	Duplicate Sample	Comp 13	F1074
9	Sample	Comp 13	F1079
10	Duplicate Sample	Comp 13	F1080
11	Spike Sample	Comp 13	F1081

	DESCRIPTION	LAB ID
12	Final LMCS Check Std	F1082
13		
14		
15		
16		
17		
18		
19		
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STANDARD TYPE	PRIMARY BOOK # & ALIQUOT VOL.	SECOND BOOK # & ALIQUOT VOL.	THIRD BOOK # & ALIQUOT VOL.	FINAL VOL. OF STD.
LMCS Check Std	16B43/100 uL			N/A
Spike	10B43B/50 uL	F1079/1 mL	16B43/100 uL	N/A

SST-102 Rev. I 10/2/90 Interim

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
F-1047 SEG.COMP#7 PU
File ID: SD2770.SPC

Counted on: 2/28/90 @ 5: 0
Detector/Geometry number: 2/ 1
Count time: 30000. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	7.5	7.4	472.982	472.982	20.000	8.574	10.000	11.457
2	1961.6	1990.9	361.219	361.219	20.000	12.114	10.000	6.024
3	267.7	271.5	303.904	303.904	20.000	11.590	10.000	4.167
4	2452.4	2458.2	231.088	231.088	20.000	11.609	10.000	6.983
5	9.9	6.3	152.832	152.832	52.000	462.923	26.000	72.922

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1		0.0012		6.285		0.04	0.10	0.50	0.226E-06
2	Pu236	0.4286	5.756	5.760	-0.004	0.06	36.74	180.58	0.813E-04
3	Pu238	0.0642	5.499	5.491	0.008	0.05	5.50	36.81	0.166E-04
	Am241		5.480	5.491	-0.011				0.127E-04
4	Pu239	0.4984	5.143	5.149	-0.006	0.05	42.72	205.79	0.927E-04
	Pu240		5.144	5.149	-0.005				0.927E-04
5	Np237	0.0076	4.640	4.781	-0.141	2.18	0.65	52.40	0.236E-04
	Np237		4.781	4.781	0.000				0.163E-05

DETECTOR CALIBRATION

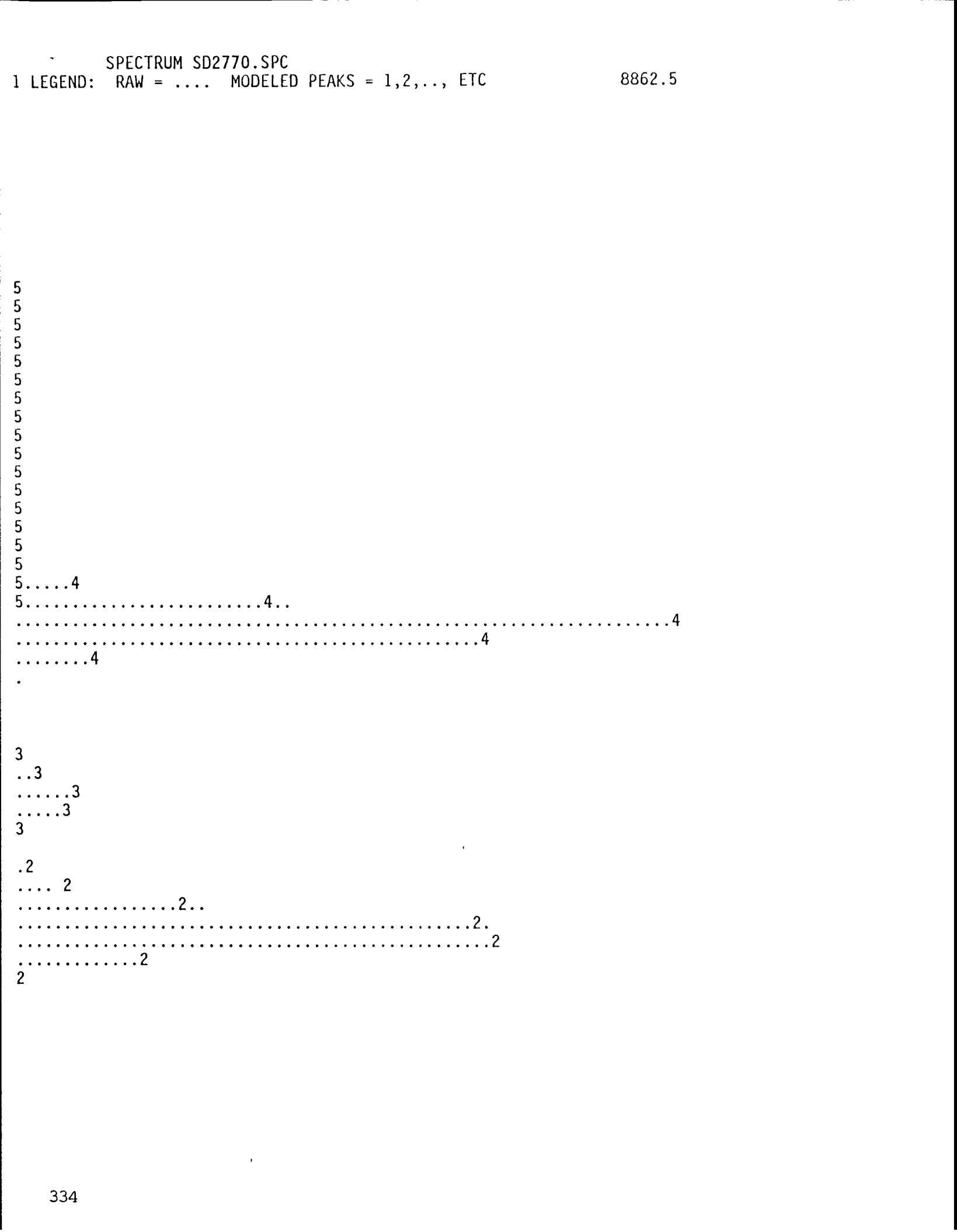
Energy(MEV) = 4.062 + (0.0047)*Channel
Energy range (MeV): 4.062 TO 6.469
Efficiency = 0.2076 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	42631.0	100.000
Smoothed	42630.9	100.000
Composite fit	42858.6	100.534
Residuals	-228.8	-0.537

Analyzed by: _____
DM

SPECTRUM SD2770.SPC



1
1

Raw Data Dump for AEA Spectrum: SP:SD2770.SPC

1	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
11	1.	0.	0.	0.	0.	1.	0.	1.	1.	0.
21	0.	1.	0.	0.	0.	0.	0.	2.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
41	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
51	0.	0.	0.	1.	2.	0.	0.	0.	2.	1.
61	2.	0.	0.	0.	1.	0.	0.	0.	1.	0.
71	0.	0.	2.	1.	0.	1.	0.	1.	1.	0.
81	0.	1.	0.	1.	0.	1.	2.	2.	1.	0.
91	0.	0.	0.	1.	0.	1.	0.	0.	0.	2.
101	4.	0.	2.	2.	1.	1.	0.	0.	1.	1.
111	0.	1.	0.	0.	1.	1.	2.	0.	0.	1.
121	1.	1.	2.	1.	1.	0.	2.	0.	1.	3.
131	1.	1.	2.	2.	1.	3.	2.	0.	4.	3.
141	2.	2.	1.	2.	0.	1.	3.	1.	4.	2.
151	5.	1.	3.	3.	1.	2.	2.	2.	2.	1.
161	4.	2.	1.	2.	3.	3.	2.	4.	10.	5.
171	6.	7.	2.	8.	5.	12.	8.	5.	10.	11.
181	5.	7.	11.	5.	7.	9.	12.	6.	9.	8.
191	8.	7.	9.	11.	11.	8.	10.	5.	11.	9.
201	12.	19.	6.	14.	22.	22.	42.	43.	40.	64.
211	72.	70.	126.	163.	189.	253.	285.	346.	425.	509.
221	652.	730.	809.	901.	1014.	1161.	1273.	1376.	1456.	1463.
231	1415.	1293.	1198.	965.	835.	603.	463.	314.	236.	154.
241	76.	42.	26.	13.	7.	6.	3.	4.	2.	7.
251	6.	3.	6.	3.	9.	6.	3.	5.	7.	6.
261	11.	8.	4.	3.	4.	10.	7.	7.	12.	8.
271	7.	10.	7.	8.	8.	10.	13.	15.	10.	10.
281	15.	22.	17.	21.	35.	32.	37.	46.	55.	61.
291	66.	61.	50.	93.	84.	87.	118.	137.	132.	134.
301	133.	162.	136.	158.	146.	130.	113.	92.	72.	40.
311	35.	27.	18.	11.	11.	3.	7.	14.	7.	8.
321	5.	4.	2.	7.	9.	11.	15.	8.	13.	13.
331	13.	15.	19.	14.	34.	30.	31.	38.	41.	69.
341	79.	113.	121.	162.	190.	238.	287.	382.	448.	494.
351	575.	627.	737.	764.	840.	899.	1001.	1038.	1122.	1113.
361	1156.	1038.	936.	891.	724.	552.	404.	301.	206.	127.
371	52.	37.	19.	10.	1.	1.	1.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	1.	1.	1.	0.	0.	0.	4.
421	0.	2.	0.	1.	3.	3.	0.	0.	1.	1.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
461	1.	3.	0.	1.	2.	0.	3.	3.	6.	4.
471	5.	6.	4.	1.	6.	3.	0.	2.	1.	1.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
F-1048 SEG.COMP#8 PU
File ID: SD3002.SPC

Counted on: 2/28/90 @ 5: 0
Detector/Geometry number: 3/ 1
Count time: 30000. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	5.8	5.7	478.842	478.842	20.000	14.589	10.000	5.526
2	1711.9	1727.6	364.340	364.340	24.000	13.774	12.000	7.444
3	62.9	66.5	306.293	306.293	24.000	12.506	12.000	1.978
4	10.3	10.7	268.032	268.032	20.000	3.851	10.000	1.021
5	22.4	22.1	232.826	232.826	20.000	9.541	10.000	5.308

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1		0.0034		6.318		0.07	0.12	0.60	0.272E-06
2	Pu236	0.9204	5.756	5.769	-0.013	0.07	32.84	166.41	0.750E-04
	Cm243		5.786	5.769	0.017				0.101E-03
3	Pu238	0.0604	5.499	5.490	0.009	0.06	2.16	14.87	0.670E-05
	Am241		5.480	5.490	-0.010				0.513E-05
4		0.0057		5.306		0.02	0.20	1.00	0.452E-06
5	Pu239	0.0101	5.143	5.137	0.006	0.05	0.36	1.80	0.810E-06
	Pu240		5.144	5.137	0.007				0.810E-06

DETECTOR CALIBRATION
Energy(MEV) = 4.020 + (0.0048)*Channel
Energy range (MeV): 4.020 TO 6.477
Efficiency = 0.2014 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	17785.0	100.000
Smoothed	17784.3	99.996
Composite fit	17843.4	100.329
Residuals	-59.1	-0.332

Analyzed by: _____
DM

SPECTRUM SD3002.SPC
1 LEGEND: RAW = ... MODELED PEAKS = 1,2,.., ETC 6509.8

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Raw Data Dump for AEA Spectrum: SP:SD3002.SPC

1	0.	0.	0.	0.	0.	1.	0.	0.	1.	1.
11	0.	0.	2.	1.	0.	0.	2.	1.	0.	0.
21	0.	0.	1.	0.	0.	0.	0.	0.	1.	2.
31	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
41	0.	2.	0.	0.	0.	1.	0.	0.	0.	1.
51	0.	0.	0.	0.	2.	1.	1.	1.	0.	2.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	1.	0.	1.	0.	0.	0.	3.	0.	2.
81	0.	1.	2.	0.	0.	1.	0.	0.	1.	0.
91	2.	2.	1.	0.	0.	0.	0.	0.	2.	0.
101	2.	0.	0.	0.	0.	0.	0.	2.	1.	0.
111	1.	1.	0.	0.	1.	1.	0.	0.	0.	1.
121	0.	1.	2.	0.	1.	3.	0.	1.	1.	2.
131	1.	1.	0.	1.	3.	1.	1.	0.	0.	5.
141	0.	0.	1.	0.	1.	1.	1.	2.	2.	0.
151	2.	1.	1.	4.	1.	0.	0.	1.	1.	1.
161	1.	1.	0.	1.	1.	1.	0.	1.	1.	1.
171	1.	1.	1.	3.	0.	3.	2.	0.	2.	2.
181	0.	2.	1.	0.	1.	0.	0.	1.	1.	0.
191	0.	1.	1.	0.	1.	0.	2.	3.	1.	0.
201	1.	0.	0.	1.	0.	0.	2.	0.	1.	1.
211	0.	1.	0.	3.	2.	4.	3.	2.	3.	6.
221	7.	5.	7.	6.	5.	7.	15.	12.	16.	11.
231	18.	16.	15.	13.	9.	6.	12.	6.	10.	4.
241	3.	5.	5.	3.	3.	3.	1.	0.	7.	4.
251	4.	4.	4.	6.	8.	8.	8.	7.	12.	12.
261	10.	7.	10.	19.	7.	11.	18.	10.	9.	7.
271	14.	9.	11.	12.	9.	9.	6.	8.	10.	6.
281	3.	8.	7.	9.	26.	18.	18.	19.	28.	21.
291	20.	23.	18.	24.	32.	29.	19.	22.	33.	30.
301	27.	35.	26.	41.	33.	32.	34.	33.	27.	33.
311	27.	14.	16.	8.	6.	7.	0.	3.	5.	2.
321	1.	1.	1.	2.	3.	3.	5.	5.	4.	2.
331	7.	9.	13.	8.	12.	17.	12.	13.	15.	19.
341	23.	37.	55.	73.	98.	129.	149.	178.	204.	240.
351	345.	352.	396.	468.	549.	604.	702.	794.	836.	844.
361	934.	966.	970.	933.	936.	853.	753.	639.	556.	463.
371	332.	225.	173.	102.	66.	43.	19.	15.	8.	3.
381	2.	0.	1.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
411	0.	0.	0.	0.	0.	2.	1.	1.	0.	0.
421	0.	0.	1.	0.	3.	0.	1.	0.	0.	0.
431	2.	1.	0.	1.	1.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
451	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
461	1.	1.	1.	0.	0.	2.	1.	1.	3.	3.
471	5.	2.	2.	3.	3.	2.	3.	1.	3.	5.
481	4.	2.	1.	0.	3.	1.	1.	0.	0.	0.
491	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
F1079
File ID: SD5637.SPC

Counted on: 3/ 1/90 @11: 0
Detector/Geometry number: 5/ 1
Count time: 30000. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	7.2	7.2	477.621	477.621	24.000	10.651	12.000	4.886
2	2122.5	2155.0	364.252	364.252	20.000	9.908	10.000	4.451
3	84.8	87.3	306.393	306.393	20.000	10.887	10.000	2.161
4	61.1	61.7	233.661	233.661	20.000	9.321	10.000	3.681

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1		0.0031		6.333		0.05	0.13	0.55	0.246E-06
2	Cm243	0.9131	5.786	5.800	-0.014	0.05	38.24	221.14	0.996E-04
	Cm244		5.796	5.800	-0.004				0.727E-04
3	Pu238	0.0569	5.499	5.528	-0.029	0.05	2.38	13.96	0.629E-05
4		0.0269		5.186		0.04	1.13	4.76	0.214E-05

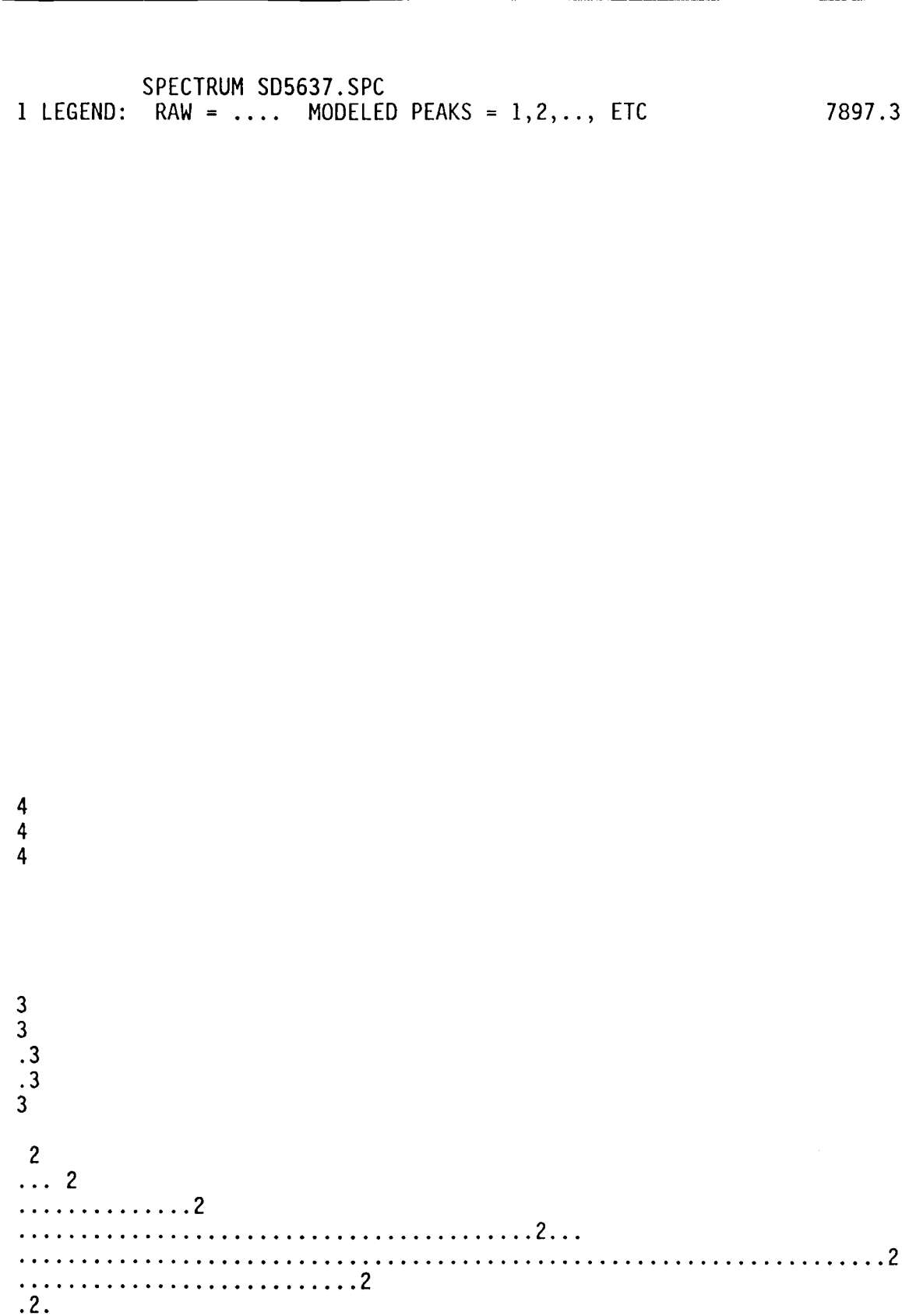
DETECTOR CALIBRATION

Energy(MEV) = 4.088 + (0.0047)*Channel
Energy range (MeV): 4.088 TO 6.494
Efficiency = 0.2369 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	20804.0	100.000
Smoothed	20803.0	99.995
Composite fit	20941.6	100.661
Residuals	-138.6	-0.666

Analyzed by: _____
EMB


SPECTRUM SD5637.SPC
1 LEGEND: RAW = ... MODELED PEAKS = 1,2,.., ETC
7897.3

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1
1

Raw Data Dump for AEA Spectrum: SP:SD5637.SPC

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
11	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
21	1.	0.	1.	0.	0.	0.	1.	0.	0.	1.
31	0.	0.	1.	1.	1.	1.	0.	0.	0.	1.
41	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
51	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
61	1.	0.	0.	0.	0.	2.	0.	0.	0.	0.
71	1.	0.	1.	0.	0.	1.	0.	0.	0.	0.
81	0.	1.	1.	2.	1.	0.	1.	1.	1.	0.
91	0.	0.	0.	1.	1.	2.	0.	0.	0.	0.
101	0.	1.	0.	1.	1.	0.	1.	0.	0.	0.
111	0.	3.	0.	1.	0.	0.	0.	2.	1.	1.
121	2.	0.	1.	0.	0.	0.	1.	1.	2.	1.
131	1.	1.	0.	1.	0.	0.	1.	0.	2.	1.
141	2.	1.	0.	2.	2.	1.	1.	1.	3.	1.
151	1.	1.	2.	0.	0.	1.	1.	0.	0.	2.
161	1.	2.	4.	1.	0.	1.	0.	0.	2.	0.
171	2.	1.	0.	0.	3.	0.	3.	0.	2.	3.
181	2.	1.	1.	0.	2.	0.	1.	0.	0.	1.
191	0.	1.	1.	2.	1.	0.	0.	1.	4.	2.
201	1.	1.	1.	1.	0.	2.	1.	2.	2.	3.
211	2.	1.	7.	9.	6.	7.	10.	11.	7.	9.
221	14.	14.	18.	18.	15.	31.	17.	23.	34.	29.
231	40.	33.	40.	35.	31.	30.	21.	19.	14.	7.
241	4.	4.	1.	2.	4.	1.	2.	0.	2.	2.
251	1.	1.	5.	1.	2.	2.	5.	1.	5.	4.
261	4.	2.	4.	3.	2.	2.	7.	6.	7.	9.
271	12.	8.	8.	4.	13.	5.	8.	4.	10.	10.
281	7.	11.	20.	10.	24.	21.	17.	31.	21.	23.
291	36.	35.	22.	26.	25.	27.	27.	34.	35.	46.
301	24.	45.	53.	43.	45.	56.	41.	47.	42.	33.
311	25.	29.	11.	10.	11.	8.	4.	5.	7.	7.
321	11.	16.	6.	10.	9.	8.	18.	13.	13.	13.
331	15.	12.	11.	15.	18.	16.	17.	33.	34.	50.
341	67.	51.	81.	91.	127.	150.	186.	222.	302.	313.
351	395.	469.	523.	598.	704.	759.	823.	790.	945.	1001.
361	1060.	1246.	1261.	1251.	1177.	1055.	901.	686.	501.	349.
371	212.	101.	40.	20.	3.	2.	1.	0.	0.	0.
381	0.	0.	0.	0.	1.	0.	1.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
401	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.
411	1.	0.	0.	0.	0.	1.	0.	1.	0.	0.
421	3.	0.	1.	1.	1.	0.	0.	0.	2.	0.
431	1.	2.	2.	0.	2.	0.	0.	0.	0.	2.
441	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	1.	0.	0.	0.	0.	1.	0.	0.	0.	0.
461	0.	1.	2.	1.	2.	2.	1.	0.	1.	4.
471	1.	6.	3.	1.	7.	5.	3.	5.	2.	3.
481	4.	2.	1.	1.	2.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	1.								

G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
F1080
File ID: SD4765.SPC

Counted on: 3/ 1/90 @11: 0
Detector/Geometry number: 4/ 1
Count time: 30000. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	11.7	11.7	478.354	478.354	20.000	9.418	10.000	9.117
2	4.0	3.9	434.619	434.619	24.000	15.286	12.000	3.785
3	2171.4	2202.4	365.446	365.446	20.000	10.792	10.000	5.046
4	85.7	89.5	306.376	306.376	20.000	14.943	10.000	3.300
5	45.4	46.8	234.009	234.009	24.000	14.374	12.000	8.327

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1		0.0040		6.352		0.04	0.17	0.76	0.340E-06
2	Cm242	0.0023	6.115	6.146	-0.031	0.07	0.10	0.59	0.265E-06
3	Cm243	0.9165	5.786	5.821	-0.035	0.05	39.69	235.49	0.106E-03
	Cm244		5.796	5.821	-0.025				0.774E-04
4		0.0565		5.543		0.07	2.45	10.59	0.477E-05
5		0.0206		5.203		0.07	0.89	3.87	0.174E-05

DETECTOR CALIBRATION

Energy(MEV) = 4.103 + (0.0047)*Channel
Energy range (MeV): 4.103 TO 6.510
Efficiency = 0.2309 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	21530.0	100.000
Smoothed	21530.0	100.000
Composite fit	21653.9	100.576
Residuals	-123.9	-0.576

Analyzed by: _____
EMB

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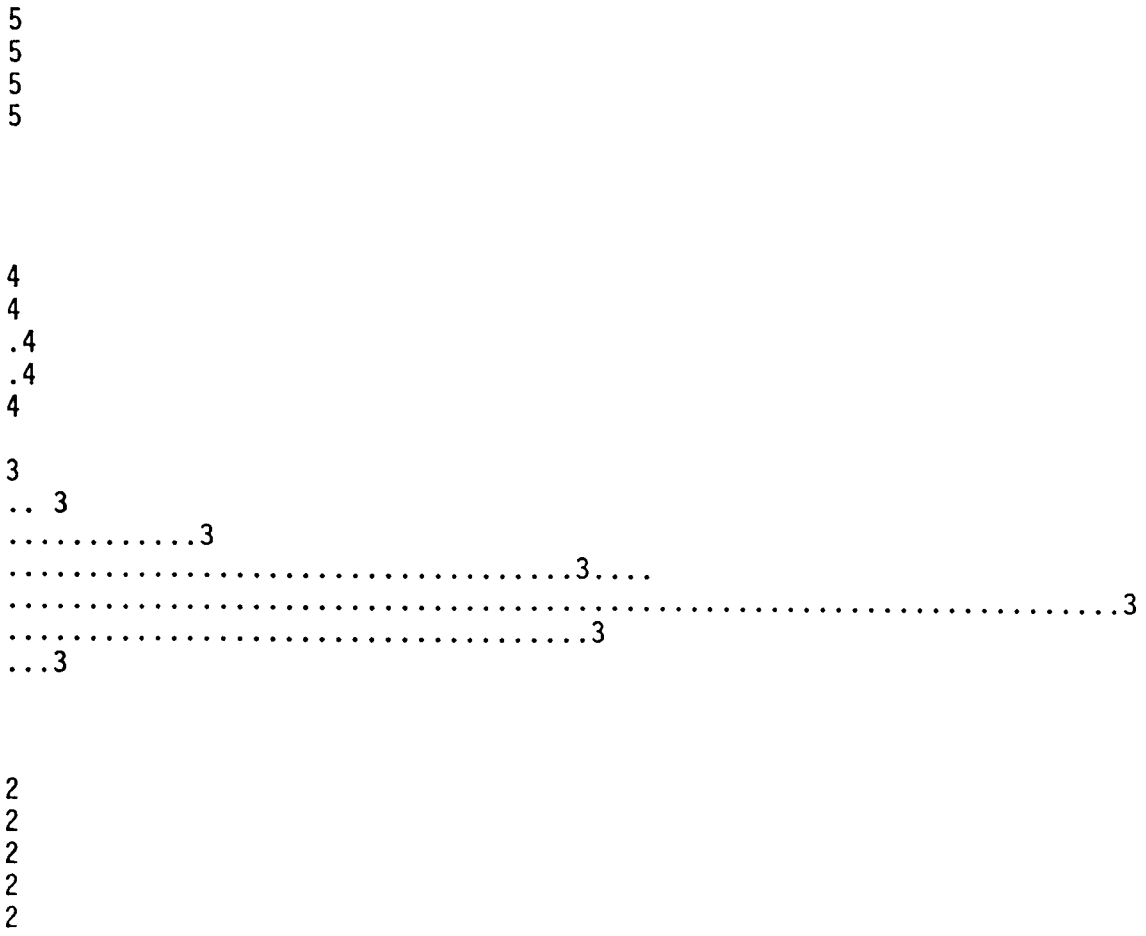
          SPECTRUM SD4765.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC                8155.2
```



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Raw Data Dump for AEA Spectrum: SP:SD4765.SPC

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	2.	0.	0.	0.	0.	0.	2.
21	0.	2.	1.	2.	0.	0.	0.	1.	1.	0.
31	0.	0.	2.	1.	0.	0.	0.	0.	1.	0.
41	0.	0.	1.	0.	1.	0.	0.	1.	0.	0.
51	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.
61	1.	0.	0.	1.	1.	0.	0.	0.	1.	0.
71	0.	1.	0.	0.	1.	1.	0.	0.	1.	0.
81	1.	0.	1.	0.	0.	1.	1.	0.	0.	1.
91	0.	0.	1.	0.	1.	0.	0.	0.	1.	0.
101	0.	0.	1.	1.	0.	0.	0.	0.	2.	1.
111	0.	0.	0.	0.	0.	0.	0.	2.	0.	1.
121	1.	0.	1.	0.	1.	2.	0.	0.	0.	0.
131	2.	0.	0.	0.	1.	0.	0.	0.	0.	0.
141	0.	1.	0.	0.	1.	1.	3.	1.	1.	1.
151	2.	3.	1.	0.	1.	4.	1.	0.	1.	1.
161	5.	0.	0.	1.	1.	0.	1.	1.	2.	2.
171	4.	0.	1.	1.	0.	4.	2.	1.	2.	4.
181	1.	1.	1.	1.	0.	2.	0.	1.	0.	0.
191	1.	0.	1.	1.	0.	2.	1.	1.	2.	0.
201	0.	0.	2.	1.	3.	0.	0.	4.	1.	1.
211	0.	1.	3.	3.	1.	2.	3.	7.	5.	5.
221	7.	8.	17.	9.	16.	21.	21.	29.	15.	32.
231	23.	28.	29.	15.	28.	28.	14.	25.	11.	14.
241	17.	7.	2.	2.	1.	4.	3.	1.	3.	1.
251	2.	4.	3.	3.	0.	1.	3.	7.	5.	7.
261	1.	5.	4.	6.	3.	5.	4.	8.	9.	6.
271	9.	12.	10.	5.	6.	4.	8.	7.	7.	8.
281	11.	8.	3.	9.	10.	18.	17.	19.	14.	33.
291	35.	32.	38.	28.	30.	30.	31.	38.	35.	35.
301	43.	51.	45.	48.	38.	45.	47.	54.	42.	34.
311	32.	26.	23.	19.	13.	6.	15.	9.	13.	5.
321	8.	11.	5.	9.	9.	7.	7.	12.	16.	16.
331	17.	11.	21.	12.	14.	26.	22.	16.	23.	29.
341	44.	43.	57.	64.	101.	120.	157.	188.	226.	269.
351	337.	363.	420.	533.	620.	642.	750.	833.	932.	974.
361	1036.	1126.	1198.	1218.	1245.	1239.	1120.	950.	833.	587.
371	457.	254.	157.	92.	43.	19.	9.	2.	0.	1.
381	0.	0.	0.	0.	2.	1.	0.	0.	1.	0.
391	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	1.	0.	0.	1.	0.	0.	0.	0.
411	1.	2.	0.	0.	0.	1.	1.	0.	0.	2.
421	1.	3.	1.	0.	3.	2.	1.	3.	1.	1.
431	1.	2.	2.	3.	3.	3.	0.	2.	0.	1.
441	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	1.	1.	0.	0.	0.	1.	1.
461	0.	0.	0.	0.	0.	0.	0.	4.	4.	5.
471	5.	2.	8.	1.	7.	10.	7.	7.	4.	8.
481	4.	4.	3.	0.	2.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
F-1081 PU
File ID: SD4764.SPC

Counted on: 3/ 1/90 @ 2: 0
Detector/Geometry number: 4/ 1
Count time: 30000. Sec

PEAK ANALYSIS

Peak	Peak height		Peak center		FWHM		Tau	
ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	14.2	14.6	477.094	477.094	20.000	11.283	10.000	8.448
2	5.1	4.4	429.367	429.367	28.000	19.912	14.000	7.140
3	1899.6	1958.3	364.507	364.507	20.000	10.668	10.000	4.248
4	248.9	256.5	306.588	306.588	16.000	10.784	8.000	3.158
5	2358.6	2379.9	233.638	233.638	20.000	10.789	10.000	4.743
6	6.2	7.2	127.676	127.676	152.000	2.000	76.000	0.200

PEAK RESULTS

Peak		AEA	Peak Centroid				Count		Activity
ID	Isotope	Fract.	Exp.	Obs.	Diff.	FWHM	Rate c/m	d/m	uCi/ea
1		0.0028		6.390		0.05	0.24	1.04	0.468E-06
2	Cm242	0.0012	6.115	6.161	-0.046	0.10	0.11	0.62	0.278E-06
3		0.4265		5.849		0.05	37.17	159.20	0.717E-04
4		0.0642		5.571		0.05	5.59	23.96	0.108E-04
5	Am243	0.5021	5.234	5.221	0.013	0.05	43.76	1703.67	0.767E-03
6		0.0032		4.713		0.01	0.28	1.18	0.534E-06

DETECTOR CALIBRATION

Energy(MEV) = 4.100 + (0.0048)*Channel
Energy range (MeV): 4.100 TO 6.557
Efficiency = 0.2335 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	43876.0	100.000
Smoothed	43875.5	99.999
Composite fit	43576.0	99.316
Residuals	299.4	0.682

Analyzed by: _____
DM

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          SPECTRUM SD4764.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC              7838.7




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Raw Data Dump for AEA Spectrum: SP:SD4764.SPC

1	0.	0.	0.	0.	0.	0.	1.	1.	0.	2.
11	1.	1.	0.	0.	0.	1.	0.	0.	1.	1.
21	0.	0.	0.	1.	0.	1.	0.	0.	1.	0.
31	0.	0.	0.	1.	1.	1.	3.	0.	2.	0.
41	0.	2.	0.	0.	0.	3.	1.	1.	1.	0.
51	0.	1.	1.	0.	2.	0.	0.	0.	2.	0.
61	2.	1.	2.	1.	0.	1.	0.	0.	1.	1.
71	0.	2.	1.	1.	4.	2.	0.	1.	1.	1.
81	2.	2.	1.	2.	2.	1.	1.	2.	1.	0.
91	2.	2.	0.	3.	1.	3.	2.	1.	3.	2.
101	1.	1.	2.	2.	4.	1.	2.	2.	2.	2.
111	1.	3.	2.	3.	3.	1.	3.	1.	0.	0.
121	2.	2.	4.	4.	3.	3.	4.	5.	2.	2.
131	3.	1.	1.	2.	1.	5.	0.	3.	2.	5.
141	3.	2.	3.	5.	1.	2.	3.	2.	1.	11.
151	5.	6.	6.	3.	5.	4.	4.	7.	4.	4.
161	3.	6.	5.	6.	2.	6.	4.	7.	10.	15.
171	7.	15.	10.	10.	8.	11.	10.	11.	14.	8.
181	10.	12.	19.	16.	14.	17.	17.	20.	23.	23.
191	23.	19.	24.	24.	27.	25.	34.	26.	27.	34.
201	41.	36.	47.	57.	63.	53.	59.	57.	74.	81.
211	105.	135.	125.	159.	181.	208.	262.	280.	330.	416.
221	459.	527.	584.	667.	742.	796.	947.	1059.	1172.	1246.
231	1341.	1327.	1364.	1257.	1269.	1126.	895.	678.	519.	318.
241	239.	116.	67.	34.	15.	12.	7.	8.	4.	2.
251	4.	3.	1.	4.	6.	7.	10.	5.	15.	8.
261	7.	6.	8.	6.	10.	9.	6.	11.	10.	13.
271	11.	7.	12.	14.	6.	12.	17.	14.	22.	9.
281	25.	11.	25.	30.	26.	30.	38.	42.	38.	41.
291	46.	64.	73.	64.	79.	56.	79.	101.	88.	86.
301	122.	154.	137.	130.	134.	133.	149.	135.	127.	107.
311	78.	62.	47.	25.	19.	11.	6.	14.	11.	15.
321	17.	14.	19.	18.	17.	14.	24.	25.	23.	19.
331	27.	32.	48.	45.	37.	49.	55.	55.	64.	71.
341	79.	80.	104.	141.	136.	170.	207.	235.	279.	308.
351	387.	438.	536.	549.	637.	681.	696.	784.	870.	960.
361	989.	1034.	1046.	1100.	1075.	1005.	917.	716.	560.	397.
371	239.	148.	72.	43.	24.	6.	3.	4.	2.	1.
381	3.	1.	0.	0.	1.	1.	2.	0.	0.	1.
391	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	2.	0.	0.	0.	0.	0.	0.	1.	2.
411	0.	2.	1.	0.	0.	0.	1.	0.	3.	0.
421	3.	1.	1.	1.	0.	5.	5.	4.	2.	1.
431	3.	2.	0.	2.	3.	1.	1.	0.	1.	1.
441	0.	1.	1.	0.	0.	1.	0.	0.	0.	1.
451	0.	0.	0.	0.	0.	1.	2.	0.	2.	0.
461	2.	0.	2.	1.	0.	1.	1.	5.	5.	3.
471	8.	10.	6.	11.	7.	10.	4.	9.	5.	10.
481	5.	4.	1.	1.	6.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
F1082
File ID: SD3006.SPC

Counted on: 3/ 1/90 @11: 0
Detector/Geometry number: 3/ 1
Count time: 30000. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	12.9	13.0	483.559	483.559	16.000	9.054	8.000	2.541
2	1548.5	1574.1	366.919	366.919	20.000	13.463	10.000	5.569
3	204.6	211.2	308.722	308.722	20.000	14.382	10.000	3.642
4	1865.2	1877.5	234.449	234.449	24.000	13.453	12.000	6.348

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1		0.0038		6.341		0.04	0.28	1.38	0.622E-06
2	Cm244	0.4303	5.796	5.781	0.015	0.06	31.81	157.94	0.711E-04
	Cm243		5.786	5.781	0.005				0.975E-04
3	Pu238	0.0720	5.499	5.502	-0.003	0.07	5.32	36.72	0.165E-04
	Am241		5.480	5.502	-0.022				0.127E-04
4	Pu239	0.4939	5.143	5.145	-0.002	0.06	36.51	181.27	0.817E-04
	Pu240		5.144	5.145	-0.001				0.817E-04

DETECTOR CALIBRATION

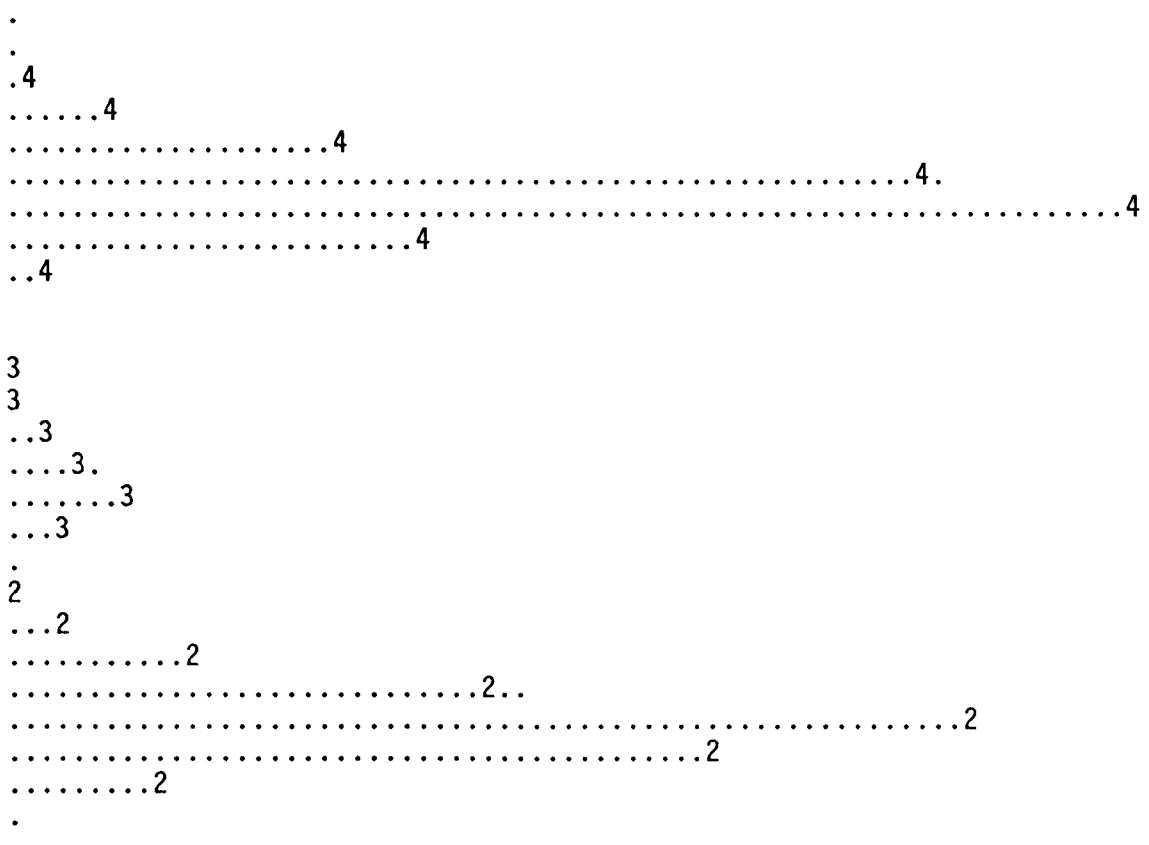
Energy(MEV) = 4.020 + (0.0048)*Channel
Energy range (MeV): 4.020 TO 6.477
Efficiency = 0.2014 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	37434.0	100.000
Smoothed	37433.4	99.998
Composite fit	36960.3	98.734
Residuals	473.1	1.264

Analyzed by: _____
EMB

SPECTRUM SD3006.SPC
1 LEGEND: RAW = ... MODELED PEAKS = 1,2,.., ETC 6701.6



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Raw Data Dump for AEA Spectrum: SP:SD3006.SPC

1	0.	0.	0.	0.	0.	0.	2.	0.	0.	0.
11	0.	2.	0.	0.	0.	0.	1.	1.	0.	1.
21	1.	1.	2.	1.	0.	0.	0.	0.	2.	1.
31	0.	1.	1.	0.	0.	0.	1.	0.	0.	0.
41	0.	0.	0.	2.	0.	0.	1.	0.	2.	0.
51	0.	1.	1.	2.	0.	0.	0.	1.	1.	1.
61	0.	0.	2.	2.	0.	0.	0.	1.	0.	2.
71	1.	0.	0.	2.	3.	2.	1.	1.	2.	1.
81	0.	0.	1.	2.	0.	1.	0.	0.	3.	0.
91	4.	0.	1.	1.	3.	1.	0.	1.	1.	3.
101	1.	1.	1.	2.	0.	2.	3.	0.	0.	0.
111	1.	2.	0.	0.	0.	0.	0.	1.	1.	4.
121	1.	1.	1.	4.	2.	4.	2.	1.	0.	4.
131	2.	2.	1.	1.	4.	4.	0.	3.	0.	2.
141	2.	1.	1.	5.	0.	5.	1.	3.	6.	3.
151	2.	8.	6.	1.	9.	3.	5.	4.	4.	4.
161	5.	4.	3.	5.	5.	4.	8.	4.	4.	9.
171	14.	12.	5.	7.	6.	7.	6.	9.	13.	10.
181	15.	12.	8.	14.	13.	13.	12.	17.	11.	21.
191	21.	16.	14.	19.	25.	22.	22.	14.	25.	33.
201	19.	34.	44.	38.	42.	34.	53.	52.	48.	74.
211	71.	78.	88.	101.	128.	142.	171.	194.	236.	286.
221	322.	356.	414.	512.	556.	683.	735.	780.	900.	950.
231	1001.	1086.	1062.	1040.	1012.	886.	893.	734.	573.	456.
241	386.	275.	184.	138.	87.	67.	38.	19.	15.	9.
251	2.	5.	5.	6.	3.	6.	4.	5.	4.	6.
261	5.	8.	8.	10.	14.	7.	11.	13.	8.	14.
271	8.	11.	11.	11.	14.	9.	13.	12.	11.	8.
281	8.	22.	21.	20.	24.	29.	29.	38.	34.	40.
291	34.	50.	46.	55.	61.	59.	67.	67.	81.	85.
301	85.	84.	107.	91.	112.	118.	116.	105.	112.	106.
311	107.	98.	72.	69.	44.	52.	25.	23.	19.	18.
321	7.	10.	11.	16.	24.	13.	18.	31.	14.	13.
331	19.	23.	20.	28.	34.	30.	37.	31.	35.	32.
341	67.	46.	72.	73.	77.	108.	122.	149.	166.	186.
351	222.	276.	306.	325.	401.	411.	482.	508.	608.	634.
361	707.	765.	774.	854.	924.	842.	862.	836.	726.	669.
371	537.	470.	332.	254.	198.	134.	93.	57.	31.	21.
381	9.	5.	1.	0.	1.	0.	0.	0.	0.	0.
391	0.	1.	0.	0.	0.	0.	1.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	2.	1.	0.	0.
411	0.	0.	0.	0.	2.	1.	1.	0.	1.	2.
421	0.	5.	0.	0.	0.	2.	0.	2.	4.	1.
431	0.	0.	4.	3.	1.	2.	2.	0.	1.	1.
441	1.	0.	0.	1.	0.	2.	1.	0.	0.	0.
451	0.	1.	0.	0.	0.	0.	0.	1.	2.	1.
461	0.	0.	1.	0.	2.	1.	1.	3.	1.	1.
471	5.	8.	4.	7.	10.	6.	6.	6.	3.	0.
481	7.	7.	7.	10.	10.	3.	3.	2.	4.	0.
491	0.	2.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Analytical Batch

LAB SEGMENT SERIAL #: F1067

CUSTOMER ID: 000013

INSTRUMENT	E60044
PROCEDURE/REV	LA-503-156/C-2
TECHNOLOGIST	R. D. Hale
DATE	February 27, 1990
TEMPERATURE	N/A
STARTING TIME	0900 02-26-90
ENDING TIME	1300 02-27-90
CHEMIST	S. A. Catlow

Americium 241
Water Digestion/Fusion
Dissolution

	DESCRIPTION		LAB ID
1	Initial LMCS Check Std		F1047
2	Reagent Blank		F1048
3	Sample	Comp 12	F1049
4	Duplicate Sample	Comp 12	F1050
5	Sample	Comp 12	F1055
6	Duplicate Sample	Comp 12	F1056
7	Sample	Comp 13	F1073
8	Duplicate Sample	Comp 13	F1074
9	Sample	Comp 13	F1079
10	Duplicate Sample	Comp 13	F1080
11	Spike Sample	Comp 13	F1075

	DESCRIPTION	LAB ID
12	Final LMCS Check Std	F1076
13		
14		
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21		
22		

STANDARD TYPE	PRIMARY BOOK # & ALIQUOT VOL.	SECOND BOOK # & ALIQUOT VOL.	THIRD BOOK # & ALIQUOT VOL.	FINAL VOL. OF STD.
LMCS Check Std	16B43/.010 mL			N/A
Spike	16B43/.010 mL	F1079/1 mL		N/A

SST-102 Rev. I 10/2/90 Interim

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
F-1047 SEG.COMP#7 AM
File ID: SD5633.SPC

Counted on: 2/28/90 @ 5: 0
Detector/Geometry number: 5/ 1
Count time: 30000. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1635.2	1664.6	301.579	301.579	24.000	18.435	12.000	2.711
2	1984.6	2112.9	256.498	256.498	24.000	12.713	12.000	2.089

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1	Pu238	0.4746	5.499	5.484	0.015	0.08	60.48	1152.31	0.519E-03
	Am241		5.480	5.484	-0.004				0.398E-03
2		0.5254		5.276		0.06	66.95	918.33	0.414E-03

DETECTOR CALIBRATION

Energy(MEV) = 4.096 + (0.0046)*Channel
Energy range (MeV): 4.096 TO 6.452
Efficiency = 0.0729 CPM/DPM

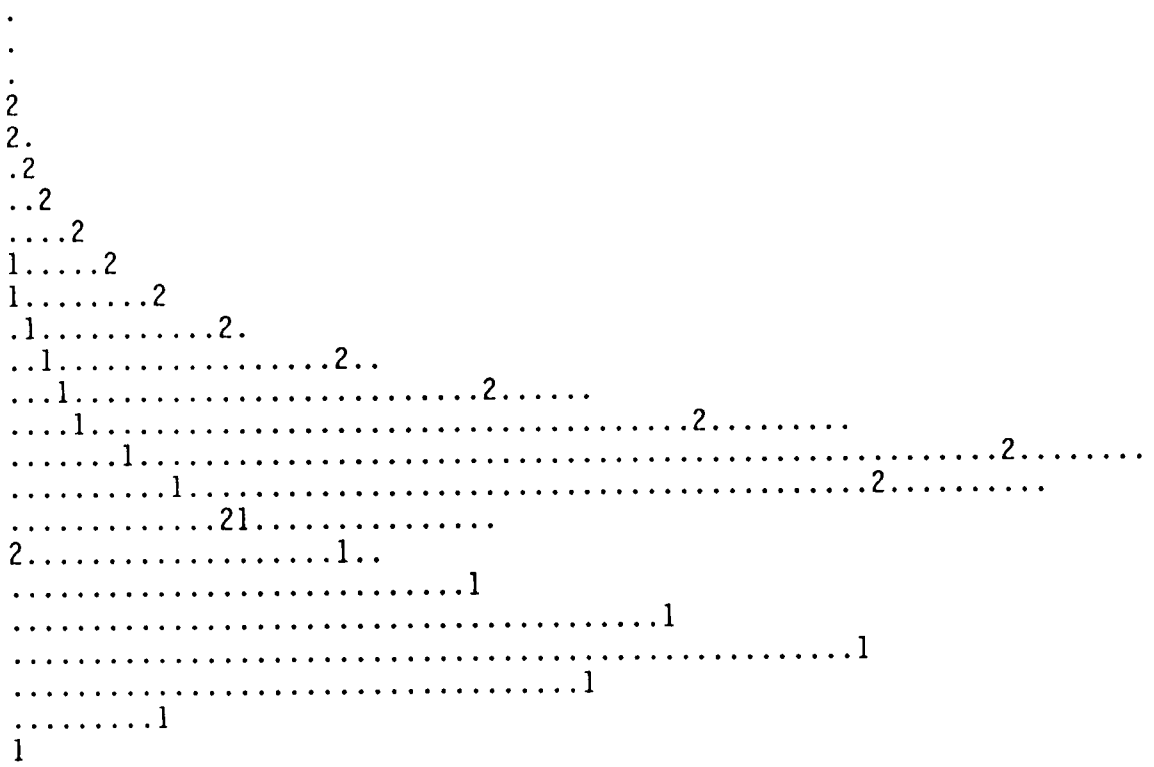
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	64436.0	100.000
Smoothed	64434.7	99.998
Composite fit	63714.4	98.880
Residuals	720.3	1.118

Analyzed by: _____
DM

SPECTRUM SD5633.SPC

1 LEGEND: RAW = ... MODELED PEAKS = 1,2,.., ETC 8454.8



Raw Data Dump for AEA Spectrum: SP:SD5633.SPC

1	0.	0.	0.	0.	0.	0.	3.	4.	0.	5.
11	0.	1.	1.	1.	2.	2.	2.	0.	0.	2.
21	3.	4.	3.	2.	1.	2.	1.	3.	1.	3.
31	0.	2.	4.	5.	3.	1.	2.	4.	3.	5.
41	1.	4.	1.	1.	5.	0.	5.	2.	3.	2.
51	5.	2.	2.	0.	2.	3.	3.	2.	2.	7.
61	3.	7.	1.	4.	7.	5.	4.	6.	4.	8.
71	4.	3.	5.	7.	7.	8.	5.	9.	10.	12.
81	5.	7.	9.	4.	6.	11.	4.	10.	9.	8.
91	4.	6.	9.	7.	13.	12.	5.	6.	12.	9.
101	4.	8.	11.	3.	9.	12.	9.	8.	8.	8.
111	12.	9.	6.	11.	10.	15.	12.	12.	10.	9.
121	11.	10.	12.	9.	11.	12.	11.	16.	10.	20.
131	9.	17.	22.	11.	18.	19.	15.	19.	13.	19.
141	21.	16.	15.	17.	23.	15.	19.	25.	19.	21.
151	18.	23.	27.	18.	27.	27.	27.	24.	28.	20.
161	24.	22.	35.	36.	24.	33.	27.	38.	28.	36.
171	22.	39.	27.	31.	30.	43.	48.	36.	40.	54.
181	35.	44.	60.	50.	47.	62.	53.	64.	73.	65.
191	89.	70.	84.	73.	87.	81.	107.	80.	93.	98.
201	108.	103.	117.	99.	123.	124.	115.	130.	139.	138.
211	135.	167.	172.	198.	189.	190.	219.	210.	241.	234.
221	278.	285.	264.	314.	307.	337.	346.	368.	395.	435.
231	466.	496.	481.	592.	546.	617.	599.	628.	677.	747.
241	697.	762.	795.	866.	874.	919.	948.	1054.	1065.	1014.
251	1097.	1114.	1118.	1180.	1160.	1207.	1235.	1205.	1124.	1021.
261	906.	763.	635.	516.	387.	339.	285.	328.	280.	310.
271	299.	287.	324.	327.	327.	321.	355.	370.	365.	405.
281	405.	439.	438.	448.	472.	507.	519.	585.	572.	635.
291	631.	636.	681.	701.	787.	779.	822.	845.	847.	867.
301	895.	807.	866.	800.	732.	673.	622.	499.	353.	286.
311	219.	199.	132.	103.	87.	64.	51.	40.	16.	9.
321	12.	2.	0.	1.	1.	1.	0.	0.	1.	0.
331	0.	0.	0.	0.	1.	0.	0.	0.	0.	2.
341	1.	0.	1.	1.	0.	0.	1.	2.	5.	0.
351	1.	4.	3.	2.	0.	0.	2.	1.	0.	0.
361	0.	0.	1.	0.	2.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
431	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
441	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
451	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
461	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
481	0.	2.	0.	1.	1.	2.	0.	0.	1.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
F-1048 SEG.COMP#8 AM
File ID: SD6068.SPC

Counted on: 2/28/90 @ 5: 0
Detector/Geometry number: 6/ 1
Count time: 30000. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	19.0	13.0	304.081	304.081	12.000	8.352	6.000	0.000
2	1739.0	1754.9	258.425	258.425	24.000	13.294	12.000	4.310
3	0.0	0.1	151.595	151.595	0.000	0.200	0.000	0.200

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1	Pu238	0.0933	5.499	5.502	-0.003	0.04	3.97	80.01	0.360E-04
	Am241		5.480	5.502	-0.022				0.276E-04
2		0.9067		5.292		0.06	38.64	560.03	0.252E-03
3	Np237	0.0000	4.781	4.801	-0.020	0.00	0.00	0.01	0.372E-08

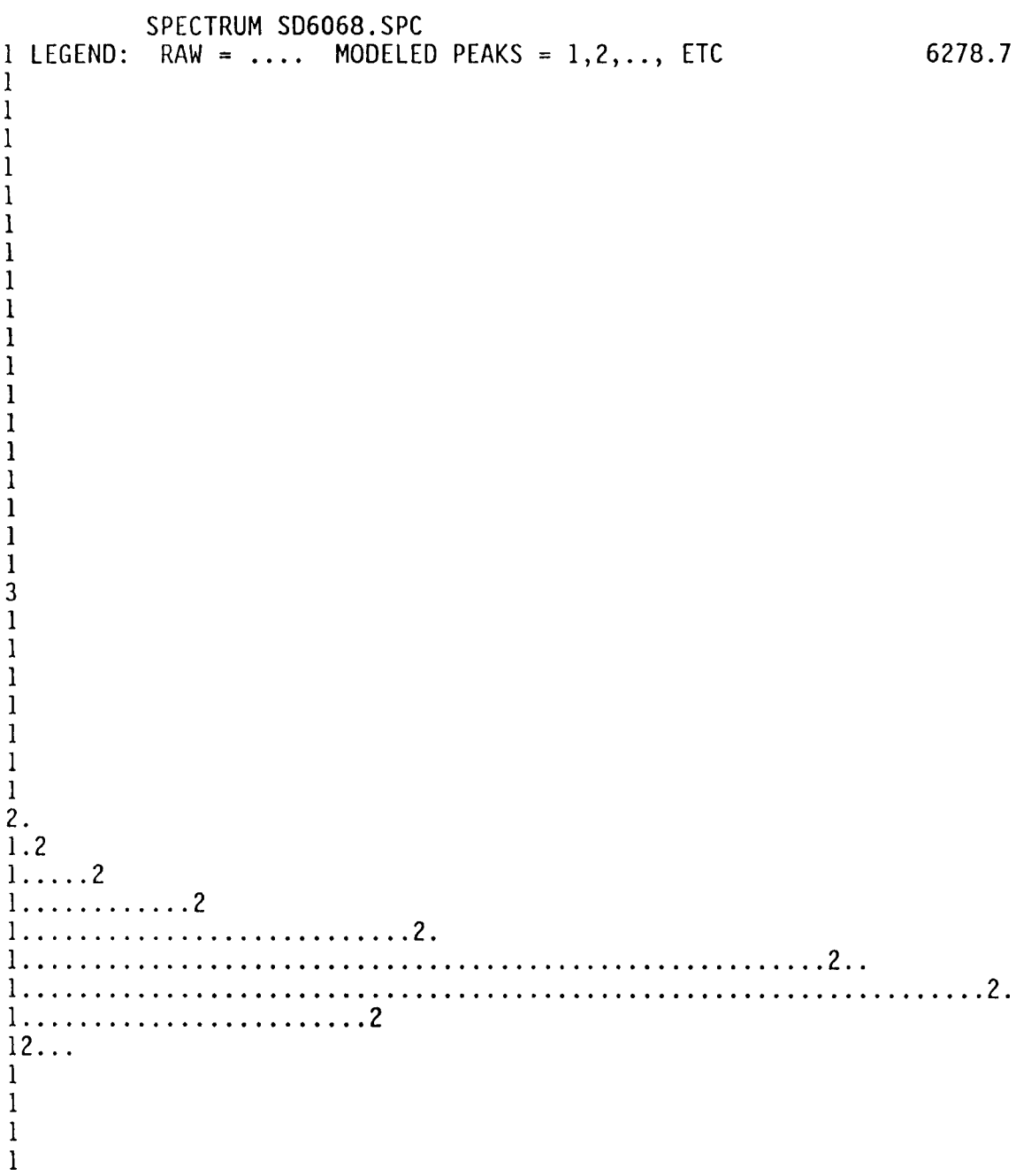
DETECTOR CALIBRATION

Energy(MEV) = 4.103 + (0.0046)*Channel
Energy range (MeV): 4.103 TO 6.459
Efficiency = 0.0690 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	20319.0	100.000
Smoothed	20318.5	99.998
Composite fit	21308.6	104.870
Residuals	-990.2	-4.873

Analyzed by: _____
DM


SPECTRUM SD6068.SPC
1 LEGEND: RAW = ... MODELED PEAKS = 1,2,.., ETC 6278.7

Raw Data Dump for AEA Spectrum: SP:SD6068.SPC

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
51	0.	1.	0.	1.	1.	0.	0.	0.	1.	1.
61	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	1.	1.	0.	0.	0.	1.	1.	1.	1.
81	0.	0.	2.	0.	1.	0.	0.	1.	0.	0.
91	2.	0.	0.	0.	0.	0.	1.	0.	2.	0.
101	2.	1.	0.	0.	1.	1.	0.	1.	1.	1.
111	0.	2.	3.	0.	0.	1.	0.	3.	0.	2.
121	3.	1.	0.	0.	2.	0.	0.	1.	0.	0.
131	0.	2.	2.	2.	1.	1.	0.	1.	0.	1.
141	3.	3.	1.	0.	2.	1.	2.	4.	5.	0.
151	2.	3.	4.	2.	2.	0.	2.	0.	2.	3.
161	1.	0.	6.	4.	3.	4.	1.	1.	5.	2.
171	3.	1.	4.	2.	6.	6.	6.	6.	3.	6.
181	7.	8.	9.	4.	8.	5.	12.	7.	11.	10.
191	8.	8.	9.	10.	11.	4.	10.	4.	8.	21.
201	15.	11.	20.	17.	22.	23.	24.	24.	22.	20.
211	17.	31.	28.	20.	20.	45.	25.	35.	46.	39.
221	45.	42.	52.	40.	59.	62.	58.	74.	75.	114.
231	100.	117.	122.	143.	207.	158.	195.	210.	224.	267.
241	251.	304.	347.	373.	392.	422.	459.	515.	665.	648.
251	708.	747.	823.	856.	891.	955.	999.	959.	987.	940.
261	794.	689.	531.	374.	313.	213.	162.	137.	90.	94.
271	82.	55.	47.	32.	39.	22.	14.	15.	6.	3.
281	3.	3.	0.	3.	2.	1.	5.	1.	0.	4.
291	3.	3.	2.	3.	5.	2.	1.	1.	5.	3.
301	7.	3.	5.	6.	4.	0.	4.	3.	6.	1.
311	2.	0.	2.	1.	2.	2.	1.	0.	0.	0.
321	1.	0.	0.	0.	1.	2.	0.	0.	1.	0.
331	1.	0.	0.	0.	1.	0.	0.	0.	1.	0.
341	0.	2.	0.	1.	1.	0.	3.	1.	2.	1.
351	0.	2.	1.	1.	1.	1.	0.	0.	1.	2.
361	0.	0.	2.	1.	2.	2.	2.	1.	0.	1.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
421	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
431	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
441	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
471	0.	0.	1.	0.	2.	0.	0.	1.	0.	0.
481	0.	1.	0.	0.	0.	1.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
F1079
File ID: SD5634.SPC

Counted on: 2/28/90 @16: 0
Detector/Geometry number: 5/ 1
Count time: 30000. Sec

PEAK ANALYSIS

Peak	Peak height		Peak center		FWHM		Tau	
ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	31.7	32.3	363.309	363.309	20.000	12.476	10.000	4.846
2	29.1	22.8	304.415	304.415	12.000	8.589	6.000	4.846
3	2856.8	2838.6	258.894	258.894	20.000	11.763	10.000	4.971

PEAK RESULTS

Peak		AEA	Peak Centroid				Count		Activity
ID	Isotope	Fract.	Exp.	Obs.	Diff.	FWHM	Rate c/m	d/m	uCi/ea
1	Cm243	0.0117	5.786	5.800	-0.014	0.06	0.65	3.78	0.170E-05
	Cm244		5.796	5.800	-0.004				0.124E-05
2	Pu238	0.0065	5.499	5.523	-0.024	0.04	0.36	2.11	0.952E-06
3		0.9818		5.309		0.06	54.43	230.53	0.104E-03

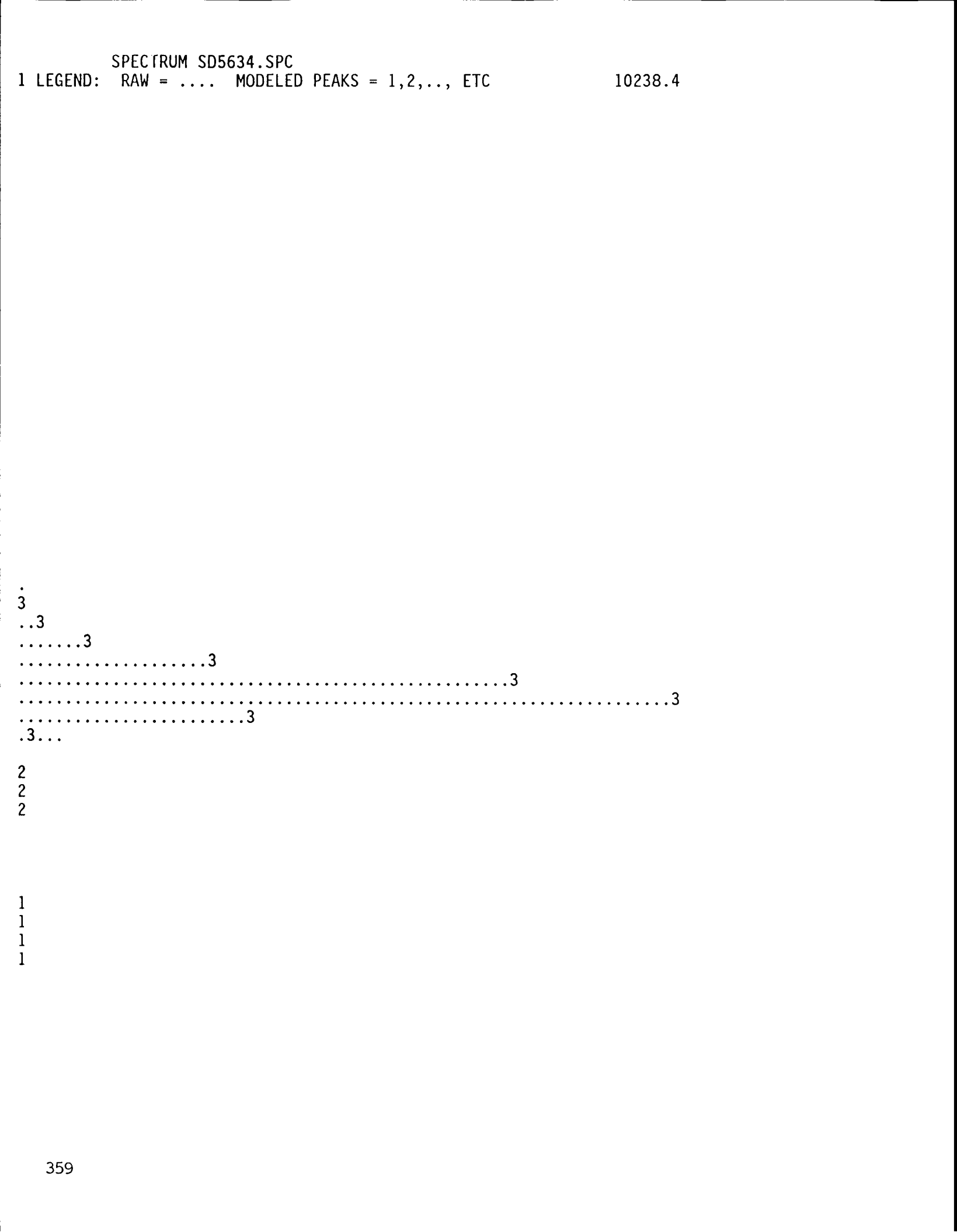
DETECTOR CALIBRATION

Energy(MEV) = 4.092 + (0.0047)*Channel
Energy range (MeV): 4.092 TO 6.499
Efficiency = 0.2361 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	28541.0	100.000
Smoothed	28541.3	100.001
Composite fit	27719.1	97.120
Residuals	821.0	2.876

Analyzed by: _____
EMB


SPECTRUM SD5634.SPC
1 LEGEND: RAW = ... MODELED PEAKS = 1,2,.., ETC 10238.4
.
3
..3
.....3
.....3
.....3
.....3
.....3
.3...
2
2
2
1
1
1
1

Raw Data Dump for AEA Spectrum: SP:SD5634.SPC

1	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
11	1.	1.	0.	0.	0.	0.	0.	1.	0.	0.
21	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
31	2.	0.	0.	0.	2.	0.	0.	0.	0.	1.
41	0.	1.	1.	1.	1.	0.	0.	2.	0.	0.
51	1.	0.	0.	1.	0.	0.	1.	1.	0.	0.
61	0.	1.	1.	1.	0.	0.	0.	1.	0.	0.
71	0.	1.	3.	1.	0.	1.	0.	0.	1.	1.
81	1.	1.	2.	0.	0.	3.	0.	1.	1.	2.
91	1.	1.	0.	1.	0.	0.	0.	1.	0.	0.
101	0.	0.	2.	0.	1.	0.	1.	0.	0.	0.
111	1.	1.	1.	1.	0.	1.	1.	3.	2.	0.
121	0.	1.	0.	1.	1.	2.	2.	0.	0.	1.
131	1.	0.	0.	2.	1.	1.	0.	1.	0.	1.
141	1.	0.	1.	1.	3.	3.	0.	0.	1.	0.
151	1.	1.	0.	3.	3.	1.	4.	2.	3.	1.
161	3.	0.	1.	3.	1.	6.	4.	0.	1.	2.
171	4.	2.	0.	2.	6.	5.	1.	3.	1.	4.
181	5.	8.	4.	6.	2.	4.	9.	4.	5.	11.
191	5.	8.	8.	6.	11.	15.	6.	12.	17.	19.
201	10.	11.	10.	11.	16.	21.	14.	18.	14.	17.
211	23.	16.	24.	32.	16.	31.	26.	29.	24.	34.
221	25.	34.	41.	32.	42.	50.	49.	49.	65.	59.
231	89.	76.	87.	123.	139.	150.	155.	179.	220.	208.
241	260.	323.	345.	443.	494.	525.	628.	741.	797.	891.
251	994.	1090.	1232.	1303.	1454.	1487.	1677.	1718.	1651.	1583.
261	1363.	1115.	855.	581.	407.	311.	213.	145.	152.	121.
271	110.	90.	93.	58.	54.	41.	34.	23.	12.	6.
281	5.	3.	1.	2.	0.	0.	1.	4.	2.	0.
291	5.	5.	7.	7.	8.	9.	9.	8.	3.	11.
301	10.	10.	13.	12.	11.	7.	10.	8.	7.	1.
311	4.	1.	1.	0.	0.	0.	2.	3.	0.	0.
321	1.	0.	0.	0.	2.	0.	0.	1.	0.	0.
331	2.	0.	0.	1.	0.	0.	1.	2.	2.	3.
341	3.	4.	2.	2.	2.	5.	4.	6.	5.	3.
351	15.	8.	6.	12.	9.	12.	12.	13.	20.	15.
361	23.	17.	15.	16.	17.	15.	17.	4.	6.	8.
371	7.	2.	1.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
441	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
461	0.	0.	1.	0.	0.	0.	0.	1.	0.	0.
471	0.	2.	0.	1.	0.	1.	0.	0.	0.	2.
481	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
F1080
File ID: SD4762.SPC

Counted on: 2/28/90 @16: 0
Detector/Geometry number: 4/ 1
Count time: 30000. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	30.6	32.2	359.862	359.862	20.000	12.080	10.000	2.833
2	111.7	42.5	297.237	297.237	12.000	0.075	6.000	2.833
3	2791.2	2851.1	254.721	254.721	20.000	15.858	10.000	5.553

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Peak Centroid Obs.	Peak Centroid Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1	Pu236	0.0124	5.756	5.736	0.020	0.06	0.81	3.58	0.161E-05
2	Th228	0.0005	5.430	5.442	-0.012	0.00	0.03	0.21	0.939E-07
3	Am243	0.9870	5.234	5.242	-0.008	0.07	64.32	2529.29	0.114E-02

DETECTOR CALIBRATION

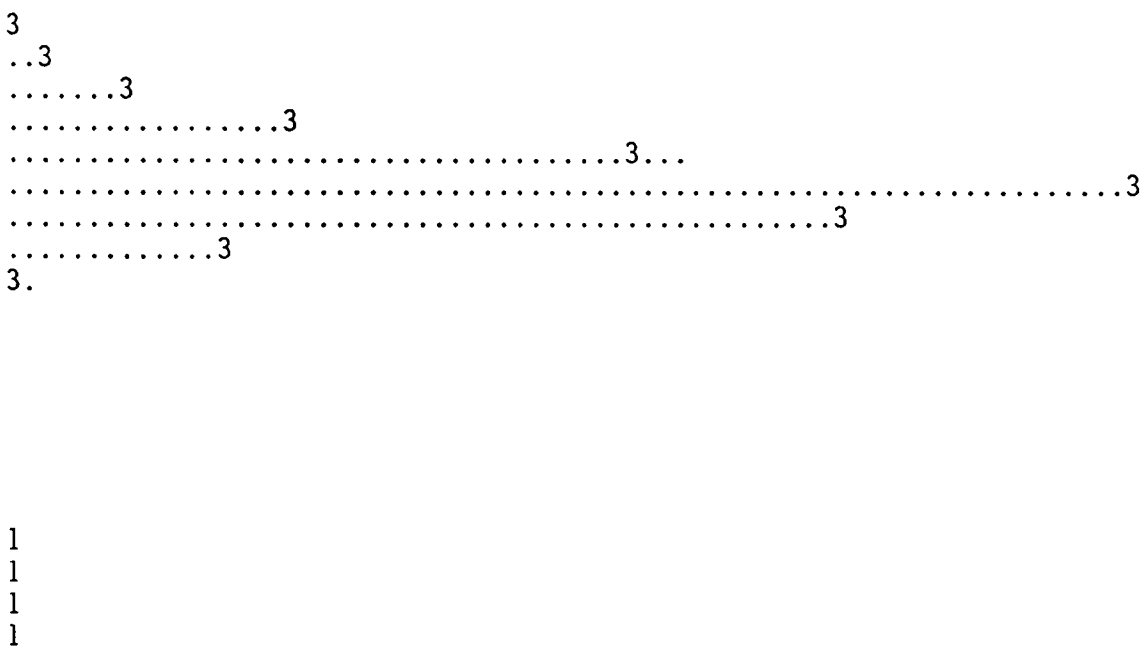
Energy(MEV) = 4.045 + (0.0047)*Channel
Energy range (MeV): 4.045 TO 6.452
Efficiency = 0.2312 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	32962.0	100.000
Smoothed	32961.9	100.000
Composite fit	32585.0	98.856
Residuals	377.0	1.144

Analyzed by: _____
EMB

SPECTRUM SD4762.SPC
1 LEGEND: RAW = ... MODELED PEAKS = 1,2,.., ETC 10602.6



Raw Data Dump for AEA Spectrum: SP:SD4762.SPC

1	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
11	0.	0.	1.	0.	0.	0.	2.	1.	0.	3.
21	0.	3.	0.	0.	0.	0.	2.	0.	1.	0.
31	0.	0.	0.	0.	0.	0.	1.	3.	0.	1.
41	1.	2.	0.	0.	2.	0.	0.	0.	1.	2.
51	1.	0.	1.	1.	1.	0.	0.	2.	0.	1.
61	0.	1.	0.	1.	0.	1.	0.	0.	0.	2.
71	1.	1.	0.	1.	0.	2.	0.	0.	0.	2.
81	0.	0.	0.	1.	1.	0.	0.	1.	3.	0.
91	0.	1.	0.	1.	0.	1.	1.	1.	1.	0.
101	0.	3.	0.	3.	0.	0.	0.	0.	0.	0.
111	2.	3.	1.	2.	1.	1.	1.	1.	0.	0.
121	1.	2.	0.	2.	1.	2.	1.	1.	2.	0.
131	1.	1.	1.	2.	0.	0.	1.	0.	3.	1.
141	0.	1.	1.	2.	1.	2.	2.	2.	2.	5.
151	0.	3.	0.	3.	2.	2.	3.	2.	2.	1.
161	2.	3.	0.	0.	5.	2.	3.	1.	2.	2.
171	4.	1.	3.	3.	4.	2.	7.	6.	3.	1.
181	6.	6.	3.	9.	6.	2.	13.	5.	8.	4.
191	9.	10.	3.	6.	9.	12.	12.	14.	14.	15.
201	21.	14.	15.	16.	10.	20.	20.	22.	21.	22.
211	31.	34.	41.	42.	34.	49.	41.	63.	65.	63.
221	65.	62.	77.	89.	110.	108.	143.	148.	156.	160.
231	218.	221.	257.	304.	323.	362.	450.	461.	479.	569.
241	661.	711.	731.	906.	967.	1052.	1152.	1228.	1379.	1457.
251	1419.	1559.	1500.	1483.	1566.	1442.	1335.	1256.	1047.	854.
261	723.	527.	395.	276.	207.	152.	122.	110.	93.	65.
271	75.	56.	44.	31.	19.	11.	8.	6.	2.	7.
281	3.	3.	2.	6.	4.	0.	6.	0.	4.	4.
291	6.	6.	5.	11.	8.	16.	8.	7.	4.	7.
301	4.	7.	4.	2.	4.	3.	4.	2.	2.	3.
311	3.	1.	0.	1.	0.	3.	1.	4.	4.	2.
321	0.	2.	0.	1.	1.	0.	5.	1.	5.	0.
331	0.	2.	2.	5.	3.	2.	6.	3.	7.	8.
341	6.	5.	8.	6.	5.	14.	11.	9.	18.	9.
351	12.	18.	11.	10.	12.	15.	15.	24.	17.	13.
361	17.	13.	14.	14.	11.	2.	6.	1.	0.	3.
371	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	1.	0.	0.	0.	0.	0.	0.	2.
411	0.	0.	0.	0.	0.	0.	0.	2.	0.	0.
421	0.	1.	1.	0.	0.	0.	0.	1.	0.	0.
431	0.	1.	1.	0.	0.	0.	0.	0.	0.	1.
441	1.	1.	0.	1.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.
461	0.	0.	4.	0.	0.	0.	1.	0.	1.	0.
471	1.	0.	1.	0.	0.	0.	1.	1.	0.	1.
481	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
F-1075 AM
File ID: SD6071.SPC

Counted on: 3/ 1/90 @ 2: 0
Detector/Geometry number: 6/ 1
Count time: 30000. Sec

PEAK ANALYSIS

Peak	Peak height		Peak center		FWHM		Tau	
ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1109.2	1112.8	302.991	302.991	24.000	17.400	12.000	2.441
2	1431.7	1447.8	257.455	257.455	20.000	13.514	10.000	2.044
3	3.7	2.3	103.001	103.001	16.000	128.602	8.000	2.243
4	2.8	1.8	70.898	70.898	12.000	1.484	6.000	0.256

PEAK RESULTS

Peak		AEA	Peak Centroid				Count		Activity
ID	Isotope	Fract.	Exp.	Obs.	Diff.	FWHM	Rate c/m	d/m	uCi/ea
1	Pu238	0.4559	5.499	5.497	0.002	0.08	41.29	831.03	0.374E-03
	Am241		5.480	5.497	-0.017				0.287E-03
2		0.5410		5.288		0.06	49.00	710.11	0.320E-03
3	U 235	0.0027	4.396	4.577	-0.181	0.59	0.24	6.15	0.277E-05
	Np237		4.640	4.577	0.063				0.263E-04
4	U 235	0.0004	4.396	4.430	-0.034	0.01	0.04	1.03	0.466E-06

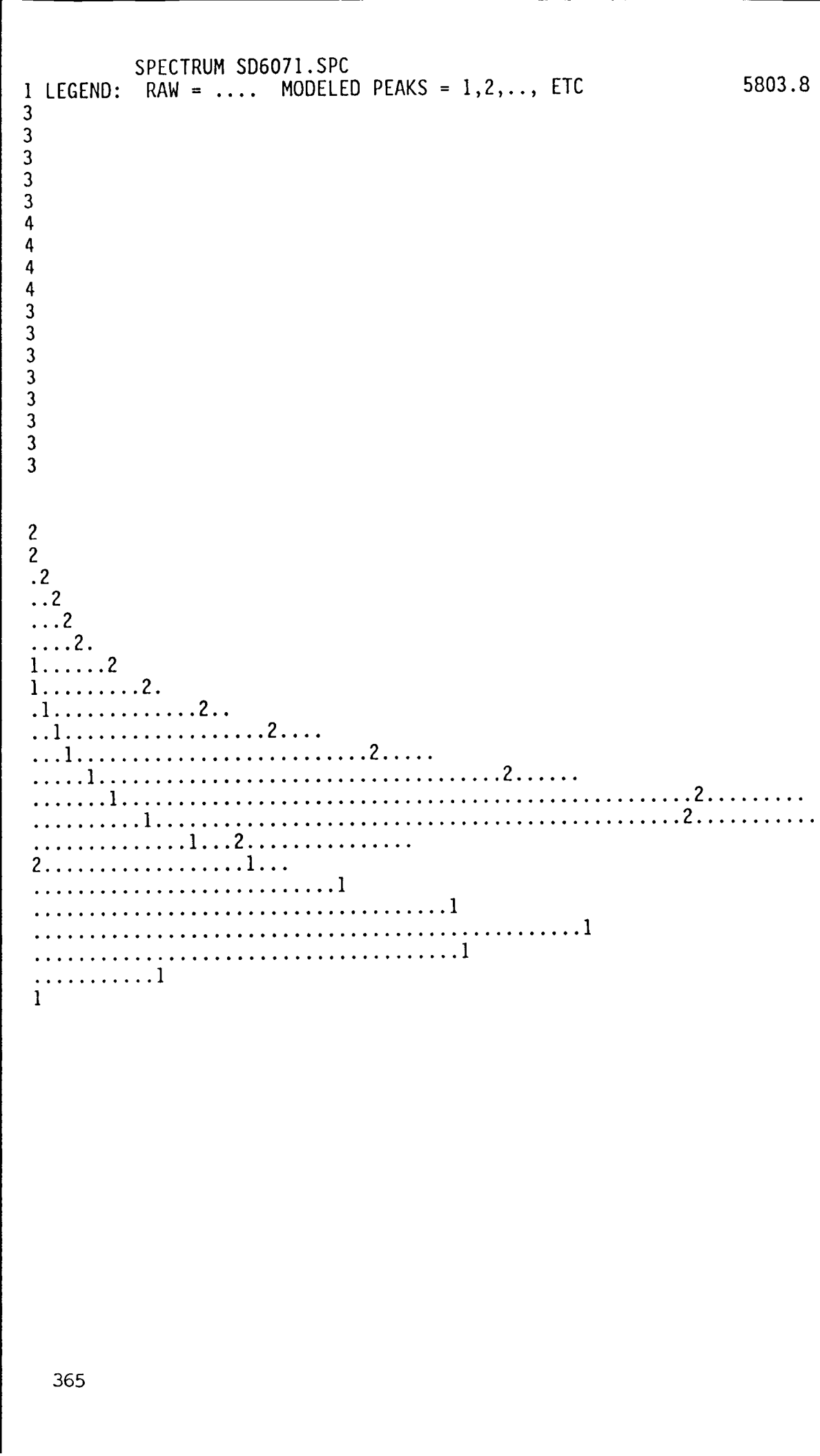
DETECTOR CALIBRATION

Energy(MEV) = 4.103 + (0.0046)*Channel
Energy range (MeV): 4.103 TO 6.459
Efficiency = 0.0690 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	45149.0	100.000
Smoothed	45148.9	100.000
Composite fit	45282.9	100.297
Residuals	-133.9	-0.297

Analyzed by: _____
DM


SPECTRUM SD6071.SPC
1 LEGEND: RAW = ... MODELED PEAKS = 1,2,.., ETC
5803.8

Raw Data Dump for AEA Spectrum: SP:SD6071.SPC

1	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
11	0.	0.	2.	1.	0.	0.	0.	0.	0.	1.
21	1.	1.	0.	1.	2.	2.	2.	0.	0.	3.
31	1.	1.	1.	0.	2.	2.	1.	0.	0.	1.
41	0.	1.	2.	0.	2.	0.	0.	0.	2.	1.
51	2.	3.	2.	2.	1.	1.	2.	2.	2.	5.
61	2.	4.	4.	0.	1.	1.	0.	1.	4.	3.
71	3.	0.	1.	4.	1.	1.	1.	1.	1.	2.
81	2.	0.	3.	4.	3.	2.	3.	0.	3.	1.
91	1.	4.	1.	5.	1.	5.	0.	2.	0.	3.
101	6.	7.	2.	3.	0.	4.	2.	1.	1.	4.
111	3.	2.	3.	3.	3.	3.	7.	4.	6.	3.
121	6.	4.	2.	4.	4.	3.	9.	2.	5.	7.
131	9.	5.	7.	6.	6.	11.	6.	5.	6.	14.
141	9.	7.	7.	11.	7.	8.	14.	12.	12.	10.
151	10.	16.	10.	13.	4.	17.	9.	11.	11.	21.
161	11.	12.	19.	23.	18.	13.	21.	16.	25.	22.
171	25.	22.	23.	32.	28.	23.	39.	27.	37.	22.
181	32.	40.	37.	24.	38.	38.	49.	55.	53.	42.
191	62.	59.	65.	59.	57.	62.	63.	70.	91.	87.
201	86.	89.	86.	103.	93.	124.	108.	92.	105.	127.
211	112.	147.	139.	155.	170.	172.	159.	175.	183.	202.
221	205.	215.	233.	265.	263.	289.	273.	293.	300.	318.
231	328.	352.	369.	388.	379.	416.	412.	400.	432.	403.
241	433.	460.	555.	562.	521.	614.	587.	632.	706.	695.
251	737.	749.	787.	855.	819.	911.	912.	851.	826.	823.
261	683.	611.	505.	417.	353.	292.	267.	222.	224.	221.
271	232.	243.	208.	234.	238.	207.	243.	215.	217.	289.
281	285.	283.	287.	295.	290.	311.	320.	354.	354.	381.
291	407.	444.	416.	446.	460.	523.	512.	492.	582.	560.
301	573.	590.	632.	556.	563.	550.	429.	390.	308.	266.
311	198.	150.	138.	89.	63.					

						66.	45.	34.	19.	20.
321	10.	9.	1.	4.	1.	0.	1.	1.	0.	0.
331	1.	1.	0.	0.	1.	1.	0.	0.	0.	1.
341	0.	0.	1.	0.	2.	0.	1.	0.	0.	2.
351	0.	2.	1.	0.	1.	1.	1.	0.	0.	0.
361	2.	0.	0.	1.	0.	2.	0.	2.	0.	0.
371	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
431	0.	0.	0.	0.	2.	0.	0.	1.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	2.	0.	0.	0.	0.	1.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	1.	0.	0.	0.	0.	2.	0.	0.	1.	0.
481	0.	1.	1.	0.	3.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
F1076
File ID: SD2774.SPC

Counted on: 3/ 1/90 @11: 0
Detector/Geometry number: 2/ 1
Count time: 30000. Sec

PEAK ANALYSIS

Peak	Peak height		Peak center		FWHM		Tau	
ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	6.2	8.1	350.980	350.980	16.000	6.534	8.000	0.000
2	1094.1	1121.8	297.840	297.840	28.000	23.295	14.000	3.505
3	1332.2	1412.3	252.521	252.521	28.000	17.669	14.000	2.910
4	0.0	0.1	41.645	41.645	0.000	0.200	0.000	0.200

PEAK RESULTS

Peak		AEA	Peak Centroid				Count		Activity
ID	Isotope	Fract.	Exp.	Obs.	Diff.	FWHM	Rate c/m	d/m	uCi/ea
1	Ra224	0.0309	5.680	5.693	-0.013	0.03	2.85	47.50	0.214E-04
2	Th228	0.4552	5.430	5.449	-0.019	0.11	41.99	925.55	0.417E-03
3	Am243	0.5139	5.234	5.240	-0.006	0.08	47.40	6743.60	0.304E-02
4		0.0000		4.270		0.00	0.00	0.01	0.350E-08

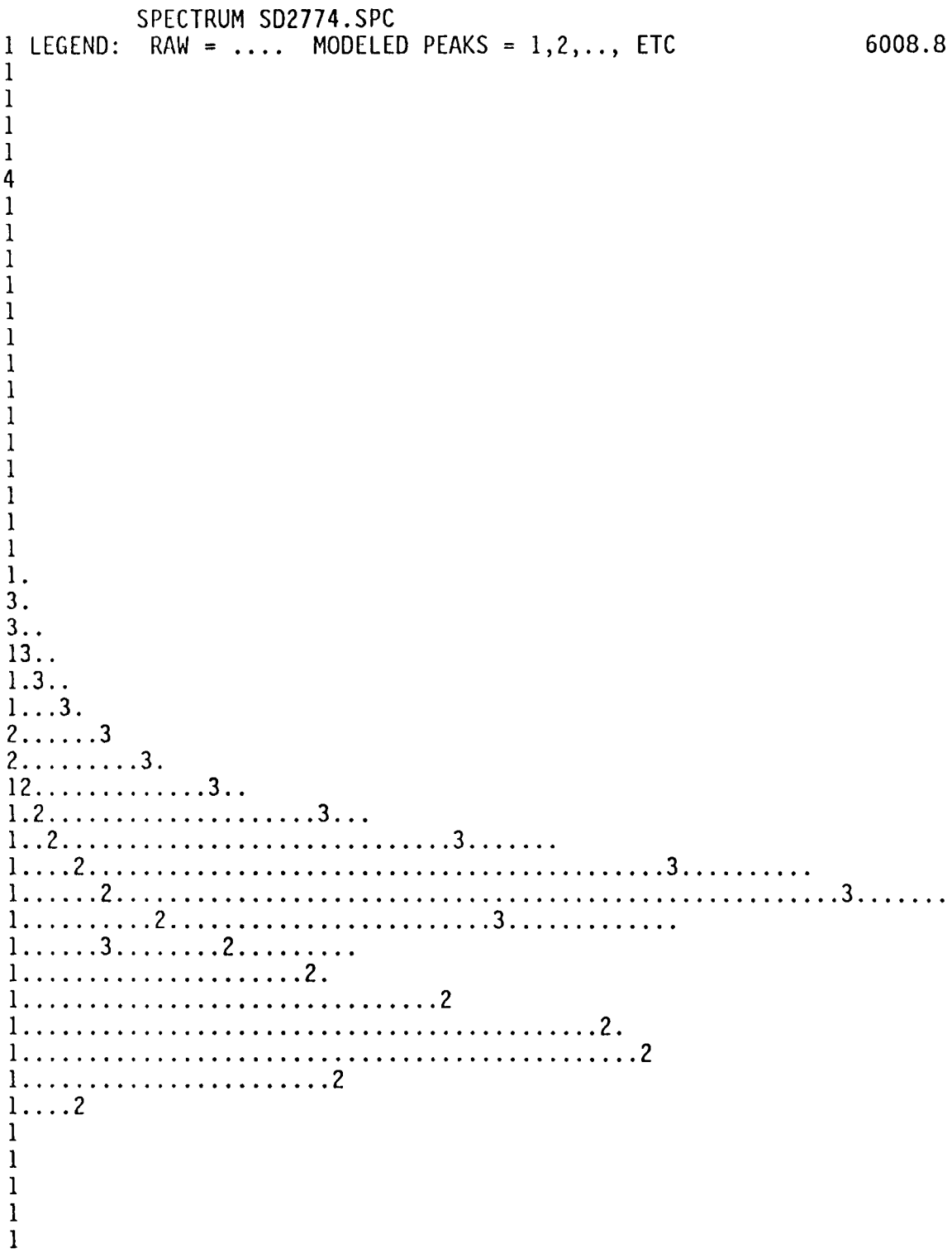
DETECTOR CALIBRATION

Energy(MEV) = 4.079 + (0.0046)*Channel
Energy range (MeV): 4.079 TO 6.434
Efficiency = 0.0639 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	46060.0	100.000
Smoothed	46058.6	99.997
Composite fit	46122.7	100.136
Residuals	-64.2	-0.139

Analyzed by: _____
EMB


SPECTRUM SD2774.SPC
1 LEGEND: RAW = ... MODELED PEAKS = 1,2,.., ETC 6008.8

Raw Data Dump for AEA Spectrum: SP:SD2774.SPC

1	0.	0.	0.	0.	0.	2.	0.	2.	0.	2.
11	1.	1.	0.	3.	1.	3.	2.	1.	3.	1.
21	0.	1.	1.	1.	4.	3.	1.	0.	5.	5.
31	0.	3.	2.	2.	1.	3.	0.	3.	3.	2.
41	3.	4.	2.	3.	1.	1.	1.	3.	1.	3.
51	0.	3.	1.	3.	3.	2.	0.	3.	0.	2.
61	4.	4.	4.	1.	4.	4.	1.	5.	4.	9.
71	1.	4.	3.	7.	2.	4.	2.	2.	1.	7.
81	6.	4.	3.	4.	3.	6.	3.	2.	6.	3.
91	4.	5.	3.	3.	6.	8.	4.	3.	3.	1.
101	6.	5.	8.	5.	7.	6.	3.	5.	8.	4.
111	8.	8.	11.	8.	10.	16.	15.	13.	14.	11.
121	7.	9.	12.	9.	17.	7.	16.	8.	10.	10.
131	21.	11.	15.	14.	16.	13.	15.	14.	16.	25.
141	7.	12.	13.	13.	12.	16.	16.	19.	13.	20.
151	17.	14.	29.	19.	26.	23.	27.	28.	26.	11.
161	22.	28.	37.	32.	29.	36.	23.	42.	35.	44.
171	30.	37.	29.	39.	38.	36.	45.	53.	49.	53.
181	40.	39.	48.	57.	43.	56.	55.	50.	65.	68.
191	62.	68.	65.	68.	79.	82.	98.	68.	67.	88.
201	90.	88.	101.	101.	89.	103.	123.	100.	112.	152.
211	140.	131.	170.	161.	163.	165.	179.	197.	206.	218.
221	226.	233.	248.	260.	274.	265.	292.	301.	309.	358.
231	388.	356.	408.	404.	441.	468.	499.	550.	567.	555.
241	606.	593.	643.	718.	748.	756.	760.	752.	796.	812.
251	762.	764.	807.	792.	759.	687.	725.	580.	553.	464.
261	406.	371.	299.	283.	258.	233.	237.	222.	208.	222.
271	199.	210.	223.	251.	284.	227.	256.	275.	304.	326.
281	331.	353.	344.	370.	385.	431.	450.	423.	519.	455.
291	511.	553.	568.	564.	590.	592.	540.	582.	564.	534.
301	534.	478.	462.	402.	360.	302.	258.	191.	171.	130.
311	95.	76.	60.	51.	47.	27.	15.	12.	11.	8.
321	4.	0.	2.	1.	4.	0.	1.	0.	2.	1.
331	0.	1.	1.	1.	1.	4.	2.	0.	0.	1.
341	3.	2.	2.	2.	2.	1.	0.	7.	5.	2.
351	5.	2.	5.	0.	2.	0.	2.	0.	1.	0.
361	0.	0.	2.	0.	1.	0.	1.	1.	0.	0.
371	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
381	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
421	1.	0.	0.	1.	0.	0.	0.	1.	1.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	1.	0.	0.	0.	0.	1.	0.	0.	0.
451	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	1.	1.	0.	1.	0.	2.	0.
481	0.	0.	2.	0.	0.	0.	0.	1.	1.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Analytical Batch

LAB SEGMENT SERIAL #: F1067

CUSTOMER ID: 000013

INSTRUMENT	WA77390
PROCEDURE/REV	LA-348-104/A-0
TECHNOLOGIST	E. Colvin
DATE	July 09, 1990
TEMPERATURE	N/A
STARTING TIME	0800
ENDING TIME	1500
CHEMIST	S. A. Catlow

Carbon 14
Water Digestion

Beckman Liquid Scintillator

	DESCRIPTION	LAB ID
1	Initial LMCS Check Std	F1077
2	Reagent Blank	F1078
3	Sample Comp 13	F1079
4	Duplicate Sample Comp 13	F1080
5	Spike Sample Comp 13	F1081
6	Final LMCS Check Std	F1082
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 BOOK # & ALIQUOT VOL.	FINAL VOL. OF STD.
LMCS Check Std	31B46/1 mL			N/A
Spike	31B46/1 mL	F1079/10 mL		N/A

SST-102 Rev. I 10/2/90 Interim

USER: 2 ID:CARBON-14 PRESET TIME: 10.00 MON 09 JUL 1990 16:57
SAMPLE REPEAT: 1 CYCLE REPEAT: 1 CCR:N RS232:N
H#: 3 AQC:Y QCF:N RCM:Y 2 PHASE MONITOR:Y POST CHK:N VIAL:S VOLUME:1
RCM-TIME: 0.10 INT:799.95
CHANNEL 1-LL: 0 UL: 700 2SIGMA: 0.10 BKG SUB: 0.00 BKG 2SIG: 0.00 LER: 0

SINGLE LABEL DPM SET UP ON 19 SEP 1988 18:59

UNKNOWN ID:C-14 UNKNOWN REPLICATES: 1
UNKNOWN NORM FACTOR ISO1:C 1.00000
UNKNOWN UNITS ISO1:DPM
UNKNOWN HALF LIFE CORRECTION:N
INDIVIDUAL UNKNOWN NORM FACTORS:N BACKGROUND QUENCH CURVES:Y
STANDARD ID:PACKARD 6003502 #2 QUENCH LIMITS LOW:0.000 HIGH:253.7
HALF LIFE(DAYS) ISO1:N
STANDARD DPM: ISO1: 108600.0

SAM	POS	CH	CPM	2SIG%	TIME	EL TIME	AVG H#	RCM%	2P	ERF
B1	**- 1	1	40.80	9.90	10.00	10.64	141.0	0.73	**	

BACKGROUND QUENCH CURVES: CONSTANT

CHANNEL 1
QUENCH CURVE COEFFICIENTS
A: 40.80000 B:0.00000000 C:0.00000000 D:0.00000000000

BACKGROUND QUENCH CURVE CORRELATION TABLE

BKG	H#	MEASURED CPM.	CALCULATED CPM.	PERCENT DIFF.	FLAG
1	141.0	40.80	40.80	0.00	

BACKGROUND QUENCH LIMITS LOW:0.000 HIGH:1000.
TOTAL QUENCH LIMITS LOW:0.000 HIGH:253.7

SAM	POS	CH	CPM	2SIG%	TIME	EL TIME	AVG H#	RCM%	2P	ERF
1	**- 3	1	1714.10	1.53	10.00	21.62	147.0	0.04	*-	
F1077	ISO1 %EFF CH1:99.98						ISO1 DPM	:1860.281		
2	**- 4	1	42.70	9.68	10.00	32.35	146.0	1.04	**	
F1078	ISO1 %EFF CH1:90.06						ISO1 DPM	:2.109593		
3	**- 5	1	136.80	5.37	10.00	43.08	148.0	0.59	*-	
F1079	ISO1 %EFF CH1:89.89						ISO1 DPM	:109.0257		
4	**- 6	1	132.20	5.50	10.00	53.79	146.0	0.42	**	
F1080	ISO1 %EFF CH1:90.06						ISO1 DPM	:101.4324		

Single Shell Tank
Calibration Record

Analyte:	C-14		
Procedure:	LA-508-121	Revision:	A-0
Instrument:	Liquid Scientillation Counter	Property Number:	WA77390
Technologist:	R. A. Jones	Payroll Number:	65801
Date:	September 20, 1988		
Calibration Standard ID:	Packard 6008502 #2		
Analyte Concentration:	(See Attached)		
Type of Calibration:			
Comments:			

SST-103 Rev. B 9/27/90 Interim

```
USER: 2 ID:CARBON-14   PRESET TIME: 10.00            MON 19 SEP 1988 16:51
SAMPLE REPEAT: 1 CYCLE REPEAT: 1 SCR:N  RS232:N
H#: 3 AQC:Y QCF:N RCM:Y 2 PHASE MONITOR:Y POST CHK:N VIAL:G VOLUME:1
RCM-TIME:  0.10 INT:999.95
CHANNEL I-LL:  0 UL: 700 2SIGMA: 0.10 BKG SUB:   0.00 BKG 2SIG:  0.00 LSR:

SINGLE LABEL DPM
UNKNOWN ID:C-14                        UNKNOWN REPLICATES: 1
UNKNOWN NORM FACTOR ISO1:Q 1.00000
UNKNOWN UNITS       ISO1:DPM
UNKNOWN HALF LIFE CORRECTION:N
INDIVIDUAL UNKNOWN NORM FACTORS:N      BACKGROUND QUENCH CURVES:Y
STANDARD ID:PACKARD 6008502 #2
HALF LIFE(DAYS)  ISO1:N
STANDARD DPM     ISO1:  108600.0


SAM  POS  CH     CPM    2SIG%  TIME     EL  TIME  AVG  H#     RCM%  2P     ERR

B1  **- 1  1     44.90   9.44  10.00       11.02   58.3        0.15
    H#:  58,  58,  59

BACKGROUND QUENCH CURVES: CONSTANT


CHANNEL 1
QENCH CURVE COEFFICIENTS
A: 44.90000      B:0.00000000       C:0.00000000      D:0.00000000000

                  BACKGROUND QUENCH CURVE CORRELATION TABLE

                  MEASURED        CALCULATED      PERCENT
BKG       H#        CPM.             CPM.          DIFF.         FLAG
---     -----     --------        ----------     ---------      ------
 1       58.3      44.90            44.90          0.00

BACKGROUND QUENCH LIMITS  LOW:0.000    HIGH:1000.
     TOTAL QUENCH LIMITS  LOW:0.000    HIGH:1000.

SAM   POS   CH    CPM     2SIG%  TIME    EL  TIME  AVG  H#   RCM%  2P    ERR

S1    **- 3  1  105004.40  0.20  10.00     22.67   -5.3        0.00
      H#:  -6,  -5,  -5
        ISO1 %EFF CH1:96.65

S2    **- 4  1  104881.70  0.20  10.00     34.15   11.7        0.00
      H#:  11,  11,  13
        ISO1 %EFF CH1:96.53

S3    **- 5  1  104007.30  0.20  10.00     45.61   36.0        0.00
      H#:  36,  36,  36
        ISO1 %EFF CH1:95.73
SAM   POS   CH      CPM   2SIG%  TIME   EL  TIME  AVG  H#     RCM%  2P    ERR
```

```
S4    **- 6  1  102265.80  0.20  10.00       57.08   73.3        0.00
      H#:  74,  73,  73
        ISO1  %EFF  CH1:94.13

S5    **- 7  1  101574.90  0.20  10.00       68.57  100.0        0.00
      H#:  99, 100, 101
        ISO1 %EFF CH1:93.49

S6    **- 8  1   98969.60  0.20  10.00       80.03  134.7        0.00
      H#: 133, 135, 136
        ISO1 %EFF CH1:91.09

S7    **- 9  1   96142.50  0.20  10.00       91.49  166.3        0.00
      H#: 167, 167, 165
        ISO1 %EFF CH1:88.49

S8    **-10  1   94268.30  0.21  10.00      102.91  195.3        0.00
      H#: 195, 196, 195
        ISO1 %EFF CH1:86.76

S9    **-11  1   90921.30  0.21  10.00      114.31  218.3        0.00
      H#: 218, 218, 219
        ISO1 %EFF CH1:83.68

S10   **-12  1   85164.00  0.22  10.00      125.65  253.7        0.00
      H#: 252, 254, 255
        ISO1 %EFF CH1:78.38


      ISOTOPE 1 QUECH STANDARDS

                        %EFF
STANDARD     H#          CH1

     1     -5.33        96.65
     2     11.67        96.54
     3     36.00        95.73
     4     73.33        94.12
     5     100.0        93.49
     6     134.7        91.09
     7     166.3        88.49
     8     195.3        86.76
     9     218.3        83.68
    10     253.7        78.38


QUENCH LIMITS  LOW:0.000    HIGH:253.7
```

9-20-88 RAJones

USER: 2 ID:CARBON-14 PRESET TIME: 10.00 MON 19 SEP 1988 16:51
SAMPLE REPEAT: 1 CYCLE REPEAT: 1 SCR:N RS232:N
H#: 3 AQC:Y QCF:N RCM:Y 2 PHASE MONITOR:Y POST CHK:N VIAL:6 VOLUME:1
RCM-TIME: 0.10 INT:999.95
CHANNEL 1-LL: 0 UL: 700 2SIGMA: 0.10 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR:

SINGLE LABEL DPM
UNKNOWN ID:C-14 UNKNOWN REPLICATES: 1
UNKNOWN NORM FACTOR ISO1:0 1.00000
UNKNOWN UNITS ISO1:DPM
UNKNOWN HALF LIFE CORRECTION:N
INDIVIDUAL UNKNOWN NORM FACTORS:N BACKGROUND QUENCH CURVES:Y
STANDARD ID:PACKARD 6008502 #2
HALF LIFE(DAYS) ISO1:N
STANDARD DPM ISO1: 108600.0 T_0 = 5-7-86

SAM	POS	CH	CPM	2SIG%	TIME	EL TIME	AVG H#	RCM%	2P	ER
B1	**- 1	1	44.90	9.44	10.00	11.02	58.3	0.15		
	H#: 58, 58, 59									

BACKGROUND QUENCH CURVES: CONSTANT

CHANNEL 1
QUENCH CURVE COEFFICIENTS
A: 44.90000 B:0.00000000 C:0.00000000 D:0.00000000000

BACKGROUND QUENCH CURVE CORRELATION TABLE

BKG	H#	MEASURED CPM.	CALCULATED CPM.	PERCENT DIFF.	FLAG
1	58.3	44.90	44.90	0.00	

BACKGROUND QUENCH LIMITS LOW:0.000 HIGH:1000.
TOTAL QUENCH LIMITS LOW:0.000 HIGH:1000.

SAM	POS	CH	CPM	2SIG%	TIME	EL TIME	AVG H#	RCM%	2P	FR
A S1	**- 3	1	105004.40	0.20	10.00	22.67	-5.3	0.00		
	H#: -6, -5, -5									
	ISO1 %EFF CH1:96.65									
B S2	**- 4	1	104881.70	0.20	10.00	34.15	11.7	0.00		
	H#: 11, 11, 13									
	ISO1 %EFF CH1:96.53									
C S3	**- 5	1	104007.30	0.20	10.00	45.61	36.0	0.00		
	H#: 36, 36, 36									
	ISO1 %EFF CH1:95.73									

0-88
RAJones

SAM	POS	CH	CPM	2SIG%	TIME	EL TIME	AVG H#	RCM%	2P	ERR
S4	**- 6	1	102265.80	0.20	10.00	57.08	73.3	0.00		
	H#: 74, 73. 73									
	ISO1 %EFF CH1:94.13									
S5	**- 7	1	101574.90	0.20	10.00	68.57	100.0	0.00		
	H#: 99, 100, 101									
	ISO1 %EFF CH1:93.49									
S6	**- 8	1	98969.60	0.20	10.00	80.03	134.7	0.00		
	H#: 133. 135. 136									
	ISO1 %EFF CH1:91.09									
S7	**- 9	1	96142.50	0.20	10.00	91.49	166.3	0.00		
	H#: 167, 167, 165									
	ISO1 %EFF CH1:88.49									
S8	**-10	1	94268.30	0.21	10.00	102.91	195.3	0.00		
	H#: 195, 196, 195									
	ISO1 %EFF CH1:86.76									
S9	**-11	1	90921.30	0.21	10.00	114.31	218.3	0.00		
	H#: 218, 218. 219									
	ISO1 %EFF CH1:83.68									
S10	**-12	1	85164.00	0.22	10.00	125.65	253.7	0.00		
	H#: 252, 254, 255									
	ISO1 %EFF CH1:78.38									

ISOTOPE 1 QUENCH STANDARDS

STANDARD	H#	%EFF CH1
1	-5.33	96.65
2	11.67	96.54
3	36.00	95.73
4	73.33	94.12
5	100.0	93.49
6	134.7	91.09
7	166.3	88.49
8	195.3	86.76
9	218.3	83.68
10	253.7	78.38

QUENCH LIMITS LOW:0.000 HIGH:253.7

Analytical Batch

LAB SEGMENT SERIAL #: F1067

CUSTOMER ID: 000013

INSTRUMENT	WA45242
PROCEDURE/REV	LA-378-103/A-2
TECHNOLOGIST	S. Cervantes
DATE	March 09, 1990
TEMPERATURE	N/A
STARTING TIME	1600 03-08-90
ENDING TIME	1330 03-09-90
CHEMIST	S. A. Catlow

Iodine 129 Analysis
Water Digestion

Tennelec 4500

	DESCRIPTION	LAB ID
1	Initial LMCS Check Std	F1077
2	Reagent Blank	F1078
3	Sample Comp 13	F1079
4	Duplicate Sample Comp 13	F1080
5	Spike Sample Comp 13	F1081
6	Final LMCS Check Std	F1082
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 BOOK # & ALIQUOT VOL.	FINAL VOL. OF STD.
LMCS Check Std	124B44/1 mL			N/A
Spike	124B44/1 mL	F1079/1 mL		N/A

SST-102 Rev. I 10/2/90 Interim

AUTOMATIC ISOTOPE ANALYSIS 09-MAR-90 15:26:56

SAMPLE PARAMETERS

Spectrum Label:	F-1077 SEG.COMP #13	
Sample Counting Date	9-MAR-90	14:20:51
Sample Collection Date	9-MAR-90	14:20:00
Decay Time	0. Days	0.014 Hrs.
Acq.Live Time	3000. Sec.	
Acq.Clock Time	3003. Sec.	
Deadtime	0.1 %	
Sample Mass	1.000 GM	
Eff.Corr.Factor	1.000	

PEAK SEARCH PARAMETERS

Mem.Group	1AB
Search Range	25 - 200 keV
Max. % Error	50.0 %
Filter Width	1.6 keV
Multiplet Det.Factor	0.1
Max.Delta-E	1.5 keV
keV/Ch.	0.20
Zero Offset	0.60 keV

Lineshape File Name:	JIM	-- H2 SHP FILE 5/13/86
Efficiency File Name:	WEM01	-- H2 EFF TABLE 5/13/86
Isotope File Name:	WIM01	-- H-2 DET. ISOTOPE FILE

***** PEAK SEARCH TABLE *****

No.	O.Energy (keV)	T.Energy (keV)	Net Cnts.	Bgnd.	% Err.	FWHM (keV)	Eff.	
1	29.4*	29.4	3922.	949.	1.8	1.375	0.0000E+00	
2	34.0*	34.0	756.	949.	5.7	1.375	0.4492E+00	
3	39.4	39.3	573.	1205.	7.6	1.373	0.5067E+00	I 129
4	59.5	59.4	44.	103.	31.6	1.369	0.5631E+00	AM 241
5	74.0	73.8	36.	98.	37.0	1.367	0.6135E+00	AM 243
6	96.5	96.2	93.	196.	21.1	1.366	0.5830E+00	
7	120.5	120.1	446.	190.	6.1	1.366	0.5376E+00	SE 75
8	135.4	135.0	1436.	213.	2.9	1.367	0.5048E+00	SE 75

***** IDENTIFIED ISOTOPES *****

Nuclide Energy	UCI/GM	Decay Corr. Abundance(%)	Rate(CPM)	% Err	Delta-E	%MPC
I 129 ?	0.136E-03 +/- 0.103E-04	1.00				
39.6	0.136E-03	7.50	11.46	7.6	0.3	
AM 241 ?	0.197E-05 +/- 0.624E-06	1.00				
59.5	0.197E-05	35.90	0.89	31.6	0.1	
AM 243 ?	0.811E-06 +/- 0.300E-06	1.00				
74.7	0.811E-06	66.00	0.73	37.0	0.9	
SE 75	0.434E-04 +/- 0.115E-05	1.00				
136.0	0.434E-04	59.00	28.72	2.9	1.0	
121.1	0.434E-04	17.30	8.96	6.1	1.0	

***** MDL TABLE *****

Nuclide Energy	UCI/GM	Decay Corr. Abundance(%)	Rate(CPM)	% Err	Delta-E	%MPC
SB 125		1.00				
176.3	<0.168E-04	6.80	< 1.00			

***** UNIDENTIFIED PEAKS *****

Energy	Rate	% Err.	Energy	Rate	% Err.	Energy	Rate	% Err.
29.4	78.43	1.8	34.0	15.13	5.7	96.2	1.85	21.1

STOP --
BG4500

SAMPLE PARAMETERS

Spectrum Label:	F-1078 SEG.COMP #14	
Sample Counting Date	9-MAR-90	15:28:37
Sample Collection Date	9-MAR-90	15:28:00
Decay Time	0. Days	0.010 Hrs.
Acq.Live Time	3000. Sec.	
Acq.Clock Time	3003. Sec.	
Deadtime	0.1 %	
Sample Mass	1.000 GM	
Eff.Corr.Factor	1.000	

PEAK SEARCH PARAMETERS

Nom.Group	1AB
Search Range	25 - 200 keV
Max. % Error	50.0 %
Filter Width	1.6 keV
Multiplet Det.Factor	0.1
Max.Delta-E	1.5 keV
keV/Ch.	0.20
Zero Offset	0.60 keV

Lineshape File Name:	JIM	-- H2 SHP FILE 5/13/86
Efficiency File Name:	WEM01	-- H2 EFF TABLE 5/13/86
Isotope File Name:	WIM01	-- H-2 DET. ISOTOPE FILE

***** PEAK SEARCH TABLE *****

No.	O.Energy (keV)	T.Energy (keV)	Net Cnts.	Bgnd.	% Err.	FWHM (keV)	Eff.	
1	31.7*	31.7	58.	265.	34.5	1.375	0.4322E+00	
2	59.6	59.5	39.	82.	32.6	1.369	0.5633E+00	AM 241
3	74.9	74.7	44.	133.	35.6	1.367	0.6160E+00	AM 243
4	91.5*	91.2	38.	206.	45.4	1.366	0.5913E+00	
5	96.5	96.2	179.	364.	13.9	1.366	0.5830E+00	
6	120.4	120.0	468.	205.	6.0	1.366	0.5378E+00	SE 75
7	135.4	135.0	1557.	188.	2.8	1.367	0.5048E+00	SE 75
8	175.9	175.4	28.	103.	49.0	1.375	0.3976E+00	SB 125

***** IDENTIFIED ISOTOPES *****

Nuclide / Energy	UCI/GM	Decay Corr. Abundance(%)	Rate(CPM)	% Err	Delta-E	%MPC
AM 241 ?	0.175E-05 +/- 0.572E-06	1.00				
59.5	0.175E-05	35.90	0.79	32.6	0.0	
AM 243 ?	0.982E-06 +/- 0.350E-06	1.00				
74.7	0.982E-06	66.00	0.89	35.6	0.0	
SB 125 ?	0.925E-05 +/- 0.444E-05	1.00				
176.3	0.925E-05	6.80	0.56	48.0	0.9	
SE 75	0.468E-04 +/- 0.118E-05	1.00				
136.0	0.471E-04	59.00	31.15	2.8	1.0	
121.1	0.453E-04	17.30	9.35	6.0	1.1	

***** MDL TABLE *****

Nuclide / Energy	UCI/GM	Decay Corr. Abundance(%)	Rate(CPM)	% Err	Delta-E	%MPC
I 129		1.00				
39.6	<0.110E-04	7.50	< 0.94			

***** UNIDENTIFIED PEAKS *****

Energy	Rate	% Err.	Energy	Rate	% Err.	Energy	Rate	% Err.
31.7	1.15	34.5	91.2	0.75	45.4	96.2	3.58	13.9

STOP --
BG4500

AUTOMATIC ISOTOPE ANALYSIS 09-MAR-90 17:19:58

SAMPLE PARAMETERS

Spectrum Label:	F-1079 SEG.COMP #15	
Sample Counting Date	9-MAR-90	16:22:11
Sample Collection Date	9-MAR-90	16:22:00
Decay Time	0. Days	0.003 Hrs.
Acq.Live Time	3000. Sec.	
Acq.Clock Time	3003. Sec.	
Deadtime	0.1 %	
Sample Mass	1.000 GM	
Eff.Corr.Factor	1.000	

PEAK SEARCH PARAMETERS

Mem.Group	1AB
Search Range	25 - 200 keV
Max. % Error	50.0 %
Filter Width	1.6 keV
Multiplet Det.Factor	0.1
Max.Delta-E	1.5 keV
keV/Ch.	0.20
Zero Offset	0.60 keV

Lineshape File Name:	JIM	-- H2 SHP FILE 5/13/86
Efficiency File Name:	WEM01	-- H2 EFF TABLE 5/13/86
Isotope File Name:	WIM01	-- H-2 DET. ISOTOPE FILE

***** PEAK SEARCH TABLE *****

No.	D.Energy (keV)	T.Energy (keV)	Net Cnts.	Bgnd.	% Err.	FWHM (keV)	Eff.	
1	31.3*	31.3	71.	209.	26.1	1.375	0.4297E+00	
2	36.2*	36.2	53.	207.	32.9	1.375	0.4697E+00	
3	96.1	96.1	134.	168.	14.9	1.366	0.5832E+00	
4	120.7	120.3	477.	179.	5.8	1.366	0.5372E+00	SE 75
5	135.4	135.0	1492.	203.	2.9	1.367	0.5048E+00	SE 75
6	151.3	150.9	32.	96.	40.4	1.370	0.4659E+00	

***** IDENTIFIED ISOTOPES *****

Nuclide / Energy	UCI/GM	Decay Corr. Abundance(%)	Rate(CPM)	% Err	Delta-E	%MPC
SE 75	0.453E-04 +/- 0.116E-05	1.00				
136.0	0.451E-04	59.00	29.83	2.8	1.0	
121.1	0.462E-04	17.30	9.53	5.8	0.8	

***** MDL TABLE *****

Nuclide / Energy	UCI/GM	Decay Corr. Abundance(%)	Rate(CPM)	% Err	Delta-E	%MPC
I 129		1.00				
39.6	<0.119E-04	7.50	< 1.01			
AM 241		1.00				
59.5	<0.215E-05	35.90	< 0.97			
AM 243		1.00				
74.7	<0.125E-05	66.00	< 1.13			
SB 125		1.00				
176.3	<0.164E-04	6.80	< 0.98			

***** UNIDENTIFIED PEAKS *****

Energy	Rate	% Err.	Energy	Rate	% Err.	Energy	Rate	% Err.
31.3	1.42	26.0	96.1	2.68	14.9	150.9	0.64	40.4
36.2	1.05	32.9						

STOP --
BG4500

SAMPLE PARAMETERS

Spectrum Label:	F-1080 SEG.COMP #16	
Sample Counting Date	9-MAR-90	17:20:23
Sample Collection Date	9-MAR-90	17:20:00
Decay Time	0. Days	0.006 Hrs.
Acq.Live Time	3000. Sec.	
Acq.Clock Time	3003. Sec.	
Deadtime	0.1 %	
Sample Mass	1.000 GM	
Eff.Corr.Factor	1.000	

PEAK SEARCH PARAMETERS

Mem.Group	1AB
Search Range	25 - 200 keV
Max. % Error	50.0 %
Filter Width	1.6 keV
Multiplet Det.Factor	0.1
Max.Delta-E	1.5 keV
keV/Ch.	0.20
Zero Offset	0.60 keV

Lineshape File Name:	JIM	-- H2 SHP FILE 5/13/86
Efficiency File Name:	WEM01	-- H2 EFF TABLE 5/13/86
Isotope File Name:	WIM01	-- H-2 DET. ISOTOPE FILE

***** PEAK SEARCH TABLE *****

No.	O.Energy (keV)	T.Energy (keV)	Net Cnts.	Bgnd.	% Err.	FWHM (keV)	Eff.	
1	31.6	31.6	59.	163.	29.7	1.375	0.4316E+00	
2	74.2	74.0	42.	137.	38.3	1.367	0.6140E+00	AM 243
3	96.2	95.9	121.	194.	17.0	1.366	0.5835E+00	
4	120.5	120.1	425.	177.	6.2	1.366	0.5376E+00	SE 75
5	135.4	135.0	1453.	219.	2.9	1.367	0.5048E+00	SE 75

***** IDENTIFIED ISOTOPES *****

Nuclide Energy	UCI/GM	Decay Corr. Abundance(%)	Rate(CPM)	% Err	Delta-E	%MPC
AM 243 ?	0.939E-06 +/- 0.360E-06	1.00				
74.7	0.939E-06	66.00	0.84	38.3	0.7	
SE 75	0.434E-04 +/- 0.115E-05	1.00				
136.0	0.440E-04	59.00	29.07	2.9	1.0	
121.1	0.412E-04	17.30	8.51	6.2	1.0	

***** MDL TABLE *****

Nuclide Energy	UCI/GM	Decay Corr. Abundance(%)	Rate(CPM)	% Err	Delta-E	%MPC
I 129		1.00				
39.6	<0.114E-04	7.50	< 0.96			
AM 241		1.00				
59.5	<0.206E-05	35.90	< 0.93			
SB 125		1.00				
176.3	<0.172E-04	6.80	< 1.02			

***** UNIDENTIFIED PEAKS *****

Energy	Rate	% Err.	Energy	Rate	% Err.	Energy	Rate	% Err.
31.6	1.17	29.6	95.9	2.43	17.0			

STOP --
BG4500

AUTOMATIC ISOTOPE ANALYSIS 09-MAR-90 19:36:44

SAMPLE PARAMETERS

Spectrum Label:	F-1081 SEG.COMP #17	
Sample Counting Date	9-MAR-90	18:45:29
Sample Collection Date	9-MAR-90	18:45:00
Decay Time	0. Days	0.008 Hrs.
Acq.Live Time	3000. Sec.	
Acq.Clock Time	3004. Sec.	
Deadtime	0.1 %	
Sample Mass	1.000 GM	
Eff.Corr.Factor	1.000	

PEAK SEARCH PARAMETERS

Mem.Group	1AB
Search Range	25 - 200 keV
Max. % Error	50.0 %
Filter Width	1.6 keV
Multiplet Det.Factor	0.1
Max.Delta-E	1.5 keV
keV/Ch.	0.20
Zero Offset	0.60 keV

Lineshape File Name: JIM -- H2 SHP FILE 5/13/86
Efficiency File Name: WEM01 -- H2 EFF TABLE 5/13/86
Isotope File Name: WIM01 -- H-2 DET. ISOTOPE FILE

***** PEAK SEARCH TABLE *****

No.	O.Energy (keV)	T.Energy (keV)	Net Cnts.	Bgnd.	% Err.	FWHM (keV)	Eff.	
1	29.4*	29.4	1024.	508.	4.0	1.375	0.0000E+00	
2	34.0*	34.0	199.	508.	14.3	1.375	0.4492E+00	
3	39.3	39.2	191.	699.	16.4	1.373	0.5054E+00	I 129
4	59.7	59.6	27.	93.	48.3	1.369	0.5634E+00	AM 241
5	65.5	65.3	42.	95.	32.3	1.368	0.5860E+00	
6	74.5	74.3	35.	130.	42.9	1.367	0.6149E+00	AM 243
7	96.4	96.1	132.	161.	14.7	1.366	0.5832E+00	
8	120.5	120.1	488.	171.	5.7	1.366	0.5376E+00	SE 75
9	135.4	135.0	1457.	228.	2.9	1.367	0.5048E+00	SE 75

***** IDENTIFIED ISOTOPES *****

Nuclide / Energy	UCI/GM	Decay Corr. Abundance(%)	Rate(CPM)	% Err	Delta-E	%MPC
I 129 ?	0.454E-04 +/- 0.743E-05	1.00				
39.6	0.454E-04	7.50	3.82	16.4	0.4	
AM 241 ?	0.120E-05 +/- 0.577E-06	1.00				
59.5	0.120E-05	35.90	0.54	48.3	-0.1	
AM 243 ?	0.779E-06 +/- 0.334E-06	1.00				
74.7	0.779E-06	66.00	0.70	42.9	0.4	
SE 75	0.447E-04 +/- 0.116E-05	1.00				
136.0	0.441E-04	59.00	29.14	2.9	1.0	
121.1	0.473E-04	17.30	9.77	5.7	1.0	

***** MDL TABLE *****

Nuclide / Energy	UCI/GM	Decay Corr. Abundance(%)	Rate(CPM)	% Err	Delta-E	%MPC
SB 125		1.00				
176.3	<0.158E-04	6.80	< 0.94			

***** UNIDENTIFIED PEAKS *****

Energy	Rate	% Err.	Energy	Rate	% Err.	Energy	Rate	% Err.
29.4	20.47	4.0	65.3	0.84	32.3	96.1	2.64	14.7
34.0	3.99	14.3						

STOP --
BG4500

AUTOMATIC ISOTOPE ANALYSIS 09-MAR-90 21:21:04

SAMPLE PARAMETERS

Spectrum Label:	F-1082 SEG.COMP #18	
Sample Counting Date	9-MAR-90	19:38:08
Sample Collection Date	9-MAR-90	19:38:00
Decay Time	0. Days	0.002 Hrs.
Acq.Live Time	3000. Sec.	
Acq.Clock Time	3004. Sec.	
Deadtime	0.1 %	
Sample Mass	1.000 GM	
Eff.Corr.Factor	1.000	

PEAK SEARCH PARAMETERS

Mem.Group	1AB
Search Range	25 - 200 keV
Max. % Error	50.0 %
Filter Width	1.6 keV
Multiplet Det.Factor	0.1
Max.Delta-E	1.5 keV
keV/Ch.	0.20
Zero Offset	0.60 keV

Lineshape File Name:	JIM	-- H2 SHP FILE 5/13/86
Efficiency File Name:	WEM01	-- H2 EFF TABLE 5/13/86
Isotope File Name:	WIM01	-- H-2 DET. ISOTOPE FILE

***** PEAK SEARCH TABLE *****

No.	O.Energy (keV)	T.Energy (keV)	Net Cnts.	Bgnd.	% Err.	FWHM (keV)	Eff.	
1	29.3*	29.3	3819.	910.	1.9	1.375	0.0000E+00	
2	34.0*	34.0	813.	910.	5.3	1.375	0.4492E+00	
3	39.3	39.2	614.	1135.	7.0	1.373	0.5054E+00	I 129
4	74.8	74.6	37.	125.	40.6	1.367	0.6157E+00	AM 243
5	96.4	96.1	182.	144.	11.0	1.366	0.5832E+00	
6	120.5	120.1	433.	185.	6.2	1.366	0.5376E+00	SE 75
7	135.4	135.0	1473.	223.	2.9	1.367	0.5048E+00	SE 75
8	166.9	166.4	35.	100.	38.9	1.373	0.4237E+00	
9	188.5	188.0	29.	75.	41.1	1.379	0.3442E+00	

***** IDENTIFIED ISOTOPES *****

Nuclide / Energy	UCI/GM	Decay Corr. Abundance(%)	Rate(CPM)	% Err	Delta-E	%MPC
I 129 ?	0.146E-03 +/- 0.102E-04	1.00				
39.6	0.146E-03	7.50	12.29	7.0	0.4	
AM 243 ?	0.827E-06 +/- 0.335E-06	1.00				
74.7	0.827E-06	66.00	0.75	40.6	0.1	
SE 75	0.440E-04 +/- 0.116E-05	1.00				
136.0	0.446E-04	59.00	29.46	2.9	1.0	
121.1	0.419E-04	17.30	8.66	6.2	1.0	

***** MDL TABLE *****

Nuclide / Energy	UCI/GM	Decay Corr. Abundance(%)	Rate(CPM)	% Err	Delta-E	%MPC
AM 241		1.00				
59.5	<0.202E-05	35.90	< 0.91			
SB 125		1.00				
176.3	<0.161E-04	6.80	< 0.96			

***** UNIDENTIFIED PEAKS *****

Energy	Rate	% Err.	Energy	Rate	% Err.	Energy	Rate	% Err.
29.3	76.37	1.9	96.1	3.65	11.0	188.0	0.57	41.1
34.0	16.25	5.3	166.4	0.69	38.9			

STOP --
BG4500

Single Shell Tank
Calibration Record

Analyte:	I-129		
Procedure:	LA-508-152	Revision:	A-1
Instrument:	TN-4500	Property Number:	WA45242
Technologist:	R. A. Jones	Payroll Number:	65801
Date:	January 09, 1989		

Calibration Standard ID: 45B40A & B

Analyte Concentration: Se^{75} = 4.06 uci, SB^{125} = 4.67 uci, I^{129} = 57.8 uci

Type of Calibration: Efficiency

No.	Energy (Kev)	Efficiency
1	29.7	0.589E+00
2	39.6	0.589E+00
3	121.1	0.419E-01
4	176.3	0.447E-01
5	264.7	0.419E-01
6	279.5	0.419E-01
7	380.6	0.447E-01

Comments: T zero = June 06, 1988

SST-103 Rev. A 9/25/90 Interim

H-2 DET, ISOTOPE FILE

No.	Isotope	Half-Life	MPC Value	Calc.Limit
	Energy	Abs.Int.(%)		
1	I 129	1.600E+06 D	---	Yes
	39.6	7.50		
2	AM 241	1.580E+05 D	---	Yes
	59.5	35.90		
3	AM 243	2.700E+06 D	---	Yes
	74.7	66.00		
4	SB 125	1004.40 D	---	Yes
	176.3	6.80		
5	SE 75	119.77 D	---	Yes
	136.0	59.00		
	121.1	17.30		

Maximum Energy Error for Isotope Identification = 1.5 keV

MDL values are corrected for decay.

Command--?

Analytical Batch

LAB SEGMENT SERIAL #: F1067

CUSTOMER ID: 000013

INSTRUMENT	WA38316
PROCEDURE/REV	LA-220-101/C-0
TECHNOLOGIST	S. Lai
DATE	June 13, 1990
TEMPERATURE	N/A
STARTING TIME	0800
ENDING TIME	1440
CHEMIST	S. A. Catlow

Strontium 89/90
Water Digestion

Detector 10

	DESCRIPTION		LAB ID
1	Initial LMCS Check Std		F1077
2	Reagent Blank		F1078
3	Sample	Comp 13	F1079
4	Duplicate Sample	Comp 13	F1080
5	Spike Sample	Comp 13	F1081
6	Final LMCS Check Std		F1082
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 BOOK # & ALIQUOT VOL.	FINAL VOL. OF STD.
LMCS Check Std	18B46/1 mL			N/A
Spike	18B46/1 mL	F1079/250 uL		N/A

SST-102 Rev. I 10/2/90 Interim

Single Shell Tank
Calibration Record

ANALYTE:	SrY^{90}		
PROCEDURE:	LQ-508-002	REVISION:	A-1
INSTRUMENT:	Detector #10	PROPERTY NUMBER:	WA45242
TECHNOLOGIST:	R.A. Jones	PAYROLL NUMBER:	65801
DATE:	May 21, 1989		
CALIBRATION STANDARD ID:	48B16T, 48B16U, 48B16TV, 48B16G, 48B16J, 48B16L		
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. 10

RADIONUCLIDE: SrY-90
HALF LIFE: 10590
COUNT TIME: 5
CPM BKG: 22

TIME ZERO DATE (HD): 13977

DATE COUNTED (HD): 16309

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

STANDARD ID	SIZE	DATE	TIME	COUNTS @ 0 DEG.	COUNTS @ 90 DEG.	COUNTS @ 180 DEG.	COUNTS @ 270 DEG.
48B16B	1	05/21/89		84795	84166	84768	83389
48B16D	1	05/21/89		107308	108714	109687	109090
48B16E	1	05/21/89		208878	200713	210979	211700
48B16G	2	05/21/89		62088	62802	61690	63053
48B16J	2	05/21/89		102092	101782	101676	101546
48B16L	2	05/21/89		192834	198242	197051	195835

STANDARD ID	SIZE	STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
48B16B	1"	40910	16834	1.16	19610	0.4793
48B16D	1"	54640	21718	1.16	25299	0.4630
48B16TE	1"	104000	41592	1.16	48450	0.4659

AVERAGE, 1" = 0.4694 +/- @95% 0.0171 3.64 % ON 05/21/89

STANDARD ID	SIZE	STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
48B16G	2"	36760	12460	1.16	14514	0.3948
48B16J	2"	58980	20333	1.16	23686	0.4016
48B16L	2"	112700	39176	1.16	45636	0.4049

AVERAGE, 2" = 0.4005 +/- @95% 0.0101 2.52 % ON 05/21/89

STANDARD ID	SIZE	STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
36B40A6	5"	0	0	1.16	0	ERR
36B40B6	5"	0	0	1.16	0	ERR
36B40C5	5"	0	0	1.16	0	ERR

AVERAGE, 5" = ERR +/- @95% ERR ERR % ON 05/21/89

NEW EFFS FOR DET 10 SrY-90 1" = 0.4694 2" = 0.4005

5" = ERR

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

Analytical Batch

Lab Segment Serial #: F1067

Customer ID: 000013

Instrument	WA77390
Procedure/Rev	LA-438-101/C-2
Technologist	S. Lai
Date	February 23, 1990
Temperature	25 C
Starting Time	1600
Ending Time	2300
Chemist	S. A. Catlow

Technetium 99
Water Digestion

Beckman Liquid Scintillator

	Description	Lab ID
1	Initial LMCS Check Std	F1077
2	Reagent Blank	F1078
3	Sample Comp 13	F1079
4	Duplicate Sample Comp 13	F1080
5	Spike Sample Comp 13	F1081
6	Final LMCS Check Std	F1082
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 Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std	148B39/250 uL			20 mL
Spike	49B39/100 uL	F1079/1 mL	148B39/250 uL	20 mL

SST-102 Rev. I 10/2/90 Interim

USER: 5 ID:TC-99, ALL PRESET TIME: 10.00 SAT 24 FEB 1990 11:48
SAMPLE REPEAT: 1 CYCLE REPEAT: 1 SCR:N RS232:N
H#: 3 AQC:Y QCF:N RCM:Y 2 PHASE MONITOR:Y POST CHK:N VIAL:6 VOLUME:1
RCM-TIME: 0.10 INT:999.95
CHANNEL 1-LL:150 UL: 800 2SIGMA: 0.10 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0

SINGLE LABEL DPM SET UP ON 19 SEP 1988 08:22

UNKNOWN ID:TC 99 DIRECT UNKNOWN REPLICATES: 1
UNKNOWN NORM FACTOR ISO1:0 1.00000
UNKNOWN UNITS ISO1:DPM
UNKNOWN HALF LIFE CORRECTION:N
INDIVIDUAL UNKNOWN NORM FACTORS:N BACKGROUND QUENCH CURVES:Y
STANDARD ID:131B28-A 1-10 QUENCH LIMITS LOW:73.67 HIGH:207.7
HALF LIFE(DAYS) ISO1:N
STANDARD DPM ISO1:0.00000000

SAM	POS	CH	CPM	2SIG%	TIME	EL TIME	AVG H#	RCM%	2P	ERR
B1	**-	1	52.50	8.73	10.00	11.05	142.0	0.98		

H#: 141, 142, 143

BACKGROUND QUENCH CURVES: CONSTANT

CHANNEL 1
QUENCH CURVE COEFFICIENTS
A: 52.50000 B:0.00000000 C:0.00000000 D:0.00000000000

BACKGROUND QUENCH CURVE CORRELATION TABLE

BKG	H#	MEASURED CPM.	CALCULATED CPM.	PERCENT DIFF.	FLAG
1	142.0	52.50	52.50	0.00	

BACKGROUND QUENCH LIMITS LOW:0.000 HIGH:1000.

SAM	POS	CH	CPM	2SIG%	TIME	EL TIME	AVG HH	RCM%	2P ERR
1	**- 3	1	1039.10	1.96	10.00	22.48	151.3	0.49	
	HH: 151, 152, 151								
	ISO1 %EFF CH1:94.01						ISO1 DPM	:1049.507	
2	**- 4	1	3429.00	1.08	10.00	33.70	150.7	0.20	
	HH: 150, 151, 151								
	ISO1 %EFF CH1:94.05						ISO1 DPM	:3589.942	

F1077

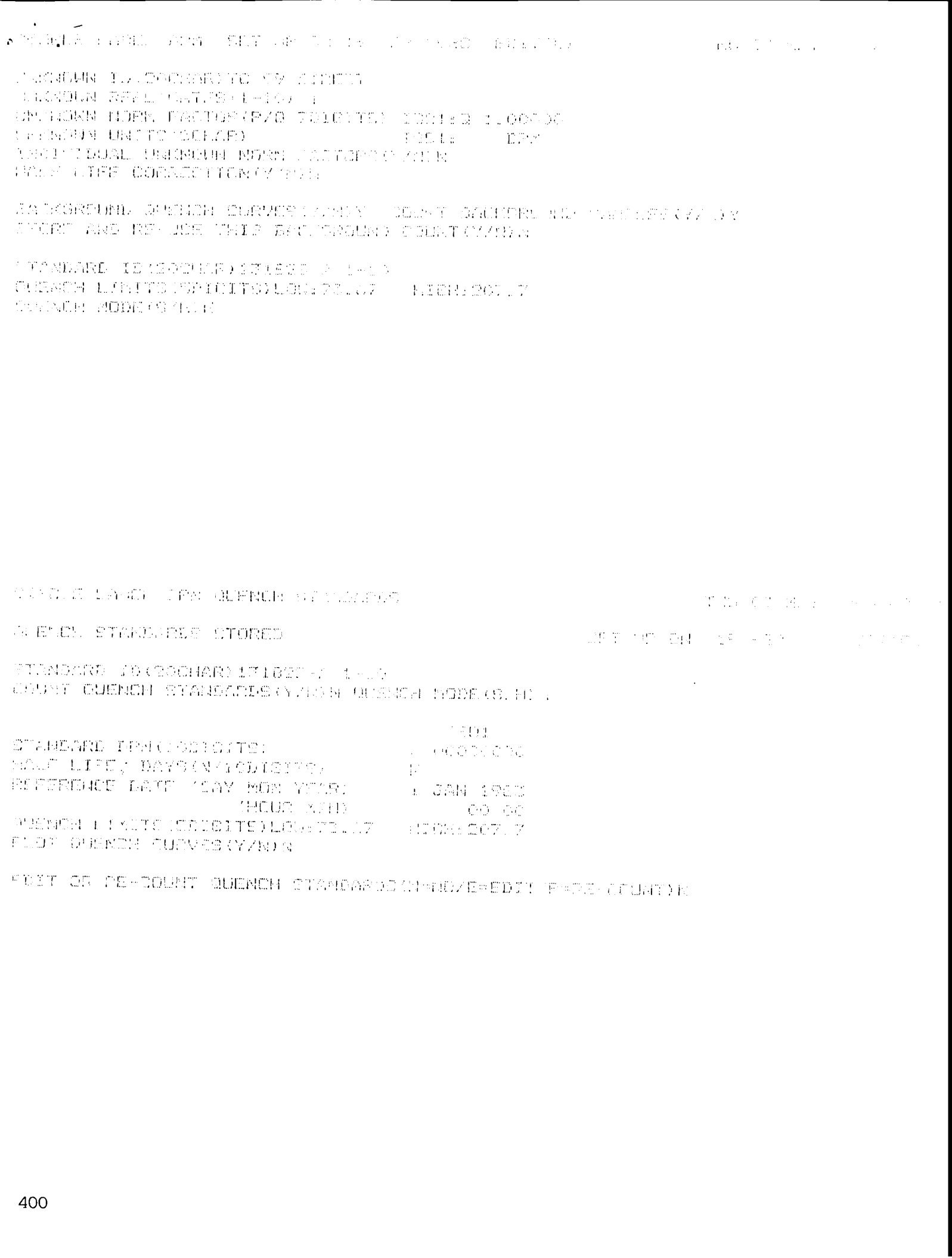
SAM	POS	CH	CPM	2SIG%	TIME	EL TIME	AVG HH	RCM%	2P ERR
3	**- 5	1	57.90	8.31	10.00	44.90	149.3	9.34	
	HH: 149, 150, 149								
	ISO1 %EFF CH1:94.14						ISO1 DPM	:5.735893	
4	**- 6	1	2597.90	1.24	10.00	56.12	150.3	0.23	
	HH: 150, 150, 151								
	ISO1 %EFF CH1:94.08						ISO1 DPM	:2705.632	
5	**- 7	1	103.70	6.21	10.00	67.31	150.7	4.20	
	HH: 150, 151, 151								
	ISO1 %EFF CH1:94.05						ISO1 DPM	:54.43655	
6	**- 8	1	2852.90	1.18	10.00	78.51	150.3	0.20	
	HH: 150, 150, 151								
	ISO1 %EFF CH1:94.08						ISO1 DPM	:2976.684	
7	**- 9	1	119.60	5.78	10.00	89.69	151.3	4.70	
	HH: 150, 152, 152								
	ISO1 %EFF CH1:94.01						ISO1 DPM	:71.37841	
8	**-10	1	2798.20	1.20	10.00	100.88	148.7	0.20	
	HH: 148, 150, 148								
	ISO1 %EFF CH1:94.18						ISO1 DPM	:2915.235	
9	**-11	1	1043.80	1.96	10.00	112.08	151.0	0.47	
	HH: 151, 151, 151								
	ISO1 %EFF CH1:94.03						ISO1 DPM	:1054.232	
10	**-12	1	3561.20	1.06	10.00	123.29	150.3	0.17	
	HH: 150, 151, 150								
	ISO1 %EFF CH1:94.08						ISO1 DPM	:3729.572	
11	**- 1	1	940.40	2.06	10.00	134.54	148.0	0.41	
	HH: 148, 148, 148								
	ISO1 %EFF CH1:94.22						ISO1 DPM	:942.3516	
12	**- 2	1	3492.40	1.07	10.00	145.75	149.7	0.15	
	HH: 150, 148, 150								
	ISO1 %EFF CH1:94.12						ISO1 DPM	:3654.699	

F1078
F1078+
F1079
F1079+
F1080
F1080+
F1081
F1081+
F1082
F1082+

Single Shell Tank
Calibration Record

Analyte:	TC 99		
Procedure:	LA-508-121	Revision:	A-0
Instrument:	Liquid Scintillation Counter	Property Number:	WA77390
Technologist:	R. A. Jones	Payroll Number:	65801
Date:	September 02, 1988		
Calibration Standard ID:	Packard 6008502 #2		
Analyte Concentration:	See attached calibration sheets.		
Type of Calibration:	Quench Curve		
Comments:	Quench Curve		

SST-103 Rev. A 9/25/90 Interim



QUENCH STANDARDS FOR ISOTOPE 1

MB	EFF1	MB	EFF1
77.67	99.03	[illegible]	[illegible]
100.3	98.45	[illegible]	[illegible]
120.0	94.66	[illegible]	[illegible]
140.7	94.32	[illegible]	[illegible]
179.3	93.90	[illegible]	[illegible]

DELETE STANDARD(N/ MB)N RE-ORDER(Y/N)?
DISPLAY QUENCH CURVE(Y/[illegible]N PLOT QUENCH CURVE Y/[illegible]N

```
ID(12CHAR)TC-99, ALL            USER  5                                THU 03 MAY 1990 [illegible]
PRESET TIME(.01-999.99) 10.00  HE(0-10) 3  SC#(Y/N/D) N
SAMPLE REPEAT(0-10) 1           AQC(Y/N) Y  PROGRAM SUMMARY(Y/N) Y
CYCLE REPEAT(1-10) 1            RCF(Y/N) N  LOW TIME(.1-999.99)  0.10 INT999.9
RS232 OUTPUT(Y/N) N             CPM(Y/N) Y  RCH TIME(.1-999.99)  0.10 INT999.9
2 PHASE(Y/N) Y POST CHK(Y/N) N  VIAL (S/P) S  VOLUME(1=0.5-1ML/2=1-5ML/3=7-20ML) [illegible]

COUNT CHANNELS(1,2,3) 1
CHANNEL SETTINGS      LL      UL    2SIGMA   BKG SUB   [illegible] DSIG      LCR
        CHANNEL 1    150     [illegible]      0.10      [illegible]        0.00         0


DATA CALCULATION PROGRAM (SELECT ONE) 5
 1 CPM          2 COUNTS      3 [illegible] RCF    4 DL [illegible]    5 SL DPM      6 [illegible]
 7 TL DPM       8 SL DPM INT  9 SL DPM INT 10 SL FTA
PRINT FORMAT(1=STANDARD/2=SHORT/3=SELECT) 1
```

Analytical Batch

LAB SEGMENT SERIAL #: F1067

CUSTOMER ID: 000013

INSTRUMENT	WA77390
PROCEDURE/REV	LA-218-113/A-1
TECHNOLOGIST	R. D. Hale
DATE	April 27, 1990
TEMPERATURE	N/A
STARTING TIME	1000
ENDING TIME	1200
CHEMIST	S. A. Catlow

Tritium Analysis
Water Digestion

Beckman Liquid Scintillator

	DESCRIPTION		LAB ID
1	Initial LMCS Check Std		F1077
2	Reagent Blank		F1078
3	Sample	Comp 13	F1079
4	Duplicate Sample	Comp 13	F1080
5	Sample	S000B1	F1199
6	Duplicate Sample	S000B1	F1200
7	Sample	S000B1	F1223
8	Duplicate Sample	S000B1	F1224
9	Spike Sample	S000B1	F1225
10	Final LMCS Check Std		F1226
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 BOOK # & ALIQUOT VOL.	FINAL VOL. OF STD.
LMCS Check Std	140B44/1 mL			20 mL
Spike	140B44/1 mL	F1223/1 mL		20 mL

SST-102 Rev. I 10/2/90 Interim

```
USER: 1 ID:H-3 TRITIUM  PRESET TIME: 10.00                THU 26 APR 1990 19:00
SAMPLE REPEAT: 1 CYCLE REPEAT: 1 SCR:N   RS232:N
H#: 3 AQC:Y QCF:N RCM:Y 2 PHASE MONITOR:Y POST CHK:N VIAL:B VOLUME:1
RCM-TIME:  0.10 INT:999.95
CHANNEL 1-LL:  0 UL: 400 2SIGMA: 0.10 BKG SUB:   0.00 BKG 2SIG:  0.00 LSR:

SINGLE LABEL DPM  SET UP ON  19 SEP 1988  16:50

UNKNOWN ID:H-3  TRITIUM              UNKNOWN REPLICATES: 1
UNKNOWN NORM FACTOR  ISO1:Q 1.00000
UNKNOWN UNITS          ISO1:DPM
UNKNOWN HALF LIFE CORRECTION:N
INDIVIDUAL UNKNOWN NORM FACTORS:N     BACKGROUND QUENCH CURVES:Y
STANDARD ID:PACKARD 6008501 #54   QUENCH LIMITS   LOW:0.000    HIGH:252.0
HALF LIFE(DAYS)  ISO1:  4503.000
STANDARD DPM     ISO1:  260100.0


SAM  POS  CH      CPM    2SIG%  TIME   EL TIME AVG H#        RCM%  2P          ER

B1  **- 1  1      20.90 13.83  10.00    11.03 120.7          0.39
    H#: 120, 121, 121


BACKGROUND QUENCH CURVES: CONSTANT


CHANNEL 1
QUENCH CURVE COEFFICIENTS
A:  20.90000       B:0.00000000       C:0.00000000       D:0.00000000000

                BACKGROUND QUENCH CURVE CORRELATION TABLE

                              MEASURED      CALCULATED      PERCENT
  BKG          H#             CPM.           CPM.           DIFF.        FLAG
  ---         -----         ---------      ----------      --------      ----
   1          120.7           20.90          20.90           0.00


BACKGROUND QUENCH LIMITS   LOW:0.000     HIGH:1000.
     TOTAL QUENCH LIMITS   LOW:0.000     HIGH:252.0


SAM  POS  CH      CPM    2SIG%  TIME   EL TIME AVG H#        RCM%  2P          ER

  1 **- 3  1     668.70  2.45  10.00    22.40  98.0          0.34
    H#:  97,  99,  98
      ISO1 %EFF CH1:43.44                          ISO1 DPM  :1491.315

  2 **- 4  1      22.30 13.39  10.00    33.52  97.3          0.66
    H#:  97,  98,  97
      ISO1 %EFF CH1:43.60                          ISO1 DPM  :3.211041
```

SAM	POS	CH	CPM	SSI6%	TIME	EL TIME	AVG HW		RCM%	2P	ER
3	**--	5	1	39.40	10.08	10.00	44.44	97.0		0.79	
	HW: 96, 97, 98										
	ISO1 %EFF CH1:43.40							ISO1 DPM		:42.35331	
4	**--	6	1	40.10	9.99	10.00	55.39	96.0		1.72	**
	ISO1 %EFF CH1:43.92							ISO1 DPM		:43.71455	
5	**--	7	1	23.70	12.99	10.00	66.53	97.0		2.91	
	HW: 96, 98, 97										
	ISO1 %EFF CH1:43.68							ISO1 DPM		:6.410233	
6	**--	8	1	27.90	11.97	10.00	77.28	72.0		1.72	**
	ISO1 %EFF CH1:49.45							ISO1 DPM		:14.16133	
7	**--	9	1	18.80	14.59	10.00	88.41	98.0		0.89	
	HW: 97, 99, 98										
	ISO1 %EFF CH1:43.44							ISO1 DPM		:0.000000	
8	**-10	1		21.50	13.64	10.00	99.56	99.0		0.66	
	HW: 98, 99, 100										
	ISO1 %EFF CH1:43.19							ISO1 DPM		:1.389073	
9	**-11	1		336.50	3.45	10.00	110.73	100.0		0.65	
	HW: 100, 99, 101										
	ISO1 %EFF CH1:42.95							ISO1 DPM		:734.8126	
10	**-12	1		639.40	2.50	10.00	121.69	97.0		0.35	**
	HW: 97, 97										
	ISO1 %EFF CH1:43.68							ISO1 DPM		:1415.981	

Single Shell Tank
Calibration Record

Analyte:	H-3		
Procedure:	LA-508-121	Revision:	A-0
Instrument:	Liquid Scintillation Counter	Property Number:	WA77390
Technologist:	R. A Jones	Payroll Number:	65801
Date:	September 20, 1988		
Calibration Standard ID:	Packard 6008501 #54		
Analyte Concentration:	(See Attached)		
Type of Calibration:			
Comments:			

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```
USER: 1 ID:H-3 TRITIUM PRESET TIME: 10.00              MON 19 SEP 1988 14:37
SAMPLE REPEAT: 1 CYCLE REPEAT: 1 SCR:n  RS232:N
H#: 3 AQC:Y QCF:N RCM:Y 2 PHASE MONITOR:Y POST CHK:N VIAL:G VOLUME:1
RCM-TIME:  0.10 INT:999.95
CHANNEL 1-LL:  0 UL: 400 2SIGMA: 0.10 BKG SUB:   0.00 BKG 2SIG:  0.00 LSR:   0

SINGLE LABEL DPM
UNKNOWN ID:H-3  TRITIUM           UNKNOWN REPLICATES: 1
UNKNOWN NORM FACTOR ISO1:Q 1.00000
UNKNOWN UNITS       ISO1:DPM
UNKNOWN HALF LIFE CORRECTION:N
INDIVIDUAL UNKNOWN NORM FACTORS:N       BACKGROUND QUENCH CURVES:Y
STANDARD ID:PACKARD 6008501 #54
HALF LIFE(DAYS)  ISO1:  4503.000
STANDARD DPM     ISO1:  260100.0


SAM  POS  CH    CPM     2SIG%   TIME     EL TIME  AVG H#     RCM%  2P      ERR

B1  **- 1  1    28.10   11.93   10.00     11.04    55.0       0.61
    H#:   55,  55,  55


BACKGROUND QUENCH CURVES: CONSTANT

CHANNEL 1
QUENCH CURVES COEFFICIENTS
A:  28.10000       B:0.00000000     C:0.00000000       D:0.00000000000

                BACKGROUND QUENCH CURVE CORRELATION TABLE

BKG     H#          CPM.         CPM.           DIFF.         FLAG
---    ----      --------     --------       ---------      -------
 1     55.0        28.10        28.10           0.00


BACKGROUND QUENCH LIMITS    LOW:0.000     HIGH:1000.
     TOTAL QUENCH LIMITS    LOW:0.000     HIGH:1000.

SAM  POS  CH    CPM     2SIG%   TIME     EL TIME  AVG H#     RCM%  2P     ERR

S1  **- 3  1  148243.70  0.16   10.00      22.72   -5.0       0.00
    H#:  -5,   -5,  -5
      ISO1 %EFF CH1:64.75

S2  **- 4  1  142518.20  0.17   10.00      34.25   13.3       0.00
    H#:  13,  14,  13
      ISO1 %EFF CH1:62.25

S3  **- 5  1  127749.40  0.18   10.00      45.75   43.3       0.00
    H#:  43,  44, 43
      ISO1 %EFF CH1:55.80
```

```
SAM  POS  CH    CPM      2SIG%   TIME     EL TIME  AVG H#     RCM%  2P     ERR

S4  **- 6  1  111143.00  0.19   10.00     57.17    76.0       0.00
    H#:  76,  76,  76
      ISO1 %EFF CH1:48.54

S5  **- 7  1   95303.30  0.20   10.00     68.56   105.3       0.00
    H#: 105, 106, 105
      ISO1 %EFF CH1:41.62

S6  **- 8  1   77574.80  0.23   10.00     79.88   135.3       0.00
    H#: 135, 136, 135
      ISO1 %EFF CH1:33.88

S7  **- 9  1   57990.70  0.26   10.00     91.13   173.0       0.00
    H#: 173, 172, 174
      ISO1 %EFF25.32


POWERFAIL RECOVERY                  MON 19 SEP 1988 16:16

S8  **-10  1   41786.70  0.31   10.00    109.66   207.3       0.00
    H#: 207, 207, 208
      ISO1 %EFF CH1:18.24

S9  **-11  1   34400.70  0.34   10.00    120.86   221.7       0.01
    H#: 223, 220, 222
      ISO1 %EFF CH1:15.02

S10 **-12  1   23670.80  0.41   10.00    132.04   252.0       0.01
    H#: 252, 253, 251
      ISO1 %EFF CH1:10.33


    ISOTOPE 1 QUENCH STANDARDS

                        %EFF
 STANDARD    H#          CH1

      1    -5.00       64.75
      2    13.33       62.25
      3    43.33       55.80
      4    76.00       48.54
      5    105.3       41.62
      6    135.3       33.88
      7    173.0       25.32
      8    207.3       18.24
      9    221.7       15.02
     10    252.0       10.33



QUENCH LIMITS   LOW:0.000    HIGH:252.0
```

Analytical Batch

LAB SEGMENT SERIAL #: F1067

CUSTOMER ID: 000013

INSTRUMENT	WA77479
PROCEDURE/REV	LA-355-131/A-2
TECHNOLOGIST	S. Reil
DATE	April 10, 1990
TEMPERATURE	70 F
STARTING TIME	1120
ENDING TIME	1200
CHEMIST	R. K. Fuller

Arsenic Analysis
2nd Water Digestion

Atomic Absorption

Perkin-Elmer 2280

	DESCRIPTION	LAB ID
1	Initial LMCS Check Std	F1077
2	Reagent Blank	F1078
3	Sample Comp 13	F1079
4	Duplicate Sample Comp 13	F1080
5	Spike Sample Comp 13	F1081
6	Final LMCS Check Std	F1082
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 BOOK # & ALIQUOT VOL.	FINAL VOL. OF STD.
LMCS Check Std	58C11BU/35 uL			35 mL
Spike	58C11BU/35 uL	F1079/1 mL		35 mL

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Single Shell Tank
Calibration Record

Analyte:	As		
Procedure:	LA-355-131	Revision:	A-2
Instrument:	Perkin-Elmer	Property Number:	WA77479
Technologist:	S. Riel	Payroll Number:	6C280
Date:	April 10, 1990		

Calibration Standard ID: 102C32

Analyte Concentration: 1.001 ppm

Type of Calibration: Linear Regression

Aliquot	Weight	Instrument Reading Units= mm
0	0	4.5
25 ul	25 ng	58.0
50 ul	50 ng	112.0
75 ul	75 ng	156.0

Comments:

SST-103 Rev. B 9/27/90 Interim

Analytical Batch

Lab Segment Serial #: F1067

Customer ID: 000013

Instrument	WA77479
Procedure/Rev	LA-325-102/A-1
Technologist	J. Hopkins
Date	February 27, 1990
Temperature	70 F
Starting Time	1300
Ending Time	1400
Chemist	R. K. Fuller

Mercury Analysis by Atomic Absorption.
Water Digestion

Manual Cold Vapor Technique

Perkin-Elmer 2280

	Description	Lab ID
1	Initial LMCS Check Std	F1059
2	Reagent Blank	F1060
3	Sample Comp 12	F1061
4	Duplicate Sample Comp 12	F1062
5	Spike Sample Comp 12	F1063
6	LMCS Check Std	F1064
7	LMCS Check Std	F1083
8	Sample Comp 13	F1085
9	Duplicate Sample Comp 13	F1086
10	Spike Sample Comp 13	F1087
11	LMCS Check Std	F1088

	Description	Lab ID
12	LMCS Check Std	F1077
13	Sample Comp 13	F1079
14	Duplicate Sample Comp 13	F1080
15	LMCS Check Std	F1082
16	LMCS Check Std	F0933
17	Sample Comp 06	F0935
18	Duplicate Sample Comp 06	F0936
19	Spike Sample Comp 06	F0937
20	Final LMCS Check Std	F0938
21		
22		

Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std	58C11BP/25 uL			15 mL
Spike	58C11BP/25 uL	F0935/2.0 mL		15 mL

SST-102 Rev. I 10/2/90 Interim

Single Shell Tank
Calibration Record

Analyte:	Hg		
Procedure:	LA-325-102	Revision:	A-1
Instrument:	Perkin-Elmer AA	Property Number:	WA77479
Technologist:	J. Hopkins	Payroll Number:	6A543
Date:	February 22, 1990		
Calibration Standard ID:	102C3V		
Analyte Concentration:	1.00 ppm		
Type of Calibration:	Linear Regression		

Aliquot	Weight	Instrument Reading Units= mm
0	0 ng	8
10 uL	10 ng	53
20 uL	20 ng	95
40 uL	40 ng	181

Comments:

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Analytical Batch

Lab Segment Serial #: F1067

Customer ID: 000013

Instrument	WA77479
Procedure/Rev	LA-365-131/A-3
Technologist	S. Riel
Date	April 01, 1990
Temperature	70 F
Starting Time	0730
Ending Time	1515
Chemist	R. K. Fuller

Selenium Analysis
2nd Water Digestion

Atomic Absorption

Perkin-Elmer 2280

	Description	Lab ID
1	Initial LMCS Check Std	F1077
2	Reagent Blank	F1078
3	Sample Comp 13	F1079
4	Duplicate Sample Comp 13	F1080
5	Spike Sample Comp 13	F1081
6	Final LMCS Check Std	F1082
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 Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std	58C11BU/35 uL			35 mL
Spike	58C11BU/35 uL	F1079/1.0 mL		35 mL

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Single Shell Tank
Calibration Record

Analyte:	Se		
Procedure:	LA-365-131	Revision:	A-3
Instrument:	Perkin-Elmer AA	Property Number:	WA77479
Technologist:	Steve Riel	Payroll Number:	6C280
Date:	April 01, 1990		

Calibration Standard ID: 102C3Z

Analyte Concentration: 1.001 ppm

Type of Calibration: Linear Regression

Aliquot	Weight	Instrument Reading Units= mm
0	0	4.5
25 ul	25 ng	25.0
50 ul	50 ng	47.5
75 ul	75 ng	66.5

Comments: 000013 - Customer ID

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ACID DIGESTION TEST ANALYSIS

Single Shell Tank Project

Acid Digestion
Units For Samples Are Wet Weight

Tank: 241-U-110
Customer ID: Core 13 Composite

	Check Standard	Blank	Sample		Duplicate Sample		Spike Of Sample		Check Standard
Laboratory ID:		F1084	F1085		F1086		F1087		
Acid Digestion		Complete	9.56	g/L	10.04	g/L	10.29	g/L	
Laboratory ID:	F1083	F0934	F1085		F1086		F1087		F1088
Arsenic	106.00%	<5.00E-03 ppm	<1.05	ug/g	<9.96E-01	ug/g	88.27%		108.60%
Laboratory ID:	F1083	F1060	F1085		F1086		F1087		F1088
Mercury	95.20%	<1.00E-02 ppm	6.28E-01	ug/g	4.99E-01	ug/g	95.45%		103.20%
Laboratory ID:	F1083	F1084	F1085		F1086		F1087		F1088
Selenium	100.50%	4.16E-03 ppm	2.90E-01	ug/g	2.76E-01	ug/g	79.60%		97.00%

ICP Results

DATA SUMMARY

Date Analyzed: April 19, 1990
Procedure: LA-505-151/A-0
Analyst: J. A. White
Digestion Procedure: Acid Digestion LA-505-159/A-0

Laboratory ID#		Acid Standard F1083		Sample F1085	Duplicate F1086	Spike of Sample F1087	Digestion 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	101.95%		0.07 LT	57262	56255	NOT CALC.	100.63%	100.37%
Antimony	103.06%		-0.01 LT	572	-103 LT			105.91%
Barium	101.45%		-0.01 LT	49	0 LT	103.28%	92.28%	104.16%
Beryllium	100.97%		0.00 LT	3	-1 LT			98.38%
Bismuth	107.97%	102.12%	-0.01 LT	15713	14154	NOT CALC.		108.36%
Boron	99.66%	94.43%	0.03	60	55	134.81%		101.73%
Cadmium	98.75%	93.46%	0.00 LT	6 LT	-17 LT	89.32%		100.12%
Calcium	104.27%	102.58%	0.09	557	512	146.72%		106.89%
Cerium	90.35%		-0.31 LT	424 LT	-1299 LT	15.40%	88.66%	91.75%
Chromium	94.27%		-0.03 LT	676	458	235.92%	84.79%	95.51%
Cobalt	98.18%		0.02 LT	129	-26 LT	85.08%	86.00%	97.27%
Copper	102.60%	99.09%	-0.01 LT	73	-22 LT	100.71%		105.17%
Europium	97.48%		-0.01 LT	6 LT	-25 LT			98.92%
Iron	100.98%		0.03	14141	16036	NOT CALC.	94.41%	103.46%
Lanthanum	93.16%	91.05%	-0.02 LT	88	-59 LT	89.51%		94.12%
Lead	106.44%	99.04%	0.01 LT	1123	520	93.18%		106.64%
Lithium	103.57%		-0.01 LT	13	-61 LT	91.11%	93.39%	106.08%
Magnesium	102.51%	97.56%	0.02	217	231	4138.61%		104.79%
Manganese	100.79%		0.01	5703	5270	NOT CALC.	92.70%	102.81%
Mercury	103.23%		-0.05 LT	-63 LT	-12 LT			102.27%
Molybdenum	99.52%	93.73%	0.00 LT	35	-14 LT	85.72%		97.14%
Nickel	99.75%		-0.01 LT	142	65	98.98%	92.68%	101.54%
Potassium	98.10%	82.65%	-0.53 LT	201 LT	-1943 LT	73.37%		99.66%
Samarium	100.49%		-0.35 LT	357 LT	-1622 LT			99.36%
Selenium	106.93%		-0.06 LT	677	244			105.01%
Silicon	92.46%	75.18%	0.63	5217	2760	-114.70%		90.40%
Silver	106.91%		-0.02 LT	35 LT	-83 LT	53.52%		107.97%
Sodium	99.67%	94.66%	0.06 LT	75809	71589	NOT CALC.		102.01%
Strontium	102.83%	100.02%	0.00 LT	563	475	86.77%		105.80%
Sulfur	105.75%		0.03	883	706			106.08%
Tantalum	98.96%		-0.04 LT	76 LT	-179 LT	27.57%	73.62%	96.38%
Thallium	107.12%		-0.33 LT	816	-1187 LT			105.99%
Thorium	105.52%		-0.18 LT	2112	-1001 LT			106.38%
Tin	98.76%		0.02 LT	67	-1 LT	102.74%	93.54%	100.85%
Titanium	102.75%		0.13	28	-30 LT	90.61%	92.17%	100.86%
Uranium	108.97%		-2.40 LT	8653	-3682 LT			106.74%
Vanadium	101.84%		-0.02 LT	34 LT	-44 LT			99.32%
Zinc	99.04%	93.05%	0.23	1828	437	66.80%		100.91%
Zirconium	101.51%		-0.04 LT	134	-53 LT	46.04%	93.47%	99.95%

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

Single Shell Tank Project

Acid Digestion
Results of the Laboratory Digestion

Tank: 241-U-110
Customer ID: Core 13 Composite

	Check Standard	Blank	Sample	Duplicate Sample	Spike Of Sample	Check Standard
Laboratory ID:		F1084	F1085	F1086	F1087	
Acid Digestion		Complete	9.56 g/L	10.04 g/L	10.29 g/L	
Laboratory ID:	F1083	F0934	F1085	F1086	F1087	F1088
Arsenic	106.01%	<5.00E-03 ppm	<1.00E-02 ppm	<1.00E-02 ppm	88.27%	108.60%
Laboratory ID:	F1083	F1060	F1085	F1086	F1087	F1088
Mercury	95.20%	<1.00E-02 ppm	6.00E-03 ppm	5.01E-03 ppm	95.45%	103.20%
Laboratory ID:	F1083	F1084	F1085	F1086	F1087	F1088
Selenium	100.50%	4.16E-03 ppm	2.77E-03 ppm	2.77E-03 ppm	79.60%	97.00%

Analytical Batch

Lab Segment Serial #: F1067

Customer ID: 000013

Instrument	N/A
Procedure/Rev	LA-505-159/A-0
Technologist	J. Worrell
Date	February 22, 1990
Temperature	68 F
Starting Time	0900
Ending Time	1515
Chemist	S. Jones

Acid Digestion

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

	Description	Lab ID
1	Reagent Blank	F1084
2	Sample Comp 13	F1085
3	Duplicate Sample Comp 13	F1086
4	Spike Sample Comp 13	F1087
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 Book # & Aliquot Vol.	Final Vol. of Std.
N/A				
Spike (see note)				

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Analytical Batch

LAB SEGMENT SERIAL #: F1067

CUSTOMER ID: 000013

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

ICP
Acid Digestion

Only data directly related to the analysis of Core Composite 13 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 13	F1085
5	Duplicate Sample Comp 13	F1086
6	Spike Sample Comp 13	F1087
7	Digested Std 82C11A	F1088
8	LMCS Check Std	N/A
9	Sample Comp 05	F0899
10	Duplicate Sample Comp 05	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 08	F0959
22	Duplicate Sample Comp 08	F0960

STANDARD TYPE	PRIMARY BOOK # & ALIQUOT VOL.	SECOND BOOK # & ALIQUOT VOL.	THIRD BOOK # & ALIQUOT 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			50.00 mL
Digested LMCS (2)	82C11A/5.0 mL			50.00 mL
Spike	34C11CO/5.0 mL	34C11CK/5.0 mL	F1085/0.5143 g	50.00 mL

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Analytical Batch

LAB SEGMENT SERIAL #: F1067

CUSTOMER ID: 000013

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
Acid Digestion

Core Composite 13 will be included in this package.

No inter-element corrections were made on this data

	DESCRIPTION	LAB ID
1	LMCS Check Std	N/A
2	Sample Comp 15	F1037
3	Duplicate Sample Comp 15	F1038
4	Final 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 BOOK # & ALIQUOT 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			50.00 mL
Digested LMCS (2)	82C11A/5.0 mL			50.00 mL
Spike	34C11CO/5.0 mL	34C11CK/5.0 mL	F1085/0.5143 g	50.00 mL

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ICP Results

RAW DATA SUMMARY

Date Analyzed: April 19, 1990
Procedure: LA-505-151/A-0
Analyst: J. A. White
Digestion Procedure: Acid Digestion LA-505-159/A-0

Laboratory ID#		Acid Standard F1083		Sample F1085	Duplicate F1086	Spike of Sample F1087	Digestion 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	101.95%		0.07 LT	57262	56255	NOT CALC.	100.63%	100.37%
Antimony	103.06%		-0.01 LT	572	-103 LT			105.91%
Arsenic	116.70% #		-0.02 LT	85	-56 LT			115.53% #
Barium	101.45%		-0.01 LT	49	0 LT	103.28%	92.28%	104.16%
Beryllium	100.97%		0.00 LT	3	-1 LT			98.38%
Bismuth	107.97%	102.12%	-0.01 LT	15713	14154	NOT CALC.		108.36%
Boron	99.66%	94.43%	0.03	60	55	134.81%		101.73%
Cadmium	98.75%	93.46%	0.00 LT	6 LT	-17 LT	89.32%		100.12%
Calcium	104.27%	102.58%	0.09	557	512	146.72%		106.89%
Cerium	90.35%		-0.31 LT	424 LT	-1299 LT	15.40%	88.66%	91.75%
Chromium	94.27%		-0.03 LT	676	458	235.92%	84.79%	95.51%
Cobalt	98.18%		0.02 LT	129	-26 LT	85.08%	86.00%	97.27%
Copper	102.60%	99.09%	-0.01 LT	73	-22 LT	100.71%		105.17%
Europium	97.48%		-0.01 LT	6 LT	-25 LT			98.92%
Iron	100.98%		0.03	14141	16036	NOT CALC.	94.41%	103.46%
Lanthanum	93.16%	91.05%	-0.02 LT	88	-59 LT	89.51%		94.12%
Lead	106.44%	99.04%	0.01 LT	1123	520	93.18%		106.64%
Lithium	103.57%		-0.01 LT	13	-61 LT	91.11%	93.39%	106.08%
Magnesium	102.51%	97.56%	0.02	217	231	4138.61%		104.79%
Manganese	100.79%		0.01	5703	5270	NOT CALC.	92.70%	102.81%
Mercury	103.23%		-0.05 LT	-63 LT	-12 LT			102.27%
Molybdenum	99.52%	93.73%	0.00 LT	35	-14 LT	85.72%		97.14%
Neodymium	89.72% #		-0.64 LT	-752 LT	-2087 LT	NOT CALC.	77.36%	90.76%
Nickel	99.75%		-0.01 LT	142	65	98.98%	92.68%	101.54%
Phosphorous	108.49%	93.37%	0.11	7599	6063	NOT CALC.		115.73% #
Potassium	98.10%	82.65%	-0.53 LT	201 LT	-1943 LT	73.37%		99.66%
Samarium	100.49%		-0.35 LT	357 LT	-1622 LT			99.36%
Selenium	106.93%		-0.06 LT	677	244			105.01%
Silicon	92.46%	75.18%	0.63	5217	2760	-114.70%		90.40%
Silver	106.91%		-0.02 LT	35 LT	-83 LT	53.52%		107.97%
Sodium	99.67%	94.66%	0.06 LT	75809	71589	NOT CALC.		102.01%
Strontium	102.83%	100.02%	0.00 LT	563	475	86.77%		105.80%
Sulfur	105.75%		0.03	883	706			106.08%
Tantalum	98.96%		-0.04 LT	76 LT	-179 LT	27.57%	73.62%	96.38%
Thallium	107.12%		-0.33 LT	816	-1187 LT			105.99%
Thorium	105.52%		-0.18 LT	2112	-1001 LT			106.38%
Tin	98.76%		0.02 LT	67	-1 LT	102.74%	93.54%	100.85%
Titanium	102.75%		0.13	28	-30 LT	90.61%	92.17%	100.86%
Tungsten	85.06% #		-0.02 LT	125	-50 LT			83.72% #
Uranium	108.97%		-2.40 LT	8653	-3682 LT			106.74%
Vanadium	101.84%		-0.02 LT	34 LT	-44 LT			99.32%
Zinc	99.04%	93.05%	0.23	1828	437	66.80%		100.91%
Zirconium	101.51%		-0.04 LT	134	-53 LT	46.04%	93.47%	99.95%

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

ICP Results RAW DATA

Date Analyzed:	April 19, 1990	Acid Digested LMCS Standard	F1083
Procedure:	LA-505-151/A-0	Reagent Blank	F1084
Analyst:	J. A. White	Core 13 Composite	F1085
Digestion	Acid Digestion	Duplicate of Core 13 Composite	F1086
Procedure:	LA-505-159/A-0	Spike of Core 13 Composite	F1087
		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			50.97	101.95%				0.07	LT	
Antimony	10.31			103.06%				-0.01	LT	
Arsenic			58.35	116.70%	#			-0.02	LT	
Barium	10.15			101.45%				-0.01	LT	
Beryllium			10.10	100.97%				0.00	LT	
Bismuth		54.09		107.97%		10.21	102.12%	-0.01	LT	
Boron	9.97			99.66%		9.44	94.43%	0.03		
Cadmium	9.88			98.75%		9.35	93.46%	0.00	LT	
Calcium	10.43			104.27%		10.26	102.58%	0.09		
Cerium	9.04			90.35%				-0.31	LT	
Chromium	9.43			94.27%				-0.03	LT	
Cobalt	9.82			98.18%				0.02	LT	
Copper	10.26			102.60%		9.91	99.09%	-0.01	LT	
Europium		9.75		97.48%				-0.01	LT	
Iron	10.10			100.98%				0.03		
Lanthanum		46.68		93.16%		9.11	91.05%	-0.02	LT	
Lead		53.33		106.44%		9.90	99.04%	0.01	LT	
Lithium	10.36			103.57%				-0.01	LT	
Magnesium	10.25			102.51%		9.76	97.56%	0.02		
Manganese	10.08			100.79%				0.01		
Mercury			25.81	103.23%				-0.05	LT	
Molybdenum			49.76	99.52%		9.35	93.73%	0.00	LT	
Neodymium	8.97			89.72%	#			-0.64	LT	
Nickel	9.98			99.75%				-0.01	LT	
Phosphorous			54.25	108.49%		9.34	93.37%	0.11		
Potassium	24.53			98.10%		8.27	82.65%	-0.53	LT	
Samarium		10.05		100.49%				-0.35	LT	
Selenium			53.47	106.93%				-0.06	LT	
Silicon			46.23	92.46%		7.52	75.18%	0.63		
Silver		10.69		106.91%		7.42		-0.02	LT	
Sodium	24.92			99.67%		9.47	94.66%	0.06	LT	
Strontium	10.28			102.83%		10.00	100.02%	0.00	LT	
Sulfur			52.88	105.75%				0.03		
Tantalum			49.48	98.96%				-0.04	LT	
Thallium			53.56	107.12%				-0.33	LT	
Thorium		52.87		105.52%				-0.18	LT	
Tin	49.38			98.76%				0.02	LT	
Titanium			51.37	102.75%				0.13		
Tungsten			21.27	85.06%	#			-0.02	LT	
Uranium		54.60		108.97%				-2.40	LT	
Vanadium			10.18	101.84%				-0.02	LT	
Zinc	9.90			99.04%		9.31	93.05%	0.23		
Zirconium			50.76	101.51%				-0.04	LT	
Dilution Factor	1.00	1.00	1.00			10.00		1.00		1.00

ICP Results

RAW DATA

	0.00956 g/mL 0.4778 g 50.00 mL Sample Dilution Two ppm	Sample Dilution One ppm	Digestion Weight Volume Sample Duplicate Dilution Three ppm	0.01004 g/mL 0.5018 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	547.20	524.07		564.58	559.24		507.09	473.99
Antimony	17.37	5.47		-2.98	-1.03 LT		13.40	14.24
Arsenic	1.86	0.81		-2.69	-0.57 LT		-0.58	1.02
Barium	0.87	0.47		-0.81	0.00 LT		10.83	10.57
Beryllium	0.13	0.03		-0.01	-0.01 LT		0.02	0.03
Bismuth	150.15	138.27		142.05	148.16		160.79	176.36
Boron	2.56	0.57		1.20	0.55		14.10	10.25
Cadmium	0.07	0.06 LT		-0.70	-0.17 LT		9.00	10.03
Calcium	5.32	3.93		5.14	4.20		20.40	14.91
Cerium	23.47	4.06 LT		-41.45	-13.04 LT		-30.01	1.54 LT
Chromium	6.46	9.19		4.60	8.70		30.54	19.37
Cobalt	4.53	1.23		1.13	-0.26 LT		8.30	9.83
Copper	1.71	0.70		-1.79	-0.22 LT		9.26	10.82
Europium	0.32	0.06 LT		-0.83	-0.25 LT		-0.57	0.04 LT
Iron	135.13	134.48		160.94	157.19		218.35	212.56
Lanthanum	2.47	0.84		-1.43	-0.60 LT		7.16	9.85
Lead	23.66	10.74		13.62	5.22		17.21	20.87
Lithium	0.95	0.12		-1.82	-0.61 LT		9.24	10.65
Magnesium	2.07	1.39		2.31	1.84		416.09	37.95
Manganese	54.49	53.66		52.89	51.43		56.88	57.54
Mercury	-3.46	-0.60 LT		-3.75	-0.13 LT		-2.46	-0.27 LT
Molybdenum	0.88	0.34		-0.53	-0.14 LT		8.93	9.87
Neodymium	-29.50	-7.19 LT		-82.75	-20.95 LT		-66.75	0.47 LT
Nickel	2.11	1.36		-0.60	0.65		9.91	11.36
Phosphorous	72.62	62.67		60.84	50.60		116.71	118.22
Potassium	18.82	1.92 LT		-67.53	-19.50 LT		-34.01	9.41
Samarium	23.80	3.42 LT		-50.25	-16.28 LT		-36.47	0.62 LT
Selenium	12.44	6.47		-6.49	2.45		7.17	9.37
Silicon	49.85	32.20		27.02	27.70		42.19	25.60
Silver	1.53	0.33 LT		-2.81	-0.84 LT		4.89	5.71
Sodium	724.43	704.44		718.47	713.34		838.67	827.74
Strontium	5.38	5.11		4.77	4.97		14.46	14.97
Sulfur	10.05	8.44		5.98	7.09		67.98	12.69
Tantalum	2.56	0.73 LT		-6.07	-1.80 LT		-0.70	3.53
Thallium	33.99	7.80		-54.28	-11.91 LT		-18.49	7.30
Thorium	20.18	3.42		-30.00	-10.05 LT		-19.12	2.21
Tin	2.14	0.64		-0.69	-0.02 LT		14.05	10.97
Titanium	0.85	0.26		-1.15	-0.30 LT		9.35	9.90
Tungsten	3.50	1.19		-3.04	-0.51 LT		-2.06	1.00
Uranium	194.34	82.69		-248.50	-36.95 LT		-175.80	60.96
Vanadium	1.66	0.33 LT		-2.23	-0.45 LT		-0.93	0.32 LT
Zinc	17.47	2.21		4.39	3.28		25.48	13.50
Zirconium	3.28	1.28		-3.76	-0.53 LT		1.83	5.97
Dilution Factor	101.00	21.00	1.00	101.00	21.00	1.00	101.00	21.00

ICP Results RAW DATA

	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	Spike Standard ID Book # 34C11CO 34C11CK
Aluminum	NOT CALC.	10.06	100.63%			50.18	100.37%		10.00	
Antimony				10.59			105.91%			
Arsenic						57.77	115.53%	#		
Barium	103.28%	9.23	92.28%	10.42			104.16%		10.00	
Beryllium						9.84	98.38%			
Bismuth	NOT CALC.				54.29		108.36%		10.00	
Boron	134.81%			10.17			101.73%		10.00	
Cadmium	89.32%			10.01			100.12%		10.00	
Calcium	146.72%			10.69			106.89%		10.00	
Cerium	15.40%	8.87	88.66%	9.18			91.75%		10.00	
Chromium	235.92%	8.56	84.79%	9.55			95.51%		10.00	
Cobalt	85.08%	8.60	86.00%	9.73			97.27%		10.00	
Copper	100.71%			10.52			105.17%		10.00	
Europium					9.89		98.92%			
Iron	NOT CALC.	9.44	94.41%	10.35			103.46%		10.00	
Lanthanum	89.51%				47.15		94.12%		10.00	
Lead	93.18%				53.43		106.64%		10.00	
Lithium	91.11%	9.34	93.39%	10.61			106.08%		10.00	
Magnesium	4138.61%			10.48			104.79%		10.00	
Manganese	NOT CALC.	9.27	92.70%	10.28			102.81%		10.00	
Mercury						25.57	102.27%			
Molybdenum	85.72%					48.57	97.14%		10.00	
Neodymium	NOT CALC.	7.74	77.36%	9.08			90.76%		10.00	
Nickel	98.98%	9.27	92.68%	10.15			101.54%		10.00	
Phosphorous	NOT CALC.					57.86	115.73%	#	10.00	
Potassium	73.37%			24.91			99.66%		10.00	
Samarium					9.94		99.36%			
Selenium						52.51	105.01%			
Silicon	-114.70%					45.20	90.40%		10.00	
Silver	53.52%				10.80		107.97%		10.00	
Sodium	NOT CALC.			25.50			102.01%		10.00	
Strontium	86.77%			10.58			105.80%		10.00	
Sulfur						53.04	106.08%			
Tantalum	27.57%	7.33	73.62%			48.19	96.38%		9.95	
Thallium						53.00	105.99%			
Thorium					53.29		106.38%			
Tin	102.74%	9.35	93.54%	50.43			100.85%		10.00	
Titanium	90.61%	9.23	92.17%			50.43	100.86%		10.00	
Tungsten						20.93	83.72%	#		
Uranium		5.01			53.48		106.74%			
Vanadium						9.93	99.32%			
Zinc	66.80%			10.09			100.91%		10.00	
Zirconium	46.04%	9.33	93.47%			49.98	99.95%		9.98	
Dilution Factor		10.00		1.00	1.00	1.00				

ICP Results

RAW DATA

	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

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	/	36.50
-100V	=	-100	-101	/	-99.0
+5VSQ	=	5.150	4.750	/	5.250
+15VSQ	=	15.14	14.70	/	15.30
-15VSQ	=	-15.2	-15.3	/	-14.7

Position Calibration in Progress

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

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

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

ICP Calibration April 19, 1990

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	132.50	1.01
BI	102.90	1.08
PB	4.96	1.03
SE	51.55	0.68
TL	43.76	1.40
TH	13.78	1.01
SN	237.10	0.91
U	12.39	0.65

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

NAME	MV INT	RSD
CE	15.66	0.48
EU	442.41	0.60
LA	5.53	0.60
ND	16.65	0.23
SM	13.65	0.42

ICP Calibration April 19, 1990

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

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

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

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

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

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

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

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

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

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

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

ICP Calibration April 19, 1990

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 : CB 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 : C0 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 : EE 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
SSI0	0	1.6713	0.0000	0.0000	-0.000	-0.000		CRV1
SSI2	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
SSI0	0	0.3600	0.0000	0.0000	0.0000	0.0000		CRV1
SSI5	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	0.212903E+02		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	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
SSI0	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	-0.290791E+00	0.170519E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.7053	0.0000	0.0000	-0.000	-0.000		CRV1
SST3	0	294.92	50.000	50.000	50.000	0.0000	0.0000	CRV1

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Programme name : SST Channel name : NI 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
SSI0	0	15.514	0.0000	0.0000	-0.000	-0.000		CRV1
SSI2	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
SSI0	0	5.6253	0.0000	0.0000	0.0000	0.0000		CRV1
SSI1	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
SSI0	0	3.7687	0.0000	0.0000	0.0000	0.0000		CRV1
SSI2	0	491.83	20.000	20.000	20.000	-0.000	-0.000	CRV1

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

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

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	0.7543	0.0000	0.0000	0.0000	0.0000		CRV1
SSI2	0	40.451	50.000	50.000	50.000	-0.000	-0.000	CRV1

Programme name : SST Channel name : IA 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
SSTO	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
SSTO	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
SSTO	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

1300

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 08:53:57

18826

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

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

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

18244

NAME	MV INT	CONCEN	RSD
Al	21.57	50.973	0.24
Sb	0.46	1.263	5.26
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	8.39
Li	4.13	0.007	40.18
Mg	0.52	0.003	1.60
Mn	1.04	0.019	1.02
Hg	399.37	25.808	0.58
Mo	293.51	49.758	0.43
Nd	5.79	-0.158	-100.24
Ni	7.41	0.510	0.95
P	66.26	)54.245	1.07
K	3.40	-0.132	-80.12
Sm	5.31	0.147	53.52
Se	28.39	53.466	0.71
Si	72.02	46.228	0.06
Ag	22.28	0.316	0.94
Na	5.78	0.146	19.94
Sr	3.87	0.004	21.45
S	42.73	)52.876	0.82
Ta	122.84	49.478	0.72
Tl	25.50	53.560	0.57
Th	1.22	0.983	4.04
Sn	1.71	0.193	0.76
Ti	447.29	51.373	0.16
W	28.21	21.266	0.47
U	6.19	12.420	1.28
V	86.99	10.184	2.07
Zn	3.56	0.037	2.26
Zr	154.39	50.756	0.11

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

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

NAME	MV INT	CONCEN	RSD
Al	2.11	0.228	31.49
Sb	0.37	-0.049	-180.83
As	1.44	0.275	9.55
Ba	3.83	(-0.017	-20.65
Be	0.70	-0.000	-141.52
Bi	14.03	10.212	0.64
B	127.77	9.443	0.82
Cd	151.70	9.346	1.27
Ca	201.23	10.258	0.57
Ce	5.08	(-0.772	-15.81
Cr	1.39	(-0.030	-21.13
Co	0.26	-0.012	-51.96
Cu	48.56	9.909	0.71
Eu	3.88	(-0.016	-17.94
Fe	1.84	0.028	23.66
La	2.71	9.105	0.51
Pb	0.73	9.904	1.43
Li	3.82	(-0.031	-22.41
Mg	204.24	9.756	0.53
Mn	0.89	0.008	16.27
Hg	3.96	(-0.043	-19.37
Mo	56.56	9.354	0.88
Nd	5.41	(-0.864	-24.79
Ni	3.28	(-0.025	-31.55
P	12.46	9.337	3.79
K	5.12	8.265	0.63
Sm	4.80	(-1.072	-13.13
Se	1.70	-0.151	-53.17
Si	14.54	7.518	6.68
Ag	174.24	7.419	0.59
Na	15.94	9.466	0.71
Sr	247.86	10.002	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	3.43	-0.008	-60.28
P	1.41	0.114	12.79
K	3.32	-0.528	-24.44
Sm	5.10	-0.354	-30.58
Se	1.74	-0.064	-26.70
Si	4.31	0.631	16.43
Ag	15.13	-0.018	-28.50
Na	5.69	0.059	76.28
Sr	3.70	-0.003	-40.42
S	0.78	0.034	6.50
Ta	3.72	-0.035	-47.06
Tl	4.30	-0.331	-21.52
Th	1.07	-0.176	-43.95
Sn	1.29	0.016	107.80
Ti	4.74	0.129	2.06
W	1.35	-0.019	-35.11
U	5.14	-2.399	-29.80
V	4.29	-0.016	-21.91
Zn	9.48	0.231	1.22
Zr	4.66	-0.036	-34.15

ICP Data Report - Sample F1085 - (File 7)

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

NAME	MV INT	CONCEN	DILCOR	RSD
Al	4.10	5.418	547.20✓	0.81
Sb	0.39	0.172	17.373	26.19
As	1.12	0.018	1.858	22.98
Ba	4.18	0.009	0.869	19.07
Be	0.74	0.001	0.134	6.25
Bi	5.40	1.487	150.15✓	0.66
B	4.98	0.025	2.561	3.21
Cd	2.39	0.001	0.072	49.13
Ca	1.52	0.053	5.321✓	1.22
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	0.20	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	22.51
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
Ru	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 (File 9)

```
Sample name     : F108G
Sample code 1   : DUPSAM
Sample code 2   : 100-10
Sample code 3   : 000013
Programme       : SST              19-Apr-90  09:25:49

NAME       MV INT    CONCEN    DILCOR       RSD

Al           4.17     5.590    564.58      1.41
Sb           0.37    -0.029    -2.978   -100.00
As           1.07    -0.027    -2.690    -30.46
Ba           3.95    -0.008    -0.805    -32.56
Be           0.70    -0.000    -0.010   -304.06
Bi           5.32     1.406    142.05      4.98
B            4.80     0.012     1.196     75.65
Cd           2.27    -0.007    -0.695    -28.20
Ca           1.48     0.051     5.136      0.63
Ce           5.26    -0.410    -41.45    -24.43
Cr           1.64     0.046     4.596      9.98
Co           0.27     0.011     1.132     83.89
Cu           2.93    -0.018    -1.787    -33.81
Eu           4.06    -0.008    -0.830    -25.07
Fe          11.38     1.593    160.94      0.64
La           0.36    -0.014    -1.432    -68.64
Pb           0.27     0.135    13.624     48.24
Li           3.92    -0.018    -1.817    -18.00
Mg           0.93     0.023     2.314      0.42
Mn           7.81     0.524    52.892      0.37
Hg           4.06   (-0.037   (-3.748    -13.16
Mo           1.67    -0.005    -0.528    -71.17
Nd           5.43   (-0.819   (-82.75    -16.69
Ni           3.43    -0.006    -0.597    -49.95
P            2.00     0.602    60.844      4.55
K            3.30    -0.669    -67.53    -13.21
Sm           5.04    -0.498    -50.25    -22.50
Se           1.74    -0.064    -6.492    -45.07
Si           3.77     0.268    27.023     11.20
Ag          14.92    -0.028    -2.812    -25.32
Na          13.38     7.114    718.47      0.30
Sr           4.92     0.047     4.765      1.48
S            0.80     0.059     5.979      4.43
Ta           3.66    -0.060    -6.073    -33.13
Tl           4.22    -0.537    -54.28    -23.97
Th           1.06    -0.297    -30.00    -24.33
Sn           1.24    -0.007    -0.685    -32.07
Ti           3.53    -0.011    -1.146    -26.50
W            1.34    -0.030    -3.042    -17.52
U            5.13    -2.460    -248.5    -25.87
V            4.24    -0.022    -2.230     -8.10
Zn           3.75     0.043     4.387      0.54
Zr           4.65    -0.037    -3.757    -26.07

Dilution factor : 101.000
```

ICP Data Report (File 10)

Sample name : F1086
Sample code 1 : DUPSAM
Sample code 2 : 500-10
Sample code 3 : 000013
Programme : SST 19-Apr-90 09:29:53

NAME	MV INT	CONCEN	DILCOR	RSD
Al	12.24	26.630	559.24	1.65
Sb	0.37	-0.049	-1.032	-91.65
As	1.07	-0.027	-0.565	-29.42
Ba	4.07	0.000	0.004	844.28
Be	0.69	-0.001	-0.012	-14.29
Bi	10.91	7.055	148.16	1.12
B	4.99	0.026	0.551	56.85
Cd	2.25	(-0.008	(-0.168	-15.36
Ca	4.40	0.200	4.198	0.97
Ce	5.16	(-0.621	(-13.04	-10.51
Cr	2.86	0.414	8.698	2.33
Co	0.26	-0.012	-0.261	-60.00
Cu	2.96	-0.011	-0.224	-31.24
Eu	3.98	(-0.012	(-0.249	-8.97
Fe	47.29	7.485	157.19	0.95
La	0.35	-0.028	-0.596	-20.83
Pb	0.28	0.248	5.218	14.85
Li	3.83	(-0.029	(-0.609	-6.47
Mg	2.29	0.088	1.840	1.18
Mn	33.67	2.449	51.431	0.91
Hg	4.54	-0.006	-0.125	-92.97
Mo	1.67	-0.007	-0.141	-17.80
Nd	5.34	(-0.998	(-20.95	-7.49
Ni	3.72	0.031	0.651	7.66
P	4.16	2.410	50.603	4.17
K	3.24	(-0.928	(-19.50	-9.82
Sm	4.93	(-0.775	(-16.28	-9.22
Se	1.83	0.117	2.447	33.65
Si	5.33	1.319	27.702	3.16
Ag	14.66	(-0.040	(-0.838	-10.86
Na	42.66	33.969	713.34	0.98
Sr	9.54	0.236	4.966	1.08
S	1.02	0.338	7.089	1.51
Ta	3.60	(-0.086	(-1.801	-11.34
Tl	4.21	(-0.567	(-11.91	-9.08
Th	1.04	(-0.478	(-10.05	-10.81
Sn	1.25	-0.001	-0.015	-476.17
Ti	3.50	-0.014	-0.297	-15.60
W	1.35	-0.024	-0.505	-23.08
U	5.18	-1.759	-36.95	-25.02
V	4.24	-0.021	-0.446	-21.87
Zn	7.19	0.156	3.276	1.08
Zr	4.69	-0.025	-0.534	-26.48

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     : F1088
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      1.83
Co            2.56     8.600      3.63
Cu            3.10     0.019     29.28
Eu            4.70     0.021      4.16
Fe           59.21     9.441      1.52
La            0.38     0.083      9.76
Pb            0.28     0.341     18.04
Li           81.25     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	-0.139	-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	-13.88
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	3.00	-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	10.340	0.71
La	0.37	0.036	30.93
Pb	0.37	0.078	0.00
Li	91.73	10.608	0.70
Mg	219.35	10.479	0.97
Mn	138.86	10.281	0.91
Hg	4.09	(-0.035	-11.09
Mo	1.73	0.004	36.37
Nd	10.76	9.076	3.51
Ni	81.91	10.154	0.63
P	1.34	0.051	34.41
K	8.51	24.914	1.12
Sm	4.93	(-0.775	-4.39
Se	3.42	3.316	2.26
Si	3.27	-0.067	-9.81
Ag	14.68	(-0.039	-6.98
Na	33.43	25.503	0.87
Sr	261.95	10.580	0.96
S	0.93	0.217	4.65
Ta	3.65	-0.062	-5.75
Tl	4.31	-0.328	-16.88
Th	1.07	-0.189	-23.69
Sn	120.18	50.427	0.94
Ti	3.43	(-0.023	-5.57
W	1.55	0.136	8.71
U	5.30	-0.080	-351.61
V	4.20	-0.026	-17.47
Zn	311.25	10.091	0.84
Zr	4.60	-0.057	-6.57

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

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

NAME	MV INT	CONCEN	RSD
Al	3.63	4.198	1.58
Sb	0.41	0.506	1.68
As	2.96	1.528	0.96
Ba	4.20	0.010	17.94
Be	0.72	0.001	34.69
Bi	57.66	54.288	0.85
B	5.47	0.063	4.91
Cd	2.42	0.003	40.50
Ca	0.73	0.012	0.64
Ce	5.63	0.314	13.05
Cr	1.63	0.044	11.62
Co	0.27	0.024	9.12
Cu	4.03	0.224	1.56
Eu	220.96	9.892	0.09
Fe	1.97	0.048	5.86
La	12.55	>47.153	0.49
Pb	2.77	53.426	0.77
Li	4.28	0.025	17.91
Mg	0.59	0.006	0.89
Mn	0.91	0.010	2.66
Hg	4.89	0.017	14.65
Mo	1.79	0.014	15.81
Nd	6.00	0.235	35.15
Ni	3.65	0.022	14.24
P	1.62	0.286	5.77
K	3.33	-0.487	-21.53
Sm	9.43	9.936	0.75
Se	1.88	0.226	5.77
Si	4.16	0.531	3.11
Ag	246.50	10.797	0.49
Na	5.53	-0.091	-31.98
Sr	3.89	0.005	13.79
S	0.86	0.134	10.36
Ta	4.16	0.147	3.21
Tl	6.65	5.646	1.78
Th	7.85	53.294	0.50
Sn	1.42	0.070	6.68
Ti	4.05	0.049	6.51
W	1.39	0.009	92.71
U	9.10	53.477	1.11
V	6.20	0.220	3.16
Zn	2.64	0.007	7.86
Zr	5.07	0.105	8.25

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

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

NAME	MV INT	CONCEN	RSD
Al	21.27	50.184	0.81
Sb	0.47	1.322	7.83
As	71.23	57.765	0.66
Ba	4.34	0.020	13.08
Be	238.03	9.838	0.55
Bi	4.97	1.052	3.17
B	5.56	0.070	0.75
Cd	2.62	0.015	10.58
Ca	0.74	0.013	0.23
Ce	5.58	0.221	45.03
Cr	1.50	0.004	99.35
Co	0.30	0.153	3.73
Cu	3.30	0.064	8.80
Eu	4.33	0.004	37.48
Fe	1.97	0.049	13.03
La	0.37	0.030	45.81
Pb	0.29	0.454	9.76
Li	4.23	0.019	2.23
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

Analytical Batch

Lab Segment Serial #: F1067

Customer ID: 000013

Instrument	WA77479
Procedure/Rev	LA-355-131/A-2
Technologist	J. Hopkins
Date	March 15, 1990
Temperature	70 F
Starting Time	1300
Ending Time	1400
Chemist	R. K. Fuller

Arsenic Analysis
Acid Digestion

Perkin-Elmer 2280 AAS

	Description	Lab ID
1	Initial LMCS Check Std	F0933
2	Reagent Blank	F0934
3	Sample Comp 06	F0935
4	Duplicate Sample Comp 06	F0936
5	Spike Sample Comp 06	F0937
6	LMCS Check Std	F1011
7	Reagent Blank	F1012
8	Sample Comp 14	F1013
9	Duplicate Sample Comp 14	F1014
10	Sample Comp 15	F1037
11	Duplicate Sample Comp 15	F1038

	Description	Lab ID
12	LMCS Check Std	F1059
13	Sample Comp 12	F1061
14	Duplicate Sample Comp 12	F1062
15	Spike Sample Comp 12	F1063
16	LMCS Check Std	F1083
17	Sample Comp 13	F1085
18	Duplicate Sample Comp 13	F1086
19	Spike Sample Comp 13	F1087
20	Final LMCS Check Std	F1088
21		
22		

Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std	58C11BR/35 uL			35 mL
Spike	58C11BR/35 uL	F0935/2.0 mL		35 mL

SST-102 Rev. I 10/2/90 Interim

Single Shell Tank
Calibration Record

Analyte:	As		
Procedure:	LA-355-131	Revision:	A-2
Instrument:	Perkin-Elmer	Property Number:	WA77479
Technologist:	S. Riel	Payroll Number:	6C280
Date:	March 15, 1990		

Calibration Standard ID: 38C9-B

Analyte Concentration: 1.00 ppm

Type of Calibration: Linear Regression

Aliquot	Weight	Instrument Reading Units= mm
0	0 ng	2
25 ul	25 ng	52
50 ul	50 ng	104
75 ul	75 ng	143

Comments:

SST-103 Rev. B 9/27/90 Interim

Analytical Batch

LAB SEGMENT SERIAL #: F1067

CUSTOMER ID: 000013

INSTRUMENT	WA77479
PROCEDURE/REV	LA-325-102/A-1
TECHNOLOGIST	J. Hopkins
DATE	February 27, 1990
TEMPERATURE	70 F
STARTING TIME	1300
ENDING TIME	1400
CHEMIST	R. K. Fuller

Mercury Analysis
Acid Digestion

Atomic Absorption

Perkin-Elmer 2280

	DESCRIPTION	LAB ID
1	Initial LMCS Check Std	F1059
2	Reagent Blank	F1060
3	Sample Comp 12	F1061
4	Duplicate Sample Comp 12	F1062
5	Spike Sample Comp 12	F1063
6	LMCS Check Std	F1064
7	LMCS Check Std	F1083
8	Sample Comp 13	F1085
9	Duplicate Sample Comp 13	F1086
10	Spike Sample Comp 13	F1087
11	LMCS Check Std	F1088

	DESCRIPTION	LAB ID
12	LMCS Check Std	F1077
13	Sample Comp 13	F1079
14	Duplicate Sample Comp 13	F1080
15	LMCS Check Std	F1082
16	LMCS Check Std	F0933
17	Sample Comp 06	F0935
18	Duplicate Sample Comp 06	F0936
19	Spike Sample Comp 06	F0937
20	Final LMCS Check Std	F0938
21		
22		

STANDARD TYPE	PRIMARY BOOK # & ALIQUOT VOL.	SECOND BOOK # & ALIQUOT VOL.	THIRD BOOK # & ALIQUOT VOL.	FINAL VOL. OF STD.
LMCS Check Std	58C11BP/25 uL			15 mL
Spike	58C11BP/25 uL	F0935/2.0 mL		15 mL

SST-102 Rev. I 10/2/90 Interim

Single Shell Tank
Calibration Record

Analyte:	Hg		
Procedure:	LA-325-102	Revision:	A-1
Instrument:	Perkin-Elmer AA	Property Number:	WA77479
Technologist:	J. Hopkins	Payroll Number:	6A543
Date:	February 27, 1990		
Calibration Standard ID:	102C3V		
Analyte Concentration:	100 ppm		
Type of Calibration:	Linear Regression		

Aliquot	Weight	Instrument Reading Units= mm
0	0 ng	8
10 uL	10 ng	53
20 uL	20 ng	95
40 uL	40 ng	181

Comments:

SST-103 Rev. B 9/27/90 Interim

Analytical Batch

Lab Segment Serial #: F1067

Customer ID: 000013

Instrument	WA77479
Procedure/Rev	LA-365-131/A-3
Technologist	S. Riel
Date	March 29, 1990
Temperature	70 F
Starting Time	1450
Ending Time	1515
Chemist	R. K. Fuller

Selenium Analysis
Acid Digestion

Perkin-Elmer 2280 AAS

	Description	Lab ID
1	Initial LMCS Check Std	F1083
2	Reagent Blank	F1084
3	Sample Comp 13	F1085
4	Duplicate Sample Comp 13	F1086
5	Spike Sample Comp 13	F1087
6	Final LMCS Check Std	F1088
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 Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std	58C11BU/35 uL			35 mL
Spike	58C11BU/35 uL	F1085/100 uL		35 mL

SST-102 Rev. I 10/2/90 Interim

Single Shell Tank
Calibration Record

Analyte:	Se		
Procedure:	LA-365-131	Revision:	A-3
Instrument:	Perkin-Elmer AA	Property Number:	WA77479
Technologist:	Steve Riel	Payroll Number:	6C280
Date:	March 29, 1990		

Calibration Standard ID: 36C9B

Analyte Concentration: 1.00ppm

Type of Calibration: Linear Regression

Aliquot	Weight	Instrument Reading Units= mm
0	0	4.0
25 ul	25 ng	24.0
50 ul	50 ng	41.0
75 ul	75 ng	58.5

Comments: 000013 - Customer ID

SST-103 Rev. A 9/25/90 Interim

APPENDIX A

ANALYTICAL ANALYSIS CARDS

UNDIGESTED SAMPLE ANALYSIS

APPENDIX A

Serial No.	Sample Point	Date	Time Issued	Priority
F 1067.-5001	SEG.COMP#3	2-16-90	8: 6	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
SAMP	LI-000-200	NONE	E21D1	0

Sample Size: ?

Customer ID: 000013

Remarks, Calculations, Results:

DUPLICATE SAMPLE Sent to PNL vial #345

WHC N 3134 pg 29

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
61300 68090				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2/15/90			

84-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1067.-5000	SEG.COMP#3	2-16-90	8: 6	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
APPR/DTR	LI-000-200	NONE	E21D1	0

Sample Size: ?

Customer ID: 000013

Remarks, Calculations, Results:

A. JAR ID# 397
B. JAR TARE WT 229.97
C. JAR TOTAL WT
D. C-B= 122.20 g
E. EST. VOL./LENGTH
F. VISUAL REMARKS

WHC N 3134

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68090 61300				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2/15/90			

84-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1067.-5003	SEG.COMP#3	2-16-90	8: 6	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
HOMOGZT	LI-000-200	NONE	E21D1	0

Sample Size: ?

Customer ID: 000013

Remarks, Calculations, Results:

Homogenization Complete Jar # 397

WHC N 3134 pg 29

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68090 61300				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2/15/90			

84-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1067.-5002	SEG.COMP#3	2-16-90	8: 6	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
PRT-SIZE	LI-000-200	NONE	E21D1	0

Sample Size: ?

Customer ID: 000013

Remarks, Calculations, Results:

PARTICLE SIZE DISTRIBUTION analysis unnecessary.

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

Date	Time Completed	Lab Unit Mgr	

84-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1067.-5080	SEG.COMP#3	2-16-90	8: 6	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
TGA	LI-000-200	NONE	E21D1	0

Sample Size	Customer ID
?	000013

Remarks, Calculations, Results: See attached (1)

Bottle 347
555 mg
damp granular, dark brown, used as-is

event	begin	peak	end	% of sample
H_2O/VPH loss	< 40°	88°	135°	26.4
decomp/endothermic	135°	> 500°	> 500°	—
total loss @ 500°	< 40°	—	500°	37.2%

Sample did not fuse

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
TAB 54168				
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		
3/13/90			BMS	

84-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1068.-5102	SEG.COMP#4	2-16-90	8: 6	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
PRT-SIZE	LI-000-200	NONE	E21D1	0

Sample Size	Customer ID
?	000013

Remarks, Calculations, Results:
DUPLICATE SAMPLE
analysis unnecessary

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		

84-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1068.-5101	SEG.COMP#4	2-16-90	8: 6	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
VOA-SAMP	LI-000-200	NONE	E21D1	0

Sample Size	Customer ID
?	000013

Remarks, Calculations, Results
DUPLICATE SAMPLE
no duplicate

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		

84-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1067.-1831	SEG.COMP#3	2-16-90	8: 6	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
DSC	LA-514-112	EXOTHERMS	E21D1	0

Sample Size	Customer ID
?	00001513

Remarks, Calculations, Results: See attached (1)

Bottle 347
9.33 Mg
damp granular, dark brown, used as-is.

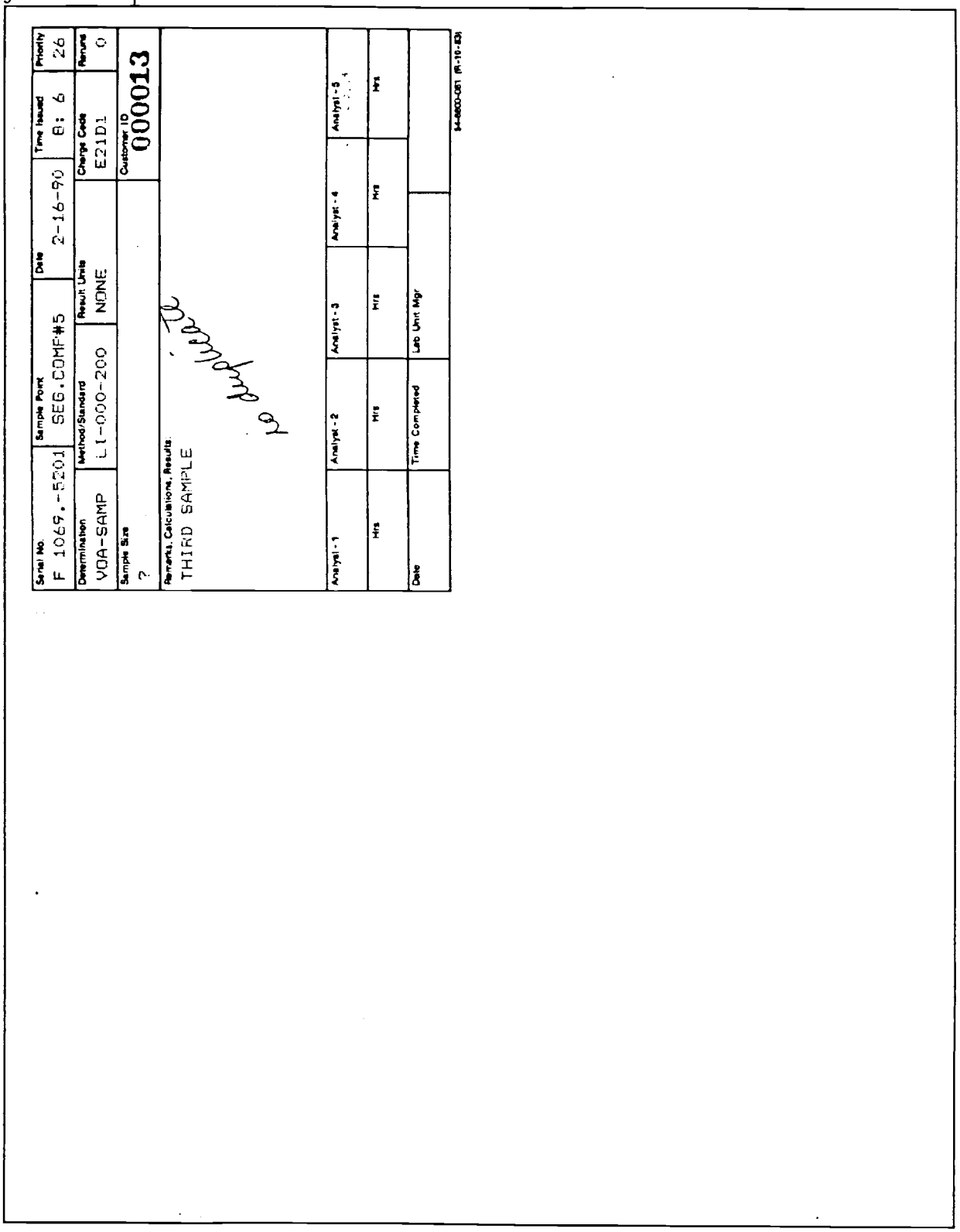
event	begin	peak	end	cal/gm (+ = endo)
H_2O/VPH loss	< 50°	125	190°	> +139.3
decomp/wt. loss	350°	> 500°	> 500°	+ —

Sample did not fuse

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
TAB 54168				
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		
3/13/90			BMS	

84-6800-081 (R-10-83)

Physical Properties



Serial No.	Sample Point	Date	Time Issued	Priority
F 1069,-5201	SEG.COMP#5	2-16-90	8: 6	26
Determination	**Method/Standard**	**Result Units**	**Charge Code**	**Reruns**
VOA-SAMP	LI-000-200	NONE	E21D1	0
Sample Size			**Customer ID**	
?			000013	

Remarks, Calculations, Results:
THIRD SAMPLE

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		

84-6800-081 (R-10-83)

pH Analysis on Solid Sample

Serial No.	Sample Point	Date	Time Issued	Priority
F 1066.-5315	SEG.COMP#2	2-16-90	8: 5	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
pH	LA-212-103	NONE	E21D1	0

Sample Size: ? 1 ml

Customer ID: 000013

Remarks, Calculations, Results:
REAGENT BLANK
24.6°C
6.34

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

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

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1065.-5515	SEG.COMP#1	2-16-90	8: 5	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
pH	LA-212-103	% RECOVERY	E21D1	0

Sample Size: ? 1 ml

Customer ID: 000013

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
pH FOUND 10.04
STD ID 12C11-B
SAMPLE TEMP 24.6
10.04/10.00
100.4%

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

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

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1068.-5115	SEG.COMP#4	2-16-90	8: 6	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
pH	LA-212-103	NONE	E21D1	0

Sample Size: ? 2.586 g / 2.586 ml

Customer ID: 000013

Remarks, Calculations, Results:
pH 12.73
SAMPLE TEMP 22.7

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

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

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1067.-5015	SEG.COMP#3	2-16-90	8: 6	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
pH	LA-212-103	NONE	E21D1	0

Sample Size: ? 2.302 g / 2.302 ml

Customer ID: 000013

Remarks, Calculations, Results:
pH 12.60
SAMPLE TEMP 22.7
#339

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

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

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

Serial No	Sample Point	Date	Time Issued	Priority
F 1070.-5515	SEG.COMP#6	2-16-90	8: 6	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
pH	LA-212-103	% RECOVERY	E21D1	0

Sample Size	Customer ID
?	000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
pH FOUND 10.07
STD ID 120115
SAMPLE TEMP 22.8

100.7%

10.07 / 10.00

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
60269				
	Hrs	Hrs	Hrs	Hrs
Date 3-1-90	Time Completed	Lab Unit Mgr		

84-6800-081 (R-10-83)

Percent Water Analysis

Serial No.	Sample Point	Date	Time Issued	Priority
F 1066.-5310	SEG.COMP#2	2-16-90	8: 5	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
% H2O	LA-564-101	%	E21D1	0

Sample Size: ?

Customer ID: 000013

Remarks, Calculations, Results:

REAGENT BLANK

.0038

21.5515 G 21.5026

21.5515 T. 21.5026

21.5475 W1 21.4990

21.5468 W2 21.4982

.0036 g

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
63598/RH				R E Barnett
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
2-22-90		[signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1065.-5510	SEG.COMP#1	2-16-90	8: 5	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
% H2O	LA-564-101	% RECOVERY	E21D1	0

Sample Size: ?

Customer ID: 000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE

LMCS ID 11C11AH

57.49

23.1158 G 22.8090

21.7207 T. 21.4131

22.3277 W1 22.0065

22.3183 W2 21.9915

56.49

96.6%

56.99 / 58.98

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
63598/RH				R E Barnett
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
2-22-90		[signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1068.-5110	SEG.COMP#4	2-16-90	8: 6	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
% H2O	LA-564-101	%	E21D1	0

Sample Size: ?

Customer ID: 000013

Remarks, Calculations, Results:

DUPLICATE SAMPLE

G. 22.1443

T. 21.1959

W1 21.7648

W2 21.7645

40.01%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
63598/RH				R E Barnett
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
2-22-90		[signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1067.-5010	SEG.COMP#3	2-16-90	8: 6	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
% H2O	LA-564-101	%	E21D1	0

Sample Size: ?

Customer ID: 000013

Remarks, Calculations, Results:

338

G. 22.6826

T. 21.8091

W1 22.3358

W2 22.3358

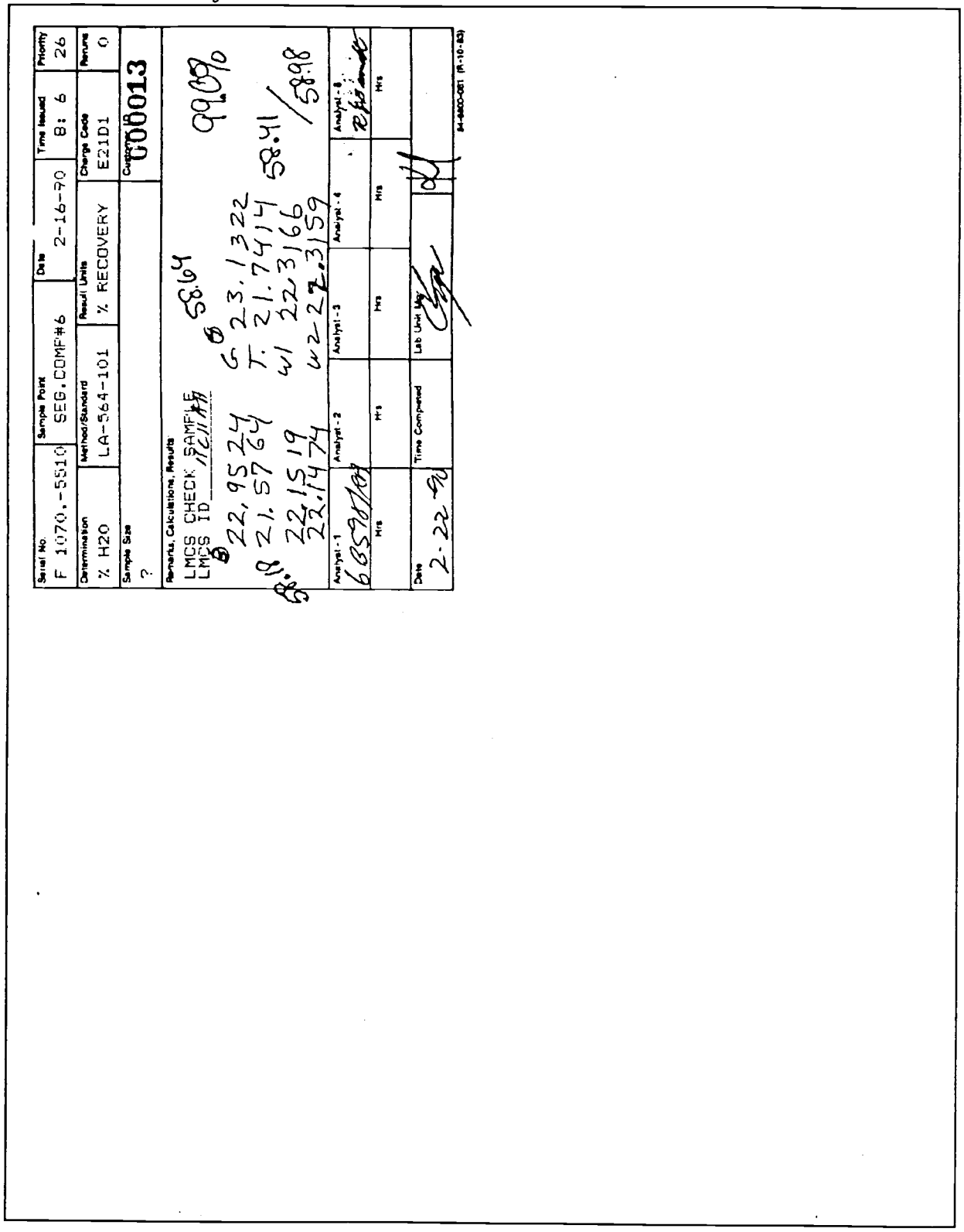
39.7%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
63598/RH				R E Barnett
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
2-22-90		[signature]

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

Percent Water Analysis



Serial No.	Sample Point	Date	Time Issued	Priority
F 1070.-5510	SEG.COMP#6	2-16-90	8: 6	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
% H20	LA-564-101	% RECOVERY	E21D1	0

Sample Size	Customer ID
?	000013

Remarks, Calculations, Results

LMCS CHECK SAMPLE
LMCS ID 11C11AA

58.64

99.0%

22.9524 G 23.1322
21.5764 T. 21.7414
22.1519 W1 22.3166
22.1474 W2 22.3159

58.18

58.41 / 58.98

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

Date	Time Completed	Lab Unit Mgr
2-22-90		[illegible]

84-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1066.-5397	SEG.COMP#2	2-16-90	8: 5	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
Hg	LA-325-102	PPM	E21D1	0

Sample Size: ? 1ml

Customer ID: #13

Remarks, Calculations, Results:

REAGENT BLANK

peak Hgt = 7mm

~~2.20~~ 10ng / 1000 = ~~<2.20E-3 ppm~~ ZAP

<1.00X10^{-2} ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Melanie Hyers				RK Fuller 7-27-90
Hrs 6C823	Hrs	Hrs	Hrs	Hrs

Date: 7-16-90 | Time Completed: | Lab Unit Mgr: Karl D. Pool, Kathy Hornbeke

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1065.-5597	SEG.COMP#1	2-16-90	8: 5	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
Hg	LA-325-102	% RECOVERY	E21D1	0

Sample Size: ? .025ml

Customer ID: #13

Remarks, Calculations, Results:

LMCS CHECK SAMPLE

LMCS ID 56C11-CD

104.8%

peak Hgt = 61mm

32.74 / 25ul = 1.31 / 1.25

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Melanie Hyers				RK Fuller 7-27-90
Hrs 6C823	Hrs	Hrs	Hrs	Hrs

Date: 7-16-90 | Time Completed: | Lab Unit Mgr: Karl D. Pool, Kathy Hornbeke

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1068.-5197	SEG.COMP#4	2-16-90	8: 6	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
Hg	LA-325-102	PPM	E21D1	0

Sample Size: ? .0344g

Customer ID: #13

Remarks, Calculations, Results:

DUPLICATE SAMPLE

peak Hgt = 67.5mm

36.64 / 34.4 = 1.07 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Melanie Hyers				RK Fuller 7-27-90
Hrs 6C823	Hrs	Hrs	Hrs	Hrs

Date: 7-16-90 | Time Completed: | Lab Unit Mgr: Karl D. Pool, Kathy Hornbeke

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1067.-5097	SEG.COMP#3	2-16-90	8: 6	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
Hg	LA-325-102	PPM	E21D1	0

Sample Size: ? .0388g in 25ul used 20ul DF= 1.25

Customer ID: #13

Remarks, Calculations, Results:

peak Hgt = 69mm

(37.53 / 38.8)(1.25) = 1.21 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Melanie Hyers				RK Fuller 7-27-90
Hrs 6C823	Hrs	Hrs	Hrs	Hrs

Date: 7-16-90 | Time Completed: | Lab Unit Mgr: Karl D. Pool, Kathy Hornbeke

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

Mercury Analysis - Undigested Sample

Serial No.	Sample Point	Date	Time Issued	Priority
F 1070.-5597	SEG.COMP#6	2-16-90	8: 6	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
Hg	LA-325-102	% RECOVERY	E21D1	0

Sample Size	Customer ID
? .025ml	#13

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 58C11-CD
peak Hgt = 62mm
33.34/25ml = 1.33/1.25 = 106.7%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Melanie Myers				RK Fuller 7-27-90
Hrs 6C823	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
7-16-90		[signature] [signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1069.-5297	SEG.COMP#5	2-16-90	8: 6	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
Hg	LA-325-102	% RECOVERY	E21D1	0

Sample Size	Customer ID
? .0388g in 25ml used 2u DF 12.5 +.025ml LMCS	#13

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID 58C11-CD
SPIKE VOLUME .015
peak Hgt = 54.mm

~~29.75 - [36.64 (.0388/.0344)] = 15 mg~~

over

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Melanie Myers				RK Fuller 7-27-90
Hrs 6C823	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
7-16-90		[signature]

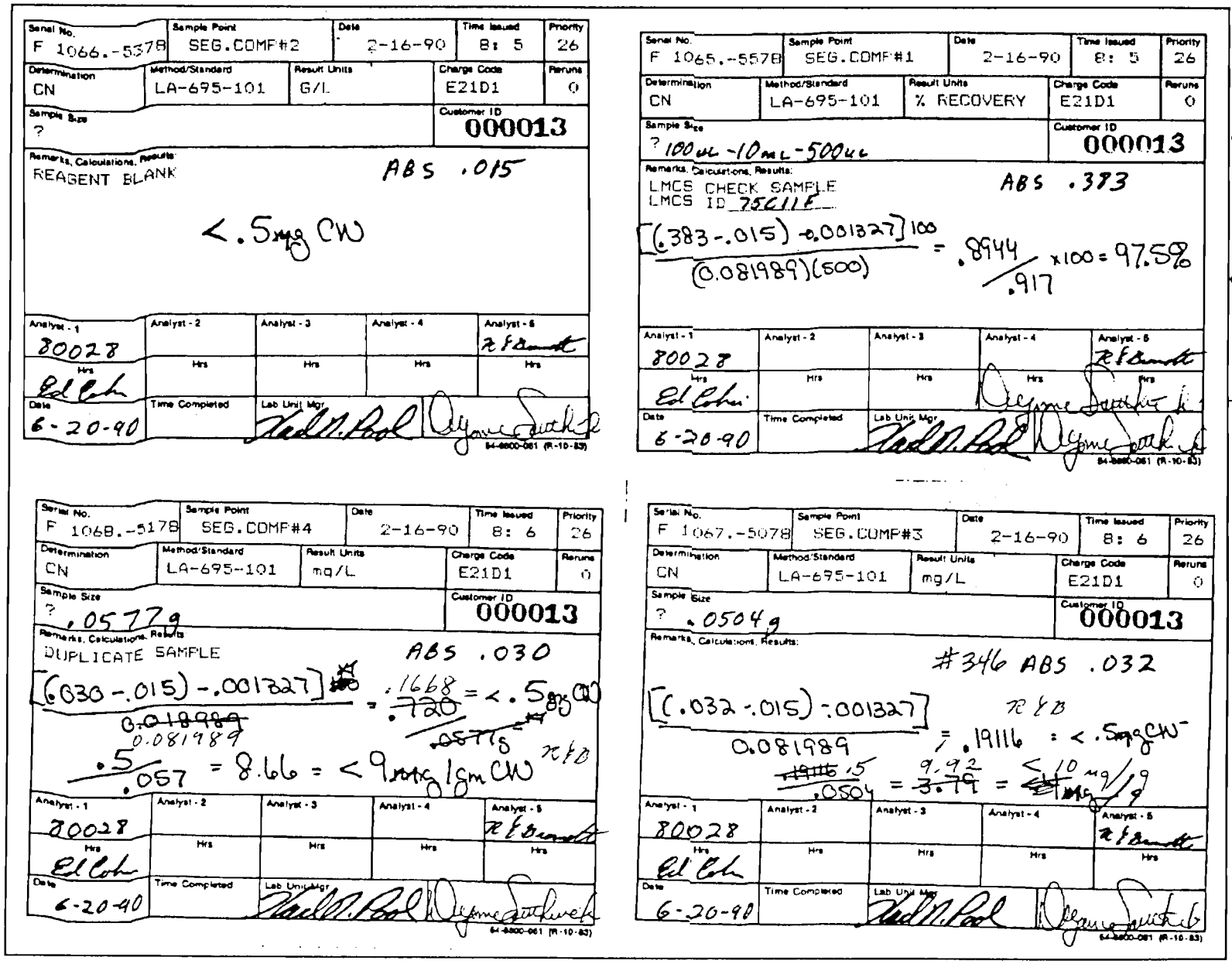
54-6800-061 (R-10-83)

Mercury Analysis - Undigested Sample

F 1069.-5297

$$\frac{29.75 - \left(\frac{.0388}{.0344}\right)\left(\frac{12.5}{125}\right)37.53}{15} =$$

$$\frac{25.5}{15\,ml} = 1.70\ ppm / 1.25 = 136.1\%$$



Serial No.	Sample Point	Date	Time Issued	Priority
F 1066.-5378	SEG.COMP#2	2-16-90	8: 5	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
CN	LA-695-101	G/L	E21D1	0

Sample Size: ?

Customer ID: 000013

Remarks, Calculations, Results:

REAGENT BLANK

ABS .015

< .5 mg CN

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		
6-20-90				

84-8800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1065.-5578	SEG.COMP#1	2-16-90	8: 5	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
CN	LA-695-101	% RECOVERY	E21D1	0

Sample Size: ? 100 uL - 10 mL - 500 uL

Customer ID: 000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE

LMCS ID 75C11E

ABS .383

$\frac{[(.383-.015)-0.001327]100}{(0.081989)(500)} = \frac{.8944}{.917} \times 100 = 97.5\%$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		
6-20-90				

84-8800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1068.-5178	SEG.COMP#4	2-16-90	8: 6	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
CN	LA-695-101	mg/L	E21D1	0

Sample Size: ? .0577g

Customer ID: 000013

Remarks, Calculations, Results:

DUPLICATE SAMPLE

ABS .030

$\frac{[(.030-.015)-.001327]}{0.081989} = \frac{.1668}{.720} = < .5\ mg\ CN$

$\frac{.5}{.057} = 8.66 = < 9\ mg/gm\ CN$ R & B

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		
6-20-90				

84-8800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1067.-5078	SEG.COMP#3	2-16-90	8: 6	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
CN	LA-695-101	mg/L	E21D1	0

Sample Size: ? .0504g

Customer ID: 000013

Remarks, Calculations, Results:

#346 ABS .032

$\frac{[(.032-.015)-.001327]}{0.081989} = .19116 = < .5\ mg\ CN$ R & B

$\frac{.5}{.0504} = \frac{9.92}{3.79} = < 10\ mg/g$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		
6-20-90				

84-8800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1070.-5578	SEG. COMP#6	2-16-90	8: 6	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
CN	LA-695-101	% RECOVERY	E21D1	0

Sample Size: ? 100uL-10mL-500uL. Customer ID: 000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 75C11F

ABS. .389

$$\frac{[(.389-.015)-0.001327]100}{(0.081989)(500)} = \frac{9.091E^{-1}}{9.17E^{-1}} \times 100 = 99.1\%$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
70028				
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cole				
Date	Time Completed	Lab Unit Mgr		
6-20-90				

84-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1069.-5278	SEG. COMP#5	2-16-90	8: 6	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
CN	LA-695-101	% RECOVERY	E21D1	0

Sample Size: ? .0621 g Customer ID:

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID 75C11F
SPIKE VOLUME 100uL-10mL-500uL

ABS .402

$$\frac{[(.402-.015)-.001327]}{.081989} = \frac{4.704-.192}{9.585} \times 100 = 98.40\%$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
70028				
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cole				
Date	Time Completed	Lab Unit Mgr		
6-20-90				

84-6800-081 (R-10-83)

KOH FUSION ANALYSIS

APPENDIX A

Serial No.	Sample Point	Date	Time Issued	Priority
F 1073.-6000	SEG.COMP#9	2-16-90	8: 7	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
FUSION	LA-549-141	G/L	E21D1	0

Sample Size: ?

Customer ID: 000013

Remarks, Calculations, Results:

GRAMS SAMPLE .4298
VOLUME ON COMPLETION 250mL #3

1.719^{-3} g/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68598/RH				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
2-22-90		

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1072.-6300	SEG.COMP#8	2-16-90	8: 7	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
FUSION	LA-549-141	G/L	E21D1	0

Sample Size: ? 250mL

Customer ID: 000013

Remarks, Calculations, Results:

REAGENT BLANK

complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68598/RH				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
2-22-90		

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1074.-6100	SEG.COMP#10	2-16-90	8: 8	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
FUSION	LA-549-141	G/L	E21D1	0

Sample Size: ?

Customer ID: 000013

Remarks, Calculations, Results:

DUPLICATE ANALYSIS
GRAMS SAMPLE .5776
VOLUME ON COMPLETION 250mL

2.158^{-3} g/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68598/RH				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
2-22-90		

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

Total Alpha Analysis on the Fusion Dissolution

Serial No.	Sample Point	Date	Time Issued	Priority
F 1048.-6325	SEG.COMP#8	2-15-90	13:47	19

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

Sample Size: ? ~~10ml~~ 50)

Customer ID: 000012

Remarks, Calculations, Results:

REAGENT BLANK

<2.81^{-2} uci/l

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

Date	Time Completed	Lab Unit Mgr	
2-23-90		[signature]	DMS

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1047.-6525	SEG.COMP#7	2-15-90	13:46	26

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

Sample Size: ? 10ml

Customer ID: 000012

Remarks, Calculations, Results:

LMCS CHECK SAMPLE [redacted]
LMCS ID 102B44

9.933^{-3} / 1.0012^{-2} 99.1%

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

Date	Time Completed	Lab Unit Mgr	
2-23-90		[signature]	DMS

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1074.-6125	SEG.COMP#10	2-16-90	8: 8	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
AT	LA-508-101	uCI/L	E21D1	0

Sample Size: ? 100-10-100

Customer ID: 000013

Remarks, Calculations, Results:

DUPLICATE SAMPLE

<1.68 uci/l

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

Date	Time Completed	Lab Unit Mgr	
2-23-90		[signature]	DMS

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

Serial No	Sample Point	Date	Time Issued	Priority
F 1073.-6025	SEG.COMP#9	2-16-90	8: 7	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
AT	LA-508-101	uCI/L	E21D1	0

Sample Size: ? 100-10-100

Customer ID: 000013

Remarks, Calculations, Results

<1.94 uci/l

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

Date	Time Completed	Lab Unit Mgr	
2-23-90		[signature]	DMS

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

14/2
3/10 - .8

F1048

3/10

Alpha Calculation by DM on 02-24-1990 at 06:34:34
Det #14 2 -inch mount Alpha eff. : .2111
Sample size : .05 mL Dilution : 1

Mount # 1

3/10 - 0.8 (2.8125E-02 uCi/L alpha

Mount # 2

3/10 - 0.8 (2.8125E-02 uCi/L alpha

14/2
474/10 - .8

F1047

473/10

Alpha Calculation by DM on 02-24-1990 at 06:31:39
Det #14 2 -inch mount Alpha eff. : .2111
Sample size : 10 mL Dilution : 1

Mount # 1

474/10 - 0.8 = 9.9436E-03 uCi/L alpha

Mount # 2

473/10 - 0.8 = 9.9223E-03 uCi/L alpha

14/2
6/10 - .8

10/10

Alpha Calculation by MAX on 02-24-1990 at 11:54:21
Det #14 2 -inch mount Alpha eff. : .2111
Sample size : .1 mL Dilution : 101

Mount # 1

6/10 - 0.8 (1.4203E+00 uCi/L alpha

Mount # 2

10/10 - 0.8 (1.9397E+00 uCi/L alpha

14/2
11/10 - .8

9/10

Alpha Calculation by DM on 02-24-1990 at 07:09:03
Det #14 2 -inch mount Alpha eff. : .2111
Sample size : .1 mL Dilution : 101

Mount # 1

11/10 - 0.8 (2.1966E+00 uCi/L alpha

Mount # 2

9/10 - 0.8 (1.6817E+00 uCi/L alpha

Total Alpha Analysis on the Fusion Dissolution

Serial No.	Sample Point	Date	Time Issued	Priority
F 1076.-6525	SEG.COMP#12	2-16-90	8: 9	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
AT	LA-508-101	% RECOVERY	E21D1	0

Sample Size: ? 10 ml

Customer ID: 000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 102844

98.6%

9.89^{-3} ver/l / 1.0021^{-2}

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
63598/RH				[illegible]
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-23-90		[illegible]	DMS

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1075.-6225	SEG.COMP#11	2-16-90	8: 8	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
AT	LA-508-101	% RECOVERY	E21D1	0

Sample Size: ? 100-10 -100

Customer ID: 000013

Remarks, Calculations, Results:

SPIKE SAMPLE F1049
SPIKE ID 102844
SPIKE VOLUME 10 mL

$\frac{9.41\times10^{1}-0}{(1010)(10)} = 9.31\times10^{-3} / 1.0021\times10^{-2}$ (92.9%)

Spike too low

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
63598/RH				[illegible]
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-23-90		[illegible]	DMS

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

14/2

476 / 10 - .8

467 / 10

F1076

Alpha Calculation by MAX on 02-24-1990 at 11:52:51
Det #14 2 -inch mount Alpha eff. : .2111
Sample size : 10 mL Dilution : 1

Mount # 1

$$\frac{476}{10} - 0.8 = 9.9863E\text{-}03 \text{ uCi/L alpha}$$

Mount # 2

$$\frac{467}{10} - 0.8 = 9.7943E\text{-}03 \text{ uCi/L alpha}$$

14/2

436 / 10 - .8

453 / 10

F1075

Alpha Calculation by MAX on 02-24-1990 at 11:55:42
Det #14 2 -inch mount Alpha eff. : .2111
Sample size : .1 mL Dilution : 101

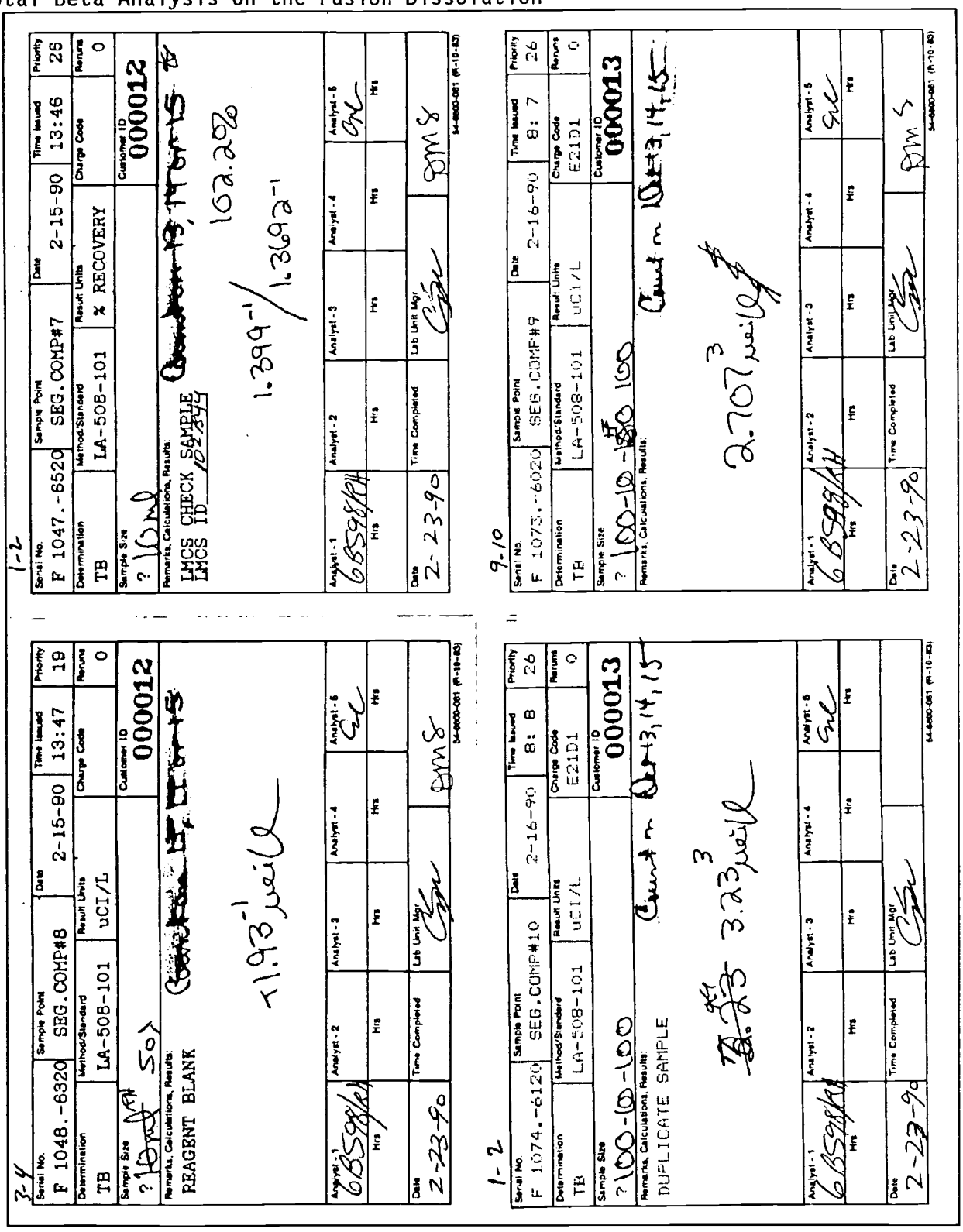
Mount # 1

$$\frac{436}{10} - 0.8 = 9.2241E+01 \text{ uCi/L alpha}$$

Mount # 2

$$\frac{453}{10} - 0.8 = 9.5905E+01 \text{ uCi/L alpha}$$

Total Beta Analysis on the Fusion Dissolution



F1048

291/10 -23

286/10

Beta Calculation by DM on 02-24-1990 at 06:34:32
Det #14 2 -inch mount Beta eff. : .2734
Sample size : .05 mL Dilution : 1

Mount # 1

$$\frac{291}{10} - 23.0 = 2.0101E\text{-}01 \text{ uCi/L beta}$$

Mount # 2

$$\frac{286}{10} - 23.0 = 1.8453E\text{-}01 \text{ uCi/L beta}$$

F1047

8712/10 -23

8734/10

Beta Calculation by DM on 02-24-1990 at 06:31:37
Det #14 2 -inch mount Beta eff. : .2734
Sample size : 10 mL Dilution : 1

Mount # 1

$$\frac{8712}{10} - 23.0 = 1.3975E\text{-}01 \text{ uCi/L beta}$$

Mount # 2

$$\frac{8734}{10} - 23.0 = 1.4011E\text{-}01 \text{ uCi/L beta}$$

14/2

19519/10 -23

15712/10

Beta Calculation by MAX on 02-24-1990 at 11:54:19
Det #14 2 -inch mount Beta eff. : .2734
Sample size : .1 mL Dilution : 101

Mount # 1

$$\frac{19519}{10} - 23.0 = 3.2098E+03 \text{ uCi/L beta}$$

Mount # 2

$$\frac{19712}{10} - 23.0 = 3.2419E+03 \text{ uCi/L beta}$$

14/2

16496/10 -23

16501/10

Beta Calculation by DM on 02-24-1990 at 07:09:01
Det #14 2 -inch mount Beta eff. : .2734
Sample size : .1 mL Dilution : 101

Mount # 1

$$\frac{16496}{10} - 23.0 = 2.7068E+03 \text{ uCi/L beta}$$

Mount # 2

$$\frac{16501}{10} - 23.0 = 2.7076E+03 \text{ uCi/L beta}$$

5-6

Serial No.	Sample Point	Date	Time Issued	Priority
F 1076.-6520	SEG.COMP#12	2-16-90	8: 9	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
TB	LA-508-101	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 10ml	000013

Remarks, Calculations, Results:

Counts DE 13, 14, 15

LMCS CHECK SAMPLE
LMCS ID 102B44

$1.429^{-1} / 1.3692^{-1}$ 104.40%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6 6598/KH				GL
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-23-90		GL	

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

3-4

Serial No.	Sample Point	Date	Time Issued	Priority
F 1075.-6220	SEG.COMP#11	2-16-90	8: 8	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
TB	LA-508-101	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 100-10-1000	000013

Remarks, Calculations, Results:

Counts DE 13, 14, 15

SPIKE SAMPLE F1049
SPIKE ID 102B44
SPIKE VOLUME 10mL

$\frac{4.96\times10^{3} - 3.49\times10^{3}}{1010\ (1.0)} = \frac{1.454\times10^{-1}}{1.3692\times10^{-1}} = 106.2\%$

Spike too low

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6 6598/KH				GL
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-23-90		GL	DMS

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

14/2

8880/10 - 23

F1076

8923/10

Beta Calculation by MAX on 02-24-1990 at 11:52:49
Det #14 2 -inch mount Beta eff. : .2734
Sample size : 10 mL Dilution : 1

Mount # 1

$$\frac{8880}{10} - 23.0 = 1.4252E\text{-}01 \text{ uCi/L beta}$$

Mount # 2

$$\frac{8923}{10} - 23.0 = 1.4322E\text{-}01 \text{ uCi/L beta}$$

14/2

29636/10 - 23

F1075

30418/10

Beta Calculation by MAX on 02-24-1990 at 11:55:40
Det #14 2 -inch mount Beta eff. : .2734
Sample size : .1 mL Dilution : 101

Mount # 1

$$\frac{29636}{10} - 23.0 = 4.8933E+03 \text{ uCi/L beta}$$

Mount # 2

$$\frac{30418}{10} - 23.0 = 5.0235E+03 \text{ uCi/L beta}$$

3190

Serial No.	Sample Point	Date	Time Issued	Priority
F 1078.-7330	SEG.COMP#14	2-16-90	8:10	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	uCI/L	E21D1	0

Sample Size: ?1ml Li .021 1 — Customer ID: 000013

Remarks, Calculations, Results:

REAGENT BLANK

Co^{60} < 564-2

Cs^{137} < 6.28-2

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

Date	Time Completed	Lab Unit Mgr.	
2-23-90			DMS

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

3189

Serial No.	Sample Point	Date	Time Issued	Priority
F 1076.-6530	SEG.COMP#12	2-16-90	8: 9	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	% RECOVERY	E21D1	0

Sample Size: ?.500A Li .021 2 — Customer ID: 000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 122644

Co^{60} 2.29' / 2.1076' 108.60%

Cs^{137} 3.01' / 2.9014' 103.70%

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

Date	Time Completed	Lab Unit Mgr.	
2-23-90			DMS

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

2080

Serial No.	Sample Point	Date	Time Issued	Priority
F 1074.-6130	SEG.COMP#10	2-16-90	8: 8	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	uCI/L	E21D1	0

Sample Size: ?.500A Li .021 20 — Customer ID: 000013

Remarks, Calculations, Results:

DUPLICATE SAMPLE

Cs^{137} 6.33' uci

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

Date	Time Completed	Lab Unit Mgr.	
2-23-90			DMS

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

1935

Serial No.	Sample Point	Date	Time Issued	Priority
F 1073.-6030	SEG.COMP#9	2-16-90	8: 7	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	uCI/L	E21D1	0

Sample Size: ?.500A Li .021 20 — Customer ID: 000013

Remarks, Calculations, Results:

Cs^{137} 5.27' uci/g

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

Date	Time Completed	Lab Unit Mgr.	
2-23-90			DMS

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

1937

Serial No.	Sample Point	Date	Time Issued	Priority
F 1077.-7530	SEG.COMP#13	2-16-90	8: 9	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 500λ Li .001 3	000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 122644

Co^{60} 2.16' / 2.1076' 102.59% good

Cs^{137} 2.97' / 2.9014' 102.40%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6BS98/RH				GW
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr.	
2-23-90			RMS

54-8800-081 (R-10-83)

2081

Serial No.	Sample Point	Date	Time Issued	Priority
F 1075.-6230	SEG.COMP#11	2-16-90	8: 8	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	% RECOVERY	E21D1	0

Sample Size	Customer ID
500λ Li .001 20	000013

Remarks, Calculations, Results:

SPIKE SAMPLE F1049
SPIKE ID 122644
SPIKE VOLUME 500λ

3.763' / 3.616 b 104.0%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6BS98/RH				GW
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr.	
2-23-90			RMS

54-8800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1072.-6340	SEG.COMP#8	2-16-90	8: 7	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	G/L	E21D1	0

Sample Size: ? 50l

Customer ID:

Remarks, Calculations, Results:

REAGENT BLANK .000 < .02

F74 sample .330

spike 54838 5.62E-4 M 100 ul

$$\frac{(.982)(.02)(5.62E^{-4})(.1)(20)}{.330-[(.982)(.02)]} = <7.11E^{-5}\ g/l$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Sue C Lai				
Hrs: 6c 9 1 6	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
6-26-90		

54-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1071.-6540	SEG.COMP#7	2-16-90	8: 7	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E21D1	0

Sample Size: ? 100-10-100

Customer ID: 000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE .190

LMCS ID 58838 .580

99.0%

spike ID/vol: 54838 5.62E-4 spike vol: 100 l

$$\frac{(.982)(.190)(5.62E^{-4})(.1)(1010)}{.580-[(.982)(.190)]} = .269\ E^{-2}\ g/l$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Sue C Lai				
Hrs: 6c 9 1 6	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
6-26-90		

54-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1074.-6140	SEG.COMP#10	2-16-90	8: 8	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	G/L	E21D1	0

Sample Size: ? 100-10-100

Customer ID:

Remarks, Calculations, Results:

DUPLICATE SAMPLE .075

Spike 54838 .450

5.62E-4 M 100 ul

$$\frac{(.982)(.075)(5.62E^{-4})(.1)(1010)}{.450-[(.982)(.075)]} = 1.11E^{-2}\ g/l$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Sue Lai				
Hrs: 6c 9 1 6	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
6-26-90		

54-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1073.-6040	SEG.COMP#9	2-16-90	8: 7	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	G/L	E21D1	0

Sample Size: ? 100-10-100

Customer ID: 000013

Remarks, Calculations, Results:

spike 54838 5.62E-4 M 100 ul

$$\frac{(.982)(.07)(5.62E^{-4})(.1)(1010)}{.440-[(.982)(.07)]} = 1.051E^{-2}\ g/l$$

.070

.440

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Sue Lai				
Hrs: 6c 9 1 6	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
6-26-90		

54-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1076.-6540	SEG.COMP#12	2-16-90	8: 9	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E21D1	0

Sample Size: ? 100-10-100

Customer ID:

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 58B38

spike ID 5438
vol 5.62E-4 m
Spike vol 100ul

.190
.585

88.9%

$$\frac{(.982)(.190)(5.62E^{-4})(.1)(1010)}{.585-[(.982)(.190)]} = 2.66E^{-2}\ gl \quad 2.99E^{-2}\ gl$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Sue Lai			[signature]	
Hrs	Hrs	Hrs	Hrs	Hrs
6C916				

Date	Time Completed	Lab Unit Mgr
6-26-90		[signature]

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

Serial No	Sample Point	Date	Time Issued	Priority
F 1075.-6240	SEG.COMP#11	2-16-90	8: 8	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E21D1	0

Sample Size: ? 100λ Sample > 10ml → .100 ml
100λ STD

Customer ID:

Remarks, Calculations, Results:
SPIKE SAMPLE
SPIKE ID 54B38
SPIKE VOLUME

F1073

98.3%

.260
.620

$$\frac{(.982)(.260)(5.62E^{-4})(.1)(1020)}{.620-[(.982)(.260)]} = 4.01E^{-2}\ gl - 1.07E^{-2}\ gl$$

$2.94E^{-2}\ gl \quad 2.99E^{-2}\ gl$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Sue Lai			[signature]	
Hrs	Hrs	Hrs	Hrs	Hrs
6C916				

Date	Time Completed	Lab Unit Mgr
6-26-90		[signature]

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

ICP Analysis - Fusion Dissolution
Analytical Travelers could not be retrieved for this analysis.

3.3 3002

Serial No.	Sample Point	Date	Time Issued	Priority
F 1048.-6381	SEG.COMP#8	2-15-90	13:48	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
PU	LA-503-156	uCI/L		0

Sample Size: ? RH 50λ spike 10B43-B

Customer ID: 000012

Remarks, Calculations, Results:
REAGENT BLANK
1200λ CON HNO_3

$<8.29^{-3}$ "AEA-480 MIN" ATTACH PRINT OUT
neill

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

Date	Time Completed	Lab Unit Mgr
2-26-90		[illegible]

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

3.2 2770

Serial No.	Sample Point	Date	Time Issued	Priority
F 1047.-6581	SEG.COMP#7	2-15-90	13:47	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
PU	LA-503-156	% RECOVERY		0

Sample Size: ? 100-10-100 + 50λ-10B43-B

Customer ID: 000012

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 16B43
1mL 8M HNO_3

105.6% "AEA-480 MIN" ATTACH PRINT OUT
$1.028^2/97.329$

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

Date	Time Completed	Lab Unit Mgr
2-26-90		[illegible]

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

4.2 6072

Serial No.	Sample Point	Date	Time Issued	Priority
F 1074.-6181	SEG.COMP#10	2-16-90	8: 8	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
PU	LA-503-156	uCI/L	E21D1	0

Sample Size: ? 250 + 50λ SPIKE 10B43-B

Customer ID: 000013

Remarks, Calculations, Results:
DUPLICATE SAMPLE
1200λ CON HNO_3

"AEA-480 MIN" ATTACH PRINT OUT

5.41^{-1} neill

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

Date	Time Completed	Lab Unit Mgr
2-27-90		[illegible]

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

4.4 8121

Serial No.	Sample Point	Date	Time Issued	Priority
F 1073.-6081	SEG.COMP#9	2-16-90	8: 8	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
PU	LA-503-156	uCI/L	E21D1	0

Sample Size: ? 250 + 50λ SPIKE 10B43-B

Customer ID: 000013

Remarks, Calculations, Results:
380λ CON HNO_3

"AEA-480 MIN" ATTACH PRINT OUT

4.90^{-1} neill

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

Date	Time Completed	Lab Unit Mgr
2-27-90		[illegible]

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

Plutonium Analysis - Fusion Dissolution

F1073.-6081

F 1074.-6181

F 1047.-6581

F 1048.-6381

3.3 3006

Serial No.	Sample Point	Date	Time Issued	Priority
F 1082.-7581	SEG.COMP#18	2-16-90	8:15	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
PU	LA-503-156	% RECOVERY	E21D1	0

Sample Size: ?100-10-100 +50µl spike 10843-B

Customer ID: 000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 16543
1ml 8M HNO_3

"AEA-480 MIN"
ATTACH PRINT OUT

95458 / 97.329 98.1%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598/KH				AM
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr.
2-26-90		

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

3.4 4764

Serial No.	Sample Point	Date	Time Issued	Priority
F 1081.-7281	SEG.COMP#17	2-16-90	8:13	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
PU	LA-503-156	% RECOVERY	E21D1	0

Sample Size: ? 1/4 1/4 smf 50µl SPIKE 10 to 1/4 10843-B

Customer ID: 000013

Remarks, Calculations, Results:

SPIKED SAMPLE F1055
12ml Conc HNO_3

"AEA-480 MIN"
ATTACH PRINT OUT

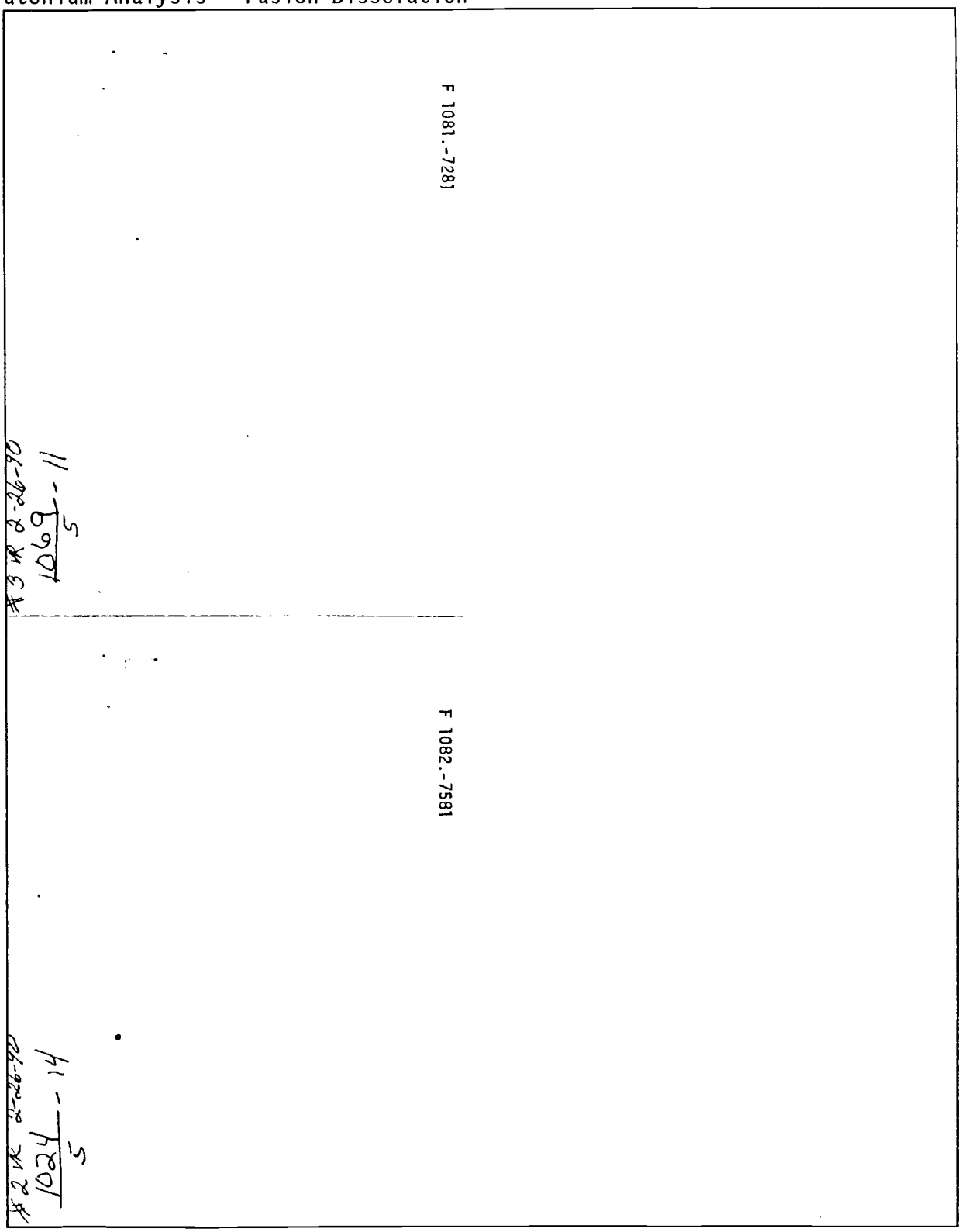
99.013 / 97.329 101.7%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598/KH				AM
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr.
2-26-90		

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

Plutonium Analysis - Fusion Dissolution



4.2 6068

Serial No.	Sample Point	Date	Time Issued	Priority
F 1048.-6382	SEG.COMP#8	2-15-90	13:48	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
AM	LA-503-156	uCI/L		0

Sample Size: ? 1ml + 100λ Am spike 9843 — Customer ID: 000012

Remarks, Calculations, Results:
REAGENT BLANK
1200λ CON HNO_3

"AEA-480 MIN"
ATTACH PRINT OUT

< 2.28 $^{-2}$ mCi

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GBS98/RH				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
2-27-90		

84-6800-081 (R-10-83)

4.1 5633

Serial No.	Sample Point	Date	Time Issued	Priority
F 1047.-6582	SEG.COMP#7	2-15-90	13:47	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
AM	LA-503-156	% RECOVERY		0

Sample Size: ? 100-10-1000 + 100λ Am spike 9843 — Customer ID: 000012

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 16843
1ml 8M HNO_3

"AEA-480 MIN"
ATTACH PRINT OUT

105.99
16.652 / 15.711

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GBS98/RH				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
2-27-90		

84-6800-081 (R-10-83)

3.2 2771

Serial No.	Sample Point	Date	Time Issued	Priority
F 1074.-6182	SEG.COMP#10	2-16-90	8: 8	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
AM	LA-503-156	uCI/L	E21D1	0

Sample Size: ? RH 250 + 100λ spike 9843 — Customer ID: 000013

Remarks, Calculations, Results:
DUPLICATE SAMPLE
380 λ CON HNO_3

"AEA-480 MIN"
ATTACH PRINT OUT

< 6.39 $^{-2}$ mCi

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GBS98/RH				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
2-27-90		

84-6800-081 (R-10-83)

3.3 3003

Serial No.	Sample Point	Date	Time Issued	Priority
F 1073.-6082	SEG.COMP#9	2-16-90	8: 8	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
AM	LA-503-156	uCI/L	E21D1	0

Sample Size: ? RH 250 + 100λ spike — Customer ID: 000013

Remarks, Calculations, Results:
380 λ CON HNO_3 9843

"AEA-480 MIN"
ATTACH PRINT OUT

2.21 $^{-1}$ mCi

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GBS98/RH				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
2-27-90		

84-6800-081 (R-10-83)

Americium 241 - Fusion Dissolution

F 1073.-6082

F 1074.-6182

F 1047.-6582

F 1048.-6382

3.2 2774

Serial No.	Sample Point	Date	Time Issued	Priority
F 1076.-6582	SEG.COMP#12	2-16-90	8: 9	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
AM	LA-503-156	% RECOVERY	E21D1	0

Sample Size: ? 1mL + 1mL 100λ spike 9B43

Customer ID: 000013

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 16B43
1mL 8M HNO3
106.6%
16.752 / 15.711

"AEA-480 MIN" ATTACH PRINT OUT

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

Date	Time Completed	Lab Unit Mgr
2-27-90		[illegible]

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

4.2 6071

Serial No	Sample Point	Date	Time Issued	Priority
F 1075.-6282	SEG.COMP#11	2-16-90	8: 8	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
AM	LA-503-156	% RECOVERY	E21D1	0

Sample Size: ? 1mLt 100λ-1m start 100λ SPIKE

Customer ID: 000013

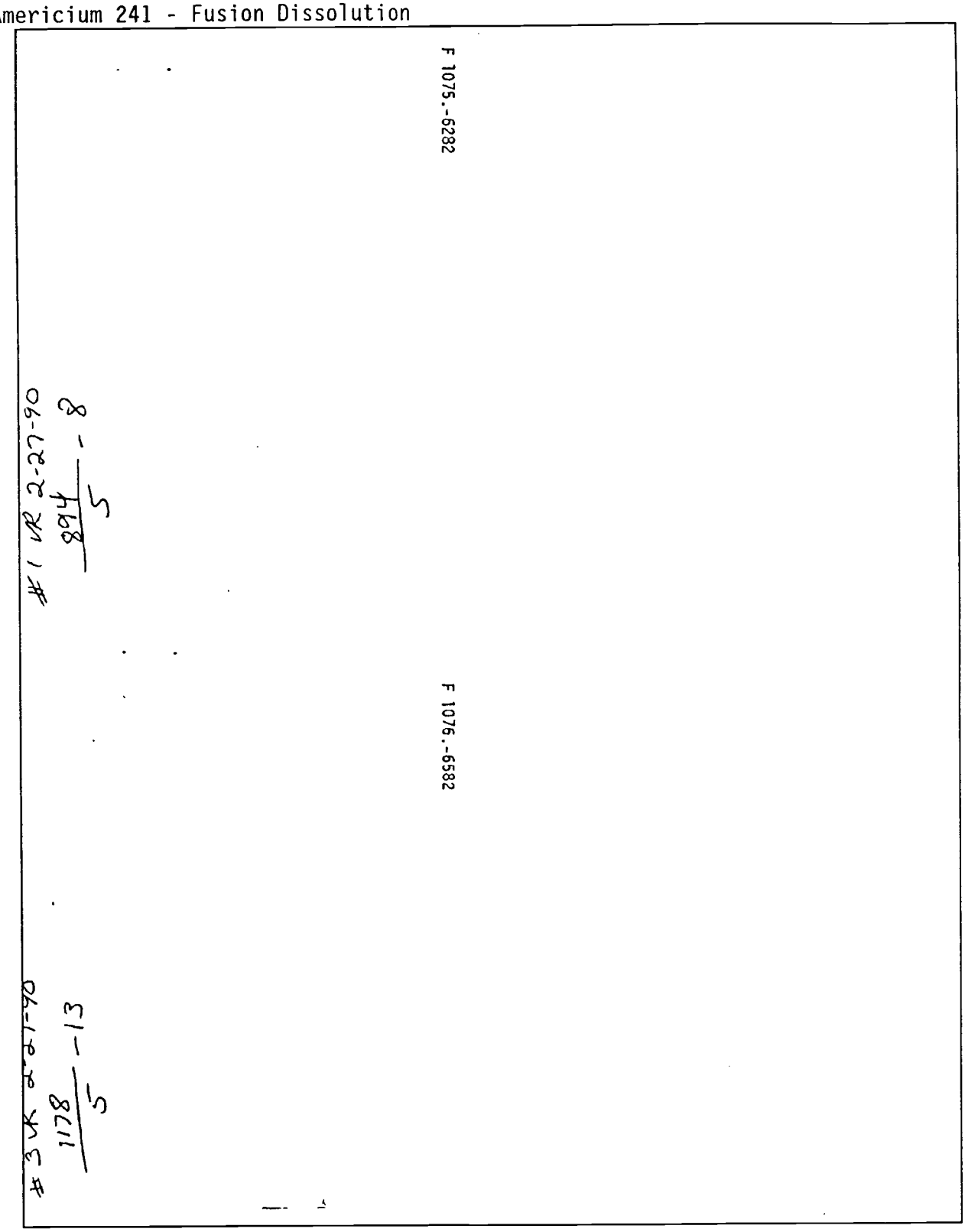
Remarks, Calculations, Results:
SPIKED SAMPLE F1055 9B43
1200λ CON HNO3
101.3%
15.923 / 15.711

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

Date	Time Completed	Lab Unit Mgr
2-27-90		[illegible]

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

Americium 241 - Fusion Dissolution



Neptunium 237 - Fusion Dissolution

Serial No.	Sample Point	Date	Time Issued	Priority
F 1000.-6383	SEG.COMP#8	2-12-90	11:14 19	

Determination	Method/Standard	Result Units	Charge Code	Reruns
NP	LA-933-141	uCI/L	WB75L	0

Sample Size: ? 250λ mT 500λ

Customer ID: 000014

Remarks, Calculations, Results:

REAGENT BLANK $\frac{(50cpm)(1000)(2)(3)(4)}{(.5)(2.22E6)} = <1.08$ weil

<1.08 weil

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

Date	Time Completed	Lab Unit Mgr
3-12-90		Karl M. Pool Kathy Thomsbee

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 999.-6583	SEG.COMP#7	2-12-90	11:13 26	

Determination	Method/Standard	Result Units	Charge Code	Reruns
NP	LA-933-141	% RECOVERY	WB75L	0

Sample Size: ? 250λ 100λ mT 500

Customer ID: 000014

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 148B33

8.583E1 weil / 128.11 Recovery 67.0%

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

Date	Time Completed	Lab Unit Mgr
3-12-90		Karl M. Pool Kathy Thomsbee

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

Serial No	Sample Point	Date	Time Issued	Priority
F 1074.-6183	SEG.COMP#10	2-16-90	8: 8	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
NP	LA-933-141	uCI/L	E21D1	0

Sample Size: ? 250λ mT 500λ

Customer ID: 000013

Remarks, Calculations, Results:

DUPLICATE SAMPLE

<1.08 weil

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

Date	Time Completed	Lab Unit Mgr
3-12-90		Karl M. Pool Kathy Thomsbee

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1073.-6083	SEG.COMP#9	2-16-90	8: 8	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
NP	LA-933-141	uCI/L	E21D1	0

Sample Size: ? 250λ mT 500λ

Customer ID: 000013

Remarks, Calculations, Results:

<1.08 weil

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

Date	Time Completed	Lab Unit Mgr
3-12-90		Karl M. Pool Kathy Thomsbee

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

#3 3-13-90 DM

FO1000.-6383

$\frac{58}{5} - 12$

#2 3-13-90 DM

FO999.-6583

$\frac{8014}{5} - 15$

$$\frac{(1578.8\text{cpm})(1000)(2)(3)(10)}{(.5)(2.22\text{E}6)}$$

#2 3-13-90 DM

$\frac{92}{5} - 15 \quad <50\text{cpm}$

$$\frac{(50)(1000)(2)(3)(4)}{(.5)(2.22\text{E}6)}$$

#1 3-13-90 DM

$\frac{45}{5} - 7 \quad <50\text{cpm}$

$$\frac{(50)(1000)(2)(3)(4)}{(.5)(2.22\text{E}6)}$$

Neptunium 237 - Fusion Dissolution

Serial No.	Sample Point	Date	Time Issued	Priority
F 1076.-6583	SEG.COMP#12	2-16-90	8: 9	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
NP	LA-933-141	% RECOVERY	E21D1	0

Sample Size: ? 250λ 100λ MT 500λ

Customer ID: 000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 148B33

65.5%

83.968 wet / 128.11 acid

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
63598/RH			[signature]	
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
3-12-90		[signature] [signature]

34-6800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1075.-6283	SEG.COMP#11	2-16-90	8: 9	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
NP	LA-933-141	% RECOVERY	E21D1	0

Sample Size: ? 250λ + ~~250λ~~ 100λ MT 500λ

Customer ID: 000013

Remarks, Calculations, Results:

SPIKED SAMPLE STD 148B33

61.5%

7.882 E¹ / 1.2811 E²

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
63598/RH			[signature]	
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
3-12-90		[signature] [signature]

34-6800-061 (R-10-83)

#2 3-13-90 DM FO1076.-6583

$\frac{7842}{5}$ 15

$$\frac{(1553.4)(1000)(2)(3)(10)}{(.5)(2.22E6)}$$

#1 3-13-90 DM FO1075.-6283

$\frac{7326}{5}$ -7

$$\frac{(1458.2)(1000)(2)(3)(10)}{(.5)(2.22E6)}$$

3 & 4

Serial No.	Sample Point	Date	Time Issued	Priority
F 1072.-6384	SEG.COMP#8	2-16-90	8: 7	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TC99	LA-438-101	uCI/L	E21D1	0

Sample Size: ? 1ml + ~~1ml~~ 100 x Tc99 (SL) spike — Customer ID: 000013

Remarks, Calculations, Results: 49B39

REAGENT BLANK

Q < 20

Q+S 2050.97

< 2.61 -2 uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C916				[signature]
Hrs: Sue Lai	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
2-27-90		[signature]

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

1 & 2

Serial No.	Sample Point	Date	Time Issued	Priority
F 1071.-6584	SEG.COMP#7	2-16-90	8: 7	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
TC99	LA-438-101	% RECOVERY	E21D1	0

Sample Size: ? 250 x + 100 x Tc spike — Customer ID: 000013

Remarks, Calculations, Results: 49B39

LMCS CHECK SAMPLE
LMCS ID_____

STP: 14B39

Q 916.648

Q+S 3093.83

~~4.60~~ 4.4602/3.6166

123.3%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C916				[signature]
Hrs: Sue Lai	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
2-27-90		[signature]

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

7 & 8

Serial No.	Sample Point	Date	Time Issued	Priority
F 1074.-6184	SEG.COMP#10	2-16-90	8: 8	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
TC99	LA-438-101	uCI/L	E21D1	0

Sample Size: ? 1ml + 100 x Tc99 spike — Customer ID: 000013

Remarks, Calculations, Results: 49B39

DUPLICATE SAMPLE

Q 16.48 < 20.00

Q+S 2601.58

< 2.05 -2 uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C916				[signature]
Hrs: Sue Lai	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
2-27-90		[signature]

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

5 & 6

Serial No.	Sample Point	Date	Time Issued	Priority
F 1073.-6084	SEG.COMP#9	2-16-90	8: 8	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
TC99	LA-438-101	uCI/L	E21D1	0

Sample Size: ? 1ml + 100 x Tc99 spike — Customer ID: 000013

Remarks, Calculations, Results: 49B39

Q < 20

Q+S 2581.85

< 2.07 -2 uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C916				[signature]
Hrs: Sue Lai	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
2-27-90		[signature]

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

11 of 12

Serial No.	Sample Point	Date	Time Issued	Priority
F 1076.-6584	SEG.COMP#12	2-16-90	8: 9	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
TC99	LA-438-101	% RECOVERY	E21D1	0

Sample Size: ? 250 l + 100 l Tc spike

Customer ID: 000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID _____

49B39

STD: 14B39

D 917.073

D+S 3608.60

99.8%

3.6095 / 3.6166

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C916				[signature]
Hrs: Sue Lai	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
2-27-90		[signature]

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

9 of 10

Serial No	Sample Point	Date	Time Issued	Priority
F 1075.-6284	SEG.COMP#11	2-16-90	8: 9	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
TC99	LA-438-101	% RECOVERY	E21D1	0

Sample Size: ? 1 ml + 250 std + 100 l spike

Customer ID: 000013

Remarks, Calculations, Results:

SPIKED SAMPLE

49B39

D 887.378

D+S 3538.12

98.1%

3.5464 / 3.6166

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C916				[signature]
Hrs: Sue Lai	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
2-27-90		[signature]

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

6232

Serial No.	Sample Point	Date	Time Issued	Priority
F 922.-6385	SEG.COMP#8	1-24-90	8:39	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
I129	LA-378-103	uCI/L	WB75L	2

Sample Size: ? 1ml

Customer ID: 000006

Remarks, Calculations, Results:

REAGENT BLANK

RERUN

G. 2.7415
T. 2.7262
NO. 0153
.0305

$\frac{(<7.52E^{-6})(1000)(1)}{.5016} = <1.50E^{-2}$ uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598	D. Anticia		S.A. Catto	
Hrs	Hrs	Hrs	Hrs	Hrs
Ronald D. Hale				

Date	Time Completed	Lab Unit Mgr	
7-9-90		Neal N. Pool	Dayne Southrick

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

6231

Serial No	Sample Point	Date	Time Issued	Priority
F 921.-6585	SEG.COMP#7	1-24-90	8:39	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
I-129	LA-378-103	% RECOVERY	WB75L	2

Sample Size: ? 1ml

Customer ID: 000006

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 38846

98.0% **RERUN**

G. 2.7565
T. 2.7419
N. 0.0146
.0305

$\frac{(2.90E^{-4})(1000)(1)}{.4787} = 6.058E^{-1}$ uci/l = 6.18E-1

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598	D. Anticia		S.A. Catto	
Hrs	Hrs	Hrs	Hrs	Hrs
Ronald D. Hale			Dayne Southrick	

Date	Time Completed	Lab Unit Mgr	
7-9-90		Neal N. Pool	Dayne Southrick

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

6236

Serial No.	Sample Point	Date	Time Issued	Priority
F 1074.-6185	SEG.COMP#10	2-16-90	8: 8	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
I129	LA-378-103	uCI/L	E21D1	0

Sample Size: ? 1ml

Customer ID: 000013

Remarks, Calculations, Results:

DUPLICATE SAMPLE

G. 2.7650
T. 2.7480
N. 0.0170
.0305

$\frac{(<6.78E^{-6})(1000)(1)}{.5574} = <1.22E^{-2}$ TOP

$<1.50 \times 10^{-2}$ uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598	Em Bauer		S.A. Catto	
Hrs	Hrs	Hrs	Hrs	Hrs
Ronald D. Hale				

Date	Time Completed	Lab Unit Mgr	
7-9-90			Dayne Southrick

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

6235

Serial No.	Sample Point	Date	Time Issued	Priority
F 1073.-6085	SEG.COMP#9	2-16-90	8: 8	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
I129	LA-378-103	uCI/L	E21D1	0

Sample Size: ? 1ml

Customer ID: 000013

Remarks, Calculations, Results:

G. 2.7523
T. 2.7375
N. 0.0148
.0305

$\frac{(<9.18E^{-6})(1000)(1)}{.4852} = <1.89E^{-2}$ uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598	D. Anticia		S.A. Catto	
Hrs	Hrs	Hrs	Hrs	Hrs
Ronald D. Hale				

Date	Time Completed	Lab Unit Mgr	
7-9-90		Neal N. Pool	Dayne Southrick

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

6238

Serial No.	Sample Point	Date	Time Issued	Priority
F 1076.-6585	SEG.COMP#12	2-16-90	8: 9	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
I-129	LA-378-103	% RECOVERY	E21D1	0

Sample Size: ? 1ml — Customer ID: 000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 38646

95.7%

G. 2.7635
T. 2.7470

$\frac{(3.206^{-4})(1000)(1)}{.541} = 5.915E^{-1}$ weld

N. 0.0165 / .0305

$6.18E^{-1}$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
BBS98				
Hrs	Hrs	Hrs	Hrs	Hrs
Ronald D. Hale				
Date	Time Completed	Lab Unit Mgr.		
7-9-90				

54-8600-081 (R-10-83)

6237

Serial No.	Sample Point	Date	Time Issued	Priority
F 1075.-6285	SEG.COMP#11	2-16-90	8: 9	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
I129	LA-378-103	% RECOVERY	E21D1	0

Sample Size: ? 1ml, 1ml std soln — Customer ID: 000013

Remarks, Calculations, Results:

SPIKED SAMPLE F923

89.8%

G. 2.7557
T. 2.7402

$\frac{(282E^{-4})(1000)(1)}{.5082} = 5.549E^{-1}$ weld

N. 00155 / .0305

$6.1816E^{-1}$ weld

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
BBS98				
Hrs	Hrs	Hrs	Hrs	Hrs
Ronald D. Hale				
Date	Time Completed	Lab Unit Mgr.		
7-9-90				

54-8600-081 (R-10-83)

Strontium 90 Analysis - Fusion Dissolution

Serial No.	Sample Point	Date	Time Issued	Priority
F 1072.-6386	SEG.COMP#8	2-16-90	8: 7	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
SR	LA-220-101	uCI/L	E21D1	0

Sample Size: ? 1ml + 1ml Sr carrier — Customer ID: 000013

Remarks, Calculations, Results:
REAGENT BLANK

		A	B
Sep Date: 2-26-90	Gross	8.2131	8.1443
Sep Time: 11:20	Tare	8.1172	8.0509
9.96 -2 ueil	net	0.0959 .959	0.0934 .934

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C916				[illegible]
Hrs: Sue Lai	Hrs	Hrs	Hrs	Hrs

Date: 2-26-90 — Time Completed: — Lab Unit Mgr: [illegible]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1071.-6586	SEG.COMP#7	2-16-90	8: 7	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
SR	LA-220-101	% RECOVERY	E21D1	0

Sample Size: ? 1ml + 1ml Sr carrier — Customer ID: 000013

Remarks, Calculations, Results: 106B44
LMCS CHECK SAMPLE
LMCS ID_____ 99.790

		A	B
Sep Date: 2-26-90	Gross	7.9999	8.0106
Sep Time: 11:20	Tare	7.9046	7.9169
1.382/1.3856	net	0.0953 .953	0.0937 .937

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C916				[illegible]
Hrs: Sue Lai	Hrs	Hrs	Hrs	Hrs

Date: 2-26-90 — Time Completed: — Lab Unit Mgr: [illegible]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1074.-6186	SEG.COMP#10	2-16-90	8: 8	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
SR	LA-220-101	uCI/L	E21D1	0

Sample Size: ? 100l + 1ml Sr carrier — Customer ID: 000013

Remarks, Calculations, Results:
DUPLICATE SAMPLE

		A	B
Sep Date: 2-26-90	Gross	7.9863	7.9077
Sep Time: 11:30	Tare	7.8961	7.8173
1.11 3 ueil	net	0.0902 .902	0.0904 .904

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C916				[illegible]
Hrs: Sue Lai	Hrs	Hrs	Hrs	Hrs

Date: 2-26-90 — Time Completed: — Lab Unit Mgr: [illegible]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1073.-6086	SEG.COMP#9	2-16-90	8: 8	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
SR	LA-220-101	uCI/L	E21D1	0

Sample Size: ? 100l + 1ml Sr carrier — Customer ID: 000013

Remarks, Calculations, Results:

		A	B
Sep Date: 2-26-90	Gross	7.9596	7.9552
Sep Time: 11:30	Tare	7.8669	7.8630
9.19 2 ueil	net	0.0927 .927	0.0922 .922

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C916				[illegible]
Hrs: Sue Lai	Hrs	Hrs	Hrs	Hrs

Date: 2-26-90 — Time Completed: — Lab Unit Mgr: [illegible]

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

10 2 2-26-90 VR 2320 ΔT=12.00

(A) 1138 / 10.5 DM - 27

(B) 1205 / 10 DM

Sr Calculation by DM on 02-27-1990 at 00:51:08
Det #10 2 -inch mount Sr eff : .3792 Y eff : .4215

Sample size : 1 mL Dilution : 1 Method : 1

Mount # 1 Decay time = 12 hrs

9.72^-2

1138 / 10 - 27.0 = 9.0817E-02 uCi/L strontium

.934

Mount # 2 Decay time = 12 hrs

1.02^-1

1205 / 10 - 27.0 = 9.7827E-02 uCi/L strontium

.959

F 1072.-6386

10 2 2-27-90 @ 0020 DM ΔT=13.00

A 12751 / 10 -29

B 13014 / 10

Sr Calculation by DM on 02-27-1990 at 00:52:09
Det #10 2 -inch mount Sr eff : .3792 Y eff : .4215

Sample size : 1 mL Dilution : 1 Method : 1

Mount # 1 Decay time = 13 hrs

1.379

12751 / 10 - 29.0 = 1.2918E+00 uCi/L strontium

.937

Mount # 2 Decay time = 13 hrs

1.384

13014 / 10 - 29.0 = 1.3191E+00 uCi/L strontium

.953

F 1071.-6586

10 2" 2-26-90 VR 1845 ΔT 7.25 DF 10

45-1941 / 5 - 27

465400 / 5

Sr Calculation by VR on 02-26-1990 at 22:04:09
Det #10 2 -inch mount Sr eff : .3792 Y eff : .4215

Sample size : 1 mL Dilution : 10 Method : 1

Mount # 1 Decay time = 7.25 hrs

1.098^3

451941 / 5 - 27.0 = 9.9034E+02 uCi/L strontium

.902

Mount # 2 Decay time = 7.25 hrs

465400 / 5 - 27.0 = 1.0198E+03 uCi/L strontium

.904

1.128^3

F 1074.-6186

10 2" 2-26-90 VR 2225 ΔT 10.9 DF 10

404154 / 5 - 27

399680 / 5

Sr Calculation by VR on 02-26-1990 at 23:17:32
Det #10 2 -inch mount Sr eff : .3792 Y eff : .4215

Sample size : 1 mL Dilution : 10 Method : 1

Mount # 1 Decay time = 10.92 hrs

9.21^2

404154 / 5 - 27.0 = 8.5407E+02 uCi/L strontium

.927

Mount # 2 Decay time = 10.92 hrs

9.16^2

399680 / 5 - 27.0 = 8.4461E+02 uCi/L strontium

.922

F 1073.-6086

Strontium 90 Analysis - Fusion Dissolution

Serial No.	Sample Point	Date	Time Issued	Priority
F 1076.-6586	SEG.COMP#12	2-16-90	8: 9	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
SR	LA-220-101	% RECOVERY	E21D1	0

Sample Size: ? 1ml + 1ml Sr carrier

Customer ID: 000013

Remarks, Calculations, Results: 106844

LMCS CHECK SAMPLE
LMCS ID_____

Sep Date: 2-26-90

Sep. Time: 11:35

1.407/1.3856

	A	B
Gross	8.0685	8.0985
Tare	7.9770	8.0072
net	0.0915	0.0913
	.915	.913

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C916				[signature]
Hrs	Hrs	Hrs	Hrs	Hrs
Sue Lai				

Date	Time Completed	Lab Unit Mgr	
2-26-90		[signature]	[signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1075.-6286	SEG.COMP#11	2-16-90	8: 9	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
SR	LA-220-101	% RECOVERY	E21D1	0

Sample Size: ? 100x + 1ml std + 1ml carrier

Customer ID: 000013

Remarks, Calculations, Results:

SPIKED SAMPLE $\frac{9.28 \times 10^2 - 9.19 \times 10^2}{10} = \frac{9.00 \times 10^{-1}}{1.3856}$ 65.0%

Sep Date: 2-26-90

Sep Time: 11:35

spike too low

	A	B
Gross	8.0110	8.0281
Tare	7.9196	7.9413
net	0.0914	0.0868
	.914	.868

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Sue Lai				[signature]
Hrs	Hrs	Hrs	Hrs	Hrs
6C916				

Date	Time Completed	Lab Unit Mgr	
2-26-90		[signature]	[signature]

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

10/2

2-26-1
@1505
AT-3.50

A

$\frac{5656}{5} - 27$

Sr Calculation by VR on 02-26-1990 at 22:05:52
Det #10 2 -inch mount Sr eff : .3792 Y eff : .4215

Sample size : 1 mL Dilution : 1 Method : 1

Mount # 1 Decay time = 3.5 hrs

1.3786

B

$\frac{5888}{5} - 27$

$\frac{5656}{5} - 27.0 = \frac{1.2596E+00}{.913}$ uCi/L strontium

Mount # 2 Decay time = 3.5 hrs

1.4345

$\frac{5888}{5} - 27.0 = \frac{1.3126E+00}{.915}$ uCi/L strontium

F1076.-6586

10 2" 2-26-90 VR 1820

AT 6.75
D.F. 10

$\frac{382928}{5} - 27$

$\frac{367702}{5}$

Sr Calculation by VR on 02-26-1990 at 22:04:58
Det #10 2 -inch mount Sr eff : .3792 Y eff : .4215
Sample size : 1 mL Dilution : 10 Method : 1
Mount # 1 Decay time = 6.75 hrs

$\frac{382928}{5} - 27.0 = \frac{8.4341E+02}{.914}$ uCi/L strontium

Mount # 2 Decay time = 6.75 hrs

$\frac{367702}{5} - 27.0 = 8.0986E+02$ uCi/L strontium

F 1075.-6286

WATER DIGESTION ANALYSIS

APPENDIX A

Serial No.	Sample Point	Date	Time Issued	Priority
F 1079.-7000	SEG.COMP#15	2-16-90	8:11	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
H2O-DGST	LA-504-101	G/L	E21D1	0

Sample Size: 1079

Customer ID: 000013

344

50ml

8.332 -3 g/ml

2-23-90 Jerry Kunkel

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80518	80518			Denied 3/2/90
Hrs 1	Hrs 30min	Hrs	Hrs	Hrs

Date | Time Completed | Lab Unit Mgr

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1078.-7300	SEG.COMP#14	2-16-90	8:10	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
H2O-DGST	LA-504-101	G/L	E21D1	0

Sample Size: ?

Customer ID: 000013

Remarks, Calculations, Results:

REAGENT BLANK

complete

2-23-9 Jerry Kunkel

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80518	80518			Denied 3/2/90
Hrs 1	Hrs 30min	Hrs	Hrs	Hrs

Date | Time Completed | Lab Unit Mgr

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1081.-7200	SEG.COMP#17	2-16-90	8:13	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
H2O-DGST	LA-504-101	% RECOVERY	E21D1	0

Sample Size: ?

Customer ID: 000013

1081

50ml

1.002 -2 g/ml

Remarks, Calculations, Results:

SPIKED ANALYSIS
GRAMS SAMPLE____
VOLUME ON
COMPLETION____
VOLUME SPIKE____
SPIKE ID_____

2-23-90 Jerry Kunkel

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80518	80518			Denied 4/71
Hrs 1	Hrs 30min	Hrs	Hrs	Hrs

Date | Time Completed | Lab Unit Mgr

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1080.-7100	SEG.COMP#16	2-16-90	8:12	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
H2O-DGST	LA-504-101	G/L	E21D1	0

Sample Size: ?

Customer ID: 000013

1080

50ml

1.119 -2 g/ml

Remarks, C

DUPL
GRAM
VOLU
COMP

2-23-90 Jerry Kunkel

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80518	80518			Denied 4/71
Hrs 1	Hrs 30min	Hrs	Hrs	Hrs

Date | Time Completed | Lab Unit Mgr

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1079.-7000	SEG.COMP#15	2-16-90	8:11	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
H2O-DGST	LA-504-101	G/L	E21D1	1

Sample Size: ? 1.0176g

Customer ID: Comp-2 #13-385

Remarks, Calculations, Results:

GRAMS SAMPLE 1.0176g
VOLUME ON COMPLETION 100ml
1.018E-2 g/ml
1.018E1 g/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GC269				
Mary Frans	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
5-29-90		

84-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1078.-7300	SEG.COMP#14	2-16-90	8:10	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
H2O-DGST	LA-504-101	G/L	E21D1	1

Sample Size: ? 100ml

Customer ID: #13-Comp-2

Remarks, Calculations, Results:

REAGENT BLANK

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GC269				
Mary Frans	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
5-29-90		

84-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1081.-7200	SEG.COMP#17	2-16-90	8:13	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
H2O-DGST	LA-504-101	% RECOVERY	E21D1	1

Sample Size: ? 1.0090g

Customer ID: Comp-2 #13-385

Remarks, Calculations, Results:

SPIKED ANALYSIS
GRAMS SAMPLE 1.0050g
VOLUME ON COMPLETION 100ml
VOLUME SPIKE
SPIKE ID
1.009E-2 g/ml
1.009E1 g/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GC269				
Mary Frans	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
5-29-90		

84-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1080.-7100	SEG.COMP#16	2-16-90	8:12	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
H2O-DGST	LA-504-101	G/L	E21D1	1

Sample Size: ? 1.0046g

Customer ID: Comp-2 #13-385

Remarks, Calculations, Results:

DUPLICATE ANALYSIS
GRAMS SAMPLE 1.0046g
VOLUME ON COMPLETION 100ml
1.005E-2 g/ml
1.005E1 g/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GC269				
Mary Frans	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
5-29-90		

84-6800-081 (R-10-83)

pH Analysis - Water Digestion - First Leach

Serial No.	Sample Point	Date	Time Issued	Priority
F 1078.-7314	SEG.COMP#14	2-16-90	8:10	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
PH	LA-211-102	% RECOVERY	E21D1	0

Sample Size: ? 1 ml

Customer ID: 000013

Remarks, Calculations, Results: Blk

24.2°C

9.73

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

Date: 2-26-90 | Time Completed: | Lab Unit Mgr: [signature] KT

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1077.-7514	SEG.COMP#13	2-16-90	8: 9	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
PH	LA-211-102	% RECOVERY	E21D1	0

Sample Size: ? 1 ml

Customer ID: 000013

Remarks, Calculations, Results: KT

LMCS CHECK SAMPLE
pH FOUND 10.08
STD ID 72C11-B
SAMPLE TEMP 24.1

100.8%

10.08 / 10.00

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

Date: 2-26-90 | Time Completed: | Lab Unit Mgr: [signature] KT

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1080.-7114	SEG.COMP#16	2-16-90	8:12	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
PH H2O Digest	LA-211-102	NONE	E21D1	0

Sample Size: ? 1 ml

Customer ID: 000013

Remarks, Calculations, Results: Duplicate

pH 11.71
SAMPLE TEMP 24.2

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

Date: 2-26-90 | Time Completed: | Lab Unit Mgr: [signature] KT

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1079.-7014	SEG.COMP#15	2-16-90	8:11	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
PH	LA-211-102	NONE	E21D1	0

Sample Size: ? 1 ml

Customer ID: 000013

Remarks, Calculations, Results:

24.2°C

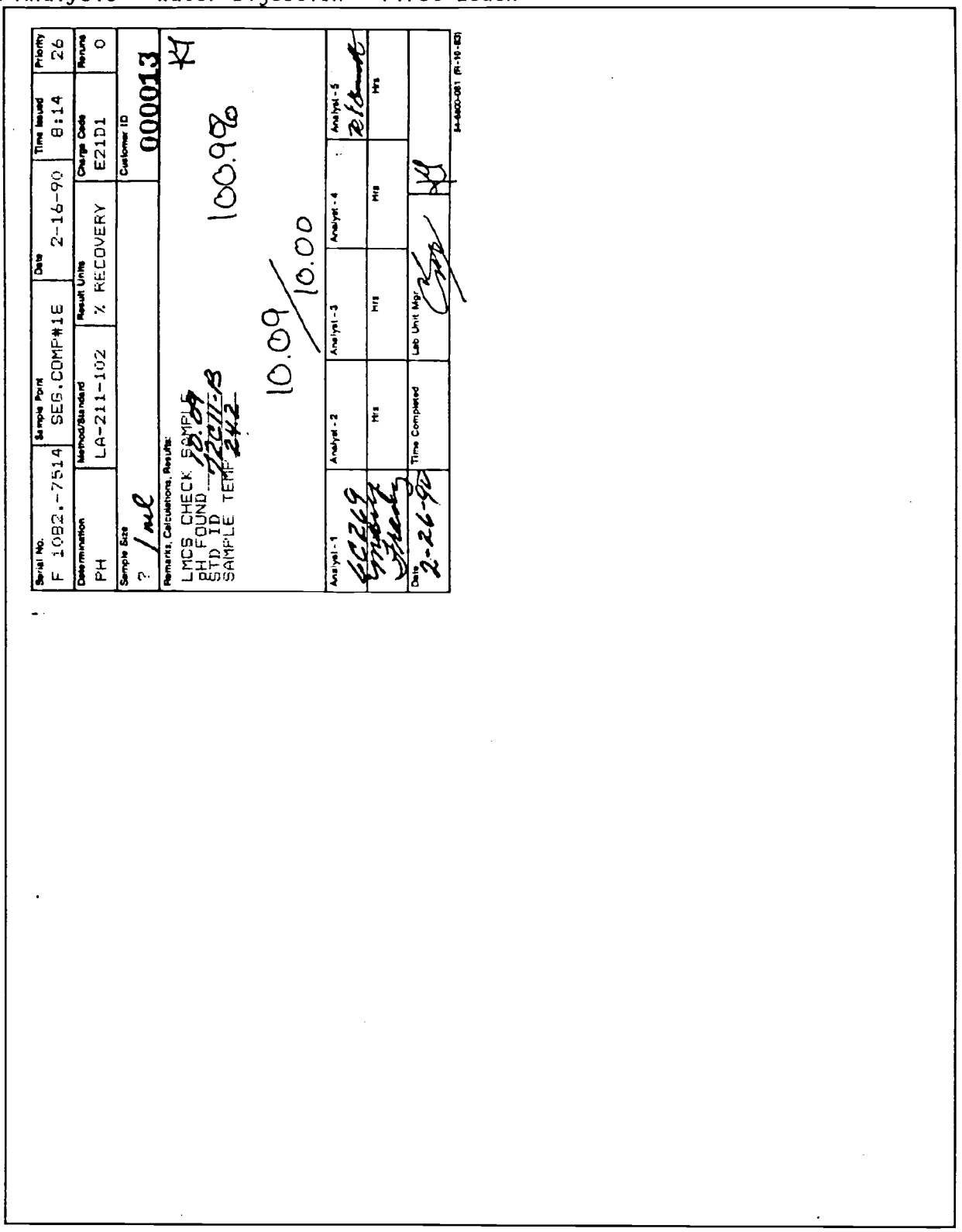
11.64

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

Date: 2-26-90 | Time Completed: | Lab Unit Mgr: [signature] KT

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

pH Analysis - Water Digestion - First Leach



Serial No.	Sample Point	Date	Time Issued	Priority
F 1082.-7514	SEG.COMP#1E	2-16-90	8:14	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
PH	LA-211-102	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 1 ml	000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
pH FOUND 10.09
STD ID 72C11-B
SAMPLE TEMP 24.2

100.9%

10.09 / 10.00

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

Date	Time Completed	Lab Unit Mgr	
2-26-90		[signature]	[signature]

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

Ion Chromatograph Analysis of the Water Digestion - Fluoride Analysis

Serial No.	Sample Point	Date	Time Issued	Priority
F 1054.-7371	SEG.COMP#14	2-15-90	13:59	26

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

Sample Size: ? Direct

Customer ID: 000012

Remarks, Calculations, Results:

REAGENT BLANK

<.1ppm

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

Date: 3/1/90 | Time Completed: | Lab Unit Mgr:

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1053.-7571	SEG.COMP#13	2-15-90	13:55	26

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

Sample Size: ? 100-10

Customer ID: 000012

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 6C1145

106.8%

64.09/6

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

Date: 3/1/90 | Time Completed: | Lab Unit Mgr:

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1080.-7171	SEG.COMP#16	2-16-90	8:12	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
F	LA-533-105	PPM	E21D1	0

Sample Size: ? 100-10

Customer ID: 000013

Remarks, Calculations, Results:

DUPLICATE SAMPLE

3.965' ppm

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

Date: 3/1/90 | Time Completed: | Lab Unit Mgr:

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1079.-7071	SEG.COMP#15	2-16-90	8:11	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
F	LA-533-105	PPM	E21D1	0

Sample Size: ? 100-10

Customer ID: 000013

Remarks, Calculations, Results:

4.161' ppm

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

Date: 3/1/90 | Time Completed: | Lab Unit Mgr:

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1082.-7571	SEG.COMP#18	2-16-90	8:14	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
F	LA-533-105	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 100-10	000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 6C11AK

62.72/60

104.5%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/KEW				
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
3/1/90		

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1057.-7271	SEG.COMP#17	2-15-90	14:7	26

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

Sample Size	Customer ID
?.100-10mL	000012

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID 3509-69
SPIKE VOLUME .300 5mL

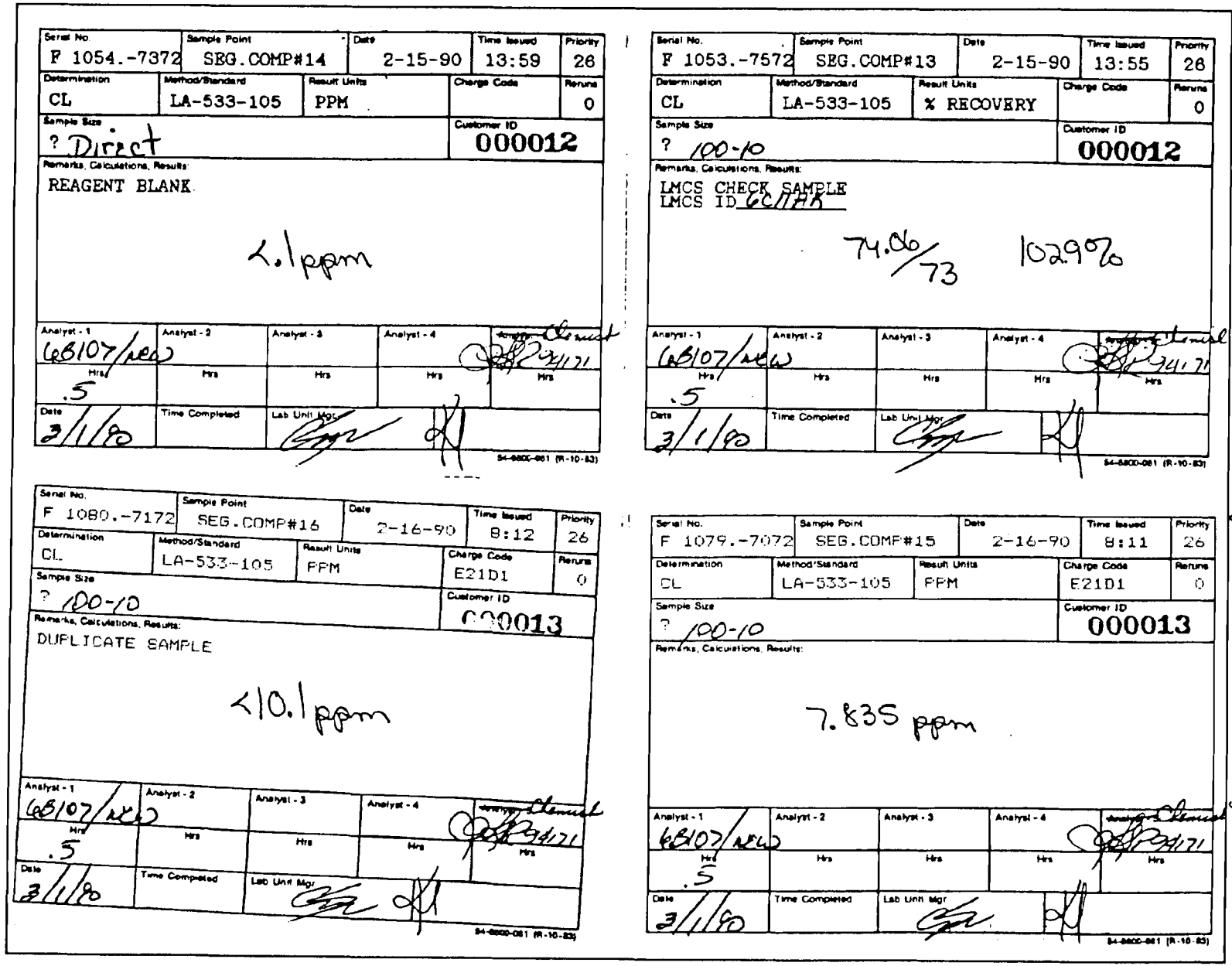
$$\frac{\left(\frac{5.3}{50}\right)(372.4)-(69.6)\left(\frac{10.01}{10.03}\right)}{\frac{(.300)(55)}{5.3}(101)} \times 100 = 110.4\%$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/KEW				
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
3-1-90		

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

Ion Chromatograph Analysis of the Water Digestion - Chloride Analysis



Serial No.	Sample Point	Date	Time Issued	Priority
F 1054.-7372	SEG.COMP#14	2-15-90	13:59	26

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

Sample Size: ? Direct

Customer ID: 000012

Remarks, Calculations, Results:
REAGENT BLANK

<.1ppm

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

Date	Time Completed	Lab Unit Mgr
3/1/90		

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1053.-7572	SEG.COMP#13	2-15-90	13:55	26

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

Sample Size: ? 100-10

Customer ID: 000012

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

74.06/73 102.9%

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

Date	Time Completed	Lab Unit Mgr
3/1/90		

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1080.-7172	SEG.COMP#16	2-16-90	8:12	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
CL	LA-533-105	PPM	E21D1	0

Sample Size: ? 100-10

Customer ID: 000013

Remarks, Calculations, Results:
DUPLICATE SAMPLE

<10.1ppm

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

Date	Time Completed	Lab Unit Mgr
3/1/90		

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1079.-7072	SEG.COMP#15	2-16-90	8:11	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
CL	LA-533-105	PPM	E21D1	0

Sample Size: ? 100-10

Customer ID: 000013

Remarks, Calculations, Results:

7.835 ppm

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

Date	Time Completed	Lab Unit Mgr
3/1/90		

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1082.-7572	SEG.COMP#18	2-16-90	8:15	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
CL	LA-533-105	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 100-10	000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 6C11HK

69.83 / 72 96.99%

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

Date	Time Completed	Lab Unit Mgr
3/1/90		

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1057.-7272	SEG.COMP#17	2-15-90	14:7	26

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

Sample Size	Customer ID
? .100 - 10 mL	000013

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID 3509-69
SPIKE VOLUME .300 5mL

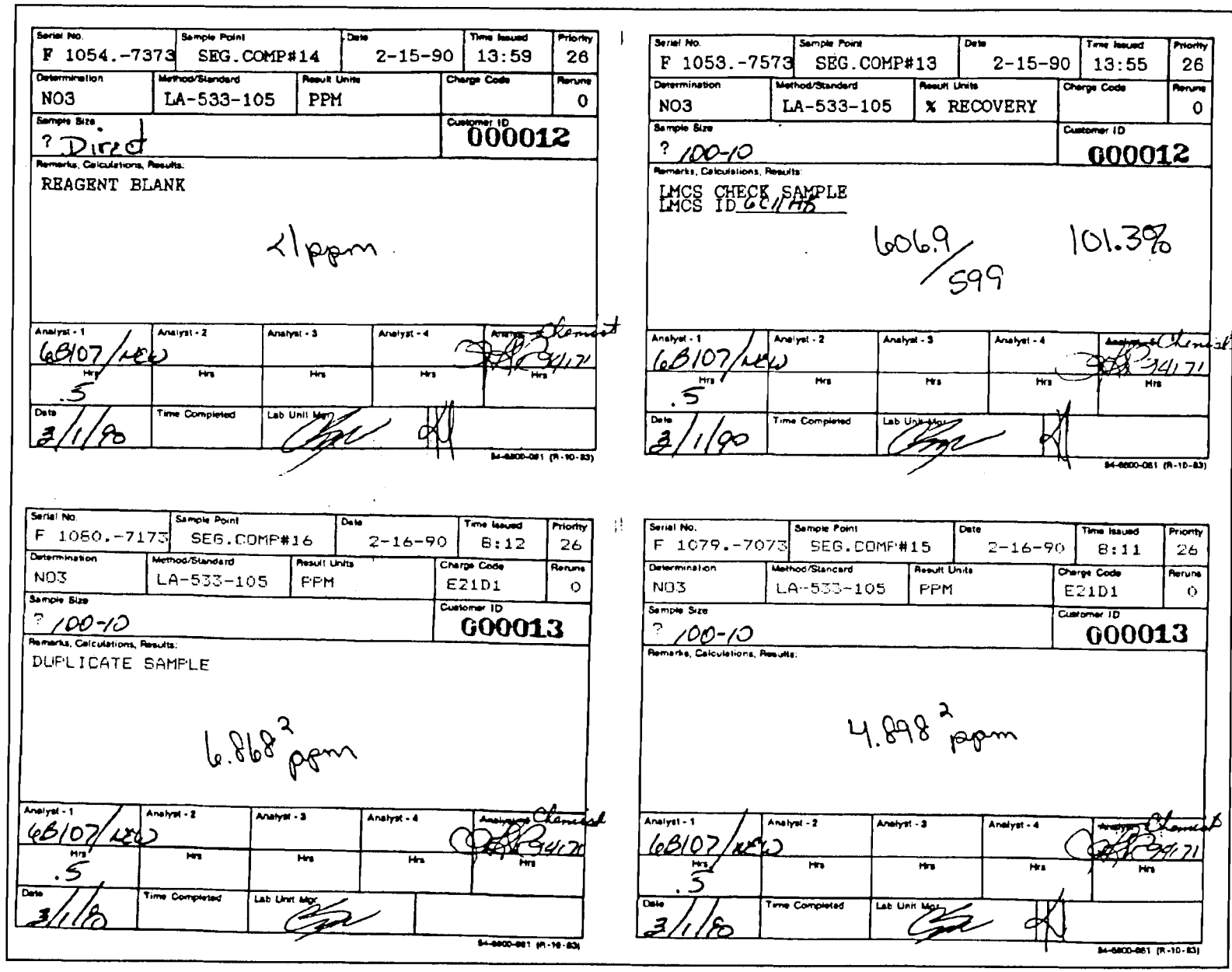
$$\frac{(1.06)(439) - (6.30)\left(\frac{10.01}{10.03}\right)}{\frac{(.300)(67)}{5.3}} \cdot 100 = 119.8\% = 105\%$$

101

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

Date	Time Completed	Lab Unit Mgr
3-1-90		

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



Serial No.	Sample Point	Date	Time Issued	Priority
F 1054.-7373	SEG.COMP#14	2-15-90	13:59	26

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

Sample Size: ? Direct
Customer ID: 000012
Remarks, Calculations, Results:
REAGENT BLANK
<1 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - Chemist
6B107/MEW				34171
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date: 2/1/90 | Time Completed: | Lab Unit Mgr.:

84-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1053.-7573	SEG.COMP#13	2-15-90	13:55	26

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

Sample Size: ? 100-10
Customer ID: 000012
Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 6C11H5
606.9/599 101.3%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - Chemist
6B107/MEW				34171
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date: 2/1/90 | Time Completed: | Lab Unit Mgr.:

84-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1060.-7173	SEG.COMP#16	2-16-90	8:12	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	PPM	E21D1	0

Sample Size: ? 100-10
Customer ID: 000013
Remarks, Calculations, Results:
DUPLICATE SAMPLE
6.868[2] ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - Chemist
6B107/MEW				34171
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date: 2/1/90 | Time Completed: | Lab Unit Mgr.:

84-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1079.-7073	SEG.COMP#15	2-16-90	8:11	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	PPM	E21D1	0

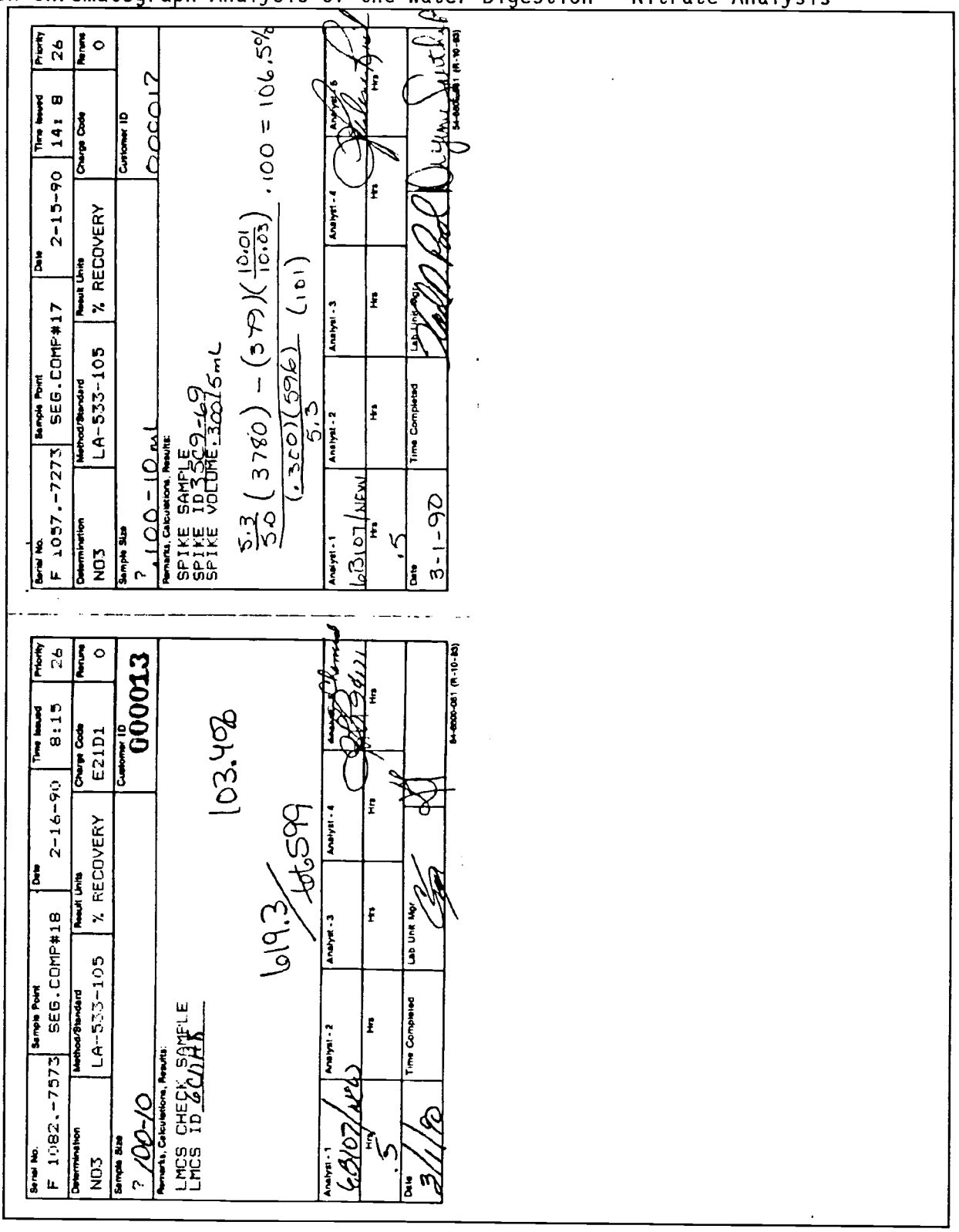
Sample Size: ? 100-10
Customer ID: 000013
Remarks, Calculations, Results:
4.898[2] ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - Chemist
6B107/MEW				34171
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date: 2/1/90 | Time Completed: | Lab Unit Mgr.:

84-6800-081 (R-10-83)

Ion Chromatograph Analysis of the Water Digestion - Nitrate Analysis



Serial No.	Sample Point	Date	Time Issued	Priority
F 1082.-7573	SEG.COMP#18	2-16-90	8:15	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 100-10	000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 6C1HK

103.4%

619.3 / 66599

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/NEW				[signature] 90171
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
3/1/90		[signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1057.-7273	SEG.COMP#17	2-15-90	14: 8	26

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

Sample Size	Customer ID
? .100-10 mL	000017

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID 3509-69
SPIKE VOLUME .300/5mL

$$\frac{\frac{5.3}{5.0}(3780) - (379)\left(\frac{10.01}{10.03}\right)}{\frac{(.300)(596)}{5.3}(101)} \cdot 100 = 106.5\%$$

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

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

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1082.-7574	SEG.COMP#18	2-16-90	8:15	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
P04	LA-533-105	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 100-10	000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 6CHAR

106.8%

639.5 / 599

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

Date	Time Completed	Lab Unit Mgr
3/1/90		

54-5800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1057.-7274	SEG.COMP#17	2-15-90	14: 8	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
P04	LA-533-105	% RECOVERY		0

Sample Size	Customer ID
? .100-10 mL	000012

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID 3509-69
SPIKE VOLUME .300/5mL

$$\frac{(1.06)(3900\text{ppb}) - (343)\left(\frac{10.01}{10.03}\right)}{\frac{(.300)(601)}{5.3}\cdot .101} \cdot 100 = 110.4\%$$

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

Date	Time Completed	Lab Unit Mgr
3-1-90		

54-5800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1054.-7374	SEG.COMP#14	2-15-90	13:59	26

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

Sample Size: ? Direct

Customer ID: 000012

Remarks, Calculations, Results:

REAGENT BLANK

<1 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GB107/MCW				
Hrs .5	Hrs	Hrs	Hrs	Hrs
Date 3/1/90	Time Completed	Lab Unit Mgr		

84-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1053.-7574	SEG.COMP#13	2-15-90	13:55	26

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

Sample Size: ? 100-10

Customer ID: 000012

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 6C11AR

619.3 / 599 103.4%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GB107/MCW				
Hrs .5	Hrs	Hrs	Hrs	Hrs
Date 3/1/90	Time Completed	Lab Unit Mgr		

84-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1080.-7174	SEG.COMP#16	2-16-90	8:12	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
PO4	LA-533-105	PPM	E21D1	0

Sample Size: ? 100-10

Customer ID: 000013

Remarks, Calculations, Results:

DUPLICATE SAMPLE

7.88[1] ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GB107/MCW				
Hrs .5	Hrs	Hrs	Hrs	Hrs
Date 3/1/90	Time Completed	Lab Unit Mgr		

84-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1079.-7074	SEG.COMP#15	2-16-90	8:11	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
PO4	LA-533-105	PPM	E21D1	0

Sample Size: ? 100-10

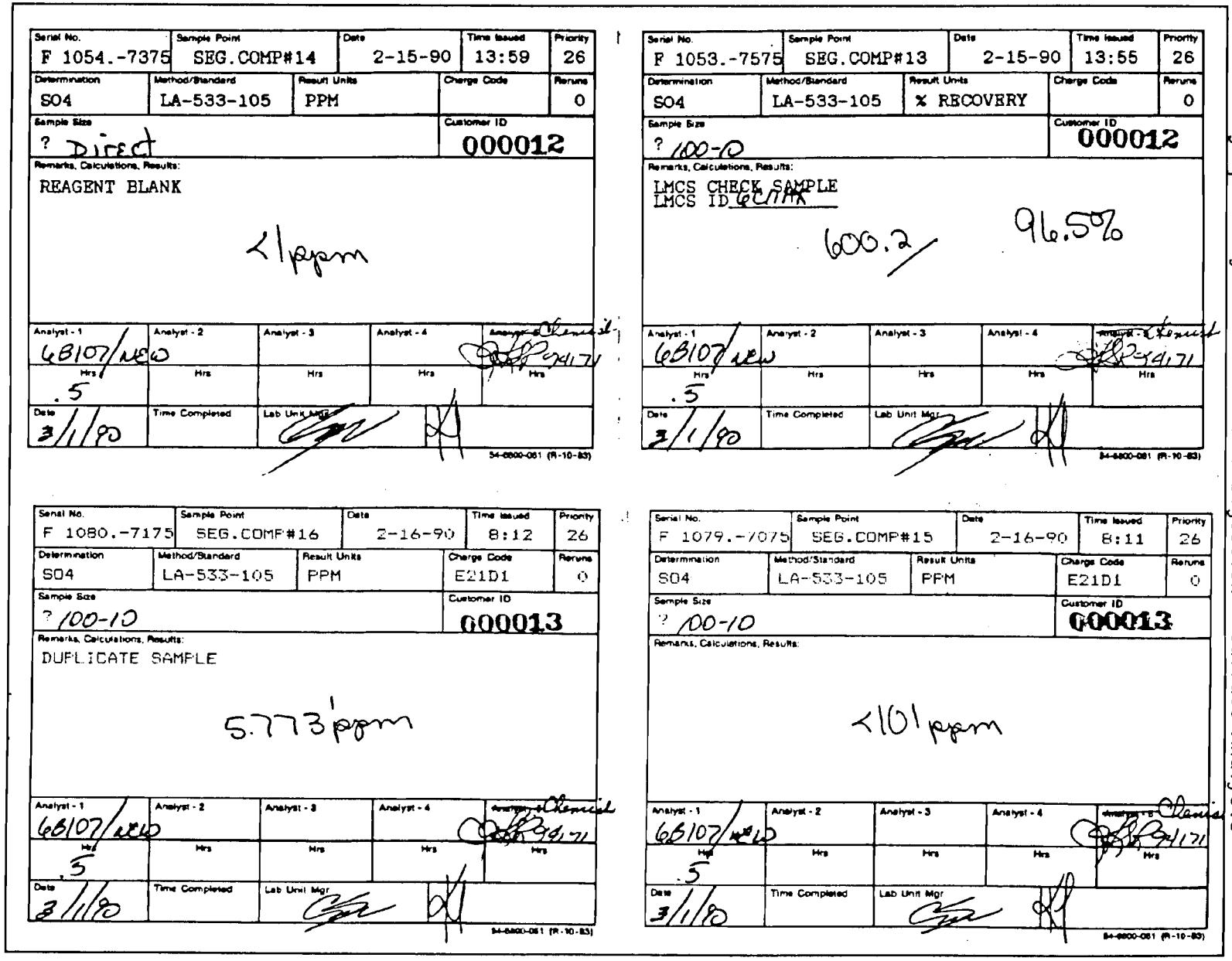
Customer ID: 000013

Remarks, Calculations, Results:

1.931[2] ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GB107/MCW				
Hrs .5	Hrs	Hrs	Hrs	Hrs
Date 3/1/90	Time Completed	Lab Unit Mgr		

84-6800-081 (R-10-83)



Serial No.	Sample Point	Date	Time Issued	Priority
F 1054.-7375	SEG.COMP#14	2-15-90	13:59	26

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

Sample Size: ? Direct
Customer ID: 000012
Remarks, Calculations, Results:
REAGENT BLANK
<1 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5 Chemist
GB107/NEW				
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date: 3/1/90 | Time Completed: | Lab Unit Mgr:

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1053.-7575	SEG.COMP#13	2-15-90	13:55	26

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

Sample Size: ? 100-0
Customer ID: 000012
Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID GCMK
600.2
96.5%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5 Chemist
GB107/NEW				
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date: 3/1/90 | Time Completed: | Lab Unit Mgr:

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1080.-7175	SEG.COMP#16	2-16-90	8:12	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
SO4	LA-533-105	PPM	E21D1	0

Sample Size: ? 100-10
Customer ID: 000013
Remarks, Calculations, Results:
DUPLICATE SAMPLE
5.773 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5 Chemist
GB107/NEW				
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date: 3/1/90 | Time Completed: | Lab Unit Mgr:

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1079.-7075	SEG.COMP#15	2-16-90	8:11	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
SO4	LA-533-105	PPM	E21D1	0

Sample Size: ? 100-10
Customer ID: 000013
Remarks, Calculations, Results:
<101 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5 Chemist
GB107/NEW				
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date: 3/1/90 | Time Completed: | Lab Unit Mgr:

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1082.-7575	SEG.COMP#18	2-16-90	8:15	26

Determination	Method/Standard	Result Units	Charge Code	Rerune
SO4	LA-533-105	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 100-10	000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 6C11A5

93.8%

583.7 / 599

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GB107/NKW				
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr.
3/1/90		

84-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1057.-7275	SEG.COMP#17	2-15-90	14: 8	26

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

Sample Size	Customer ID
? 100-10 mL	000012

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID 3209-69
SPIKE VOLUME .300/5 mL

$$\frac{\frac{5.3}{5.0}(3390)}{\frac{(.300)(596)}{5.3}.101} \times 100 = 105.5\%$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GB107/NKW				
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr.
3-1-90		

84-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1078.-7326	SEG.COMP#14	2-16-90	8:10	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	G/L	E21D1	0

Sample Size: ? 200uL

Customer ID: 000013

Remarks, Calculations, Results:

REAGENT BLANK

.5566 ug/min

3.9 ug

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cohn				

Date	Time Completed	Lab Unit Mgr
2-26-90		

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1077.-7526	SEG.COMP#13	2-16-90	8: 9	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	E21D1	0

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

Customer ID: 000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE

LMCS ID 70C11C

95.5%

2.866 / 3.00

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80027				
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cohn				

Date	Time Completed	Lab Unit Mgr
2-26-90		

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1080.-7126	SEG.COMP#16	2-16-90	8:12	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	G/L	E21D1	0

Sample Size: ? 1mL + 100uL .5M H_2SO_4 - 200uL

Customer ID: 000013

Remarks, Calculations, Results:

DUPLICATE SAMPLE

2.75^{-3} g/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80027				
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cohn				

Date	Time Completed	Lab Unit Mgr
2-26-90		

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1079.-7026	SEG.COMP#15	2-16-90	8:11	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	G/L	E21D1	0

Sample Size: ? 1mL + 100uL .5M H_2SO_4 - 200uL

Customer ID: 000013

Remarks, Calculations, Results:

1.09^{-3} g/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cohn				

Date	Time Completed	Lab Unit Mgr
2-26-90		

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

Total Organic Carbon Analysis on the Water Digestion

Serial No.	Sample Point	Date	Time Issued	Priority
F 1082.-7526	SEG.COMP#18	2-16-90	8:14	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 200uL-2mL-200uL	000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 70C11 C

KP

95.7%

2.871/3.000

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				[signature]
Hrs	Hrs	Hrs	Hrs	Hrs
[signature]				

Date	Time Completed	Lab Unit Mgr
2-26-90		[signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1081.-7226	SEG.COMP#17	2-16-90	8:13	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 200uL+100uL .5mH2SO4-200uL	000013

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID 80C11
SPIKE VOLUME 200uL

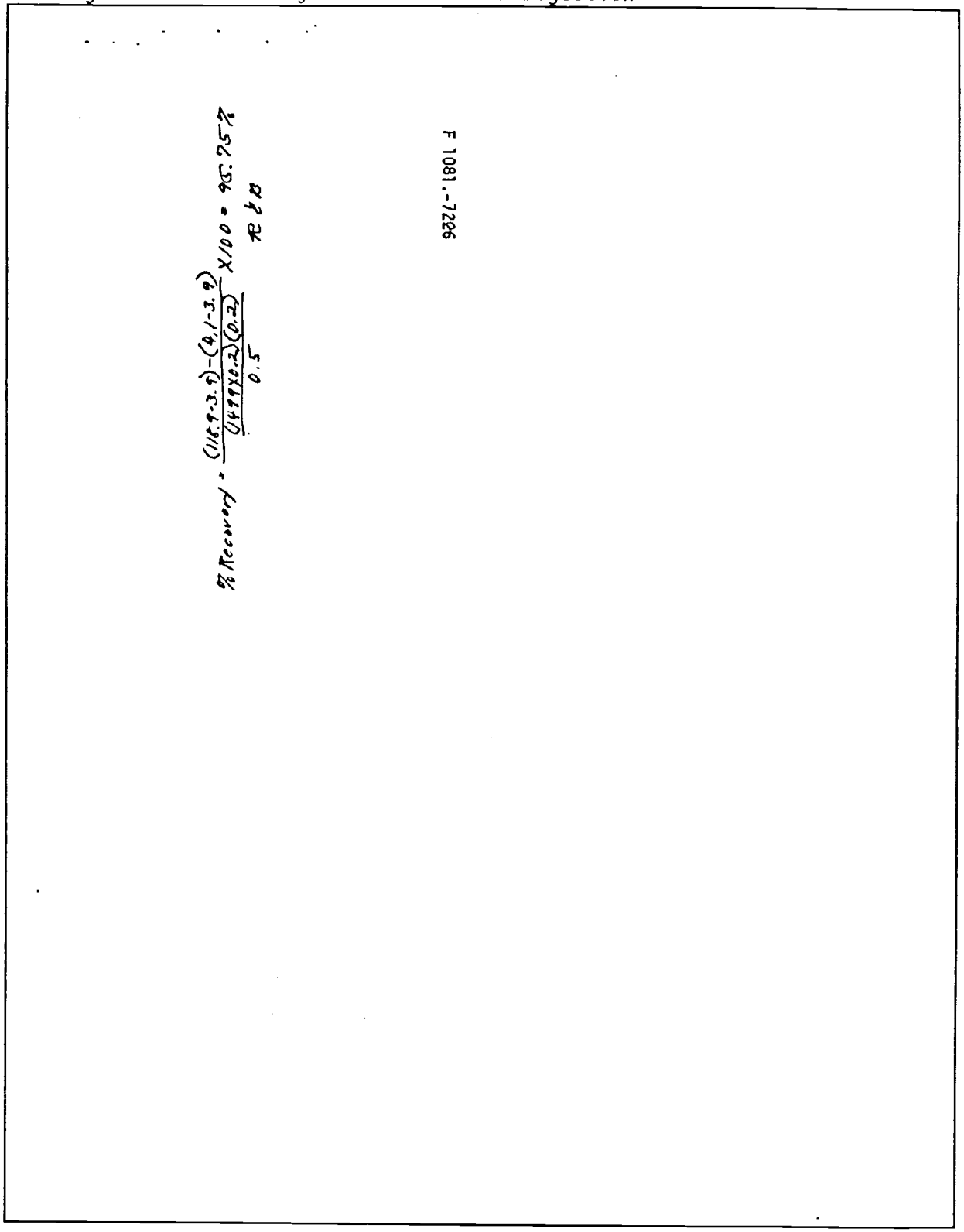
~~118.0~~ KP ~~115.0 - .2~~ ~~119.9~~ R/B ~~x100 = 95.8%~~ (OVER)

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				[signature]
Hrs	Hrs	Hrs	Hrs	Hrs
[signature]				

Date	Time Completed	Lab Unit Mgr
2-26-90		[signature]

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

Total Organic Carbon Analysis on the Water Digestion



$$\% \text{ Recovery} = \frac{(118.9-3.9)-(4.1-3.9)}{\frac{(1499 \times 0.2)(0.2)}{0.5}} \times 100 = 95.75\%$$

RJB

F 1081.-7226

Serial No.	Sample Point	Date	Time Issued	Priority
F 1078.-7328	SEG.COMP#14	2-16-90	8:10	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
NH3	LA-634-102	M	E21D1	0

Sample Size: ?2ml 0.0971 m HCl — Customer ID: 000013

Remarks, Calculations, Results:
REAGENT BLANK
Smpl: 27
Blk: 26
<2.52 -3 m
<4.04' ppm

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

Date: 2-26-90 — Time Completed: — Lab Unit Mgr: [signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1077.-7528	SEG.COMP#13	2-16-90	8: 9	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
NH3	LA-634-102	% RECOVERY	E21D1	0

Sample Size: ?250 ml 0.0971 m HCl — Customer ID: 000013

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 4C110J
Std: 149
Blk: 26
4.777 -2 / 5.00 -2
95.5%

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

Date: 2-26-90 — Time Completed: — Lab Unit Mgr: [signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1080.-7128	SEG.COMP#16	2-16-90	8:12	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
NH3	LA-634-102	M	E21D1	0

Sample Size: ?2ml 0.0971 m HCl — Customer ID: 000013

Remarks, Calculations, Results:
DUPLICATE SAMPLE
Smpl: 30
Blk: 26
<2.52 -3 m
<4.04' ppm

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

Date: 2-26-90 — Time Completed: — Lab Unit Mgr: [signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1079.-7028	SEG.COMP#15	2-16-90	8:11	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
NH3	LA-634-102	M	E21D1	0

Sample Size: ?2ml 0.0971 m HCl — Customer ID: 000013

Remarks, Calculations, Results:
Smpl: 34
Blk: 26
<2.52 -3 m
<4.04' ppm

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

Date: 2-26-90 — Time Completed: — Lab Unit Mgr: [signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1082.-7528	SEG.COMP#18	2-16-90	8:14	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
NH3	LA-634-102	% RECOVERY	E21D1	0

Sample Size: ? 250 λ 0.0971 M Hcl Customer ID: 000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 4C1103

101.8% Std : 157
Blk : 26

5.088 m^{-2} / 5.00^{-2}

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

Date	Time Completed	Lab Unit Mgr	
2-26-90		[signature]	[signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1081.-7228	SEG.COMP#17	2-16-90	8:13	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
NH3	LA-634-102	% RECOVERY	E21D1	0

Sample Size: ? 2ml + 250 λ std 0.0971 M Hcl Customer ID: 000013

Remarks, Calculations, Results:

SPIKED SAMPLE
~~4C11 03~~ 250 λ
4C11 03 250 λ
Sampl #1081

Spk'd Sampl : 159
Blk : 26

103.3% 5.166^{-2} / 5.00^{-2}

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

Date	Time Completed	Lab Unit Mgr	
2-26-90		[signature]	[signature]

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

Carbonate Analysis on the Water Digestion

Serial No.	Sample Point	Date	Time Issued	Priority
F 1078.-7327	SEG.COMP#14	2-16-90	8:10	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
CO3	LA-622-102	G/L	E21D1	0

Sample Size: ? 200uL

Customer ID: 000013

Remarks, Calculations, Results:
REAGENT BLANK

.385 ug/min

2.7 ug

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				R. [illegible]
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cohn				

Date	Time Completed	Lab Unit Mgr
2-27-90		[illegible]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1077.-7527	SEG.COMP#13	2-16-90	8: 9	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
CO3	LA-622-102	% RECOVERY	E21D1	0

Sample Size: ? 50uL

Customer ID: 000013

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 69C11D

104.1%

2.082 m^{-1} / 2.00^{-1}

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				R. [illegible]
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cohn				

Date	Time Completed	Lab Unit Mgr
2-27-90		[illegible]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1080.-7127	SEG.COMP#16	2-16-90	8:12	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
CO3	LA-622-102	G/L	E21D1	0

Sample Size: ? 200uL

Customer ID: 000013

Remarks, Calculations, Results:
DUPLICATE SAMPLE

6.67 m^{-3}

0.08 g/L

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				R. [illegible]
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cohn				

Date	Time Completed	Lab Unit Mgr
2-27-90		[illegible]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1079.-7027	SEG.COMP#15	2-16-90	8:11	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
CO3	LA-622-102	G/L	E21D1	0

Sample Size: ? 200uL

Customer ID: 000013

Remarks, Calculations, Results:

6.53 m^{-3}

0.079 g/L

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				R. [illegible]
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cohn				

Date	Time Completed	Lab Unit Mgr
2-27-90		[illegible]

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

Carbonate Analysis on the Water Digestion

Serial No.	Sample Point	Date	Time Issued	Priority
F 1082.-7527	SEG.COMP#18	2-16-90	8:14	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
CO3	LA-622-102	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 50uL	000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 69C11D

103.9%

2.078 m⁻¹ / 2.00 m⁻¹

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				[signature]
Hrs	Hrs	Hrs	Hrs	Hrs
[signature]				

Date	Time Completed	Lab Unit Mgr
2-27-90		[signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1081.-7227	SEG.COMP#17	2-16-90	8:13	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
CO3	LA-622-102	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 200uL	000013

Remarks, Calculations, Results:

SPIKED SAMPLE
SPIKE ID 69C11D
SPIKE VOL. 100uL

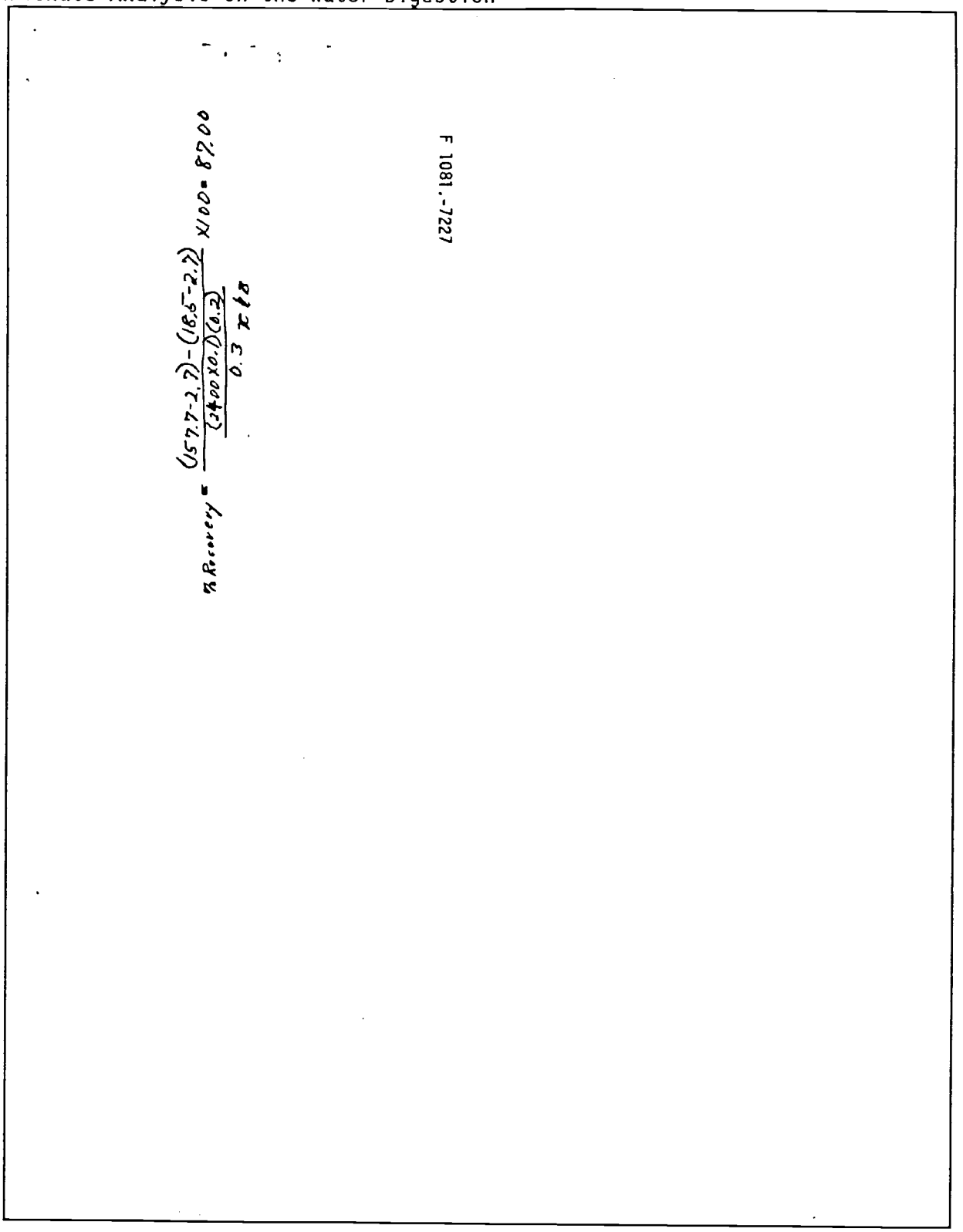
~~155 - 15.8~~ / ~~160 - 120~~ RED ~~x100~~ = ~~116.0%~~ ~~87.0%~~
(OVER)

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				[signature]
Hrs	Hrs	Hrs	Hrs	Hrs
[signature]				

Date	Time Completed	Lab Unit Mgr
2-27-90		[signature]

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

Carbonate Analysis on the Water Digestion



Serial No.	Sample Point	Date	Time Issued	Priority
F 1078.-7379	SEG.COMP#14	2-16-90	8:11	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO2	LA-645-001	M	E21D1	0

Sample Size: ? 1 ml

Customer ID: 000013

Remarks, Calculations, Results:

REAGENT BLANK

< .359 ppm

< .054

< 7.8 -6 m

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
EC269				RK Fuller 3-9-90
Hrs	Hrs	Hrs	Hrs	Hrs
Date: 2-26-90	Time Completed	Lab Unit Mgr		

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1077.-7579	SEG.COMP#13	2-16-90	8: 9	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO2	LA-645-001	% RECOVERY	E21D1	0

Sample Size: ? 100-10-50

Customer ID: 000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID FC11A4

4.982 -1 / 5.00 -1

99.68%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
EC269				RK Fuller 3-9-90
Hrs	Hrs	Hrs	Hrs	Hrs
Date: 2-26-90	Time Completed	Lab Unit Mgr		

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1080.-7179	SEG.COMP#16	2-16-90	8:12	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO2	LA-645-001	M	E21D1	0

Sample Size: ? 50λ

Customer ID: 000013

Remarks, Calculations, Results:

DUPLICATE SAMPLE

.687

3.02 -3 m

1.39 2 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
EC269				RK Fuller 3-9-90
Hrs	Hrs	Hrs	Hrs	Hrs
Date: 2-26-90	Time Completed	Lab Unit Mgr		

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1079.-7079	SEG.COMP#15	2-16-90	8:11	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO2	LA-645-001	M	E21D1	0

Sample Size: ? 50λ

Customer ID: 000013

Remarks, Calculations, Results:

.489

2.12 -3 m

9.76 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
EC269				RK Fuller 3-9-90
Hrs	Hrs	Hrs	Hrs	Hrs
Date: 2-26-90	Time Completed	Lab Unit Mgr		

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

Nitrite Analysis - Water Digestion

Serial No.	Sample Point	Date	Time Issued	Priority
F 1082.-7579	SEG.COMP#18	2-16-90	8:15	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO2	LA-645-001	% RECOVERY	E21D1	0

Sample Size: ? 100-10-50

Customer ID: 000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 8CHAU

1.120 100.8%

5.042^{-1} / 5.00^{-1}

1.115 100.4%

5.019^{-1} / 5.00^{-1}

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				RK Fuller 3-9-90
Mary Frang	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
2-26-90		[signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1081.-7279	SEG.COMP#17	2-16-90	8:13	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO2	LA-645-001	% RECOVERY	E21D1	0

Sample Size: ? 50λ + 100-10-50

Customer ID: 000013

Remarks, Calculations, Results:

SPIKED SAMPLE
Bottle #1081
Spk 8CHAU -

4.105^{-1} / 5.00^{-1} 82.1%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				RK Fuller 3-9-90
Mary Frang	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
2-26-90		[signature]

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

9,10

Serial No.	Sample Point	Date	Time Issued	Priority
F 1078.-7325	SEG.COMP#14	2-16-90	8:10	26

Determination	Method/Standard	Result Units	Charge Code	Rerune
AT	LA-508-101	uCI/L	E21D1	0

Sample Size: ? 10 ml

Customer ID: 000013

Remarks, Calculations, Results:

REAGENT BLANK

1.01^{-2} well

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				
Hrs	Hrs	Hrs	Hrs	Hrs
Date: 2-28-90	Time Completed	Lab Unit Mgr		

54-6600-081 (R-10-83)

5,6

Serial No.	Sample Point	Date	Time Issued	Priority
F 1080.-7125	SEG.COMP#16	2-16-90	8:12	26

Determination	Method/Standard	Result Units	Charge Code	Rerune
AT	LA-508-101	uCI/L	E21D1	0

Sample Size: ? 50λ

Customer ID: 000013

Remarks, Calculations, Results:

DUPLICATE SAMPLE

$<2.49^{-2}$ well

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				
Hrs	Hrs	Hrs	Hrs	Hrs
Date: 2-28-90	Time Completed	Lab Unit Mgr		

54-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1077.-7525	SEG.COMP#13	2-16-90	8: 9	26

Determination	Method/Standard	Result Units	Charge Code	Rerune
AT	LA-508-101	% RECOVERY	E21D1	0

Sample Size: ? 0 ml

Customer ID: 000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 102844

103%

$1.026^{-2} / 1.002^{-2}$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				
Hrs	Hrs	Hrs	Hrs	Hrs
Date: 2-28-90	Time Completed	Lab Unit Mgr		

54-6600-081 (R-10-83)

7,8

Serial No.	Sample Point	Date	Time Issued	Priority
F 1079.-7025	SEG.COMP#15	2-16-90	8:11	26

Determination	Method/Standard	Result Units	Charge Code	Rerune
AT	LA-508-101	uCI/L	E21D1	0

Sample Size: ? 50λ

Customer ID: 000013

Remarks, Calculations, Results:

$<2.49^{-2}$ well

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				
Hrs	Hrs	Hrs	Hrs	Hrs
Date: 2-28-90	Time Completed	Lab Unit Mgr		

54-6600-081 (R-10-83)

14 2 2-28-90 VR

473/10 - .5

486/10 -

Alpha Calculation by VR on 02-28-1990 at 18:37:20
Bet #14 2 -inch mount Alpha eff. : .2111
Sample size : 10 mL Dilution : 1

Mount # 1

473/10 - 0.5 = 9.9863E-03 uCi/L alpha

Mount # 2

486/10 - 0.5 = 1.0264E-02 uCi/L alpha

F 1078.-7325

14/2

494/10

Alpha Calculation by EMB on 02-28-1990 at 14:48:44
Bet #14 2 -inch mount Alpha eff. : .2111
Sample size : 10 mL Dilution : 1

Mount # 1

487/10

494/10 - 0.5 = 1.0434E-02 uCi/L alpha

Mount # 2

487/10 - 0.5 = 1.0285E-02 uCi/L alpha

F 1077.-7525

14 2" 2-28-90 VR

6/10 - .5

4/10 -

Alpha Calculation by VR on 02-28-1990 at 18:35:17
Bet #14 2 -inch mount Alpha eff. : .2111
Sample size : 1 mL Dilution : 20

Mount # 1

6/10 - 0.5 < 2.7622E-02 uCi/L alpha

Mount # 2

4/10 - 0.5 < 2.2235E-02 uCi/L alpha

F 1080.-7126

14 2" 2-28-90 VR

1/10 - .5

6/10 -

Alpha Calculation by VR on 02-28-1990 at 18:36:11
Bet #14 2 -inch mount Alpha eff. : .2111
Sample size : 1 mL Dilution : 20

Mount # 1

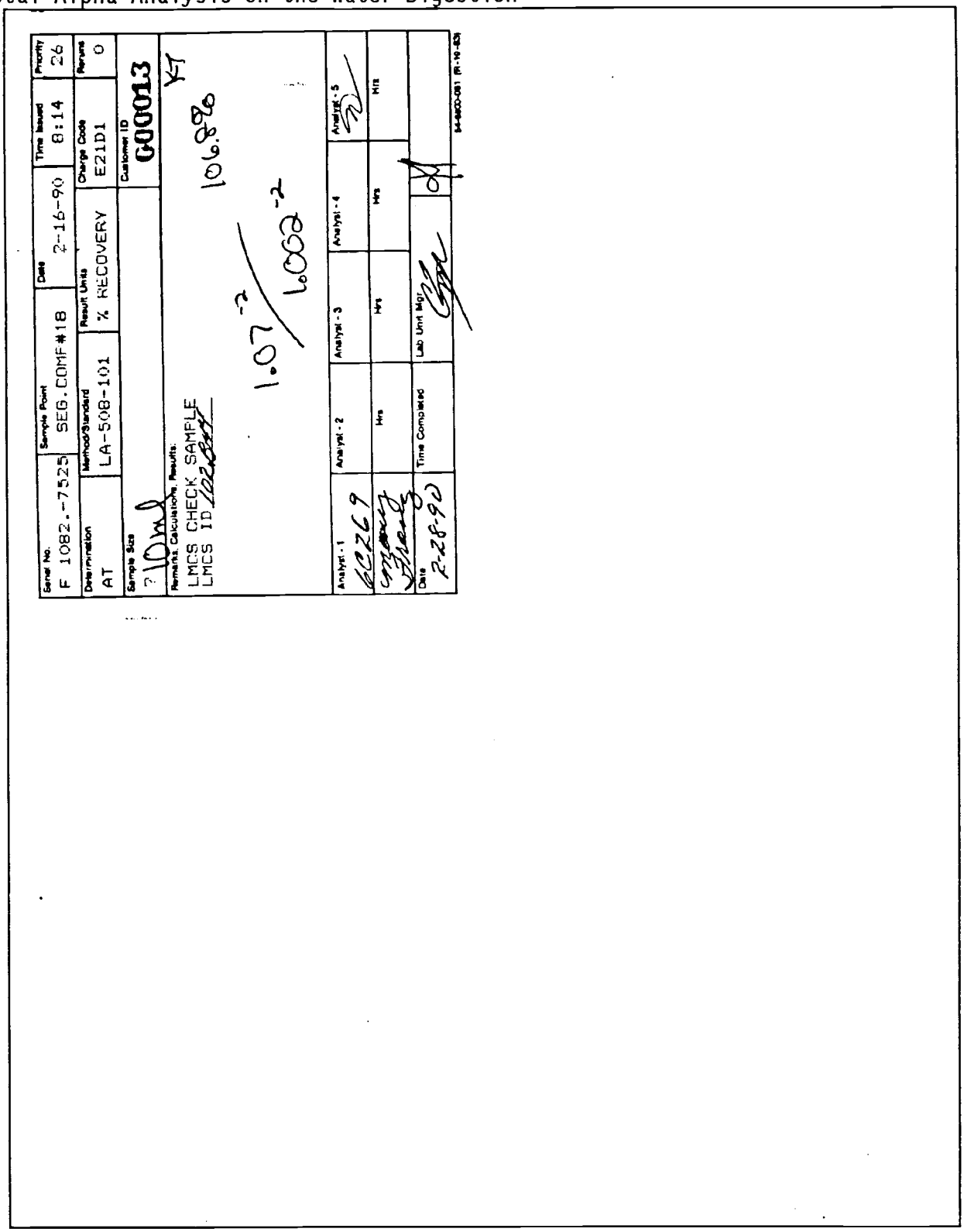
1/10 - 0.5 < 2.2235E-02 uCi/L alpha

Mount # 2

6/10 - 0.5 < 2.7622E-02 uCi/L alpha

F 1079.-7025

Total Alpha Analysis on the Water Digestion



Serial No.	Sample Point	Date	Time Issued	Priority
F 1082.-7525	SEG.COMP#18	2-16-90	8:14	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
AT	LA-508-101	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 10ml	000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 102B44

KT

106.8%

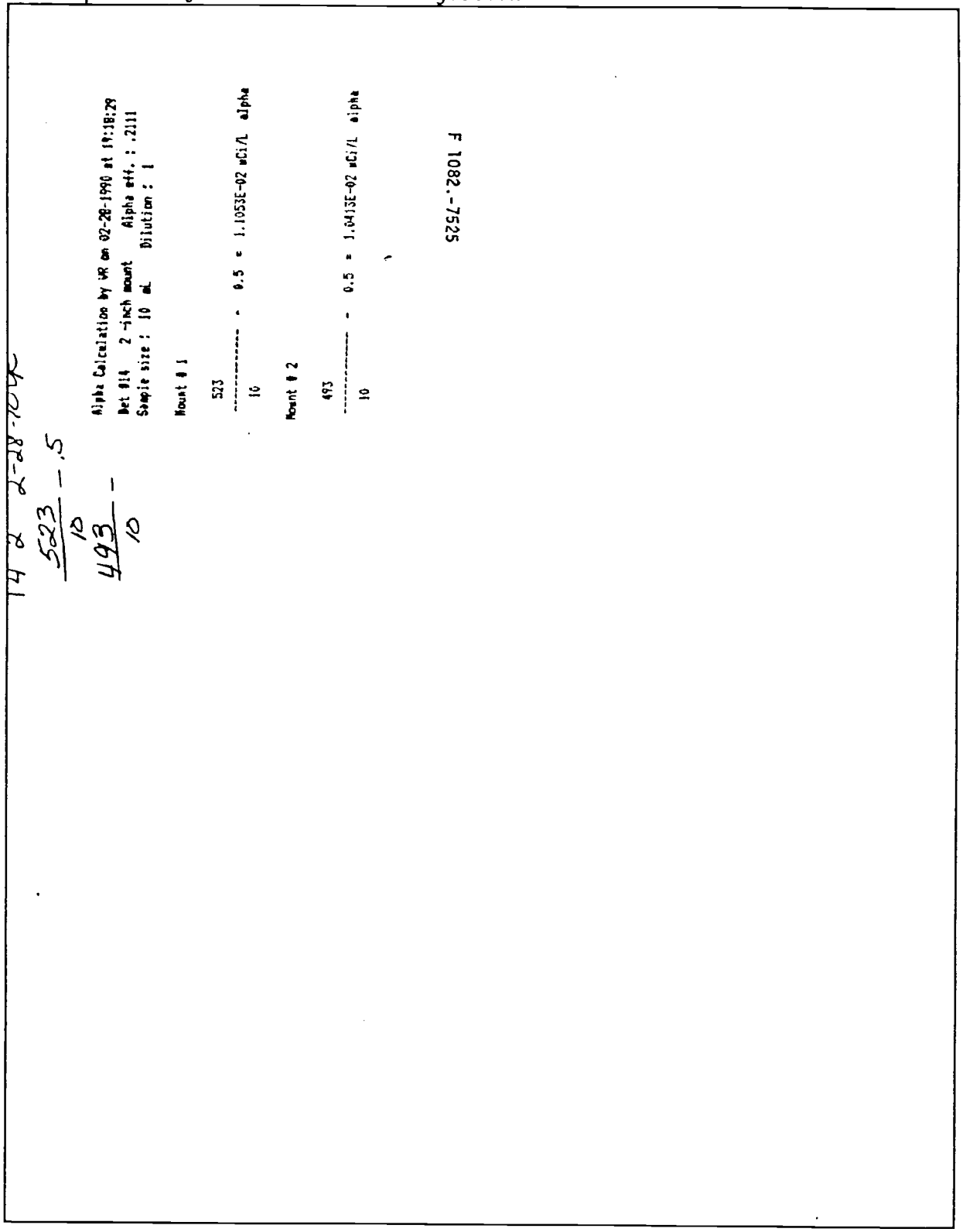
1.07 -2 / 1.002 -2

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

Date	Time Completed	Lab Unit Mgr
2-28-90		[illegible]

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

Total Alpha Analysis on the Water Digestion



14 & 2-28-1990

523/10 - .5

493/10 -

Alpha Calculation by VR on 02-28-1990 at 19:18:29
Det #14 2-inch mount Alpha eff. : .2111
Sample size : 10 mL Dilution : 1

Mount # 1

523/10 * 0.5 = 1.1053E-02 uCi/L alpha

Mount # 2

493/10 * 0.5 = 1.0413E-02 uCi/L alpha

F 1082-7525

Serial No.	Sample Point	Date	Time Issued	Priority
F 1078.-7320	SED.COMP#14	2-16-90	8:10	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
TB	LA-508-101	uCI/L	E21D1	0

Sample Size: ?10ml — Customer ID: 000013

Remarks, Calculations, Results:
REAGENT BLANK
H_2O
Counted Oct 13, 14, 15
8.34^{-1} uci/l

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

Date: 2-28-90 — Time Completed: — Lab Unit Mgr:

54-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1077.-7520	SED.COMP#13	2-16-90	8: 9	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
TB	LA-508-101	% RECOVERY	E21D1	0

Sample Size: ?10ml — Customer ID: 000013

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 102644
Counted on Oct 13, 14, 15
1.420^{-1} / 1.3682^{-1} 103.8%

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

Date: 2-28-90 — Time Completed: — Lab Unit Mgr:

54-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1080.-7120	SED.COMP#16	2-16-90	8:12	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
TB	LA-508-101	uCI/L	E21D1	0

Sample Size: ?50ml — Customer ID: 000013

Remarks, Calculations, Results:
DUPLICATE SAMPLE
Counted Oct 13, 14, 15
~~1.32~~ 1.53^{2} uci/l

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

Date: 2-28-90 — Time Completed: — Lab Unit Mgr:

54-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1079.-7020	SED.COMP#15	2-16-90	8:11	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
TB	LA-508-101	uCI/L	E21D1	0

Sample Size: ?50ml — Customer ID: 000013

Remarks, Calculations, Results:
Counted Oct 13, 14, 15
1.605^{2} uci/l

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

Date: 2-28-90 — Time Completed: — Lab Unit Mgr:

54-6600-081 (R-10-83)

14 2" 2-28-90 VR

48154 / 10 = 19

53479 / 10

Beta Calculation by VR on 02-28-1990 at 18:37:18
Det #14 2 -inch mount Beta eff. : .2734
Sample size : 10 mL Dilution : 1

Mount # 1

48154 / 10 - 19.0 = 7.9025E-01 uCi/L beta

Mount # 2

53479 / 10 - 19.0 = 8.7798E-01 uCi/L beta

F 1078.-7320

14/2

8728 / 10 = 19

Beta Calculation by EMB on 02-28-1990 at 14:40:42
Det #14 2 -inch mount Beta eff. : .2734
Sample size : 10 mL Dilution : 1

Mount # 1

8891 / 10 - 8728 / 10 - 19.0 = 1.4067E-01 uCi/L beta

Mount # 2

8891 / 10 - 19.0 = 1.4336E-01 uCi/L beta

F 1077.-7520

14 2" 2-28-90 VR DF 20

40141 / 10 = 19

52839 / 10

Beta Calculation by VR on 02-28-1990 at 18:35:15
Det #14 2 -inch mount Beta eff. : .2734
Sample size : 1 mL Dilution : 20

Mount # 1

40141 / 10 - 19.0 = 1.3165E+02 uCi/L beta

Mount # 2

52839 / 10 - 19.0 = 1.7349E+02 uCi/L beta

F 1080.-7120

14 2" 2-28-90 VR

44598 / 10 = 19

53196 / 10

Beta Calculation by VR on 02-28-1990 at 18:36:09
Det #14 2 -inch mount Beta eff. : .2734
Sample size : 1 mL Dilution : 20

Mount # 1

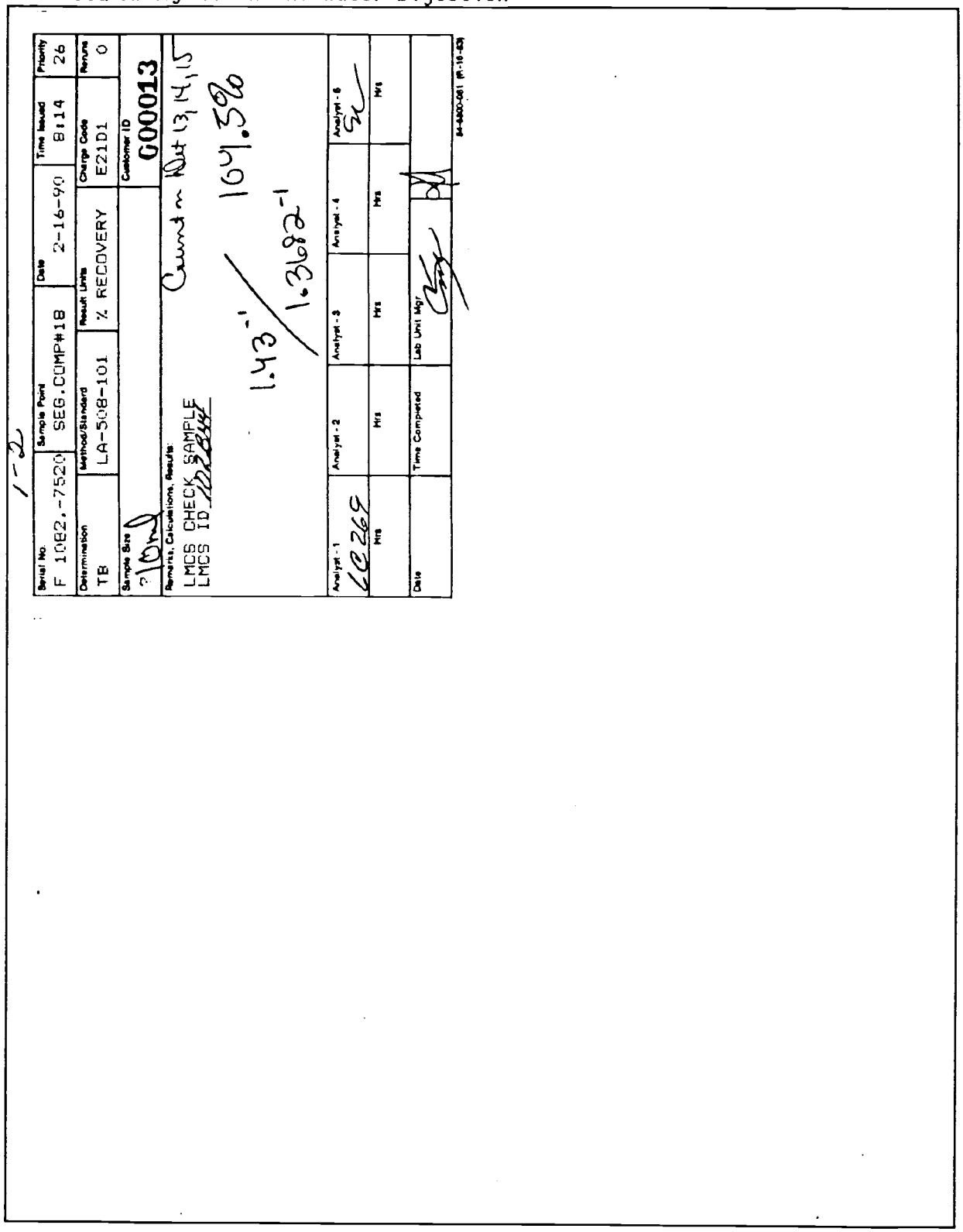
44598 / 10 - 19.0 = 1.4633E+02 uCi/L beta

Mount # 2

53196 / 10 - 19.0 = 1.7466E+02 uCi/L beta

F 1079.-7020

Total Beta Analysis on the Water Digestion



1-2

Serial No.	Sample Point	Date	Time Issued	Priority
F 1082.-7520	SEG.COMP#18	2-16-90	8:14	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
TB	LA-508-101	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 10ml	000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 102B44

Count on Det 13, 14, 15

104.5%

$1.43^{-1} / 1.3682^{-1}$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
LC269				[signature]
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
		[signature]

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

14 2" 2-28-90 VR

8852/10 - 19

8882/10 -

Beta Calculation by VR on 02-28-1990 at 19:18:27
Det #14 2 -inch mount Beta eff. : .2734
Sample size : 10 mL Dilution : 1

Mount # 1

$$\frac{8852}{10} - 19.0 = 1.4271E\text{-}01 \text{ uCi/L beta}$$

Mount # 2

$$\frac{8882}{10} - 19.0 = 1.4321E\text{-}01 \text{ uCi/L beta}$$

F 1082.-7520

3190

Serial No.	Sample Point	Date	Time Issued	Priority
F 1078.-7330	SEG.COMP#14	2-16-90	8:10	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	uCI/L	E21D1	0

Sample Size: ? 1 mL Li .001 1 — Customer ID: 000013

Remarks, Calculations, Results:

REAGENT BLANK

Co^{60} < 5.64^{-2}

Cs^{137} < 6.28^{-2}

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

Date	Time Completed	Lab Unit Mgr
2-23-90		DMS

84-6600-061 (R-10-83)

3189

Serial No.	Sample Point	Date	Time Issued	Priority
F 1076.-6530	SEG.COMP#12	2-16-90	8: 9	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	% RECOVERY	E21D1	0

Sample Size: ? 500 mL Li .001 2 — Customer ID: 000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 122644

Co^{60} 2.29' / 2.1076' 108.6%

Cs^{137} 3.01' / 2.9014' 103.7%

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

Date	Time Completed	Lab Unit Mgr
2-23-90		DMS

84-6600-061 (R-10-83)

2082

Serial No.	Sample Point	Date	Time Issued	Priority
F 1080.-7130	SEG.COMP#16	2-16-90	8:12	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	uCI/L	E21D1	0

Sample Size: ? 500 RH 1 mL Li .001 1 — Customer ID: 000013

Remarks, Calculations, Results:

DUPLICATE SAMPLE

Cs^{137} 1.03^{2} weil

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

Date	Time Completed	Lab Unit Mgr
2-23-90		DMS

84-6600-061 (R-10-83)

4217

Serial No.	Sample Point	Date	Time Issued	Priority
F 1079.-7030	SEG.COMP#15	2-16-90	8:11	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	uCI/L	E21D1	0

Sample Size: ? 500 RH 1 mL Li .001 1 — Customer ID: 000013

Remarks, Calculations, Results:

Cs^{137} 7.74' weil

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

Date	Time Completed	Lab Unit Mgr
2-23-90		DMS

84-6600-061 (R-10-83)

1957

Serial No.	Sample Point	Date	Time Issued	Priority
F 1077.-7530	SEG.COMP#13	2-16-90	8: 9	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 500λ Li .001 2	000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 122844

Co^{60} 2.16' / 2.1076' 102.59% good

Cs^{137} 2.97' / 2.9014' 102.40%

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

Date	Time Completed	Lab Unit Mgr.	
2-23-90			KMS

84-6800-081 (R-10-83)

2081

Serial No.	Sample Point	Date	Time Issued	Priority
F 1075.-6230	SEG.COMP#11	2-16-90	8: 8	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 501 Li .001 20	000013

Remarks, Calculations, Results:

SPIKE SAMPLE F1049
SPIKE ID 122844
SPIKE VOLUME 500λ

3.763' / 3.616 b 104.0%

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

Date	Time Completed	Lab Unit Mgr.	
2-23-90			KMS

84-6800-081 (R-10-83)

ICP analysis on the Water Digestion

Serial No.	Sample Point	Date	Time Issued	Priority
F 1078.-8350	SEG.COMP#14	2-16-90	8:10	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	PPM	E21D1	0

Sample Size: ? ~~Batched~~ Jaw 1mL-10 ML

Customer ID: Core 13

Remarks, Calculations, Results:
REAGENT BLANK

H2O Digest

Completed

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65283			[signature]	
Hrs	Hrs	Hrs	Hrs	Hrs
Janice A. White				

Date	Time Completed	Lab Unit Mgr.	
07-05-90		[signature]	[signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1077.-8550	SEG.COMP#13	2-16-90	8: 9	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	% RECOVERY	E21D1	0

Sample Size: ? Direct

Customer ID: Core 13

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID_____

H2O Digest

78C11-S
87B38-A
77C11-R

Completed

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65283			[signature]	
Hrs	Hrs	Hrs	Hrs	Hrs
Janice A. White			[signature]	

Date	Time Completed	Lab Unit Mgr.	
07-05-90		[signature]	[signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1081.-8250	SEG.COMP#17	2-16-90	8:13	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	PPM	E21D1	0

Sample Size: ? ~~Batched~~ Jaw

Customer ID: Core 13

Remarks, Calculations, Results:
SPIKE SAMPLE
SPIKE ID
SPIKE VOLUME 1mL EA

H2O Digest

78C11-S
87B38-A
77C11-R

Completed

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65283			[signature]	
Hrs	Hrs	Hrs	Hrs	Hrs
Janice A. White				

Date	Time Completed	Lab Unit Mgr.	
07-05-90		[signature]	[signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1080.-8150	SEG.COMP#16	2-16-90	8:12	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	PPM	E21D1	0

Sample Size: ? 1mL-10 ML

Customer ID: Core 13

Remarks, Calculations, Results:
DUPLICATE SAMPLE

H2O Digest

Completed

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65283			[signature]	
Hrs	Hrs	Hrs	Hrs	Hrs
Janice A. White				

Date	Time Completed	Lab Unit Mgr.	
07-05-90		[signature]	[signature]

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

3.3 3002

Serial No.	Sample Point	Date	Time Issued	Priority
F 1048.-6381	SEG.COMP#8	2-15-90	13:48	19

Determination	Method/Standard	Result Units	Charge Code	Rerune
PU	LA-503-156	uCI/L		0

Sample Size: ? ml RH + 50λ spike 10B43-B

Customer ID: 000012

Remarks, Calculations, Results:
REAGENT BLANK
1200λ CON HNO_3

<8.29-3 neill

"AEA-480 MIN" ATTACH PRINT OUT

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

Date	Time Completed	Lab Unit Mgr
2-26-90		[illegible]

84-6800-081 (R-10-83)

3.2 2770

Serial No.	Sample Point	Date	Time Issued	Priority
F 1047.-6581	SEG.COMP#7	2-15-90	13:47	26

Determination	Method/Standard	Result Units	Charge Code	Rerune
PU	LA-503-156	% RECOVERY		0

Sample Size: ? 100-10-100 + 50λ-10B43-B

Customer ID: 000012

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 16B43
1mL 8m HNO_3

105.6% "AEA-480 MIN" ATTACH PRINT OUT

1.028²/97.329

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

Date	Time Completed	Lab Unit Mgr
2-26-90		[illegible]

84-6800-081 (R-10-83)

3.4 4765

Serial No.	Sample Point	Date	Time Issued	Priority
F 1080.-7181	SEG.COMP#16	2-16-90	8:12	26

Determination	Method/Standard	Result Units	Charge Code	Rerune
PU	LA-503-156	uCI/L	E21D1	0

Sample Size: ? ml + 50λ spike 10B43-B

Customer ID: 000013

Remarks, Calculations, Results:
DUPLICATE SAMPLE
1200λ CON HNO_3

"AEA-480 MIN" ATTACH PRINT OUT

<6.46-3 neill

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

Date	Time Completed	Lab Unit Mgr
2-27-90		[illegible]

84-6800-081 (R-10-83)

4.1 5637

Serial No.	Sample Point	Date	Time Issued	Priority
F 1079.-7081	SEG.COMP#15	2-16-90	8:12	26

Determination	Method/Standard	Result Units	Charge Code	Rerune
PU	LA-503-156	uCI/L	E21D1	0

Sample Size: ? ml + 50λ spike 10B43-B

Customer ID: 000013

Remarks, Calculations, Results:
1200λ CON HNO_3

"AEA-480 MIN" ATTACH PRINT OUT

<6.38-3 neill

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

Date	Time Completed	Lab Unit Mgr
2-27-90		[illegible]

84-6800-081 (R-10-83)

3.3 3006

Serial No.	Sample Point	Date	Time Issued	Priority
F 1082.-7581	SEG.COMP#18	2-16-90	8:15	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
PU	LA-503-156	% RECOVERY	E21D1	0

Sample Size: ? 100-10-100 + 50 dl spike 10B43-B

Customer ID: 000013

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 16B43
1mL 8M HNO3

"AEA-480 MIN"
ATTACH PRINT OUT

98.1%

95.458 / 97.329

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

Date	Time Completed	Lab Unit Mgr
2-26-90		[illegible]

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

3.4 4764

Serial No.	Sample Point	Date	Time Issued	Priority
F 1081.-7281	SEG.COMP#17	2-16-90	8:13	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
PU	LA-503-156	% RECOVERY	E21D1	0

Sample Size: ? 1mL + 50 dl SPIKE 10B43-B

Customer ID: 000013

Remarks, Calculations, Results:
SPIKED SAMPLE F1055
1200 Con HNO3

"AEA-480 MIN"
ATTACH PRINT OUT

99.013 / 97.329 101.7%

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

Date	Time Completed	Lab Unit Mgr
2-26-90		[illegible]

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

4.2 6068

Serial No.	Sample Point	Date	Time Issued	Priority
F 1048.-6382	SEG.COMP#8	2-15-90	13:48	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
AM	LA-503-156	uCI/L		0

Sample Size: ? 1ml + 100λ Am spike 9843 — Customer ID: 000012

Remarks, Calculations, Results:
REAGENT BLANK
1200λ CON HNO_3
"AEA-480 MIN"
ATTACH PRINT OUT
$< 2.28^{-2}$ ucil

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

Date	Time Completed	Lab Unit Mgr
2-27-90		

84-6600-081 (R-10-83)

4.1 5633

Serial No.	Sample Point	Date	Time Issued	Priority
F 1047.-6582	SEG.COMP#7	2-15-90	13:47	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
AM	LA-503-156	% RECOVERY		0

Sample Size: ? 100-10-1000 + 100λ Am spike 9843 — Customer ID: 000012

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 16843
1ml 8M HNO_3
"AEA-480 MIN"
ATTACH PRINT OUT
105.9900
16.652 / 15.711

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

Date	Time Completed	Lab Unit Mgr
2-27-90		

84-6600-081 (R-10-83)

3.4 4762

Serial No.	Sample Point	Date	Time Issued	Priority
F 1080.-7182	SEG.COMP#16	2-16-90	8:13	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
AM	LA-503-156	uCI/L	E21D1	0

Sample Size: ? 1ml + 100λ Spike 9843 — Customer ID: 000013

Remarks, Calculations, Results:
DUPLICATE SAMPLE
1200λ CON HNO_3
"AEA-480 MIN"
ATTACH PRINT OUT
$< 1.45^{-2}$ ucil

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

Date	Time Completed	Lab Unit Mgr
2-27-90		

84-6600-081 (R-10-83)

4.1 5634

Serial No.	Sample Point	Date	Time Issued	Priority
F 1079.-7082	SEG.COMP#15	2-16-90	8:12	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
AM	LA-503-156	uCI/L	E21D1	0

Sample Size: ? 1ml + 100λ spike — Customer ID: 000013

Remarks, Calculations, Results:
1200λ CON HNO_3 9843
"AEA-480 MIN"
ATTACH PRINT OUT
$< 1.32^{-2}$ uci/l

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

Date	Time Completed	Lab Unit Mgr
2-27-90		

84-6600-081 (R-10-83)

3.2 2774

Serial No.	Sample Point	Date	Time Issued	Priority
F 1076.-6582	SEG.COMP#12	2-16-90	8: 9	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
AM	LA-503-156	% RECOVERY	E21D1	0

Sample Size: ? 1ml 100-10-1ml 100λ spike 9B43

Customer ID: 000013

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 16B43
1mL 8m HNO3
106.6%
16.752 / 15.711

"AEA-480 MIN" ATTACH PRINT OUT

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

Date	Time Completed	Lab Unit Mgr
2-27-90		[illegible]

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

4.2 6071

Serial No.	Sample Point	Date	Time Issued	Priority
F 1075.-6282	SEG.COMP#11	2-16-90	8: 8	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
AM	LA-503-156	% RECOVERY	E21D1	0

Sample Size: ? 1mLt 100-10-1m spt 100λ SPIKE

Customer ID: 000013

Remarks, Calculations, Results:
SPIKED SAMPLE F1055 9B43
1200λ CaN HNO3
101.3%
15.923 / 15.711

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

Date	Time Completed	Lab Unit Mgr
2-27-90		[illegible]

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

2

Serial No.	Sample Point	Date	Time Issued	Priority
F 1078.-7388	SEG.COMP#14	2-16-90	8:11	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
C14	LA-348-104	uCI/L	E21D1	0

Sample Size: ? 10ml

Customer ID: 000013

Remarks, Calculations, Results:

REAGENT BLANK

dpm 2.1096

$< 1.13 \times 10^{-3}$ uCi/L

$\frac{(<25\text{dpm})(1000)}{(2.22E^{6})(10)} \Rightarrow <9.01E^{-4}$ uCi/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80027				
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cobin				
Date	Time Completed	Lab Unit Mgr		
7-9-90				

84-5600-081 (R-10-83)

1

Serial No.	Sample Point	Date	Time Issued	Priority
F 1077.-7588	SEG.COMP#13	2-16-90	8:10	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
C14	LA-348-104	% RECOVERY	E21D1	0

Sample Size: ? 1mL

Customer ID: 000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE

LMCS ID 31846

8 mL

$\frac{(1860.28\text{dpm})(1000)}{(2.22E^{6})(1)} = 8.38E^{-1}$ uCi/ml / $8.8916E^{-1}$ uCi/ml

94.20%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cobin				
Date	Time Completed	Lab Unit Mgr		
7-9-90				

84-5600-081 (R-10-83)

4

Serial No.	Sample Point	Date	Time Issued	Priority
F 1080.-7188	SEG.COMP#16	2-16-90	8:13	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
C14	LA-348-104	uCI/L	E21D1	0

Sample Size: ? 10mL

Customer ID: 000013

Remarks, Calculations, Results:

DUPLICATE SAMPLE

$\frac{(101.4824\text{dpm})(1000)}{(2.22E^{6})(10)} = 4.57E^{-3}$ uCi/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cobin				
Date	Time Completed	Lab Unit Mgr		
7-9-90				

84-5600-081 (R-10-83)

3

Serial No.	Sample Point	Date	Time Issued	Priority
F 1079.-7088	SEG.COMP#15	2-16-90	8:12	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
C14	LA-348-104	uCI/L	E21D1	0

Sample Size: ? 10mL

Customer ID: 000013

Remarks, Calculations, Results:

$\frac{(109.0257)(1000)}{(2.22E^{6})(10)} = 4.91E^{-3}$ uCi/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cobin				
Date	Time Completed	Lab Unit Mgr		
7-9-90				

84-5600-081 (R-10-83)

6

Serial No.	Sample Point	Date	Time Issued	Priority
F 1082.-7588	SEG.COMP#18	2-16-90	8:15	26

Determination	Method/Standard	Result Units	Charge Code	Rerune
C14	LA-348-104	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 1 mL	000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 31846

96.2%

$$\frac{(1899.256)(1000)}{(2.22E^{6})(1)} = 8.56E^{-1}_{wt} / 8.8916E^{-1}$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				
Hrs	Hrs	Hrs	Hrs	Hrs
2				

Date	Time Completed	Lab Unit Mgr
7-9-90		

84-6600-081 (R-10-83)

5

Serial No.	Sample Point	Date	Time Issued	Priority
F 1081.-7288	SEG.COMP#17	2-16-90	8:14	26

Determination	Method/Standard	Result Units	Charge Code	Rerune
C14	LA-348-104	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 10 mL	000013

Remarks, Calculations, Results:

SPIKE ID. 31846

91.5%

SPIKE VOL. 1mL

$$\frac{(191575\,dpm - 169.0257)(1000)}{(2.22E^{6})} = 8.139E^{-1} / 8.8916E^{-1}$$ wet

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				
Hrs	Hrs	Hrs	Hrs	Hrs
2				

Date	Time Completed	Lab Unit Mgr
7-9-90		

84-6600-081 (R-10-83)

A5065

Serial No.	Sample Point	Date	Time Issued	Priority
F 1078.-7385	SEG.COMP#14	2-16-90	8:11	26

Determination	Method/Standard	Result Units	Charge Code	Rerune
I129	LA-378-103	uCI/L	E21D1	0

Sample Size: ? ml — Customer ID: 000013

Remarks, Calculations, Results:

REAGENT BLANK

$\frac{(<.110^{-4})(1000)}{.128} = <8.60^{-2}$ wet

g. 2.1253
+. 2.1214
n. .0039 / .0305

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80725/I.C.				GL
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
3-9-90		

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

A5064

Serial No.	Sample Point	Date	Time Issued	Priority
F 1077.-7585	SEG.COMP#13	2-16-90	8:10	26

Determination	Method/Standard	Result Units	Charge Code	Rerune
I129	LA-378-103	% RECOVERY	E21D1	0

Sample Size: ? ml — Customer ID: 000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 124844

$\frac{(.136^{-3})(1000)}{.210} = 6.48^{-1}$ / 5.85

g. 2.1291
+. 2.1227
n. .0064 / .0305

110.7 %

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80725/I.C.				GL
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
3-9-90		

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

A-5069

Serial No.	Sample Point	Date	Time Issued	Priority
F 1080.-7185	SEG.COMP#16	2-16-90	8:13	26

Determination	Method/Standard	Result Units	Charge Code	Rerune
I129	LA-378-103	uCI/L	E21D1	0

Sample Size: ? ml — Customer ID: 000013

Remarks, Calculations, Results:

DUPLICATE SAMPLE

$\frac{(114^{-4})(1000)}{.200} = <5.70^{-2}$

g. 2.1245
+. 2.1184
n. .0061 / .0305 = .200

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80725/I.C.				GL
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
3-9-90		

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

A-5067

Serial No.	Sample Point	Date	Time Issued	Priority
F 1079.-7085	SEG.COMP#15	2-16-90	8:12	26

Determination	Method/Standard	Result Units	Charge Code	Rerune
I129	LA-378-103	uCI/L	E21D1	0

Sample Size: ? ml — Customer ID: 000013

Remarks, Calculations, Results:

$\frac{(<.119^{-4})(1000)}{.180} = <6.60^{-2}$ wet

g. 2.1284
+. 2.1229
n. .0055 / .0305

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80725/I.C.				GL
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
3-9-90		

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

A-5072

Serial No.	Sample Point	Date	Time Issued	Priority
F 1082.-7585	SEG.COMP#18	2-16-90	8:15	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
I129	LA-378-103	% RECOVERY	E21D1	0

Sample Size: ? 1ml — Customer ID: 000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 124 B44

g. 2.0987
+. 2.0921

$\frac{(.146^{-3})(1000)}{.216} = 6.75^{-1}$ / 5.85 ln. .0066 / .216

115.3 %

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80725/LC				GL
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
3-9-90		GP SH

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

A5070

Serial No.	Sample Point	Date	Time Issued	Priority
F 1081.-7285	SEG.COMP#17	2-16-90	8:14	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
I129	LA-378-103	% RECOVERY	E21D1	0

Sample Size: ? 1ml + 1ml std (124 B44) — Customer ID: 000013

Remarks, Calculations, Results:

SPIKED SAMPLE

g. 2.1014
+. 2.0997

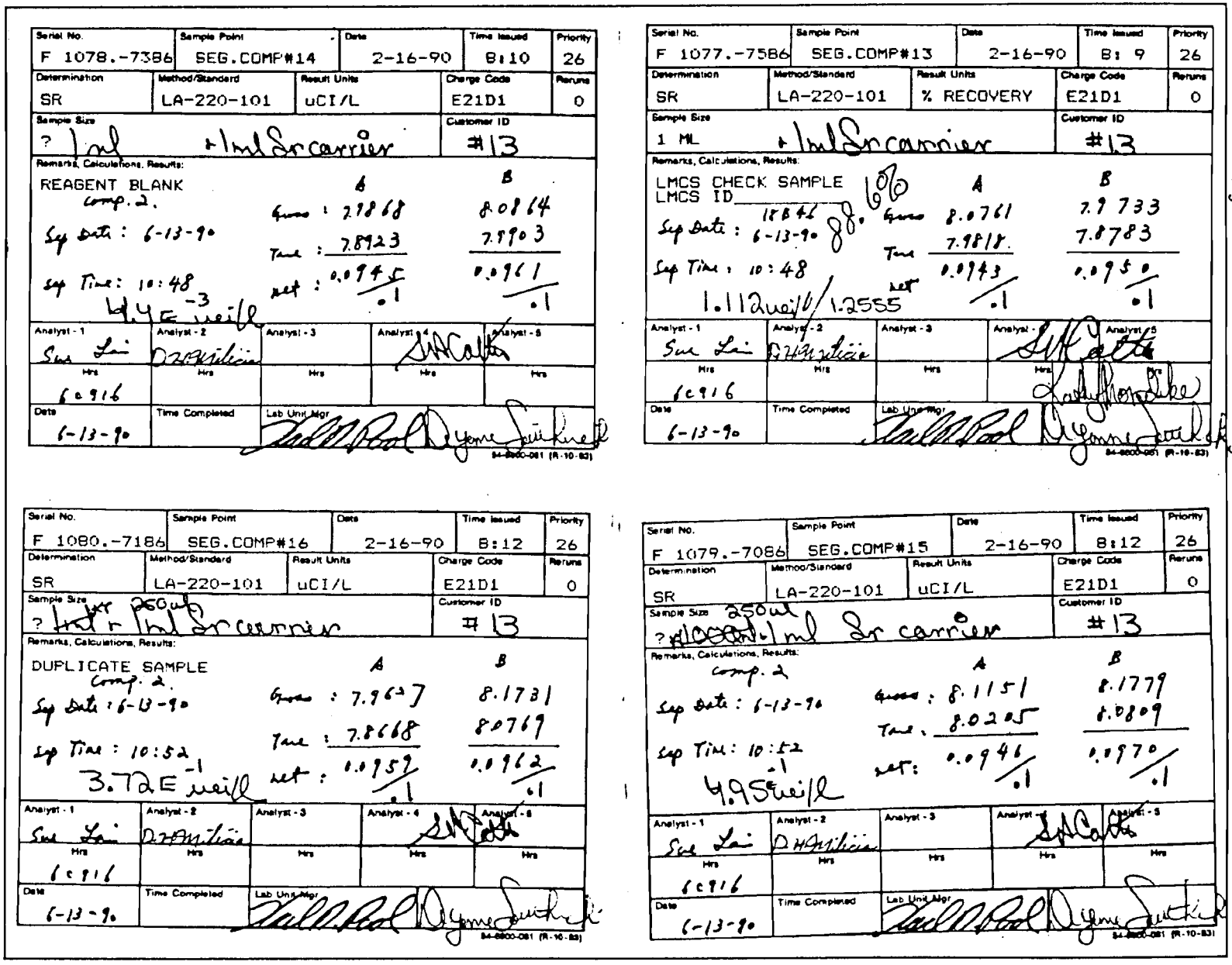
139.32

$\frac{(4.54^{-4})(1000)}{.0557} = 8.15^{+1}$ uci/l / 5.85 2.1^{-1} .0017 / .0305

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80725/LC				GL
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
3-9-90		SH

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



Serial No.	Sample Point	Date	Time Issued	Priority
F 1078.-7386	SEG.COMP#14	2-16-90	8:10	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
SR	LA-220-101	uCI/L	E21D1	0

Sample Size: ? 1 ml + 1 ml Sr carrier — Customer ID: #13

Remarks, Calculations, Results:

REAGENT BLANK
comp. 2.

	A	B
Gross	7.9868	8.0864
Tare	7.8923	7.9903
net	0.0945 / .1	0.0961 / .1

Sep Date: 6-13-90
Sep Time: 10:48
4.45E-3 uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Sue Lai	D.H. Militica		S.H. Cobb	
Hrs: 6.916	Hrs	Hrs	Hrs	Hrs

Date: 6-13-90 — Time Completed: — Lab Unit Mgr: Ted M. Bond, Dyane Sutkin

84-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1077.-7586	SEG.COMP#13	2-16-90	8:9	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
SR	LA-220-101	% RECOVERY	E21D1	0

Sample Size: 1 ML + 1 ml Sr carrier — Customer ID: #13

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 18842 — 88%

	A	B
Gross	8.0761	7.9733
Tare	7.9818	7.8783
net	0.0943 / .1	0.0950 / .1

Sep Date: 6-13-90
Sep Time: 10:48
1.112 uci/l / 1.2555

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Sue Lai	D.H. Militica		S.H. Cobb	
Hrs: 6.916	Hrs	Hrs	Hrs	Hrs

Date: 6-13-90 — Time Completed: — Lab Unit Mgr: Ted M. Bond, Dyane Sutkin

84-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1080.-7186	SEG.COMP#16	2-16-90	8:12	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
SR	LA-220-101	uCI/L	E21D1	0

Sample Size: ? 1 ml + 250 ul Sr carrier — Customer ID: #13

Remarks, Calculations, Results:

DUPLICATE SAMPLE
Comp. 2.

	A	B
Gross	7.9627	8.1731
Tare	7.8668	8.0769
net	0.0959 / .1	0.0962 / .1

Sep Date: 6-13-90
Sep Time: 10:52
3.72E-1 uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Sue Lai	D.H. Militica		S.H. Cobb	
Hrs: 6.916	Hrs	Hrs	Hrs	Hrs

Date: 6-13-90 — Time Completed: — Lab Unit Mgr: Ted M. Bond, Dyane Sutkin

84-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1079.-7086	SEG.COMP#15	2-16-90	8:12	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
SR	LA-220-101	uCI/L	E21D1	0

Sample Size: ? 250 ul + 1 ml Sr carrier — Customer ID: #13

Remarks, Calculations, Results:

comp. 2

	A	B
Gross	8.1151	8.1779
Tare	8.0205	8.0809
net	0.0946 / .1	0.0970 / .1

Sep Date: 6-13-90
Sep Time: 10:52
4.95E-1 uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Sue Lai	D.H. Militica		S.H. Cobb	
Hrs: 6.916	Hrs	Hrs	Hrs	Hrs

Date: 6-13-90 — Time Completed: — Lab Unit Mgr: Ted M. Bond, Dyane Sutkin

84-6600-081 (R-10-83)

F 1078.-7386 ΔT=5.45

(A) 153/10 -12

(B) 162/10

Sr Calculation by DM on 06-13-1990 at 18:35:51
Det #10 2-inch mount Sr eff : .3792 Y eff : .4215

Sample size : 1 mL Dilution : 1 Method : 1

Mount # 1 Decay time = 5.45 hrs

153/10 - 12.0 = 3.6855E-03 uCi/L strontium / .945 — 3.90E-3 well

Mount # 2 Decay time = 5.45 hrs

162/10 - 12.0 = 4.6906E-03 uCi/L strontium / .961 — 4.90E-3 well

10/2 6-13-90 @ 1550 DM

F 1077.-7586 ΔT=5.03

(A) 9505/10 -12

(B) 9496/10

Sr Calculation by DM on 06-13-1990 at 18:34:54
Det #10 2-inch mount Sr eff : .3792 Y eff : .4215

Sample size : 1 mL Dilution : 1 Method : 1

Mount # 1 Decay time = 5.03 hrs

9505/10 - 12.0 = 1.0528E+00 uCi/L strontium / .943 — 1.116

Mount # 2 Decay time = 5.03 hrs

9496/10 - 12.0 = 1.0518E+00 uCi/L strontium / .950 — 1.107

10/2 6-13-90 @ 1702 DM ΔT=6.17

F 1080.-7186

(A) 907/10 -12

(B) 945/10

Sr Calculation by DM on 06-13-1990 at 18:37:25
Det #10 2-inch mount Sr eff : .3792 Y eff : .4215

Sample size : .25 mL Dilution : 1 Method : 1

Mount # 1 Decay time = 6.17 hrs

907/10 - 12.0 = 3.4890E-01 uCi/L strontium / .959 — 3.64E-1 well

Mount # 2 Decay time = 6.17 hrs

945/10 - 12.0 = 3.6575E-01 uCi/L strontium / .962 — 3.802E-1 well

10/2 6-13-90 @ 1640 DM ΔT=5.80

F 1079.-7086

(A) 1176/10 -12

(B) 1195/10

Sr Calculation by DM on 06-13-1990 at 18:36:53
Det #10 2-inch mount Sr eff : .3792 Y eff : .4215

Sample size : .25 mL Dilution : 1 Method : 1

Mount # 1 Decay time = 5.8 hrs

1176/10 - 12.0 = 4.6999E-01 uCi/L strontium / .946 — 4.97E-1 well

Mount # 2 Decay time = 5.8 hrs

1195/10 - 12.0 = 4.7845E-01 uCi/L strontium / .970 — 4.93E-1 well

Strontium 90 Analysis on the Water Digestion

Serial No.	Sample Point	Date	Time Issued	Priority
F 1082.-7586	SEG.COMP#18	2-16-90	8:15	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
SR	LA-220-101	% RECOVERY	E21D1	0

Sample Size: ? Ml + Ml Sr carrier

Customer ID: #13

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 18846
Sep Date: 6-13-90
Sep Time: 10:57

1.1411 wt/l / 1.2555

90.9%

	A	B
Gross	7.5645	8.1578
Tare	7.4696	8.0608
net	0.0949 / .1	0.0970 / .1

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Sue Lai	D. H. Milicia		[signature]	
Hrs 6c916	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
6-13-90		[signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1081.-7286	SEG.COMP#17	2-16-90	8:14	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
SR	LA-220-101	% RECOVERY	E21D1	0

Sample Size: ? 250 ml Ml + Ml Sr carrier

Customer ID: #13

Remarks, Calculations, Results:

SPIKED SAMPLE Comp. 2
18846
Sep Date: 6-13-90
Sep Time: 10:57

93.5%

1.174 / 1.2555

	A	B
Gross	7.8866	8.1027
Tare	7.7936	8.0076
net	0.0930 / .1	0.0951 / .1

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Sue Lai	D. H. Milicia		[signature]	
Hrs 6c916	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
6-13-90		[signature]

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

10/2 6-13-90 @ 1834 DM F 1082.-7586 ΔT= 7.62

(A) $\frac{10203}{10} - 12$

(F-1082)

(B) $\frac{10088}{10}$

Sr Calculation by DM on 06-13-1990 at 19:19:07
Det #10 2 -inch mount Sr eff : .3792 Y eff : .4215

Sample size : 1 mL Dilution : 1 Method : 1

Mount # 1 Decay time = 7.62 hrs

$\frac{10203}{10} - 12.0 = \frac{1.1009E+00}{.949}$ uCi/L strontium 1.1601 uci/l

Mount # 2 Decay time = 7.62 hrs

$\frac{10088}{10} - 12.0 = \frac{1.0884E+00}{.970}$ uCi/L strontium 1.122 uci/l

10/2 6-13-90 @ 1813 DM F 1081.-7286 ΔT= 7.27

(A) $\frac{10745}{10} - 12$ $\left(\frac{5.149}{4}\right) - \left(\frac{4.95E^{-1}}{4}\right) =$

(B) $\frac{11598}{10}$

Sr Calculation by DM on 06-13-1990 at 18:38:03
Det #10 2 -inch mount Sr eff : .3792 Y eff : .4215

Sample size : .25 mL Dilution : 1 Method : 1

Mount # 1 Decay time = 7.27 hrs

$\frac{10745}{10} - 12.0 = \frac{4.6570E+00}{.93}$ uCi/L strontium 5.008

Mount # 2 Decay time = 7.27 hrs

$\frac{11598}{10} - 12.0 = \frac{5.0308E+00}{.951}$ uCi/L strontium 5.29

$(1.2873 \text{ uci/ea} - .1238/\text{uci/ea})\left(\frac{10.09\text{ g/l}}{10.18\text{ g/l}}\right) = 1.174 \times 10$

3-4

Serial No.	Sample Point	Date	Time Issued	Priority
F 1078.-7384	SEG.COMP#14	2-16-90	8:11	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
TC99	LA-438-101	uCI/L	E21D1	0

Sample Size: ? 1ml + 100A spike — Customer ID: 000013

Remarks, Calculations, Results:

REAGENT BLANK 49839

A <20.0

DAS 2705.63

1.97^{-2} uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C916				SW
Hrs: Sue Lai	Hrs	Hrs	Hrs	Hrs
Date: 2-23-90	Time Completed	Lab Unit Mgr:	DMS	

84-8800-081 (R-10-83)

1-2

Serial No.	Sample Point	Date	Time Issued	Priority
F 1077.-7584	SEG.COMP#13	2-16-90	8:10	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
TC99	LA-438-101	% RECOVERY	E21D1	0

Sample Size: ? 250A + 100A spike — Customer ID: 000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE 49839

LMCS ID _____

STD: 148839 A 1049.51

DAS 3589.94

4.376 / 3.6166 = 121.0% (100.)

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C916				SW
Hrs: Sue Lai	Hrs	Hrs	Hrs	Hrs
Date: 2-23-90	Time Completed	Lab Unit Mgr:	DMS	

84-8800-081 (R-10-83)

7-8

Serial No.	Sample Point	Date	Time Issued	Priority
F 1080.-7184	SEG.COMP#16	2-16-90	8:13	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
TC99	LA-438-101	uCI/L	E21D1	0

Sample Size: ? 1ml + 100A spike — Customer ID: 000013

Remarks, Calculations, Results:

DUPLICATE SAMPLE

A 71.3784

DAS 2915.24

6.65^{-2} uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C916				SW
Hrs: Sue Lai	Hrs	Hrs	Hrs	Hrs
Date: 2-23-90	Time Completed	Lab Unit Mgr:	DMS	

84-8800-081 (R-10-83)

5-6

Serial No.	Sample Point	Date	Time Issued	Priority
F 1079.-7084	SEG.COMP#15	2-16-90	8:12	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
TC99	LA-438-101	uCI/L	E21D1	0

Sample Size: ? 1ml + 100A spike — Customer ID: 000013

Remarks, Calculations, Results:

A 54.437

DAS 2976.68

4.93^{-2} uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C916				SW
Hrs: Sue Lai	Hrs	Hrs	Hrs	Hrs
Date: 2-23-90	Time Completed	Lab Unit Mgr:	DMS	

84-8800-081 (R-10-83)

Technetium 99 Analysis on the Water Digestion

11-12

Serial No.	Sample Point	Date	Time Issued	Priority
F 1082.-7584	SEG.COMP#18	2-16-90	8:15	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
TC99	LA-438-101	% RECOVERY	E21D1	0

Sample Size: ? 250l + 100l spike

Customer ID: 000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID_____

49B39

STD : 148B39
a 942.352
Q+S 3654.699

101.8%

3.681 / 3.6166

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C916				SW
Hrs	Hrs	Hrs	Hrs	Hrs
Sue Lai				

Date	Time Completed	Lab Unit Mgr	
2-23-90		[signature]	DMS

84-6800-081 (R-10-83)

9-10

Serial No.	Sample Point	Date	Time Issued	Priority
F 1081.-7284	SEG.COMP#17	2-16-90	8:14	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
TC99	LA-438-101	% RECOVERY	E21D1	0

Sample Size: ? 1ml + 250l std spike + 100l Tc spike

Customer ID: 000013

Remarks, Calculations, Results:

SPIKED SAMPLE

49B39

a 1054.23
Q+S 3729.57

4.174 / 3.6166 = 115.4%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C916				SW
Hrs	Hrs	Hrs	Hrs	Hrs
Sue Lai				

Date	Time Completed	Lab Unit Mgr	
2-23-90		[signature]	[signature]

84-6800-081 (R-10-83)

2

Serial No.	Sample Point	Date	Time Issued	Priority
F 1078.-7387	SEG.COMP#14	2-16-90	8:11	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
H3	LA-218-113	uCI/L	E21D1	0

Sample Size: ? 1mL — Customer ID: G00013

Remarks, Calculations, Results:

REAGENT BLANK

$< 9.01 \times 10^{-3}$ uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6 GS98/RH				
Hrs	Hrs	Hrs	Hrs	Hrs

Date: 4-26-90 — Time Completed: — Lab Unit Mgr: Ted W. Paul, Kathy Thomdike

1

Serial No.	Sample Point	Date	Time Issued	Priority
F 1077.-7587	SEG.COMP#13	2-16-90	8:10	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
H3	LA-218-113	% RECOVERY	E21D1	0

Sample Size: ? 1mL — Customer ID: G00013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 140.344

$6.72 \times 10^{-1} / 7.08 \times 10^{1} = 95.0\%$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6 GS98/RH			Dwayne Smith	
Hrs	Hrs	Hrs	Hrs	Hrs

Date: 4-26-90 — Time Completed: — Lab Unit Mgr: Ted W. Paul, Kathy Thomdike

4

Serial No.	Sample Point	Date	Time Issued	Priority
F 1080.-7187	SEG.COMP#16	2-16-90	8:13	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
H3	LA-218-113	uCI/L	E21D1	0

Sample Size: ? 1mL — Customer ID: G00013

Remarks, Calculations, Results:

DUPLICATE SAMPLE

1.97×10^{-2} uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6 GS98/RH				
Hrs	Hrs	Hrs	Hrs	Hrs

Date: 4-26-90 — Time Completed: — Lab Unit Mgr: Ted W. Paul, Kathy Thomdike

3

Serial No.	Sample Point	Date	Time Issued	Priority
F 1079.-7087	SEG.COMP#15	2-16-90	8:12	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
H3	LA-218-113	uCI/L	E21D1	0

Sample Size: ? 1mL — Customer ID: G0001?

Remarks, Calculations, Results:

1.91×10^{-2} uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6 GS98/RH				
Hrs	Hrs	Hrs	Hrs	Hrs

Date: 4-26-90 — Time Completed: — Lab Unit Mgr: Ted W. Paul, Kathy Thomdike

10

Serial No.	Sample Point	Date	Time Issued	Priority
F 1226.-7587	SEG.COMP#18	3- 6-90	18:16	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
H3	LA-218-113	% RECOVERY	E21D1	0

Sample Size	Customer ID
? /mL	S00032

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 140B44

90.2%

6.38×10^{-1} mi/l / 7.08×10^{-1} =

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6 BS78/RH				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
4-26-90		Ted M. Pool Kathy Momdike

54-6600-081 (R-10-83)

9

Serial No	Sample Point	Date	Time Issued	Priority
F 1225.-7287	SEG.COMP#17	3- 6-90	18:15	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
H3	LA-218-113	% RECOVERY	E21D1	0

Sample Size	Customer ID
? /mL + /m/ spike	S00032

Remarks, Calculations, Results:
SPIKED SAMPLE F1223
STD 140B44

93.5%

6.62×10^{-1} / 7.08×10^{-1}

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6 BS78/RH				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
4-26-90		Ted M. Pool Kathy Momdike

54-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1078.-7395	SEG.COMP#14	2-16-90	8:11	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
AS	LA-355-131	PPM	E21D1	0

Sample Size: ? 1mL
Customer ID: 000013

Remarks, Calculations, Results: REAGENT BLANK pk Hgt: 4.5mm 2nd Leach

$< 5 ng/1000 = < 5.00^{-3}$ ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GC290				RK Fuller 4-11-90
Hrs: 25m	Hrs	Hrs	Hrs	Hrs

Date: 4-10-90 Time Completed: 4/17 Lab Unit Mgr:

84-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1077.-7595	SEG.COMP#13	2-16-90	8:10	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
AS	LA-355-131	% RECOVERY	E21D1	0

Sample Size: ? 35L
Customer ID: 000013

Remarks, Calculations, Results: LMCS CHECK SAMPLE pk Hgt: 87.0mm 2nd Leach
LMCS ID 38c118a

$39.651/35 = 1.133/1.13$ 100.39%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GC290				RK Fuller 4-11-90
Hrs: 25m	Hrs	Hrs	Hrs	Hrs

Date: 4-10-90 Time Completed: 4/17 Lab Unit Mgr:

84-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1080.-7195	SEG.COMP#16	2-16-90	8:13	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
AS	LA-355-131	PPM	E21D1	0

Sample Size: ? 1mL
Customer ID: 000013

Remarks, Calculations, Results: DUPLICATE SAMPLE pk Hgt: 6.5mm 2nd Leach

$< 5 ng/1000 = < 5.00^{-3}$ ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GC290				RK Fuller 4-11-90
Hrs: 25m	Hrs	Hrs	Hrs	Hrs

Date: 4-10-90 Time Completed: 4/17 Lab Unit Mgr:

84-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1079.-7095	SEG.COMP#15	2-16-90	8:12	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
AS	LA-355-131	PPM	E21D1	0

Sample Size: ? 1mL
Customer ID: 000013

Remarks, Calculations, Results: pk Hgt: 6.0 2nd Leach

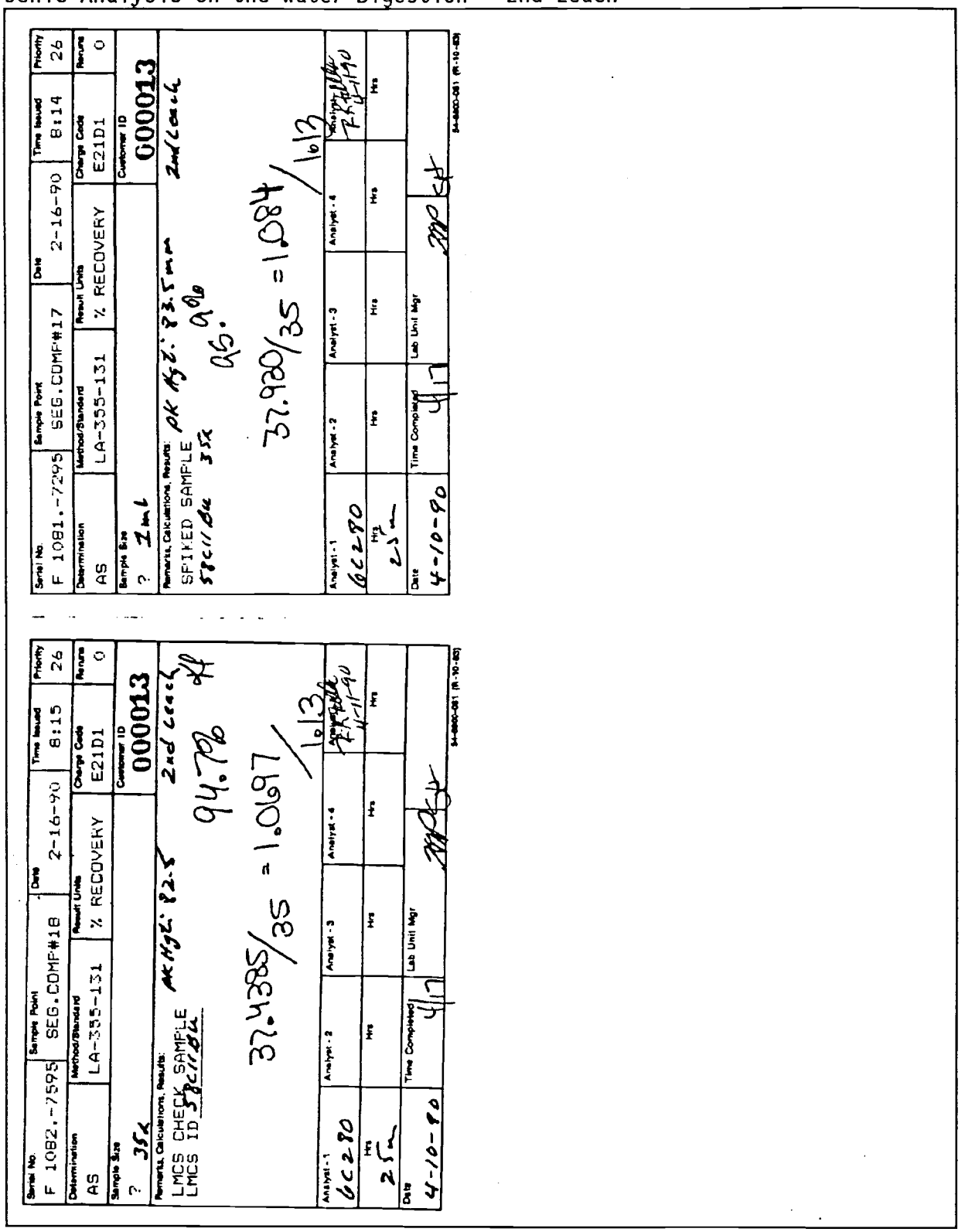
$< 5/1000 = < 5.00^{-3}$ ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GC290				RK Fuller 4-11-90
Hrs: 25m	Hrs	Hrs	Hrs	Hrs

Date: 4-10-90 Time Completed: 4/17 Lab Unit Mgr:

84-6800-081 (R-10-83)

Arsenic Analysis on the Water Digestion - 2nd Leach



Serial No.	Sample Point	Date	Time Issued	Priority
F 1082.-7595	SEG.COMP#18	2-16-90	8:15	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
AS	LA-355-131	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 35x	000013

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 58C11BU
pk Hgt: 82.5 2nd Leach
94.7%
37.4385/35 = 1.0697/1.13

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C280				RR 4-11-90
Hrs 25m	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
4-10-90	4/17	[signature]

54-8800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1081.-7295	SEG.COMP#17	2-16-90	8:14	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
AS	LA-355-131	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 1ml	000013

Remarks, Calculations, Results:
SPIKED SAMPLE
58C11BU 35x
pk Hgt: 83.5mm 2nd Leach
95.9%
37.930/35 = 1.084/1.13

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C280				RR 4-11-90
Hrs 25m	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
4-10-90	4/17	[signature]

54-8800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1079.-7097	SEG.COMP#15	2-16-90	8:12	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
Hg	LA-325-102	PPM	E21D1	0

Sample Size	Customer ID
? 2ml	000013

Remarks, Calculations, Results:

peak height 9, .046ng, 2.3×10^{-5} ppm

$< 1 \times 10^{-4}$ ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6A543				RK Fuller 3-9-90
Hrs	Hrs	Hrs	Hrs	Hrs
J. Hopkins				
Date	Time Completed	Lab Unit Mgr		
2-27-90				

84-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1077.-7597	SEG.COMP#13	2-16-90	8:10	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
Hg	LA-325-102	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 25l	000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID S8C11BP

peak height 138, 29.97ng, 1.20ppm, ~~92.27%~~ 96.00%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6A543				RK Fuller 3-9-90
Hrs	Hrs	Hrs	Hrs	Hrs
J. Hopkins				
Date	Time Completed	Lab Unit Mgr		
2-27-90				

84-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1087.-8297	SEG.COMP#23	2-16-90	8:16	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
HG	LA-325-102	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 2ml + 25l	000013

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID S8C11P
SPIKE VOLUME 25l

peak height - 90, 42.03ng, 1.24ppm
95.45% spike recovery

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6A543				3-9-90 RK Fuller
Hrs	Hrs	Hrs	Hrs	Hrs
J. Hopkins				
Date	Time Completed	Lab Unit Mgr		
2-27-90				

84-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1080.-7197	SEG.COMP#16	2-16-90	8:13	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
Hg	LA-325-102	PPM	E21D1	0

Sample Size	Customer ID
? 2ml	000013

Remarks, Calculations, Results:

DUPLICATE SAMPLE
peak height 11, .510ng, 2.55×10^{-4} ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6A543				RK Fuller 3-9-90
Hrs	Hrs	Hrs	Hrs	Hrs
J. Hopkins				
Date	Time Completed	Lab Unit Mgr		
2-27-90				

84-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1060.-8397	SEG.COMP#20	2-15-90	14: 9	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
HG	LA-325-102	PPM		0

Sample Size	Customer ID
? 0	000012

Remarks, Calculations, Results:

REAGENT BLANK

~~PK Ht 8 = .1149ng~~

< 0.01 ppm RK7

$< 1.00 \times 10^{-2}$ ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst
6A543				RK 3-9-90
Hrs	Hrs	Hrs	Hrs	Hrs
J Hopkins				
Date	Time Completed	Lab Unit Mgr		
2-27-90				

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1082.-7597	SEG.COMP#18	2-16-90	8:15	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
Hg	LA-325-102	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 25 1	000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE

LMCS ID 58C11BP

Peak height

138, 29.97ng, 1.20ppm, ~~92.27%~~

96.0%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst
6A543				RK 3-9-90
Hrs	Hrs	Hrs	Hrs	Hrs
J Hopkins				
Date	Time Completed	Lab Unit Mgr		
2-27-90				

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1083.-8597	SEG.COMP#19	2-16-90	8:15	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
HG	LA-325-102	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 25 1	000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE

LMCS ID 58C11BP

PK HT-137, 29.73ng, 1.19ppm, ~~91.49%~~

95.2%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst
6A543				RK 3-9-90
Hrs	Hrs	Hrs	Hrs	Hrs
J Hopkins				
Date	Time Completed	Lab Unit Mgr		
2-27-90				

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1059.-8597	SEG.COMP#19	2-15-90	14: 9	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
HG	LA-325-102	% RECOVERY		0

Sample Size	Customer ID
? 25 1	000012

Remarks, Calculations, Results:

LMCS CHECK SAMPLE

LMCS ID 58C11BP

~~Peak~~ HT-137.5, 29.85ng, 1.19ppm ~~91.85%~~

95.2%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst
6A543				RK 3-9-90
Hrs	Hrs	Hrs	Hrs	Hrs
J Hopkins				
Date	Time Completed	Lab Unit Mgr		
2-27-90				

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1078.-7396	SEG.COMP#14	2-16-90	8:11	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
SE	LA-365-131	PPM	E21D1	0

Sample Size: ? 1 mL — Customer ID: 000013

Remarks, Calculations, Results:
REAGENT BLANK pk Hgt: 3.5 mm 2nd Leach

$\frac{5}{1000}$ = <.005ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GC280				RK 4-3-90
Hrs 25m	Hrs	Hrs	Hrs	Hrs
Date 4-1-90	Time Completed	Lab Unit Mgr		

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1077.-7596	SEG.COMP#13	2-16-90	8:10	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
SE	LA-365-131	% RECOVERY	E21D1	0

Sample Size: ? 35 1 — Customer ID: 000013

Remarks, Calculations, Results:
LMCS CHECK SAMPLE pk Hgt: 40.0 mm 2nd Leach KH
LMCS ID 58c118a

107.3%

42.446/35 = 1.2127/1.13

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GC280				RK 4-3-90
Hrs 25m	Hrs	Hrs	Hrs	Hrs
Date 4-1-90	Time Completed	Lab Unit Mgr		

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1080.-7196	SEG.COMP#16	2-16-90	8:13	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
SE	LA-365-131	PPM	E21D1	0

Sample Size: ? 1 mL — Customer ID: 000013

Remarks, Calculations, Results:
DUPLICATE SAMPLE pk Hgt: 4.0 mm 2nd Leach

$\frac{<5 \text{ ng}}{1000}$ = <.005ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GC280				RK 4-3-90
Hrs 25m	Hrs	Hrs	Hrs	Hrs
Date 4-1-90	Time Completed	Lab Unit Mgr		

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1079.-7096	SEG.COMP#15	2-16-90	8:12	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
SE	LA-365-131	PPM	E21D1	0

Sample Size: ? 1 mL — Customer ID: 000013

Remarks, Calculations, Results:
pk Hgt: 3.5 mm 2nd Leach

$\frac{5}{1000}$ = <.005ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GC280				RK 4-3-90
Hrs 25m	Hrs	Hrs	Hrs	Hrs
Date 4-1-90	Time Completed	Lab Unit Mgr		

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

Selenium Analysis on the Water Digestion - 2nd Leach

Serial No.	Sample Point	Date	Time Issued	Priority
F 1082.-7596	SEG.COMP#18	2-16-90	8:15	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
SE	LA-365-131	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 35x	000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE pk Hgt: 33.0mm 2nd Leach KF
LMCS ID 58C11BU

86.1%

34.053/35 = .9729/1.13

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6L280				RK 4-3-90
Hrs 25m	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
4-1-90		[signature]	[signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1081.-7296	SEG.COMP#17	2-16-90	8:14	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
SE	LA-365-131	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 2 mL	000013

Remarks, Calculations, Results:

SPIKED SAMPLE pk Hgt: 32.0mm 2nd Leach
58C11 BU 35x

83.1%

32.854/35 = .9387/1.13

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6L280				RK 4-3-90
Hrs 25m	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
4-1-90		[signature]	[signature]

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

ACID DIGESTION

APPENDIX A

Acid Digestion

Serial No.	Sample Point	Date	Time Issued	Priority
F 1085.-8000	SEG.COMP#21	2-16-90	8:16	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
ACD-DGST	LA-505-159	G/L	E21D1	0

Sample Size: ?

Customer ID: 000013

Remarks, Calculations, Results:

GRAMS SAMPLE .4778
VOLUME ON
COMPLETION 50ml

~~9.556 -3 g/ml~~ Sj

9.556 g/L

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
61483 JW				
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-22-90		[signature]	KP [signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1084.-8300	SEG.COMP#20	2-16-90	8:16	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
ACD-DGST	LA-505-159	G/L	E21D1	0

Sample Size: ?

Customer ID: 000013

Remarks, Calculations, Results:

REAGENT BLANK
VOLUME ON
COMPLETION 50ml

#340 complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
61483 JW				
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-22-90		[signature]	KP

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1087.-8200	SEG.COMP#23	2-16-90	8:16	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
ACD-DGST	LA-505-158	% RECOVERY	E21D1	0

Sample Size: ?

Customer ID: 000013

Remarks, Calculations, Results:

SPIKED ANALYSIS
GRAMS SAMPLE .5143
VOLUME ON
COMPLETION 50ml
VOLUME SPIKE 5ml+5ml
SPIKE ID 103C15-D & 104C15B

~~1.029 -2 g/ml~~

1.029 x 10¹ g/L

0.5143 GRAMS

11:05:35

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
61483 JW				
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-22-90		[signature]	KP [signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1086.-8100	SEG.COMP#22	2-16-90	8:16	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
ACD-DGST	LA-505-159	G/L	E21D1	0

Sample Size: ?

Customer ID: 000013

Remarks, Calculations, Results:

DUPLICATE ANALYSIS
GRAMS SAMPLE .5018
VOLUME ON
COMPLETION 50ml

~~1.004 -2 g/ml~~ Sj

1.004 x 10¹ g/L

0.5018 GRAMS

11:02:29

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
61483 JW				
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-22-90		[signature]	KP [signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1084.-8350	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	Customer ID
? Direct	000013

Remarks, Calculations, Results:
REAGENT BLANK

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65283				
Hrs J. White	Hrs	Hrs Paul M. Pool	Hrs	Hrs
Date 4-19-90	Time Completed	Lab Unit Mgr QP	Dyanne Southerland	

84-8800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1083.-8550	SEG.COMP#19	2-16-90	8:15	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	% RECOVERY	E21D1	0

Sample Size	Customer ID
? Direct	000013

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 81C11A

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65283				
Hrs 4-19-90	Hrs	Hrs Paul M. Pool	Hrs	Hrs
Date J. White	Time Completed	Lab Unit Mgr QP	Dyanne Southerland	

84-8800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1086.-8150	SEG.COMP#22	2-16-90	8:16	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	PPM	E21D1	0

Sample Size	Customer ID
? 100-10 & 500-10	000013

Remarks, Calculations, Results:
DUPLICATE SAMPLE

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65283				
Hrs J. White	Hrs	Hrs Paul M. Pool	Hrs	Hrs
Date 4-19-90	Time Completed	Lab Unit Mgr QP	Dyanne Southerland	

84-8800-081 (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	Customer ID
? 100-10 & 500-10	000013

Remarks, Calculations, Results:

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65283				
Hrs J. White	Hrs	Hrs Paul M. Pool	Hrs	Hrs
Date 4-19-90	Time Completed	Lab Unit Mgr QP	Dyanne Southerland	

84-8800-081 (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	Customer ID
? Direct	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 N. Pool		

Date	Time Completed	Lab Unit Mgr	
4-19-90		AP	Dyanne Sawhick

84-6800-061 (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	Customer ID
? 100-10 & 500-10	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 N. Pool		

Date	Time Completed	Lab Unit Mgr	
4-19-90		AP	Dyanne Sawhick

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 934.-8395	SEG.COMP#20	1-24-90	8:49	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
AS	LA-355-131	PPM	WB75L	0

Sample Size: ? 1 ml

Customer ID:

Remarks, Calculations, Results:

REAGENT BLANK
peak height 2, -1.025ng, <.005ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6A543				R.K. Tuttle 3-26-90
Hrs	Hrs	Hrs	Hrs	Hrs
J. Hopkins				
Date	Time Completed	Lab Unit Mgr		
3-15-90				

84-8800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1083.-8595	SEG.COMP#19	2-16-90	8:15	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
AS	LA-355-131	% RECOVERY	E21D1	0

Sample Size: ? 35 l

Customer ID: 000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID SRC11BR
peak height 85, 43.04ng, 106.01%, 1.229ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6A543				R.K. Tuttle 3-26-90
Hrs	Hrs	Hrs	Hrs	Hrs
J. Hopkins				
Date	Time Completed	Lab Unit Mgr		
3-15-90				

84-8800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1086.-8195	SEG.COMP#22	2-16-90	8:16	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
AS	LA-355-131	PPM	E21D1	0

Sample Size: ? 500 l

Customer ID: 000013

Remarks, Calculations, Results:

DUPLICATE SAMPLE
peak height 6.5, 1.36ng, 2.72×10^{-3} ppm

$< 1.0^{-2}$ ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6A543				R.K. Tuttle 3-26-90
Hrs	Hrs	Hrs	Hrs	Hrs
J. Hopkins				
Date	Time Completed	Lab Unit Mgr		
3-15-90		QP		

84-8800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1085.-8095	SEG.COMP#21	2-16-90	8:16	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
AS	LA-355-131	PPM	E21D1	0

Sample Size: ? 500 l

Customer ID: 000013

Remarks, Calculations, Results:

peak height 5, .57ng, 1.13×10^{-3} ppm

$< 1.0^{-2}$ ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6A543				R.K. Tuttle 3-26-90
Hrs	Hrs	Hrs	Hrs	Hrs
J. Hopkins				
Date	Time Completed	Lab Unit Mgr		
3-15-90		QP		

84-8800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1088.-8595	SEG. COMP#24	2-16-90	8:16	26

Determination	Method/Standard	Result Units	Charge Code	Rerune
AS	LA-355-131	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 35 ml	000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID S8C11AR
Peak height 87, 44.099 ng, ~~108.62%~~ 108.6% Rec. 1.26ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6A543				R.K. Hall 3-26-90
Hrs	Hrs	Hrs	Hrs	Hrs
J. Hopkins				
Date 3-15-90	Time Completed	Lab Unit Mgr		

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1087.-8295	SEG. COMP#23	2-16-90	8:16	26

Determination	Method/Standard	Result Units	Charge Code	Rerune
AS	LA-355-131	% RECOVERY	E21D1	0

Sample Size	Customer ID
?	000013

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID S8C11AR
SPIKE VOLUME 35 ml
Peak height 74, 35.84 ng, 88.27% Rec; 1.02ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6A543				R.K. Hall 3-26-90
Hrs	Hrs	Hrs	Hrs	Hrs
J. Hopkins				
Date 3-15-90	Time Completed	Lab Unit Mgr		

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1060.-8397	SEG.COMP#20	2-15-90	14: 9	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
HG	LA-325-102	PPM		0

Sample Size: ? 0

Customer ID: 000012

Remarks, Calculations, Results:

REAGENT BLANK

PK HT 8 = ~~.1149ng~~

$< 1.00 \times 10^{-2}$ ppm

< 0.01 ppm RK 7

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst RK Fuller 3-9-90
6A543				
Hrs	Hrs	Hrs	Hrs	Hrs
J. Hopkins				
Date	Time Completed	Lab Unit Mgr		
2-27-90				

84-8800-881 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1083.-8597	SEG.COMP#19	2-16-90	8:15	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
HG	LA-325-102	% RECOVERY	E21D1	0

Sample Size: ? 25 l

Customer ID: 000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE

LMCS ID SICILBP

PK HT-137, 29.73ng, 1.19ppm, ~~91.49%~~ 95.29%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst RK Fuller 3-9-90
6A543				
Hrs	Hrs	Hrs	Hrs	Hrs
J. Hopkins				
Date	Time Completed	Lab Unit Mgr		
2-27-90				

84-8800-881 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1086.-8197	SEG.COMP#22	2-16-90	8:16	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
HG	LA-325-102	PPM	E21D1	0

Sample Size: ? 2 ml

Customer ID: 000013

Remarks, Calculations, Results:

DUPLICATE SAMPLE

PK HT 52, 10.02ng, 5.01×10^{-3} ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst RK Fuller 3-9-90
6A543				
Hrs	Hrs	Hrs	Hrs	Hrs
J. Hopkins				
Date	Time Completed	Lab Unit Mgr		
2-27-90				

84-8800-881 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1085.-8097	SEG.COMP#21	2-16-90	8:16	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
HG	LA-325-102	PPM	E21D1	0

Sample Size: ? 2 ml

Customer ID: 000013

Remarks, Calculations, Results:

PK HT, 60.5, 11.99ng, 6.00×10^{-3} ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst RK Fuller 3-9-90
6A543				
Hrs	Hrs	Hrs	Hrs	Hrs
J. Hopkins				
Date	Time Completed	Lab Unit Mgr		
2-27-90				

84-8800-881 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1088.-8597	SEG.COMP#24	2-16-90	8:16	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
HG	LA-325-102	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 25 l	000013

Remarks, Calculations, Results: ~~PK HT~~ -148, 32.29ng, 1.29ppm, ~~99.34%~~ Spike Recovery

LMCS CHECK SAMPLE
LMCS ID 58C11BP

103.2%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst #5
6A543				RK fuller 3-9-90
Hrs	Hrs	Hrs	Hrs	Hrs
J. Hopkins				
Date	Time Completed	Lab Unit Mgr		
2-27-90				

84-8800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1087.-8297	SEG.COMP#23	2-16-90	8:16	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
HG	LA-325-102	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 2ml + 25 l	000013

Remarks, Calculations, Results: peak height - A0, 42.03ng, 1.24ppm

SPIKE SAMPLE
SPIKE ID 58C11P
SPIKE VOLUME 25l

95.45% spike recovery

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst #5
6A543				3-9-90 RK fuller
Hrs	Hrs	Hrs	Hrs	Hrs
J. Hopkins				
Date	Time Completed	Lab Unit Mgr		
2-27-90				

84-8800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1084.-8396	SEG.COMP#20	2-16-90	8:16	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
SE	LA-365-131	PPM	E21D1	0

Sample Size	Customer ID
? 100λ	000013

Remarks, Calculations, Results:

REAGENT BLANK pk Hgt = 4.8mm

4.16^{-3}

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GC290				RK 3-29-90
Hrs 25m	Hrs	Hrs	Hrs	Hrs
Date 3-29-90	Time Completed	Lab Unit Mgr		

84-8800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1093.-8596	SEG.COMP#19	2-16-90	8:15	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
SE	LA-365-131	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 35λ	000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID S8C11BW

PEAK Height = ~~44.0mm~~ 34.0mm

$40.44/35 = 1.156/1.15$

100.5% ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GC290				RK 3-29-90
Hrs 25m	Hrs	Hrs	Hrs	Hrs
Date 3-29-90	Time Completed	Lab Unit Mgr		

84-8800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1086.-8196	SEG.COMP#22	2-16-90	8:16	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
SE	LA-365-131	PPM	E21D1	0

Sample Size	Customer ID
? 100λ	000013

Remarks, Calculations, Results:

DUPLICATE SAMPLE

pk Height = ~~35mm~~ 5.0mm

2.77^{-3} ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GC290				RK 3-29-90
Hrs 25m	Hrs	Hrs	Hrs	Hrs
Date 3-29-90	Time Completed	Lab Unit Mgr		

84-8800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1085.-8096	SEG.COMP#21	2-16-90	8:16	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
SE	LA-365-131	PPM	E21D1	0

Sample Size	Customer ID
? 100λ	000013

Remarks, Calculations, Results:

PEAK Height = ~~5mm~~ 5.0mm

2.77^{-3} ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GC290				RK 3-29-90
Hrs 25m	Hrs	Hrs	Hrs	Hrs
Date 3-29-90	Time Completed	Lab Unit Mgr		

84-8800-081 (R-10-83)

Selenium Analysis on the Acid Digestion

Serial No.	Sample Point	Date	Time Issued	Priority
F 1088.-8596	SEG.COMP#24	2-16-90	8:16	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
SE	LA-365-131	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 35λ	000013

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 58C11B4

pk Hgt ~~35.0mm~~ 33.0mm

1.116/1.15

97.0%

DMS

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GC290				RK Tuttle 3-29-90
Hrs 25m	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
3-29-90		

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 1087.-8296	SEG.COMP#23	2-16-90	8:16	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
SE	LA-365-131	% RECOVERY	E21D1	0

Sample Size	Customer ID
? 100λ + 35λ	000013

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID 58C11B4
SPIKE VOLUME 35λ

pk Hgt ~~[illegible]~~ 28.0mm

.9181/

79.6%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GC280				RK Tuttle 3-29-90
Hrs 25m	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
3-29-90		

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

APPENDIX B

ANALYTICAL DETECTION LIMITS

SINGLE SHELL TANK PROJECT
Analytical Detection Limits
October 12, 1990

The following detection limits are derived on ideal matrices. These values were derived by using either calibration standards or pure matrix standards. Detection limits on actual single shell tank samples are likely to be much higher. No information regarding procedure detection limits is available for procedures not listed in this report.

Procedure LA-355-131
Arsenic Analysis by Hydride Generation Atomic Absorption

Detection Limit = 0.005 ppm in solution
Typical sample dilution for the Fusion Dissolution was 0.0025g/mL.
Typical sample dilution for the Water Digestion was 0.010g/mL.
Typical sample dilution for the acid Digestion was 0.010g/mL.

Procedure LA-325-102
Mercury Analysis by Atomic Absorption Manual Cold Vapor Technique

Detection Limit = 0.002 ppm in solution
Typical sample dilution for the Fusion Dissolution was 0.0025g/mL.
Typical sample dilution for the Water Digestion was 0.010g/mL.
Typical sample dilution for the acid Digestion was 0.010g/mL.
Solids were analyzed directly.

Procedure LA-362-131
Selenium Analysis by Hydride Generation Atomic Absorption

Detection Limit = 0.005 ppm in solution
Typical sample dilution for the Fusion Dissolution was 0.0025g/mL.
Typical sample dilution for the Water Digestion was 0.010g/mL.
Typical sample dilution for the acid Digestion was 0.010g/mL.

Procedure **LA-533-105**
Anion Analysis on Dionex Model 4000i

Typical sample dilution was 0.000099g/mL

Fluoride
Detection Limit in solution = 0.09 ppm.

Chloride
Detection Limit in solution = 0.04 ppm.

Nitrate
Detection Limit in solution = 0.24 ppm.

Phosphate
Detection Limit in solution = 0.13 ppm.

Sulfate
Detection Limit in solution = 0.13 ppm.

Procedure **LA-622-102**
Determination of Carbonate in Solutions by Coulometry

Detection Limit = 5 ppm in solution
Typical sample dilution was 0.01g/mL

Procedure **LA-344-105**
Total Organic Carbon
Determination of Carbon Insolation by Combustion and Coulometry

Detection Limit = 5.5 ppm in solution
Typical sample dilution was 0.01g/mL

Procedure **LA-505-151**
Inductively Coupled Plasma (ICP) Emission Spectrometer Operations and Analysis

Typical sample dilution for the Fusion Dissolution was 0.00019g/mL.

Typical sample dilution for the Water Digestion was 0.000476g/mL.

Typical sample dilution for the acid Digestion was 0.000476g/mL.

Instrument Detection Limit ppm.

Aluminum	0.0745	Antimony	0.1424
Arsenic	0.0223	Barium	0.0026
Beryllium	0.0006	Bismuth	0.0839
Boron	0.0083	Cadmium	0.0039
Calcium	0.0002	Cerium	0.1359
Chromium	0.0039	Cobalt	0.0246
Copper	0.0158	Europium	0.0024
Iron	0.0073	Lanthanum	0.0141
Lead	0.0273	Lithium	0.0032
Magnesium	0.0001	Manganese	0.0011
Mercury	0.0036	Molybdenum	0.0049
Neodymium	0.2130	Nickel	0.0147
Phosphorous	0.0308	Potassium	0.2122
Samarium	0.1525	Selenium	0.0631
Silicon	0.0314	Silver	0.0183
Sodium	0.0483	Strontium	0.0010
Sulfur	0.0163	Tantalum	0.0273
Thallium	0.0646	Thorium	0.0122
Tin	0.0144	Titanium	0.0035
Tungsten	0.0273	Uranium	1.1405
Vanadium	0.0186	Zinc	0.0017
Zirconium	0.0141		

200

0123607

2068

Westinghouse
Hanford Company

P.O. Box 1970 Richland, WA 99352

222-S/RCRA Analytical Laboratories

Project: Single-Shell Tank Waste Characterization

Tank: 241-U-110

Core: 13

Segment: 3

Customer Id. Number: 89-075

Report Revision: 1

Date Printed: October 10, 1990

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This report consists of pages 1 through 158.
Appendix A consists of pages A-1 through A-39.
Appendix B consists of pages B-1 through B-3.

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.

Dennis K. Sato
Data Coordinator

Date Oct 18, 1990

Cary M. Seidel
Unit Manager

Date October 18, 1990

Larry H. Taylor
Laboratory Q.A. Officer

Date October 23, 1990

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 13 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-033-89 (2) Sample Number 89-075 (3) Supervisor DC Hartley

(4) Tank 110-4 (5) Riser 2 (6) Segment 3 (7) Cask Serial Number C1017

Radiation Survey Data:	(8) FIELD	(20) · LABORATORY
Over Top Dose Rate	<0.5 mr/hr	
Side Dose Rate	3 mr/hr, JW 3 mr/hr	
Bottom Dose Rate	3.5 mr/hr JW 3 bottom	
Smearable Contamination	<DET. (alpha)	<D (alpha)
	<DET. (beta gamma)	<D (beta-gamma)
	RPT T.A. Reid (Signature)	RPT J.R. Mendez (Signature)

(9) Shipment Description:

A. Work Package Number	2W-89-0100/W
B. Cask Seal Number	For Future Use
C. Sampler Number Used	37
D. Date and Time Sampler Unseated	11-30/89, 1720
E. Expected Liquid Content	10%
F. Expected Solid Content	90%
G. Dose Rate Through Drill String	200 mr/hr
H. Expected Sample Length	19"

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

Core #13
WHC-CM-0210 Waste characterization Plan for the Hanford 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
241-4 110	DC Hartley	~~11-30-89~~ 12-1-89 0555	2225 Hanford	VIDA Boyle	12-01-89 09:25

(15) Seal Intact Upon Release?	(18) Seal Intact Upon Receipt?	(19) Seal Data Consistent with this Record? Shipment No.	Sample No.
☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No

Single Shell Tank Waste Characterization
Summary of Core Sample

TANK ID:	241-U-110
RISER ID:	2
CORE ID:	#13

DATE SAMPLING INITIATED:	11-30-89
DATE SAMPLING COMPLETED:	12-01-89

SEGMENT		
1	Lab Serial No.	F-0489
	Customer ID No.	89-073
	Last Segment?	NO
2	Lab Serial No.	F-0513
	Customer ID No.	89-074
	Last Segment?	NO
3	Lab Serial No.	F-0537
	Customer ID No.	89-075
	Last Segment?	NO
4	Lab Serial No.	F-0561
	Customer ID No.	89-076
	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

Results are reported as wet sample weight.

Tank: 241-U-110
Core: 13
Segment: 3
Customer Id.: 89-075

Untreated Sample Results

	Sample	Duplicate
pH	12.42	12.12
Percent Water	43.18 %	42.98 %

Fusion Analysis Results

	Sample	Duplicate
Fusion Digestion	2.30E+00 g/L	2.27E+00 g/L
Total Alpha	<0.76 uci/g	<0.73 uci/g
Total Beta	1.88E+03 uci/g	1.80E+03 uci/g
GEA		
Cs-137	5.13E+01 uci/g	5.73E+01 uci/g
Uranium	6.35E+03 ug/g	5.77E+03 ug/g

Water Digestion Results

	Sample	Duplicate
Water Digestion	1.21E+01 g/L	1.01E+01 g/L
Ion Chromatograph		
Fluoride	1.72E+03 ug/g	1.73E+03 ug/g
Chloride	1.62E+03 ug/g	1.76E+03 ug/g
Nitrate	5.79E+04 ug/g	5.04E+04 ug/g
Phoshate	5.85E+03 ug/g	<10000 ug/g
Sulfate	3.83E+03 ug/g	3.75E+03 ug/g
Total Organic Carbon	4.09E+02 ug/g	7.08E+02 ug/g

Acid Digestion Results

	Sample	Duplicate
Aluminum	111438. ug/g	110671. ug/g
Antimony	LT	LT
Arsenic	LT	LT
Barium	158. ug/g	145. ug/g
Beryllium	LT	LT
Bismuth	14424. ug/g	13246. ug/g
Boron	LT	LT
Cadmium	LT	LT
Calcium	737. ug/g	2239. ug/g
Cerium	2873. ug/g	2539. ug/g
Chromium	1526. ug/g	1514. ug/g
Cobalt	LT	LT
Copper	LT	LT
Europium	62. ug/g	52. ug/g
Iron	14585. ug/g	12334. ug/g
Lanthanum	310. ug/g	271. ug/g
Lead	1825. ug/g	1989. ug/g
Lithium	112. ug/g	94. ug/g
Magnesium	514. ug/g	1038. ug/g
Manganese	10103. ug/g	9745. ug/g
Mercury	LT	LT
Molybdenum	102. ug/g	99. ug/g
Neodymium	LT	LT
Nickel	345. ug/g	348. ug/g
Potassium	3597. ug/g	3326. ug/g
Samarium	3527. ug/g	3077. ug/g
Selenium	1549. ug/g	1695. ug/g
Silver	LT	LT
Sodium	79266. ug/g	77373. ug/g
Strontium	935. ug/g	921. ug/g
Tantalum	LT	LT
Thallium	3984. ug/g	3564. ug/g
Thorium	2087. ug/g	1748. ug/g
Tin	LT	LT
Titanium	134. ug/g	126. ug/g
Uranium	27585. ug/g	24107. ug/g
Vanadium	193. ug/g	LT
Zinc	177. ug/g	331. ug/g
Zirconium	315. ug/g	269. ug/g

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

PHYSICAL TEST RESULTS

Single Shell Tank
Extrusion of Segment -- Physical Tests

LAB SEGMENT SERIAL #: F0537 CUSTOMER ID: 89-075

ANALYST: Richard L. Weiss DATE EXTRUDED: January 26,1990

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: 15.0 in.	CALCULATED VOLUME: 11.78in^3	
REMARKS	None		

APPEARANCE OF SOLIDS: Sample was dark brown with firm solids. During the early stage of extrusion, no sample but "air" noted leaking from the sample valve.

PENETROMETER	13.8 lbs/sq in	REMARKS: None

HOMOGENIZATION

PROCEDURE: T038A-00712	REVISION: F	QUANTITY OF MATERIAL: 220.95	GRAMS
DATE HOMOGENIZED: 02-15-90		TIME HOMOGENIZED: 5.0	MINUTES
OPERATOR: K. J. Patterson			

LABORATORY NOTEBOOK REFERENCE	WHC-N-313-4	33 and 34
	Notebook No.	Page No.

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Single Shell Tank
Segment -- Subsamples

LAB SEGMENT SERIAL #: F0537 CUSTOMER ID: 89-075

VOLATILE ORGANIC ANALYSIS

VOA SAMPLE | LAB SERIAL #: 89-075-277 | DATE SAMPLED: 01-26-90

Sample shipped to PNL

PARTICLE SIZE DISTRIBUTION ANALYSIS

PARTICLE SIZE SAMPLE | LAB SERIAL #: F0537 | DATE SAMPLED: 01-26-90

Homogenized Solids

UNDIGESTED SOLIDS ANALYSIS

LABORATORY SERIAL NUMBER FOR SAMPLE: F0537 | DATE SAMPLED: 02-15-90

LABORATORY SERIAL NUMBER OF DUPLICATE SAMPLE: F0538

FUSION ANALYSIS OF SOLIDS

LABORATORY SERIAL NUMBER OF SAMPLE: F0542 | DATE SAMPLED: 02-15-90

LABORATORY SERIAL NUMBER OF DUPLICATE SAMPLE: F0543

LABORATORY SERIAL NUMBER OF SPIKED SAMPLE: F0544

ACID DIGESTION ANALYSIS OF SOLIDS

LABORATORY SERIAL NUMBER OF SAMPLE: F0552 | DATE SAMPLED: 02-15-90

LABORATORY SERIAL NUMBER OF DUPLICATE SAMPLE: F0553

LABORATORY SERIAL NUMBER OF SPIKED SAMPLE: F0554

WATER DIGESTION ANALYSIS OF SOLIDS

LABORATORY SERIAL NUMBER OF SAMPLE: F0547 | DATE SAMPLED: 02-15-90

LABORATORY SERIAL NUMBER OF DUPLICATE SAMPLE: F0548

LABORATORY SERIAL NUMBER OF SPIKED SAMPLE: F0549

Laboratory Notebook Reference | WHC-N-313-4 (Notebook No.) | 33 (Page No.)

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TANK 241-U-110. CORE 13. SEGMENT 3

Brinkmann

Particle Size Analyzer

PROCESS CHEMISTRY LABS PARTICLE ANALYSIS VIA BRINKMANN 2010 STATISTICS

SAMPLE NAME : SST,B000274,F0537,GLY,SBK
FILE NAME : F0537.002

DATE	: 22/02/1990	ACQ. RANGE	: 0.5-150	COUNTS	: 84360
TIME	: 08:10	ACQ. MODE	: SAMPLE	S.N.F.	: 0.96
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 470 SEC	S.D.U.	: 2857
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 4	CONCENTR.	: 4.6E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 8.5E-03 %

	MEAN Diameter	S.D.
Number, Length :	1.14 µm	1.25 µm
Number, Area :	1.69 µm	1.36 µm
Number, Volume :	3.29 µm	2.49 µm
Length, Area :	2.51 µm	5.00 µm
Length, Volume :	5.59 µm	5.87 µm
Area, Volume :	12.48 µm	19.69 µm
Volume, Moment :	43.56 µm	30.76 µm

	MEDIAN Diameter	MODE	CONFIDENCE
Number :	0.84 µm	0.75 µm	100.00%
Area :	4.65 µm	4.75 µm	82.99%
Volume :	42.91 µm	45.76 µm	99.78%

immiscible organics present
in sample; had to use EtOH, glycerine dispersant

SAMPLE NAME : SST,B000274,F0537,GLY,SBK
FILE NAME : F0537.002

DATE	: 22/02/1990	ACQ. RANGE	: 0.5-150	COUNTS	: 84360
TIME	: 08:10	ACQ. MODE	: SAMPLE	S.N.F.	: 0.96
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 470 SEC	S.D.U.	: 2357
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 4	CONCENTR.	: 4.6E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 8.5E-03 %

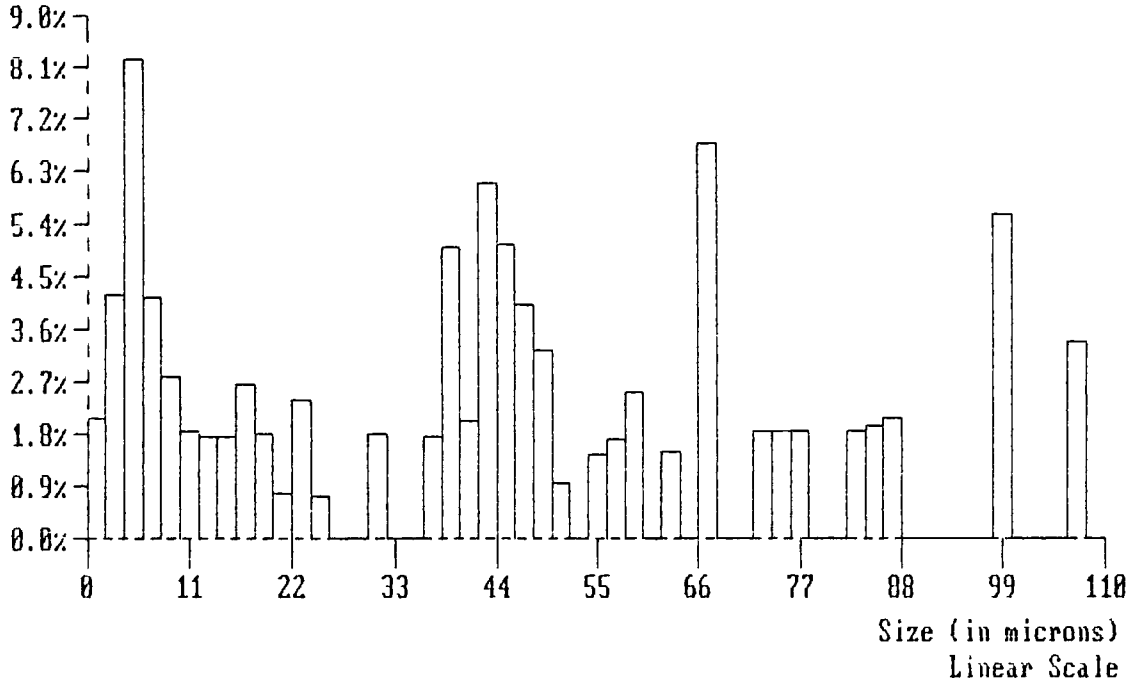
PROBABILITY VOLUME DENSITY GRAPH

Name: SST,B000274,F0537,GLY,SBK
8.5E-05 cc/ml(100.0%)
Mode at 5.00 µm

Mean(nv): 3.29µm
S.D.(nv): 2.49µm

Median : 42.91µm
Mean(vm): 43.56µm
S.D.(vm): 30.76µm
Conf(vm): 99.78 %

<< SCALE RANGE (µm): ADJUSTED >>



SAMPLE NAME : SST,B000274,F0537,GLY,SBK
FILE NAME : F0537.002

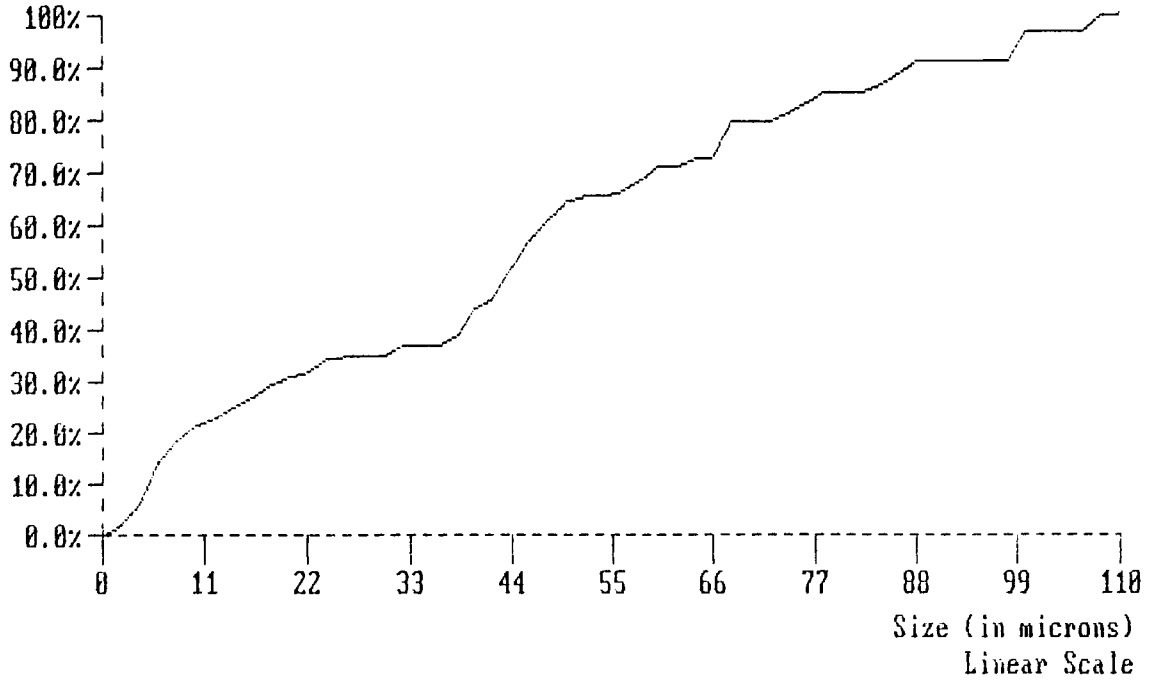
DATE	: 22/02/1990	ACQ. RANGE	: 0.5-150	COUNTS	: 84360
TIME	: 08:10	ACQ. MODE	: SAMPLE	S.N.F.	: 0.96
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 470 SEC	S.D.U.	: 2057
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 4	CONCENTR.	: 4.6E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 8.5E-03 %

PROBABILITY VOLUME DISTRIBUTION GRAPH

Name: SST,B000274,F0537,GLY,SBK
8.5E-05 cc/ml(100.0%)

Mean(nv): 3.29µm
S.D.(nv): 2.49µm

Median : 42.91µm
Mean(vm): 43.56µm
S.D.(vm): 30.76µm
Conf(vm): 99.78 %



Brinkmann

Particle Size Analyzer

PROCESS CHEMISTRY LABS PARTICLE ANALYSIS
VIA BRINKMANN 2010
STATISTICS

SAMPLE NAME : SST,B000274,F0537,GLY,SBK
FILE NAME : F0537.003

DATE	: 22/02/1990	ACQ. RANGE	: 0.5-60	COUNTS	: 23365
TIME	: 08:21	ACQ. MODE	: SAMPLE	S.N.F.	: 0.91
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 135 SEC	S.D.U.	: 3428
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 3	CONCENTR.	: 5.1E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 7.6E-03 %

	MEAN Diameter	S.D.
Number, Length :	1.03 µm	1.21 µm
Number, Area :	1.59 µm	1.34 µm
Number, Volume :	3.05 µm	2.36 µm
Length, Area :	2.46 µm	4.64 µm
Length, Volume :	5.25 µm	5.41 µm
Area, Volume :	11.19 µm	14.34 µm
Volume, Moment :	29.56 µm	16.24 µm

	MEDIAN Diameter	MODE	CONFIDENCE
Number :	0.75 µm	0.55 µm	99.99%
Area :	4.76 µm	4.86 µm	64.55%
Volume :	37.17 µm	38.72 µm	96.91%

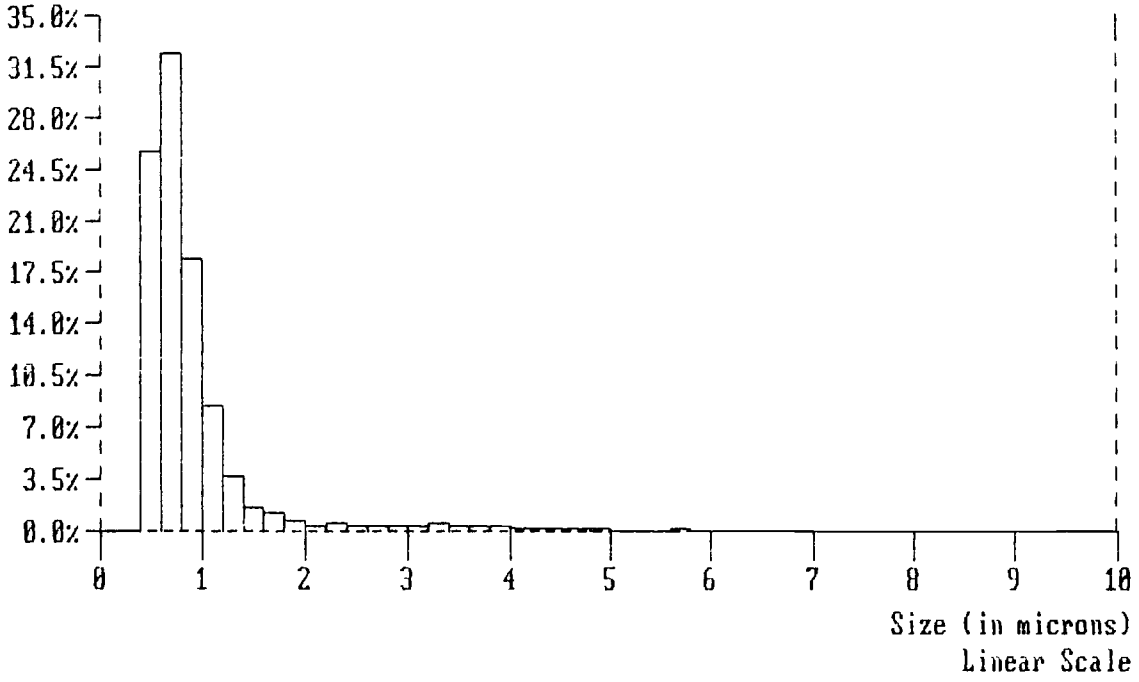
SAMPLE NAME : SST,B000274,F0537,GLY,SBK
FILE NAME : F0537.003

DATE	: 22/02/1990	ACQ. RANGE	: 0.5-60	COUNTS	: 23865
TIME	: 08:21	ACQ. MODE	: SAMPLE	S.N.F.	: 0.91
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 135 SEC	S.D.U.	: 3428
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 3	CONCENTR.	: 5.1E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 7.6E-03 %

PROBABILITY NUMBER DENSITY GRAPH

Name: SST,B000274,F0537,GLY,SBK
5.1E+06 #/ml(99.8%)
Mode at 0.70 µm
<< SCALE RANGE (µm): 0 - 10 >>

Local Median : 0.75µm
Local Mean(nl): 1.01µm
Local S.D.(nl): 0.91µm
Local Conf(nl):100.00 %



SAMPLE NAME : SST,B000274,F0537,GLY,SBK
FILE NAME : F0537.003

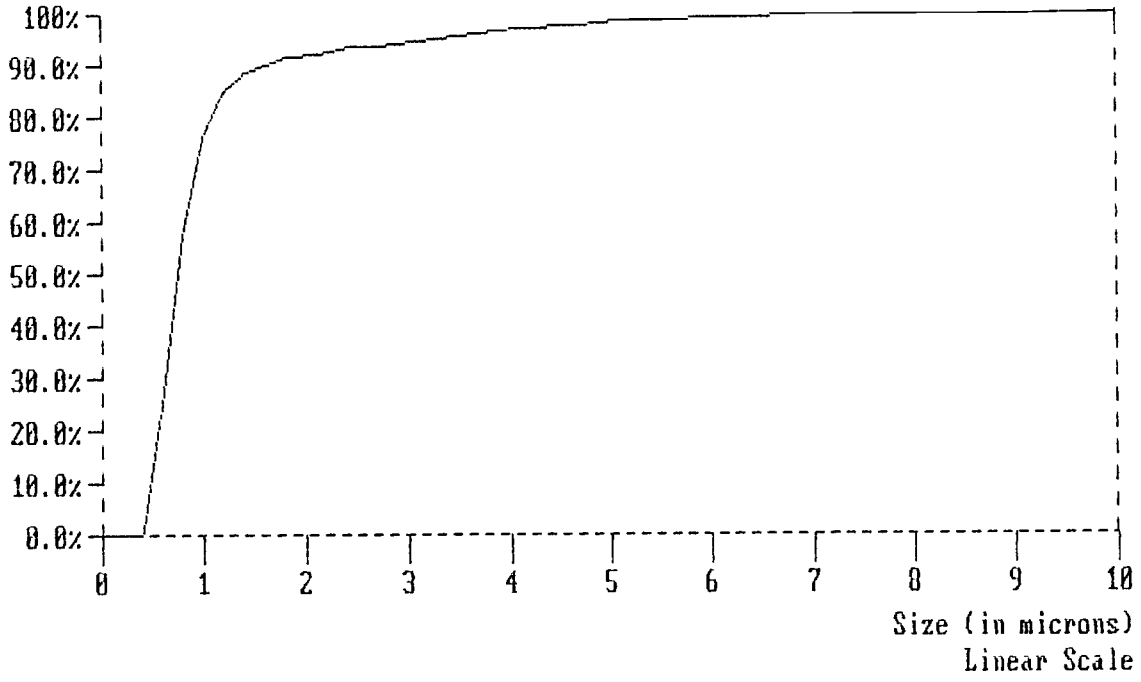
DATE	: 22/02/1990	ACQ. RANGE	: 0.5-60	COUNTS	: 23965
TIME	: 08:21	ACQ. MODE	: SAMPLE	S.N.F.	: 0.91
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 135 SEC	S.D.U.	: 3428
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 3	CONCENTR.	: 5.1E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 7.6E-03 %

PROBABILITY NUMBER DISTRIBUTION GRAPH

Name: SST,B000274,F0537,GLY,SBK
5.1E+06 #/ml(99.8%)

Local Median : 0.75µm
Local Mean(nl): 1.01µm
Local S.D.(nl): 0.91µm
Local Conf(nl):100.00 %

<< SCALE RANGE (µm): 0 - 10 >>



UNDIGESTED SAMPLE ANALYSIS

Single Shell Tank Project

Untreated Sample Results

Tank: 241-U-110
Core: 13
Segment: 4
Customer ID: 89-075

	Check Standard	Blank		Sample	Sample Duplicate	Check Standard
Laboratory ID:	F0536	F0577		F0537	F0538	F0540
pH	100.30%	6.54		12.42	12.12	100.00%
Laboratory ID:	F0416	F0437		F0537	F0538	F0564
%Water	98.30%	6.2	mg	43.18%	42.98%	96.95%

Analytical Batch

LAB SEGMENT SERIAL #:F0537

CUSTOMER ID:89-075

INSTRUMENT	WA77509
PROCEDURE/REV	LA-212-103/A-1
TECHNOLOGIST	Mary Franz
DATE	March 09, 1990
TEMPERATURE	24.2 C
STARTING TIME	1500
ENDING TIME	1830
CHEMIST	R. E. Brandt

pH analysis of the solid sample

	DESCRIPTION	LAB ID
1	Initial LMCS Check Std.	F0536
2	Reagent Blank	F0557
3	Sample 89-075	F0537
4	Duplicate Sample 89-075	F0538
5	Final LMCS Check Std.	F0540
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 Standard	72C11-8/1.0 mL			1.0 mL

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

Analytical Batch

LAB SEGMENT SERIAL #:F0537

CUSTOMER ID:89-075

INSTRUMENT	N/A
PROCEDURE/REV	LA-564-101/D-2
TECHNOLOGIST	R. D. Hale
DATE	March 05, 1990
TEMPERATURE	120 C
STARTING TIME	1400 3-1-90
ENDING TIME	1430 3-2-90
CHEMIST	R. E. Brandt

% Water in Sample 89-075

	DESCRIPTION		LAB ID
1	Initial LMCS Check Std.		F0416
2	Reagent Blank		F0437
3	Sample	89-070	F0417
4	Duplicate Sample	89-070	F0418
5	Sample	89-071	F0441
6	Duplicate Sample	89-071	F0442
7	Sample	89-072	F0465
8	Duplicate Sample	89-072	F0466
9	Sample	89-073	F0489
10	Duplicate Sample	89-073	F0490
11	Sample	89-074	F0513

	DESCRIPTION		LAB ID
12	Duplicate Sample	89-074	F0514
13	Sample	89-075	F0537
14	Duplicate Sample	89-075	F0538
15	Sample	89-076	F0561
16	Duplicate Sample	89-076	F0562
17	Final LMCS Check Std		F0564
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	11C11AH/1.0 mL			1.0 mL

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

KOH FUSION ANALYSIS

Single Shell Tank Project

Fusion Analysis
Laboratory Results of Solids
Units Are Sample Wet Weight

Tank: 241-U-110
Core: 13
Segment: 3
Customer ID: 89-075

	Check Standard	Blank		Sample		Sample Duplicate		Spike of Sample	Check Standard
Laboratory ID:	**N/A**	**F0436**		**F0542**		**F0543**		**N/A**	**N/A**
Fusion Digestion	N/A	Complete		2.3	g/L	2.27	g/L	N/A	N/A
Laboratory ID:	**F0545**	**F0556**		**F0542**		**F0543**		**F0544**	**F0541**
Total Alpha	109.70%	<1.22E-04	uci/L	<7.56E-01	uci/g	<7.31E-01	uci/g	110.10%	94.10%
Total Beta	106.10%	<6.07E-04	uci/L	1.88E+03	uci/g	1.80E+03	uci/g	103.20%	101.70%
Laboratory ID:	**F0421**	**F0436**		**F0542**		**F0543**		**F0568**	**F0569**
GEA Cs-137	98.30%	<4.81E-04	uci/L	5.13E+01	uci/g	5.73E+01	uci/g	93.50%	97.30%
Laboratory ID:	**F0541**	**F0556**		**F0542**		**F0543**		**F0544**	**F0545**
Uranium	88.99%	<1.16E+02	ug/L	6.35E+03	ug/g	5.77E+03	ug/g	94.30%	87.40%

Single Shell Tank Project

Fusion Analysis
Results of the Laboratory Digestions

Tank: 241-U-110
Core: 13
Segment: 3
Customer ID: 89-075

	Check Standard	Blank		Sample		Sample Duplicate		Spike of Sample	Check Standard
Laboratory ID:	**N/A**	**F0436**		**F0542**		**F0543**		**N/A**	**N/A**
Fusion Digestion	N/A	Complete		2.3	g/L	2.27	g/L	N/A	N/A
Laboratory ID:	**F0545**	**F0556**		**F0542**		**F0543**		**F0544**	**F0541**
Total Alpha	109.70%	<1.22E-04	uci/L	<1.74	uci/L	<1.66	uci/L	110.10%	94.10%
Total Beta	106.10%	<6.07E-04	uci/L	4.32E+03	uci/L	4.09E+03	uci/L	103.20%	101.70%
Laboratory ID:	**F0421**	**F0436**		**F0542**		**F0543**		**F0568**	**F0569**
GEA Cs-137	98.30%	<4.81E-04	uci/L	1.18E+02	uci/L	1.30E+02	uci/L	93.50%	97.30%
Laboratory ID:	**F0541**	**F0556**		**F0542**		**F0543**		**F0544**	**F0545**
Uranium	88.99%	<1.16E+02	ug/L	1.46E-02	g/L	1.31E-02	g/L	94.30%	87.40%

Analytical Batch

LAB SEGMENT SERIAL #:F0537

CUSTOMER ID:89-075

INSTRUMENT	N/A
PROCEDURE/REV	LA-549-141/A-1
TECHNOLOGIST	R. D. Hale
DATE	March 10, 1990
TEMPERATURE	450 C
STARTING TIME	0800
ENDING TIME	1200
CHEMIST	S. A. Catlow

Fusion Dissolution

	DESCRIPTION		LAB ID
1	Reagent Blank		F0436
2	Sample	89-070	F0422
3	Duplicate Sample	89-070	F0423
4	Sample	89-071	F0446
5	Duplicate Sample	89-071	F0447
6	Sample	89-072	F0470
7	Duplicate Sample	89-072	F0471
8	Sample	89-075	F0542
9	Duplicate Sample	89-075	F0543
10	Sample	89-076	F0566
11	Duplicate Sample	89-076	F0567

	DESCRIPTION		LAB ID
12	Sample	89-077	F1095
13	Duplicate Sample	89-077	F1096
14	Sample	89-078	F1119
15	Duplicate Sample	89-078	F1120
16	Sample	89-079	F1143
17	Duplicate Sample	89-079	F1144
18	Sample	89-080	F1167
19	Duplicate Sample	89-080	F1168
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 #:F0537

CUSTOMER ID: 89-075

INSTRUMENT	WA57276
PROCEDURE/REV	LA-508-101/C-2
TECHNOLOGIST	Mary Franz
DATE	April 09, 1990
TEMPERATURE	N/A
STARTING TIME	1030
ENDING TIME	1200
CHEMIST	S. A. Catlow

Total Beta & Total Alpha Analysis of the Fusion Dissolution.
Detector 14, WA57276
Samples were prepared in batch, but counted randomly.

	DESCRIPTION	LAB ID
1	Initial LMCS Check Std.	F0545
2	Reagent Blank	F0556
3	Sample 89-075	F0542
4	Duplicate Sample 89-075	F0543
5	Spike of Sample 89-075	F0544
6	Final LMCS Check Std.	F0541
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 Standard	143B44/10 mL			N/A
Spike	143B44/10 mL	F0542/1.0 uL		N/A

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

Single Shell Tank

Calibration Record

Analyte:	Am^{241}		
Procedure:	LQ-508-002	Revision:	A-0
Instrument:	Detector #14	Property Number:	WA45709
Technologist:	R.A. Jones	Payroll Number:	65801
Date:	November 28,1988		
Calibration Standard ID:	36B40A8; 36B40B7; 36B40C7; 36B40A3; 36B40B3; 36B40C3; 36B40A6;36B40B6; 36B40C5		
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. 14

RADIONUCLIDE: Am-241
HALF LIFE: 154497
COUNT TIME: 5
CPM BKG: 0.5

TIME ZERO DATE (HD): 15897

DATE COUNTED (HD): 16135

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

STANDARD ID	SIZE	DATE	TIME	COUNTS @ 0 DEG.	COUNTS @ 90 DEG.	COUNTS @ 180 DEG.	COUNTS @ 270 DEG.
36B40A8	1	11/28/88	1115	83719	83889	83820	84087
36B40B7	1	11/28/88	1128	147778	147414	147378	147313
36B40C7	1	11/28/88	1142	212324	211727	211106	211442
36B40A3	2	11/28/88	1155	67029	66485	66532	66137
36B40B3	2	11/28/88	1207	116432	117580	116643	116507
36B40C3	2	11/28/88	1221	167025	166472	166682	166167
36B40A6	5	11/28/88	1234	64835	64744	63542	64860
36B40B6	5	11/28/88	1246	132366	127335	127267	127511
36B40C5	5	11/28/88	1300	176904	172226	170187	173840

STANDARD ID	SIZE	STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
36B40A8	1"	60570	16775	1.00	16793	0.2773
36B40B7	1"	109900	29494	1.00	29525	0.2687
36B40C7	1"	159700	42329	1.00	42375	0.2653

AVERAGE, 1" = 0.2704 +/- @95% 0.0121 4.46 % ON 11/28/88

STANDARD ID	SIZE	STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
36B40A3	2"	61800	13309	1.00	13323	0.2156
36B40B3	2"	110700	23358	1.00	23383	0.2112
36B40C3	2"	161400	33317	1.00	33352	0.2066

AVERAGE, 2" = 0.2111 +/- @95% 0.0088 4.15 % ON 11/28/88

STANDARD ID	SIZE	STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
36B40A6	5"	59470	12899	1.00	12912	0.2171
36B40B6	5"	109800	25723	1.00	25751	0.2345
36B40C5	5"	160100	34657	1.00	34694	0.2167

AVERAGE, 5" = 0.2228 +/- @95% 0.0199 8.95 % ON 11/28/88

NEW EFFS FOR DET 14 Am-241 1" = 0.2704 2" = 0.2111

5" = 0.2228

Single Shell Tank

Calibration Record

Analyte:	Co^{60}		
Procedure:	LQ-508-002	Revision:	A-0
Instrument:	Detector #14	Property Number:	WA57276
Technologist:	R.A. Jones	Payroll Number:	65801
Date:	November 28, 1988		
Calibration Standard ID:	32B40A8; 32B40B7; 32B40C7; 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. 14

		2",5" STD TIME ZERO DATE (HD):	15883
RADIONUCLIDE:	Co-60	1" STD TIME ZERO DATE (HD):	15883
HALF LIFE:	1925	DATE COUNTED (HD):	16135
COUNT TIME:	5	DATE COUNTED 1" (HD)	16135
CPM BKG:	19		
CPM 1" BKG:	19		

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

STANDARD ID	SIZE	DATE	TIME	COUNTS @ 0 DEG.	COUNTS @ 90 DEG.	COUNTS @ 180 DEG.	COUNTS @ 270 DEG.
32B40A8	1	11/28/88	1313	94851	93909	94136	94073
32B40B7	1	11/28/88	1325	180320	178550	178878	179065
32B40C7	1	11/28/88	1338	260104	258654	259795	259469
32B40A4	2	11/28/88	1349	90411	89596	89705	90717
32B40B3	2	11/28/88	1527	170657	169556	169500	170301
32B40C4	2	11/28/88	1540	244082	244246	243016	249016
32B40A5	5	11/28/88	1551	83403	82448	82728	84312
32B40B6	5	11/28/88	1603	160402	163149	162823	159622
32B40C5	5	11/28/88	1616	237343	232578	231827	23179

STANDARD ID	SIZE	STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
32B40A8	1"	69550	18829	1.09	20618	0.2964
32B40B7	1"	134700	35822	1.09	39224	0.2912
32B40C7	1"	201000	51882	1.09	56810	0.2826

AVERAGE, 1" = 0.2901 +/- @95% 0.0137 4.71 % ON 11/28/88

STANDARD ID	SIZE	STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
32B40A4	2"	70480	18002	1.09	19712	0.2797
32B40B3	2"	135100	33982	1.09	37209	0.2754
32B40C4	2"	202400	48999	1.09	53653	0.2651

AVERAGE, 2" = 0.2734 +/- @95% 0.0147 5.38 % ON 11/28/88

STANDARD ID	SIZE	STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
32B40A5	5"	70160	16626	1.09	18205	0.2595
32B40B6	5"	135700	32281	1.09	35347	0.2605
32B40C5	5"	201900	46658	1.09	51090	0.2530

AVERAGE, 5" = 0.2577 +/- @95% 0.0079 3.07 % ON 11/28/88

NEW EFFS FOR DET 14 Co-60 1" = 0.2901 2" = 0.2734

5" = 0.2577

Analytical Batch

LAB SEGMENT SERIAL #:F0537

CUSTOMER ID:89-075

INSTRUMENT	401934
PROCEDURE/REV	LA-548-121/C-2
TECHNOLOGIST	R. D. Hale
DATE	March 14, 1990
TEMPERATURE	23 C
STARTING TIME	0900
ENDING TIME	1000
CHEMIST	S. A. Catlow

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

	DESCRIPTION		LAB ID
1	Initial LMCS Check Std.		F0421
2	Reagent Blank		F0436
3	Sample	89-070	F0422
4	Duplicate Sample	89-070	F0423
5	Sample	89-071	F0446
6	Duplicate Sample	89-071	F0447
7	Sample	89-072	F0470
8	Duplicate Sample	89-072	F0471
9	Sample	89-075	F0542
10	Duplicate Sample	89-075	F0543
11	Sample	89-076	F0566

	DESCRIPTION		LAB ID
12	Duplicate Sample	89-076	F0567
13	Spike	89-076	F0568
14	Final LMCS Check Std.		F0569
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	122B44/500 uL			22 mL
Spike	122B44/500 uL	F0566/50 uL		22 mL

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:	February 14, 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: 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: 56840 D1

ENERGY (KEV)	EFFICIENCY (COUNTS/GAMMA)
59.536	5.721347E-03
88.032	1.512560E-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)
+ 2.017690E+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: 56840 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)
                    +   -2.020058E+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

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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  13:08:43


                    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: SD1070
ANALYZED BY:         VR

SAMPLE DESCRIPTION: F421 SEG 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 14-MAR-90 AT 11:00:58

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 23-NOV-89
EFFICIENCY CALIBRATION PERFORMED  2-MAR-89
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222-S COUNTING ROOM 27-AUG-90 13:08:43

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	1127.46	563.20	1.34	417.	456.	13.9	CS-134, EU-152
2C	1139.52	569.23	1.34	456.	822.	12.2	CS-134, BI-207
3C	1210.35	604.63	1.41	394.	5339.	3.3	CS-134
4C	1219.45	609.18	1.41	323.	79.	30.4	BI-214, RU-103
5	1324.22	661.55	1.47	366.	9209.	2.1	CS-137
5B		661.82			35.	46.4	
6C	1592.53	795.69	1.55	258.	3769.	4.0	CS-134
7C	1604.74	801.80	1.55	227.	359.	14.3	CS-134
8	2347.09	1173.10	1.74	186.	4807.	3.0	CO-60
9	2665.49	1332.42	1.97	37.	4508.	3.0	CO-60
10	2731.21	1365.31	2.48	13.	101.	22.6	CS-134
11	2921.74	1460.68	2.12	11.	187.	15.5	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 13:08:43

SAMPLE: F421 SEG F
DATA COLLECTED ON 14-MAR-90 AT 11:00:58
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

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

NUCLIDE	ACTIVITY CONCENTRATION IN uCi/LI MEASURED	ERROR	DECAY CORRECTED	ERROR	ENERGY COMPARISON (KEV) EXPECT	DIFF
AC-228	LLD<7.86E-01		LLD<7.86E-01		911.07	
AG-108M	LLD<1.96E-01		LLD<1.96E-01		433.94	
AG-110M	LLD<8.94E-01		LLD<8.94E-01		657.76	
AM-241	LLD<8.34E-01		LLD<8.34E-01		59.54	
AM-243	LLD<2.10E-01		LLD<2.10E-01		74.67	
AR-41	LLD<1.48E-01		LLD<1.48E-01		1293.64	
AU-198	LLD<1.70E-01		LLD<1.70E-01		411.80	
BA-133	LLD<2.57E-01		LLD<2.57E-01		356.02	
BA-139	LLD<5.05E-01		LLD<5.05E-01		165.85	
BA-140	LLD<7.04E-01		LLD<7.04E-01		537.27	
BA-141	LLD<5.12E-01		LLD<5.12E-01		190.23	
BE-7	LLD<1.78E+00		LLD<1.78E+00		477.59	
BI-207	LLD<1.69E-01		LLD<1.69E-01		569.70	
BI-212	LLD<2.47E+00		LLD<2.47E+00		727.27	
BI-214	1.70E-01	+-1.58E-01	1.70E-01	+-1.58E-01	609.32	-0.14
CD-109	LLD<3.08E+00		LLD<3.08E+00		88.03	
CE-139	LLD<1.14E-01		LLD<1.14E-01		165.85	
CE-141	LLD<1.77E-01		LLD<1.77E-01		145.44	
CEPR144	LLD<1.51E+00		LLD<1.51E+00		133.51	
CO-56	LLD<1.88E-01		LLD<1.88E-01		846.76	
CO-57	LLD<9.58E-02		LLD<9.58E-02		122.06	
CO-58	LLD<1.83E-01		LLD<1.83E-01		810.75	
CO-60	2.14E+01	+-6.73E-01	2.14E+01	+-6.73E-01	1332.50	-0.08
					1173.24	-0.14
CR-51	LLD<1.38E+00		LLD<1.38E+00		320.09	
CS-134	1.36E+01	+-5.63E-01	1.36E+01	+-5.63E-01	795.84	-0.15
					604.70	-0.07
CS-136	LLD<1.85E-01		LLD<1.85E-01		818.51	
CS-137	2.85E+01	+-7.04E-01	2.85E+01	+-7.04E-01	661.65	-0.10
CS-138	LLD<1.38E-01		LLD<1.38E-01		1435.86	
EU-152	LLD<3.23E-01		LLD<3.23E-01		1408.01	
EU-154	LLD<3.09E-01		LLD<3.09E-01		1274.45	
EU-155	LLD<3.73E-01		LLD<3.73E-01		105.31	
FE-59	LLD<4.20E-01		LLD<4.20E-01		1099.25	
HF-181	LLD<1.95E-01		LLD<1.95E-01		482.20	
HG-203	LLD<1.60E-01		LLD<1.60E-01		279.20	
I-131	LLD<1.97E-01		LLD<1.97E-01		364.48	
I-132	LLD<2.60E-01		LLD<2.60E-01		667.69	
I-133	LLD<1.90E-01		LLD<1.90E-01		529.69	
I-134	LLD<2.70E-01		LLD<2.70E-01		847.03	
I-135	LLD<4.06E-01		LLD<4.06E-01		1260.41	
K-40	LLD<1.90E+00		LLD<1.90E+00		1460.75	
KR-85	LLD<4.08E+01		LLD<4.08E+01		513.99	
KR-85M	LLD<1.12E-01		LLD<1.12E-01		151.17	
KR-87	LLD<4.37E-01		LLD<4.37E-01		402.58	
KR-89	LLD<6.52E+00		LLD<6.52E+00		220.90	
LA-140	LLD<7.35E-02		LLD<7.35E-02		1596.20	

LA-142	LLD<3.84E-01	LLD<3.84E-01	641.83
MN-54	LLD<1.75E-01	LLD<1.75E-01	834.83
MN-56	LLD<2.12E-01	LLD<2.12E-01	846.76
NA-22	LLD<1.03E-01	LLD<1.03E-01	1274.55
NA-24	LLD<1.68E-01	LLD<1.68E-01	1368.60
NB-94	LLD<1.59E-01	LLD<1.59E-01	702.63
NB-95	LLD<1.60E-01	LLD<1.60E-01	765.78
NB-97	LLD<1.08E+00	LLD<1.08E+00	657.92
NP-238	LLD<8.25E-01	LLD<8.25E-01	984.45
NP-239	LLD<8.99E-01	LLD<8.99E-01	277.60
PA-233	LLD<4.03E-01	LLD<4.03E-01	311.98
PA-234M	LLD<3.46E+01	LLD<3.46E+01	1001.03
PB-210	LLD<4.65E+00	LLD<4.65E+00	465.03
PB-212	LLD<2.86E-01	LLD<2.86E-01	239.00
PB-214	LLD<4.25E-01	LLD<4.25E-01	351.92
PO-210	LLD<1.64E+04	LLD<1.64E+04	804.00
PO-214	LLD<6.88E+03	LLD<6.88E+03	799.70
PO-216	LLD<1.32E+04	LLD<1.32E+04	804.90
PU-239	LLD<1.30E+03	LLD<1.30E+03	129.30
PU-241	LLD<4.57E+04	LLD<4.57E+04	148.57
RA-224	LLD<3.12E+00	LLD<3.12E+00	240.99
RA-226	LLD<2.72E+00	LLD<2.72E+00	186.10
RB-88	LLD<6.32E-01	LLD<6.32E-01	1836.00
RB-89	LLD<9.12E-01	LLD<9.12E-01	1031.88
RN-220	LLD<1.46E+02	LLD<1.46E+02	549.73
RU-103	LLD<1.78E-01	LLD<1.78E-01	497.08
RURH106	LLD<3.28E+00	LLD<3.28E+00	621.80
SB-124	LLD<3.08E-01	LLD<3.08E-01	602.72
SB-125	LLD<1.46E+00	LLD<1.46E+00	176.33
SC-46	LLD<2.22E-01	LLD<2.22E-01	1120.45
SE-75	LLD<2.20E-01	LLD<2.20E-01	264.66
SN-113	LLD<2.49E-01	LLD<2.49E-01	391.67
SR-85	LLD<1.79E-01	LLD<1.79E-01	513.99
SR-91	LLD<3.03E-01	LLD<3.03E-01	555.60
SR-92	LLD<7.70E-02	LLD<7.70E-02	1383.94
TA-182	LLD<6.21E-01	LLD<6.21E-01	1121.30
TC-99M	LLD<1.02E-01	LLD<1.02E-01	140.51
TE-123M	LLD<1.09E-01	LLD<1.09E-01	159.00
TE-125M	LLD<2.77E+01	LLD<2.77E+01	109.27
TE-132	LLD<1.34E-01	LLD<1.34E-01	228.16
TH-228	LLD<9.61E+00	LLD<9.61E+00	84.37
TL-208	LLD<2.18E-01	LLD<2.18E-01	583.14
U-235	LLD<1.81E-01	LLD<1.81E-01	185.71
U-237	LLD<5.53E-01	LLD<5.53E-01	208.00
W-187	LLD<5.51E-01	LLD<5.51E-01	685.74
XE-131M	LLD<4.72E+00	LLD<4.72E+00	163.98
XE-133	LLD<3.42E-01	LLD<3.42E-01	81.00
XE-133M	LLD<1.18E+00	LLD<1.18E+00	233.21
XE-135	LLD<1.44E-01	LLD<1.44E-01	249.79
XE-138	LLD<1.09E+00	LLD<1.09E+00	258.41
Y-88	LLD<6.00E-02	LLD<6.00E-02	1836.06
Y-91	LLD<4.84E+01	LLD<4.84E+01	1204.90
Y-91M	LLD<2.29E-01	LLD<2.29E-01	555.60
ZN-65	LLD<4.36E-01	LLD<4.36E-01	1115.55
ZR-95	LLD<3.02E-01	LLD<3.02E-01	756.73
ZR-97	LLD<1.59E-01	LLD<1.59E-01	743.33
TOTAL	6.37E+01 +-1.14E+00	6.37E+01 +-1.14E+00	

STANDARD DEVIATION = 0.04

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.44E-09 UC/LI
TOTAL MEASURED ACTIVITY = 6.37E+01 (+-1.14E+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
1127.46	563.20	456.	13.9	1.95E+01
1139.52	569.23	822.	12.2	3.55E+01
1604.74	801.80	359.	14.3	2.06E+01
2731.21	1365.31	101.	22.6	9.06E+00

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2921.74	1460.68	187.	15.5	1.77E+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  13:13:16

                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: SD1071
ANALYZED BY:        JLA

SAMPLE DESCRIPTION: F-436 SEGMENT-U
GEOMETRY DESCRIPTION:
SAMPLE SIZE:   1.0000E-01 LI       / CONVERSION FACTOR: 1.0000E+00
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL000

COLLECT STARTED ON 14-MAR-90 AT 12:26:23

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 23-NOV-89
EFFICIENCY CALIBRATION PERFORMED  2-MAR-89
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ALL DETECTED PEAKS WERE USED IN THE ANALYSIS

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
1324.38	661.63	52.	45.6	2.55E+00
2922.13	1460.87	194.	14.8	1.84E+01

222-S COUNTING ROOM 27-AUG-90 13:13:16

SAMPLE: F-436 SEGMENT-U
DATA COLLECTED ON 14-MAR-90 AT 12:26:23
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<1.24E-03		LLD<1.24E-03		911.07	
AG-108M	LLD<2.52E-04		LLD<2.52E-04		433.94	
AG-110M	LLD<4.41E-04		LLD<4.41E-04		657.76	
AM-241	LLD<1.52E-03		LLD<1.52E-03		59.54	
AM-243	LLD<4.29E-04		LLD<4.29E-04		74.67	
AR-41	LLD<3.67E-04		LLD<3.67E-04		1293.64	
AU-198	LLD<2.12E-04		LLD<2.12E-04		411.80	
BA-133	LLD<4.21E-04		LLD<4.21E-04		356.02	
BA-139	LLD<9.27E-04		LLD<9.27E-04		165.85	
BA-140	LLD<8.81E-04		LLD<8.81E-04		537.27	
BA-141	LLD<9.08E-04		LLD<9.08E-04		190.23	
BE-7	LLD<2.21E-03		LLD<2.21E-03		477.59	
BI-207	LLD<2.47E-04		LLD<2.47E-04		569.70	
BI-212	LLD<3.74E-03		LLD<3.74E-03		727.27	
BI-214	LLD<8.46E-04		LLD<8.46E-04		609.32	
CD-109	LLD<5.88E-03		LLD<5.88E-03		88.03	
CE-139	LLD<2.10E-04		LLD<2.10E-04		165.85	
CE-141	LLD<3.38E-04		LLD<3.38E-04		145.44	
CEPR144	LLD<2.82E-03		LLD<2.82E-03		133.51	
CO-56	LLD<2.05E-04		LLD<2.05E-04		846.76	
CO-57	LLD<1.79E-04		LLD<1.79E-04		122.06	
CO-58	LLD<2.81E-04		LLD<2.81E-04		810.75	
CO-60	LLD<3.73E-04		LLD<3.73E-04		1332.50	
CR-51	LLD<2.03E-03		LLD<2.03E-03		320.09	
CS-134	LLD<3.00E-04		LLD<3.00E-04		795.84	
CS-136	LLD<2.68E-04		LLD<2.68E-04		818.51	
CS-137	LLD<4.81E-04		LLD<4.81E-04		661.65	
CS-138	LLD<7.32E-04		LLD<7.32E-04		1435.86	
EU-152	LLD<1.04E-03		LLD<1.04E-03		1408.01	
EU-154	LLD<1.01E-03		LLD<1.01E-03		1274.45	
EU-155	LLD<7.24E-04		LLD<7.24E-04		105.31	
FE-59	LLD<4.30E-04		LLD<4.30E-04		1099.25	
HF-181	LLD<2.61E-04		LLD<2.61E-04		482.20	
HG-203	LLD<2.61E-04		LLD<2.61E-04		279.20	
I-131	LLD<2.93E-04		LLD<2.93E-04		364.48	
I-132	LLD<2.98E-04		LLD<2.98E-04		667.69	
I-133	LLD<2.29E-04		LLD<2.29E-04		529.69	
I-134	LLD<3.08E-04		LLD<3.08E-04		847.03	
I-135	LLD<1.49E-03		LLD<1.49E-03		1260.41	
K-40	LLD<9.27E-03		LLD<9.27E-03		1460.75	
KR-85	LLD<7.79E-02		LLD<7.79E-02		513.99	
KR-85M	LLD<2.17E-04		LLD<2.17E-04		151.17	
KR-87	LLD<5.54E-04		LLD<5.54E-04		402.58	
KR-89	LLD<1.15E-02		LLD<1.15E-02		220.90	
LA-140	LLD<4.13E-04		LLD<4.13E-04		1596.20	
LA-142	LLD<6.29E-04		LLD<6.29E-04		641.83	
MN-54	LLD<2.72E-04		LLD<2.72E-04		834.83	

MN-56	LLD<2.31E-04	LLD<2.31E-04	846.76
NA-22	LLD<3.24E-04	LLD<3.24E-04	1274.55
NA-24	LLD<3.15E-04	LLD<3.15E-04	1368.60
NB-94	LLD<3.18E-04	LLD<3.18E-04	702.63
NB-95	LLD<2.93E-04	LLD<2.93E-04	765.78
NB-97	LLD<5.34E-04	LLD<5.34E-04	657.92
NP-238	LLD<1.38E-03	LLD<1.38E-03	984.45
NP-239	LLD<1.46E-03	LLD<1.46E-03	277.60
PA-233	LLD<6.42E-04	LLD<6.42E-04	311.98
PA-234M	LLD<5.40E-02	LLD<5.40E-02	1001.03
PB-210	LLD<6.01E-03	LLD<6.01E-03	465.03
PB-212	LLD<4.55E-04	LLD<4.55E-04	239.00
PB-214	LLD<6.66E-04	LLD<6.66E-04	351.92
PO-210	LLD<2.27E+01	LLD<2.27E+01	804.00
PO-214	LLD<2.22E+00	LLD<2.22E+00	799.70
PO-216	LLD<1.39E+01	LLD<1.39E+01	804.90
PU-239	LLD<2.35E+00	LLD<2.35E+00	129.30
PU-241	LLD<8.31E+01	LLD<8.31E+01	148.57
RA-224	LLD<5.60E-03	LLD<5.60E-03	240.99
RA-226	LLD<4.92E-03	LLD<4.92E-03	186.10
RB-88	LLD<1.98E-03	LLD<1.98E-03	1836.00
RB-89	LLD<1.01E-03	LLD<1.01E-03	1031.88
RN-220	LLD<2.10E-01	LLD<2.10E-01	549.73
RU-103	LLD<2.45E-04	LLD<2.45E-04	497.08
RURH106	LLD<5.76E-03	LLD<5.76E-03	621.80
SB-124	LLD<2.54E-04	LLD<2.54E-04	602.72
SB-125	LLD<2.64E-03	LLD<2.64E-03	176.33
SC-46	LLD<3.04E-04	LLD<3.04E-04	1120.45
SE-75	LLD<3.31E-04	LLD<3.31E-04	264.66
SN-113	LLD<3.25E-04	LLD<3.25E-04	391.67
SR-85	LLD<3.42E-04	LLD<3.42E-04	513.99
SR-91	LLD<4.47E-04	LLD<4.47E-04	555.60
SR-92	LLD<5.12E-04	LLD<5.12E-04	1383.94
TA-182	LLD<9.06E-04	LLD<9.06E-04	1121.30
TC-99M	LLD<1.87E-04	LLD<1.87E-04	140.51
TE-123M	LLD<2.02E-04	LLD<2.02E-04	159.00
TE-125M	LLD<4.76E-02	LLD<4.76E-02	109.27
TE-132	LLD<2.38E-04	LLD<2.38E-04	228.16
TH-228	LLD<1.86E-02	LLD<1.86E-02	84.37
TL-208	LLD<2.78E-04	LLD<2.78E-04	583.14
U-235	LLD<3.30E-04	LLD<3.30E-04	185.71
U-237	LLD<9.03E-04	LLD<9.03E-04	208.00
W-187	LLD<9.68E-04	LLD<9.68E-04	685.74
XE-131M	LLD<9.89E-03	LLD<9.89E-03	163.98
XE-133	LLD<7.16E-04	LLD<7.16E-04	81.00
XE-133M	LLD<2.05E-03	LLD<2.05E-03	233.21
XE-135	LLD<2.36E-04	LLD<2.36E-04	249.79
XE-138	LLD<1.79E-03	LLD<1.79E-03	258.41
Y-88	LLD<1.88E-04	LLD<1.88E-04	1836.06
Y-91	LLD<1.39E-01	LLD<1.39E-01	1204.90
Y-91M	LLD<3.38E-04	LLD<3.38E-04	555.60
ZN-65	LLD<7.69E-04	LLD<7.69E-04	1115.55
ZR-95	LLD<4.59E-04	LLD<4.59E-04	756.73
ZR-97	LLD<3.07E-04	LLD<3.07E-04	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 85.0%

222-S COUNTING ROOM 27-AUG-90 13:13:16

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

PK	CENTROID CHANNEL	ENERGY KEV	FWHM KEV	BACKGND COUNTS	NET AREA COUNTS	ERROR %	NUCLIDES
1	1324.38	661.63	1.53	40.	52.	45.6	CS-137
1B		661.82			35.	46.4	
2	2922.13	1460.87	2.07	8.	194.	14.8	K-40
2B		1461.77			182.	11.2	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

B - ENVIRONMENTAL BACKGROUND PEAK

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

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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                                  29-AUG-90  08:12:26


               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: SD1080
ANALYZED BY:         EMB

SAMPLE DESCRIPTION: F542
GEOMETRY DESCRIPTION:
SAMPLE SIZE:    1.0000E-03 LI       / CONVERSION FACTOR: 2.5000E-02
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL000

COLLECT STARTED ON 14-MAR-90 AT 22:44:02

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 23-NOV-89
EFFICIENCY CALIBRATION PERFORMED  2-MAR-89
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222-S COUNTING ROOM 29-AUG-90 08:12:26

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$	92.82	46.31	1.08	101.	41.	94.5	PU-242, PU-240, EU-155
2	1324.16	661.52	1.60	44.	1942.	4.6	CS-137
2B		661.82			35.	46.4	
3	2922.22	1460.92	2.21	7.	176.	15.5	K-40
3B		1461.77			182.	11.2	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

$ - MULTIPLET ANALYSIS CONVERGED DUE TO LACK OF CHI-SQ IMPROVEMENT
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 29-AUG-90 08:12:26

SAMPLE: F542
DATA COLLECTED ON 14-MAR-90 AT 22:44:02
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<4.11E+00		LLD<4.11E+00		911.07	
AG-108M	LLD<1.60E+00		LLD<1.60E+00		433.94	
AG-110M	LLD<8.20E+00		LLD<8.20E+00		657.76	
AM-241	LLD<1.03E+01		LLD<1.03E+01		59.54	
AM-243	LLD<3.08E+00		LLD<3.08E+00		74.67	
AR-41	LLD<1.31E+00		LLD<1.31E+00		1293.64	
AU-198	LLD<1.37E+00		LLD<1.37E+00		411.80	
BA-133	LLD<2.39E+00		LLD<2.39E+00		356.02	
BA-139	LLD<5.76E+00		LLD<5.76E+00		165.85	
BA-140	LLD<5.21E+00		LLD<5.21E+00		537.27	
BA-141	LLD<5.47E+00		LLD<5.47E+00		190.23	
BE-7	LLD<1.50E+01		LLD<1.50E+01		477.59	
BI-207	LLD<1.26E+00		LLD<1.26E+00		569.70	
BI-212	LLD<1.76E+01		LLD<1.76E+01		727.27	
BI-214	LLD<3.65E+00		LLD<3.65E+00		609.32	
CD-109	LLD<4.22E+01		LLD<4.22E+01		88.03	
CE-139	LLD<1.30E+00		LLD<1.30E+00		165.85	
CE-141	LLD<2.10E+00		LLD<2.10E+00		145.44	
CEPR144	LLD<1.69E+01		LLD<1.69E+01		133.51	
CO-56	LLD<1.13E+00		LLD<1.13E+00		846.76	
CO-57	LLD<1.19E+00		LLD<1.19E+00		122.06	
CO-58	LLD<1.20E+00		LLD<1.20E+00		810.75	
CO-60	LLD<1.29E+00		LLD<1.29E+00		1332.50	
CR-51	LLD<1.16E+01		LLD<1.16E+01		320.09	
CS-134	LLD<1.11E+00		LLD<1.11E+00		795.84	
CS-136	LLD<1.26E+00		LLD<1.26E+00		818.51	
CS-137	1.18E+02	+-5.77E+00	1.18E+02	+-5.77E+00	661.65	-0.13
CS-138	LLD<1.59E+00		LLD<1.59E+00		1435.86	
EU-152	LLD<6.46E+00		LLD<6.46E+00		1408.01	
EU-154	LLD<3.87E+00		LLD<3.87E+00		1274.45	
EU-155	LLD<4.92E+00		LLD<4.92E+00		105.31	
FE-59	LLD<2.59E+00		LLD<2.59E+00		1099.25	
HF-181	LLD<1.74E+00		LLD<1.74E+00		482.20	
HG-203	LLD<1.38E+00		LLD<1.38E+00		279.20	
I-131	LLD<1.53E+00		LLD<1.53E+00		364.48	
I-132	LLD<2.20E+00		LLD<2.20E+00		667.69	
I-133	LLD<1.50E+00		LLD<1.50E+00		529.69	
I-134	LLD<1.66E+00		LLD<1.66E+00		847.03	
I-135	LLD<4.69E+00		LLD<4.69E+00		1260.41	
K-40	LLD<3.68E+01		LLD<3.68E+01		1460.75	
KR-85	LLD<3.83E+02		LLD<3.83E+02		513.99	
KR-85M	LLD<1.30E+00		LLD<1.30E+00		151.17	
KR-87	LLD<3.30E+00		LLD<3.30E+00		402.58	
KR-89	LLD<6.11E+01		LLD<6.11E+01		220.90	
LA-140	LLD<1.26E+00		LLD<1.26E+00		1596.20	
LA-142	LLD<2.77E+00		LLD<2.77E+00		641.83	
MN-54	LLD<1.26E+00		LLD<1.26E+00		834.83	

MN-56	LLD<1.28E+00	LLD<1.28E+00	846.76
NA-22	LLD<1.23E+00	LLD<1.23E+00	1274.55
NA-24	LLD<1.42E+00	LLD<1.42E+00	1368.60
NB-94	LLD<1.17E+00	LLD<1.17E+00	702.63
NB-95	LLD<9.45E-01	LLD<9.45E-01	765.78
NB-97	LLD<9.93E+00	LLD<9.93E+00	657.92
NP-238	LLD<3.18E+00	LLD<3.18E+00	984.45
NP-239	LLD<7.70E+00	LLD<7.70E+00	277.60
PA-233	LLD<3.26E+00	LLD<3.26E+00	311.98
PA-234M	LLD<2.59E+02	LLD<2.59E+02	1001.03
PB-210	LLD<3.83E+01	LLD<3.83E+01	465.03
PB-212	LLD<2.65E+00	LLD<2.65E+00	239.00
PB-214	LLD<3.68E+00	LLD<3.68E+00	351.92
PO-210	LLD<9.53E+04	LLD<9.53E+04	804.00
PO-214	LLD<1.14E+04	LLD<1.14E+04	799.70
PO-216	LLD<6.26E+04	LLD<6.26E+04	804.90
PU-239	LLD<1.53E+04	LLD<1.53E+04	129.30
PU-241	LLD<5.47E+05	LLD<5.47E+05	148.57
RA-224	LLD<2.99E+01	LLD<2.99E+01	240.99
RA-226	LLD<2.88E+01	LLD<2.88E+01	186.10
RB-88	LLD<1.26E+01	LLD<1.26E+01	1836.00
RB-89	LLD<4.53E+00	LLD<4.53E+00	1031.88
RN-220	LLD<1.11E+03	LLD<1.11E+03	549.73
RU-103	LLD<1.61E+00	LLD<1.61E+00	497.08
RURH106	LLD<2.42E+01	LLD<2.42E+01	621.80
SB-124	LLD<1.35E+00	LLD<1.35E+00	602.72
SB-125	LLD<1.48E+01	LLD<1.48E+01	176.33
SC-46	LLD<1.31E+00	LLD<1.31E+00	1120.45
SE-75	LLD<2.01E+00	LLD<2.01E+00	264.66
SN-113	LLD<1.89E+00	LLD<1.89E+00	391.67
SR-85	LLD<1.68E+00	LLD<1.68E+00	513.99
SR-91	LLD<2.19E+00	LLD<2.19E+00	555.60
SR-92	LLD<1.54E+00	LLD<1.54E+00	1383.94
TA-182	LLD<3.62E+00	LLD<3.62E+00	1121.30
TC-99M	LLD<1.19E+00	LLD<1.19E+00	140.51
TE-123M	LLD<1.22E+00	LLD<1.22E+00	159.00
TE-125M	LLD<3.88E+02	LLD<3.88E+02	109.27
TE-132	LLD<1.33E+00	LLD<1.33E+00	228.16
TH-228	LLD<1.38E+02	LLD<1.38E+02	84.37
TL-208	LLD<1.50E+00	LLD<1.50E+00	583.14
U-235	LLD<1.91E+00	LLD<1.91E+00	185.71
U-237	LLD<5.22E+00	LLD<5.22E+00	208.00
W-187	LLD<3.64E+00	LLD<3.64E+00	685.74
XE-131M	LLD<5.38E+01	LLD<5.38E+01	163.98
XE-133	LLD<4.82E+00	LLD<4.82E+00	81.00
XE-133M	LLD<1.16E+01	LLD<1.16E+01	233.21
XE-135	LLD<1.29E+00	LLD<1.29E+00	249.79
XE-138	LLD<1.00E+01	LLD<1.00E+01	258.41
Y-88	LLD<1.20E+00	LLD<1.20E+00	1836.06
Y-91	LLD<6.07E+02	LLD<6.07E+02	1204.90
Y-91M	LLD<1.66E+00	LLD<1.66E+00	555.60
ZN-65	LLD<3.50E+00	LLD<3.50E+00	1115.55
ZR-95	LLD<2.40E+00	LLD<2.40E+00	756.73
ZR-97	LLD<9.03E-01	LLD<9.03E-01	743.33
TOTAL	1.18E+02 +-5.77E+00	1.18E+02 +-5.77E+00	

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.16E-08 UC/LI
TOTAL MEASURED ACTIVITY = 1.18E+02 (+-5.77E+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
92.82	46.31	41.	94.5	6.24E+00

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2922.22	1460.92	176.	15.5	1.66E+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                *
*                                                                       *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *

CANBERRA SPECTRAN-F V2.06  SOFTWARE

222-S COUNTING ROOM                                  29-AUG-90  08:16:20


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

MCA UNIT NUMBER:   2     /     ADC UNIT NUMBER: 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: SD1081
ANALYZED BY:        MAX

SAMPLE DESCRIPTION: F543
GEOMETRY DESCRIPTION:
SAMPLE SIZE:   1.0000E-03 LI       / CONVERSION FACTOR: 2.5000E-02
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL000

COLLECT STARTED ON 15-MAR-90 AT 00:57:34

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 23-NOV-89
EFFICIENCY CALIBRATION PERFORMED  2-MAR-89
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222-S COUNTING ROOM 29-AUG-90 08:16:20

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	1324.26	661.57	1.52	65.	2123.	4.4	CS-137
1B		661.82			35.	46.4	
2C	2922.32	1460.97	2.01	16.	163.	17.3	K-40
2B		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 29-AUG-90 08:16:20

SAMPLE: F543
DATA COLLECTED ON 15-MAR-90 AT 00:57:34
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<3.99E+00		LLD<3.99E+00		911.07	
AG-108M	LLD<1.57E+00		LLD<1.57E+00		433.94	
AG-110M	LLD<8.56E+00		LLD<8.56E+00		657.76	
AM-241	LLD<9.75E+00		LLD<9.75E+00		59.54	
AM-243	LLD<2.81E+00		LLD<2.81E+00		74.67	
AR-41	LLD<1.47E+00		LLD<1.47E+00		1293.64	
AU-198	LLD<1.38E+00		LLD<1.38E+00		411.80	
BA-133	LLD<2.28E+00		LLD<2.28E+00		356.02	
BA-139	LLD<6.00E+00		LLD<6.00E+00		165.85	
BA-140	LLD<5.25E+00		LLD<5.25E+00		537.27	
BA-141	LLD<5.35E+00		LLD<5.35E+00		190.23	
BE-7	LLD<1.47E+01		LLD<1.47E+01		477.59	
BI-207	LLD<1.33E+00		LLD<1.33E+00		569.70	
BI-212	LLD<1.98E+01		LLD<1.98E+01		727.27	
BI-214	LLD<3.24E+00		LLD<3.24E+00		609.32	
CD-109	LLD<4.33E+01		LLD<4.33E+01		88.03	
CE-139	LLD<1.36E+00		LLD<1.36E+00		165.85	
CE-141	LLD<2.01E+00		LLD<2.01E+00		145.44	
CEPR144	LLD<1.73E+01		LLD<1.73E+01		133.51	
CO-56	LLD<9.36E-01		LLD<9.36E-01		846.76	
CO-57	LLD<1.23E+00		LLD<1.23E+00		122.06	
CO-58	LLD<1.10E+00		LLD<1.10E+00		810.75	
CO-60	LLD<1.04E+00		LLD<1.04E+00		1332.50	
CR-51	LLD<1.13E+01		LLD<1.13E+01		320.09	
CS-134	LLD<1.34E+00		LLD<1.34E+00		795.84	
CS-136	LLD<9.80E-01		LLD<9.80E-01		818.51	
CS-137	1.30E+02	+-6.10E+00	1.30E+02	+-6.10E+00	661.65	-0.08
CS-138	LLD<2.93E+00		LLD<2.93E+00		1435.86	
EU-152	LLD<5.66E+00		LLD<5.66E+00		1408.01	
EU-154	LLD<1.89E+00		LLD<1.89E+00		1274.45	
EU-155	LLD<4.94E+00		LLD<4.94E+00		105.31	
FE-59	LLD<2.20E+00		LLD<2.20E+00		1099.25	
HF-181	LLD<1.68E+00		LLD<1.68E+00		482.20	
HG-203	LLD<1.37E+00		LLD<1.37E+00		279.20	
I-131	LLD<1.57E+00		LLD<1.57E+00		364.48	
I-132	LLD<2.36E+00		LLD<2.36E+00		667.69	
I-133	LLD<1.58E+00		LLD<1.58E+00		529.69	
I-134	LLD<1.44E+00		LLD<1.44E+00		847.03	
I-135	LLD<4.92E+00		LLD<4.92E+00		1260.41	
K-40	LLD<3.79E+01		LLD<3.79E+01		1460.75	
KR-85	LLD<3.88E+02		LLD<3.88E+02		513.99	
KR-85M	LLD<1.32E+00		LLD<1.32E+00		151.17	
KR-87	LLD<3.53E+00		LLD<3.53E+00		402.58	
KR-89	LLD<6.61E+01		LLD<6.61E+01		220.90	
LA-140	LLD<1.37E+00		LLD<1.37E+00		1596.20	
LA-142	LLD<2.97E+00		LLD<2.97E+00		641.83	
MN-54	LLD<1.06E+00		LLD<1.06E+00		834.83	

MN-56	LLD<1.06E+00	LLD<1.06E+00	846.76
NA-22	LLD<7.56E-01	LLD<7.56E-01	1274.55
NA-24	LLD<1.18E+00	LLD<1.18E+00	1368.60
NB-94	LLD<1.27E+00	LLD<1.27E+00	702.63
NB-95	LLD<1.07E+00	LLD<1.07E+00	765.78
NB-97	LLD<1.04E+01	LLD<1.04E+01	657.92
NP-238	LLD<4.23E+00	LLD<4.23E+00	984.45
NP-239	LLD<8.04E+00	LLD<8.04E+00	277.60
PA-233	LLD<3.53E+00	LLD<3.53E+00	311.98
PA-234M	LLD<2.53E+02	LLD<2.53E+02	1001.03
PB-210	LLD<3.69E+01	LLD<3.69E+01	465.03
PB-212	LLD<2.93E+00	LLD<2.93E+00	239.00
PB-214	LLD<3.70E+00	LLD<3.70E+00	351.92
PO-210	LLD<1.07E+05	LLD<1.07E+05	804.00
PO-214	LLD<1.30E+04	LLD<1.30E+04	799.70
PO-216	LLD<7.01E+04	LLD<7.01E+04	804.90
PU-239	LLD<1.54E+04	LLD<1.54E+04	129.30
PU-241	LLD<5.24E+05	LLD<5.24E+05	148.57
RA-224	LLD<3.09E+01	LLD<3.09E+01	240.99
RA-226	LLD<2.74E+01	LLD<2.74E+01	186.10
RB-88	LLD<1.44E+01	LLD<1.44E+01	1836.00
RB-89	LLD<4.76E+00	LLD<4.76E+00	1031.88
RN-220	LLD<1.10E+03	LLD<1.10E+03	549.73
RU-103	LLD<1.42E+00	LLD<1.42E+00	497.08
RURH106	LLD<2.59E+01	LLD<2.59E+01	621.80
SB-124	LLD<1.02E+00	LLD<1.02E+00	602.72
SB-125	LLD<1.53E+01	LLD<1.53E+01	176.33
SC-46	LLD<1.49E+00	LLD<1.49E+00	1120.45
SE-75	LLD<1.98E+00	LLD<1.98E+00	264.66
SN-113	LLD<2.01E+00	LLD<2.01E+00	391.67
SR-85	LLD<1.70E+00	LLD<1.70E+00	513.99
SR-91	LLD<2.42E+00	LLD<2.42E+00	555.60
SR-92	LLD<1.20E+00	LLD<1.20E+00	1383.94
TA-182	LLD<4.26E+00	LLD<4.26E+00	1121.30
TC-99M	LLD<1.12E+00	LLD<1.12E+00	140.51
TE-123M	LLD<1.19E+00	LLD<1.19E+00	159.00
TE-125M	LLD<3.74E+02	LLD<3.74E+02	109.27
TE-132	LLD<1.33E+00	LLD<1.33E+00	228.16
TH-228	LLD<1.30E+02	LLD<1.30E+02	84.37
TL-208	LLD<1.34E+00	LLD<1.34E+00	583.14
U-235	LLD<1.84E+00	LLD<1.84E+00	185.71
U-237	LLD<5.29E+00	LLD<5.29E+00	208.00
W-187	LLD<3.95E+00	LLD<3.95E+00	685.74
XE-131M	LLD<5.31E+01	LLD<5.31E+01	163.98
XE-133	LLD<4.77E+00	LLD<4.77E+00	81.00
XE-133M	LLD<1.18E+01	LLD<1.18E+01	233.21
XE-135	LLD<1.34E+00	LLD<1.34E+00	249.79
XE-138	LLD<9.74E+00	LLD<9.74E+00	258.41
Y-88	LLD<1.36E+00	LLD<1.36E+00	1836.06
Y-91	LLD<5.27E+02	LLD<5.27E+02	1204.90
Y-91M	LLD<1.83E+00	LLD<1.83E+00	555.60
ZN-65	LLD<3.44E+00	LLD<3.44E+00	1115.55
ZR-95	LLD<1.56E+00	LLD<1.56E+00	756.73
ZR-97	LLD<1.18E+00	LLD<1.18E+00	743.33
	---	---	
TOTAL	1.30E+02 +-6.10E+00	1.30E+02 +-6.10E+00	

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.16E-08 UC/LI
TOTAL MEASURED ACTIVITY = 1.30E+02 (+-6.10E+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
2922.32	1460.97	163.	17.3	1.54E+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            *
*                                                                       *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *

CANBERRA SPECTRAN-F V2.06  SOFTWARE

222-S COUNTING ROOM                                  27-AUG-90  13:22:40


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

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

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

ANALYSIS OF SPECTRUM SAVED IN DISK FILE: SD1084
ANALYZED BY:         MAX

SAMPLE DESCRIPTION: F568
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 15-MAR-90 AT 04:41:44

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

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

ENERGY CALIBRATION PERFORMED 23-NOV-89
EFFICIENCY CALIBRATION PERFORMED  2-MAR-89
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222-S COUNTING ROOM 27-AUG-90 13:22:40

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

PK	CENTROID CHANNEL	ENERGY KEV	FWHM KEV	BACKGND COUNTS	NET AREA COUNTS	ERROR %	NUCLIDES
1C	1127.31	563.13	1.39	475.	428.	17.4	CS-134, EU-152
2C	1139.70	569.32	1.39	485.	740.	14.4	CS-134, BI-207
3	1210.36	604.64	1.47	520.	4961.	3.1	CS-134
4	1324.22	661.55	1.53	326.	13178.	1.8	CS-137
4B		661.82			35.	46.4	
5C	1592.50	795.68	1.50	258.	3527.	4.2	CS-134
6C	1604.72	801.79	1.50	246.	368.	13.7	CS-134
7	2347.08	1173.09	1.79	210.	4735.	3.0	CO-60
8	2665.49	1332.42	1.86	39.	4119.	3.1	CO-60
9	2730.86	1365.14	1.58	7.	99.	21.4	CS-134
10	2922.13	1460.87	2.48	10.	172.	16.0	K-40
10B		1461.77			182.	11.2	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

C - MULTIPLET ANALYSIS CONVERGED NORMALLY
B - ENVIRONMENTAL BACKGROUND PEAK

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

222-S COUNTING ROOM 27-AUG-90 13:22:40

SAMPLE: F568
DATA COLLECTED ON 15-MAR-90 AT 04:41:44
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<7.40E+00		LLD<7.40E+00		911.07	
AG-108M	LLD<2.06E+00		LLD<2.06E+00		433.94	
AG-110M	LLD<1.06E+01		LLD<1.06E+01		657.76	
AM-241	LLD<8.73E+00		LLD<8.73E+00		59.54	
AM-243	LLD<2.29E+00		LLD<2.29E+00		74.67	
AR-41	LLD<1.23E+00		LLD<1.23E+00		1293.64	
AU-198	LLD<1.86E+00		LLD<1.86E+00		411.80	
BA-133	LLD<2.82E+00		LLD<2.82E+00		356.02	
BA-139	LLD<5.43E+00		LLD<5.43E+00		165.85	
BA-140	LLD<6.94E+00		LLD<6.94E+00		537.27	
BA-141	LLD<5.59E+00		LLD<5.59E+00		190.23	
BE-7	LLD<1.93E+01		LLD<1.93E+01		477.59	
BI-207	LLD<1.78E+00		LLD<1.78E+00		569.70	
BI-212	LLD<2.31E+01		LLD<2.31E+01		727.27	
BI-214	LLD<1.01E+01		LLD<1.01E+01		609.32	
CD-109	LLD<3.37E+01		LLD<3.37E+01		88.03	
CE-139	LLD<1.23E+00		LLD<1.23E+00		165.85	
CE-141	LLD<1.90E+00		LLD<1.90E+00		145.44	
CEPR144	LLD<1.58E+01		LLD<1.58E+01		133.51	
CO-56	LLD<1.78E+00		LLD<1.78E+00		846.76	
CO-57	LLD<1.03E+00		LLD<1.03E+00		122.06	
CO-58	LLD<1.76E+00		LLD<1.76E+00		810.75	
CO-60	1.96E+02	+-6.41E+00	1.96E+02	+-6.41E+00	1332.50	-0.08
					1173.24	-0.15
CR-51	LLD<1.43E+01		LLD<1.43E+01		320.09	
CS-134	1.27E+02	+-5.53E+00	1.27E+02	+-5.53E+00	795.84	-0.17
					604.70	-0.06
CS-136	LLD<1.79E+00		LLD<1.79E+00		818.51	
CS-137	4.08E+02	+-8.75E+00	4.08E+02	+-8.75E+00	661.65	-0.10
CS-138	LLD<1.38E+00		LLD<1.38E+00		1435.86	
EU-152	LLD<3.04E+00		LLD<3.04E+00		1408.01	
EU-154	LLD<3.24E+00		LLD<3.24E+00		1274.45	
EU-155	LLD<4.02E+00		LLD<4.02E+00		105.31	
FE-59	LLD<4.53E+00		LLD<4.53E+00		1099.25	
HF-181	LLD<2.13E+00		LLD<2.13E+00		482.20	
HG-203	LLD<1.65E+00		LLD<1.65E+00		279.20	
I-131	LLD<2.07E+00		LLD<2.07E+00		364.48	
I-132	LLD<2.80E+00		LLD<2.80E+00		667.69	
I-133	LLD<1.94E+00		LLD<1.94E+00		529.69	
I-134	LLD<2.53E+00		LLD<2.53E+00		847.03	
I-135	LLD<4.50E+00		LLD<4.50E+00		1260.41	
K-40	LLD<1.85E+01		LLD<1.85E+01		1460.75	
KR-85	LLD<4.26E+02		LLD<4.26E+02		513.99	
KR-85M	LLD<1.22E+00		LLD<1.22E+00		151.17	
KR-87	LLD<4.55E+00		LLD<4.55E+00		402.58	
KR-89	LLD<6.73E+01		LLD<6.73E+01		220.90	
LA-140	LLD<6.86E-01		LLD<6.86E-01		1596.20	

LA-142	LLD<3.84E+00	LLD<3.84E+00	641.83
MN-54	LLD<1.73E+00	LLD<1.73E+00	834.83
MN-56	LLD<2.01E+00	LLD<2.01E+00	846.76
NA-22	LLD<1.07E+00	LLD<1.07E+00	1274.55
NA-24	LLD<1.50E+00	LLD<1.50E+00	1368.60
NB-94	LLD<1.58E+00	LLD<1.58E+00	702.63
NB-95	LLD<1.63E+00	LLD<1.63E+00	765.78
NB-97	LLD<1.28E+01	LLD<1.28E+01	657.92
NP-238	LLD<7.72E+00	LLD<7.72E+00	984.45
NP-239	LLD<9.48E+00	LLD<9.48E+00	277.60
PA-233	LLD<4.17E+00	LLD<4.17E+00	311.98
PA-234M	LLD<3.77E+02	LLD<3.77E+02	1001.03
PB-210	LLD<4.92E+01	LLD<4.92E+01	465.03
PB-212	LLD<3.06E+00	LLD<3.06E+00	239.00
PB-214	LLD<4.56E+00	LLD<4.56E+00	351.92
PO-210	LLD<1.62E+05	LLD<1.62E+05	804.00
PO-214	LLD<6.74E+04	LLD<6.74E+04	799.70
PO-216	LLD<1.36E+05	LLD<1.36E+05	804.90
PU-239	LLD<1.38E+04	LLD<1.38E+04	129.30
PU-241	LLD<4.87E+05	LLD<4.87E+05	148.57
RA-224	LLD<3.34E+01	LLD<3.34E+01	240.99
RA-226	LLD<2.90E+01	LLD<2.90E+01	186.10
RB-88	LLD<9.27E+00	LLD<9.27E+00	1836.00
RB-89	LLD<9.20E+00	LLD<9.20E+00	1031.88
RN-220	LLD<1.53E+03	LLD<1.53E+03	549.73
RU-103	LLD<1.87E+00	LLD<1.87E+00	497.08
RURH106	LLD<3.23E+01	LLD<3.23E+01	621.80
SB-124	LLD<3.09E+00	LLD<3.09E+00	602.72
SB-125	LLD<1.54E+01	LLD<1.54E+01	176.33
SC-46	LLD<2.20E+00	LLD<2.20E+00	1120.45
SE-75	LLD<2.27E+00	LLD<2.27E+00	264.66
SN-113	LLD<2.55E+00	LLD<2.55E+00	391.67
SR-85	LLD<1.87E+00	LLD<1.87E+00	513.99
SR-91	LLD<3.06E+00	LLD<3.06E+00	555.60
SR-92	LLD<1.10E+00	LLD<1.10E+00	1383.94
TA-182	LLD<6.32E+00	LLD<6.32E+00	1121.30
TC-99M	LLD<1.06E+00	LLD<1.06E+00	140.51
TE-123M	LLD<1.14E+00	LLD<1.14E+00	159.00
TE-125M	LLD<3.04E+02	LLD<3.04E+02	109.27
TE-132	LLD<1.44E+00	LLD<1.44E+00	228.16
TH-228	LLD<9.91E+01	LLD<9.91E+01	84.37
TL-208	LLD<2.21E+00	LLD<2.21E+00	583.14
U-235	LLD<1.94E+00	LLD<1.94E+00	185.71
U-237	LLD<5.64E+00	LLD<5.64E+00	208.00
W-187	LLD<5.34E+00	LLD<5.34E+00	685.74
XE-131M	LLD<5.26E+01	LLD<5.26E+01	163.98
XE-133	LLD<3.69E+00	LLD<3.69E+00	81.00
XE-133M	LLD<1.26E+01	LLD<1.26E+01	233.21
XE-135	LLD<1.48E+00	LLD<1.48E+00	249.79
XE-138	LLD<1.12E+01	LLD<1.12E+01	258.41
Y-88	LLD<8.79E-01	LLD<8.79E-01	1836.06
Y-91	LLD<4.23E+02	LLD<4.23E+02	1204.90
Y-91M	LLD<2.32E+00	LLD<2.32E+00	555.60
ZN-65	LLD<4.60E+00	LLD<4.60E+00	1115.55
ZR-95	LLD<3.07E+00	LLD<3.07E+00	756.73
ZR-97	LLD<1.49E+00	LLD<1.49E+00	743.33
TOTAL	7.31E+02 +-1.22E+01	7.31E+02 +-1.22E+01	

STANDARD DEVIATION = 0.05

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.73E-09 UC/LI
TOTAL MEASURED ACTIVITY = 7.31E+02 (+-1.22E+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
1127.31	563.13	428.	17.4	1.83E+01
1139.70	569.32	740.	14.4	3.20E+01
1604.72	801.79	368.	13.7	2.11E+01
2730.86	1365.14	99.	21.4	8.84E+00

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2922.13	1460.87	172.	16.0	1.63E+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  13:28:16

                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: SD1087
ANALYZED BY:        MAX

SAMPLE DESCRIPTION: F569
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 15-MAR-90 AT 07:10:10

COLLECT LIVE TIME:    3254. SECONDS
        REAL TIME:     199. SECONDS
        DEAD TIME: -1535.18 %

 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 13:28:16

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

PK	CENTROID CHANNEL	ENERGY KEV	FWHM KEV	BACKGND COUNTS	NET AREA COUNTS	ERROR %	NUCLIDES
1C	1127.55	563.25	1.38	459.	523.	12.7	CS-134, EU-152
2C	1139.64	569.29	1.38	494.	890.	11.4	CS-134, BI-207
3	1210.42	604.67	1.52	526.	5470.	2.9	CS-134
4	1324.31	661.60	1.59	393.	9861.	2.1	CS-137
4B		661.82			38.	46.4	
5C	1592.64	795.75	1.54	258.	3854.	4.0	CS-134
6C	1604.90	801.88	1.54	258.	405.	14.2	CS-134
7	2347.09	1173.10	1.83	230.	5233.	2.9	CO-60
8	2665.64	1332.50	1.90	72.	4671.	2.9	CO-60
9	2730.89	1365.15	1.76	20.	92.	25.4	CS-134
10	2922.37	1460.99	2.02	11.	178.	15.9	K-40
10B		1461.77			197.	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 13:28:16

SAMPLE: F569
DATA COLLECTED ON 15-MAR-90 AT 07:10:10
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<7.24E-01		LLD<7.24E-01		911.07	
AG-108M	LLD<1.84E-01		LLD<1.84E-01		433.94	
AG-110M	LLD<8.41E-01		LLD<8.41E-01		657.76	
AM-241	LLD<7.59E-01		LLD<7.59E-01		59.54	
AM-243	LLD<2.01E-01		LLD<2.01E-01		74.67	
AR-41	LLD<1.15E-01		LLD<1.15E-01		1293.64	
AU-198	LLD<1.64E-01		LLD<1.64E-01		411.80	
BA-133	LLD<2.45E-01		LLD<2.45E-01		356.02	
BA-139	LLD<4.12E-01		LLD<4.12E-01		165.85	
BA-140	LLD<6.21E-01		LLD<6.21E-01		537.27	
BA-141	LLD<2.36E-01		LLD<2.36E-01		190.23	
BE-7	LLD<1.72E+00		LLD<1.72E+00		477.59	
BI-207	LLD<1.70E-01		LLD<1.70E-01		569.70	
BI-212	LLD<2.23E+00		LLD<2.23E+00		727.27	
BI-214	LLD<1.00E+00		LLD<1.00E+00		609.32	
CD-109	LLD<2.87E+00		LLD<2.87E+00		88.03	
CE-139	LLD<1.12E-01		LLD<1.12E-01		165.85	
CE-141	LLD<1.72E-01		LLD<1.72E-01		145.44	
CEPR144	LLD<1.43E+00		LLD<1.43E+00		133.51	
CO-56	LLD<1.73E-01		LLD<1.73E-01		846.76	
CO-57	LLD<9.28E-02		LLD<9.28E-02		122.06	
CO-58	LLD<1.69E-01		LLD<1.69E-01		810.75	
CO-60	2.05E+01	+-6.38E-01	2.05E+01	+-6.38E-01	1332.50	-0.00
					1173.24	-0.14
CR-51	LLD<1.27E+00		LLD<1.27E+00		320.09	
CS-134	1.28E+01	+-5.38E-01	1.28E+01	+-5.38E-01	795.84	-0.10
					604.70	-0.03
CS-136	LLD<1.71E-01		LLD<1.71E-01		818.51	
CS-137	2.81E+01	+-6.78E-01	2.81E+01	+-6.78E-01	661.65	-0.05
CS-138	LLD<9.04E-02		LLD<9.04E-02		1435.86	
EU-152	LLD<3.59E-01		LLD<3.59E-01		1408.01	
EU-154	LLD<2.89E-01		LLD<2.89E-01		1274.45	
EU-155	LLD<3.56E-01		LLD<3.56E-01		105.31	
FE-59	LLD<3.89E-01		LLD<3.89E-01		1099.25	
HF-181	LLD<1.81E-01		LLD<1.81E-01		482.20	
HG-203	LLD<1.50E-01		LLD<1.50E-01		279.20	
I-131	LLD<1.91E-01		LLD<1.91E-01		364.48	
I-132	LLD<2.26E-01		LLD<2.26E-01		667.69	
I-133	LLD<1.76E-01		LLD<1.76E-01		529.69	
I-134	LLD<1.83E-01		LLD<1.83E-01		847.03	
I-135	LLD<3.87E-01		LLD<3.87E-01		1260.41	
K-40	LLD<1.82E+00		LLD<1.82E+00		1460.75	
KR-85	LLD<3.74E+01		LLD<3.74E+01		513.99	
KR-85M	LLD<1.02E-01		LLD<1.02E-01		151.17	
KR-87	LLD<3.42E-01		LLD<3.42E-01		402.58	
KR-89	LLD<7.88E-01		LLD<7.88E-01		220.90	
LA-140	LLD<6.32E-02		LLD<6.32E-02		1596.20	

LA-142	LLD<3.12E-01	LLD<3.12E-01	641.83
MN-54	LLD<1.66E-01	LLD<1.66E-01	834.83
MN-56	LLD<1.74E-01	LLD<1.74E-01	846.76
NA-22	LLD<9.83E-02	LLD<9.83E-02	1274.55
NA-24	LLD<1.44E-01	LLD<1.44E-01	1368.60
NB-94	LLD<1.53E-01	LLD<1.53E-01	702.63
NB-95	LLD<1.62E-01	LLD<1.62E-01	765.78
NB-97	LLD<8.22E-01	LLD<8.22E-01	657.92
NP-238	LLD<7.78E-01	LLD<7.78E-01	984.45
NP-239	LLD<8.62E-01	LLD<8.62E-01	277.60
PA-233	LLD<3.87E-01	LLD<3.87E-01	311.98
PA-234M	LLD<3.57E+01	LLD<3.57E+01	1001.03
PB-210	LLD<4.39E+00	LLD<4.39E+00	465.03
PB-212	LLD<2.70E-01	LLD<2.70E-01	239.00
PB-214	LLD<4.18E-01	LLD<4.18E-01	351.92
PO-210	LLD<1.54E+04	LLD<1.54E+04	804.00
PO-214	LLD<6.40E+03	LLD<6.40E+03	799.70
PO-216	LLD<1.30E+04	LLD<1.30E+04	804.90
PU-239	LLD<1.24E+03	LLD<1.24E+03	129.30
PU-241	LLD<4.57E+04	LLD<4.57E+04	148.57
RA-224	LLD<2.96E+00	LLD<2.96E+00	240.99
RA-226	LLD<2.64E+00	LLD<2.64E+00	186.10
RB-88	LLD<3.44E-01	LLD<3.44E-01	1836.00
RB-89	LLD<3.82E-01	LLD<3.82E-01	1031.88
RN-220	LLD<1.44E+02	LLD<1.44E+02	549.73
RU-103	LLD<1.71E-01	LLD<1.71E-01	497.08
RURH106	LLD<3.00E+00	LLD<3.00E+00	621.80
SB-124	LLD<3.09E-01	LLD<3.09E-01	602.72
SB-125	LLD<1.38E+00	LLD<1.38E+00	176.33
SC-46	LLD<2.04E-01	LLD<2.04E-01	1120.45
SE-75	LLD<2.02E-01	LLD<2.02E-01	264.66
SN-113	LLD<2.33E-01	LLD<2.33E-01	391.67
SR-85	LLD<1.64E-01	LLD<1.64E-01	513.99
SR-91	LLD<2.80E-01	LLD<2.80E-01	555.60
SR-92	LLD<7.87E-02	LLD<7.87E-02	1383.94
TA-182	LLD<5.90E-01	LLD<5.90E-01	1121.30
TC-99M	LLD<9.22E-02	LLD<9.22E-02	140.51
TE-123M	LLD<1.03E-01	LLD<1.03E-01	159.00
TE-125M	LLD<2.66E+01	LLD<2.66E+01	109.27
TE-132	LLD<1.28E-01	LLD<1.28E-01	228.16
TH-228	LLD<9.26E+00	LLD<9.26E+00	84.37
TL-208	LLD<1.96E-01	LLD<1.96E-01	583.14
U-235	LLD<1.76E-01	LLD<1.76E-01	185.71
U-237	LLD<5.18E-01	LLD<5.18E-01	208.00
W-187	LLD<5.18E-01	LLD<5.18E-01	685.74
XE-131M	LLD<4.68E+00	LLD<4.68E+00	163.98
XE-133	LLD<3.20E-01	LLD<3.20E-01	81.00
XE-133M	LLD<1.15E+00	LLD<1.15E+00	233.21
XE-135	LLD<1.35E-01	LLD<1.35E-01	249.79
XE-138	LLD<3.99E-01	LLD<3.99E-01	258.41
Y-88	LLD<6.95E-02	LLD<6.95E-02	1836.06
Y-91	LLD<4.43E+01	LLD<4.43E+01	1204.90
Y-91M	LLD<1.61E-01	LLD<1.61E-01	555.60
ZN-65	LLD<4.48E-01	LLD<4.48E-01	1115.55
ZR-95	LLD<2.81E-01	LLD<2.81E-01	756.73
ZR-97	LLD<1.49E-01	LLD<1.49E-01	743.33
TOTAL	6.14E+01 +-1.07E+00	6.14E+01 +-1.07E+00	

STANDARD DEVIATION = 0.05

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.46E-09 UC/LI
TOTAL MEASURED ACTIVITY = 6.14E+01 (+-1.07E+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
1127.55	563.25	523.	12.7	2.06E+01
1139.64	569.29	890.	11.4	3.54E+01
1604.90	801.88	405.	14.2	2.14E+01
2730.89	1365.15	92.	25.4	7.57E+00

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2922.37	1460.99	178.	15.9	1.55E+01

Analytical Batch

LAB SEGMENT SERIAL #:F0537

CUSTOMER ID:89-075

INSTRUMENT	WA77344
PROCEDURE/REV	LA-925-106/A-2
TECHNOLOGIST	Sue Lai
DATE	July 02, 1990
TEMPERATURE	N/A
STARTING TIME	1400
ENDING TIME	1450
CHEMIST	S. A. Catlow

Uranium Analysis

Fusion Dissolution

	DESCRIPTION		LAB ID
1	Initial LMCS Check Std.		F0541
2	Reagent Blank		F0556
3	Sample	89-075	F0542
4	Duplicate Sample	89-075	F0543
5	Spike Of Sample	89-075	F0544
6	Final LMCS Check Std.		F0545
7			
8			
9			
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.
LMCS Check Standard	58B38/100 uL			5.7 mL
Spike	58B38/100 uL	F0542/1.0 uL		5.7 mL

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WATER DIGESTION TEST ANALYSIS

Single Shell Tank Project

Water Digestion
Sample Results on Solid Weight

Tank : 241-U-110
Core: 13
Segment: 3
Customer ID: 89-075

		Check Standard	Blank		Sample		Sample Duplicate		Spike of Sample	Check Standard
Laboratory ID:		**N/A**	**F0558**		**F0547**		**F0548**		**F0549**	
Water Digestion		N/A	Complete		1.21E+01	g/L	1.01E+01	g/L	1.14E+01 g/L	N/A
Laboratory ID:		**F0426**	**F0438**		**F0547**		**F0548**		**F0429**	**F0574**
Fluoride	2nd Run	90.80%	<1.00E-01	ppm	1.72E+03	ug/g	1.73E+03	ug/g	85.60%	91.80%
Chloride	1st Run	99.70%	2.02E-01	ppm	1.62E+03	ug/g	1.76E+03	ug/g	102.40%	97.50%
Nitrate	1st Run	101.90%	<1.0	ppm	5.79E+04	ug/g	5.04E+04	ug/g	108.40%	102.70%
Phosphate	1st Run	100.80%	<1.0	ppm	5.85E+03	ug/g	<1.00E+04	ug/g	105.60%	101.50%
Sulfate	1st Run	100.80%	<1.0	ppm	3.83E+03	ug/g	3.75E+03	ug/g	110.30%	100.50%
Laboratory ID:		**F0546**	**F0558**		**F0547**		**F0548**		**F0549**	**F0550**
Total Organic Carbon		98.80%	3	ug	4.09E+02	ug/g	7.08E+02	ug/g	97.40%	99.00%

Single Shell Tank Project

Water Digestion
Sample Results on Laboratory Digestion

Tank 241-U-110
Core 13
Segment 3
Customer ID: 89-075

Laboratory Segment Serial No. : F0561

		Check Standard	Blank		Sample		Sample Duplicate		Spike of Sample	Check Standard
Laboratory ID:		**N/A**	**F0558**		**F0547**		**F0548**		**F0549**	**N/A**
Water Digestion		N/A	Complete		1.21E+01	g/L	1.01E+01	g/L	1.14E+01	N/A
Laboratory I.D.		**F0426**	**F0438**		**F0547**		**F0548**		**F0429**	**F0574**
Fluoride	2nd Run	90.80%	<1.0E-01	ppm	2.08E+01	ppm	1.75E+01	ppm	85.60%	91.80%
Chloride	1st Run	99.70%	2.02E-01	ppm	1.96E+01	ppm	1.78E+01	ppm	102.40%	97.50%
Nitrate	1st Run	101.90%	<1.0	ppm	7.01E+02	ppm	5.09E+02	ppm	108.40%	102.70%
Phosphate	1st Run	100.80%	<1.0	ppm	7.08E+01	ppm	<1.01E+02	ppm	105.60%	101.50%
Sulfate	1st Run	100.80%	<1.0	ppm	4.64E+01	ppm	3.79E+01	ppm	110.30%	100.50%
Laboratory ID:		**F0546**	**F0558**		**F0547**		**F0548**		**F0549**	**F0550**
Total Organic Carbon		98.80%	3.00	ug	4.95E-03	g/L	7.15E-03	g/L	97.40%	99.00%

Analytical Batch

LAB SEGMENT SERIAL #:F0537

CUSTOMER ID:89-075

INSTRUMENT	N/A
PROCEDURE/REV	LA-504-101/A-2
TECHNOLOGIST	M. Franz
DATE	March 09, 1990
TEMPERATURE	N/A
STARTING TIME	1430
ENDING TIME	2200
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		F0558
2	Sample	89-075	F0547
3	Duplicate Sample	89-075	F0548
4	Spike of Sample	89-075	F0549
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)				

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Analytical Batch

LAB SEGMENT SERIAL #:F0537

CUSTOMER ID:89-075

INSTRUMENT	DIONEX 4000
PROCEDURE/REV	LA-533-105/A-3
TECHNOLOGIST	N. E. Wright
DATE	April 06, 1990
TEMPERATURE	22 C
STARTING TIME	1100 04-05-90
ENDING TIME	1515 04-05-90
CHEMIST	H. S. Rich

Ion Chromatograph Analysis
Water Digestion

	DESCRIPTION		LAB ID
1	Initial LMCS Check Std.		F0426
2	Reagent Blank		F0438
3	Sample	89-070	F0427
4	Duplicate Sample	89-070	F0428
5	Spike of Sample	89-070	F0429
6	Sample	89-071	F0451
7	Duplicate Sample	89-071	F0452
8	Sample	89-072	F0475
9	Duplicate Sample	89-072	F0476
10	Sample	89-075	F0547
11	Duplicate Sample	89-075	F0548

	DESCRIPTION		LAB ID
12	Sample	89-076	F0571
13	Duplicate Sample	89-076	F0572
14	Sample	Core-007	F0983
15	Duplicate Sample	Core-007	F0984
16	Duplicate Sample	Core-006	F0064
17	Final LMCS Check Std		F0574
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.	6C11HO/100 uL			10.1 mL
Spike	35C9-77/300 uL	F0427/50 uL		5.3 mL

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:	April 03, 1990		

CALIBRATION STANDARD ID: 35C9-78

ANALYTE CONCENTRATION: F 60.0 Cl 76.0 NO_3 611.0 PO_4 606.0 SO_4 587.0

TYPE OF CALIBRATION: Linear

COMMENTS:

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

DIONEX METHOD PARAMETERS - SST.MET

Detector Parameters

Number of Detectors	1
Detector 1 Type	CDM

Report Options

Run Time (minutes)	11.50
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: A:\90040300.D05	
Record Result Data	No

Integration Parameters

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

Integration Timed Events

Time	Description

Calibration Parameters

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

Component # 1 FLUORIDE Retention Time 1.02
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 4.11817E-004
Least Squares Intercept = -6.11181E-002
Ka = -3.36922E-010

Level	Amount	Area	Height
1	1.19800E-001	1733	320
2	2.98500E-001	4705	821
3	5.94100E-001	9348	1644
4	1.17650E+000	21998	3547
5	2.30800E+000	37180	5315
6	4.44440E+000	74116	11092

Component # 2 CHLORIDE Retention Time 1.62
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 7.20825E-004
Least Squares Intercept = -7.89437E-002
Ka = -1.05413E-008

Level	Amount	Area	Height
1	1.51700E-001	1456	241
2	3.78110E-001	4024	594
3	7.52480E-001	8080	1191
4	1.49020E+000	17215	2702
5	2.92300E+000	28370	4066
6	5.62950E+000	59291	9183

Component # 3 NITRITE Retention Time 1.95
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 6.03697E-004
Least Squares Intercept = 4.43064E-001
Ka = 3.82504E-009

Level	Amount	Area	Height
1	1.06990E+000	9937	1360
2	2.66670E+000	25698	3515
3	5.30700E+000	53506	7323
4	1.05099E+001	114215	15244
5	2.06146E+001	218918	28443
6	3.97026E+001	440177	49476

Component # 4 BROMIDE Retention Time 3.00
Reference Peak FLUORIDE Window Size 5.00%
Least Squares Slope = 1.66948E-003
Least Squares Intercept = 2.80223E-001
Ka = -5.76698E-010

Level	Amount	Area	Height
1	1.00100E+000	0	495
2	2.49500E+000	0	1341
3	4.96500E+000	0	2740
4	9.86850E+000	0	5689
5	1.92877E+001	0	11502
6	3.71471E+001	0	22240

Component # 5 NITRATE Retention Time 3.70
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 2.26506E-003
Least Squares Intercept = -5.58779E-001
Ka = 2.11324E-008

Level	Amount	Area	Height
1	1.21960E+000	7363	607
2	3.03970E+000	19564	1518
3	6.04950E+000	39111	2906
4	1.19805E+001	83794	5858
5	2.34991E+001	132213	9250
6	4.52580E+001	274103	17468

Component # 6 PHOSPHATE Retention Time 6.03
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 6.51026E-003
Least Squares Intercept = -2.98628E-001
Ka = -1.07878E-007

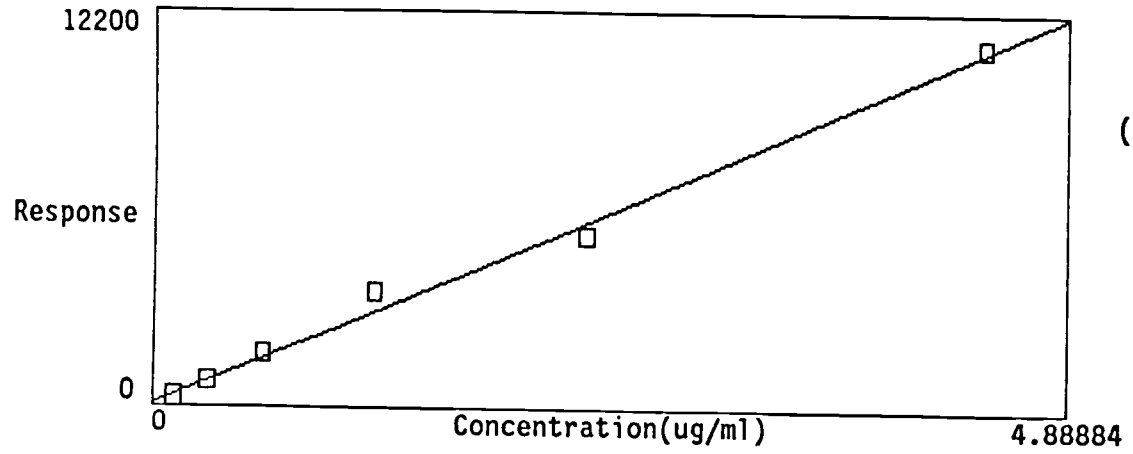
Level	Amount	Area	Height
1	1.20960E+000	3420	198
2	3.01490E+000	9585	519
3	6.00000E+000	19755	1057
4	1.18824E+001	32539	1886
5	2.33068E+001	69406	3876
6	4.48876E+001	142872	8003

Component # 7 SULFATE Retention Time 7.48
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 3.09635E-003
Least Squares Intercept = -7.42866E-001
Ka = -2.82182E-008

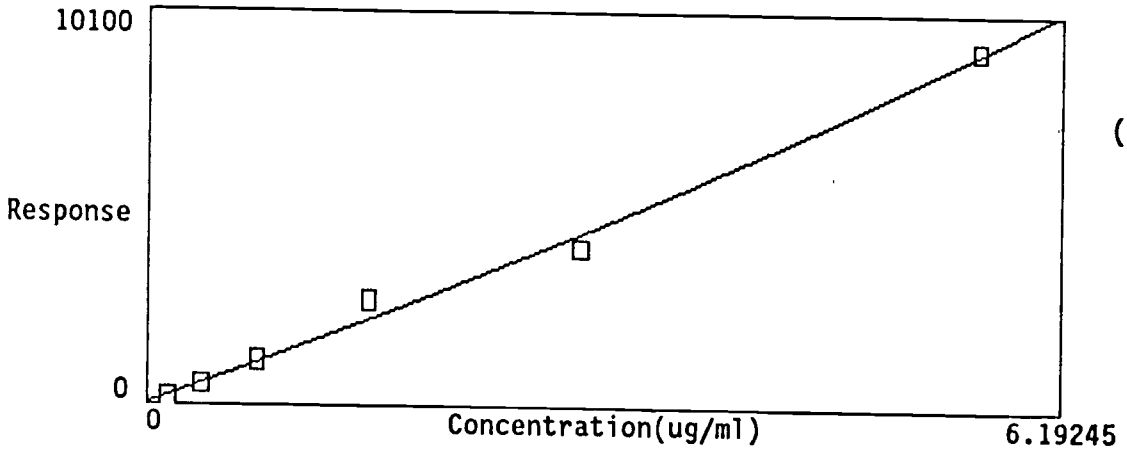
Level	Amount	Area	Height
1	1.17560E+000	10745	515
2	2.93030E+000	26326	1236
3	5.83170E+000	50588	2357
4	1.15491E+001	79004	4005
5	2.26530E+001	163581	8158
6	4.36284E+001	343157	16953

Component # 8 Oxalate Retention Time 9.77
Reference Peak FLUORIDE Window Size 10.00%
Least Squares Slope = 0.00000E+000
Least Squares Intercept = 0.00000E+000
Ka = 0.00000E+000

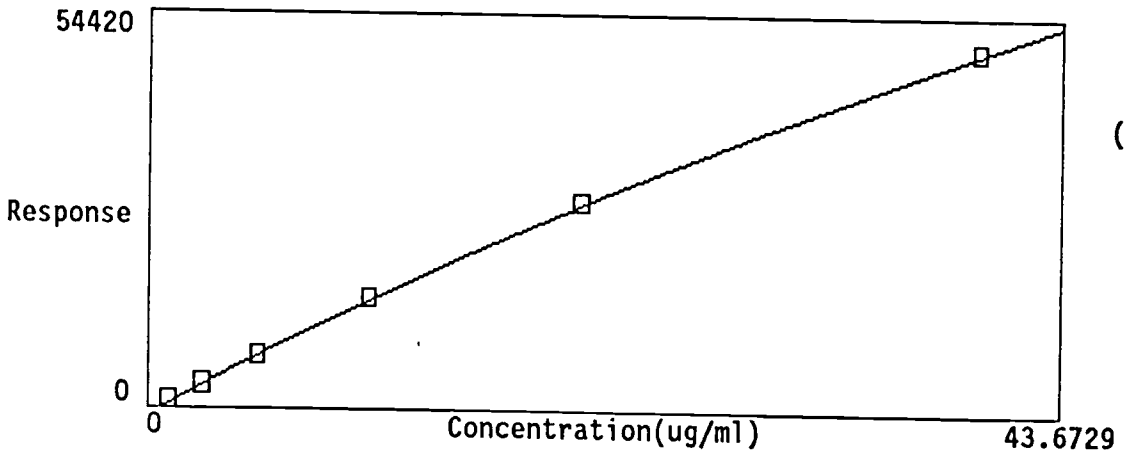
Level	Amount	Area	Height
1	0.00000E+000	0	0
2	0.00000E+000	0	0
3	0.00000E+000	0	0
4	0.00000E+000	0	0
5	0.00000E+000	0	0
6	0.00000E+000	98993	5848



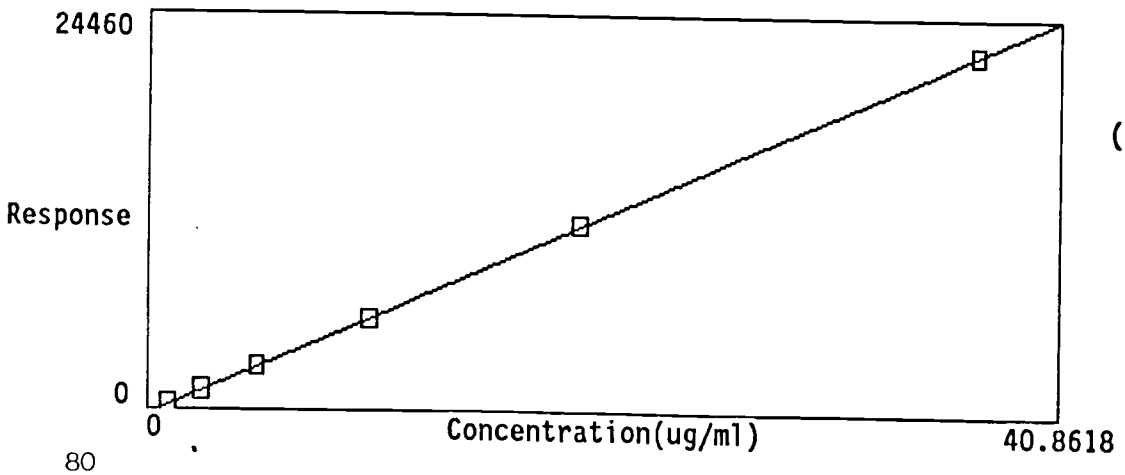
Component: FLUORIDE
Fit Type: Quadratic
Conc = (-3.369224e-010
(4.118173e-004 * Resp)+



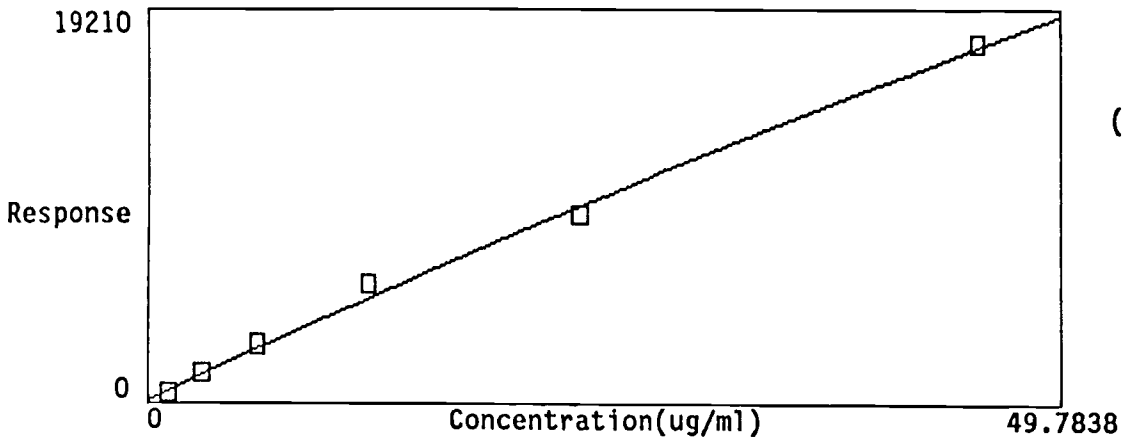
Component: CHLORIDE
Fit Type: Quadratic
Conc = (-1.054134e-008
(7.208249e-004 * Resp)+



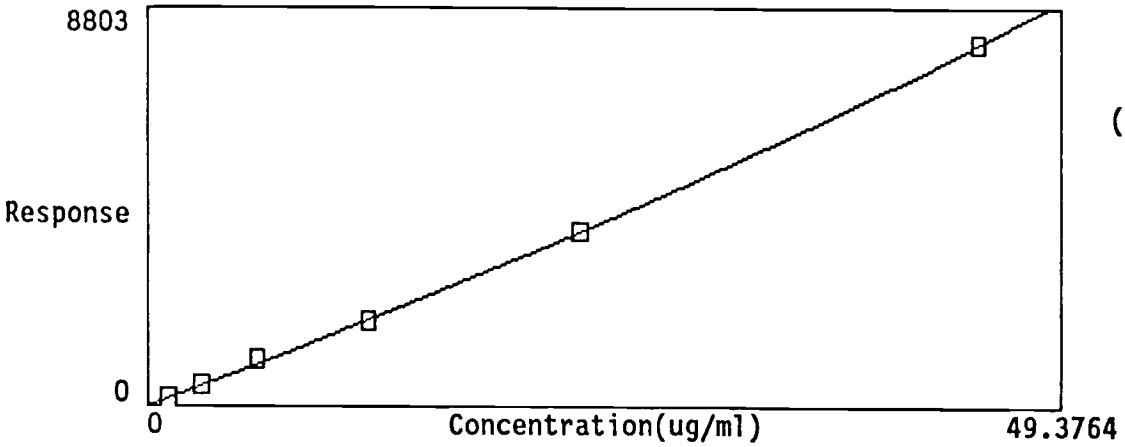
Component: NITRITE
Fit Type: Quadratic
Conc = (3.824921e-009 *
(6.037006e-004 * Resp)+



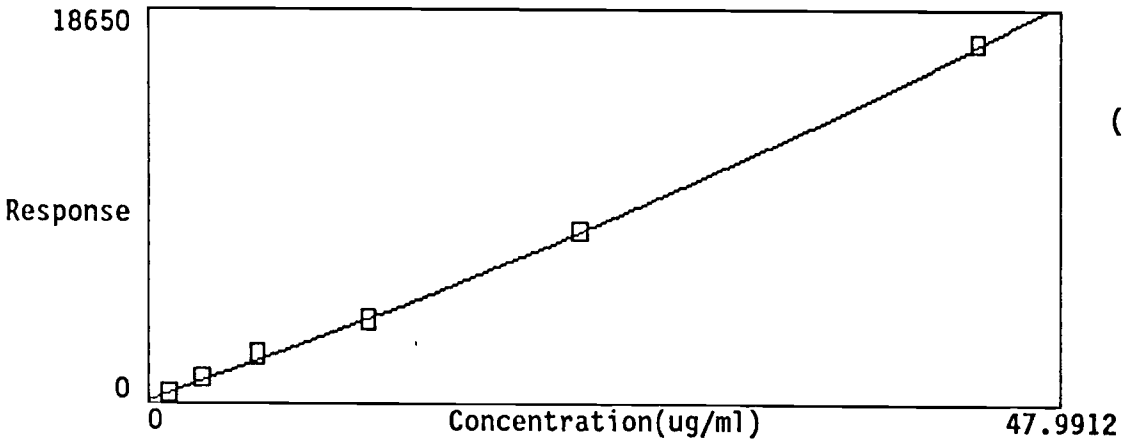
Component: BROMIDE
Fit Type: Quadratic
Conc = (-5.766983e-010
(1.669477e-003 * Resp)+



Component: NITRATE
Fit Type: Quadratic
Conc = (2.113242e-008 *
(2.265060e-003 * Resp)+



Component: PHOSPHATE
Fit Type: Quadratic
Conc = (-1.078779e-007
(6.510264e-003 * Resp)+



Component: SULFATE
Fit Type: Quadratic
Conc = (-2.821818e-008
(3.096352e-003 * Resp)+

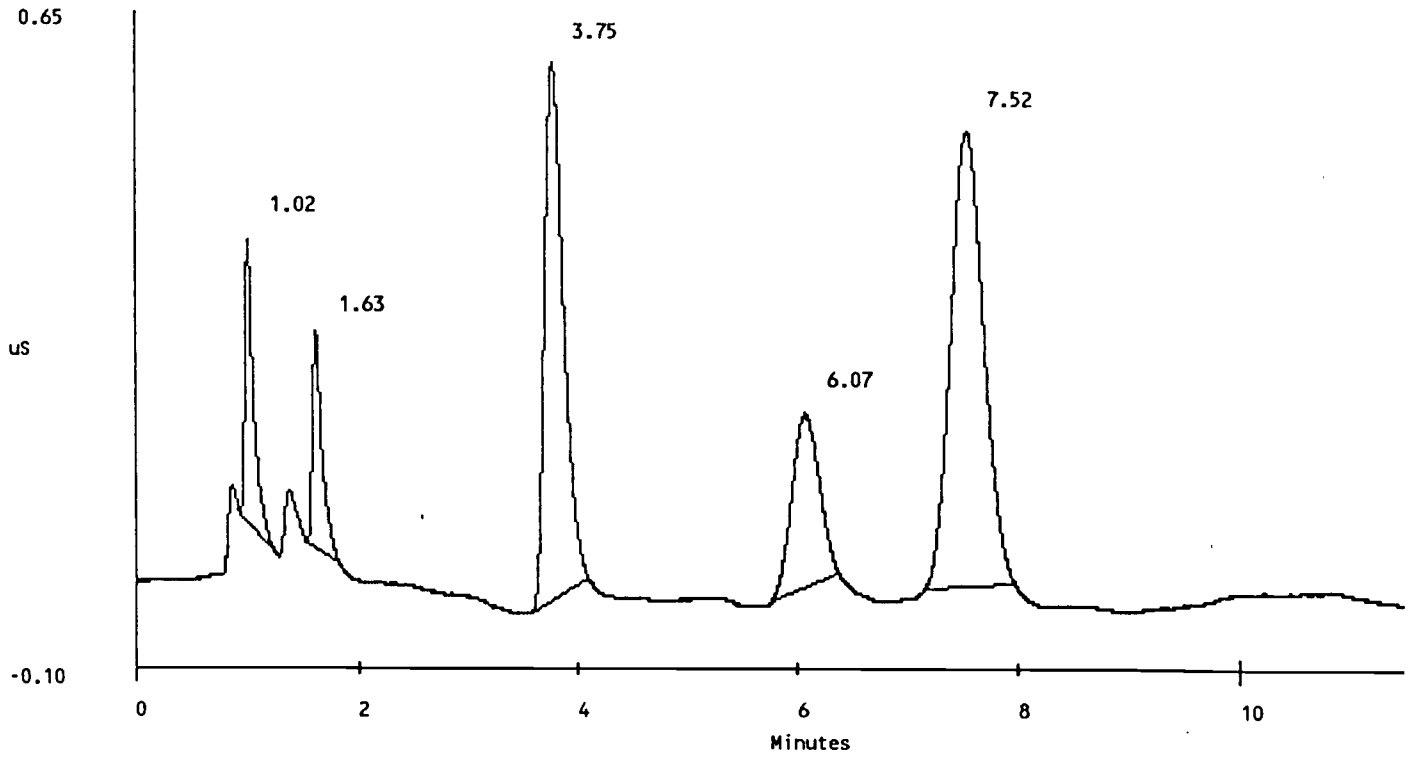
DATA REPROCESSED ON Mon Jul 02 13:05:05 1990

Sample Name: AUTOCAL1R	Date: Tue Apr 03 10:17:01 1990
Data File : A:\90040300.D03	
Method : C:\WINDOWS\AI400\METHOD\SST.MET	
CIM Address: 1 System : 1 Cycle#: 3	Detector: CDM

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

Stop time = 11.50 Minutes Number of Data Points = 3451
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	1.02	FLUORIDE	1.198e-001	1.733e+003	320	1	0	0.00%
2	1.63	CHLORIDE	1.517e-001	1.456e+003	241	1	0	0.00%
3	3.75	NITRATE	1.220e+000	7.363e+003	607	1	0	0.00%
4	6.07	PHOSPHATE	1.210e+000	3.420e+003	198	1	0	0.00%
5	7.52	SULFATE	1.176e+000	1.075e+004	515	1	0	0.00%



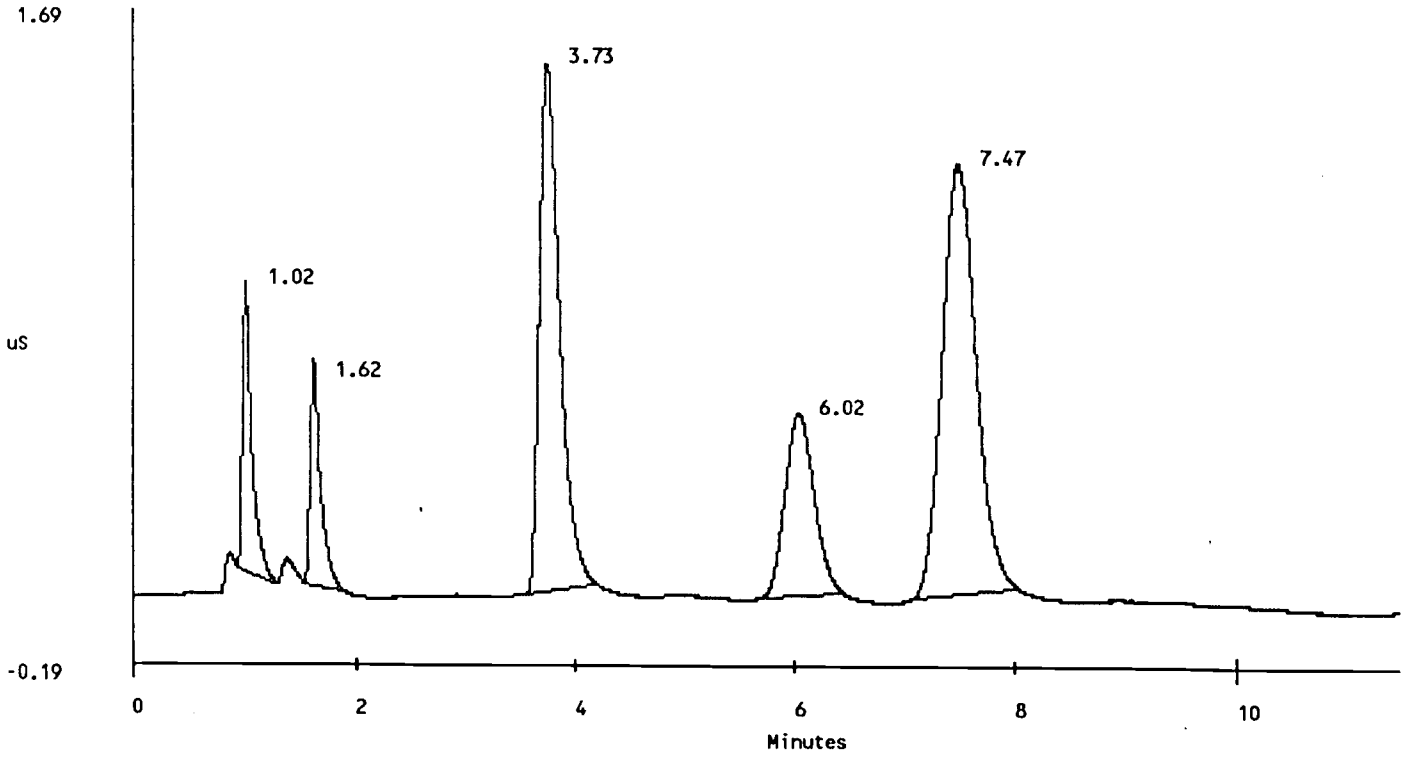
DATA REPROCESSED ON Mon Jul 02 14:37:19 1990

```
Sample Name: AUTOCAL2R                          Date: Tue Apr 03 10:29:21 1990
Data File  : A:\90040300.D04
Method     : C:\WINDOWS\AI400\METHOD\SST.MET
CIM Address: 1       System : 1       Cycle#:   4       Detector: CDM
```

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

Stop time = 11.50 Minutes Number of Data Points = 3451
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	1.02	FLUORIDE	2.984e-001	4.705e+003	821	1	0	0.00%
2	1.62	CHLORIDE	3.783e-001	4.024e+003	594	1	0	-1.02%
3	3.73	NITRATE	3.039e+000	1.956e+004	1518	1	0	-0.44%
4	6.02	PHOSPHATE	5.755e+000	9.585e+003	519	1	0	-0.82%
5	7.47	SULFATE	6.145e+000	2.633e+004	1236	1	0	-0.67%



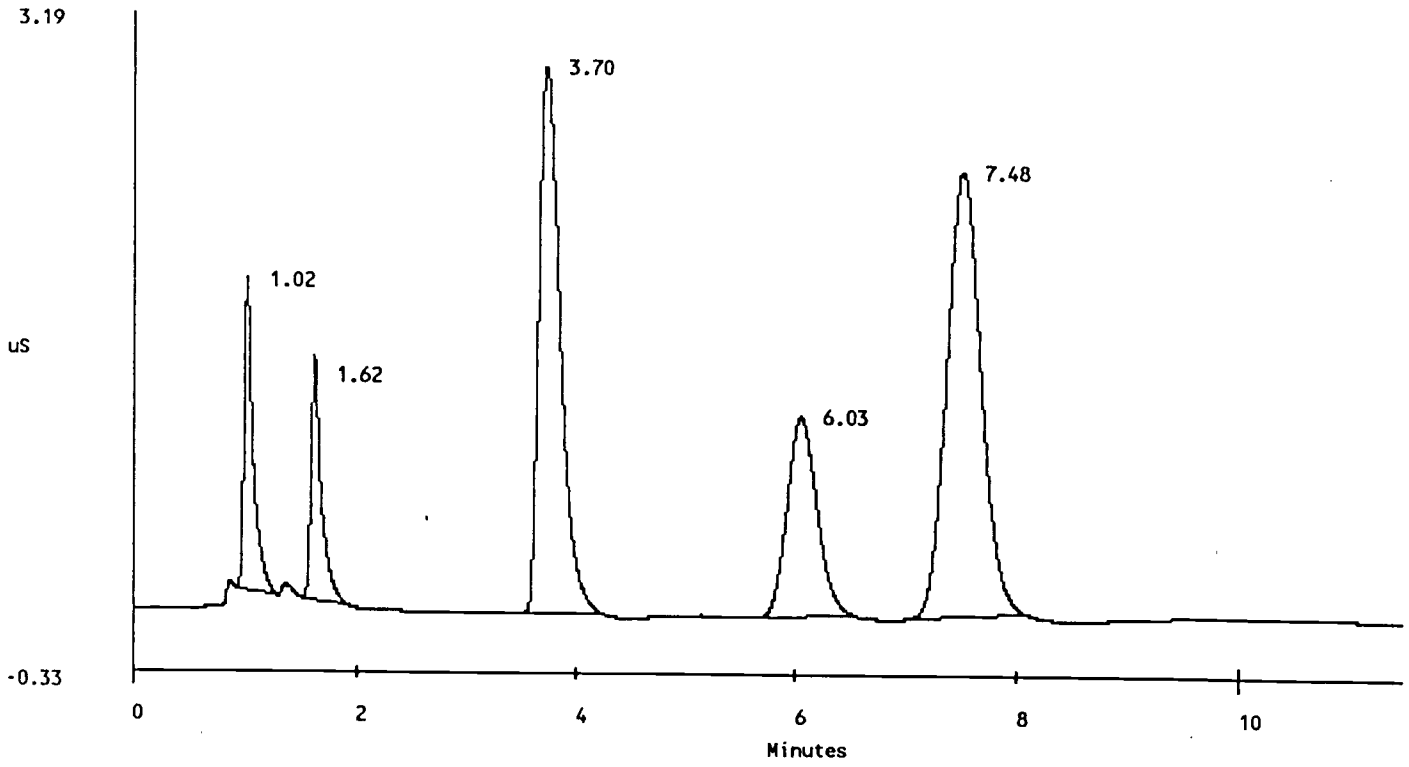
DATA REPROCESSED ON Mon Jul 02 14:37:59 1990

```
Sample Name: AUTOCAL3R                          Date: Tue Apr 03 10:41:41 1990
Data File  : A:\90040300.D05
Method     : C:\WINDOWS\AI400\METHOD\SST.MET
CIM Address: 1       System : 1       Cycle#:   5       Detector: CDM
```

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

Stop time = 11.50 Minutes Number of Data Points = 3451
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	1.02	FLUORIDE	5.941e-001	9.348e+003	1644	1	0	0.00%
2	1.62	CHLORIDE	7.523e-001	8.080e+003	1191	1	0	-1.02%
3	3.70	NITRATE	6.051e+000	3.911e+004	2906	1	0	-1.33%
4	6.03	PHOSPHATE	8.564e+000	1.976e+004	1057	1	0	-0.55%
5	7.48	SULFATE	8.817e+000	5.059e+004	2357	1	0	-0.44%



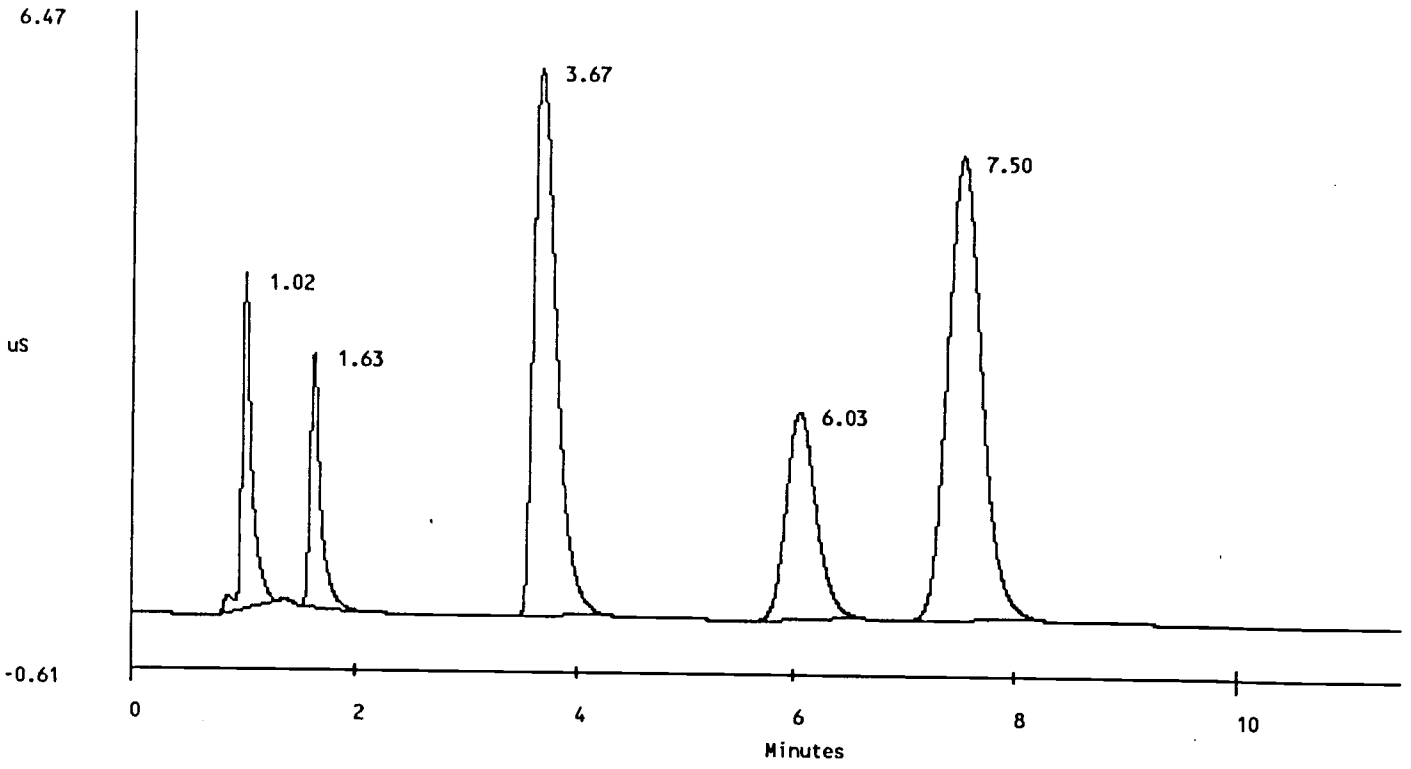
DATA REPROCESSED ON Mon Jul 02 14:38:33 1990

Sample Name: AUTOCAL4R Date: Tue Apr 03 10:54:02 1990
Data File : A:\90040300.D06
Method : C:\WINDOWS\AI400\METHOD\SST.MET
CIM Address: 1 System : 1 Cycle#: 6 Detector: CDM

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

Stop time = 11.50 Minutes Number of Data Points = 3450
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	1.02	FLUORIDE	1.177e+000	2.200e+004	3547	1	0	0.00%
2	1.63	CHLORIDE	1.490e+000	1.722e+004	2702	1	0	0.00%
3	3.67	NITRATE	1.198e+001	8.379e+004	5858	1	0	-2.22%
4	6.03	PHOSPHATE	1.460e+001	4.206e+004	2212	1	0	-0.55%
5	7.50	SULFATE	1.496e+001	1.068e+005	4931	1	0	-0.22%



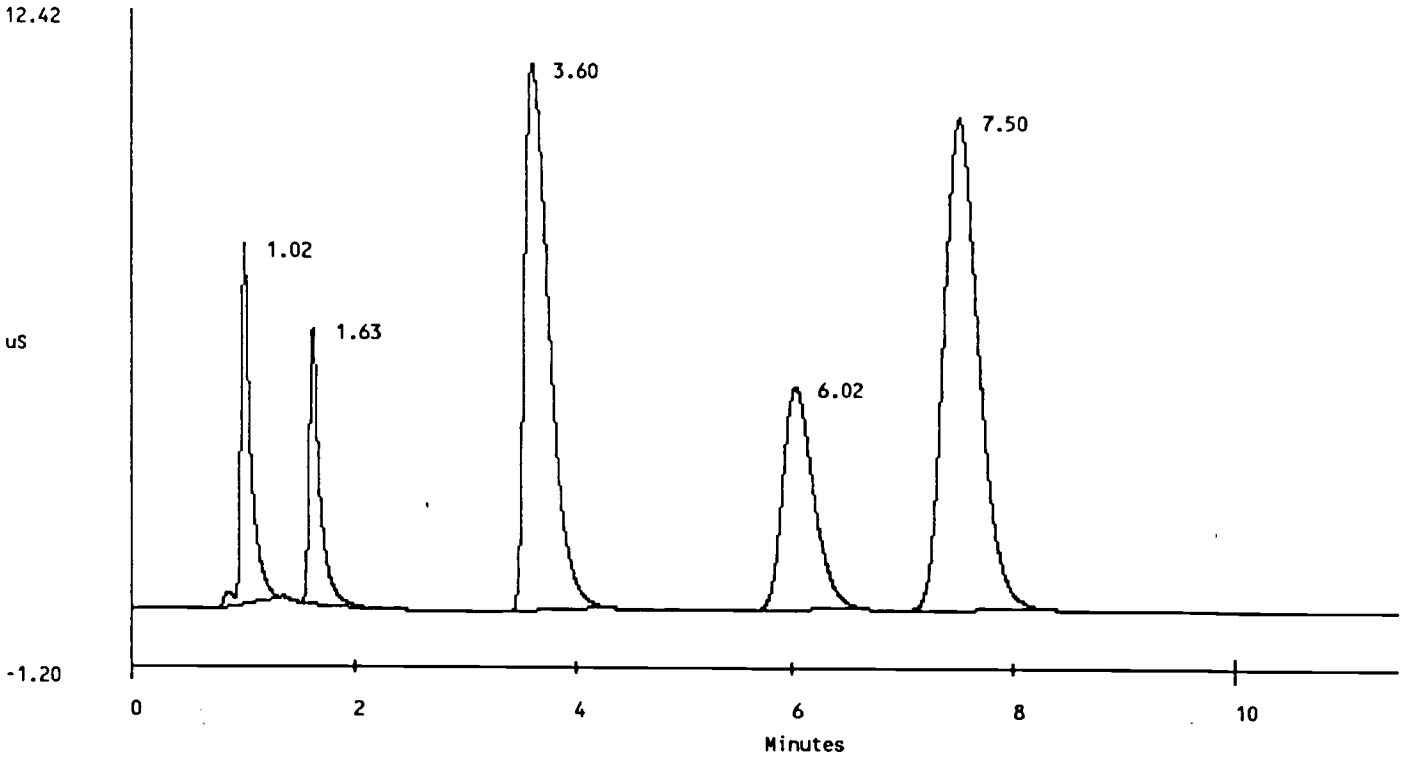
DATA REPROCESSED ON Mon Jul 02 14:39:07 1990

```
Sample Name: AUTOCAL5R                          Date: Tue Apr 03 11:06:22 1990
Data File  : A:\90040300.D07
Method     : C:\WINDOWS\AI400\METHOD\SST.MET
CIM Address: 1       System : 1       Cycle#:   7       Detector: CDM
```

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

Stop time = 11.50 Minutes Number of Data Points = 3450
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	1.02	FLUORIDE	3.050e+000	4.520e+004	7323	1	0	0.00%
2	1.63	CHLORIDE	3.751e+000	3.558e+004	5631	1	0	0.00%
3	3.60	NITRATE	2.869e+001	1.757e+005	11209	1	0	-4.00%
4	6.02	PHOSPHATE	2.675e+001	8.811e+004	4535	1	0	-0.82%
5	7.50	SULFATE	2.728e+001	2.192e+005	10100	1	0	-0.22%



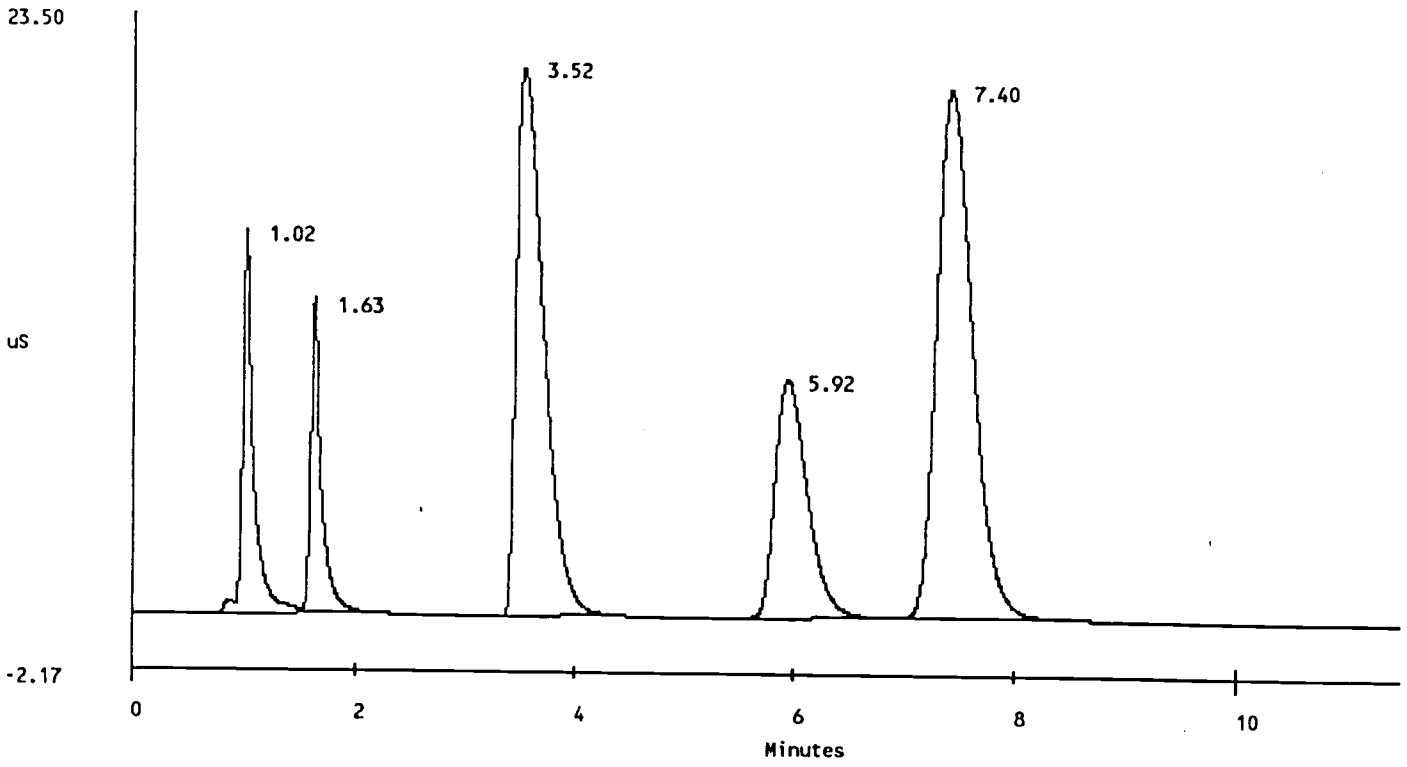
DATA REPROCESSED ON Mon Jul 02 14:39:42 1990

Sample Name: AUTOCAL6R Date: Tue Apr 03 11:18:42 1990
Data File : A:\90040300.D08
Method : C:\WINDOWS\AI400\METHOD\SST.MET
CIM Address: 1 System : 1 Cycle#: 8 Detector: CDM

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

Stop time = 11.50 Minutes Number of Data Points = 3451
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	1.02	FLUORIDE	5.778e+000	9.886e+004	14697	2	0	0.00%
2	1.63	CHLORIDE	7.060e+000	7.699e+004	11887	2	0	0.00%
3	3.52	NITRATE	5.544e+001	3.641e+005	21314	1	0	-6.22%
4	5.92	PHOSPHATE	5.042e+001	1.851e+005	9060	1	0	-2.47%
5	7.40	SULFATE	5.218e+001	4.591e+005	20537	1	0	-1.55%



DIONEX SCHEDULE - A:\90040500.SCH

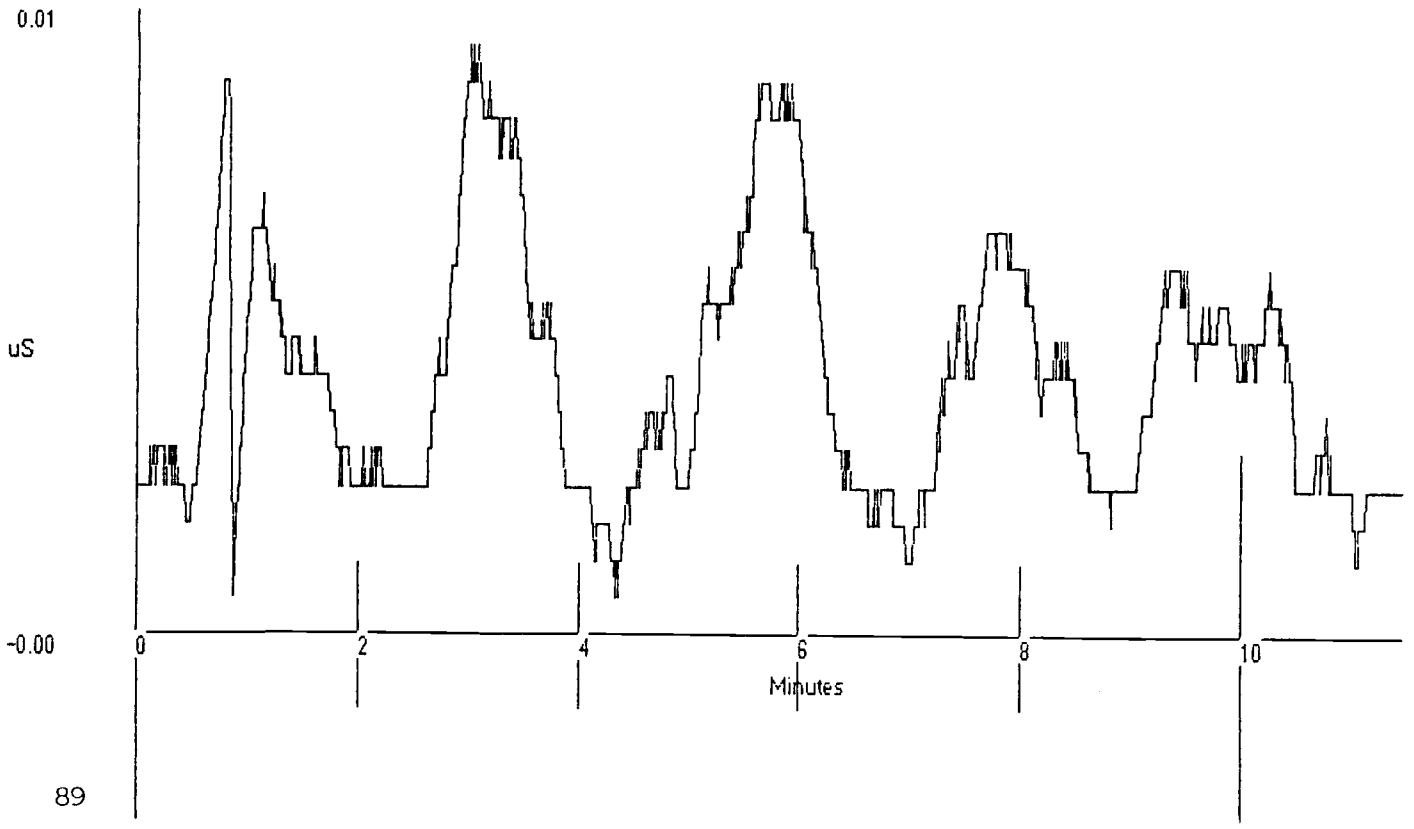
Inject	Sample Name	Method Name	Data File	Volume	Dilution	Int Std
1	SETUP	c:\windows\ai	c:\windows\ai	1	1	0
2	BLANK	c:\windows\ai	c:\windows\ai	1	1	0
3	LMCS/6C11-HO	c:\windows\ai	c:\windows\ai	1	101	0
4	438B	c:\windows\ai	c:\windows\ai	1	1	0
5	427	c:\windows\ai	c:\windows\ai	1	101	0
6	428D	c:\windows\ai	c:\windows\ai	1	101	0
7	429S	c:\windows\ai	c:\windows\ai	1	101	0
8	451	c:\windows\ai	c:\windows\ai	1	101	0
9	452D	c:\windows\ai	c:\windows\ai	1	101	0
10	475	c:\windows\ai	c:\windows\ai	1	101	0
11	476D	c:\windows\ai	c:\windows\ai	1	101	0
12	547	c:\windows\ai	c:\windows\ai	1	101	0
13	548D	c:\windows\ai	c:\windows\ai	1	101	0
14	571	c:\windows\ai	c:\windows\ai	1	101	0
15	572D	c:\windows\ai	c:\windows\ai	1	101	0
16	983	c:\windows\ai	c:\windows\ai	1	51	0
17	984D	c:\windows\ai	c:\windows\ai	1	51	0
18	64D	c:\windows\ai	c:\windows\ai	1	101	0
19	LMCS/6C11-HO	c:\windows\ai	c:\windows\ai	1	101	0

```
Sample Name: SETUP                                   Date: Thu Apr 05 11:44:48 1990
Data File  : c:\windows\ai400\data\900-5963.d01
Method     : c:\windows\ai400\method\sst.met
CIM Address: 1       System : 1       Cycle#:   1       Detector: CDM
```

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

Start Time = 0.00 minutes Stop time = 11.50 Minutes
Number of Data Points = 3450 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

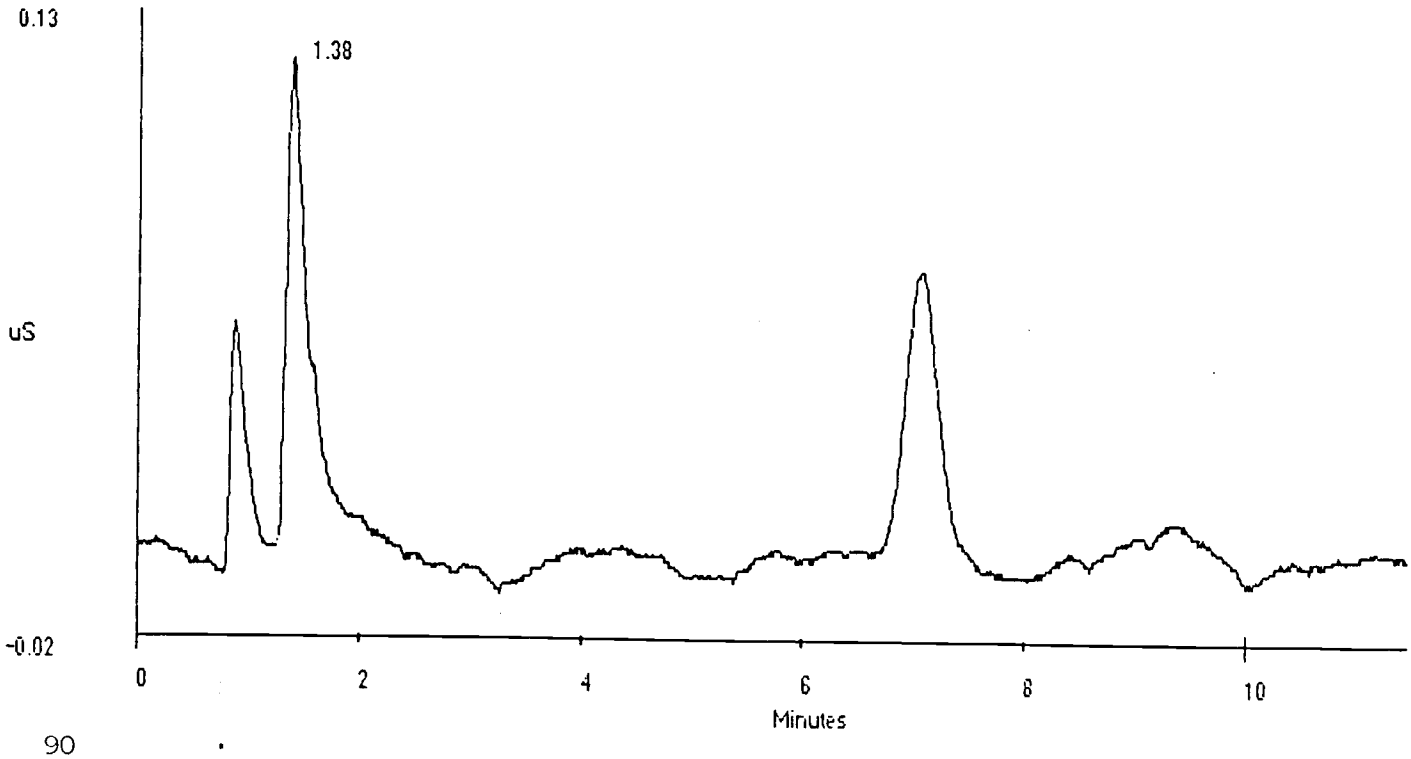


```
Sample Name: BLANK                                   Date: Thu Apr 05 11:57:04 1990
Data File  : c:\windows\ai400\data\900-5963.d02
Method     : c:\windows\ai400\method\sst.met
CIM Address: 1        System : 1        Cycle#:   2       Detector: CDM
```

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

Start Time = 0.00 minutes Stop time = 11.50 Minutes
Number of Data Points = 3450 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	1.38		0.000e+000	1.021e+003	106	1		

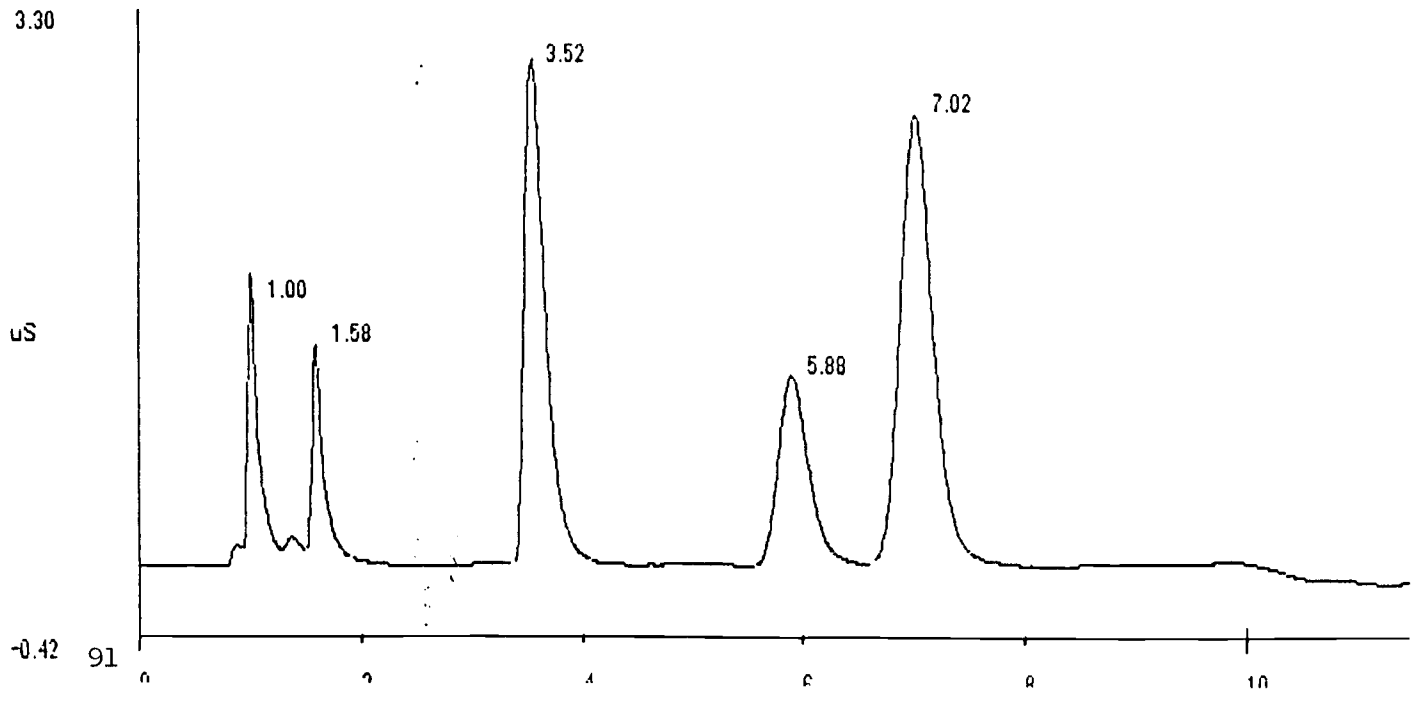


: Sample Name: LMCS/6C11-HO F0426 Date: Thu Apr 05 12:09:18 1990:
: Data File : c:\windows\ai400\data\900-5963.d03 :
: Method : c:\windows\ai400\method\sst.met :
: CIM Address: 1 System : 1 Cycle#: 3 Detector: CDM :

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

Start Time = 0.00 minutes Stop time = 11.50 Minutes
Number of Data Points = 3450 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	1.00	FLUORIDE	5.097e+001	9.542e+003	1452	1	0	-1.64%
2	1.58	CHLORIDE	7.181e+001	7.920e+003	1209	1	0	-3.06%
3	3.52	NITRATE	6.106e+002	3.939e+004	2949	1	0	0.00%
4	5.88	PHOSPHATE	6.038e+002	2.002e+004	1084	1	0	-0.56%
5	7.02	SULFATE	6.268e+002	5.312e+004	2626	1	0	-5.18%

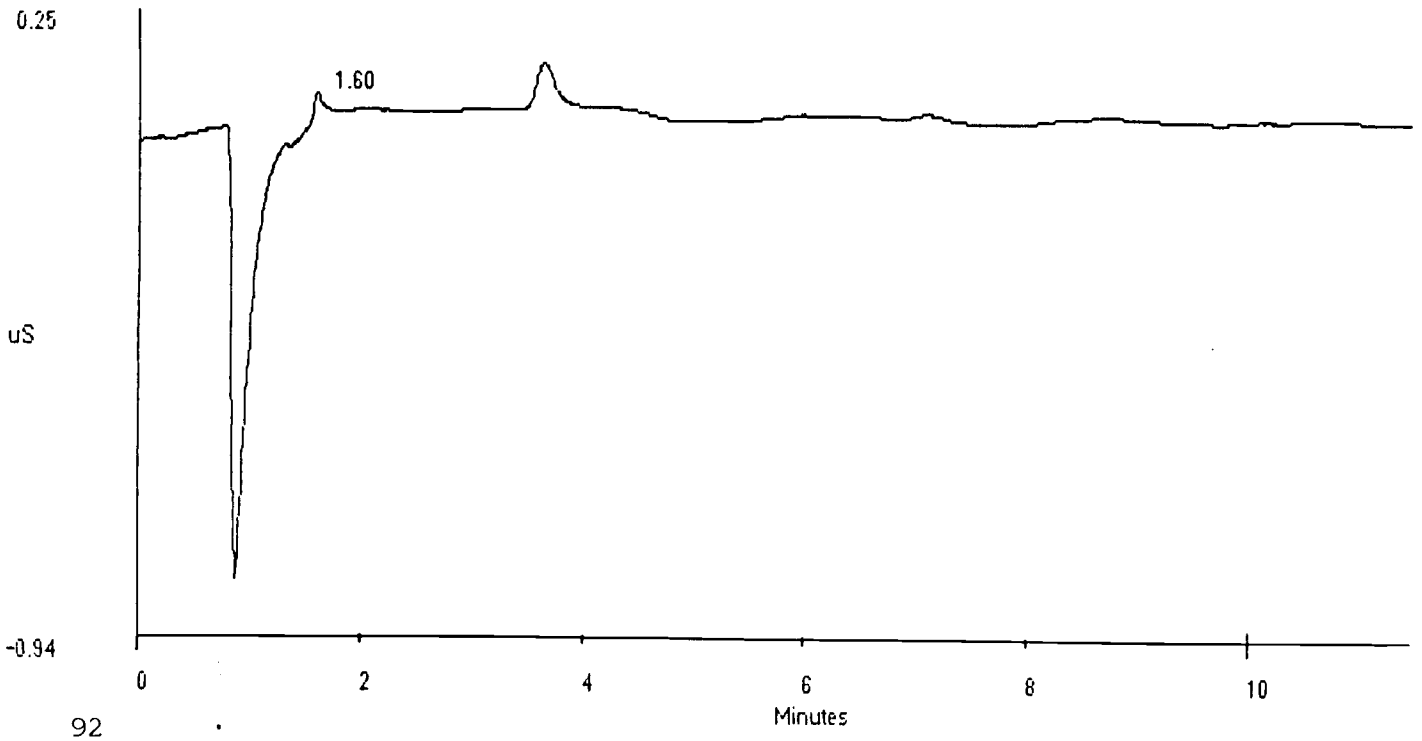


```
: Sample Name: 438B                                    Date: Thu Apr 05 12:21:34 1990:
: Data File  : c:\windows\ai400\data\900-5963.d04                                     :
: Method     : c:\windows\ai400\method\sst.met                                       :
: CIM Address: 1        System : 1        Cycle#:   4       Detector: CDM          :
```

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

Start Time = 0.00 minutes Stop time = 11.50 Minutes
Number of Data Points = 3450 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	1.60	CHLORIDE	2.017e-001	1.746e+004	266	1	0	-2.04%



DATA REPROCESSED ON Thu Aug 23 13:26:41 1990

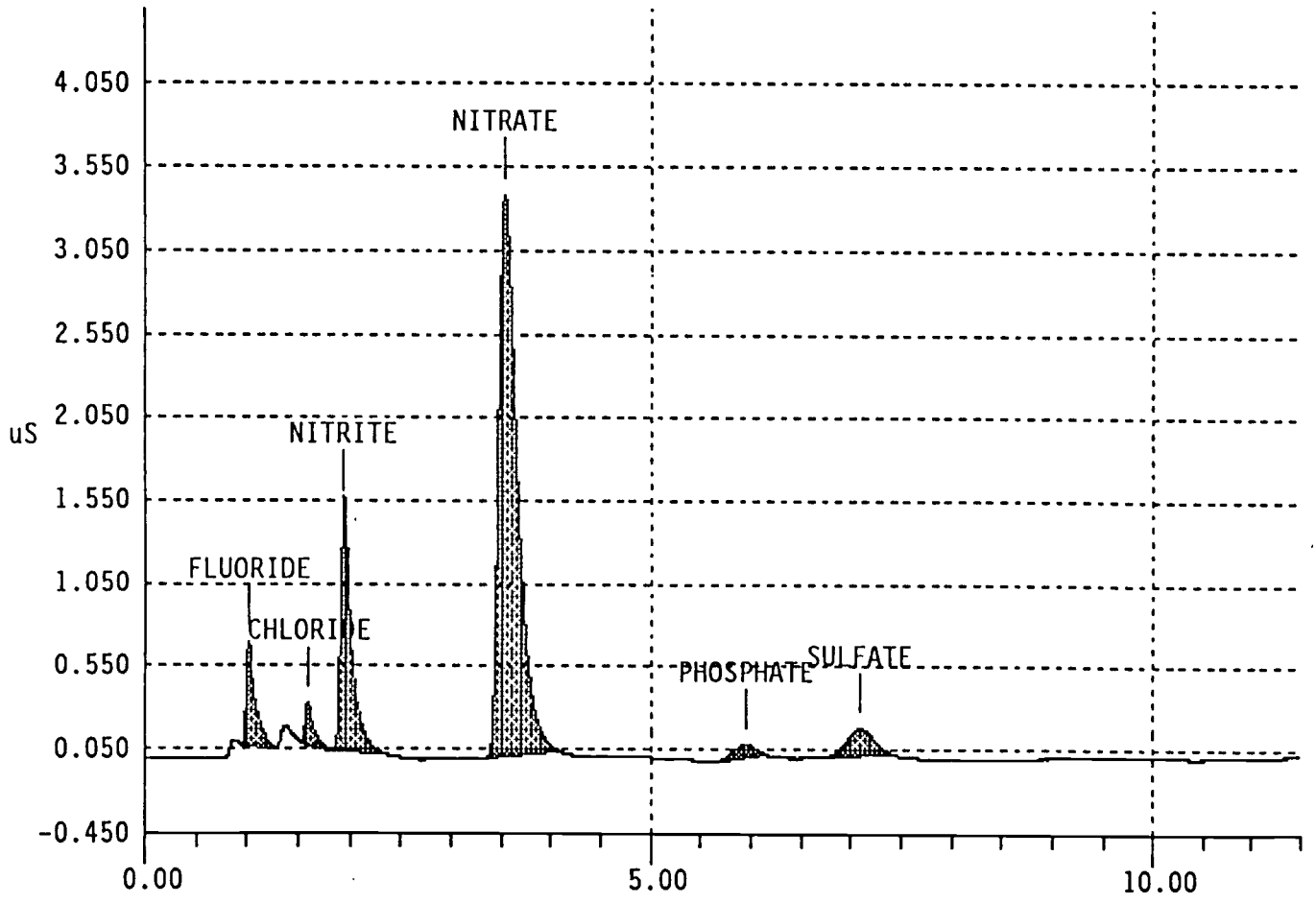
```
Sample Name: 547                                  Date: Thu Apr 05 14:59:38 1990
Data File  : A:\90040500.D12
Method     : c:\windows\ai400\method\sst.met
ACI Address: 1       System : 1       Inject#:  12      Detector: CDM
```

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

Stop time = 11.50 Minutes Number of Data Points = 3450
Area reject = 1000 One Data Point per 0.2 seconds
Amount Injected = 1 Dilution factor = 101

PEAK NUM	RET TIME	PEAK NAME	CONC. in ug/ml	AREA	HEIGHT	BL	REF PEAK	% DELTA RET TIME
1	1.02	FLUORIDE	2.424e+001	3.915e+003	628	1	0	0.00%
2	1.60	CHLORIDE	1.956e+001	1.443e+003	252	1	0	0.00%
3	1.93	NITRITE	1.690e+002	1.122e+004	1477	1	0	0.00%
4	3.53	NITRATE	7.011e+002	4.494e+004	3380	1	0	0.00%
5	5.95	PHOSPHATE	7.084e+001	1.140e+003	75	1	0	0.00%
6	7.08	SULFATE	4.645e+001	2.859e+003	156	1	0	0.00%

File: A:\90040500.D12 Sample: 547



DATA REPROCESSED ON Thu Aug 23 13:28:13 1990

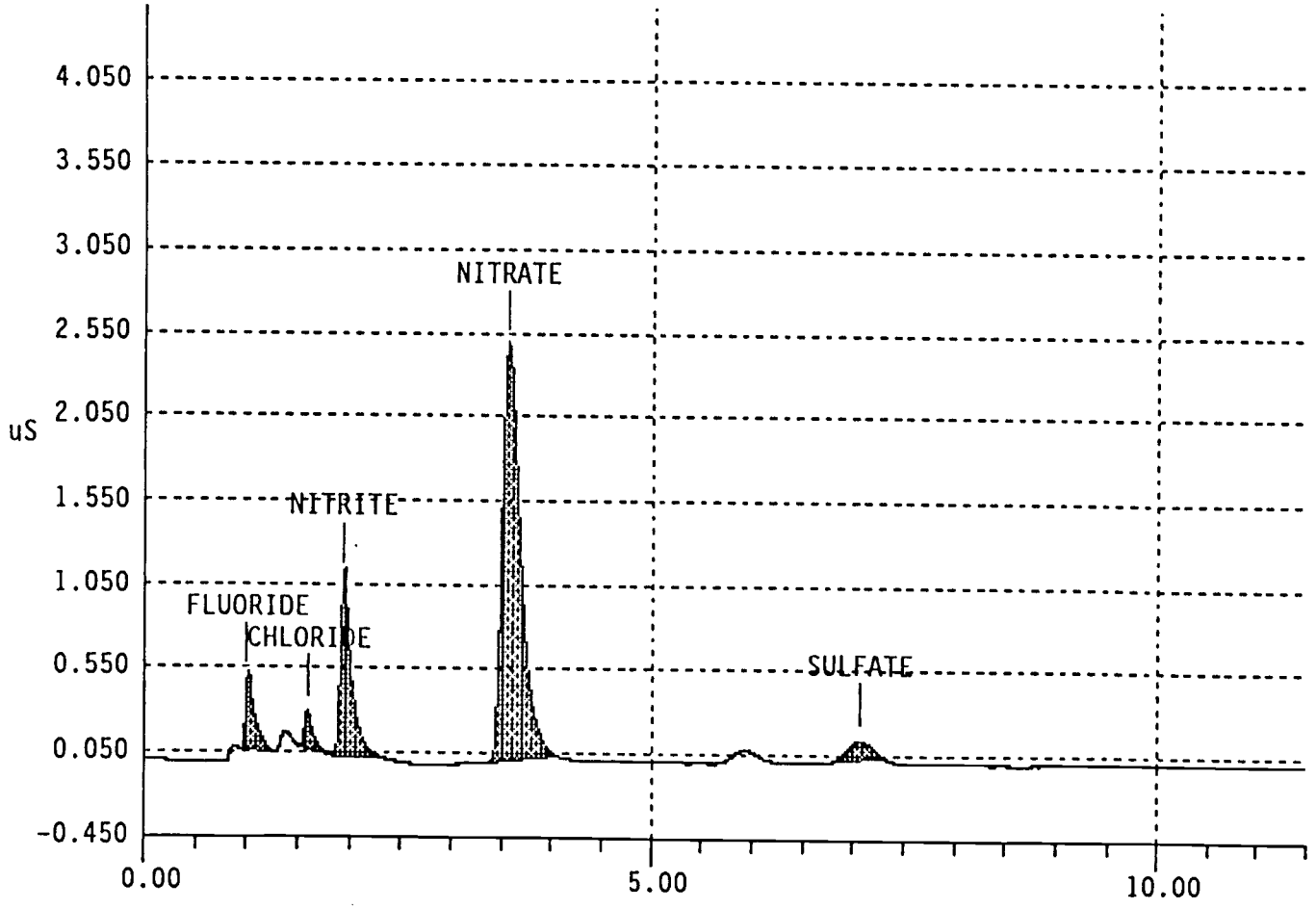
```
Sample Name: 548D                                   Date: Thu Apr 05 15:11:56 1990
Data File  : A:\90040500.D13
Method     : c:\windows\ai400\method\sst.met
ACI Address: 1       System : 1       Inject#:  13      Detector: CDM
```

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

Stop time = 11.50 Minutes Number of Data Points = 3450
Area reject = 1000 One Data Point per 0.2 seconds
Amount Injected = 1 Dilution factor = 101

PEAK NUM	RET TIME	PEAK NAME	CONC. in ug/ml	AREA	HEIGHT	BL	REF PEAK	% DELTA RET TIME
1	1.00	FLUORIDE	1.757e+001	2.918e+003	423	1	0	0.00%
2	1.60	CHLORIDE	1.778e+001	1.271e+003	220	1	0	0.00%
3	1.93	NITRITE	1.299e+002	8.164e+003	1061	1	0	0.00%
4	3.55	NITRATE	5.093e+002	3.219e+004	2466	1	0	0.00%
5	7.07	SULFATE	3.793e+001	2.012e+003	120	1	0	0.00%

File: A:\90040500.D13 Sample: 548D



DATA REPROCESSED ON Thu Aug 23 13:17:53 1990

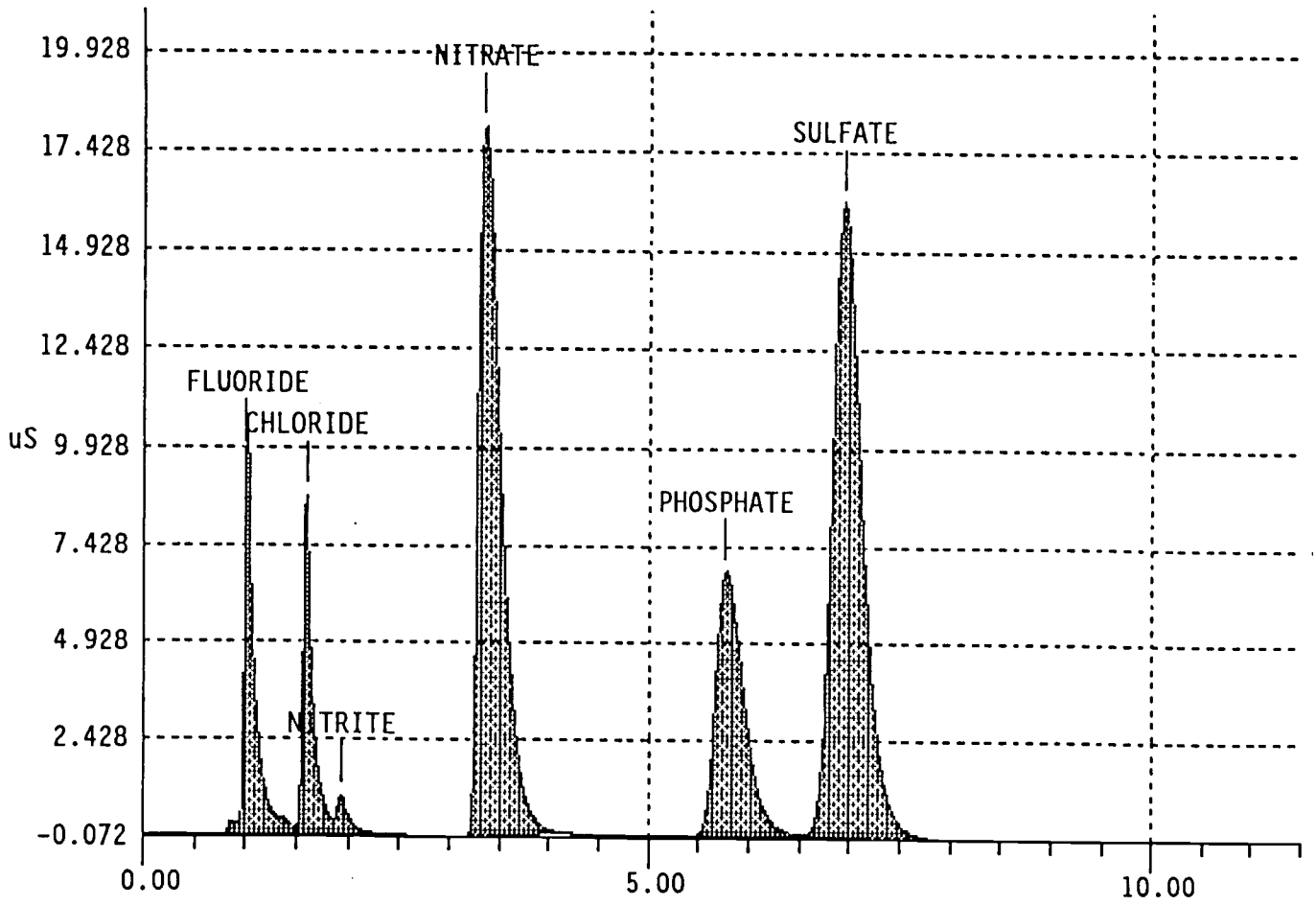
```
Sample Name: 429S                                  Date: Thu Apr 05 13:58:17 1990
Data File  : A:\90040500.D07
Method     : c:\windows\ai400\method\sst.met
ACI Address: 1       System : 1       Inject#:   7       Detector: CDM
```

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

Stop time = 11.50 Minutes Number of Data Points = 3450
Area reject = 1000 One Data Point per 0.2 seconds
Amount Injected = 1 Dilution factor = 101

PEAK NUM	RET TIME	PEAK NAME	CONC. in ug/ml	AREA	HEIGHT	BL	REF PEAK	% DELTA RET TIME
1	1.00	FLUORIDE	3.052e+002	7.634e+004	9685	2	0	0.00%
2	1.58	CHLORIDE	4.348e+002	5.743e+004	8656	3	0	0.00%
3	1.93	NITRITE	1.089e+002	6.323e+003	836	4	0	0.00%
4	3.35	NITRATE	3.839e+003	2.908e+005	17987	1	0	0.00%
5	5.77	PHOSPHATE	3.452e+003	1.356e+005	6762	2	0	0.00%
6	6.93	SULFATE	3.527e+003	3.404e+005	16085	2	0	-6.31%

File: A:\90040500.D07 Sample: 429S



DATA REPROCESSED ON Thu Aug 23 13:37:04 1990

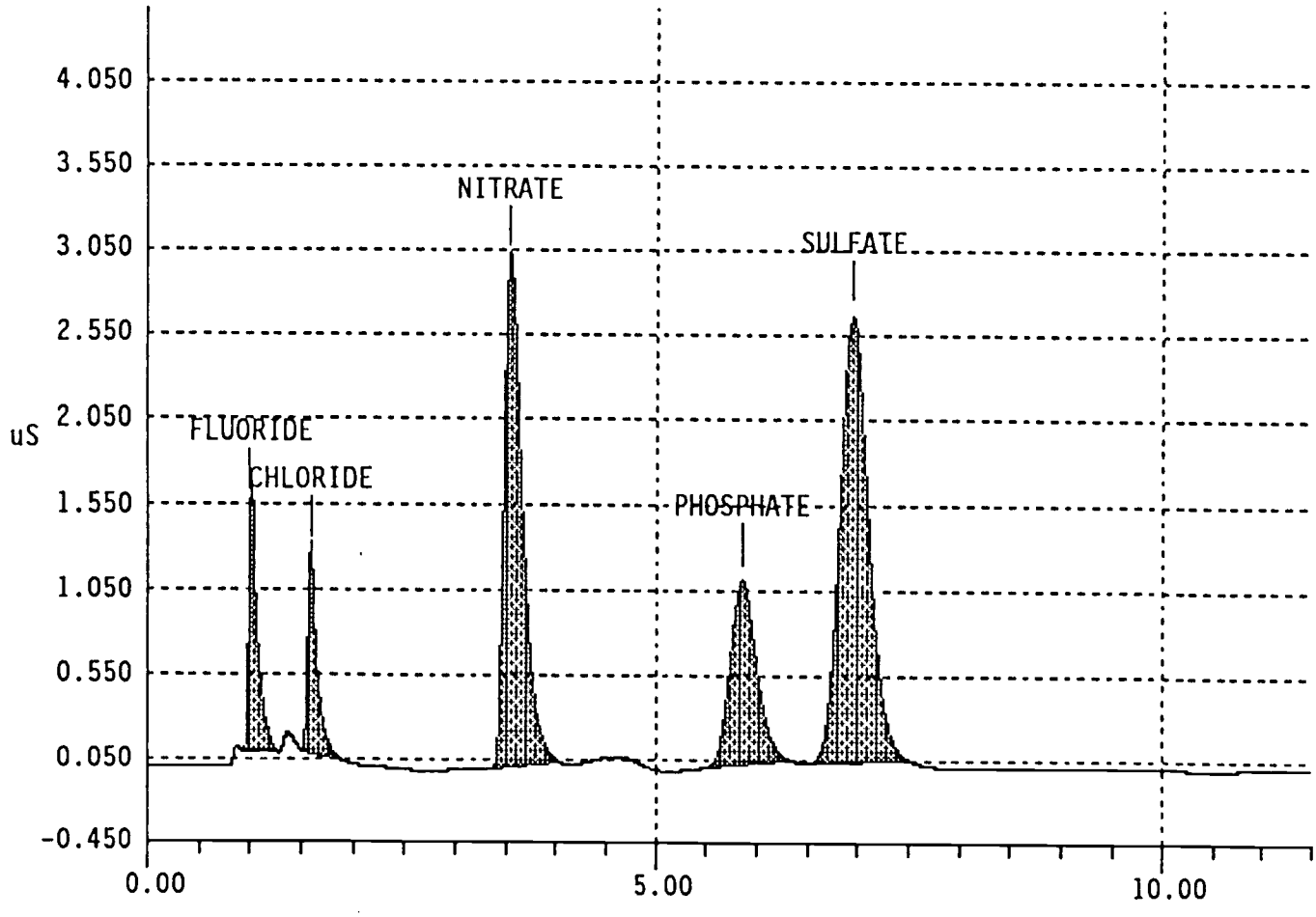
```
Sample Name: LMCS/6C11-HO F0571          Date: Thu Apr 05 16:25:34 1990
Data File  : A:\90040500.D19
Method     : c:\windows\ai400\method\sst.met
ACI Address: 1      System : 1      Inject#:  19      Detector: CDM
```

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

Stop time = 11.50 Minutes Number of Data Points = 3450
Area reject = 1000 One Data Point per 0.2 seconds
Amount Injected = 1 Dilution factor = 101

PEAK NUM	RET TIME	PEAK NAME	CONC. in ug/ml	AREA	HEIGHT	BL	REF PEAK	% DELTA RET TIME
1	1.00	FLUORIDE	5.094e+001	9.493e+003	1451	1	0	0.00%
2	1.58	CHLORIDE	7.021e+001	7.816e+003	1180	1	0	0.00%
3	3.53	NITRATE	6.154e+002	3.890e+004	2971	1	0	0.00%
4	5.85	PHOSPHATE	6.079e+002	2.009e+004	1091	1	0	0.00%
5	6.95	SULFATE	6.252e+002	5.262e+004	2619	1	0	-6.08%

File: A:\90040500.D19 Sample: LMCS/6C11-HO



Analytical Batch

LAB SEGMENT SERIAL #:F0537

CUSTOMER ID:89-075

INSTRUMENT	WB24721
PROCEDURE/REV	LA-533-105/A-3
TECHNOLOGIST	N. E. Wright
DATE	April 12, 1990
TEMPERATURE	22.5 C
STARTING TIME	1100
ENDING TIME	1420
CHEMIST	H. S. Rich

Ion Chromatograph Analysis
Water Digestion

* Run for Flouride only

	DESCRIPTION		LAB ID
1	Initial LMCS Check Std.		F0426
2	Reagent Blank		F0438
3	Sample	89-070	F0427
4	Duplicate Sample	89-070	F0428
5	Spike of sample	89-070	F0429
6	Sample	89-071	F0451
7	Duplicate Sample	89-071	F0452
8	Sample	89-072	F0475
9	Duplicate Sample	89-072	F0476
10	Sample	89-075	F0547
11	Duplicate Sample	89-075	F0548

	DESCRIPTION		LAB ID
12	Sample	89-076	F0571
13	Final LMCS Check Std.		F0574
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.	6C11HO/100 uL			10.1 mL
Spike	35C9-77/300 uL	F0427/50 uL		5.3 mL

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: N. E. Wright	Payroll Number: 6B107
Date: April 11, 1990	
Calibration Standard ID: 35C9-78	
Analyte Concentration: F 60 Cl 76 PO_4 606 NO_3 611 SO_4 587 (ppm)	
Type of Calibration: Linear	

Comments:

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

DIONEX METHOD PARAMETERS - SST.MET

Detector Parameters

Number of Detectors	1
Detector 1 Type	CDM

Report Options

Run Time (minutes)	11.50
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: A:\90040979.D08	
Record Result Data	No

Integration Parameters

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

Integration Timed Events

Time	Description

Calibration Parameters

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

Component # 5 PHOSPHATE Retention Time 5.80
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 5.30474E-003
Least Squares Intercept = 1.89883E-001
Ka = -4.78291E-008

Level	Amount	Area	Height
1	1.21550E+000	3360	198
2	3.02990E+000	9889	536
3	6.02970E+000	20802	1103
4	1.19412E+001	43160	2270
5	2.34230E+001	88767	4565
6	4.51110E+001	186751	9238

Component # 6 SULFATE Retention Time 6.85
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 2.26381E-003
Least Squares Intercept = 6.72726E-003
Ka = -1.34143E-008

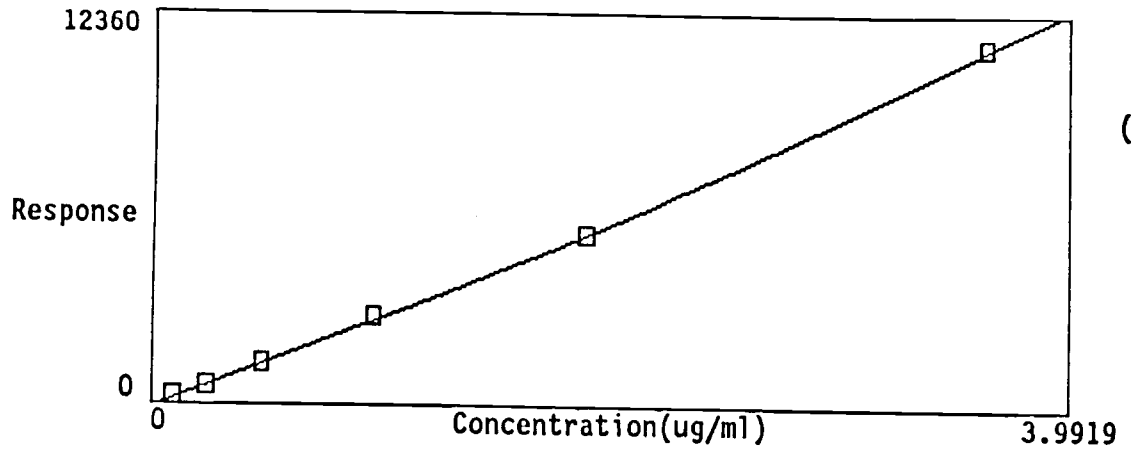
Level	Amount	Area	Height
1	1.18960E+000	10771	557
2	2.96520E+000	25693	1297
3	5.90100E+000	51993	2607
4	1.16860E+001	108657	5358
5	2.29231E+001	220178	10811
6	4.41480E+001	472662	22498

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

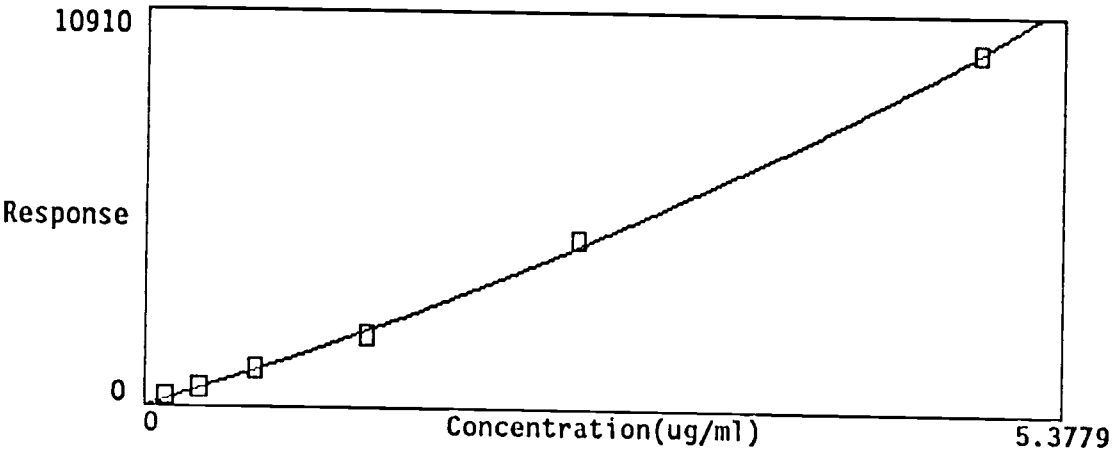
Level	Amount	Area	Height
1	0.00000E+000	0	0
2	0.00000E+000	0	0
3	0.00000E+000	0	0
4	0.00000E+000	0	0
5	0.00000E+000	0	0
6	0.00000E+000	98993	5848

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

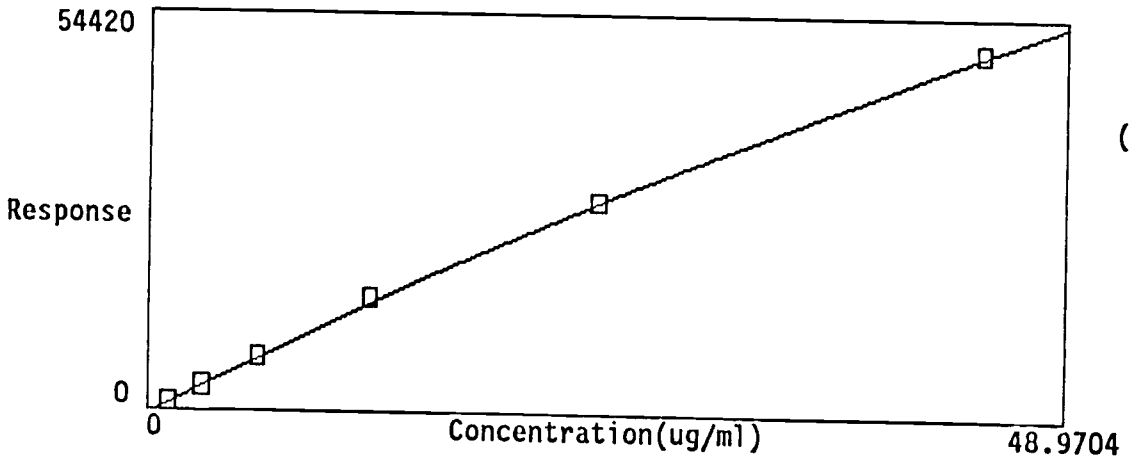
Step	Time	Description
Init		CDM AutoOffset Off
Init		CDM Recorder Mark OFF
Init		CDM Temp. Comp. = 1.7 / Deg C
Init		CDM Recorder Range = 1.000 uS
Init		CDM Cell ON
Init		CMA Heater = 25 Deg. C
Init		Valve A ON
Init		Valve B ON
Init		Inject Valve OFF
Init		CIM Relay 1 OFF
Init		CIM Relay 2 OFF
Init		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



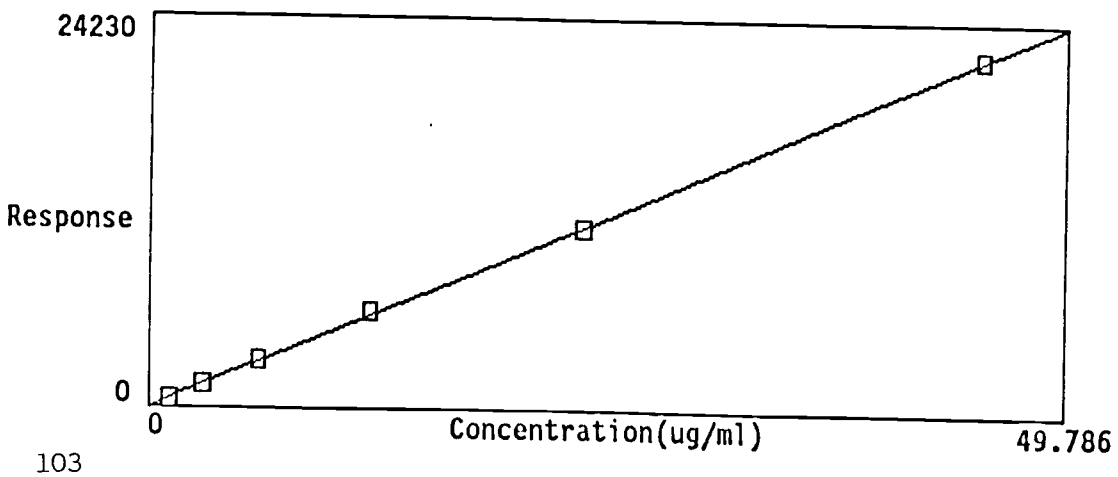
Component: FLUORIDE
Fit Type: Quadratic
Conc = (-4.023616e-009
(3.684797e-004 * Resp)+



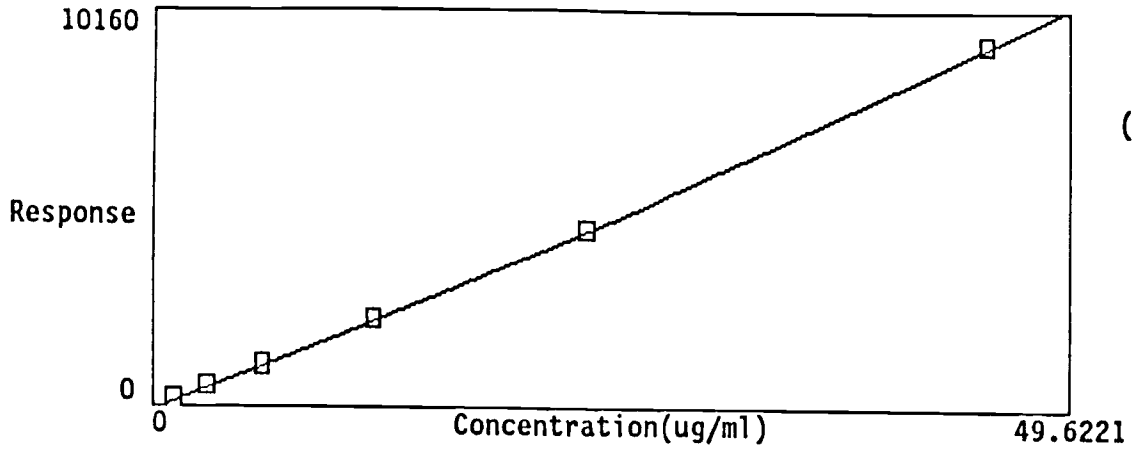
Component: CHLORIDE
Fit Type: Quadratic
Conc = (-1.216103e-008
(6.159914e-004 * Resp)+



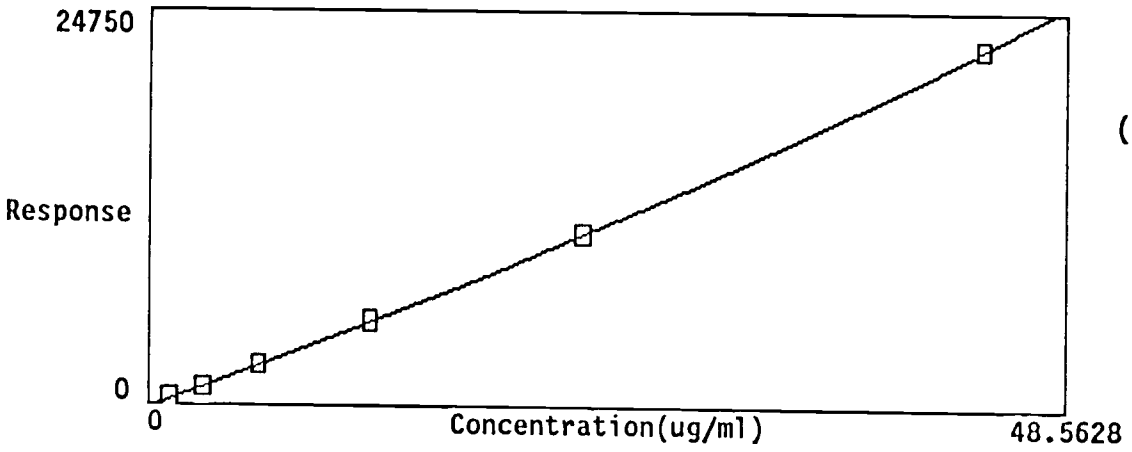
Component: NITRITE
Fit Type: Quadratic
Conc = (3.364537e-009 *
(7.286927e-004 * Resp)+



Component: NITRATE
Fit Type: Quadratic
Conc = (2.728131e-010 *
(2.063355e-003 * Resp)+



Component: PHOSPHATE
Fit Type: Quadratic
Conc = (-4.782909e-008
(5.304744e-003 * Resp)+



Component: SULFATE
Fit Type: Quadratic
Conc = (-1.341431e-008
(2.263806e-003 * Resp)+

********** AUTOMATIC CALIBRATION UPDATE **********
Method File: C:\WINDOWS\AI400\METHOD\SST.MET
Result File: CALDATA.R10
Sample Name: AUTOCAL1R Calibration Level : 1
Interface #: 1 Cycle #: 3 Result File Date: Wed Apr 11 10:22:06 1990
Start time = 0 Stop time = 11.50
Area reject = 1000 One DataPoint per 0.2 seconds
Amount Injected = 1 Dilution factor = 1
********** PEAKS NOT FOUND IN THIS RUN **********

Name	Adjusted Ret Time	Reference Peak
FLUORIDE	1.00	0
Oxalate	9.77	1

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

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD HEIGHT	MEASURED HEIGHT	NEW HEIGHT
2	CHLORIDE	1.60	1.60	1.60	3.580e+002	3.583e+002	3.583e+002
3	NITRITE	1.95	1.95	1.95	1.360e+003	1.360e+003	1.360e+003
4	NITRATE	3.38	3.67	3.67	4.680e+002	6.767e+002	6.767e+002
5	PHOSPHATE	5.80	6.00	6.00	1.800e+002	1.983e+002	1.983e+002
6	SULFATE	6.85	6.98	6.98	1.980e+002	5.565e+002	5.565e+002

********** AUTOMATIC CALIBRATION UPDATE **********
Method File: C:\WINDOWS\AI400\METHOD\SST.MET
Result File: CALDATA.R10
Sample Name: AUTOCAL2R Calibration Level : 2
Interface #: 1 Cycle #: 4 Result File Date: Wed Apr 11 10:34:25 1990
Start time = 0 Stop time = 11.50
Area reject = 1000 One DataPoint per 0.2 seconds
Amount Injected = 1 Dilution factor = 1
********** PEAKS NOT FOUND IN THIS RUN **********

Name	Adjusted Ret Time	Reference Peak
Oxalate	9.77	1

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

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD HEIGHT	MEASURED HEIGHT	NEW HEIGHT
1	FLUORIDE	1.00	1.00	1.00	6.160e+002	6.067e+002	6.067e+002
2	CHLORIDE	1.60	1.60	1.60	4.890e+002	5.866e+002	5.866e+002
3	NITRITE	1.95	1.95	1.95	3.515e+003	3.515e+003	3.515e+003
4	NITRATE	3.67	3.63	3.63	1.234e+003	1.565e+003	1.565e+003
5	PHOSPHATE	6.00	5.98	5.98	4.370e+002	5.364e+002	5.364e+002
6	SULFATE	6.98	6.97	6.97	9.220e+002	1.297e+003	1.297e+003

********** AUTOMATIC CALIBRATION UPDATE **********
Method File: C:\WINDOWS\AI400\METHOD\SST.MET
Result File: CALDATA.R10
Sample Name: AUTOCAL3R Calibration Level : 3
Interface #: 1 Cycle #: 5 Result File Date: Wed Apr 11 10:46:43 1990
Start time = 0 Stop time = 11.50
Area reject = 1000 One DataPoint per 0.2 seconds
Amount Injected = 1 Dilution factor = 1
********** PEAKS NOT FOUND IN THIS RUN **********

Name	Adjusted Ret Time	Reference Peak
Oxalate	9.77	1

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

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD HEIGHT	MEASURED HEIGHT	NEW HEIGHT
1	FLUORIDE	1.00	1.00	1.00	1.226e+003	1.320e+003	1.320e+003
2	CHLORIDE	1.60	1.60	1.60	1.017e+003	1.135e+003	1.135e+003
3	NITRITE	1.95	1.95	1.95	7.323e+003	7.323e+003	7.323e+003
4	NITRATE	3.63	3.58	3.58	2.460e+003	3.098e+003	3.098e+003
5	PHOSPHATE	5.98	5.97	5.97	9.480e+002	1.103e+003	1.103e+003
6	SULFATE	6.97	6.97	6.97	1.890e+003	2.607e+003	2.607e+003

```
**********    AUTOMATIC CALIBRATION UPDATE    **********
Method File:  C:\WINDOWS\AI400\METHOD\SST.MET
Result File:  CALDATA.R10
Sample Name:  AUTOCAL4R                          Calibration Level :  4
Interface #: 1  Cycle #: 6      Result File Date: Wed Apr 11 10:59:03 1990
Start time  = 0          Stop time = 11.50
Area reject = 1000       One DataPoint per 0.2 seconds
Amount Injected = 1      Dilution factor = 1
**********  PEAKS NOT FOUND IN THIS RUN  **********
```

Name	Adjusted Ret Time	Reference Peak
Oxalate	9.77	1

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

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD HEIGHT	MEASURED HEIGHT	NEW HEIGHT
1	FLUORIDE	1.00	1.00	1.00	2.625e+003	2.776e+003	2.776e+003
2	CHLORIDE	1.60	1.58	1.58	2.088e+003	2.092e+003	2.092e+003
3	NITRITE	1.95	1.95	1.95	1.524e+004	1.524e+004	1.524e+004
4	NITRATE	3.58	3.53	3.53	4.753e+003	6.111e+003	6.111e+003
5	PHOSPHATE	5.97	5.93	5.93	1.886e+003	2.270e+003	2.270e+003
6	SULFATE	6.97	6.93	6.93	4.005e+003	5.358e+003	5.358e+003

********** AUTOMATIC CALIBRATION UPDATE **********
Method File: C:\WINDOWS\AI400\METHOD\SST.MET
Result File: CALDATA.R10
Sample Name: AUTOCAL5R Calibration Level : 5
Interface #: 1 Cycle #: 7 Result File Date: Wed Apr 11 11:11:21 1990
Start time = 0 Stop time = 11.50
Area reject = 1000 One DataPoint per 0.2 seconds
Amount Injected = 1 Dilution factor = 1
********** PEAKS NOT FOUND IN THIS RUN **********

Name	Adjusted Ret Time	Reference Peak
Oxalate	9.77	1

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

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD HEIGHT	MEASURED HEIGHT	NEW HEIGHT
1	FLUORIDE	1.00	1.00	1.00	5.315e+003	5.385e+003	5.385e+003
2	CHLORIDE	1.58	1.60	1.60	4.066e+003	4.705e+003	4.705e+003
3	NITRITE	1.95	1.95	1.95	2.844e+004	2.844e+004	2.844e+004
4	NITRATE	3.53	3.47	3.47	9.250e+003	1.137e+004	1.137e+004
5	PHOSPHATE	5.93	5.88	5.88	3.876e+003	4.565e+003	4.565e+003
6	SULFATE	6.93	6.90	6.90	8.158e+003	1.081e+004	1.081e+004

********** AUTOMATIC CALIBRATION UPDATE **********
Method File: C:\WINDOWS\AI400\METHOD\SST.MET
Result File: CALDATA.R10
Sample Name: AUTOCAL6R Calibration Level : 6
Interface #: 1 Cycle #: 8 Result File Date: Wed Apr 11 11:23:42 1990
Start time = 0 Stop time = 11.50
Area reject = 1000 One DataPoint per 0.2 seconds
Amount Injected = 1 Dilution factor = 1
********** PEAKS NOT FOUND IN THIS RUN **********

Name	Adjusted Ret Time	Reference Peak
Oxalate	9.77	1

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

COMP NUM	COMPONENT NAME	OLD RET.TIME	MEASURED RET.TIME	NEW RET.TIME	OLD HEIGHT	MEASURED HEIGHT	NEW HEIGHT
1	FLUORIDE	1.00	1.00	1.00	1.109e+004	1.123e+004	1.123e+004
2	CHLORIDE	1.60	1.60	1.60	9.183e+003	9.921e+003	9.921e+003
3	NITRITE	1.95	1.95	1.95	4.948e+004	4.948e+004	4.948e+004
4	NITRATE	3.47	3.38	3.38	1.747e+004	2.203e+004	2.203e+004
5	PHOSPHATE	5.88	5.80	5.80	8.003e+003	9.238e+003	9.238e+003
6	SULFATE	6.90	6.85	6.85	1.695e+004	2.250e+004	2.250e+004

DIONEX SCHEDULE - A:\90041200.SCH

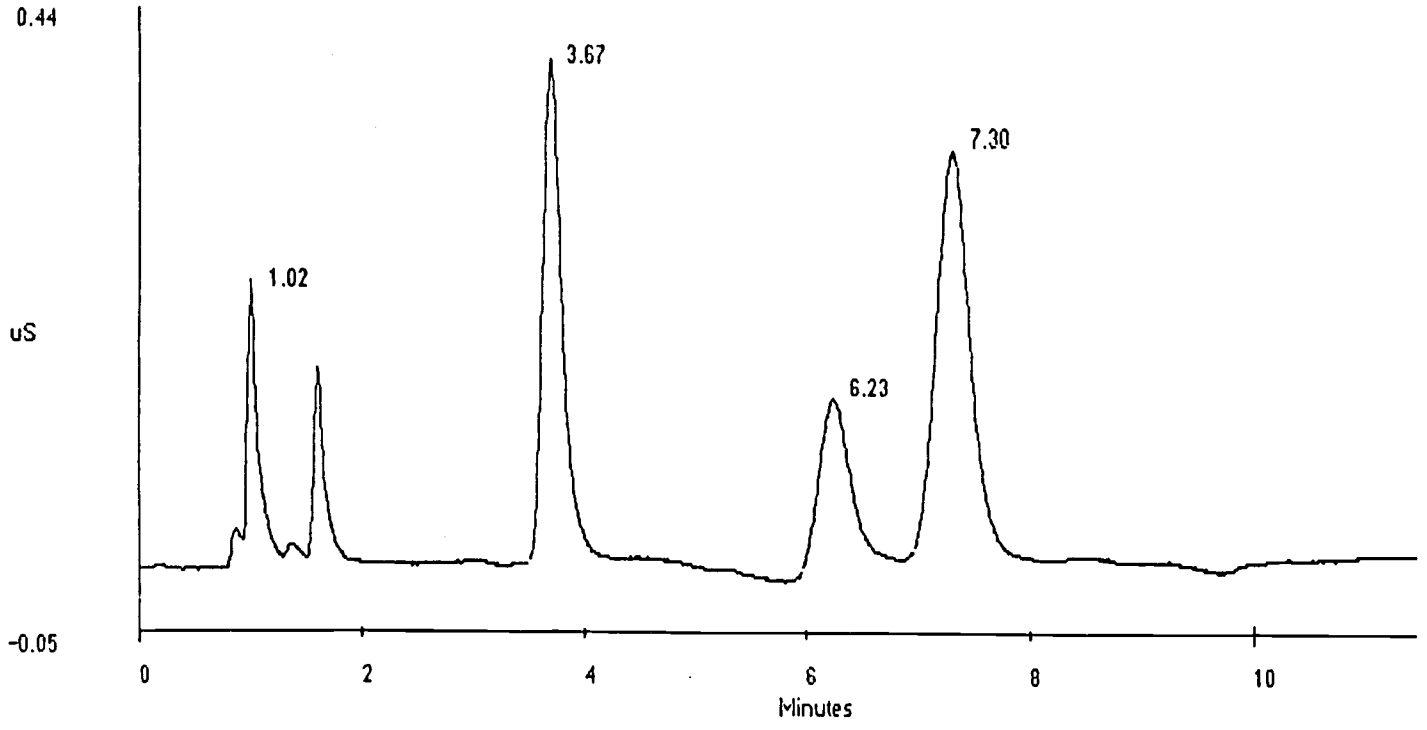
Inject	Sample Name	Method Name	Data File	Volume	Dilution	Int Std
1	SETUP	c:\windows\ai	c:\windows\ai	1	1	0
2	BLANK	c:\windows\ai	c:\windows\ai	1	1	0
3	LMCS/6C11-HO	c:\windows\ai	c:\windows\ai	1	101	0
4	438B	c:\windows\ai	c:\windows\ai	1	1	0
5	427	c:\windows\ai	c:\windows\ai	1	101	0
6	428D	c:\windows\ai	c:\windows\ai	1	101	0
7	429S	c:\windows\ai	c:\windows\ai	1	101	0
8	451	c:\windows\ai	c:\windows\ai	1	101	0
9	452D	c:\windows\ai	c:\windows\ai	1	101	0
10	475	c:\windows\ai	c:\windows\ai	1	101	0
11	476D	c:\windows\ai	c:\windows\ai	1	101	0
12	547	c:\windows\ai	c:\windows\ai	1	101	0
13	548D	c:\windows\ai	c:\windows\ai	1	101	0
14	571	c:\windows\ai	c:\windows\ai	1	101	0
15	572D	c:\windows\ai	c:\windows\ai	1	101	0
16	983	c:\windows\ai	c:\windows\ai	1	21	0
17	984D	c:\windows\ai	c:\windows\ai	1	21	0
18	LMCS/6C11-HO	c:\windows\ai	c:\windows\ai	1	101	0

```
Sample Name: SETUP                                  Date: Thu Apr 12 11:09:04 1990
Data File  : c:\windows\ai400\data\90041200.d01
Method     : c:\windows\ai400\method\sst.met
CIM Address: 1        System : 1        Cycle#:   1       Detector: CDM
```

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

Start Time = 0.00 minutes Stop time = 11.50 Minutes
Number of Data Points = 3450 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	1.02	FLUORIDE	7.169e-002	1.081e+003	196	1	0	1.67%
2	3.67		0.000e+000	4.412e+003	376	1		
3	6.23		0.000e+000	1.859e+003	115	1		
4	7.30	SULFATE	6.889e-001	5.861e+003	301	1	0	6.57%

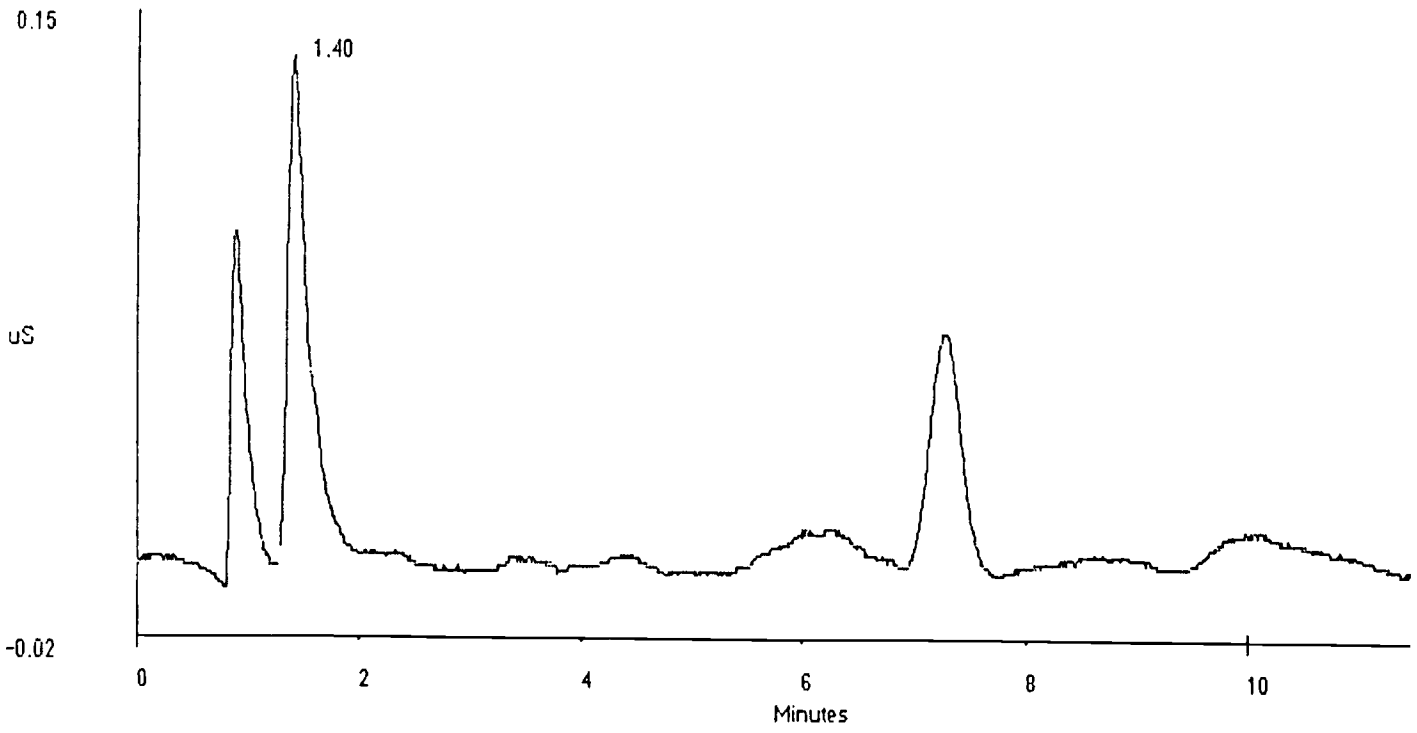


```
Sample Name: BLANK                                    Date: Thu Apr 12 11:21:20 1990
Data File  : c:\windows\ai400\data\90041200.d02
Method     : c:\windows\ai400\method\sst.met
CIM Address: 1        System : 1        Cycle#:   2       Detector: CDM
```

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

Start Time = 0.00 minutes Stop time = 11.50 Minutes
Number of Data Points = 3450 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

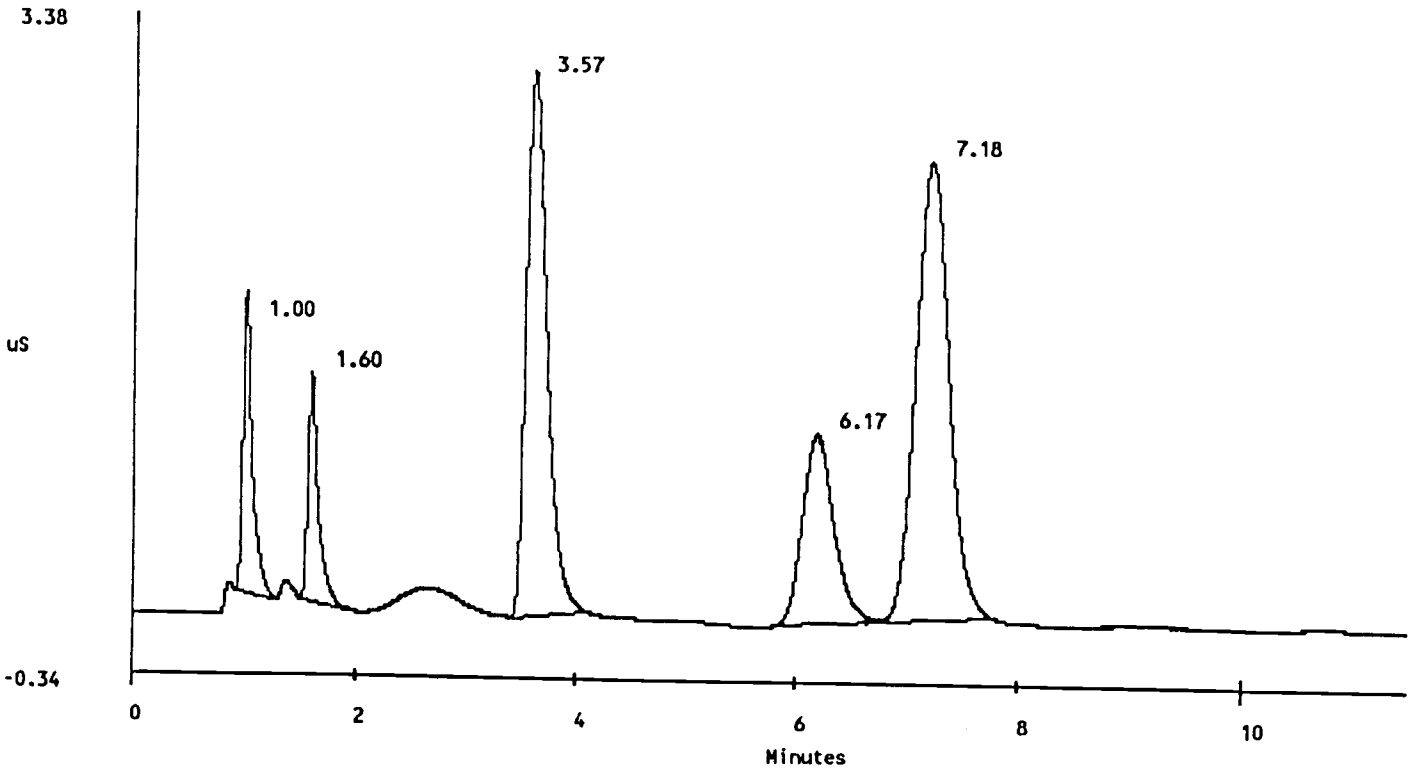


Sample Name: LMCS/6C11-HO F-0426 Date: Thu Apr 12 11:33:35 1990
Data File : 90041200.D03
Method : c:\windows\ai400\method\sst.met
CIM Address: 1 System : 1 Cycle#: 3 Detector: CDM

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

Start Time = 0.00 minutes Stop time = 11.50 Minutes
Number of Data Points = 3451 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	1.00	FLUORIDE	5.450e+001	9.780e+003	1489	1	0	0.00%
2	1.60	CHLORIDE	7.288e+001	7.890e+003	1258	1	0	0.00%
3	3.57	NITRATE	5.993e+002	3.943e+004	3009	1	0	5.42%
4	6.17	PHOSPHATE	5.816e+002	2.084e+004	1060	2	0	6.32%
5	7.18	SULFATE	5.781e+002	5.320e+004	2564	2	0	4.87%

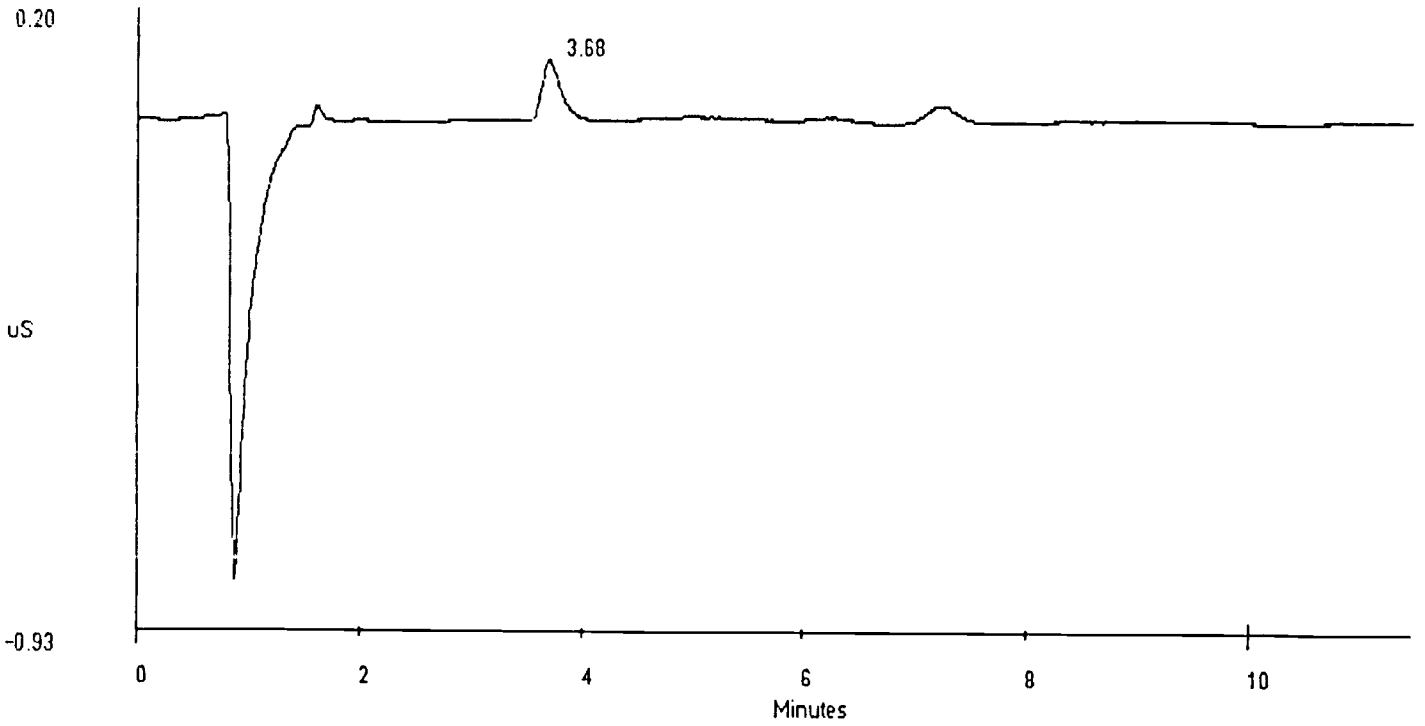


```
Sample Name: 438B                                    Date: Thu Apr 12 11:45:50 1990
Data File  : c:\windows\ai400\data\90041200.d04
Method     : c:\windows\ai400\method\sst.met
CIM Address: 1        System : 1        Cycle#:   4       Detector: CDM
```

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

Start Time = 0.00 minutes Stop time = 11.50 Minutes
Number of Data Points = 3450 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 RET TIME	% DELTA

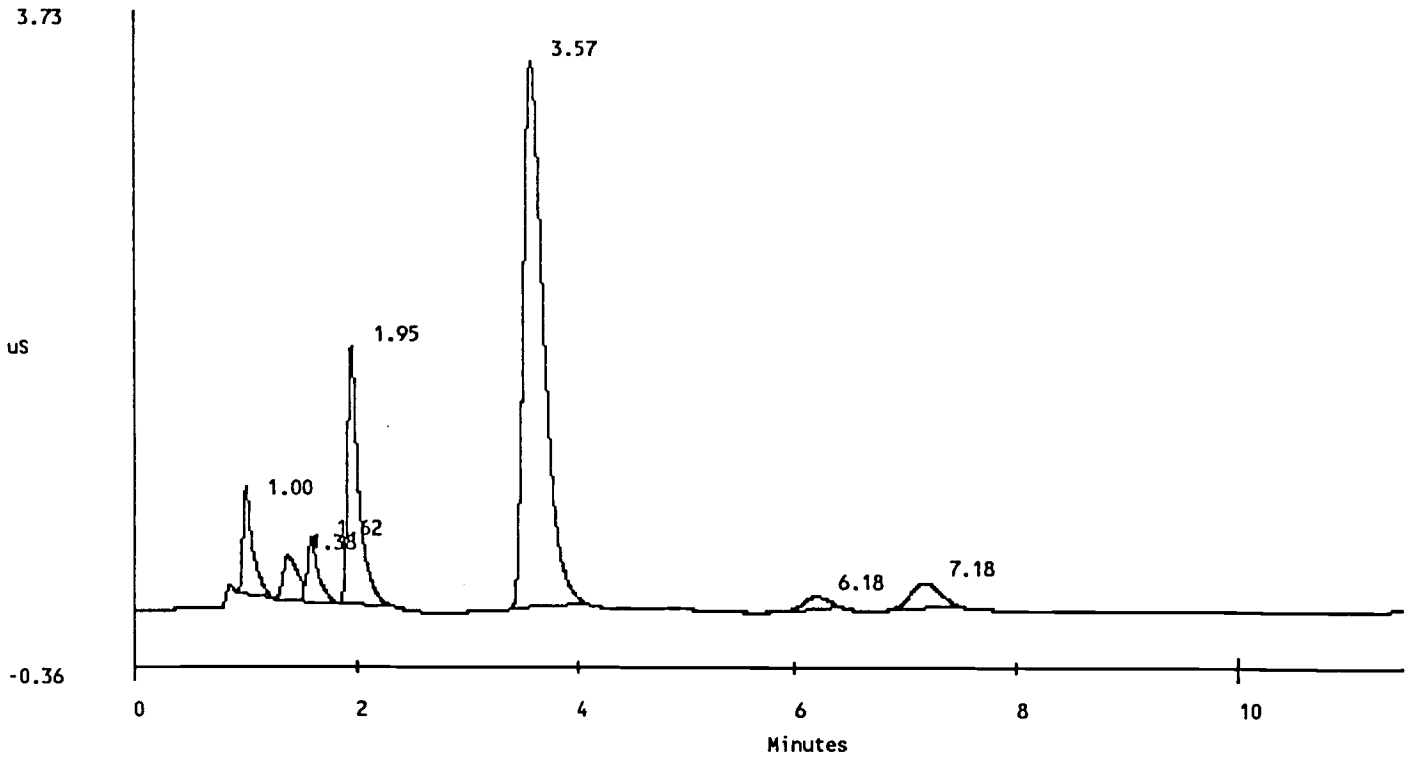


Sample Name: 547 Date: Thu Apr 12 13:23:57 1990
Data File : 90041200.D12
Method : c:\windows\ai400\method\sst.met
CIM Address: 1 System : 1 Cycle#: 12 Detector: CDM

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

Start Time = 0.00 minutes Stop time = 11.50 Minutes
Number of Data Points = 3450 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	1.00	FLUORIDE	2.079e+001	4.016e+003	563	1	0	0.00%
2	1.38		0.000e+000	2.417e+003	268	2		
3	1.62	CHLORIDE	1.915e+001	2.531e+003	366	2	0	1.04%
4	1.95	NITRITE	1.447e+002	1.133e+004	1581	2	0	0.00%
5	3.57	NITRATE	6.764e+002	4.367e+004	3379	1	0	5.42%
6	6.18	PHOSPHATE	5.840e+001	1.083e+003	73	1	0	6.61%
7	7.18	SULFATE	3.556e+001	2.812e+003	152	1	0	4.87%

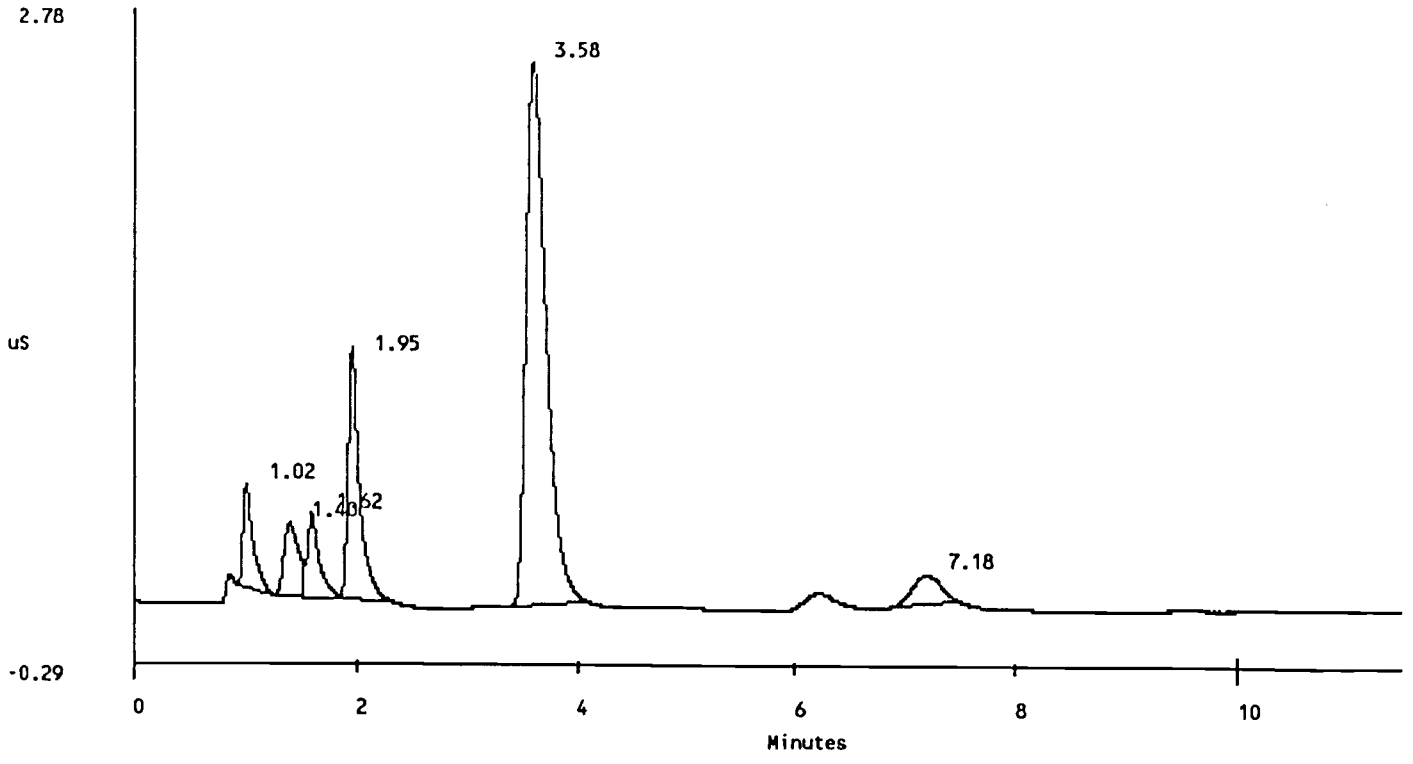


```
Sample Name: 548D                                  Date: Thu Apr 12 13:36:15 1990
Data File  : 90041200.D13
Method     : c:\windows\ai400\method\sst.met
CIM Address: 1       System : 1       Cycle#:  13      Detector: CDM
```

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

Start Time = 0.00 minutes Stop time = 11.50 Minutes
Number of Data Points = 3450 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	1.02	FLUORIDE	1.745e+001	3.041e+003	472	1	0	1.67%
2	1.40		0.000e+000	3.016e+003	336	2		
3	1.62	CHLORIDE	1.980e+001	2.711e+003	376	2	0	1.04%
4	1.95	NITRITE	1.105e+002	8.207e+003	1122	2	0	0.00%
5	3.58	NITRATE	4.981e+002	3.205e+004	2524	1	0	5.91%
6	7.18	SULFATE	3.026e+001	2.254e+003	129	1	0	4.87%

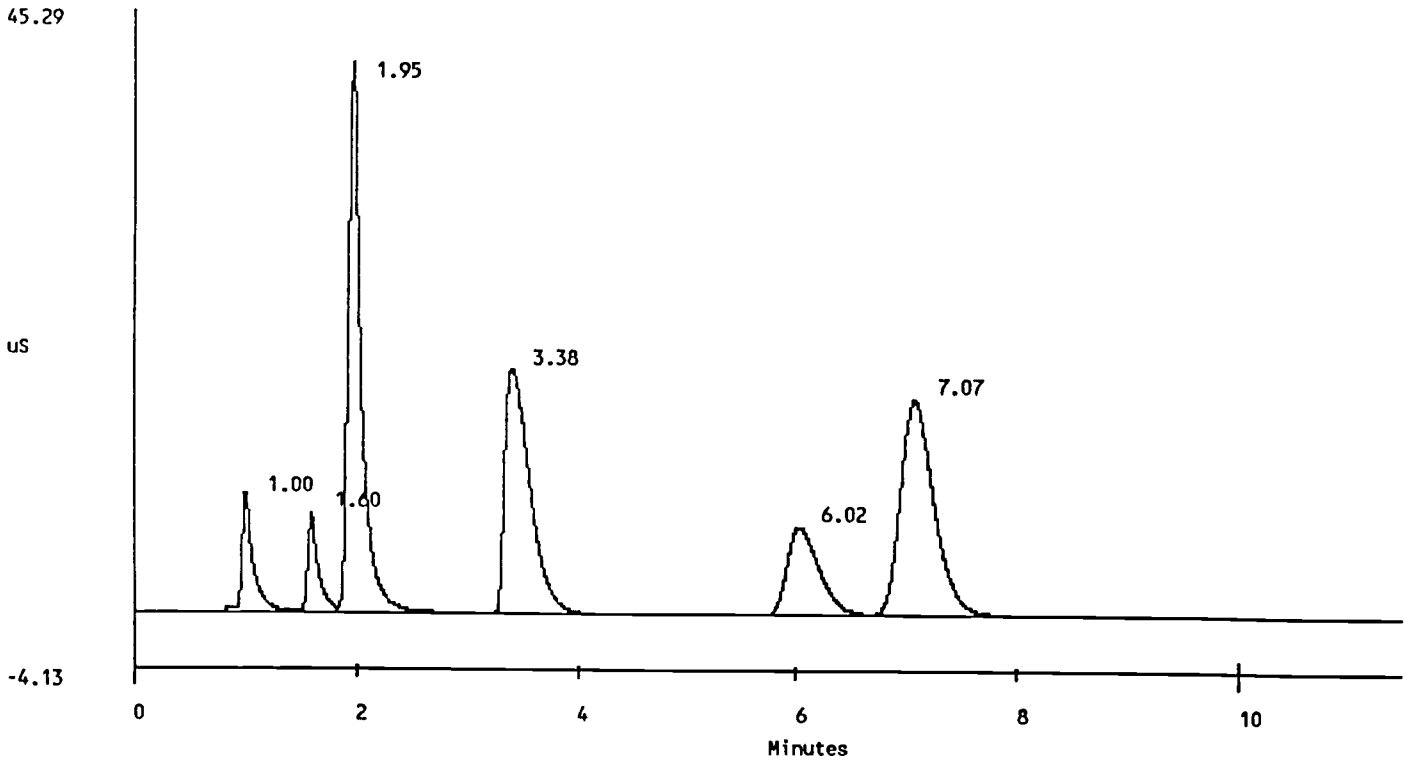


```
Sample Name: 429S                                    Date: Thu Apr 12 12:22:35 1990
Data File  : 90041200.D07
Method     : c:\windows\ai400\method\sst.met
CIM Address: 1       System : 1       Cycle#:   7       Detector: CDM
```

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

Start Time = 0.00 minutes Stop time = 11.50 Minutes
Number of Data Points = 3450 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	1.00	FLUORIDE	2.921e+002	6.771e+004	8669	2	0	0.00%
2	1.60	CHLORIDE	3.943e+002	4.826e+004	7505	2	0	0.00%
3	1.95	NITRITE	3.480e+003	3.366e+005	39647	2	0	0.00%
4	3.38	NITRATE	3.747e+003	2.932e+005	18071	1	0	0.00%
5	6.02	PHOSPHATE	3.360e+003	1.356e+005	6632	2	0	3.74%
6	7.07	SULFATE	3.335e+003	3.435e+005	16122	2	0	3.16%

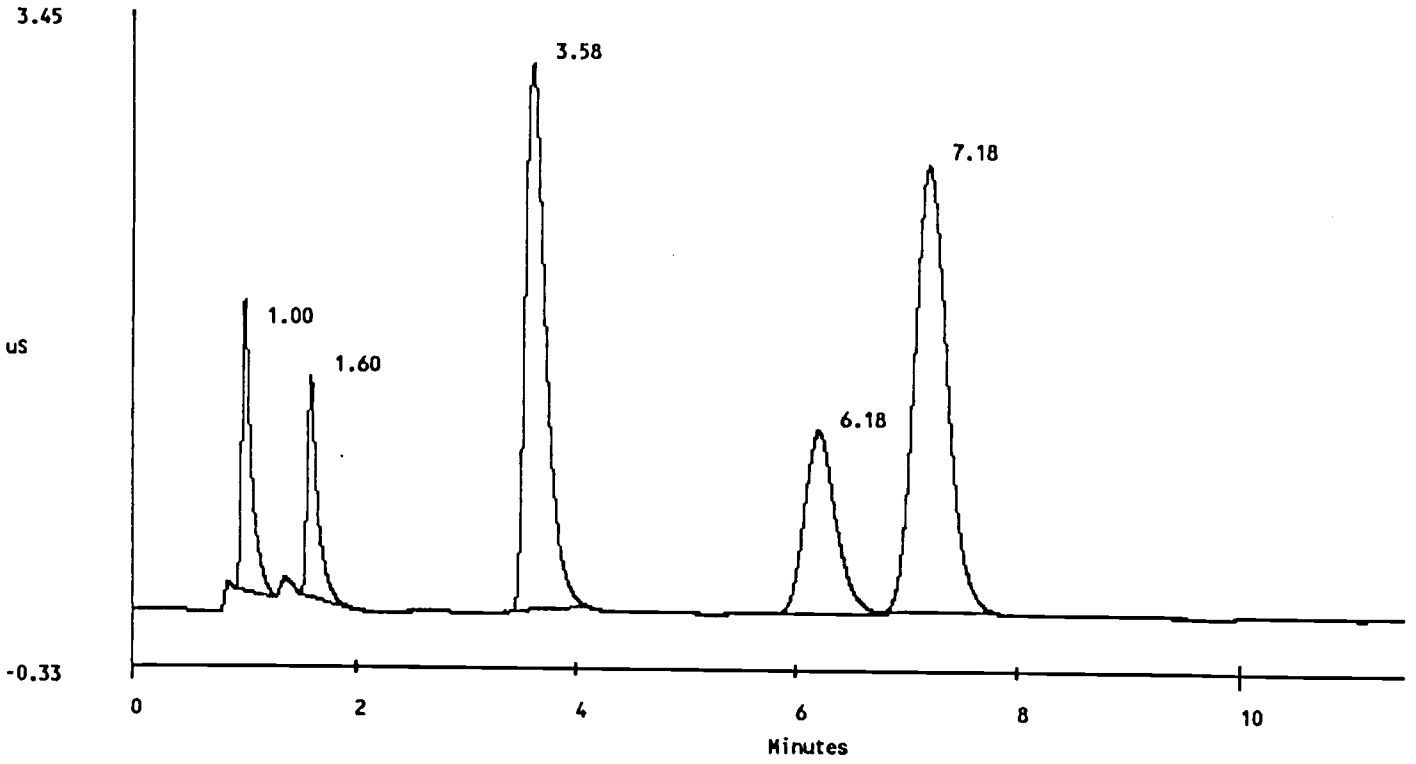


Sample Name: 6C11HO F0574 Date: Thu Apr 12 14:21:13 1990
Data File : 900-5485.D01
Method : C:\WINDOWS\AI400\METHOD\SST.MET
CIM Address: 1 System : 1 Cycle#: 1 Detector: CDM

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

Start Time = 0.00 minutes Stop time = 11.50 Minutes
Number of Data Points = 3451 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	1.00	FLUORIDE	5.455e-001	9.806e+003	1506	1	0	0.00%
2	1.60	CHLORIDE	7.267e-001	7.884e+003	1267	1	0	0.00%
3	3.58	NITRATE	6.182e+000	4.031e+004	3130	1	0	5.91%
4	6.18	PHOSPHATE	5.669e+000	2.050e+004	1043	2	0	6.61%
5	7.18	SULFATE	5.724e+000	5.282e+004	2564	2	0	4.87%



Analytical Batch

LAB SEGMENT SERIAL #:F0537

CUSTOMER ID:89-075

INSTRUMENT	WB39937
PROCEDURE/REV	LA-344-105/A-3
TECHNOLOGIST	E. Colvin
DATE	March 15, 1990
TEMPERATURE	25 C
STARTING TIME	1230
ENDING TIME	1430
CHEMIST	R. E. Brandt

Total Organic Carbon from water digestion.

Samples were acidified before analysis.

	DESCRIPTION	LAB ID
1	Initial LMCS Check Std.	F0546
2	Reagent Blank	F0558
3	Sample 89-075	F0547
4	Duplicate Sample 89-075	F0548
5	Spike of Sample 89-075	F0549
6	Final LMCS Check Std.	F0550
7		
8		
9		
10		
11		

	DESCRIPTION	LAB ID
12		
13		
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21		
22		

STANDARD TYPE	PRIMARY BOOK # & ALIQUOT VOL.	SECOND BOOK # & ALIQUOT VOL.	THIRD BK# & ALQT. VOL.	FINAL VOL. OF STD.
LMCS Check Std.	70C11C/200 uL			2.2 mL
Spike	80C11/200 uL	F0547/200 uL		0.5 mL

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

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-546 Date: 03-15-1990 Time: 07:25:23

Blank = .4282261 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	36.60	100.00
3	3.01	46.30	20.95
4	4.01	51.40	9.92
5	5.01	54.10	4.99
6	6.01	55.90	3.22
7	7.01	56.90	1.76

(56.9 - 3.000079)(11)/(200) = 2.964496 g/L Carbon

(56.9 - 3.000079)(11)/(200)(12) = .2470413 Molar Carbon

Sample Run By: 80028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-558 Date: 03-15-1990 Time: 07:09:33

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

Reading	Analysis Time	Coulometer	% Difference
1	1.01	0.40	%-13425.00
2	2.01	1.00	60.00
3	3.01	1.40	28.57
4	4.01	1.80	22.22
5	5.01	2.20	18.18
6	6.01	2.60	15.38
7	7.01	3.00	13.33

BLANK VALUE = 3 / 7.005646 = .4282261 ug/minute X 7 min = 2.99

Sample Run By: 80028

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-547 Date: 03-15-1990 Time: 09:00:22

Blank = .4282261 Sample Size = 200 Dilution Factor = 1.1
% Difference = 10 Min Readings = 7 Max Readings = 7

Reading	Analysis Time	Coulometer	% Difference
1	1.01	0.00	0.00
2	2.01	1.40	100.00
3	3.01	2.10	33.33
4	4.00	2.60	19.23
5	5.01	3.10	16.13
6	6.01	3.60	13.89
7	7.01	3.90	7.69

(3.9 - 3.000014)(1.1)/(200) = 4.949926E-03 g/L Carbon

(3.9 - 3.000014)(1.1)/(200)(12) = 4.124938E-04 Molar Carbon

Sample Run By: 80028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-548 Date: 03-15-1990 Time: 09:09:46

Blank = .4282261 Sample Size = 200 Dilution Factor = 1.1
% Difference = 10 Min Readings = 7 Max Readings = 7

Reading	Analysis Time	Coulometer	% Difference
1	1.01	0.00	0.00
2	2.01	1.70	100.00
3	3.01	2.40	29.17
4	4.01	3.00	20.00
5	5.01	3.40	11.76
6	6.01	4.00	15.00
7	7.01	4.30	6.98

(4.3 - 3.000092)(1.1)/(200) = 7.149495E-03 g/L Carbon

(4.3 - 3.000092)(1.1)/(200)(12) = 5.957913E-04 Molar Carbon

Sample Run By: 80028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. O

Sample: R-549 Date: 03-15-1990 Time: 09:18:14

Blank = .4282261 Sample Size = 200 Dilution Factor = 1.1
% Difference = 10 Min Readings = 7 Max Readings = 7

Reading	Analysis Time	Coulometer	% Difference
1	1.01	0.00	0.00
2	2.01	75.50	100.00
3	3.01	98.00	22.96
4	4.01	109.40	10.42
5	5.01	115.30	5.12
6	6.01	118.70	2.86
7	7.01	120.70	1.66

(120.7 - 3.000458)(1.1)/(200) = .6473475 g/L Carbon

(120.7 - 3.000458)(1.1)/(200)(12) = 5.394563E-02 Molar Carbon

Sample Run By: 80028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-550 Date: 03-15-1990 Time: 09:28:16

Blank = .4282261 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	36.50	100.00
3	3.01	46.40	21.34
4	4.01	51.40	9.73
5	5.01	54.30	5.34
6	6.01	55.90	2.86
7	7.01	57.00	1.93

(57 - 3.000406)(11)/(200) = 2.969978 g/L Carbon

(57 - 3.000406)(11)/(200)(12) = .2474982 Molar Carbon

Sample Run By: 80028_____

ACID DIGESTION TEST ANALYSIS

ICP Results DATA SUMMARY

		Acid Digested Standard	NONE
Date Analyzed:	August 21,1990	Reagent Blank	F583
Procedure:	LA-505-151/A-0	Sample	F552
Analyst:	J.A.WHITE	Duplicate	F553
Digestion	Acid Digestion	Spike of	NONE
Procedure:	LA-505-159/A-0	Acid Digested Standard	NONE

	Standard Recovery %	Reagent Blank ppm	Sample ug/g	Sample Duplicate ug/g	Standard Recovery %
Aluminum	101.91%	1.01	111438.	110671.	102.53%
Antimony	101.00%	0.05 LT	828. LT	1198. LT	101.89%
Arsenic	107.25%	0.00 LT	326. LT	207. LT	107.84%
Barium	105.05%	0.03	158.	145.	105.50%
Beryllium	101.53%	0.00 LT	4. LT	3. LT	102.13%
Bismuth	105.54%	0.08 LT	14424.	13246.	108.40%
Boron	105.11%	0.06	104. LT	84. LT	105.80%
Cadmium	100.18%	0.00 LT	35. LT	34. LT	103.71%
Calcium	100.79%	1.05	737.	2239.	101.57%
Cerium	98.21%	0.22	2873.	2539.	100.70%
Chromium	101.50%	0.03	1526.	1514.	104.15%
Cobalt	101.16%	0.00 LT	72. LT	52. LT	103.80%
Copper	100.86%	0.06	204. LT	189. LT	101.22%
Europium	100.12%	0.00	62.	52.	100.38%
Iron	103.34%	0.77	14585.	12334.	105.69%
Lanthanum	97.12%	0.02 LT	310.	271.	97.16%
Lead	107.16%	0.09	1825.	1989.	108.02%
Lithium	99.67%	0.01	112.	94.	97.75%
Magnesium	103.59%	0.23	514.	1038.	105.28%
Manganese	100.43%	0.03	10103.	9745.	102.71%
Mercury	103.11%	-0.03 LT	-305. LT	-302. LT	105.84%
Molybdenum	99.39%	0.00 LT	102.	99.	99.48%
Neodymium	99.23%	0.15 LT	1547. LT	1362. LT	101.54%
Nickel	99.26%	0.01 LT	345.	348.	102.41%
Potassium	100.99%	0.52	3597.	3326.	103.98%
Samarium	105.74%	0.27	3527.	3077.	109.96%
Selenium	97.62%	0.06 LT	1549.	1695.	97.96%
Silver	95.18%	0.01 LT	189. LT	160. LT	94.40%
Sodium	101.01%	0.70	79266.	77373.	101.33%
Strontium	101.15%	0.01	935.	921.	101.70%
Tantalum	98.04%	0.03 LT	393. LT	393. LT	98.57%
Thallium	97.89%	0.17	3984.	3564.	98.94%
Thorium	101.66%	0.14	2087.	1748.	102.39%
Tin	99.54%	0.02	198. LT	129. LT	101.84%
Titanium	104.05%	0.14	134.	126.	103.61%
Uranium	103.40%	1.08 LT	27585.	24107.	107.99%
Vanadium	96.93%	0.01 LT	193.	176. LT	96.75%
Zinc	101.14%	0.09	177.	331.	102.74%
Zirconium	99.10%	0.03	315.	269.	98.99%
Dilution Factor		1.00	101.00	101.00	

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

Analytical Batch

LAB SEGMENT SERIAL #:F0537

CUSTOMER ID:89-075

INSTRUMENT	N/A
PROCEDURE/REV	LA-505-159/A-0
TECHNOLOGIST	Janice A. White
DATE	April 26, 1990
TEMPERATURE	N/A
STARTING TIME	0800
ENDING TIME	1530
CHEMIST	S. A. Jones

Acid Digestion

	DESCRIPTION	LAB ID
1	Sample 89-075	F0552
2	Duplicate of Sample 89-075	F0553
3	Spike of Sample 89-075	F0554
4	Reagent Blank	F0559
5		
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	DESCRIPTION	LAB ID
12		
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22		

STANDARD TYPE	PRIMARY BOOK # & ALIQUOT VOL.	SECOND BOOK # & ALIQUOT VOL.	THIRD BK# & ALQT. VOL.	FINAL VOL. OF STD.
Spike	78C11K/5 mL	82B38G/5 mL	77C11J/5 mL	
LMCS Std.	N/A			

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

ICP Results RAW DATA SUMMARY

		Acid Digested Standard	NONE
Date Analyzed:	August 21,1990	Reagent Blank	F583
Procedure:	LA-505-151/A-0	Sample	F552
Analyst:	J.A.WHITE	Duplicate	F553
Digestion	Acid Digestion	Spike of	NONE
Procedure:	LA-505-159/A-0	Acid Digested Standard	NONE

	Standard Recovery %	Reagent Blank ppm	Sample ug/g	Sample Duplicate ug/g	Standard Recovery %
Aluminum	101.91%	1.01	111438.	110671.	102.53%
Antimony	101.00%	0.05 LT	828. LT	1198. LT	101.89%
Arsenic	107.25%	0.00 LT	326. LT	207. LT	107.84%
Barium	105.05%	0.03	158.	145.	105.50%
Beryllium	101.53%	0.00 LT	4. LT	3. LT	102.13%
Bismuth	105.54%	0.08 LT	14424.	13246.	108.40%
Boron	105.11%	0.06	104. LT	84. LT	105.80%
Cadmium	100.18%	0.00 LT	35. LT	34. LT	103.71%
Calcium	100.79%	1.05	737.	2239.	101.57%
Cerium	98.21%	0.22	2873.	2539.	100.70%
Chromium	101.50%	0.03	1526.	1514.	104.15%
Cobalt	101.16%	0.00 LT	72. LT	52. LT	103.80%
Copper	100.86%	0.06	204. LT	189. LT	101.22%
Europium	100.12%	0.00	62.	52.	100.38%
Iron	103.34%	0.77	14585.	12334.	105.69%
Lanthanum	97.12%	0.02 LT	310.	271.	97.16%
Lead	107.16%	0.09	1825.	1989.	108.02%
Lithium	99.67%	0.01	112.	94.	97.75%
Magnesium	103.59%	0.23	514.	1038.	105.28%
Manganese	100.43%	0.03	10103.	9745.	102.71%
Mercury	103.11%	-0.03 LT	-305. LT	-302. LT	105.84%
Molybdenum	99.39%	0.00 LT	102.	99.	99.48%
Neodymium	99.23%	0.15 LT	1547. LT	1362. LT	101.54%
Nickel	99.26%	0.01 LT	345.	348.	102.41%
Phosphorous	65.78% #	0.15	3012.	3393.	103.15%
Potassium	100.99%	0.52	3597.	3326.	103.98%
Samarium	105.74%	0.27	3527.	3077.	109.96%
Selenium	97.62%	0.06 LT	1549.	1695.	97.96%
Silicon	89.68% #	2.41	4427.	4533.	89.92% #
Silver	95.18%	0.01 LT	189. LT	160. LT	94.40%
Sodium	101.01%	0.70	79266.	77373.	101.33%
Strontium	101.15%	0.01	935.	921.	101.70%
Sulfur	85.84% #	0.16	1135.	1527.	99.66%
Tantalum	98.04%	0.03 LT	393. LT	393. LT	98.57%
Thallium	97.89%	0.17	3984.	3564.	98.94%
Thorium	101.66%	0.14	2087.	1748.	102.39%
Tin	99.54%	0.02	198. LT	129. LT	101.84%
Titanium	104.05%	0.14	134.	126.	103.61%
Tungsten	68.46% #	0.01 LT	313. LT	289. LT	68.83% #
Uranium	103.40%	1.08 LT	27585.	24107.	107.99%
Vanadium	96.93%	0.01 LT	193.	176. LT	96.75%
Zinc	101.14%	0.09	177.	331.	102.74%
Zirconium	99.10%	0.03	315.	269.	98.99%
Dilution Factor		1.00	101.00	101.00	

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

Analytical Batch

LAB SEGMENT SERIAL #: F0537

CUSTOMER ID: 89-075

INSTRUMENT	WB39939
PROCEDURE/REV	LA-505-151/A-0
TECHNOLOGIST	J. A. White
DATE	August 21, 1990
TEMPERATURE	N/A
STARTING TIME	0740
ENDING TIME	1315
CHEMIST	S. A. Jones

ICP Analysis

Acid Digestion

No inter-element corrections were performed on this data.

	DESCRIPTION	LAB ID
1	Initial LMCS Check Std	N/A
2	Reagent Blank	F1228
3	Sample 9000B2	F1205
4	Duplicate Sample 9000B2	F1206
5	Spike Sample 9000B2	F1231
6	LMCS Check Std	N/A
7	Reagent Blank	F0583
8	Sample 89-075	F0552
9	Duplicate Sample 89-075	F0553
10	Sample 89-070	F0432
11	Duplicate Sample 89-070	F0433

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

STANDARD TYPE	PRIMARY BOOK # & ALIQUOT VOL.	SECOND BOOK # & ALIQUOT VOL.	THIRD BOOK # & ALIQUOT VOL.	FINAL VOL. OF STD.
LMCS Check Std	78C11Z/3.0 mL	87B38D/3.0 mL	77C11Y/3.0 mL	3.0 mL
Spike	78C11Z/5.0 mL	87B38D/5.0 mL	77C11Y/5.0 mL	
spike cont	9000B2/0.5912 g			50.0 mL

SST-102 Rev. I 10/2/90 Interim

ICP Results RAW DATA

Date Analyzed:	August 21,1990	Acid Digested Standard	NONE
Procedure:	LA-505-151/A-0	Reagent Blank	F583
Analyst:	J.A.WHITE	Sample	F552
Digestion	Acid Digestion	Duplicate	F553
Procedure:	LA-505-159/A-0	Spike of	NONE
		Acid Digested Standard	NONE

							Digestion	0.0103 ug/g	
							Weight	0.51 g	
							Volume	50.00 mL	
			Starting						
			LMCS		Acid	Reagent	Sample	Sample	Sample
			Instrument	Standard	Digestion	Blank			
			Standard	Recovery	Standard		Dilution	Dilution	Dilution
					Recovery		Three	Two	One
			ppm	%	%	ppm	ppm	ppm	ppm
	SST-1	SST-2	SST-3						
Aluminum			10.19	101.91%	NA	1.01			1146.70
Antimony	10.10			101.00%	NA	0.05 LT			8.53 LT
Arsenic			21.45	107.25%	NA	0.00 LT			3.36 LT
Barium	10.51			105.05%	NA	0.03			1.63
Beryllium			4.06	101.53%	NA	0.00 LT			0.04 LT
Bismuth		5.28		105.54%	NA	0.08 LT			148.42
Boron	10.51			105.11%	NA	0.06			1.07 LT
Cadmium	10.02			100.18%	NA	0.00 LT			0.36 LT
Calcium	10.08			100.79%	NA	1.05			7.58
Cerium	9.82			98.21%	NA	0.22			29.57
Chromium	10.15			101.50%	NA	0.03			15.71
Cobalt	10.12			101.16%	NA	0.00 LT			0.74 LT
Copper	10.09			100.86%	NA	0.06			2.10 LT
Europium		5.01		100.12%	NA	0.00			0.64
Iron	10.33			103.34%	NA	0.77			150.08
Lanthanum		4.86		97.12%	NA	0.02 LT			3.19
Lead		5.36		107.16%	NA	0.09			18.78
Lithium	9.97			99.67%	NA	0.01			1.15
Magnesium	10.36			103.59%	NA	0.23			5.29
Manganese	10.04			100.43%	NA	0.03			103.96
Mercury			10.31	103.11%	NA	-0.03 LT			-3.14 LT
Molybdenum			9.94	99.39%	NA	0.00 LT			1.05
Neodymium	9.92			99.23%	NA	0.15 LT			15.92 LT
Nickel	9.93			99.26%	NA	0.01 LT			3.55
Phosphorous			6.58	65.78% #	NA	0.15			30.99
Potassium	10.10			100.99%	NA	0.52			37.02
Samarium		5.29		105.74%	NA	0.27			36.30
Selenium			19.52	97.62%	NA	0.06 LT			15.94
Silicon			8.97	89.68% #	NA	2.41			45.56
Silver		4.76		95.18%	NA	0.01 LT			1.94 LT
Sodium	10.10			101.01%	NA	0.70			815.65
Strontium	10.12			101.15%	NA	0.01			9.62
Sulfur			17.17	85.84% #	NA	0.16			11.68
Tantalum			9.80	98.04%	NA	0.03 LT			4.05 LT
Thallium			19.58	97.89%	NA	0.17			41.00
Thorium		25.42		101.66%	NA	0.14			21.48
Tin	4.98			99.54%	NA	0.02			2.04 LT
Titanium			10.41	104.05%	NA	0.14			1.38
Tungsten			6.85	68.46% #	NA	0.01 LT			3.22 LT
Uranium		25.85		103.40%	NA	1.08 LT			283.85
Vanadium			3.88	96.93%	NA	0.01 LT			1.99
Zinc	10.11			101.14%	NA	0.09			1.82
Zirconium			9.91	99.10%	NA	0.03			3.24
Dilution Factor	1.00	1.00	1.00			1.00			101.00

	Digestion Weight 0.51 g Volume 50.00 mL Sample Duplicate Dilution Three ppm	Sample Duplicate Dilution Two ppm	Sample Duplicate Dilution One ppm	Digestion Weight 0.59 g Volume 50.00 mL Spike of Sample Dilution Three ppm	Spike of Sample Dilution Two ppm	Spike of Sample Dilution One ppm			Ending LMCS Standard ppm	Standard Recovery %
							SST-1	SST-2	SST-3	
Aluminum			1125.30			123.88			10.25	102.53%
Antimony			12.18 LT			0.34 LT	10.19			101.89%
Arsenic			2.10 LT			5.85			21.57	107.84%
Barium			1.47			1.45	10.55			105.50%
Beryllium			0.03 LT			1.01			4.09	102.13%
Bismuth			134.69			6.00		5.42		108.40%
Boron			0.86 LT			0.99	10.58			105.80%
Cadmium			0.35 LT			1.01	10.37			103.71%
Calcium			22.77			46.98	10.16			101.57%
Cerium			25.82			2.52 LT	10.07			100.70%
Chromium			15.40			0.00 LT	10.42			104.15%
Cobalt			0.53 LT			0.97	10.38			103.80%
Copper			1.92 LT			1.11	10.12			101.22%
Europium			0.53			1.02		5.02		100.38%
Iron			125.41			80.31	10.57			105.69%
Lanthanum			2.76			4.52		4.86		97.16%
Lead			20.23			2.53		5.40		108.02%
Lithium			0.96			1.12	9.78			97.75%
Magnesium			10.56			28.96	10.53			105.28%
Manganese			99.09			3.71	10.27			102.71%
Mercury			-3.07 LT			2.55			10.58	105.84%
Molybdenum			1.01			4.95			9.95	99.48%
Neodymium			13.85 LT			-2.87 LT	10.15			101.54%
Nickel			3.54			1.43	10.24			102.41%
Phosphorous			34.50			8.35			10.32	103.15%
Potassium			33.82			1.22 LT	10.40			103.98%
Samarium			31.29			2.25 LT		5.50		109.96%
Selenium			17.24			6.25			19.59	97.96%
Silicon			46.09			37.75			8.99	89.92%
Silver			1.63 LT			1.08		4.72		94.40%
Sodium			786.73			45.73	10.13			101.33%
Strontium			9.37			2.00	10.17			101.70%
Sulfur			15.53			12.75			19.93	99.66%
Tantalum			4.00 LT			1.05			9.86	98.57%
Thallium			36.24			9.46			19.79	98.94%
Thorium			17.78			5.73		25.60		102.39%
Tin			1.32 LT			5.28	5.09			101.84%
Titanium			1.28			3.51			10.36	103.61%
Tungsten			2.93 LT			2.07			6.88	68.83%
Uranium			245.12			13.71 LT		27.00		107.99%
Vanadium			1.79 LT			1.01			3.87	96.75%
Zinc			3.36			1.50	10.27			102.74%
Zirconium			2.74			5.11			9.90	98.99%
Dilution Factor			101.00			21.00				

		Spike Standard LMCS ppm added	Spike Standard ID Book # 78C11M 83B38D 77C11L	SST-1	SST-2	LMCS Standards Values ppm SST-3	LMCS Standard IDs Book # 78C11M 83B38D 77C11L	ACID DIGESTION LMCS STANDARD VALUES ppm in Sample	ACID DIGEST. LMCS IDs Book #
Aluminum		50.00				10.00		100.00	
Antimony		10.00		10.00					
Arsenic		50.00				20.00			
Barium		10.00		10.00				100.00	
Beryllium		10.00				4.00			
Bismuth		50.10			5.00			100.00	
Boron		10.00		10.00				100.00	
Cadmium		10.00		10.00				100.00	
Calcium		10.00		10.00				100.00	
Cerium		10.00		10.00				100.00	
Chromium		10.00		10.00				100.90	
Cobalt		10.00		10.00				100.00	
Copper		10.00		10.00				100.00	
Europium		10.00			5.00				
Iron		10.00		10.00				100.00	
Lanthanum		50.10			5.00			100.00	
Lead		50.10			5.00			100.00	
Lithium		10.00		10.00				100.00	
Magnesium		10.00		10.00				100.00	
Manganese		10.00		10.00				100.00	
Mercury		25.00				10.00			
Molybdenum		50.00				10.00		99.80	
Neodymium		10.00		10.00				100.00	
Nickel		10.00		10.00				100.00	
Phosphorous		50.00				10.00		100.00	
Potassium		25.00		10.00				100.00	
Samarium		10.00			5.00				
Selenium		50.00				20.00			
Silicon	#	50.00				10.00		100.00	
Silver		10.00			5.00				
Sodium		25.00		10.00				100.00	
Strontium		10.00		10.00				100.00	
Sulfur		50.00				20.00			
Tantalum		50.00				10.00		99.50	
Thallium		50.00				20.00			
Thorium		50.10			25.00				
Tin		50.00		5.00				100.00	
Titanium		50.00				10.00		100.10	
Tungsten	#	25.00				10.00			
Uranium		50.10			25.00				
Vanadium		10.00				4.00			
Zinc		10.00		10.00				100.00	
Zirconium		50.00				10.00		99.80	
Dilution Factor								10.00	

ICP Analysis August 21, 1990 Acid Blank

Sample name : HNO3
Programme : SST 21-Aug-90 12:46:16

NAME	MV INT	CONCEN	RSD
Al	1.69	-0.053	-16.46
Sb	0.32	-0.004	-793.77
As	1.00	-0.020	-12.99
Ba	4.51	-0.004	-34.33
Be	0.56	-0.001	-27.91
Bi	3.41	-0.043	-36.95
B	4.24	-0.009	-48.40
Cd	2.27	-0.003	-20.78
Ca	0.49	0.000	86.60
Ce	5.65	-0.116	-46.49
Cr	1.63	0.012	187.21
Co	0.86	-0.003	-102.21
Cu	2.99	-0.001	-155.36
Eu	4.32	-0.003	-42.74
Fe	1.29	-0.004	-79.81
La	0.43	0.002	519.56
Pb	0.26	0.043	57.73
Li	4.28	-0.006	-32.56
Mg	0.43	-0.000	-85.71
Mn	0.75	-0.001	-64.24
Hg	3.05	0.030	100.85
Mo	1.51	-0.004	-49.58
Nd	9.15	0.014	420.64
Ni	3.06	-0.005	-1.35
P	1.19	0.012	107.76
K	3.65	-0.141	-85.51
Sm	5.45	-0.150	-35.59
Se	1.63	-0.005	-241.08
Si	3.21	-0.031	-8.79
Ag	4.42	-0.010	-37.41
Na	6.90	-0.061	-40.56
Sr	3.91	-0.002	-40.91
S	0.69	0.003	296.92
Ta	3.60	-0.018	-4.75
Tl	3.52	-0.203	-37.40
Th	1.64	-0.086	-38.20
Sn	1.29	-0.005	-46.67
Ti	3.53	-0.004	-31.66
W	2.61	-0.018	-60.34
U	5.78	-0.886	-31.27
V	3.39	-0.008	-2.83
Zn	2.20	-0.001	-31.78
Zr	4.78	-0.015	-28.16

ICP Analysis August 21, 1990 LMCS Check Standard

Sample name : 78C11Z
Sample code 1 : SSI1
Programme : SST 21-Aug-90 12:51:13

NAME	MV INT	CONCEN	RSD
Al	1.78	0.158	3.27
Sb	1.15	10.000	0.18
As	1.10	0.053	14.52
Ba	184.55	10.411	0.30
Be	0.60	0.001	11.69
Bi	3.64	0.132	15.91
B	148.70	10.417	0.74
Cd	178.29	9.900	0.24
Ca	237.38	10.014	0.31
Ce	12.17	9.685	0.21
Cr	39.67	10.050	0.35
Co	28.21	10.000	0.26
Cu	57.43	9.999	0.37
Eu	4.94	0.025	1.13
Fe	46.70	10.205	0.42
La	0.47	0.107	0.00
Pb	0.26	0.207	0.00
Li	110.86	9.883	0.40
Mg	260.36	10.216	0.31
Mn	146.04	9.944	0.31
Hg	2.76	0.001	307.29
Mo	1.66	0.019	7.86
Nd	27.59	9.865	0.76
Ni	83.27	9.817	0.39
P	1.30	0.143	10.59
K	6.04	10.147	0.88
Sm	5.58	0.115	13.99
Se	3.29	2.904	1.44
Si	3.37	0.056	4.35
Ag	4.56	0.008	11.27
Na	23.53	10.012	0.22
Sr	321.20	10.008	0.33
S	0.90	0.258	1.99
Ta	3.77	0.039	8.15
Tl	3.76	0.475	6.96
Th	1.74	0.335	3.85
Sn	16.95	4.891	0.29
Ti	3.63	0.006	8.90
W	3.47	0.256	1.59
U	6.31	4.345	2.51
V	3.51	0.010	13.37
Zn	378.92	9.982	0.36
Zr	4.92	0.024	3.10

ICP Analysis August 21, 1990 LMCS Check Standard

Sample name : 87B38D
Sample code 1 : SST2
Sample code 2 : DIRECT
Programme : SST 21-Aug-90 12:55:35

NAME	MV INT	CONCEN	RSD
Al	2.55	2.073	0.30
Sb	0.34	0.241	7.64
As	1.28	0.186	4.09
Ba	4.79	0.012	2.63
Be	0.57	0.000	83.89
Bi	10.46	5.282	0.44
B	5.04	0.048	31.45
Cd	2.41	0.004	15.23
Ca	1.05	0.024	1.66
Ce	5.90	0.256	1.22
Cr	1.84	0.066	7.21
Co	0.89	0.011	16.30
Cu	3.59	0.110	1.11
Eu	115.42	5.029	0.40
Fe	1.45	0.033	3.37
La	2.33	4.853	0.45
Pb	0.50	5.286	0.62
Li	4.38	0.003	30.70
Mg	0.61	0.007	4.38
Mn	0.84	0.005	5.85
Hg	2.68	-0.008	-52.40
Mo	1.58	0.007	3.50
Nd	9.77	0.344	3.93
Ni	3.22	0.014	27.53
P	1.38	0.239	6.52
K	3.69	0.029	97.60
Sm	8.13	5.244	0.36
Se	1.69	0.104	16.37
Si	3.74	0.258	1.16
Ag	40.13	4.847	0.42
Na	7.06	0.032	26.58
Sr	4.10	0.005	6.46
S	0.76	0.090	18.60
Ta	3.85	0.067	4.82
Tl	4.56	2.669	3.19
Th	7.70	25.489	0.60
Sn	1.43	0.039	10.95
Ti	3.87	0.030	2.11
W	2.68	0.002	69.29
U	8.46	25.694	0.57
V	4.12	0.104	1.99
Zn	2.83	0.015	5.47
Zr	5.08	0.069	0.61

ICP Analysis August 21, 1990 LMCS Check Standard

Sample name : 77C11Y
Sample code 1 : SSI3
Sample code 2 : DIRECT
Programme : SST 21-Aug-90 13:24:32

NAME	MV INT	CONCEN	RSD
Al	5.87	10.290	0.01
Sb	0.35	0.354	19.38
As	29.92	21.488	0.26
Ba	4.76	0.010	7.18
Be	105.34	4.115	0.21
Bi	3.71	0.188	7.95
B	4.71	0.024	8.15
Cd	2.40	0.004	22.79
Ca	0.72	0.010	0.25
Ce	5.80	0.108	22.46
Cr	1.70	0.029	47.46
Co	0.93	0.024	1.50
Cu	3.05	0.010	10.64
Eu	4.42	0.002	43.74
Fe	1.40	0.023	19.06
La	0.44	0.020	26.02
Pb	0.26	0.179	6.93
Li	4.49	0.013	7.67
Mg	0.52	0.003	0.68
Mn	0.82	0.004	8.06
Hg	106.05	10.470	0.48
Mo	66.30	9.964	0.10
Nd	9.32	0.102	37.30
Ni	3.93	0.101	2.66
P	10.40	10.572	2.02
K	3.74	0.264	38.25
Sm	5.60	0.148	24.75
Se	12.77	19.469	0.39
Si	19.85	9.029	0.74
Ag	4.93	0.059	4.54
Na	7.18	0.108	4.58
Sr	4.02	0.002	13.69
S	17.22	20.327	0.78
Ta	32.44	9.798	0.10
Tl	10.64	19.551	0.33
Th	1.71	0.206	11.32
Sn	1.62	0.099	6.64
Ti	105.33	10.458	0.10
W	23.84	6.808	0.90
U	6.05	1.785	11.23
V	29.00	3.882	0.54
Zn	2.75	0.013	3.76
Zr	40.67	9.952	0.10

ICP Analysis August 21, 1990 Acid Blank

Sample name : HNO3
Programme : SST 21-Aug-90 13:32:40

NAME	MV INT	CONCEN	RSD
Al	1.72	0.031	48.24
Sb	0.33	0.076	71.20
As	1.03	-0.002	-236.04
Ba	4.61	0.002	8.81
Be	0.57	0.000	135.21
Bi	3.49	0.016	108.62
B	4.36	-0.001	-635.73
Cd	2.34	0.001	81.46
Ca	0.50	0.000	6.19
Ce	5.78	0.079	10.57
Cr	1.65	0.017	48.18
Co	0.87	0.003	64.15
Cu	3.02	0.004	22.88
Eu	4.41	0.001	16.08
Fe	1.32	0.004	86.65
La	0.44	0.019	15.75
Pb	0.26	0.143	15.00
Li	4.38	0.003	36.45
Mg	0.44	0.000	28.64
Mn	0.76	0.000	75.00
Hg	2.49	(-0.026	-1.01
Mo	1.55	0.002	18.41
Nd	9.31	0.100	33.21
Ni	3.10	-0.000	-606.39
P	1.16	-0.020	-208.68
K	3.71	0.131	47.12
Sm	5.57	0.103	19.04
Se	1.65	0.035	17.32
Si	3.29	0.009	26.01
Ag	4.53	0.004	30.84
Na	7.06	0.036	22.57
Sr	3.98	0.001	21.69
S	0.68	-0.019	-84.44
Ta	3.68	0.009	58.88
Tl	3.61	0.055	66.36
Th	1.68	0.058	18.41
Sn	1.31	0.002	442.20
Ti	3.62	0.004	25.77
W	2.67	-0.001	-666.51
U	5.91	0.393	19.58
V	3.48	0.006	47.71
Zn	2.25	0.000	737.29
Zr	4.86	0.009	9.96

ICP Analysis August 21, 1990 Acid Digested Standard

Sample name : ICP1
Sample code 1 : DIGEST
Sample code 2 : LMCS
Sample code 3 : DIRECT
Programme : SST 21-Aug-90 13:36:43

NAME	MV INT	CONCEN	RSD
Al	1.88	0.427	6.20
Sb	0.33	0.096	7.22
As	1.47	0.328	2.50
Ba	4.74	0.010	24.67
Be	0.57	0.000	303.12
Bi	16.35	9.734	0.26
B	139.53	9.755	0.49
Cd	169.79	9.422	0.09
Ca	231.92	9.783	0.14
Ce	5.81	0.120	66.58
Cr	1.78	0.050	14.89
Co	0.88	0.005	23.41
Cu	55.81	9.700	0.19
Eu	4.43	0.002	58.20
Fe	1.65	0.079	1.86
La	3.95	9.006	0.11
Pb	0.71	9.742	0.46
Li	4.46	0.010	32.90
Mg	248.25	9.740	0.13
Mn	1.02	0.018	1.93
Hg	2.45	(-0.031	-2.30
Mo	65.61	9.858	0.08
Nd	9.53	0.214	33.15
Ni	3.17	0.008	51.00
P	6.14	5.692	12.63
K	5.91	9.596	1.73
Sm	5.54	0.036	280.67
Se	1.67	0.075	57.30
Si	14.33	6.024	0.69
Ag	38.61	4.639	0.55
Na	23.25	9.843	0.24
Sr	310.10	9.657	0.14
S	0.90	0.261	1.80
Ta	3.66	0.003	224.53
Tl	3.62	0.067	32.54
Th	1.68	0.059	82.38
Sn	1.64	0.104	6.74
Ti	4.82	0.128	2.48
W	3.28	0.197	5.49
U	5.94	0.684	70.32
V	3.49	0.007	0.00
Zn	365.99	9.639	0.37
Zr	4.83	-0.000	-2495.8

ICP Analysis August 21, 1990 Reagent Blank

Sample name : F1328
Sample code 1 : BLANK
Sample code 2 : BATCH
Sample code 3 : DIRECT
Programme : SSI 21-Aug-90 13:42:09

NAME	MV INT	CONCEN	RSD
Al	1.76	0.107	5.81
Sb	0.33	0.060	113.73
As	1.01	-0.014	-48.89
Ba	4.65	0.004	11.70
Be	0.57	0.000	251.66
Bi	3.48	0.011	122.98
B	5.63	0.091	3.61
Cd	2.40	0.004	36.17
Ca	14.45	0.590	0.17
Ce	5.77	0.054	16.97
Cr	3.92	0.615	1.40
Co	0.88	0.005	26.38
Cu	3.23	0.043	6.84
Eu	4.40	0.001	34.21
Fe	14.97	3.072	0.59
La	0.43	0.008	19.25
Pb	0.26	0.093	13.32
Li	4.48	0.012	2.69
Mg	2.96	0.099	0.46
Mn	1.61	0.059	1.43
Hg	2.50	(-0.025	-11.70
Mo	1.59	0.008	23.74
Nd	9.27	0.076	18.31
Ni	6.28	0.389	0.93
P	1.26	0.092	11.18
K	3.74	0.234	14.06
Sm	5.56	0.068	42.86
Se	1.73	0.169	12.64
Si	4.80	0.835	0.98
Ag	4.51	0.002	51.51
Na	7.50	0.302	3.03
Sr	4.06	0.003	3.82
S	0.80	~~0.139~~	1.42
Ta	3.68	0.007	19.67
Tl	3.60	0.029	116.27
Th	1.67	0.028	70.89
Sn	1.37	0.021	17.50
Ti	4.04	0.048	1.07
W	2.67	-0.000	*******
U	5.88	0.033	275.34
V	3.46	0.003	30.90
Zn	3.27	0.027	0.93
Zr	4.84	0.004	45.19

ICP Analysis August 21, 1990 Sample S000B1

Sample name : F1205
Sample code 1 : SAMPLE
Sample code 2 : 1-10
Sample code 3 : RERUN
Programme : SST 21-Aug-90 13:47:14

NAME	MV INT	CONCEN	DILCOR	RSD
Al	2.15	1.078	11.856	0.87
Sb	0.33	0.024	0.265	275.38
As	1.03	-0.005	-0.052	-86.96
Ba	4.93	0.021	0.229	2.16
Be	0.58	0.000	0.004	14.78
Bi	3.46	-0.001	-0.008	-1155.4
B	4.51	0.010	0.106	31.92
Cd	2.31	-0.001	-0.011	-50.41
Ca	66.27	2.781	30.587	0.29
Ce	5.73	0.005	0.055	306.43
Cr	1.65	0.015	0.169	23.57
Co	0.87	0.000	0.000	5799200
Cu	3.00	0.001	0.009	81.13
Eu	4.37	-0.000	-0.004	-111.07
Fe	14.55	2.979	32.768	0.25
La	0.44	0.012	0.131	21.43
Pb	0.26	0.086	0.944	14.43
Li	4.36	0.001	0.013	30.70
Mg	20.46	0.787	8.657	0.24
Mn	2.88	0.145	1.595	0.21
Hg	2.44	(-0.032	(-0.350	-3.55
Mo	1.53	-0.001	-0.007	-292.97
Nd	9.24	0.062	0.678	64.72
Ni	3.10	-0.000	-0.000	-3148.1
P	1.26	0.092	1.013	16.28
K	3.73	0.194	2.134	19.75
Sm	5.52	-0.009	-0.103	-142.66
Se	1.62	-0.014	-0.154	-86.60
Si	4.40	0.617	6.783	0.36
Ag	4.48	-0.002	-0.027	-66.66
Na	10.61	2.182	24.001	0.07
Sr	5.60	0.052	0.570	0.00
S	0.98	0.357	3.932	3.61
Ta	3.65	-0.001	-0.007	-510.68
Tl	3.58	-0.024	-0.264	-156.66
Th	1.66	0.004	0.046	346.49
Sn	1.33	0.008	0.087	95.26
Ti	3.75	0.018	0.195	2.34
W	2.64	-0.009	-0.100	-65.30
U	5.85	-0.225	-2.474	-26.83
V	3.45	0.001	0.016	203.57
Zn	3.60	0.036	0.396	1.89
Zr	4.84	0.002	0.020	165.91

Dilution factor : 11.0000

ICP Analysis August 21, 1990 Spike of S000B1

Sample name : F1231
Sample code 1 : SPIKE
Sample code 2 : BATCH
Sample code 3 : 1-10
Programme : SST 21-Aug-90 13:57:02

NAME	MV INT	CONCEN	DILCOR	RSD
Al	6.34	11.451	125.96	0.26
Sb	0.34	0.149	1.636	12.39
As	1.70	0.494	5.431	2.20
Ba	6.91	0.135	1.486	0.11
Be	2.94	0.093	1.024	0.63
Bi	4.10	0.481	5.292	3.41
B	5.65	0.092	1.014	2.73
Cd	3.93	0.090	0.989	1.03
Ca	102.46	4.310	47.415	0.19
Ce	5.83	0.154	1.693	11.33
Cr	2.08	0.130	1.434	0.71
Co	1.12	0.092	1.007	3.62
Cu	3.53	0.099	1.084	1.14
Eu	6.40	0.091	1.006	0.41
Fe	33.73	7.290	80.185	0.32
La	0.61	0.446	4.909	1.32
Pb	0.28	0.572	6.295	0.00
Li	5.37	0.095	1.047	0.39
Mg	68.75	2.685	29.535	0.15
Mn	5.72	0.340	3.738	0.31
Hg	4.55	0.182	2.004	2.22
Mo	4.46	0.450	4.948	0.61
Nd	9.51	0.206	2.263	5.84
Ni	4.01	0.111	1.221	1.62
P	1.68	0.574	6.313	5.08
K	3.83	0.658	7.241	4.00
Sm	5.60	0.150	1.645	8.96
Se	1.93	0.528	5.812	5.38
Si	8.13	2.649	29.143	0.13
Ag	5.19	0.094	1.033	0.55
Na	13.56	3.974	43.711	0.20
Sr	9.75	0.183	2.010	0.16
S	1.91	1.492	16.413	1.00
Ta	3.72	0.023	0.251	23.94
Tl	3.79	0.535	5.889	4.94
Th	1.78	0.497	5.468	1.77
Sn	2.80	0.467	5.142	0.76
Ti	6.75	0.326	3.582	0.08
W	3.11	0.142	1.564	5.35
U	5.94	0.645	7.092	11.34
V	4.05	0.093	1.022	0.50
Zn	17.72	0.410	4.510	0.07
Zr	6.46	0.452	4.972	0.09

Dilution factor : 11.0000

ICP Analysis August 21, 1990 Acid Blank

Sample name : HNO3
Programme : SST 21-Aug-90 14:01:18

NAME	MV INT	CONCEN	RSD
Al	1.71	0.002	567.96
Sb	0.33	0.040	34.64
As	1.03	-0.004	-46.69
Ba	4.59	0.001	60.17
Be	0.57	-0.000	-56.25
Bi	3.47	0.005	286.28
B	4.32	-0.004	-27.83
Cd	2.32	-0.000	-394.73
Ca	0.51	0.001	7.16
Ce	5.75	0.034	28.93
Cr	1.62	0.007	130.44
Co	0.86	-0.000	-305.52
Cu	2.99	-0.001	-209.41
Eu	4.39	0.001	90.72
Fe	1.32	0.003	126.20
La	0.44	0.012	37.11
Pb	0.26	0.143	0.00
Li	4.35	0.000	452.08
Mg	0.44	0.000	19.99
Mn	0.75	-0.001	-57.60
Hg	2.38	(-0.038	-4.31
Mo	1.53	-0.001	-333.48
Nd	9.24	0.062	93.55
Ni	3.10	-0.001	-307.08
P	1.23	0.065	23.08
K	3.69	0.052	66.14
Sm	5.55	0.046	11.67
Se	1.65	0.029	46.60
Si	3.27	-0.001	-184.98
Ag	4.49	-0.001	-44.61
Na	7.03	0.017	70.14
Sr	3.97	0.000	20.15
S	0.70	0.008	31.22
Ta	3.66	0.001	637.00
Tl	3.58	-0.031	-85.70
Th	1.67	0.018	26.65
Sn	1.30	-0.001	-396.85
Ti	3.39	0.001	40.51
W	2.65	-0.008	-98.06
U	5.88	0.069	57.78
V	3.45	0.001	288.23
Zn	2.26	0.000	124.43
Zr	4.84	0.002	85.30

ICP Analysis August 21, 1990 LMCS Check Standard

Sample name : 78C11Z
Sample code 1 : SSI1
Sample code 2 : DIRECT
Programme : SST 21-Aug-90 14:05:27

NAME	MV INT	CONCEN	RSD
Al	1.78	0.158	5.05
Sb	1.16	10.100	0.43
As	1.10	0.054	4.42
Ba	186.18	10.505	0.74
Be	0.60	0.001	26.25
Bi	3.67	0.158	10.51
B	150.00	10.511	0.32
Cd	180.38	10.018	0.66
Ca	238.92	10.079	0.71
Ce	12.26	9.821	0.58
Cr	40.05	10.150	0.51
Co	28.53	10.116	0.59
Cu	57.91	10.086	0.60
Eu	4.94	0.025	0.47
Fe	47.27	10.334	0.77
La	0.47	0.108	2.73
Pb	0.27	0.243	5.09
Li	111.77	9.967	0.73
Mg	264.00	10.359	0.67
Mn	147.48	10.043	0.61
Hg	2.46	(-0.029	-6.77
Mo	1.66	0.019	5.71
Nd	27.70	9.923	0.60
Ni	84.16	9.926	0.29
P	1.32	0.166	4.16
K	6.02	10.099	0.62
Sm	5.59	0.136	20.69
Se	3.28	2.879	0.88
Si	3.37	0.058	3.80
Ag	4.56	0.009	22.22
Na	23.68	10.101	0.58
Sr	324.60	10.115	0.72
S	0.89	0.240	3.41
Ta	3.77	0.038	4.09
Tl	3.76	0.468	16.07
Th	1.75	0.368	3.98
Sn	17.22	4.977	0.83
Ti	3.63	0.006	16.56
W	3.49	0.265	1.06
U	6.32	4.457	2.12
V	3.51	0.010	9.65
Zn	383.91	10.114	0.61
Zr	4.92	0.026	4.67

ICP Analysis August 21, 1990 LMCS Check Standard

Sample name : 78C11D
Sample code 1 : SSI2
Sample code 2 : DIRECT
Programme : SSI 21-Aug-90 14:09:36

NAME	MV INT	CONCEN	RSD
Al	2.57	2.113	0.18
Sb	0.34	0.237	5.08
As	1.29	0.191	2.73
Ba	4.81	0.014	4.69
Be	0.58	0.000	13.48
Bi	10.45	5.277	0.57
B	5.08	0.051	24.21
Cd	2.44	0.006	14.80
Ca	1.05	0.024	1.15
Ce	5.93	0.306	4.46
Cr	1.82	0.060	2.06
Co	0.91	0.015	11.81
Cu	3.60	0.112	0.62
Eu	114.93	5.006	0.68
Fe	1.45	0.033	15.51
La	2.33	4.856	0.53
Pb	0.50	5.358	0.69
Li	4.41	0.006	12.90
Mg	0.61	0.007	2.80
Mn	0.85	0.006	5.92
Hg	2.52	(-0.023	-11.82
Mo	1.59	0.009	17.70
Nd	9.77	0.345	7.36
Ni	3.26	0.019	19.94
P	1.30	0.143	20.52
K	3.70	0.070	28.93
Sm	8.15	5.287	0.19
Se	1.71	0.145	9.10
Si	3.77	0.274	2.18
Ag	39.49	4.759	0.63
Na	7.10	0.057	11.93
Sr	4.13	0.005	2.68
S	0.73	0.042	13.35
Ta	3.88	0.075	7.10
Tl	4.62	2.853	1.49
Th	7.68	25.415	0.56
Sn	1.44	0.041	2.69
Ti	3.91	0.034	1.67
W	2.74	0.023	20.43
U	8.48	25.850	0.39
V	4.17	0.111	1.03
Zn	2.87	0.017	5.61
Zr	5.10	0.076	1.93

ICP Analysis August 21, 1990 LMCS Check Standard

Sample name : 77C11Y
Sample code 1 : SSI3
Sample code 2 : DIRECT
Programme : SSI 21-Aug-90 14:13:52

NAME	MV INT	CONCEN	RSD
Al	5.83	10.191	0.47
Sb	0.35	0.350	7.96
As	29.87	21.449	0.32
Ba	4.79	0.012	8.85
Be	103.95	4.061	1.03
Bi	3.76	0.221	1.38
B	4.85	0.035	1.99
Cd	2.45	0.007	19.54
Ca	0.73	0.010	0.42
Ce	5.84	0.160	22.58
Cr	1.67	0.022	16.47
Co	0.94	0.027	4.64
Cu	3.08	0.015	13.22
Eu	4.46	0.004	20.65
Fe	1.43	0.028	4.62
La	0.44	0.013	30.55
Pb	0.26	0.193	6.41
Li	4.49	0.013	12.37
Mg	0.53	0.004	1.07
Mn	0.83	0.005	9.42
Hg	104.48	10.311	0.50
Mo	66.14	9.939	0.52
Nd	9.28	0.079	61.99
Ni	3.96	0.105	3.54
P	6.91	6.578	9.28
K	3.74	0.234	34.15
Sm	5.63	0.209	23.83
Se	12.80	19.523	0.33
Si	19.74	8.968	0.38
Ag	4.99	0.066	1.67
Na	7.22	0.129	14.13
Sr	4.05	0.003	13.85
S	14.65	17.168	3.09
Ta	32.46	9.004	0.35
Tl	10.65	19.578	0.84
Th	1.71	0.218	12.59
Sn	1.63	0.101	4.97
Ti	104.82	10.405	0.42
W	23.96	6.846	0.25
U	6.09	2.166	12.32
V	28.98	3.877	0.85
Zn	2.79	0.014	7.25
Zr	40.52	9.910	0.33

ICP Analysis August 21, 1990 Reagent Blank

Sample name : F583
Sample code 1 : BLANK
Sample code 2 : BATCH
Sample code 3 : DIRECT
Programme : SST 21-Aug-90 14:23:18

NAME	MV INT	CONCEN	RSD
Al	2.12	1.008	2.09
Sb	0.33	0.048	72.17
As	1.03	0.000	1814.36
Ba	5.01	0.025	7.09
Be	0.58	0.000	99.55
Bi	3.57	0.080	17.74
B	5.23	0.062	4.95
Cd	2.40	0.004	19.21
Ca	25.28	1.048	0.12
Ce	5.87	0.217	25.20
Cr	1.69	0.027	6.17
Co	0.88	0.004	20.99
Cu	3.34	0.064	4.00
Eu	4.47	0.004	29.45
Fe	4.73	0.770	1.14
La	0.44	0.019	20.83
Pb	0.26	0.093	48.04
Li	4.47	0.012	24.98
Mg	6.28	0.230	0.17
Mn	1.20	0.031	0.81
Hg	2.51	(-0.025	-22.64
Mo	1.56	0.004	34.90
Nd	9.41	0.148	21.79
Ni	3.21	0.013	10.51
P	1.31	0.152	7.44
K	3.80	0.517	14.24
Sm	5.66	0.266	27.97
Se	1.66	0.058	13.21
Si	7.69	2.407	0.28
Ag	4.58	0.012	26.64
Na	8.16	0.700	3.43
Sr	4.30	0.011	6.64
S	0.82	0.156	9.12
Ta	3.73	0.025	19.53
Tl	3.65	0.171	17.19
Th	1.70	0.137	31.74
Sn	1.38	0.024	12.36
Ti	4.93	0.139	4.92
W	2.69	0.007	19.92
U	5.98	1.075	33.39
V	3.52	0.012	15.09
Zn	5.50	0.086	0.29
Zr	4.92	0.025	22.97

ICP Analysis August 21, 1990 Sample of 89-075

Sample name : F552
Sample code 1 : SAMPLE
Sample code 2 : 100-10
Sample code 3 : RERUN
Programme : SST 21-Aug-90 14:27:34

NAME	MV INT	CONCEN	DILCOR	RSD
Al	6.30	11.354	1146.7	0.41
Sb	0.33	0.084	8.525	29.74
As	1.08	0.033	3.356	21.51
Ba	4.85	0.016	1.628	1.36
Be	0.58	0.000	0.044	46.65
Bi	5.41	1.470	148.42	1.72
B	4.52	0.011	1.072	5.15
Cd	2.39	0.004	0.358	17.17
Ca	2.26	0.075	7.580	0.38
Ce	5.93	0.293	29.566	0.00
Cr	2.18	0.156	15.707	2.79
Co	0.89	0.007	0.739	18.93
Cu	3.11	0.021	2.096	4.37
Eu	4.52	0.006	0.637	3.80
Fe	7.91	1.486	150.08	0.49
La	0.44	0.032	3.189	12.39
Pb	0.26	0.186	18.784	11.54
Li	4.47	0.011	1.153	1.41
Mg	1.77	0.052	5.293	0.35
Mn	15.80	1.029	103.96	0.40
Hg	2.45	(-0.031	(-3.136	-15.10
Mo	1.60	0.010	1.046	22.43
Nd	9.42	0.158	15.920	30.04
Ni	3.39	0.035	3.554	8.54
P	1.44	0.307	30.989	3.13
K	3.77	0.366	37.016	11.59
Sm	5.70	0.359	36.296	1.48
Se	1.72	0.158	15.944	12.44
Si	4.10	0.451	45.557	0.37
Ag	4.64	0.019	1.942	3.56
Na	20.34	8.076	815.65	0.37
Sr	6.98	0.095	9.620	0.36
S	0.79	0.116	11.675	5.86
Ta	3.77	0.040	4.045	17.47
Tl	3.74	0.406	40.999	8.65
Th	1.71	0.213	21.475	3.03
Sn	1.37	0.020	2.042	25.94
Ti	3.71	0.014	1.384	3.75
W	2.77	0.032	3.216	10.55
U	6.16	2.810	283.85	2.55
V	3.57	0.020	1.989	4.25
Zn	2.93	0.018	1.822	2.72
Zr	4.95	0.032	3.244	2.00

Dilution factor : 101.000

ICP Analysis August 21, 1990 Duplicate of 89-075

Sample name : F553
Sample code 1 : DUPSAM
Sample code 2 : 100-10
Sample code 3 : RERUN
Programme : SST 21-Aug-90 14:31:48

NAME	MV INT	CONCEN	DILCOR	RSD
Al	6.21	11.142	1125.3	0.28
Sb	0.33	0.121	12.178	11.55
As	1.06	0.021	2.104	10.91
Ba	4.83	0.015	1.472	1.37
Be	0.58	0.000	0.029	41.66
Bi	5.23	1.334	134.69	0.81
B	4.49	0.008	0.858	4.98
Cd	2.39	0.003	0.350	25.86
Ca	5.82	0.225	22.768	0.12
Ce	5.90	0.256	25.820	3.83
Cr	2.17	0.152	15.396	0.56
Co	0.88	0.005	0.529	88.34
Cu	3.10	0.019	1.923	2.23
Eu	4.50	0.005	0.529	2.64
Fe	6.83	1.242	125.41	0.44
La	0.44	0.027	2.758	9.38
Pb	0.26	0.200	20.229	6.19
Li	4.45	0.009	0.959	10.17
Mg	3.09	0.105	10.557	0.15
Mn	15.09	0.981	99.091	0.23
Hg	2.46	(-0.030	(-3.071	-1.15
Mo	1.60	0.010	1.010	13.44
Nd	9.38	0.137	13.852	23.80
Ni	3.39	0.035	3.541	8.45
P	1.47	0.342	34.500	6.04
K	3.76	0.335	33.822	7.87
Sm	5.68	0.310	31.285	3.58
Se	1.73	0.171	17.238	9.73
Si	4.11	0.456	46.089	0.72
Ag	4.62	0.016	1.626	5.16
Na	19.86	7.789	786.73	0.15
Sr	6.90	0.093	9.366	0.14
S	0.82	0.154	15.525	6.80
Ta	3.77	0.040	3.999	4.55
Tl	3.72	0.359	36.236	5.91
Th	1.70	0.176	17.778	6.04
Sn	1.35	0.013	1.316	43.55
Ti	3.70	0.013	1.280	1.62
W	2.76	0.029	2.934	19.38
U	6.12	2.427	245.12	2.39
V	3.56	0.018	1.789	7.39
Zn	3.50	0.033	3.363	0.76
Zr	4.93	0.027	2.739	6.00

Dilution factor : 101.000

ICP Analysis August 21, 1990 Sample of 89-070

Sample name : F432
Sample code 1 : SAMPLE
Sample code 2 : 100-10
Sample code 3 : RERUN
Programme : SST 21-Aug-90 14:35:51

NAME	MV INT	CONCEN	DILCOR	RSD
Al	6.82	12.654	1278.0	0.50
Sb	0.33	0.100	10.149	6.93
As	1.06	0.020	2.054	0.00
Ba	4.85	0.016	1.607	3.11
Be	0.58	0.000	0.036	55.93
Bi	4.42	0.723	73.030	0.21
B	4.50	0.009	0.899	2.15
Cd	2.38	0.003	0.277	33.41
Ca	2.59	0.089	8.978	0.55
Ce	5.88	0.222	22.428	7.04
Cr	2.06	0.123	12.456	2.23
Co	0.88	0.006	0.591	7.22
Cu	3.10	0.019	1.941	5.26
Eu	4.49	0.005	0.515	1.85
Fe	10.32	2.027	204.72	0.39
La	0.44	0.029	2.930	5.09
Pb	0.27	0.236	23.841	10.50
Li	4.43	0.008	0.809	7.08
Mg	8.27	0.308	31.100	0.56
Mn	13.46	0.869	87.786	0.54
Hg	2.43	(-0.033	(-3.303	-2.41
Mo	1.59	0.009	0.917	19.64
Nd	9.40	0.145	14.625	19.14
Ni	3.39	0.035	3.537	12.03
P	1.30	0.141	14.279	15.97
K	3.75	0.289	29.177	2.98
Sm	5.66	0.280	28.238	5.99
Se	1.72	0.161	16.238	13.62
Si	3.92	0.354	35.731	0.32
Ag	4.61	0.016	1.584	4.28
Na	19.65	7.657	773.40	0.35
Sr	7.72	0.119	11.984	0.38
S	0.77	0.100	10.060	7.02
Ta	3.76	0.034	3.426	24.09
Tl	3.74	0.410	41.372	3.97
Th	1.70	0.170	17.209	10.02
Sn	1.36	0.017	1.674	24.67
Ti	3.78	0.021	2.156	0.74
W	2.78	0.034	3.443	34.94
U	6.24	3.630	366.67	1.38
V	3.59	0.022	2.198	3.69
Zn	3.22	0.026	2.613	1.05
Zr	4.99	0.043	4.384	1.11

Dilution factor : 101.000

ICP Analysis August 21, 1990 Duplicate of 89-070

Sample name : F433
Sample code 1 : DUPSAM
Sample code 2 : 100-10
Sample code 3 : RERRUN
Programme : SST 21-Aug-90 14:39:56

NAME	MV INT	CONCEN	DILCOR	RSD
Al	7.30	13.845	1398.4	0.51
Sb	0.34	0.149	15.020	18.72
As	1.06	0.024	2.454	35.48
Ba	4.86	0.017	1.667	5.37
Be	0.58	0.000	0.049	4.68
Bi	4.43	0.726	73.335	0.38
B	4.52	0.011	1.064	20.60
Cd	2.39	0.004	0.379	18.99
Ca	2.74	0.095	9.626	0.68
Ce	5.89	0.247	24.908	13.03
Cr	2.06	0.124	12.536	1.49
Co	0.88	0.004	0.443	34.70
Cu	3.11	0.021	2.158	10.46
Eu	4.50	0.006	0.563	10.61
Fe	16.41	3.396	342.96	0.41
La	0.44	0.030	3.016	14.85
Pb	0.27	0.293	29.621	14.63
Li	4.45	0.010	0.981	19.73
Mg	8.24	0.307	30.988	0.59
Mn	13.16	0.849	85.753	0.86
Hg	2.42	(-0.034	(-3.412	-10.63
Mo	1.60	0.011	1.072	9.65
Nd	9.37	0.130	13.114	14.62
Ni	3.37	0.032	3.261	5.15
P	1.31	0.154	15.514	17.81
K	3.75	0.302	30.484	21.04
Sm	5.68	0.312	31.488	9.71
Se	1.72	0.150	15.179	15.38
Si	4.01	0.404	40.809	1.07
Ag	4.63	0.018	1.786	12.21
Na	20.09	7.924	800.35	0.67
Sr	7.81	0.121	12.271	0.40
S	0.79	0.118	11.965	8.24
Ta	3.76	0.035	3.495	27.34
Tl	3.75	0.430	43.427	7.61
Th	1.71	0.194	19.626	15.22
Sn	1.36	0.018	1.842	23.77
Ti	3.81	0.024	2.415	4.41
W	2.76	0.029	2.891	29.47
U	6.25	3.776	381.37	4.59
V	3.60	0.024	2.423	4.12
Zn	3.98	0.046	4.651	1.10
Zr	4.99	0.044	4.478	7.12

Dilution factor : 101.000

ICP Analysis August 21, 1990 Acid Blank

Sample name : HNO3
Programme : SST 21-Aug-90 14:44:16

NAME	MV INT	CONCEN	RSD
Al	1.75	0.084	19.29
Sb	0.33	0.096	61.66
As	1.06	0.019	18.48
Ba	4.68	0.006	18.05
Be	0.58	0.000	59.77
Bi	3.56	0.071	33.20
B	4.43	0.004	42.37
Cd	2.38	0.003	17.53
Ca	0.52	0.001	3.36
Ce	5.88	0.225	12.19
Cr	1.63	0.012	15.91
Co	0.89	0.008	21.48
Cu	3.06	0.012	19.71
Eu	4.49	0.005	18.09
Fe	1.35	0.011	40.61
La	0.44	0.032	24.77
Pb	0.26	0.193	16.97
Li	4.44	0.009	11.90
Mg	0.45	0.001	11.75
Mn	0.77	0.001	31.75
Hg	2.39	(-0.037	-11.57
Mo	1.58	0.007	24.36
Nd	9.40	0.144	7.78
Ni	3.20	0.012	9.63
P	1.16	-0.020	-125.17
K	3.73	0.220	7.07
Sm	5.67	0.286	16.32
Se	1.68	0.083	17.08
Si	3.34	0.041	15.14
Ag	4.60	0.013	17.70
Na	7.16	0.098	17.07
Sr	4.04	0.003	14.03
S	0.68	-0.015	-86.74
Ta	3.76	0.035	18.62
Tl	3.69	0.280	3.57
Th	1.70	0.142	12.00
Sn	1.34	0.011	16.43
Ti	3.68	0.010	16.17
W	2.72	0.014	5.68
U	6.01	1.319	16.17
V	3.55	0.017	23.68
Zn	2.31	0.002	5.62
Zr	4.92	0.025	16.42

ICP Analysis August 21, 1990 LMCS Check Standard

Sample name : 78C11Z
Sample code 1 : SST1
Sample code 2 : DIRECT
Programme : SST 21-Aug-90 14:48:29

NAME	MV INT	CONCEN	RSD
Al	1.82	0.261	1.45
Sb	1.17	10.189	0.42
As	1.14	0.084	8.62
Ba	186.95	10.550	0.41
Be	0.61	0.002	4.37
Bi	3.79	0.242	6.19
B	150.97	10.580	0.19
Cd	186.66	10.371	0.31
Ca	240.78	10.157	0.43
Ce	12.43	10.070	0.12
Cr	41.06	10.415	0.41
Co	29.25	10.380	0.30
Cu	58.10	10.122	0.26
Eu	5.06	0.031	0.89
Fe	48.32	10.569	0.67
La	0.48	0.118	3.32
Pb	0.27	0.250	17.14
Li	109.70	9.775	0.31
Mg	268.29	10.528	0.34
Mn	150.81	10.271	0.49
Hg	2.50	(-0.026	-6.03
Mo	1.70	0.026	6.54
Nd	28.13	10.154	0.94
Ni	86.74	10.241	0.51
P	1.23	0.066	47.19
K	6.09	10.398	0.27
Sm	5.71	0.385	3.99
Se	3.38	3.057	0.75
Si	3.47	0.108	0.29
Ag	4.68	0.025	1.89
Na	23.73	10.133	0.21
Sr	326.35	10.170	0.37
S	0.85	0.200	15.13
Ta	3.91	0.086	2.70
Tl	3.88	0.793	3.85
Th	1.78	0.503	2.22
Sn	17.59	5.092	0.18
Ti	3.72	0.015	4.38
W	3.61	0.302	1.82
U	6.47	5.932	0.97
V	3.63	0.028	2.27
Zn	389.93	10.274	0.30
Zr	5.02	0.054	4.66

ICP Analysis August 21, 1990 LMCS Check Standard

Sample name : 87B38D
Sample code 1 : SST2
Sample code 2 : DIRECT
Programme : SST 21-Aug-90 14:52:47

NAME	MV INI	CONCEN	RSD
Al	2.60	2.189	0.24
Sb	0.34	0.225	10.71
As	1.32	0.212	2.30
Ba	4.91	0.019	1.66
Be	0.60	0.001	21.53
Bi	10.64	5.420	0.22
B	5.20	0.059	23.52
Cd	2.48	0.008	5.60
Ca	1.07	0.025	1.11
Ce	6.07	0.505	0.60
Cr	1.86	0.071	4.50
Co	0.92	0.021	6.23
Cu	3.67	0.125	1.19
Eu	115.21	5.019	0.36
Fe	1.48	0.040	2.55
La	2.33	4.858	0.38
Pb	0.51	5.401	0.69
Li	4.50	0.014	4.37
Mg	0.62	0.007	3.22
Mn	0.86	0.007	4.16
Hg	2.53	(-0.023	-11.95
Mo	1.63	0.015	16.68
Nd	9.97	0.452	5.79
Ni	3.33	0.027	10.21
P	1.38	0.235	9.06
K	3.75	0.310	11.02
Sm	8.26	5.498	0.29
Se	1.75	0.211	2.09
Si	3.84	0.314	0.90
Ag	39.20	4.720	0.40
Na	7.24	0.145	7.01
Sr	4.20	0.008	2.99
S	0.75	0.075	9.46
Ta	3.98	0.109	2.04
Tl	4.72	3.126	0.41
Th	7.72	25.598	0.52
Sn	1.47	0.050	18.40
Ti	3.98	0.042	1.77
W	2.81	0.044	4.65
U	8.59	26.997	0.39
V	4.25	0.123	1.15
Zn	2.93	0.018	5.14
Zr	5.20	0.103	1.02

ICP Analysis August 21, 1990 LMCS Check Standard

Sample name : 77C11Y
Sample code 1 : SST3
Sample code 2 : DIRECT
Programme : SST 21-Aug-90 14:57:09

NAME	MV INT	CONCEN	RSD
Al	5.85	10.253	0.37
Sb	0.36	0.386	1.80
As	30.03	21.568	0.38
Ba	4.90	0.019	6.23
Be	104.57	4.085	0.59
Bi	3.87	0.308	10.05
B	4.91	0.039	10.21
Cd	2.50	0.010	9.58
Ca	0.86	0.016	0.16
Ce	5.99	0.384	9.22
Cr	1.71	0.032	8.71
Co	0.96	0.033	5.01
Cu	3.14	0.028	7.92
Eu	4.57	0.008	10.91
Fe	1.46	0.036	17.55
La	0.44	0.031	12.73
Pb	0.26	0.172	7.22
Li	4.62	0.026	4.99
Mg	0.55	0.005	1.75
Mn	0.84	0.006	7.65
Hg	107.17	10.584	0.26
Mo	66.20	9.948	0.48
Nd	9.56	0.234	17.90
Ni	4.07	0.118	2.03
P	10.17	10.315	1.79
K	3.81	0.561	7.42
Sm	5.77	0.501	8.84
Se	12.84	19.591	0.26
Si	19.78	8.992	0.13
Ag	5.10	0.082	1.87
Na	7.40	0.239	8.27
Sr	4.14	0.006	7.98
S	16.90	19.932	0.81
Ta	32.61	9.857	0.35
Tl	10.73	19.787	0.22
Th	1.76	0.424	10.18
Sn	1.68	0.117	2.31
Ti	104.40	10.361	0.57
W	24.07	6.883	0.18
U	6.24	3.630	6.59
V	28.93	3.870	0.55
Zn	2.89	0.017	3.75
Zr	40.48	9.899	0.49

APPENDIX A
ANALYTICAL ANALYSIS CARDS

Serial No.	Sample Point	Date	Time Issued	Priority
F 537.-5002	SEGMENT-B	12- 1-89	11:30	24

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

Sample Size: ?

Customer ID: 089075

Remarks, Calculations, Results:

PARTICLE SIZE DISTRIBUTION Bottle # 274

Gross wt 21.99 Results: see attached (6)

Tare wt 21.03

Samp wt 0.96.

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
RLW KJP JRT	[illegible]			
Hrs: 1-26-90	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 537.-5003	SEGMENT-B	12- 1-89	11:30	16

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

Sample Size: ?

Customer ID: 089075

Remarks, Calculations, Results:

Homogenization Complete

Jar # 399

WHC N 3134 pg 29

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[illegible] 161300 168890				
Hrs	Hrs	Hrs	Hrs	Hrs
Date: 2/15/90	Time Completed	Lab Unit Mgr		

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 537.-5000	SEGMENT-B	12- 1-89	11:30	18

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

Sample Size: ? WHC N 9133

Customer ID: 89-075

Remarks, Calculations, Results:

Penitrometer 220 Raw

A. JAR ID# 252
B. JAR TARE WT. 222.1
C. JAR TOTAL WT. 432.3
D. C-B= 210.2
E. EST. VOL./LENGTH 15"
F. VISUAL REMARKS Dark brown, firm solid. During early stage of extrusion, no sample extruded but air noted leaking from sampler valve.

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
RLW KJP JRT	[illegible] 161300 165886			
Hrs: 1-26-90	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 537.-5001	SEGMENT-B	12- 1-89	11:30	18

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

Sample Size: ?

Customer ID: 089075

Remarks, Calculations, Results:

DUPLICATE SAMPLE Bottle # 277

Gross wt 31.10

Tare wt 21.31

Samp wt 9.79

WHC N 3133

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
RLW KJP JRT	[illegible] 161300 165886			
Hrs: 1-26-90	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		

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

pH Analysis of Solid Sample

Serial No.	Sample Point	Date	Time Issued	Priority
F 557.-5315	SEGMENT-V	12- 1-89	11:33	18

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

Sample Size: ? 1 ml

Customer ID: 089075

Remarks, Calculations, Results:
~~LMCS CHECK SAMPLE~~ Reagent Blank
pH FOUND 6.54
STD ID
SAMPLE TEMP 24.2

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

Date	Time Completed	Lab Unit Mgr
3-9-90		JP

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 536.-5515	SEGMENT-A	12- 1-89	11:30	19

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

Sample Size: ? 1 ml

Customer ID: 089075

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
pH FOUND 10.03
STD ID 72C11-B
SAMPLE TEMP 24.2

100.3% DMS

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

Date	Time Completed	Lab Unit Mgr
3-9-90		JP

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 538.-5115	SEGMENT-C	12- 1-89	11:31	19

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

Sample Size: ? 2.159g / 2.159 ml

Customer ID: 089075

Remarks, Calculations, Results:
pH 12.12
SAMPLE TEMP 24.2

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

Date	Time Completed	Lab Unit Mgr
3-9-90		JP

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 537.-5015	SEGMENT-B	12- 1-89	11:30	19

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

Sample Size: ? 2.261g / 2.261 ml

Customer ID: 089075

Remarks, Calculations, Results:
pH 12.42
SAMPLE TEMP 24.2

#371 9.34g

WHC N 3134

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

Date	Time Completed	Lab Unit Mgr
3-9-90		JP

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

pH Analysis of Solid Sample

Serial No.	Sample Point	Date	Time Issued	Priority
F 540.-5515	SEGMENT-E	12- 1-89	11:31	19

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

Sample Size	Customer ID
? 1 ml	089075

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
pH FOUND 10.00
STD ID 72CII-B
SAMPLE TEMP 24.2

100.0%
pms

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

Date	Time Completed	Lab Unit Mgr	
3-9-90		[illegible]	[illegible]

54-6800-081 (R-10-53)

Percent Water Analysis

Serial No.	Sample Point	Date	Time Issued	Priority
F 437.-5310	SEGMENT-V	11-30-89	8: 9	18

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

Sample Size: ?

Customer ID: 089070

Remarks, Calculations, Results:

REAGENT BLANK

① .0065 ② .0059

21.5642 G 21.6807 .0062 g

21.5642 T. 21.6807

21.5578 W1 21.6748

21.5576 W2 21.6746

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

Date: 3-2-90 | Time Completed: | Lab Unit Mgr: [signature] [signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 416.-5510	SEGMENT-A	11-30-89	8: 5	19

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

Sample Size: ?

Customer ID: 89-070

Remarks, Calculations, Results:

LMCS CHECK SAMPLE

LMCS ID 11C11AH

① 57.76 ② 98.3%

22.8786 G 22.8859

58.16 21.4798 T 21.5004 57.96/58.98

22.0651 W1 22.0857

22.0632 W2 22.0811

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

Date: 3-2-90 | Time Completed: | Lab Unit Mgr: [signature] [signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 538.-5110	SEGMENT-C	12- 1-89	11:31	19

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

Sample Size: ?

Customer ID: 089075

Remarks, Calculations, Results:

DUPLICATE SAMPLE

G. 22.3036

T. 21.6754 42.98%

W1 22.0336

W2 22.0333

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

Date: 3-2-90 | Time Completed: | Lab Unit Mgr: [signature] [signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 537.-5010	SEGMENT-B	12- 1-89	11:30	19

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

Sample Size: ?

Customer ID: 089075

Remarks, Calculations, Results:

#366 5.38g

G. 21.9675

T. 21.3221 43.18%

W1 21.6888

W2 21.6882 WHC N3134

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

Date: 3-2-90 | Time Completed: | Lab Unit Mgr: [signature] [signature]

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

Percent Water Analysis

Serial No.	Sample Point	Date	Time Issued	Priority
F 564.-5510	SEGMENT-E	12- 1-89	11:34	19

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

Sample Size	Customer ID
?	089076

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 11C11AA

	57.77	57.18% / 58.98
		56.58
G,	22.9823	22.9189
T,	21.59560	21.5377
W1	22.1812	22.1374
W2	22.1780	22.1310

96.95%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B59				[signature]
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr.	
3-2-90		[signature]	[signature]

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

Use F 537

Serial No.	Sample Point	Date	Time Issued	Priority
F 542.-6000	SEGMENT-G	12- 1-89	11:31	18

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

Sample Size	Customer ID
?	089075

Remarks, Calculations, Results:
GRAMS SAMPLE .4598
VOLUME ON COMPLETION 200 mL

2.30^{-3} g/ml

WHC Dow

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

Date	Time Completed	Lab Unit Mgr	
3-10-90		[illegible]	[illegible]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 436.-6300	SEGMENT-U	11-30-89	8: 8	18

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

Sample Size	Customer ID
? 200 mL	089070

Remarks, Calculations, Results:
REAGENT BLANK

complete

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

Date	Time Completed	Lab Unit Mgr	
3-10-90		[illegible]	[illegible]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 543.-6100	SEGMENT-H	12- 1-89	11:31	18

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

Sample Size	Customer ID
?	089075

Remarks, Calculations, Results:
DUPLICATE ANALYSIS
GRAMS SAMPLE .4545
VOLUME ON COMPLETION 200 mL

2.27^{-3} g/ml

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

Date	Time Completed	Lab Unit Mgr	
3-10-90		[illegible]	[illegible]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 556.-6320	SEGMENT-U	12- 1-89	11:33	18

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

Sample Size: ? 10 ml

Customer ID: 089075

Remarks, Calculations, Results:

REAGENT BLANK

H_2O

< 1.22 -4 uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GC269				
Mary Fraley	Hrs	Hrs	Hrs	Hrs

Date: 4-9-90 Time Completed: 4/17 Lab Unit Mgr: [signature] SH

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 545.-6520	SEGMENT-J	12- 1-89	11:31	19

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

Sample Size: ? 10 ml

Customer ID: 089075

Remarks, Calculations, Results:

LMCS CHECK SAMPLE

LMCS ID 103544

$1.10^{-2} / 1.0027^{-2}$ 109.70%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GC269				
Mary Fraley	Hrs	Hrs	Hrs	Hrs

Date: 4-9-90 Time Completed: 4/17 Lab Unit Mgr: [signature] SH

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 543.-6120	SEGMENT-H	12- 1-89	11:31	19

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

Sample Size: ? 100-10-100

Customer ID: 089075

Remarks, Calculations, Results:

DUPLICATE SAMPLE

< 1.66 uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GC269				
Mary Fraley	Hrs	Hrs	Hrs	Hrs

Date: 4-9-90 Time Completed: 4/17 Lab Unit Mgr: [signature] SH

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 542.-6020	SEGMENT-G	12- 1-89	11:31	19

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

Sample Size: ? 100-10-100

Customer ID: 089075

Remarks, Calculations, Results:

Count on 13, 14 or 15

< 1.74 uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GC269				
Mary Fraley	Hrs	Hrs	Hrs	Hrs

Date: 4-9-90 Time Completed: 4/17 Lab Unit Mgr: [signature] SH

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

14/2 F0556

2/10

Alpha Calculation by EMB on 04-09-1990 at 19:20:19
Det #14 2 -inch mount Alpha eff. : .2111
Sample size : 10 mL Dilution : 1

Mount # 1

3/10 — 2/10 - 0.6 < 1.2178E-04 uCi/L alpha

Mount # 2

3/10 — 3/10 - 0.6 < 1.2178E-04 uCi/L alpha

14/2 F0545

489/10

Alpha Calculation by EMB on 04-09-1990 at 22:47:27
Det #14 2 -inch mount Alpha eff. : .2111
Sample size : 10 mL Dilution : 1

553/10 Mount # 1

489/10 - 0.6 = 1.0306E-02 uCi/L alpha

Mount # 2

553/10 - 0.6 = 1.1672E-02 uCi/L alpha

14/2 ~~F0544~~ F0543

Alpha Calculation by EMB on 04-09-1990 at 19:21:01
Det #14 2 -inch mount Alpha eff. : .2111
Sample size : 1 mL Dilution : 1010

9/10 Mount # 1

9/10 - 0.6 < 2.0238E+00 uCi/L alpha

12/10 Mount # 2

12/10 - 0.6 = 1.2931E+00 uCi/L alpha

14/2 F 0542

Alpha Calculation by EMB on 04-09-1990 at 19:21:39
Det #14 2 -inch mount Alpha eff. : .2111
Sample size : 1 mL Dilution : 1010

14/10 Mount # 1

14/10 - 0.6 = 1.7241E+00 uCi/L alpha

8/10 Mount # 2

6/10 - 0.6 < 1.7616E+00 uCi/L alpha

Serial No.	Sample Point	Date	Time Issued	Priority
F 544.-6220	SEGMENT-I	12- 1-89	11:31	19

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

Sample Size: ? 100-10-100

Customer ID: 089075

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID 143B44
SPIKE VOLUME 10 ml

$1.104^{-2} / 1.0027^{-2}$ 110.1%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GC269				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
4-9-90	4/17		SH

84-5800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 541.-6520	SEGMENT-F	12- 1-89	11:31	19

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

Sample Size: ? 10 ml

Customer ID: 089075

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 143B44

94.1%

$9.43^{-3} / 1.0027^{-2}$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GC269				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
4-9-90	4/17		SH

84-5800-061 (R-10-83)

14/2 F:0524

516/10 - .6

Alpha Calculation by EMB on 04-09-1990 at 19:37:22
Det #14 2 -inch mount Alpha eff. : .2111
536/10 Sample size : 1 mL Dilution : 1010

Mount # 1

$$\frac{516}{10} - 0.6 = 1.0991E+02 \text{ uCi/L alpha}$$

Mount # 2

$$\frac{536}{10} - 0.6 = 1.1422E+02 \text{ uCi/L alpha}$$

14/2 F-0541

405/10 - .6

Alpha Calculation by EMB on 04-09-1990 at 22:40:02
Det #14 2 -inch mount Alpha eff. : .2111
491 Sample size : 10 mL Dilution : 1

Mount # 1

$$\frac{405}{10} - 0.6 = 8.5140E-03 \text{ uCi/L alpha}$$

Mount # 2

$$\frac{491}{10} - 0.6 = 1.0349E-02 \text{ uCi/L alpha}$$

Serial No.	Sample Point	Date	Time Issued	Priority
F 556.-6325	SEGMENT-U	12- 1-89	11:33	18

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

Sample Size: ? 10ml

Customer ID: 089075

Remarks, Calculations, Results:

REAGENT BLANK H_2O Count on 13, 14 or 15

$< 6.07^{-4}$ uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				
Mary Fraley	Hrs	Hrs	Hrs	Hrs
Date: 4-9-90	Time Completed: 4/17	Lab Unit Mgr	SH	

84-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 545.-6525	SEGMENT-J	12- 1-89	11:32	19

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

Sample Size: ? 10 ml

Customer ID: 089075

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 143849 Count on 13, 14 or 15

1.43^{-1} / 1.3473^{-1} 106.1%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				
Mary Fraley	Hrs	Hrs	Hrs	Hrs
Date: 4-9-90	Time Completed: 4/17	Lab Unit Mgr	SH	

84-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 543.-6125	SEGMENT-H	12- 1-89	11:31	19

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

Sample Size: ? 100-10-100

Customer ID: 089075

Remarks, Calculations, Results:

DUPLICATE SAMPLE Count on 13, 14 or 15

4.09^{3} uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				
Mary Fraley	Hrs	Hrs	Hrs	Hrs
Date: 4-9-90	Time Completed: 4/17	Lab Unit Mgr	SH	

84-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 542.-6025	SEGMENT-G	12- 1-89	11:31	19

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

Sample Size: ? 100-10-100

Customer ID: 089075

Remarks, Calculations, Results:

4.32^{3} uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				
Mary Fraley	Hrs	Hrs	Hrs	Hrs
Date: 4-9-90	Time Completed: 4/11	Lab Unit Mgr	SH	

84-6600-081 (R-10-83)

F-0556

14/2

195/10 - 25

Beta Calculation by EMB on 04-09-1990 at 19:20:08
Det #14 2 -inch mount Beta eff. : .2734
Sample size : 10 mL Dilution : 1

201/10

Mount # 1

195 / 10 - 25.0 < 6.0696E-04 uCi/L beta

Mount # 2

201 / 10 - 25.0 < 6.0692E-04 uCi/L beta

F-0545

14/2

8859/10 - 25

Beta Calculation by EMB on 04-09-1990 at 22:47:25
Det #14 2 -inch mount Beta eff. : .2734
Sample size : 10 mL Dilution : 1

9040/10

Mount # 1

8859 / 10 - 25.0 = 1.4184E-01 uCi/L beta

Mount # 2

9040 / 10 - 25.0 = 1.4482E-01 uCi/L beta

F-0543

14/2

df=1010

24539/10 - 25

Beta Calculation by EMB on 04-09-1990 at 19:20:59
Det #14 2 -inch mount Beta eff. : .2734
Sample size : 1 mL Dilution : 1010

25094/10

Mount # 1

24539 / 10 - 25.0 = 4.0418E+03 uCi/L beta

Mount # 2

25094 / 10 - 25.0 = 4.1342E+03 uCi/L beta

F-0542

14/2

26134/10 - 25

Beta Calculation by EMB on 04-09-1990 at 19:21:37
Det #14 2 -inch mount Beta eff. : .2734
Sample size : 1 mL Dilution : 1010

26282/10

Mount # 1

26134 / 10 - 25.0 = 4.3073E+03 uCi/L beta

Mount # 2

26282 / 10 - 25.0 = 4.3319E+03 uCi/L beta

Serial No.	Sample Point	Date	Time Issued	Priority
F 541.-6525	SEGMENT-F	12- 1-89	11:31	19

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

Sample Size: ? 10 ml

Customer ID: 089075

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 143B44

Count on 13, 14 or 15

101.7%

$1.27^{-1} / 1.3473^{-1}$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				
	Hrs	Hrs	Hrs	Hrs
Date: 4-9-90	Time Completed: 411	Lab Unit Mgr		

84-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F544 -6225	SEGMENT-I	12- 1-89	11:31	19

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

Sample Size: ? 100-10-100

Customer ID: 089075

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID 143B94
SPIKE VOLUME 10 ml

Count on 13 14 or 15

103.2%

KH

$1.391^{-1} / 1.3473^{-1}$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				
	Hrs	Hrs	Hrs	Hrs
Date: 4-9-90	Time Completed: 411	Lab Unit Mgr		

84-6800-081 (R-10-83)

14/2 F.0541

8701 / 10 -25

Beta Calculation by EMB on 04-09-1990 at 22:48:00
Det #14 2 -inch mount Beta eff. : .2734
Sample size : 10 mL Dilution : 1

8466 / 10

Mount # 1

8701
---------- - 25.0 = 1.3924E-01 uCi/L beta
10

Mount # 2

8466
---------- - 25.0 = 1.3537E-01 uCi/L beta
10

14/2 F0544

34239 / 10 -25

Beta Calculation by EMB on 04-09-1990 at 19:37:20
Det #14 2 -inch mount Beta eff. : .2734
Sample size : 1 mL Dilution : 1010

35061 / 10

Mount # 1

34239
---------- - 25.0 = 5.6566E+03 uCi/L beta
10

Mount # 2

35061
---------- - 25.0 = 5.7928E+03 uCi/L beta
10

1071

Serial No.	Sample Point	Date	Time Issued	Priority
F 436.-6330	SEGMENT-U	11-30-89	8: 9	18

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

Sample Size: ? 1ML

Customer ID: 089070

Remarks, Calculations, Results:
REAGENT BLANK

Co^{60} < 3.73 $^{-4}$ uci/l

Cs^{137} < 481 $^{-4}$ uci/l

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

Date	Time Completed	Lab Unit Mgr	
3-14-90		QP	DM 8

54-5800-061 (R-10-83)

1070

Serial No.	Sample Point	Date	Time Issued	Priority
F 421.-6530	SEGMENT-F	11-30-89	8: 5	19

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

Sample Size: ? 500λ Li $^{.001}_{2}$

Customer ID: 089070

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 122B94

Co^{60} 2.14' / 2.0933' 102.2%

Cs^{137} ℓ 2.85' / 2.8979' 98.3%

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

Date	Time Completed	Lab Unit Mgr	
3-14-90		QP	DM 8

54-5800-061 (R-10-83)

1081

Serial No.	Sample Point	Date	Time Issued	Priority
F 543.-6130	SEGMENT-H	12- 1-89	11:31	19

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

Sample Size: ? 25λ

Customer ID: 089075

Remarks, Calculations, Results:
DUPLICATE SAMPLE

Co^{60} < 1.04 uci/l

Cs^{137} 1.30 ^{2} uci/l

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

Date	Time Completed	Lab Unit Mgr	
3-14-90		QP	

54-5800-061 (R-10-83)

1080

Serial No.	Sample Point	Date	Time Issued	Priority
F 542.-6030	SEGMENT-G	12- 1-89	11:31	19

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

Sample Size: ? 25λ 40

Customer ID: 089075

Remarks, Calculations, Results:

Co^{60} < 1.29 uci/l

Cs^{137} 1.18 ^{2} uci/l

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

Date	Time Completed	Lab Unit Mgr	
3-14-90		QP	

54-5800-061 (R-10-83)

1087

Serial No.	Sample Point	Date	Time Issued	Priority
F 569.-6530	SEGMENT-J	12- 1-89	11:35	19

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

Sample Size: ? 500 l

Customer ID: 089076

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 122844

Co^{60} 2.07'/2.0932' 98.9%

Cs^{137} 2.82'/2.8979' 97.3%

KP

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68598/RH				SME
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-14-90		QP	DMS

84-5800-081 (R-10-83)

1084

Serial No.	Sample Point	Date	Time Issued	Priority
F 568.-6230	SEGMENT-I	12- 1-89	11:35	19

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

Sample Size: ? 50 l

Customer ID: 089076

Remarks, Calculations, Results:

SPIKE SAMPLE F447
SPIKE ID 122844
SPIKE VOLUME 50

93.5%

$2.04' - 6.85 = 13.55 \times 2 = 2.71'/2.8979'$

$4.08^2 - 1.37^2 = 2.71^2$ KP

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68598/RH				SME
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
3-14-90		QP	DMS

84-5800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 556.-6340	SEGMENT-U	12- 1-89	11:33	18

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

Sample Size: .050ml — Customer ID: 89075

Remarks, Calculations, Results:
REAGENT BLANK F217 Blank
Spike 54B38 Val 5.62E-4 g/l Volume .100ml .000 .210

$$\frac{(.982)(.02)(5.62E^{-4})(.1)(20)}{.210-[(.982)(.02)]} = <1.16E^{-4}\ g/l$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Sue Lai			[signature]	
Hrs 6C916	Hrs	Hrs	Hrs	Hrs

Date: 7-2-90 — Time Completed: — Lab Unit Mgr: [signature] [signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 541.-6540	SEGMENT-F	12- 1-89	11:31	23

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

Sample Size: ? .100ml - 10ml - .100ml — Customer ID: 89075

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 58B38
Spike ID 54B38
Spike Value 5.62E-4
Spike Volume .100ml .130 .400

$$\frac{(.982)(.130)(5.62E^{-4})(.1)(1010)}{.400-[(.982)(.130)]} = 2.61E^{-2}\ g/l \quad 88.99\% \quad 2.99E^{-2}\ g/l$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Sue Lai			[signature]	
Hrs 6C916	Hrs	Hrs	Hrs	Hrs

Date: 7-2-90 — Time Completed: — Lab Unit Mgr: [signature] [signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 543.-6140	SEGMENT-H	12- 1-89	11:31	23

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

Sample Size: ? 0.10ml - 10ml - 0.10 ml — Customer ID: 89075

Remarks, Calculations, Results:
DUPLICATE SAMPLE
Spike 54B38 Value 5.62E-4 Volume 0.100ml 0.065 0.340

$$\frac{(.982)(.065)(5.62E^{-4})(.1)(1010)}{.340-[(.982)(.065)]} = 1.31E^{-2}\ g/l$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Sue Lai			[signature]	
Hrs 6C916	Hrs	Hrs	Hrs	Hrs

Date: 7-2-90 — Time Completed: — Lab Unit Mgr: [signature] [signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 542.-6040	SEGMENT-G	12- 1-89	11:31	23

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

Sample Size: ? .100 at 10ml - .10ml — Customer ID: 89075

Remarks, Calculations, Results:
Spike 54B38 5.62E-2 g/l Volume .100ml 0.070 0.335

$$\frac{(.982)(.07)(5.62E^{-4}\ g/l)(.1)(1010)}{.335-[(.982)(.070)]} = 1.46E^{-2}\ g/l$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Sue Lai			[signature]	
Hrs 6C916	Hrs	Hrs	Hrs	Hrs

Date: 7-2-90 — Time Completed: — Lab Unit Mgr: [signature] [signature]

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

Serial No	Sample Point	Date	Time Issued	Priority
F 545.-6540	SEGMENT-J	12- 1-89	11:32	23

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

Sample Size: ? 0.100ml - 10ml - 0.100ml

Customer ID: 089075

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 58B38

Spike: ID 54B38
Value 5.62E-4 g/l
Volume 0.100ml
0.130
0.405
87.4%

$$\frac{(.982)(.130)(5.62E^{-4})(.1)(1010)}{.405-[(.982)(.130)]} = 2.61E^{-2}\ g/l \,/\, 2.99E^{-2}\ g/l$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Sue Lai			S A Catto	
Hrs	Hrs	Hrs	Hrs	Hrs
6C916				

Date	Time Completed	Lab Unit Mgr	
7-2-90		[signature]	Dejone Jaucher

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 544.-6240	SEGMENT-I	12- 1-89	11:31	23

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

Sample Size: ? Sample 100ml / std 100ml > 10ml water - .100ml

Customer ID: 089075

Remarks, Calculations, Results:
SPIKE SAMPLE F542
SPIKE ID 54B38
SPIKE VOLUME .100ml

Value 5.62E-4 g/l
94.3%
0.185
0.425

$$\frac{(.982)(.185)(5.62E^{-4})(.1)(1020)}{.425-[(.982)(.185)]} = 4.28E^{-2}\ g/l - 1.46E^{-2}\ g/l = 2.82E^{-2}\ g/l \,/\, 2.99E^{-2}\ g/l$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Sue Lai			S A Catto	
Hrs	Hrs	Hrs	Hrs	Hrs
6C916				

Date	Time Completed	Lab Unit Mgr	
7-2-90		[signature]	Dejone Jaucher

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 547.-7000	SEGMENT-L	12- 1-89	11:32	19

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

Sample Size: ?

Customer ID: 089075

Remarks, Calculations, Results:

GRAMS SAMPLE _____ #378 5.39 g

VOLUME ON

COMPLETION _____

1.21^{-2} g/ml

Note N 313 4 F547

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				
Mary Fratz	Hrs	Hrs		
Date 3-9-90	Time Completed	Lab Unit Mgr		

Serial No.	Sample Point	Date	Time Issued	Priority
F 558.-7300	SEGMENT-W	12- 1-89	11:33	18

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

Sample Size: ? 50 ml

Customer ID: 089075

Remarks, Calculations, Results:

REAGENT BLANK

H_2O

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				
Mary Fratz	Hrs	Hrs	Hrs	Hrs
Date 3-9-90	Time Completed	Lab Unit Mgr		

54-5800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 549.-7200	SEGMENT-N	12- 1-89	11:32	19

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

Sample Size: ?

Customer ID: 089075

Remarks, Calculations, Results:

SPIKED ANALYSIS F549

GRAMS SAMPLE _____

VOLUME ON

COMPLETION _____

VOLUME SPIKE _____

SPIKE ID _____

1.14^{-2} g/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				
Mary Fratz	Hrs	Hrs	Hrs	Hrs
Date 3-9-90	Time Completed	Lab Unit Mgr		

54-5800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 548.-7100	SEGMENT-M	12- 1-89	11:32	19

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

Sample Size: ?

Customer ID: 089075

Remarks, Calculations, Results:

DUPLICATE ANALYSIS F548

GRAMS SAMPLE _____

VOLUME ON

COMPLETION _____

1.01^{-2} g/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				
Mary Fratz	Hrs	Hrs	Hrs	Hrs
Date 3-9-90	Time Completed	Lab Unit Mgr		

54-5800-081 (R-10-83)

Ion Chromatograph Analysis on the Water Digestion - Chloride Analysis

Serial No.	Sample Point	Date	Time Issued	Priority
F 438.-7372	SEGMENT-W	11-30-89	8: 9	18

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

Sample Size: ? Direct

Customer ID: 089070

Remarks, Calculations, Results:
REAGENT BLANK

.202 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/NEW				[signature] 4/1/71
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
4/5/90		QP	[signature]

54-5800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 426.-7572	SEGMENT-K	11-30-89	8: 7	19

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

Sample Size: 100-10

Customer ID: 089070

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 6C1/A5

KT

99.7%

~~61~~ KT 71.81/72.00

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/NEW				[signature] 4/1/71
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
4/5/90		QP	[signature]

54-5800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 548.-7172	SEGMENT-M	12- 1-89	11:32	19

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

Sample Size: ? 100-10

Customer ID: 089075

Remarks, Calculations, Results:
DUPLICATE SAMPLE

1.78' ppm

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

Date	Time Completed	Lab Unit Mgr	
4/5/90		QP	[signature]

54-5800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 547.-7072	SEGMENT-L	12- 1-89	11:32	19

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

Sample Size: ? ~~Direct~~ 100-10

Customer ID: 089075

Remarks, Calculations, Results:

1.96' ppm

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

Date	Time Completed	Lab Unit Mgr	
4/5/90		QP	[signature]

54-5800-061 (R-10-83)

Ion Chromatograph Analysis on the Water Digestion - Chloride Analysis

Serial No.	Sample Point	Date	Time Issued	Priority
F 574.-7572	SEGMENT-O	12- 1-89	11:36	19

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

Sample Size	Customer ID
100-10	089076

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID EC11HO

KY

97.5%

70.21/72.0

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/new				[signature]
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
4/5/90		[signature]	KY

54-5600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 429.-7272	SEGMENT-N	11-30-89	8: 8	19

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

Sample Size	Customer ID
? 100-10	089[illegible]

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID 55C9-77
SPIKE VOLUME .300/5ml

See Reverse Side

AP

$\cancel{1.07\left[\frac{(4.348^2 - 17.0)/1.07}{434.5}\right] \times 100 = 103.9\%}$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/new				[signature] 9A171
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
4/5/90		[signature]	KY

54-5600-061 (R-10-83)

Ion Chromatograph Analysis on the Water Digestion - Chloride Analysis

Cl

$$\frac{(1.06)(435) - (17.6)\left(\frac{9.744}{10.39}\right)}{\frac{(.300)(76)}{5.3}(101)} \times 100 =$$

$= 102.4\%$

8-23-90

F 429-7272

Serial No.	Sample Point	Date	Time Issued	Priority
F 438.-7373	SEGMENT-W	11-30-89	8: 9	18

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

Sample Size: ? Direct

Customer ID: 089070

Remarks, Calculations, Results:
REAGENT BLANK

<1 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
WB107/NEW				
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date: 4/5/90 | Time Completed: | Lab Unit Mgr: AP

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 426.-7573	SEGMENT-K	11-30-89	8: 7	19

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

Sample Size: 100-10

Customer ID: 089070

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID WB110

101.9%

616.6/599

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
WB107/NEW				
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date: 4/5/90 | Time Completed: | Lab Unit Mgr: AP

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 548.-7173	SEGMENT-M	12- 1-89	11:32	19

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

Sample Size: ? 100-10

Customer ID: 089075

Remarks, Calculations, Results:
DUPLICATE SAMPLE

5.09^{2} ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
WB107/NEW				
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date: 4/5/90 | Time Completed: | Lab Unit Mgr: AP

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

Serial No	Sample Point	Date	Time Issued	Priority
F 547.-7073	SEGMENT-L	12- 1-89	11:32	19

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

Sample Size: ? 100-10

Customer ID: 089075

Remarks, Calculations, Results:

7.01^{2} ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
WB107/NEW				
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date: 4/5/90 | Time Completed: | Lab Unit Mgr: AP

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 574.-7573	SEGMENT-O	12- 1-89	11:37	19

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

Sample Size	Customer ID
100-10	089076

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 621145

615.4/599 102.7%

KP

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68107/KEW				
Hrs .5	Hrs	Hrs	Hrs	Hrs
Date 4/5/90	Time Completed	Lab Unit Mgr QP	QP	

54-6600-081 (R-10-63)

Serial No.	Sample Point	Date	Time Issued	Priority
F 429.-7273	SEGMENT-N	11-30-89	8: 8	19

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

Sample Size	Customer ID
? 100-10	089070

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID 3509-77
SPIKE VOLUME 300/5ml

See Reverse Side →

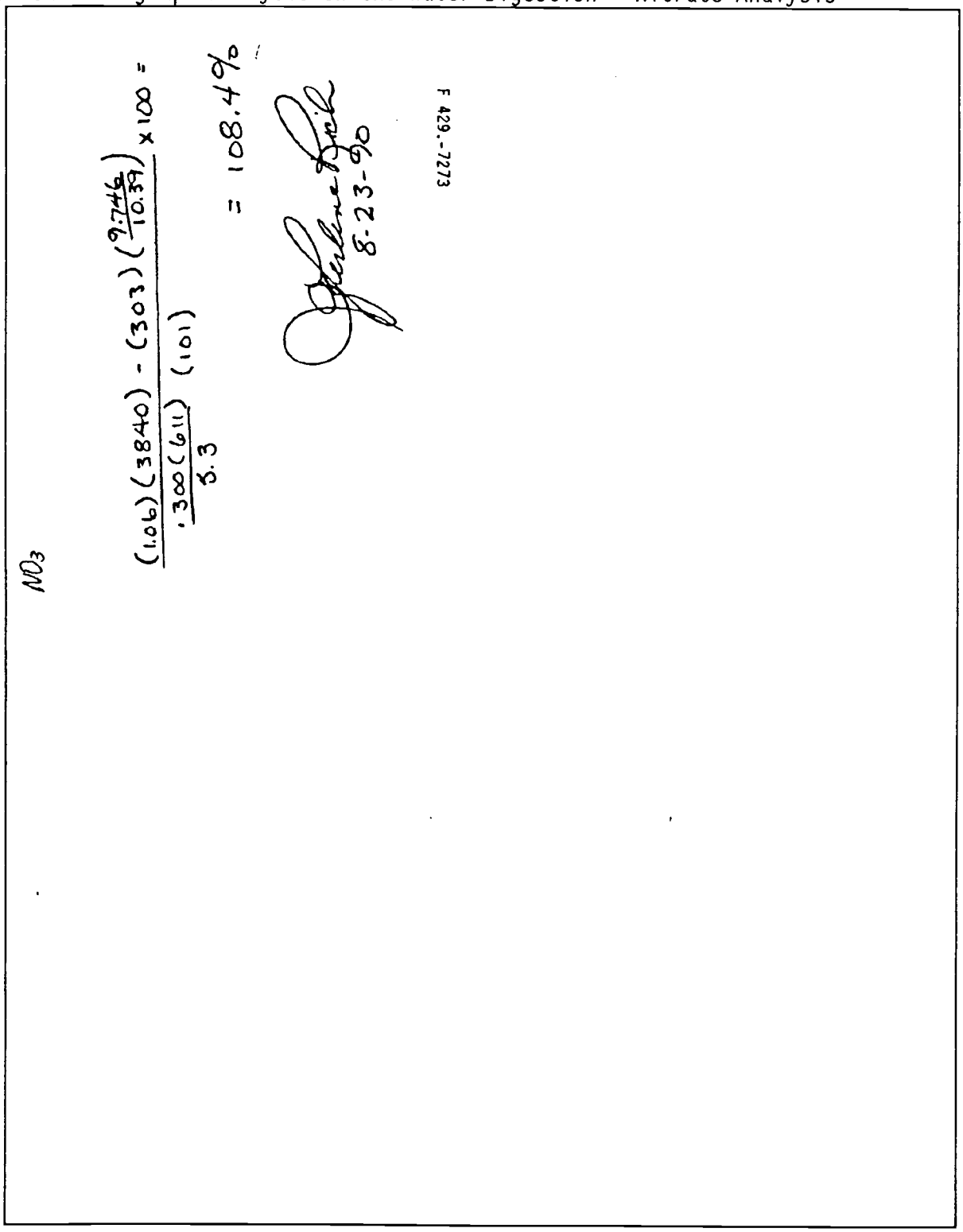
QP

1.07 [(3.84 − 3.033) / 3493.1] 100 = 109.4%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68107/KEW				
Hrs .5	Hrs	Hrs	Hrs	Hrs
Date 4/5/90	Time Completed	Lab Unit Mgr QP	QP	

54-6600-081 (R-10-63)

Ion Chromatograph Analysis on the Water Digestion - Nitrate Analysis



Serial No.	Sample Point	Date	Time Issued	Priority
F 438.-7374	SEGMENT-W	11-30-89	8: 9	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
P04	LA-533-105	PPM	WB75L	0

Sample Size: ? Dirt

Customer ID: 089070

Remarks, Calculations, Results:
REAGENT BLANK

<1 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GB107/MEW				
Hrs .5	Hrs	Hrs	Hrs	Hrs
Date 4/5/90	Time Completed	Lab Unit Mgr		

54-8800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 426.-7574	SEGMENT-K	11-30-89	8: 7	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
P04	LA-533-105	% RECOVERY	WB75L	0

Sample Size: 100-10

Customer ID: 089070

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 6C1176

600.8% *

603.8/599

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GB107/MEW				
Hrs .5	Hrs	Hrs	Hrs	Hrs
Date 4/5/90	Time Completed	Lab Unit Mgr		

54-8800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 548.-7174	SEGMENT-M	12- 1-89	11:32	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
P04	LA-533-105	PPM	WB75L	0

Sample Size: ? 100-10

Customer ID: 089075

Remarks, Calculations, Results:
DUPLICATE SAMPLE

<1.01² ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GB107/MEW				
Hrs .5	Hrs	Hrs	Hrs	Hrs
Date 4/5/90	Time Completed	Lab Unit Mgr		

54-8800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 547.-7074	SEGMENT-L	12- 1-89	11:32	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
P04	LA-533-105	PPM	WB75L	0

Sample Size: ? 100-10

Customer ID: 089075

Remarks, Calculations, Results:

7.08¹ ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
GB107/MEW				
Hrs .5	Hrs	Hrs	Hrs	Hrs
Date 4/5/90	Time Completed	Lab Unit Mgr		

54-8800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 574.-7574	SEGMENT-O	12- 1-89	11:37	19

Determination	Method/Standard	Result Units	Charge Code	Rerun
P04	LA-533-105	% RECOVERY	WB75L	0

Sample Size: 100-10

Customer ID: 089076

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 6C1140

KP

607.9 / 599 101.5%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst 5
GB107/LEW				
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date 4/5/90 | Time Completed | Lab Unit Mgr QP

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 429.-7274	SEGMENT-N	11-30-89	8: 8	19

Determination	Method/Standard	Result Units	Charge Code	Rerun
P04	LA-533-105	% RECOVERY	WB75L	0

Sample Size: ? 100-10

Customer ID: 089070

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID 3529-77
SPIKE VOLUME .300/5 ml

See Reverse Side

QP

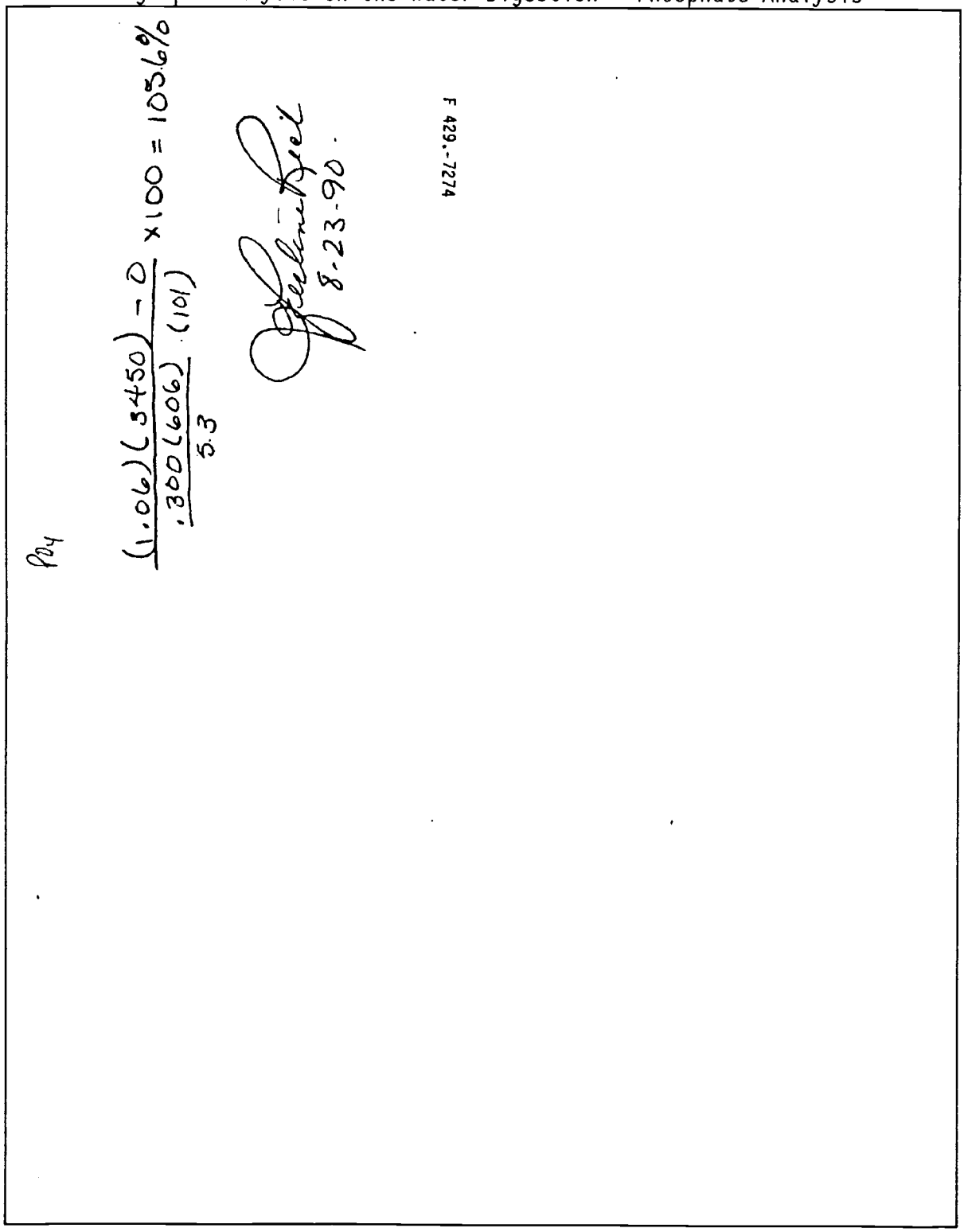
$\frac{1.01(3.452^3)}{3464.5} \times 100 = 106.6\%$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst 5
GB107/LEW				
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date 4/5/90 | Time Completed | Lab Unit Mgr QP

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

Ion Chromatograph Analysis on the Water Digestion - Phosphate Analysis



Serial No.	Sample Point	Date	Time Issued	Priority
F 438.-7375	SEGMENT-W	11-30-89	8: 9	18

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

Sample Size: ? Direct
Customer ID: 089070
Remarks, Calculations, Results:
REAGENT BLANK
<1 ppm

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

Date: 4/5/90 | Time Completed: | Lab Unit Mgr:

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 426.-7575	SEGMENT-K	11-30-89	8: 7	19

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

Sample Size: 100-10
Customer ID: 089070
Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 6C1140
100.8%
6268/622

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

Date: 4/5/90 | Time Completed: | Lab Unit Mgr:

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 548.-7175	SEGMENT-M	12- 1-89	11:32	19

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

Sample Size: ? 100-10
Customer ID: 089075
Remarks, Calculations, Results:
DUPLICATE SAMPLE
3.79' ppm

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

Date: 4/5/90 | Time Completed: | Lab Unit Mgr:

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

Serial No	Sample Point	Date	Time Issued	Priority
F 547.-7075	SEGMENT-L	12- 1-89	11:32	19

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

Sample Size: ? 100-10
Customer ID: 089075
Remarks, Calculations, Results:
4.64' ppm

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

Date: 4/5/90 | Time Completed: | Lab Unit Mgr:

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 574.-7575	SEGMENT-0	12- 1-89	11:37	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
S04	LA-533-105	% RECOVERY	WB75L	0

Sample Size: 100-10

Customer ID: 089076

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 6C1145

625.2/622 100.5%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/new				
Hrs: .5	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
4/5/90		

54-5600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 429.-7275	SEGMENT-N	11-30-89	8: 8	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
S04	LA-533-105	% RECOVERY	WB75L	0

Sample Size: ? 100-10

Customer ID: 089070

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID 3509-77
SPIKE VOLUME 300/5ml

See Reverse Side

$\frac{1.07(3.527^3 - 3.01^1)}{3355.9} \times 100 = 111.5\%$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/new				
Hrs: .5	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
4/5/90		

54-5600-081 (R-10-83)

Ion Chromatograph Analysis on the Water Digestion - Sulfate Analysis

$$SO_4 \quad \frac{(1.06)(3530) - (30.1)\left(\frac{9.746}{10.39}\right)}{\frac{.300(589)}{5.3}(101)} \times 100 =$$

$$= 110.3\%$$

08-23-90

F 429-7275

Serial No.	Sample Point	Date	Time Issued	Priority
F 438.-7371	SEGMENT-W	11-30-89	8: 9	18

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

Sample Size: ? Direct

Customer ID:

Remarks, Calculations, Results:
REAGENT BLANK

RERUN

<1 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/MEW				
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date 4/12/90 Time Completed 4/14 Lab Unit Mgr QL

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 426.-7571	SEGMENT-K	11-30-89	8: 7	19

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 6C11-40

RERUN

54.5/60.0 90.8%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/MEW				
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date 4/12/90 Time Completed 4/16 Lab Unit Mgr QL

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 548.-7171	SEGMENT-M	12- 1-89	11:32	19

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

Sample Size: ? 100-10

Customer ID:

Remarks, Calculations, Results:
DUPLICATE SAMPLE

RERUN

1.75 ppm ~~1.745 ppm~~

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/MEW				
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date 4/12/90 Time Completed 4/16 Lab Unit Mgr QL

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 547.-7071	SEGMENT-L	12- 1-89	11:32	19

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

Sample Size: ? 100-10

Customer ID:

Remarks, Calculations, Results:

RERUN

2.08 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/MEW				
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date 4/12/90 Time Completed 4/14 Lab Unit Mgr QL

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

Sample No.	Sample Pt:	Date	Time Issued	Priority
F 429.-7271	SEGMENT-N	11-30-89	8: 8	19

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

Sample Size: ? 100-10 | Customer ID:

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID 3529-79
SPIKE VOLUME 300/5ml

See Reverse Side **RERUN**

(99)

$$\frac{1.9(2.921^2 - 1.22^1)}{289.13} \times 100 = 105.08\%$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/REW				
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
4/12/90	4/16	

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 574.-7571	SEGMENT-O	12- 1-89	11:36	19

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 6011-HO

RERUN

91.8%

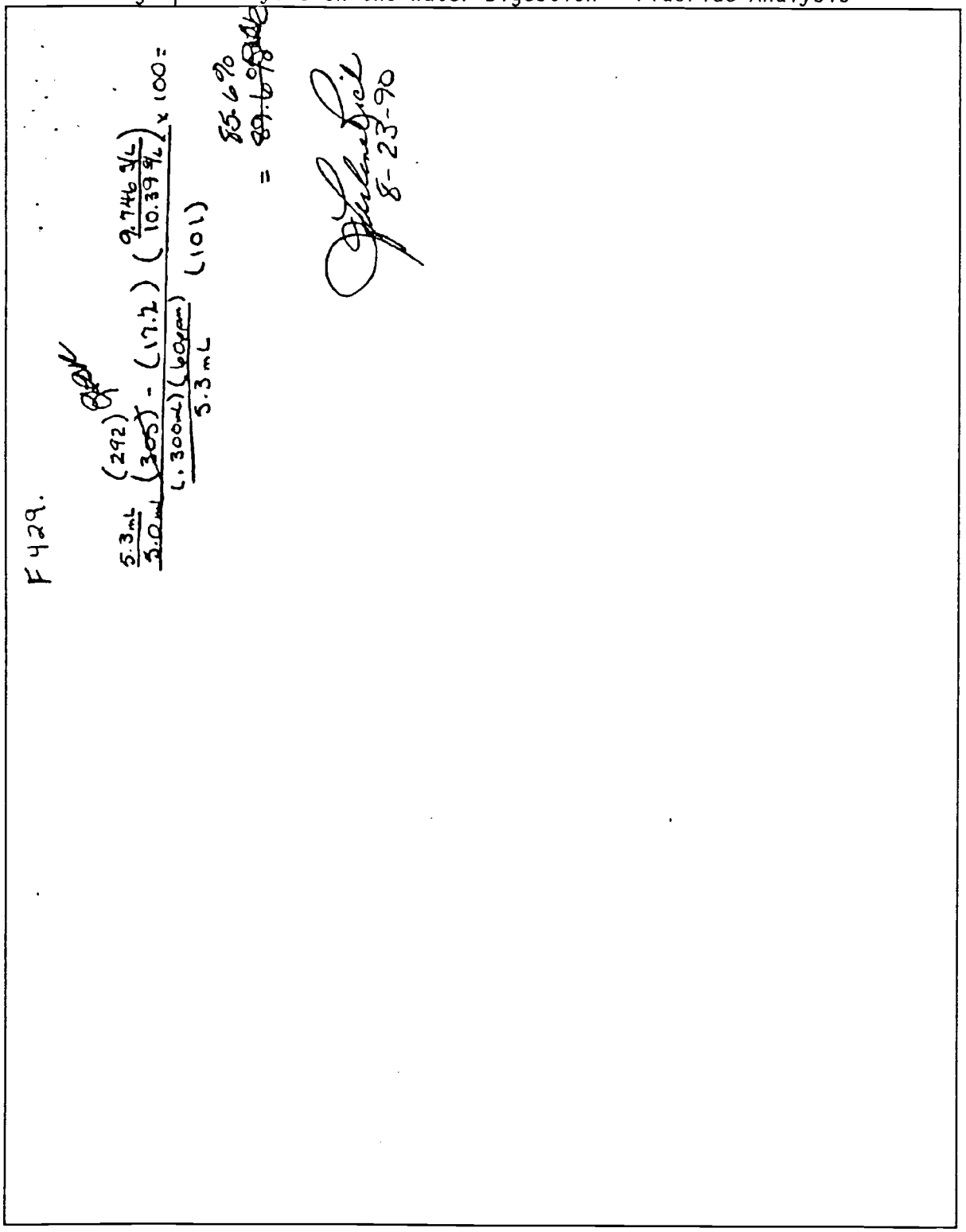
55.1/60.0

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/REW				
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
4/12/90	4/16	

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

Ion Chromatograph Analysis on the Water Digestion - Fluoride Analysis



Serial No.	Sample Point	Date	Time Issued	Priority
F 558.-7326	SEGMENT-W	12- 1-89	11:33	18

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

Sample Size: ? 200uL

Customer ID: 089075

Remarks, Calculations, Results:
REAGENT BLANK

3.0 mg

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80027				
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		
3-15-90				

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 546.-7526	SEGMENT-K	12- 1-89	11:32	19

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

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

Customer ID: 089075

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 70C11C

98.8% LCMS

2.964 g/l / 3.000

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80027				
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		
3-15-90				

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 548.-7126	SEGMENT-M	12- 1-89	11:32	19

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

Sample Size: ? 1mL+100uL.5m H_2SO_4-200uL

Customer ID: 089075

Remarks, Calculations, Results:
DUPLICATE SAMPLE

7.15^{-3} g/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80027				
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		
3-15-90				

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 547.-7026	SEGMENT-L	12- 1-89	11:32	19

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

Sample Size: ? 1mL+100uL.5m H_2SO_4-200uL

Customer ID: 089075

Remarks, Calculations, Results:

4.95^{-3} g/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		
3-15-90				

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 550.-7526	SEGMENT-O	12- 1-89	11:33	19

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

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

Customer ID: 089075

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 70C11C

2.97/3.00 = 99.0% RMS

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
70028				[illegible]
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cole				
Date	Time Completed	Lab Mgr		
3-15-90		[illegible]	SK	

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 549.-7226	SEGMENT-N	12- 1-89	11:32	19

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

Sample Size: ? 200uL+100uL .5m H_2SO_4 -200uL

Customer ID: 089075

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID 70C11
SPIKE VOLUME 200uL

SEE Reverse Side (QP)

(120.7-3.00) - (3.9-3.00) = 119.9 = 99.4%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
70028				[illegible]
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cole				
Date	Time Completed	Lab Mgr		
3-15-90		QP	SK	

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

Total Organic Carbon Analysis on the Water Digestion

FO549.-7226

JR Pritchik

$$\frac{117.7\mu g - (0.9\mu g)\left(\frac{11.4\ g/l}{12.1\ g/l}\right)}{\left(\frac{300\mu g}{.5ml}\right).2ml} \times 100 = 97.4\%$$

80C11: $(1500\mu g/ml)(.2ml) = 300\mu g$.

Serial No.	Sample Point	Date	Time Issued	Priority
F 553.-8100	SEGMENT-R	12- 1-89	11:33	23

Determination	Method/Standard	Result Units	Charge Code	Rerun
ACD-DGST	LA-505-159	G/L	WB75L	0

Sample Size: ?

Customer ID: 089075

SEQUENCE # : 136
WT 1: 82.6741
WT 2: 83.1325

NET WEIGHT:

---> 0.5084 GRAMS

04/26/90 @ 09:43:52

1.02x10' g/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65283				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
4-26-90		

84-8800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 552.-8000	SEGMENT-Q	12- 1-89	11:33	23

Determination	Method/Standard	Result Units	Charge Code	Rerun
ACD-DGST	LA-505-159	G/L	WB75L	0

Sample Size: ?

Customer ID: 089075

SEQUENCE # : 135
WT 1: 82.0777

WT 2: 83.7922

NET WEIGHT:

---> 0.5145 GRAMS

04/26/90 @ 09:39:28

#314 2.909

1.63x10' g/l

CN3134

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65283				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
4-26-90		

84-8800-081 (R-10-83)

F0554 and F0559 Not Available

Serial No.	Sample Point	Date	Time Issued	Priority
F 552.-8050	SEGMENT-Q	12- 1-89	11:33	23

Determination	Method/Standard	Result Units	Charge Code	Rerun
ICP	LA-505-151	PPM	WB75L	0

Sample Size: ? .1mL-10mL & .5mL-10mL

Customer ID: 089075

Remarks, Calculations, Results:

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65283				
Hrs	Hrs	Hrs	Hrs	Hrs
Janice A. White			[signature]	

Date	Time Completed	Lab Unit Mgr
5-14-90	8/21/90	[signature] Kathy Romelike

84-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 553.-8150	SEGMENT-R	12- 1-89	11:33	23

Determination	Method/Standard	Result Units	Charge Code	Rerun
ICP	LA-505-151	PPM	WB75L	0

Sample Size: ? .1mL-10mL & .5mL-10mL

Customer ID: 089075

Remarks, Calculations, Results:
DUPLICATE SAMPLE

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65283				
Hrs	Hrs	Hrs	Hrs	Hrs
Janice A. White			[signature]	

Date	Time Completed	Lab Unit Mgr
5-14-90	8/21/90	[signature] Kathy Romelike

84-6600-081 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
F 583.-8350	SEGMENT-X	12- 1-89	11:38	18

Determination	Method/Standard	Result Units	Charge Code	Rerun
ICP	LA-505-151	PPM	WB75L	0

Sample Size: ? Direct

Customer ID: 089076

Remarks, Calculations, Results:
REAGENT BLANK

complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65283				
Hrs	Hrs	Hrs	Hrs	Hrs
Janice White				

Date	Time Completed	Lab Unit Mgr
4-30-90	8/21/90	[signature]

84-6600-081 (R-10-83)

APPENDIX B
ANALYTICAL DETECTION LIMITS

SINGLE SHELL TANK PROJECT
Analytical Detection Limits
October 12, 1990

The following detection limits are derived on ideal matrices. These values were derived by using either calibration standards or pure matrix standards. Detection limits on actual single shell tank samples are likely to be much higher. No information regarding procedure detection limits is available for procedures not listed in this report.

Procedure LA-355-131
Arsenic Analysis by Hydride Generation Atomic Absorption

Detection Limit = 0.005 ppm in solution
Typical sample dilution for the Fusion Dissolution was 0.0025g/mL.
Typical sample dilution for the Water Digestion was 0.010g/mL.
Typical sample dilution for the acid Digestion was 0.010g/mL.

Procedure LA-325-102
Mercury Analysis by Atomic Absorption Manual Cold Vapor Technique

Detection Limit = 0.002 ppm in solution
Typical sample dilution for the Fusion Dissolution was 0.0025g/mL.
Typical sample dilution for the Water Digestion was 0.010g/mL.
Typical sample dilution for the acid Digestion was 0.010g/mL.
Solids were analyzed directly.

Procedure LA-362-131
Selenium Analysis by Hydride Generation Atomic Absorption

Detection Limit = 0.005 ppm in solution
Typical sample dilution for the Fusion Dissolution was 0.0025g/mL.
Typical sample dilution for the Water Digestion was 0.010g/mL.
Typical sample dilution for the acid Digestion was 0.010g/mL.

Procedure LA-533-105
Anion Analysis on Dionex Model 4000i

Typical sample dilution was 0.000099g/mL

Fluoride
Detection Limit in solution = 0.09 ppm.

Chloride
Detection Limit in solution = 0.04 ppm.

Nitrate
Detection Limit in solution = 0.24 ppm.

Phosphate
Detection Limit in solution = 0.13 ppm.

Sulfate
Detection Limit in solution = 0.13 ppm.

Procedure LA-622-102
Determination of Carbonate in Solutions by Coulometry

Detection Limit = 5 ppm in solution
Typical sample dilution was 0.01g/mL

Procedure LA-344-105
Total Organic Carbon
Determination of Carbon Insolation by Combustion and Coulometry

Detection Limit = 5.5 ppm in solution
Typical sample dilution was 0.01g/mL

Procedure LA-505-151
Inductively Coupled Plasma (ICP) Emission Spectrometer Operations and Analysis

Typical sample dilution for the Fusion Dissolution was 0.00019g/mL.

Typical sample dilution for the Water Digestion was 0.000476g/mL.

Typical sample dilution for the acid Digestion was 0.000476g/mL.

Instrument Detection Limit ppm.

Aluminum	0.0745	Antimony	0.1424
Arsenic	0.0223	Barium	0.0026
Beryllium	0.0006	Bismuth	0.0839
Boron	0.0083	Cadmium	0.0039
Calcium	0.0002	Cerium	0.1359
Chromium	0.0039	Cobalt	0.0246
Copper	0.0158	Europium	0.0024
Iron	0.0073	Lanthanum	0.0141
Lead	0.0273	Lithium	0.0032
Magnesium	0.0001	Manganese	0.0011
Mercury	0.0036	Molybdenum	0.0049
Neodymium	0.2130	Nickel	0.0147
Phosphorous	0.0308	Potassium	0.2122
Samarium	0.1525	Selenium	0.0631
Silicon	0.0314	Silver	0.0183
Sodium	0.0483	Strontium	0.0010
Sulfur	0.0163	Tantalum	0.0273
Thallium	0.0646	Thorium	0.0122
Tin	0.0144	Titanium	0.0035
Tungsten	0.0273	Uranium	1.1405
Vanadium	0.0186	Zinc	0.0017
Zirconium	0.0141		

012367

3 of 8

Westinghouse
Hanford Company

P.O. Box 1970 Richland, WA 99352

222-S/RCRA Analytical Laboratories

Project:	Single-Shell Tank Waste Characterization
Tank:	241-U-110
Core:	13
Segment:	4
Customer Id. Number:	89-076
Report Revision:	1
Date Printed:	October 16, 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 through 200.
Appendix A consists of pages A-1 through A-42.
Appendix B consists of pages B-1 through B-2.

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.

Dennis K. Sato
Data Coordinator

Date Oct 23, 1990

Cary M Seidel
Cary M. Seidel
Unit Manager

Date Oct. 23, 1990

L. H. Taylor
Larry H. Taylor
Laboratory Q.A. Officer

Date Oct. 30, 1990

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 4 from core 13 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

6

CHAIN-OF-CUSTODY RECORD FOR CORE SAMPLING

(1) Shipment Number 5-034-89 (2) Sample Number 89-076 (3) Supervisor DC Hartley

(4) Tank 110 4 (5) Riser 2 (6) Segment 4 (7) Cask Serial Number 1004 C

Radiation Survey Data:	(8) FIELD	(20) · LABORATORY
Over Top Dose Rate	LO.5 MR/HR	
Side Dose Rate	3.0 MR/HR	2 MR/HR
Bottom Dose Rate	3.5 MR/HR	1.5 MR/HR
Smearable Contamination	<DET (alpha)	LD (alpha)
	<DET (beta-gamma)	LD (beta-gamma)
	RPT RA Bird (Signature)	RPT DL Morse (Signature)

(9) Shipment Description:

A. Work Package Number	2W-89-01060/W
B. Cask Seal Number	For Future Use
C. Sampler Number Used	17
D. Date and Time Sampler Unseated	11/30/89, 1825
E. Expected Liquid Content	10%
F. Expected Solid Content	90%
G. Dose Rate Through Drill String	150 MR/HR
H. Expected Sample Length	19"

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

Core #13

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
241-4 110	DC Hartley / DC Hartley	~~11-30-89~~ 12-1-89 1020	2225 / Hillwest	Vida Boyle / Vida Boyle	12.1.89 10:30

(15) Seal Intact Upon Release?	(18) Seal Intact Upon Receipt?	(19) Seal Data Consistent with this Record?	
		Shipment No.	Sample No.
☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No

Single Shell Tank Waste Characterization
Summary of Core Sample

TANK ID:	241-U-110
RISER ID:	2
CORE ID:	#13

DATE SAMPLING INITIATED:	11-30-89
DATE SAMPLING COMPLETED:	11-30-89

SEGMENT		
1	Lab Serial No.	F0489
	Customer ID No.	89-073
	Last Segment?	NO
2	Lab Serial No.	F0513
	Customer ID No.	89-074
	Last Segment?	NO
3	Lab Serial No.	F0537
	Customer ID No.	89-075
	Last Segment?	NO
4	Lab Serial No.	F-0561
	Customer ID No.	89-076
	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

Results are reported as wet sample weight.

Tank: 241-U-110
Core: 13
Segment: 4
Customer Id.: 89-076

Untreated Sample Results

	Sample	Duplicate
pH	12.52	12.81
Percent Water	44.68%	46.78%

Fusion Analysis Results

	Sample	Duplicate
Fusion Digestion	2.74 g/L	2.03 g/L
Total Alpha	6.28E-01 uci/g	<6.85E-01 uci/g
Total Beta	6.82E+02 uci/g	1.13E+03 uci/g
GEA		
Cs-137	2.60E+01 uci/g	2.54E+01 uci/g
Uranium	3.90E+03 ug/g	3.57E+03 ug/g

Water Digestion Results

	Sample	Duplicate
Water Digestion	9.21 g/L	10.16 g/L
Ion Chromatogragh		
Fluoride	1.63E+03 ug/g	4.30E+03 ug/g
Chloride	2.46E+03 ug/g	2.31E+03 ug/g
Nitrate	9.02E+04 ug/g	7.68E+04 ug/g
Phoshate	1.08E+04 ug/g	8.57E+03 ug/g
Sulfate	5.49E+03 ug/g	4.75E+03 ug/g
Total Organic Carbon	8.96E+02 ug/g	7.58E+02 ug/g

Acid Digestion Results

	Sample	Duplicate
Aluminum	52577 ug/g	41871 ug/g
Antimony	LT	LT
Barium	LT	28 ug/g
Beryllium	LT	2 ug/g
Bismuth	18525 ug/g	15441 ug/g
Boron	LT	69 ug/g
Cadmium	LT	LT
Calcium	388 ug/g	365 ug/g
Cerium	LT	LT
Cobalt	LT	LT
Copper	LT	61 ug/g
Europium	LT	LT
Iron	27355 ug/g	27174 ug/g
Lanthanum	LT	7 ug/g
Lead	264 ug/g	593 ug/g
Lithium	LT	LT
Magnesium	133 ug/g	142 ug/g
Manganese	3769 ug/g	3699 ug/g
Mercury	460 ug/g	361 ug/g
Molybdenum	LT	LT
Nickel	LT	139 ug/g
Potassium	LT	LT
Samarium	LT	LT
Selenium	LT	630 ug/g
Silver	LT	LT
Sodium	93097 ug/g	85924 ug/g
Strontium	353 ug/g	325 ug/g
Sulfur	1133 ug/g	1090 ug/g
Tantalum	LT	LT
Thallium	LT	709 ug/g
Thorium	LT	LT
Tin	LT	LT
Titanium	LT	LT
Uranium	LT	4102 ug/g
Vanadium	LT	LT
Zinc	189 ug/g	194 ug/g
Zirconium	LT	101 ug/g

LT: Less Than Instrument Detection Limit.

PHYSICAL TEST RESULTS

Single Shell Tank
Extrusion of Segment -- Physical Tests

LAB SEGMENT SERIAL #: F0561 CUSTOMER ID: 89-076

ANALYST: Don Herting DATE EXTRUDED: October 25, 1990

DRAINABLE LIQUID Liquid Submitted for Segment Analysis? -- NO

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

APPEARANCE OF LIQUID: Observed liquid was clear.

DIMENSIONS OF SEGMENT

Completed Segment Obtained? NO	LENGTH: 8.0 in.	CALCULATED VOLUME: 6.28 in^3
REMARKS	None	

APPEARANCE OF SOLIDS: The solid sample was slightly soft. Most of the solids were dark brown. The top 1" was chocolate brown. Some hard "chunks" noted in the solids.

PENETROMETER	N/A lbs/sq in	REMARKS: None

HOMOGENIZATION

PROCEDURE: T038A-00712 REVISION: F		QUANTITY OF MATERIAL: 150.69	GRAMS
DATE HOMOGENIZED: 02-15-90		TIME HOMOGENIZED: 5.0	MINUTES
OPERATOR: Fran. Steen			

LABORATORY NOTEBOOK REFERENCE	WHC-N-313-4	29
	Notebook No.	Page No.

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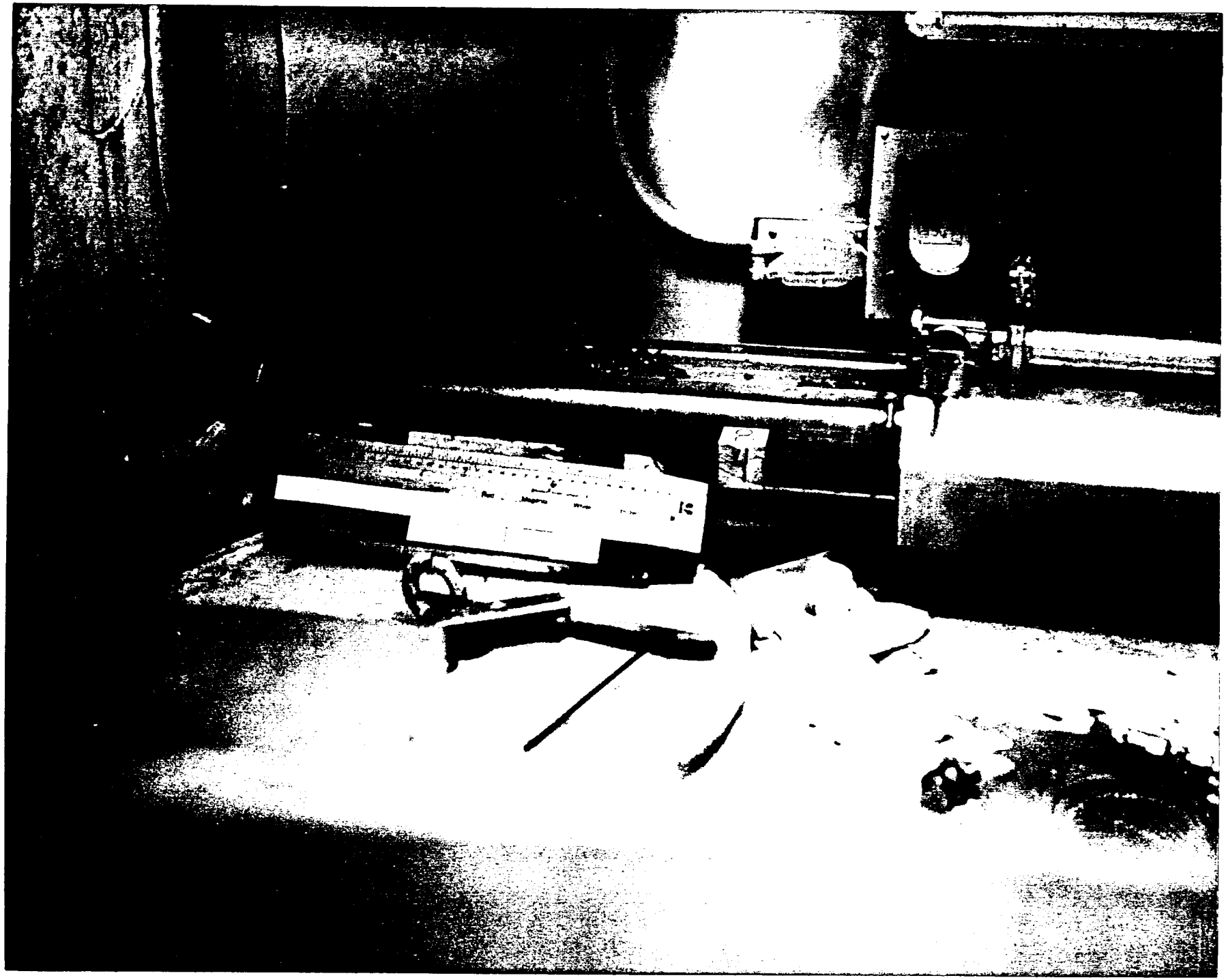
Single Shell Tank
Segment -- Subsamples

Lab Segment Serial #: F0561		Customer ID: 89-076
Volatile Organic Analysis		
VOA Sample	Lab Serial #: 89-076-275	Date Sampled: 01-25-90
Sample shipped to PNL		
Particle Size Distribution Analysis		
Particle Size Sample	Lab Serial #: F0561	Date Sampled: 01-25-90
Homogenized Solids		
Undigested Solids Analysis		
Laboratory Serial Number For Sample:	F0561	Date Sampled: 02-15-90
Laboratory Serial Number of Duplicate Sample:	F0562	
Fusion Analysis of Solids		
Laboratory Serial Number of Sample:	F0566	Date Sampled: 02-15-90
Laboratory Serial Number of Duplicate Sample:	F0567	
Laboratory Serial Number of Spiked Sample:	F0568	
Acid Digestion Analysis of Solids		
Laboratory Serial Number of Sample:	F0576	Date Sampled: 02-15-90
Laboratory Serial Number of Duplicate Sample:	F0577	
Laboratory Serial Number of Spiked Sample:	F0578	
Water Digestion Analysis of Solids		
Laboratory Serial Number of Sample:	F0571	Date Sampled: 02-15-90
Laboratory Serial Number of Duplicate Sample:	F0572	
Laboratory Serial Number of Spiked Sample:	F0573	

Laboratory Notebook Reference	WHC-N-313-4	34
	Notebook No.	Page No.

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



TANK 241-U-110, CORE 13, SEGMENT 4

Brinkmann

Particle Size Analyzer

PROCESS CHEMISTRY LABS PARTICLE ANALYSIS VIA BRINKMANN P910 STATISTICS

SAMPLE NAME : SST,B000276,F0561,GLY,SBK
FILE NAME : F0561.002

DATE	: 22/02/1990	ACQ. RANGE	: 0.5-150	COUNTS	: 23947
TIME	: 09:39	ACQ. MODE	: SAMPLE	S.N.F.	: 0.89
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 138 SEC	S.D.U.	: 3507
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 3	CONCENTR.	: 4.5E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 3.0E-02 %

	MEAN Diameter	S.D.
Number, Length :	1.25 µm	1.73 µm
Number, Area :	2.14 µm	1.94 µm
Number, Volume :	5.03 µm	4.15 µm
Length, Area :	3.64 µm	9.39 µm
Length, Volume :	10.07 µm	11.38 µm
Area, Volume :	27.85 µm	35.42 µm
Volume, Moment :	72.90 µm	84.16 µm

	MEDIAN Diameter	MODE	CONFIDENCE
Number :	0.85 µm	0.75 µm	100.00%
Area :	6.84 µm	89.03 µm	64.83%
Volume :	82.05 µm	89.03 µm	98.86%

organics present in sample; dispersed in EtOH-glycerine

SAMPLE NAME : SST,B000276,F0561,GLY,SBK
FILE NAME : F0561.002

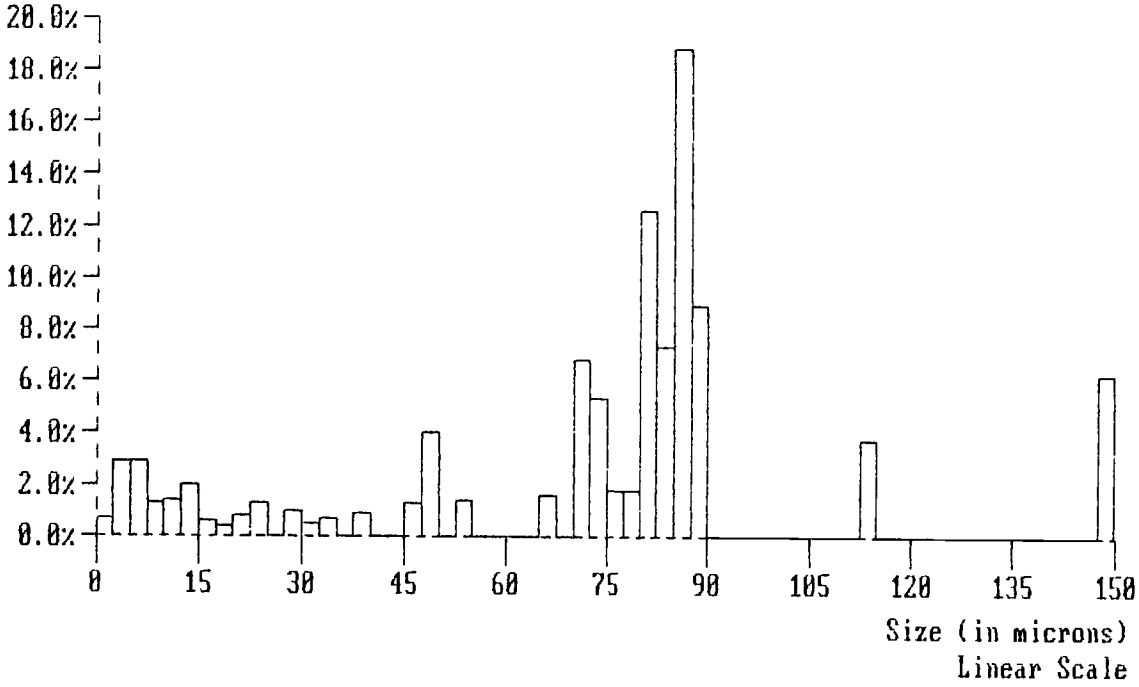
DATE	: 22/02/1990	ACQ. RANGE	: 0.5-150	COUNTS	: 23747
TIME	: 09:39	ACQ. MODE	: SAMPLE	S.N.F.	: 0.89
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 130 SEC	S.D.U.	: 3507
CELL TYPE	: MAGNETIC (S)	SAMPLE SIZE	: 3	CONCENTR.	: 4.5E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 3.0E-02 %

PROBABILITY VOLUME DENSITY GRAPH

Name: SST,B000276,F0561,GLY,SBK
3.0E-04 cc/ml(100.0%)
Mode at 86.25 µm
<< SCALE RANGE (µm): ADJUSTED >>

Mean(nv): 5.03µm
S.D.(nv): 4.15µm

Median : 82.05µm
Mean(vm): 72.90µm
S.D.(vm): 34.16µm
Conf(vm): 98.86 %



SAMPLE NAME : SST,B000276,F0561,GLY,SBK
FILE NAME : F0561.002

DATE	: 22/02/1990	ACQ. RANGE	: 0.5-150	COUNTS	: 23947
TIME	: 09:39	ACQ. MODE	: SAMPLE	S.N.F.	: 0.89
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 130 SEC	S.D.U.	: 3507
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 3	CONCENTR.	: 4.5E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 3.0E-02 %

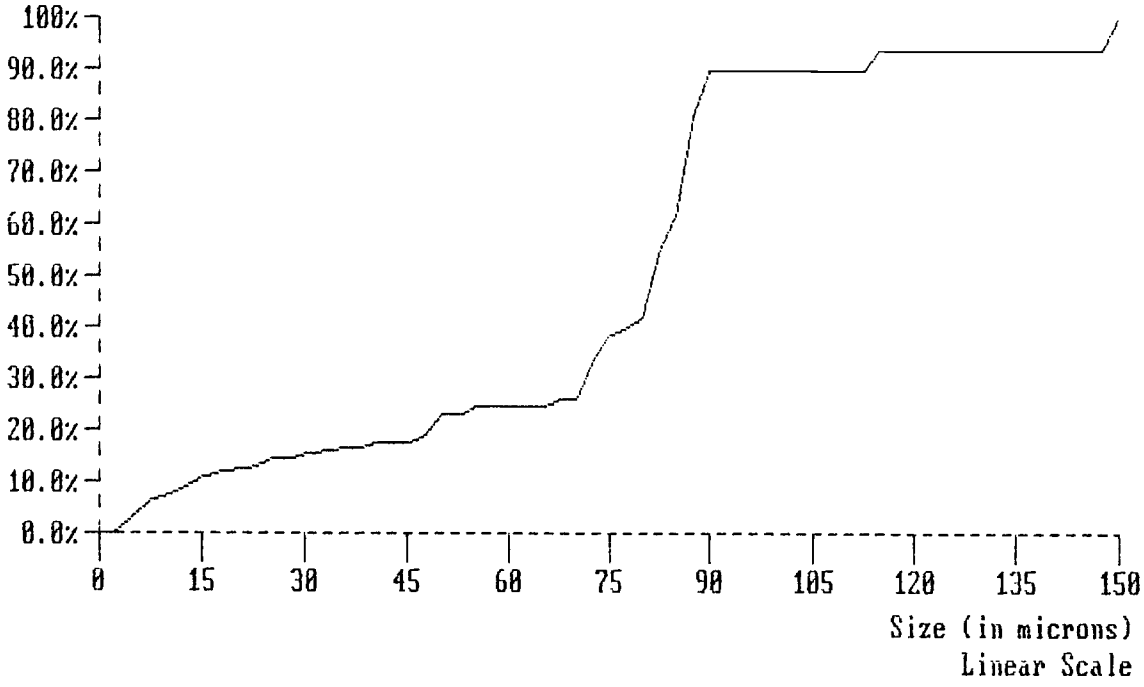
PROBABILITY VOLUME DISTRIBUTION GRAPH

Name: SST,B000276,F0561,GLY,SBK
3.0E-04 cc/ml(100.0%)

Mean(nv): 5.03µm
S.D.(nv): 4.15µm

Median : 82.05µm
Mean(vm): 72.90µm
S.D.(vm): 34.16µm
Conf(vm): 98.86 %

<< SCALE RANGE (µm): ADJUSTED >>



Brinkmann

Particle Size Analyzer

PROCESS CHEMISTRY LABS PARTICLE ANALYSIS VIA BRINKMANN 2010

STATISTICS

SAMPLE NAME : SST,B000276,F0561,GLY,SBK
FILE NAME : F0561.003

DATE	: 22/02/1990	ACQ. RANGE	: 0.5-60	COUNTS	: 26463
TIME	: 09:44	ACQ. MODE	: SAMPLE	S.N.F.	: 0.87
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 137 SEC	S.D.U.	: 3408
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 3	CONCENTR.	: 5.0E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 1.1E-02 %

	MEAN Diameter	S.D.
Number, Length :	1.09 µm	1.38 µm
Number, Area :	1.76 µm	1.53 µm
Number, Volume :	3.47 µm	2.75 µm
Length, Area :	2.84 µm	5.51 µm
Length, Volume :	6.19 µm	6.45 µm
Area, Volume :	13.52 µm	16.28 µm
Volume, Moment :	33.12 µm	17.44 µm

	MEDIAN Diameter	MODE	CONFIDENCE
Number :	0.76 µm	0.55 µm	99.94%
Area :	5.48 µm	4.86 µm	67.52%
Volume :	37.11 µm	49.19 µm	97.57%

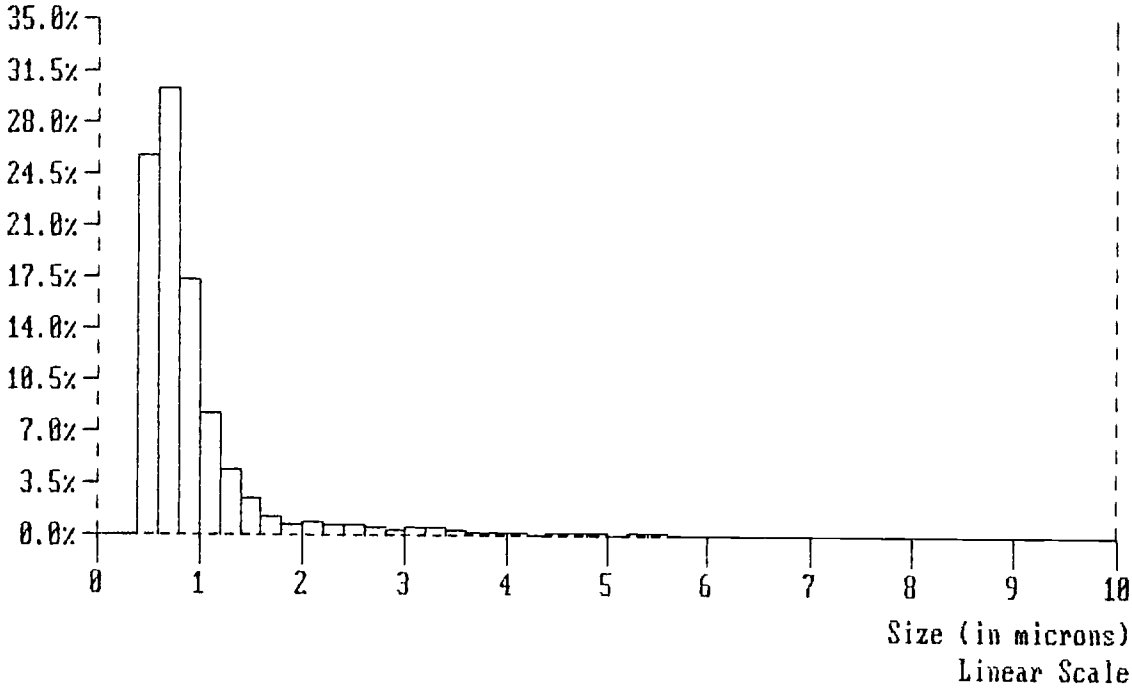
SAMPLE NAME : SST,B000276,F0561,GLY,SBK
FILE NAME : F0561.003

DATE	: 22/02/1990	ACQ. RANGE	: 0.5-60	COUNTS	: 24463
TIME	: 09:44	ACQ. MODE	: SAMPLE	S.N.F.	: 0.87
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 137 SEC	S.D.U.	: 3408
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 3	CONCENTR.	: 5.0E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 1.1E-02 %

PROBABILITY NUMBER DENSITY GRAPH

Name: SST,B000276,F0561,GLY,SBK
5.0E+06 #/ml(99.8%)
Mode at 0.70 µm
<< SCALE RANGE (µm): 0 - 10 >>

Local Median : 0.76µm
Local Mean(nl): 1.05µm
Local S.D.(nl): 0.98µm
Local Conf(nl): 100.00 %



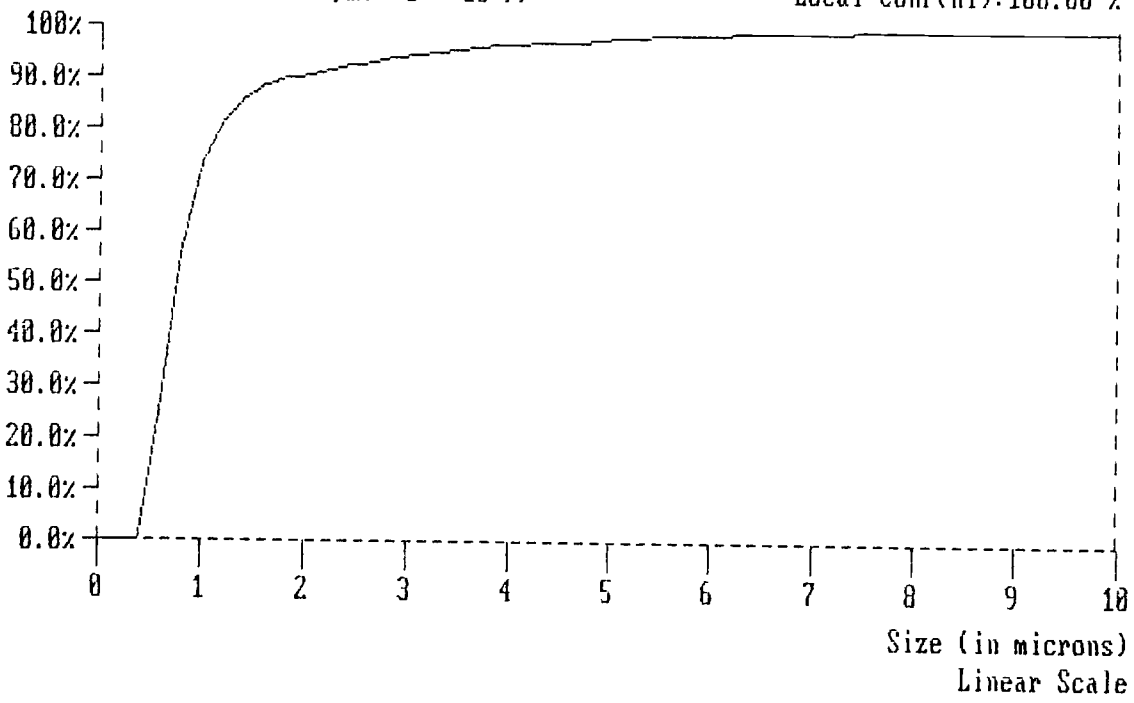
SAMPLE NAME : SST,B000276,F0561,GLY,SBK
FILE NAME : F0561.003

DATE	: 22/02/1990	ACQ. RANGE	: 0.5-60	COUNTS	: 26463
TIME	: 09:44	ACQ. MODE	: SAMPLE	S.N.F.	: 0.87
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 137 SEC	S.D.U.	: 3408
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 3	CONCENTR.	: 5.0E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 1.1E-02 %

PROBABILITY NUMBER DISTRIBUTION GRAPH

Name: SST,B000276,F0561,GLY,SBK
5.0E+06 #/ml(99.8%)

Local Median : 0.76µm
Local Mean(nl): 1.05µm
Local S.D.(nl): 0.98µm
Local Conf(nl):100.00 %



UNDIGESTED SAMPLE ANALYSIS

Single Shell Tank Project

Untreated Sample Results

Tank: 241-U-110
Core: 13
Segment: 4
Customer ID: 89-076

	Check Standard	Blank		Sample	Sample Duplicate	Check Standard
Laboratory ID:	F0560	F0581		F0561	F0562	F0564
pH	100.10%	7.75		12.52	12.81	100.40%
Laboratory ID:	F0416	F0437		F0561	F0562	F0564
%Water	98.30%	6.2	mg	44.68%	46.78%	96.95%

Analytical Batch

LAB SEGMENT SERIAL #:F0561

CUSTOMER ID:89-076

INSTRUMENT	AL10653
PROCEDURE/REV	LA-212-103/A-1
TECHNOLOGIST	M. Franz
DATE	March 09, 1990
TEMPERATURE	24.0 C
STARTING TIME	1530
ENDING TIME	1930
CHEMIST	R. E. Brandt

pH Analysis of the Solid Sample

	DESCRIPTION	LAB ID
1	Initial LMCS Check Std.	F0560
2	Reagent Blank	F0581
3	Sample 89-076	F0561
4	Duplicate Sample 89-076	F0562
5	Final LMCS Check Std.	F0564
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 Standard	72C11-B/1.0 mL			1.0 mL

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

Analytical Batch

LAB SEGMENT SERIAL #:F0561

CUSTOMER ID:89-076

INSTRUMENT	N/A
PROCEDURE/REV	LA-564-101/D-1
TECHNOLOGIST	R. D. Hale
DATE	March 05, 1990
TEMPERATURE	120 C
STARTING TIME	1400 03-01-90
ENDING TIME	1430 03-02-90
CHEMIST	R. E. Brandt

% Water in Sample

	DESCRIPTION	LAB ID
1	Initial LMCS Check Std.	F0416
2	Reagent Blank	F0437
3	Sample 89-076	F0561
4	Duplicate Sample 89-076	F0562
5	Final LMCS Check Std.	F0564
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 Standard	11C11AH/1.0 mL			1.0 mL

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

KOH FUSION ANALYSIS

Single Shell Tank Project

Fusion Analysis
Laboratory Results of Solids
Units Are Sample Wet Weight

Tank: 241-U-110
Core: 13
Segment: 4
Customer ID: 89-076

	Check Standard	Blank		Sample		Sample Duplicate		Spike of Sample	Check Standard
Laboratory ID:		F0436		F0566		F0567			
Fusion Digestion		Complete		2.74	g/L	2.03	g/L		
Laboratory ID:	F0565	F0580		F0566		F0567		F0568	F0569
Total Alpha	99.70%	<1.11E-04	uci/L	6.28E-01	uci/g	<6.85E-01	uci/g	101.40%	100.80%
Total Beta	104.70%	<7.37E-04	uci/L	6.82E+02	uci/g	1.13E+03	uci/g	*	103.70%
Laboratory ID:	F0421	F0436		F0566		F0567		F0568	F0569
GEA Cs-137	98.30%	<4.81E-04	uci/L	2.60E+01	uci/g	2.54E+01	uci/g	93.50%	97.30%
Laboratory ID:	F0565	F0580		F0566		F0567		F0568	F0569
Uranium	90.60%	<1.22E+02	ug/L	3.90E+03	ug/g	3.57E+03	ug/g	99.70%	90.60%

* Spike Too Low To Calculate.

Single Shell Tank Project

Fusion Analysis

Results of the Laboratory DIgestions

Tank: 241-U-110
Core: 13
Segment: 4
Customer ID: 89-076

	Check Standard	Blank		Sample		Sample Duplicate		Spike of Sample	Check Standard
Laboratory ID:		F0436		F0566		F0567			
Fusion Digestion		Complete		2.74	g/L	2.03	g/L		
Laboratory Id:	F0565	F0580		F0566		F0567		F0568	F0569
Total Alpha	99.70%	<1.11E-04	uci/L	1.72	uci/L	<1.39	uci/L	101.40%	100.80%
Total Beta	104.70%	<7.37E-04	uci/L	1.87E+03	uci/L	2.30E+03	uci/L	*	103.70%
Laboratory ID:	F0421	F0436		F0566		F0567		F0568	F0569
GEA Cs-137	98.30%	<4.81E-04	uci/L	7.12E+01	uci/L	5.16E+01	uci/L	93.50%	97.30%
Laboratory ID:	F0565	F0580		F0566		F0567		F0568	F0569
Uranium	90.60%	<1.22E+02	ug/L	1.07E-02	g/L	7.25E-03	g/L	99.70%	90.60%

*Spike Too Low To Calculate

Analytical Batch

LAB SEGMENT SERIAL #:F0561

CUSTOMER ID:89-076

INSTRUMENT	N/A
PROCEDURE/REV	LA-549-141/A-1
TECHNOLOGIST	R. D. Hale
DATE	March 10, 1990
TEMPERATURE	450 C
STARTING TIME	0800
ENDING TIME	1200
CHEMIST	S. A. Catlow

Fusion Dissolution

	DESCRIPTION		LAB ID
1	Reagent Blank		F0436
2	Sample	89-070	F0422
3	Duplicate Sample	89-070	F0423
4	Sample	89-071	F0446
5	Duplicate Sample	89-071	F0447
6	Sample	89-072	F0470
7	Duplicate Sample	89-072	F0471
8	Sample	89-075	F0542
9	Duplicate Sample	89-075	F0543
10	Sample	89-076	F0566
11	Duplicate Sample	89-076	F0567

	DESCRIPTION		LAB ID
12	Sample	89-077	F1095
13	Duplicate Sample	89-077	F1096
14	Sample	89-078	F1119
15	Duplicate Sample	89-078	F1120
16	Sample	89-079	F1143
17	Duplicate Sample	89-079	F1144
18	Sample	89-080	F1167
19	Duplicate Sample	89-080	F1168
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 #:F0561

CUSTOMER ID:89-076

INSTRUMENT	WA57276
PROCEDURE/REV	LA-508-101/C-1
TECHNOLOGIST	M. Franz
DATE	April 10, 1990
TEMPERATURE	N/A
STARTING TIME	0800
ENDING TIME	0930
CHEMIST	S. A. Catlow

Total Alpha and Total Beta

Fusion Dissolution Analysis

Detector 14, WA57276

Samples were prepared in batch, but counted randomly.

	DESCRIPTION	LAB ID
1	Initial LMCS Check Std.	F0565
2	Reagent Blank	F0580
3	Sample 89-076	F0566
4	Duplicate Sample 89-076	F0567
5	Spike 89-076	F0568
6	Final LMCS Check Std.	F0569
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 Standard	143B44/10 mL			N/A
Spike	143B44/10 mL	F0566/1.0 uL		N/A

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

Single Shell Tank
Calibration Record

ANALYTE:	Am^{241}		
PROCEDURE:	LQ-508-002	REVISION:	A-0
INSTRUMENT:	Detector #14	PROPERTY NUMBER:	WA45709
TECHNOLOGIST:	R.A. Jones	PAYROLL NUMBER:	65801
DATE:	November 28,1988		
CALIBRATION STANDARD ID:	36B40A8; 36B40B7; 36B40C7; 36B40A3; 36B40B3; 36B40C3; 36B40A6;36B40B6; 36B40C5		
ANALYTE CONCENTRATION:	N/A		
TYPE OF CALIBRATION:	Efficiency		

SS1-103 Rev. (Draft) 9/15/90 Short Interim

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

DETECTOR No. 14

RADIONUCLIDE: Am-241
HALF LIFE: 154497
COUNT TIME: 5
CPM BKG: 0.5

TIME ZERO DATE (HD): 15897
DATE COUNTED (HD): 16135

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

STANDARD ID	SIZE	DATE	TIME	COUNTS @ 0 DEG.	COUNTS @ 90 DEG.	COUNTS @ 180 DEG.	COUNTS @ 270 DEG.
36B40A8	1	11/28/88	1115	83719	83889	83820	84087
36B40B7	1	11/28/88	1128	147778	147414	147378	147313
36B40C7	1	11/28/88	1142	212324	211727	211106	211442
36B40A3	2	11/28/88	1155	67029	66485	66532	66137
36B40B3	2	11/28/88	1207	116432	117580	116643	116507
36B40C3	2	11/28/88	1221	167025	166472	166682	166167
36B40A6	5	11/28/88	1234	64835	64744	63542	64860
36B40B6	5	11/28/88	1246	132366	127335	127267	127511
36B40C5	5	11/28/88	1300	176904	172226	170187	173840

STANDARD ID	SIZE	STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
36B40A8	1"	60570	16775	1.00	16793	0.2773
36B40B7	1"	109900	29494	1.00	29525	0.2687
36B40C7	1"	159700	42329	1.00	42375	0.2653

AVERAGE, 1" = 0.2704 +/- @95% 0.0121 4.46 % ON 11/28/88

STANDARD ID		STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
36B40A3	2"	61800	13309	1.00	13323	0.2156
36B40B3	2"	110700	23358	1.00	23383	0.2112
36B40C3	2"	161400	33317	1.00	33352	0.2066

AVERAGE, 2" = 0.2111 +/- @95% 0.0088 4.15 % ON 11/28/88

STANDARD ID		STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
36B40A6	5"	59470	12899	1.00	12912	0.2171
36B40B6	5"	109800	25723	1.00	25751	0.2345
36B40C5	5"	160100	34657	1.00	34694	0.2167

AVERAGE, 5" = 0.2228 +/- @95% 0.0199 8.95 % ON 11/28/88

NEW EFFS FOR DET 14 Am-241 1" = 0.2704 2" = 0.2111

5" = 0.2228

Single Shell Tank
Calibration Record

Analyte:	Co^{60}		
Procedure:	LQ-508-002	Revision:	A-0
Instrument:	Detector #14	Property Number:	WA57276
Technologist:	R.A. Jones	Payroll Number:	65801
Date:	November 28, 1988		
Calibration Standard ID:	32B40A8; 32B40B7; 32B40C7; 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. 14

RADIONUCLIDE:	Co-60	2",5" STD TIME ZERO DATE (HD):	15883
HALF LIFE:	1925	1" STD TIME ZERO DATE (HD):	15883
COUNT TIME:	5	DATE COUNTED (HD):	16135
CPM BKG:	19	DATE COUNTED 1" (HD)	16135
CPM 1" BKG:	19		

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

STANDARD ID	SIZE	DATE	TIME	COUNTS @ 0 DEG.	COUNTS @ 90 DEG.	COUNTS @ 180 DEG.	COUNTS @ 270 DEG.
32B40A8	1	11/28/88	1313	94851	93909	94136	94073
32B40B7	1	11/28/88	1325	180320	178550	178878	179065
32B40C7	1	11/28/88	1338	260104	258654	259795	259469
32B40A4	2	11/28/88	1349	90411	89596	89705	90717
32B40B3	2	11/28/88	1527	170657	169556	169500	170301
32B40C4	2	11/28/88	1540	244082	244246	243016	249016
32B40A5	5	11/28/88	1551	83403	82448	82728	84312
32B40B6	5	11/28/88	1603	160402	163149	162823	159622
32B40C5	5	11/28/88	1616	237343	232578	231827	23179

STANDARD ID	SIZE	STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
32B40A8	1"	69550	18829	1.09	20618	0.2964
32B40B7	1"	134700	35822	1.09	39224	0.2912
32B40C7	1"	201000	51882	1.09	56810	0.2826

AVERAGE, 1" = 0.2901 +/- @95% 0.0137 4.71 % ON 11/28/88

STANDARD ID		STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
32B40A4	2"	70480	18002	1.09	19712	0.2797
32B40B3	2"	135100	33982	1.09	37209	0.2754
32B40C4	2"	202400	48999	1.09	53653	0.2651

AVERAGE, 2" = 0.2734 +/- @95% 0.0147 5.38 % ON 11/28/88

STANDARD ID		STD VALUE	AVE CPM	DECAY CORR	DECAY CORR CPM	EFFICIENCY
32B40A5	5"	70160	16626	1.09	18205	0.2595
32B40B6	5"	135700	32281	1.09	35347	0.2605
32B40C5	5"	201900	46658	1.09	51090	0.2530

AVERAGE, 5" = 0.2577 +/- @95% 0.0079 3.07 % ON 11/28/88

NEW EFFS FOR DET 14 Co-60 1" = 0.2901 2" = 0.2734

5" = 0.2577

Analytical Batch

LAB SEGMENT SERIAL #:F0561

CUSTOMER ID:89-076

INSTRUMENT	401934
PROCEDURE/REV	LA-548-121/C-2
TECHNOLOGIST	R. D. Hale
DATE	March 14, 1990
TEMPERATURE	23 C
STARTING TIME	0900
ENDING TIME	1000
CHEMIST	S. A. Catlow

GEA Analysis

Fusion Dissolution

Counted on GEA Detector #1

Samples are prepared in batch, but counted randomly.

	DESCRIPTION		LAB ID
1	Initial LMCS Check Std.		F0421
2	Reagent Blank		F0436
3	Sample	89-070	F0422
4	Duplicate Sample	89-070	F0423
5	Sample	89-071	F0446
6	Duplicate Sample	89-071	F0447
7	Sample	89-072	F0470
8	Duplicate Sample	89-072	F0471
9	Sample	89-071	F0442
10	Duplicate Sample	89-071	F0443
11	Sample	89-076	F0566

	DESCRIPTION		LAB ID
12	Duplicate sample	89-076	F0567
13	Spike	89-076	F0568
14	Final LMCS Check Std.		F0569
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	122B44/500 uL			22 mL
Spike	122B44/500 uL	F0447/50 uL		22 mL

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:	February 14, 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: 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: 56840 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: 56840 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

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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  13:08:43


                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: SD1070
ANALYZED BY:        VR

SAMPLE DESCRIPTION: F421 SEG 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 14-MAR-90 AT 11:00:58

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 23-NOV-89
EFFICIENCY CALIBRATION PERFORMED  2-MAR-89
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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	1127.46	563.20	1.34	417.	456.	13.9	CS-134, EU-152
2C	1139.52	569.23	1.34	456.	822.	12.2	CS-134, BI-207
3C	1210.35	604.63	1.41	394.	5339.	3.3	CS-134
4C	1219.45	609.18	1.41	323.	79.	30.4	BI-214, RU-103
5	1324.22	661.55	1.47	366.	9209.	2.1	CS-137
5B		661.82			35.	46.4	
6C	1592.53	795.69	1.55	258.	3769.	4.0	CS-134
7C	1604.74	801.80	1.55	227.	359.	14.3	CS-134
8	2347.09	1173.10	1.74	186.	4807.	3.0	CO-60
9	2665.49	1332.42	1.97	37.	4508.	3.0	CO-60
10	2731.21	1365.31	2.48	13.	101.	22.6	CS-134
11	2921.74	1460.68	2.12	11.	187.	15.5	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 13:08:43

SAMPLE: F421 SEG F
DATA COLLECTED ON 14-MAR-90 AT 11:00:58
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

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

NUCLIDE	ACTIVITY CONCENTRATION IN uCi/LI				ENERGY COMPARISON (KEV)	
	MEASURED	ERROR	DECAY CORRECTED	ERROR	EXPECT	DIFF
AC-228	LLD<7.86E-01		LLD<7.86E-01		911.07	
AG-108M	LLD<1.96E-01		LLD<1.96E-01		433.94	
AG-110M	LLD<8.94E-01		LLD<8.94E-01		657.76	
AM-241	LLD<8.34E-01		LLD<8.34E-01		59.54	
AM-243	LLD<2.10E-01		LLD<2.10E-01		74.67	
AR-41	LLD<1.48E-01		LLD<1.48E-01		1293.64	
AU-198	LLD<1.70E-01		LLD<1.70E-01		411.80	
BA-133	LLD<2.57E-01		LLD<2.57E-01		356.02	
BA-139	LLD<5.05E-01		LLD<5.05E-01		165.85	
BA-140	LLD<7.04E-01		LLD<7.04E-01		537.27	
BA-141	LLD<5.12E-01		LLD<5.12E-01		190.23	
BE-7	LLD<1.78E+00		LLD<1.78E+00		477.59	
BI-207	LLD<1.69E-01		LLD<1.69E-01		569.70	
BI-212	LLD<2.47E+00		LLD<2.47E+00		727.27	
BI-214	1.70E-01	+-1.58E-01	1.70E-01	+-1.58E-01	609.32	-0.14
CD-109	LLD<3.08E+00		LLD<3.08E+00		88.03	
CE-139	LLD<1.14E-01		LLD<1.14E-01		165.85	
CE-141	LLD<1.77E-01		LLD<1.77E-01		145.44	
CEPR144	LLD<1.51E+00		LLD<1.51E+00		133.51	
CO-56	LLD<1.88E-01		LLD<1.88E-01		846.76	
CO-57	LLD<9.58E-02		LLD<9.58E-02		122.06	
CO-58	LLD<1.83E-01		LLD<1.83E-01		810.75	
CO-60	2.14E+01	+-6.73E-01	2.14E+01	+-6.73E-01	1332.50	-0.08
					1173.24	-0.14
CR-51	LLD<1.38E+00		LLD<1.38E+00		320.09	
CS-134	1.36E+01	+-5.63E-01	1.36E+01	+-5.63E-01	795.84	-0.15
					604.70	-0.07
CS-136	LLD<1.85E-01		LLD<1.85E-01		818.51	
CS-137	2.85E+01	+-7.04E-01	2.85E+01	+-7.04E-01	661.65	-0.10
CS-138	LLD<1.38E-01		LLD<1.38E-01		1435.86	
EU-152	LLD<3.23E-01		LLD<3.23E-01		1408.01	
EU-154	LLD<3.09E-01		LLD<3.09E-01		1274.45	
EU-155	LLD<3.73E-01		LLD<3.73E-01		105.31	
FE-59	LLD<4.20E-01		LLD<4.20E-01		1099.25	
HF-181	LLD<1.95E-01		LLD<1.95E-01		482.20	
HG-203	LLD<1.60E-01		LLD<1.60E-01		279.20	
I-131	LLD<1.97E-01		LLD<1.97E-01		364.48	
I-132	LLD<2.60E-01		LLD<2.60E-01		667.69	
I-133	LLD<1.90E-01		LLD<1.90E-01		529.69	
I-134	LLD<2.70E-01		LLD<2.70E-01		847.03	
I-135	LLD<4.06E-01		LLD<4.06E-01		1260.41	
K-40	LLD<1.90E+00		LLD<1.90E+00		1460.75	
KR-85	LLD<4.08E+01		LLD<4.08E+01		513.99	
KR-85M	LLD<1.12E-01		LLD<1.12E-01		151.17	
KR-87	LLD<4.37E-01		LLD<4.37E-01		402.58	
KR-89	LLD<6.52E+00		LLD<6.52E+00		220.90	
LA-140	LLD<7.35E-02		LLD<7.35E-02		1596.20	

LA-142	LLD<3.84E-01	LLD<3.84E-01	641.83
MN-54	LLD<1.75E-01	LLD<1.75E-01	834.83
MN-56	LLD<2.12E-01	LLD<2.12E-01	846.76
NA-22	LLD<1.03E-01	LLD<1.03E-01	1274.55
NA-24	LLD<1.68E-01	LLD<1.68E-01	1368.60
NB-94	LLD<1.59E-01	LLD<1.59E-01	702.63
NB-95	LLD<1.60E-01	LLD<1.60E-01	765.78
NB-97	LLD<1.08E+00	LLD<1.08E+00	657.92
NP-238	LLD<8.25E-01	LLD<8.25E-01	984.45
NP-239	LLD<8.99E-01	LLD<8.99E-01	277.60
PA-233	LLD<4.03E-01	LLD<4.03E-01	311.98
PA-234M	LLD<3.46E+01	LLD<3.46E+01	1001.03
PB-210	LLD<4.65E+00	LLD<4.65E+00	465.03
PB-212	LLD<2.86E-01	LLD<2.86E-01	239.00
PB-214	LLD<4.25E-01	LLD<4.25E-01	351.92
PO-210	LLD<1.64E+04	LLD<1.64E+04	804.00
PO-214	LLD<6.88E+03	LLD<6.88E+03	799.70
PO-216	LLD<1.32E+04	LLD<1.32E+04	804.90
PU-239	LLD<1.30E+03	LLD<1.30E+03	129.30
PU-241	LLD<4.57E+04	LLD<4.57E+04	148.57
RA-224	LLD<3.12E+00	LLD<3.12E+00	240.99
RA-226	LLD<2.72E+00	LLD<2.72E+00	186.10
RB-88	LLD<6.32E-01	LLD<6.32E-01	1836.00
RB-89	LLD<9.12E-01	LLD<9.12E-01	1031.88
RN-220	LLD<1.46E+02	LLD<1.46E+02	549.73
RU-103	LLD<1.78E-01	LLD<1.78E-01	497.08
RURH106	LLD<3.28E+00	LLD<3.28E+00	621.80
SB-124	LLD<3.08E-01	LLD<3.08E-01	602.72
SB-125	LLD<1.46E+00	LLD<1.46E+00	176.33
SC-46	LLD<2.22E-01	LLD<2.22E-01	1120.45
SE-75	LLD<2.20E-01	LLD<2.20E-01	264.66
SN-113	LLD<2.49E-01	LLD<2.49E-01	391.67
SR-85	LLD<1.79E-01	LLD<1.79E-01	513.99
SR-91	LLD<3.03E-01	LLD<3.03E-01	555.60
SR-92	LLD<7.70E-02	LLD<7.70E-02	1383.94
TA-182	LLD<6.21E-01	LLD<6.21E-01	1121.30
TC-99M	LLD<1.02E-01	LLD<1.02E-01	140.51
TE-123M	LLD<1.09E-01	LLD<1.09E-01	159.00
TE-125M	LLD<2.77E+01	LLD<2.77E+01	109.27
TE-132	LLD<1.34E-01	LLD<1.34E-01	228.16
TH-228	LLD<9.61E+00	LLD<9.61E+00	84.37
TL-208	LLD<2.18E-01	LLD<2.18E-01	583.14
U-235	LLD<1.81E-01	LLD<1.81E-01	185.71
U-237	LLD<5.53E-01	LLD<5.53E-01	208.00
W-187	LLD<5.51E-01	LLD<5.51E-01	685.74
XE-131M	LLD<4.72E+00	LLD<4.72E+00	163.98
XE-133	LLD<3.42E-01	LLD<3.42E-01	81.00
XE-133M	LLD<1.18E+00	LLD<1.18E+00	233.21
XE-135	LLD<1.44E-01	LLD<1.44E-01	249.79
XE-138	LLD<1.09E+00	LLD<1.09E+00	258.41
Y-88	LLD<6.00E-02	LLD<6.00E-02	1836.06
Y-91	LLD<4.84E+01	LLD<4.84E+01	1204.90
Y-91M	LLD<2.29E-01	LLD<2.29E-01	555.60
ZN-65	LLD<4.36E-01	LLD<4.36E-01	1115.55
ZR-95	LLD<3.02E-01	LLD<3.02E-01	756.73
ZR-97	LLD<1.59E-01	LLD<1.59E-01	743.33
TOTAL	6.37E+01 +-1.14E+00	6.37E+01 +-1.14E+00	

STANDARD DEVIATION = 0.04

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.44E-09 UC/LI
TOTAL MEASURED ACTIVITY = 6.37E+01 (+-1.14E+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
1127.46	563.20	456.	13.9	1.95E+01
1139.52	569.23	822.	12.2	3.55E+01
1604.74	801.80	359.	14.3	2.06E+01
2731.21	1365.31	101.	22.6	9.06E+00

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2921.74	1460.68	187.	15.5	1.77E+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                *
*                                                                       *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *

CANBERRA SPECTRAN-F V2.06  SOFTWARE

222-S COUNTING ROOM                                  27-AUG-90  13:13:16


                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: SD1071
ANALYZED BY:        JLA

SAMPLE DESCRIPTION: F-436 SEGMENT-U
GEOMETRY DESCRIPTION:
SAMPLE SIZE:   1.0000E-01 LI       / CONVERSION FACTOR: 1.0000E+00
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL000

COLLECT STARTED ON 14-MAR-90 AT 12:26:23

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

222-S COUNTING ROOM 27-AUG-90 13:13:16

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

PK	CENTROID CHANNEL	ENERGY KEV	FWHM KEV	BACKGND COUNTS	NET AREA COUNTS	ERROR %	NUCLIDES
1	1324.38	661.63	1.53	40.	52.	45.6	CS-137
1B		661.82			35.	46.4	
2	2922.13	1460.87	2.07	8.	194.	14.8	K-40
2B		1461.77			182.	11.2	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

B - ENVIRONMENTAL BACKGROUND PEAK

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

222-S COUNTING ROOM 27-AUG-90 13:13:16

SAMPLE: F-436 SEGMENT-U
DATA COLLECTED ON 14-MAR-90 AT 12:26:23
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<1.24E-03		LLD<1.24E-03		911.07	
AG-108M	LLD<2.52E-04		LLD<2.52E-04		433.94	
AG-110M	LLD<4.41E-04		LLD<4.41E-04		657.76	
AM-241	LLD<1.52E-03		LLD<1.52E-03		59.54	
AM-243	LLD<4.29E-04		LLD<4.29E-04		74.67	
AR-41	LLD<3.67E-04		LLD<3.67E-04		1293.64	
AU-198	LLD<2.12E-04		LLD<2.12E-04		411.80	
BA-133	LLD<4.21E-04		LLD<4.21E-04		356.02	
BA-139	LLD<9.27E-04		LLD<9.27E-04		165.85	
BA-140	LLD<8.81E-04		LLD<8.81E-04		537.27	
BA-141	LLD<9.08E-04		LLD<9.08E-04		190.23	
BE-7	LLD<2.21E-03		LLD<2.21E-03		477.59	
BI-207	LLD<2.47E-04		LLD<2.47E-04		569.70	
BI-212	LLD<3.74E-03		LLD<3.74E-03		727.27	
BI-214	LLD<8.46E-04		LLD<8.46E-04		609.32	
CD-109	LLD<5.88E-03		LLD<5.88E-03		88.03	
CE-139	LLD<2.10E-04		LLD<2.10E-04		165.85	
CE-141	LLD<3.38E-04		LLD<3.38E-04		145.44	
CEPR144	LLD<2.82E-03		LLD<2.82E-03		133.51	
CO-56	LLD<2.05E-04		LLD<2.05E-04		846.76	
CO-57	LLD<1.79E-04		LLD<1.79E-04		122.06	
CO-58	LLD<2.81E-04		LLD<2.81E-04		810.75	
CO-60	LLD<3.73E-04		LLD<3.73E-04		1332.50	
CR-51	LLD<2.03E-03		LLD<2.03E-03		320.09	
CS-134	LLD<3.00E-04		LLD<3.00E-04		795.84	
CS-136	LLD<2.68E-04		LLD<2.68E-04		818.51	
CS-137	LLD<4.81E-04		LLD<4.81E-04		661.65	
CS-138	LLD<7.32E-04		LLD<7.32E-04		1435.86	
EU-152	LLD<1.04E-03		LLD<1.04E-03		1408.01	
EU-154	LLD<1.01E-03		LLD<1.01E-03		1274.45	
EU-155	LLD<7.24E-04		LLD<7.24E-04		105.31	
FE-59	LLD<4.30E-04		LLD<4.30E-04		1099.25	
HF-181	LLD<2.61E-04		LLD<2.61E-04		482.20	
HG-203	LLD<2.61E-04		LLD<2.61E-04		279.20	
I-131	LLD<2.93E-04		LLD<2.93E-04		364.48	
I-132	LLD<2.98E-04		LLD<2.98E-04		667.69	
I-133	LLD<2.29E-04		LLD<2.29E-04		529.69	
I-134	LLD<3.08E-04		LLD<3.08E-04		847.03	
I-135	LLD<1.49E-03		LLD<1.49E-03		1260.41	
K-40	LLD<9.27E-03		LLD<9.27E-03		1460.75	
KR-85	LLD<7.79E-02		LLD<7.79E-02		513.99	
KR-85M	LLD<2.17E-04		LLD<2.17E-04		151.17	
KR-87	LLD<5.54E-04		LLD<5.54E-04		402.58	
KR-89	LLD<1.15E-02		LLD<1.15E-02		220.90	
LA-140	LLD<4.13E-04		LLD<4.13E-04		1596.20	
LA-142	LLD<6.29E-04		LLD<6.29E-04		641.83	
MN-54	LLD<2.72E-04		LLD<2.72E-04		834.83	

MN-56	LLD<2.31E-04	LLD<2.31E-04	846.76
NA-22	LLD<3.24E-04	LLD<3.24E-04	1274.55
NA-24	LLD<3.15E-04	LLD<3.15E-04	1368.60
NB-94	LLD<3.18E-04	LLD<3.18E-04	702.63
NB-95	LLD<2.93E-04	LLD<2.93E-04	765.78
NB-97	LLD<5.34E-04	LLD<5.34E-04	657.92
NP-238	LLD<1.38E-03	LLD<1.38E-03	984.45
NP-239	LLD<1.46E-03	LLD<1.46E-03	277.60
PA-233	LLD<6.42E-04	LLD<6.42E-04	311.98
PA-234M	LLD<5.40E-02	LLD<5.40E-02	1001.03
PB-210	LLD<6.01E-03	LLD<6.01E-03	465.03
PB-212	LLD<4.55E-04	LLD<4.55E-04	239.00
PB-214	LLD<6.66E-04	LLD<6.66E-04	351.92
PO-210	LLD<2.27E+01	LLD<2.27E+01	804.00
PO-214	LLD<2.22E+00	LLD<2.22E+00	799.70
PO-216	LLD<1.39E+01	LLD<1.39E+01	804.90
PU-239	LLD<2.35E+00	LLD<2.35E+00	129.30
PU-241	LLD<8.31E+01	LLD<8.31E+01	148.57
RA-224	LLD<5.60E-03	LLD<5.60E-03	240.99
RA-226	LLD<4.92E-03	LLD<4.92E-03	186.10
RB-88	LLD<1.98E-03	LLD<1.98E-03	1836.00
RB-89	LLD<1.01E-03	LLD<1.01E-03	1031.88
RN-220	LLD<2.10E-01	LLD<2.10E-01	549.73
RU-103	LLD<2.45E-04	LLD<2.45E-04	497.08
RURH106	LLD<5.76E-03	LLD<5.76E-03	621.80
SB-124	LLD<2.54E-04	LLD<2.54E-04	602.72
SB-125	LLD<2.64E-03	LLD<2.64E-03	176.33
SC-46	LLD<3.04E-04	LLD<3.04E-04	1120.45
SE-75	LLD<3.31E-04	LLD<3.31E-04	264.66
SN-113	LLD<3.25E-04	LLD<3.25E-04	391.67
SR-85	LLD<3.42E-04	LLD<3.42E-04	513.99
SR-91	LLD<4.47E-04	LLD<4.47E-04	555.60
SR-92	LLD<5.12E-04	LLD<5.12E-04	1383.94
TA-182	LLD<9.06E-04	LLD<9.06E-04	1121.30
TC-99M	LLD<1.87E-04	LLD<1.87E-04	140.51
TE-123M	LLD<2.02E-04	LLD<2.02E-04	159.00
TE-125M	LLD<4.76E-02	LLD<4.76E-02	109.27
TE-132	LLD<2.38E-04	LLD<2.38E-04	228.16
TH-228	LLD<1.86E-02	LLD<1.86E-02	84.37
TL-208	LLD<2.78E-04	LLD<2.78E-04	583.14
U-235	LLD<3.30E-04	LLD<3.30E-04	185.71
U-237	LLD<9.03E-04	LLD<9.03E-04	208.00
W-187	LLD<9.68E-04	LLD<9.68E-04	685.74
XE-131M	LLD<9.89E-03	LLD<9.89E-03	163.98
XE-133	LLD<7.16E-04	LLD<7.16E-04	81.00
XE-133M	LLD<2.05E-03	LLD<2.05E-03	233.21
XE-135	LLD<2.36E-04	LLD<2.36E-04	249.79
XE-138	LLD<1.79E-03	LLD<1.79E-03	258.41
Y-88	LLD<1.88E-04	LLD<1.88E-04	1836.06
Y-91	LLD<1.39E-01	LLD<1.39E-01	1204.90
Y-91M	LLD<3.38E-04	LLD<3.38E-04	555.60
ZN-65	LLD<7.69E-04	LLD<7.69E-04	1115.55
ZR-95	LLD<4.59E-04	LLD<4.59E-04	756.73
ZR-97	LLD<3.07E-04	LLD<3.07E-04	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 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
1324.38	661.63	52.	45.6	2.55E+00
2922.13	1460.87	194.	14.8	1.84E+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  13:18:39


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

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

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

ANALYSIS OF SPECTRUM SAVED IN DISK FILE: SD1082
ANALYZED BY:         MAX

SAMPLE DESCRIPTION: F566
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 15-MAR-90 AT 01:54:37

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 23-NOV-89
EFFICIENCY CALIBRATION PERFORMED  2-MAR-89
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222-S COUNTING ROOM 27-AUG-90 13:18:39

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

PK	CENTROID CHANNEL	ENERGY KEV	FWHM KEV	BACKGND COUNTS	NET AREA COUNTS	ERROR %	NUCLIDES
1	95.55	47.67	0.94	139.	83.	44.9	
2	1324.20	661.54	1.47	51.	2327.	4.2	CS-137
2B		661.82			35.	46.4	
3	2921.65	1460.63	2.11	11.	158.	17.0	K-40
3B		1461.77			182.	11.2	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

B - ENVIRONMENTAL BACKGROUND PEAK

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

222-S COUNTING ROOM 27-AUG-90 13:18:39

SAMPLE: F566
DATA COLLECTED ON 15-MAR-90 AT 01:54:37
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<2.23E+00		LLD<2.23E+00		911.07	
AG-108M	LLD<7.94E-01		LLD<7.94E-01		433.94	
AG-110M	LLD<4.47E+00		LLD<4.47E+00		657.76	
AM-241	LLD<4.60E+00		LLD<4.60E+00		59.54	
AM-243	LLD<1.35E+00		LLD<1.35E+00		74.67	
AR-41	LLD<8.70E-01		LLD<8.70E-01		1293.64	
AU-198	LLD<7.12E-01		LLD<7.12E-01		411.80	
BA-133	LLD<1.17E+00		LLD<1.17E+00		356.02	
BA-139	LLD<2.81E+00		LLD<2.81E+00		165.85	
BA-140	LLD<2.47E+00		LLD<2.47E+00		537.27	
BA-141	LLD<2.57E+00		LLD<2.57E+00		190.23	
BE-7	LLD<6.99E+00		LLD<6.99E+00		477.59	
BI-207	LLD<5.59E-01		LLD<5.59E-01		569.70	
BI-212	LLD<9.29E+00		LLD<9.29E+00		727.27	
BI-214	LLD<1.67E+00		LLD<1.67E+00		609.32	
CD-109	LLD<2.09E+01		LLD<2.09E+01		88.03	
CE-139	LLD<6.36E-01		LLD<6.36E-01		165.85	
CE-141	LLD<9.78E-01		LLD<9.78E-01		145.44	
CEPR144	LLD<8.43E+00		LLD<8.43E+00		133.51	
CO-56	LLD<5.65E-01		LLD<5.65E-01		846.76	
CO-57	LLD<5.47E-01		LLD<5.47E-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<6.36E+00		LLD<6.36E+00		320.09	
CS-134	LLD<6.56E-01		LLD<6.56E-01		795.84	
CS-136	LLD<5.06E-01		LLD<5.06E-01		818.51	
CS-137	7.12E+01	+-3.17E+00	7.12E+01	+-3.17E+00	661.65	-0.11
CS-138	LLD<1.07E+00		LLD<1.07E+00		1435.86	
EU-152	LLD<2.83E+00		LLD<2.83E+00		1408.01	
EU-154	LLD<1.75E+00		LLD<1.75E+00		1274.45	
EU-155	LLD<2.13E+00		LLD<2.13E+00		105.31	
FE-59	LLD<1.10E+00		LLD<1.10E+00		1099.25	
HF-181	LLD<8.45E-01		LLD<8.45E-01		482.20	
HG-203	LLD<6.94E-01		LLD<6.94E-01		279.20	
I-131	LLD<8.54E-01		LLD<8.54E-01		364.48	
I-132	LLD<1.14E+00		LLD<1.14E+00		667.69	
I-133	LLD<6.82E-01		LLD<6.82E-01		529.69	
I-134	LLD<8.50E-01		LLD<8.50E-01		847.03	
I-135	LLD<1.79E+00		LLD<1.79E+00		1260.41	
K-40	LLD<1.88E+01		LLD<1.88E+01		1460.75	
KR-85	LLD<2.13E+02		LLD<2.13E+02		513.99	
KR-85M	LLD<6.51E-01		LLD<6.51E-01		151.17	
KR-87	LLD<1.81E+00		LLD<1.81E+00		402.58	
KR-89	LLD<2.91E+01		LLD<2.91E+01		220.90	
LA-140	LLD<7.35E-01		LLD<7.35E-01		1596.20	
LA-142	LLD<1.81E+00		LLD<1.81E+00		641.83	
MN-54	LLD<6.65E-01		LLD<6.65E-01		834.83	

MN-56	LLD<6.38E-01	LLD<6.38E-01	846.76
NA-22	LLD<5.85E-01	LLD<5.85E-01	1274.55
NA-24	LLD<4.90E-01	LLD<4.90E-01	1368.60
NB-94	LLD<4.80E-01	LLD<4.80E-01	702.63
NB-95	LLD<5.66E-01	LLD<5.66E-01	765.78
NB-97	LLD<5.42E+00	LLD<5.42E+00	657.92
NP-238	LLD<2.40E+00	LLD<2.40E+00	984.45
NP-239	LLD<3.95E+00	LLD<3.95E+00	277.60
PA-233	LLD<1.75E+00	LLD<1.75E+00	311.98
PA-234M	LLD<1.15E+02	LLD<1.15E+02	1001.03
PB-210	LLD<2.06E+01	LLD<2.06E+01	465.03
PB-212	LLD<1.34E+00	LLD<1.34E+00	239.00
PB-214	LLD<1.89E+00	LLD<1.89E+00	351.92
PO-210	LLD<4.43E+04	LLD<4.43E+04	804.00
PO-214	LLD<5.92E+03	LLD<5.92E+03	799.70
PO-216	LLD<2.77E+04	LLD<2.77E+04	804.90
PU-239	LLD<7.33E+03	LLD<7.33E+03	129.30
PU-241	LLD<2.36E+05	LLD<2.36E+05	148.57
RA-224	LLD<1.44E+01	LLD<1.44E+01	240.99
RA-226	LLD<1.32E+01	LLD<1.32E+01	186.10
RB-88	LLD<6.32E+00	LLD<6.32E+00	1836.00
RB-89	LLD<2.78E+00	LLD<2.78E+00	1031.88
RN-220	LLD<5.88E+02	LLD<5.88E+02	549.73
RU-103	LLD<7.32E-01	LLD<7.32E-01	497.08
RURH106	LLD<1.32E+01	LLD<1.32E+01	621.80
SB-124	LLD<5.48E-01	LLD<5.48E-01	602.72
SB-125	LLD<7.36E+00	LLD<7.36E+00	176.33
SC-46	LLD<4.60E-01	LLD<4.60E-01	1120.45
SE-75	LLD<8.92E-01	LLD<8.92E-01	264.66
SN-113	LLD<1.01E+00	LLD<1.01E+00	391.67
SR-85	LLD<9.33E-01	LLD<9.33E-01	513.99
SR-91	LLD<1.05E+00	LLD<1.05E+00	555.60
SR-92	LLD<7.70E-01	LLD<7.70E-01	1383.94
TA-182	LLD<2.01E+00	LLD<2.01E+00	1121.30
TC-99M	LLD<5.43E-01	LLD<5.43E-01	140.51
TE-123M	LLD<5.61E-01	LLD<5.61E-01	159.00
TE-125M	LLD<1.55E+02	LLD<1.55E+02	109.27
TE-132	LLD<6.33E-01	LLD<6.33E-01	228.16
TH-228	LLD<6.00E+01	LLD<6.00E+01	84.37
TL-208	LLD<8.78E-01	LLD<8.78E-01	583.14
U-235	LLD<8.80E-01	LLD<8.80E-01	185.71
U-237	LLD<2.56E+00	LLD<2.56E+00	208.00
W-187	LLD<1.94E+00	LLD<1.94E+00	685.74
XE-131M	LLD<2.46E+01	LLD<2.46E+01	163.98
XE-133	LLD<2.31E+00	LLD<2.31E+00	81.00
XE-133M	LLD<5.58E+00	LLD<5.58E+00	233.21
XE-135	LLD<6.39E-01	LLD<6.39E-01	249.79
XE-138	LLD<4.48E+00	LLD<4.48E+00	258.41
Y-88	LLD<6.00E-01	LLD<6.00E-01	1836.06
Y-91	LLD<2.41E+02	LLD<2.41E+02	1204.90
Y-91M	LLD<7.96E-01	LLD<7.96E-01	555.60
ZN-65	LLD<1.91E+00	LLD<1.91E+00	1115.55
ZR-95	LLD<9.91E-01	LLD<9.91E-01	756.73
ZR-97	LLD<5.80E-01	LLD<5.80E-01	743.33
TOTAL	7.12E+01 +-3.17E+00	7.12E+01 +-3.17E+00	

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.16E-08 UC/LI
TOTAL MEASURED ACTIVITY = 7.12E+01 (+-3.17E+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
95.55	47.67	83.	44.9	1.11E+01

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2921.65	1460.63	158.	17.0	1.49E+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                                  29-AUG-90  08:22:36


                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: SD1083
ANALYZED BY:        MAX

SAMPLE DESCRIPTION: F567
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 15-MAR-90 AT 03:45:20

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 23-NOV-89
EFFICIENCY CALIBRATION PERFORMED  2-MAR-89
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222-S COUNTING ROOM 29-AUG-90 08:22:36

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	1324.20	661.54	1.64	50.	1696.	4.9	CS-137
1B		661.82			35.	46.4	
2	2921.64	1460.63	2.04	8.	180.	15.5	K-40
2B		1461.77			182.	11.2	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

B - ENVIRONMENTAL BACKGROUND PEAK

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

222-S COUNTING ROOM 29-AUG-90 08:22:36

SAMPLE: F567
DATA COLLECTED ON 15-MAR-90 AT 03:45:20
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<1.99E+00		LLD<1.99E+00		911.07	
AG-108M	LLD<8.05E-01		LLD<8.05E-01		433.94	
AG-110M	LLD<3.81E+00		LLD<3.81E+00		657.76	
AM-241	LLD<4.01E+00		LLD<4.01E+00		59.54	
AM-243	LLD<1.21E+00		LLD<1.21E+00		74.67	
AR-41	LLD<8.70E-01		LLD<8.70E-01		1293.64	
AU-198	LLD<6.50E-01		LLD<6.50E-01		411.80	
BA-133	LLD<1.19E+00		LLD<1.19E+00		356.02	
BA-139	LLD<2.49E+00		LLD<2.49E+00		165.85	
BA-140	LLD<2.49E+00		LLD<2.49E+00		537.27	
BA-141	LLD<2.30E+00		LLD<2.30E+00		190.23	
BE-7	LLD<7.03E+00		LLD<7.03E+00		477.59	
BI-207	LLD<5.79E-01		LLD<5.79E-01		569.70	
BI-212	LLD<7.88E+00		LLD<7.88E+00		727.27	
BI-214	LLD<1.79E+00		LLD<1.79E+00		609.32	
CD-109	LLD<1.75E+01		LLD<1.75E+01		88.03	
CE-139	LLD<5.65E-01		LLD<5.65E-01		165.85	
CE-141	LLD<8.53E-01		LLD<8.53E-01		145.44	
CEPR144	LLD<7.76E+00		LLD<7.76E+00		133.51	
CO-56	LLD<5.65E-01		LLD<5.65E-01		846.76	
CO-57	LLD<4.83E-01		LLD<4.83E-01		122.06	
CO-58	LLD<6.63E-01		LLD<6.63E-01		810.75	
CO-60	LLD<6.05E-01		LLD<6.05E-01		1332.50	
CR-51	LLD<5.48E+00		LLD<5.48E+00		320.09	
CS-134	LLD<6.29E-01		LLD<6.29E-01		795.84	
CS-136	LLD<6.54E-01		LLD<6.54E-01		818.51	
CS-137	5.16E+01	+-2.71E+00	5.16E+01	+-2.71E+00	661.65	-0.11
CS-138	LLD<1.07E+00		LLD<1.07E+00		1435.86	
EU-152	LLD<3.23E+00		LLD<3.23E+00		1408.01	
EU-154	LLD<1.75E+00		LLD<1.75E+00		1274.45	
EU-155	LLD<2.07E+00		LLD<2.07E+00		105.31	
FE-59	LLD<1.14E+00		LLD<1.14E+00		1099.25	
HF-181	LLD<7.65E-01		LLD<7.65E-01		482.20	
HG-203	LLD<6.67E-01		LLD<6.67E-01		279.20	
I-131	LLD<7.71E-01		LLD<7.71E-01		364.48	
I-132	LLD<1.03E+00		LLD<1.03E+00		667.69	
I-133	LLD<7.07E-01		LLD<7.07E-01		529.69	
I-134	LLD<8.88E-01		LLD<8.88E-01		847.03	
I-135	LLD<2.57E+00		LLD<2.57E+00		1260.41	
K-40	LLD<1.85E+01		LLD<1.85E+01		1460.75	
KR-85	LLD<1.93E+02		LLD<1.93E+02		513.99	
KR-85M	LLD<5.63E-01		LLD<5.63E-01		151.17	
KR-87	LLD<1.60E+00		LLD<1.60E+00		402.58	
KR-89	LLD<2.71E+01		LLD<2.71E+01		220.90	
LA-140	LLD<6.86E-01		LLD<6.86E-01		1596.20	
LA-142	LLD<1.32E+00		LLD<1.32E+00		641.83	
MN-54	LLD<4.81E-01		LLD<4.81E-01		834.83	

MN-56	LLD<6.38E-01	LLD<6.38E-01	846.76
NA-22	LLD<5.85E-01	LLD<5.85E-01	1274.55
NA-24	LLD<6.31E-01	LLD<6.31E-01	1368.60
NB-94	LLD<5.30E-01	LLD<5.30E-01	702.63
NB-95	LLD<4.72E-01	LLD<4.72E-01	765.78
NB-97	LLD<4.62E+00	LLD<4.62E+00	657.92
NP-238	LLD<1.87E+00	LLD<1.87E+00	984.45
NP-239	LLD<3.86E+00	LLD<3.86E+00	277.60
PA-233	LLD<1.72E+00	LLD<1.72E+00	311.98
PA-234M	LLD<1.05E+02	LLD<1.05E+02	1001.03
PB-210	LLD<1.93E+01	LLD<1.93E+01	465.03
PB-212	LLD<1.29E+00	LLD<1.29E+00	239.00
PB-214	LLD<1.71E+00	LLD<1.71E+00	351.92
PO-210	LLD<5.07E+04	LLD<5.07E+04	804.00
PO-214	LLD<5.31E+03	LLD<5.31E+03	799.70
PO-216	LLD<3.51E+04	LLD<3.51E+04	804.90
PU-239	LLD<6.36E+03	LLD<6.36E+03	129.30
PU-241	LLD<2.37E+05	LLD<2.37E+05	148.57
RA-224	LLD<1.35E+01	LLD<1.35E+01	240.99
RA-226	LLD<1.25E+01	LLD<1.25E+01	186.10
RB-88	LLD<5.29E+00	LLD<5.29E+00	1836.00
RB-89	LLD<2.69E+00	LLD<2.69E+00	1031.88
RN-220	LLD<5.83E+02	LLD<5.83E+02	549.73
RU-103	LLD<6.51E-01	LLD<6.51E-01	497.08
RURH106	LLD<1.33E+01	LLD<1.33E+01	621.80
SB-124	LLD<6.05E-01	LLD<6.05E-01	602.72
SB-125	LLD<6.76E+00	LLD<6.76E+00	176.33
SC-46	LLD<5.54E-01	LLD<5.54E-01	1120.45
SE-75	LLD<8.11E-01	LLD<8.11E-01	264.66
SN-113	LLD<9.07E-01	LLD<9.07E-01	391.67
SR-85	LLD<8.48E-01	LLD<8.48E-01	513.99
SR-91	LLD<1.23E+00	LLD<1.23E+00	555.60
SR-92	LLD<9.87E-01	LLD<9.87E-01	1383.94
TA-182	LLD<1.88E+00	LLD<1.88E+00	1121.30
TC-99M	LLD<4.88E-01	LLD<4.88E-01	140.51
TE-123M	LLD<5.12E-01	LLD<5.12E-01	159.00
TE-125M	LLD<1.59E+02	LLD<1.59E+02	109.27
TE-132	LLD<5.95E-01	LLD<5.95E-01	228.16
TH-228	LLD<5.23E+01	LLD<5.23E+01	84.37
TL-208	LLD<7.22E-01	LLD<7.22E-01	583.14
U-235	LLD<8.42E-01	LLD<8.42E-01	185.71
U-237	LLD<2.25E+00	LLD<2.25E+00	208.00
W-187	LLD<1.65E+00	LLD<1.65E+00	685.74
XE-131M	LLD<2.54E+01	LLD<2.54E+01	163.98
XE-133	LLD<1.94E+00	LLD<1.94E+00	81.00
XE-133M	LLD<5.10E+00	LLD<5.10E+00	233.21
XE-135	LLD<6.33E-01	LLD<6.33E-01	249.79
XE-138	LLD<4.05E+00	LLD<4.05E+00	258.41
Y-88	LLD<5.03E-01	LLD<5.03E-01	1836.06
Y-91	LLD<2.63E+02	LLD<2.63E+02	1204.90
Y-91M	LLD<9.28E-01	LLD<9.28E-01	555.60
ZN-65	LLD<1.72E+00	LLD<1.72E+00	1115.55
ZR-95	LLD<1.10E+00	LLD<1.10E+00	756.73
ZR-97	LLD<4.20E-01	LLD<4.20E-01	743.33
TOTAL	5.16E+01 +-2.71E+00	5.16E+01 +-2.71E+00	

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.16E-08 UC/LI
TOTAL MEASURED ACTIVITY = 5.16E+01 (+-2.71E+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
2921.64	1460.63	180.	15.5	1.71E+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                *
*                                                                       *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *

CANBERRA SPECTRAN-F V2.06  SOFTWARE

222-S COUNTING ROOM                                  27-AUG-90  13:22:40


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

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

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

ANALYSIS OF SPECTRUM SAVED IN DISK FILE: SD1084
ANALYZED BY:        MAX

SAMPLE DESCRIPTION: F568
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 15-MAR-90 AT 04:41:44

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

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

ENERGY CALIBRATION PERFORMED 23-NOV-89
EFFICIENCY CALIBRATION PERFORMED  2-MAR-89
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222-S COUNTING ROOM 27-AUG-90 13:22:40

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

PK	CENTROID CHANNEL	ENERGY KEV	FWHM KEV	BACKGND COUNTS	NET AREA COUNTS	ERROR %	NUCLIDES
1C	1127.31	563.13	1.39	475.	428.	17.4	CS-134, EU-152
2C	1139.70	569.32	1.39	485.	740.	14.4	CS-134, BI-207
3	1210.36	604.64	1.47	520.	4961.	3.1	CS-134
4	1324.22	661.55	1.53	326.	13178.	1.8	CS-137
4B		661.82			35.	46.4	
5C	1592.50	795.68	1.50	258.	3527.	4.2	CS-134
6C	1604.72	801.79	1.50	246.	368.	13.7	CS-134
7	2347.08	1173.09	1.79	210.	4735.	3.0	CO-60
8	2665.49	1332.42	1.86	39.	4119.	3.1	CO-60
9	2730.86	1365.14	1.58	7.	99.	21.4	CS-134
10	2922.13	1460.87	2.48	10.	172.	16.0	K-40
10B		1461.77			182.	11.2	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

C - MULTIPLET ANALYSIS CONVERGED NORMALLY
B - ENVIRONMENTAL BACKGROUND PEAK

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

222-S COUNTING ROOM 27-AUG-90 13:22:40

SAMPLE: F568
DATA COLLECTED ON 15-MAR-90 AT 04:41:44
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<7.40E+00		LLD<7.40E+00		911.07	
AG-108M	LLD<2.06E+00		LLD<2.06E+00		433.94	
AG-110M	LLD<1.06E+01		LLD<1.06E+01		657.76	
AM-241	LLD<8.73E+00		LLD<8.73E+00		59.54	
AM-243	LLD<2.29E+00		LLD<2.29E+00		74.67	
AR-41	LLD<1.23E+00		LLD<1.23E+00		1293.64	
AU-198	LLD<1.86E+00		LLD<1.86E+00		411.80	
BA-133	LLD<2.82E+00		LLD<2.82E+00		356.02	
BA-139	LLD<5.43E+00		LLD<5.43E+00		165.85	
BA-140	LLD<6.94E+00		LLD<6.94E+00		537.27	
BA-141	LLD<5.59E+00		LLD<5.59E+00		190.23	
BE-7	LLD<1.93E+01		LLD<1.93E+01		477.59	
BI-207	LLD<1.78E+00		LLD<1.78E+00		569.70	
BI-212	LLD<2.31E+01		LLD<2.31E+01		727.27	
BI-214	LLD<1.01E+01		LLD<1.01E+01		609.32	
CD-109	LLD<3.37E+01		LLD<3.37E+01		88.03	
CE-139	LLD<1.23E+00		LLD<1.23E+00		165.85	
CE-141	LLD<1.90E+00		LLD<1.90E+00		145.44	
CEPR144	LLD<1.58E+01		LLD<1.58E+01		133.51	
CO-56	LLD<1.78E+00		LLD<1.78E+00		846.76	
CO-57	LLD<1.03E+00		LLD<1.03E+00		122.06	
CO-58	LLD<1.76E+00		LLD<1.76E+00		810.75	
CO-60	1.96E+02	+-6.41E+00	1.96E+02	+-6.41E+00	1332.50	-0.08
					1173.24	-0.15
CR-51	LLD<1.43E+01		LLD<1.43E+01		320.09	
CS-134	1.27E+02	+-5.53E+00	1.27E+02	+-5.53E+00	795.84	-0.17
					604.70	-0.06
CS-136	LLD<1.79E+00		LLD<1.79E+00		818.51	
CS-137	4.08E+02	+-8.75E+00	4.08E+02	+-8.75E+00	661.65	-0.10
CS-138	LLD<1.38E+00		LLD<1.38E+00		1435.86	
EU-152	LLD<3.04E+00		LLD<3.04E+00		1408.01	
EU-154	LLD<3.24E+00		LLD<3.24E+00		1274.45	
EU-155	LLD<4.02E+00		LLD<4.02E+00		105.31	
FE-59	LLD<4.53E+00		LLD<4.53E+00		1099.25	
HF-181	LLD<2.13E+00		LLD<2.13E+00		482.20	
HG-203	LLD<1.65E+00		LLD<1.65E+00		279.20	
I-131	LLD<2.07E+00		LLD<2.07E+00		364.48	
I-132	LLD<2.80E+00		LLD<2.80E+00		667.69	
I-133	LLD<1.94E+00		LLD<1.94E+00		529.69	
I-134	LLD<2.53E+00		LLD<2.53E+00		847.03	
I-135	LLD<4.50E+00		LLD<4.50E+00		1260.41	
K-40	LLD<1.85E+01		LLD<1.85E+01		1460.75	
KR-85	LLD<4.26E+02		LLD<4.26E+02		513.99	
KR-85M	LLD<1.22E+00		LLD<1.22E+00		151.17	
KR-87	LLD<4.55E+00		LLD<4.55E+00		402.58	
KR-89	LLD<6.73E+01		LLD<6.73E+01		220.90	
LA-140	LLD<6.86E-01		LLD<6.86E-01		1596.20	

LA-142	LLD<3.84E+00	LLD<3.84E+00	641.83
MN-54	LLD<1.73E+00	LLD<1.73E+00	834.83
MN-56	LLD<2.01E+00	LLD<2.01E+00	846.76
NA-22	LLD<1.07E+00	LLD<1.07E+00	1274.55
NA-24	LLD<1.50E+00	LLD<1.50E+00	1368.60
NB-94	LLD<1.58E+00	LLD<1.58E+00	702.63
NB-95	LLD<1.63E+00	LLD<1.63E+00	765.78
NB-97	LLD<1.28E+01	LLD<1.28E+01	657.92
NP-238	LLD<7.72E+00	LLD<7.72E+00	984.45
NP-239	LLD<9.48E+00	LLD<9.48E+00	277.60
PA-233	LLD<4.17E+00	LLD<4.17E+00	311.98
PA-234M	LLD<3.77E+02	LLD<3.77E+02	1001.03
PB-210	LLD<4.92E+01	LLD<4.92E+01	465.03
PB-212	LLD<3.06E+00	LLD<3.06E+00	239.00
PB-214	LLD<4.56E+00	LLD<4.56E+00	351.92
PO-210	LLD<1.62E+05	LLD<1.62E+05	804.00
PO-214	LLD<6.74E+04	LLD<6.74E+04	799.70
PO-216	LLD<1.36E+05	LLD<1.36E+05	804.90
PU-239	LLD<1.38E+04	LLD<1.38E+04	129.30
PU-241	LLD<4.87E+05	LLD<4.87E+05	148.57
RA-224	LLD<3.34E+01	LLD<3.34E+01	240.99
RA-226	LLD<2.90E+01	LLD<2.90E+01	186.10
RB-88	LLD<9.27E+00	LLD<9.27E+00	1836.00
RB-89	LLD<9.20E+00	LLD<9.20E+00	1031.88
RN-220	LLD<1.53E+03	LLD<1.53E+03	549.73
RU-103	LLD<1.87E+00	LLD<1.87E+00	497.08
RURH106	LLD<3.23E+01	LLD<3.23E+01	621.80
SB-124	LLD<3.09E+00	LLD<3.09E+00	602.72
SB-125	LLD<1.54E+01	LLD<1.54E+01	176.33
SC-46	LLD<2.20E+00	LLD<2.20E+00	1120.45
SE-75	LLD<2.27E+00	LLD<2.27E+00	264.66
SN-113	LLD<2.55E+00	LLD<2.55E+00	391.67
SR-85	LLD<1.87E+00	LLD<1.87E+00	513.99
SR-91	LLD<3.06E+00	LLD<3.06E+00	555.60
SR-92	LLD<1.10E+00	LLD<1.10E+00	1383.94
TA-182	LLD<6.32E+00	LLD<6.32E+00	1121.30
TC-99M	LLD<1.06E+00	LLD<1.06E+00	140.51
TE-123M	LLD<1.14E+00	LLD<1.14E+00	159.00
TE-125M	LLD<3.04E+02	LLD<3.04E+02	109.27
TE-132	LLD<1.44E+00	LLD<1.44E+00	228.16
TH-228	LLD<9.91E+01	LLD<9.91E+01	84.37
TL-208	LLD<2.21E+00	LLD<2.21E+00	583.14
U-235	LLD<1.94E+00	LLD<1.94E+00	185.71
U-237	LLD<5.64E+00	LLD<5.64E+00	208.00
W-187	LLD<5.34E+00	LLD<5.34E+00	685.74
XE-131M	LLD<5.26E+01	LLD<5.26E+01	163.98
XE-133	LLD<3.69E+00	LLD<3.69E+00	81.00
XE-133M	LLD<1.26E+01	LLD<1.26E+01	233.21
XE-135	LLD<1.48E+00	LLD<1.48E+00	249.79
XE-138	LLD<1.12E+01	LLD<1.12E+01	258.41
Y-88	LLD<8.79E-01	LLD<8.79E-01	1836.06
Y-91	LLD<4.23E+02	LLD<4.23E+02	1204.90
Y-91M	LLD<2.32E+00	LLD<2.32E+00	555.60
ZN-65	LLD<4.60E+00	LLD<4.60E+00	1115.55
ZR-95	LLD<3.07E+00	LLD<3.07E+00	756.73
ZR-97	LLD<1.49E+00	LLD<1.49E+00	743.33
TOTAL	7.31E+02 +-1.22E+01	7.31E+02 +-1.22E+01	

STANDARD DEVIATION = 0.05

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.73E-09 UC/LI
TOTAL MEASURED ACTIVITY = 7.31E+02 (+-1.22E+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
1127.31	563.13	428.	17.4	1.83E+01
1139.70	569.32	740.	14.4	3.20E+01
1604.72	801.79	368.	13.7	2.11E+01
2730.86	1365.14	99.	21.4	8.84E+00

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2922.13	1460.87	172.	16.0	1.63E+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                *
*                                                                       *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *

CANBERRA SPECTRAN-F V2.06  SOFTWARE

222-S COUNTING ROOM                                  27-AUG-90  13:28:16


                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: SD1087
ANALYZED BY:         MAX

SAMPLE DESCRIPTION: F569
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 15-MAR-90 AT 07:10:10

COLLECT LIVE TIME:     3254. SECONDS
        REAL TIME:      199. SECONDS
        DEAD TIME: -1535.18 %

 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 13:28:16

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

PK	CENTROID CHANNEL	ENERGY KEV	FWHM KEV	BACKGND COUNTS	NET AREA COUNTS	ERROR %	NUCLIDES
1C	1127.55	563.25	1.38	459.	523.	12.7	CS-134, EU-152
2C	1139.64	569.29	1.38	494.	890.	11.4	CS-134, BI-207
3	1210.42	604.67	1.52	526.	5470.	2.9	CS-134
4	1324.31	661.60	1.59	393.	9861.	2.1	CS-137
4B		661.82			38.	46.4	
5C	1592.64	795.75	1.54	258.	3854.	4.0	CS-134
6C	1604.90	801.88	1.54	258.	405.	14.2	CS-134
7	2347.09	1173.10	1.83	230.	5233.	2.9	CO-60
8	2665.64	1332.50	1.90	72.	4671.	2.9	CO-60
9	2730.89	1365.15	1.76	20.	92.	25.4	CS-134
10	2922.37	1460.99	2.02	11.	178.	15.9	K-40
10B		1461.77			197.	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 13:28:16

SAMPLE: F569
DATA COLLECTED ON 15-MAR-90 AT 07:10:10
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<7.24E-01		LLD<7.24E-01		911.07	
AG-108M	LLD<1.84E-01		LLD<1.84E-01		433.94	
AG-110M	LLD<8.41E-01		LLD<8.41E-01		657.76	
AM-241	LLD<7.59E-01		LLD<7.59E-01		59.54	
AM-243	LLD<2.01E-01		LLD<2.01E-01		74.67	
AR-41	LLD<1.15E-01		LLD<1.15E-01		1293.64	
AU-198	LLD<1.64E-01		LLD<1.64E-01		411.80	
BA-133	LLD<2.45E-01		LLD<2.45E-01		356.02	
BA-139	LLD<4.12E-01		LLD<4.12E-01		165.85	
BA-140	LLD<6.21E-01		LLD<6.21E-01		537.27	
BA-141	LLD<2.36E-01		LLD<2.36E-01		190.23	
BE-7	LLD<1.72E+00		LLD<1.72E+00		477.59	
BI-207	LLD<1.70E-01		LLD<1.70E-01		569.70	
BI-212	LLD<2.23E+00		LLD<2.23E+00		727.27	
BI-214	LLD<1.00E+00		LLD<1.00E+00		609.32	
CD-109	LLD<2.87E+00		LLD<2.87E+00		88.03	
CE-139	LLD<1.12E-01		LLD<1.12E-01		165.85	
CE-141	LLD<1.72E-01		LLD<1.72E-01		145.44	
CEPR144	LLD<1.43E+00		LLD<1.43E+00		133.51	
CO-56	LLD<1.73E-01		LLD<1.73E-01		846.76	
CO-57	LLD<9.28E-02		LLD<9.28E-02		122.06	
CO-58	LLD<1.69E-01		LLD<1.69E-01		810.75	
CO-60	2.05E+01	+-6.38E-01	2.05E+01	+-6.38E-01	1332.50	-0.00
					1173.24	-0.14
CR-51	LLD<1.27E+00		LLD<1.27E+00		320.09	
CS-134	1.28E+01	+-5.38E-01	1.28E+01	+-5.38E-01	795.84	-0.10
					604.70	-0.03
CS-136	LLD<1.71E-01		LLD<1.71E-01		818.51	
CS-137	2.81E+01	+-6.78E-01	2.81E+01	+-6.78E-01	661.65	-0.05
CS-138	LLD<9.04E-02		LLD<9.04E-02		1435.86	
EU-152	LLD<3.59E-01		LLD<3.59E-01		1408.01	
EU-154	LLD<2.89E-01		LLD<2.89E-01		1274.45	
EU-155	LLD<3.56E-01		LLD<3.56E-01		105.31	
FE-59	LLD<3.89E-01		LLD<3.89E-01		1099.25	
HF-181	LLD<1.81E-01		LLD<1.81E-01		482.20	
HG-203	LLD<1.50E-01		LLD<1.50E-01		279.20	
I-131	LLD<1.91E-01		LLD<1.91E-01		364.48	
I-132	LLD<2.26E-01		LLD<2.26E-01		667.69	
I-133	LLD<1.76E-01		LLD<1.76E-01		529.69	
I-134	LLD<1.83E-01		LLD<1.83E-01		847.03	
I-135	LLD<3.87E-01		LLD<3.87E-01		1260.41	
K-40	LLD<1.82E+00		LLD<1.82E+00		1460.75	
KR-85	LLD<3.74E+01		LLD<3.74E+01		513.99	
KR-85M	LLD<1.02E-01		LLD<1.02E-01		151.17	
KR-87	LLD<3.42E-01		LLD<3.42E-01		402.58	
KR-89	LLD<7.88E-01		LLD<7.88E-01		220.90	
LA-140	LLD<6.32E-02		LLD<6.32E-02		1596.20	

LA-142	LLD<3.12E-01	LLD<3.12E-01	641.83
MN-54	LLD<1.66E-01	LLD<1.66E-01	834.83
MN-56	LLD<1.74E-01	LLD<1.74E-01	846.76
NA-22	LLD<9.83E-02	LLD<9.83E-02	1274.55
NA-24	LLD<1.44E-01	LLD<1.44E-01	1368.60
NB-94	LLD<1.53E-01	LLD<1.53E-01	702.63
NB-95	LLD<1.62E-01	LLD<1.62E-01	765.78
NB-97	LLD<8.22E-01	LLD<8.22E-01	657.92
NP-238	LLD<7.78E-01	LLD<7.78E-01	984.45
NP-239	LLD<8.62E-01	LLD<8.62E-01	277.60
PA-233	LLD<3.87E-01	LLD<3.87E-01	311.98
PA-234M	LLD<3.57E+01	LLD<3.57E+01	1001.03
PB-210	LLD<4.39E+00	LLD<4.39E+00	465.03
PB-212	LLD<2.70E-01	LLD<2.70E-01	239.00
PB-214	LLD<4.18E-01	LLD<4.18E-01	351.92
PO-210	LLD<1.54E+04	LLD<1.54E+04	804.00
PO-214	LLD<6.40E+03	LLD<6.40E+03	799.70
PO-216	LLD<1.30E+04	LLD<1.30E+04	804.90
PU-239	LLD<1.24E+03	LLD<1.24E+03	129.30
PU-241	LLD<4.57E+04	LLD<4.57E+04	148.57
RA-224	LLD<2.96E+00	LLD<2.96E+00	240.99
RA-226	LLD<2.64E+00	LLD<2.64E+00	186.10
RB-88	LLD<3.44E-01	LLD<3.44E-01	1836.00
RB-89	LLD<3.82E-01	LLD<3.82E-01	1031.88
RN-220	LLD<1.44E+02	LLD<1.44E+02	549.73
RU-103	LLD<1.71E-01	LLD<1.71E-01	497.08
RURH106	LLD<3.00E+00	LLD<3.00E+00	621.80
SB-124	LLD<3.09E-01	LLD<3.09E-01	602.72
SB-125	LLD<1.38E+00	LLD<1.38E+00	176.33
SC-46	LLD<2.04E-01	LLD<2.04E-01	1120.45
SE-75	LLD<2.02E-01	LLD<2.02E-01	264.66
SN-113	LLD<2.33E-01	LLD<2.33E-01	391.67
SR-85	LLD<1.64E-01	LLD<1.64E-01	513.99
SR-91	LLD<2.80E-01	LLD<2.80E-01	555.60
SR-92	LLD<7.87E-02	LLD<7.87E-02	1383.94
TA-182	LLD<5.90E-01	LLD<5.90E-01	1121.30
TC-99M	LLD<9.22E-02	LLD<9.22E-02	140.51
TE-123M	LLD<1.03E-01	LLD<1.03E-01	159.00
TE-125M	LLD<2.66E+01	LLD<2.66E+01	109.27
TE-132	LLD<1.28E-01	LLD<1.28E-01	228.16
TH-228	LLD<9.26E+00	LLD<9.26E+00	84.37
TL-208	LLD<1.96E-01	LLD<1.96E-01	583.14
U-235	LLD<1.76E-01	LLD<1.76E-01	185.71
U-237	LLD<5.18E-01	LLD<5.18E-01	208.00
W-187	LLD<5.18E-01	LLD<5.18E-01	685.74
XE-131M	LLD<4.68E+00	LLD<4.68E+00	163.98
XE-133	LLD<3.20E-01	LLD<3.20E-01	81.00
XE-133M	LLD<1.15E+00	LLD<1.15E+00	233.21
XE-135	LLD<1.35E-01	LLD<1.35E-01	249.79
XE-138	LLD<3.99E-01	LLD<3.99E-01	258.41
Y-88	LLD<6.95E-02	LLD<6.95E-02	1836.06
Y-91	LLD<4.43E+01	LLD<4.43E+01	1204.90
Y-91M	LLD<1.61E-01	LLD<1.61E-01	555.60
ZN-65	LLD<4.48E-01	LLD<4.48E-01	1115.55
ZR-95	LLD<2.81E-01	LLD<2.81E-01	756.73
ZR-97	LLD<1.49E-01	LLD<1.49E-01	743.33
TOTAL	6.14E+01 +-1.07E+00	6.14E+01 +-1.07E+00	

STANDARD DEVIATION = 0.05

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.46E-09 UC/LI
TOTAL MEASURED ACTIVITY = 6.14E+01 (+-1.07E+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
1127.55	563.25	523.	12.7	2.06E+01
1139.64	569.29	890.	11.4	3.54E+01
1604.90	801.88	405.	14.2	2.14E+01
2730.89	1365.15	92.	25.4	7.57E+00

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2922.37	1460.99	178.	15.9	1.55E+01

Analytical Batch

LAB SEGMENT SERIAL #:F0561

CUSTOMER ID:89-076

INSTRUMENT	WA77344
PROCEDURE/REV	LA-925-106/A-2
TECHNOLOGIST	Sue Lai
DATE	June 28, 1990
TEMPERATURE	N/A
STARTING TIME	1230
ENDING TIME	1515
CHEMIST	S. A. Catlow

Uranium Analysis

Fusion Dissolution

	DESCRIPTION	LAB ID
1	Initial LMCS Check Std.	F0565
2	Reagent Blank	F0580
3	Sample 89-076	F0566
4	Duplicate Sample 89-076	F0567
5	Spike 89-076	F0568
6	Final LMCS Check Std.	F0569
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 Standard	58B38/1uL			5.7 mL
Spike 89-076	54B38/2.45ul	F0566/2.45ul		5.75 mL

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

WATER DIGESTION TEST ANALYSIS

Single Shell Tank Project

Water Digestion
Sample Results on Solid Weight

Tank 241-U-110
Core 13
Segment 4
Customer ID: 89-076

Laboratory Segment Serial No. : F0561

		Check Standard	Blank		Sample		Sample Duplicate		Spike of Sample		Check Standard
Laboratory ID:			F0582		F0571		F0572		F0573		
Water Digestion			Complete		9.21	g/L	10.16	g/L	10.11	g/L	
Laboratory ID:		F0426	F0438		F0571		F0572		F0429		F0574
Ion Chromatograph											
Fluoride	2nd Run	90.80%	<0.1	ppm	1.63E+03	ug/g	N/A	ug/g	85.60%		91.80%
Chloride	1st Run	99.70%	0.202	ppm	2.46E+03	ug/g	2.31E+03	ug/g	102.40%		97.50%
Nitrate	1st Run	101.90%	<1.0	ppm	9.02E+04	ug/g	7.68E+04	ug/g	108.40%		102.70%
Phosphate	1st Run	100.80%	<1.0	ppm	1.08E+04	ug/g	8.57E+03	ug/g	105.60%		101.50%
Sulfate	1st Run	100.80%	<1.0	ppm	5.49E+03	ug/g	4.75E+03	ug/g	110.30%		100.50%
Laboratory ID:		F1197	F1198		F0571		F0572		F1201		F1202
Fluoride	3rd Run	97.20%	<0.1	ppm	N/A	ug/g	4.30E+03	ug/g	99.40%		100.30%
Laboratory ID:		F0570	F0582		F0571		F0572		F0573		F1202
Total Organic Carbon		96.30%	2.8	ug	8.96E+02	ug/g	7.58E+02	ug/g	98.30%		97.30%

Single Shell Tank Project

Water Digestion
Sample Results on Laboratory Digestion

Tank 241-U-110
Core 13
Segment 4
Customer ID: 89-076 Laboratory Segment Serial No.: F0561

		Check Standard	Blank		Sample		Sample Duplicate		Spike of Sample	Check Standard
Laboratory ID:		N/A	F0582		F0571		F0572		F0573	N/A
Water Digestion		N/A	Complete		9.21	g/L	10.16	g/L	10.11	N/A
Laboratory I.D.		F0426	F0438		F0571		F0572		F0429	F0574
Ion Chromatograph										
Fluoride	2nd Run	90.80%	<0.1	ppm	1.50E+01	ppm	N/A	ppm	85.60%	91.80%
Chloride	1st Run	99.70%	0.202	ppm	2.27E+01	ppm	2.35E+01	ppm	102.40%	97.50%
Nitrate	1st Run	101.90%	<1.0	ppm	8.31E+02	ppm	7.80E+02	ppm	108.40%	102.70%
Phosphate	1st Run	100.80%	<1.0	ppm	1.00E+02	ppm	8.71E+01	ppm	105.60%	101.50%
Sulfate	1st Run	100.80%	<1.0	ppm	5.06E+01	ppm	4.83E+01	ppm	110.30%	100.50%
Laboratory ID:		F1197	F1198		F0571		F0572		F1201	F1202
Fluoride	3rd Run	97.20%	<0.1	ppm	N/A	ppm	4.37E+01	ppm	99.40%	100.30%
Laboratory ID:		F0570	F0582		F0571		F0572		F0573	F0574
Total Organic Carbon		96.30%	2.8	ug	8.25E-03	g/L	7.70E-03	g/L	98.30%	97.30%

Analytical Batch

LAB SEGMENT SERIAL #:F0561

CUSTOMER ID:89-076

INSTRUMENT	N/A
PROCEDURE/REV	LA-504-101/A-2
TECHNOLOGIST	M. Franz
DATE	March 13, 1990
TEMPERATURE	N/A
STARTING TIME	0830
ENDING TIME	1500
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	F0582
2	Sample 89-076	F0571
3	Duplicate Sample 89-076	F0572
4	Spike of Sample 89-076	F0573
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

Analytical Batch

LAB SEGMENT SERIAL #:F0561

CUSTOMER ID:89-076

INSTRUMENT	WB24721
PROCEDURE/REV	LA-533-105/A-3
TECHNOLOGIST	N. E. Wright
DATE	April 06, 1990
TEMPERATURE	22 C
STARTING TIME	1100 04-05-90
ENDING TIME	1515 04-05-90
CHEMIST	H. S. Rich

Ion Chromatograph Analysis from Water Digestion

	DESCRIPTION		LAB ID
1	Initial LMCS Check Std.		F0426
2	Reagent Blank		F0438
3	Sample	89-070	F0427
4	Duplicate Sample	89-070	F0428
5	Spike	89-070	F0429
6	Sample	89-071	F0451
7	Duplicate Sample	89-071	F0452
8	Sample	89-072	F0475
9	Duplicate Sample	89-072	F0476
10	Sample	89-075	F0547
11	Duplicate Sample	89-075	F0548

	DESCRIPTION		LAB ID
12	Sample	89-076	F0571
13	Duplicate Sample	89-076	F0572
14	Sample	Core-007	F0983
15	Duplicate Sample	Core-007	F0984
16	Duplicate Sample	Core-006	F0064
17	Final LMCS Check Std.		F0574
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.	6C11HO/100uL			10.1 mL
Spike of 89-083	35C9-77/300uL	F0427/50uL		5.3 mL

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:	April 03, 1990		

Calibration Standard ID: 35C9-77 issued April 02, 1990

Analyte Concentration: F 60.0 Cl 76.0 NO_3 611.0 PO_4 606.0 SO_4 589.0

Type of Calibration: Linear

Comments:

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

Detector Parameters

Number of Detectors	1
Detector 1 Type	CDM

Report Options

Run Time (minutes)	11.50
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: A:\90040300.D05	
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

Component # 1 FLUORIDE Retention Time 1.02
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 4.11817E-004
Least Squares Intercept = -6.11181E-002
Ka = -3.36922E-010

Level	Amount	Area	Height
1	1.19800E-001	1733	320
2	2.98500E-001	4705	821
3	5.94100E-001	9348	1644
4	1.17650E+000	21998	3547
5	2.30800E+000	37180	5315
6	4.44440E+000	74116	11092

Component # 2 CHLORIDE Retention Time 1.62
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 7.20825E-004
Least Squares Intercept = -7.89437E-002
Ka = -1.05413E-008

Level	Amount	Area	Height
1	1.51700E-001	1456	241
2	3.78110E-001	4024	594
3	7.52480E-001	8080	1191
4	1.49020E+000	17215	2702
5	2.92300E+000	28370	4066
6	5.62950E+000	59291	9183

Component # 3 NITRITE Retention Time 1.95
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 6.03697E-004
Least Squares Intercept = 4.43064E-001
Ka = 3.82504E-009

Level	Amount	Area	Height
1	1.06990E+000	9937	1360
2	2.66670E+000	25698	3515
3	5.30700E+000	53506	7323
4	1.05099E+001	114215	15244
5	2.06146E+001	218918	28443
6	3.97026E+001	440177	49476

Component # 4 BROMIDE Retention Time 3.00
Reference Peak FLUORIDE Window Size 5.00%
Least Squares Slope = 1.66948E-003
Least Squares Intercept = 2.80223E-001
Ka = -5.76698E-010

Level	Amount	Area	Height
1	1.00100E+000	0	495
2	2.49500E+000	0	1341
3	4.96500E+000	0	2740
4	9.86850E+000	0	5689
5	1.92877E+001	0	11502
6	3.71471E+001	0	22240

Component # 5 NITRATE Retention Time 3.70
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 2.26506E-003
Least Squares Intercept = -5.58779E-001
Ka = 2.11324E-008

Level	Amount	Area	Height
1	1.21960E+000	7363	607
2	3.03970E+000	19564	1518
3	6.04950E+000	39111	2906
4	1.19805E+001	83794	5858
5	2.34991E+001	132213	9250
6	4.52580E+001	274103	17468

Component # 6 PHOSPHATE Retention Time 6.03
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 6.51026E-003
Least Squares Intercept = -2.98628E-001
Ka = -1.07878E-007

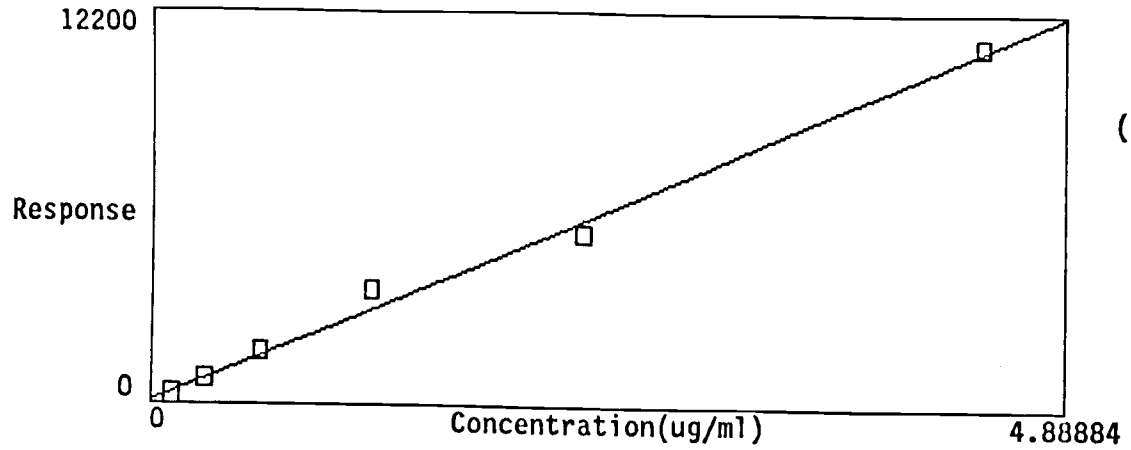
Level	Amount	Area	Height
1	1.20960E+000	3420	198
2	3.01490E+000	9585	519
3	6.00000E+000	19755	1057
4	1.18824E+001	32539	1886
5	2.33068E+001	69406	3876
6	4.48876E+001	142872	8003

Component # 7 SULFATE Retention Time 7.48
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 3.09635E-003
Least Squares Intercept = -7.42866E-001
Ka = -2.82182E-008

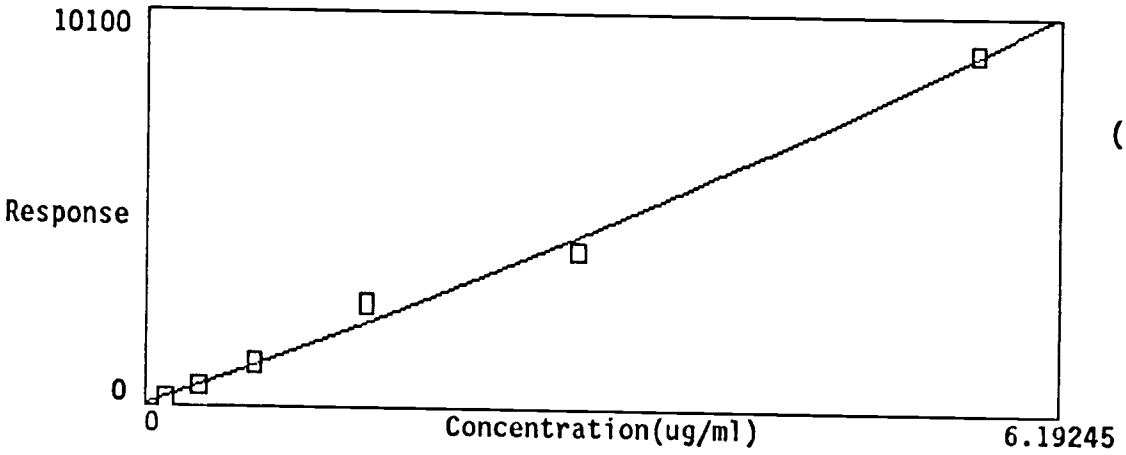
Level	Amount	Area	Height
1	1.17560E+000	10745	515
2	2.93030E+000	26326	1236
3	5.83170E+000	50588	2357
4	1.15491E+001	79004	4005
5	2.26530E+001	163581	8158
6	4.36284E+001	343157	16953

Component # 8 Oxalate Retention Time 9.77
Reference Peak FLUORIDE Window Size 10.00%
Least Squares Slope = 0.00000E+000
Least Squares Intercept = 0.00000E+000
Ka = 0.00000E+000

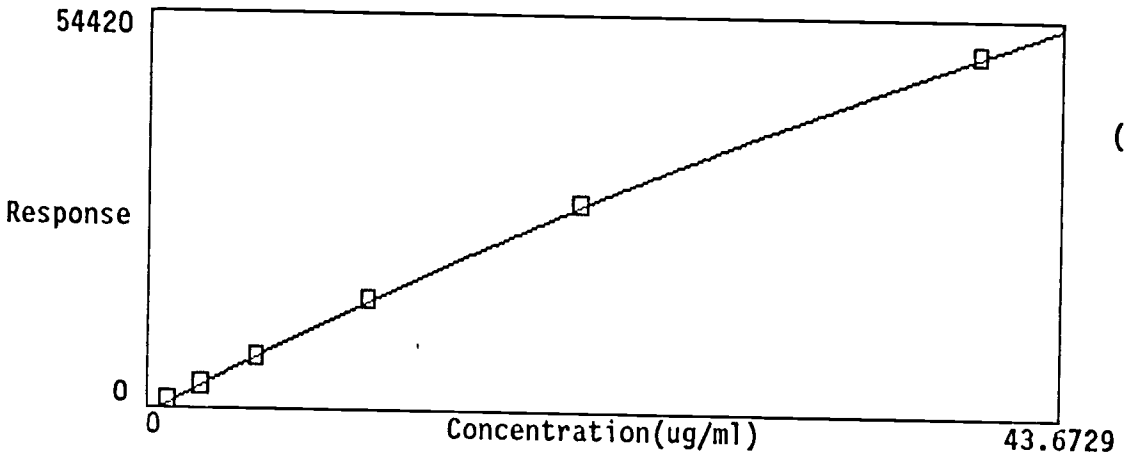
Level	Amount	Area	Height
1	0.00000E+000	0	0
2	0.00000E+000	0	0
3	0.00000E+000	0	0
4	0.00000E+000	0	0
5	0.00000E+000	0	0
6	0.00000E+000	98993	5848



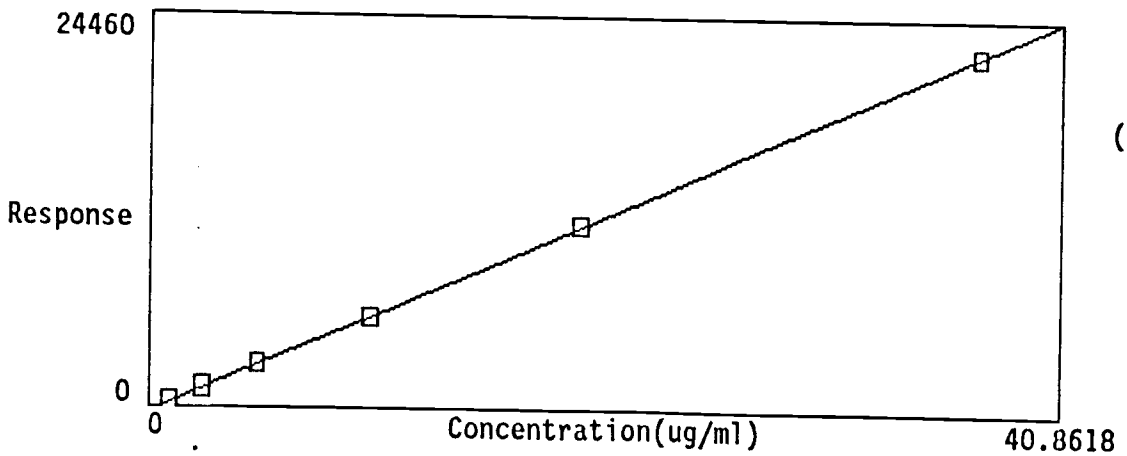
Component: FLUORIDE
Fit Type: Quadratic
Conc = (-3.369224e-010
(4.118173e-004 * Resp)+



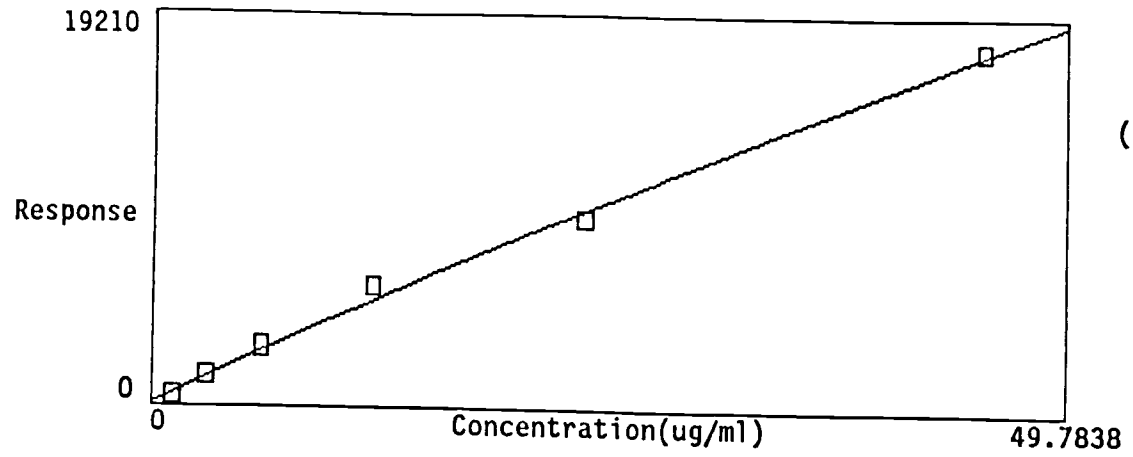
Component: CHLORIDE
Fit Type: Quadratic
Conc = (-1.054134e-008
(7.208249e-004 * Resp)+



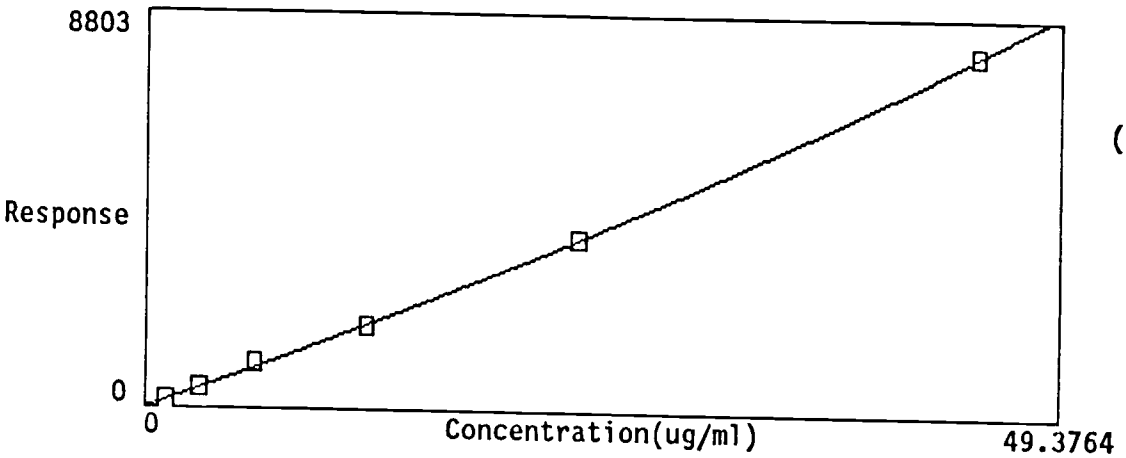
Component: NITRITE
Fit Type: Quadratic
Conc = (3.824921e-009 *
(6.037006e-004 * Resp)+



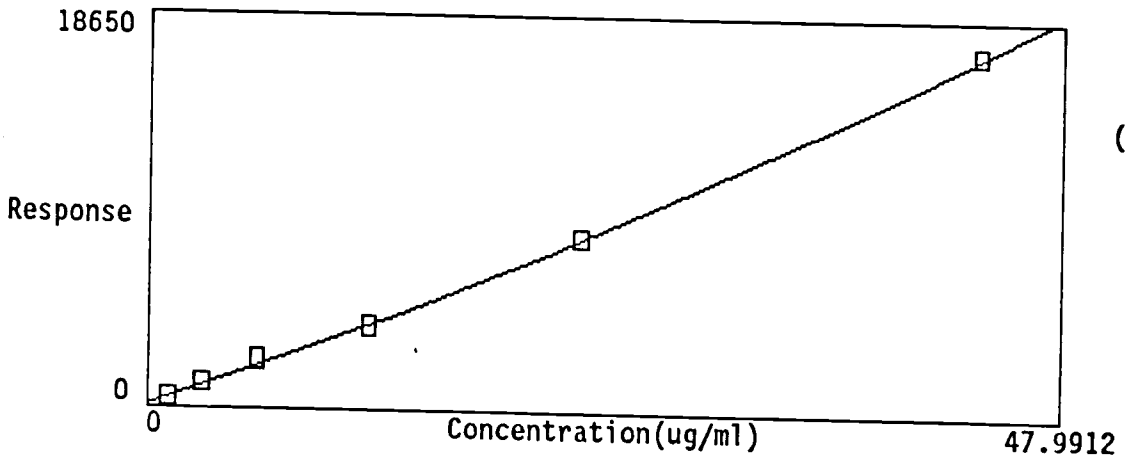
Component: BROMIDE
Fit Type: Quadratic
Conc = (-5.766983e-010
(1.669477e-003 * Resp)+



Component: NITRATE
Fit Type: Quadratic
Conc = (2.113242e-008 *
(2.265060e-003 * Resp)+



Component: PHOSPHATE
Fit Type: Quadratic
Conc = (-1.078779e-007
(6.510264e-003 * Resp)+



Component: SULFATE
Fit Type: Quadratic
Conc = (-2.821818e-008
(3.096352e-003 * Resp)+

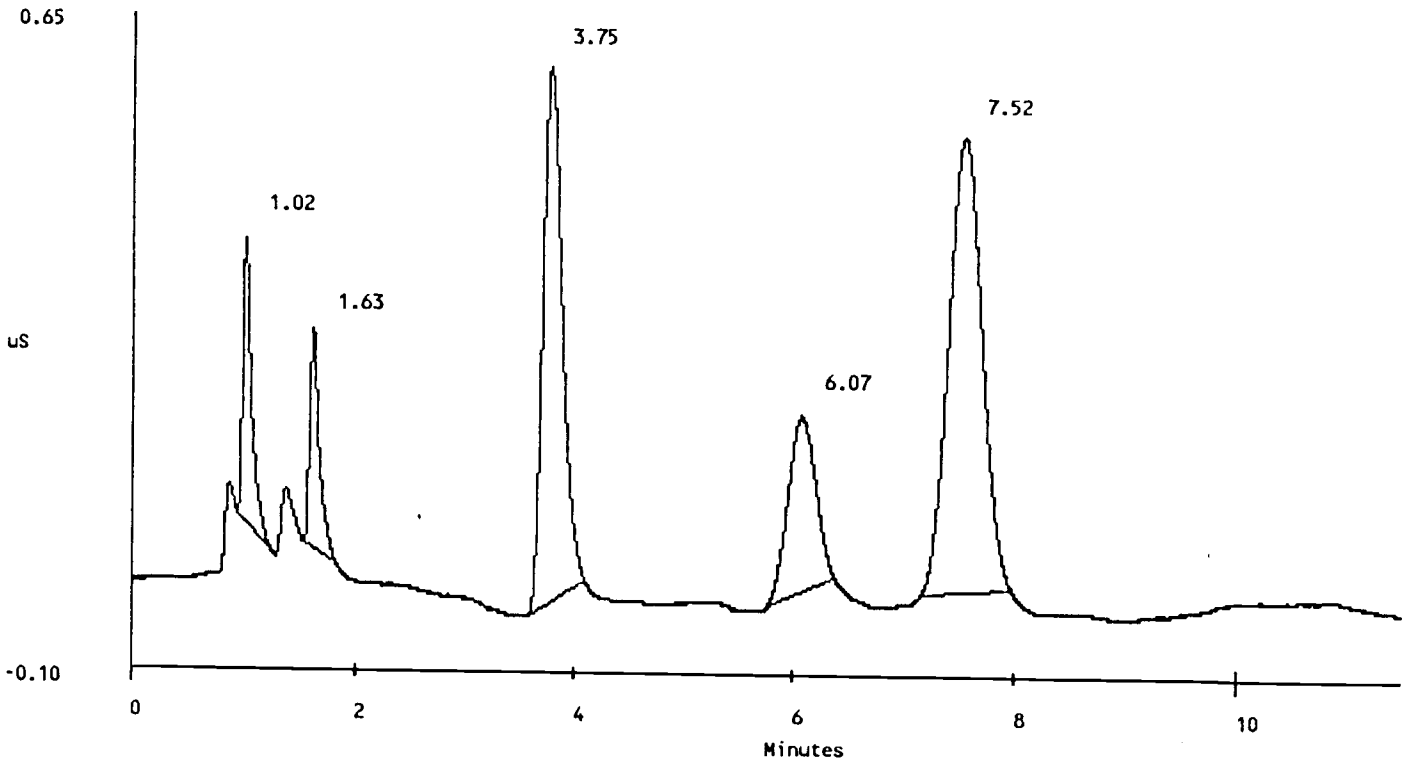
DATA REPROCESSED ON Mon Jul 02 13:05:05 1990

```
Sample Name: AUTOCAL1R                          Date: Tue Apr 03 10:17:01 1990
Data File  : A:\90040300.D03
Method     : C:\WINDOWS\AI400\METHOD\SST.MET
CIM Address: 1       System : 1       Cycle#:   3       Detector: CDM
```

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

Stop time = 11.50 Minutes Number of Data Points = 3451
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	1.02	FLUORIDE	1.198e-001	1.733e+003	320	1	0	0.00%
2	1.63	CHLORIDE	1.517e-001	1.456e+003	241	1	0	0.00%
3	3.75	NITRATE	1.220e+000	7.363e+003	607	1	0	0.00%
4	6.07	PHOSPHATE	1.210e+000	3.420e+003	198	1	0	0.00%
5	7.52	SULFATE	1.176e+000	1.075e+004	515	1	0	0.00%



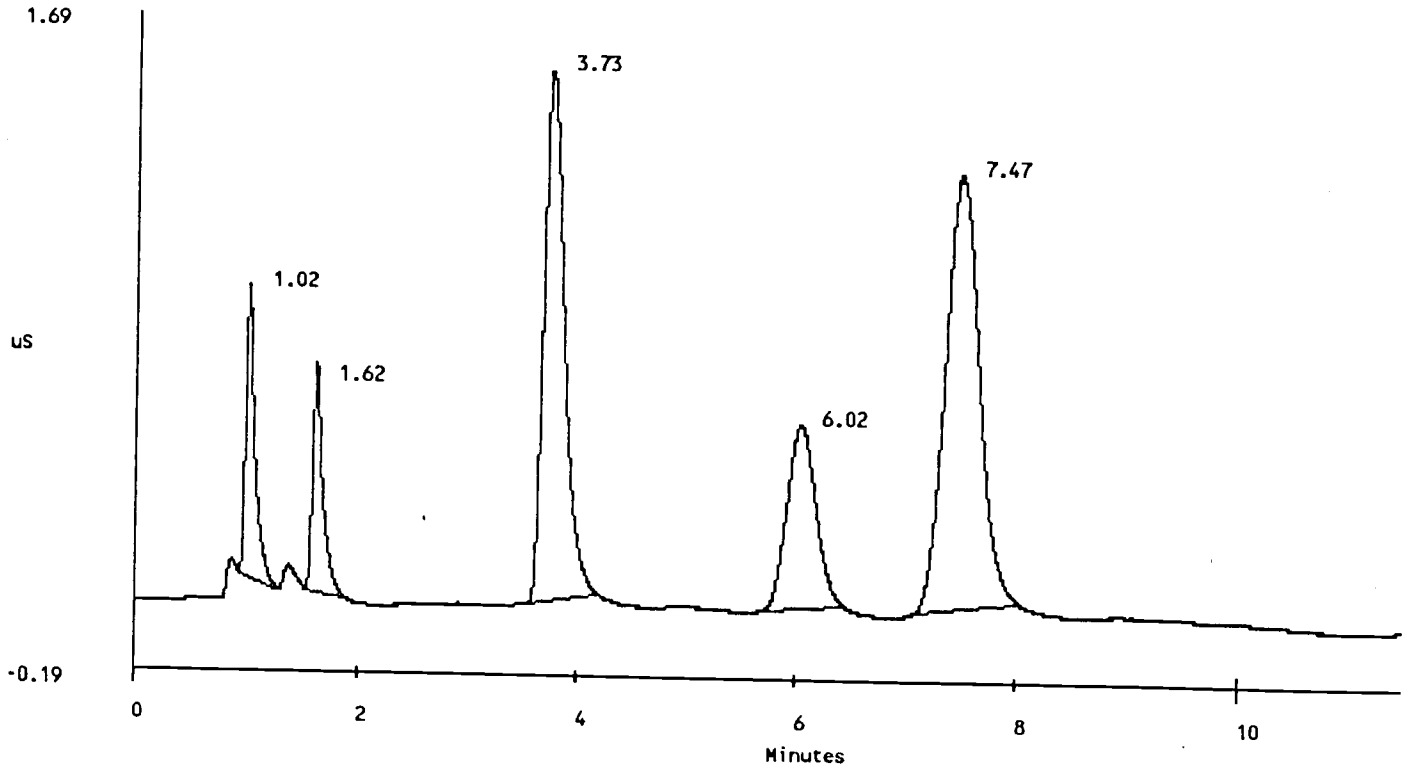
DATA REPROCESSED ON Mon Jul 02 14:37:19 1990

Sample Name: AUTOCAL2R
Data File : A:\90040300.D04
Method : C:\WINDOWS\AI400\METHOD\SST.MET
CIM Address: 1 System : 1 Cycle#: 4 Detector: CDM
Date: Tue Apr 03 10:29:21 1990

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

Stop time = 11.50 Minutes
Area reject = 1000
Amount Injected = 1
Number of Data Points = 3451
One Data Point per 0.2 seconds
Dilution factor = 1

PEAK NUM	RET TIME	PEAK NAME	CONC. in ug/ml	AREA	HEIGHT	BL	REF PEAK	% DELTA RET TIME
1	1.02	FLUORIDE	2.984e-001	4.705e+003	821	1	0	0.00%
2	1.62	CHLORIDE	3.783e-001	4.024e+003	594	1	0	-1.02%
3	3.73	NITRATE	3.039e+000	1.956e+004	1518	1	0	-0.44%
4	6.02	PHOSPHATE	5.755e+000	9.585e+003	519	1	0	-0.82%
5	7.47	SULFATE	6.145e+000	2.633e+004	1236	1	0	-0.67%



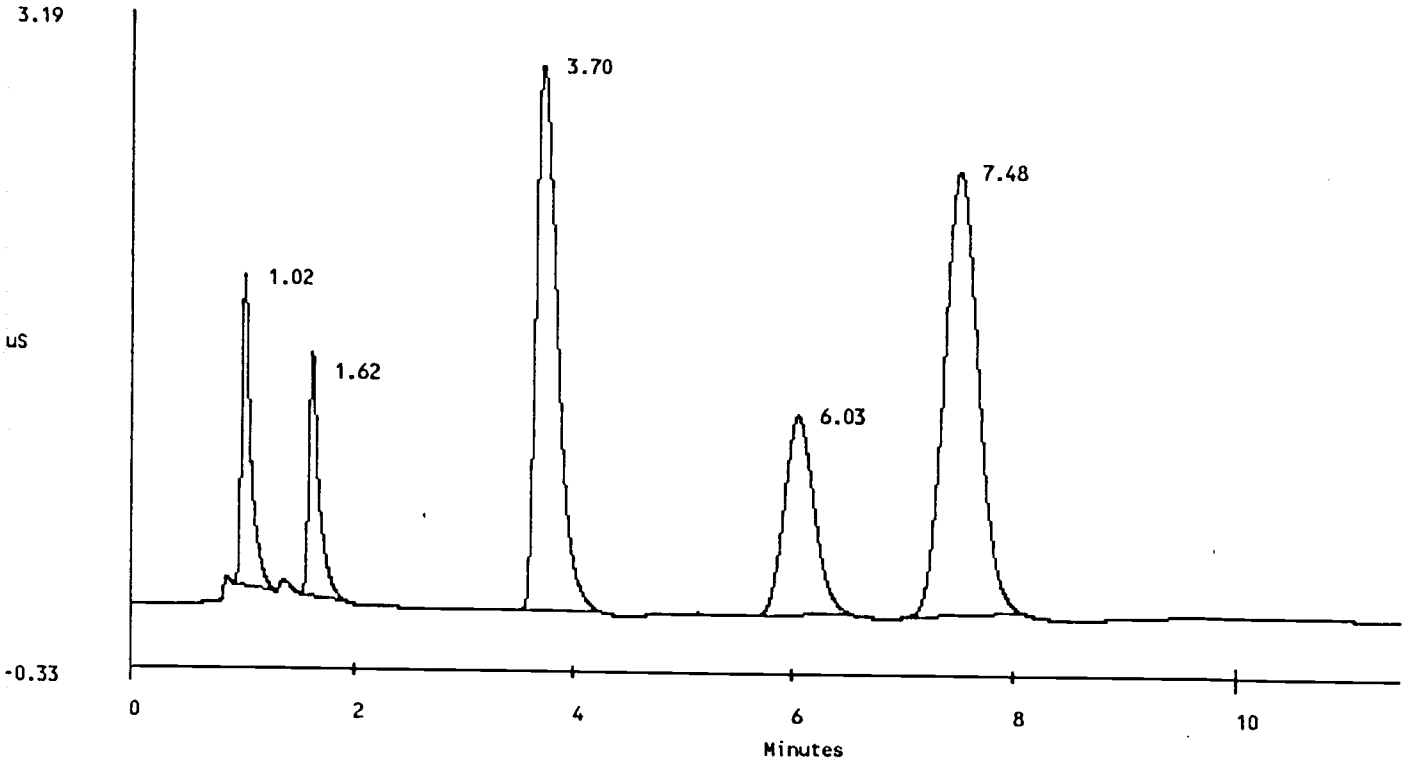
DATA REPROCESSED ON Mon Jul 02 14:37:59 1990

Sample Name: AUTOCAL3R Date: Tue Apr 03 10:41:41 1990
Data File : A:\90040300.D05
Method : C:\WINDOWS\AI400\METHOD\SST.MET
CIM Address: 1 System : 1 Cycle#: 5 Detector: CDM

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

Stop time = 11.50 Minutes Number of Data Points = 3451
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	1.02	FLUORIDE	5.941e-001	9.348e+003	1644	1	0	0.00%
2	1.62	CHLORIDE	7.523e-001	8.080e+003	1191	1	0	-1.02%
3	3.70	NITRATE	6.051e+000	3.911e+004	2906	1	0	-1.33%
4	6.03	PHOSPHATE	8.564e+000	1.976e+004	1057	1	0	-0.55%
5	7.48	SULFATE	8.817e+000	5.059e+004	2357	1	0	-0.44%



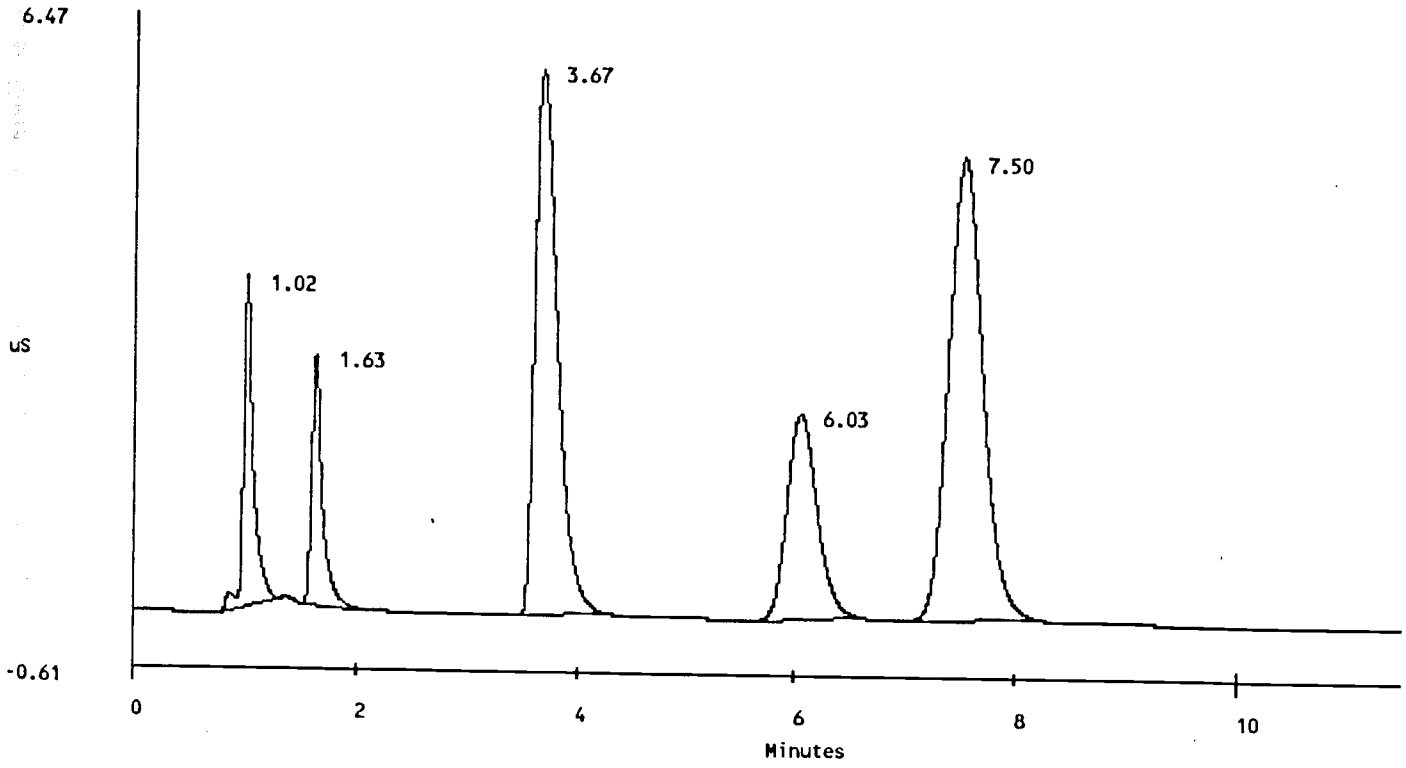
DATA REPROCESSED ON Mon Jul 02 14:38:33 1990

Sample Name: AUTOCAL4R Date: Tue Apr 03 10:54:02 1990
Data File : A:\90040300.D06
Method : C:\WINDOWS\AI400\METHOD\SST.MET
CIM Address: 1 System : 1 Cycle#: 6 Detector: CDM

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

Stop time = 11.50 Minutes Number of Data Points = 3450
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	1.02	FLUORIDE	1.177e+000	2.200e+004	3547	1	0	0.00%
2	1.63	CHLORIDE	1.490e+000	1.722e+004	2702	1	0	0.00%
3	3.67	NITRATE	1.198e+001	8.379e+004	5858	1	0	-2.22%
4	6.03	PHOSPHATE	1.460e+001	4.206e+004	2212	1	0	-0.55%
5	7.50	SULFATE	1.496e+001	1.068e+005	4931	1	0	-0.22%



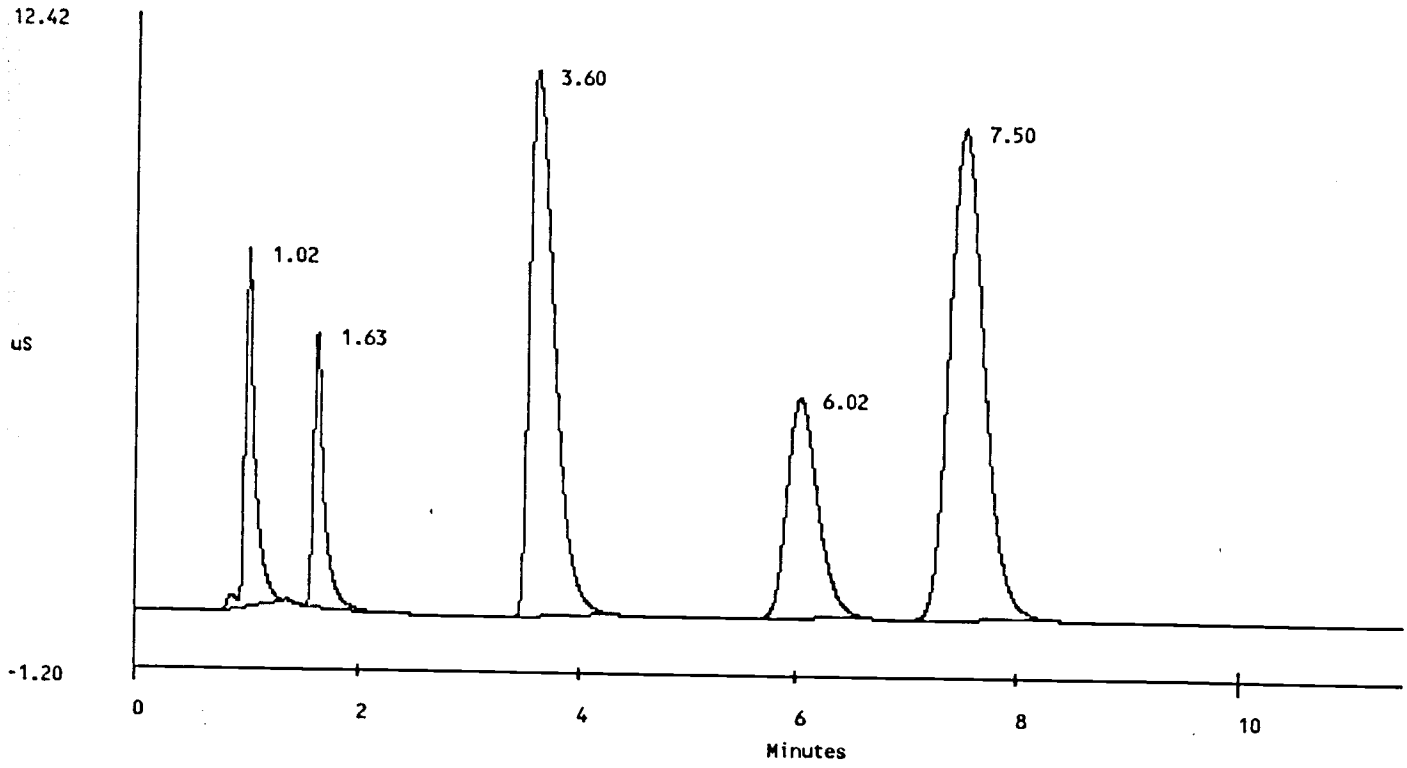
DATA REPROCESSED ON Mon Jul 02 14:39:07 1990

Sample Name: AUTOCAL5R Date: Tue Apr 03 11:06:22 1990
Data File : A:\90040300.D07
Method : C:\WINDOWS\AI400\METHOD\SST.MET
CIM Address: 1 System : 1 Cycle#: 7 Detector: CDM

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

Stop time = 11.50 Minutes Number of Data Points = 3450
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	1.02	FLUORIDE	3.050e+000	4.520e+004	7323	1	0	0.00%
2	1.63	CHLORIDE	3.751e+000	3.558e+004	5631	1	0	0.00%
3	3.60	NITRATE	2.869e+001	1.757e+005	11209	1	0	-4.00%
4	6.02	PHOSPHATE	2.675e+001	8.811e+004	4535	1	0	-0.82%
5	7.50	SULFATE	2.728e+001	2.192e+005	10100	1	0	-0.22%



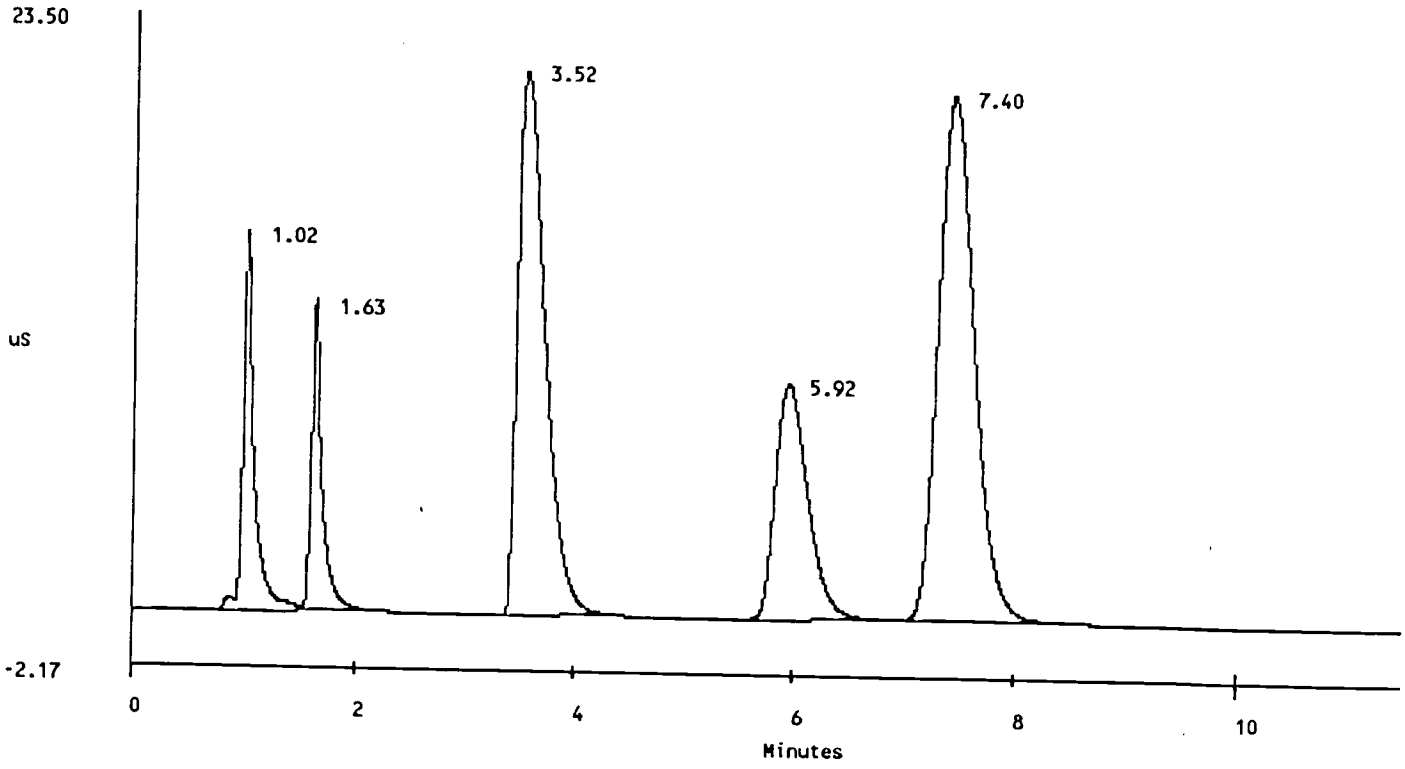
DATA REPROCESSED ON Mon Jul 02 14:39:42 1990

Sample Name: AUTOCAL6R Date: Tue Apr 03 11:18:42 1990
Data File : A:\90040300.D08
Method : C:\WINDOWS\AI400\METHOD\SST.MET
CIM Address: 1 System : 1 Cycle#: 8 Detector: CDM

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

Stop time = 11.50 Minutes
Area reject = 1000
Amount Injected = 1
Number of Data Points = 3451
One Data Point per 0.2 seconds
Dilution factor = 1

PEAK NUM	RET TIME	PEAK NAME	CONC. in ug/ml	AREA	HEIGHT	BL	REF PEAK	% DELTA RET TIME
1	1.02	FLUORIDE	5.778e+000	9.886e+004	14697	2	0	0.00%
2	1.63	CHLORIDE	7.060e+000	7.699e+004	11887	2	0	0.00%
3	3.52	NITRATE	5.544e+001	3.641e+005	21314	1	0	-6.22%
4	5.92	PHOSPHATE	5.042e+001	1.851e+005	9060	1	0	-2.47%
5	7.40	SULFATE	5.218e+001	4.591e+005	20537	1	0	-1.55%



DIONEX SCHEDULE - A:\90040500.SCH

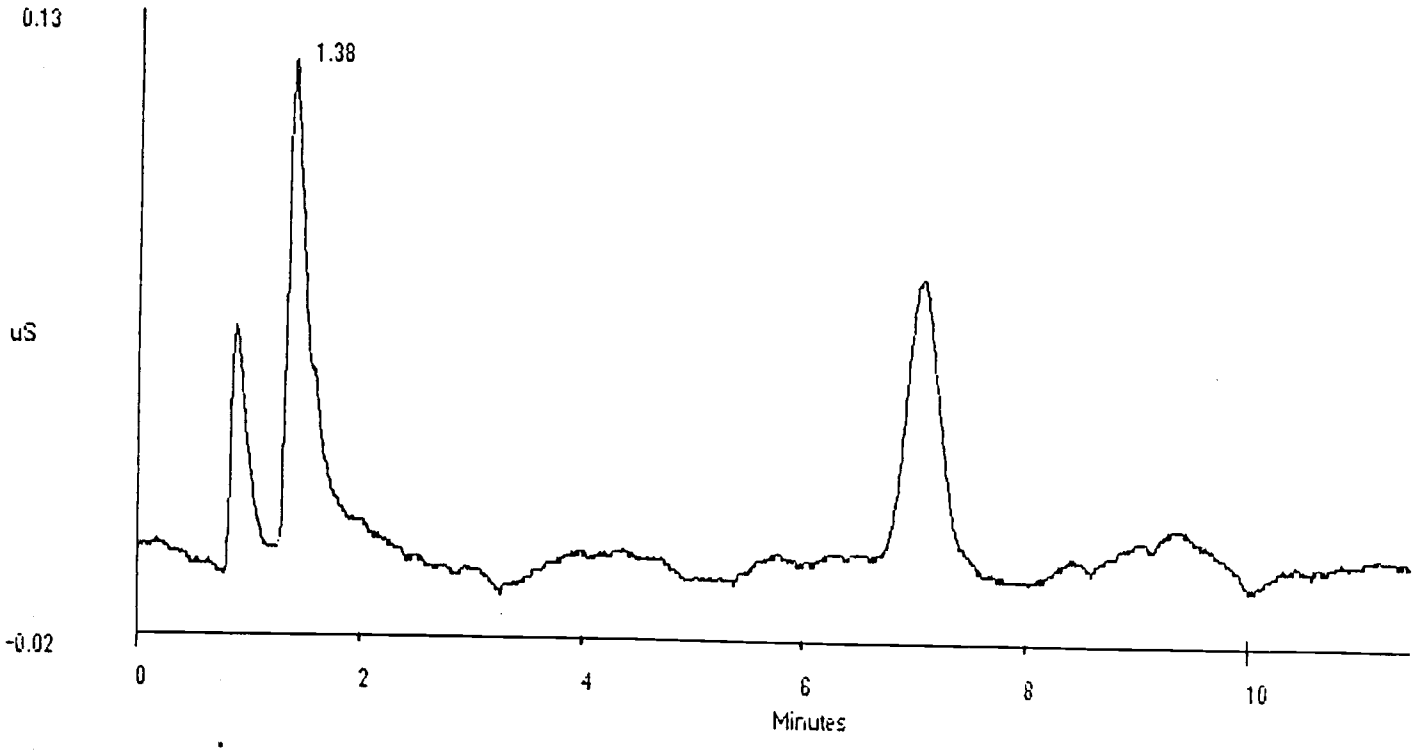
Inject	Sample Name	Method Name	Data File	Volume	Dilution	Int Std
1	SETUP	c:\windows\ai	c:\windows\ai	1	1	0
2	BLANK	c:\windows\ai	c:\windows\ai	1	1	0
3	LMCS/6C11-HO	c:\windows\ai	c:\windows\ai	1	101	0
4	438B	c:\windows\ai	c:\windows\ai	1	1	0
5	427	c:\windows\ai	c:\windows\ai	1	101	0
6	428D	c:\windows\ai	c:\windows\ai	1	101	0
7	429S	c:\windows\ai	c:\windows\ai	1	101	0
8	451	c:\windows\ai	c:\windows\ai	1	101	0
9	452D	c:\windows\ai	c:\windows\ai	1	101	0
10	475	c:\windows\ai	c:\windows\ai	1	101	0
11	476D	c:\windows\ai	c:\windows\ai	1	101	0
12	547	c:\windows\ai	c:\windows\ai	1	101	0
13	548D	c:\windows\ai	c:\windows\ai	1	101	0
14	571	c:\windows\ai	c:\windows\ai	1	101	0
15	572D	c:\windows\ai	c:\windows\ai	1	101	0
16	983	c:\windows\ai	c:\windows\ai	1	51	0
17	984D	c:\windows\ai	c:\windows\ai	1	51	0
18	64D	c:\windows\ai	c:\windows\ai	1	101	0
19	LMCS/6C11-HO	c:\windows\ai	c:\windows\ai	1	101	0

```
Sample Name: BLANK                                    Date: Thu Apr 05 11:57:04 1990
Data File  : c:\windows\ai400\data\900-5963.d02
Method     : c:\windows\ai400\method\sst.met
CIM Address: 1        System : 1        Cycle#:   2        Detector: CDM
```

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

Start Time = 0.00 minutes Stop time = 11.50 Minutes
Number of Data Points = 3450 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	1.38		0.000e+000	1.021e+003	106		1	

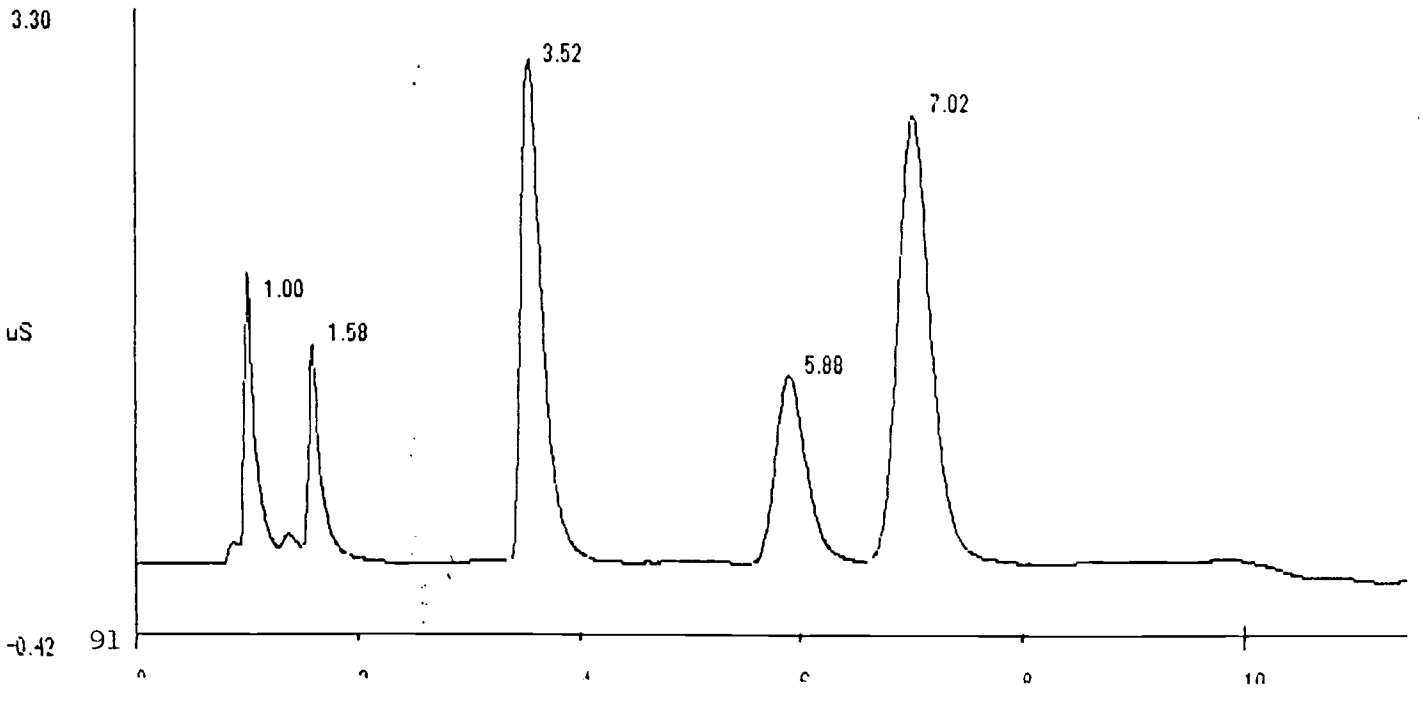


Sample Name: LMCS/6C11-HO			Date: Thu Apr 05 12:09:18 1990
Data File : c:\windows\ai400\data\900-5963.d03			
Method : c:\windows\ai400\method\sst.met			
CIM Address: 1	System : 1	Cycle#: 3	Detector: CDM

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

Start Time = 0.00 minutes Stop time = 11.50 Minutes
Number of Data Points = 3450 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	1.00	FLUORIDE	5.097e+001	9.542e+003	1452	1	0	-1.64%
2	1.58	CHLORIDE	7.181e+001	7.920e+003	1209	1	0	-3.06%
3	3.52	NITRATE	6.106e+002	3.939e+004	2949	1	0	0.00%
4	5.88	PHOSPHATE	6.038e+002	2.002e+004	1084	1	0	-0.56%
5	7.02	SULFATE	6.268e+002	5.312e+004	2626	1	0	-5.18%

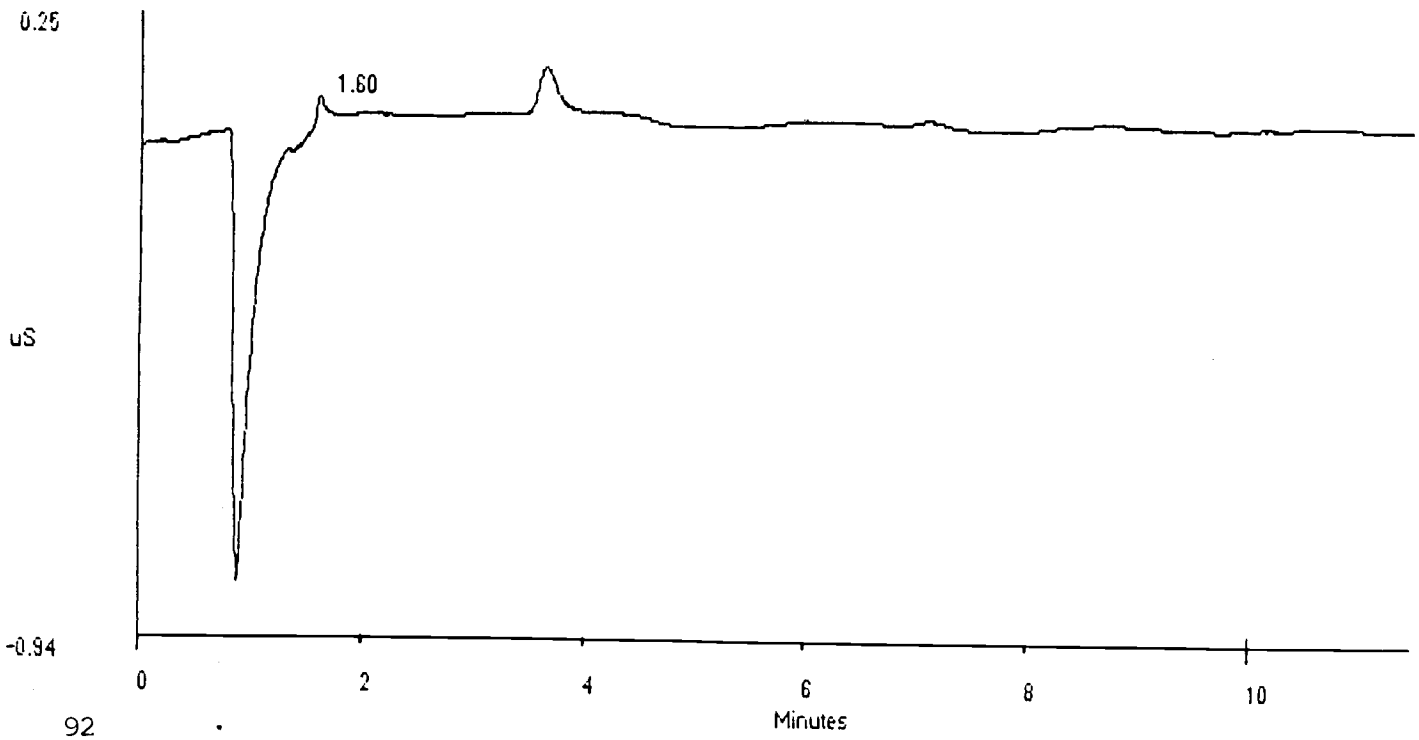


Sample Name: 438B				Date: Thu Apr 05 12:21:34 1990	
Data File : c:\windows\ai400\data\900-5963.d04					
Method : c:\windows\ai400\method\sst.met					
CIM Address: 1	System : 1	Cycle#: 4	Detector: CDM		

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

Start Time = 0.00 minutes Stop time = 11.50 Minutes
Number of Data Points = 3450 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	1.60	CHLORIDE	2.017e-001	1.746e+004	266	1	0	-2.04%



DATA REPROCESSED ON Thu Aug 23 13:29:46 1990

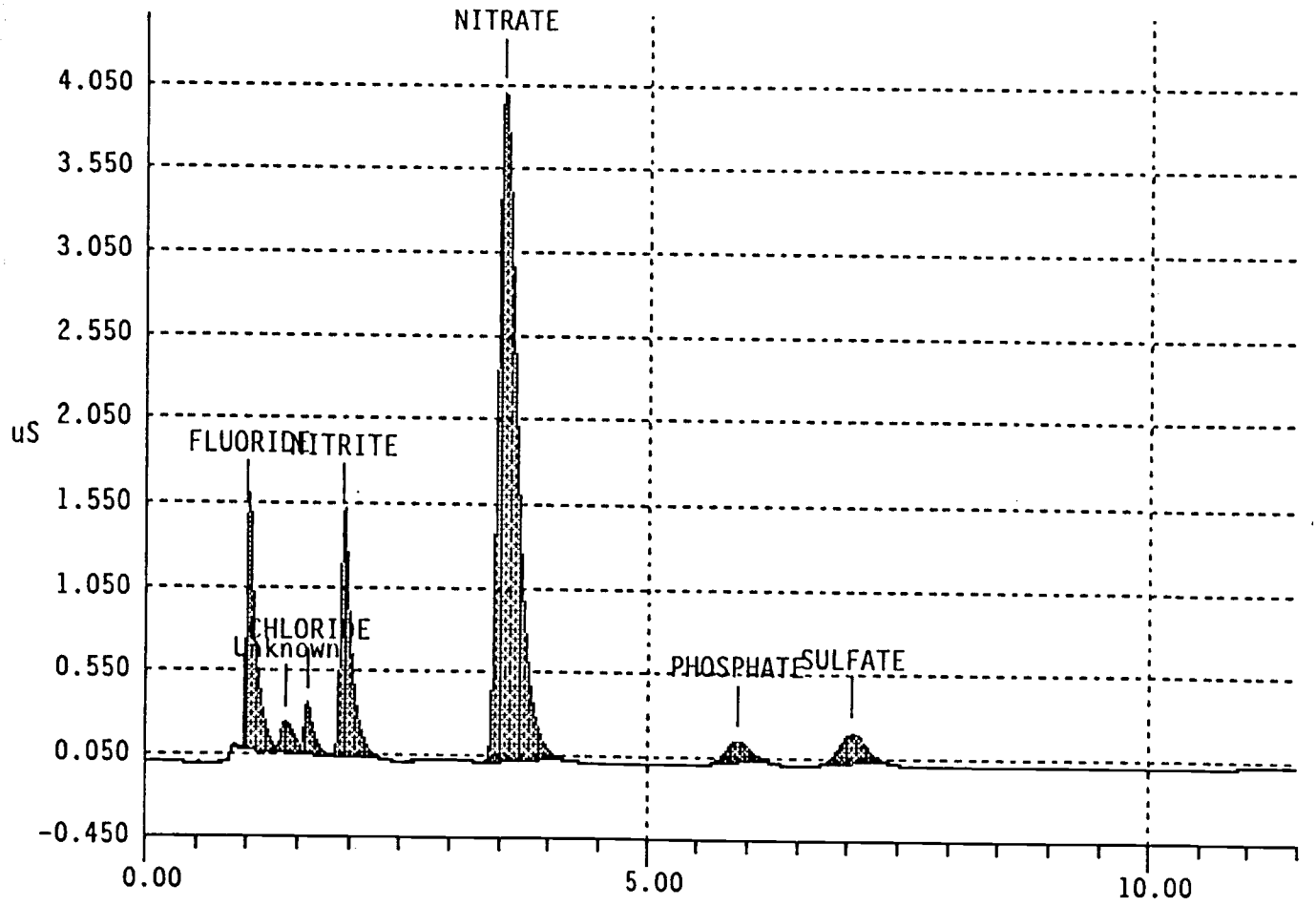
Sample Name: 571			Date: Thu Apr 05 15:24:11 1990
Data File : A:\90040500.D14			
Method : c:\windows\ai400\method\sst.met			
ACI Address: 1	System : 1	Inject#: 14	Detector: CDM

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

Stop time = 11.50 Minutes Number of Data Points = 3450
Area reject = 1000 One Data Point per 0.2 seconds
Amount Injected = 1 Dilution factor = 101

PEAK NUM	RET TIME	PEAK NAME	CONC. in ug/ml	AREA	HEIGHT	BL	REF PEAK	% DELTA RET TIME
1	1.00	FLUORIDE	4.906e+001	9.670e+003	1393	2	0	0.00%
2	1.38		0.000e+000	1.680e+003	186	2		
3	1.60	CHLORIDE	2.273e+001	1.971e+003	309	2	0	0.00%
4	1.93	NITRITE	1.637e+002	1.087e+004	1421	1	0	0.00%
5	3.53	NITRATE	8.307e+002	5.339e+004	3996	1	0	0.00%
6	5.90	PHOSPHATE	1.005e+002	2.118e+003	131	1	0	0.00%
7	7.05	SULFATE	5.065e+001	3.082e+003	174	1	0	0.00%

File: A:\90040500.D14 Sample: 571



DATA REPROCESSED ON Thu Aug 23 13:31:14 1990

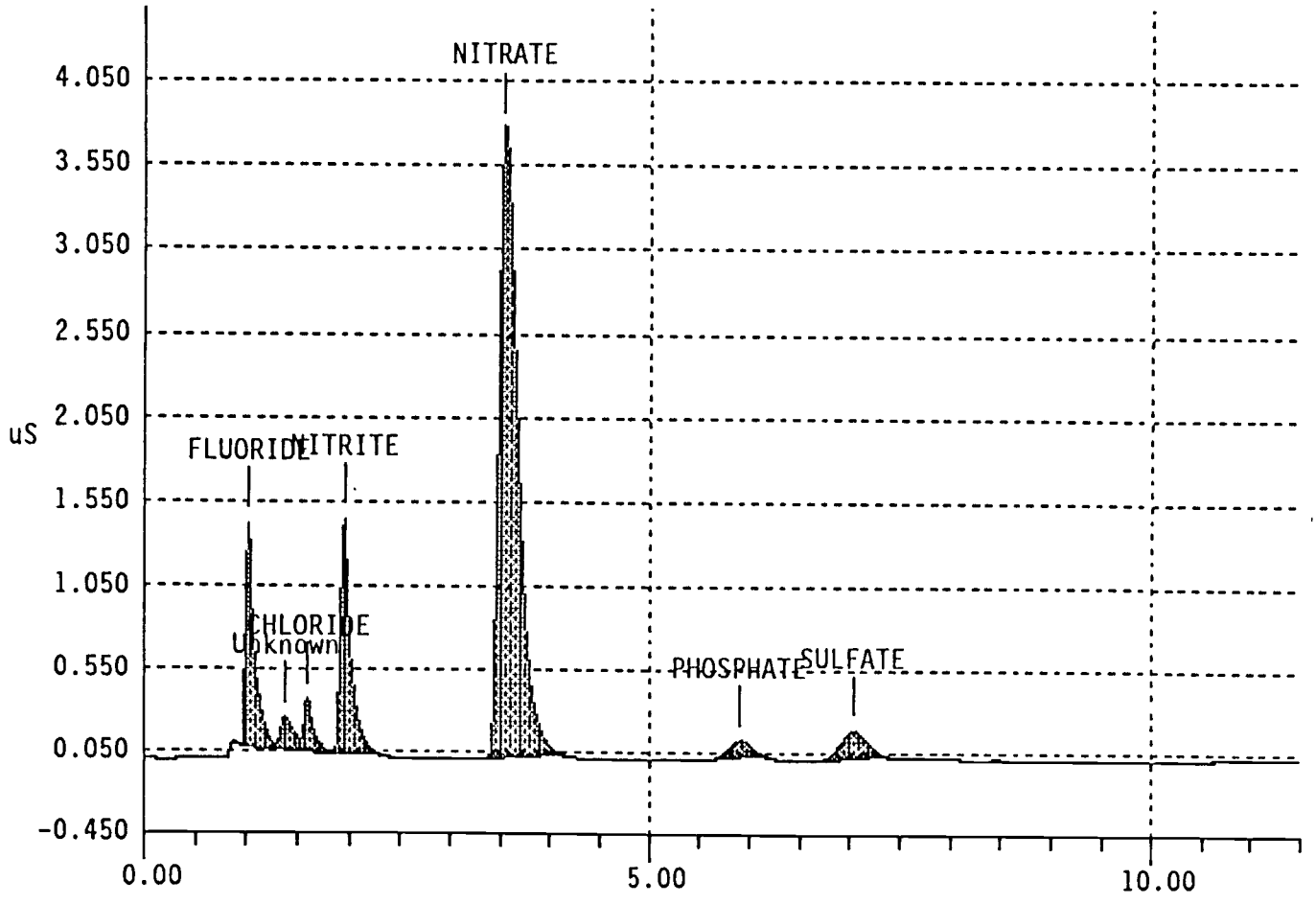
```
Sample Name: 572D                                  Date: Thu Apr 05 15:36:28 1990
Data File  : A:\90040500.D15
Method     : c:\windows\ai400\method\sst.met
ACI Address: 1       System : 1       Inject#:  15      Detector: CDM
```

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

Stop time = 11.50 Minutes Number of Data Points = 3450
Area reject = 1000 One Data Point per 0.2 seconds
Amount Injected = 1 Dilution factor = 101

PEAK NUM	RET TIME	PEAK NAME	CONC. in ug/ml	AREA	HEIGHT	BL	REF PEAK	% DELTA RET TIME
1	1.02	FLUORIDE	4.757e+001	8.430e+003	1347	2	0	0.00%
2	1.38		0.000e+000	1.738e+003	199	2		
3	1.60	CHLORIDE	2.348e+001	2.096e+003	323	2	0	0.00%
4	1.95	NITRITE	1.634e+002	9.891e+003	1418	1	0	0.00%
5	3.53	NITRATE	7.799e+002	5.000e+004	3755	1	0	0.00%
6	5.90	PHOSPHATE	8.708e+001	1.616e+003	105	1	0	0.00%
7	7.03	SULFATE	4.831e+001	2.908e+003	164	1	0	0.00%

File: A:\90040500.D15 Sample: 572D



DATA REPROCESSED ON Thu Aug 23 13:17:53 1990

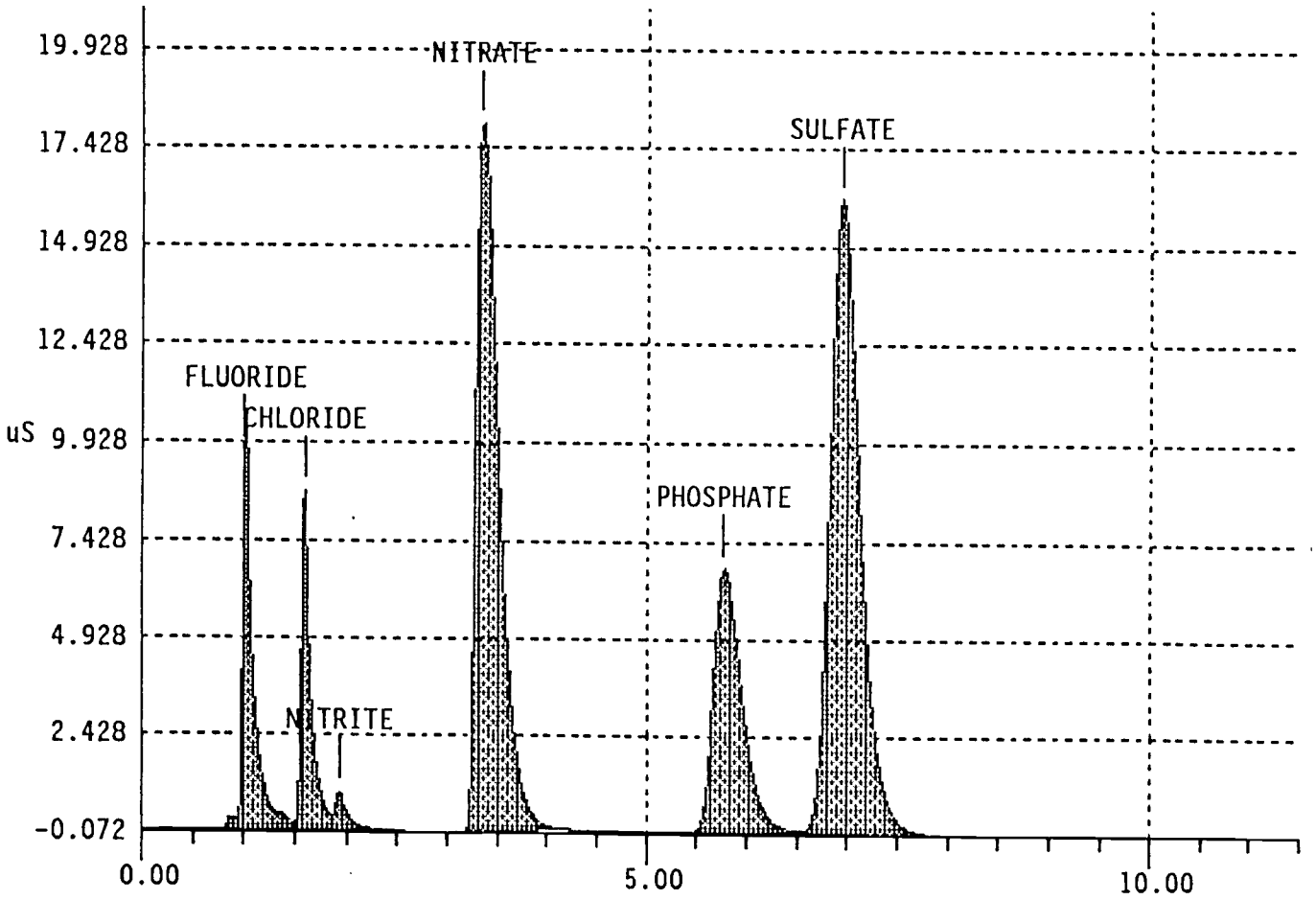
Sample Name: 429S Date: Thu Apr 05 13:58:17 1990
Data File : A:\90040500.D07
Method : c:\windows\ai400\method\sst.met
ACI Address: 1 System : 1 Inject#: 7 Detector: CDM

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

Stop time = 11.50 Minutes Number of Data Points = 3450
Area reject = 1000 One Data Point per 0.2 seconds
Amount Injected = 1 Dilution factor = 101

PEAK NUM	RET TIME	PEAK NAME	CONC. in ug/ml	AREA	HEIGHT	BL	REF PEAK	% DELTA RET TIME
1	1.00	FLUORIDE	3.052e+002	7.634e+004	9685	2	0	0.00%
2	1.58	CHLORIDE	4.348e+002	5.743e+004	8656	3	0	0.00%
3	1.93	NITRITE	1.089e+002	6.323e+003	836	4	0	0.00%
4	3.35	NITRATE	3.839e+003	2.908e+005	17987	1	0	0.00%
5	5.77	PHOSPHATE	3.452e+003	1.356e+005	6762	2	0	0.00%
6	6.93	SULFATE	3.527e+003	3.404e+005	16085	2	0	-6.31%

File: A:\90040500.D07 Sample: 429S



DATA REPROCESSED ON Thu Aug 23 13:37:04 1990

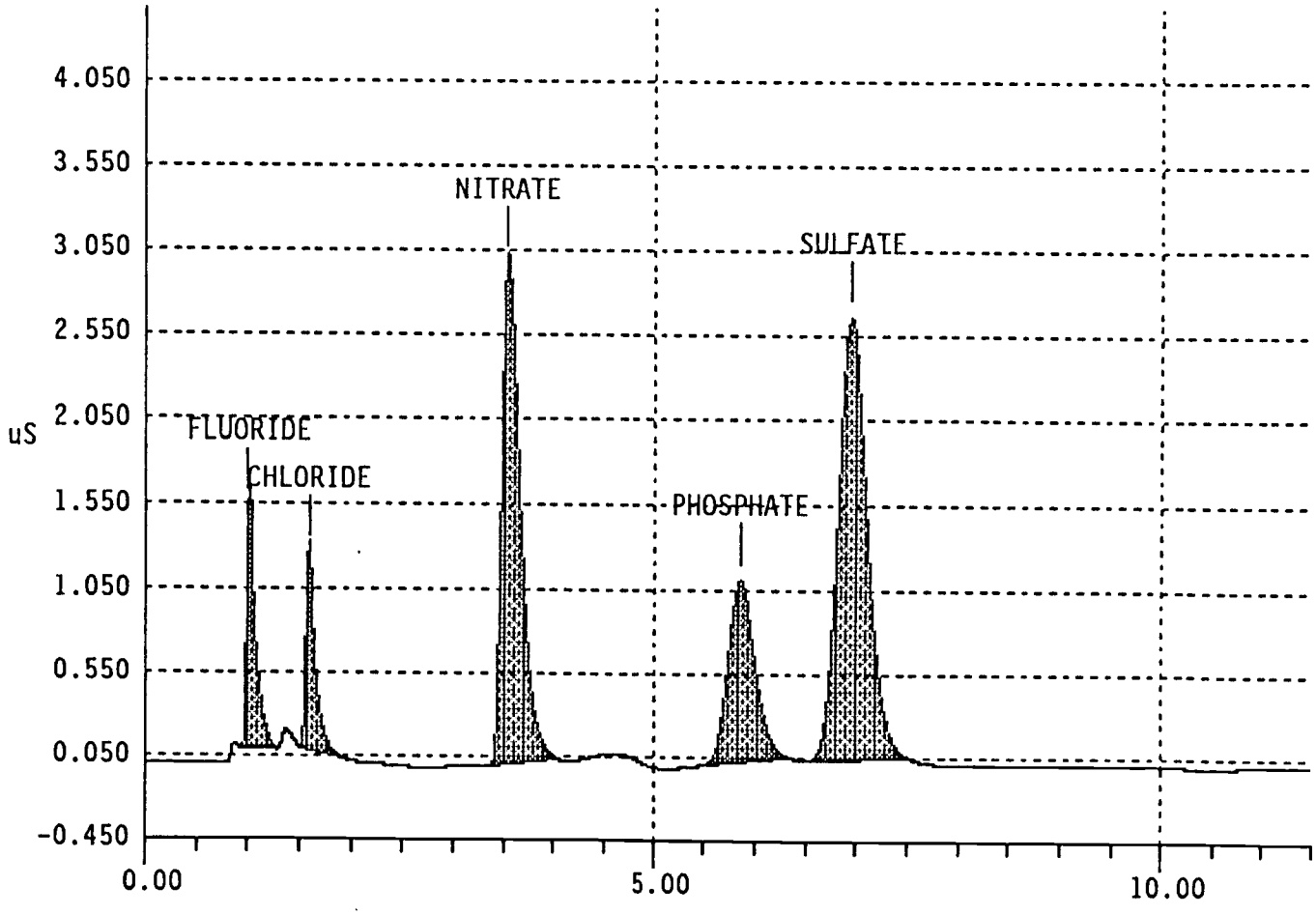
```
Sample Name: LMCS/6C11-HO                    Date: Thu Apr 05 16:25:34 1990
Data File  : A:\90040500.D19
Method     : c:\windows\ai400\method\sst.met
ACI Address: 1       System : 1       Inject#:  19      Detector: CDM
```

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

Stop time = 11.50 Minutes Number of Data Points = 3450
Area reject = 1000 One Data Point per 0.2 seconds
Amount Injected = 1 Dilution factor = 101

PEAK NUM	RET TIME	PEAK NAME	CONC. in ug/ml	AREA	HEIGHT	BL	REF PEAK	% DELTA RET TIME
1	1.00	FLUORIDE	5.094e+001	9.493e+003	1451	1	0	0.00%
2	1.58	CHLORIDE	7.021e+001	7.816e+003	1180	1	0	0.00%
3	3.53	NITRATE	6.154e+002	3.890e+004	2971	1	0	0.00%
4	5.85	PHOSPHATE	6.079e+002	2.009e+004	1091	1	0	0.00%
5	6.95	SULFATE	6.252e+002	5.262e+004	2619	1	0	-6.08%

File: A:\90040500.D19 Sample: LMCS/6C11-HO



Analytical Batch

LAB SEGMENT SERIAL #:F0561

CUSTOMER ID:89-076

INSTRUMENT	WB24721
PROCEDURE/REV	LA-533-105/A-3
TECHNOLOGIST	N. E. Wright
DATE	April 12, 1990
TEMPERATURE	22 C
STARTING TIME	1100
ENDING TIME	1515
CHEMIST	H. S. Rich

Ion Chromatograph Analysis from Water Digestion

* Run for Flouride only

2nd Run

	DESCRIPTION		LAB ID
1	Initial LMCS Check Std.		F0426
2	Reagent Blank		F0438
3	Sample	89-070	F0427
4	Duplicate Sample	89-070	F0428
5	Spike	89-070	F0429
6	Sample	89-071	F0451
7	Duplicate Sample	89-071	F0452
8	Sample	89-072	F0475
9	Duplicate Sample	89-072	F0476
10	Sample	89-075	F0547
11	Duplicate Sample	89-075	F0548

	DESCRIPTION		LAB ID
12	Sample	89-076	F0571
13	Final LMCS Check Std.	89-076	F0574
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.	6C11HO/100 uL			10.1 mL
Spike	35C9-77/300 uL	F0427/50 uL		5.3 mL

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:	April 11, 1990		

CALIBRATION STANDARD ID: 35C9-78 issued April 02, 1990

ANALYTE CONCENTRATION: F 50.0 Cl 65.0 NO_3 610.0 PO_4 608.0 SO_4 594.0 in ppm

TYPE OF CALIBRATION: Linear

COMMENTS:

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

DIONEX METHOD PARAMETERS - SST.MET

Detector Parameters

Number of Detectors	1
Detector 1 Type	CDM

Report Options

Run Time (minutes)	11.50
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: A:\90040979.D08	
Record Result Data	No

Integration Parameters

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

Integration Timed Events

Time	Description

Calibration Parameters

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

Component # 1 FLUORIDE Retention Time 1.00
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 3.68480E-004
Least Squares Intercept = -1.99974E-004
Ka = -4.02362E-009

Level	Amount	Area	Height
1	9.78000E-002	1668	300
2	2.43800E-001	3642	607
3	4.85200E-001	9315	1320
4	9.60800E-001	18456	2776
5	1.88460E+000	35592	5385
6	3.62900E+000	83552	11233

Component # 2 CHLORIDE Retention Time 1.60
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 6.15991E-004
Least Squares Intercept = -3.39552E-002
Ka = -1.21610E-008

Level	Amount	Area	Height
1	1.31700E-001	2313	358
2	3.28400E-001	3676	587
3	6.53500E-001	6685	1135
4	1.29410E+000	14160	2092
5	2.53800E+000	28199	4705
6	4.88900E+000	62634	9921

Component # 3 NITRITE Retention Time 1.95
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 7.28693E-004
Least Squares Intercept = 2.72186E-001
Ka = 3.36454E-009

Level	Amount	Area	Height
1	1.18960E+000	9937	1360
2	2.99000E+000	25698	3515
3	5.95050E+000	53506	7323
4	1.17843E+001	114215	15244
5	2.39442E+001	218918	28443
6	4.45185E+001	440177	49476

Component # 4 NITRATE Retention Time 3.38
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 2.06336E-003
Least Squares Intercept = -2.78230E-001
Ka = 2.72813E-010

Level	Amount	Area	Height
1	1.21960E+000	7900	677
2	3.03980E+000	19225	1565
3	6.04950E+000	40617	3098
4	1.19800E+001	84027	6111
5	2.35000E+001	171346	11368
6	4.52600E+001	368906	22029

Component # 5 PHOSPHATE Retention Time 5.80
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 5.30474E-003
Least Squares Intercept = 1.89883E-001
Ka = -4.78291E-008

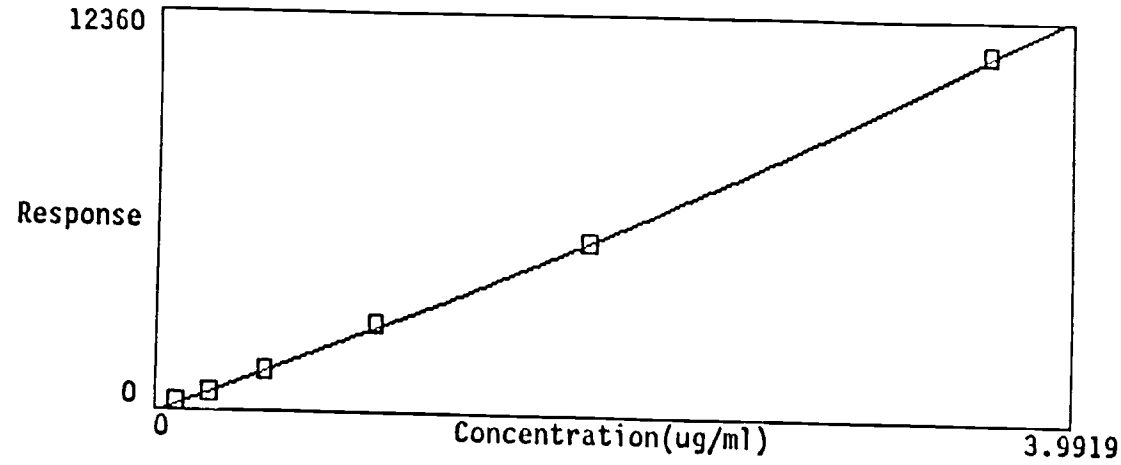
Level	Amount	Area	Height
1	1.21550E+000	3360	198
2	3.02990E+000	9889	536
3	6.02970E+000	20802	1103
4	1.19412E+001	43160	2270
5	2.34230E+001	88767	4565
6	4.51110E+001	186751	9238

Component # 6 SULFATE Retention Time 6.85
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 2.26381E-003
Least Squares Intercept = 6.72726E-003
Ka = -1.34143E-008

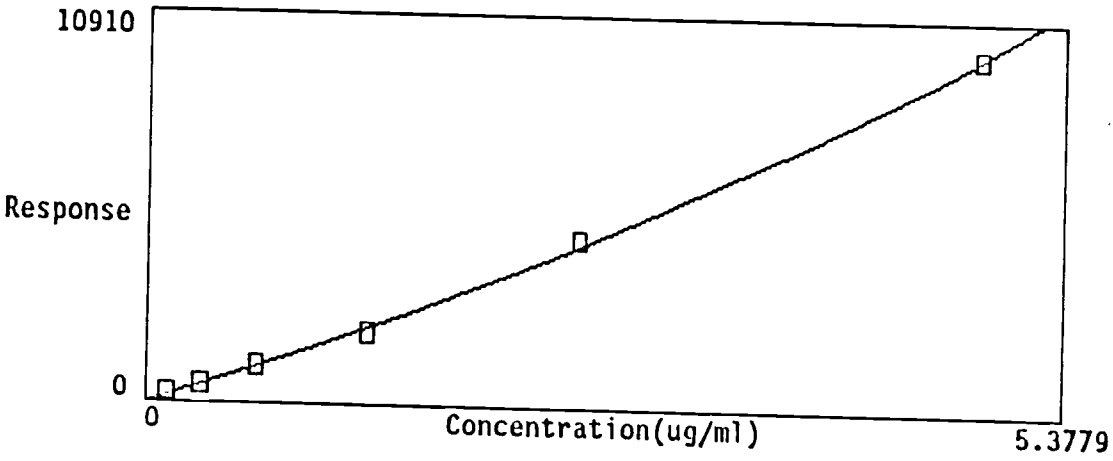
Level	Amount	Area	Height
1	1.18960E+000	10771	557
2	2.96520E+000	25693	1297
3	5.90100E+000	51993	2607
4	1.16860E+001	108657	5358
5	2.29231E+001	220178	10811
6	4.41480E+001	472662	22498

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

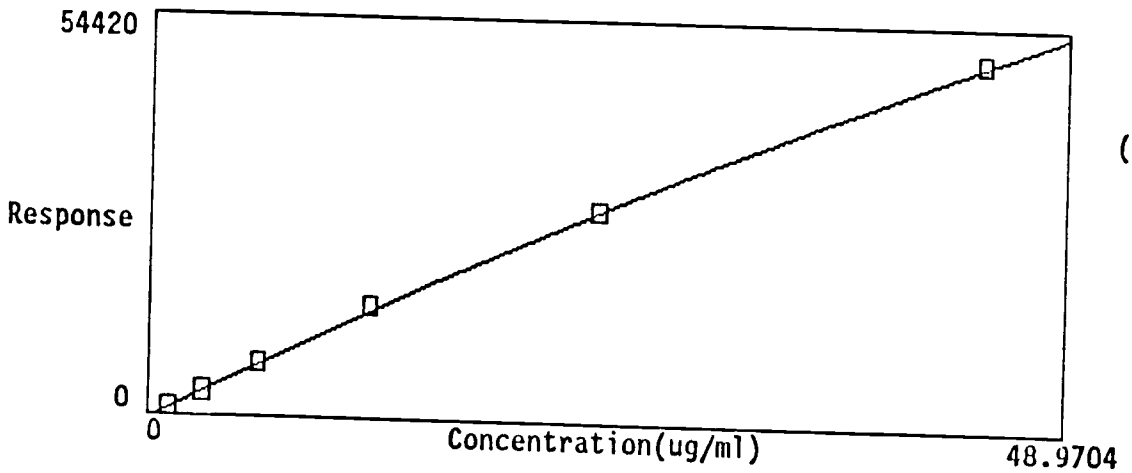
Level	Amount	Area	Height
1	0.00000E+000	0	0
2	0.00000E+000	0	0
3	0.00000E+000	0	0
4	0.00000E+000	0	0
5	0.00000E+000	0	0
6	0.00000E+000	98993	5848



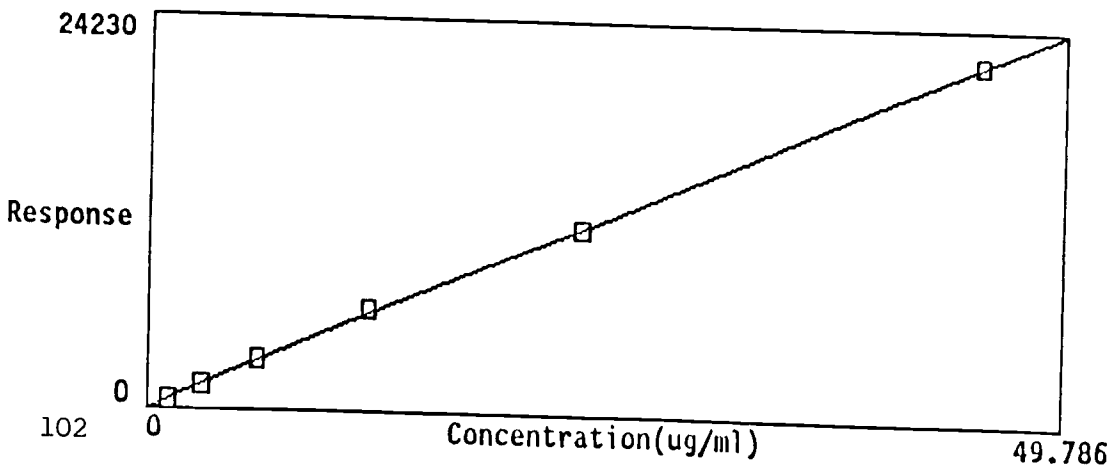
Component: FLUORIDE
Fit Type: Quadratic
Conc = (-4.023616e-009
(3.684797e-004 * Resp)+



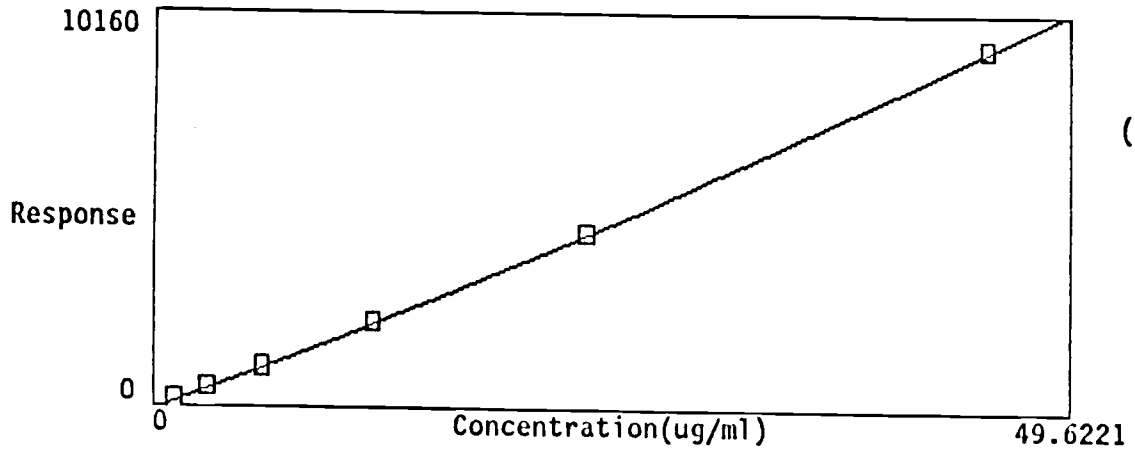
Component: CHLORIDE
Fit Type: Quadratic
Conc = (-1.216103e-008
(6.159914e-004 * Resp)+



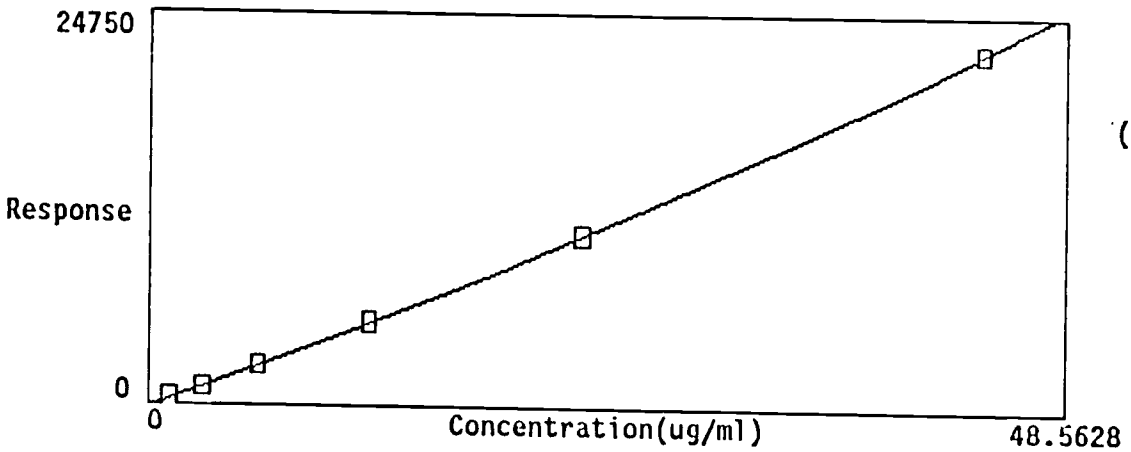
Component: NITRITE
Fit Type: Quadratic
Conc = (3.364537e-009 *
(7.286927e-004 * Resp)+



Component: NITRATE
Fit Type: Quadratic
Conc = (2.728131e-010 *
(2.063355e-003 * Resp)+



Component: PHOSPHATE
Fit Type: Quadratic
Conc = (-4.782909e-008
(5.304744e-003 * Resp)+



Component: SULFATE
Fit Type: Quadratic
Conc = (-1.341431e-008
(2.263806e-003 * Resp)+

DATA REPROCESSED ON Mon Jul 16 10:15:06 1990

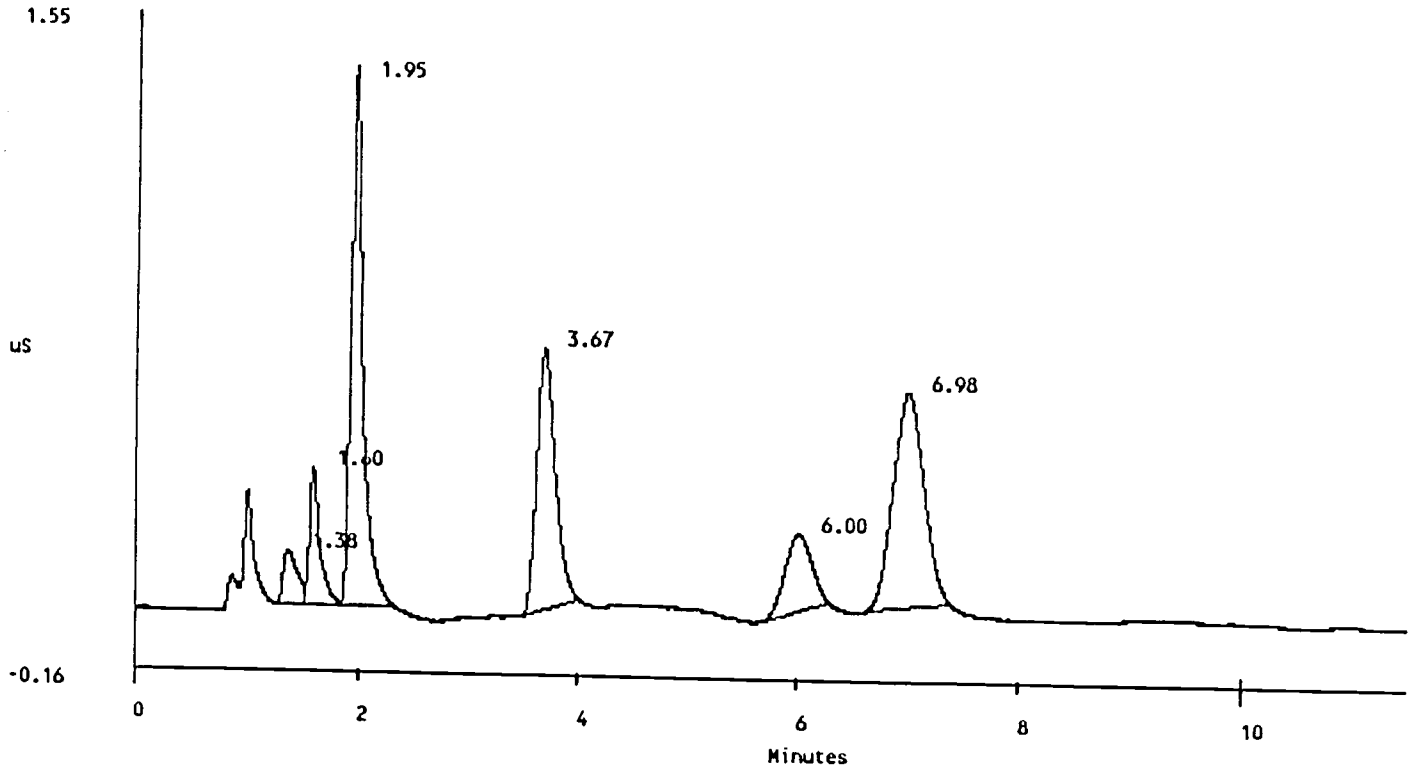
```
Sample Name: AUTOCAL1R                          Date: Wed Apr 11 10:22:06 1990
Data File  : A:\90040979.D03
Method     : C:\WINDOWS\AI400\METHOD\SST.MET
CIM Address: 1       System : 1       Cycle#:   3       Detector: CDM
```

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

Stop time = 11.50 Minutes
Area reject = 1000
Amount Injected = 1

Number of Data Points = 3451
One Data Point per 0.2 seconds
Dilution factor = 1

PEAK NUM	RET TIME	PEAK NAME	CONC. in ug/ml	AREA	HEIGHT	BL	REF PEAK	% DELTA RET TIME
1	1.38		0.000e+000	1.225e+003	140	2		
2	1.60	CHLORIDE	1.317e-001	2.313e+003	358	2	0	0.00%
3	1.95	NITRITE	1.190e+000	9.937e+003	1360	2	0	0.00%
4	3.67	NITRATE	1.220e+000	7.900e+003	677	1	0	0.00%
5	6.00	PHOSPHATE	1.216e+000	3.360e+003	198	1	0	0.00%
6	6.98	SULFATE	1.190e+000	1.077e+004	557	1	0	0.00%



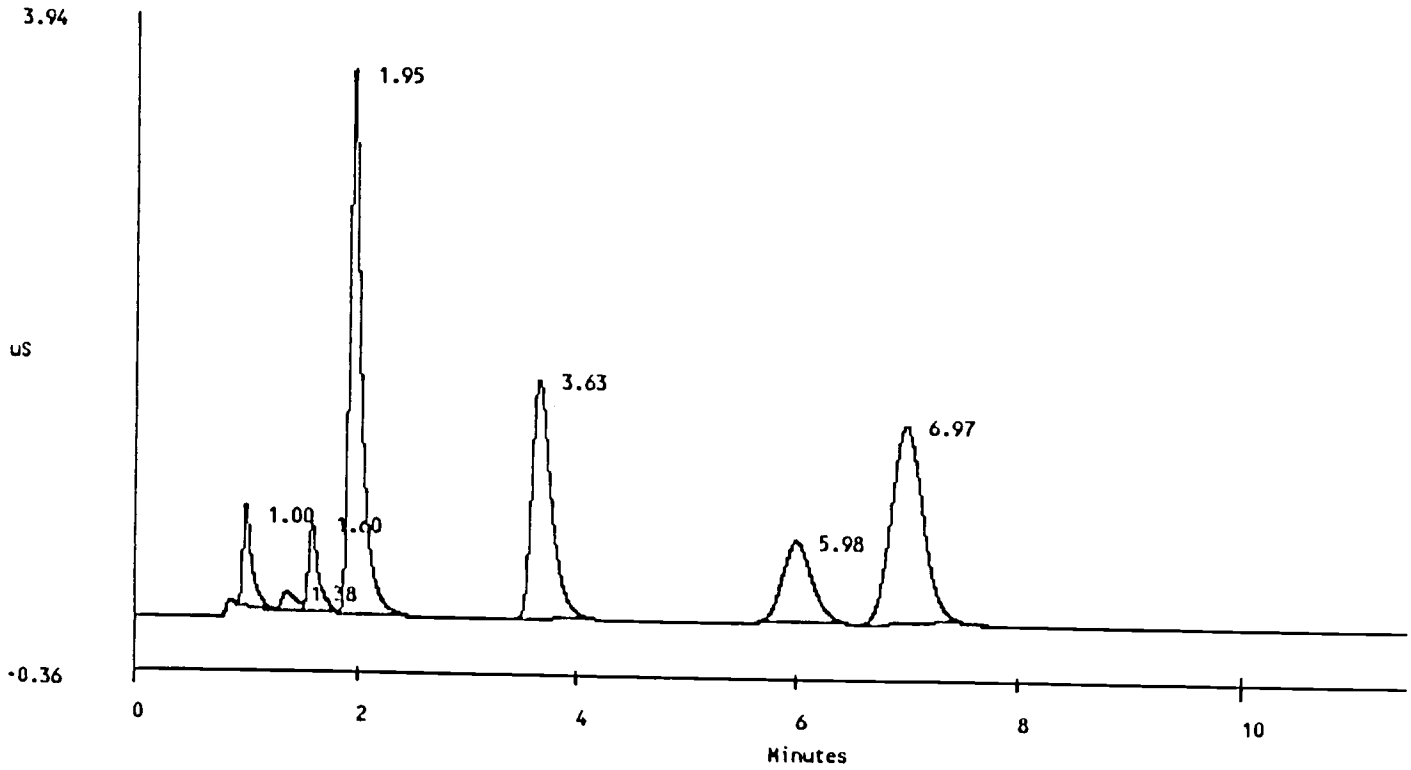
DATA REPROCESSED ON Mon Jul 16 10:16:39 1990

Sample Name: AUTOCAL2R Date: Wed Apr 11 10:34:25 1990
Data File : A:\90040979.D04
Method : C:\WINDOWS\AI400\METHOD\SST.MET
CIM Address: 1 System : 1 Cycle#: 4 Detector: CDM

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

Stop time = 11.50 Minutes Number of Data Points = 3451
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	2.438e-001	3.642e+003	607	1	0	0.00%
2	1.38		0.000e+000	1.159e+003	132	2		
3	1.60	CHLORIDE	3.284e-001	3.676e+003	587	2	0	0.00%
4	1.95	NITRITE	2.990e+000	2.570e+004	3515	2	0	0.00%
5	3.63	NITRATE	3.040e+000	1.923e+004	1565	1	0	0.00%
6	5.98	PHOSPHATE	3.030e+000	9.889e+003	536	1	0	0.00%
7	6.97	SULFATE	2.965e+000	2.569e+004	1297	1	0	0.00%



DATA REPROCESSED ON Mon Jul 16 10:17:20 1990

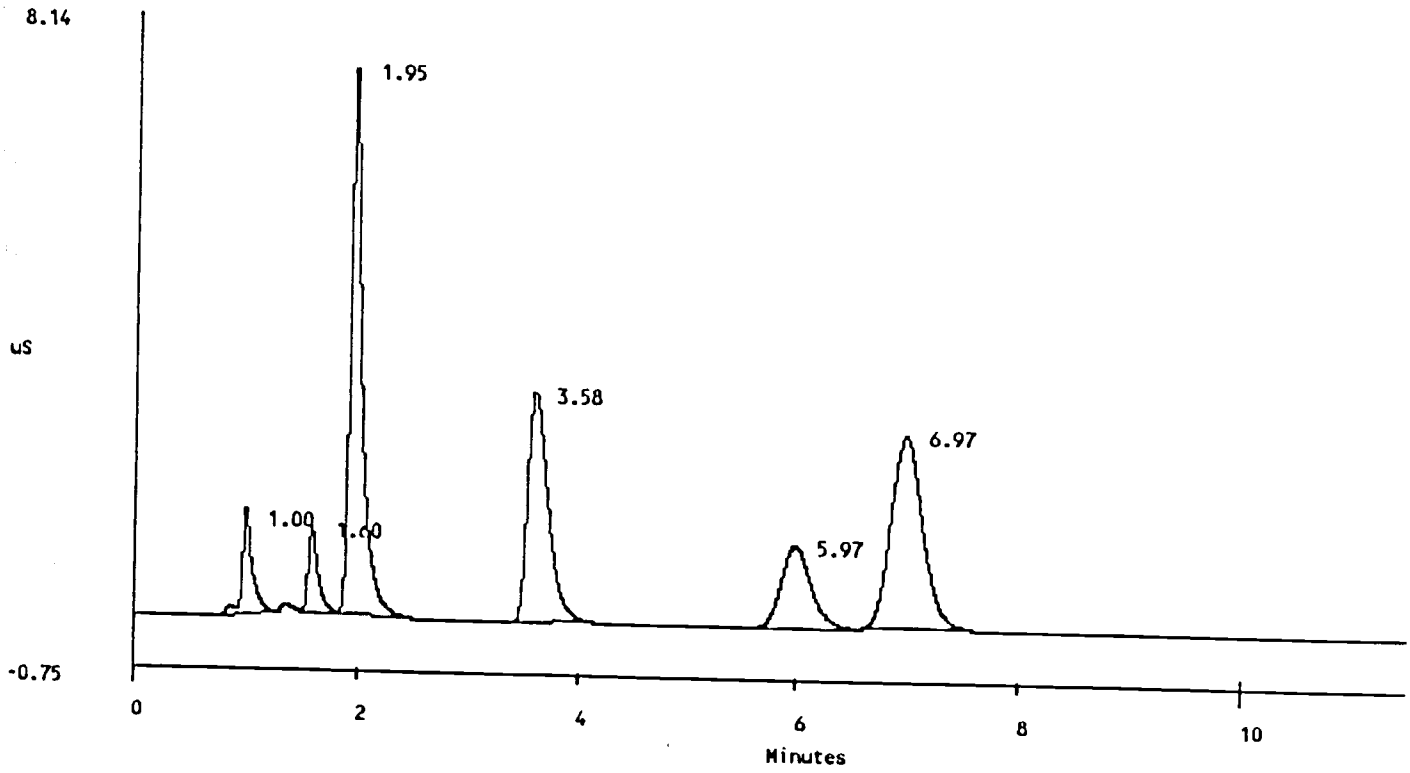
Sample Name: AUTOCAL3R
Data File : A:\90040979.D05 Date: Wed Apr 11 10:46:43 1990
Method : C:\WINDOWS\AI400\METHOD\SST.MET
CIM Address: 1 System : 1 Cycle#: 5 Detector: CDM

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

Stop time = 11.50 Minutes
Area reject = 1000
Amount Injected = 1

Number of Data Points = 3450
One Data Point per 0.2 seconds
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	4.852e-001	9.315e+003	1320	1	0	0.00%
2	1.60	CHLORIDE	6.535e-001	6.685e+003	1135	1	0	0.00%
3	1.95	NITRITE	5.951e+000	5.351e+004	7323	1	0	0.00%
4	3.58	NITRATE	6.050e+000	4.062e+004	3098	1	0	0.00%
5	5.97	PHOSPHATE	6.030e+000	2.080e+004	1103	2	0	0.00%
6	6.97	SULFATE	5.901e+000	5.199e+004	2607	2	0	0.00%



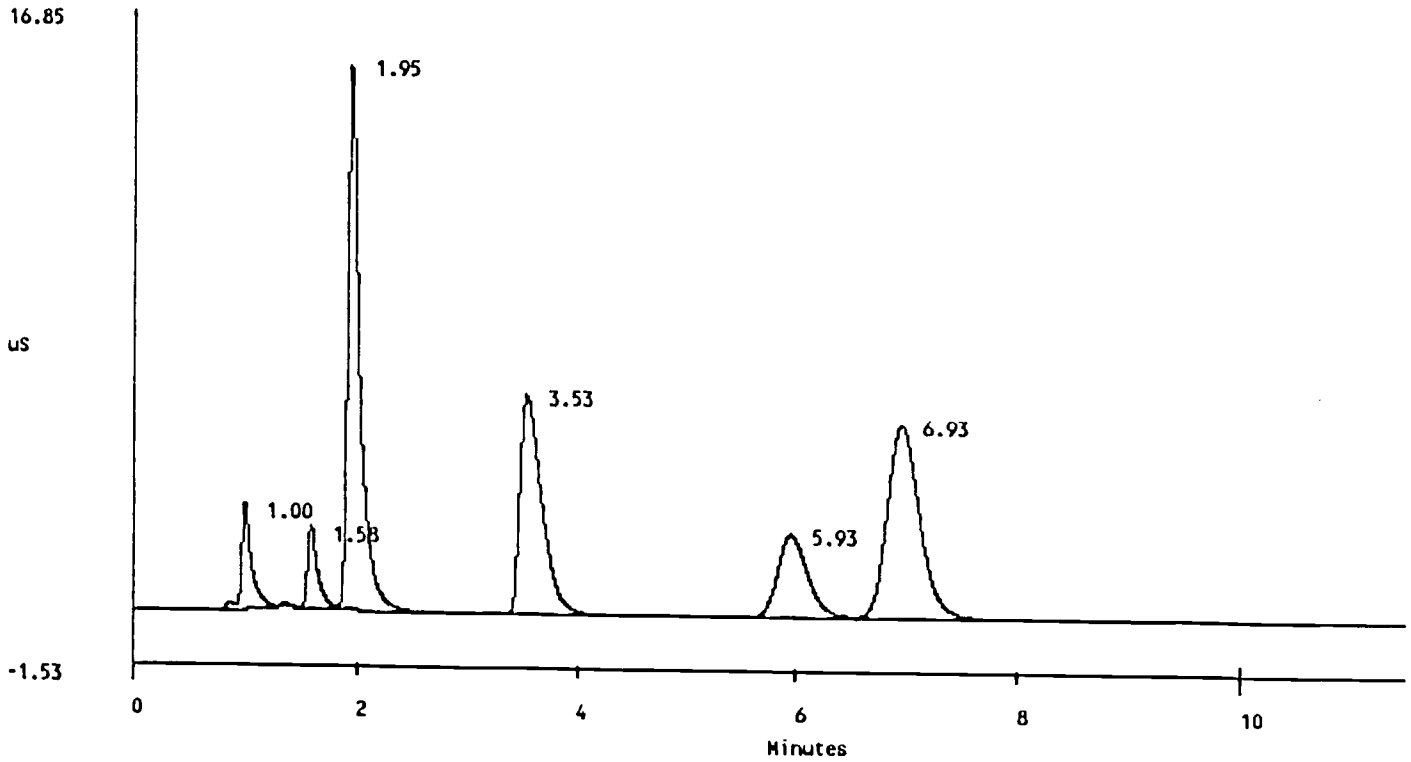
DATA REPROCESSED ON Mon Jul 16 10:17:59 1990

Sample Name: AUTOCAL4R Date: Wed Apr 11 10:59:03 1990
Data File : A:\90040979.D06
Method : C:\WINDOWS\AI400\METHOD\SST.MET
CIM Address: 1 System : 1 Cycle#: 6 Detector: CDM

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

Stop time = 11.50 Minutes Number of Data Points = 3450
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	9.608e-001	1.846e+004	2776	1	0	0.00%
2	1.58	CHLORIDE	1.294e+000	1.416e+004	2092	2	0	0.00%
3	1.95	NITRITE	1.178e+001	1.142e+005	15244	2	0	0.00%
4	3.53	NITRATE	1.198e+001	8.403e+004	6111	1	0	0.00%
5	5.93	PHOSPHATE	1.194e+001	4.316e+004	2270	2	0	0.00%
6	6.93	SULFATE	1.169e+000	1.087e+005	5358	2	0	0.00%



DATA REPROCESSED ON Mon Jul 16 10:18:38 1990

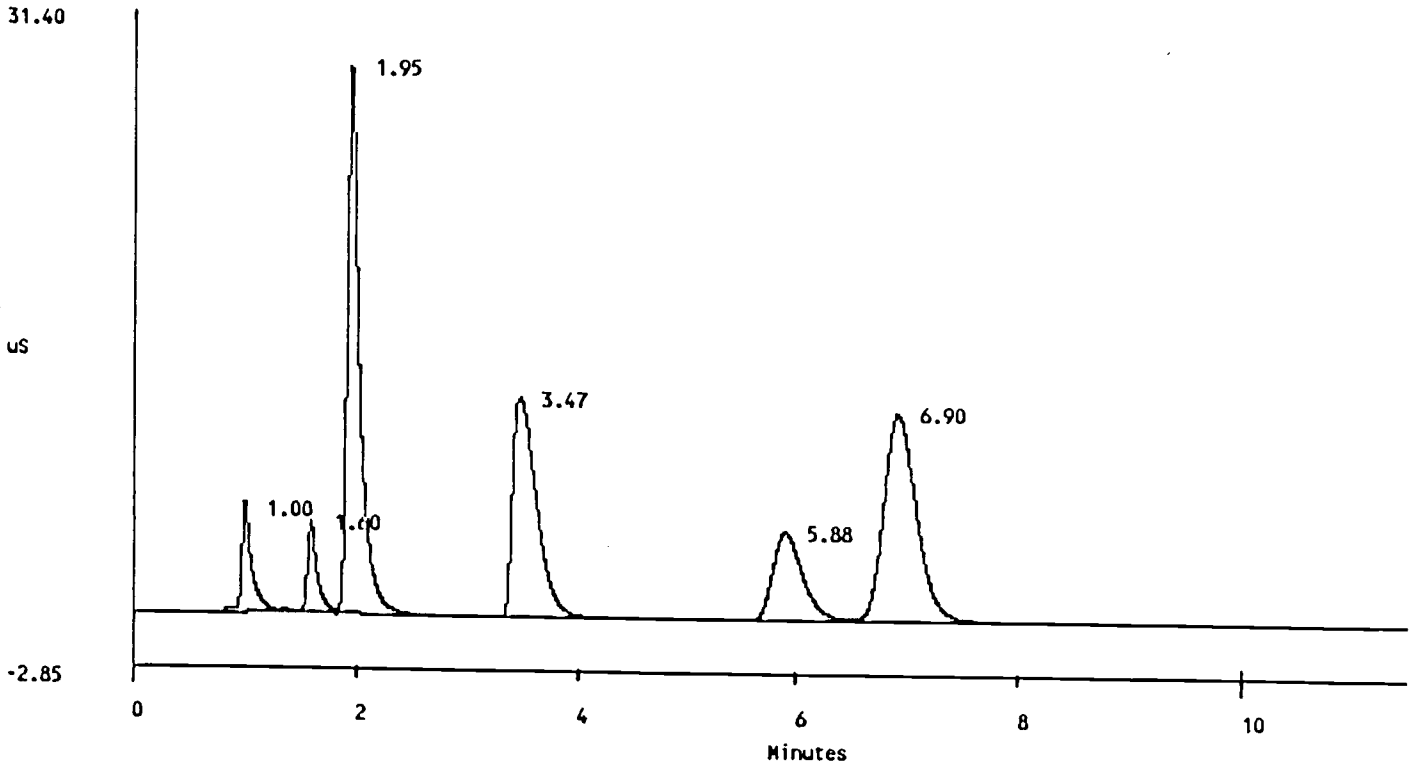
Sample Name: AUTOCAL5R	Date: Wed Apr 11 11:11:21 1990
Data File : A:\90040979.D07	
Method : C:\WINDOWS\AI400\METHOD\SST.MET	
CIM Address: 1 System : 1 Cycle#: 7	Detector: CDM

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

Stop time = 11.50 Minutes
Area reject = 1000
Amount Injected = 1

Number of Data Points = 3450
One Data Point per 0.2 seconds
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	1.885e+000	3.559e+004	5385	1	0	0.00%
2	1.60	CHLORIDE	2.538e+000	2.820e+004	4705	2	0	0.00%
3	1.95	NITRITE	2.394e+001	2.189e+005	28443	2	0	0.00%
4	3.47	NITRATE	2.350e+004	1.713e+005	11368	1	0	0.00%
5	5.88	PHOSPHATE	2.342e+001	8.877e+004	4565	2	0	0.00%
6	6.90	SULFATE	2.292e+001	2.202e+005	10811	2	0	0.00%



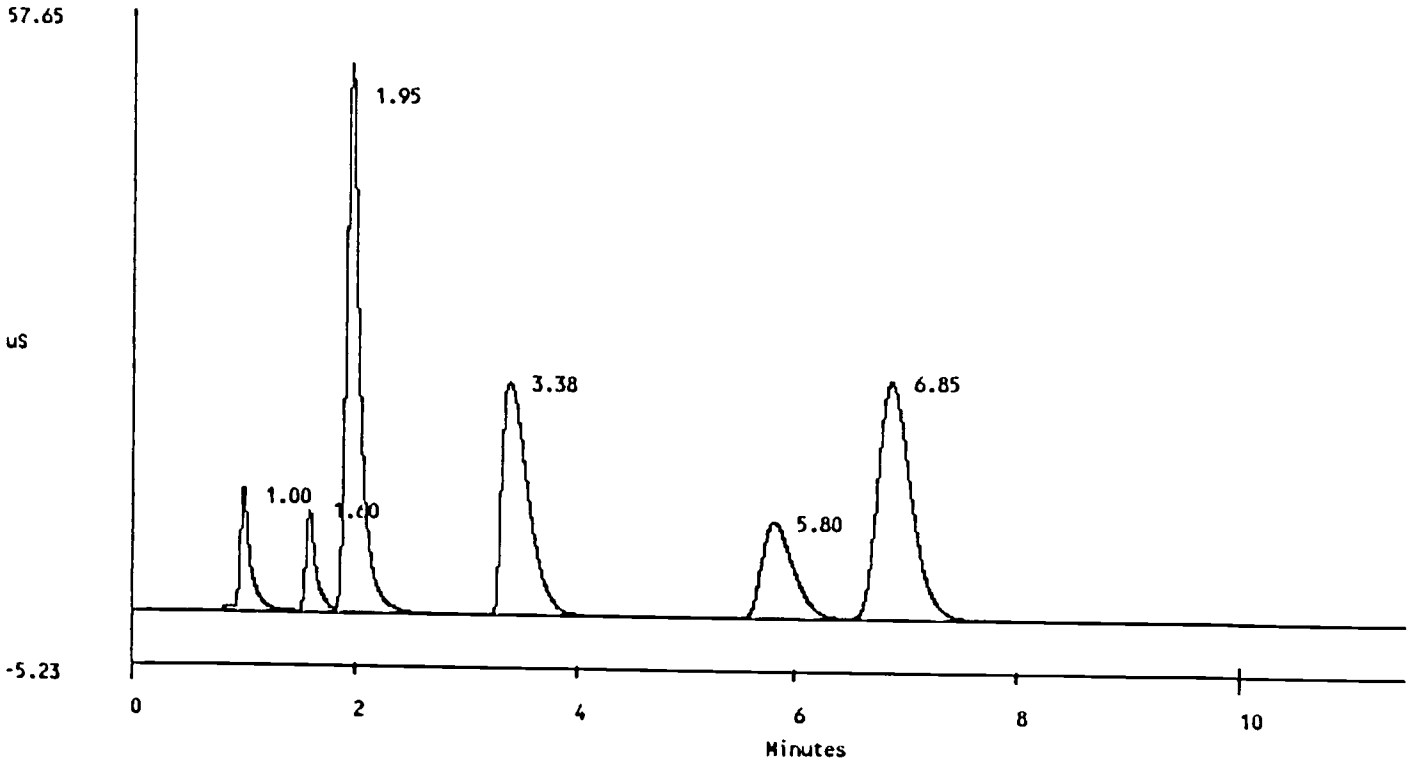
DATA REPROCESSED ON Mon Jul 16 10:19:17 1990

```
Sample Name: AUTOCAL6R                          Date: Wed Apr 11 11:23:42 1990
Data File  : A:\90040979.D08
Method     : C:\WINDOWS\AI400\METHOD\SST.MET
CIM Address: 1       System : 1       Cycle#:   8       Detector: CDM
```

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

Stop time = 11.50 Minutes Number of Data Points = 3450
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	3.629e+000	8.355e+004	11233	2	0	0.00%
2	1.60	CHLORIDE	4.889e+000	6.263e+004	9921	2	0	0.00%
3	1.95	NITRITE	4.452e+001	4.402e+005	49476	2	0	0.00%
4	3.38	NITRATE	4.526e+001	3.689e+005	22029	1	0	0.00%
5	5.80	PHOSPHATE	4.511e+001	1.868e+005	9238	2	0	0.00%
6	6.85	SULFATE	4.415e+001	4.727e+005	22498	2	0	0.00%



DIONEX SCHEDULE - A:\90041200.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/6C11-HO	c:\windows\ai	c:\windows\ai	1	101	0
4	438B	c:\windows\ai	c:\windows\ai	1	1	0
5	427	c:\windows\ai	c:\windows\ai	1	101	0
6	428D	c:\windows\ai	c:\windows\ai	1	101	0
7	429S	c:\windows\ai	c:\windows\ai	1	101	0
8	451	c:\windows\ai	c:\windows\ai	1	101	0
9	452D	c:\windows\ai	c:\windows\ai	1	101	0
10	475	c:\windows\ai	c:\windows\ai	1	101	0
11	476D	c:\windows\ai	c:\windows\ai	1	101	0
12	547	c:\windows\ai	c:\windows\ai	1	101	0
13	548D	c:\windows\ai	c:\windows\ai	1	101	0
14	571	c:\windows\ai	c:\windows\ai	1	101	0
15	572D	c:\windows\ai	c:\windows\ai	1	101	0
16	983	c:\windows\ai	c:\windows\ai	1	21	0
17	984D	c:\windows\ai	c:\windows\ai	1	21	0
18	LMCS/6C11-HO	c:\windows\ai	c:\windows\ai	1	101	0

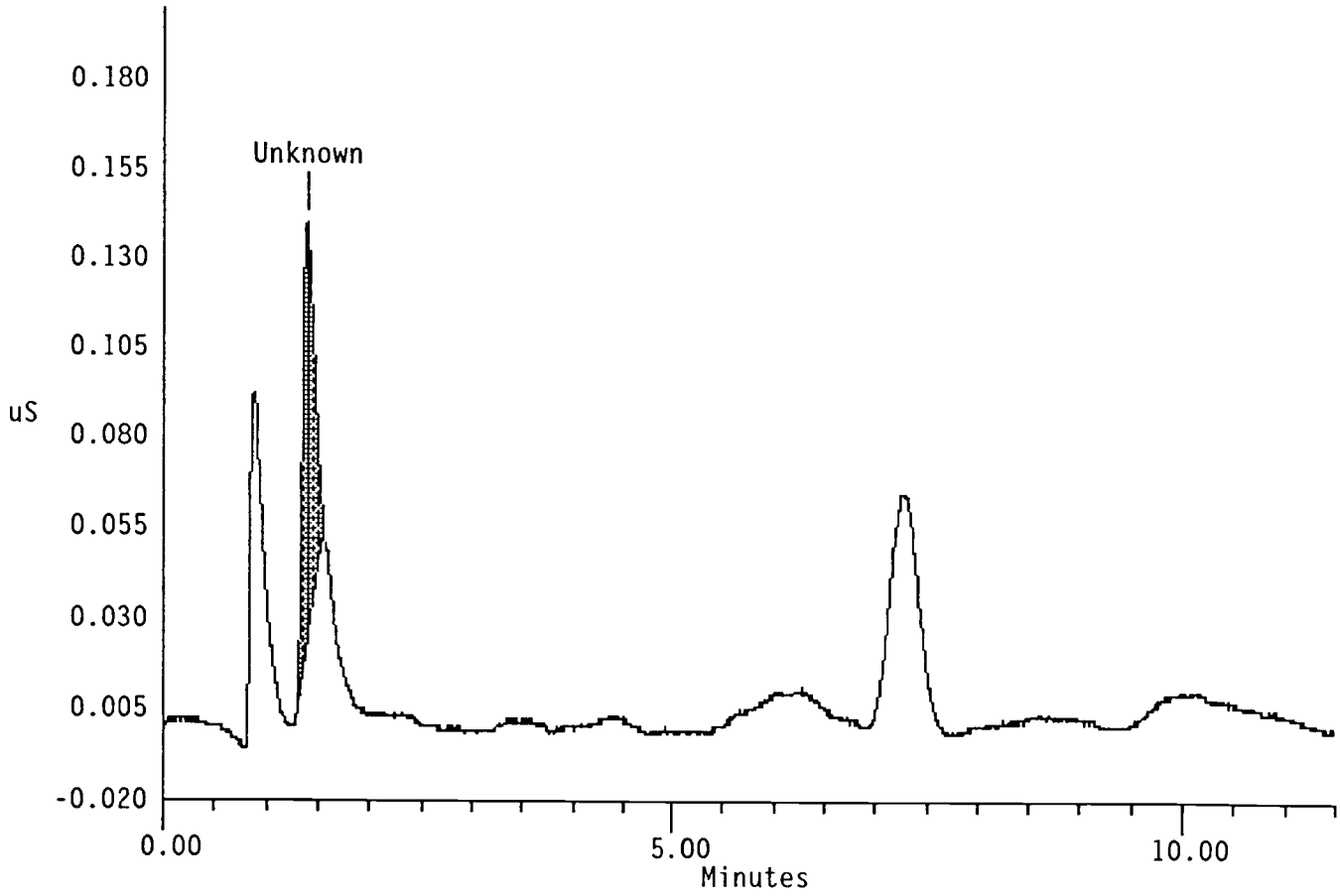
DATA REPROCESSED ON Tue Oct 16 10:19:50 1990

```
Sample Name: BLANK                                  Date: Thu Apr 12 12:21:20 1990
Data File  : A:\90041200.D02
Method     : c:\windows\ai400\method\sst.met
ACI Address: 1       System : 1       Inject#:   2  Detector: CDM-1
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	3451	5Hz	0.00	11.50	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta

File: A:\90041200.D02 Sample: BLANK

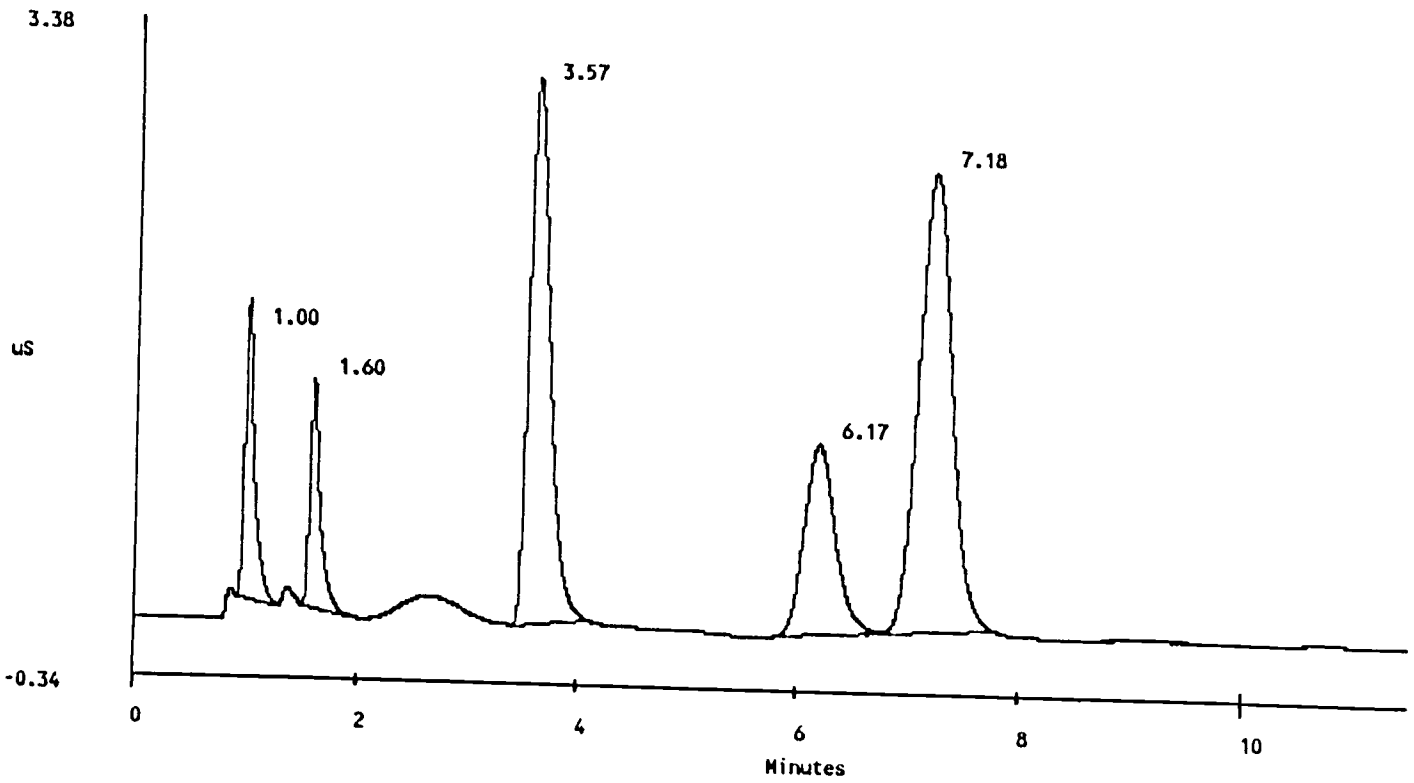


Sample Name: LMCS/6C11-HO
Data File : 90041200.D03
Method : c:\windows\ai400\method\sst.met
CIM Address: 1 System : 1 Cycle#: 3 Detector: CDM
Date: Thu Apr 12 11:33:35 1990

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

Start Time = 0.00 minutes
Number of Data Points = 3451
Stop time = 11.50 Minutes
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	1.00	FLUORIDE	5.450e+001	9.780e+003	1489	1	0	0.00%
2	1.60	CHLORIDE	7.288e+001	7.890e+003	1258	1	0	0.00%
3	3.57	NITRATE	5.993e+002	3.943e+004	3009	1	0	5.42%
4	6.17	PHOSPHATE	5.816e+002	2.084e+004	1060	2	0	6.32%
5	7.18	SULFATE	5.781e+002	5.320e+004	2564	2	0	4.87%



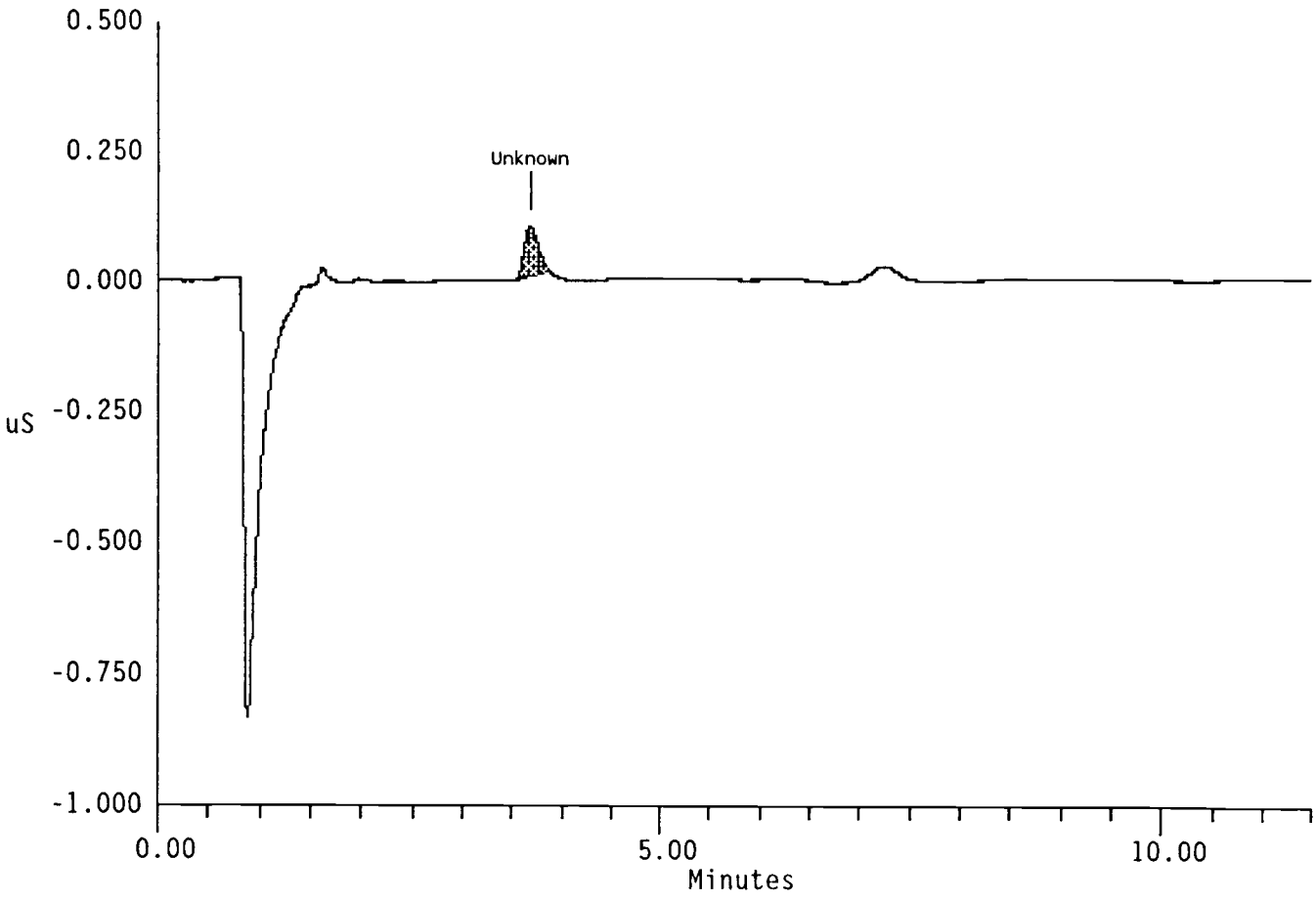
DATA REPROCESSED ON Tue Oct 16 10:10:30 1990

```
Sample Name: 438B                                  Date: Thu Apr 12 12:45:50 1990
Data File  : A:\90041200.D04
Method     : c:\windows\ai400\method\sst.met
ACI Address: 1       System : 1       Inject#:   4  Detector: CDM-1
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	3451	5Hz	0.00	11.50	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta

File: A:\90041200.D04 Sample: 438B

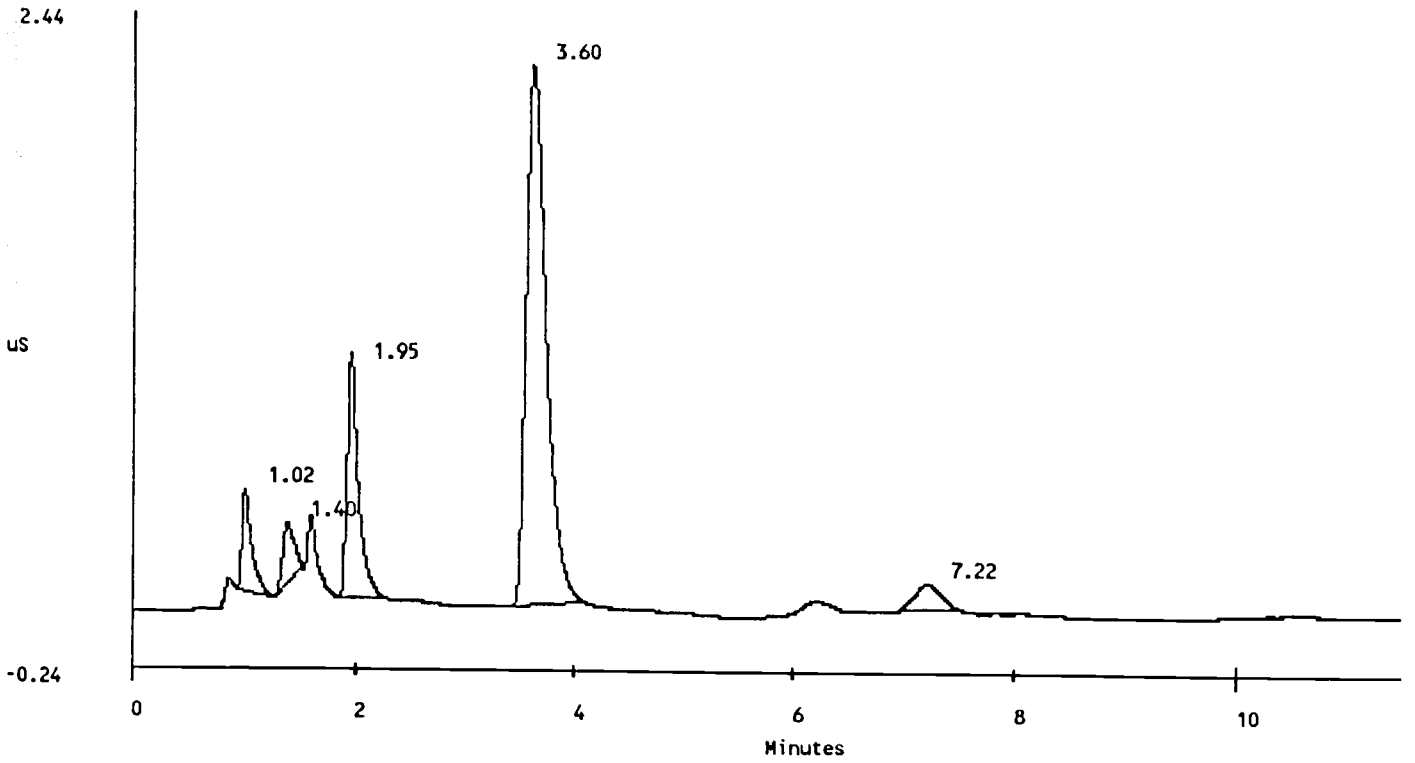


Sample Name: 571 Date: Thu Apr 12 13:48:31 1990
Data File : 90041200.D14
Method : c:\windows\ai400\method\sst.met
CIM Address: 1 System : 1 Cycle#: 14 Detector: CDM

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

Start Time = 0.00 minutes Stop time = 11.50 Minutes
Number of Data Points = 3451 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	1.02	FLUORIDE	1.497e+001	2.515e+003	404	1	0	1.67%
2	1.40		0.000e+000	1.705e+003	240	1		
3	1.95	NITRITE	9.680e+001	6.749e+003	937	1	0	0.00%
4	3.60	NITRATE	4.287e+002	2.740e+004	2191	1	0	6.40%
5	7.22	SULFATE	2.433e+001	1.741e+003	103	1	0	5.35%



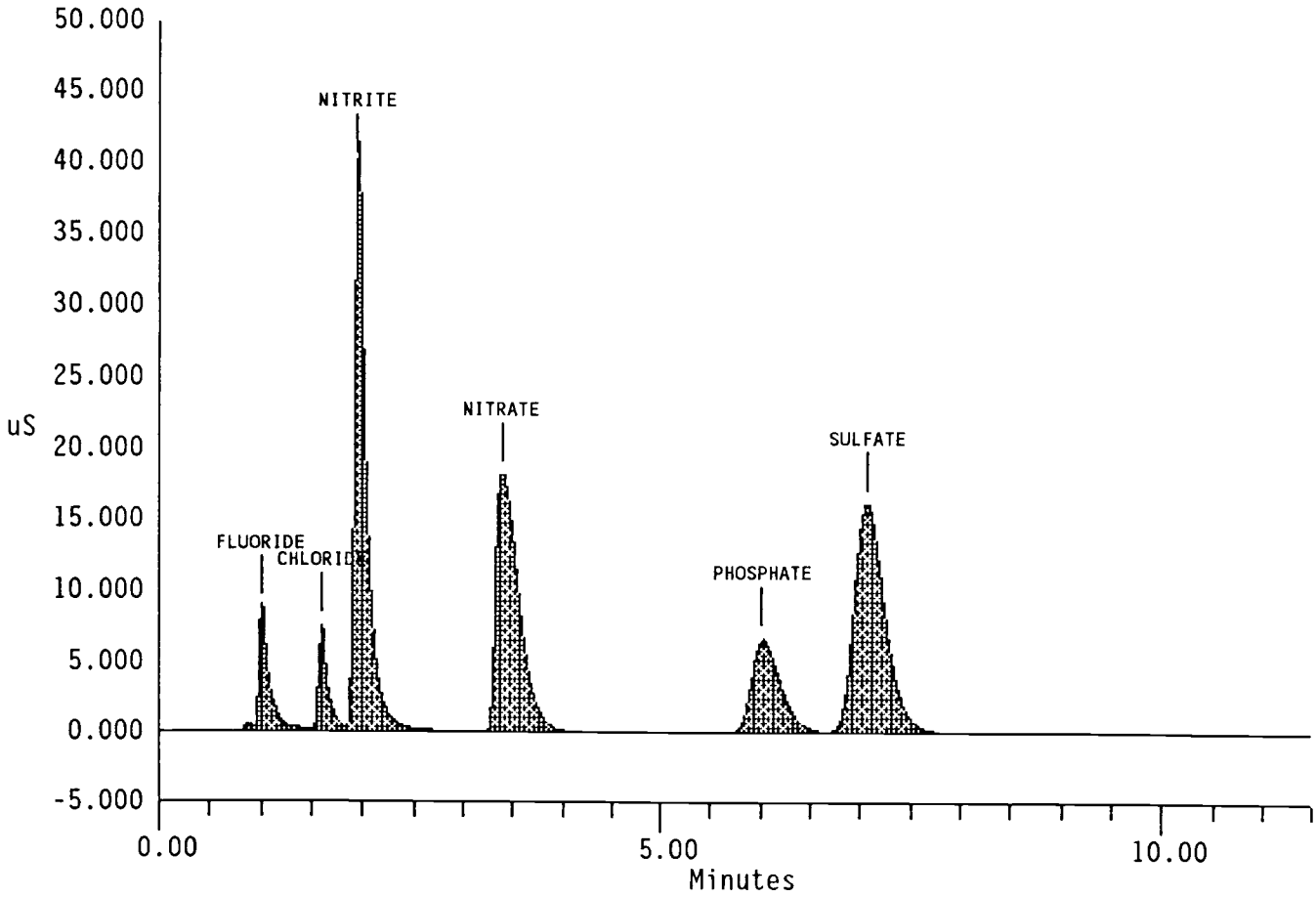
DATA REPROCESSED ON Tue Oct 16 10:12:18 1990

Sample Name: 429S Date: Thu Apr 12 13:22:35 1990
Data File : A:\90041200.D07
Method : c:\windows\ai400\method\sst.met
ACI Address: 1 System : 1 Inject#: 7 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	3450	5Hz	0.00	11.50	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.00	FLUORIDE	292.080	8669	67713	2	0.00
2	1.60	CHLORIDE	394.323	7505	48260	2	0.00
3	1.95	NITRITE	3479.557	39647	336532	2	0.00
4	3.38	NITRATE	3747.008	18071	293247	1	0.00
5	6.02	PHOSPHATE	3360.118	6632	135640	2	0.00
6	7.07	SULFATE	3334.760	16122	343503	2	0.00

File: A:\90041200.D07 Sample: 429S



Sample Name: 6C11HO Date: Thu Apr 12 14:21:13 1990
Data File : 900-5485.D01
Method : C:\WINDOWS\AI400\METHOD\SST.MET
CIM Address: 1 System : 1 Cycle#: 1 Detector: CDM

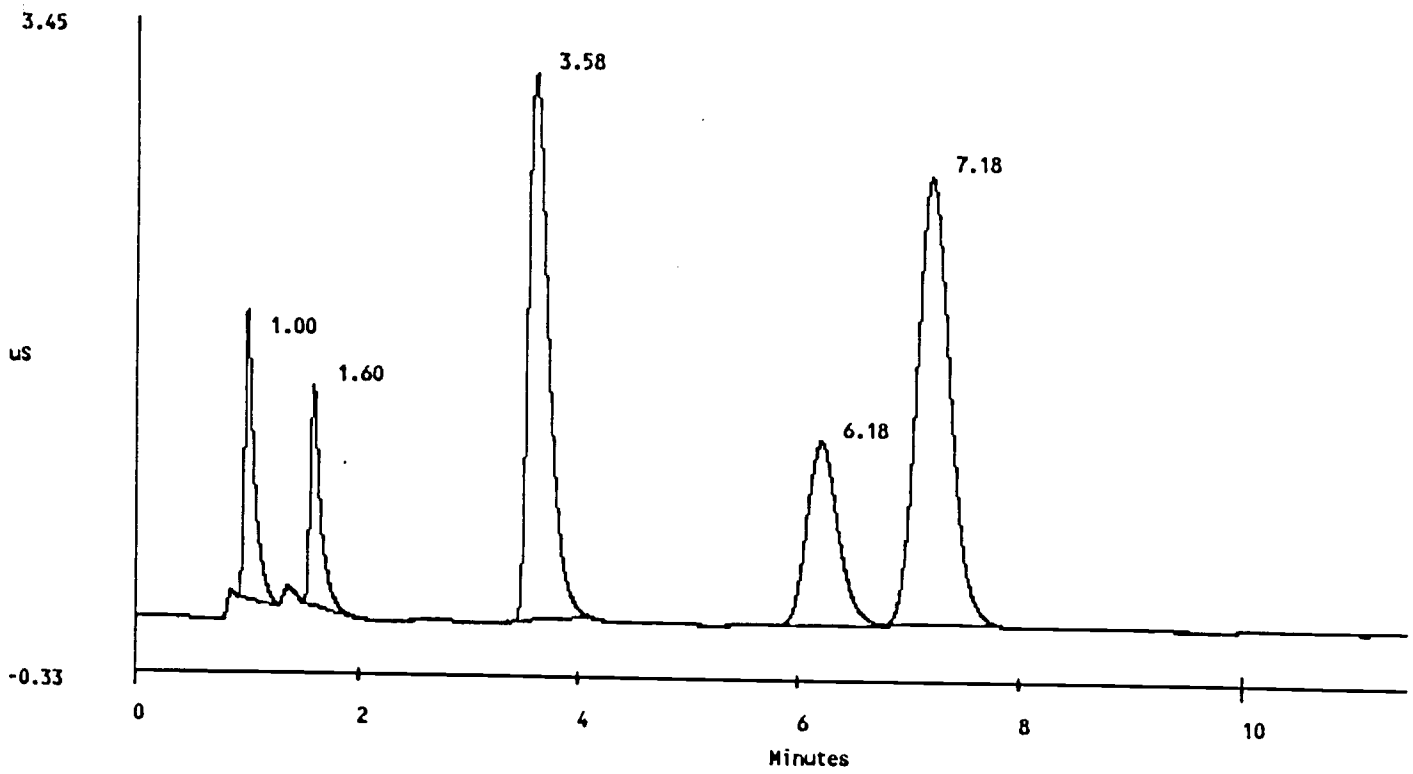
********** EXTERNAL STANDARD REPORT **********

Start Time = 0.00 minutes Stop time = 11.50 Minutes
Number of Data Points = 3451 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	1.00	FLUORIDE	5.455e-001	9.806e+003	1506	1	0	0.00%
2	1.60	CHLORIDE	7.267e-001	7.884e+003	1267	1	0	0.00%
3	3.58	NITRATE	6.182e+000	4.031e+004	3130	1	0	5.91%
4	6.18	PHOSPHATE	5.669e+000	2.050e+004	1043	2	0	6.61%
5	7.18	SULFATE	5.724e+000	5.282e+004	2564	2	0	4.87%

101

X101



Analytical Batch

LAB SEGMENT SERIAL #:F0561

CUSTOMER ID:89-076

INSTRUMENT	WB24721
PROCEDURE/REV	LA-533-105/A-3
TECHNOLOGIST	N. E. Wright
DATE	April 17, 1990
TEMPERATURE	Not Reported
STARTING TIME	Not Reported
ENDING TIME	Not Reported
CHEMIST	H. S. Rich

Ion Chromatograph Analysis

Water Digestion

* Run for Flouride only

3rd Run

	DESCRIPTION		LAB ID
1	Initial LMCS Check Std.		F1197
2	Blank		N/A
3	Reagent Blank		F1198
4	Sample	9000B1	F1199
5	Duplicate Sample	9000B1	F1200
6	Spike	9000B1	F1201
7	Duplicate of Sample	89-076	F0572
8	Sample	Core 0007	F0983
9	Duplicate	Core 0007	F0984
10	Final LMCS Check Std.		F1202
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.	6C11-HP/100ul			10.1 ml
Spike	35C9-80/300ul	F1200/5.0ml		5.3 ml

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:	April 11, 1990		

CALIBRATION STANDARD ID: 35C9-78 issued April 02, 1990

ANALYTE CONCENTRATION: F 50.0 Cl 65.0 NO_3 610.0 PO_4 608.0 SO_4 594.0 in ppm

TYPE OF CALIBRATION: Linear

COMMENTS:

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

Detector Parameters

Number of Detectors	1
Detector 1 Type	CDM

Report Options

Run Time (minutes)	11.50
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: A:\90040979.D03	
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

Component # 1 FLUORIDE Retention Time 1.00
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 3.68480E-004
Least Squares Intercept = -2.53206E-004
Ka = -4.02333E-009

Level	Amount	Area	Height
1	9.78000E-002	1668	300
2	2.43800E-001	3642	607
3	4.85200E-001	9315	1320
4	9.60800E-001	18456	2776
5	1.88460E+000	35592	5385
6	3.62900E+000	83552	11233

Component # 2 CHLORIDE Retention Time 1.60
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 6.20250E-004
Least Squares Intercept = -4.60718E-002
Ka = -1.24687E-008

Level	Amount	Area	Height
1	1.31700E-001	2313	358
2	3.28400E-001	3676587	624
3	6.53500E-001	66851135	1150
4	1.29410E+000	14160	2092
5	2.53800E+000	28199	4705
6	4.88900E+000	62634	9921

Component # 3 NITRITE Retention Time 1.95
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 7.28651E-004
Least Squares Intercept = 2.72668E-001
Ka = 3.36511E-009

Level	Amount	Area	Height
1	1.18960E+000	9937	1360
2	2.99000E+000	25698	3515
3	5.95050E+000	53506	7323
4	1.17843E+001	114215	15244
5	2.39442E+001	218918	28443
6	4.45185E+001	440177	49476

Component # 4 NITRATE Retention Time 3.67
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 2.06327E-003
Least Squares Intercept = -2.77920E-001
Ka = 2.76226E-010

Level	Amount	Area	Height
1	1.21960E+000	7900	677
2	3.03980E+000	19225	1565
3	6.04950E+000	40617	3098
4	1.19800E+001	84027	6111
5	2.35000E+001	171346	11368
6	4.52600E+001	368906	22029

Component # 5 PHOSPHATE Retention Time 6.00
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 5.30514E-003
Least Squares Intercept = 1.89751E-001
Ka = -4.78833E-008

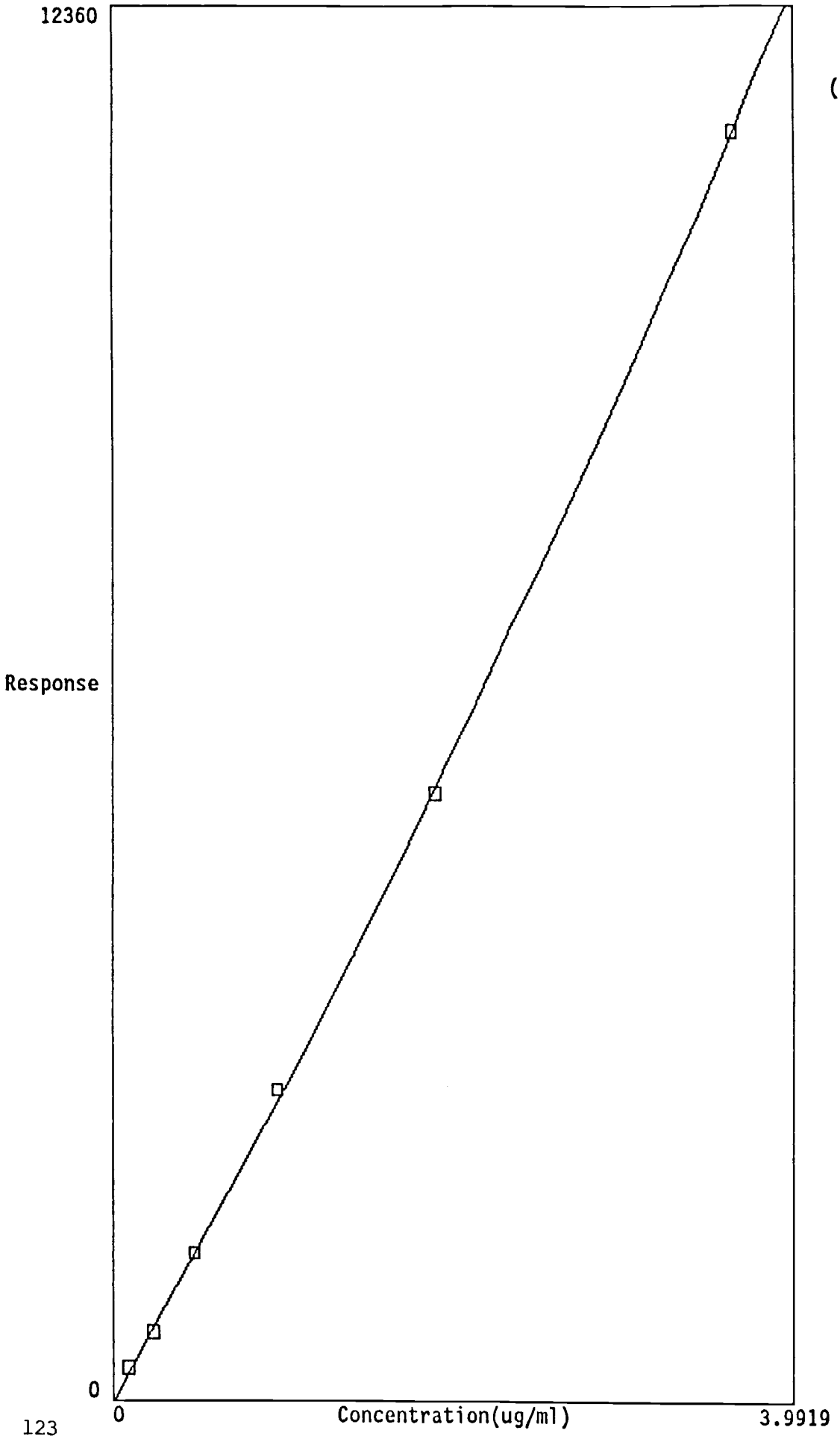
Level	Amount	Area	Height
1	1.21550E+000	3360	198
2	3.02990E+000	9889	536
3	6.02970E+000	20802	1103
4	1.19412E+001	43160	2270
5	2.34230E+001	88767	4565
6	4.51110E+001	186751	9238

Component # 6 SULFATE Retention Time 6.98
Reference Peak C:\WINDOWS\AI400\METHOD\SST.MET Window Size
Least Squares Slope = 2.26368E-003
Least Squares Intercept = 7.28276E-003
Ka = -1.34101E-008

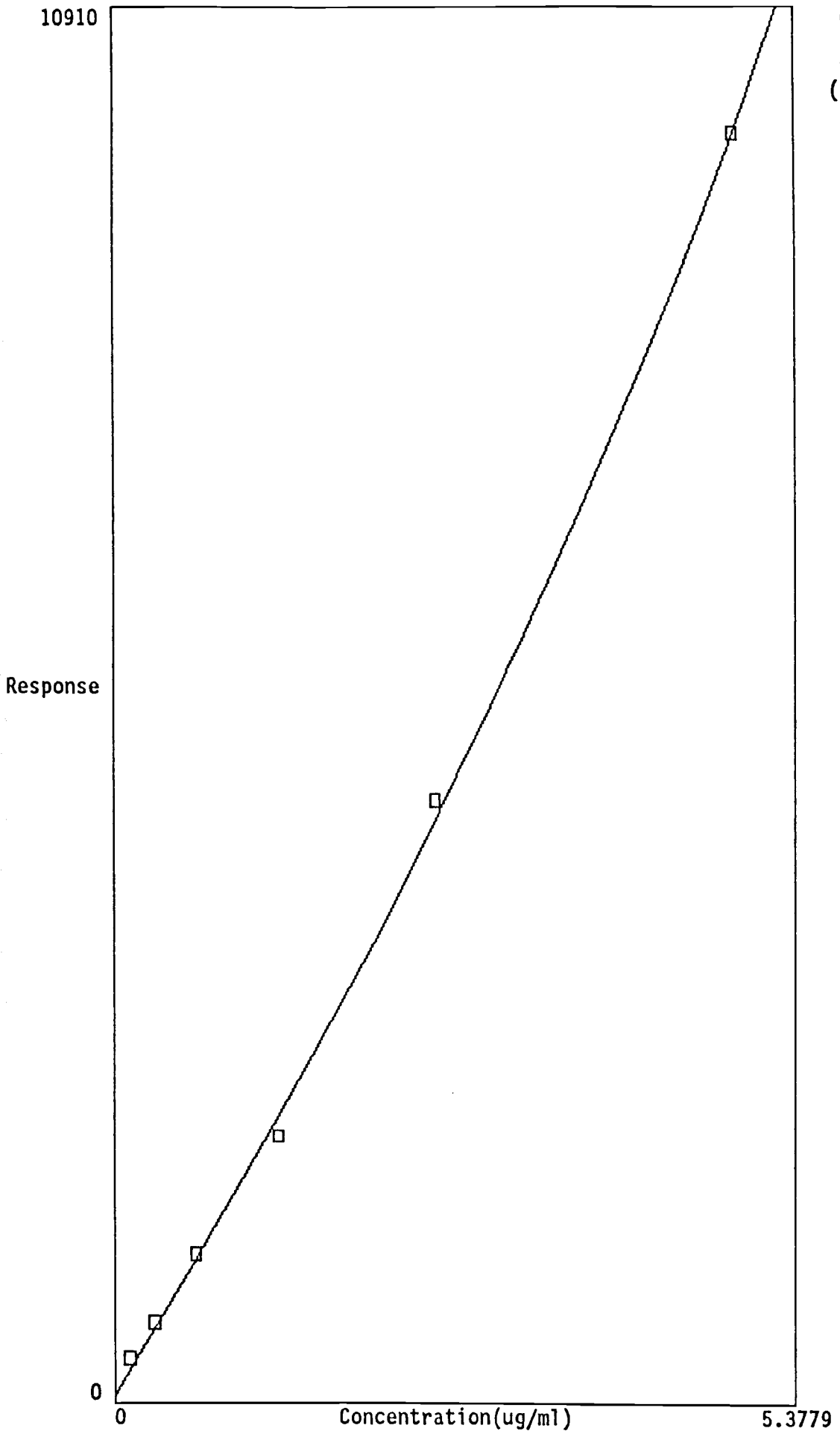
Level	Amount	Area	Height
1	1.18960E+000	10771	557
2	2.96520E+000	25693	1297
3	5.90100E+000	51993	2607
4	1.16860E+001	108657	5358
5	2.29231E+001	220178	10811
6	4.41480E+001	472662	22498

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

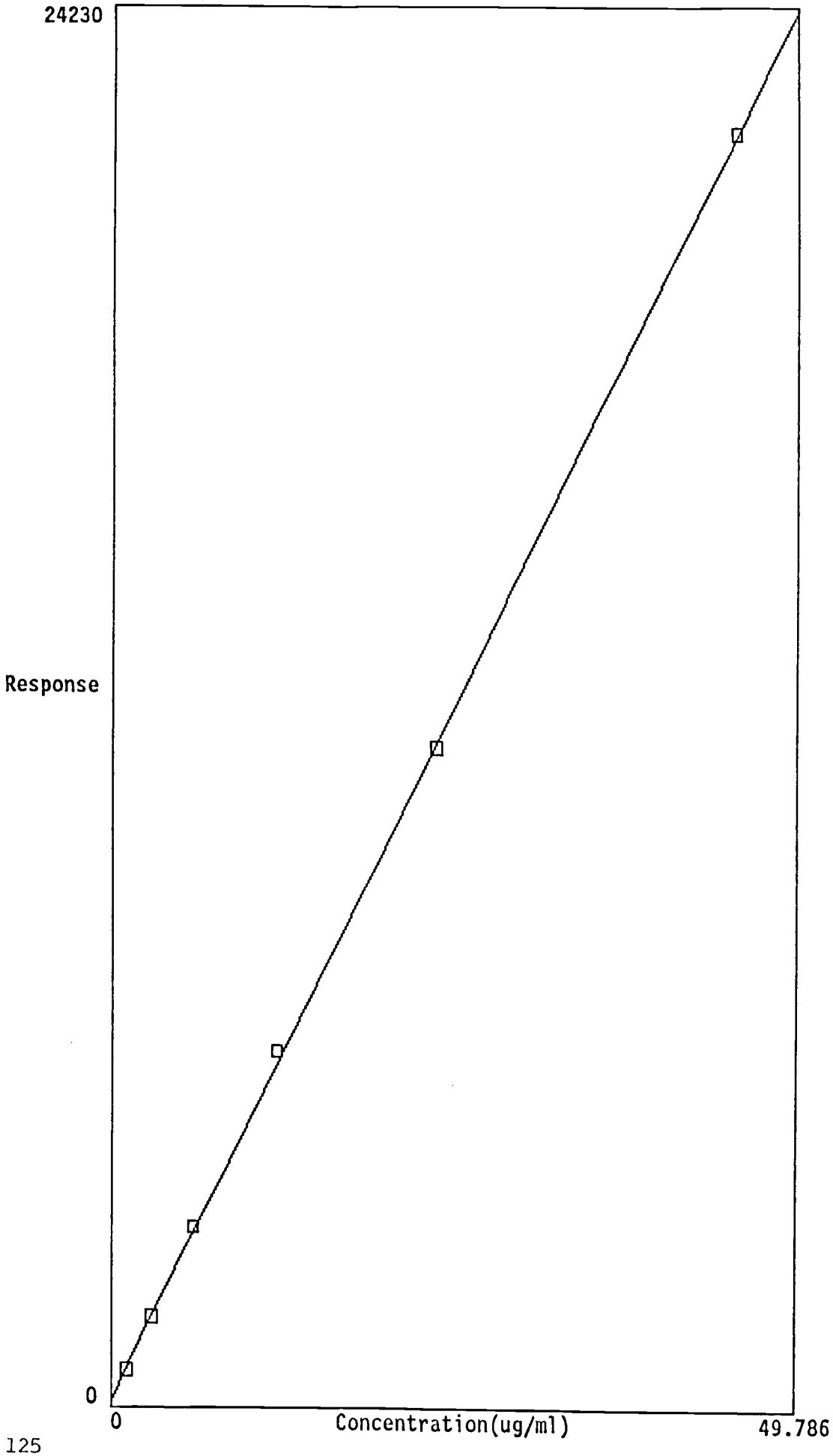
Level	Amount	Area	Height
1	0.00000E+000	0	0
2	0.00000E+000	0	0
3	0.00000E+000	0	0
4	0.00000E+000	0	0
5	0.00000E+000	0	0
6	0.00000E+000	98993	5848



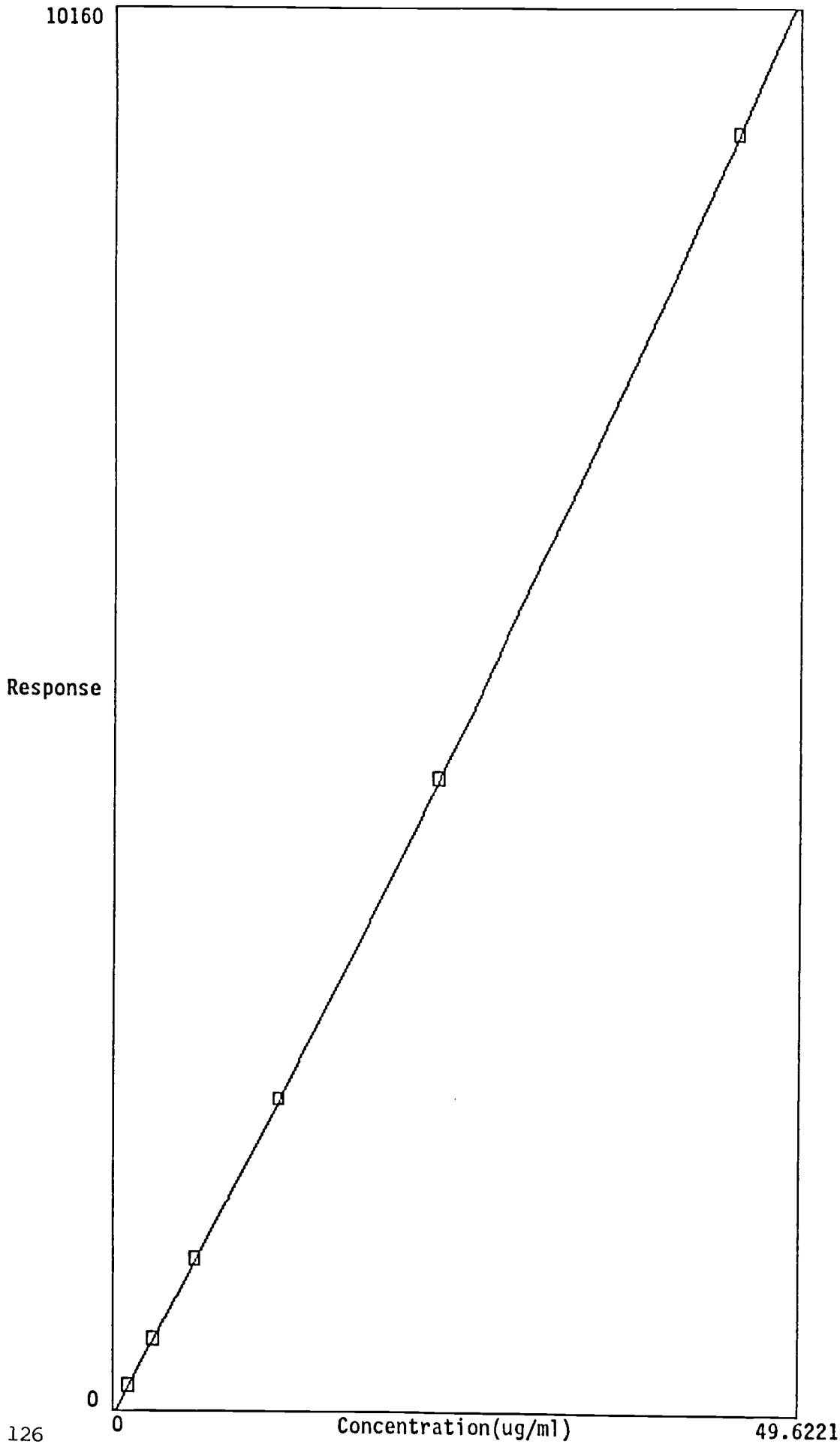
Component: FLUORIDE
Fit Type: Quadratic
Conc = (-4.023334e-009
(3.684803e-004 * Resp)+



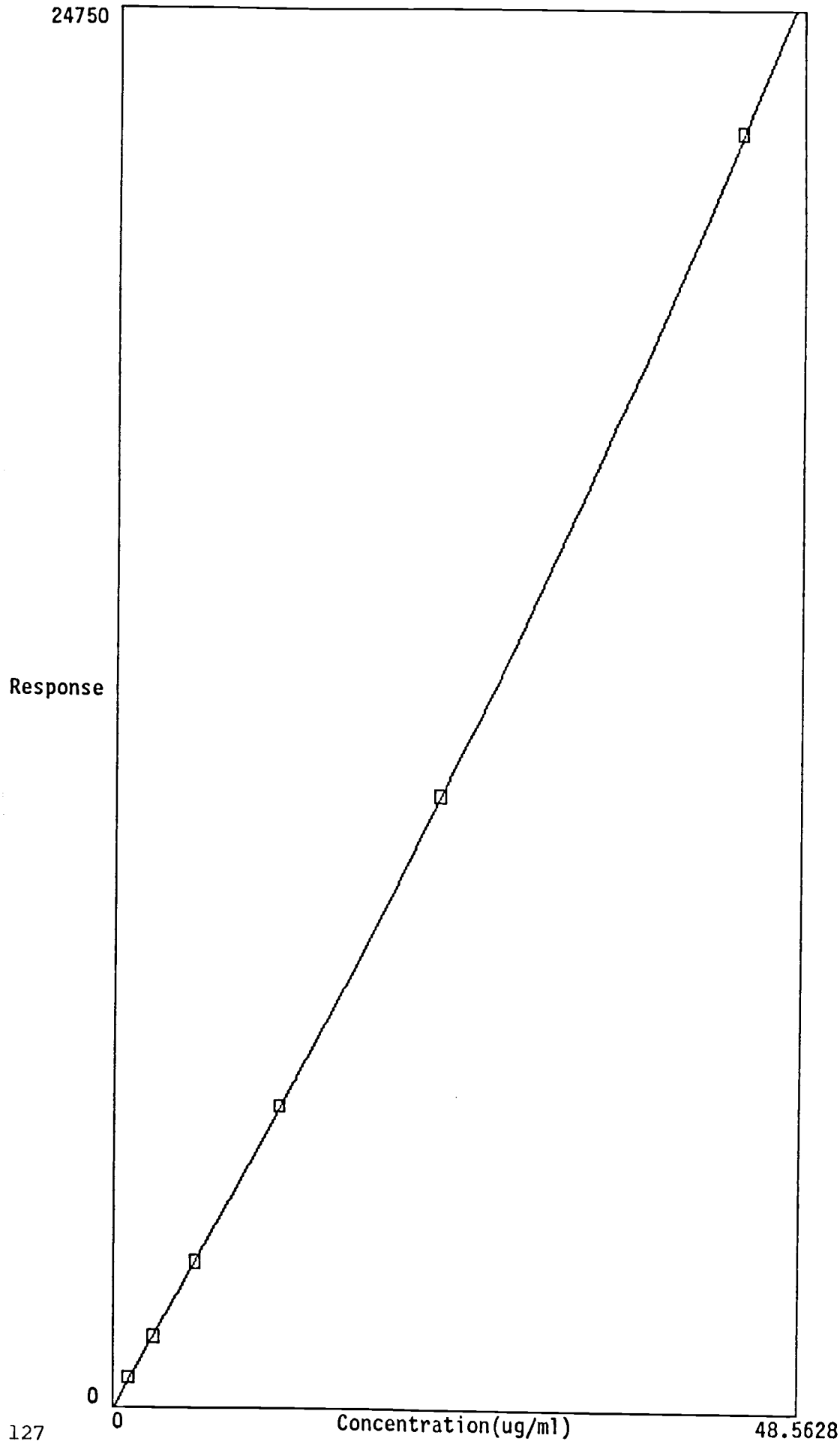
Component: CHLORIDE
Fit Type: Quadratic
Conc = (-1.246868e-008
(6.202502e-004 * Resp)+



Component: NITRATE
Fit Type: Quadratic
Conc = (2.741067e-010 *
(2.063327e-003 * Resp)+



Component: PHOSPHATE
Fit Type: Quadratic
Conc = (-4.788326e-008
(5.305137e-003 * Resp)+



Component: SULFATE
Fit Type: Quadratic
Conc = (-1.341009e-008
(2.263682e-003 * Resp)+

DATA REPROCESSED ON Mon Sep 17 09:57:48 1990

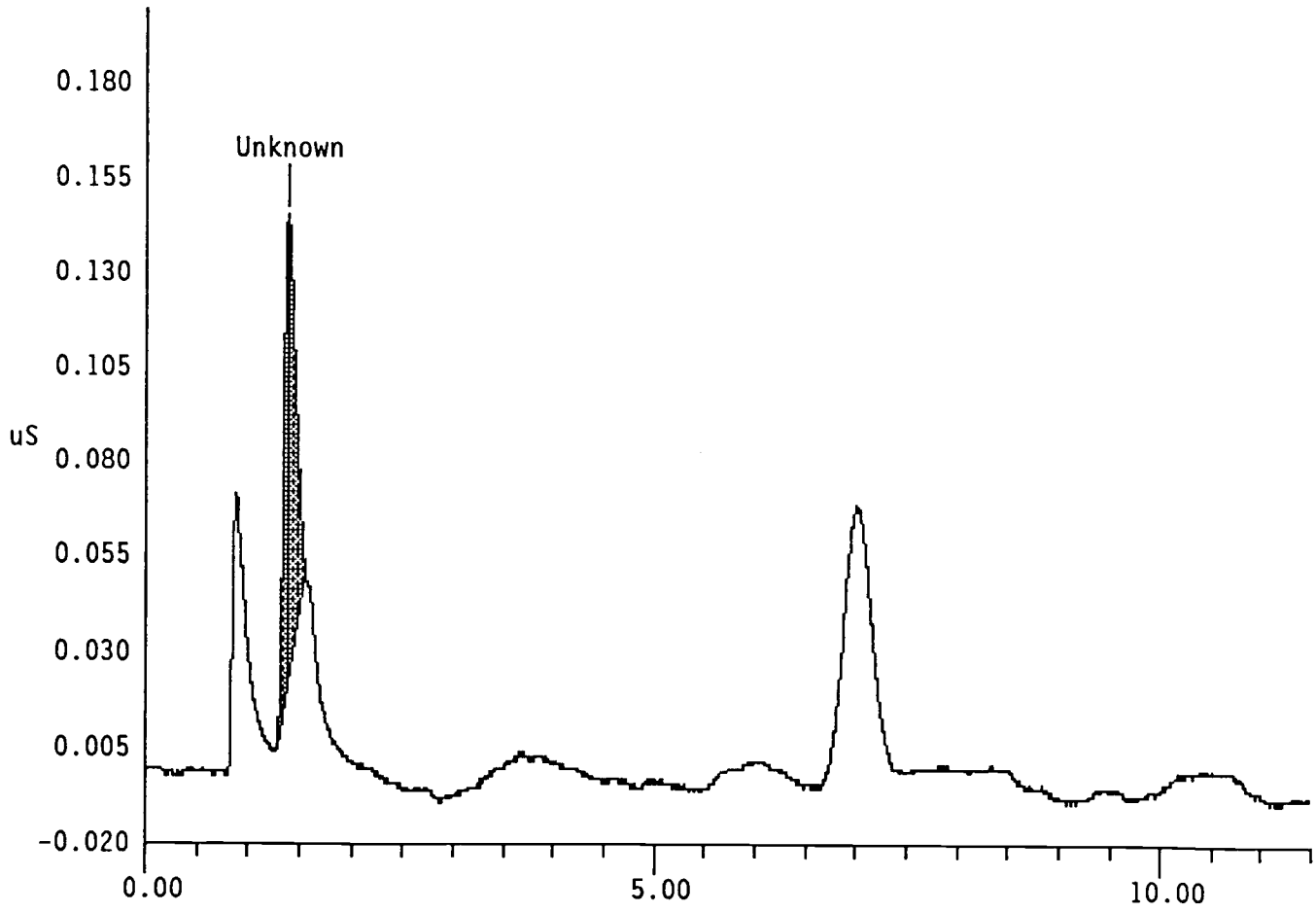
```
| Sample Name: BLANK                                  Date: Wed Apr 11 11:09:54 1990|
| Data File  : A:\90040979.D02                                                      |
| Method     : c:\windows\ai400\method\sst.met                                      |
| ACI Address: 1       System : 1       Inject#:   2      Detector: CDM           |
```

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

Stop time = 11.50 Minutes Number of Data Points = 3450
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

File: A:\90040979.D02 Sample: BLANK



DATA REPROCESSED ON Mon Sep 17 09:59:43 1990

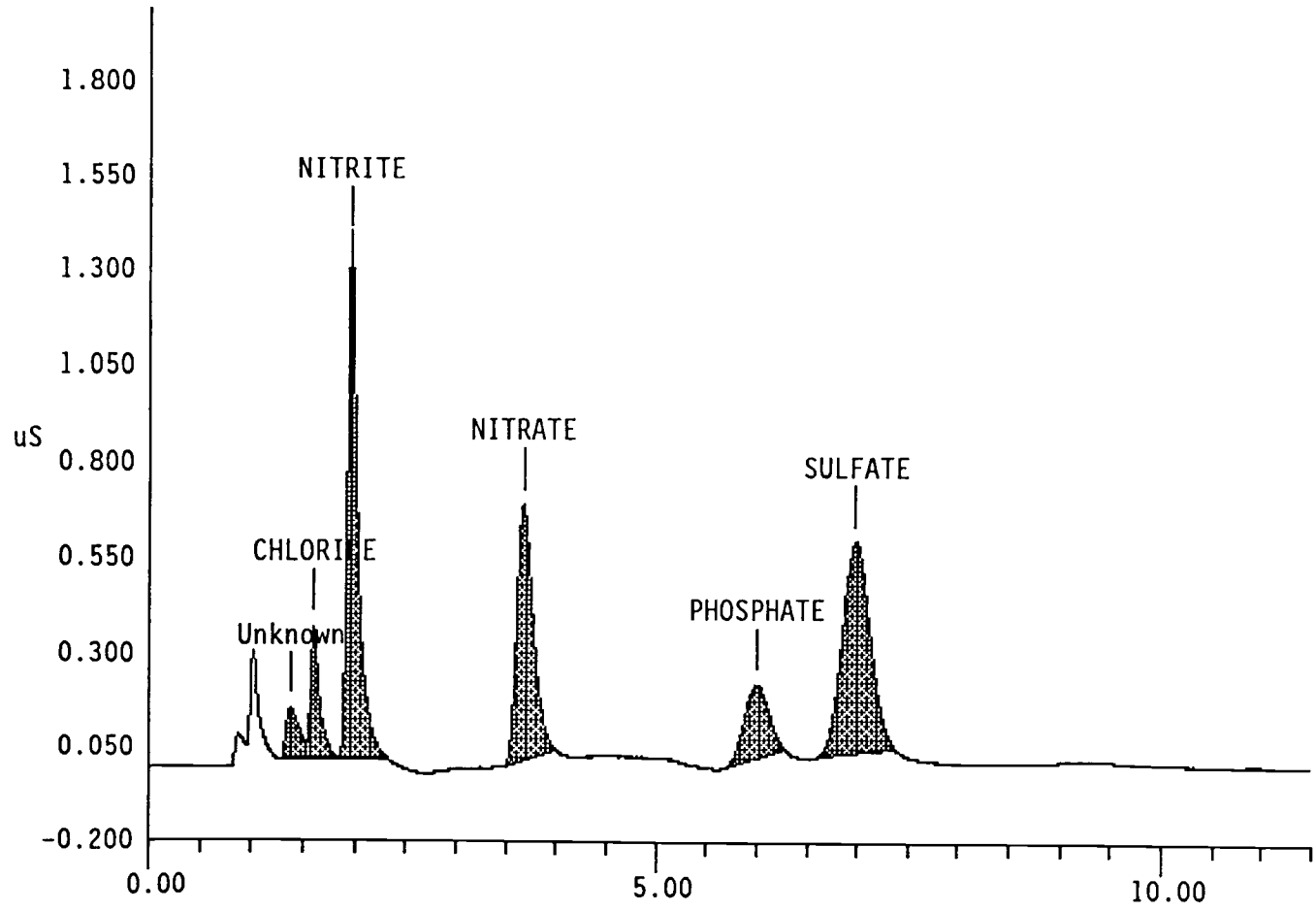
```
Sample Name: AUTOCAL1R                          Date: Wed Apr 11 11:22:06 1990
Data File  : A:\90040979.D03
Method     : c:\windows\ai400\method\sst.met
ACI Address: 1       System : 1       Inject#:   3       Detector: CDM
```

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

Stop time = 11.50 Minutes Number of Data Points = 3451
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	1.38		0.000e+000	1.225e+003	140	2		
2	1.60	CHLORIDE	1.517e-001	2.311e+003	358	2	0	0.00%
3	1.95	NITRITE	1.190e+000	9.937e+003	1360	2	0	0.00%
4	3.67	NITRATE	1.220e+000	7.900e+003	677	1	0	0.00%
5	6.00	PHOSPHATE	1.210e+000	3.360e+003	198	1	0	0.00%
6	6.98	SULFATE	1.172e+000	1.077e+004	557	1	0	0.00%

File: A:\90040979.D03 Sample: AUTOCAL1R



DATA REPROCESSED ON Mon Sep 17 10:01:28 1990

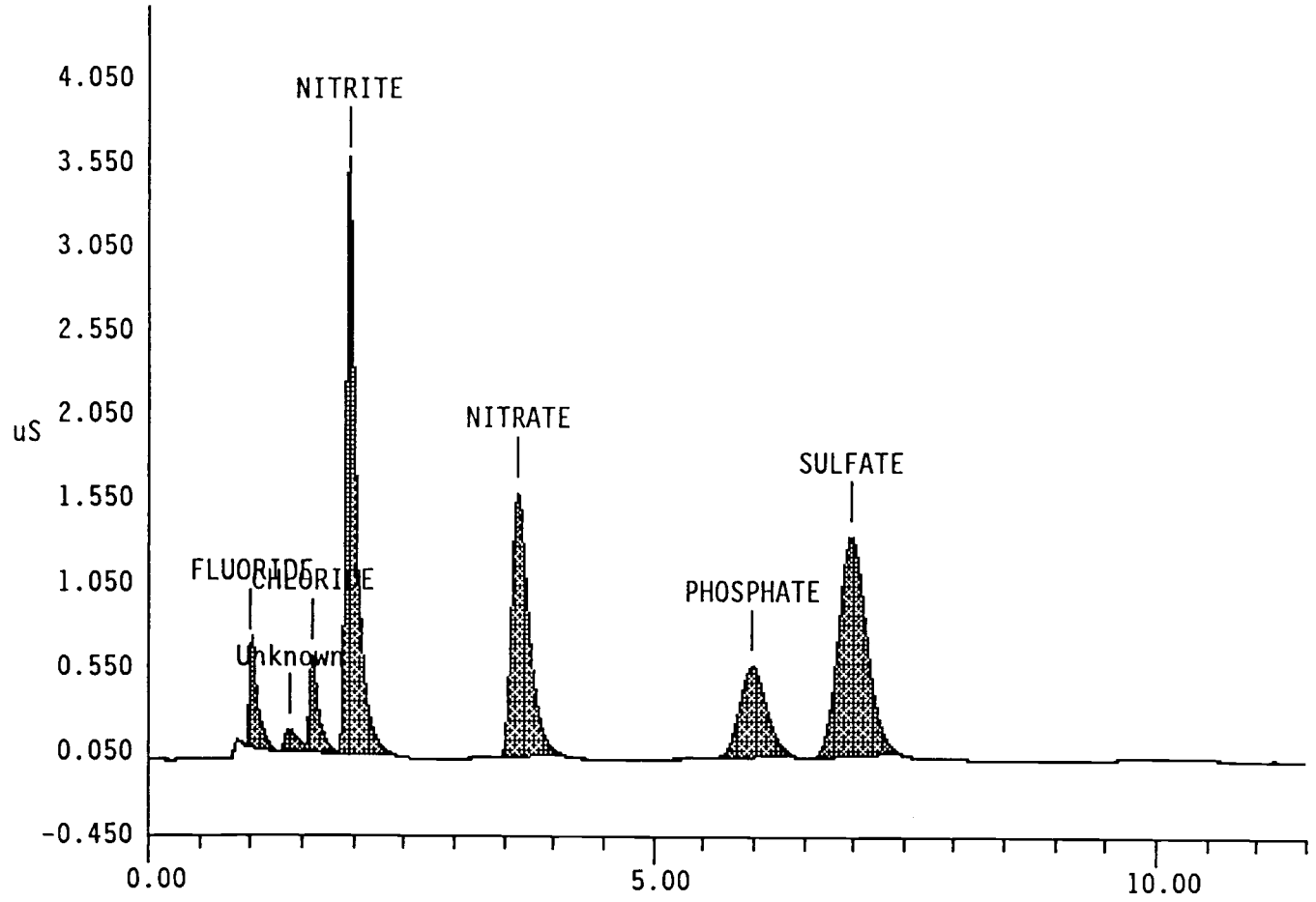
```
Sample Name: AUTOCAL2R                          Date: Wed Apr 11 11:34:25 1990
Data File  : A:\90040979.D04
Method     : c:\windows\ai400\method\sst.met
ACI Address: 1       System : 1       Inject#:   4       Detector: CDM
```

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

Stop time = 11.50 Minutes Number of Data Points = 3451
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	2.985e-001	3.642e+003	607	1	0	0.00%
2	1.38		0.000e+000	1.159e+003	132	2		
3	1.60	CHLORIDE	3.780e-001	3.671e+003	587	2	0	0.00%
4	1.95	NITRITE	2.990e+000	2.570e+004	3515	2	0	0.00%
5	3.63	NITRATE	3.040e+000	1.923e+004	1565	1	0	0.00%
6	5.98	PHOSPHATE	3.015e+000	9.889e+003	536	1	0	0.00%
7	6.97	SULFATE	2.920e+000	2.569e+004	1297	1	0	0.00%

File: A:\90040979.D04 Sample: AUTOCAL2R



DATA REPROCESSED ON Mon Sep 17 10:03:08 1990

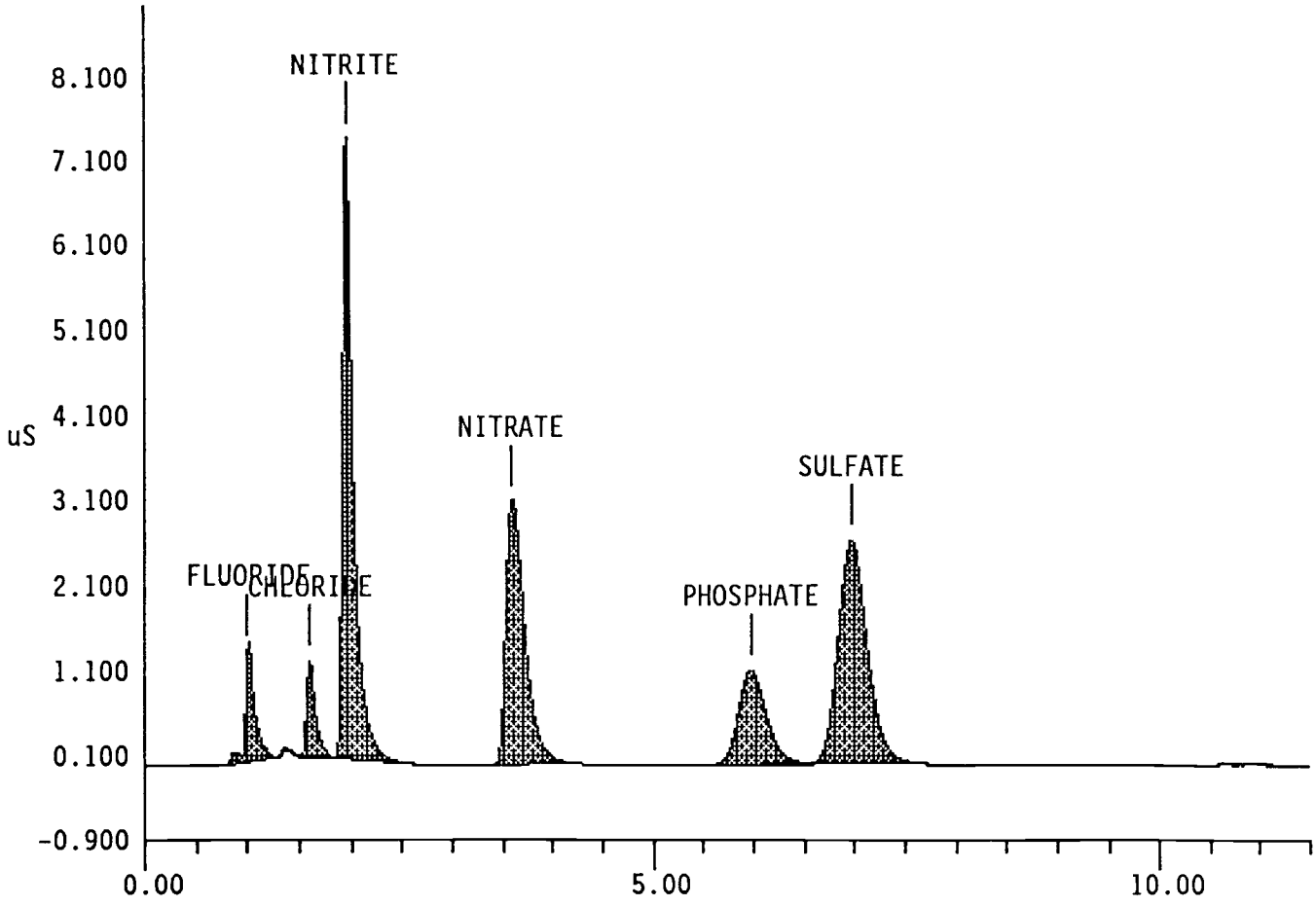
Sample Name: AUTOCAL3R			Date: Wed Apr 11 11:46:43 1990
Data File : A:\90040979.D05			
Method : c:\windows\ai400\method\sst.met			
ACI Address: 1	System : 1	Inject#: 5	Detector: CDM

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

Stop time = 11.50 Minutes Number of Data Points = 3450
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	5.941e-001	9.315e+003	1320	1	0	0.00%
2	1.60	CHLORIDE	7.525e-001	6.685e+003	1135	1	0	0.00%
3	1.95	NITRITE	5.951e+000	5.351e+004	7323	1	0	0.00%
4	3.58	NITRATE	6.050e+000	4.062e+004	3098	1	0	0.00%
5	5.97	PHOSPHATE	6.000e+000	2.080e+004	1103	2	0	0.00%
6	6.97	SULFATE	5.812e+000	5.199e+004	2607	2	0	0.00%

File: A:\90040979.D05 Sample: AUTOCAL3R



DATA REPROCESSED ON Mon Sep 17 10:04:54 1990

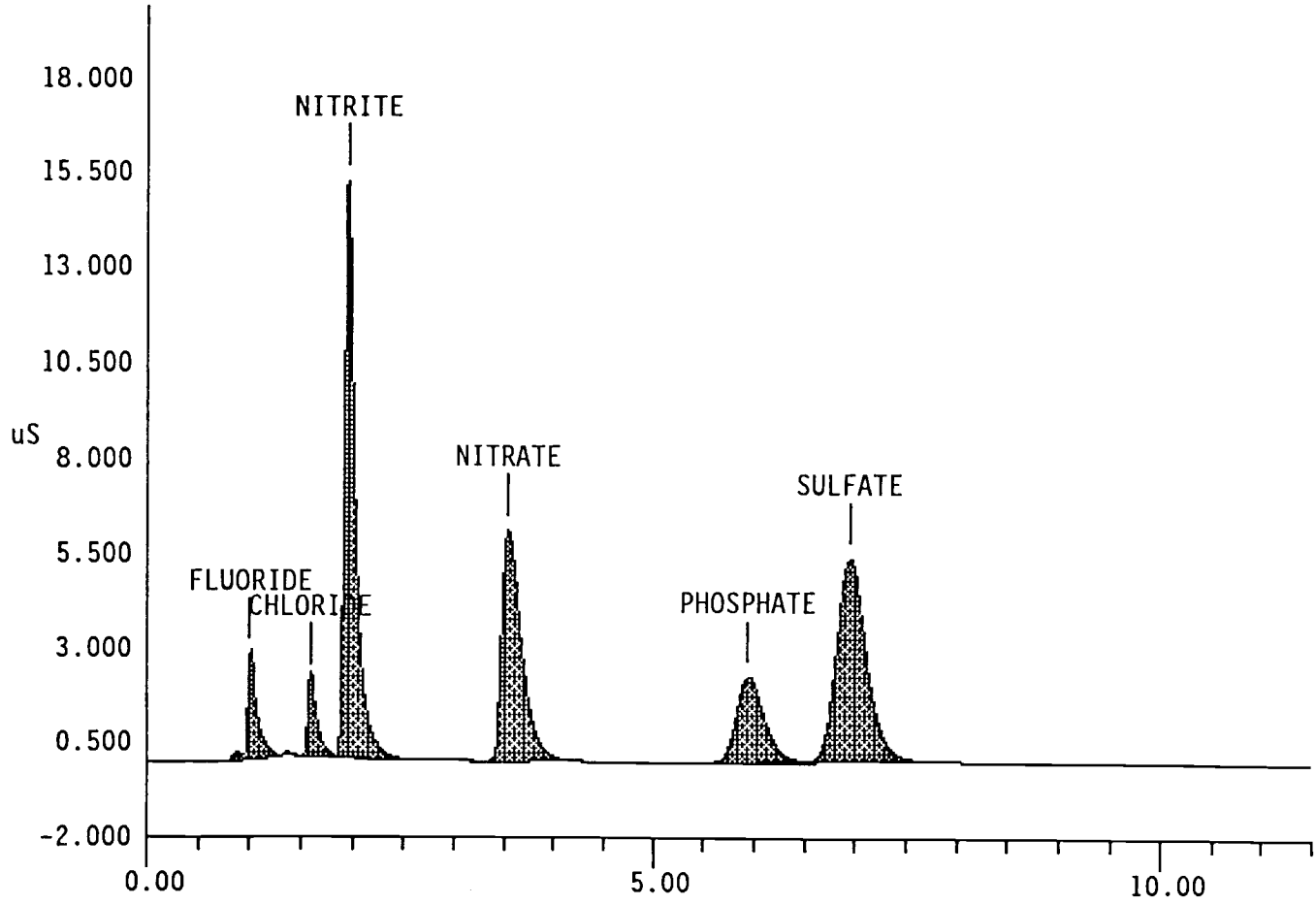
```
| Sample Name: AUTOCAL4R                          Date: Wed Apr 11 11:59:03 1990|
| Data File  : A:\90040979.D06                                                  |
| Method     : c:\windows\ai400\method\sst.met                                  |
| ACI Address: 1       System : 1       Inject#:   6      Detector: CDM       |
```

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

Stop time = 11.50 Minutes Number of Data Points = 3450
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	1.176e+000	1.846e+004	2776	1	0	0.00%
2	1.58	CHLORIDE	1.490e+000	1.416e+004	2092	2	0	0.00%
3	1.95	NITRITE	1.178e+001	1.142e+005	15244	2	0	0.00%
4	3.53	NITRATE	1.198e+001	8.403e+004	6111	1	0	0.00%
5	5.93	PHOSPHATE	1.188e+001	4.316e+004	2270	2	0	0.00%
6	6.93	SULFATE	1.151e+001	1.087e+005	5358	2	0	0.00%

File: A:\90040979.D06 Sample: AUTOCAL4R



DATA REPROCESSED ON Mon Sep 17 10:06:34 1990

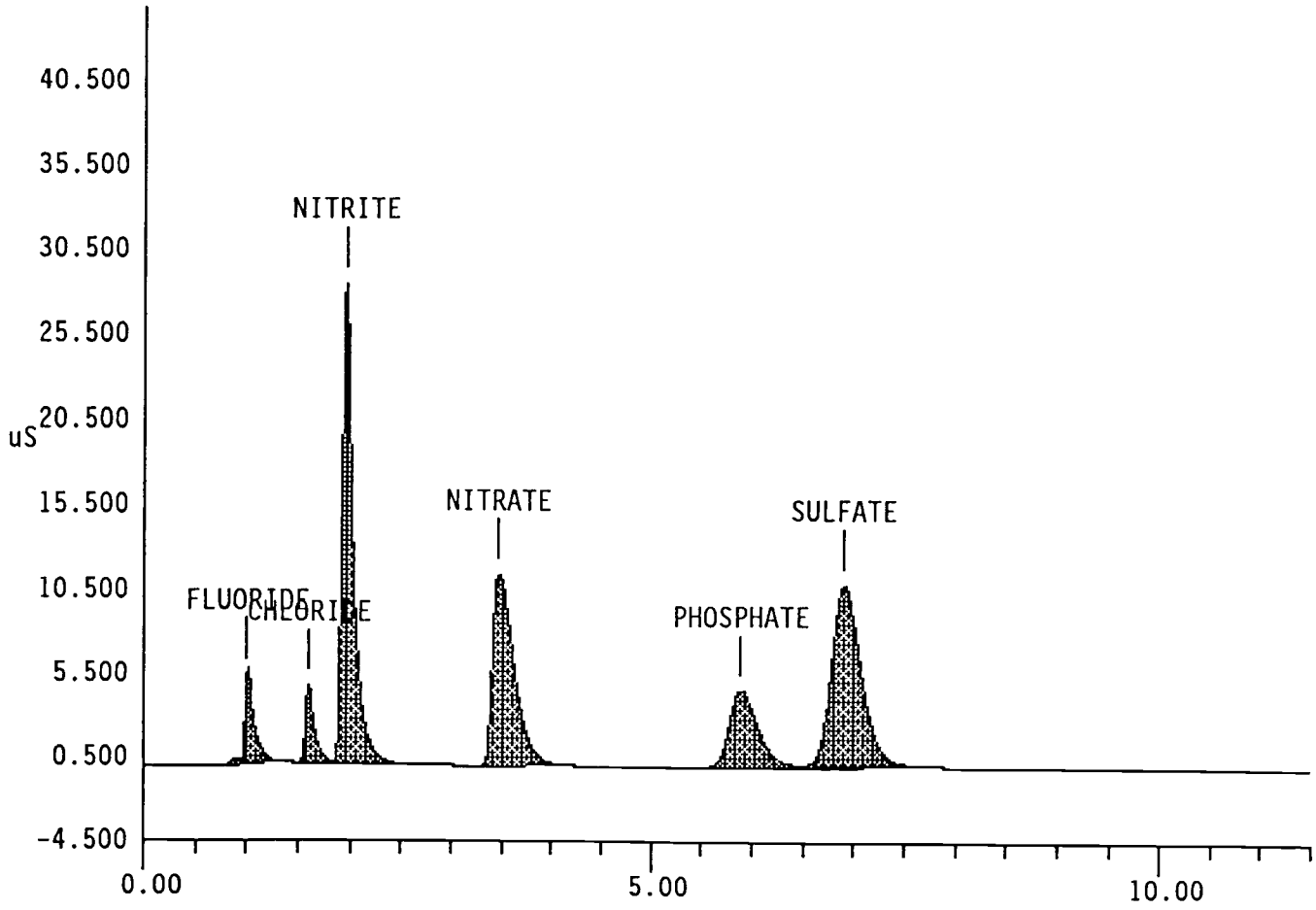
```
Sample Name: AUTOCAL5R                          Date: Wed Apr 11 12:11:21 1990
Data File  : A:\90040979.D07
Method     : c:\windows\ai400\method\sst.met
ACI Address: 1       System : 1       Inject#:   7       Detector: CDM
```

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

Stop time = 11.50 Minutes Number of Data Points = 3450
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	2.308e+000	3.559e+004	5385	1	0	0.00%
2	1.60	CHLORIDE	2.923e+000	2.820e+004	4705	2	0	0.00%
3	1.95	NITRITE	2.394e+001	2.189e+005	28443	2	0	0.00%
4	3.47	NITRATE	2.350e+001	1.713e+005	11368	1	0	0.00%
5	5.88	PHOSPHATE	2.330e+001	8.877e+004	4565	2	0	0.00%
6	6.90	SULFATE	2.258e+001	2.202e+005	10811	2	0	0.00%

File: A:\90040979.D07 Sample: AUTOCAL5R



DATA REPROCESSED ON Mon Sep 17 10:08:15 1990

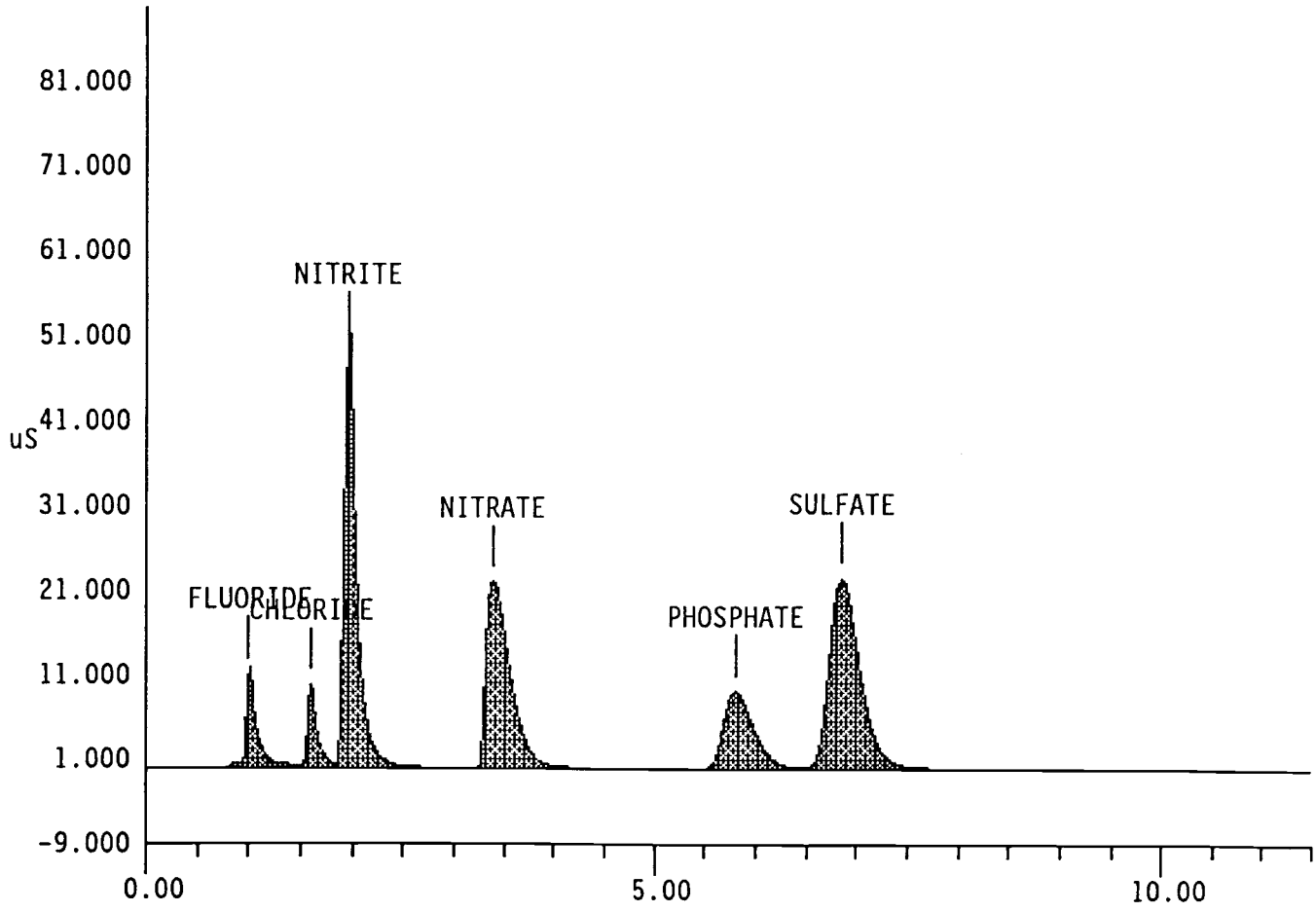
```
================================================================================
| Sample Name: AUTOCAL6R                          Date: Wed Apr 11 12:23:42 1990|
| Data File  : A:\90040979.D08                                                  |
| Method     : c:\windows\ai400\method\sst.met                                  |
| ACI Address: 1       System : 1       Inject#:   8      Detector: CDM       |
================================================================================
```

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

Stop time = 11.50 Minutes Number of Data Points = 3450
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	4.444e+000	8.355e+004	11233	2	0	0.00%
2	1.60	CHLORIDE	5.630e+000	6.263e+004	9921	2	0	0.00%
3	1.95	NITRITE	4.452e+001	4.402e+005	49476	2	0	0.00%
4	3.38	NITRATE	4.526e+001	3.689e+005	22029	1	0	0.00%
5	5.80	PHOSPHATE	4.489e+001	1.868e+005	9238	2	0	0.00%
6	6.85	SULFATE	4.348e+001	4.727e+005	22498	2	0	0.00%

File: A:\90040979.D08 Sample: AUTOCAL6R



DIONEX SCHEDULE - A:\90041700.SCH

Inj#	Sample Name	Method Name	Data File	Vol.	Dil.	Int.Std.
1	SETUP	...\sst	...\900417001		1	0
2	BLANK	...\sst	...\900417001		1	0
3	LMCS/6C11-HP	...\sst	...\900417001		101	0
4	1198B	...\sst	...\900417001		1	0
5	1199	...\sst	...\900417001		1	0
6	1200D	...\sst	...\900417001		1	0
7	1201S	...\sst	...\900417001		1	0
8	572D	...\sst	...\900417001		101	0
9	983	...\sst	...\900417001		21	0
10	984D	...\sst	...\900417001		21	0
11	LMCS/6C11-HP	...\sst	...\900417001		101	0
12	R6640	...\sst	...\900417001		1111	0
13	R6641	...\sst	...\900417001		1111	0
14	R6642	...\sst	...\900417001		1111	0
15	R6664	...\sst	...\900417001		1111	0
16	R6665	...\sst	...\900417001		1111	0
17	R6669.STD	...\sst	...\900417001		101	0
18	R6666	...\sst	...\900417001		1111	0
19	R6667	...\sst	...\900417001		1111	0
20	R6670	...\sst	...\900417001		1111	0
21	R6671	...\sst	...\900417001		1111	0
22	R6672	...\sst	...\900417001		1111	0
23	R6673	...\sst	...\900417001		1111	0
24	R6673.SP	...\sst	...\900417001		1111	0
25	R6674.STD	...\sst	...\900417001		101	0

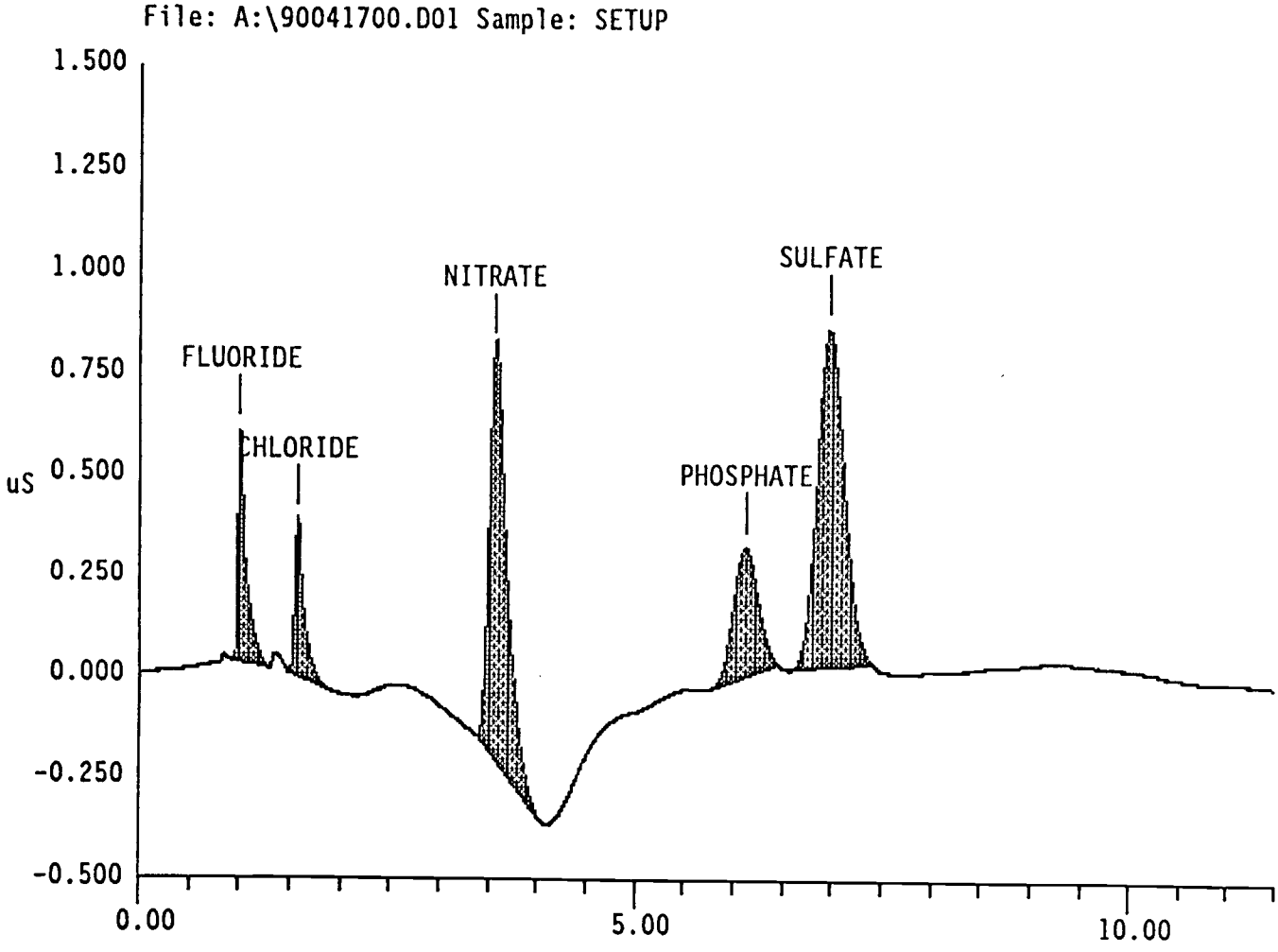
DATA REPROCESSED ON Mon Sep 17 09:16:34 1990

```
Sample Name: SETUP                                  Date: Tue Apr 17 12:40:24 1990
Data File  : A:\90041700.D01
Method     : c:\windows\ai400\method\sst.met
ACI Address: 1       System : 1       Inject#:   1      Detector: CDM
```

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

Stop time = 11.50 Minutes Number of Data Points = 3450
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	2.101e-001	3.251e+003	574	1	0	0.00%
2	1.57	CHLORIDE	2.034e-001	2.406e+003	388	1	0	0.00%
3	3.55	NITRATE	1.807e+000	1.344e+004	1010	1	0	0.00%
4	6.12	PHOSPHATE	1.895e+000	5.614e+003	323	1	0	5.46%
5	6.97	SULFATE	1.889e+000	1.603e+004	835	1	0	0.00%



DATA REPROCESSED ON Mon Sep 17 09:18:40 1990

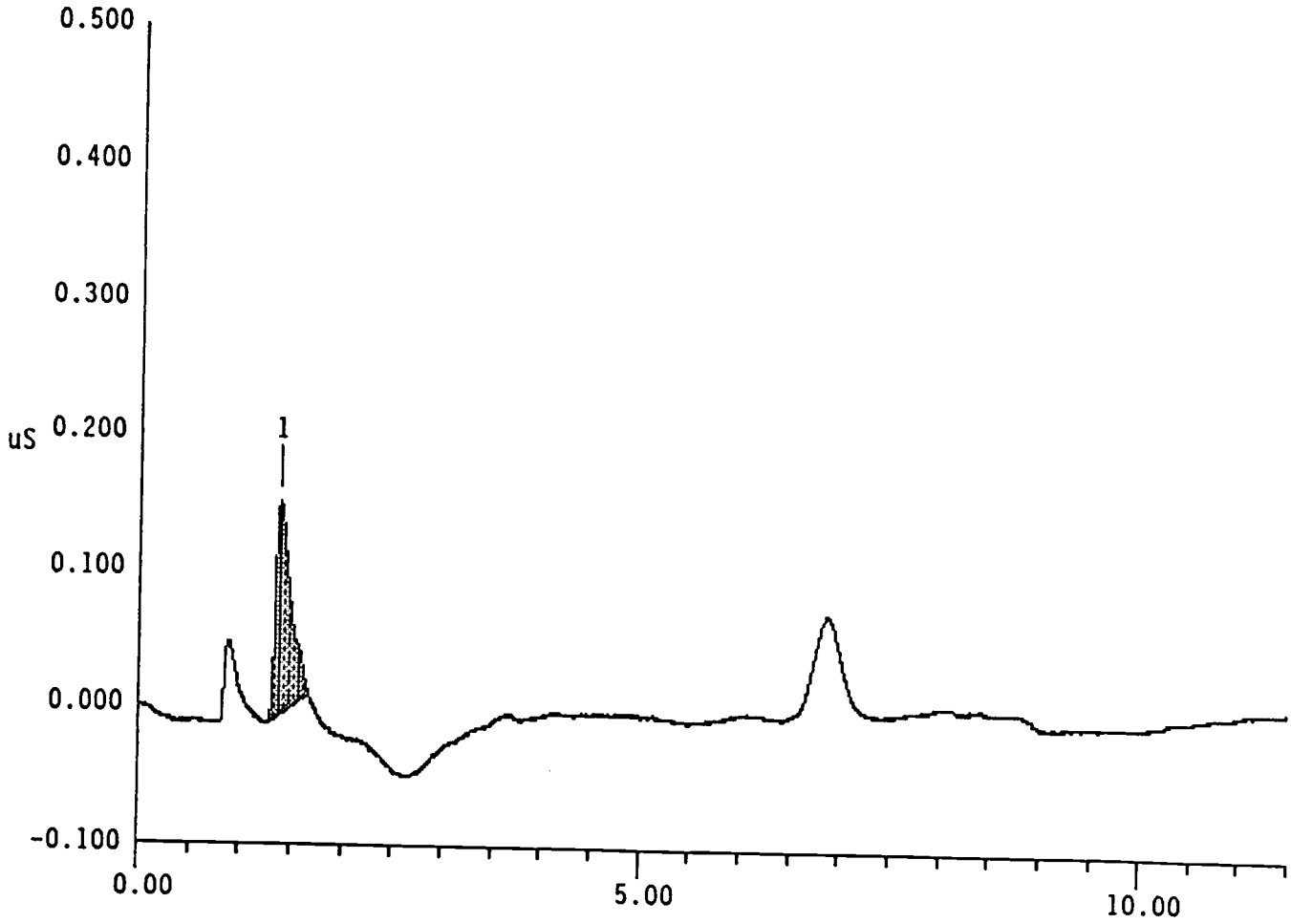
```
Sample Name: BLANK                                  Date: Tue Apr 17 12:52:42 1990
Data File  : A:\90041700.D02
Method     : c:\windows\ai400\method\sst.met
ACI Address: 1       System : 1       Inject#:   2       Detector: CDM
```

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

Stop time = 11.50 Minutes Number of Data Points = 3451
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	1.38		0.000e+000	1.652e+003	156	1		

File: A:\90041700.D02 Sample: BLANK



DATA REPROCESSED ON Mon Sep 17 09:20:50 1990

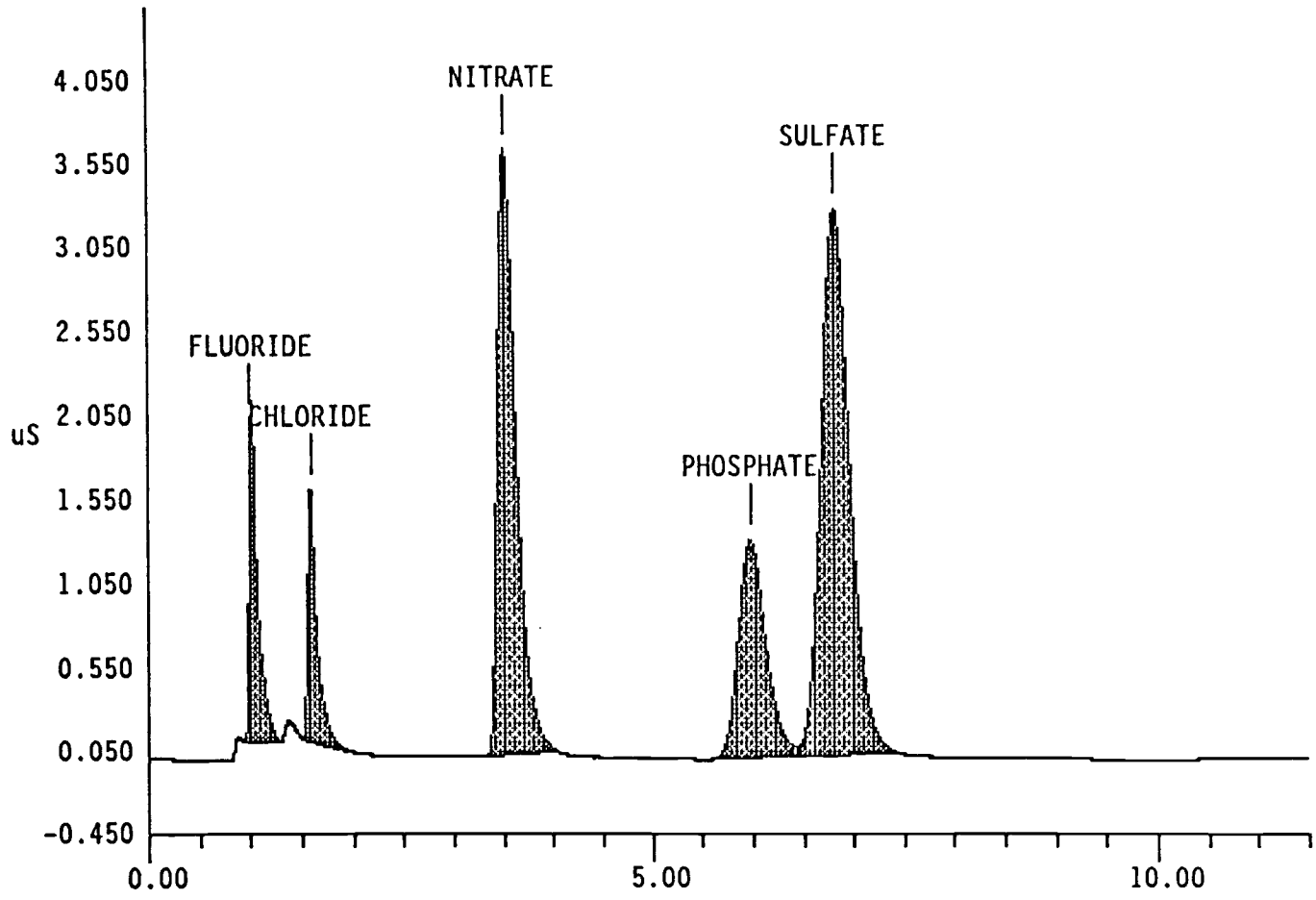
```
Sample Name: LMCS/6C11-HP                    Date: Tue Apr 17 13:04:58 1990
Data File  : A:\90041700.D03
Method     : c:\windows\ai400\method\sst.met
ACI Address: 1       System : 1       Inject#:   3       Detector: CDM
```

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

Stop time = 11.50 Minutes Number of Data Points = 3451
Area reject = 1000 One Data Point per 0.2 seconds
Amount Injected = 1 Dilution factor = 101

PEAK NUM	RET TIME	PEAK NAME	CONC. in ug/ml	AREA	HEIGHT	BL	REF PEAK	% DELTA RET TIME
1	1.00	FLUORIDE	7.000e+001	1.159e+004	1922	1	0	0.00%
2	1.58	CHLORIDE	8.693e+001	9.282e+003	1497	1	0	0.00%
3	3.50	NITRATE	7.249e+002	4.811e+004	3611	1	0	0.00%
4	5.97	PHOSPHATE	7.054e+002	2.467e+004	1296	2	0	0.00%
5	6.80	SULFATE	7.286e+002	6.479e+004	3246	2	0	0.00%

File: A:\90041700.D03 Sample: LMCS/6C11-HP



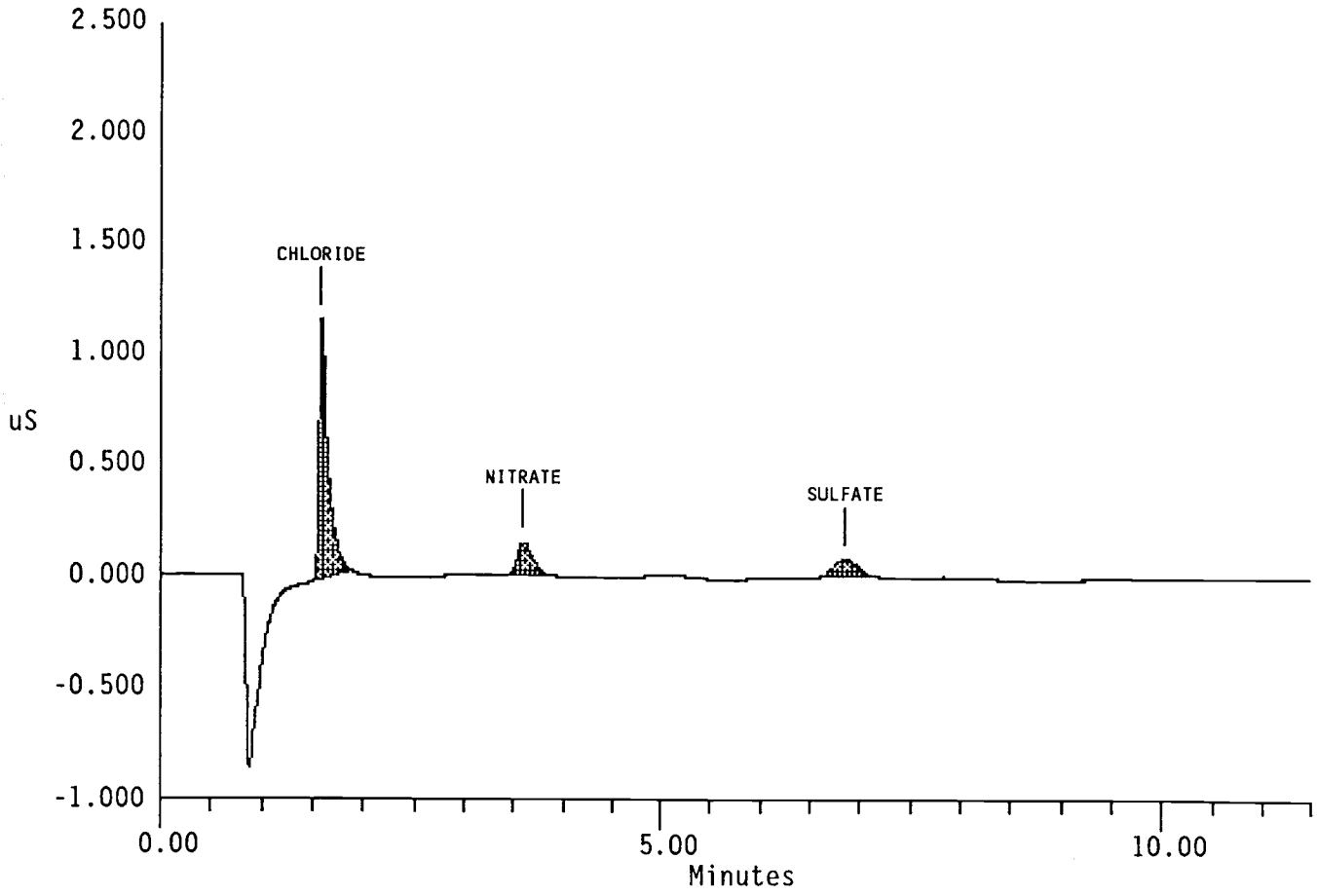
DATA REPROCESSED ON Tue Oct 16 10:16:46 1990

Sample Name: 1198B Date: Tue Apr 17 13:17:16 1990
Data File : A:\90041700.D04
Method : c:\windows\ai400\method\sst.met
ACI Address: 1 System : 1 Inject#: 4 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	3451	5Hz	0.00	11.50	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.58	CHLORIDE	0.670	1170	7368	1	0.00
2	3.60	NITRATE	0.020	145	1512	1	6.40
3	6.85	SULFATE	0.174	74	1138	1	0.00

File: A:\90041700.D04 Sample: 1198B



DATA REPROCESSED ON Mon Sep 17 09:12:06 1990

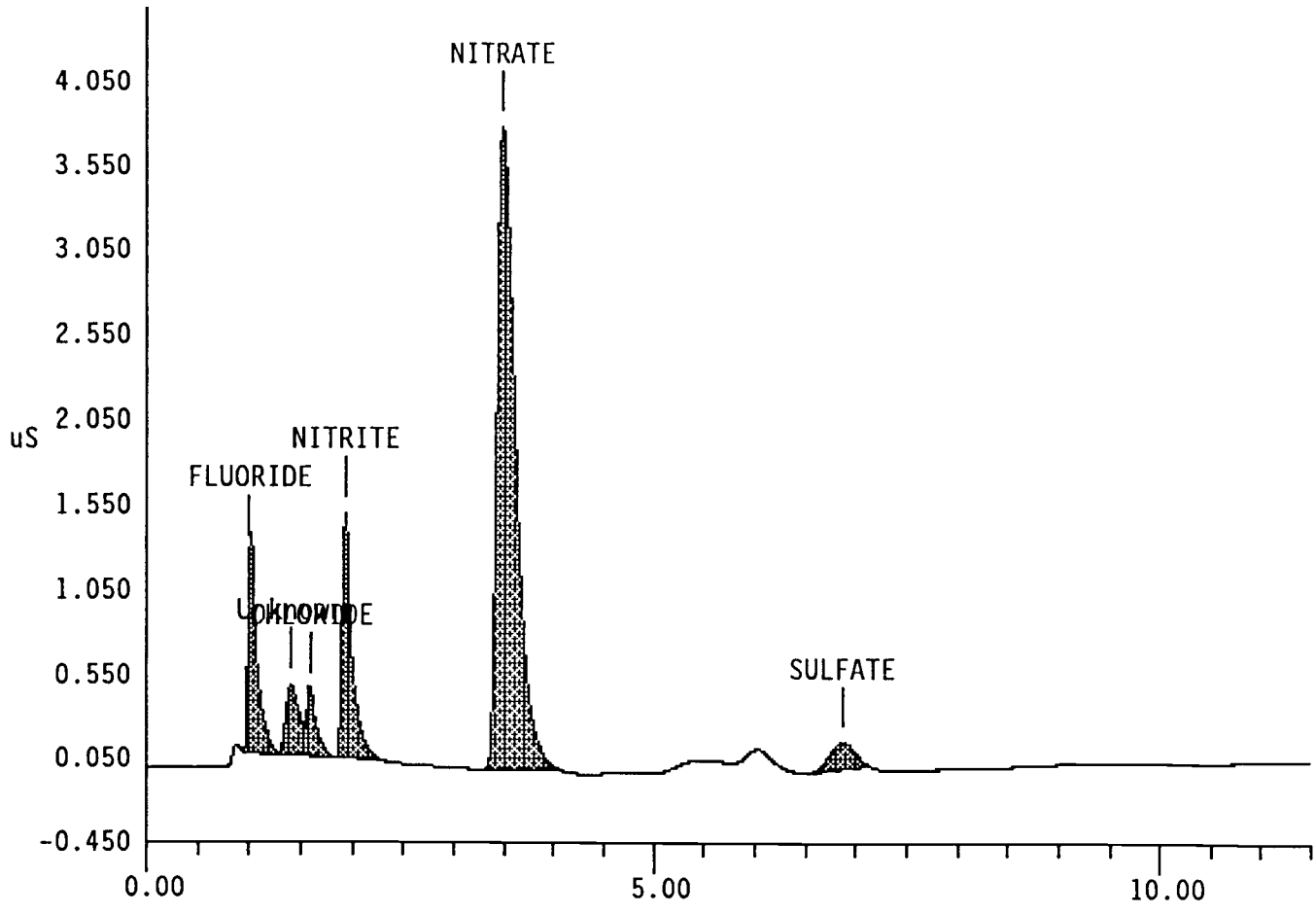
```
| Sample Name: 572D                              Date: Tue Apr 17 14:06:22 1990|
| Data File  : A:\90041700.D08                                                 |
| Method     : c:\windows\ai400\method\sst.met                                 |
| ACI Address: 1       System : 1       Inject#:   8      Detector: CDM      |
```

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

Stop time = 11.50 Minutes Number of Data Points = 3450
Area reject = 1000 One Data Point per 0.2 seconds
Amount Injected = 1 Dilution factor = 101

PEAK NUM	RET TIME	PEAK NAME	CONC. in ug/ml	AREA	HEIGHT	BL	REF PEAK	% DELTA RET TIME
1	1.00	FLUORIDE	4.374e+001	7.883e+003	1191	2	0	0.00%
2	1.40		0.000e+000	3.648e+003	425	2		
3	1.60	CHLORIDE	2.169e+001	2.778e+003	407	2	0	0.00%
4	1.93	NITRITE	1.355e+002	9.869e+003	1457	1	0	0.00%
5	3.48	NITRATE	7.631e+002	4.974e+004	3795	1	0	0.00%
6	6.87	SULFATE	3.827e+001	2.807e+003	164	1	0	0.00%

File: A:\90041700.D08 Sample: 572D



DATA REPROCESSED ON Mon Sep 17 09:29:42 1990

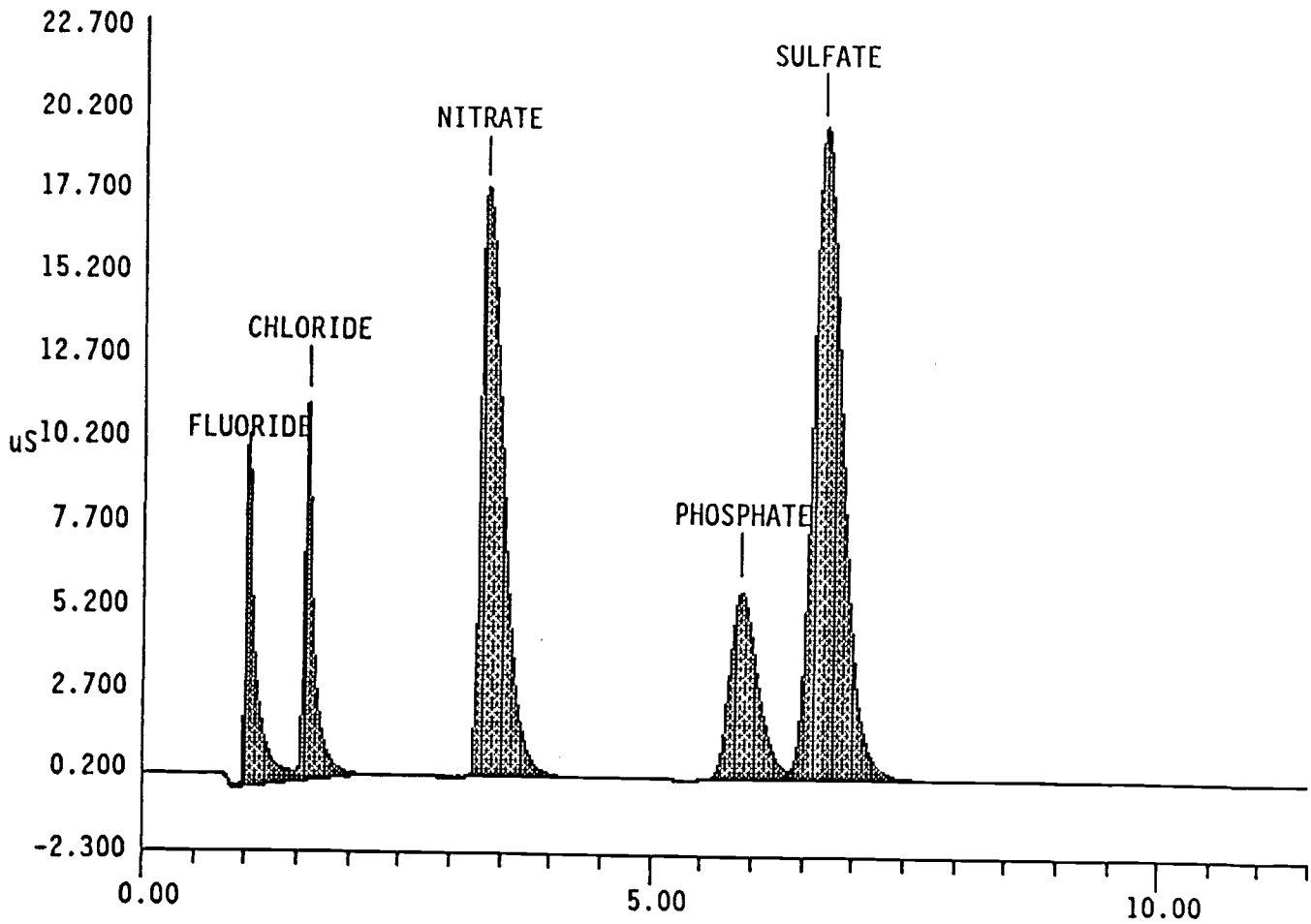
Sample Name: 1201S Date: Tue Apr 17 13:54:05 1990
Data File : A:\90041700.D07
Method : c:\windows\ai400\method\sst.met
ACI Address: 1 System : 1 Inject#: 7 Detector: CDM

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

Stop time = 11.50 Minutes Number of Data Points = 3450
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	2.870e+000	6.911e+004	8595	2	0	0.00%
2	1.58	CHLORIDE	5.401e+000	7.376e+004	11381	2	0	0.00%
3	3.33	NITRATE	3.637e+001	2.827e+005	17719	1	0	0.00%
4	5.88	PHOSPHATE	2.924e+001	1.117e+005	5777	2	0	0.00%
5	6.68	SULFATE	3.937e+001	4.067e+005	19685	2	0	0.00%

File: A:\90041700.D07 Sample: 1201S



DATA REPROCESSED ON Mon Sep 17 09:32:35 1990

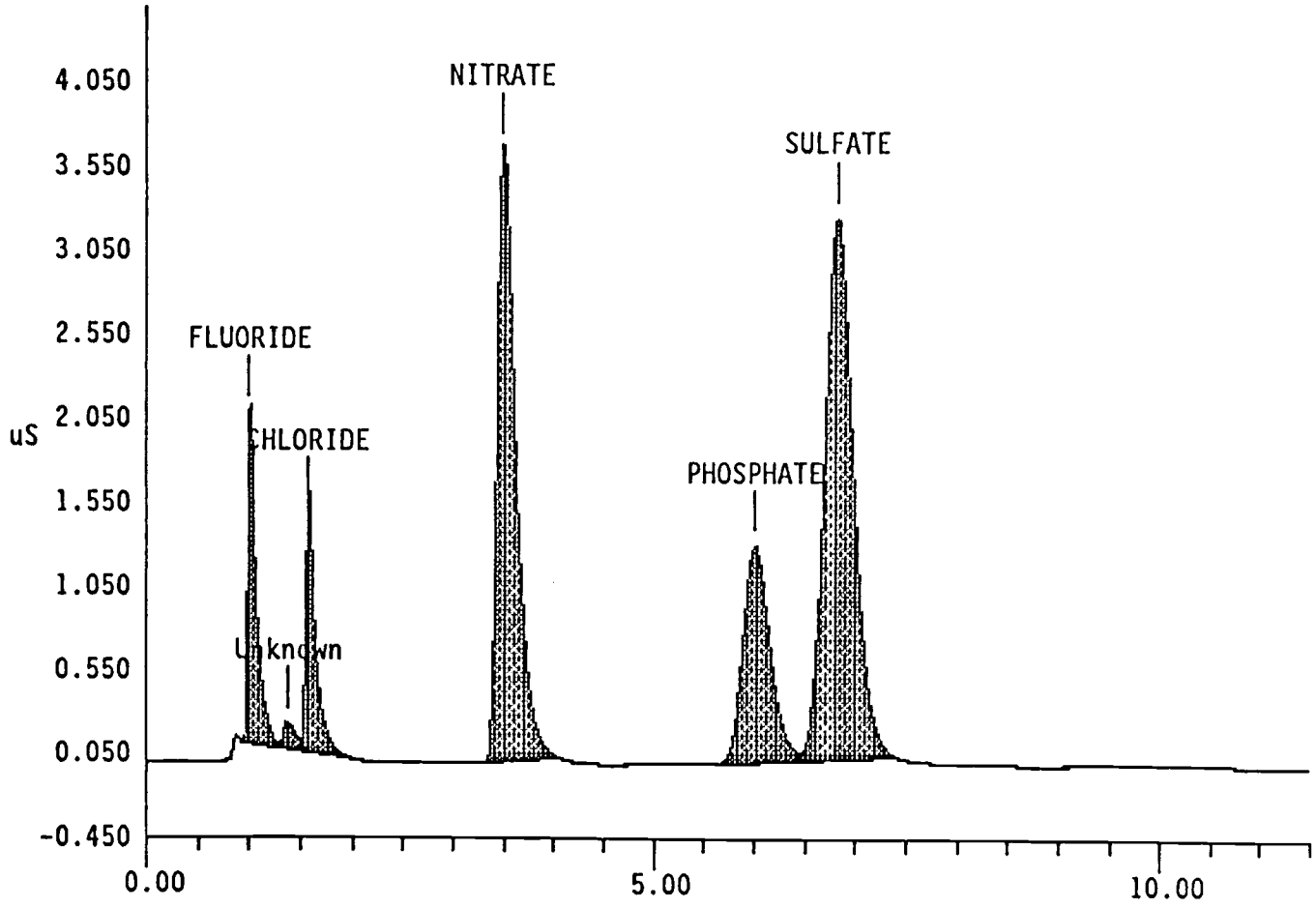
```
Sample Name: LMCS/6C11-HP                    Date: Tue Apr 17 14:43:18 1990
Data File  : A:\90041700.D11
Method     : c:\windows\ai400\method\sst.met
ACI Address: 1       System : 1       Inject#:  11      Detector: CDM
```

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

Stop time = 11.50 Minutes Number of Data Points = 3450
Area reject = 1000 One Data Point per 0.2 seconds
Amount Injected = 1 Dilution factor = 101

PEAK NUM	RET TIME	PEAK NAME	CONC. in ug/ml	AREA	HEIGHT	BL	REF PEAK	% DELTA RET TIME
1	1.00	FLUORIDE	7.218e+001	1.216e+004	1983	2	0	0.00%
2	1.38		0.000e+000	1.329e+003	159	2		
3	1.57	CHLORIDE	8.247e+001	1.016e+004	1421	2	0	0.00%
4	3.48	NITRATE	7.328e+002	4.792e+004	3649	1	0	0.00%
5	6.00	PHOSPHATE	7.027e+002	2.440e+004	1291	2	0	0.00%
6	6.82	SULFATE	7.252e+002	6.402e+004	3230	2	0	0.00%

File: A:\90041700.D11 Sample: LMCS/6C11-HP



Analytical Batch

LAB SEGMENT SERIAL #:F0561

CUSTOMER ID:89-076

INSTRUMENT	WB39937
PROCEDURE/REV	LA-344-105/A-3
TECHNOLOGIST	E. H. Colvin
DATE	April 10, 1990
TEMPERATURE	N/A
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.	F0570
2	Reagent Blank	F0582
3	Sample 89-076	F0571
4	Duplicate Sample 89-076	F0572
5	Spike of sample 89-076	F0573
6	Final LMCS Check Std	F0574
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.	70C11C/200 uL			2.2 mL
Spike of	80C11A/200 uL	F0571/200 uL		.5 mL

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

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-570 Date: 04-10-1990 Time: 09:00:14

Blank = .3996689 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	42.50	100.00
3	3.01	52.10	18.43
4	4.01	54.00	3.52
5	5.01	54.60	1.10
6	6.01	55.10	0.91
7	7.01	55.40	0.54

(55.4 - 2.800341)(11)/(200) = 2.892981 g/L Carbon

(55.4 - 2.800341)(11)/(200)(12) = .2410818 Molar Carbon

Sample Run By: 80028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-582 Date: 04-10-1990 Time: 08:51:49

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

Reading	Analysis Time	Coulometer	% Difference
1	1.01	0.00	0.00
2	2.01	1.20	100.00
3	3.01	1.70	29.41
4	4.01	2.00	15.00
5	5.01	2.30	13.04
6	6.01	2.50	8.00
7	7.01	2.80	10.71

BLANK VALUE = 2.8 / 7.005799 = .3996689 ug/minute

Sample Run By: B0020_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-~~572~~ 571 ee Date: 04-10-1990 Time: 09:17:08

Blank = .3996689 Sample Size = 200 Dilution Factor = 1.1
% Difference = 10 Min Readings = 7 Max Readings = 7

Reading	Analysis Time	Coulometer	% Difference
1	1.01	0.00	0.00
2	2.01	2.30	100.00
3	3.01	3.00	23.33
4	4.01	3.40	11.76
5	5.01	3.70	8.11
6	6.01	4.10	9.76
7	7.01	4.30	4.65

(4.3 - 2.799927)(1.1)/(200) = 8.250405E-03 g/L Carbon

(4.3 - 2.799927)(1.1)/(200)(12) = 6.8753338E-04 Molar Carbon

Sample Run By: 80028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-572 Date: 04-10-1990 Time: 09:30:57

Blank = .3996689 Sample Size = 200 Dilution Factor = 1.1
% Difference = 10 Min Readings = 7 Max Readings = 7

Reading	Analysis Time	Coulometer	% Difference
1	1.01	0.40	-925.00
2	2.01	2.20	81.82
3	3.01	3.00	26.67
4	4.01	3.30	9.09
5	5.01	3.70	10.81
6	6.01	4.00	7.50
7	7.01	4.20	4.76

(4.2 - 2.799951)(1.1)/(200) = 7.700269E-03 g/L Carbon

(4.2 - 2.799951)(1.1)/(200)(12) = 6.416891E-04 Molar Carbon

Sample Run By: 80028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-573 Date: 04-10-1990 Time: 09:40:34

Blank = .3996689 Sample Size = 200 Dilution Factor = 1.1
% Difference = 10 Min Readings = 7 Max Readings = 7

Reading	Analysis Time	Coulometer	% Difference
1	1.01	0.00	0.00
2	2.01	88.90	100.00
3	3.01	111.70	20.41
4	4.01	118.40	5.66
5	5.01	120.50	1.74
6	6.01	121.50	0.82
7	7.01	122.20	0.57

(122.2 - 2.799951)(1.1)/(200) = .6567003 g/L Carbon

(122.2 - 2.799951)(1.1)/(200)(12) = 5.472503E-02 Molar Carbon

Sample Run By: 80028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-574 Date: 04-10-1990 Time: 09:49:59

Blank = .3996689 Sample Size = 200 Dilution Factor = 11
% Difference = 10 Min Readings = 7 Max Readings = 7

Reading	Analysis Time	Coulometer	% Difference
1	1.01	3.80	%-3097.37
2	2.01	40.70	90.66
3	3.01	49.70	18.11
4	4.01	53.30	6.75
5	5.01	54.70	2.56
6	6.01	55.40	1.26
7	7.01	55.90	0.89

(55.9 - 2.8)(11)/(200) = 2.9205 g/L Carbon

(55.9 - 2.8)(11)/(200)(12) = .243375 Molar Carbon

Sample Run By: 80028_____

ACID DIGESTION TEST ANALYSIS

ICP Results

DATA SUMMARY

Date Analyzed:	April 30,1990	Acid Digested LMCS Standard	F0575
Procedure:	LA-505-151/A-0	Reagent Blank	F0583
Analyst:	J. A. White	Sample 89-076	F0576
Digestion	Acid Digestion	Duplicate of 89-076	F0577
Procedure:	LA-505-159/A-0	Spike of 89-076	F0578
		Acid Digested LMCS Standard	F0579

	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	99.53%	92.02%	0.33	52577	41871	NOT CALC.	96.56%	100.70%
Antimony	101.46%	87.00%	0.02 LT	-424 LT	90 LT		67.00%	103.07%
Barium	96.88%	93.10%	0.01	-14 LT	28	9.00%	92.70%	99.30%
Beryllium	92.48%	87.90%	0.00 LT	-4 LT	2		90.60%	95.99%
Bismuth	107.57%	94.31%	0.03 LT	18525	15441	NOT CALC.	101.54%	106.23%
Boron	97.61%	93.20%	0.06	17 LT	69	9.34%	92.60%	100.71%
Cadmium	98.39%	93.70%	0.00 LT	-15 LT	3 LT	8.31%	91.10%	98.69%
Calcium	99.65%	143.70%	0.78	388	365	17.05%	144.90%	102.21%
Cerium	92.74%	50.50%	-0.08 LT	-1556 LT	60 LT	-133.80%	0.80%	92.37%
Cobalt	100.65%	95.40%	0.00 LT	-79 LT	2 LT	0.73%	86.60%	94.24%
Copper	97.85%	92.60%	0.01 LT	-41 LT	61	7.33%	90.60%	100.63%
Europium	95.38%	92.70%	0.00 LT	-29 LT	1 LT		94.90%	98.16%
Iron	100.92%	128.30%	0.58	27355	27174	NOT CALC.	126.30%	103.46%
Lanthanum	92.91%	89.66%	-0.01 LT	-99 LT	7 LT	39.26%	91.90%	94.17%
Lead	109.25%	96.71%	0.03 LT	264	593	56.37%	103.09%	105.09%
Lithium	95.42%	88.00%	-0.01 LT	-80 LT	-4 LT	1.97%	86.20%	98.13%
Magnesium	100.34%	108.40%	0.17	133	142	42.12%	107.20%	102.45%
Manganese	98.71%	97.50%	0.03	3769	3699	21.19%	97.00%	100.16%
Mercury	105.56%	89.88%	0.01	460	361		94.80%	105.34%
Molybdenum	94.93%	87.60%	0.00 LT	-41 LT	4 LT	43.03%	91.18%	96.36%
Nickel	96.94%	94.20%	0.00 LT	12 LT	139	11.29%	90.70%	97.87%
Potassium	98.89%	74.68%	-0.09 LT	-2256 LT	42 LT	-183.40%	44.60%	98.37%
Samarium	101.01%	3.00%	-0.12 LT	-1832 LT	-21 LT		43.80%	95.61%
Selenium	105.30%	88.26%	-0.02 LT	3 LT	630		95.04%	105.26%
Silver	101.85%	91.20%	-0.01 LT	-87 LT	3 LT	-8.76%	96.10%	102.71%
Sodium	97.23%	97.68%	0.35	93097	85924	NOT CALC.	85.92%	98.55%
Strontium	98.41%	96.30%	0.00	353	325	14.69%	96.00%	100.99%
Sulfur	106.06%	95.42%	0.14	1133	1090		101.22%	106.15%
Tantalum	96.72%	76.60%	-0.01 LT	-224 LT	15 LT	-18.40%	80.42%	96.79%
Thallium	100.34%	83.48%	-0.11 LT	-1849 LT	709		91.10%	101.95%
Thorium	101.91%	87.41%	-0.08 LT	-1148 LT	-10 LT		94.77%	102.75%
Tin	100.13%	98.20%	0.02 LT	-50 LT	21 LT	45.14%	94.72%	100.68%
Titanium	96.67%	91.90%	0.09	-26 LT	8 LT	49.15%	94.68%	99.79%
Uranium	109.29%		-0.89 LT	-7007 LT	4102		35.91%	102.10%
Vanadium	94.00%	86.90%	-0.01 LT	-71 LT	24 LT		90.90%	95.92%
Zinc	98.63%	95.20%	0.08	189	194	13.42%	93.90%	100.16%
Zirconium	96.12%	88.94%	-0.01 LT	-162 LT	101	42.85%	92.02%	98.91%

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

Analytical Batch

LAB SEGMENT SERIAL #:F0561

CUSTOMER ID:89-076

INSTRUMENT	N/A
PROCEDURE/REV	LA-505-159/A-0
TECHNOLOGIST	J. A. White
DATE	April 26,1990
TEMPERATURE	72 C
STARTING TIME	0800
ENDING TIME	1553
CHEMIST	S. A. Jones

Acid Digestion of Sample 89-076

	DESCRIPTION		LAB ID
1	Reagent Blank		F0583
2	Sample	89-076	F0576
3	Duplicate Sample	89-076	F0577
4	Spike of Sample	89-076	F0578
5	Reagent Blank		F0439
6	Sample	89-070	F0432
7	Duplicate Sample	89-070	F0433
8	Spike	89-070	F0434
9	Reagent Blank		F0559
10	Sample	89-075	F0552
11	Duplicate Sample	89-075	F0553

	DESCRIPTION		LAB ID
12	Spike	89-075	F0554
13			
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22			

STANDARD TYPE	PRIMARY BOOK # & ALIQUOT VOL.	SECOND BOOK # & ALIQUOT VOL.	THIRD BK# & ALQT.VOL.	FINAL VOL. OF STD.
Spike	78C11K/5.0ml	82B38G/5.0mL	77C11J/5.0ml	50mL

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

ICP Results

RAW DATA SUMMARY

Date Analyzed:	April 30,1990
Procedure:	LA-505-151/A-0
Analyst:	J. A. White
Digestion	Acid Digestion
Procedure:	LA-505-159/A-0

Acid Digested LMCS Standard	F0575
Reagent Blank	F0583
Sample 89-076	F0576
Duplicate of 89-076	F0577
Spike of 89-076	F0578
Acid Digested LMCS Standard	F0579

	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	99.53%		92.02%	0.33	52577	41871	NOT CALC.	96.56%	100.70%	
Antimony	101.46%		87.00%	0.02 LT	-424 LT	90 LT		67.00%	103.07%	
Arsenic	113.79%	#	99.86%	-0.02 LT	-137 LT	10 LT		104.44%	114.94%	#
Barium	96.88%		93.10%	0.01	-14 LT	28	9.00%	92.70%	99.30%	
Beryllium	92.48%		87.90%	0.00 LT	-4 LT	2		90.60%	95.99%	
Bismuth	107.57%		94.31%	0.03 LT	18525	15441	NOT CALC.	101.54%	106.23%	
Boron	97.61%		93.20%	0.06	17 LT	69	9.34%	92.60%	100.71%	
Cadmium	98.39%		93.70%	0.00 LT	-15 LT	3 LT	8.31%	91.10%	98.69%	
Calcium	99.65%		143.70%	0.78	388	365	17.05%	144.90%	102.21%	
Cerium	92.74%		50.50%	-0.08 LT	-1556 LT	60 LT	-133.80%	0.80%	92.37%	
Chromium	89.67%	#	87.60%	0.01	1186	1172	23.25%	85.80%	90.41%	
Cobalt	100.65%		95.40%	0.00 LT	-79 LT	2 LT	0.73%	86.60%	94.24%	
Copper	97.85%		92.60%	0.01 LT	-41 LT	61	7.33%	90.60%	100.63%	
Europium	95.38%		92.70%	0.00 LT	-29 LT	1 LT		94.90%	98.16%	
Iron	100.92%		128.30%	0.58	27355	27174	NOT CALC.	126.30%	103.46%	
Lanthanum	92.91%		89.66%	-0.01 LT	-99 LT	7 LT	39.26%	91.90%	94.17%	
Lead	109.25%		96.71%	0.03 LT	264	593	56.37%	103.09%	105.09%	
Lithium	95.42%		88.00%	-0.01 LT	-80 LT	-4 LT	1.97%	86.20%	98.13%	
Magnesium	100.34%		108.40%	0.17	133	142	42.12%	107.20%	102.45%	
Manganese	98.71%		97.50%	0.03	3769	3699	21.19%	97.00%	100.16%	
Mercury	105.56%		89.88%	0.01	460	361		94.80%	105.34%	
Molybdenum	94.93%		87.60%	0.00 LT	-41 LT	4 LT	43.03%	91.18%	96.36%	
Neodymium	88.36%	#	50.50%	-0.06 LT	-1087 LT	-19 LT	-97.78%	18.90%	85.78%	#
Nickel	96.94%		94.20%	0.00 LT	12 LT	139	11.29%	90.70%	97.87%	
Phosphorous	113.68%	#	96.46%	0.10	3755	3500	6.53%	105.20%	112.63%	#
Potassium	98.89%		74.68%	-0.09 LT	-2256 LT	42 LT	-183.40%	44.60%	98.37%	
Samarium	101.01%		3.00%	-0.12 LT	-1832 LT	-21 LT		43.80%	95.61%	
Selenium	105.30%		88.26%	-0.02 LT	3 LT	630		95.04%	105.26%	
Silicon	87.67%	#	30.04%	0.82	23 LT	681	53.57%	30.36%	90.12%	
Silver	101.85%		91.20%	-0.01 LT	-87 LT	3 LT	-8.76%	96.10%	102.71%	
Sodium	97.23%		97.68%	0.35	93097	85924	NOT CALC.	85.92%	98.55%	
Strontium	98.41%		96.30%	0.00	353	325	14.69%	96.00%	100.99%	
Sulfur	106.06%		95.42%	0.14	1133	1090		101.22%	106.15%	
Tantalum	96.72%		76.60%	-0.01 LT	-224 LT	15 LT	-18.40%	80.42%	96.79%	
Thallium	100.34%		83.48%	-0.11 LT	-1849 LT	709		91.10%	101.95%	
Thorium	101.91%		87.41%	-0.08 LT	-1148 LT	-10 LT		94.77%	102.75%	
Tin	100.13%		98.20%	0.02 LT	-50 LT	21 LT	45.14%	94.72%	100.68%	
Titanium	96.67%		91.90%	0.09	-26 LT	8 LT	49.15%	94.68%	99.79%	
Tungsten	82.43%	#	69.72%	0.01 LT	-131 LT	42 LT		73.20%	83.80%	#
Uranium	109.29%			-0.89 LT	-7007 LT	4102		35.91%	102.10%	
Vanadium	94.00%		86.90%	-0.01 LT	-71 LT	24 LT		90.90%	95.92%	
Zinc	98.63%		95.20%	0.08	189	194	13.42%	93.90%	100.16%	
Zirconium	96.12%		88.94%	-0.01 LT	-162 LT	101	42.85%	92.02%	98.91%	

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

Analytical Batch

LAB SEGMENT SERIAL #: F0561

CUSTOMER ID: 89-076

INSTRUMENT	WB39939
PROCEDURE/REV	LA-505-151/A-0
TECHNOLOGIST	J. A. White
DATE	April 30, 1990
TEMPERATURE	N/A
STARTING TIME	0800
ENDING TIME	1530
CHEMIST	S. A. Jones

ICP

Acid Digestion

	DESCRIPTION	LAB ID
1	Initial LMCS Check Std	N/A
2	LMCS Digested Std	F0575
3	Reagent Blank	F0583
4	Sample 89-076	F0576
5	Duplicate Sample 89-076	F0577
6	Spike 89-076	F0578
7	LMCS Digested Std	F0579
8	LMCS Check Std	N/A
9	Sample Comp 14	F1001
10	Duplicate Sample Comp 14	F1002
11	Sample Comp 06	F0923

	DESCRIPTION	LAB ID
12	Duplicate Sample Comp 06	F0924
13	Sample Comp 08	F0947
14	Duplicate Sample Comp 08	F0948
15	Final LMCS Check Std	N/A
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22		

STANDARD TYPE	PRIMARY BOOK # & ALIQUOT VOL.	SECOND BOOK # & ALIQUOT VOL.	THIRD BOOK # & ALIQUOT VOL.	FINAL VOL. OF STD.
LMCS Check Std	78C11K/1.0 mL	83B83A/1.0 mL	77C11J/1.0 mL	1.0 mL
Digested LMCS	78C11K/5.0 mL	83B83A/5.0 mL	77C11J/5.0 mL	50.0 mL
Spike	78C11K/5.0 mL	82B38G/5.0 mL	77C11J/5.0 mL	
Spike conc	F0578/0.4986 g			50.0 mL

SST-102 Rev. I 10/2/90 Interim

ICP Results RAW DATA

	0.5512 g 50.00 mL Sample Dilution Two ppm	Sample Dilution One ppm	Weight Volume Sample Duplicate Dilution Three ppm	0.5281 g 50.00 mL Sample Duplicate Dilution Two ppm	Sample Duplicate Dilution One ppm	Weight Volume Spike of Sample Dilution Three ppm	0.4986 g 50.00 mL Spike of Sample Dilution Two ppm	Spike of Sample Dilution One ppm
Aluminum	579.61	562.37		442.24	478.91		546.54	533.49
Antimony	-9.12	-4.67 LT		-10.74	0.95 LT		0.00	-2.44 LT
Arsenic	-4.24	-1.51 LT		-4.88	0.11 LT		5.39	4.36
Barium	-0.55	-0.15 LT		-0.74	0.29		1.27	0.90
Beryllium	-0.10	-0.04 LT		-0.13	0.02		0.97	0.96
Bismuth	204.22	197.77		163.09	183.82		178.87	171.48
Boron	3.23	0.19 LT		3.07	0.73		4.16	0.93
Cadmium	-0.44	-0.17 LT		-0.52	0.03 LT		0.92	0.83
Calcium	4.28	3.92		3.85	3.66		5.57	5.16
Cerium	-30.04	-17.15 LT		-37.16	0.63 LT		2.31	-13.38 LT
Chromium	13.07	12.95		12.37	13.99		14.15	13.27
Cobalt	-1.05	-0.88 LT		-2.69	0.02 LT		1.29	0.07 LT
Copper	-1.49	-0.45 LT		-1.91	0.64		1.61	0.73
Europium	-0.60	-0.32 LT		-0.71	0.01 LT		0.99	0.73
Iron	301.56	287.16		287.01	290.30		262.92	258.11
Lanthanum	-1.57	-1.09 LT		-2.89	0.07 LT		4.98	3.93
Lead	4.37	2.91		-6.99	6.27		15.73	8.27
Lithium	-1.57	-0.88 LT		-1.94	-0.04 LT		0.82	0.20
Magnesium	1.47	2.88		1.50	3.53		5.54	2.41
Manganese	41.55	39.49		39.06	39.35		39.70	39.05
Mercury	5.07	0.30		3.81	0.65		10.25	2.93
Molybdenum	-1.12	-0.45 LT		-1.35	0.04 LT		4.44	4.30
Neodymium	-26.64	-11.98 LT		-31.09	-0.20 LT		-2.80	-9.78 LT
Nickel	-0.87	0.13 LT		-0.54	1.47		1.50	1.13
Phosphorous	41.40	38.78		36.97	44.46		38.10	34.07
Potassium	-50.03	-24.87 LT		-59.98	0.45 LT		1.64	-18.34 LT
Samarium	-36.25	-20.20 LT		-43.27	-0.22 LT		0.89	-16.19 LT
Selenium	-5.77	0.04 LT		-8.98	6.66		9.76	6.47
Silicon	-3.25	0.26 LT		-6.93	7.19		4.95	5.36
Silver	-2.23	-0.96 LT		-3.13	0.03 LT		0.12	-0.88 LT
Sodium	1026.30	994.00		907.53	936.99		923.60	911.02
Strontium	3.89	3.92		3.44	3.90		4.99	4.85
Sulfur	12.58	12.49		7.30	11.52		18.84	16.44
Tantalum	-4.62	-2.47 LT		-5.94	0.15 LT		0.30	-1.83 LT
Thallium	-41.29	-20.38 LT		-41.98	7.48		12.16	-10.54 LT
Thorium	-23.16	-12.66 LT		-27.80	-0.11 LT		4.46	-5.64 LT
Tin	-0.90	-0.55 LT		-2.60	0.22 LT		5.29	4.51
Titanium	-0.93	-0.29 LT		-1.48	0.08 LT		4.92	4.58
Tungsten	-2.68	-1.44 LT		-4.25	0.44 LT		0.61	0.33 LT
Uranium	-186.70	-77.25 LT		-232.80	43.32		41.18	-54.14 LT
Vanadium	-2.05	-0.78 LT		-1.70	0.26 LT		0.50	0.31 LT
Zinc	2.09	1.95		1.71	2.05		3.23	2.89
Zirconium	-3.52	-1.79 LT		-3.21	1.07		5.80	4.28
Dilution Factor	101.00	21.00	1.00	101.00	21.00	1.00	101.00	21.00

ICP Results RAW DATA

Date Analyzed:	April 30,1990	Acid Digested LMCS Standard	F0575
Procedure:	LA-505-151/A-0	Reagent Blank	F0583
Analyst:	J. A. White	Sample 89-076	F0576
Digestion	Acid Digestion	Duplicate of 89-076	F0577
Procedure:	LA-505-159/A-0	Spike of 89-076	F0578
	LMCS Standard	Acid Digested LMCS Standard	F0579

			Starting LMCS Standard Instrument Standard ppm	Recovery %		LMCS Acid Digestion Standard ppm	Acid Digestion Standard Recovery %	Reagent Blank ppm	Weight Volume Sample Dilution Three ppm
	SST-1	SST-2	SST-3						
Aluminum			49.77	99.53%		4.60	92.02%	0.33	
Antimony	10.15			101.46%		0.87 LT	87.00%	0.02 LT	
Arsenic			56.89	113.79%	#	4.99	99.86%	-0.02 LT	
Barium	9.69			96.88%		0.93	93.10%	0.01	
Beryllium			9.25	92.48%		0.88	87.90%	0.00 LT	
Bismuth		53.90		107.57%		4.73	94.31%	0.03 LT	
Boron	9.76			97.61%		0.93	93.20%	0.06	
Cadmium	9.84			98.39%		0.94	93.70%	0.00 LT	
Calcium	9.97			99.65%		1.44	143.70%	0.78	
Cerium	9.27			92.74%		0.51 LT	50.50%	-0.08 LT	
Chromium	8.97			89.67%	#	0.88	87.60%	0.01	
Cobalt	10.07			100.65%		0.95	95.40%	0.00 LT	
Copper	9.79			97.85%		0.93	92.60%	0.01 LT	
Europium		9.54		95.38%		0.93	92.70%	0.00 LT	
Iron	10.09			100.92%		1.28	128.30%	0.58	
Lanthanum		46.55		92.91%		4.49	89.66%	-0.01 LT	
Lead		54.73		109.25%		4.85	96.71%	0.03 LT	
Lithium	9.54			95.42%		0.88	88.00%	-0.01 LT	
Magnesium	10.03			100.34%		1.08	108.40%	0.17	
Manganese	9.87			98.71%		0.98	97.50%	0.03	
Mercury			26.39	105.56%		2.25	89.88%	0.01	
Molybdenum			47.47	94.93%		4.38	87.60%	0.00 LT	
Neodymium	8.84			88.36%	#	0.51 LT	50.50%	-0.06 LT	
Nickel	9.69			96.94%		0.94	94.20%	0.00 LT	
Phosphorous			56.84	113.68%	#	4.82	96.46%	0.10	
Potassium	24.72			98.89%		1.87 LT	74.68%	-0.09 LT	
Samarium		10.10		101.01%		0.03 LT	3.00%	-0.12 LT	
Selenium			52.65	105.30%		4.41	88.26%	-0.02 LT	
Silicon			43.83	87.67%	#	1.50	30.04%	0.82	
Silver		10.19		101.85%		0.91	91.20%	-0.01 LT	
Sodium	24.31			97.23%		2.44	97.68%	0.35	
Strontium	9.84			98.41%		0.96	96.30%	0.00	
Sulfur			53.03	106.06%		4.77	95.42%	0.14	
Tantalum			48.36	96.72%		3.83	76.60%	-0.01 LT	
Thallium			50.17	100.34%		4.17	83.48%	-0.11 LT	
Thorium		51.06		101.91%		4.38	87.41%	-0.08 LT	
Tin	50.07			100.13%		4.91	98.20%	0.02 LT	
Titanium			48.34	96.67%		4.60	91.90%	0.09	
Tungsten			20.61	82.43%	#	1.74	69.72%	0.01 LT	
Uranium		54.75		109.29%		-0.68 LT		-0.89 LT	
Vanadium			9.40	94.00%		0.87	86.90%	-0.01 LT	
Zinc	9.86			98.63%		0.95	95.20%	0.08	
Zirconium			48.06	96.12%		4.45	88.94%	-0.01 LT	
Dilution Factor	1.00	1.00	1.00			10.00		1.00	1.00

ICP Results RAW DATA

	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.	4.83	96.56%			50.35	100.70%		10.00
Antimony		0.67	67.00%	10.31			103.07%		
Arsenic		5.22	104.44%			57.47	114.94%	#	
Barium	9.00%	0.93	92.70%	9.93			99.30%		10.00
Beryllium		0.91	90.60%			9.60	95.99%		
Bismuth	NOT CALC.	5.09	101.54%		53.22		106.23%		10.00
Boron	9.34%	0.93	92.60%	10.07			100.71%		10.00
Cadmium	8.31%	0.91	91.10%	9.87			98.69%		10.00
Calcium	17.05%	1.45	144.90%	10.22			102.21%		10.00
Cerium	-133.80%	0.01	0.80%	9.24			92.37%		10.00
Chromium	23.25%	0.86	85.80%	9.04			90.41%		10.00
Cobalt	0.73%	0.87	86.60%	9.42			94.24%		10.00
Copper	7.33%	0.91	90.60%	10.06			100.63%		10.00
Europium		0.95	94.90%		9.82		98.16%		
Iron	NOT CALC.	1.26	126.30%	10.35			103.46%		10.00
Lanthanum	39.26%	4.60	91.90%		47.18		94.17%		10.00
Lead	56.37%	5.17	103.09%		52.65		105.09%		10.00
Lithium	1.97%	0.86	86.20%	9.81			98.13%		10.00
Magnesium	42.12%	1.07	107.20%	10.25			102.45%		10.00
Manganese	21.19%	0.97	97.00%	10.02			100.16%		10.00
Mercury		2.37	94.80%			26.34	105.34%		
Molybdenum	43.03%	4.56	91.18%			48.18	96.36%		10.00
Neodymium	-97.78%	0.19	18.90%	8.58			85.78%	#	10.00
Nickel	11.29%	0.91	90.70%	9.79			97.87%		10.00
Phosphorous	6.53%	5.26	105.20%			56.32	112.63%	#	10.00
Potassium	-183.40%	1.12	44.60%	24.59			98.37%		10.00
Samarium		0.44	43.80%		9.56		95.61%		
Selenium		4.75	95.04%			52.63	105.26%		
Silicon	53.57%	1.52	30.36%			45.06	90.12%		10.00
Silver	-8.76%	0.96	96.10%		10.27		102.71%		10.00
Sodium	NOT CALC.	2.15	85.92%	24.64			98.55%		10.00
Strontium	14.69%	0.96	96.00%	10.10			100.99%		10.00
Sulfur		5.06	101.22%			53.08	106.15%		
Tantalum	-18.40%	4.02	80.42%			48.40	96.79%		9.95
Thallium		4.56	91.10%			50.98	101.95%		
Thorium		4.75	94.77%		51.48		102.75%		
Tin	45.14%	4.74	94.72%	50.34			100.68%		10.00
Titanium	49.15%	4.73	94.68%			49.90	99.79%		10.00
Tungsten		1.83	73.20%			20.95	83.80%	#	
Uranium		1.80	35.91%		51.15		102.10%		
Vanadium		0.91	90.90%			9.59	95.92%		
Zinc	13.42%	0.94	93.90%	10.02			100.16%		10.00
Zirconium	42.85%	4.60	92.02%			49.46	98.91%		9.98
Dilution Factor		10.00		1.00	1.00	1.00			1.00

	Spike Standard ID Book # 82B38G 78C11K 77C11J			LMCS Standards Values ppm SST-3	LMCS Standard IDs Book # 78C11K 83B83A 77C11J	ACID DIGESTION LMCS STANDARD VALUES ppm in Sample	ACID DIGEST. LMCS IDs Book # 78C11K 83B83A 77C11J
Aluminum				50.00		50.00	
Antimony		10.00				10.00	
Arsenic				50.00		50.00	
Barium		10.00				10.00	
Beryllium				10.00		10.00	
Bismuth			50.10			50.10	
Boron		10.00				10.00	
Cadmium		10.00				10.00	
Calcium		10.00				10.00	
Cerium		10.00				10.00	
Chromium		10.00				10.00	
Cobalt		10.00				10.00	
Copper		10.00				10.00	
Europium			10.00			10.00	
Iron		10.00				10.00	
Lanthanum			50.10			50.10	
Lead			50.10			50.10	
Lithium		10.00				10.00	
Magnesium		10.00				10.00	
Manganese		10.00				10.00	
Mercury				25.00		25.00	
Molybdenum				50.00		50.00	
Neodymium		10.00				10.00	
Nickel		10.00				10.00	
Phosphorous				50.00		50.00	
Potassium		25.00				25.00	
Samarium			10.00			10.00	
Selenium				50.00		50.00	
Silicon				50.00		50.00	
Silver			10.00			10.00	
Sodium		25.00				25.00	
Strontium		10.00				10.00	
Sulfur				50.00		50.00	
Tantalum				50.00		50.00	
Thallium				50.00		50.00	
Thorium			50.10			50.10	
Tin		50.00				50.00	
Titanium				50.00		50.00	
Tungsten				25.00		25.00	
Uranium			50.10			50.10	
Vanadium				10.00		10.00	
Zinc		10.00				10.00	
Zirconium				50.00		50.00	
Dilution Factor						1.00	

ICP Calibration Report

Procedure: LA-505-151 Revision: A-0
Instrument: WB39939
Technologist: J.A. White
Date: April 30, 1990

Calibration Standards for ICP Program "SST"

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

ICP Standard Formulations

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

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

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

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

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

SM-10 Li, Na, K, Rb, Cs, Be, Mg, Ca, Sr, & Ba 100 ppm Lot# 0-119A

SM-20 V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ag, & Cd 100 ppm Lot# 0-119B

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

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

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

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

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

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

Solution is used directly for calibration.

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

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

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

ICP Calibration - April 30, 1990

Sample name : SST0
Programme : SST 30-Apr-90 10:18:35

NAME	MV INT	RSD
AL	2.20	1.14
SB	0.53	0.78
AS	1.55	1.03
BA	4.02	0.97
BE	0.94	2.32
BI	6.18	0.72
B	5.52	1.17
CD	3.43	0.84
CA	0.51	1.71
CE	5.67	1.02
CR	1.58	1.26
CO	0.26	0.22
CU	3.20	0.99
EU	4.28	1.17
FE	1.83	0.60
LA	0.37	1.10
PB	0.32	0.73
LI	3.96	0.95
MG	0.49	0.91
MN	1.01	1.12
HG	5.82	0.85
MO	2.81	0.71
ND	5.68	1.14
NI	5.34	0.50
P	1.67	0.91
K	3.20	0.53
SM	5.17	1.03
SE	2.48	0.87
SI	3.87	0.16
AG	16.70	0.91
NA	5.60	1.23
SR	3.81	0.83
S	0.92	1.48
TA	4.57	1.16
TL	5.03	0.87
TH	1.14	1.07
SN	1.97	1.05
TI	4.21	0.77
W	2.10	1.53
U	5.37	1.09
VI	5.09	0.93
ZN	4.69	0.65
ZR	4.95	0.85

ICP Calibration - April 30, 1990

Sample name : SST1
Programme : SST 30-Apr-90 10:22:40

NAME	MV INT	RSD
LI	553.61	0.25
K	16.56	0.20
NA	75.89	0.21

Sample name : SST2
Programme : SST 30-Apr-90 10:24:28

NAME	MV INT	RSD
BA	437.78	0.60
BE	571.45	0.61
CD	555.48	0.56
CA	588.05	0.58
CR	114.65	1.83
CO	6.01	1.37
CU	133.33	0.58
FE	174.15	0.59
MG	639.16	0.41
MN	415.50	0.44
NI	259.77	0.49
AG	621.48	0.46
SR	777.57	0.56
V1	236.32	1.15
ZN	844.10	0.47

Sample name : SST3
Programme : SST 30-Apr-90 10:27:02

NAME	MV INT	RSD
AL	26.28	0.55
B	783.88	0.71
HG	1144.05	0.43
MO	456.95	0.66
P	77.75	0.56
SI	103.25	0.59
S	49.36	0.80
TA	202.46	0.63
TI	662.47	0.57
W	104.41	0.63
ZR	243.32	0.51

Sample name : SST4
Programme : SST 30-Apr-90 10:29:04

NAME	MV INT	RSD
SB	10.88	1.02
AS	175.33	0.66
BI	155.55	0.56
PB	8.02	0.63
SE	75.98	0.55
TL	59.00	0.32

ICP Calibration - April 30, 1990

Sample name : SST4
Programme : SST 30-Apr-90 10:29:04

NAME	MV INT	RSD
SB	10.88	1.02
AS	175.33	0.66
BI	155.55	0.56
PB	8.02	0.63
SE	75.98	0.55
TL	59.00	0.32
TH	30.76	0.50
SN	383.46	0.71
U	16.25	0.47

Sample name : SST5
Programme : SST 30-Apr-90 10:31:36

NAME	MV INT	RSD
CE	21.38	0.28
EU	670.06	0.58
LA	8.07	0.35
ND	27.77	0.15
SM	18.02	0.28

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	2.0910	27.594	-0.457031E+01	0.207647E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	2.2010	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	26.280	50.000	50.000	50.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.5076	11.421	-0.516647E+01	0.966900E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.5343	0.0000	0.0000	0.0000	0.0000		CRV1
SST4	0	10.877	100.00	100.00	100.00	0.0000	0.0000	CRV1

ICP Calibration - April 30, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.4763	184.10	-0.894243E+00	0.575446E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.5540	0.0000	0.0000	0.0000	0.0000		CRV1
SST4	0	175.33	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	3.8152	459.67	-0.185168E+00	0.461076E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.0160	0.0000	0.0000	-0.000	-0.000		CRV1
SST2	0	437.78	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	0.8955	600.02	-0.330466E-01	0.350565E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.9427	0.0000	0.0000	-0.000	-0.000		CRV1
SST2	0	571.45	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	5.8694	163.33	-0.413622E+01	0.669471E+00		

Name	Number	Int.	Conc	True	Calc	Conc	% Error	Curve

Programme name : [illegible] Channel name : [illegible] Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	5.8694	163.33	-0.413622E+01	0.669471E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	6.1783	0.0000	0.0000	0.0000	0.0000		CRV1
SST4	0	155.55	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	5.2468	823.07	-0.354788E+00	0.642382E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	5.5230	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	783.88	50.000	50.000	50.000	-0.000	-0.000	CRV1

Programme name : SST Channel name : C0 Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.2547	583.25	-0.124118E+00	0.362283E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	3.4260	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	555.48	20.000	20.000	20.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.4804	617.45	-0.172130E-01	0.340402E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.5057	0.0000	0.0000	0.0000	0.0000		CRV1

ICP Calibration - April 30, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.4804	617.45	-0.172130E-01	0.340402E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.5057	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	588.05	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	5.3859	22.449	-0.721718E+01	0.127302E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	5.6693	0.0000	0.0000	0.0000	0.0000		CRV1
SST5	0	21.380	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.4988	120.39	-0.279042E+00	0.176870E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.5777	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	114.65	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.2454	6.3147	-0.897666E+00	0.347484E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve

ICP Calibration - April 30, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.2454	6.3147	-0.897666E+00	0.347484E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSTO	0	0.2583	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	6.0140	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.0391	140.00	-0.491645E+00	0.153687E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSTO	0	3.1990	0.0000	0.0000	-0.000	-0.000		CRV1
SST2	0	133.33	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.0651	703.57	-0.128540E+00	0.300397E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSTO	0	4.2790	0.0000	0.0000	-0.000	-0.000		CRV1
SST5	0	670.06	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.7426	182.86	-0.212907E+00	0.116068E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve

ICP Calibration - April 30, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.7426	182.86	-0.212907E+00	0.116068E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.8343	0.0000	0.0000	-0.000	-0.000		CRV1
SST2	0	174.15	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	0.3490	8.4735	-0.953782E+00	0.259650E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.3673	0.0000	0.0000	0.0000	0.0000		CRV1
SST5	0	8.0700	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	0.3018	8.4242	-0.412369E+01	0.129780E+02		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.3177	0.0000	0.0000	-0.000	-0.000		CRV1
SST4	0	8.0230	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	3.7642	581.29	-0.360442E+00	0.909672E-01		

Name	Number	Int.	Conc	True	Calc	Conc	% Error	Curve

ICP Calibration - April 30, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.7642	581.29	-0.360442E+00	0.909672E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	3.9623	0.0000	0.0000	-0.000	-0.000		CRV1
SST1	0	553.61	50.000	50.000	50.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.4699	671.12	-0.154907E-01	0.313154E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.4947	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	639.16	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	0.9614	436.28	-0.488312E-01	0.482522E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.0120	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	415.50	20.000	20.000	20.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	5.5284	1201.3	-0.255631E+00	0.439278E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve

ICP Calibration - April 30, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	5.5284	1201.3	-0.255631E+00	0.439278E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	5.8193	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	1144.1	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	2.6654	479.79	-0.308898E+00	0.110098E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	2.8057	0.0000	0.0000	-0.000	-0.000		CRV1
SST3	0	456.95	50.000	50.000	50.000	0.0000	0.0000	CRV1

Programme name : SST Channel name : NO Polynomial type : CC

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	5.3925	29.157	-0.513873E+01	0.905291E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	5.6763	0.0000	0.0000	0.0000	0.0000		CRV1
SST5	0	27.769	20.000	20.000	20.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	5.0746	272.76	-0.419898E+00	0.786081E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve

ICP Calibration - April 30, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	5.0746	272.76	-0.419898E+00	0.786081E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	5.3417	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	259.77	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	1.5887	81.641	-0.109905E+01	0.657194E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.6723	0.0000	0.0000	-0.000	-0.000		CRV1
SST3	0	77.753	50.000	50.000	50.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.0375	17.383	-0.119679E+02	0.374308E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	3.1973	0.0000	0.0000	-0.000	-0.000		CRV1
SST1	0	16.555	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	4.9071	18.919	-0.803797E+01	0.155614E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve

ICP Calibration - April 30, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.9071	18.919	-0.803797E+01	0.155614E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	5.1653	0.0000	0.0000	0.0000	0.0000		CRV1
SSI5	0	18.018	20.000	20.000	20.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	2.3535	79.783	-0.337022E+01	0.136042E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	2.4773	0.0000	0.0000	-0.000	-0.000		CRV1
SSI4	0	75.984	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	3.6727	108.41	-0.194506E+01	0.503119E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	3.8660	0.0000	0.0000	0.0000	0.0000		CRV1
SSI3	0	103.25	50.000	50.000	50.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	15.864	652.56	-0.552230E+00	0.330697E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve

ICP Calibration - April 30, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	15.864	652.56	-0.552230E+00	0.330697E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	16.699	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	621.48	20.000	20.000	20.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	5.3184	79.688	-0.398203E+01	0.711288E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	5.5983	0.0000	0.0000	0.0000	0.0000		CRV1
SST1	0	75.893	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	3.6160	816.45	-0.983851E-01	0.258477E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	3.8063	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	777.57	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	0.8696	51.824	-0.944798E+00	0.103219E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve

ICP Calibration - April 30, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.8696	51.824	-0.944798E+00	0.103219E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.9153	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	49.356	50.000	50.000	50.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.3377	212.58	-0.115365E+01	0.252660E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.5660	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	202.46	50.000	50.000	50.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.7769	61.950	-0.931668E+01	0.185284E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	5.0283	0.0000	0.0000	-0.000	-0.000		CRV1
SST4	0	59.000	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	1.0789	21.796	-0.578772E+01	0.509632E+01		

Name	Number	Int.	Conc	True	Calc	Conc	% Error	Curve

ICP Calibration - April 30, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.0789	21.796	-0.578772E+01	0.509632E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.1357	0.0000	0.0000	-0.000	-0.000		CRV1
SST4	0	20.758	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	1.8750	402.64	-0.517357E+00	0.262130E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.9737	0.0000	0.0000	-0.000	-0.000		CRV1
SST4	0	383.46	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	4.0011	695.59	-0.319910E+00	0.759581E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.2117	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	662.47	50.000	50.000	50.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.9906	109.63	-0.102401E+01	0.488708E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve

ICP Calibration - April 30, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.9906	109.63	-0.102401E+01	0.488708E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	2.0953	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	104.41	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	5.1025	17.057	-0.493930E+02	0.919625E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	5.3710	0.0000	0.0000	0.0000	0.0000		CRV1
SST4	0	16.245	100.00	100.00	100.00	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.8390	248.14	-0.440576E+00	0.864950E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	5.0937	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	236.32	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	4.4599	886.31	-0.111857E+00	0.238264E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve

ICP Calibration - April 30, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.4599	886.31	-0.111957E+00	0.238264E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.6947	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	844.10	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.7060	255.49	-0.103907E+01	0.209757E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.9537	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	243.32	50.000	50.000	50.000	0.0000	0.0000	CRV1

Sample name : HNO3
Programme : SST 30-Apr-90 10:43:33

NAME	MV INT	CONCEN	RSD
Al	2.07	(-0.271	-28.40
Sb	0.52	-0.097	-47.26
As	1.46	(-0.055	-23.84
Ba	3.72	(-0.013	-24.03
Be	0.89	(-0.002	-16.54
Bi	5.86	(-0.212	-30.47
B	5.21	(-0.020	-24.51
Cd	3.25	(-0.006	-16.00
Ca	0.49	-0.001	-27.50
Ce	5.28	(-0.493	-26.71
Cr	1.49	(-0.016	-32.16
Co	0.26	-0.003	-416.33
Cu	2.98	(-0.033	-22.66
Eu	3.97	(-0.009	-22.84
Fe	1.72	(-0.013	-39.64
La	0.36	-0.030	-24.74
Pb	0.31	-0.087	-30.00
Li	3.70	(-0.024	-26.91
Mg	0.48	-0.001	-23.32
Mn	0.97	-0.002	-27.42
Hg	5.39	(-0.019	-26.88
Mo	2.67	-0.015	-18.69
Nd	5.30	(-0.344	-34.84
Ni	5.04	(-0.023	-14.02

ICP Analysis - April 30, 1990 Acid Blank

Sample name : HNO3
Programme : SSI 30-Apr-90 12:34:17

NAME	MV INT	CONCEN	RSD
Al	2.08	(-0.259	-12.25
Sb	0.51	-0.219	-14.18
As	1.46	(-0.055	-37.31
Ba	3.73	(-0.013	-14.05
Be	0.88	(-0.002	-5.72
Bi	5.77	(-0.271	-14.47
B	5.30	-0.015	-5.80
Cd	3.22	(-0.007	-14.73
Ca	0.51	0.000	1374.72
Ce	5.28	(-0.501	-12.50
Cr	1.48	(-0.017	-20.54
Co	0.25	-0.032	-10.71
Cu	2.99	(-0.032	-13.86
Eu	3.98	(-0.009	10.85
Fe	1.72	(-0.014	-23.15
La	0.35	-0.038	-20.83
Pb	0.31	-0.134	-29.57
Li	3.69	(-0.024	-11.58
Mg	0.48	-0.001	-16.08
Mn	0.96	(-0.003	-22.24
Hg	6.14	0.014	23.77
Mo	2.61	(-0.021	-11.63
Nd	5.22	(-0.413	-14.22
Ni	4.98	(-0.029	-17.89
P	1.52	(-0.099	-21.40
K	3.01	(-0.719	-16.96
Sm	4.80	(-0.564	-12.59
Se	2.33	(-0.205	-6.63
Si	3.49	(-0.188	-11.63
Ag	15.49	(-0.040	-11.93
Na	5.20	(-0.385	-11.45
Sr	3.58	(-0.006	-13.66
S	0.87	-0.043	-15.11
Ta	4.26	(-0.077	-15.41
Tl	4.66	(-0.685	-19.60
Th	1.06	(-0.382	-14.75
Sn	1.87	(-0.028	-20.06
Ti	3.97	(-0.018	-13.83
W	1.96	(-0.065	-23.43
U	4.99	(-3.544	-11.87
V	4.77	(-0.028	-16.50
Zn	4.43	(-0.006	-13.66
Zr	4.69	(-0.055	-13.26

ICP Analysis - April 30, 1990 LMCS Check Standard

Sample name : 78C11K
Sample code 1 : SST1
Sample code 2 : DIRECT
Programme : SST 30-Apr-90 12:37:55

NAME	MV INT	CONCEN	RSD
Al	2.31	0.017	481.36
Sb	1.58	10.146	1.55
As	1.65	0.058	45.93
Ba	214.14	9.688	0.21
Be	0.93	-0.000	-170.63
Bi	6.02	-0.106	-66.10
B	157.48	9.761	0.21
Cd	275.01	9.839	0.95
Ca	293.26	9.965	0.35
Ce	12.95	9.274	1.40
Cr	52.27	8.967	0.76
Co	3.15	10.065	1.94
Cu	66.87	9.785	0.04
Eu	4.90	0.019	16.64
Fe	88.78	10.092	0.38
La	0.36	0.038	27.27
Pb	0.31	-0.039	-69.39
Li	108.86	9.542	0.06
Mg	320.92	10.034	0.15
Mn	205.58	9.871	0.41
Hg	5.77	-0.002	-132.93
Mo	2.80	-0.001	-589.75
Nd	15.44	8.836	2.73
Ni	128.67	9.694	0.83
P	1.70	0.020	174.66
K	9.80	24.722	1.34
Sm	4.89	(-0.432	-41.18
Se	5.11	3.580	3.66
Si	3.64	(-0.115	-34.45
Ag	15.91	-0.026	-40.85
Na	39.77	24.307	0.32
Sr	384.54	9.841	0.20
S	1.23	0.323	12.01
Ta	4.42	-0.036	-85.06
Tl	5.12	0.163	130.52
Th	1.13	-0.015	-800.86
Sn	192.97	50.066	1.01
Ti	4.04	-0.013	-45.76
W	2.37	0.136	6.95
U	5.61	2.176	51.46
V	4.96	-0.011	-48.65
Zn	418.64	9.863	0.56
Zr	4.82	-0.028	-63.66

ICP Analysis - April 30, 1990 LMCS Check Standard

Sample name : 82B38A
Sample code 1 : SST2
Sample code 2 : DIRECT
Programme : SST 30-Apr-90 12:41:50

NAME	MV INT	CONCEN	%SD
Al	4.93	5.675	1.44
Sb	0.69	0.632	18.20
As	4.94	1.947	0.79
Ba	4.46	0.020	8.93
Be	0.99	0.002	21.52
Bi	86.68	53.895	0.62
B	6.76	0.080	4.01
Cd	3.67	0.009	11.70
Ca	0.96	0.015	0.59
Ce	6.23	0.715	9.44
Cr	2.10	0.093	4.29
Co	0.37	0.031	27.96
Cu	5.00	0.277	1.70
Eu	321.80	9.538	0.01
Fe	2.38	0.064	5.91
La	18.30	146.549	0.24
Pb	4.54	54.733	0.75
Li	4.03	0.006	37.89
Mg	0.72	0.007	1.59
Mn	1.24	0.011	2.33
Hg	7.04	0.054	10.18
Mo	2.96	0.017	12.08
Nd	6.55	0.793	2.42
Ni	5.72	0.030	12.90
P	2.16	0.218	10.32
K	3.32	0.077	83.81
Se	11.66	10.191	0.72
Sr	2.72	0.331	8.45
Si	5.13	0.636	2.30
Ag	324.69	10.185	0.31
Na	5.74	0.098	39.42
Sr	4.14	0.009	8.10
Y	1.14	0.232	3.30
Ta	5.36	0.202	7.10
Tl	8.65	6.710	1.14
Th	11.15	51.055	0.50
Sn	2.28	0.081	5.42
Ti	5.11	0.068	4.82
W	2.16	0.033	41.26
U	11.33	54.754	0.92
V	7.81	0.235	2.64
Zn	5.45	0.018	5.02
Zr	5.64	0.145	4.96

ICP Analysis - April 30, 1990 LMCS Check Standard

Sample name : 772111
Sample code 1 : SST3
Sample code 2 : DIRECT
Programme : SST 30-Apr-90 12:45:40

NAME	MV INT	CONCEN	%SD
Al	26.17	49.767	0.85
Sb	0.67	1.286	8.25
As	100.42	56.894	0.87
Ba	4.58	0.026	8.50
Be	264.74	9.248	1.04
Bi	7.87	1.130	2.76
B	6.72	0.077	3.70
Cd	3.94	0.019	6.82
Ca	1.32	0.028	0.76
Ce	6.01	0.437	18.10
Cr	1.86	0.050	7.68
Co	0.30	0.146	1.37
Cu	3.69	0.075	6.41
Eu	4.57	0.009	16.70
Fe	2.32	0.057	5.01
La	0.38	0.033	20.89
Pb	0.34	0.264	14.75
Li	4.15	0.017	25.80
Mg	0.76	0.008	1.12
Mn	1.39	0.018	3.83
Hg	606.61	26.391	0.48
Mo	433.92	47.465	0.72
Nd	6.09	0.375	24.79
Ni	11.89	0.515	1.50
P	88.16	>56.839	0.76
K	3.34	0.523	21.48
Sm	5.50	0.528	17.73
Se	41.18	52.652	0.56
Si	90.99	43.834	0.94
Ag	28.29	0.383	0.51
Na	6.97	0.973	3.88
Sr	4.11	0.008	12.13
S	52.29	>53.028	0.44
Ta	195.97	48.361	0.26
Tl	32.11	50.172	0.92
Th	1.36	1.159	3.44
Sn	2.74	0.201	5.00
Ti	640.58	48.337	1.21
W	44.26	20.607	1.30
U	7.17	16.594	2.52
V	113.77	9.400	1.24
Zn	6.35	0.039	2.82
Zr	234.08	48.061	1.00

ICP Analysis - April 30, 1990 Acid Digested LMCS Check Standard

Sample name : F575
Sample code 1 : SST1
Sample code 2 : DIGEST
Sample code 3 : 89076
Programme : SST 30-Apr-90 12:50:22

NAME	MV INT	CONCEN	RSD
Al	2.24	0.083	82.50
Sb	0.62	0.870	8.41
As	1.49	-0.037	-29.42
Ba	24.20	0.931	0.65
Be	0.89	(-0.002	-22.69
Bi	5.91	-0.180	-26.61
B	20.03	0.932	0.72
Cd	29.28	0.537	1.16
Ca	42.68	1.436	0.83
Ce	6.07	0.505	25.50
Cr	6.53	0.876	0.95
Co	0.53	0.954	1.31
Cu	9.23	0.926	0.98
Eu	4.08	(-0.006	-39.07
Fe	12.89	1.283	1.13
La	0.36	-0.023	-46.63
Pb	0.32	-0.017	-156.12
Li	13.64	0.880	0.49
Mg	35.12	1.084	0.69
Mn	21.21	0.975	0.64
Hg	5.84	0.001	480.14
Mo	2.68	-0.014	-20.07
Nd	6.23	0.505	23.67
Ni	17.33	0.942	1.17
P	1.73	0.017	176.28
K	3.70	1.867	8.85
Sm	4.84	(-0.508	-28.18
Se	2.63	0.210	32.17
Si	5.34	0.740	23.59
Ag	15.65	(-0.035	-31.14
Na	9.03	2.442	2.48
Sr	41.06	0.963	0.71
S	1.02	0.111	20.83
Ta	4.32	(-0.063	-36.43
Tl	4.70	(-0.616	-33.51
Th	1.08	(-0.294	-30.60
Sn	20.70	4.910	1.01
Ti	4.98	0.059	9.23
W	2.07	-0.014	-56.03
U	5.07	(-2.737	-34.18
V	4.73	(-0.032	-24.14
Zn	44.65	0.952	0.87
Zr	4.72	-0.048	-30.10

ICP Analysis - April 30, 1990 Acid Digested LMCS Check Standard

Sample name : F575
Sample code 1 : 9812
Sample code 2 : DIGEST
Sample code 3 : 89076
Programme : SST 30-Apr-90 12:54:41

NAME	MV INT	CONCEN	RSD
Al	2.35	0.315	12.90
Sb	0.51	-0.251	-32.21
As	1.71	0.089	8.94
Ba	3.65	(-0.017	-11.89
Be	0.87	(-0.002	-9.59
Bi	13.24	4.725	0.32
B	5.76	0.015	12.35
Cd	3.20	(-0.008	-18.53
Ca	12.88	0.421	1.05
Ce	5.06	(-0.781	-11.02
Cr	1.56	-0.003	-134.68
Co	0.25	-0.037	-19.52
Cu	3.08	-0.018	-21.44
Eu	35.13	0.927	1.03
Fe	3.50	0.194	1.25
La	2.10	4.492	1.17
Pb	0.69	4.845	0.71
Li	3.52	(-0.040	-9.09
Mg	3.01	0.079	0.68
Mn	1.28	0.013	6.10
Hg	5.54	-0.012	-8.57
Mo	2.58	(-0.025	-11.33
Nd	5.06	(-0.562	-4.27
Ni	4.95	(-0.031	-8.96
P	1.59	(-0.055	-30.39
K	2.89	(-1.138	-10.76
Sm	5.18	0.030	254.39
Se	2.28	(-0.262	-10.54
Si	4.54	0.338	3.14
Ag	44.28	0.912	0.29
Na	5.43	-0.117	-36.97
Sr	3.61	(-0.005	-18.06
S	0.95	0.036	18.37
Ta	4.13	(-0.111	-13.68
Tl	4.79	-0.443	-39.26
Th	2.00	4.379	0.12
Sn	1.91	-0.016	-39.51
Ti	4.91	0.053	3.31
W	1.91	(-0.088	-7.68
U	5.30	-0.681	-72.57
V	4.87	-0.019	-28.17
Zn	5.13	0.010	9.45
Zr	4.56	(-0.082	-11.72

ICP Analysis - April 30, 1990 Acid Digested LMCS Check Standard

Sample name : F575
Sample code 1 : SST3
Sample code 2 : DIGEST
Sample code 3 : 89076
Programme : SST 30-Apr-90 12:58:32

NAME	MV INT	CONCEN	RSD
Al	4.43	4.601	0.46
Sb	0.53	-0.003	-2163.4
As	10.23	4.993	0.91
Ba	3.97	-0.002	-113.71
Be	26.02	0.879	0.58
Bi	6.17	-0.007	-688.01
B	6.08	0.036	4.64
Cd	3.38	-0.002	-103.64
Ca	12.37	0.404	0.76
Ce	5.40	-0.348	-24.31
Cr	1.62	0.008	30.81
Co	0.26	-0.000	*******
Cu	3.12	-0.012	-40.72
Eu	4.05	(-0.007	-24.47
Fe	3.04	0.140	2.94
La	0.36	-0.030	-27.55
Pb	0.31	-0.061	-74.23
Li	3.76	(-0.019	-32.98
Mg	2.86	0.074	0.31
Mn	1.29	0.013	2.01
Hg	56.96	2.247	0.36
Mo	42.58	4.380	0.91
Nd	5.38	(-0.266	-25.73
Ni	5.73	0.031	40.75
P	9.01	4.823	3.32
K	3.07	-0.459	-24.15
Sm	4.90	(-0.410	-34.87
Se	5.72	4.413	0.35
Si	6.85	1.502	6.46
Ag	16.78	0.003	220.74
Na	6.03	0.307	14.03
Sr	3.80	-0.000	-908.03
S	5.54	4.771	0.88
Ta	19.73	3.830	41.32
Tl	7.28	4.174	4.39
Th	1.10	-0.187	-29.50
Sn	2.05	0.019	23.76
Ti	64.70	4.595	1.64
W	5.66	1.743	14.34
U	5.22	-1.358	-42.38
V	15.14	0.869	0.89
Zn	5.30	0.014	12.49
Zr	26.15	4.447	1.29

ICP Analysis - April 30, 1990 Reagent Blank

Sample name : F593
Sample code 1 : BLANK
Sample code 2 : DIRECT
Sample code 3 : 89076
Programme : SST 30-Apr-90 13:03:01

NAME	MV INT	CONCEN	RSD
Al	2.36	0.332	7.23
Sb	0.54	0.019	202.08
As	1.52	-0.018	-8.53
Ba	4.22	0.009	7.76
Be	0.95	0.000	214.93
Bi	6.23	0.031	71.33
B	6.44	0.059	4.47
Cd	3.45	0.001	46.89
Ca	23.54	0.784	0.07
Ce	5.61	-0.076	-40.93
Cr	1.65	0.013	4.90
Co	0.26	0.003	152.75
Cu	3.27	0.011	12.38
Eu	4.21	-0.002	-26.21
Fe	6.79	0.575	1.37
La	0.36	-0.013	-23.09
Pb	0.32	0.030	42.86
Li	3.90	-0.005	-25.47
Mg	5.77	0.165	0.40
Mn	1.52	0.025	1.26
Hg	6.03	0.009	30.21
Mo	2.79	-0.002	-69.78
Nd	5.61	-0.058	-72.86
Ni	5.37	0.002	103.69
P	1.82	0.095	17.72
K	3.17	-0.086	-59.03
Sm	5.09	-0.117	-30.15
Se	2.46	-0.019	-100.62
Si	5.50	0.822	3.18
Ag	16.42	-0.009	-26.78
Na	6.08	0.345	5.26
Sr	3.97	0.004	7.62
S	1.05	0.144	4.47
Ta	4.52	-0.011	-55.85
Tl	4.97	-0.112	-135.73
Th	1.13	-0.078	-48.95
Sn	2.04	0.017	32.12
Ti	5.37	0.088	1.47
W	2.11	0.005	165.86
U	5.27	-0.886	-28.47
V	5.03	-0.005	-57.18
Zn	8.14	0.082	1.24
Zr	4.90	-0.010	-35.41

ICP Analysis - April 30, 1990 Segment 89-076

Sample name : F576
Sample code 1 : SAMPLE
Sample code 2 : 100-10
Sample code 3 : 89076
Programme : SST 30-Apr-90 13:07:39

NAME	MV INT	CONCEN	DILCOR	RSD
Al	4.96	5.739	579.61	2.79
Sb	0.53	-0.090	-9.115	-59.65
As	1.48	-0.042	-4.243	-14.55
Ba	3.90	-0.005	-0.550	-55.76
Be	0.91	-0.001	-0.100	-45.38
Bi	9.20	2.022	204.22	4.69
B	6.02	0.032	3.233	33.35
Cd	3.31	-0.004	-0.435	-37.17
Ca	1.75	0.042	4.277	1.28
Ce	5.44	-0.297	-30.04	-37.36
Cr	3.31	0.129	13.070	4.24
Co	0.26	-0.010	-1.053	-117.06
Cu	3.10	-0.015	-1.490	-40.88
Eu	4.08	-0.006	-0.596	-35.44
Fe	27.56	2.986	301.56	1.37
La	0.36	-0.016	-1.579	-34.69
Pb	0.32	0.043	4.369	79.37
Li	3.79	-0.015	-1.565	-33.07
Mg	0.96	0.015	1.469	2.25
Mn	9.54	0.411	41.550	1.04
Hg	6.96	0.050	5.070	10.19
Mo	2.71	-0.011	-1.119	-23.65
Nd	5.39	(-0.264	(-26.64	-32.70
Ni	5.23	-0.009	-0.868	-72.39
P	2.30	0.410	41.397	10.82
K	3.07	-0.495	-50.03	-34.03
Sm	4.93	-0.359	-36.25	-38.79
Se	2.44	-0.057	-5.771	-116.89
Si	3.80	-0.032	-3.252	-168.17
Ag	16.03	-0.022	-2.229	-45.46
Na	19.88	10.161	1026.3	1.87
Sr	5.30	0.039	3.889	4.40
S	1.04	0.125	12.580	10.58
Ta	4.39	-0.046	-4.619	-51.46
Tl	4.81	-0.409	-41.29	-54.79
Th	1.09	-0.229	-23.16	-31.53
Sn	1.94	-0.009	-0.900	-70.61
Ti	4.09	-0.009	-0.933	-48.83
W	2.04	-0.027	-2.682	-58.43
U	5.17	-1.848	-186.7	-45.92
V	4.86	-0.020	-2.047	-39.48
Zn	5.56	0.021	2.086	8.19
Zr	4.79	-0.035	-3.517	-40.69

Dilution factor : 101.000

ICP Analysis - April 30, 1990 Segment 89-076

Sample name : F576
Sample code 1 : SAMPLE
Sample code 2 : 500-10
Sample code 3 : 89076
Programme : SSI 30-Apr-90 13:11:53

NAME	MV INT	CONCEN	DILCOR	RSD
Al	15.10	26.780	562.37	0.65
Sb	0.51	-0.332	-6.970	-86.98
As	1.43	(-0.072	(-1.511	-13.17
Ba	3.86	-0.007	-0.154	-30.13
Be	0.89	(-0.002	(-0.040	-18.44
Bi	29.25	9.418	197.77	0.61
B	5.66	0.009	0.186	149.71
Cd	3.20	(-0.008	(-0.169	-24.60
Ca	5.99	0.187	3.919	0.67
Ce	5.03	(-0.817	(-17.15	-11.31
Cr	5.07	0.617	12.953	0.50
Co	0.25	-0.042	-0.876	-20.97
Cu	3.06	-0.021	-0.451	-23.64
Eu	3.79	(-0.015	(-0.316	-11.27
Fe	119.65	13.674	287.16	0.53
La	0.35	(-0.052	(-1.091	-22.55
Pb	0.33	0.138	2.907	32.92
Li	3.50	(-0.042	(-0.884	-10.39
Mg	4.87	0.137	2.875	0.71
Mn	39.98	1.880	39.489	0.42
Hg	6.14	0.014	0.295	139.39
Mo	2.61	(-0.022	(-0.452	-5.38
Nd	5.05	(-0.571	(-11.98	-4.16
Ni	5.42	0.006	0.127	90.59
P	4.46	1.846	38.776	6.79
K	2.88	(-1.184	(-24.87	-9.96
Sm	4.55	(-0.962	(-20.20	-10.28
Se	2.48	0.002	0.038	1061.69
Si	3.89	0.012	0.257	47.98
Ag	15.31	(-0.046	(-0.961	-13.60
Na	72.14	47.333	994.00	0.74
Sr	11.03	0.187	3.921	0.73
S	1.49	0.595	12.493	4.43
Ta	4.10	(-0.118	(-2.471	-11.48
Tl	4.50	(-0.970	(-20.38	-9.80
Th	1.02	(-0.603	(-12.66	-11.87
Sn	1.87	(-0.026	(-0.547	-8.80
Ti	4.03	-0.014	-0.289	-20.35
W	1.95	(-0.069	(-1.444	-11.11
U	4.97	(-3.676	(-77.25	-16.64
V	4.66	(-0.037	(-0.779	-6.08
Zn	8.58	0.093	1.945	1.98
Zr	4.55	(-0.085	(-1.788	-10.97

Dilution factor : 21.0000

ICP Analysis - April 30, 1990 Duplicate Segment 89-076

Sample name : F577
Sample code 1 : DUPSAM
Sample code 2 : 100-10
Sample code 3 : 89076
Programme : SST 30-Apr-90 13:16:24

NAME	MV INT	CONCEN	DILCOR	RSD
Al	4.31	4.379	442.24	2.27
Sb	0.52	-0.106	-10.74	-31.93
As	1.47	(-0.048	(-4.882	-18.56
Ba	3.86	-0.007	-0.737	-30.40
Be	0.91	-0.001	-0.125	-12.76
Bi	8.59	1.615	163.09	1.83
B	6.00	0.030	3.073	22.67
Cd	3.28	-0.005	-0.517	-31.40
Ca	1.63	0.038	3.854	1.03
Ce	5.38	(-0.368	(-37.16	-23.27
Cr	2.27	0.123	12.374	3.39
Co	0.35	-0.027	-2.691	-27.15
Cu	3.08	-0.019	-1.914	-28.47
Eu	4.05	(-0.007	(-0.706	-17.64
Fe	26.32	2.842	287.01	1.16
La	0.36	-0.029	-2.885	-19.92
Pb	0.31	-0.069	-6.991	-29.64
Li	3.75	(-0.019	(-1.936	-19.56
Mg	0.97	0.015	1.502	1.82
Mn	9.03	0.387	39.064	1.07
Hg	6.68	0.038	3.813	20.58
Mo	2.69	-0.013	-1.359	-25.32
Nd	5.34	(-0.308	(-31.09	-25.18
Ni	3.27	-0.005	-0.535	-38.77
P	2.23	0.366	36.973	11.16
K	3.04	-0.594	-59.98	-13.83
Sm	4.89	(-0.428	(-43.27	-22.16
Se	2.41	-0.089	-8.977	-47.45
Si	3.73	-0.069	-6.928	-21.21
Ag	15.76	(-0.031	(-3.128	-18.35
Na	18.23	8.985	907.53	1.47
Sr	5.12	0.034	3.436	3.34
S	0.99	0.072	7.298	10.03
Ta	4.33	(-0.059	(-5.937	-33.78
Tl	4.80	-0.416	-41.98	-17.10
Th	1.00	-0.375	-37.80	-21.06
Sn	1.08	-0.026	-2.603	-27.22
Ti	4.02	-0.015	-1.476	19.39
W	2.01	-0.042	-4.245	-24.12
U	5.12	-2.305	-232.8	-24.08
V	4.90	-0.017	-1.698	-29.55
Zn	5.41	0.017	1.710	6.97
Zr	4.80	-0.032	-3.213	-24.64

Dilution factor : 101.000

ICP Analysis - April 30, 1990 Duplicate Segment 89-076

Sample code 1 : DUPSAM
Sample code 2 : 500-10
Sample code 3 : 89076
Programme : SSI 30-Apr-90 13:20:31

NAME	MV INT	CONCEN	DILCOR	RSD
Al	13.19	22.805	479.91	0.36
Sb	0.54	0.045	0.948	130.34
As	1.56	0.005	0.105	312.70
Ba	4.32	0.014	0.291	25.69
Be	0.97	0.001	0.021	14.87
Bi	19.25	8.753	183.82	0.51
B	6.07	0.035	0.731	6.43
Cd	3.46	0.001	0.038	61.92
Ca	5.63	0.174	3.663	0.39
Ce	5.69	0.030	0.633	424.46
Cr	5.35	0.666	13.994	0.71
Co	0.26	0.001	0.024	754.92
Cu	3.40	0.031	0.641	28.18
Eu	4.29	0.000	0.006	818.59
Fe	120.94	13.824	290.30	0.38
La	0.37	0.003	0.073	338.20
Pb	0.34	0.296	6.368	5.02
Li	3.94	-0.002	-0.038	-329.35
Mg	5.87	0.168	3.532	2.70
Mn	39.84	1.874	39.345	0.42
Hg	6.52	0.031	0.647	17.36
Mo	2.82	0.002	0.042	112.72
Nd	5.67	-0.009	-0.196	-757.30
Ni	6.23	0.070	1.466	9.12
P	4.89	2.117	44.462	0.67
K	3.20	0.021	0.445	939.37
Sm	5.16	-0.010	-0.218	-1433.5
Se	3.71	0.317	6.657	12.74
Si	4.55	0.342	7.188	8.75
Ag	16.74	0.001	0.031	636.67
Na	68.33	44.619	936.99	0.08
Sr	10.99	0.186	3.897	0.57
S	1.45	0.548	11.517	1.52
Ta	4.60	0.007	0.154	272.02
Ti	5.22	0.356	7.484	16.15
Th	1.13	-0.005	-0.107	-1761.3
Sn	2.01	0.010	0.220	59.28
Ti	4.26	0.004	0.080	118.46
W	2.14	0.021	0.441	70.01
U	5.60	2.063	43.324	43.88
V	5.23	0.012	0.256	47.98
Zn	8.78	0.097	2.045	9.16
Zr	5.20	0.051	1.065	27.47

Dilution factor : 21.0000

ICP Analysis - April 30, 1990 Spike of Segment 89-076

Sample name : F578
Sample code 1 : SPIKE
Sample code 2 : 100-10
Sample code 3 : 89076
Programme : SST 30-Apr-90 13:24:32

NAME	MV INT	CONCEN	DIL.COR	RSD
Al	4.81	5.411	546.54	1.71
Sb	0.53	0.000	0.000	
As	1.65	0.053	5.386	51.64
Ba	4.29	0.013	1.268	48.61
Be	1.22	0.010	0.974	4.25
Bi	8.82	1.771	178.87	7.09
B	6.16	0.041	4.155	29.93
Cd	3.68	0.009	0.917	38.74
Ca	2.13	0.055	5.574	1.03
Ce	5.69	0.023	2.314	1073.51
Cr	2.37	0.140	14.148	6.35
Co	0.26	0.013	1.287	61.82
Cu	3.30	0.016	1.609	95.58
Eu	4.61	0.010	0.993	44.73
Fe	24.26	2.603	262.92	1.46
La	0.39	0.049	4.983	33.84
Pb	0.33	0.156	15.729	42.76
Li	4.05	0.008	0.824	124.72
Mg	2.25	0.055	5.541	9.69
Mn	9.16	0.393	39.704	0.59
Hg	8.13	0.101	10.249	11.80
Mo	3.20	0.044	4.437	21.69
Nd	5.65	-0.028	-2.804	-698.22
Ni	5.53	0.015	1.501	87.54
P	2.25	0.377	38.100	14.26
K	3.19	-0.016	-1.638	-2061.7
Sm	5.17	0.009	0.891	3068.06
Se	2.55	0.097	9.756	99.59
Si	3.96	0.049	4.946	81.53
Ag	16.74	0.001	0.120	1632.19
Na	18.45	9.145	923.60	0.97
Sr	3.72	0.049	4.987	4.62
S	1.10	0.186	18.835	14.48
Ta	4.58	0.003	0.298	1159.86
Tl	5.09	0.120	12.164	310.12
Th	1.14	0.044	4.461	999.44
Sn	2.17	0.052	5.286	97.27
Ti	4.85	0.049	4.915	17.91
W	2.11	0.006	0.609	620.58
U	5.42	0.408	41.178	415.20
V	5.15	0.005	0.504	169.46
Zn	6.04	0.032	3.229	9.52
Zr	5.23	0.057	5.798	48.84

Dilution factor : 101.000

ICP Analysis - April 30, 1990 Spike of Segment 89-076

Sample name : E578
Sample code 1 : SPIKE
Sample code 2 : 500-10
Sample code 3 : 89076
Programme : SSI 30-Apr-90 13:28:48

NAME	MV INT	CONCEN	DILCOR	RSD
Al	14.44	25.404	533.49	1.19
Sb	0.52	-0.116	-2.437	-37.58
As	1.91	0.208	4.362	9.45
Ba	4.95	0.043	0.900	5.33
Be	2.24	0.046	0.956	0.91
Bi	18.38	8.166	171.48	1.20
B	6.22	0.044	0.934	12.66
Cd	4.52	0.040	0.831	3.16
Ca	7.72	0.246	5.156	1.01
Ce	5.17	(-0.637	(-13.38	-10.20
Cr	5.15	0.632	13.271	1.27
Co	0.26	0.003	0.073	230.94
Cu	3.43	0.035	0.733	12.07
Eu	5.44	0.035	0.732	4.81
Fe	107.73	12.291	258.11	0.83
La	0.44	0.187	3.926	4.46
Pb	0.35	0.394	8.267	5.71
Li	4.07	0.009	0.197	35.99
Mg	4.16	0.115	2.409	1.21
Mn	39.55	1.859	39.047	1.19
Hg	9.00	0.140	2.934	9.44
Mo	4.67	0.205	4.303	3.55
Nd	5.16	(-0.456	(-9.578	-6.03
Ni	6.03	0.054	1.129	6.00
P	4.14	1.622	34.066	3.63
K	2.96	(-0.873	(-18.34	-10.71
Sm	4.67	(-0.771	(-16.19	-9.94
Se	2.70	0.308	6.466	9.02
Si	4.37	0.255	5.357	6.54
Ag	15.44	(-0.042	(-0.876	-11.79
Na	66.59	43.382	911.02	1.21
Sr	12.74	0.231	4.849	1.36
S	1.67	0.783	16.438	3.46
Ta	4.32	(-0.087	(-1.831	-18.85
Tl	4.76	(-0.502	(-10.54	-12.57
Th	1.08	-0.268	-5.637	-18.70
Sn	2.79	0.215	4.514	3.85
Ti	7.08	0.218	4.578	2.11
W	2.13	0.016	0.332	56.21
U	5.09	(-2.578	(-54.14	-17.23
V	5.27	0.015	0.312	18.75
Zn	10.47	0.138	2.886	1.48
Zr	5.02	0.204	4.276	4.96

Dilution factor : 21.0000

ICP Analysis - April 30, 1990 Acid Digested LMCS Standard

Sample name : F579
Sample code 1 : SST1
Sample code 2 : DIGEST
Sample code 3 : 89076
Programme : SST 30-Apr-90 13:32:49

NAME	MV INT	CONCEN	RSD
Al	2.10	-0.213	-24.34
Sb	0.60	0.670	13.40
As	1.40	(-0.086	-15.06
Ba	24.11	0.927	0.74
Be	0.86	(-0.003	-15.48
Bi	5.61	(-0.381	-19.22
B	19.94	0.926	1.71
Cd	28.59	0.911	1.70
Ca	43.08	1.449	0.49
Ce	5.68	0.008	1382.82
Cr	6.43	0.858	1.75
Co	0.51	0.866	2.67
Cu	9.09	0.906	1.35
Eu	3.79	(-0.015	-12.03
Fe	12.72	1.263	1.38
La	0.35	(-0.057	-13.12
Pb	0.30	-0.199	-3.77
Li	13.44	0.863	0.90
Mg	34.72	1.072	0.85
Mn	21.12	0.970	1.35
Hg	5.88	0.003	51.46
Mo	2.56	(-0.027	-15.39
Nd	5.89	0.189	32.11
Ni	16.88	0.907	1.98
P	1.57	(-0.067	-50.86
K	3.50	1.115	10.45
Sm	4.46	(-1.066	-10.54
Se	2.50	0.024	67.92
Si	4.23	0.182	7.78
Ag	14.43	(-0.075	-9.09
Na	8.62	2.148	2.97
Sr	40.95	0.960	0.57
S	0.96	0.048	29.46
Ta	3.99	(-0.146	-9.53
Tl	4.41	(-1.145	-15.29
Th	1.01	(-0.654	-11.95
Sn	20.04	4.736	1.41
Ti	4.76	0.042	10.74
W	1.92	(-0.082	-18.61
U	4.69	(-6.244	-10.51
V	4.54	(-0.048	-12.60
Zn	44.11	0.939	1.29
Zr	4.46	(-0.103	-11.56

ICP Analysis - April 30, 1990 Acid Digested LMCS Standard

Sample name : P579
Sample code 1 : SST3
Sample code 2 : DIGEST
Sample code 3 : 89076
Programme : SST 30-Apr-90 13:36:35

NAME	MV INT	CONCCN	RSD
Al	2.45	0.516	15.33
Sn	0.53	-0.077	-26.02
As	1.79	0.135	5.33
Ba	3.85	-0.008	-36.29
Be	0.91	-0.001	-8.93
Bi	13.78	5.087	2.98
B	5.99	0.030	21.25
Cd	3.33	-0.004	-36.91
Ca	13.08	0.428	1.44
Ce	5.33	(-0.437	-23.79
Cr	1.61	0.006	72.19
Co	0.36	-0.012	-79.37
Cu	3.22	0.004	202.85
Eu	35.86	0.949	1.62
Fe	3.62	0.207	3.51
La	2.14	4.604	1.70
Pb	0.72	5.165	2.57
Li	3.70	(-0.034	-21.32
Mg	3.09	0.081	2.00
Mn	1.32	0.015	7.54
Hg	5.83	0.001	157.70
Mo	2.67	-0.015	-19.26
Nd	5.34	(-0.307	-27.19
Ni	5.16	-0.014	-28.12
P	1.73	0.037	92.66
K	3.03	(-0.631	-24.49
Sm	5.45	0.438	22.08
Se	2.35	(-0.179	-25.74
Si	4.46	0.297	10.06
Ag	45.76	0.961	2.59
Na	5.72	0.087	83.41
Sr	3.77	-0.001	-134.98
S	1.01	0.096	27.04
Ta	4.34	-0.057	-29.56
Tl	5.08	0.094	105.49
Th	2.07	4.748	3.46
Sn	2.00	0.007	65.04
Ti	5.11	0.068	8.28
W	2.00	-0.047	-20.87
U	5.57	1.799	46.94
V	5.09	-0.000	-1296.1
Zn	5.27	0.014	10.25
Zr	4.75	-0.043	-28.91

ICP Analysis - April 30, 1990 Acid Digested LMCS Standard

Sample name : F579
Sample code 1 : SSI3
Sample code 2 : DIGEST
Sample code 3 : 89076
Programme : SST 30-Apr-90 13:40:16

NAME	MV INT	CONCEN	RSD
Al	4.53	4.828	1.86
Sb	0.54	0.039	52.04
As	10.69	5.222	0.96
Ba	4.07	0.002	110.87
Be	26.80	0.506	0.69
Bi	6.21	0.018	213.22
B	6.17	0.042	5.80
Cd	3.44	0.000	234.17
Ca	12.67	0.414	0.27
Ce	5.53	-0.182	-60.49
Cr	1.66	0.015	32.63
Co	0.26	0.012	17.32
Cu	3.19	-0.002	-310.16
Dy	4.16	-0.003	-56.26
Fe	3.09	0.146	3.10
La	0.36	-0.015	-56.73
Pb	0.32	-0.022	-103.92
Li	3.85	-0.010	-46.53
Mg	2.92	0.076	0.99
Mn	1.31	0.014	6.39
Hg	59.78	2.370	1.68
Mo	44.22	4.559	1.09
Nd	5.49	-0.170	-56.37
Ni	5.77	0.033	14.43
P	9.68	5.250	3.29
K	3.12	-0.281	-56.48
Sm	5.03	-0.218	-51.59
Se	5.97	4.752	2.60
Si	6.88	1.518	1.21
Ag	17.13	0.014	51.58
Na	6.18	0.416	13.86
Sr	3.88	0.002	66.31
S	5.82	5.061	1.15
Ta	20.48	4.021	4.37
Tl	7.49	4.555	1.75
Th	1.13	-0.053	-128.51
Sn	2.07	0.024	15.67
Ti	66.54	4.734	0.30
W	5.84	1.890	0.44
U	5.35	-0.181	-393.91
V	15.61	0.909	1.08
Zn	5.37	0.016	9.75
Zr	26.89	4.601	0.60

ICP Analysis - April 30, 1990 Acid Blank

Sample name : HNO3
Programme : SST 30-Apr-90 13:44:04

NAME	MV INT	CONCEN	RSD
Al	2.13	-0.149	-57.35
Sb	0.52	-0.119	-70.69
As	1.49	-0.035	-42.07
Ba	3.86	-0.007	-49.89
Be	0.91	-0.001	-54.78
Bi	5.92	-0.172	-37.67
B	5.60	0.005	19.14
Cd	3.31	-0.004	-36.91
Ca	0.53	0.091	30.09
Ce	5.47	-0.258	-56.69
Cr	1.51	-0.013	-34.09
Co	0.25	-0.014	-62.93
Cu	3.08	-0.019	-46.58
Eu	4.12	-0.005	-49.93
Fe	1.79	-0.006	-66.81
La	0.36	-0.015	-53.91
Pb	0.32	-0.025	-112.50
Li	3.82	-0.013	-55.34
Mg	0.49	-0.000	-83.89
Mn	0.99	-0.001	-79.25
Hg	6.26	0.019	48.04
Mo	2.68	-0.014	-39.32
Nd	5.45	-0.206	-41.34
Ni	5.15	-0.015	-36.32
P	1.63	-0.037	-84.24
K	3.08	-0.439	-42.25
Sm	4.98	-0.295	-53.00
Se	2.38	-0.126	-46.57
Si	3.60	(-0.136	-30.29
Ag	15.96	-0.024	-44.31
Na	5.37	-0.162	-46.05
Sr	3.69	-0.003	-49.73
S	0.90	-0.021	-122.95
Ta	4.39	-0.043	-57.12
Tl	4.81	-0.408	-52.76
Th	1.09	-0.212	-47.21
Sn	1.92	-0.014	-89.84
Ti	4.06	-0.011	-45.56
W	2.02	-0.037	-45.59
U	5.15	-1.993	-47.78
V	4.84	-0.022	-47.71
Zn	4.60	-0.002	-62.91
Zr	4.81	-0.030	-52.54

ICP Analysis - April 30, 1990 LMCS Check Standard

Sample name : 78C11K
Sample code 1 : SST1
Sample code 2 : DIRECT
Programme : SST 30-Apr-90 13:47:42

NAME	MV INT	CONCEN	RSD
Al	2.12	-0.170	-25.16
Sb	1.60	10.307	1.61
As	1.61	0.033	26.02
Ba	219.39	9.930	1.13
Be	0.90	-0.091	-20.38
Bi	5.83	(-0.231	-13.13
B	162.30	10.071	0.85
Cd	275.83	9.969	1.59
Ca	300.78	10.221	0.96
Ce	12.93	9.237	1.66
Cr	52.69	9.041	1.28
Co	2.97	9.424	1.55
Cu	68.07	10.963	1.09
Eu	4.72	0.013	13.39
Fe	90.97	10.346	0.91
La	0.38	0.031	20.97
Pb	0.32	-0.017	-114.56
Li	111.84	9.813	1.06
Mg	327.65	10.245	1.10
Mn	208.58	10.016	1.22
Hg	5.54	0.001	641.29
Mo	2.73	-0.008	-18.92
Nd	15.15	8.578	3.05
Ni	129.84	9.787	1.19
P	1.66	-0.006	-357.32
K	9.77	24.592	1.68
Sm	4.66	(-0.791	-11.63
Se	5.06	3.515	1.88
Si	3.48	(-0.192	-10.27
Ag	15.11	(-0.053	-12.51
Na	40.24	24.637	1.25
Sr	394.51	10.099	1.08
S	1.22	0.309	6.56
Ta	4.25	(-0.081	-15.16
Tl	4.78	-0.466	-8.86
Th	1.09	-0.229	-24.78
Sn	194.01	50.339	1.35
Ti	3.88	(-0.025	-12.08
W	2.31	0.107	1.85
U	5.37	-0.037	-1621.1
V	4.66	(-0.037	-13.17
Zn	425.07	10.016	1.30
Zr	4.65	(-0.063	-13.55

ICP Analysis - April 30, 1990 LMCS Check Standard

Sample name : 83B38A
Sample code 1 : SST2
Sample code 2 : DIRECT
Programme : SST 30-Apr-90 13:51:41

NAME	MV INT	CONCEN	RSD
Al	4.71	5.202	0.76
Sb	0.57	0.361	9.41
As	4.70	1.812	1.07
Ba	4.02	0.000	9500.53
Be	0.92	-0.001	-32.43
Bi	85.67	53.219	0.62
B	6.44	0.059	3.75
Cd	3.39	-0.001	-167.29
Ca	0.93	0.015	0.49
Cr	5.62	-0.066	-181.76
Co	1.94	0.064	6.91
Co	0.25	-0.034	-36.33
Cu	4.69	0.230	2.62
Eu	331.05	9.916	1.01
Fe	2.27	0.050	11.96
La	10.54	)47.179	1.01
Pb	4.37	52.648	0.72
Li	3.61	(-0.032	-18.68
Mg	0.68	0.036	1.95
Mn	1.16	0.007	11.27
Hg	7.05	0.054	15.71
Mo	2.76	-0.035	-110.56
Nd	6.61	0.299	35.09
Ni	5.29	-0.004	-210.29
P	1.97	0.198	22.63
K	2.93	(-1.002	-13.94
Sm	11.31	9.561	0.79
Se	2.51	0.046	108.08
Si	4.79	0.458	5.17
Ag	337.29	10.271	0.70
Na	5.12	(-0.339	-20.02
Sr	3.80	-0.000	-953.70
S	1.05	0.136	14.02
Ta	4.89	0.082	31.37
Tl	8.14	5.757	3.53
Th	11.24	51.476	0.84
Sn	2.13	0.042	11.97
Ti	4.70	0.037	10.81
W	1.99	(-0.053	-13.60
U	10.93	51.150	0.65
V	7.40	0.199	2.08
Zn	5.17	0.011	11.13
Zr	5.23	0.058	21.24

ICP Analysis - April 30, 1990 LMCS Check Standard

Sample name : 77C11J
Sample code 1 : SST3
Sample code 2 : DIRECT
Programme : SST 30-Apr-90 13:55:39

NAME	MV INT	CONCEN	RSD
Al	26.45	50.351	0.84
Sb	0.65	1.131	12.13
As	101.43	57.470	0.30
Ba	4.31	0.014	30.87
Be	274.76	9.599	0.72
Bi	7.57	0.929	6.87
B	7.01	0.096	36.85
Cd	3.75	0.012	14.34
Ca	1.33	0.028	0.69
Ce	5.62	-0.062	-281.29
Cr	1.79	0.036	18.26
Co	0.28	0.081	4.95
Cu	3.50	0.047	19.55
Eu	4.27	-0.000	-1564.3
Fe	2.24	0.047	9.32
La	0.37	0.000	*******
Pb	0.33	0.125	31.60
Li	3.89	-0.007	-216.33
Mg	0.75	0.008	2.39
Mn	1.34	0.016	6.52
Hg	605.34	26.336	0.60
Mo	440.43	48.181	0.48
Nd	5.68	0.005	1661.82
Ni	11.67	0.497	1.07
P	87.36	256.315	1.63
K	3.14	-0.201	-113.53
Sm	5.15	-0.029	-664.92
Se	41.17	52.632	0.98
Si	93.43	45.062	0.52
Ag	27.49	0.357	1.68
Na	6.61	0.719	12.11
Sr	3.91	0.003	73.73
S	52.34	253.077	1.14
Ta	196.11	48.395	0.56
Tl	32.54	50.976	0.69
Th	1.30	0.849	12.83
Sn	2.68	0.185	3.01
Ti	661.11	49.896	1.42
W	44.96	20.949	0.52
U	6.94	14.420	3.27
V	115.99	9.592	0.76
Zn	6.19	0.036	3.13
Zr	240.73	49.456	1.29

APPENDIX A
ANALYTICAL ANALYSIS CARDS

Serial No	Sample Point	Date	Time Issued	Priority
F 561.-5002	SEGMENT-B	12- 1-89	11:34	24

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

Sample Size: ?

Customer ID: 089076

Remarks, Calculations, Results:
PARTICLE SIZE DISTRIBUTION
Bottle # 276
Gross wt. 22.14
Tare wt. 21.69
Sample wt. 0.45
Results: see attached (6)

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
RLW FHS JRS	[illegible] 2-26-90			
Hrs 1-25-90	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
		[signature]	EMS

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 561.-5003	SEGMENT-B	12- 1-89	11:34	16

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

Sample Size: ?

Customer ID: 089076

Remarks, Calculations, Results:
Homogenization Complete
Jar # 398
WHCN 3134 pg 29

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6A297 61300 6B090				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2/15/90			

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

Serial No	Sample Point	Date	Time Issued	Priority
F 561.-5000	SEGMENT-B	12- 1-89	11:34	18

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

Sample Size: ? WHCN 3133

Customer ID: 89-076

Remarks, Calculations, Results:
Penitrometer 120 Rcw
Small sample
A. JAR ID# 136
B. JAR TARE WT. 221.5
C. JAR TOTAL WT. ~~[illegible]~~ RLW 365.9
D. C-B= 144.4 gm
E. EST. VOL./LENGTH 8"
F. VISUAL REMARKS most of the solids are very dark brown. Top ~1" chocolat brown sample slightly soft significant amount of liquid, clear. Hard chunks noted in solids

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
RLW FHS JRS	6A297 61300 6B090 65286			
Hrs 1-25-90	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 561.-5001	SEGMENT-B	12- 1-89	11:34	18

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

Sample Size: ?

Customer ID: 089076

Remarks, Calculations, Results:
DUPLICATE SAMPLE
Bottle # 275
Gross wt 2681
Tare wt 2957
Sample wt 5.84
WHCN 3133

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
RLW FHS, JRS	6A297 6B090 65286			
Hrs 1-25-90	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	

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

Physical Properties

Liquid from tops in Bottle
#2250 ~ 75 mL some liquid
lost in transfer

Gross wt 269.2

Tare wt 221.5

Liquid wt 47.7 gm

F 561-5000

Percent Water Analysis

Serial No.	Sample Point	Date	Time Issued	Priority
F 564.-5510	SEGMENT-E	12- 1-89	11:34	19

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

Sample Size	Customer ID
?	089076

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 11C11AA

57.18% / 58.98

(3) 57.77 (4) 56.58

G, 22.9823 22.9189 96.95%
T, 21.59560 21.5377
W1 22.1812 22.1374
W2 22.1780 22.1310

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

Date	Time Completed	Lab Unit Mgr.	
3-2-90		[signature]	[signature]

84-8800-081 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
F 566.-6000	SEGMENT-G	12- 1-89	11:35	18

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

Sample Size	Customer ID
?	089076

Remarks, Calculations, Results:

GRAMS SAMPLE .5473
VOLUME ON COMPLETION 200 mL

2.74^{-3} g/ml

10Hr N 3134

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598/87				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
3-10-90		

84-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 436.-6300	SEGMENT-U	11-30-89	8: 8	18

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

Sample Size	Customer ID
? 200 mL	089070

Remarks, Calculations, Results:

REAGENT BLANK

complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B598/87				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
3-10-90		

84-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 567.-6100	SEGMENT-H	12- 1-89	11:35	18

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

Sample Size	Customer ID
?	089076

Remarks, Calculations, Results:

DUPLICATE ANALYSIS
GRAMS SAMPLE .4059
VOLUME ON COMPLETION 200mL

2.03^{-3} g/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B599/87				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
3-10-90		

84-6800-081 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
F 568.-6220	SEGMENT-I	12- 1-89	11:35	19

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

Sample Size: ? 100-10-100 (F566) | Customer ID: 089076

Remarks, Calculations, Results:
SPIKE SAMPLE
SPIKE ID 133BH
SPIKE VOLUME 10 ml
1.025 101.4%
1.017 -R / 1.0027 -2

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

Date: 4-10-90 | Time Completed: 4/17 | Lab Unit Mgr

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

Serial No.	Sample Point	Date	Time Issued	Priority
F 569.-6520	SEGMENT-J	12- 1-89	11:35	19

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

Sample Size: ? 10 ml | Customer ID: 089076

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 143BH
100.890
1.011 -2 / 1.0027 -2

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

Date: 4-10-90 | Time Completed: 4/17 | Lab Unit Mgr

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

Serial No	Sample Point	Date	Time Issued	Priority
F 566.-6020	SEGMENT-G	12- 1-89	11:35	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
AT	LA-548-101	uCI/L	WB75L	0

Sample Size: ? 100-10-100 | Customer ID: 089076

Remarks, Calculations, Results:
1.72 ueil

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269	Hrs	Hrs	Hrs	Hrs

Date: 4-10-90 | Time Completed: 4/17 | Lab Unit Mgr

54-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 567.-6120	SEGMENT-H	12- 1-89	11:35	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
AT	LA-548-101	uCI/L	WB75L	0

Sample Size: ? 100-10-100 | Customer ID: 089076

Remarks, Calculations, Results:
DUPLICATE SAMPLE
<1.39 ueil

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269	Hrs	Hrs	Hrs	Hrs

Date: 4-10-90 | Time Completed: 4/17 | Lab Unit Mgr

54-6800-081 (R-10-83)

14/2

FO568.-6220

Alpha Calculation by MAI on 04-10-1990 at 13:48:23
Det #14 2 -inch mount Alpha eff. : .2111
Sample size : .1 mL Dilution : 101

479/10 - .5

Mount # 1

484/10 - 479/10 - 0.5 = 1.0215E+02 uCi/L alpha

Mount # 2

484/10 - 0.5 = 1.0323E+02 uCi/L alpha

14/2

FO569.-6520

Alpha Calculation by MAI on 04-10-1990 at 17:12:06
Det #14 2 -inch mount Alpha eff. : .2111
Sample size : 10 mL Dilution : 1

501/10 - .5

Mount # 1

457/10 - 501/10 - 0.5 = 1.0564E-02 uCi/L alpha

Mount # 2

457/10 - 0.5 = 9.6449E-03 uCi/L alpha

14/2

FO566.-6020

Alpha Calculation by MAI on 04-10-1990 at 15:49:36
Det #14 2 -inch mount Alpha eff. : .2111
Sample size : .1 mL Dilution : 101

Mount # 1

13/10 - 5/10 - 0.5 = 1.7241E+00 uCi/L alpha

Mount # 2

7/10 - 7/10 - 0.5 < 1.6629E+00 uCi/L alpha

14/2

FO567.-6120

Alpha Calculation by MAI on 04-10-1990 at 13:48:57
Det #14 2 -inch mount Alpha eff. : .2111
Sample size : .1 mL Dilution : 101

4/10 - .5

Mount # 1

6/10 - 4/10 - 0.5 < 1.1228E+00 uCi/L alpha

Mount # 2

6/10 - 0.5 < 1.3949E+00 uCi/L alpha

Serial No.	Sample Point	Date	Time Issued	Priority
F 565.-6520	SEGMENT-F	12- 1-89	11:34	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
AT	LA-548-101	% RECOVERY	WB75L	0

Sample Size: ? 10 ml

Customer ID: 089076

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 143814

99.7%

$1.00^{-2} / 1.0027^{-2}$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
LC269				
Hrs	Hrs	Hrs	Hrs	Hrs

Date: 4-10-90 Time Completed: 4:17 Lab Unit Mgr:

54-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 580.-6320	SEGMENT-U	12- 1-89	11:37	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
AT	LA-548-101	uCI/L	WB75L	0

Sample Size: ? 10 ml

Customer ID: 089076

Remarks, Calculations, Results:

REAGENT BLANK
H_2O

$< 1.11^{-4}$ uCi

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
LC269				
Hrs	Hrs	Hrs	Hrs	Hrs

Date: 4-10-90 Time Completed: 4:17 Lab Unit Mgr:

54-6800-081 (R-10-83)

14/2

PO565.-6520

477/10

472/10

Alpha Calculation by MAX on 04-10-1990 at 13:47:40
Bet #14 2 -inch mount Alpha eff. : .2111
Sample size : 10 mL Dilution : 1

Mount # 1

$$\frac{477}{10} - 0.5 = 1.0072E\text{-}02 \text{ uCi/L alpha}$$

Mount # 2

$$\frac{472}{10} - 0.5 = 9.9650E\text{-}03 \text{ uCi/L alpha}$$

14/2

PO580.-6320

Alpha Calculation by MAX on 04-10-1990 at 13:47:05
Bet #14 2 -inch mount Alpha eff. : .2111
Sample size : 10 mL Dilution : 1

3/10

2/10

Mount # 1

$$\frac{3}{10} - 0.5 < 1.1117E\text{-}04 \text{ uCi/L alpha}$$

Mount # 2

$$\frac{2}{10} - 0.5 < 1.1117E\text{-}04 \text{ uCi/L alpha}$$

Total Beta Analysis on the Fusion Dissolution

9&10

Serial No.	Sample Point	Date	Time Issued	Priority
F 580.-6325	SEGMENT-U	12- 1-89	11:37	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
TB	LA-548-101	uCI/L	WB75L	0

Sample Size: ? 10 ml

Customer ID: 089076

Remarks, Calculations, Results: REAGENT BLANK H_2O Count on 13, 14 or 15

$<7.37^{-4}$ uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				
Mary Franz	Hrs	Hrs	Hrs	Hrs

Date: 4-10-90 | Time Completed: 4/17 | Lab Unit Mgr: [signature] | SH

54-6800-061 (R-10-83)

1&2

Serial No.	Sample Point	Date	Time Issued	Priority
F 565.-6525	SEGMENT-F	12- 1-89	11:34	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TB	LA-548-101	% RECOVERY	WB75L	0

Sample Size: ? 10 ml

Customer ID: 089076

Remarks, Calculations, Results: LMCS CHECK SAMPLE LMCS ID 143B44 Count on 13, 14 or 15

1.41^{-1} uci/l 104.7% 1.3466^{-1}

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				
Mary Franz	Hrs	Hrs	Hrs	Hrs

Date: 4-10-90 | Time Completed: 4/17 | Lab Unit Mgr: [signature] | SH

54-6800-061 (R-10-83)

5&6

Serial No.	Sample Point	Date	Time Issued	Priority
F 567.-6125	SEGMENT-H	12- 1-89	11:35	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TB	LA-548-101	uCI/L	WB75L	0

Sample Size: ? 100-10-100

Customer ID: 089076

Remarks, Calculations, Results: DUPLICATE SAMPLE Count on 13, 14 or 15

2.30^{3} uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				
Mary Franz	Hrs	Hrs	Hrs	Hrs

Date: 4-10-90 | Time Completed: 4/17 | Lab Unit Mgr: [signature] | SH

54-6800-061 (R-10-83)

3&4

Serial No	Sample Point	Date	Time Issued	Priority
F 566.-6025	SEGMENT-G	12- 1-89	11:35	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TB	LA-548-101	uCI/L	WB75L	0

Sample Size: ? 100-10-100

Customer ID: 089076

Remarks, Calculations, Results: Count on 13, 14 or 15

1.87^{3} uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				
Mary Franz	Hrs	Hrs	Hrs	Hrs

Date: 4-10-90 | Time Completed: 4/17 | Lab Unit Mgr: [signature] | SH

54-6800-061 (R-10-83)

Total Beta Analysis on the Fusion Dissolution

14/2 4-10 M

$\frac{239}{10}$ - 23

$\frac{203}{10}$ -

$\frac{10}{2}$ - 0.5 < 1.111

$\frac{10}{2}$ - 0.5 < 1.11

Beta Calculation by MAX on 04-10-1990 at 13:47:03
Det #14 2 -inch mount Beta eff. : .2734
Sample size : 10 mL Dilution : 1

Mount # 1

$\frac{239}{10}$ - 23.0 < 7.3702E-04 uCi/L beta

Mount # 2

$\frac{203}{10}$ - 23.0 < 5.8219E-04 uCi/L beta

14/2 4-10 M

$\frac{8986}{10}$ - 23

$\frac{8619}{10}$ -

Beta Calculation by MAX on 04-10-1990 at 13:47:38
Det #14 2 -inch mount Beta eff. : .2734
Sample size : 10 mL Dilution : 1

Mount # 1

$\frac{8986}{10}$ - 23.0 = 1.4426E-01 uCi/L beta

Mount # 2

$\frac{8619}{10}$ - 23.0 = 1.3822E-01 uCi/L beta

14/2 4-10 M

$\frac{13814}{10}$ - 23

$\frac{14337}{10}$ -

Beta Calculation by MAX on 04-10-1990 at 13:48:54
Det #14 2 -inch mount Beta eff. : .2734
Sample size : .1 mL Dilution : 101

Mount # 1

$\frac{13814}{10}$ - 23.0 = 2.2605E+03 uCi/L beta

Mount # 2

$\frac{14337}{10}$ - 23.0 = 2.3475E+03 uCi/L beta

14/2 4-10 M

$\frac{11530}{10}$ - 23

$\frac{11443}{10}$ -

Beta Calculation by MAX on 04-10-1990 at 13:49:28
Det #14 2 -inch mount Beta eff. : .2734
Sample size : .1 mL Dilution : 101

Mount # 1

$\frac{11530}{10}$ - 23.0 = 1.8604E+03 uCi/L beta

Mount # 2

$\frac{11443}{10}$ - 23.0 = 1.8659E+03 uCi/L beta

Total Beta Analysis on the Fusion Dissolution

142

Serial No.	Sample Point	Date	Time Issued	Priority
F 569.-6525	SEGMENT-J	12- 1-89	11:35	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TB	LA-548-101	% RECOVERY	WB75L	0

Sample Size: ? 10 ml

Customer ID: 089076

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 143B44

Count on 13, 14 or 15

1.396⁻¹ / 1.3466⁻¹ 103.7%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				
Mary Fraing	Hrs	Hrs	Hrs	Hrs

Date: 4-10-90 | Time Completed: 4/17 | Lab Unit Mgr: [signature] | SH

84-6800-061 (R-10-83)

748

Serial No.	Sample Point	Date	Time Issued	Priority
F 568.-6225	SEGMENT-I	12- 1-89	11:35	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TB	LA-548-101	% RECOVERY	WB75L	0

Sample Size: ? 100-10-100 (F566)

Customer ID: 089076

Remarks, Calculations, Results:
SPIKE SAMPLE
SPIKE ID 143B44
SPIKE VOLUME 10 ml

Count on 13, 14 or 15

spike too low

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269				
Mary Fraing	Hrs	Hrs	Hrs	Hrs

Date: 4-10-90 | Time Completed: 4/17 | Lab Unit Mgr: [signature] | SH

84-6800-061 (R-10-83)

14/2 4-10-4

8790 - 23
10

8611
10 -

Beta Calculation by MAX on 04-10-1990 at 17:12:04
Det #14 2 -inch mount Beta eff. : .2734
Sample size : 10 mL Dilution : 1

Mount # 1

$$\frac{8790}{10} - 23.0 = 1.4103E\text{-}01 \text{ uCi/L beta}$$

Mount # 2

$$\frac{8611}{10} - 23.0 = 1.3808E\text{-}01 \text{ uCi/L beta}$$

14/2 4-10-4

8788 - 23
10

8653
10

Beta Calculation by MAX on 04-10-1990 at 13:48:21
Det #14 2 -inch mount Beta eff. : .2734
Sample size : .1 mL Dilution : 101

Mount # 1

$$\frac{8788}{10} - 23.0 = 1.4241E+03 \text{ uCi/L beta}$$

Mount # 2

$$\frac{8653}{10} - 23.0 = 1.4016E+03 \text{ uCi/L beta}$$

1071

Serial No.	Sample Point	Date	Time Issued	Priority
F 436.-6330	SEGMENT-U	11-30-89	8: 9	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	uCI/L	WB75L	0

Sample Size: ? 1ml — Customer ID: 089070

Remarks, Calculations, Results:
REAGENT BLANK

Co^{60} < 3.73^{-4} uci/l

Cs^{137} < 481^{-4} uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6 BS98/KH				GL
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
3-14-90		QP	DM 8

84-6800-081 (R-10-83)

1070

Serial No.	Sample Point	Date	Time Issued	Priority
F 421.-6530	SEGMENT-F	11-30-89	8: 5	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	% RECOVERY	WB75L	0

Sample Size: ? 500 Li .001 2 — Customer ID: 089070

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 122B44

Co^{60} 2.14' / 2.0933' 102.2%

Cs^{137} 2.85' / 2.8979' 98.3%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6 BS98/KH				GL
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
3-14-90		QP	DM 8

84-6800-081 (R-10-83)

1083

Serial No.	Sample Point	Date	Time Issued	Priority
F 567.-6130	SEGMENT-H	12- 1-89	11:35	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	uCI/L	WB75L	0

Sample Size: ? 50 — Customer ID: 089076

Remarks, Calculations, Results:
DUPLICATE SAMPLE

Co^{60} < 6.05^{-1} uci/l

Cs^{137} 5.16' uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6 BS98/KH				GL
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
3-14-90		QP	DM 8

84-6800-081 (R-10-83)

1082

Serial No.	Sample Point	Date	Time Issued	Priority
F 566.-6030	SEGMENT-G	12- 1-89	11:35	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	uCI/L	WB75L	0

Sample Size: ? 50 — Customer ID: 089076

Remarks, Calculations, Results:

Co^{60} < 5.64^{-1} uci/l

Cs^{137} 7.12' uci/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6 BS98/KH				GL
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
3-14-90		QP	DM 8

84-6800-081 (R-10-83)

1087

Serial No.	Sample Point	Date	Time Issued	Priority
F 569.-6530	SEGMENT-J	12- 1-89	11:35	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	% RECOVERY	WB75L	0

Sample Size	Customer ID
? 500 l	089076

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 122854

Co^{60} 2.07'/2.0932' 98.9%

Cs^{137} 2.82'/2.8979' 97.3%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
685981RH				GAL
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-14-90		QP	RMS

54-6800-081 (R-10-83)

1084

Serial No.	Sample Point	Date	Time Issued	Priority
F 568.-6230	SEGMENT-I	12- 1-89	11:35	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
GEA	LA-548-121	% RECOVERY	WB75L	0

Sample Size	Customer ID
? 500 l	089076

Remarks, Calculations, Results:

SPIKE SAMPLE F447
SPIKE ID 122854
SPIKE VOLUME 500

93.5%

$2.04' - 6.85 = 13.55 \times 2 = 2.71'$

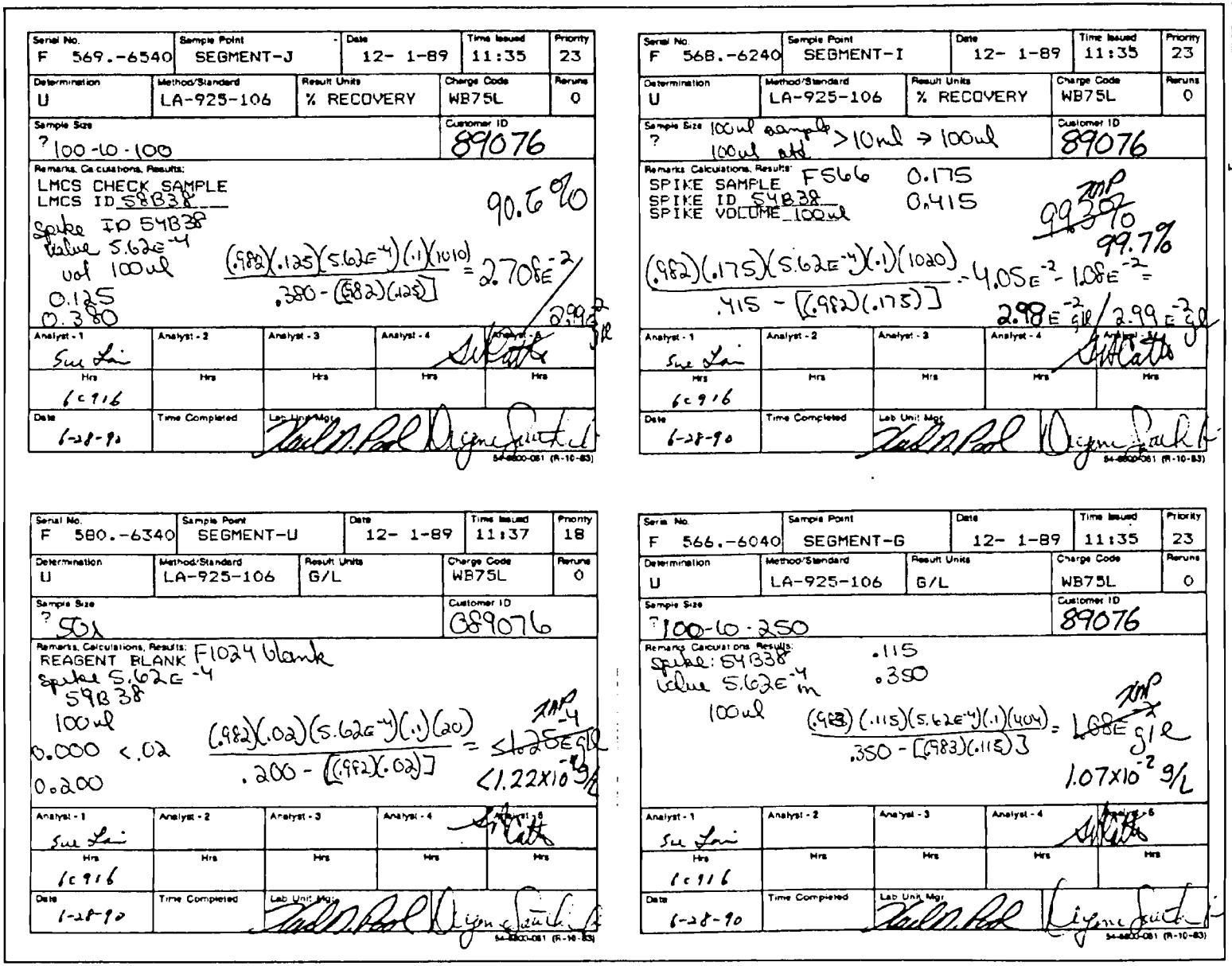
$4.08^2 - 1.37^2 = 2.71^2$ KT

2.8978'

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
685981RH				GAL
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
3-14-90		QP	RMS

54-6800-081 (R-10-83)



Serial No.	Sample Point	Date	Time Issued	Priority
F 569.-6540	SEGMENT-J	12- 1-89	11:35	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	WB75L	0

Sample Size: ? 100-10-100 — Customer ID: 89076

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 58B38
Spike ID 54B38
Value $5.62E^{-4}$
vol 100ul
0.125
0.380

90.6%

$$\frac{(.982)(.125)(5.62E^{-4})(.1)(1010)}{.380-[(.982)(.125)]} = 2.70E^{-2}$$

2.99 g/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Sue Lai				
Hrs: 1c 9 1 6	Hrs	Hrs	Hrs	Hrs

Date: 1-28-90 — Time Completed — Lab Unit Mgr.

54-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 568.-6240	SEGMENT-I	12- 1-89	11:35	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	WB75L	0

Sample Size: ? 100ul sample >10ml → 100ul 100ul std — Customer ID: 89076

Remarks, Calculations, Results:
SPIKE SAMPLE FS66 0.175
SPIKE ID 54B38 0.415
SPIKE VOLUME 100ul

99.3% 99.7%

$$\frac{(.982)(.175)(5.62E^{-4})(.1)(1020)}{.415-[(.982)(.175)]} = 4.05E^{-2} - 1.08E^{-2} =$$

$2.98E^{-2}$ g/l / $2.99E^{-2}$ g/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Sue Lai				
Hrs: 1c 9 1 6	Hrs	Hrs	Hrs	Hrs

Date: 1-28-90 — Time Completed — Lab Unit Mgr.

54-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 580.-6340	SEGMENT-U	12- 1-89	11:37	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	G/L	WB75L	0

Sample Size: ? 50l — Customer ID: 89076

Remarks, Calculations, Results: REAGENT BLANK F1024 blank
Spike $5.62E^{-4}$
54B38
100ul
0.000 < .02
0.200

$$\frac{(.982)(.02)(5.62E^{-4})(.1)(20)}{.200-[(.982)(.02)]} = <1.22\times10^{-4}\ g/l$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Sue Lai				
Hrs: 1c 9 1 6	Hrs	Hrs	Hrs	Hrs

Date: 1-28-90 — Time Completed — Lab Unit Mgr.

54-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 566.-6040	SEGMENT-G	12- 1-89	11:35	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	G/L	WB75L	0

Sample Size: ? 100-10-250 — Customer ID: 89076

Remarks, Calculations, Results:
Spike: 54B38 .115
Value $5.62E^{-4}$ m .350
100ul

$$\frac{(.983)(.115)(5.62E^{-4})(.1)(404)}{.350-[(.983)(.115)]} = 1.07\times10^{-2}\ g/l$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Sue Lai				
Hrs: 1c 9 1 6	Hrs	Hrs	Hrs	Hrs

Date: 1-28-90 — Time Completed — Lab Unit Mgr.

54-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 565.-6540	SEGMENT-F	12- 1-89	11:34	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	WB75L	0

Sample Size	Customer ID
? 100-10-100	89076

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID SB838
Spike ID SYB38
Vol $5.62E^{-4}$ M
Spike vol -100ul
.135
.410
90.6%

$$\frac{(.982)(.135)(5.62E^{-4})(.1)(1010)}{.410-[(.982)(.135)]} = 2.71E^{-2}\,g/l \;/\; 2.99E^{-2}\,g/l$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Sue Lai				
Hrs	Hrs	Hrs	Hrs	Hrs
6c916				

Date	Time Completed	Lab Unit Mgr.	
1-28-90			

54-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 567.-6140	SEGMENT-H	12- 1-89	11:35	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	G/L	WB75L	0

Sample Size	Customer ID
? 100-10-250	89076

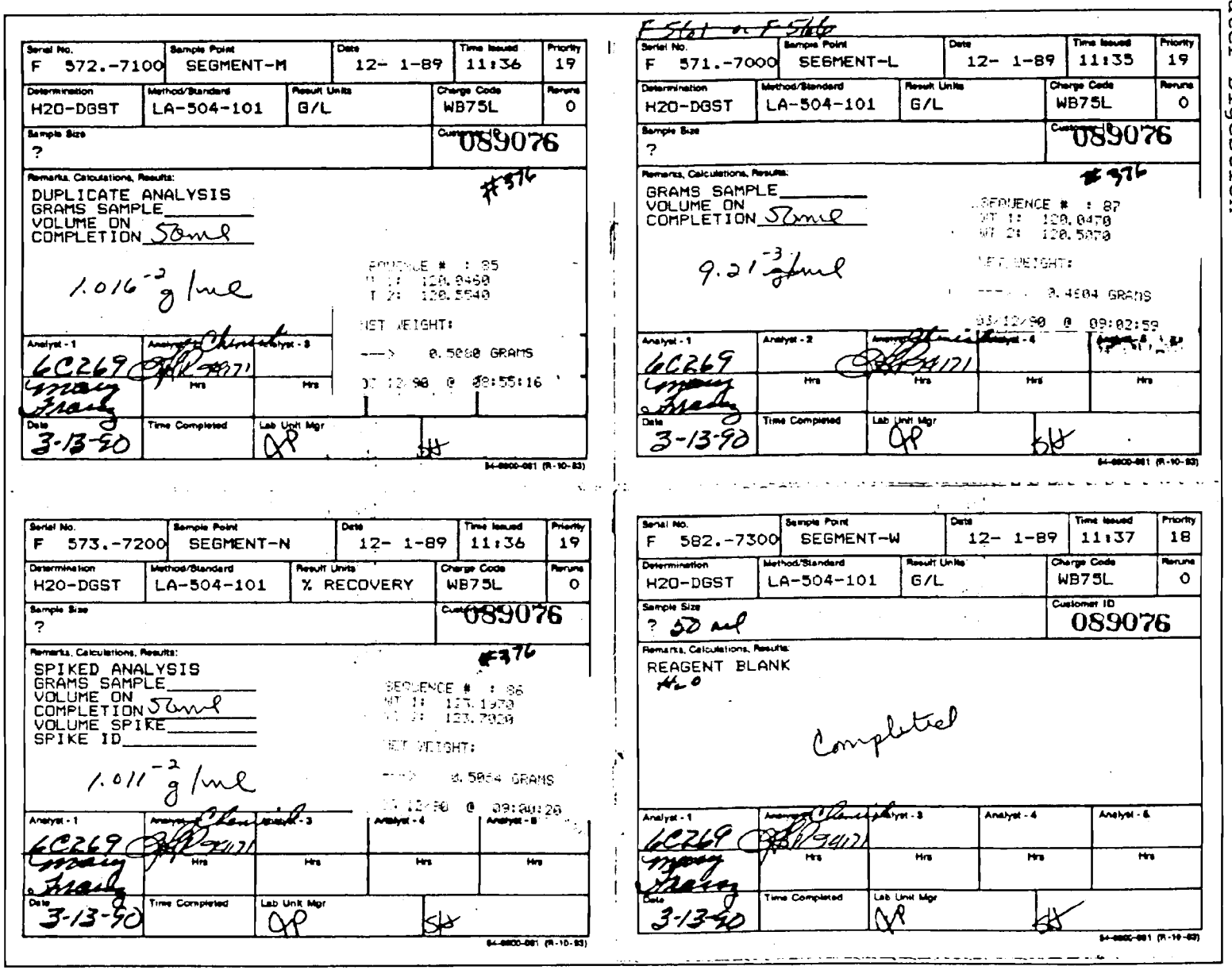
Remarks, Calculations, Results:
DUPLICATE SAMPLE
0.080
0.325
Spike SYB38
$5.62E^{-4}$ M
100ul

$$\frac{(.983)(.08)(5.62E^{-4})(.1)(404)}{.325-[(.983)(.08)]} = 7.25E^{-3}\,g/l$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Sue Lai				
Hrs	Hrs	Hrs	Hrs	Hrs
6c916				

Date	Time Completed	Lab Unit Mgr.	
1-28-90			

54-6800-081 (R-10-83)



Serial No.	Sample Point	Date	Time Issued	Priority
F 572.-7100	SEGMENT-M	12- 1-89	11:36	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
H2O-DGST	LA-504-101	G/L	WB75L	0

Sample Size: ?

Customer ID: 089076

#376

Remarks, Calculations, Results:

DUPLICATE ANALYSIS
GRAMS SAMPLE_____
VOLUME ON
COMPLETION 50ml

1.016 -2 g/ml

SEQUENCE # : 85
WT 1: 120.0460
WT 2: 120.5540

NET WEIGHT:

---> 0.5080 GRAMS

03/12/90 @ 08:55:16

Analyst - 1	Analyst - 2	Analyst - 3
6C269	Chemist 94171	
Mary Franz	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
3-13-90		AP	SH

54-6600-061 (R-10-83)

F 561 or F 566

Serial No.	Sample Point	Date	Time Issued	Priority
F 571.-7000	SEGMENT-L	12- 1-89	11:35	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
H2O-DGST	LA-504-101	G/L	WB75L	0

Sample Size: ?

Customer ID: 089076

#376

Remarks, Calculations, Results:

GRAMS SAMPLE_____
VOLUME ON
COMPLETION 50ml

9.21 -3 g/ml

SEQUENCE # : 87
WT 1: 120.0470
WT 2: 120.5070

NET WEIGHT:

---> 0.4604 GRAMS

03/12/90 @ 09:02:59

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269		Chemist 94171		
Mary Franz	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
3-13-90		AP	SH

54-6600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 573.-7200	SEGMENT-N	12- 1-89	11:36	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
H2O-DGST	LA-504-101	% RECOVERY	WB75L	0

Sample Size: ?

Customer ID: 089076

#376

Remarks, Calculations, Results:

SPIKED ANALYSIS
GRAMS SAMPLE_____
VOLUME ON
COMPLETION 50ml
VOLUME SPIKE_____
SPIKE ID_____

1.011 -2 g/ml

SEQUENCE # : 86
WT 1: 123.1970
WT 2: 123.7020

NET WEIGHT:

---> 0.5054 GRAMS

03/12/90 @ 09:00:20

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269	Chemist 94171			
Mary Franz	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
3-13-90		AP	SH

54-6600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 582.-7300	SEGMENT-W	12- 1-89	11:37	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
H2O-DGST	LA-504-101	G/L	WB75L	0

Sample Size: ? 50 ml

Customer ID: 089076

Remarks, Calculations, Results:

REAGENT BLANK
H_2O

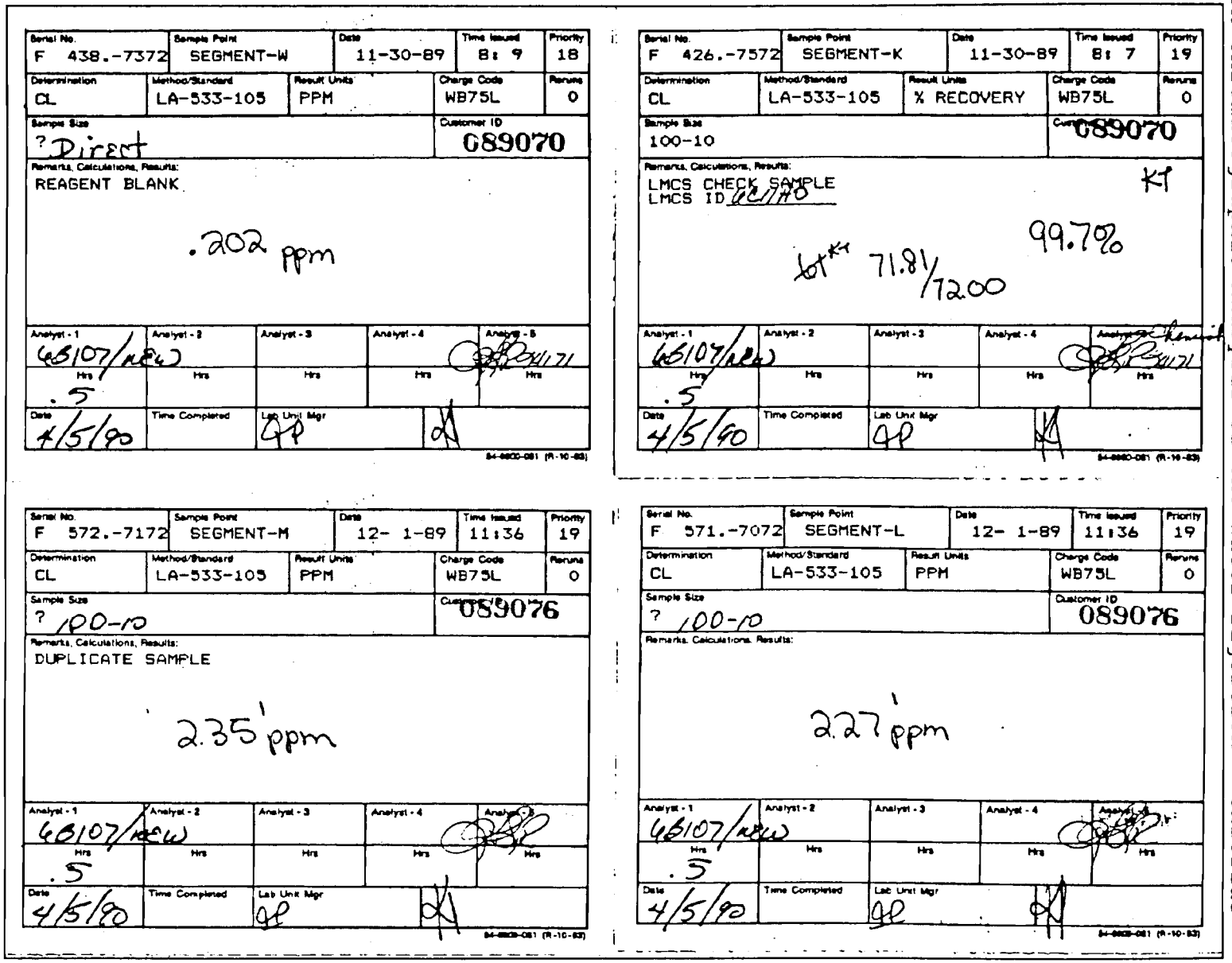
Completed

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C269	Chemist 94171			
Mary Franz	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
3-13-90		AP	SH

54-6600-061 (R-10-83)

Ion Chromatographic Analysis of the Water Digestion - Chloride



Serial No.	Sample Point	Date	Time Issued	Priority
F 438.-7372	SEGMENT-W	11-30-89	8: 9	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
CL	LA-533-105	PPM	WB75L	0

Sample Size: ? Direct

Customer ID: 089070

Remarks, Calculations, Results:
REAGENT BLANK

.202 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/NEW				[signature] 4/1/71
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date: 4/5/90 | Time Completed: | Lab Unit Mgr: [signature]

84-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 426.-7572	SEGMENT-K	11-30-89	8: 7	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
CL	LA-533-105	% RECOVERY	WB75L	0

Sample Size: 100-10

Customer ID: 089070

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 6C1/HO

KT

~~61~~ KT 71.81/72.00

99.7%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/NEW				[signature] 4/1/71
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date: 4/5/90 | Time Completed: | Lab Unit Mgr: [signature]

84-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 572.-7172	SEGMENT-M	12- 1-89	11:36	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
CL	LA-533-105	PPM	WB75L	0

Sample Size: ? 100-10

Customer ID: 089076

Remarks, Calculations, Results:
DUPLICATE SAMPLE

2.35' ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/NEW				[signature]
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date: 4/5/90 | Time Completed: | Lab Unit Mgr: [signature]

84-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 571.-7072	SEGMENT-L	12- 1-89	11:36	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
CL	LA-533-105	PPM	WB75L	0

Sample Size: ? 100-10

Customer ID: 089076

Remarks, Calculations, Results:

2.27' ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/NEW				[signature]
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date: 4/5/90 | Time Completed: | Lab Unit Mgr: [signature]

84-6600-081 (R-10-83)

Ion Chromatographic Analysis of the Water Digestion - Chloride

Serial No.	Sample Point	Date	Time Issued	Priority
F 574.-7572	SEGMENT-O	12- 1-89	11:36	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
CL	LA-533-105	% RECOVERY	WB75L	0

Sample Size	Customer ID
100-10	089076

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID EC11HO

97.5%

70.21/72.0

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68107/NEW				
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
4/5/90		

54-6600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 429.-7272	SEGMENT-N	11-30-89	8: 8	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
CL	LA-533-105	% RECOVERY	WB75L	0

Sample Size	Customer ID
? 100-10	089[illegible]

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID 55C9-77
SPIKE VOLUME .300/5ml

See Reverse Side

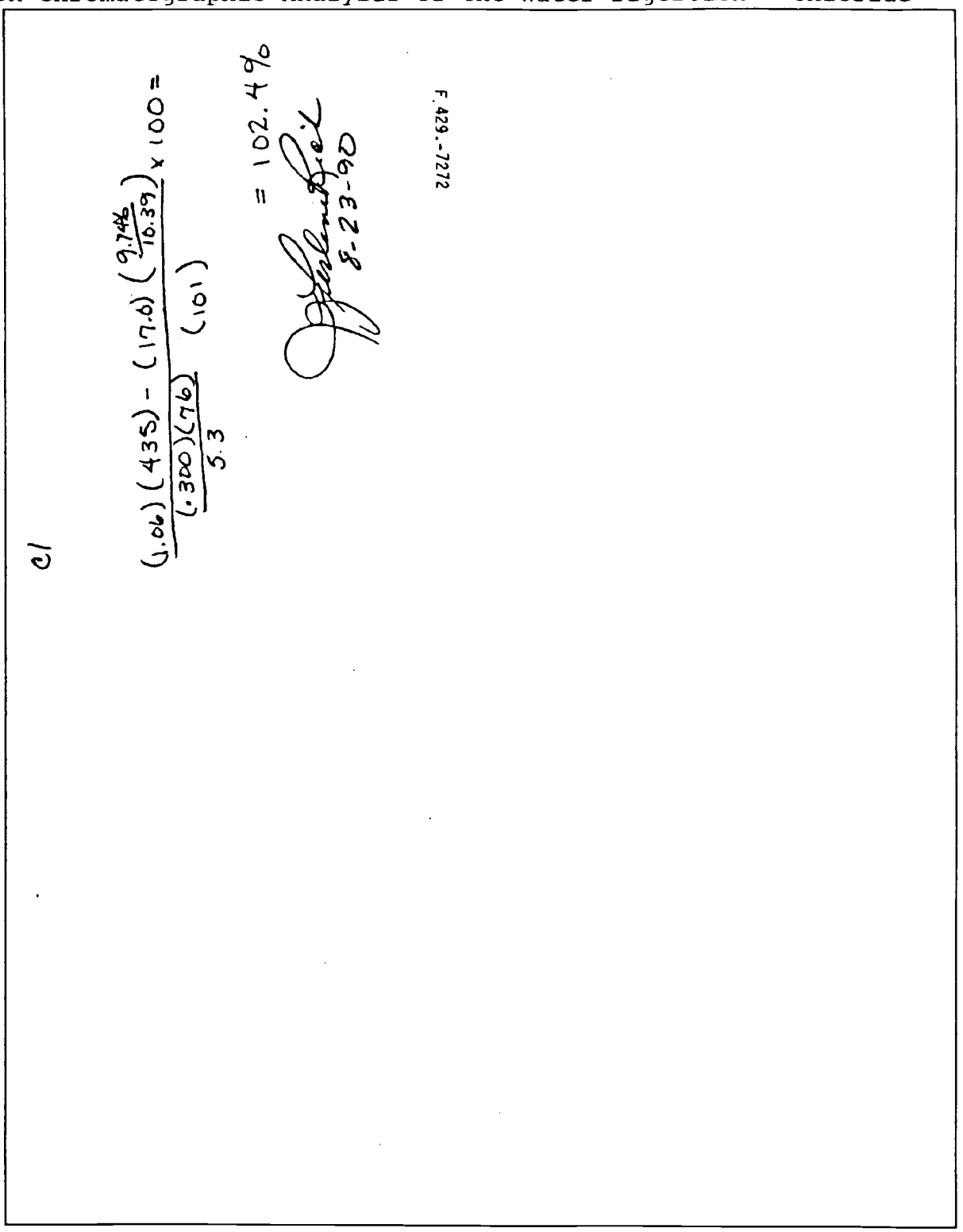
$\cancel{1.07}\left[\frac{(4.348^2 - 17.0)\,1.07}{434.5}\right] \times 100 = \cancel{103.9\%}$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68107/NEW				99171
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
4/5/90		

54-6600-061 (R-10-83)

Ion Chromatographic Analysis of the Water Digestion - Chloride



Serial No	Sample Point	Date	Time Issued	Priority
F 438.-7373	SEGMENT-W	11-30-89	8: 9	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	PPM	WB75L	0

Sample Size: ? Direct

Customer ID: ~~089070~~

Remarks, Calculations, Results:
REAGENT BLANK

<1 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
WB107/NEW				94171
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date: 4/5/90 | Time Completed: | Lab Unit Mgr: AP

54-6800-081 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
F 426.-7573	SEGMENT-K	11-30-89	8: 7	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	% RECOVERY	WB75L	0

Sample Size: 100-10

Customer ID: ~~089070~~

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID WC1110

161.9%

616.6/599

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
WB107/NEW				94171
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date: 4/5/90 | Time Completed: | Lab Unit Mgr: AP

54-6800-081 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
F 572.-7173	SEGMENT-M	12- 1-89	11:36	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	PPM	WB75L	0

Sample Size: ? 100-10

Customer ID: 089076

Remarks, Calculations, Results:
DUPLICATE SAMPLE

7.80^{2} ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
WB107/NEW				
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date: 4/5/90 | Time Completed: | Lab Unit Mgr: AP

54-6800-081 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
F 571.-7073	SEGMENT-L	12- 1-89	11:36	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	PPM	WB75L	0

Sample Size: ? 100-10

Customer ID: 089076

Remarks, Calculations, Results:

8.31^{2} ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
WB107/NEW				
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date: 4/5/90 | Time Completed: | Lab Unit Mgr: AP

54-6800-081 (R-10-83)

Ion Chromatographic Analysis of the Water Digestion - Nitrate

Serial No	Sample Point	Date	Time Issued	Priority
F 574.-7573	SEGMENT-O	12- 1-89	11:37	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	% RECOVERY	WB75L	0

Sample Size	Customer ID
100-10	089076

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 6C17H0

615.4/599 102.7%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68107/NEW				[signature]
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
4/5/90		[signature]

84-6800-081 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
F 429.-7273	SEGMENT-N	11-30-89	8: 8	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	% RECOVERY	WB75L	0

Sample Size	Customer ID
? 100-10	089070

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID 3569-72
SPIKE VOLUME 300/5ml

See Reverse Side →

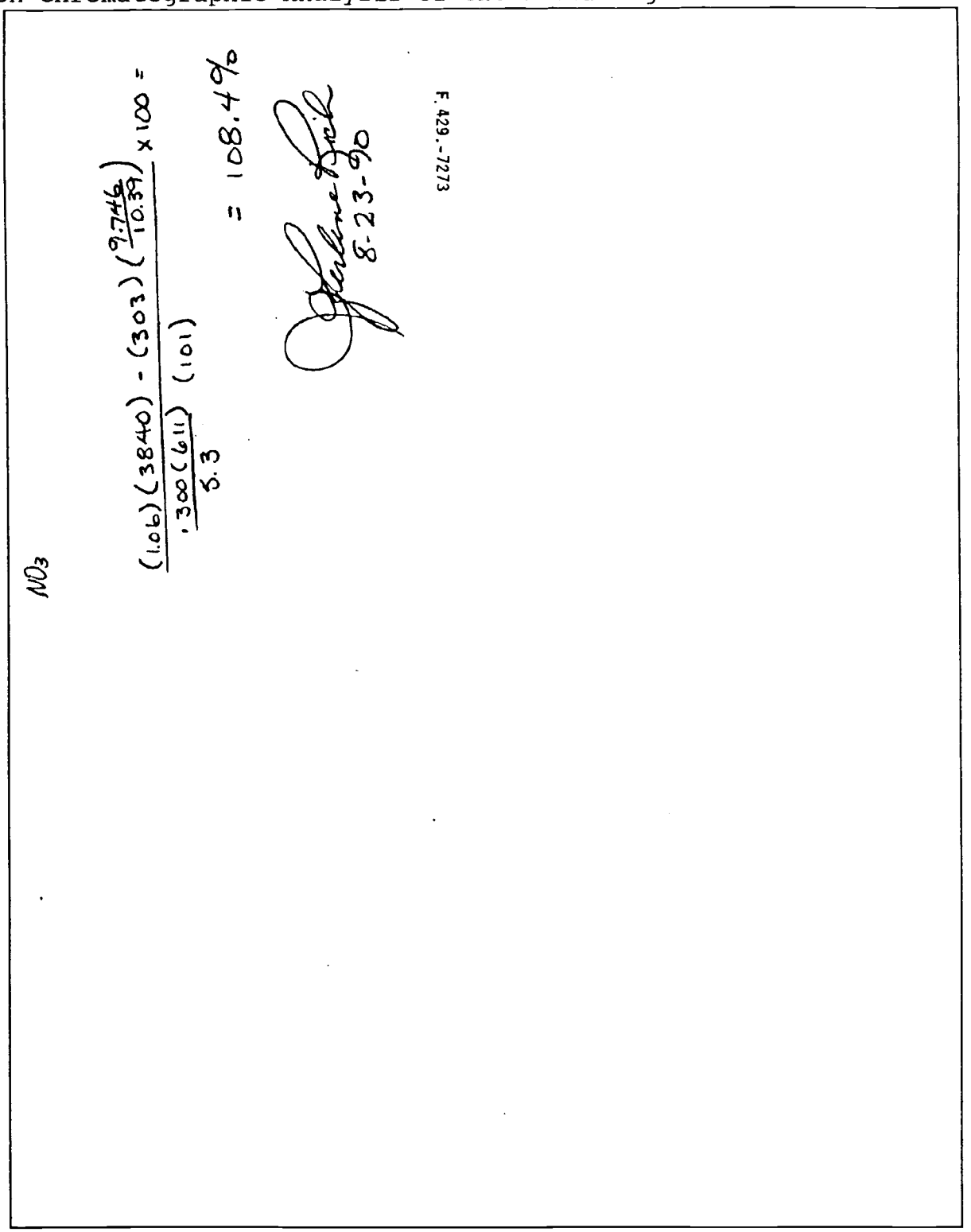
$$\cancel{1.07}\left[\frac{(3.84^3 - 3.03^2)\,107}{3493.1}\right]100 = \cancel{109.4\%}$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68107/NEW				[signature]
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
4/5/90		[signature]

84-6800-081 (R-10-83)

Ion Chromatographic Analysis of the Water Digestion - Nitrate



Serial No.	Sample Point	Date	Time Issued	Priority
F 438.-7374	SEGMENT-W	11-30-89	8: 9	18

Determination	Method/Standard	Result Units	Charge Code	Rerune
P04	LA-533-105	PPM	WB75L	0

Sample Size: ? Direct
Customer ID: 089070

Remarks, Calculations, Results:
REAGENT BLANK

<1 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68107/MEW				
Hrs: .5	Hrs	Hrs	Hrs	Hrs

Date: 4/5/90 | Time Completed: | Lab Unit Mgr: QP

84-6800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 426.-7574	SEGMENT-K	11-30-89	8: 7	19

Determination	Method/Standard	Result Units	Charge Code	Rerune
P04	LA-533-105	% RECOVERY	WB75L	0

Sample Size: 100-10
Customer ID: 089070

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 6C1176

100.8% *

6038/599

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68107/MEW				
Hrs: .5	Hrs	Hrs	Hrs	Hrs

Date: 4/5/90 | Time Completed: | Lab Unit Mgr: QP

84-6800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 572.-7174	SEGMENT-M	12- 1-89	11:36	19

Determination	Method/Standard	Result Units	Charge Code	Rerune
P04	LA-533-105	PPM	WB75L	0

Sample Size: ? 100-10
Customer ID: 089076

Remarks, Calculations, Results:
DUPLICATE SAMPLE

8.71[1] ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68107/MEW				
Hrs: .5	Hrs	Hrs	Hrs	Hrs

Date: 4/5/90 | Time Completed: | Lab Unit Mgr:

84-6800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 571.-7074	SEGMENT-L	12- 1-89	11:36	19

Determination	Method/Standard	Result Units	Charge Code	Rerune
P04	LA-533-105	PPM	WB75L	0

Sample Size: ? 100-10
Customer ID: 089076

Remarks, Calculations, Results:

1.00[2] ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68107/MEW				
Hrs: .5	Hrs	Hrs	Hrs	Hrs

Date: 4/5/90 | Time Completed: | Lab Unit Mgr: QP

84-6800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 429.-7274	SEGMENT-N	11-30-89	8: 8	19

Determination	Method/Standard	Result Units	Charge Code	Rerun
P04	LA-533-105	% RECOVERY	WB75L	0

Sample Size: ? 100-10

Customer ID: 089070

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID 3569-77
SPIKE VOLUME 300/5 ml

See Reverse Side

QP

$\frac{1.07(3.452^3)}{3464.5} \times 100 =$ ~~101.07%~~

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68107/NEW				
Hrs: .5	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
4/5/90		QP

54-8600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 574.-7574	SEGMENT-O	12- 1-89	11:37	19

Determination	Method/Standard	Result Units	Charge Code	Rerun
P04	LA-533-105	% RECOVERY	WB75L	0

Sample Size: 100-10

Customer ID: 089076

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 6C1140

KP

607.9/599 101.5%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
68107/NEW				
Hrs: .5	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
4/5/90		QP

54-8600-081 (R-10-83)

Ion Chromatographic Analysis of the Water Digestion - Phosphate

PO_4

$$\frac{\frac{(1.06)(3450) - 0}{.300(606)}(101)}{5.3} \times 100 = 105.6\%$$

F 429.-7274

8-23-90

Serial No.	Sample Point	Date	Time Issued	Priority
F 438.-7375	SEGMENT-W	11-30-89	8: 9	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
SO4	LA-533-105	PPM	WB75L	0

Sample Size: ? Direct
Customer ID: 089070

Remarks, Calculations, Results:
REAGENT BLANK

<1 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/MEW				4/4/71
Hrs .5	Hrs	Hrs	Hrs	Hrs
Date 4/5/90	Time Completed	Lab Unit Mgr		

54-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 426.-7575	SEGMENT-K	11-30-89	8: 7	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
SO4	LA-533-105	% RECOVERY	WB75L	0

Sample Size: 100-10
Customer ID: 089070

Remarks, Calculations, Results:
LMCS CHECK SAMPLE *1
LMCS ID 6C1140

100.8%

6268/622

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/MEW				4/4/71
Hrs .5	Hrs	Hrs	Hrs	Hrs
Date 4/5/90	Time Completed	Lab Unit Mgr		

54-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 572.-7175	SEGMENT-M	12- 1-89	11:36	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
SO4	LA-533-105	PPM	WB75L	0

Sample Size: ? 100-10
Customer ID: 089076

Remarks, Calculations, Results:
DUPLICATE SAMPLE

4.83 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/MEW				
Hrs .5	Hrs	Hrs	Hrs	Hrs
Date 4/5/90	Time Completed	Lab Unit Mgr		

54-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 571.-7075	SEGMENT-L	12- 1-89	11:36	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
SO4	LA-533-105	PPM	WB75L	0

Sample Size: ? 100-10
Customer ID: 089076

Remarks, Calculations, Results:

5.06 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/MEW				
Hrs .5	Hrs	Hrs	Hrs	Hrs
Date 4/5/90	Time Completed	Lab Unit Mgr		

54-6600-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 574.-7575	SEGMENT-O	12- 1-89	11:37	19

Determination	Method/Standard	Result Units	Charge Code	Rerune
SO4	LA-533-105	% RECOVERY	WB75L	0

Sample Size	Customer ID
100-10	089076

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 6C11A0

625.2/622 1005%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/new				
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
4/5/90		

54-6800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 429.-7275	SEGMENT-N	11-30-89	8: 8	19

Determination	Method/Standard	Result Units	Charge Code	Rerune
SO4	LA-533-105	% RECOVERY	WB75L	0

Sample Size	Customer ID
? 100-10	089070

Remarks, Calculations, Results:
SPIKE SAMPLE
SPIKE ID 3509-77
SPIKE VOLUME 100/5ml

See Reverse Side

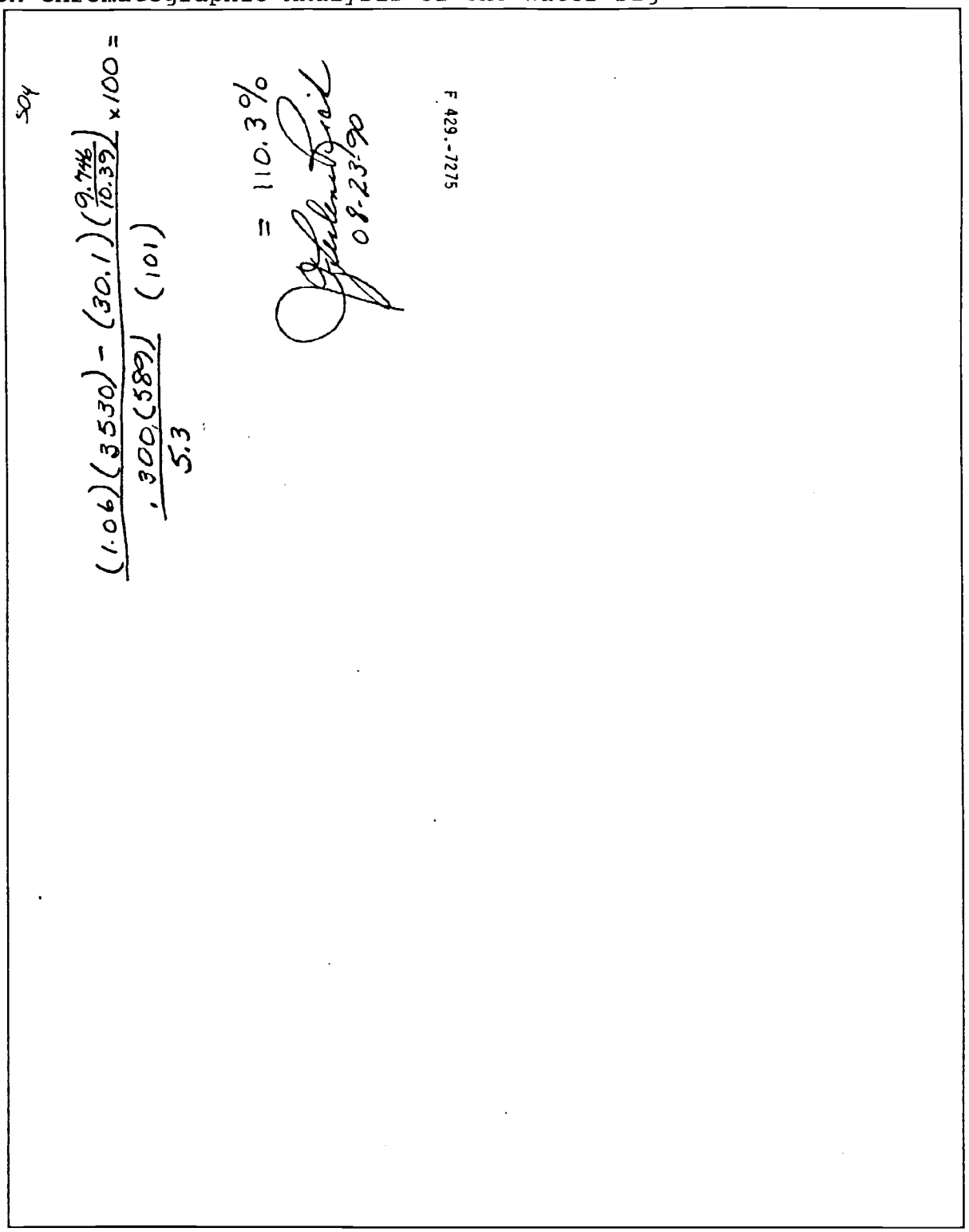
$$\frac{1.07(3.527^3 - 3.01^1)}{3355.9} \times 100 = 111.5\%$$

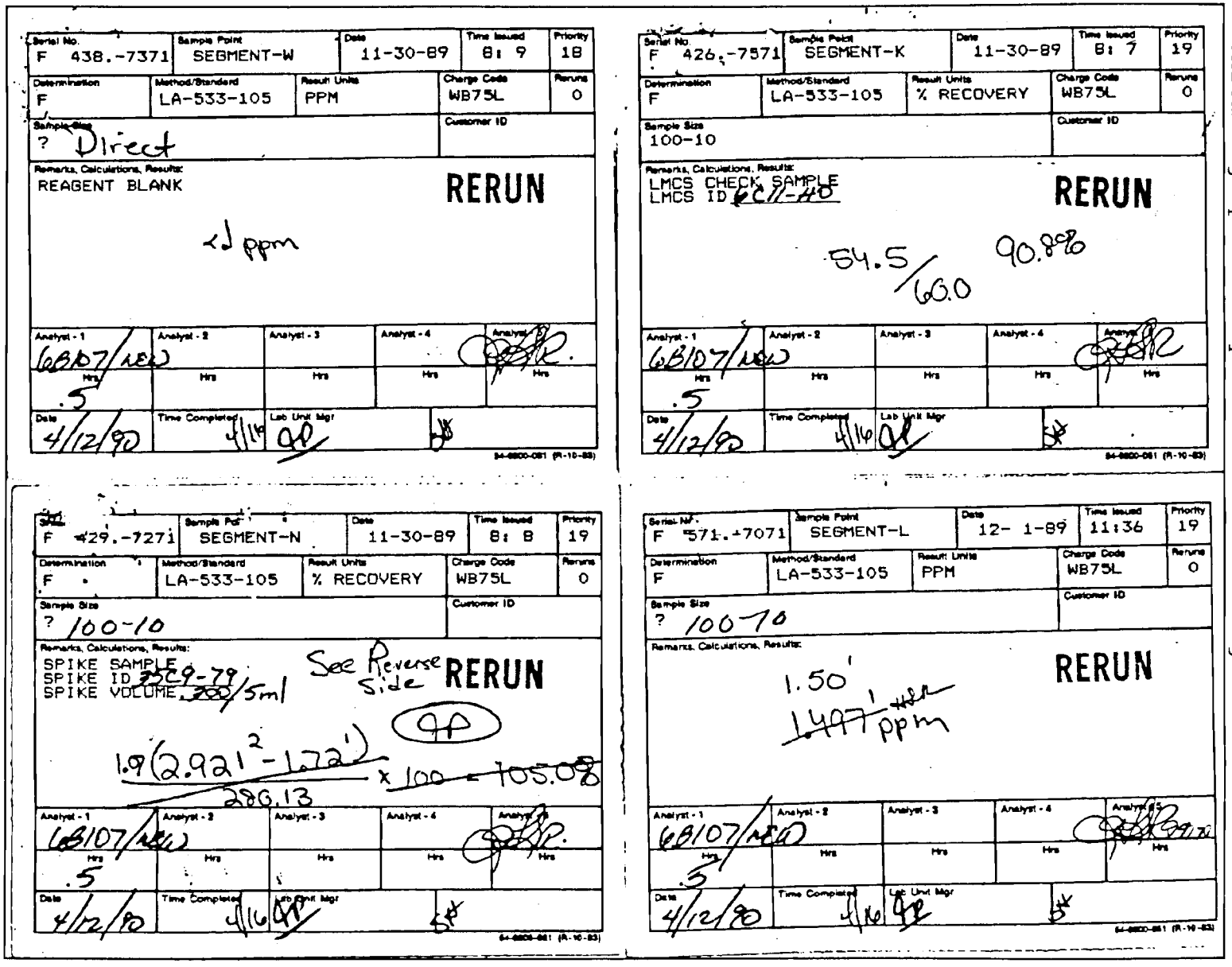
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6B107/new				34170
Hrs .5	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
4/5/90		

54-6800-061 (R-10-83)

Ion Chromatographic Analysis of the Water Digestion





Serial No. F 438.-7371 | Sample Point SEGMENT-W | Date 11-30-89 | Time Issued 8: 9 | Priority 18
Determination F | Method/Standard LA-533-105 | Result Units PPM | Charge Code WB75L | Reruns 0
Sample Size ? Direct | Customer ID
Remarks, Calculations, Results:
REAGENT BLANK
RERUN
<1 ppm
Analyst - 1 6B107/NEW .5 Hrs | Analyst - 2 Hrs | Analyst - 3 Hrs | Analyst - 4 Hrs | Analyst 5 Hrs
Date 4/12/90 | Time Completed 4/14 | Lab Unit Mgr QP

Serial No. F 426.-7571 | Sample Point SEGMENT-K | Date 11-30-89 | Time Issued 8: 7 | Priority 19
Determination F | 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 6C11-40
RERUN
54.5/60.0 90.8%
Analyst - 1 6B107/NEW .5 Hrs | Analyst - 2 Hrs | Analyst - 3 Hrs | Analyst - 4 Hrs | Analyst 5 Hrs
Date 4/12/90 | Time Completed 4/16 | Lab Unit Mgr QP

Serial No. F 429.-7271 | Sample Point SEGMENT-N | Date 11-30-89 | Time Issued 8: 8 | Priority 19
Determination F | Method/Standard LA-533-105 | Result Units % RECOVERY | Charge Code WB75L | Reruns 0
Sample Size ? 100-10 | Customer ID
Remarks, Calculations, Results:
SPIKE SAMPLE
SPIKE ID 5C9-79
SPIKE VOLUME 5ml
See Reverse Side
RERUN
QP
$\frac{1.9(2.921^2 - 1.72^2)}{286.13} \times 100 = 105.0\%$
Analyst - 1 6B107/NEW .5 Hrs | Analyst - 2 Hrs | Analyst - 3 Hrs | Analyst - 4 Hrs | Analyst 5 Hrs
Date 4/12/90 | Time Completed 4/16 | Lab Unit Mgr QP

Serial No. F 571.-7071 | Sample Point SEGMENT-L | Date 12- 1-89 | Time Issued 11:36 | Priority 19
Determination F | Method/Standard LA-533-105 | Result Units PPM | Charge Code WB75L | Reruns 0
Sample Size ? 100-10 | Customer ID
Remarks, Calculations, Results:
1.50
1.497 ppm
RERUN
Analyst - 1 6B107/NEW .5 Hrs | Analyst - 2 Hrs | Analyst - 3 Hrs | Analyst - 4 Hrs | Analyst 5 Hrs
Date 4/12/90 | Time Completed 4/16 | Lab Unit Mgr QP

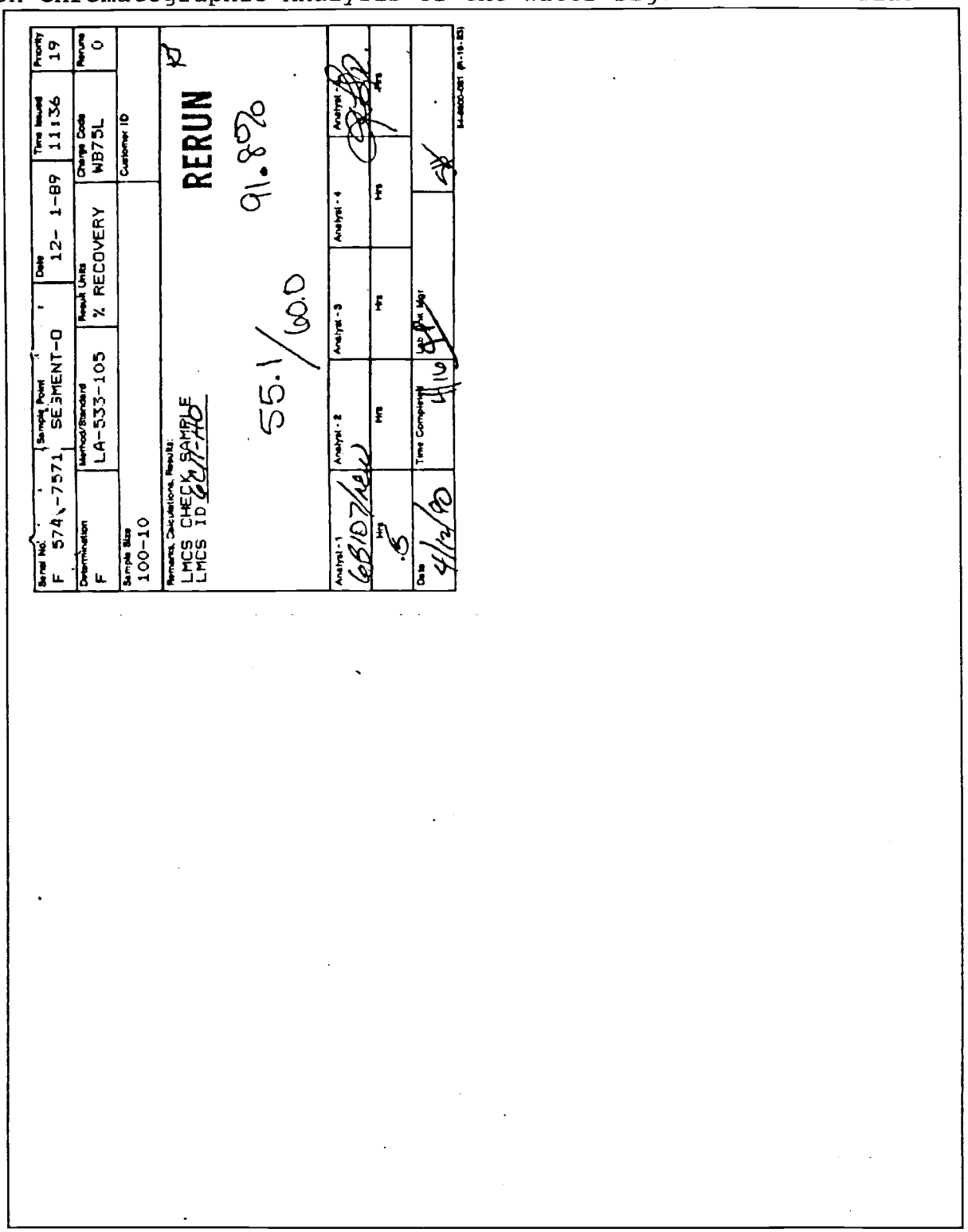
F 429.

$$\frac{\frac{5.3\,mL}{5.0\,mL}\,(292)\,\cancel{(305)} - (17.2)\left(\frac{9.746\,g/L}{10.39\,g/L}\right)}{\frac{(.300\,mL)(60\,ppm)}{5.3\,mL}\,(101)} \times 100 =$$

$= \cancel{89.6\%}$ 85.6%

8-23-90

Ion Chromatographic Analysis of the Water Digestion - Fluoride



Serial No.	Sample Point	Date	Time Issued	Priority
F 1198.-7371	SEG.COMP#14	3- 6-90	17:37	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
F	LA-533-105	PPM	E21D1	0

Sample Size: ? Direct
Customer ID: S00081
Remarks, Calculations, Results:
REAGENT BLANK
< .1 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
16807/REW				
Hrs: .5	Hrs	Hrs	Hrs	Hrs

Date: 4/17/90 | Time Completed | Lab Unit Mgr

54-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1197.-7571	SEG.COMP#13	3- 6-90	17:36	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
F	LA-533-105	% RECOVERY	E21D1	0

Sample Size: ? 100-10
Customer ID: S00081
Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID GC11-HP
DMS
97.2%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
16B107/REW				
Hrs: .5	Hrs	Hrs	Hrs	Hrs

Date: 4/17/90 | Time Completed | Lab Unit Mgr

54-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1201.-7271	SEG.COMP#17	3- 6-90	17:41	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
F	LA-533-105	% RECOVERY	E21D1	0

Sample Size: ? Direct
Customer ID: 900081
Remarks, Calculations, Results:
SPIKE SAMPLE
SPIKE ID 35-Cg-80
SPIKE VOLUME 5 mL / 300 mL

$$\frac{\left(\frac{5.3}{50}\right)(2.87) - \left[\left(\frac{9.974}{10.6}\right)(0)\right]}{\left(\frac{.3}{5.0}\right)(5.0)(1)} = \frac{3.042}{3.06} = 99.4\%$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
16B107				
Hrs	Hrs	Hrs	Hrs	Hrs

Date: 4/17/90 | Time Completed | Lab Unit Mgr

54-6800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 1202.-7571	SEG.COMP#18	3- 6-90	17:43	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
F	LA-533-105	% RECOVERY	E21D1	0

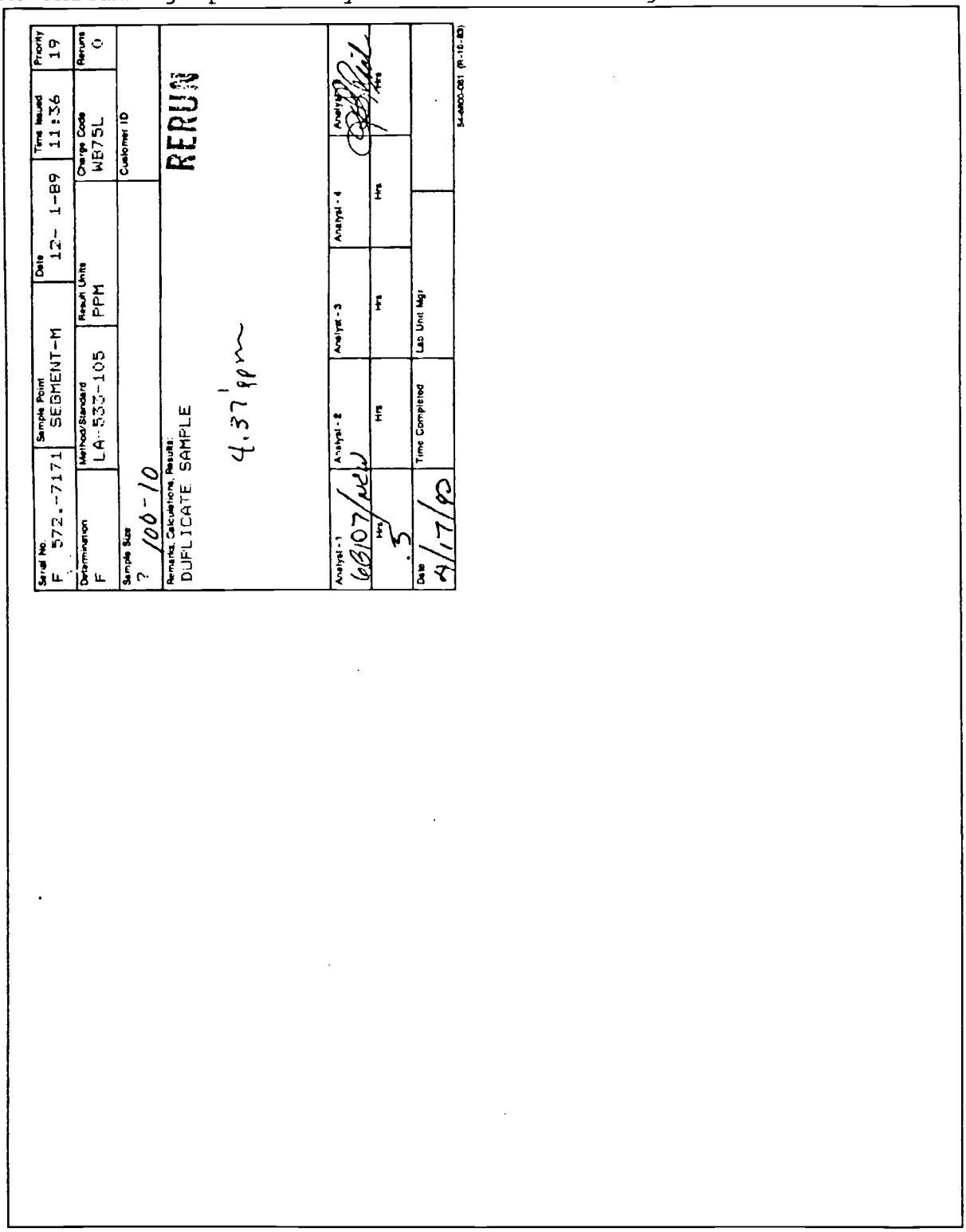
Sample Size: ? 100-10
Customer ID: S00081
Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID GC11-HP
100.3%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
16B107/REW				
Hrs: .5	Hrs	Hrs	Hrs	Hrs

Date: 4/17/90 | Time Completed | Lab Unit Mgr

54-6800-081 (R-10-83)

Ion Chromatographic Analysis of the Water Digestion - Fluoride



Total Organic Carbon Analysis on the Water Digestion

Serial No.	Sample Point	Date	Time Issued	Priority
F 582.-7326	SEGMENT-W	12- 1-89	11:37	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	G/L	WB75L	0

Sample Size: ? 200uL

Customer ID: 089076

Remarks, Calculations, Results:
REAGENT BLANK

2.8 ug

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				R Bennett
Hrs: Ed Cohen	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
4-10-90	4/17	[signature]	SH

54-6800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 570.-7526	SEGMENT-K	12- 1-89	11:35	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	WB75L	0

Sample Size: ? 200uL-2mL-200uL

Customer ID: 089076

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID 70C11C

2.89 mg/L / 3.0 u

96.3% DMS

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				R Bennett
Hrs: Ed Cohen	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
4-10-90	4/17	[signature]	SH

54-6800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 572.-7126	SEGMENT-M	12- 1-89	11:36	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	G/L	WB75L	0

Sample Size: ? 1mL+100uL.5m H_2SO_4-200uL

Customer ID: 089076

Remarks, Calculations, Results:
DUPLICATE SAMPLE

7.70 $^{-3}$ g/L

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				R Bennett
Hrs: Ed Cohen	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
4-10-90	4/17	[signature]	SH

54-6800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 571.-7026	SEGMENT-L	12- 1-89	11:35	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	G/L	WB75L	0

Sample Size: ? 1mL+100uL.5m H_2SO_4-200uL

Customer ID: 089076

Remarks, Calculations, Results:

8.25 $^{-3}$ g/L
~~6.88~~ $^{-4}$ m
DMS

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				R Bennett
Hrs: Ed Cohen	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
4-10-90	4/17	[signature]	SH

54-6800-061 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
F 574.-7526	SEGMENT-O	12- 1-89	11:36	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	WB75L	0

Sample Size	Customer ID
? 200uL-2mL-200uL	089076

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID 70C11C

97.3%

2.92 g/l / 3.00

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cole				

Date	Time Completed	Lab Unit Mgr
4-10-90	4/17	

84-6800-061 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
F 573.-7226	SEGMENT-N	12- 1-89	11:36	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	WB75L	0

Sample Size	Customer ID
? 200uL+100uL .5M H_2SO_4 - 200uL	089076

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID 70C11
SPIKE VOLUME 200uL

98.3%

$\frac{(22.2 - 2.8)(4.3 - 28)}{119.9} \times 100$ 83%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cole				

Date	Time Completed	Lab Unit Mgr
4-10-90	4/17	

84-6800-061 (R-10-83)

Acid Digestion

Serial No.	Sample Point	Date	Time Issued	Priority
F 577.-8100	SEGMENT-R	12- 1-89	11:37	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
ACD-DGST	LA-505-159	G/L	WB75L	0

Sample Size: ? 50mL

Customer ID: 089076

Ref: D G V C

1.06x10¹g/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65283				Safones
Hrs	Hrs	Hrs	Hrs	Hrs
Janice G. White				

Date: 4-26-90 | Time Completed: | Lab Unit Mgr: Ted M. Pool | Dyane Smith

54-6600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 578.-8200	SEGMENT-S	12- 1-89	11:37	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
ACD-DGST	LA-505-158	% RECOVERY	WB75L	0

Sample Size: ? 50mL

Customer ID: 089076

Remarks, Calculations, Results:

SPIKED ANALYSIS
GRAMS SAMPLE
VOLUME ON
COMPLETION
VOLUME SPIKE 15mL
SPIKE ID
5mL @
78C11K
82B38G + 77C11J

9.97g/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65283				Safones
Hrs	Hrs	Hrs	Hrs	Hrs
Janice G. White				

Date: 4-26-90 | Time Completed: | Lab Unit Mgr: Ted M. Pool | Dyane Smith

54-6600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 583.-8300	SEGMENT-X	12- 1-89	11:38	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
ACD-DGST	LA-505-159	G/L	WB75L	0

Sample Size: ? 50mL

Customer ID: 089076

Remarks, Calculations, Results:

REAGENT BLANK
VOLUME ON
COMPLETION 50uL

Completed

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65283			Safones	
Hrs	Hrs	Hrs	Hrs	Hrs
Janice G. White				

Date: 4-26-90 | Time Completed: | Lab Unit Mgr: Ted M. Pool | Dyane Smith

54-6600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 576.-8000	SEGMENT-Q	12- 1-89	11:37	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
ACD-DGST	LA-505-159	G/L	WB75L	0

Sample Size: ? 50mL

Customer ID: 089076

#375 5.05g

1.10x10¹g/l

WHC N 313 4

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65283				
Hrs	Hrs	Hrs	Hrs	Hrs
Janice G. White			Safones	

Date: 4-26-90 | Time Completed: | Lab Unit Mgr: Ted M. Pool | Dyane Smith

54-6600-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 578.-8250	SEGMENT-S	12- 1-89	11:37	23

Determination	Method/Standard	Result Units	Charge Code	Rerune
ICP	LA-505-151	PPM	WB75L	0

Sample Size: ? 100-10 E 500-10

Customer ID: 089076

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
Janice White				
Date	Time Completed	Lab Unit Mgr		
4-30-90				

54-8800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 579.-8550	SEGMENT-T	12- 1-89	11:37	23

Determination	Method/Standard	Result Units	Charge Code	Rerune
ICP	LA-505-151	% RECOVERY	WB75L	0

Sample Size: ?

Customer ID: 089076

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID_____

complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65283				
Hrs	Hrs	Hrs	Hrs	Hrs
Janice White			Kathy Thornsberry	
Date	Time Completed	Lab Unit Mgr		
4-30-90				

54-8800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 576.-8050	SEGMENT-Q	12- 1-89	11:37	23

Determination	Method/Standard	Result Units	Charge Code	Rerune
ICP	LA-505-151	PPM	WB75L	0

Sample Size: ? 100-10 E 500-10

Customer ID: 089076

Remarks, Calculations, Results:

complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65283				
Hrs	Hrs	Hrs	Hrs	Hrs
Janice White				
Date	Time Completed	Lab Unit Mgr		
4-30-90				

54-8800-081 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
F 577.-8150	SEGMENT-R	12- 1-89	11:37	23

Determination	Method/Standard	Result Units	Charge Code	Rerune
ICP	LA-505-151	PPM	WB75L	0

Sample Size: ? 100-10 E 500-10

Customer ID: 089076

Remarks, Calculations, Results:

DUPLICATE SAMPLE

complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65283				
Hrs	Hrs	Hrs	Hrs	Hrs
Janice White				
Date	Time Completed	Lab Unit Mgr		
4-30-90				

54-8800-081 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
F 575.-8550	SEGMENT-P	12- 1-89	11:37	23

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	% RECOVERY	WB75L	0

Sample Size	Customer ID
?	089076

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID_____

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65283				[signature]
Hrs [signature]	Hrs	Hrs	Hrs [signature]	Hrs

Date	Time Completed	Lab Unit Mgr
4-30-90		[signature]

54-6800-061 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
F 583.-8350	SEGMENT-X	12- 1-89	11:38	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	PPM	WB75L	0

Sample Size	Customer ID
? Direct	089076

Remarks, Calculations, Results:
REAGENT BLANK

complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65283				
Hrs [signature]	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
~~4-30-90~~	8/21/90	[signature]

54-6800-061 (R-10-83)

APPENDIX B
ANALYTICAL DETECTION LIMITS

SINGLE SHELL TANK PROJECT
Analytical Detection Limits
October 12, 1990

The following detection limits are derived on ideal matrices. These values were derived by using either calibration standards or pure matrix standards. Detection limits on actual single shell tank samples are likely to be much higher. No information regarding procedure detection limits is available for procedures not listed in this report.

Procedure LA-355-131
Arsenic Analysis by Hydride Generation Atomic Absorption

Detection Limit = 0.005 ppm in solution
Typical sample dilution for the Fusion Dissolution was 0.0025g/mL.
Typical sample dilution for the Water Digestion was 0.010g/mL.
Typical sample dilution for the acid Digestion was 0.010g/mL.

Procedure LA-325-102
Mercury Analysis by Atomic Absorption Manual Cold Vapor Technique

Detection Limit = 0.002 ppm in solution
Typical sample dilution for the Fusion Dissolution was 0.0025g/mL.
Typical sample dilution for the Water Digestion was 0.010g/mL.
Typical sample dilution for the acid Digestion was 0.010g/mL.
Solids were analyzed directly.

Procedure LA-362-131
Selenium Analysis by Hydride Generation Atomic Absorption

Detection Limit = 0.005 ppm in solution
Typical sample dilution for the Fusion Dissolution was 0.0025g/mL.
Typical sample dilution for the Water Digestion was 0.010g/mL.
Typical sample dilution for the acid Digestion was 0.010g/mL.

Procedure LA-533-105
Anion Analysis on Dionex Model 4000i

Typical sample dilution was 0.000099g/mL

Fluoride
Detection Limit in solution = 0.09 ppm.

Chloride
Detection Limit in solution = 0.04 ppm.

Nitrate
Detection Limit in solution = 0.24 ppm.

Phosphate
Detection Limit in solution = 0.13 ppm.

Sulfate
Detection Limit in solution = 0.13 ppm.

Procedure LA-622-102
Determination of Carbonate in Solutions by Coulometry

Detection Limit = 5 ppm in solution
Typical sample dilution was 0.01g/mL

Procedure LA-344-105
Total Organic Carbon
Determination of Carbon Insolation by Combustion and Coulometry

Detection Limit = 5.5 ppm in solution
Typical sample dilution was 0.01g/mL

Procedure LA-505-151
Inductively Coupled Plasma (ICP) Emission Spectrometer Operations and Analysis

Typical sample dilution for the Fusion Dissolution was 0.00019g/mL.

Typical sample dilution for the Water Digestion was 0.000476g/mL.

Typical sample dilution for the acid Digestion was 0.000476g/mL.

Instrument Detection Limit ppm.

Aluminum	0.0745	Antimony	0.1424
Arsenic	0.0223	Barium	0.0026
Beryllium	0.0006	Bismuth	0.0839
Boron	0.0083	Cadmium	0.0039
Calcium	0.0002	Cerium	0.1359
Chromium	0.0039	Cobalt	0.0246
Copper	0.0158	Europium	0.0024
Iron	0.0073	Lanthanum	0.0141
Lead	0.0273	Lithium	0.0032
Magnesium	0.0001	Manganese	0.0011
Mercury	0.0036	Molybdenum	0.0049
Neodymium	0.2130	Nickel	0.0147
Phosphorous	0.0308	Potassium	0.2122
Samarium	0.1525	Selenium	0.0631
Silicon	0.0314	Silver	0.0183
Sodium	0.0483	Strontium	0.0010
Sulfur	0.0163	Tantalum	0.0273
Thallium	0.0646	Thorium	0.0122
Tin	0.0144	Titanium	0.0035
Tungsten	0.0273	Uranium	1.1405
Vanadium	0.0186	Zinc	0.0017
Zirconium	0.0141		

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Westinghouse Hanford Company

012367

4 of 8

OSM RCRA LEVEL C DATA ASSESSMENT

DATE 12-17-90 (Conquest Small)

REVIEWED BY C.J. Simiele

LABORATORY WHC-222S

CASE # SST-241-U-110

SDG # Core 13 Composite

SAMPLES/MATRIX Seq# (1) 89-073 (2) 89-074 (3) 89-075 (4) 89-076

LABID:

Untreated: E1067

Acid Digest: E1085

Fusion : E1073

Water Leach: F1079

DATA ASSESSMENT SUMMARY

QUALITY CONTROL CHECK	ANALYSIS	Hg[u]	CN[u]	DH#%Water (Duplicate Analyses only)
1.	Holding Time	X	X	—
2.	Calibration	O	O	—
3.	Analytical Blank	O	O	—
4.	LCS	*	*	*
5.	ICS (ICP ONLY)	N/A	N/A	N/A
6.	Matrix Spike	~~O~~ X (LCS)	O	—
7.	Duplicate Analyses	O	O	O
8.				
9.				
10.				

O = data had no problems
X = data qualified due to minor problems
M = data qualified due to major problems/some data may be unusable

OVERALL ASSESSSMENT: (Samples not qualified based on exceeded holding times.)

NOTES: * = no data provided with data package.
No Radiochemistry validation done on data package.
u= untreated; A=acid digest, f= fusion prep., w=water leach.
o Refer to the corresponding attachments for explanation of any problems.

Westinghouse
Hanford Company

OSM RCRA LEVEL C DATA ASSESSMENT

DATE 12-17-90 (Conrad J. Simuels) SAMPLES/MATRIX Seq#(1)89-073 (2)89-074
(3)89-075 (4)89-076

REVIEWED BY C.J. Simiele

LABID:

LABORATORY WHC-222S — Untreated: F1067

CASE # SST-241-U-110 — Acid Digest: F1085

SDG # Core 13 Composite — Fusion : F1073
Water Leach: F1079

DATA ASSESSMENT SUMMARY

QUALITY CONTROL CHECK	ANALYSIS	ICP^F	IC^W	TOC^W
1. Holding Time		O	X	X
2. Calibration		O	O	O
3. Analytical Blank		X	O	O
4. LCS		*	*	*
5. ICS (ICP ONLY)		*	N/A	N/A
6. Matrix Spike		M	M	O
7. Duplicate Analyses		X	X	X
8.				
9.				
10.				

O = data had no problems
X = data qualified due to minor problems
M = data qualified due to major problems/some data may be unusable

OVERALL ASSESSSMENT: (Samples not qualified based on exceeded holding times.)

NOTES: * = no data provided with data package.
No Radiochemistry Validation done on data package.
U= untreated; A=acid digest, f= fusion prep., W=water leach.
o Refer to the corresponding attachments for explanation of any problems.

Westinghouse
Hanford Company

OSM RCRA LEVEL C DATA ASSESSMENT

DATE 12-17-90 (Comp. J. Simiele)

REVIEWED BY C.J. Simiele

LABORATORY WHC-222S

CASE # SST-241-U-110

SDG # Core 13 Composite

SAMPLES/MATRIX Seq# (1) 89-073 (2) 89-074 (3) 89-075 (4) 89-076

LABID:
Untreated: F1067
Acid Digest: F1085
Fusion : F1073
Water Leach: F1079

DATA ASSESSMENT SUMMARY

QUALITY CONTROL CHECK	ANALYSIS	NH_3^W	CO_3^W	NO_2^W
1. Holding Time		X	X	X
2. Calibration		O	O	O
3. Analytical Blank		O	O	O
4. LCS		*	*	*
5. ICS (ICP ONLY)		N/A	N/A	N/A
6. Matrix Spike		O	O	O
7. Duplicate Analyses		X	X	O
8.				
9.				
10.				

O = data had no problems
X = data qualified due to minor problems
M = data qualified due to major problems/some data may be unusable

OVERALL ASSESSSMENT: (Samples not qualified based on exceeded holding times.)

NOTES: * = no data provided with data package.
No Radiochemistry Validation done on data package.
U= untreated; A= acid digest, f= fusion prep., W= water leach.
o Refer to the corresponding attachments for explanation of any problems.

Westinghouse
Hanford Company

OSM RCRA LEVEL C DATA ASSESSMENT

DATE 12-17-90 (Connie J. Simpley) SAMPLES/MATRIX Seq#(1)89-073 (2)89-074
(3)89-075 (4)89-076

REVIEWED BY C.J. Simiele

LABORATORY WHC-222S

CASE # SST-241-U-110

SDG # Core 13 Composite

LABID:
Untreated: E1067
Acid Digest: E1085
Fusion : E1073
Water Leach: E1079

DATA ASSESSMENT SUMMARY

QUALITY CONTROL CHECK	ANALYSIS	ICP^W	As^W	Hg^W
1. Holding Time		X	O	X
2. Calibration		O	O	O
3. Analytical Blank		X	O	X
4. LCS		*	*	*
5. ICS (ICP ONLY)		*	N/A	N/A
6. Matrix Spike		X	O	O
7. Duplicate Analyses		X	O	X
8.				
9.				
10.				

O = data had no problems
X = data qualified due to minor problems
M = data qualified due to major problems/some data may be unusable

OVERALL ASSESSSMENT: (Samples not qualified based on exceeded holding times.)

NOTES: * = no data provided with data package.
No Radiochemistry validation done on data package.
u= untreated; A= acid digest, f= fusion prep., w= water leach.
o Refer to the corresponding attachments for explanation of any problems.

Westinghouse
Hanford Company

OSM RCRA LEVEL C DATA ASSESSMENT

DATE 12-17-90

SAMPLES/MATRIX Seq# (1) 89-073 (2) 89-074 (3) 89-075 (4) 89-076

REVIEWED BY C.J. Simiele (Conquy Simiele)

LABORATORY WHC-222S

CASE # SST-241-U-110

SDG # Core 13 Composite

LABID:
Untreated: F1067
Acid Digest: F1085
Fusion : F1073
Water Leach: F1079

DATA ASSESSMENT SUMMARY

QUALITY CONTROL CHECK	ANALYSIS	Se[W]	ICP[A]	As[A]
1. Holding Time		O	O	O
2. Calibration		X	X	O
3. Analytical Blank		O	X	O
4. LCS		*	*	*
5. ICS (ICP ONLY)		N/A	*	N/A
6. Matrix Spike		O	M	O
7. Duplicate Analyses		O	X	O
8.				
9.				
10.				

O = data had no problems
X = data qualified due to minor problems
M = data qualified due to major problems/some data may be unusable

OVERALL ASSESSSMENT: (Samples not qualified based on exceeded holding times.)

NOTES: * = no data provided with data package.
No Radiochemistry Validation done on data package.
U = untreated; A = acid digest, f = fusion prep., W = water leach.
o Refer to the corresponding attachments for explanation of any problems.

Westinghouse
Hanford Company

OSM RCRA LEVEL C DATA ASSESSMENT

DATE 12-17-90 SAMPLES/MATRIX Seq#(1) 89-073 (2) 89-074
(Tonya J. Samuels)
REVIEWED BY C.J. Simiele (3) 89-075 (4) 89-076
LABID:
LABORATORY WHC-222S Untreated: E1067
CASE # SST-241-U-110 Acid Digest: E1085
SDG # Core 13 Composite Fusion : E1073
Water Leach: E1079

DATA ASSESSMENT SUMMARY

QUALITY CONTROL CHECK	ANALYSIS	Hg[A]	Se[A]	—
1.	Holding Time	X	O	/
2.	Calibration	O	O	/
3.	Analytical Blank	O	O	
4.	LCS	*	*	*
5.	ICS (ICP ONLY)	N/A	N/A	/
6.	Matrix Spike	O	O	/
7.	Duplicate Analyses	X	O	
8.	/	/	/	/
9.	/	/	/	/
10.				

O = data had no problems
X = data qualified due to minor problems
M = data qualified due to major problems/some data may be unusable

OVERALL ASSESSSMENT: (Samples not qualified based on exceeded holding times.)

NOTES: * = no data provided with data package.
No Radiochemistry validation done on data package.
U= untreated; A=acid digest, f= Fusion prep., W=water leach.
o Refer to the corresponding attachments for explanation of any problems.

Analytical Laboratory Data Summary

SINGLE SHELL TANK PROJECT

The next four pages of this report (including this page) summarizes the results for the analysis of the

Core 13 Composite Sample
Tank 241-U-110

UNTREATED SAMPLE RESULTS

	Sample	Duplicate
pH	12.60	12.73
% Water	39.70%	40.01%
Mercury	1.21 ug/g J	1.07 ug/g
Cyanide	<1.00E+01 ug/g	<9.00E+00 ug/g
Carbon 14	This Analysis was not completed	

12-17-90
C.J. Sutfield

DATA SUMMARY

Sample units are Wet Weight

Core 13 Composite
Fusion Dissolution

Tank: 241-U-110
Customer ID: Core Composite 13

Radiological Analysis

	Sample		Duplicate Sample	
Fusion	1.72	g/L	2.16	g/L
Total Alpha	<1.13	uci/g	<7.78E-01	uci/g
Total Beta	1.58E+03	uci/g	1.50E+03	uci/g
GEA Cs-137	3.06E+01	uci/g	2.93E+01	uci/g
Uranium	6.10E+03	ug/g	5.14E+03	ug/g
Plutonium	2.85E-01	uci/g	2.50E-01	uci/g
Americium 241	1.28E-01	uci/g	<2.96E-02	uci/g
Neptunium 237	<6.28E-01	uci/g	<5.00E-01	uci/g
Technetium 99	<1.20E-02	uci/g	<9.49E-03	uci/g
Iodine 129	<1.10E-02	uci/g	<6.94E-03	uci/g
Strontium 90	5.34E+02	uci/g	5.14E+02	uci/g

LT: Less Than
NC: Not Calibrated
NOT CALC: Not Calculated
Instrument Standards Outside Control Limits

ICP Results

	Sample		Duplicate	
Aluminum	28065	ug/g	30125	ug/g
Antimony	LT	R	LT	
Barium	LT		LT	
Beryllium	LT		LT	
Boron	153	ug/g J	113	ug/g
Cadmium	LT		LT	
Calcium	737	ug/g J	1005	ug/g
Chromium	177	ug/g J	139	ug/g
Cobalt	LT		LT	
Copper	LT		LT	
Europium	LT		LT	
Iron	3239	ug/g	3263	ug/g
Lithium	LT		LT	
Magnesium	472	ug/g UJ	221	ug/g
Manganese	912	ug/g	890	ug/g
Mercury	LT		LT	
Molybdenum	LT		LT	
Neodymium	LT		LT	
Nickel	1449	ug/g	1600	ug/g
Phosphorous	813	ug/g R	522	ug/g
Potassium	NA		NA	
Samarium	LT		LT	
Selenium	LT		LT	
Silicon	7151	ug/g U	6832	ug/g
Silver	LT		LT	
Sodium	14124	ug/g J	17280	ug/g
Strontium	97	ug/g J	130	ug/g
Sulfur	195	ug/g R	102	ug/g
Tantalum	LT		LT	
Thallium	LT		LT	
Thorium	LT		LT	
Tin	LT		LT	
Titanium	LT		LT	
Vanadium	LT		LT	
Zinc	88	ug/g	77	ug/g
Zirconium	LT		LT	

12-17-90
C.J. Surpell

DATA SUMMARY

Units For Samples Are Wet Weight

Core 13 Composite
Water Digestion

Tank: 241-U-110
Customer Id.: Core 13 Composite

	Sample	Duplicate
Water Digestion	8.33 g/L	11.19 g/L
Water Digestion **	10.18 g/L	10.05 g/L
pH	11.64	11.71

Anion Analysis

	Sample	Duplicate
Fluoride	4.99E+03 ug/g J	3.55E+03 ug/g
Chloride	9.41E+02 ug/g	9.03E+02 ug/g
Nitrate	5.88E+04 ug/g	6.14E+04 ug/g
Phosphate	2.32E+04 ug/g R	7.04E+03 ug/g
Sulfate	1.21E+04 ug/g J	5.16E+03 ug/g
Total Organic Carbon	1.31E+02 ug/g J	2.46E+02 ug/g
Ammonia	<4.85E+03 ug/g J	<3.61E+03 ug/g
Carbonate	9.48E+03 ug/g J	7.15E+03 ug/g
Nitrite	1.17E+04 ug/g	1.24E+04 ug/g

Radiological Analysis

	Sample	Duplicate
Total Alpha	<2.99E-03 uci/g	<2.23E-03 uci/g
Total Beta	1.93E+01 uci/g	1.37 uci/g
GEA Cs-137	9.29 uci/g	9.20 uci/g
Americium 241	<1.58E-03 uci/g	<1.30E-03 uci/g
Carbon 14	5.89E-04 uci/g	4.08E-04 uci/g
Iodine 129	<7.92E-03 uci/g	<5.09E-03 uci/g
Neptunium 237 *	not analyzed	
Plutonium	<7.66E-04 uci/g	<5.77E-04 uci/g
Strontium 90	5.94E-02 uci/g	3.32E-02 uci/g
Technetium 99	5.92E-03 uci/g	5.94E-03 uci/g
Tritium	2.29E-03 uci/g	1.76E-03 uic/g

Atomic Absorption Spectroscopy

Arsenic **	<4.91E-01 ug/g	<4.98E-01	ug/g
Mercury	<1.2E-02 ug/g UJ	2.28E-02	ug/g
Selenium **	<4.91E-01 ug/g J	<4.98E-01	ug/g

* Analysis Was Not Run.
** Analysis performed on second digestion.

ICP Results

	Sample	Duplicate
Aluminum	3009 ug/g J	2657 ug/g
Antimony	LT	LT
Arsenic	LT	LT
Beryllium	1 ug/g U	LT
Bismuth	LT	LT
Boron	226 ug/g UJ	231 ug/g
Cadmium	LT	LT
Calcium	21 ug/g U	24 ug/g
Cerium	LT	LT
Chromium	740 ug/g J	727 ug/g
Cobalt	LT	LT
Copper	LT	LT
Europium	5 ug/g U	LT
Iron	18 ug/g UJ	16 ug/g
Lanthanum	LT	LT
Lead	177 ug/g UJ	LT
Lithium	10 ug/g J	6 ug/g
Magnesium	90 ug/g U	75 ug/g
Manganese	LT UJ	LT
Mercury	15 ug/g UJ	11 ug/g
Molybdenum	12 ug/g	LT
Neodymium	LT	LT
Nickel	LT UJ	LT
Phosphorous	2956 ug/g	2720 ug/g
Potassium	LT	LT
Samarium	273 ug/g UJ	LT
Selenium	267 ug/g J	276 ug/g
Silicon	1111 ug/g U	1075 ug/g
Silver	LT	LT
Sodium	63099 ug/g	62398 ug/g
Strontium	3 ug/g UJ	2 ug/g
Sulfur	777 ug/g	744 ug/g
Tantalum	LT	LT
Thallium	418 ug/g UJ	298 ug/g
Thorium	161 ug/g UJ	69 ug/g
Tin	LT	LT
Titanium	10 ug/g UJ	7 ug/g
Uranium	LT UJ	LT
Vanadium	21 ug/g J	10 ug/g
Zinc	7 ug/g	6 ug/g
Zirconium	27 ug/g	LT

12-18-90 C.J. Simpell

DATA SUMMARY

Units For Samples Are Wet Weight

Core 13 Composite
Acid Digestion

Tank: 241-U-110
Customer Id.: Core 13 Composite

Atomic Absorption Spectroscopy

Hydride Analysis

	Sample	Duplicate
Acid Digestion	9.56 g/L	10.04 g/L
Arsenic	<1.05 ug/g	<9.96E-01 ug/g
Mercury	6.28E-01 ug/g J	4.99E-01 ug/g
Selenium	2.90E-01 ug/g	2.76E-01 ug/g

ICP Results

	Sample	Duplicate
Aluminum	57262 ug/g	56255 ug/g
Antimony	572 ug/g J	LT
Barium	49 ug/g J	LT
Beryllium	3 ug/g J	LT
Bismuth	15713 ug/g	14154 ug/g
Boron	60 ug/g UJ	55 ug/g
Cadmium	LT	LT
Calcium	557 ug/g UJ	512 ug/g
Cerium	LT R	LT
Chromium	676 ug/g UJ	458 ug/g
Cobalt	129 ug/g J	LT
Copper	73 ug/g J	LT
Europium	LT	LT
Iron	14141 ug/g	16036 ug/g
Lanthanum	88 ug/g J	LT
Lead	1123 ug/g J	520 ug/g
Lithium	13 ug/g J	LT
Magnesium	217 ug/g UJ	231 ug/g
Manganese	5703 ug/g	5270 ug/g
Mercury	LT	LT
Molybdenum	35 ug/g J	LT
Nickel	142 ug/g J	65 ug/g
Potassium	LT UJ	LT
Samarium	LT	LT
Selenium	677 ug/g J	244 ug/g
Silicon	5217 ug/g R	2760 ug/g
Silver	LT UJ	LT
Sodium	75809 ug/g	71589 ug/g
Strontium	563 ug/g	475 ug/g
Sulfur	883 ug/g	706 ug/g
Tantalum	LT R	LT
Thallium	816 ug/g J	LT
Thorium	2112 ug/g J	LT
Tin	67 ug/g J	LT
Titanium	28 ug/g UJ	LT
Uranium	8653 ug/g J	LT
Vanadium	LT	LT
Zinc	1828 ug/g UJ	437 ug/g
Zirconium	134 ug/g J	LT

LT: Less Than
NC: Not Calibrated
NOT CALC: Not Calculated
Instrument Standards Outside Control Limits

12-17-90
C.J. Simpell

RCRA LEVEL C QC

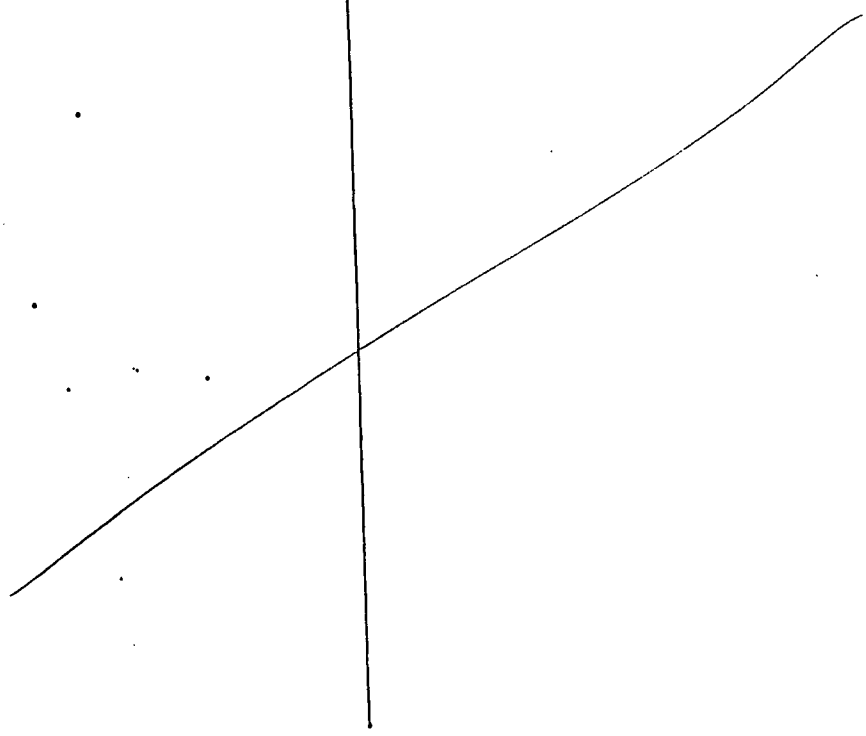
Name C.J. Simiele Date 12-17-90

QC Check: Holding Time

COMMENTS: Hg (undigest) analyses holding time of 28 days exceeded by 200 days.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

Name C.J. Simiele Date 12-17-90

QC Check: Calibration

COMMENTS: Hg (undigest) calibration standards are within ±10% control limits. No calibration curve data provided. Calibration frequency met.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual

RCRA LEVEL C QC

Name C.J. Simiele Date 12-17-90

QC Check: Analytical Blank

COMMENTS: No Contaminants detected in Hg preparation blank and associated sample.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual

RCRA LEVEL C QC

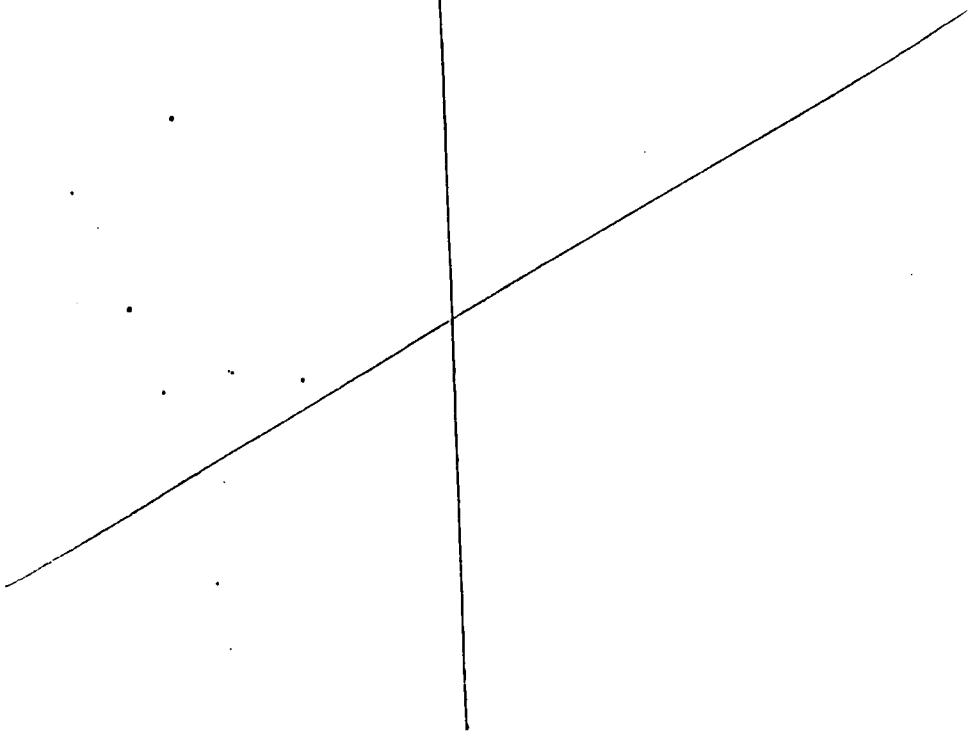
Name C.J. Simiele Date 12-17-90

QC Check: LCS

COMMENTS: No LCS data provided with data package.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

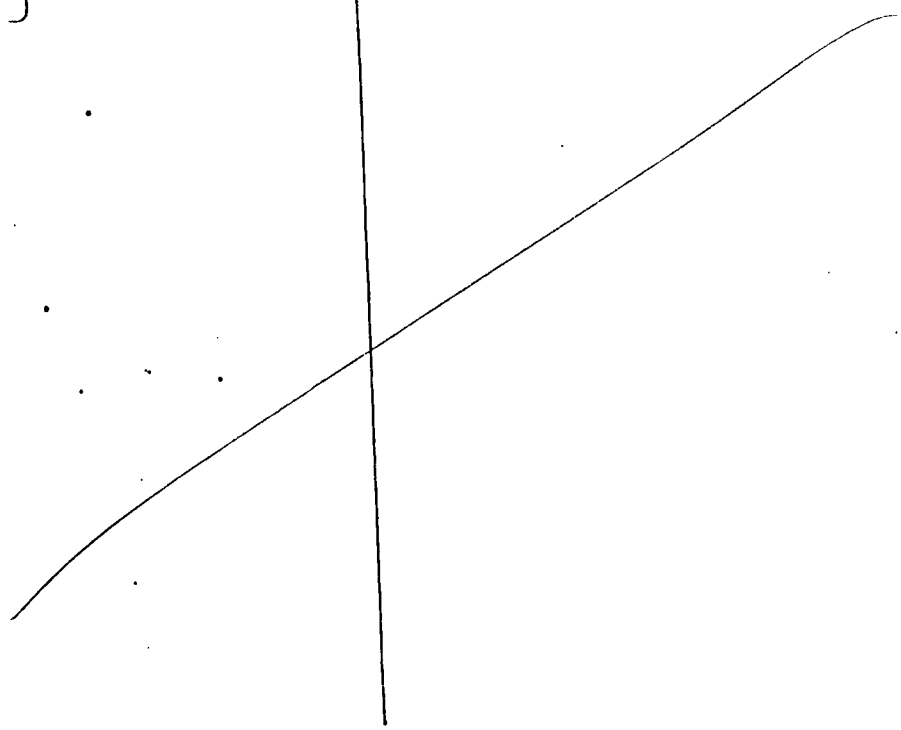
Name C.J. Simiele Date 12-17-90

QC Check: Matrix Spike

COMMENTS: Hg (undigest.) matrix spike %Rec is out of ±25% (control limits. (%Rec = 136)

ACTION: ~~None~~ Qualify associated sample as per OSM guidelines.

sample #	constituent	value/qual	sample #	constituent	value/qual
F1067	Hg	J			



RCRA LEVEL C QC

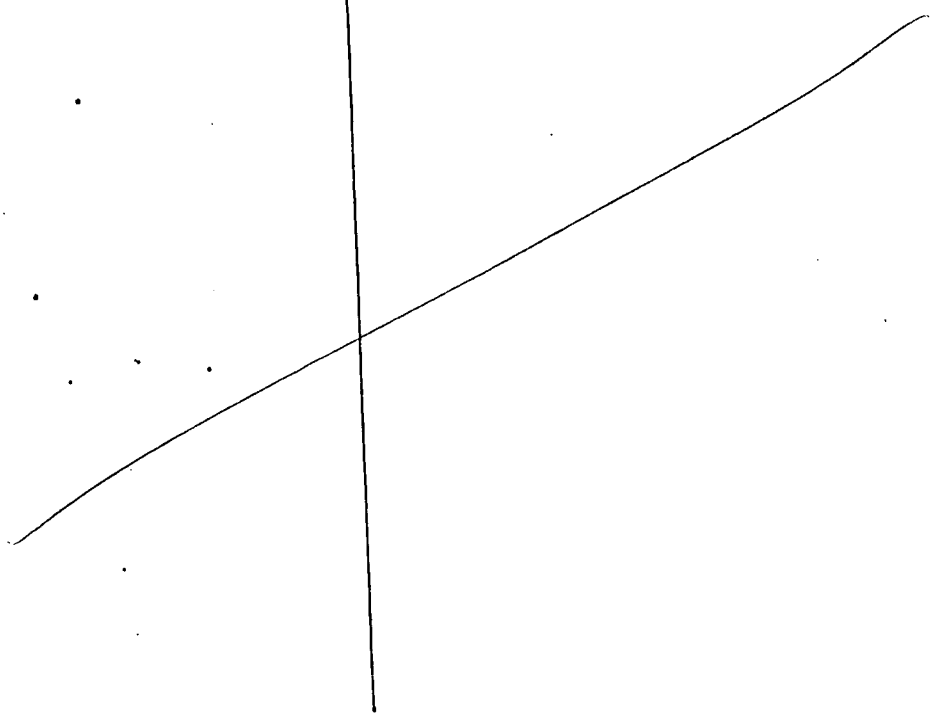
Name C.J. Simiele Date 12-17-90

QC Check: Duplicate Analyses

COMMENTS: Ha (undigest) duplicate analyses RPD is within ±20% control limits.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

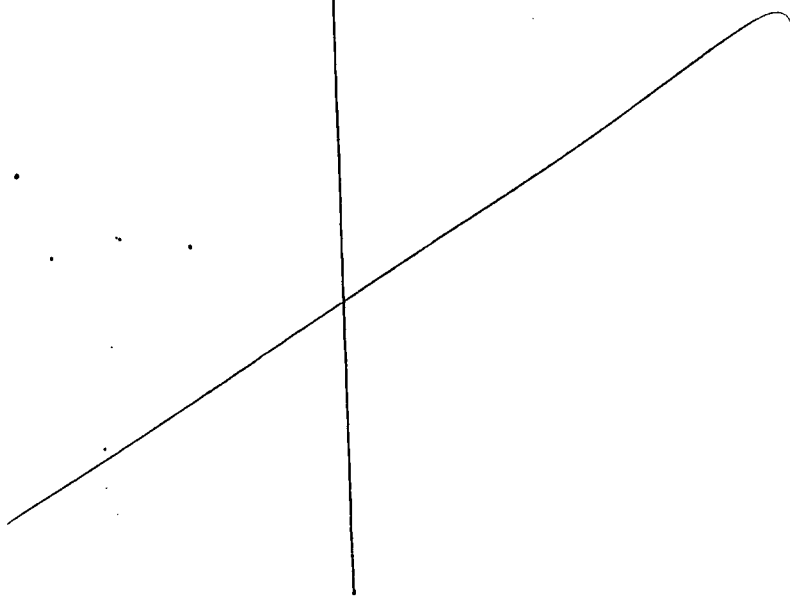
Name C.J. Simiele Date 12-17-90

QC Check: Holding Time

COMMENTS: CN holding time of 14 days was exceeded by 188 days.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

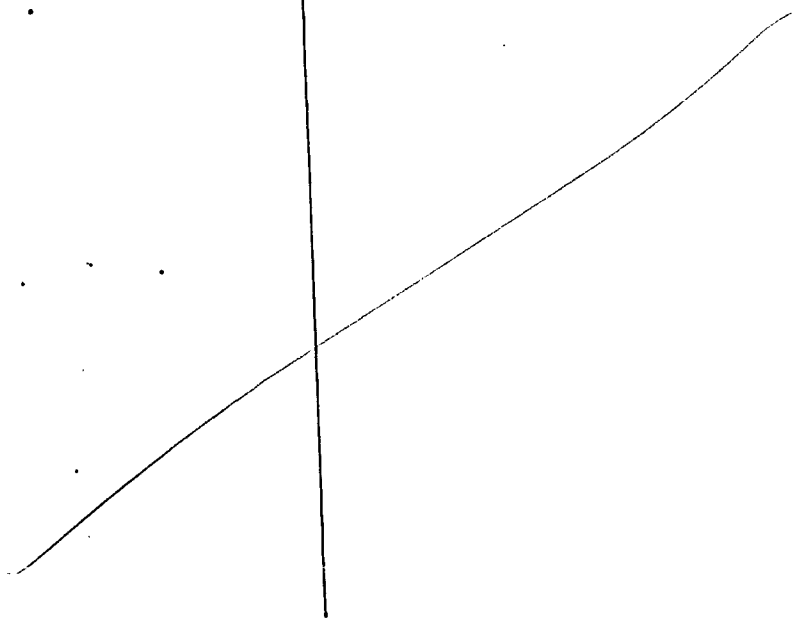
Name C.J. Simiele Date 12-17-90

QC Check: Calibration

COMMENTS: CN (undigest.) calibration standards are within ±10% control limits. Calibration curve correl coeff. = 0.99987. Calibration frequency met.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

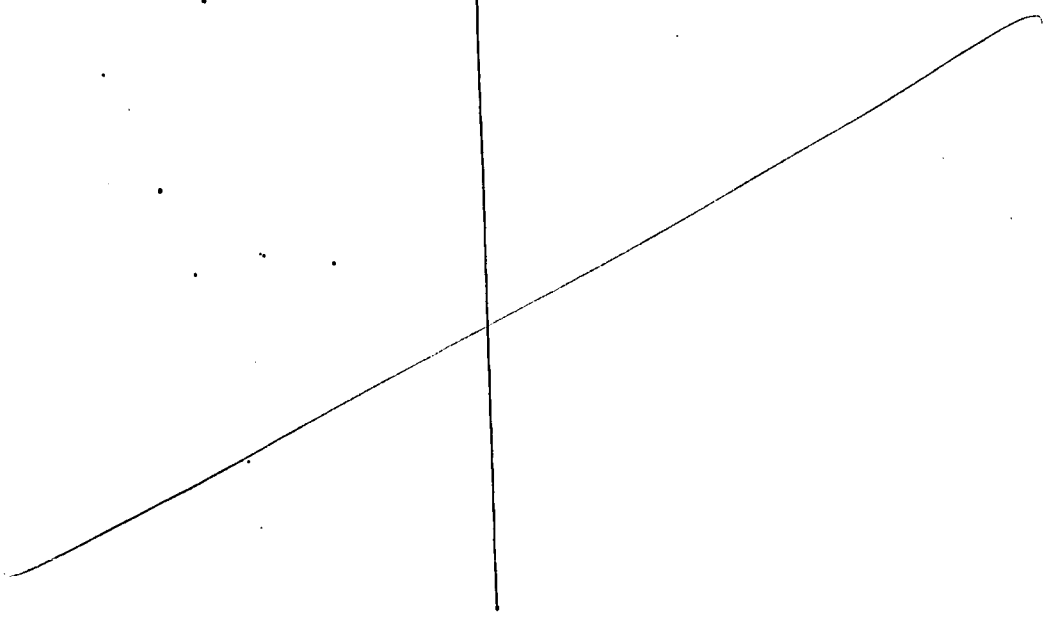
Name C.J. Simiele Date 12-17-90

QC Check: Analytical Blank

COMMENTS: No contaminants detected in CN preparation blank and associated sample.

ACTION: None.

sample #	constituent	value/qual	sample #	constituent	value/qual



___ of ___

RCRA LEVEL C QC

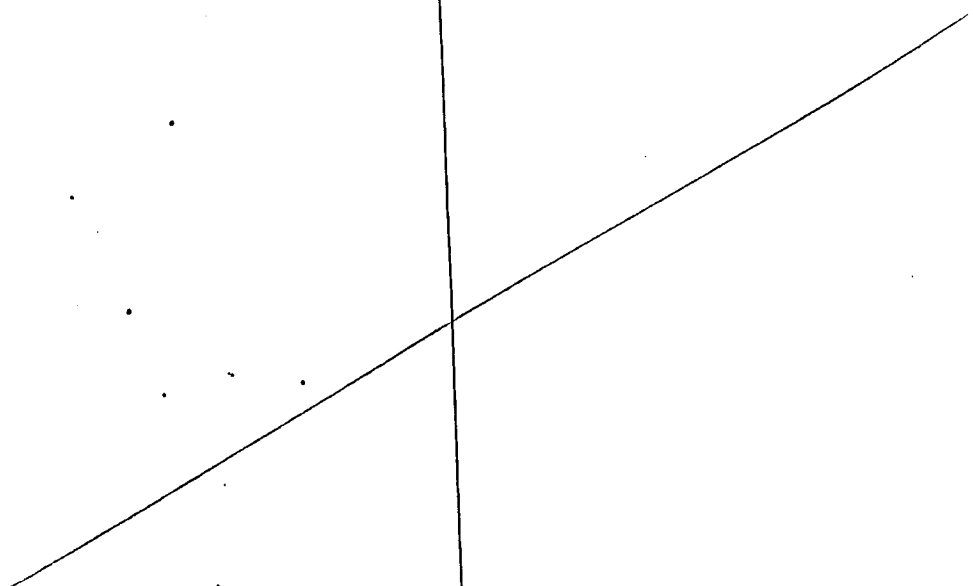
Name C.J. Simiele Date 12-17-90

QC Check: LCS

COMMENTS: No LCS data provided with data package.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

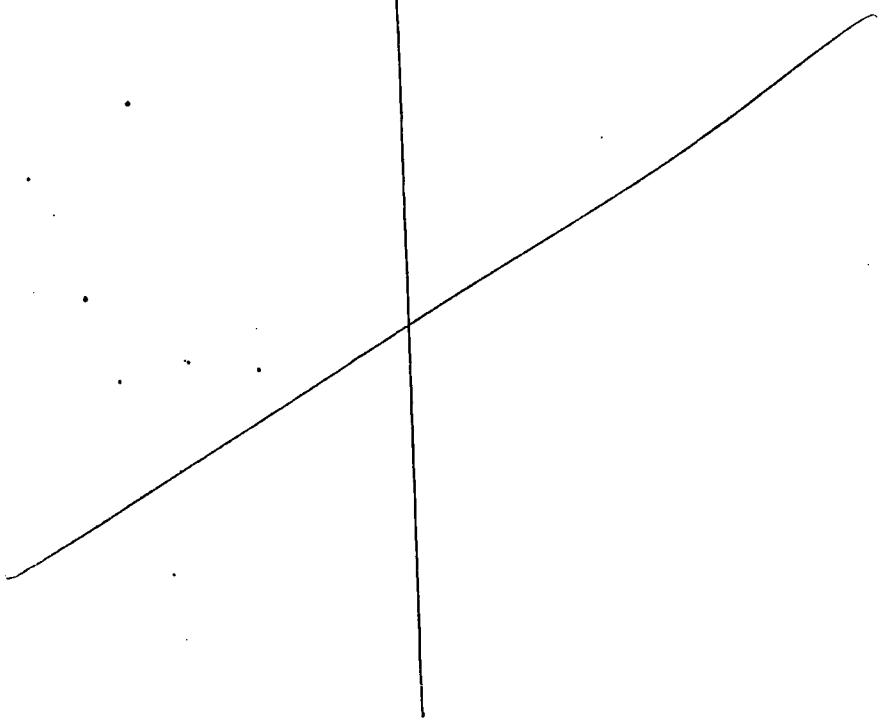
Name C.J. Simiele Date 12-17-90

QC Check: Matrix Spike

COMMENTS: CN (undigest) matrix spike %Rec is within ± 25% control limits.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

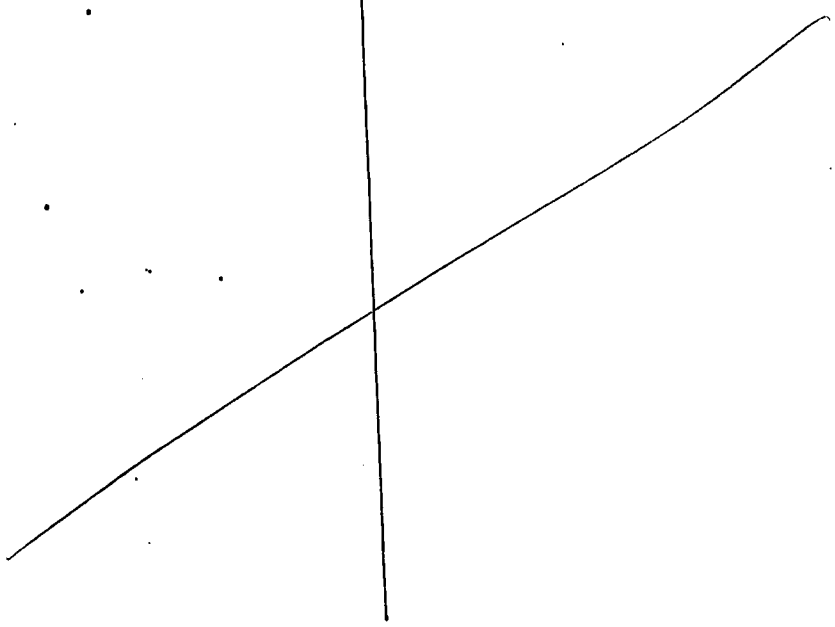
Name C.J. Simiele Date 12-17-90

QC Check: Duplicate Analyses

COMMENTS: CN (undigest) duplicate analyses RPD is within ±20% control limits.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



___ of ___

RCRA LEVEL C QC

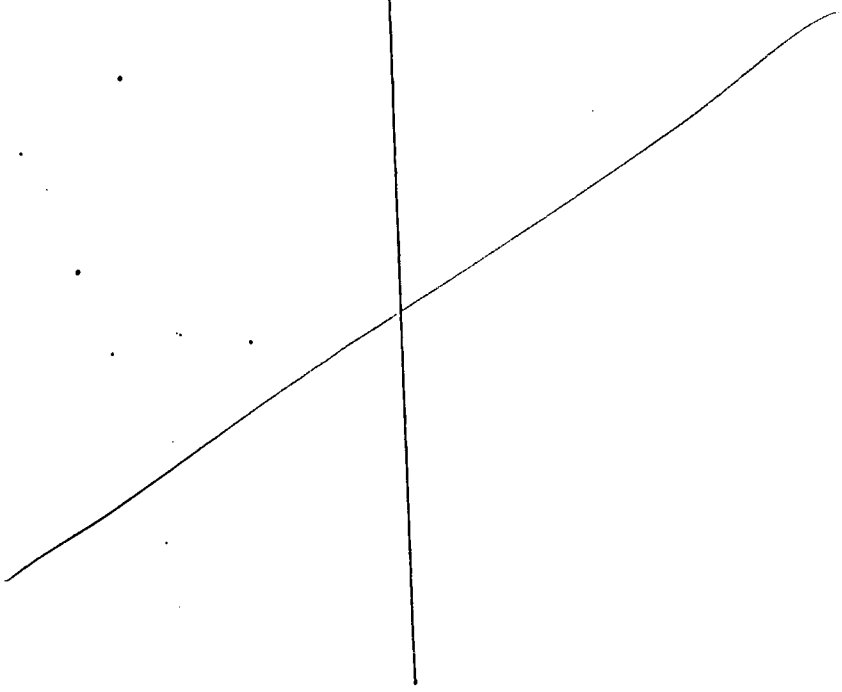
Name C. J. Simiele Date 12-17-90

QC Check: Duplicate Analyses

COMMENTS: pH & % Water duplicate analyses
~~is~~ RPD's are within ± 20% control limits.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



___ of ___

RCRA LEVEL C QC

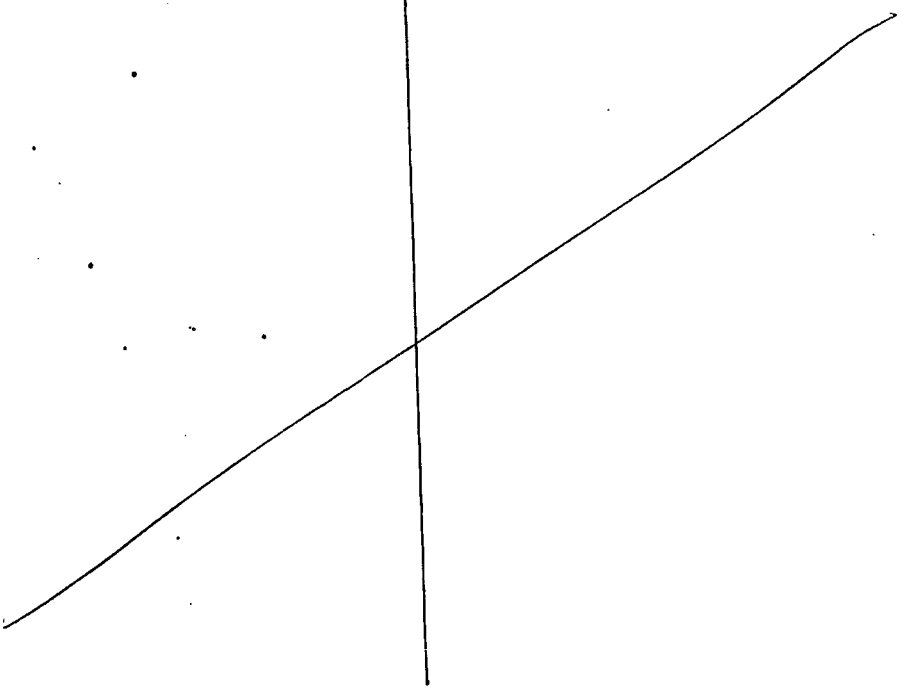
Name C.J. Simiele Date 12-17-90

QC Check: Holding Time

COMMENTS: ICP (fusion) analyses holding time of 6 months met.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

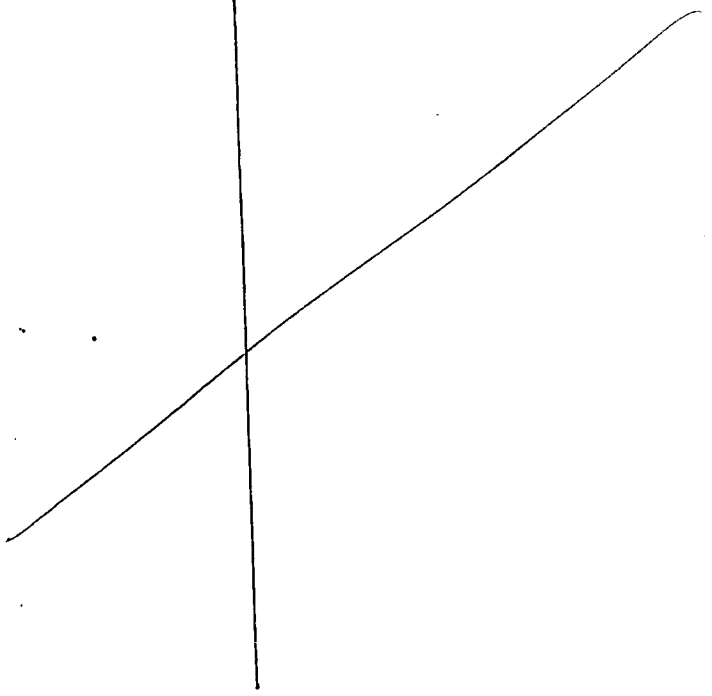
Name C.J. Simiele Date 12-17-90

QC Check: Calibration

COMMENTS: ICP (fision) calibration standards are within ±10% control limits. Calibration frequency met.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

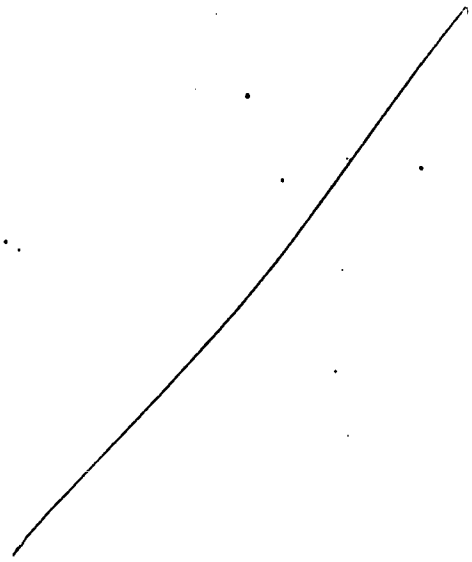
Name C.J. Simiele Date 12-17-90

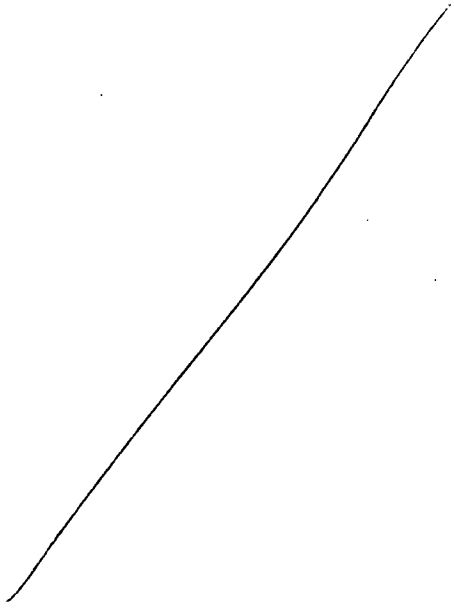
QC Check: Analytical Blank

COMMENTS: Contaminants detected in ICP preparation blank and associated sample for: Mg & Si.

ACTION: Qualify associated samples as per OSM guidelines.

sample #	constituent	value/qual	sample #	constituent	value/qual
F1073	Mg	U			
L	Si	L			





___ of ___

RCRA LEVEL C QC

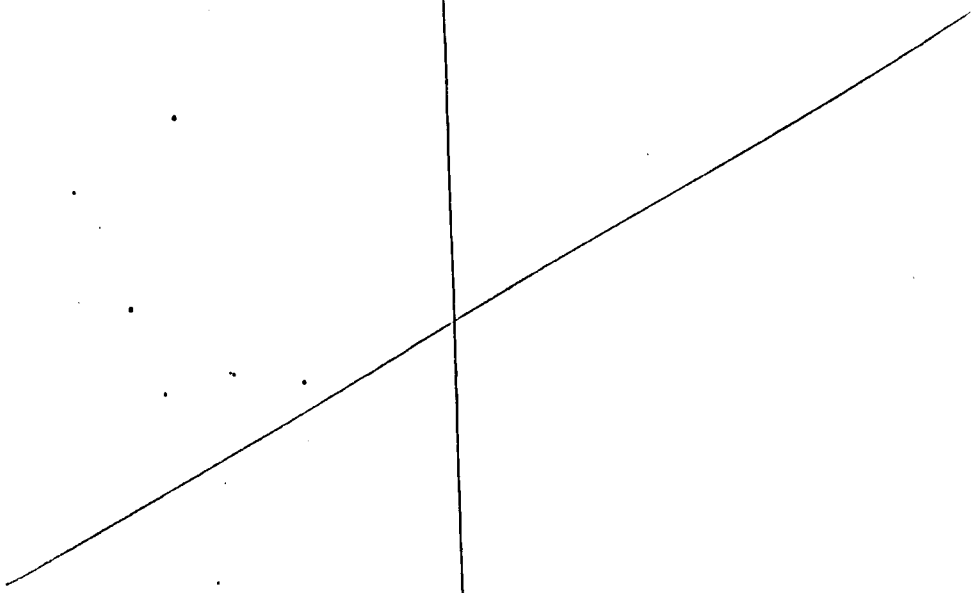
Name C.J. Simiele Date 12-17-90

QC Check: LCS

COMMENTS: No LCS data provided with data package.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

Name C.J. Simiele Date 12-17-90

QC Check: Matrix Spike

COMMENTS: ICP (fusion) matrix spike %Rec is out of ±25% control limits for: Sb (20%); P (-.23%) & S (.02%).

ACTION: Qualify associated samples as per OSM guidelines.

sample #	constituent	value/qual	sample #	constituent	value/qual
F1073	Sb	R			
L	P	L			
	S				

___ of ___

RCRA LEVEL C QC

Name C.J. Simiele Date 12-17-90

QC Check: Duplicate Analyses

COMMENTS: ICP (fusion) duplicate analyses RPD out ±20% (control limits for: B (26%); Ca (36%); Cr (21%); Mg (53%); P (36%); Na (22%); Sr (34%); S (48%).

ACTION: Qualify associated samples as per OSM guidelines.

sample #	constituent	value/qual	sample #	constituent	value/qual
F1079	B	J			
	Ca				
	Cr				
	Mg				
	P				
	Na				
	Sr				
	S				

___ of ___

RCRA LEVEL C QC

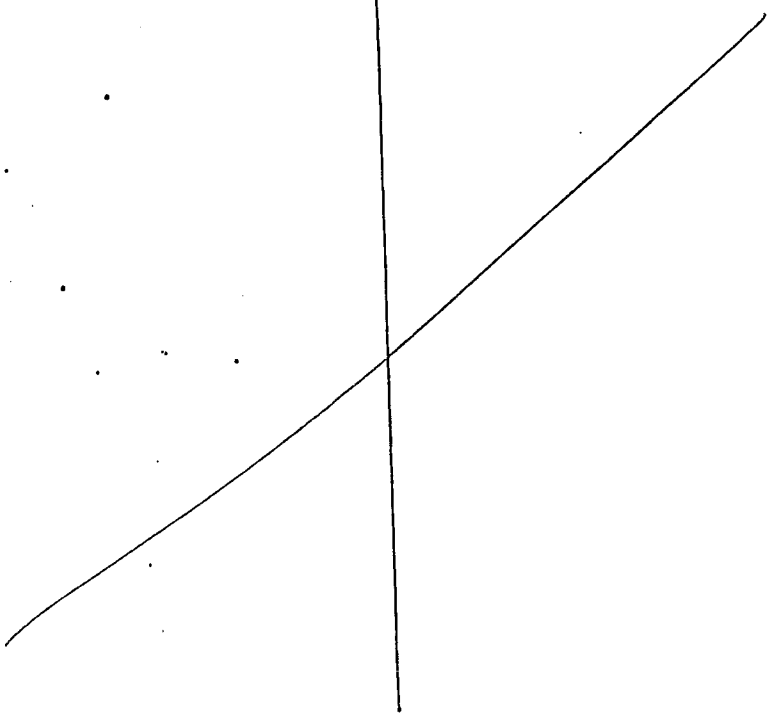
Name C.J. Simiele Date 12-17-90

QC Check: Holding Time

COMMENTS: IC (water leach) analyses holding time of 2days for NO_3, exceeded by 89 days and holding time of 28 days for all other anions exceeded by 63 days.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

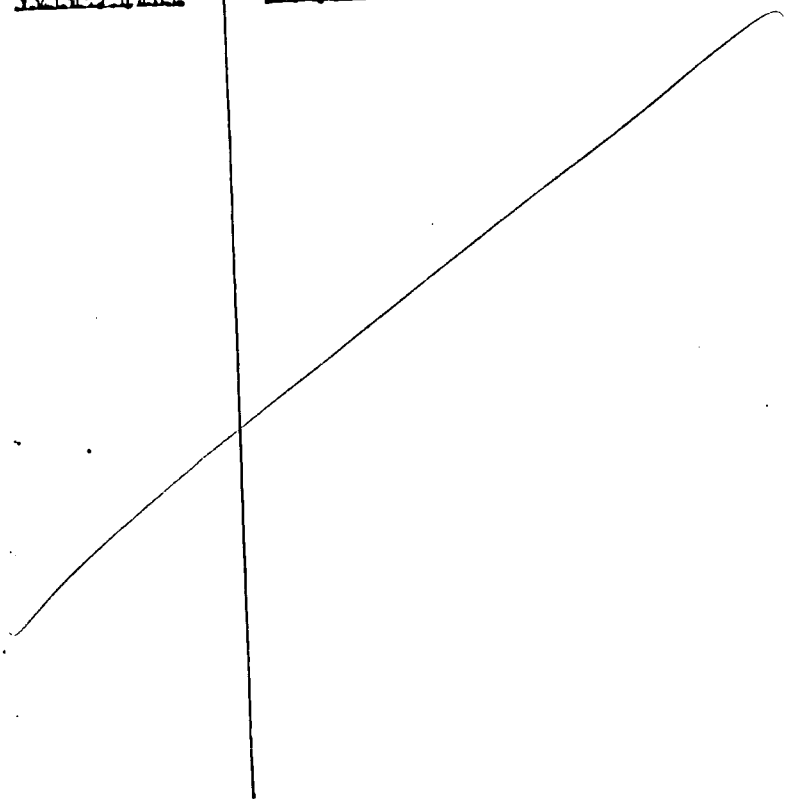
Name C.J. Simiele Date 12-17-90

QC Check: Calibration

COMMENTS: IC (Water leach) calibration standards are within ±10% control limits. Calibration frequency met.

ACTION: None.

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

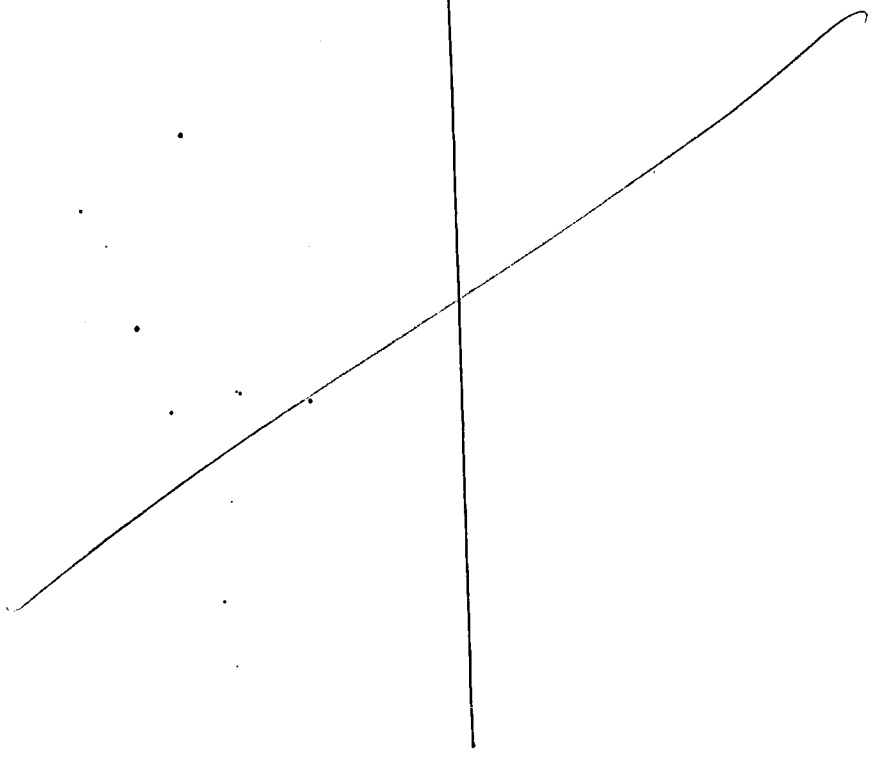
Name C.J. Simiele Date 12-17-90

QC Check: Analytical Blank

COMMENTS: No contaminants detected in IC preparation blank and associated sample.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

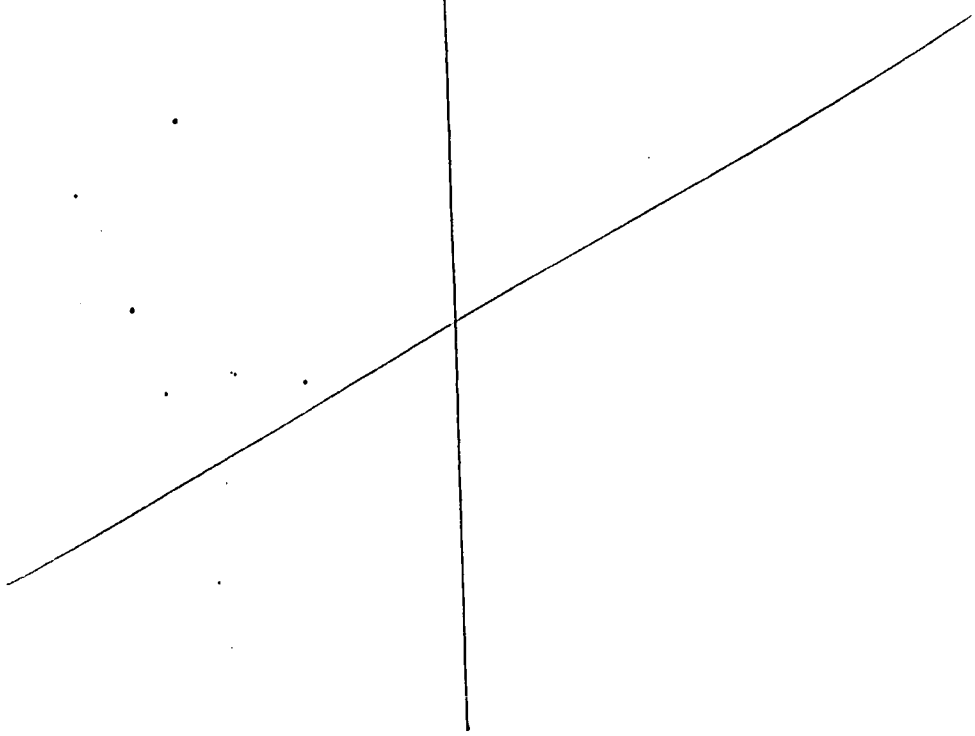
Name C.J. Simiele Date 12-17-90

QC Check: LCS

COMMENTS: No LCS data provided with data package.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

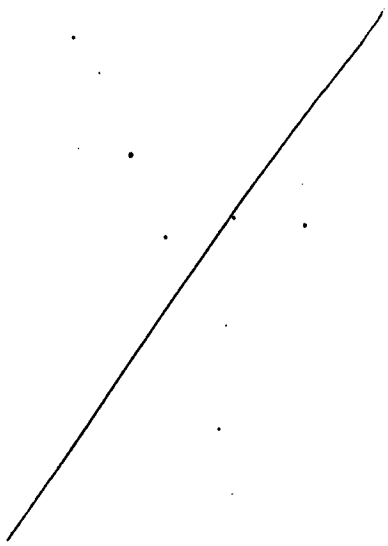
Name C.J. Simiele Date 12-17-90

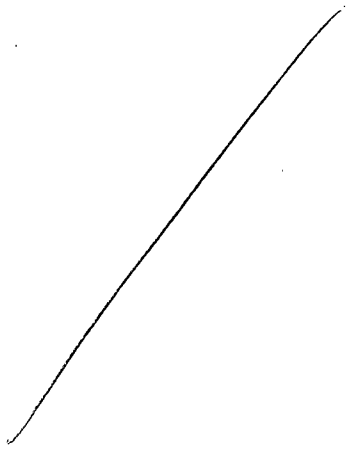
QC Check: Matrix Spike

COMMENTS: 1C matrix spike % Rec. out of ±25% control limits for PO4. (% Rec = 10.4).

ACTION: Qualify associated sample as per OSM guidelines.

sample #	constituent	value/qual	sample #	constituent	value/qual
F1079	PO4	R			





___ of ___

RCRA LEVEL C QC

Name C.J. Simiele Date 12-17-90

QC Check: Duplicate Analyses

COMMENTS: 1C duplicate analyses RPD out of ± 20% control limits for F (29%), PO4 (70%), SO4 (57%).

ACTION: Qualify associated sample as per OSM guidelines.

sample #	constituent	value/qual
F1079	F	J
↓	PO4	↓
	SO4	

sample #	constituent	value/qual

RCRA LEVEL C QC

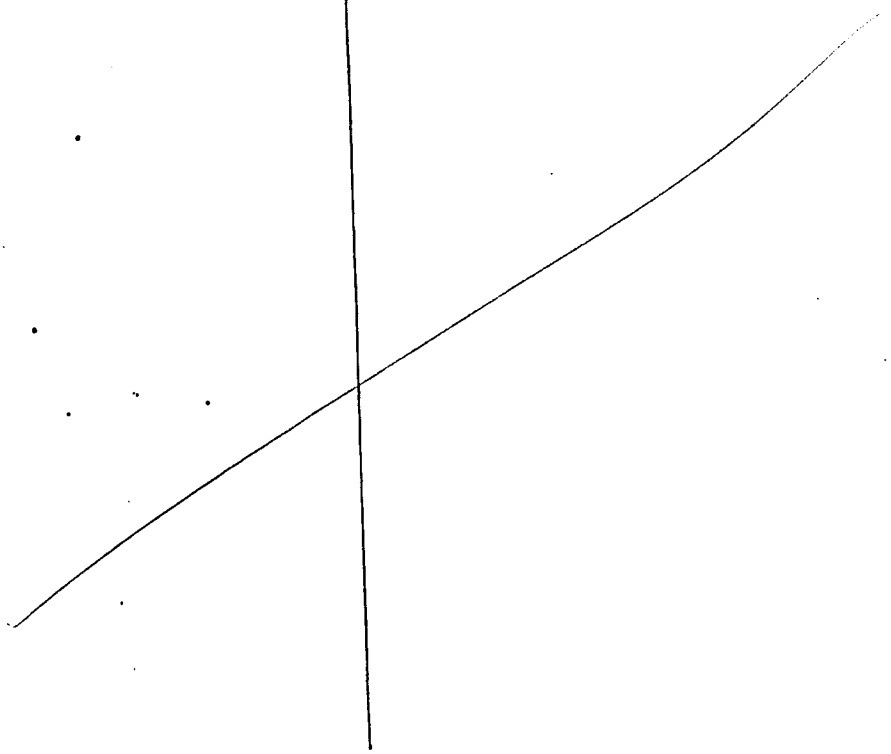
Name C.J. Simiele Date 12-17-90

QC Check: Holding Time

COMMENTS: TOC (water leach) holding time of 28 days exceeded by 160 days.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



___ of ___

RCRA LEVEL C QC

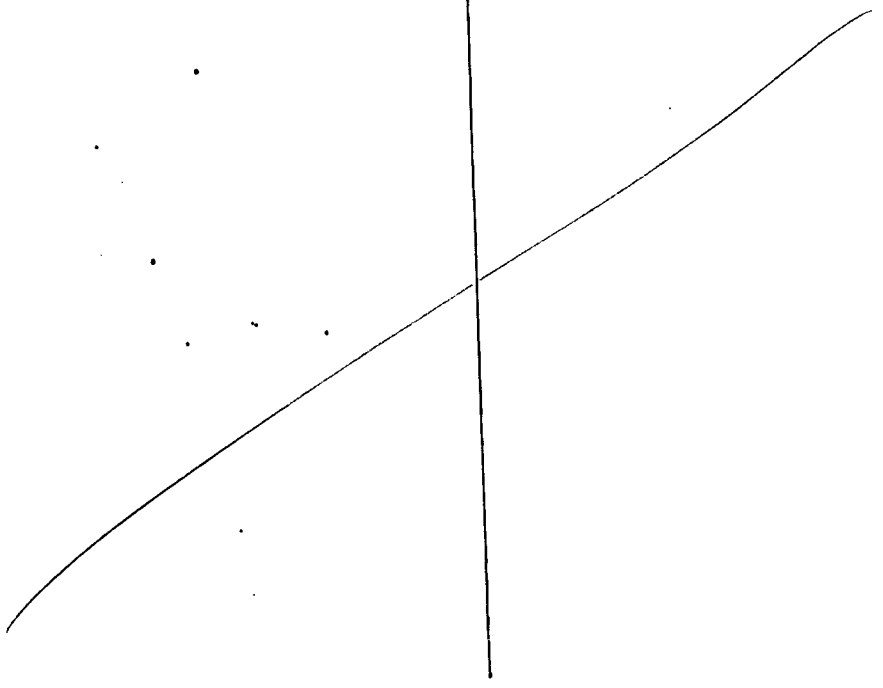
Name C.J. Simiele Date 12-17-90

QC Check: Calibration

COMMENTS: Ion calibration standards are within ±10% control limits. Calibration frequency met.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

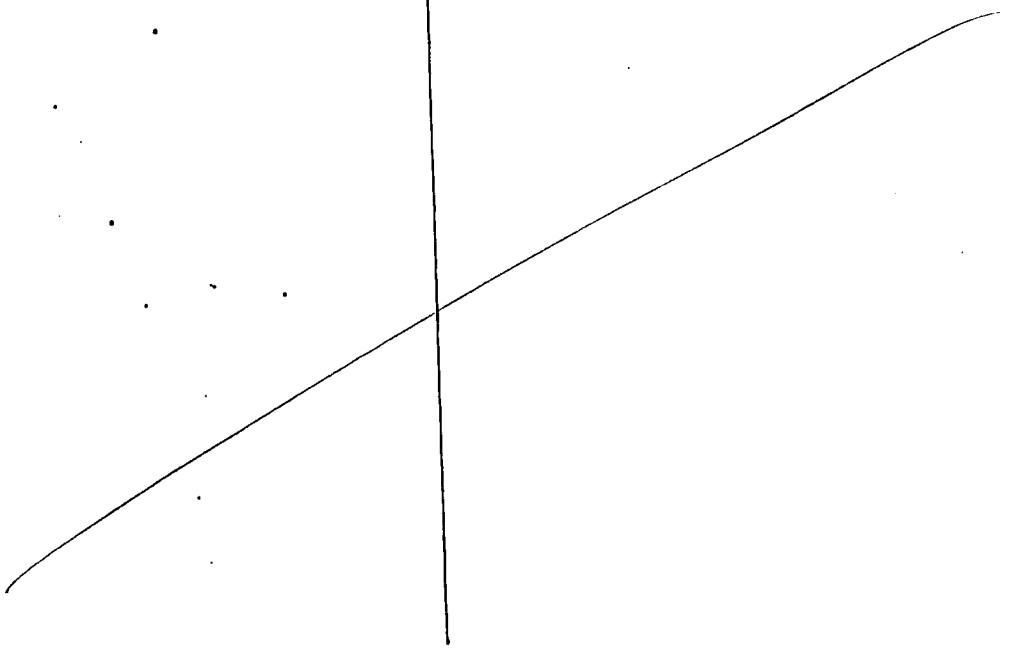
Name C.J. Simiele Date 12-17-90

QC Check: Analytical Blank

COMMENTS: No Contaminants detected in TOC preparation blank and associated sample.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



___ of ___

RCRA LEVEL C QC

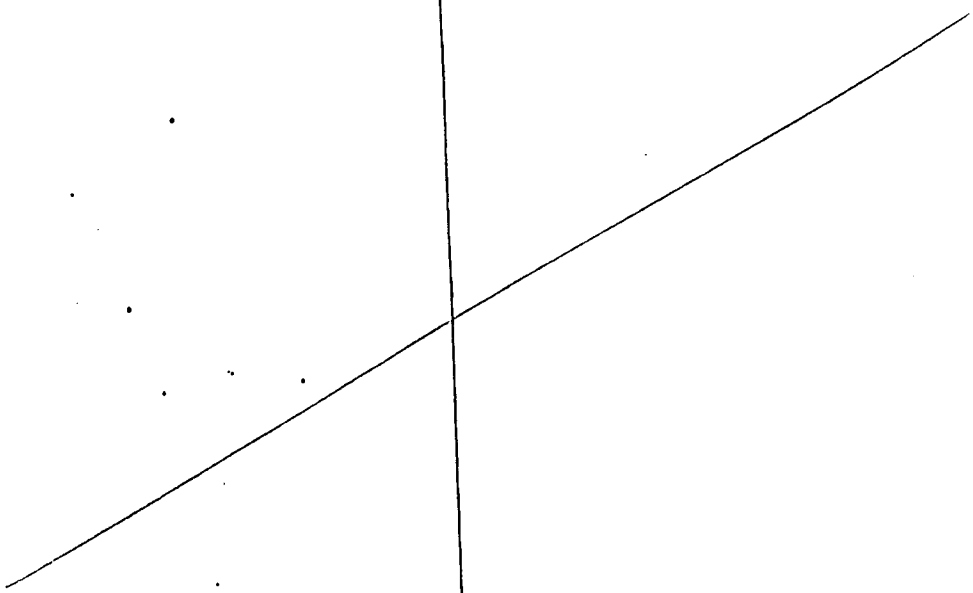
Name C.J. Simiele Date 12-17-90

QC Check: LCS

COMMENTS: No LCS data provided with data package.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

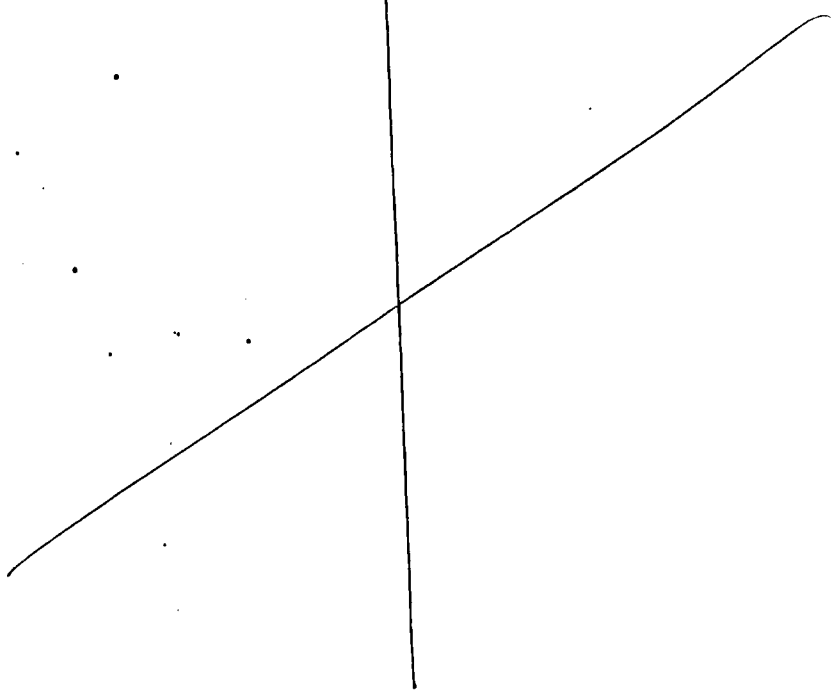
Name C.J. Simiele Date 12-17-90

QC Check: Matrix Spike

COMMENTS: TOC matrix spike %Rec is within ± 25% control limits.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

Name C.J. Simiele Date 12-17-90

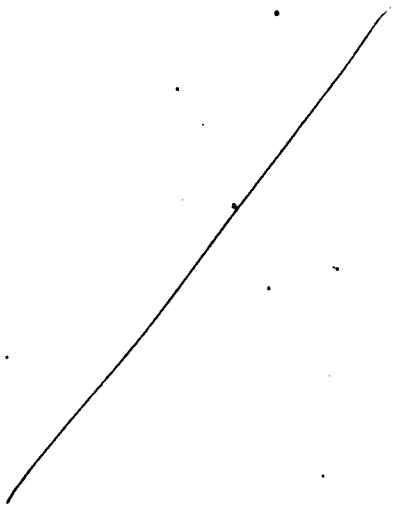
QC Check: Duplicate Analyses

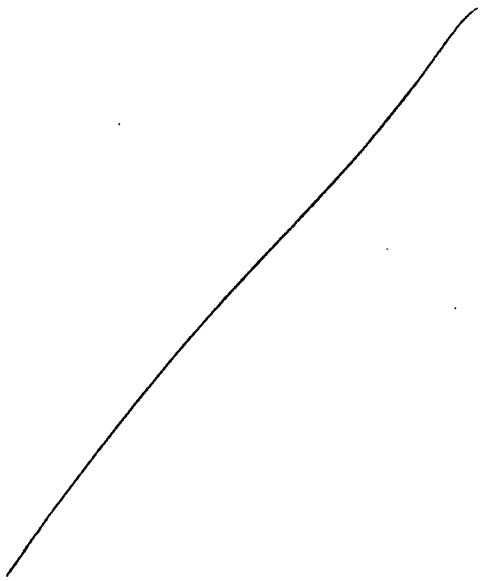
COMMENTS: TOC duplicate analyses RPDis out of ±20% control limits. (%Rec=88).

ACTION: Qualify associated sample as per OSM guidelines.

sample #	constituent	value/qual
F1079	TOC	J

sample #	constituent	value/qual





___ of ___

RCRA LEVEL C QC

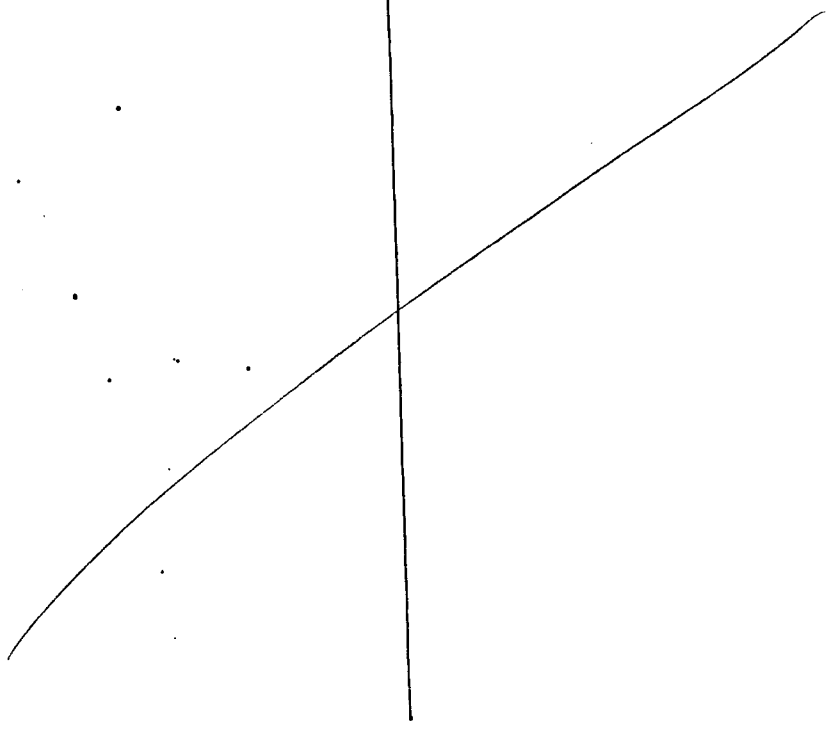
Name C.J. Simiele Date 12-17-90

QC Check: Holding Time

COMMENTS: NH_3 (water leach) analyses holding time of 28 days exceeded by 100 days.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

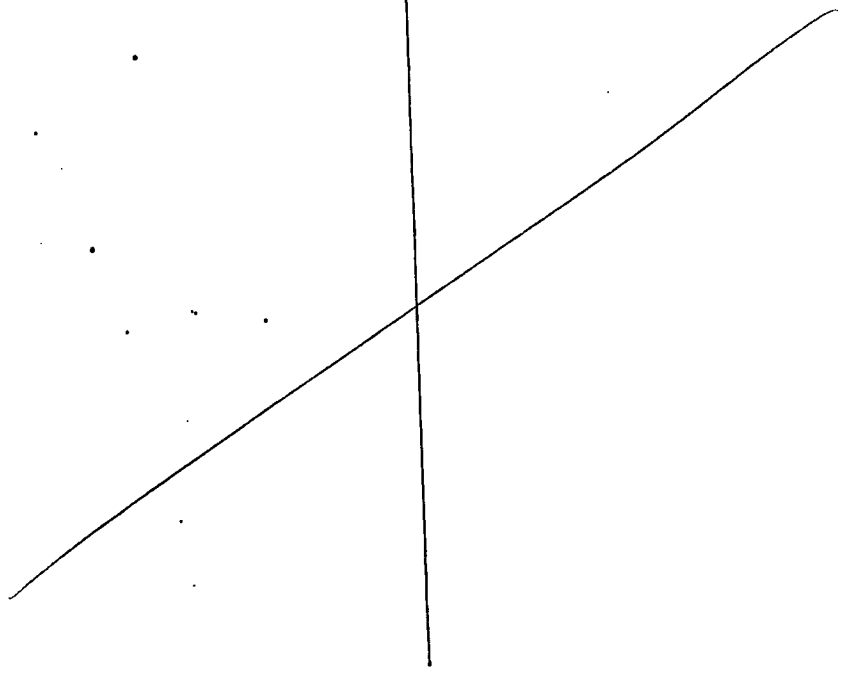
Name C.J. Simiele Date 12-17-90

QC Check: Calibration

COMMENTS: NH_3 calibration standards are within ± 10% control limits. Calibration frequency met.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

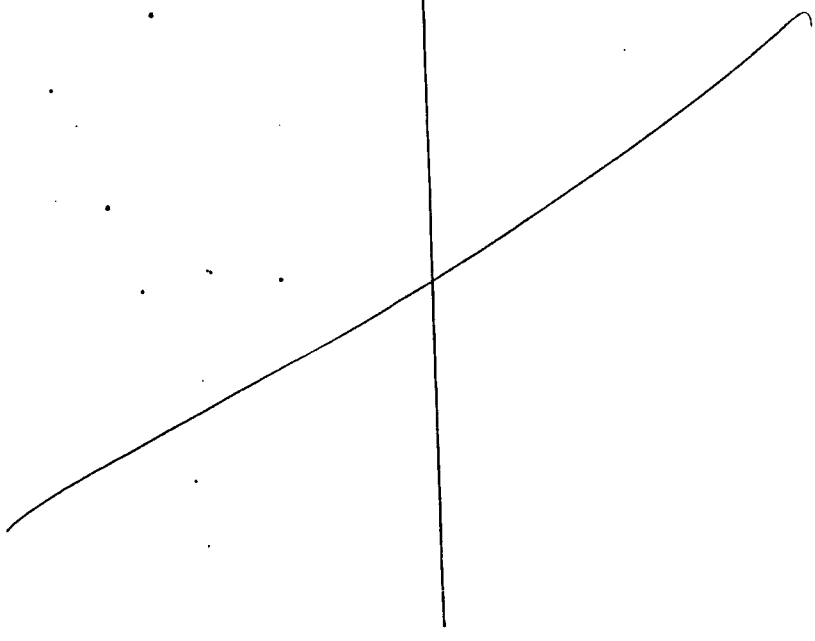
Name C.J. Simicic Date 12-17-90

QC Check: Analytical Blank

COMMENTS: No contaminants detected in NH_3 preparation blank and associated sample.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

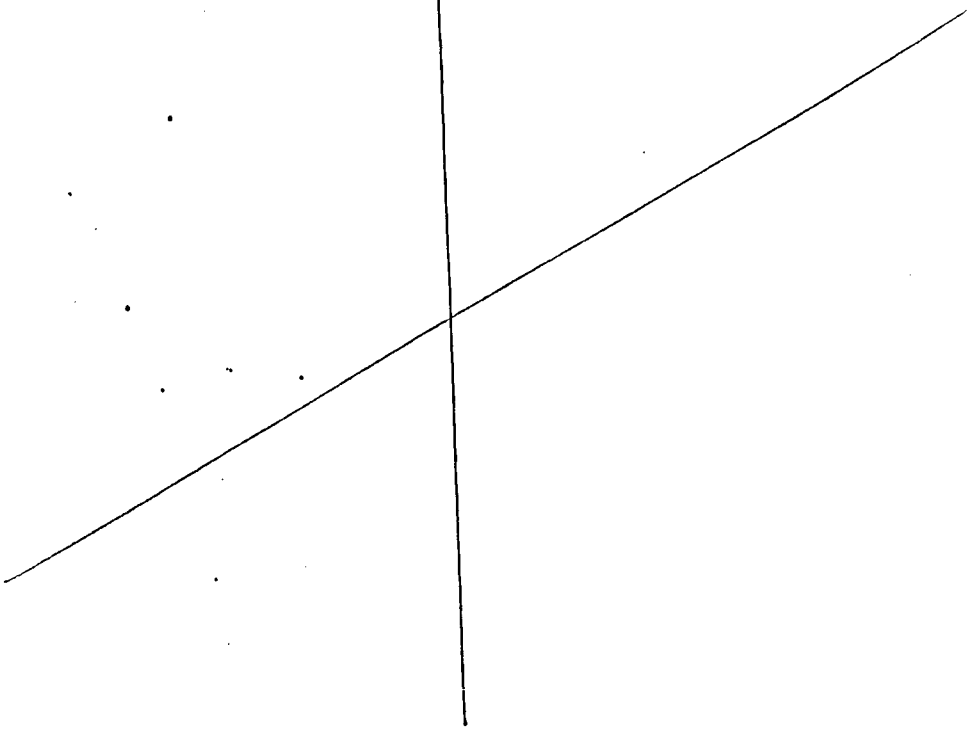
Name C.J. Simiele Date 12-17-90

QC Check: LCS

COMMENTS: No LCS data provided with data package.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

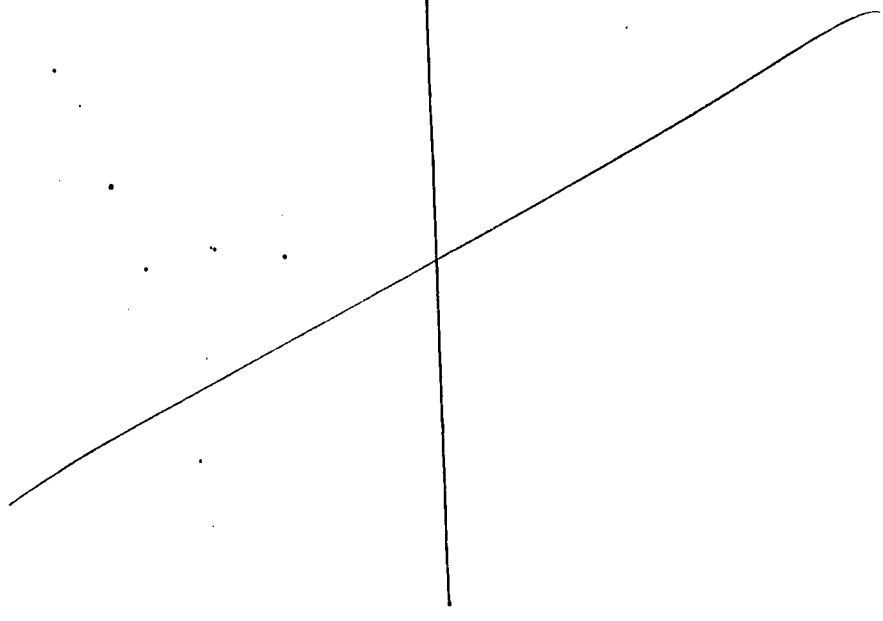
Name C.J. Simiele Date 12-17-90

QC Check: Matrix Spike

COMMENTS: NH3 matrix spike %Rec. is within ±25% control limits.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

Name C.J. Simiele Date 12-17-90

QC Check: Duplicate Analyses

COMMENTS: NH_3 duplicate analyses RPD is out of ±25% control limits. (RPD= 26%).

ACTION: Qualify associated sample as per OSM guidelines.

sample #	constituent	value/qual	sample #	constituent	value/qual
F1079	NH_3	J			

___ of ___

RCRA LEVEL C QC

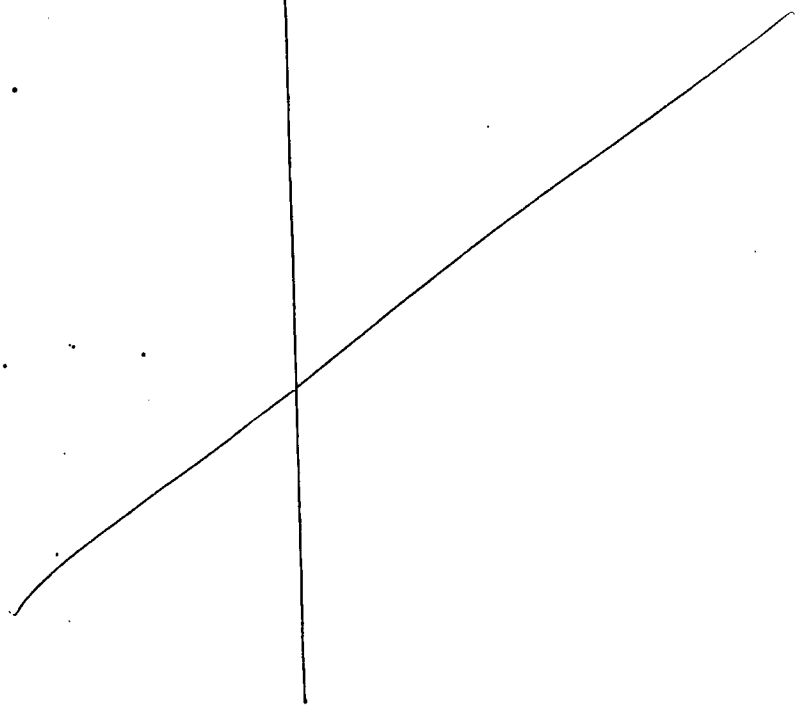
Name C.J. Simiele Date 12-17-90

QC Check: Holding Time

COMMENTS: CO_3 (water leach) analyses holding time of 28 days exceeded by 161 days.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

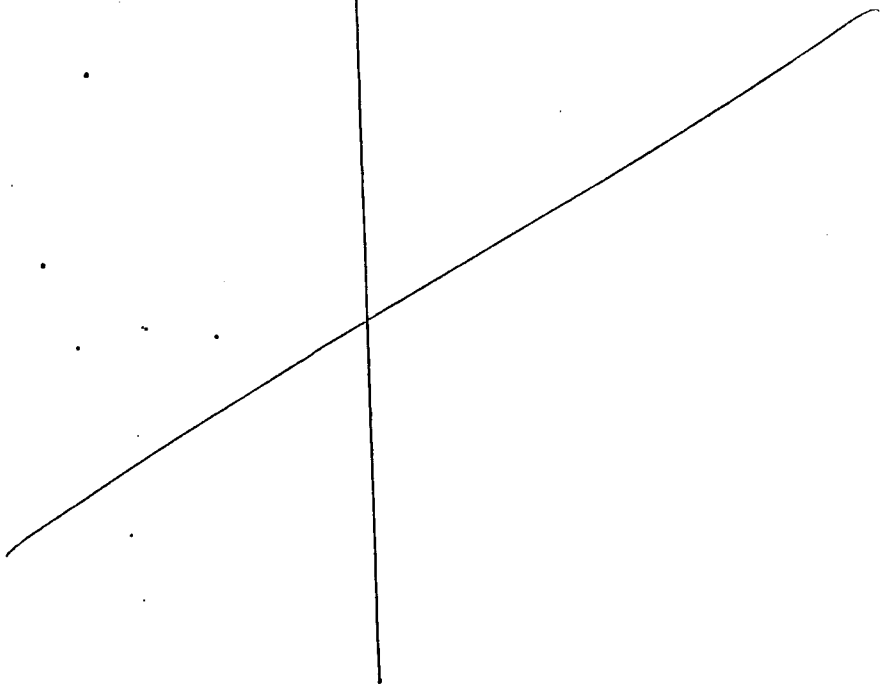
Name C.J. Simiele Date 12-17-90

QC Check: Calibration

COMMENTS: CO_3 calibration standards are within ±10% control limits. Calibration frequency met.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

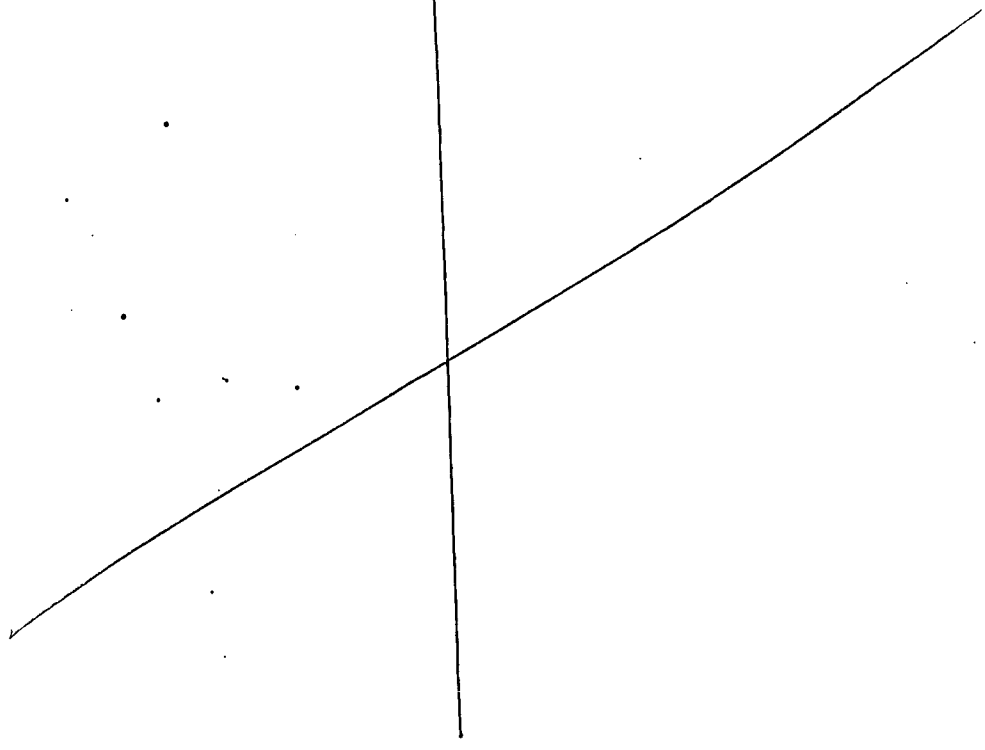
Name C.J. Simiele Date 12-17-90

QC Check: Analytical Blank

COMMENTS: No contaminants detected in CO_3 preparation blank and associated sample.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



___ of ___

RCRA LEVEL C QC

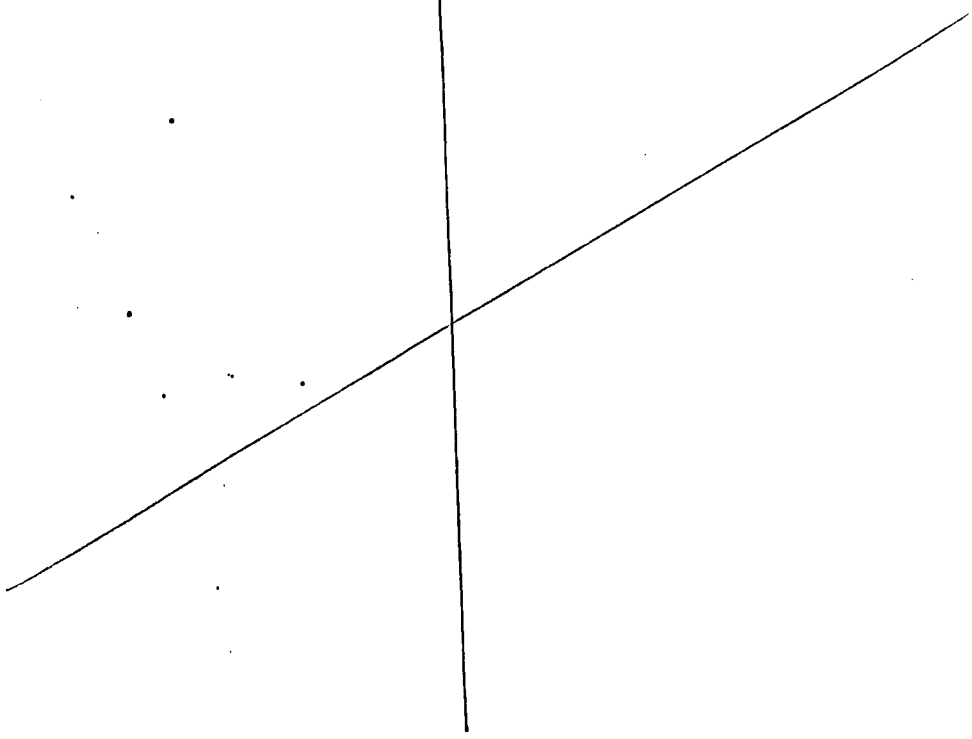
Name C.J. Simicle Date 12-17-90

QC Check: LCS

COMMENTS: No LCS data provided with data package.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

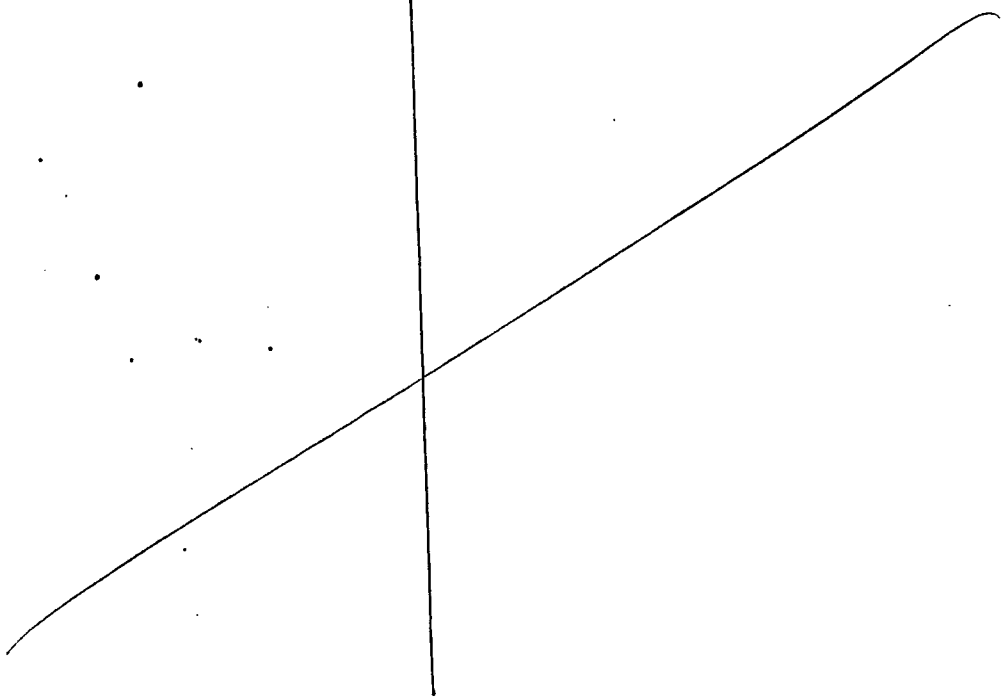
Name C.J. Simiele Date 12-17-90

QC Check: Matrix Spike

COMMENTS: CO_3 matrix spike %Rec is within ±25% control limits.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



___ of ___

RCRA LEVEL C QC

Name C.J. Simiele Date 12-17-90

QC Check: Duplicate Analyses

COMMENTS: CO_3 duplicate analyses RPD is out of ±20% control limits. (RPD = 25%).

ACTION: Qualify associated sample as per OSM guidelines.

sample #	constituent	value/qual
F1079	CO_3	J

sample #	constituent	value/qual

___ of ___

RCRA LEVEL C QC

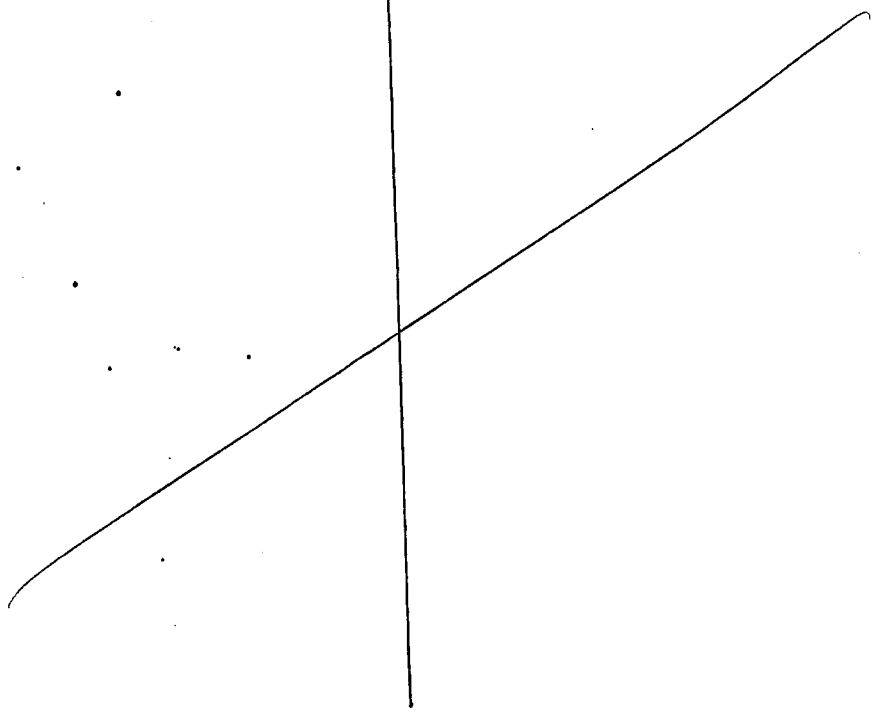
Name C.J. Simiele Date 12-17-90

QC Check: Holding Time

COMMENTS: NO_2 (water leach) analyses holding time of 2 days was exceeded by 8 to 9 days.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

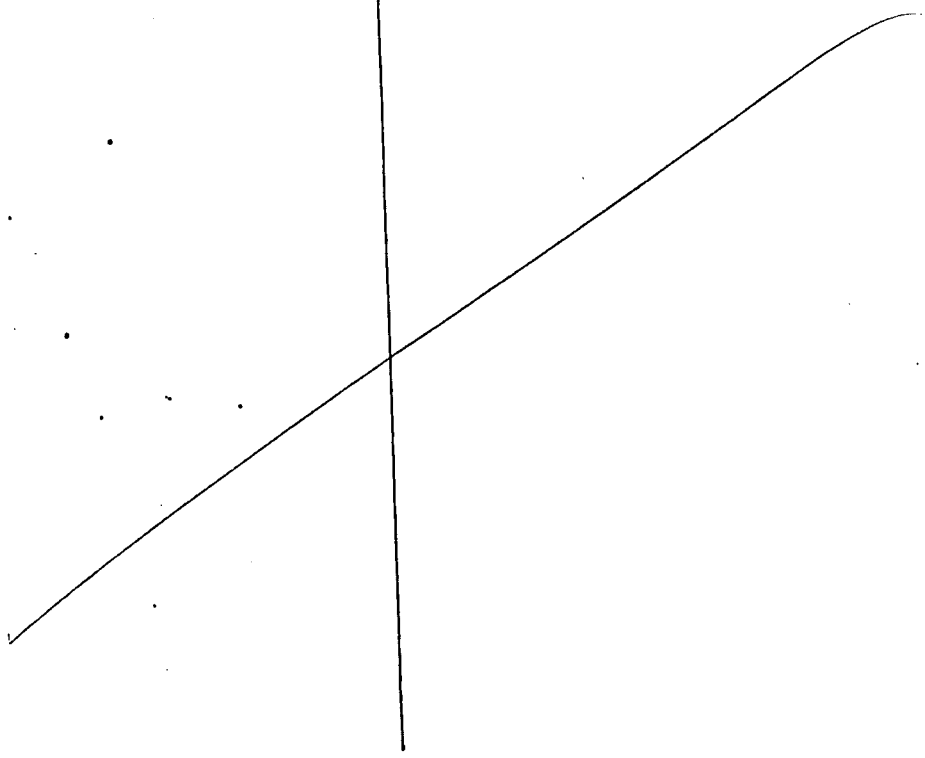
Name C. J. Simiele Date 12-17-90

QC Check: Calibration

COMMENTS: NO_2 calibration standards are within ±10% control limits. Calibration curve Corr. Coeff = 0.9991. Calibration frequency met.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

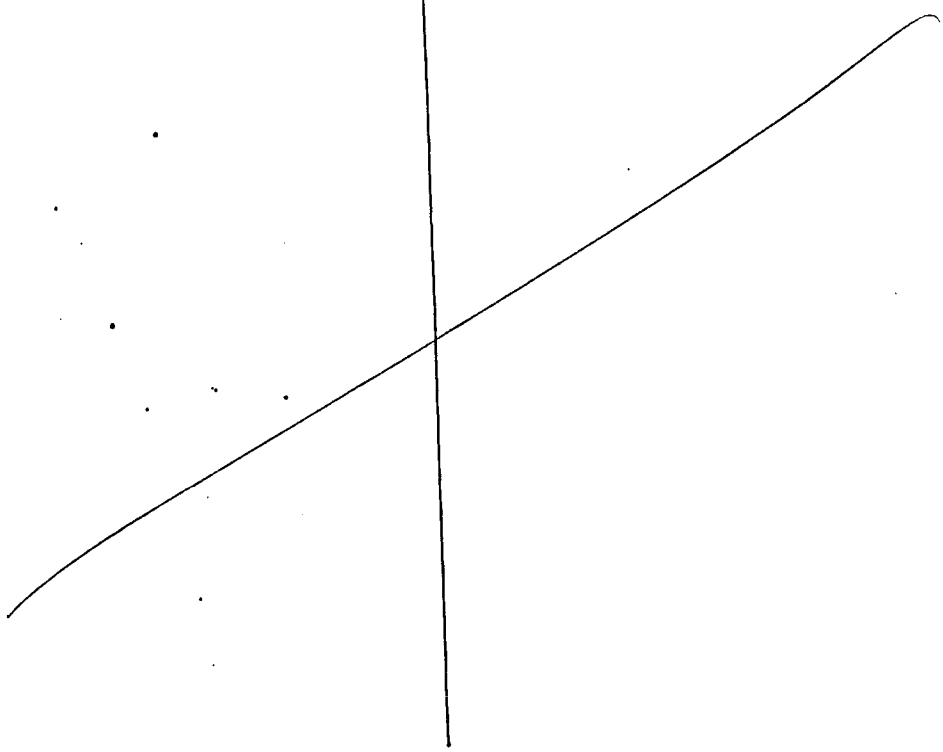
Name C.J. Simiele Date 12-17-90

QC Check: Analytical Blank

COMMENTS: No contaminants detected in NO_2 preparation blank and associated sample.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



___ of ___

RCRA LEVEL C QC

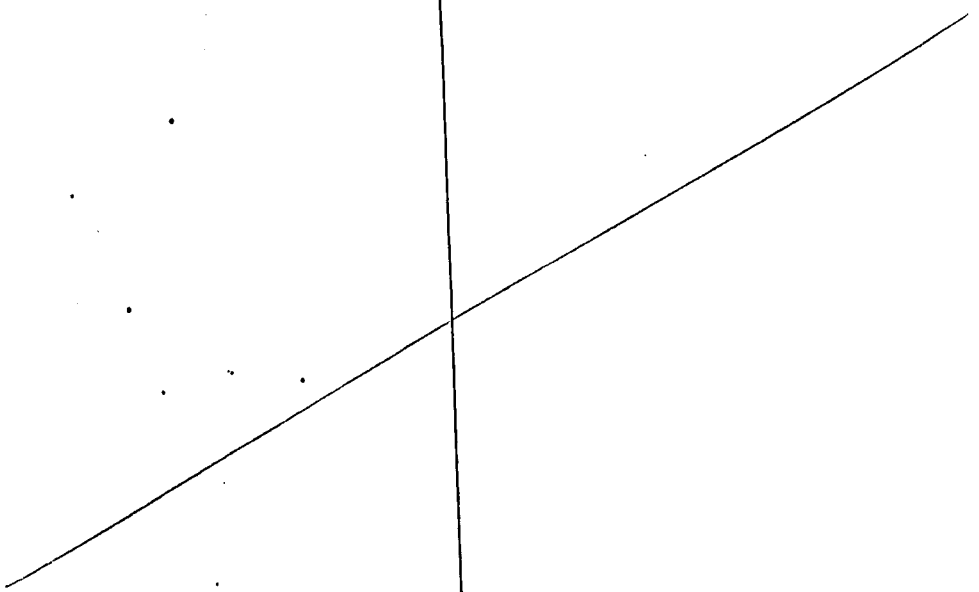
Name C.J. Simiele Date 12-17-90

QC Check: LCS

COMMENTS: No LCS data provided with data package.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

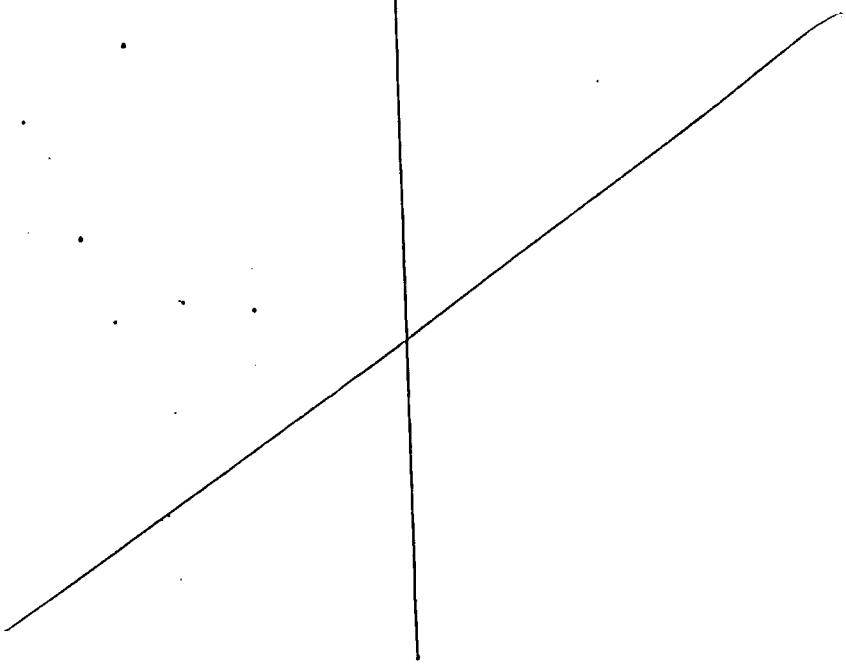
Name C.J. Simiele Date 12-17-90

QC Check: Matrix Spike

COMMENTS: NO2 matrix spike %Rec is within ±25% control limits.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



___ of ___

RCRA LEVEL C QC

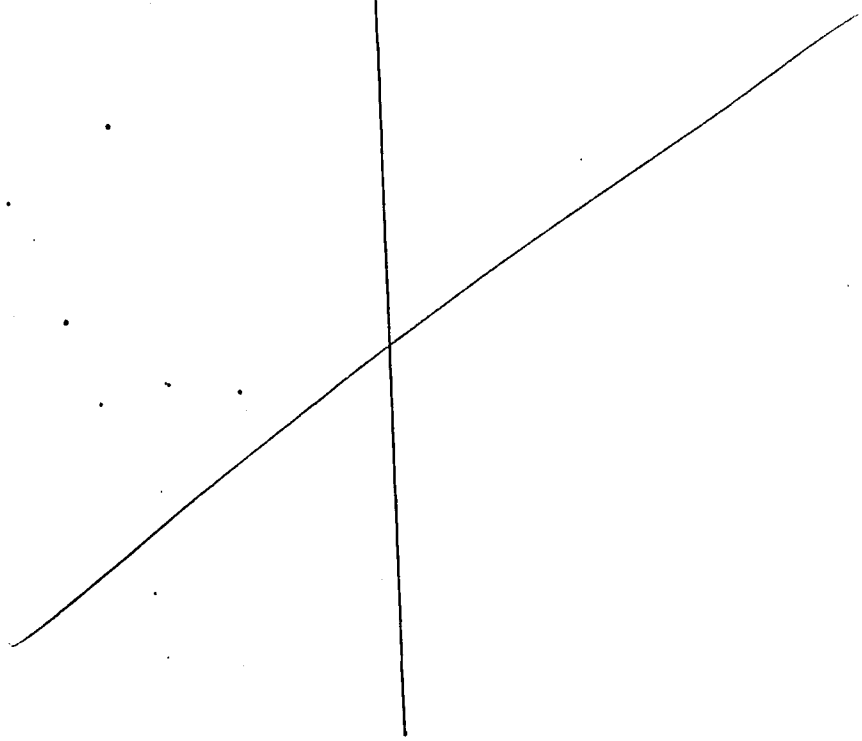
Name C.J. Simiele Date 12-17-90

QC Check: Duplicate Analyses

COMMENTS: NO2 duplicate analyses RPD is within ± 20% control limits.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

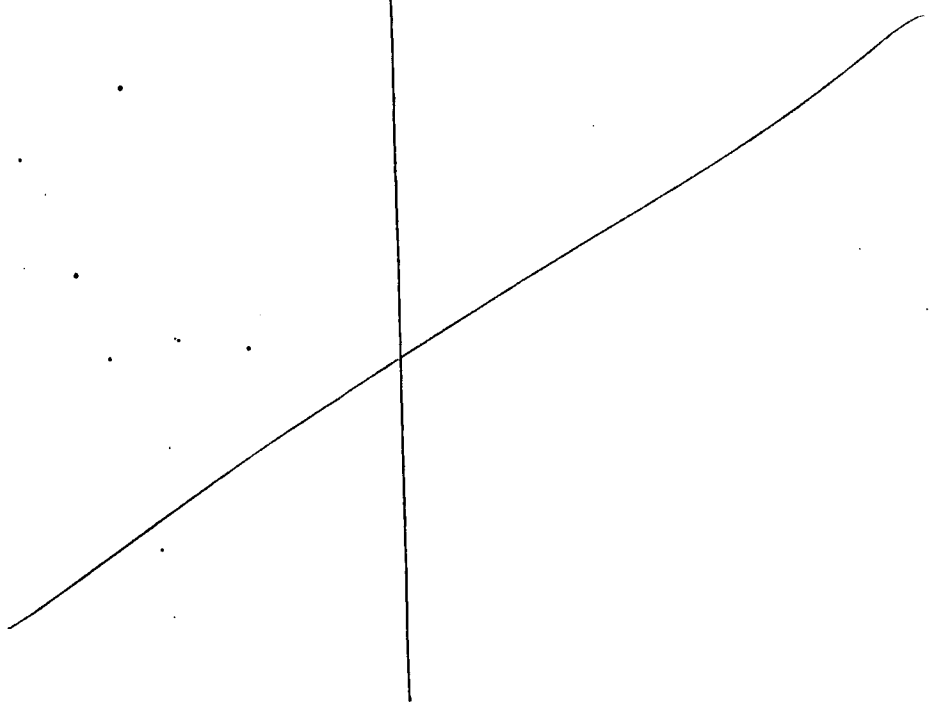
Name C.J. Simiele Date 12-17-90

QC Check: Holding Time

COMMENTS: ICP (water leach) analyses holding time of 10 months was exceeded by 1.5 months.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

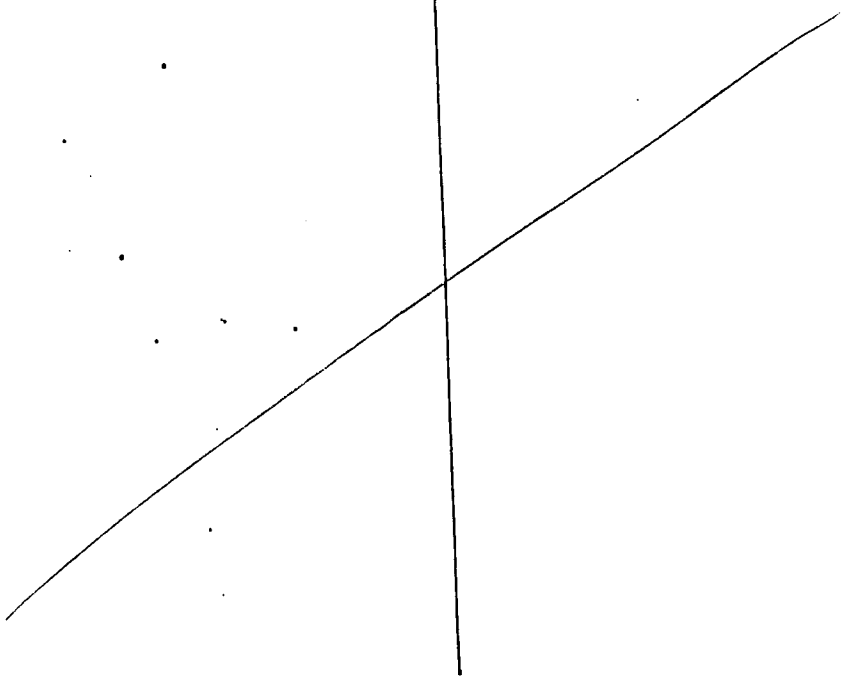
Name C.J. Simiele Date 12-17-90

QC Check: Calibration

COMMENTS: ICP calibration standards ~~of~~ cis are within ±10% control limits. Calibration frequency met.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



___ of ___

RCRA LEVEL C QC

Name C.J. Simiele Date 12-17-90

QC Check: Analytical Blank

COMMENTS: Possible contaminants detected in ICP preparation blank and associated sample for: Ba, Be, B, Ca, Eu, Fe, Pb, Mg, Hg, Sm, Si, Sr, Tl, Th, Ti.

ACTION: Qualify associated samples as per OSM guidelines.

sample #	constituent	value/qual	sample #	constituent	value/qual
F1079	Ba	U			
	Be				
	B				
	Ca				
	Eu				
	Fe				
	Pb				
	Mg				
	Hg				
	Sm				
	Si				
	Sr				
	Tl				
	Th				
	Ti				

RCRA LEVEL C QC

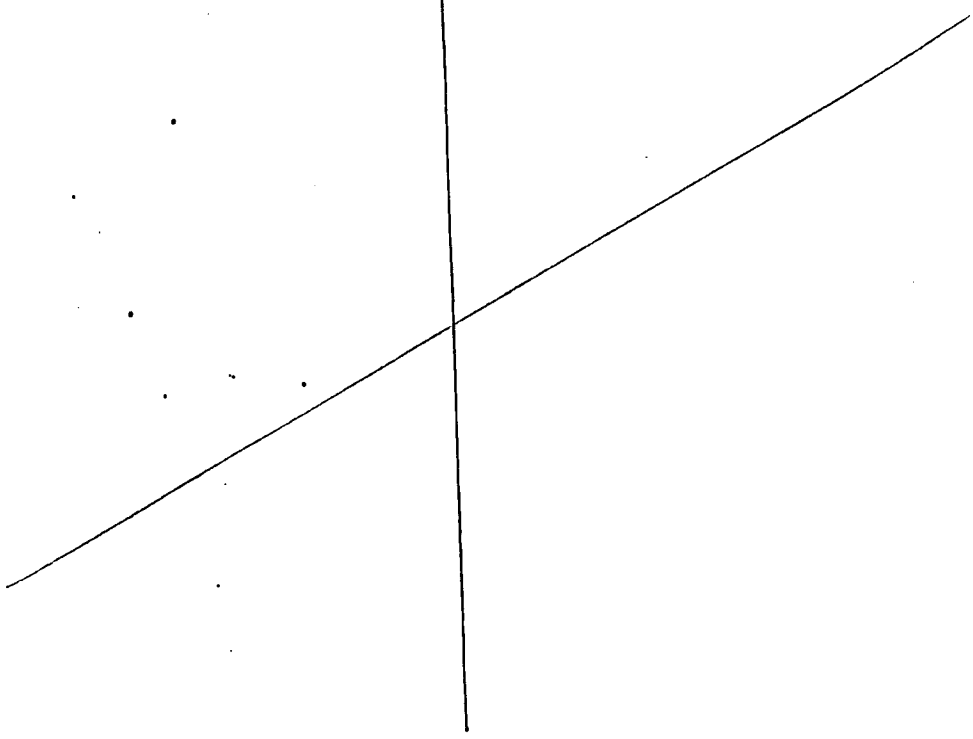
Name C.J. Simiele Date 12-17-90

QC Check: LCS

COMMENTS: No LCS data provided with data package.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

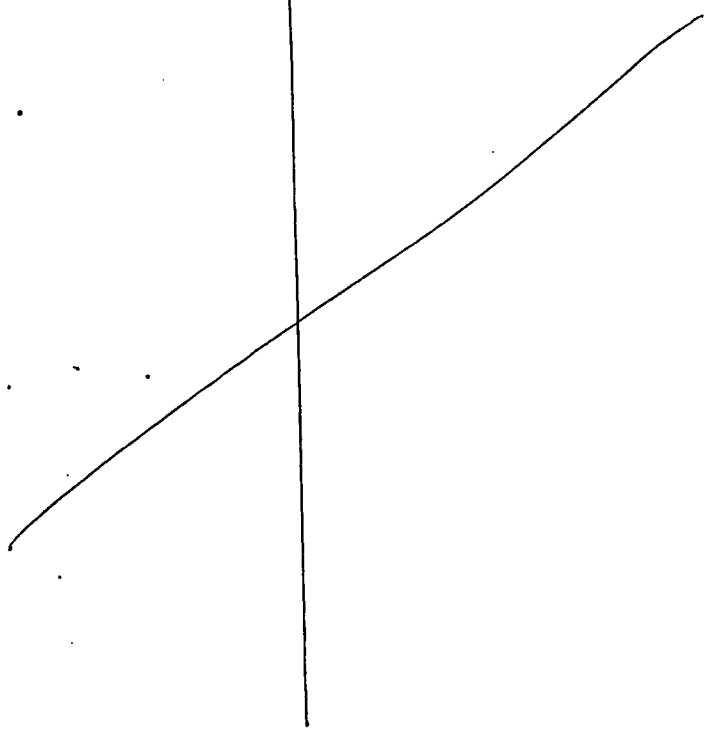
Name C.J. Simiele Date 12-17-90

QC Check: ICS

COMMENTS: No ICS data provided with data package.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

Name C.J. Simiele Date 12-17-90

QC Check: Matrix Spike

COMMENTS: ICP matrix spike, %Rec. out of ±25%0 Control limits for: Al(65%); B(130%); Cr(279%); Fe(700%); Mn(135%); Ni(364%); Sm(74%); Se(134%); U(154%).

ACTION: Qualify associated samples as per OSM guidelines.

sample #	constituent	value/qual
F1079	Al	J
	B	UJ
	Cr	J
	Fe	J
	Mn	UJ
	Ni	UJ
	Sm	J
	Se	J
	U	UJ

sample #	constituent	value/qual

RCRA LEVEL C QC

Name C.J. Simiele Date 12-17-90

QC Check: Duplicate Analyses

COMMENTS: ICP duplicate analyses RPD is out of ±20% Control limits for: Pb (108%); Li (40%); Hg (27%); Sr (33%); Tl (29%); Th (57%); Ti (30%); V (52%);

ACTION: Qualify associated sample as per OSM guidelines.

sample #	constituent	value/qual	sample #	constituent	value/qual
F1079	Pb	J			
	Li				
	Hg				
	Sr				
	Tl				
	Th				
	Ti				
	V				

___ of ___

RCRA LEVEL C QC

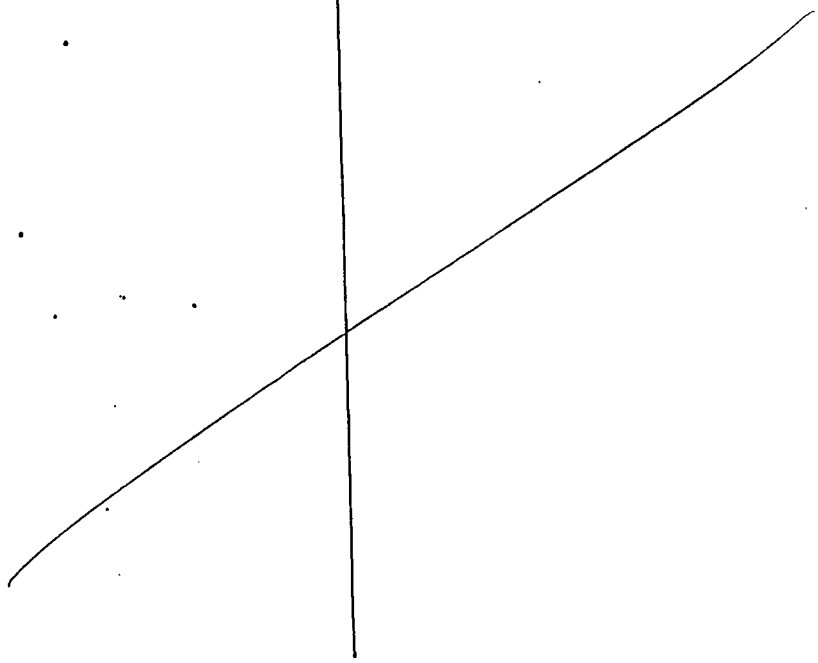
Name C.J. Simiele Date 12- -90

QC Check: Holding Time

COMMENTS: As (water leach) analyses holding time of 10 months met.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

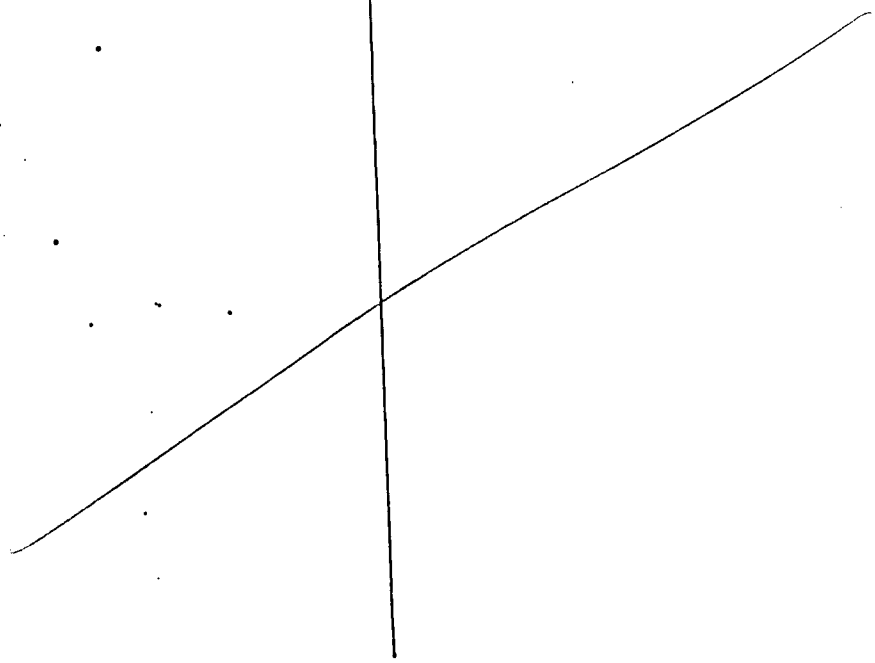
Name C.J. Simiele Date 12-17-90

QC Check: Calibration

COMMENTS: As (water leach) calibration standards are within ±10% control limits. Calibration curve corr. Coeff = 0.9989. Calibration frequency met.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



___ of ___

RCRA LEVEL C QC

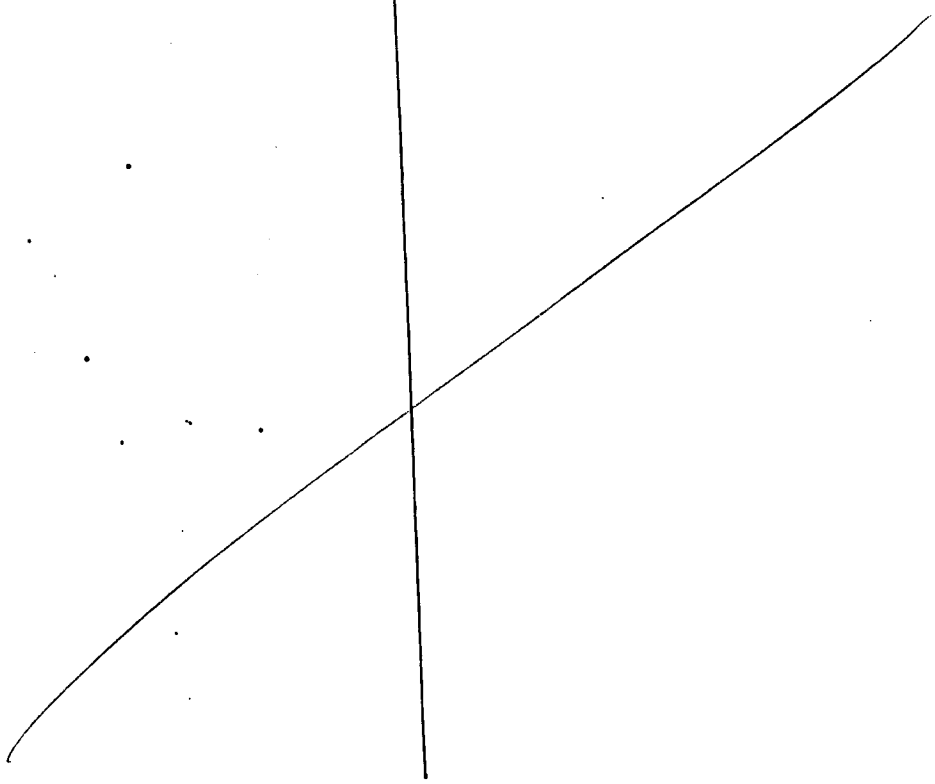
Name C.J. Simicic Date 12-17-90

QC Check: Analytical Blank

COMMENTS: No contaminants detected in As preparation blank and associated sample.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

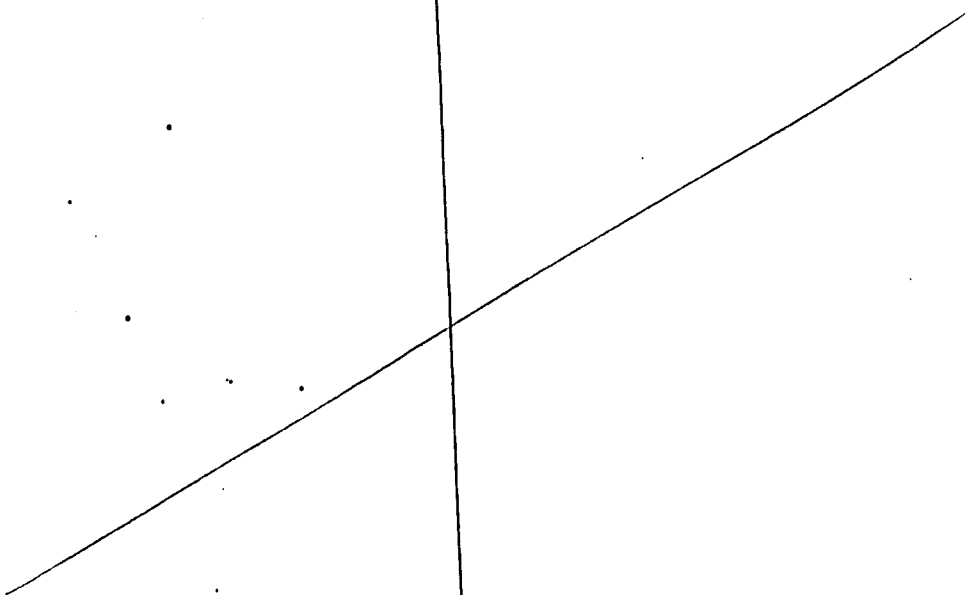
Name C.J. Simiele Date 12-17-90

QC Check: LCS

COMMENTS: No LCS data provided with data package.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

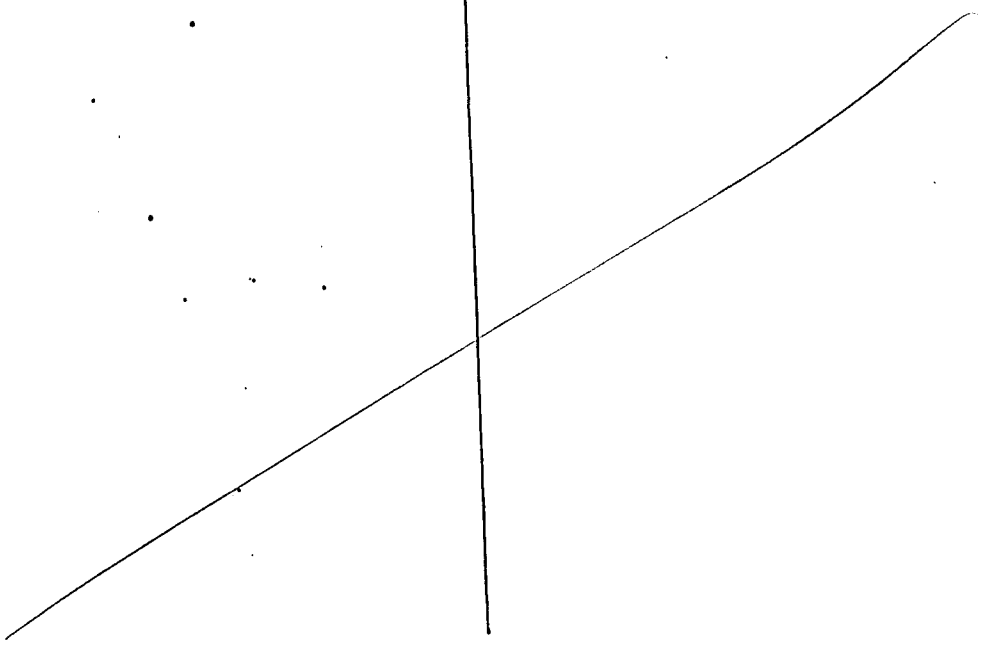
Name C.J. Simiele Date 12-17-90

QC Check: Matrix Spike

COMMENTS: As matrix spike % Rec. is within ±25% control limits.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

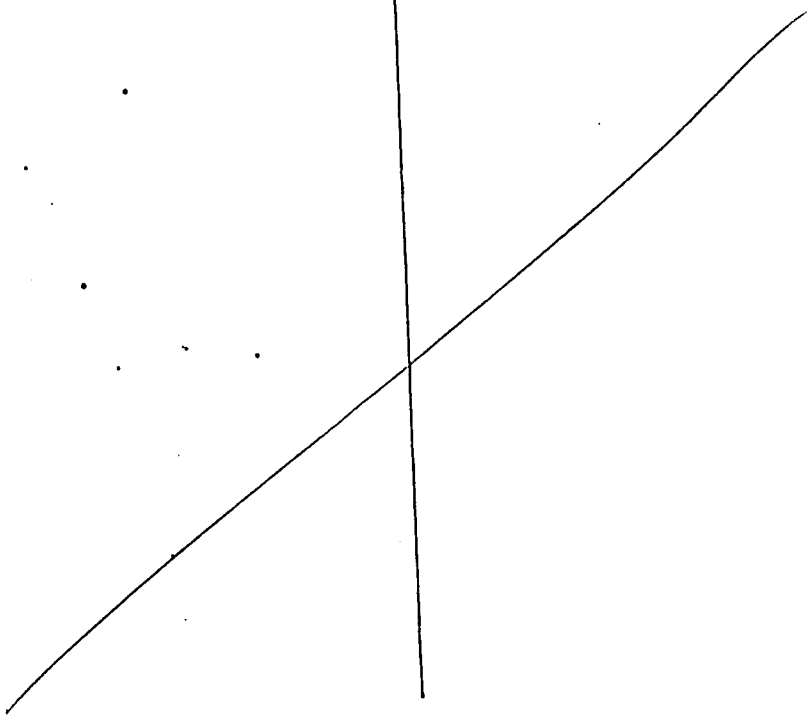
Name C.J. Simiele Date 12-17-90

QC Check: Duplicate Analyses

COMMENTS: As duplicate analyses RPD is within ±20% control limits.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

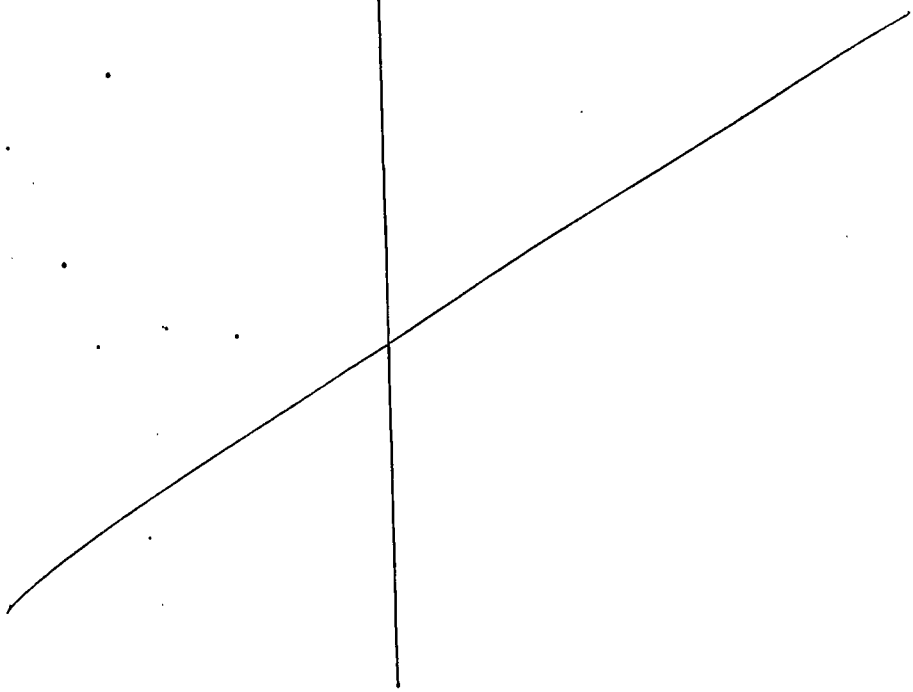
Name C.J. Simiele Date 12-17-90

QC Check: Holding Time

COMMENTS: Hg (water leach) analyses holding time of 28 days was exceeded by 61 days.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



___ of ___

RCRA LEVEL C QC

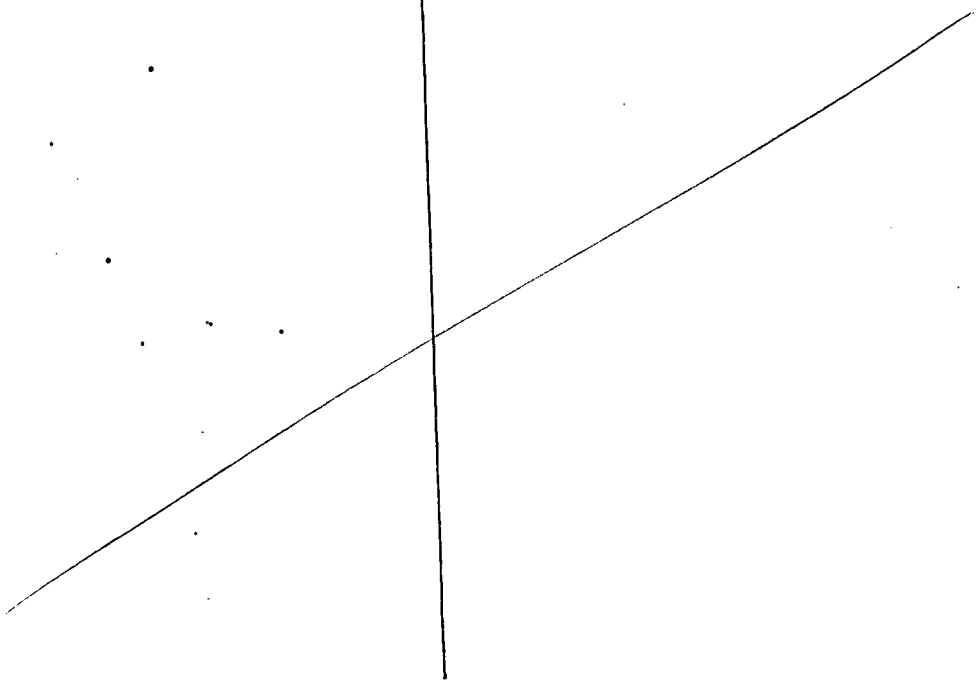
Name C.J. Simiele Date 12-17-90

QC Check: Calibration

COMMENTS: Hg calibration standards are within ±10% control limits. Calibration curve Corr. Coeff = 0.9999. Calibration frequency met.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

Name C.J. Simiele Date 12-17-90

QC Check: Analytical Blank

COMMENTS: Possible contaminants detected in Hg preparation blank and associated sample.

ACTION: Qualify associated sample as per OSM guidelines.

sample #	constituent	value/qual	sample #	constituent	value/qual
F1079	Hg	U			

___ of ___

RCRA LEVEL C QC

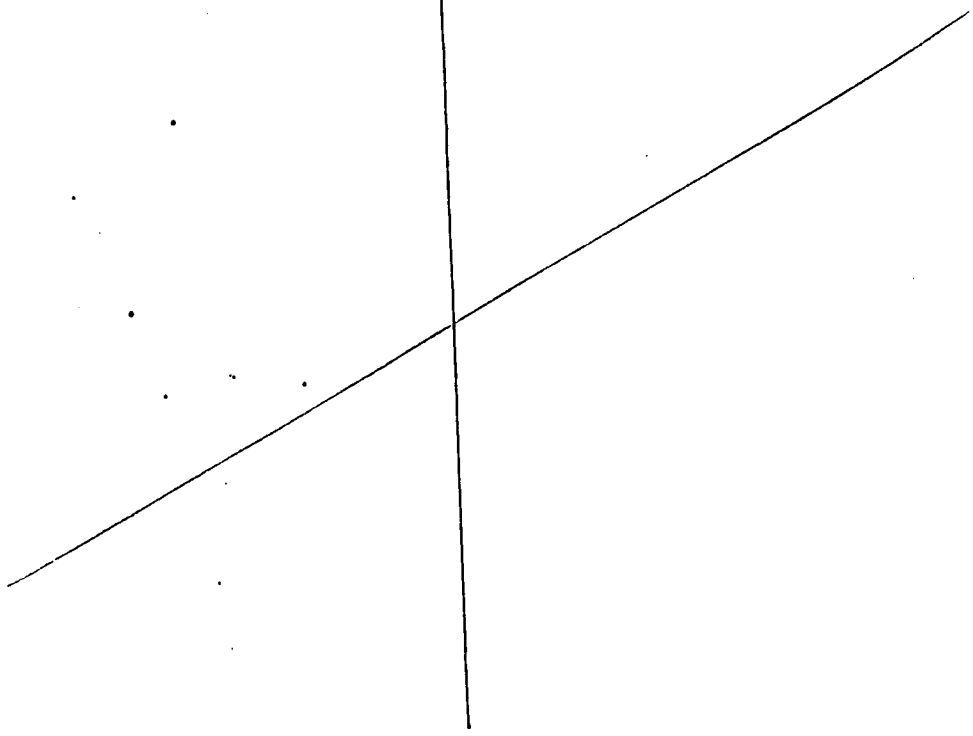
Name C.J. Simiele Date 12-17-90

QC Check: LCS

COMMENTS: No LCS data provided with data package.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

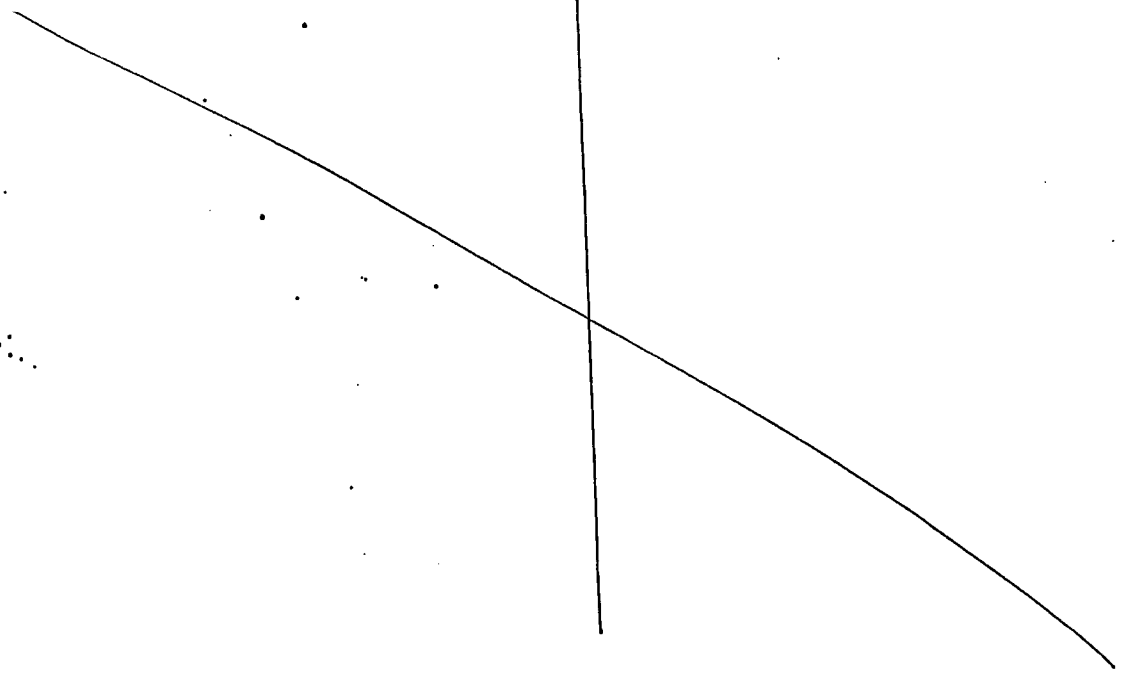
Name C.J. Simiele Date 12-17-90

QC Check: Matrix Spike

COMMENTS: Hg matrix spike % Rec is within ±25% control limits.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



___ of ___

RCRA LEVEL C QC

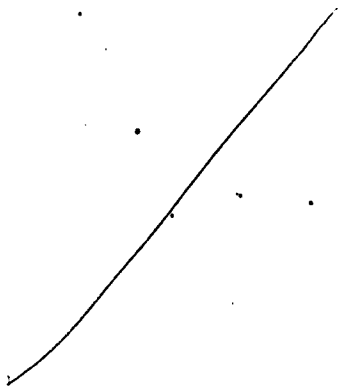
Name C.J. Simiele Date 12-17-90

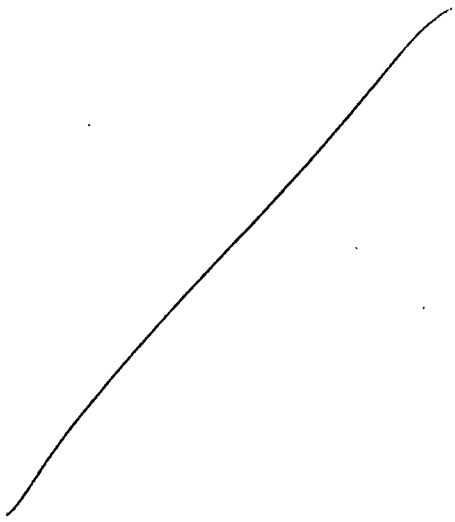
QC Check: Duplicate Analyses

COMMENTS: Hg duplicate analyses RPD is out of ±20% (control limits. (RPD=90%).

ACTION: Qualify associated samples as per OSM guidelines

sample #	constituent	value/qual	sample #	constituent	value/qual
F1079	Hg	J			





___ of ___

RCRA LEVEL C QC

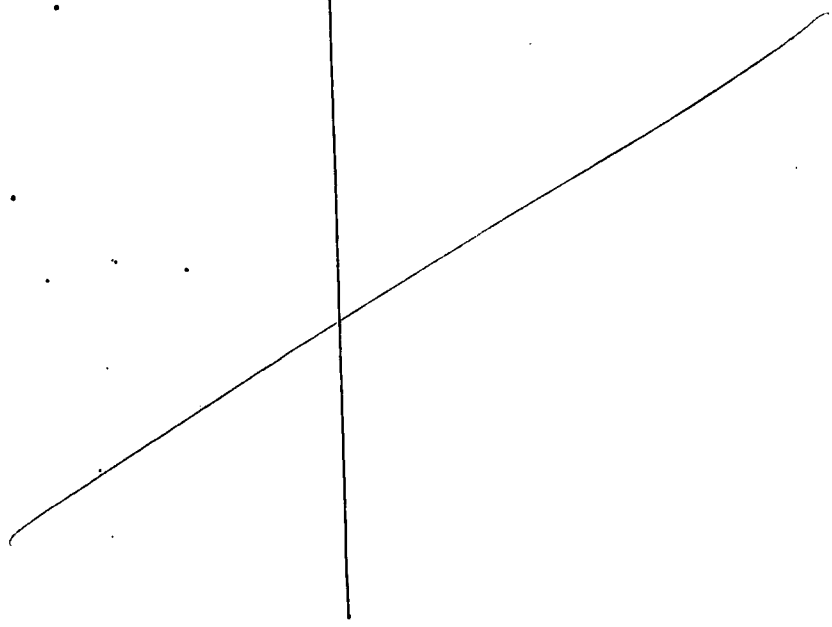
Name C.J. Simiele Date 12-17-90

QC Check: Holding Time

COMMENTS: Se (water leach) analyses holding time of 1 months was met.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

Name C.J. Simiele Date 12-17-90

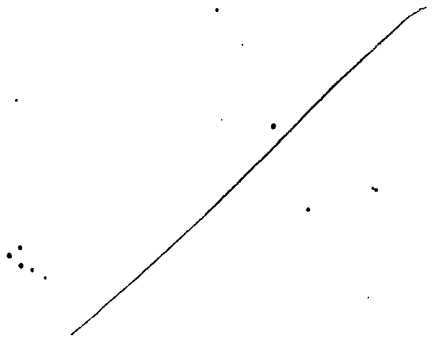
QC Check: Calibration

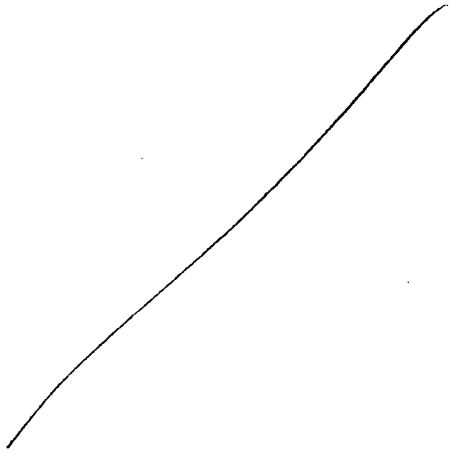
COMMENTS: Se one ~~are~~ is Calibration standards within ±10% Control limits. One standards %Rec = 86%. Calibration curve Corr. Coeff = 0.9995. Calibration frequency met.

ACTION: Qualify associated sample as per OSM guidelines.

sample #	constituent	value/qual
F1079	Se	J

sample #	constituent	value/qual





___ of ___

RCRA LEVEL C QC

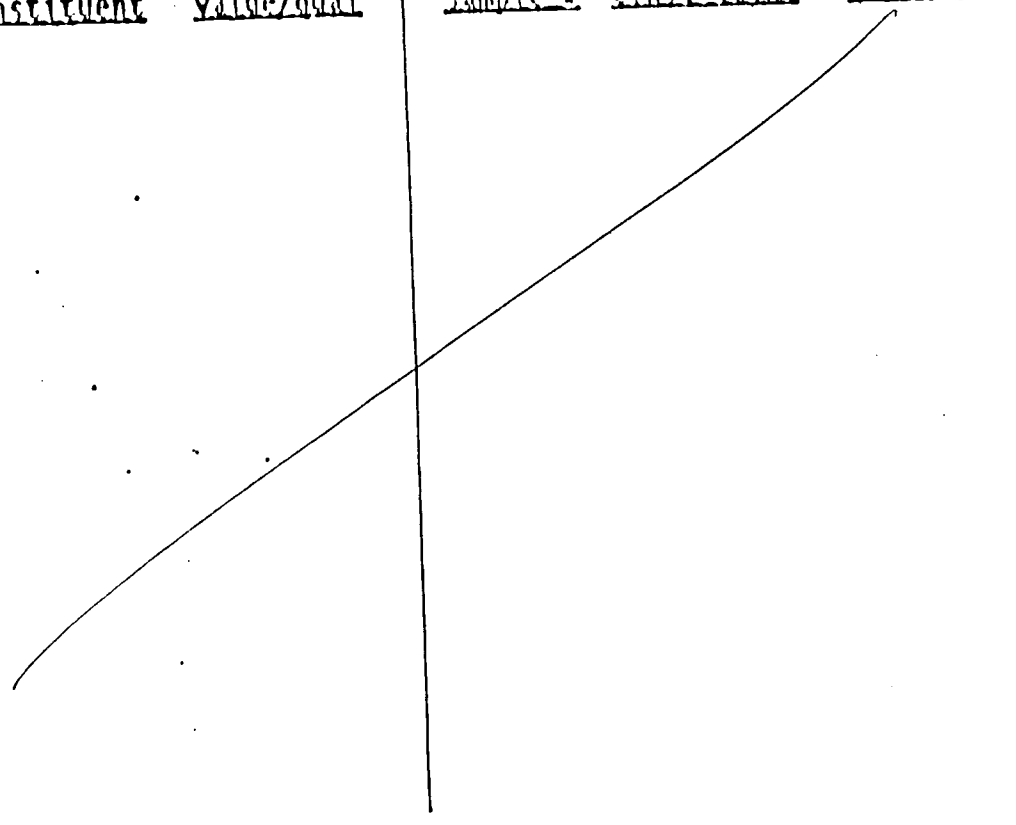
Name C.J. Simiele Date 12-17-90

QC Check: Analytical Blank

COMMENTS: ~~Se~~ CJS No contaminants detected in Se preparation blank and associated sample.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



___ of ___

RCRA LEVEL C QC

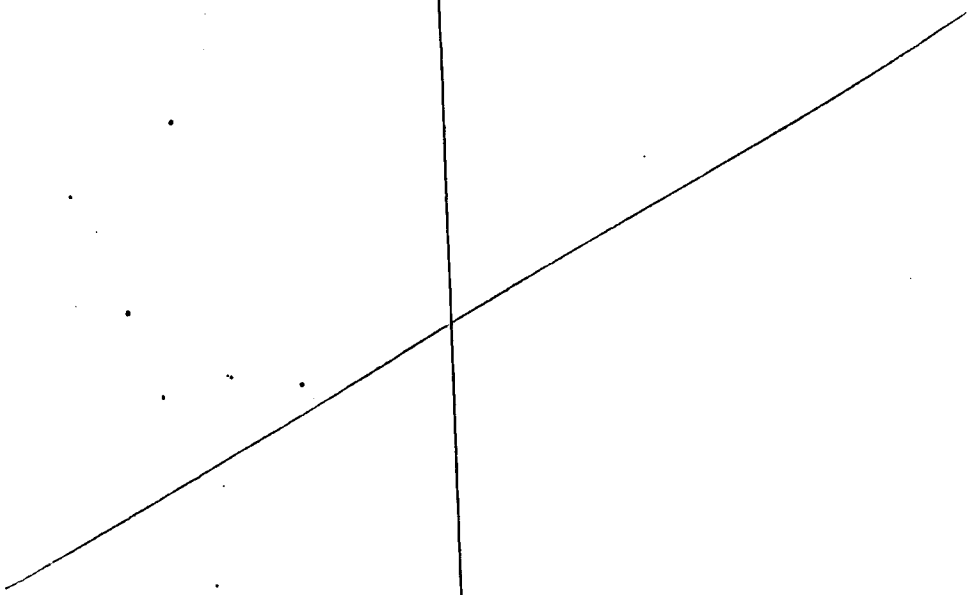
Name C.J. Simiele Date 12-17-90

QC Check: LCS

COMMENTS: No LCS data provided with data package.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

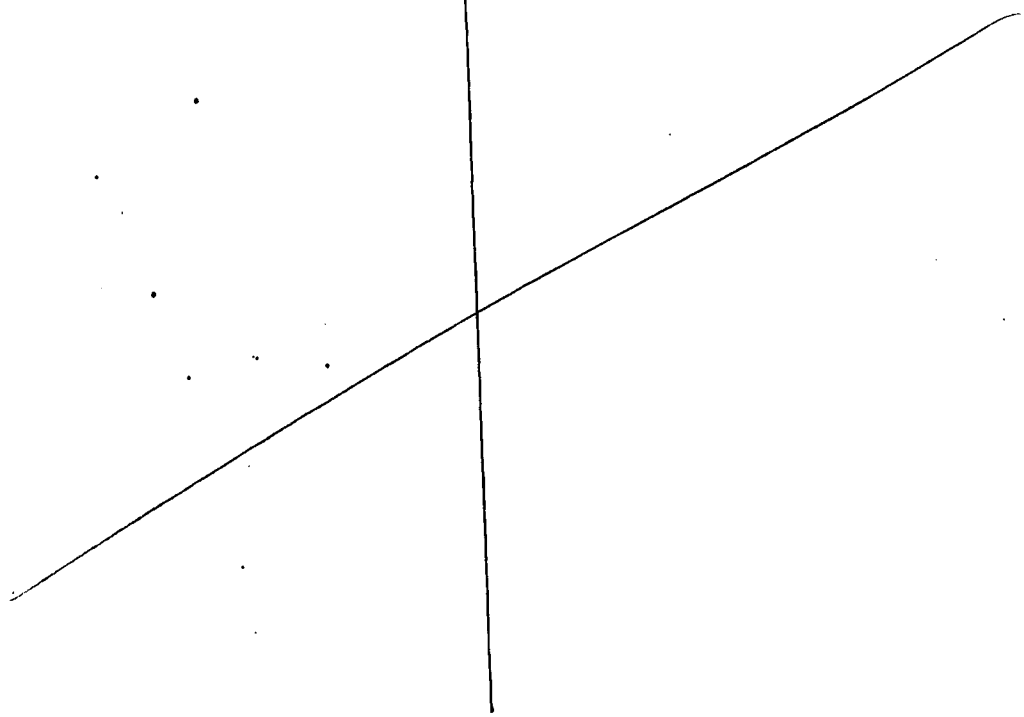
Name C.J. Simiele Date 12-17-90

QC Check: Matrix Spike

COMMENTS: Se matrix spike %Rec is within ±25% control limits

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

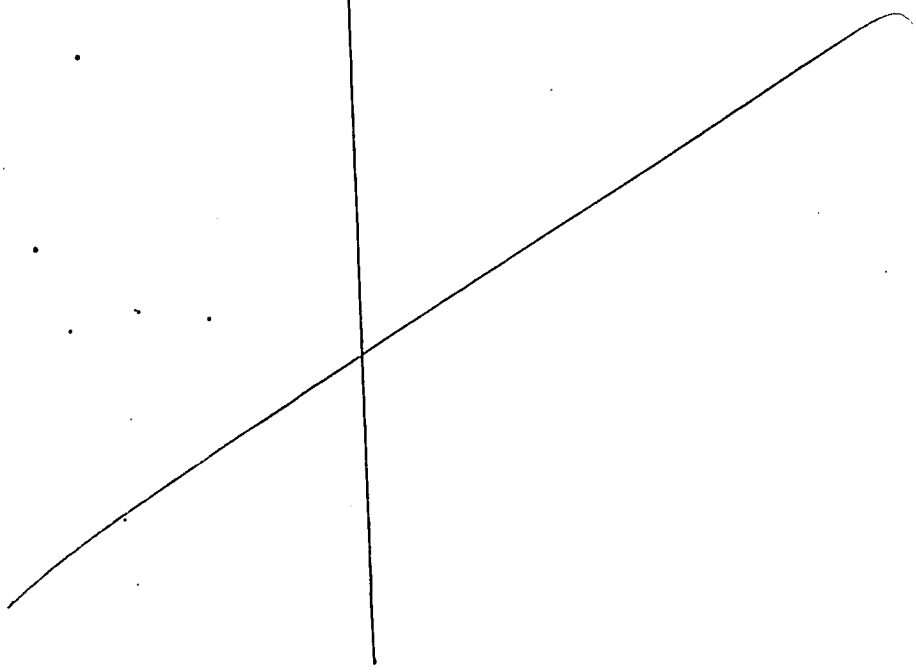
Name C.J. Simiele Date 12- -90

QC Check: Duplicate Analyses

COMMENTS: Se duplicate analyses RPD is within ± 20% control limits.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



___ of ___

RCRA LEVEL C QC

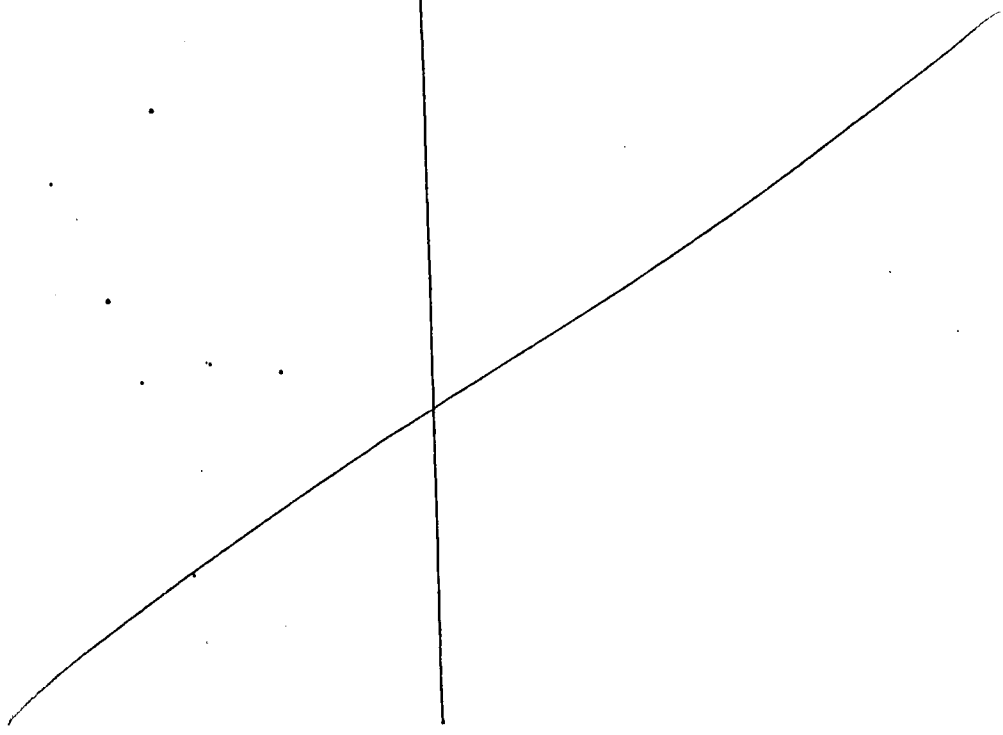
Name C.J. Simiele Date 12-17-90

QC Check: Holding Time

COMMENTS: ICP (acid digest) analyses holding time of 6 months was met.

ACTION: None.

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

Name C.J. Simiele Date 12-17-90

QC Check: Calibration

COMMENTS: ICP (acid digest) calibration standards are within ±10% control limits for non-digest. Std's. Acid digest. standards out of ±10% control limits include: Ce (89%); Cr (85%); Co (80%); K (83%); Si (75%); Ta (74%).

ACTION: Qualify associated samples as per OSM guidelines.

sample #	constituent	value/qual
F1085	Ce	UJ
	Cr	J
	Co	J
	K	UJ
	Si	J
	Ta	UJ

sample #	constituent	value/qual

___ of ___

RCRA LEVEL C QC

Name C.J. Simicle Date 12-17-90

QC Check: Analytical Blank

COMMENTS: Possible contaminants detected in ICP preparation blank and associated sample for: B, Ca, Mg, Si, Ti and Zn.

ACTION: Qualify associated sample as per OSM guidelines.

sample #	constituent	value/qual	sample #	constituent	value/qual
F1085	B	U			
	Ca				
	Mg				
	Si				
	Ti				
	Zn				

___ of ___

RCRA LEVEL C QC

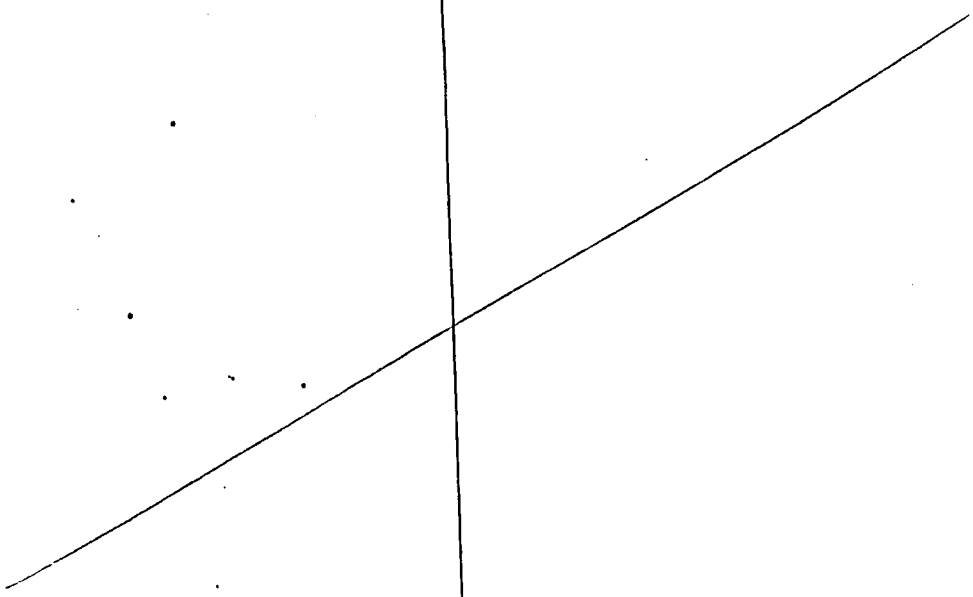
Name C.J. Simiele Date 12-17-90

QC Check: LCS

COMMENTS: No LCS data provided with data package.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

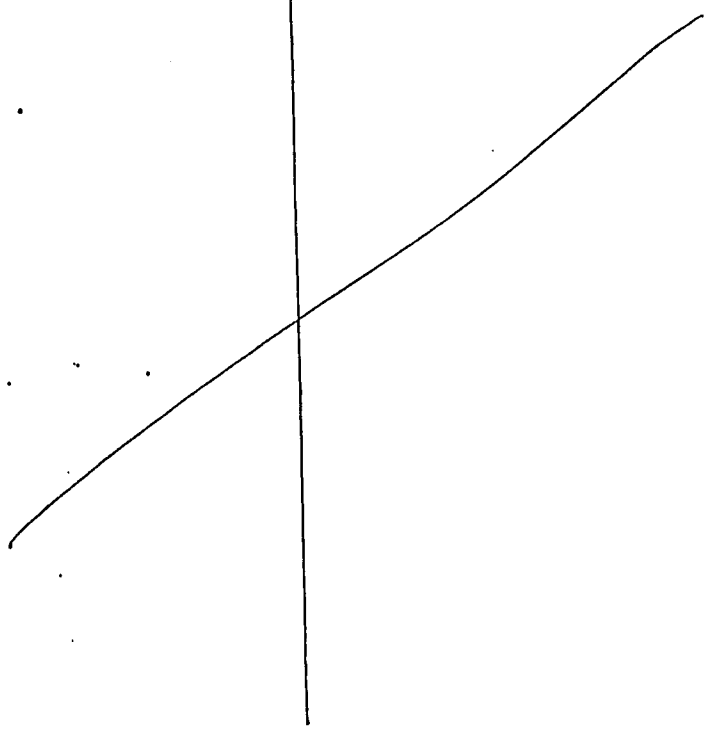
Name C. J. Simiele Date 12-17-90

QC Check: ICS

COMMENTS: No ICS data provided with data package.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

Name C.J. Simiele Date 12-17-90

QC Check: Matrix Spike

COMMENTS: ICP matrix spike % Rec. is out of ± 25% control limits for: B(135%); Ca(147%); Ce(115%); Cr(236%); Mg(4139%); K(73%); Si(-115%); Ag(54%); Ta(26%); Zn(167%); Zr(146%).

ACTION: Qualify associated samples as per OSM guidelines.

sample #	constituent	value/qual	sample #	constituent	value/qual
F1085	B	J			
	Ca	J			
	Ce	R			
	Cr	J			
	Mg	J			
	K	UJ			
	Si	R			
	Ag	UJ			
	Ta	R			
	Zn	J			
	Zr	J			

___ of ___

RCRA LEVEL C QC

Name C.J. Simiele Date 12-17-90

QC Check: Duplicate Analyses

COMMENTS: ICP duplicate analyses RPD out of ±20% control limits for: Sb(48%); Ba(88%); Be(57%); Cr(32%); Co(160%); Cu(55%); La(160%); Pb(54%); Li(46%); Mo(71%); Ni(54%); Se(64%); Si(47%); Tl(83%); Th(97%); Sn(55%); Ti(73%); U(72%); Zn(76%); Zr(78%).

ACTION: Qualify associated samples as per OSM guidelines.

sample #	constituent	value/qual	sample #	constituent	value/qual
F1085	Sb	J			
	Ba				
	Be				
	Cr				
	Co				
	Cu				
	La				
	Pb				
	Li				
	Mo				
	Ni				
	Se				
	Si				
	Tl				
	Th				
	Sn				
	Ti				
	U				
	Zn				
	Zr				

___ of ___

RCRA LEVEL C QC

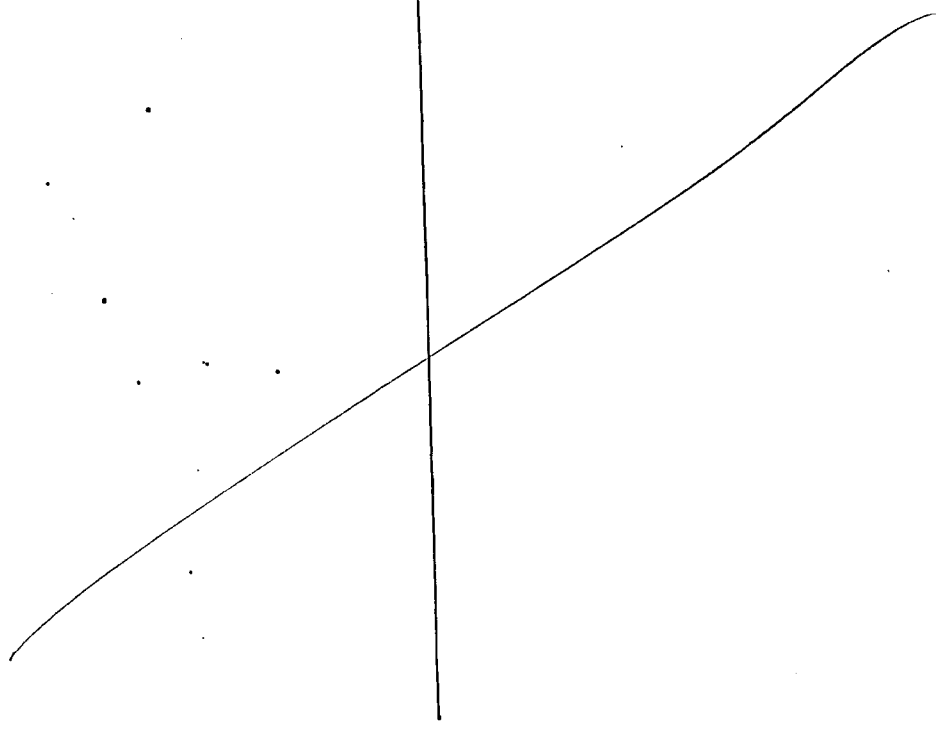
Name C.J. Simiele Date 12-17-90

QC Check: Holding Time

COMMENTS: As (acid digest) analyses holding time of 6 months was met.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

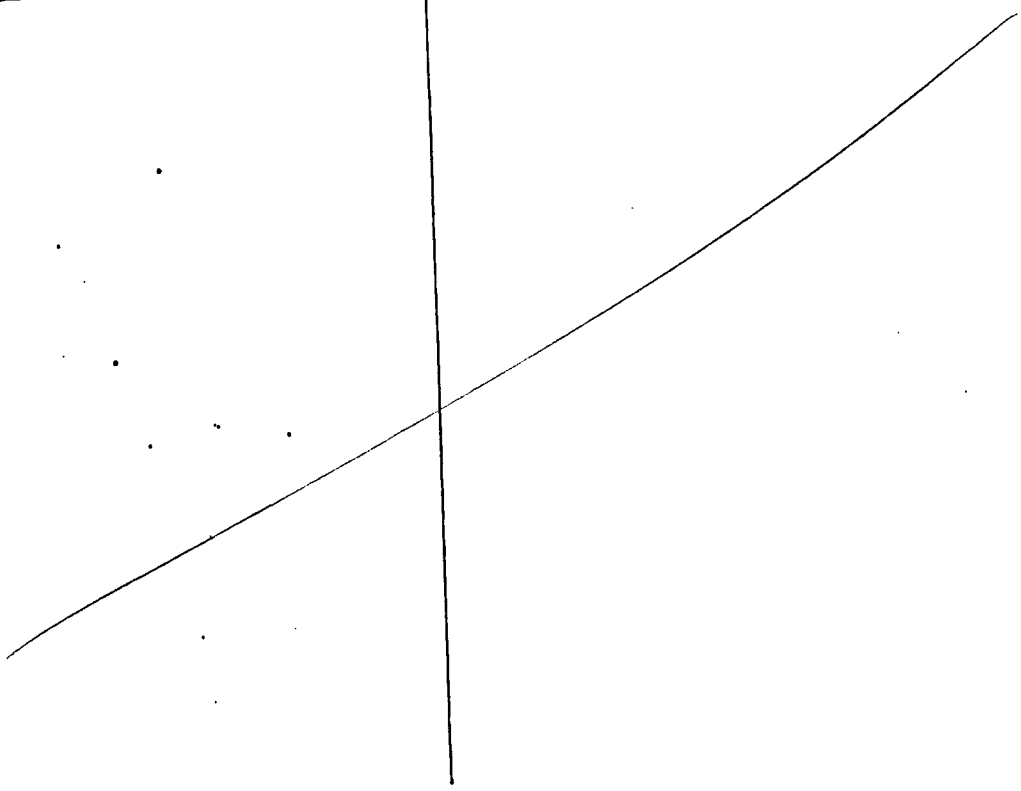
Name C.J. Simiele Date 12-17-90

QC Check: Calibration

COMMENTS: As (acid digest) calibration standards are within ±10% control limits. Calibration curve Corr. Coeff = 0.998. Calibration frequency met.

ACTION: None.

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

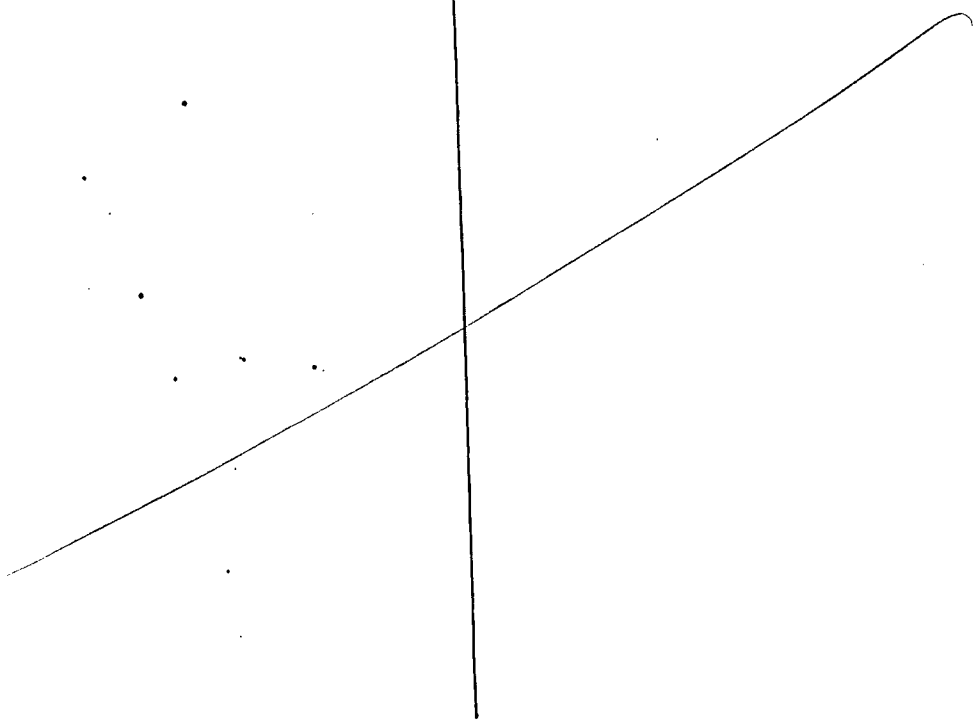
Name C.J. Simiele Date 12- -90

QC Check: Analytical Blank

COMMENTS: No contaminants detected in As preparation blank and assocuated sample.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

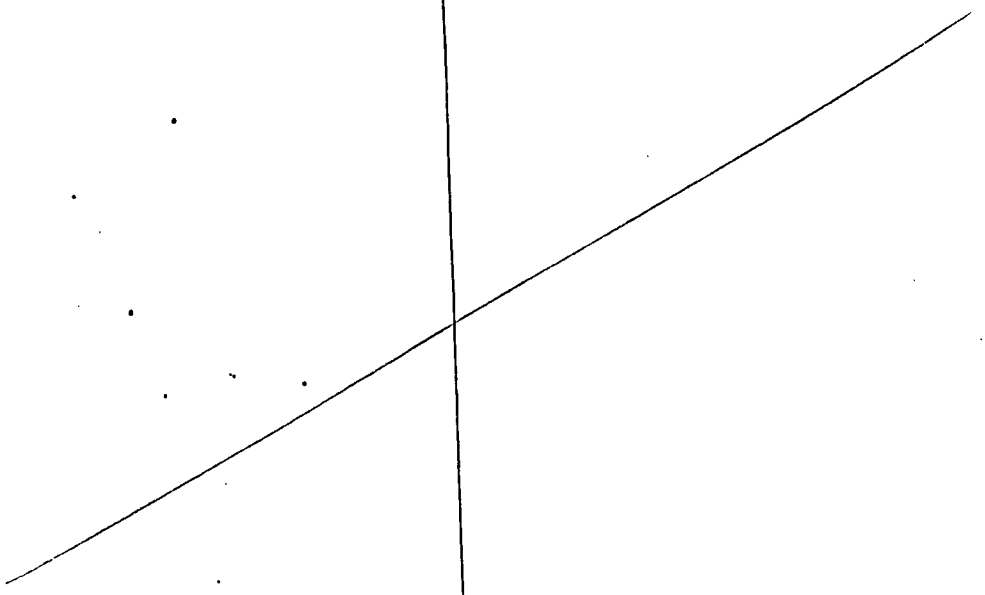
Name C.J. Simiele Date 12-17-90

QC Check: LCS

COMMENTS: No LCS data provided with data package.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

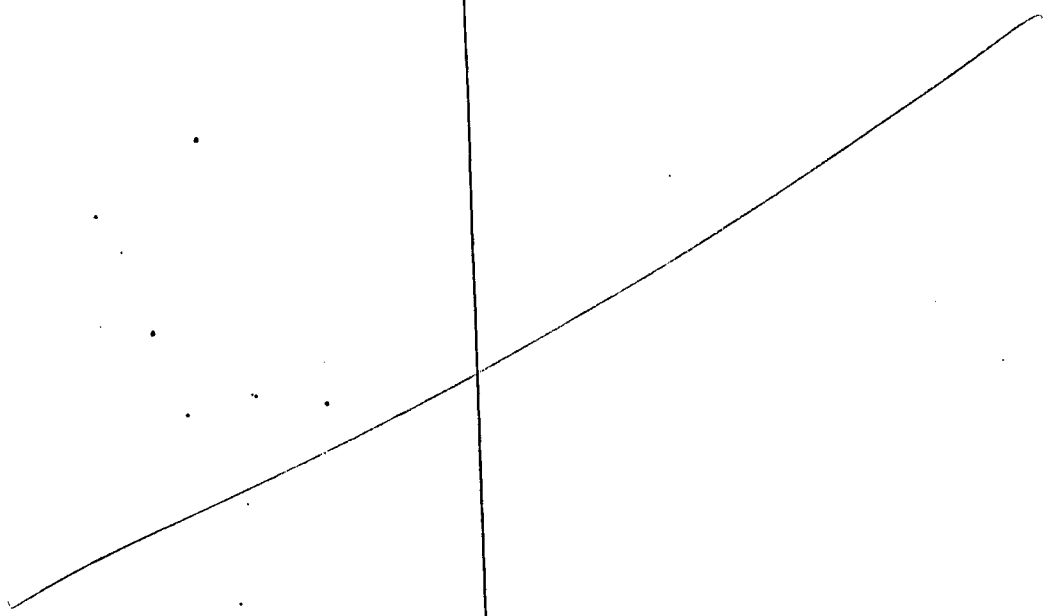
Name C.J. Simiele Date 12-17-90

QC Check: Matrix Spike

COMMENTS: As matrix spike % Rec is within ±25% control limits.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

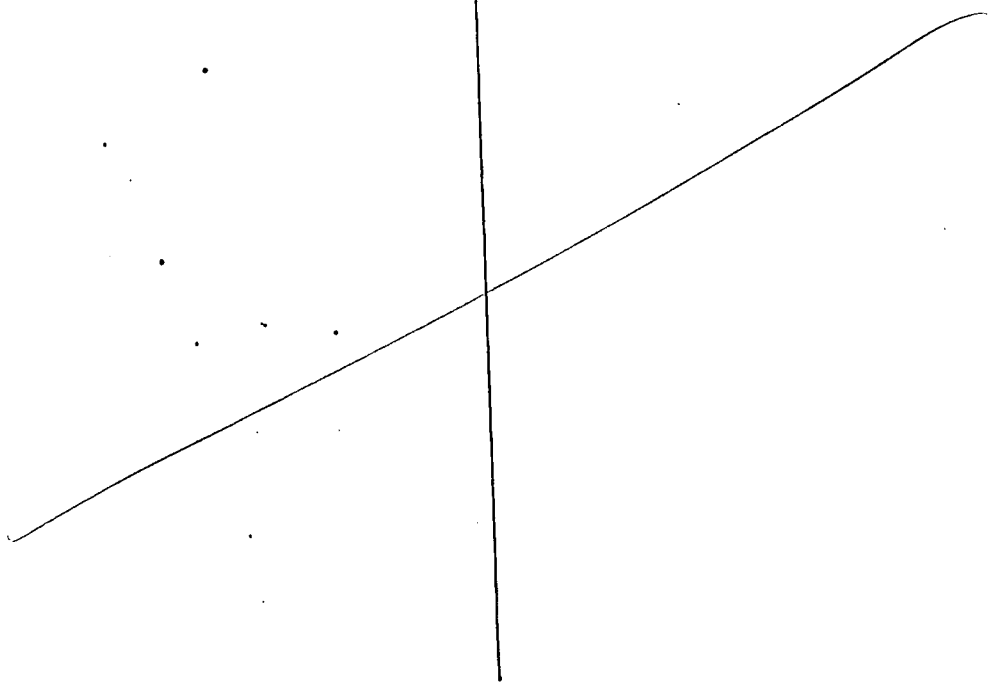
Name C.J. Simiele Date 12-17-90

QC Check: Duplicate Analyses

COMMENTS: As duplicate analyses RPD is within ± 20% control limits.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

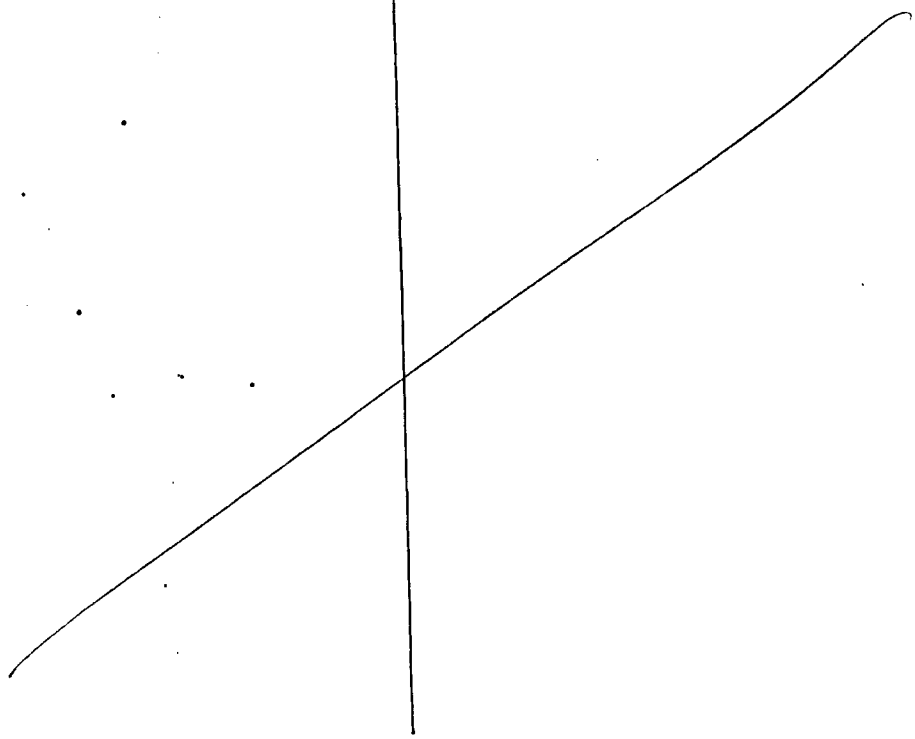
Name C.J. Simiele Date 12- -90

QC Check: Holding Time

COMMENTS: Hg (acid digest) analyses holding time of 28 days of was exceeded by 101 days.

ACTION: None.

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

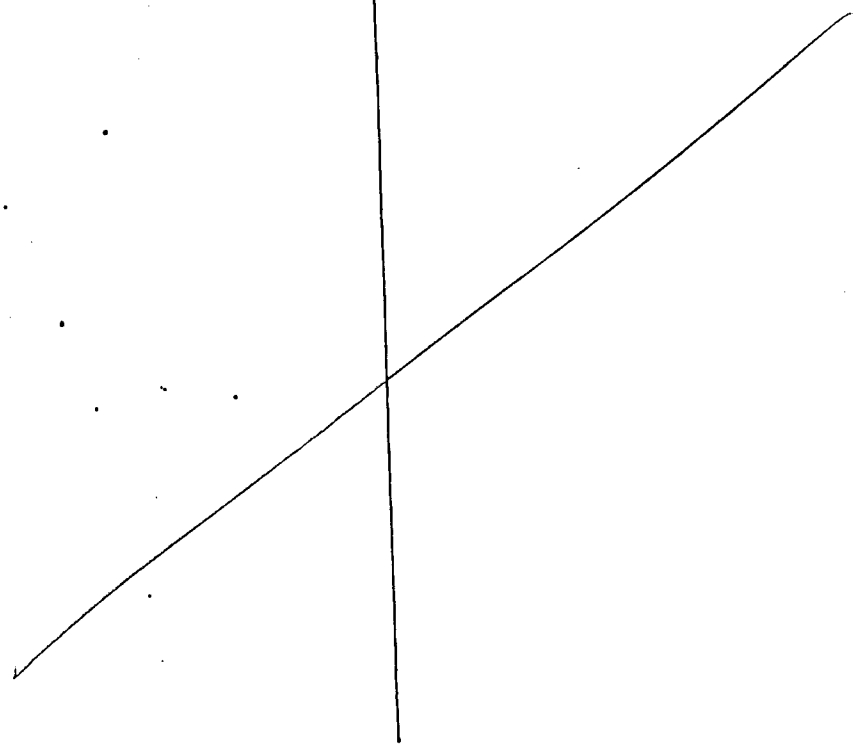
Name C.J. Simiele Date 12-17-90

QC Check: Calibration

COMMENTS: Hg calibration standards are within ±10% control limits. Calibration curve Corr. Coeff = 0.9999. Calibration frequency met.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

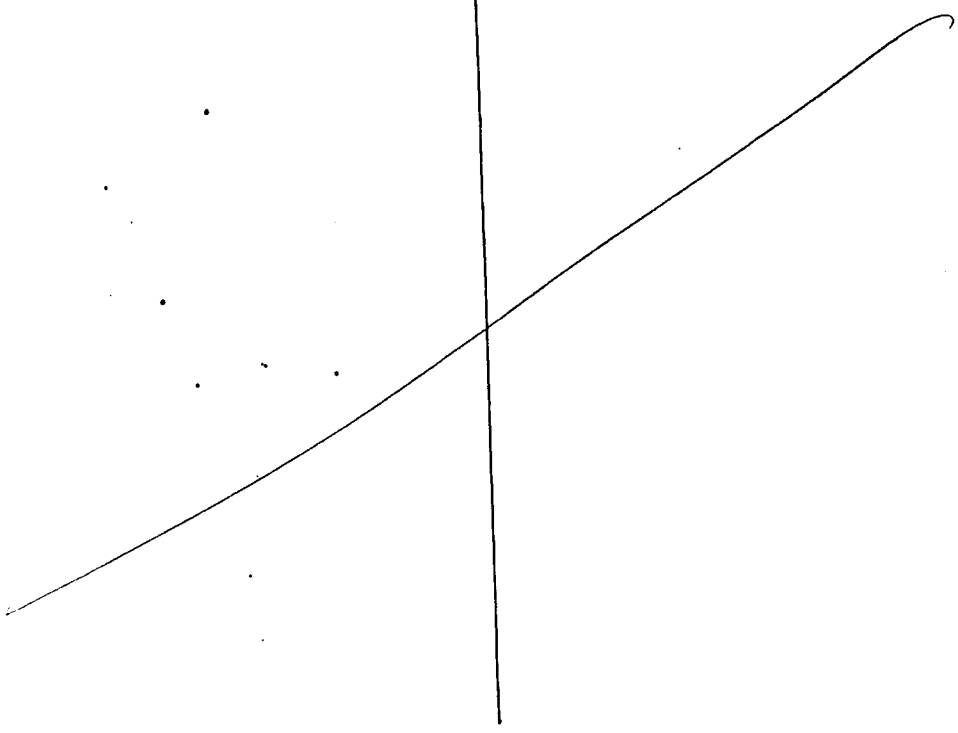
Name C.J. Simiele Date 12-17-90

QC Check: Analytical Blank

COMMENTS: No contaminants detected in Hg preparation blank and associated sample.

ACTION: None.

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

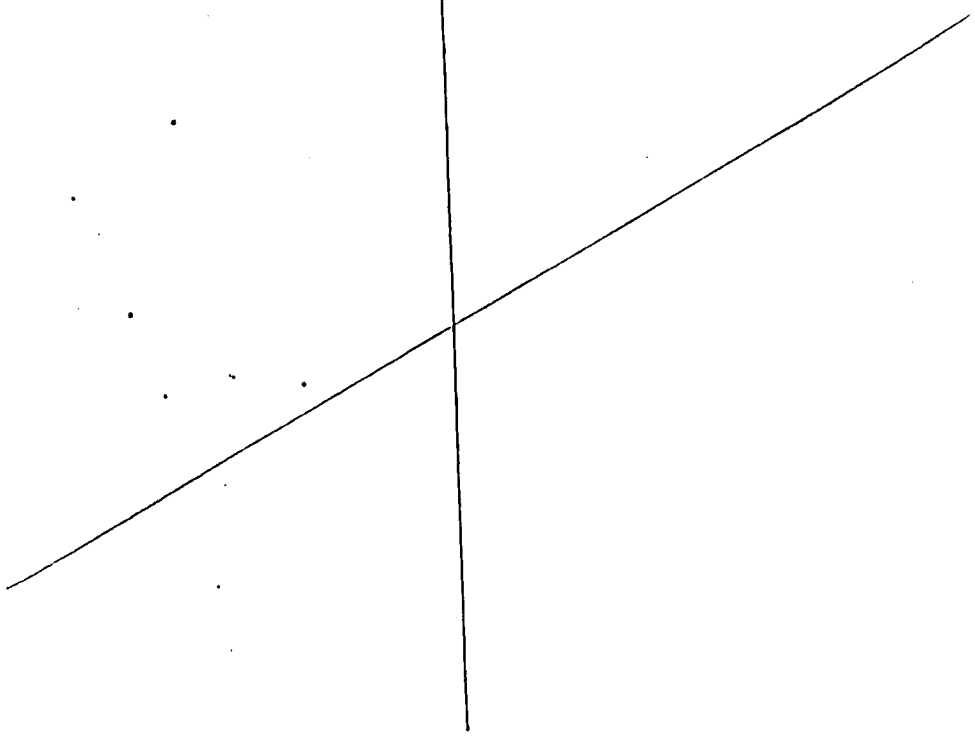
Name C.J. Simiele Date 12-17-90

QC Check: LCS

COMMENTS: No LCS data provided with data package.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

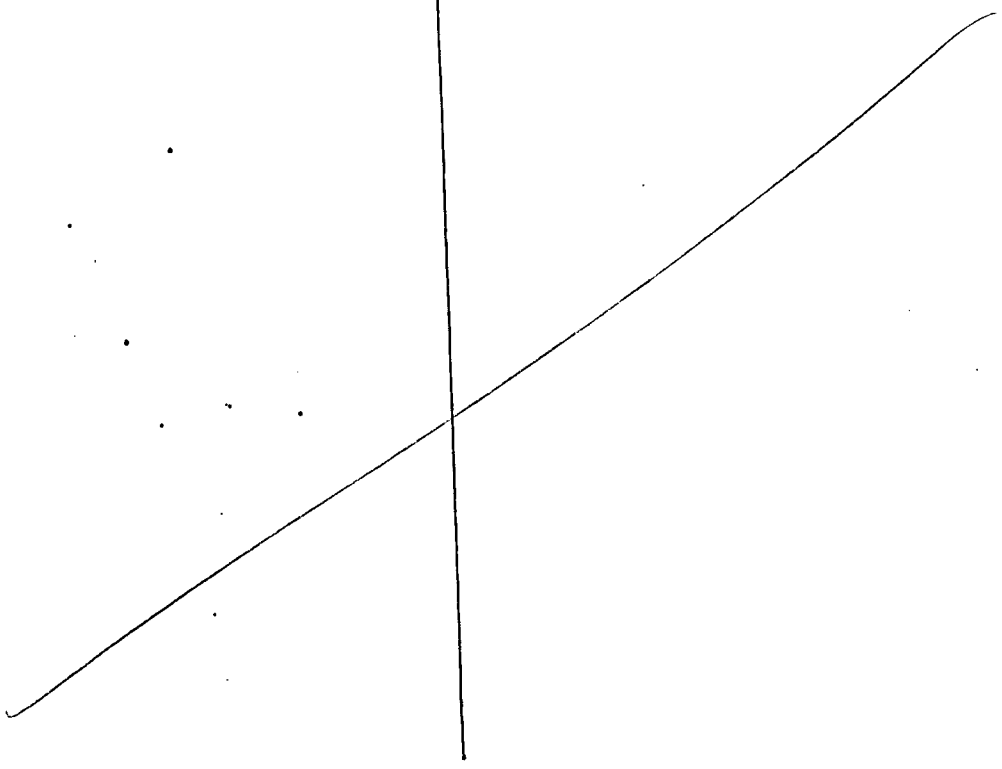
Name C.J. Simiele Date 12-17-90

QC Check: Matrix Spike

COMMENTS: Hg matrix spike %Rec is within ±25% control limits.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

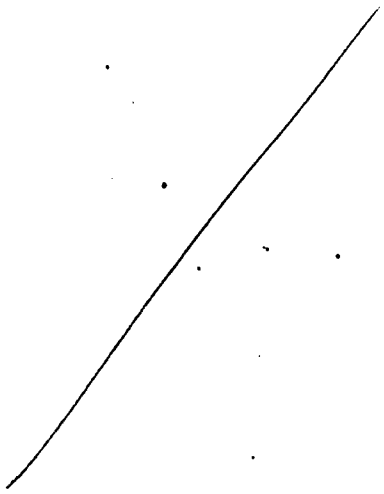
Name C.J. Simiele Date 12-17-90

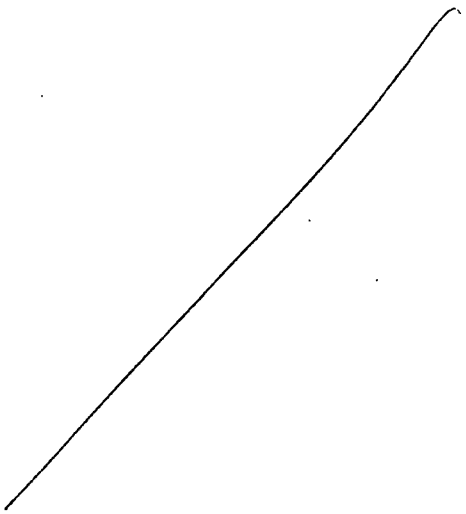
QC Check: Duplicate Analyses

COMMENTS: Hg duplicate analyses RPD is out of ±20% control limits. (RPD=20.5%).

ACTION: Qualify associated sample as per OSM guidelines.

sample #	constituent	value/qual	sample #	constituent	value/qual
F1085	Hg	J			





___ of ___

RCRA LEVEL C QC

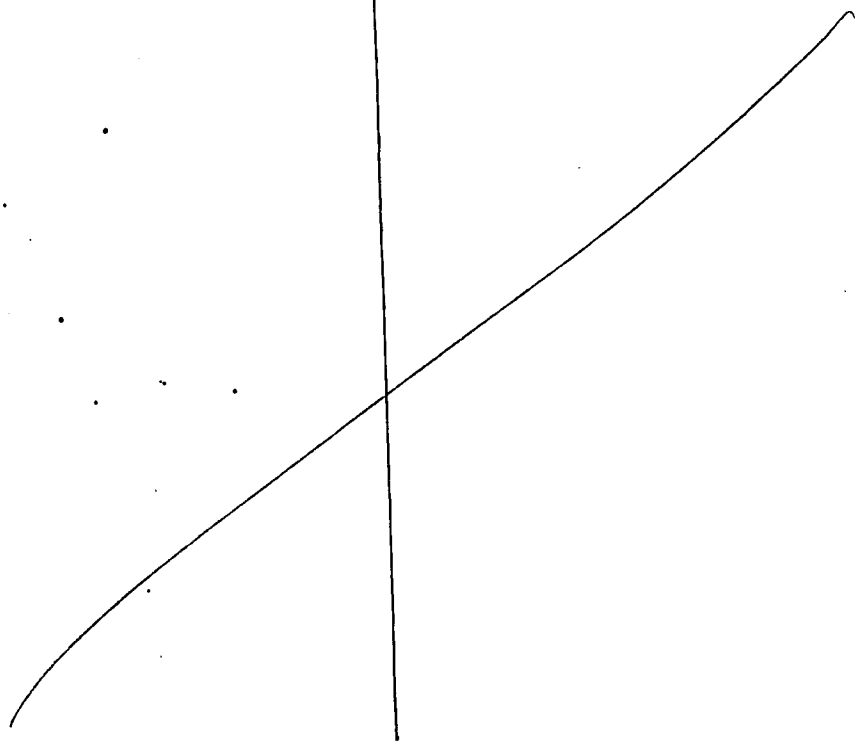
Name C.J. Simiele Date 12-17-90

QC Check: Holding Time

COMMENTS: Se (acid digest.) analyses holding time of 6 months was met.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

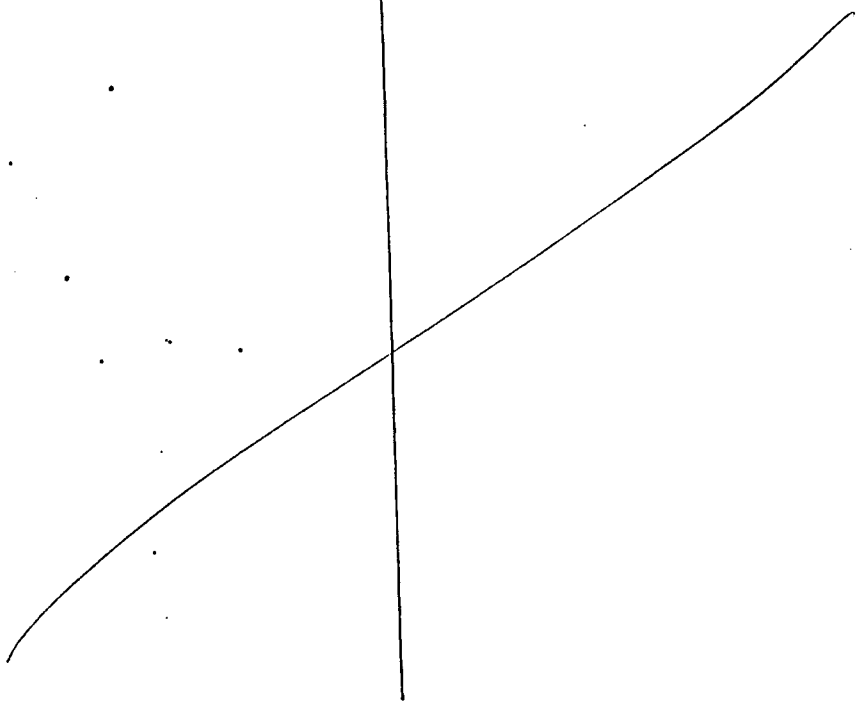
Name C. J. Simiele Date 12-17-90

QC Check: Calibration

COMMENTS: Se calibration standards are within ±10% control limits. Calibration curve Corr. Coeff = 0.9993. Calibration frequency met.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

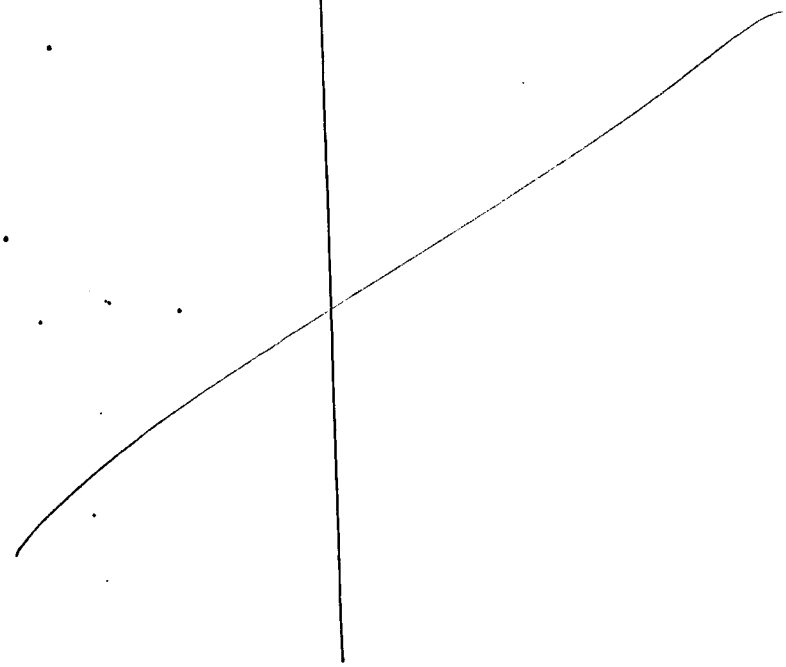
Name C.J. Simiele Date 12-17-90

QC Check: Analytical Blank

COMMENTS: No contaminants detected in Se preparation blank and associated sample

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

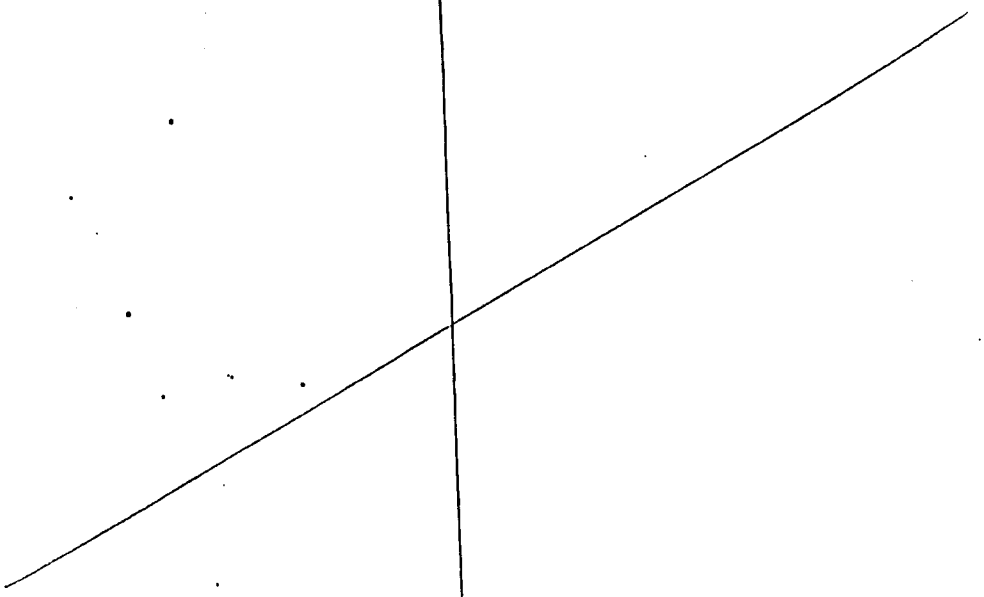
Name C. J. Simiele Date 12-17-90

QC Check: LCS

COMMENTS: No LCS data provided with data package.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

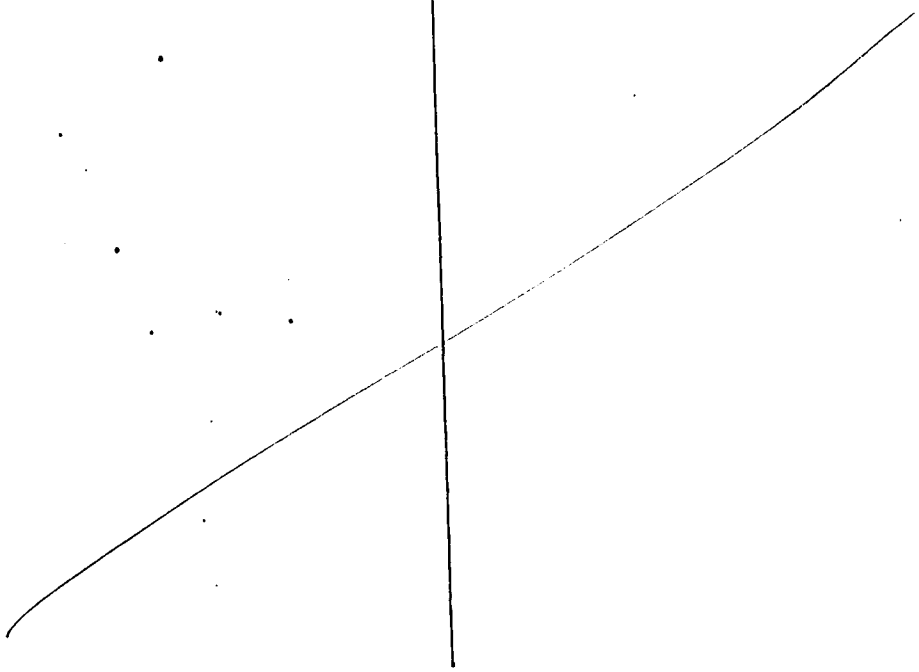
Name C.J. Simiele Date 12-17-90

QC Check: Matrix Spike

COMMENTS: Se matrix spike % Rec. is within ± 25% control limits.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

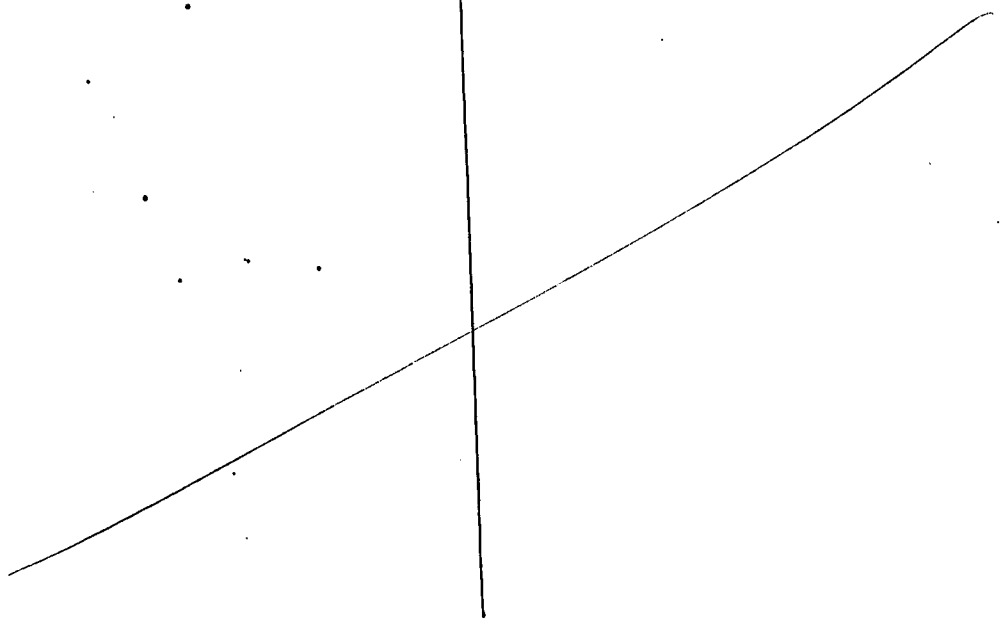
Name C.J. Simiele Date 12-17-90

QC Check: Duplicate Analyses

COMMENTS: Sr duplicate analyses RPD is within ±20% control limits.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



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Westinghouse Hanford Company

017367

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OSM RCRA LEVEL C DATA ASSESSMENT

DATE 12-16-90 SAMPLES/MATRIX Seq# 89-076

REVIEWED BY C. J. Simiele (Connie J. Simiele) LAB ID:

LABORATORY WHC-222S Untreated: F0561

CASE # SST-241-U-110 Fusion : F0566

SDG # # 89-076 (Core 13 Segment 4) Acid Digest: F0576

Water Leach: F0571

DATA ASSESSMENT SUMMARY

QUALITY CONTROL CHECK	ANALYSIS IC	TOC	ICP
1. Holding Time	X	X	O
2. Calibration	O	O	X
3. Analytical Blank	O	O	X
4. LCS	*	*	*
5. ICS (ICP ONLY)	N/A	N/A	*
6. Matrix Spike	O	O	M
7. Duplicate Analyses	X	O	X
8.			
9.			
10.			

O = data had no problems
X = data qualified due to minor problems
M = data qualified due to major problems/some data may be unusable

OVERALL ASSESSSMENT: (Samples not qualified based on exceeded holding times.)

NOTES: * = no data provided with data package.
No Radiochemistry Validation completed on data package.

o Refer to the corresponding attachments for explanation of any problems.

RCRA LEVEL C QC

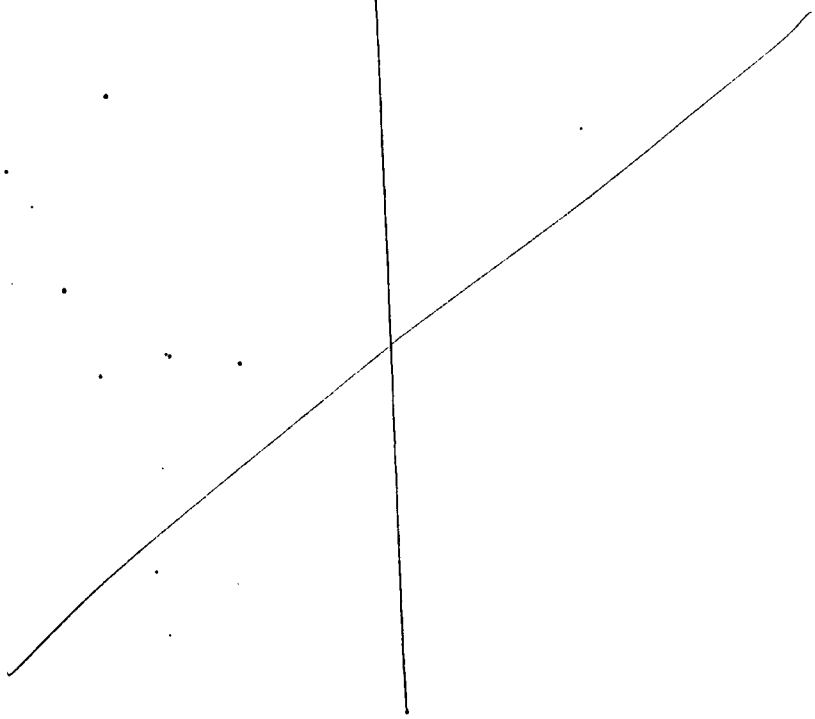
Name C.J. Simiele Date 12-11e-90

QC check: Holding Time

COMMENTS: IC holding time of 2 days for NO_3 was exceeded by 123 days, 28 days for F was exceeded by 104 days, and 28 days for Cl, PO_4 & SO_4 was exceeded by 97 days.

ACTION: None.

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

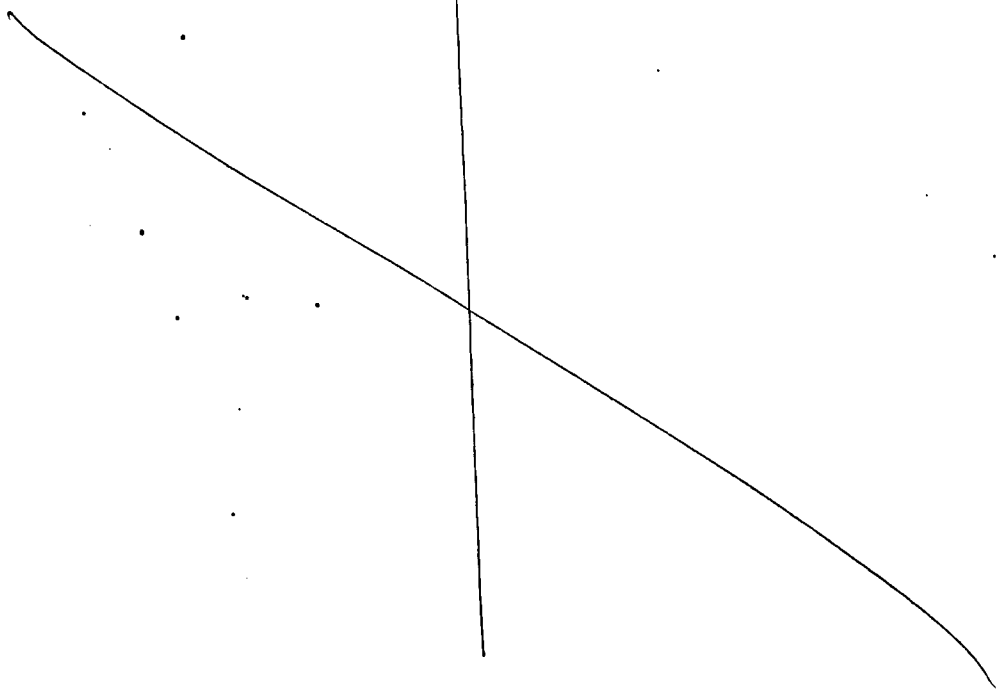
Name C.J. Simiele Date 12-11e-90

qc check: Calibration

COMMENTS: IC calibration standards are within ±10% control limits. Calibration frequency met.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

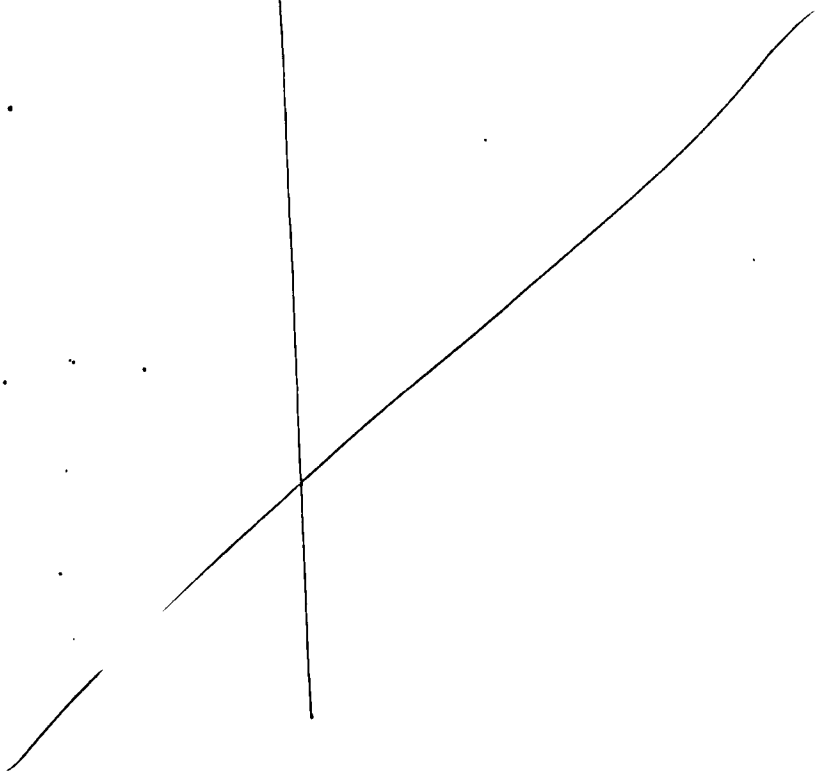
Name C.J. Simiele Date 12-16-90

QC Check: Analytical Blank

COMMENTS: No contaminants detected in IC preparation blank and associated samples for all anions.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

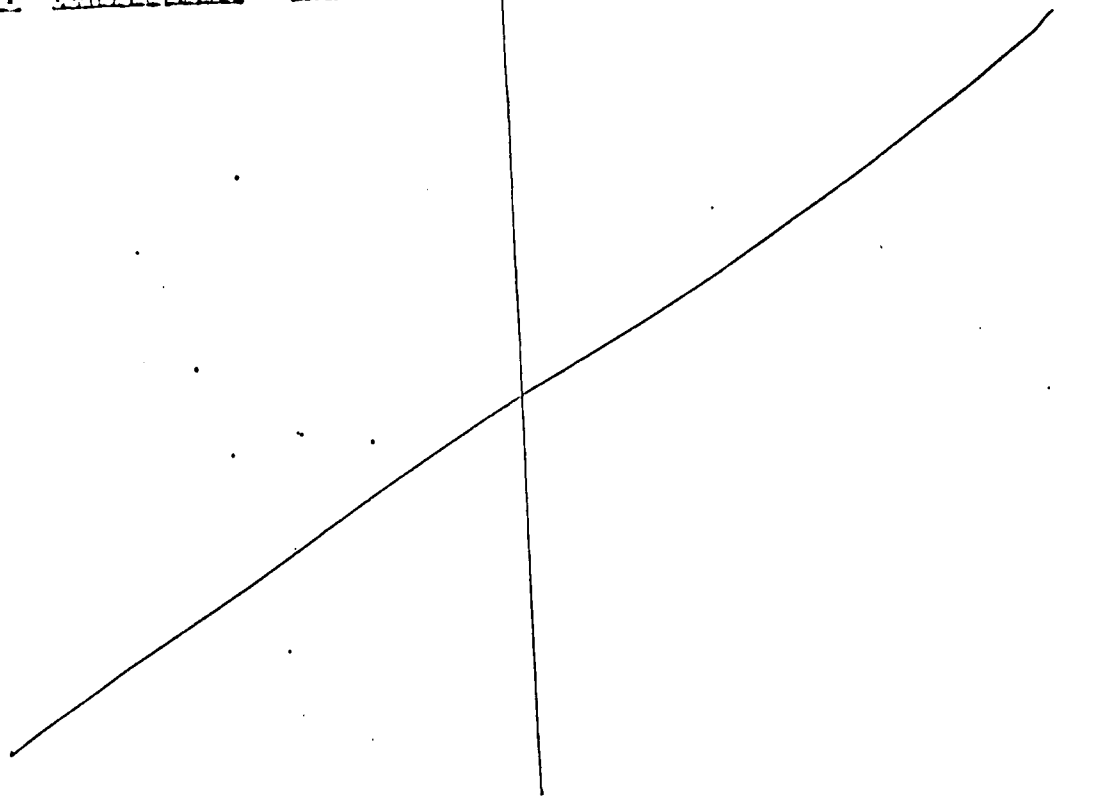
Name C. J. Simiele Date 12-16-90

QC Check: LCS

COMMENTS: No LCS data provided with data package.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

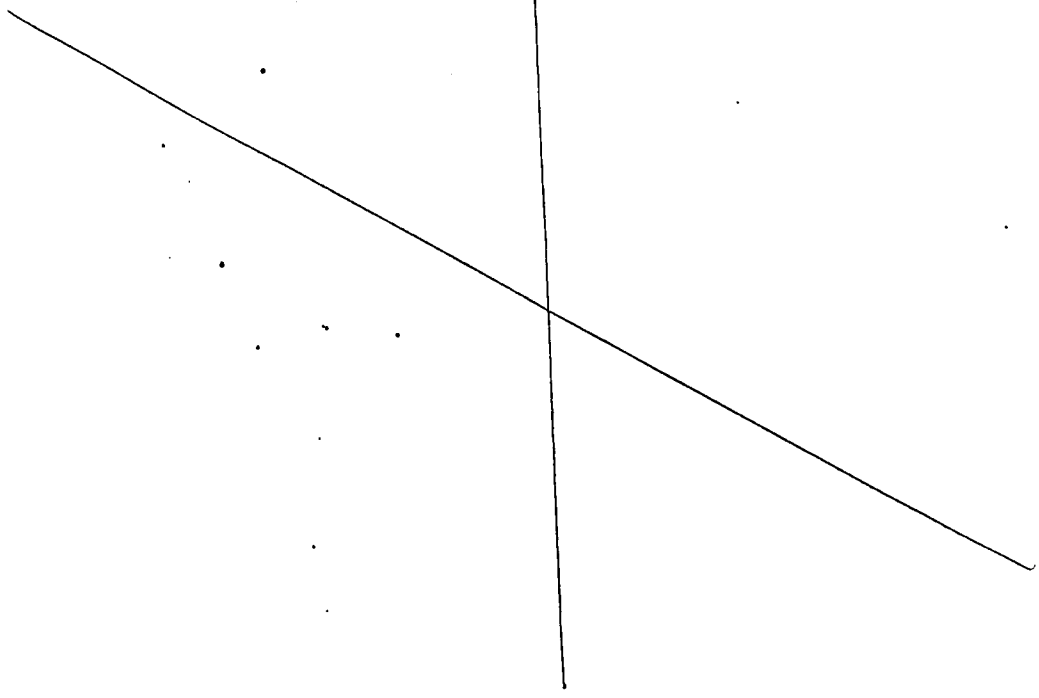
Name C.J. Simiele Date 12-16-90

QC Check: Matrix Spike

COMMENTS: All matrix spike %Rec is within ±25% control limits for all anions.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

Name C.J. Simiele Date 12-11-90

QC Check: Duplicate Analyses

COMMENTS: 10 duplicate analyses, RPD out of ± 20% control limits for: F (147%); PO4 (21%).

ACTION: Qualify associated samples as per OSM guidelines.

sample #	constituent	value/qual
F0571	F	J
L	PO4	V

sample #	constituent	value/qual

___ of ___

RCRA LEVEL C QC

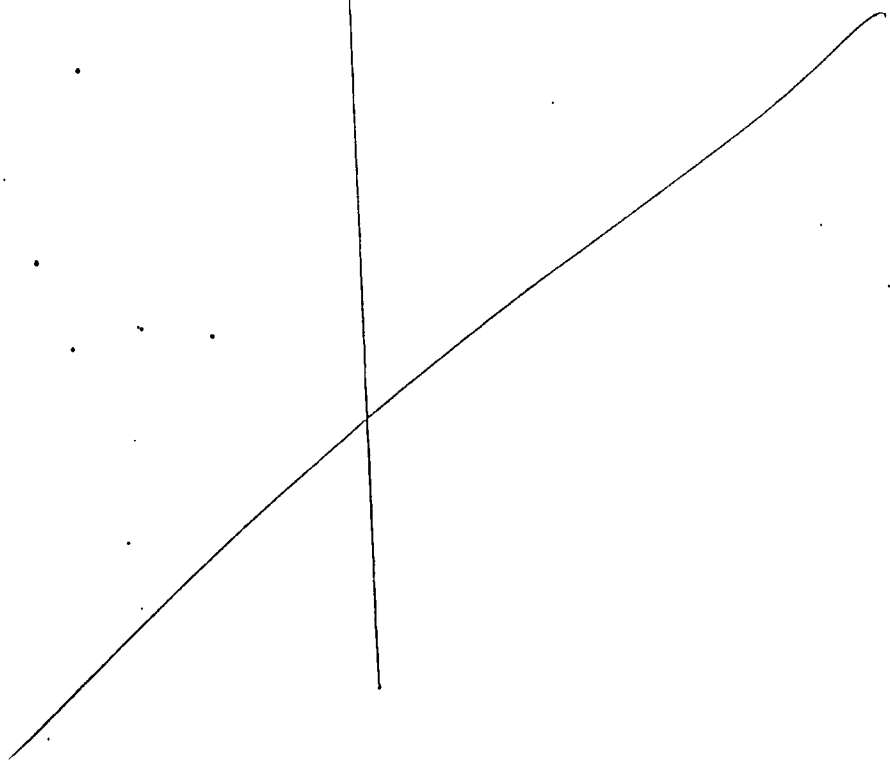
Name C.J. Simiele Date 12-11e-90

QC Check: Holding Time

COMMENTS: TOC holding time of 28 days was exceeded by 102 days.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

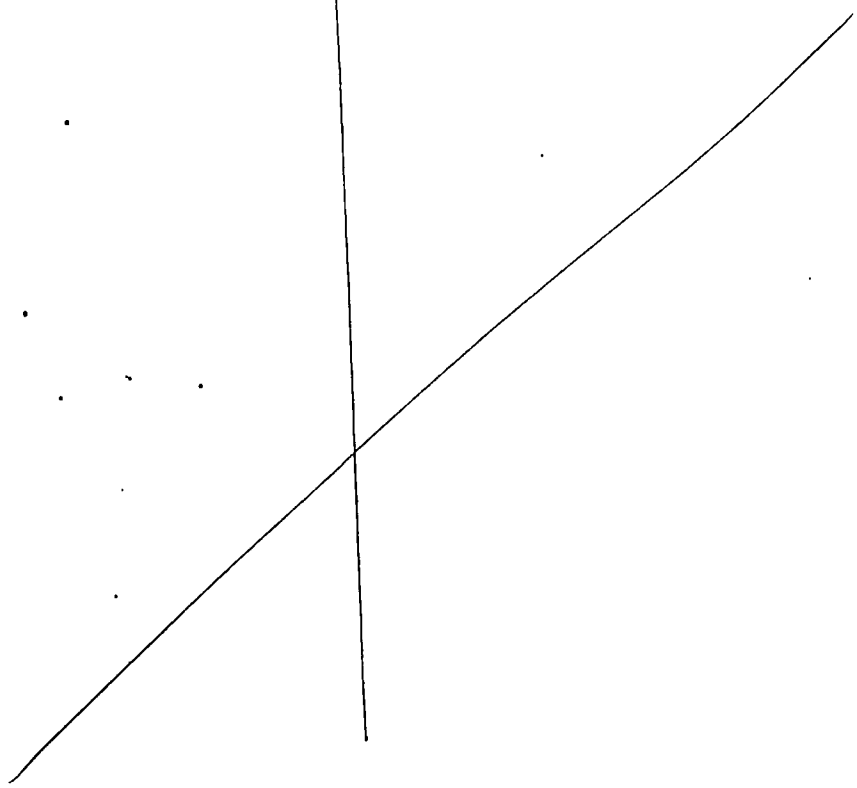
Name C. J. Simiele Date 12-16-90

QC check: Calibration

COMMENTS: TOC calibration standards are within ±10% control limits. Calibration frequency met.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

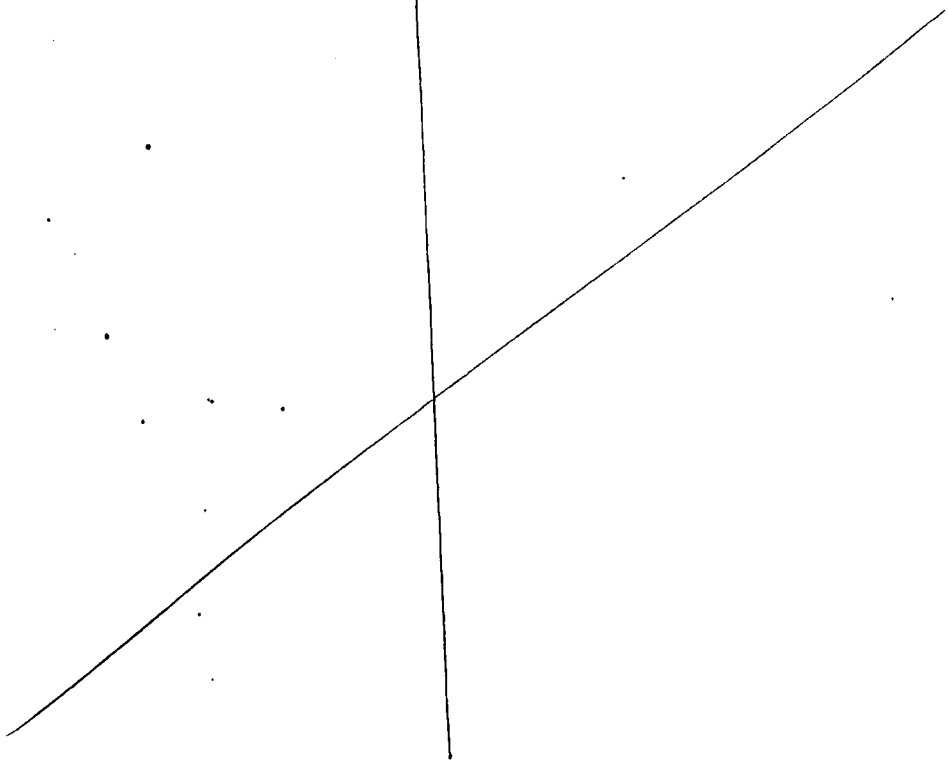
Name C.J. Simiele Date 12-11-90

QC check: Analytical Blank

COMMENTS: No contaminants detected in TOC preparation blank and associated sample.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

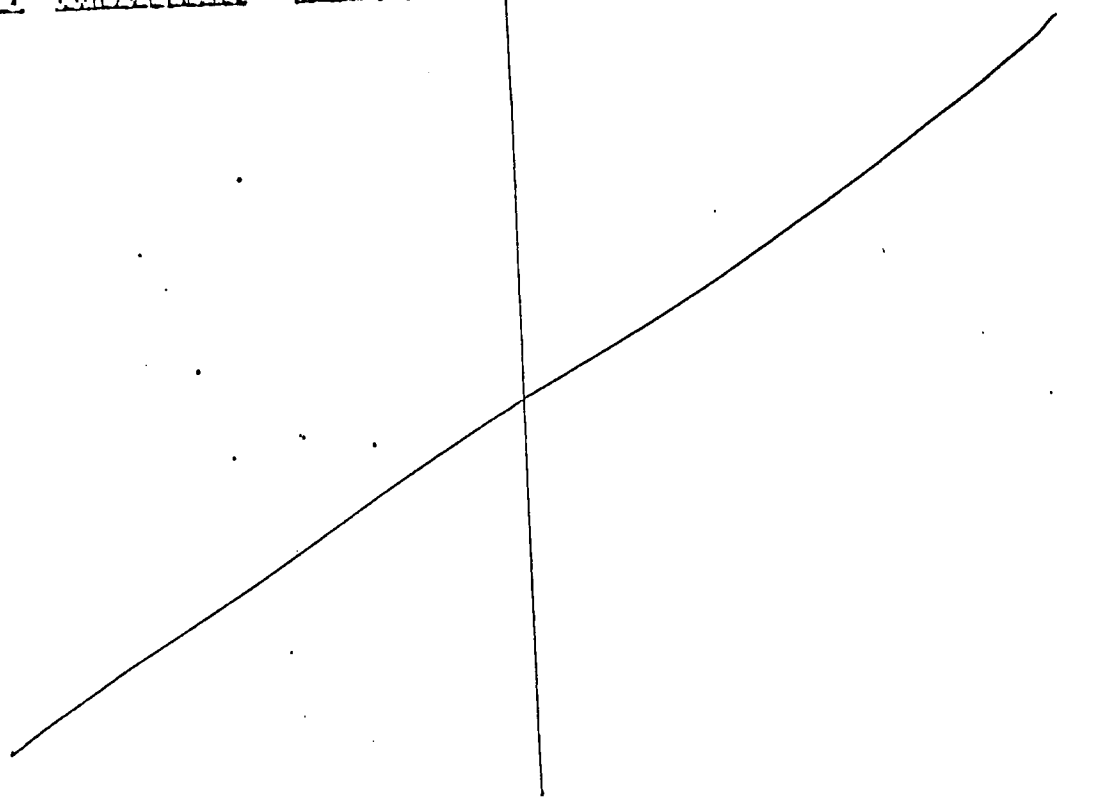
Name C. J. Simiele Date 12-16-90

QC Check: LCS

COMMENTS: No LCS data provided with data package.

ACTION: None.

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

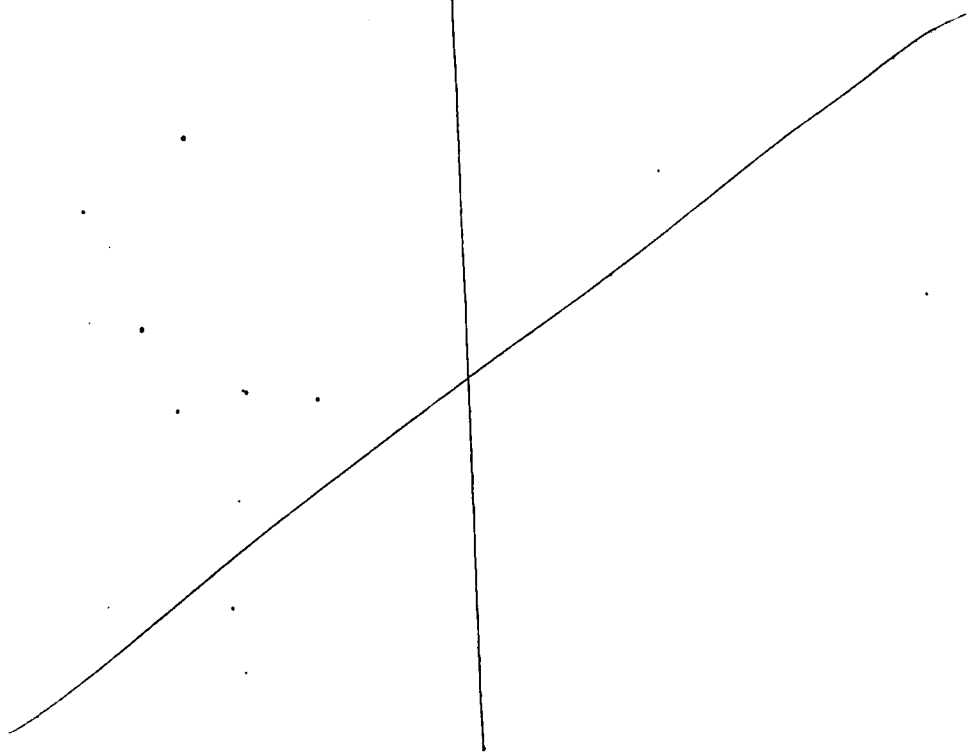
Name C.J. Simiele Date 12-16-90

QC Check: Matrix Spike

COMMENTS: TOC matrix spike %Rec. is within ±25% control limits.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

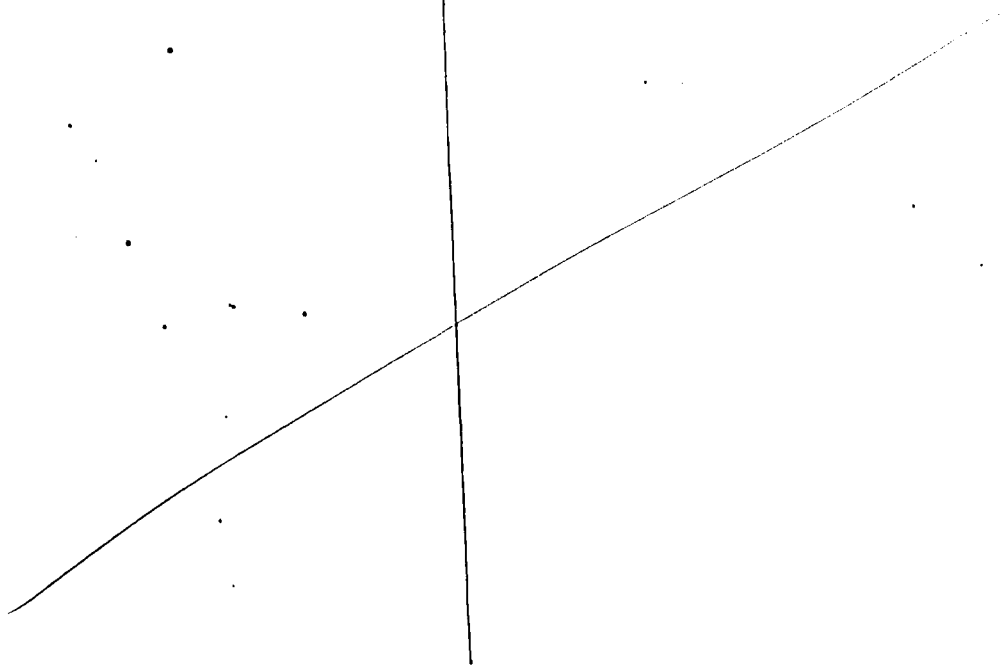
Name C.J. Simiele Date 12-11-90

QC Check: Duplicate Analyses

COMMENTS: Toc duplicate analyses RPD is within ±20% control limits.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



___ of ___

RCRA LEVEL C QC

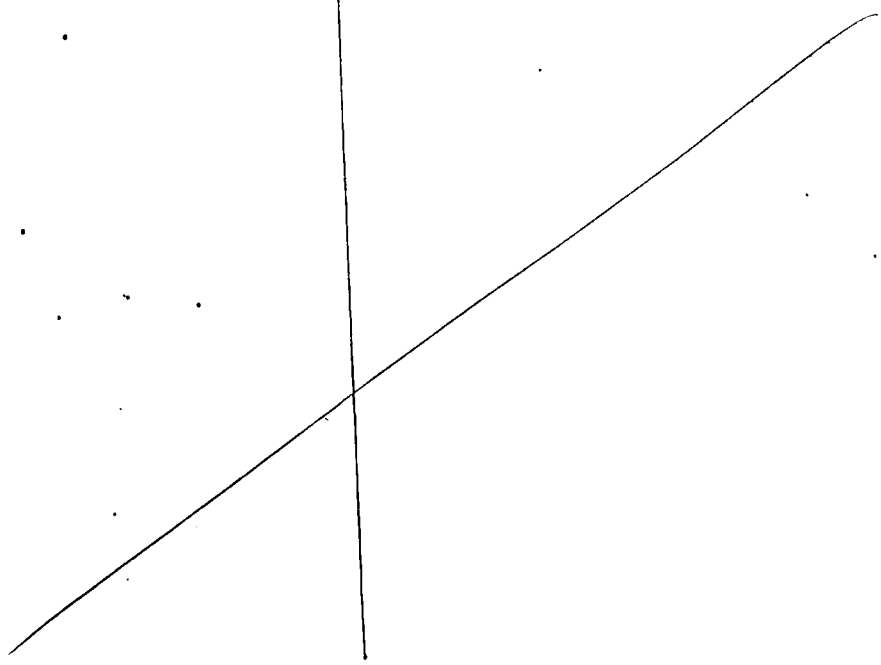
Name C.J. Simiele Date 12-11e-90

QC check: Holding Time

COMMENTS: ICP holding time of six months was met.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

Name C.J. Simiele Date 12-11e-90

QC check: Calibration

COMMENTS: ICP calibration standards out of ±10% control limits include (non-digest. Std's): As(114%); Cr (89.7%); Nd (86%); P(112.10%); Si (87.7%); Tu(82.4%). (digest stds): 22 elements out of ±10% control limits.

ACTION: Qualify assoguated samples as per OSM guidelines.

sample #	constituent	value/qual
F0576	As	UJ
	Sb	UJ
	Be	UJ
	Ca	J
	Ce	UJ
	Cr	J
	Co	UJ
	Fe	J
	Li	UJ
	Mo	UJ
	Nd	UJ
	P	J
	K	UJ
	Sm	UJ
	Se	UJ
	Si	UJ
	~~Ag~~ Na	J
	Ta	UJ
	Tl	UJ
	Th	UJ

sample #	constituent	value/qual
F0576	Tu	UJ
	U	UJ
	V	UJ

___ of ___

RCRA LEVEL C QC

Name C.J. Simiele Date 12-11-90

QC Check: Analytical Blank

COMMENTS: Possible contaminants detected in ICP Sample and associated preparation blank for: Ca, Mg, Hg, S, & Zn.

ACTION: Qualify associated ~~to~~ sample as per OSM guidelines.

sample #	constituent	value/qual	sample #	constituent	value/qual
F057b	Ca	U			
	Mg				
	Hg				
	S				
	Zn				

___ of ___

RCRA LEVEL C QC

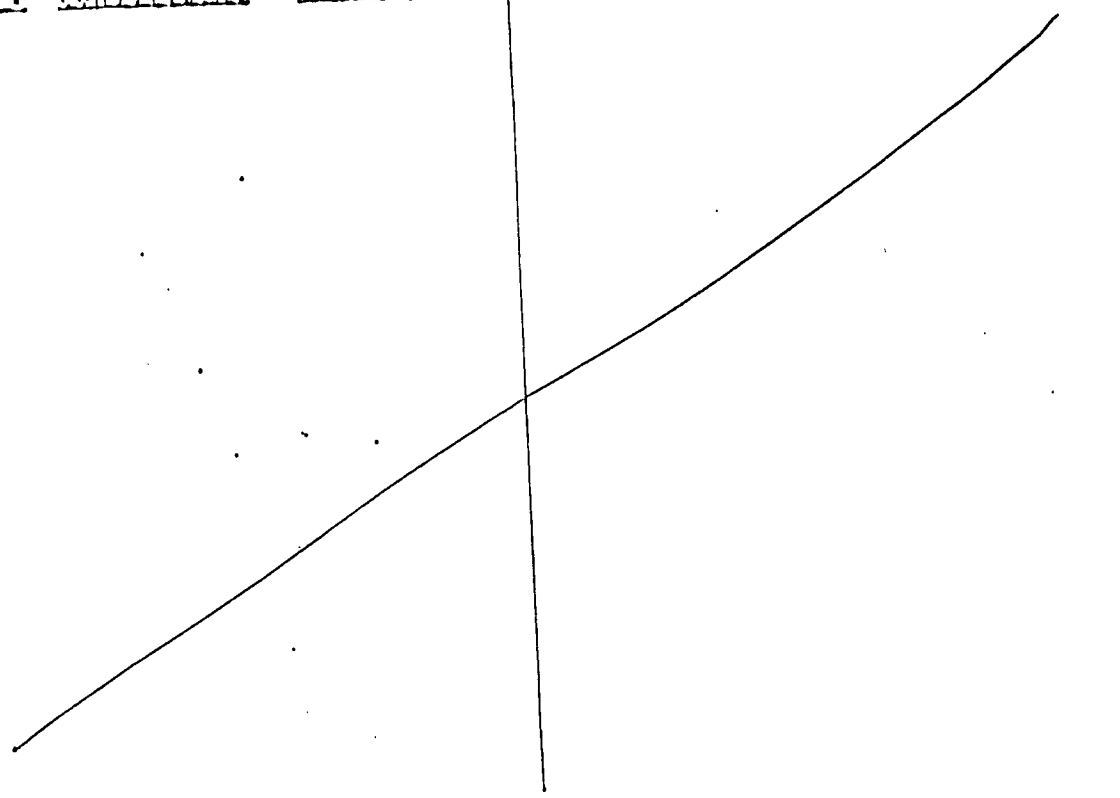
Name C. J. Simiele Date 12-16-90

QC Check: LCS

COMMENTS: No LCS data provided with data package.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

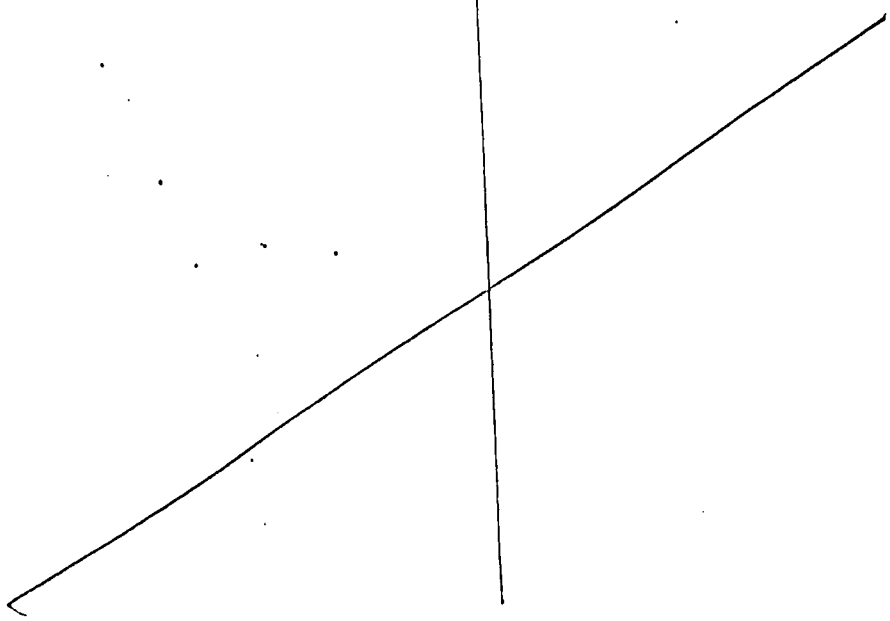
Name C.J. Simiele Date 12-16-90

QC check: ICS

COMMENTS: No ICS data provided with data package.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

Name C.J. Simiele Date 12-16-90

QC Check: Matrix Spike

COMMENTS: ICP matrix spike %Rec out of ±25% control limits for: Ba (9%); B (9%); Cd (8%); Ca (17%); Ce (-133%); Co (-73%); Cu (7.3%); La (39%); Pb (516%); Li (2%); Mg (42%); Mn (21%); Mo (43%); Ni (11%); P (-183%); Ag (-9%); Sr (5%); Ta (-18%); Sn (46%); Ti (49%); Zn (13%); Zr (43%)

ACTION: Qualify associated samples as per OSM guidelines.

sample #	constituent	value/qual	sample #	constituent	value/qual
F0576	Ba	R			
	B	R			
	Cd	R			
	Ca	R			
	Ce	R			
	Co	R			
	Cu	R			
	La	UJ			
	Pb	J			
	Li	R			
	Mg	J			
	Mn	R			
	Mo	UJ			
	Ni	R			
	P	R			
	Ag	R			
	Sr	R			
	Ta	R			
	Sn	UJ			
	Ti	UJ			
	Zn	R			
	Zr	UJ			

___ of ___

RCRA LEVEL C QC

Name C.J. Simiele Date 12-11-90

QC Check: Duplicate Analyses

COMMENTS: ICP duplicate analyses RPD out of ±20%
Control limits for: Ba (460%); Be (54%); B (297%); Cu (85%);
La (78%); Pb (124%); Hg (22%); Ni (348%); Se (374%);
Tl (421%); U (71%); Zr (274%).

ACTION: Qualify associated samples as per
OSM guidelines.

sample #	constituent	value/qual
F05760	Ba	UJ
	Be	UJ
	B	UJ
	Cu	UJ
	La	UJ
	Pb	J
	Hg	J
	Ni	UJ
	Se	UJ
	Tl	UJ
	U	UJ
	Zr	UJ

sample #	constituent	value/qual

SUMMARY DATA REPORT

Results are reported as wet sample weight.

Tank: 241-U-110
Core: 13
Segment: 4
Customer Id.: 89-076

Untreated Sample Results

	Sample	Duplicate
pH	12.52	12.81
Percent Water	44.68%	46.78%

Fusion Analysis Results

	Sample	Duplicate
Fusion Digestion	2.74 g/L	2.03 g/L
Total Alpha	6.28E-01 uci/g	<6.85E-01 uci/g
Total Beta	6.82E+02 uci/g	1.13E+03 uci/g
GEA		
Cs-137	2.60E+01 uci/g	2.54E+01 uci/g
Uranium	3.90E+03 ug/g	3.57E+03 ug/g

Water Digestion Results

	Sample	Duplicate
Water Digestion	9.21 g/L	10.16 g/L
Ion Chromatograph		
Fluoride	1.63E+03 ug/g J	4.30E+03 ug/g
Chloride	2.46E+03 ug/g	2.31E+03 ug/g
Nitrate	9.02E+04 ug/g	7.68E+04 ug/g
Phoshate	1.08E+04 ug/g J	8.57E+03 ug/g
Sulfate	5.49E+03 ug/g	4.75E+03 ug/g
Total Organic Carbon	8.96E+02 ug/g	7.58E+02 ug/g

Acid Digestion Results

	Sample	Duplicate
Aluminum	52577 ug/g	41871 ug/g
Antimony	LT UJ	LT
Barium	LT R	28 ug/g
Beryllium	LT UJ	2 ug/g
Bismuth	18525 ug/g	15441 ug/g
Boron	LT R	69 ug/g
Cadmium	LT R	LT
Calcium	388 ug/g R	365 ug/g
Cerium	LT R	LT
Cobalt	LT R	LT
Copper	LT R	61 ug/g
Europium	LT	LT
Iron	27355 ug/g J	27174 ug/g
Lanthanum	LT UJ	7 ug/g
Lead	264 ug/g J	593 ug/g
Lithium	LT R	LT
Magnesium	133 ug/g J U	142 ug/g
Manganese	3769 ug/g R	3699 ug/g
Mercury	460 ug/g UJ	361 ug/g
Molybdenum	LT R UJ	LT
Nickel	LT UJ	139 ug/g
Potassium	LT UJ	LT
Samarium	LT UJ	LT
Selenium	LT UJ	630 ug/g
Silver	LT R	LT
Sodium	93097 ug/g J	85924 ug/g
Strontium	353 ug/g R	325 ug/g
Sulfur	1133 ug/g U	1090 ug/g
Tantalum	LT R	LT
Thallium	LT UJ	709 ug/g
Thorium	LT UJ	LT
Tin	LT R UJ	LT
Titanium	LT UJ	LT
Uranium	LT UJ	4102 ug/g
Vanadium	LT UJ	LT
Zinc	189 ug/g R	194 ug/g
Zirconium	LT UJ	101 ug/g

LT: Less Than Instrument Detection Limit.

12-16-90
C.J. Sunfield

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Westinghouse Hanford Company

012367

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OSM RCRA LEVEL C DATA ASSESSMENT

DATE 12-16-90 (Compiled by C.J. Simiele)

REVIEWED BY C.J. Simiele

LABORATORY WHC-222S

CASE # SST-241-U-110

SDG # # 89-075 (Core 13 Segment 3)

SAMPLES/MATRIX Seq# 89-075

LAB ID:

Untreated: E0537

Fusion : E0542

Acid Digest: E0552

Water Leach: E0547

DATA ASSESSMENT SUMMARY

QUALITY CONTROL CHECK	ANALYSIS	IC	TOC	ICP
1. Holding Time		X	X	X
2. Calibration		O	O	O
3. Analytical Blank		O	O	X
4. LCS		*	*	*
5. ICS (ICP ONLY)		N/A	N/A	*
6. Matrix Spike		O	O	M
7. Duplicate Analyses		X	X	X
8.				
9.				
10.				

O = data had no problems
X = data qualified due to minor problems
M = data qualified due to major problems/some data may be unusable

OVERALL ASSESSSMENT: (Samples not qualified based on exceeded holding times.)

NOTES: *= no data provided with data package.
No Radiochemistry Validation completed on data package.

o Refer to the corresponding attachments for explanation of any problems.

SUMMARY DATA REPORT

Results are reported as wet sample weight.

Tank: 241-U-110
Core: 13
Segment: 3
Customer Id.: 89-075

Untreated Sample Results

	Sample	Duplicate
pH	12.42	12.12
Percent Water	43.18 %	42.98 %

Fusion Analysis Results

	Sample	Duplicate
Fusion Digestion	2.30E+00 g/L	2.27E+00 g/L
Total Alpha	<0.76 uci/g	<0.73 uci/g
Total Beta	1.88E+03 uci/g	1.80E+03 uci/g
GEA		
Cs-137	5.13E+01 uci/g	5.73E+01 uci/g
Uranium	6.35E+03 ug/g	5.77E+03 ug/g

Water Digestion Results

	Sample	Duplicate
Water Digestion	1.21E+01 g/L	1.01E+01 g/L
Ion Chromatogragh		
Fluoride	1.72E+03 ug/g	1.73E+03 ug/g
Chloride	1.62E+03 ug/g	1.76E+03 ug/g
Nitrate	5.79E+04 ug/g	5.04E+04 ug/g
Phoshate	5.85E+03 ug/g J	<10000 ug/g
Sulfate	3.83E+03 ug/g	3.75E+03 ug/g
Total Organic Carbon	4.09E+02 ug/g J	7.08E+02 ug/g

12-16-90
C.J. Surfield

Acid Digestion Results

	Sample	Duplicate
Aluminum	111438. ug/g R	110671. ug/g
Antimony	LT	LT
Arsenic	LT	LT
Barium	158. ug/g	145. ug/g
Beryllium	LT	LT
Bismuth	14424. ug/g	13246. ug/g
Boron	LT	LT
Cadmium	LT	LT
Calcium	737. ug/g	2239. ug/g
Cerium	2873. ug/g	2539. ug/g
Chromium	1526. ug/g	1514. ug/g
Cobalt	LT	LT
Copper	LT	LT
Europium	62. ug/g	52. ug/g
Iron	14585. ug/g	12334. ug/g
Lanthanum	310. ug/g	271. ug/g
Lead	1825. ug/g	1989. ug/g
Lithium	112. ug/g	94. ug/g
Magnesium	514. ug/g	1038. ug/g
Manganese	10103. ug/g	9745. ug/g
Mercury	LT	LT
Molybdenum	102. ug/g	99. ug/g
Neodymium	LT	LT
Nickel	345. ug/g	348. ug/g
Potassium	3597. ug/g	3326. ug/g
Samarium	3527. ug/g	3077. ug/g
Selenium	1549. ug/g	1695. ug/g
Silver	LT	LT
Sodium	79266. ug/g	77373. ug/g
Strontium	935. ug/g	921. ug/g
Tantalum	LT	LT
Thallium	3984. ug/g	3564. ug/g
Thorium	2087. ug/g	1748. ug/g
Tin	LT	LT
Titanium	134. ug/g	126. ug/g
Uranium	27585. ug/g	24107. ug/g
Vanadium	193. ug/g	LT
Zinc	177. ug/g	331. ug/g
Zirconium	315. ug/g	269. ug/g

LT: Less Than
NC: Not Calibrated
NOT CALC: Not Calculated
Instrument Standards Outside Control Limits

RCRA LEVEL C QC

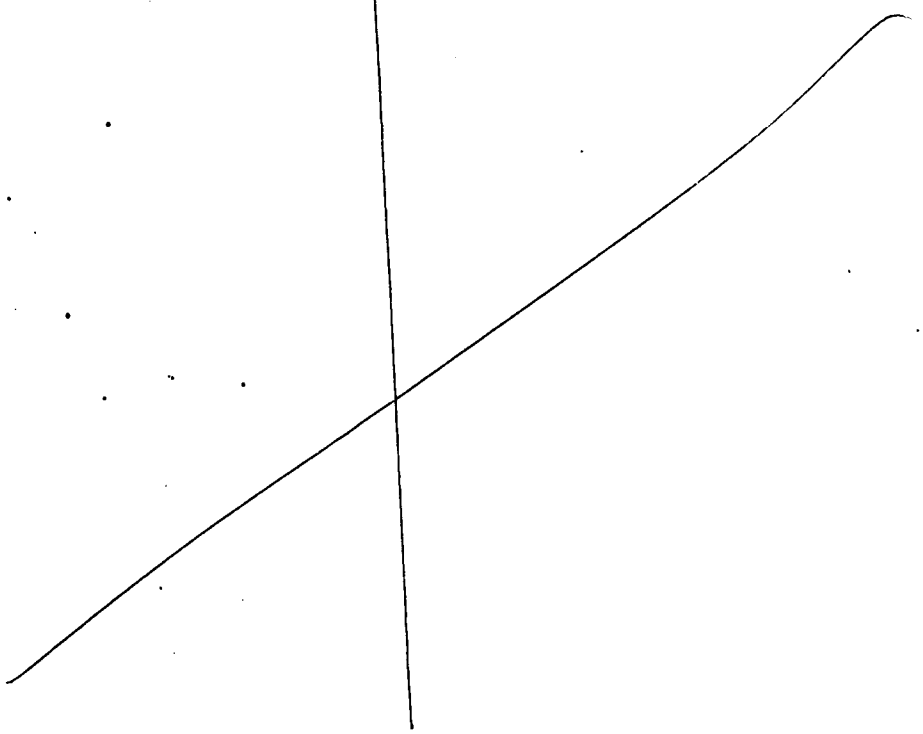
Name C.J. Simiele Date 12-11-90

QC check: Holding Time

COMMENTS: IC analyses holding time for NO_3 of 2days was exceeded by 123days, 28 days for F was exceeded by 104 days, and 28days for Cl, PO_4& SO_4 was exceeded by 97days.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



___ of ___

RCRA LEVEL C QC

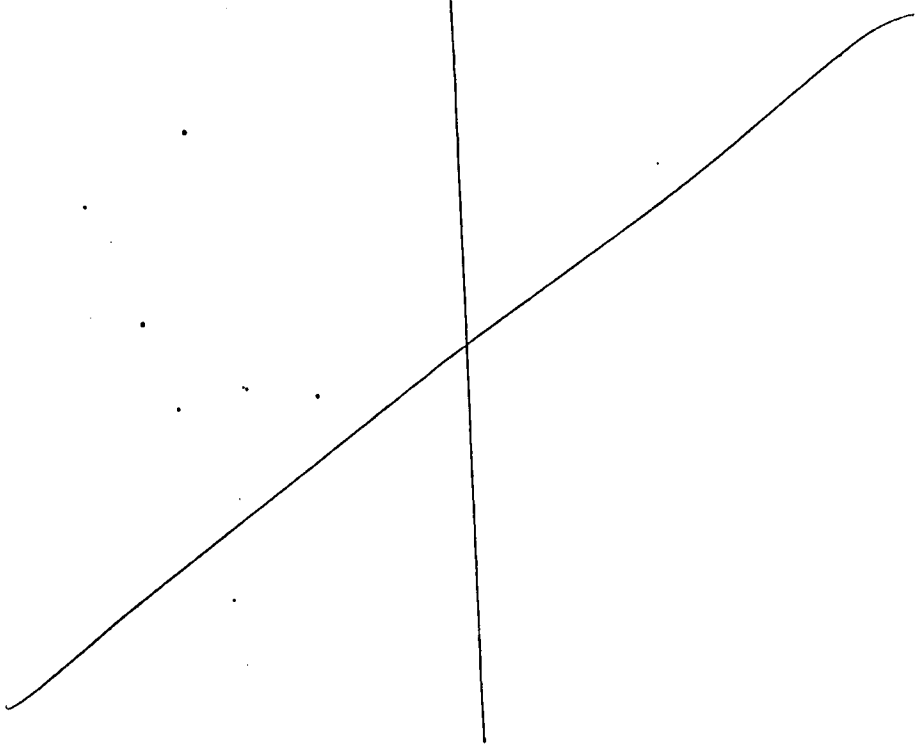
Name C.J. Simiele Date 12-16-90

QC Check: Calibration

COMMENTS: IC calibration standards are within ±10% control limits. Calibration frequency met.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

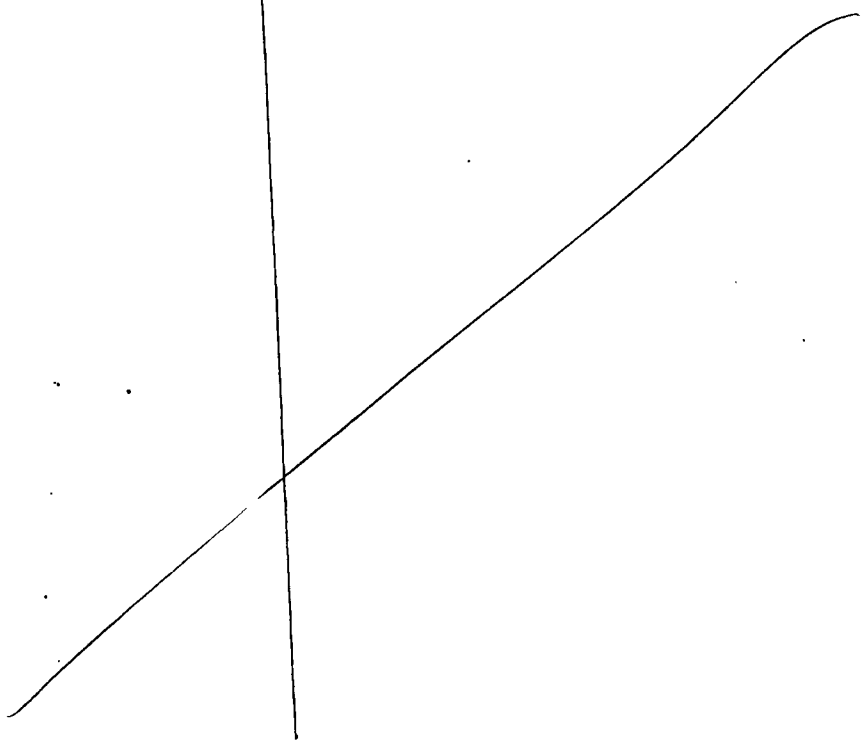
Name C.J. Simiele Date 12-16-90

QC Check: Analytical Blank

COMMENTS: No contaminants detected in IC preparation blank and associated sample.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

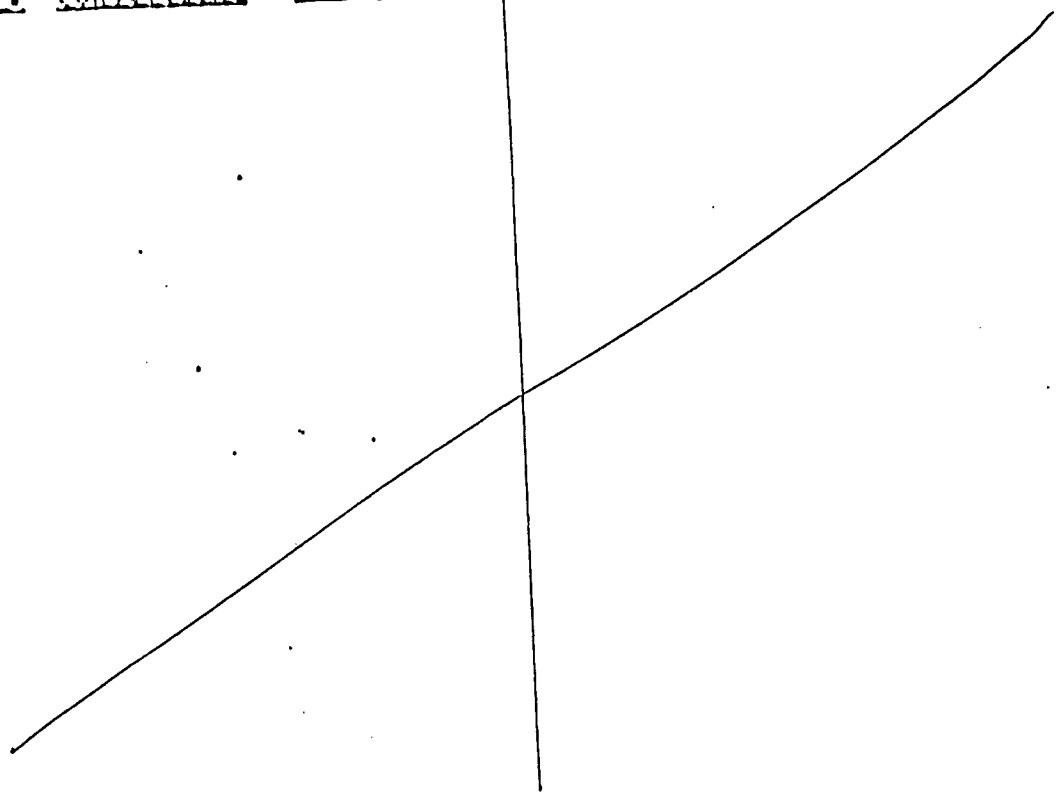
Name C. J. Simiele Date 12-16-90

QC Check: LCS

COMMENTS: No LCS data provided with data package.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

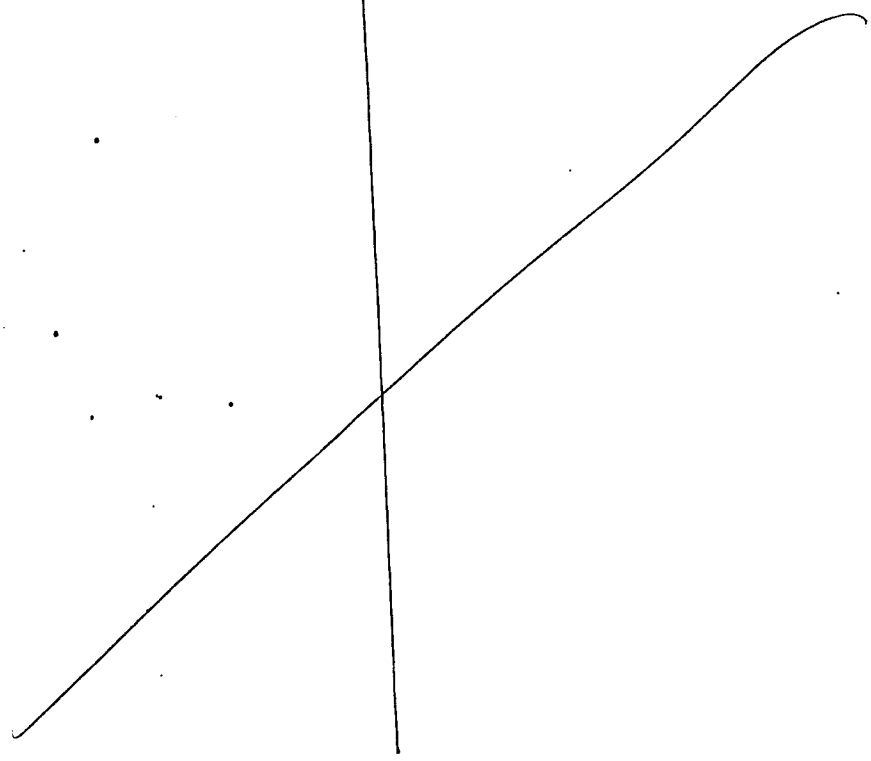
Name C.J. Simiele Date 12-16-90

QC Check: Matrix Spike

COMMENTS: IC matrix spike %Rec. is within ±25% control limits for all anions.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



___ of ___

RCRA LEVEL C QC

Name C.J. Simiele Date 12-16-90

QC Check: Duplicate Analyses

COMMENTS: 1C duplicate analyses, RPD out of ±20% control limits for PO4 (70%).

ACTION: Qualify associated samples as per OSM guidelines.

sample #	constituent	value/qual
F0547	PO4	J

sample #	constituent	value/qual

RCRA LEVEL C QC

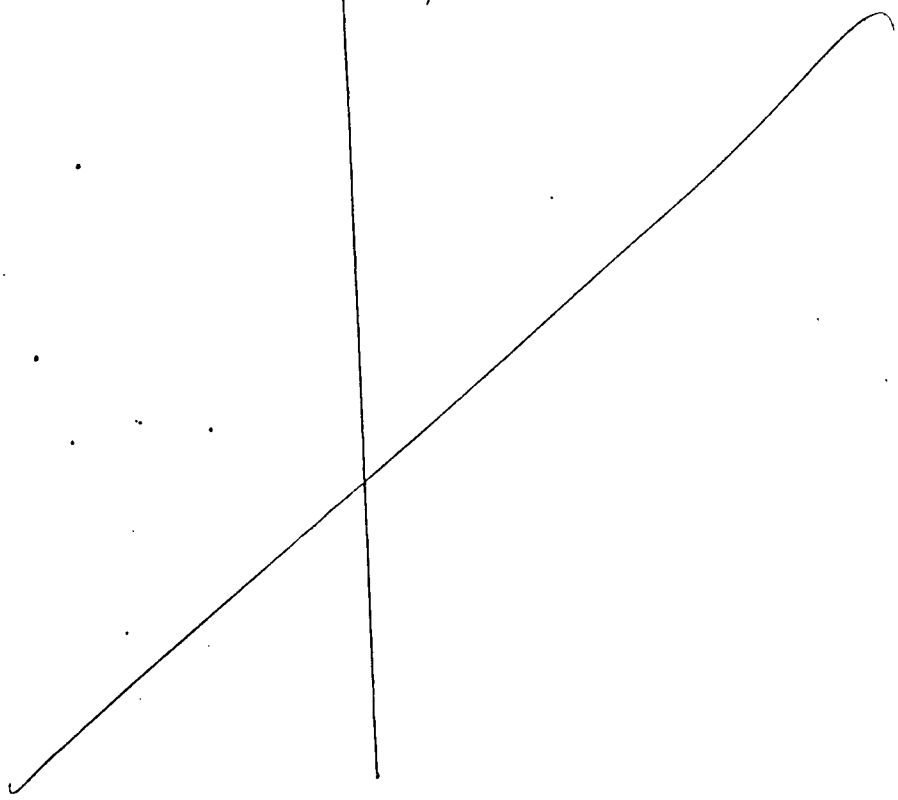
Name C.J. Simiele Date 12-11e-90

QC Check: Holding Time

COMMENTS: Toc holding time of 28 days was exceeded by 71e days.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

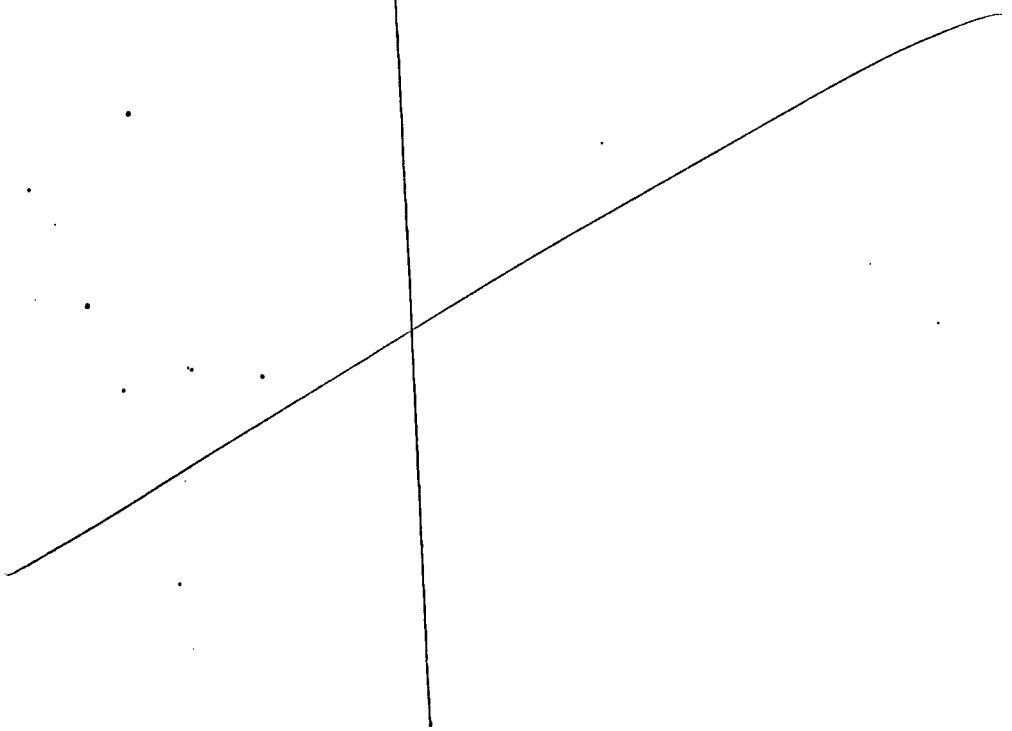
Name C.J. Simiele Date 12-11-90

QC Check: Calibration

COMMENTS: TOC calibration standards are within ± 10% control limits. Calibration frequency met.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

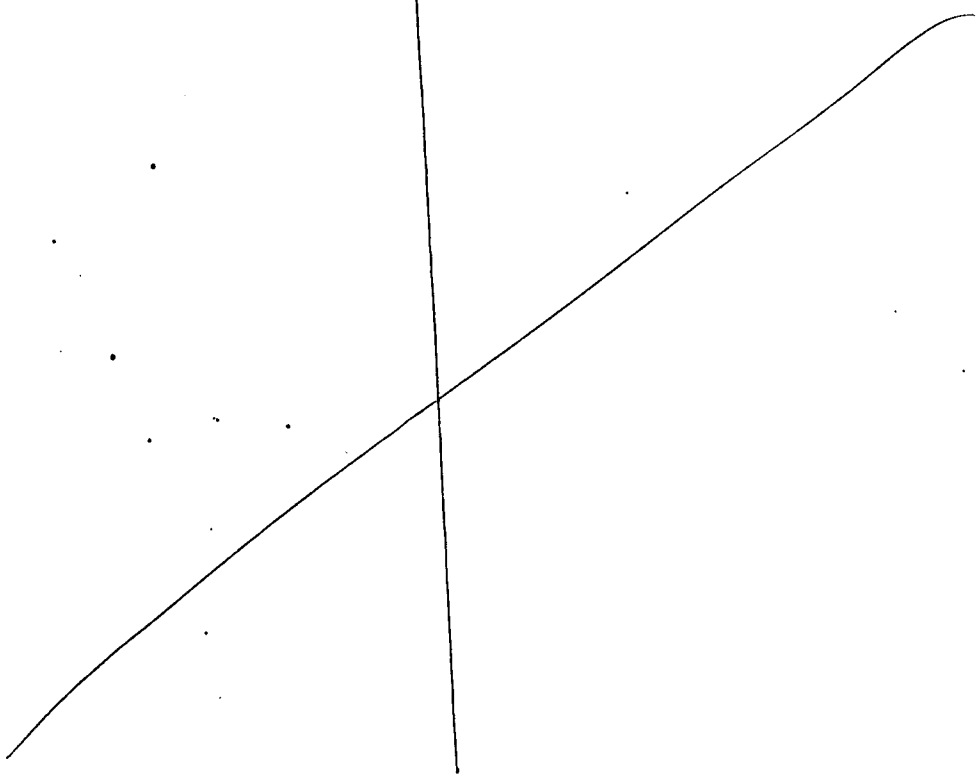
Name C.J. Simiele Date 12-16-90

QC Check: Analytical Blank

COMMENTS: No contaminants detected in TOC preparation blank and associated sample.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

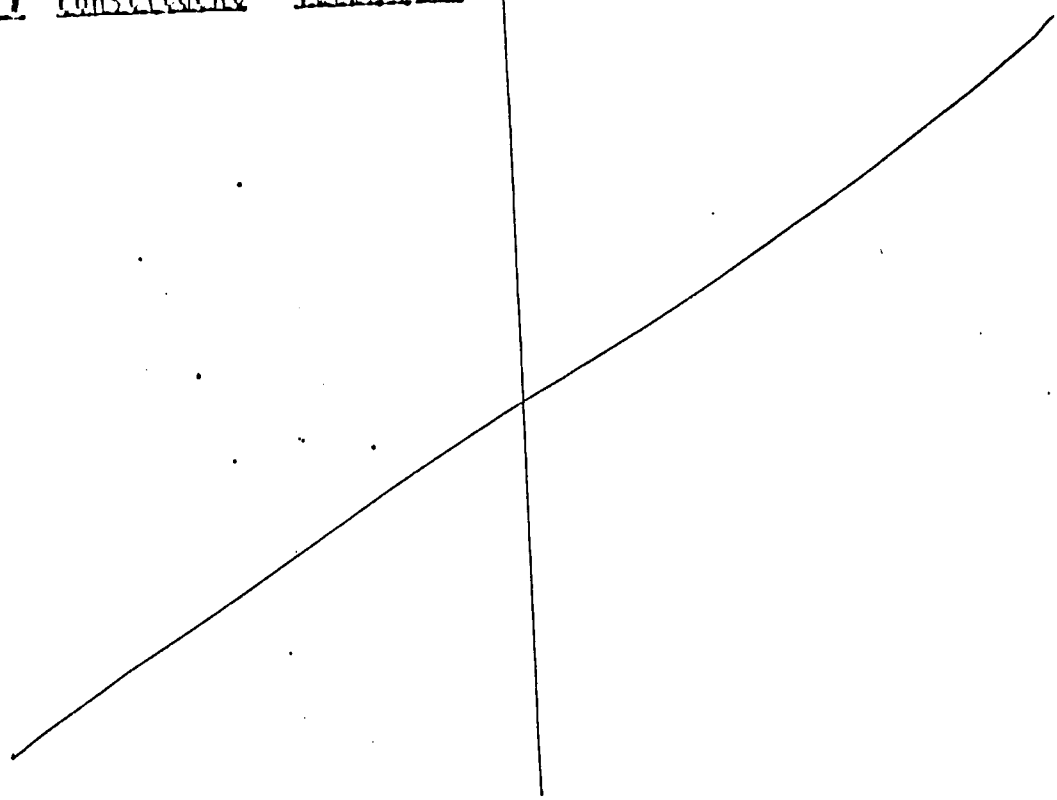
Name C.J. Simiele Date 12-11-90

QC Check: LCS

COMMENTS: No LCS data provided with data package.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

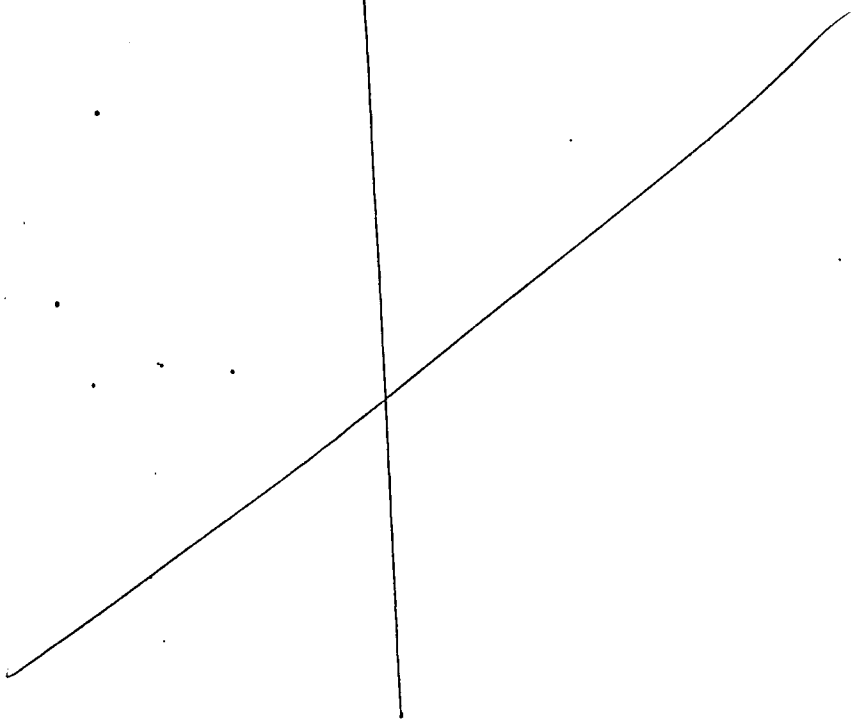
Name C.J. Simiele Date 12-16-90

QC Check: Matrix Spike

COMMENTS: Toc matrix spike %Rec. is within ±25% control limits.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

Name C.J. Simiele Date 12-11-90

QC Check: Duplicate Analyses

COMMENTS: TOC duplicate analyses RPD is out of ±20% (control limits. (RPD=73%).

ACTION: Qualify associated sample as per OSM guidelines.

sample #	constituent	value/qual	sample #	constituent	value/qual
F0547	TOC	J			

___ of ___

RCRA LEVEL C QC

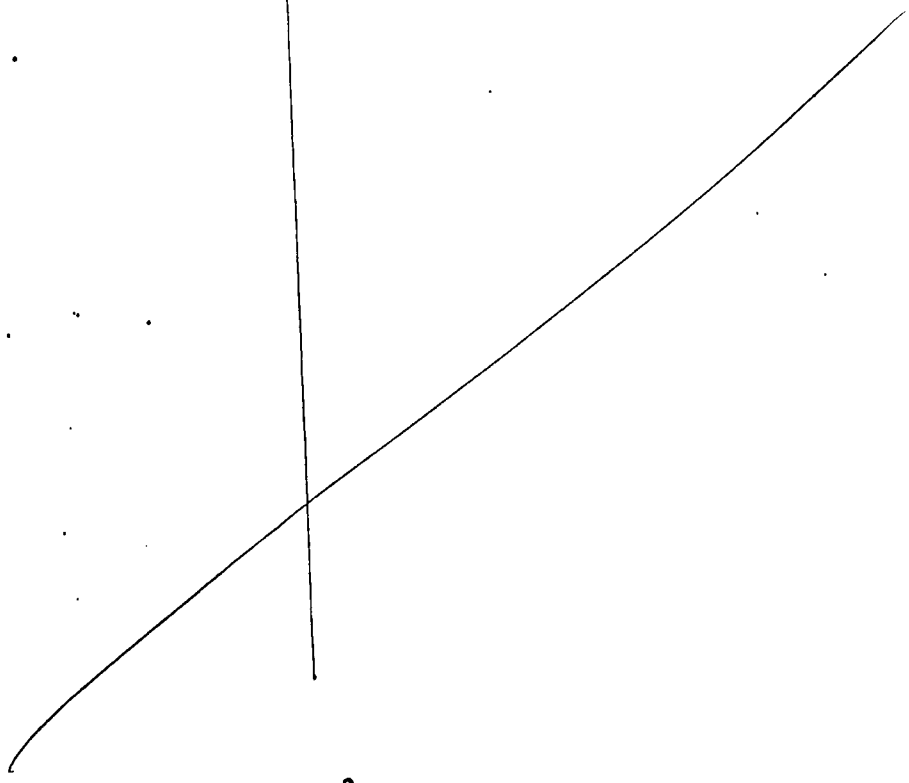
Name C.J. Simiele Date 12-11-90

QC Check: Holding Time

COMMENTS: ICP (acid digest) holding time of 6 months was exceeded by 2 months.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

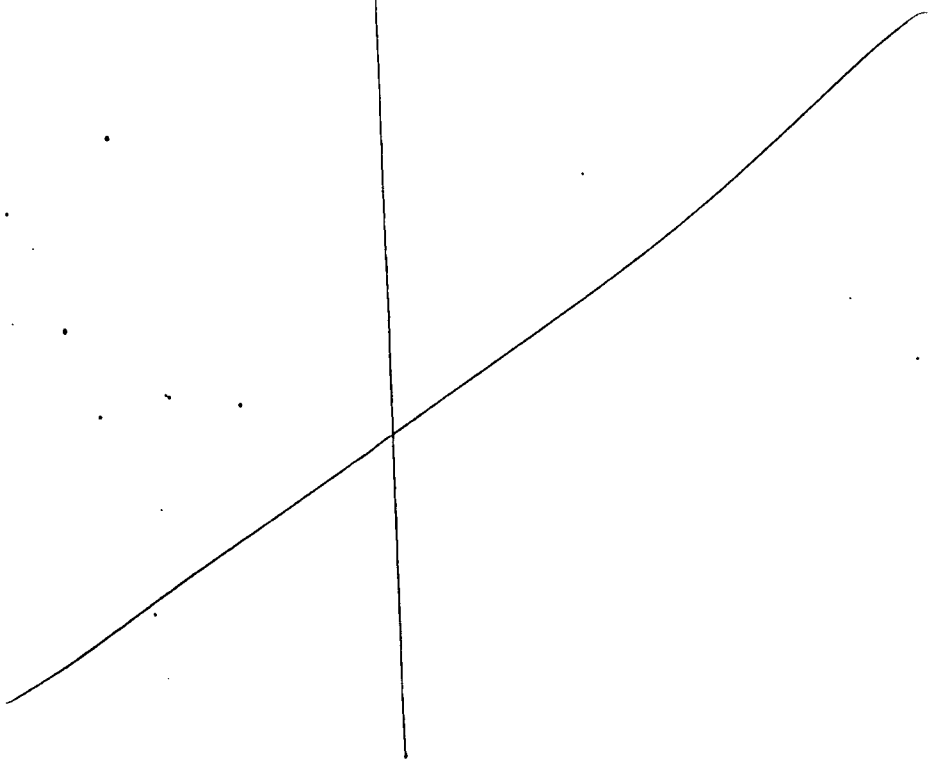
Name C.J. Simiele Date 12-11-90

QC Check: Calibration

COMMENTS: ICP calibration standards are within ±10% control limits. Calibration frequency (non-digest. std's) met.

ACTION: None.

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

Name C.J. Simiele Date 12-16-90

QC Check: Analytical Blank

COMMENTS: Possible contaminants detected in ICP sample and preparation blank for: Ba, Ca, Ce, Fe, Pb, Li, Mg, P, K, Sm, Si, S, Tl, Th, Ti, Zn & Zr.

ACTION: Qualify associated samples as per OSM guidelines.

sample #	constituent	value/qual	sample #	constituent	value/qual
F0547	Ba	U			
	Ca				
	Ce				
	Fe				
	Pb				
	Li				
	Mg				
	P				
	K				
	Sm				
	Si				
	S				
	Tl				
	Th				
	Ti				
	Zn				
	Zr				

RCRA LEVEL C QC

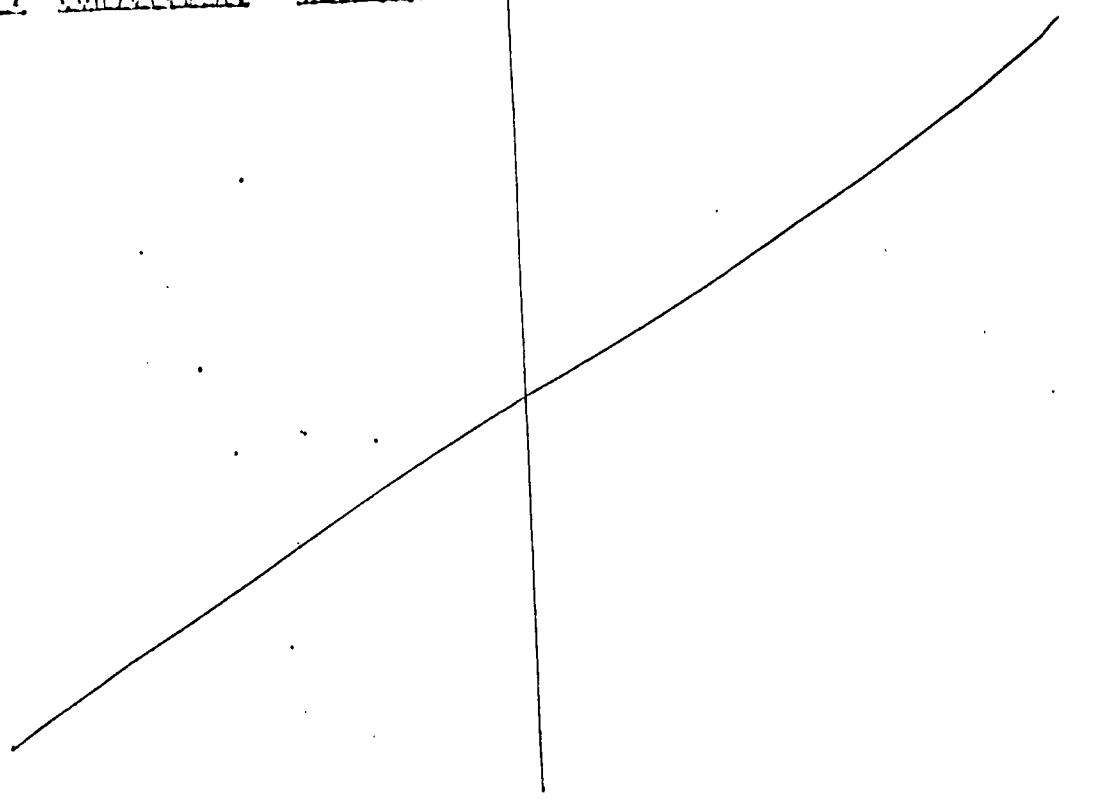
Name C. J. Simiele Date 12-16-90

QC Check: LCS

COMMENTS: No LCS data provided with data package.

ACTION: None.

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

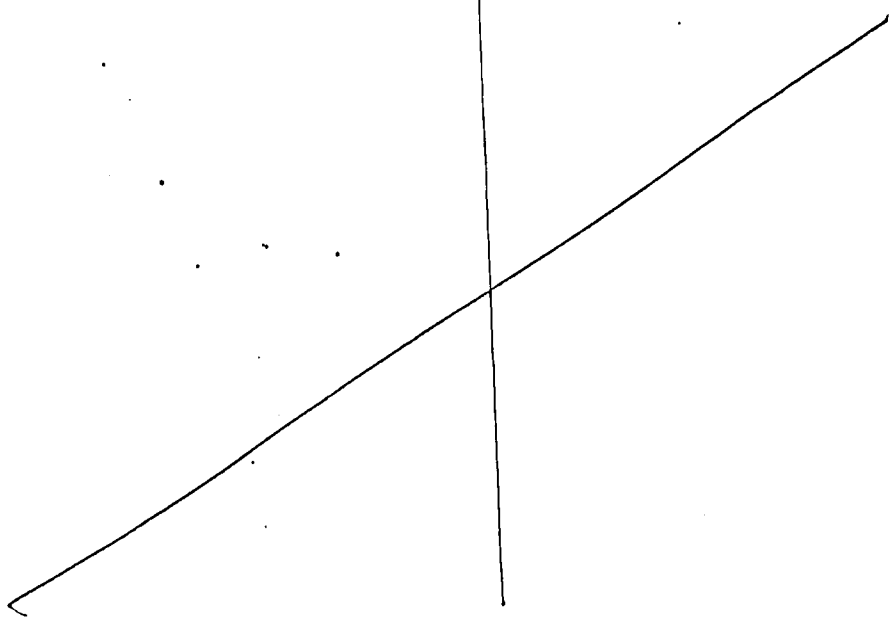
Name C.J. Simiele Date 12-16-90

QC check: ICS

COMMENTS: No ICS data provided with data package.

ACTION: None

sample #	constituent	value/qual	sample #	constituent	value/qual



RCRA LEVEL C QC

Name C.J. Simiele Date 12-16-90

QC check: Matrix Spike

COMMENTS: No matrix spike data provided with ICP analyses.

ACTION: Qualify associated samples as per OSM guidelines.

sample #	constituent	value/qual
F0547	All ICP Elements	R

sample #	constituent	value/qual

___ of ___

Westinghouse Hanford Company

OSM RCRA LEVEL C DATA ASSESSMENT

DATE 12-18-90 (Compiled J. Simiele)

REVIEWED BY C. J. Simiele

LABORATORY WHC-222-S

CASE # SST-241-U-110

SDG # 89-074
Core 13 Seq # 2

SAMPLES/MATRIX _____ _____ _____

DATA ASSESSMENT SUMMARY

QUALITY CONTROL CHECK	ANALYSIS		
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

O = data had no problems
X = data qualified due to minor problems
M = data qualified due to major problems/some data may be unusable

OVERALL ASSESSSMENT: Segment sampler contained 9 grams of sample, which were added to the composite sample

NOTES: _____

o Refer to the corresponding attachments for explanation of any problems.

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Westinghouse
Hanford Company

OSM RCRA LEVEL C DATA ASSESSMENT

DATE 12-18-90 SAMPLES/MATRIX _____ _____ _____
(Comp. J. Simiele)

REVIEWED BY C.J. Simiele _____ _____ _____

LABORATORY WHC-222-S _____ _____ _____

CASE # SST-241-U-110 _____ _____ _____

SDG # 89-073 _____ _____ _____
Core 13 Seg. #1

DATA ASSESSMENT SUMMARY

QUALITY CONTROL CHECK	ANALYSIS			
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

O = data had no problems
X = data qualified due to minor problems
M = data qualified due to major problems/some data may be unusable

OVERALL ASSESSSMENT: Segment sampler contained 4 grams of sample, which were added to the core composite.

NOTES: _____

o Refer to the corresponding attachments for explanation of any problems.