SECTION

Westinghouse
Hanford Company

P.O. Box 1970 Richland, WA 99352

1 of 7

222-S/RCRA Analytical Laboratories

Project: Single-Shell Tank Waste Characterization

Tank: 241-U-110

Core: 8

Customer Id. Number: Core 8 Composite

Report Revision: 1

Date Printed: October 10, 1990

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Hanford Operations and Engineering Contractor for the US Department of Energy

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Appendix A consists of pages A-1 through A-120.
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 Environmental Activities on the Hanford Site", WHC-SD-CP-QAPP-002. I found it to be a true and accurate accounting both technically and for completeness of the laboratory analyses performed on this sample.

Shirley A. Cervantes — Date October 25, 1990

Shirley A. Cervantes
Data Coordinator

Cary M. Seidel — Date October 25, 1990

Cary M. Seidel
Unit Manager

L. H. Taylor — Date November 1, 1990

Larry H. Taylor
Laboratory Q.A. Officer

INTRODUCTION

INTRODUCTION

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

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

Analytical Laboratories performs all analytical analysis to the specifications of the "Quality Assurance Project Plan for the Chemical Analysis of Highly Radioactive Samples in Support of Environmental Activities on the Hanford Site,"
WHC-SD-CP-QAPP-002. In accordance with WHC-SD-CP-QAPP-002, the following laboratory policies are being followed. Spikes are performed on either the undissolved sample, or the sample after dissolution, as directed by the 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 GEA analysis reports has no relationship to the sampling activities or the sample identification. All results in this data package relate only to Sample 89-050 (Segment 1 from Core 8) taken from Riser 7 of Tank 241-U-110. Segments 2 (89-051), 3 (89-052), and 4 (89-053) from this riser were not recovered from the tank by the sampling efforts.

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. The Chrome-VI and the ICP 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

CHAIN-OF-CUSTODY RECORD FOR CORE SAMPLING

(1) Shipment Number S-028-89 (2) Sample Number 89-050 (3) Supervisor D C Hartley

(4) Tank 1104 (5) Riser 7 (6) Segment #1 (7) Cask Serial Number C1026

Radiation Survey Data:	(8) FIELD	(20) LABORATORY
Over Top Dose Rate	<1.5 mr/hr	<0.5 mr/hr
Side Dose Rate	<1.5 mr/hr	<0.5 mr/hr
Bottom Dose Rate	<1.5 mr/hr	<0.5 mr/hr
Smearable Contamination	LDET (alpha)	<DET (alpha)
	LDET (beta-gamma)	<DET (beta-gamma)
	RPT (Signature)	RPT (Signature)

(9) Shipment Description:

A. Work Package Number	2W/89/00955/W
B. Cask Seal Number	For Future Use
C. Sampler Number Used	28
D. Date and Time Sampler Unseated	11-17-89, 1057
E. Expected Liquid Content	20%
F. Expected Solid Content	20%
G. Dose Rate Through Drill String	.5 mr/hr
H. Expected Sample Length	191'

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

Core #8
WHC-EP-0210 Waste Characterization of 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	D C Hartley / D C Hartley	11-20-89 2202	2225 LAB S, 200 West	MS LAWRIAS / [illegible]	11-20-89 2225

(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:	#7
CORE ID:	#8

DATE SAMPLING INITIATED:	11-17-89
DATE SAMPLING COMPLETED:	11-17-89
Segments 2, 3, & 4	received empty

SEGMENT		
1	Lab Serial No.	F0289
	Customer ID No.	89-050
	Last Segment?	NO
2	Lab Serial No.	F0321
	Customer ID No.	89-051
	Last Segment?	NO
3	Lab Serial No.	F0345
	Customer ID No.	89-052
	Last Segment?	NO
4	Lab Serial No.	F0369
	Customer ID No.	89-053
	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 #:	Core 8 Composite	Customer ID:	F0941

Simi-Volatile Organic Analysis

Simi-VOA Sample	Lab Serial #: N/A	Date Sampled:

Particle Size Distribution Analysis

Particle Size Sample	Lab Serial #: F0289	Date Sampled:

Homogenized Solids

Undigested Solids Analysis

Laboratory Serial Number for Sample:	F0941	Date Sampled: 11-28-89
Laboratory Serial Number of Duplicate Sample:	F0942	

Fusion Analysis of Solids

Laboratory Serial Number for Sample:	F0947	Date Sampled: 11-28-89
Laboratory Serial Number of Duplicate Sample:	F0948	
Laboratory Serial Number of Spiked Sample:	F0949	

Acid Digestion Analysis of Solids

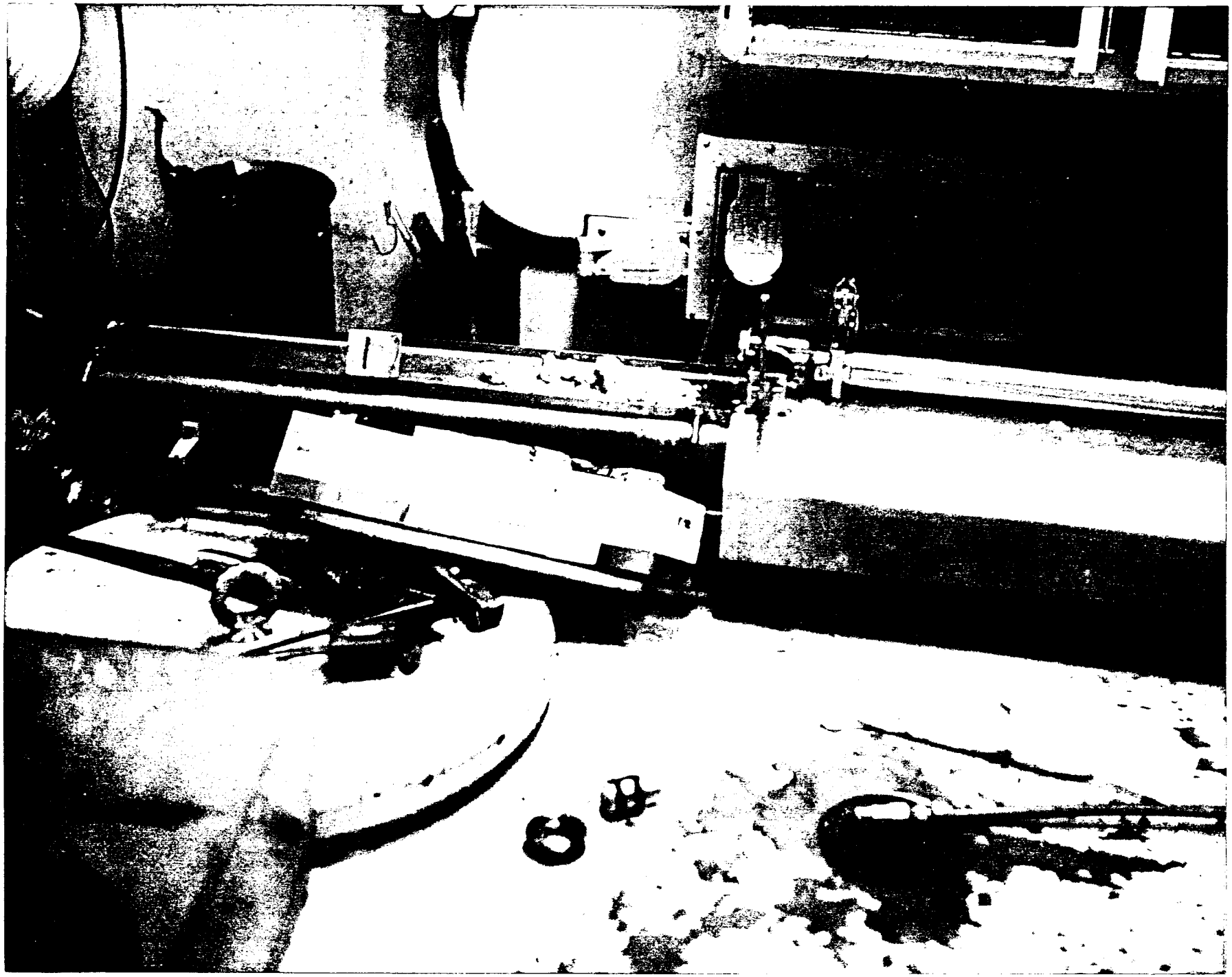
Laboratory Serial Number for Sample:	F0959	Date Sampled: 11-28-89
Laboratory Serial Number of Duplicate Sample:	F0960	
Laboratory Serial Number of Spiked Sample:	F0961	

Water Digestion Analysis of Solids

Laboratory Serial Number for Sample:	F0953	Date Sampled: 11-28-89
Laboratory Serial Number of Duplicate Sample:	F0954	
Laboratory Serial Number of Spiked Sample:	F0955	

Laboratory Notebook Reference	WHC-N-313-4	12
	Notebook No.	Page No.

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



TANK 241-U-110. CORE 8. SEGMENT 1

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 8 Composite Sample
Tank 241-U-110

UNTREATED SAMPLE RESULTS

	Sample	Duplicate
pH	10.28	10.78
% Water	8.73%	8.04%
Mercury	3.96E-01 ug/g	4.60E-01 ug/g
Cyanide	<1200 ug/g	<1100 ug/g

Carbon 14 was not completed

DATA SUMMARY

Sample units are Wet Weight

Core 8 Composite
Fusion Dissolution

Tank: 241-U-110
Customer ID: Core Composite 8

Radiological Analysis

	Sample		Duplicate Sample	
Fusion	2.71	g/L	2.12	g/L
Total Alpha	7.14E-03	uci/g	1.01E-02	uci/g
Total Beta	2.03	uci/g	4.00	uci/g
GEA Cs-137	3.80E-01	uci/g	4.09E-01	uci/g
Uranium	9.26E+02	ug/g	1.18E+03	ug/g
Plutonium	5.35E-03	uci/g	<3.63E-03	uci/g
Americium 241	<6.90E-03	uci/g	1.71E-02	uci/g
Neptunium 237	<3.98E-01	uci/g	<5.09E-01	uci/g
Technetium 99	<8.30E-03	uci/g	<1.00E-02	uci/g
Iodine 129	<3.97E-02	uci/g	<5.07E-02	uci/g
Strontium 90	5.61E-01	uci/g	1.14	uci/g

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

ICP Results

	Sample	Duplicate
Aluminum	307798 ug/g	310987 ug/g
Antimony	LT	LT
Barium	LT	LT
Beryllium	LT	LT
Bismuth	LT	LT
Boron	164 ug/g	439 ug/g
Cadmium	LT	LT
Calcium	2519 ug/g	4046 ug/g
Cerium	LT	LT
Cobalt	LT	LT
Copper	LT	LT
Europium	LT	LT
Iron	354 ug/g	632 ug/g
Lanthanum	LT	LT
Lead	LT	LT
Lithium	LT	LT
Magnesium	647 ug/g	496 ug/g
Manganese	46 ug/g	74 ug/g
Mercury	LT	LT
Molybdenum	LT	LT
Nickel	2104 ug/g	3034 ug/g
Samarium	LT	LT
Selenium	LT	LT
Silver	LT	LT
Sodium	2940 ug/g	7153 ug/g
Strontium	29 ug/g	LT
Sulfur	LT	LT
Tantalum	LT	LT
Thallium	LT	LT
Thorium	LT	LT
Tin	LT	LT
Titanium	LT	LT
Uranium	LT	LT
Vanadium	LT	LT
Zinc	65 ug/g	143 ug/g
Zirconium	LT	LT

DATA SUMMARY

Units For Samples Are Wet Weight

Core 8 Composite
Water Digestion

Tank: 241-U-110
Customer Id.: Core 8 Composite

ICP Results

Sample was not analyzed

	Sample	Duplicate
Water Digestion	10.10 g/L	9.80 g/L
pH	8.21	7.48

Anion Analysis

Fluoride	2.37E+01 ug/g	3.64E+01 ug/g
Chloride	3.01E+01 ug/g	3.28E+01 ug/g
Nitrate	2.51E+02 ug/g	3.06E+02 ug/g
Phosphate	1.12E+02 ug/g	2.13E+02 ug/g
Sulfate	<1.98E+02 ug/g	<2.04E+02 ug/g
Total Organic Carbon**	1.70E+03 ug/g	1.40E+03 ug/g
Total Organic Carbon*	8.78E+02 ug/g	8.28E+02 ug/g
Ammonia	<5.24E+03 ug/g	<5.40E+03 ug/g
Carbonate	2.97E+02 ug/g	3.57E+02 ug/g
Nitrite	1.72E+04 ug/g	7.98E+03 ug/g

Radiological Analysis

Total Alpha	<2.54E-03 uci/g	<1.35E-03 uci/g
Total Beta	2.34E-01 uci/g	3.03E-01 uci/g
GEA Cs-137	1.83E-01 uci/g	3.32E-01 uci/L
Americium 241	<1.27E-03 uci/g	<2.43E-03 uci/g
Carbon 14	1.13E-04 uci/g	1.13E-04 uci/g
Iodine 129	<5.19E-02 uci/g	<6.78E-03 uci/g
Neptunium 237	<1.07E-04 uci/g	<1.10E-01 uci/g
Plutonium	<6.30E-04 uci/g	<1.23E-03 uci/g
Strontium 90	6.50E-02 uci/g	6.41E-02 uci/g
Technetium 99	<1.40E-03 uci/g	<2.35E-03 uci/g
Tritium	<1.13E-03 uci/g	<1.13E-03 uci/g

Atomic Absorption Spectroscopy

Arsenic	<4.99E-01 ug/g	<4.99E-01 ug/g
Mercury	1.09E-01 ug/g	9.18E-02 ug/g
Selenium	<4.99E-01 ug/g	<5.02E-01 ug/g

*** Analysis Was Not Run.
** Samples were not acidified before analysis. Results include carbanate in sample.
* Samples were acidified correctly before analysis.

DATA SUMMARY

Units For Samples Are Wet Weight

Core 8 Composite
Acid Digestion

Tank: 241-U-110
Customer Id.8 Composite

Atomic Absorption Spectroscopy

Hydride Analysis

	Sample	Duplicate
Acid Digestion	10.24 g/L	11.95 g/L
Arsenic	<4.88E-01 ug/g	<4.18E-01 ug/g
Mercury	3.18E-01 ug/g	2.84E-01 ug/g
Selenium	<9.76E-01 ug/g	<8.37E-01 ug/g

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

ICP Results

	Sample	Duplicate
Aluminum	132295 ug/g	75555 ug/g
Antimony	524 ug/g	LT
Barium	LT	LT
Beryllium	LT	LT
Bismuth	LT	LT
Boron	LT	LT
Cadmium	LT	LT
Calcium	98 ug/g	134 ug/g
Cerium	LT	LT
Chromium	LT	LT
Copper	LT	LT
Europium	LT	LT
Iron	218 ug/g	81 ug/g
Lanthanum	LT	LT
Lead	553 ug/g	LT
Lithium	LT	LT
Magnesium	20 ug/g	29 ug/g
Manganese	58 ug/g	29 ug/g
Mercury	LT	LT
Molybdenum	39 ug/g	LT
Nickel	LT	LT
Potassium	LT	LT
Samarium	LT	LT
Selenium	526 ug/g	LT
Silver	LT	LT
Sodium	1111 ug/g	LT
Strontium	LT	LT
Sulfur	79 ug/g	LT
Tantalum	LT	LT
Thallium	LT	LT
Thorium	86 ug/g	LT
Tin	76 ug/g	LT
Titanium	12 ug/g	LT
Uranium	LT	LT
Vanadium	LT	LT
Zinc	56 ug/g	148 ug/g
Zirconium	LT	LT

PHYSICAL TEST ANALYSIS

Single Shell Tank
Extrusion of Segment -- Physical Tests

Lab Segment Serial #: F0941 Customer ID: Core 8 Composite

Analyst: K. J. Patterson Date Extruded: November 27, 1989

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? NO	Length: 5 in	Calc. Vol. 3.92 cu in
Remarks		

Appearance of Solids:

Hard, white crumbly solids. Material is more sticky than previous cores.

Penetrometer 6.0 lbs/sq in Remarks:

Homogenization

Procedure: T038A-00712 Revision: F		Quantity of Material: 103.31	Grams
Date Homogenized: 12-28-89		Time Homogenized: 5.0	Minutes
Operator: K. J. Patterson			

Laboratory Notebook Reference

Notebook No.	Page No.
WHC-N-313-4	12

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

B r i n k m a n n

Particle Size Analyzer

PROCESS CHEMISTRY LABS PARTICLE ANALYSIS
VIA BRINKMANN 2010

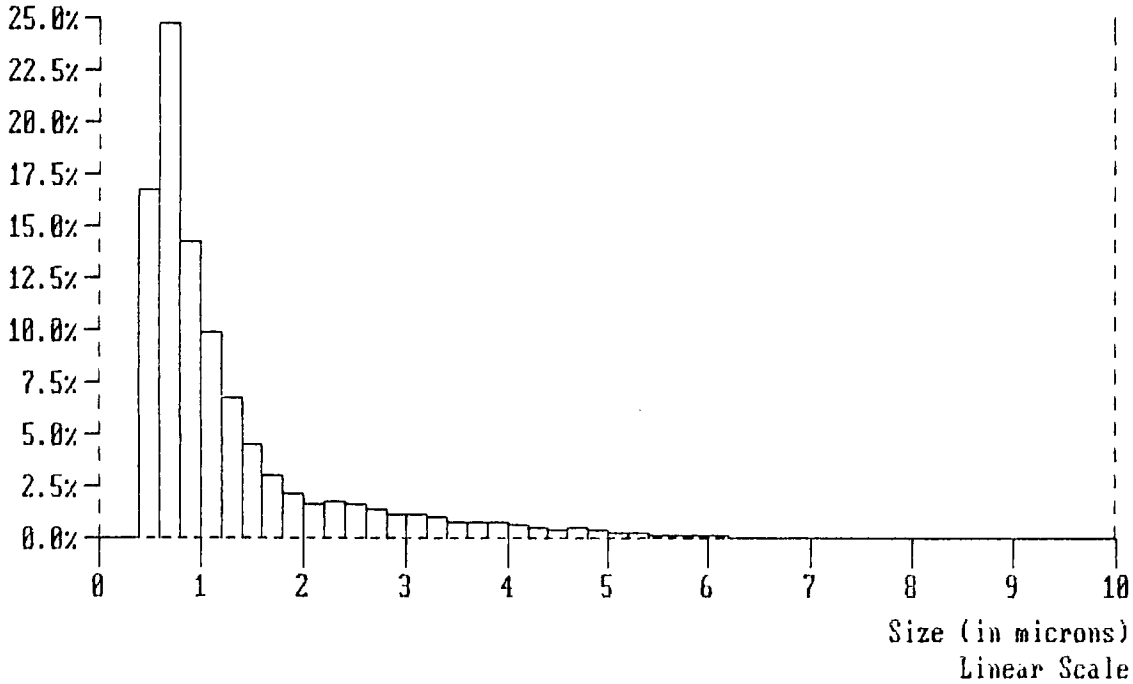
SAMPLE NAME : SST,B000087,F0289,ETOH,SBK
FILE NAME : F0289.002

DATE	: 04/12/1989	ACQ. RANGE	: 0.5-60	COUNTS	: 131888
TIME	: 13:58	ACQ. MODE	: SAMPLE	S.N.F.	: 0.98
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 1169 SEC	S.D.U.	: 1643
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 4	CONCENTR.	: 1.2E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 1.5E-03 %

PROBABILITY NUMBER DENSITY GRAPH

Name: SST,B000087,F0289,ETOH,SBK
1.2E+06 #/ml(99.7%)
Mode at 0.70 µm
<< SCALE RANGE (µm): 0 - 10 >>

Local Median : 0.91µm
Local Mean(nl): 1.35µm
Local S.D.(nl): 1.18µm
Local Conf(nl):100.00 %



F 289.-5002 PRT-SIZE

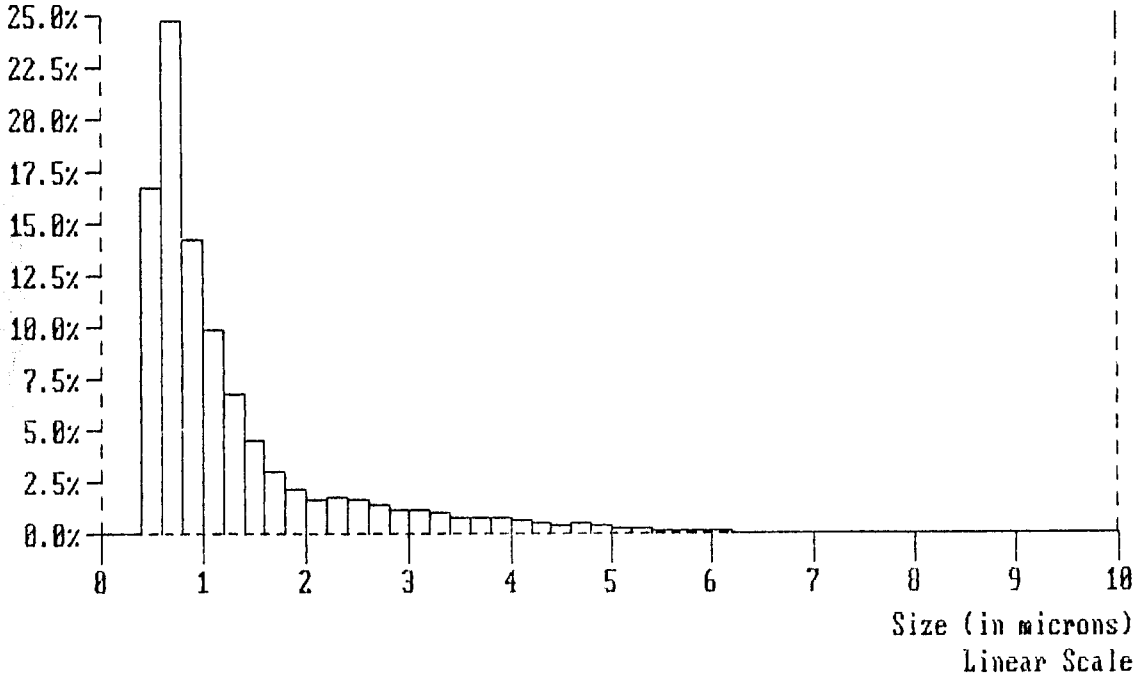
SAMPLE NAME : SST,B000087,F0289,ETOH,SBK
FILE NAME : F0289.002

DATE	: 04/12/1989	ACQ. RANGE	: 0.5-60	COUNTS	: 131888
TIME	: 13:58	ACQ. MODE	: SAMPLE	S.N.F.	: 0.98
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 1169 SEC	S.D.U.	: 1648
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 4	CONCENTR.	: 1.2E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 1.5E-03 %

PROBABILITY NUMBER DENSITY GRAPH

Name: SST,B000087,F0289,ETOH,SBK
1.2E+06 #/ml(99.7%)
Mode at 0.70 µm
<< SCALE RANGE (µm): 0 - 10 >>

Local Median : 0.91µm
Local Mean(nl): 1.35µm
Local S.D.(nl): 1.18µm
Local Conf(nl):100.00 %



Brinkmann

Particle Size Analyzer

PROCESS CHEMISTRY LABS PARTICLE ANALYSIS VIA BRINKMANN 2010

SAMPLE NAME : SST,B000087,F0289,ETOH,SBK
FILE NAME : F0289.001

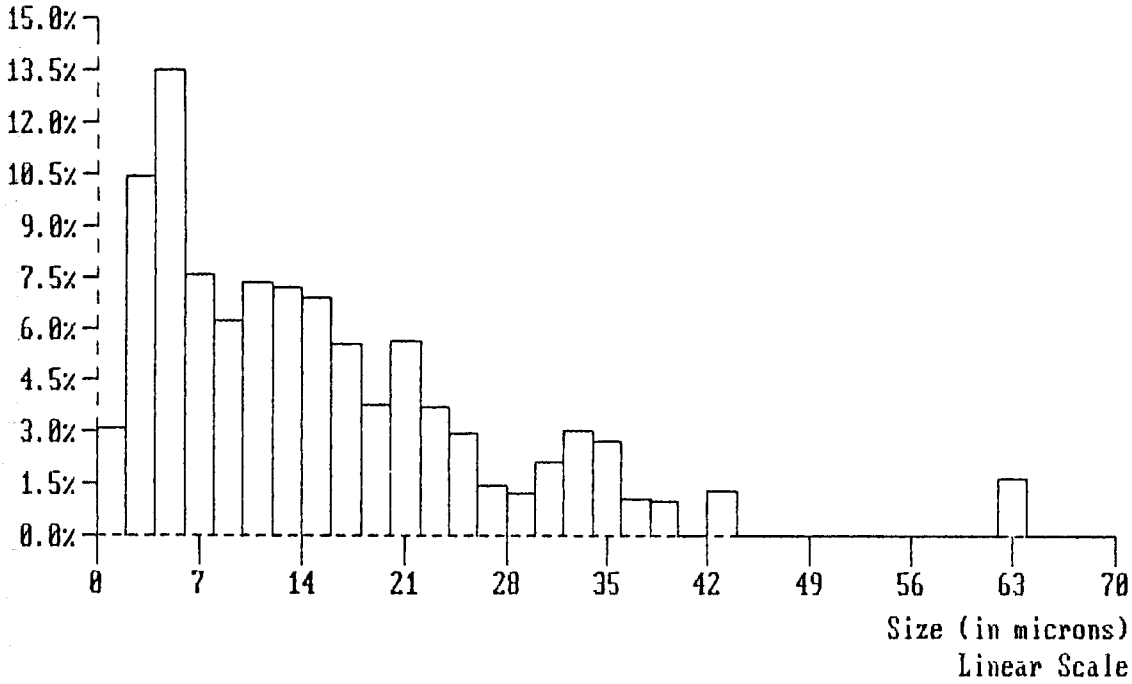
DATE	: 04/12/1989	ACQ. RANGE	: 0.5-150	COUNTS	: 275893
TIME	: 13:13	ACQ. MODE	: SAMPLE	S.N.F.	: 1.00
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 1586 SEC	S.D.U.	: 662
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 4	CONCENTR.	: 6.9E+05 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 1.3E-03 %

PROBABILITY VOLUME DENSITY GRAPH

Name: SST,B000087,F0289,ETOH,SBK
1.3E-05 cc/ml(100.0%)
Mode at 5.00 µm
<< SCALE RANGE (µm): ADJUSTED >>

Mean(nv): 3.27µm
S.D.(nv): 2.31µm

Median : 12.52µm
Mean(vm): 15.19µm
S.D.(vm): 11.89µm
Conf(vm): 99.43 %



Brinkmann Particle Size Analyzer

PROCESS CHEMISTRY LABS PARTICLE ANALYSIS VIA BRINKMANN 2010

SAMPLE NAME : SST,B000087,F0289,ETOH,SBK
FILE NAME : F0289.001

DATE	: 04/12/1989	ACQ. RANGE	: 0.5-150	COUNTS	: 275893
TIME	: 13:13	ACQ. MODE	: SAMPLE	S.N.F.	: 1.00
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 1586 SEC	S.D.U.	: 662
CELL TYPE	: MAGNETIC (3)	SAMPLE SIZE	: 4	CONCENTR.	: 6.9E+05 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: 95.00%(V)	SOLIDS	: 1.3E-03 %

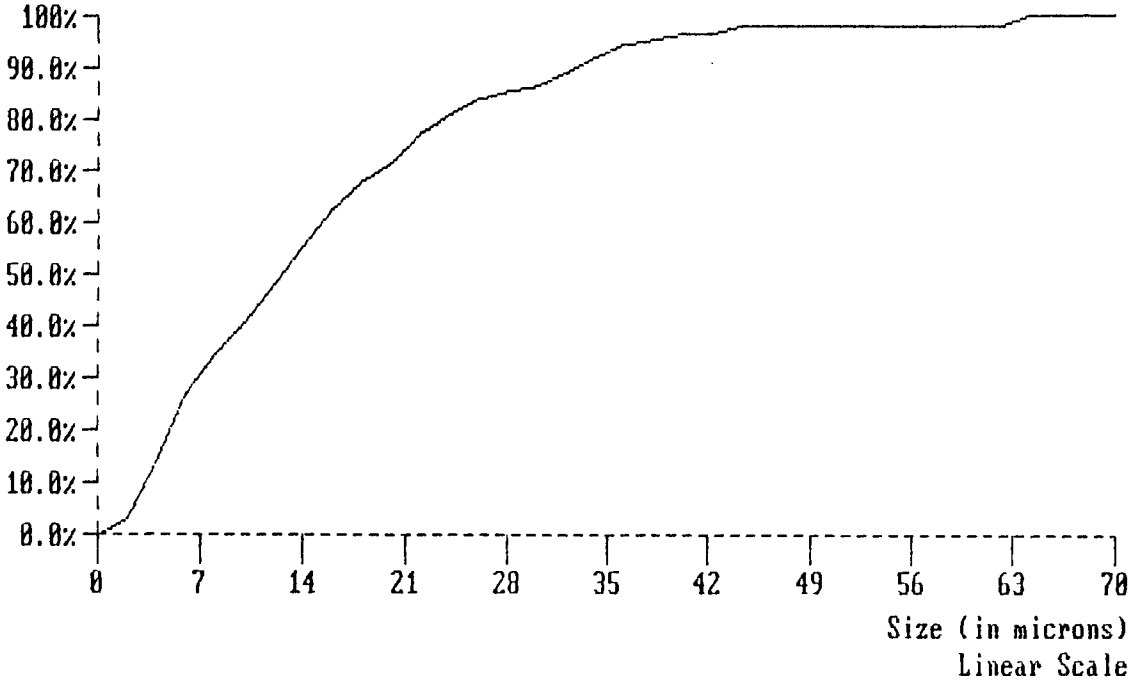
PROBABILITY VOLUME DISTRIBUTION GRAPH

Name: SST,B000087,F0289,ETOH,SBK
1.3E-05 cc/ml(100.0%)

Mean(nv): 3.27µm
S.D.(nv): 2.31µm

Median : 12.52µm
Mean(vm): 15.19µm
S.D.(vm): 11.89µm
Conf(vm): 99.43 %

<< SCALE RANGE (µm): ADJUSTED >>



Analytical Batch

Lab Segment Serial #: F0941

Customer ID: 000008

Instrument	WA63090/WA58053
Procedure/Rev	L1-000-200
Technologist	D. B. Bechtold
Date	March 13, 1990
Temperature	N/A
Starting Time	0837
Ending Time	1503
Chemist	D. B. Bechtold

Thermographic/Differential Scanning Calorometer Analysis

*Reagent Grade Dry Fine; Reference Scan

	Description	Lab ID
1	Therographic Analysis	F0941
2	Diff. Scanning Calorimeter	F0941
3		
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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.
N/A				

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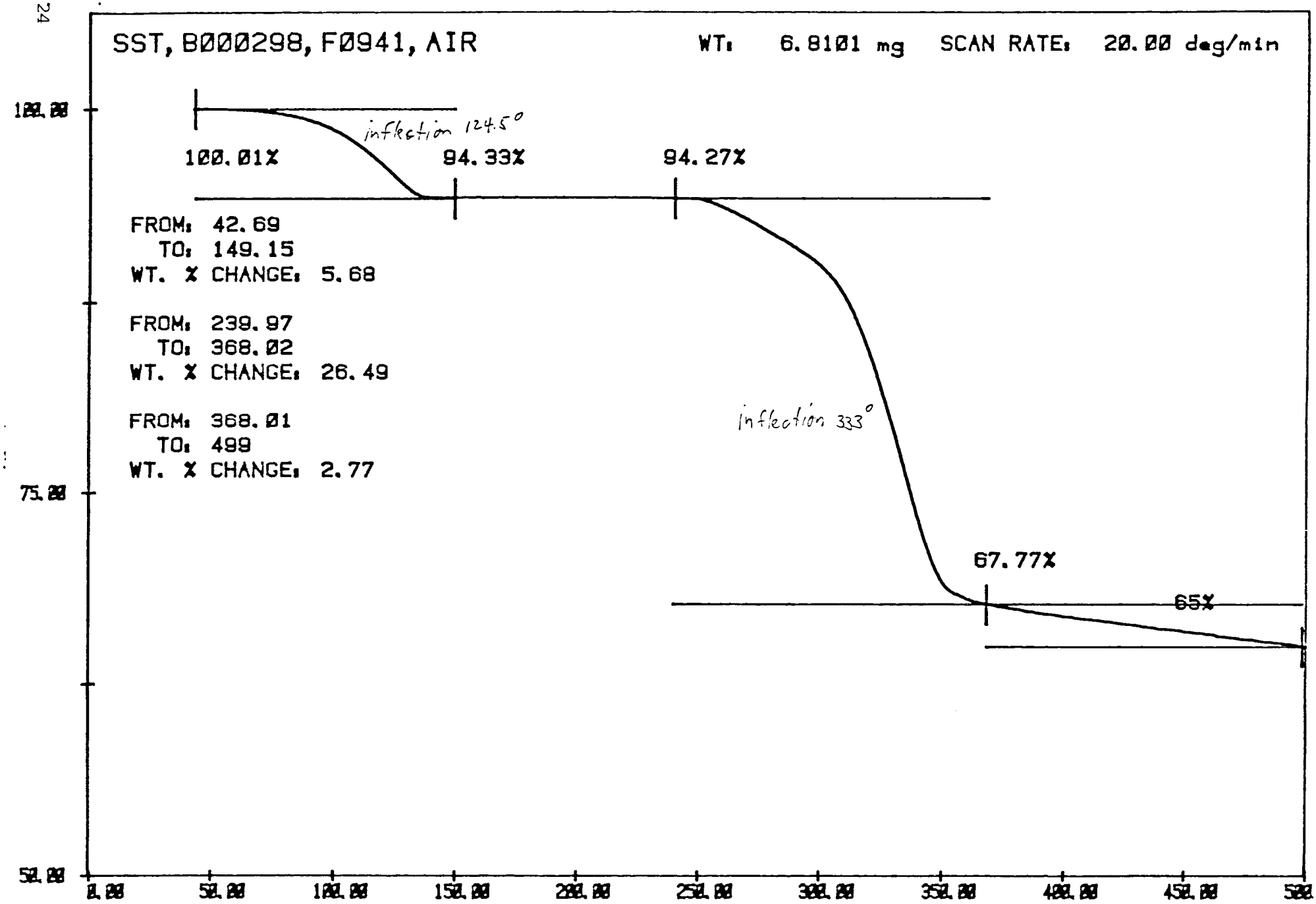
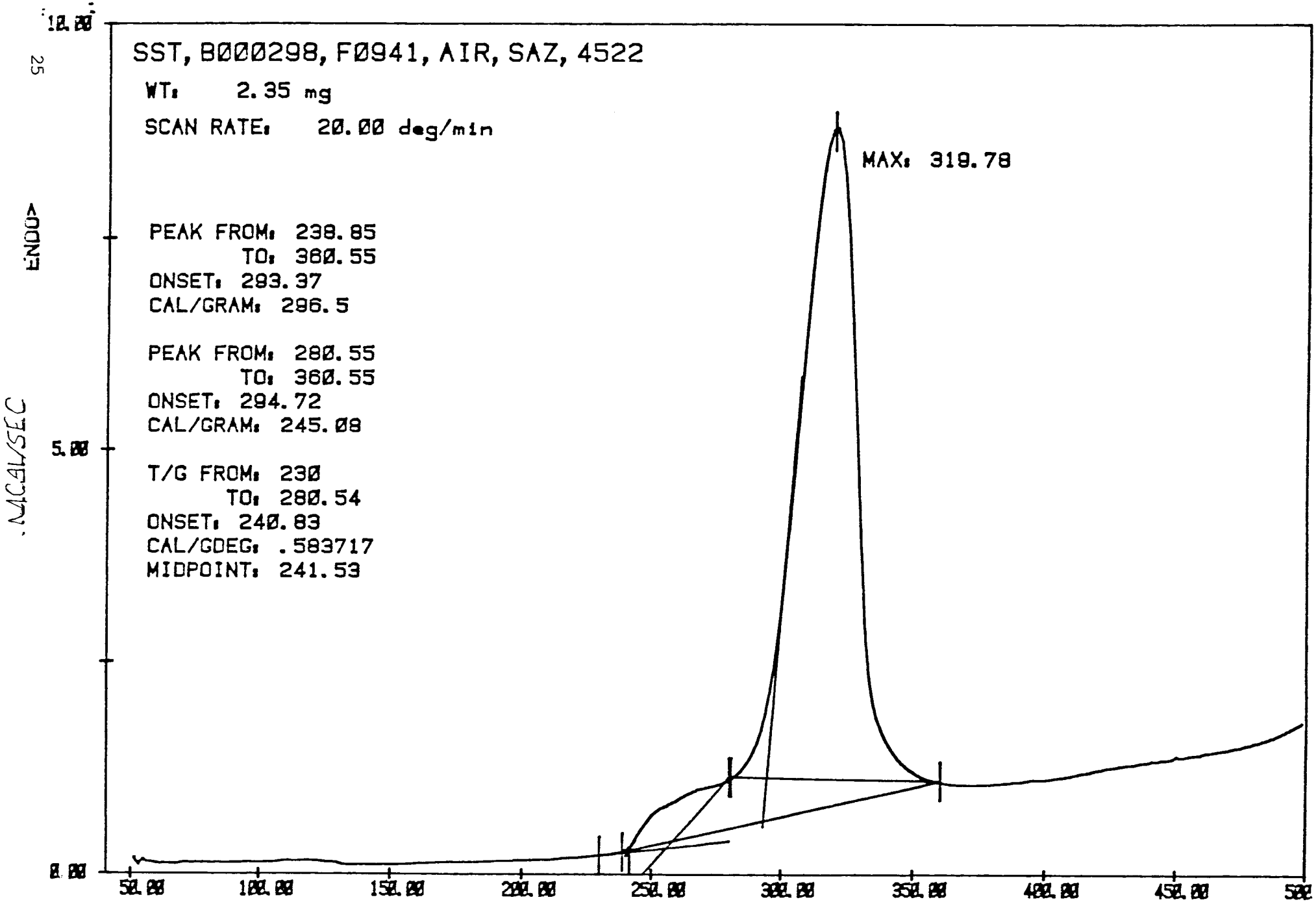


DBB, SBK FILE: F0941. TG

DATE: 90/03/13 TIME: 08:37



DBB, SBK FILE: F0941.D4

DATE: 90/03/07 TIME: 15:03

UNDIGESTED SAMPLE ANALYSIS

Single Shell Tank Project

Undigested Sample
Analysis Results

Tank: 241-U-110
Customer ID: Core 8 Composite

	Check Standard	Blank	Sample	Duplicate Sample	Spike of Sample	Check Standard
Laboratory ID:	F0100	F0121	F0289	F0290	N/A	F0292
pH	101.00%	6.83	10.28	10.78	N/A	100.90%
Laboratory ID:	F0100	F0309	F0289	F0290	N/A	F0292
% Water	96.63%	6.50E-03 g	8.73%	8.04%	N/A	96.80%
Laboratory ID:	F0939	F0940	F0941	F0942	F0943	F0944
Mercury	108.80%	<10.00 ng	3.96E-01 ug/g	4.60E-01 ug/g	82.90%	116.00%
Laboratory ID:	F0939	F0940	F0941	F0942	F0943	F0944
Cyanide	104.40%	<3.00E+02 ug	<1.20E+03 ug/g	<1.10E+03 ug/g	104.70%	103.50%

Analytical Batch

Lab Segment Serial #: F0941

Customer ID: 000008

pH Analysis of Solid Sample

Instrument	AL10653
Procedure/Rev	LA-212-103/A-0
Technologist	M. Franz
Date	January 02, 1990
Temperature	23.6 C
Starting Time	1330
Ending Time	2000
Chemist	R. E. Brandt

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

	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.	72C11A/5.0 mL			5.0 mL

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Analytical Batch

Lab Segment Serial #: F0941

Customer ID: 000008

Instrument	N/A
Procedure/Rev	LA-564-101/D-0
Technologist	R. D. Hale
Date	January 03, 1990
Temperature	120 C
Starting Time	1100 01-02-90
Ending Time	1100 01-03-90
Chemist	R. E. Brandt

Percent Water in Sample

Undigested Sample

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

	Description	Lab ID
12	Final LMCS Check Std.	F0292
13		
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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.	11C11AG/1.0 g			1.0 g

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Analytical Batch

Lab Segment Serial #: F0941

Customer ID: 000008

Instrument	Perkin-Elmer
Procedure/Rev	LA-325-102/A-2
Technologist	M. Myers
Date	July 16, 1990
Temperature	20 C
Starting Time	1330
Ending Time	1500
Chemist	R. K. Fuller

Mercury Analysis by Atomic Absorption

Manual Cold Vapor Technique

Undigested Sample

	Description	Lab ID
1	Initial LMCS Check Std.	F0939
2	Reagent Blank	F0940
3	Sample Composite 8	F0941
4	Duplicate Sample Composite 8	F0942
5	Spike Composite 8	F0943
6	Final LMCS Check Std.	F0944
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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.	58C11-CD/25 uL			25 mL
Spike	58C11-CD/25 uL	F0941/0.0384 g		25 mL

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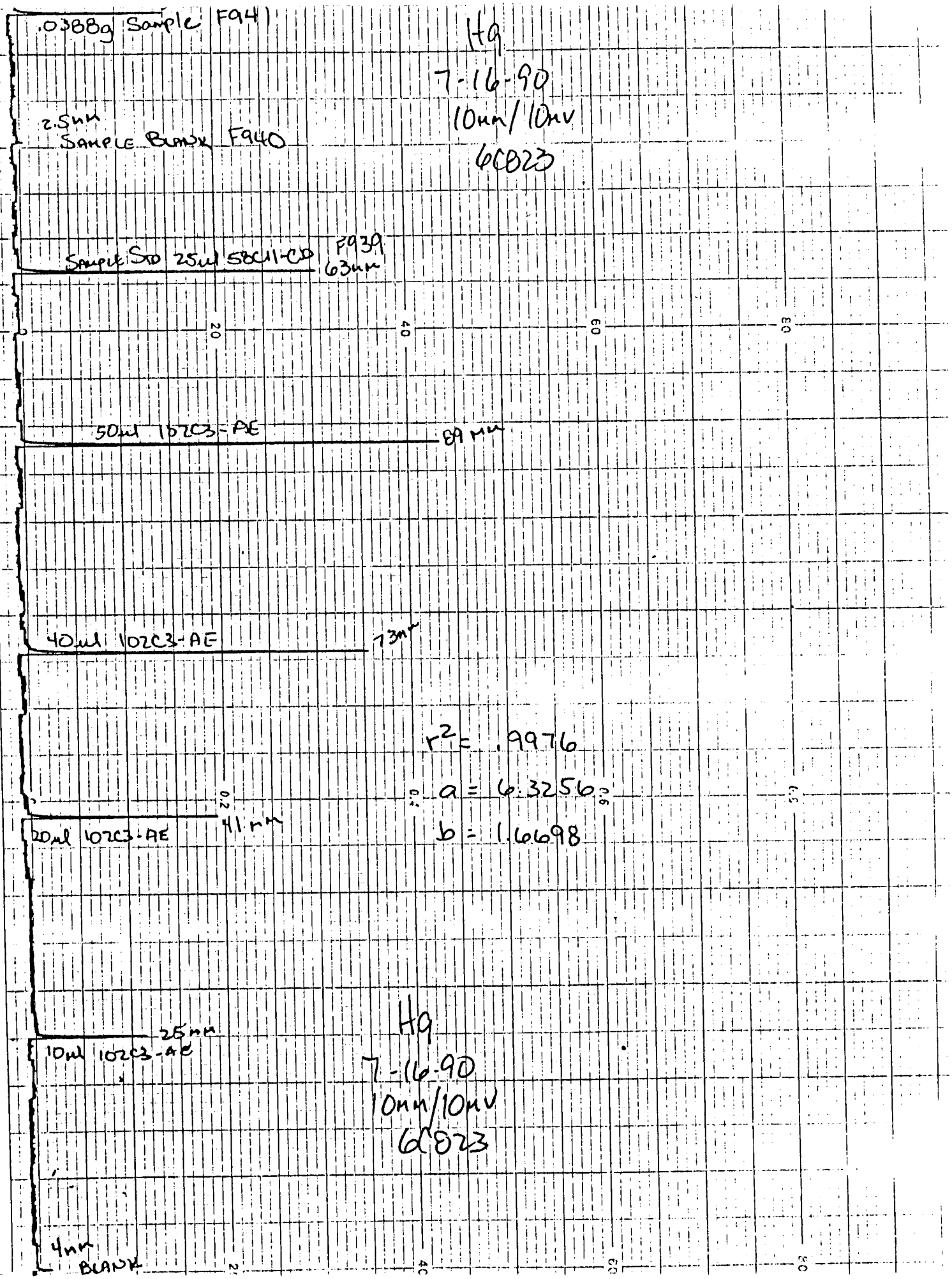

.0388g Sample F941
Hg
7-16-90
10nm/10mV
6C823
2.5nm
Sample Blank F940
Sample Std 25ul 58C11-CD F939
63nm
20
40
60
80
50ul 102C3-AE
89 nm
40ul 102C3-AE
73nm
r2 = .9976
a = 6.3256
b = 1.6698
0.2
0.4
0.6
0.8
20ul 102C3-AE
41nm
25nm
10ul 102C3-AE
Hg
7-16-90
10nm/10mV
6C823
4nm
BLANK

50nm
.0133g Sample ~~F1018~~ nm
F1019

Hg
7-16-90
10nm/10nV
Melanie Myers

6nm
~~F1017~~ Sample Blank
F1018 nm

20 40 60 80

64nm
25ul 58C11-CD Sample Std ~~F1016~~ nm
F1017

67nm
25ul 58C11-CD Sample Std F944

75nm
.0384g Sample + 25ul 58C11 CD F943

32nm
.0334g Sample Duplicate F942

32.nm
.0388g Sample F941

Hg
7-16-90
10nm/10nV
6C823

2.5nm
Sample Blank F940

F939

7mm Sample Blank F1016

61mm F1015

25ul 58C11-CD Sample STD

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

61.5mm F1022

25ul 58C11-CD Sample STD

38mm

.0143g Sample 2ml-10ml + 15ul 58C11CD F1021

15mm

.0224g Sample + 25ul 58C11-CD ~~F1020~~ mm F1021

.0143g Sample Duplicate ~~F1019~~ mm
43mm F1020

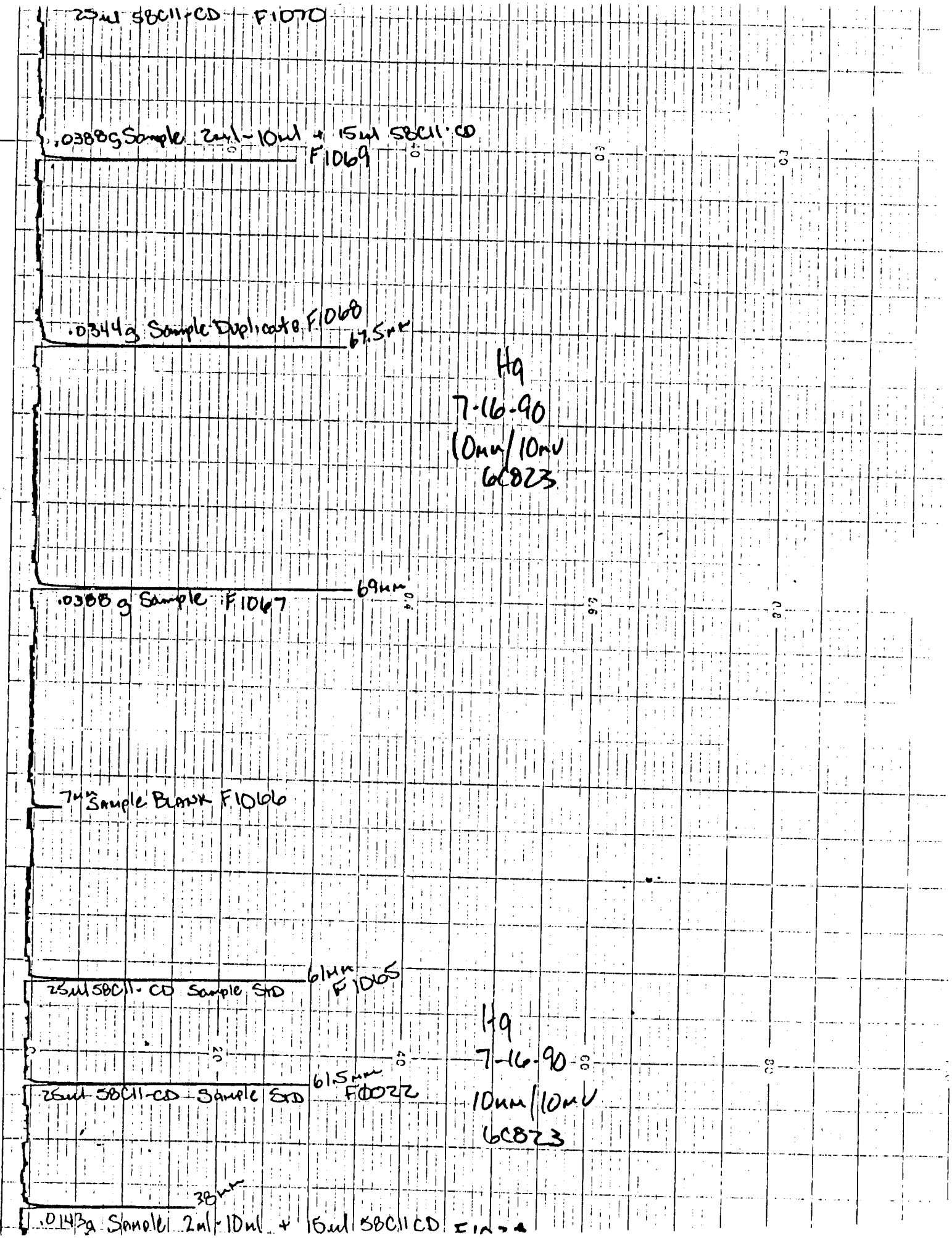
50mm

.0133g Sample ~~F1018~~ mm
F1019

Hg
7-16-90
10mm/10mV
Melanie Myers

6mm

~~F1017~~ Sample Blank
F1018mm


25ml 58C11-CD F1070
.0388g Sample 2ml-10ml + 15ml 58C11-CD
F1069
.0344g Sample Duplicate F1068
67.5nm
Hg
7-16-90
10nm/10nV
6C823
.0388g Sample F1067
69nm
7nm Sample Blank F1066
25ml 58C11-CD Sample STD
61nm
F1065
Hg
7-16-90
10nm/10nV
6C823
25ml 58C11-CD Sample STD
61.5nm
F00022
38nm
.0143g Sample 2ml-10ml + 15ml 58C11CD

943

NET WEIGHT:

SEQUENCE # : 221
WT 1: 26.4088
WT 2: 26.4146

1018A

NET WEIGHT:

---> 0.0038 GRAMS

07/13/90 @ 07:51:38

1067

NET WEIGHT:

942

SEQUENCE # : 222
WT 1: 27.6395
WT 2: 27.6538

1019

NET WEIGHT:

0.0143 GRAMS

07/13/90 @ 07:54:05

1068

NET WEIGHT:

---> 0.0341 GRAMS

07/13/90 @

176

SEQUENCE # : 223
WT 1: 26.1679

1020

NET WEIGHT:

---> 0.0224 GRAMS

07/13/90 @ 07:55:49

1069

NET WEIGHT:

SEQUENCE # : 224
WT 1: 26.4141
WT 2: 26.4226

1018+
1018

NET WEIGHT:

---> 0.0085 GRAMS
+ .0058 .0133

07/13/90 @ 07:57:32

Analytical Batch

Lab Segment Serial #: F0941

Customer ID: 000008

Cyanide Analysis

Undigested Sample

Instrument	WA66684
Procedure/Rev	LA-695-101/A-2
Technologist	E. Colvin
Date	February 21, 1990
Temperature	N/A
Starting Time	0800 02-20-90
Ending Time	2200 02-21-90
Chemist	R. E. Brandt

	Description	Lab ID
1	Initial LMCS Check Std.	F0939
2	Reagent Blank	F0940
3	Sample Composite 8	F0941
4	Duplicate Sample Composite 8	F0942
5	Spike Composite 8	F0943
6	Final LMCS Check Std.	F0944
7		
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11		

	Description	Lab ID
12		
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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.	74C11B/10 uL			50 mL
Spike	75C11B/10 uL	F0941/0.3306 g		50 mL

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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 CN/mL

TYPE OF CALIBRATION: Least Square Linear Regression

Dilution	Concentration	Instrument Reading Units=
Blank	0	0.016
100 ul	0.82	0.091
200 ul	1.63	0.150
500 ul	4.08	0.354
1000 ul	8.17	0.663
2000 ul	16.34	1.275
3000 ul	24.51	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 8 Composite

	Check Standard	Blank	Sample	Duplicate Sample	Spike of Sample	Check Standard
Laboratory ID:			F0294	F0295		
Fusion			2.71 g/L	2.12 g/L		
Laboratory ID:	F0105	F0308	F0294	F0295	F0296	F0297
Total Alpha	111.90%	<1.00E-04 uci/L	7.14E-03 uci/g	1.01E-02 uci/g	97.10%	100.30%
Total Beta	98.80%	<2.58E-04 uci/L	2.03 uci/g	4.00 uci/g	*	96.50%
Laboratory ID:	F0129	F0308	F0294	F0295	F0296	F0297
GEA Cs-137	98.10%	2.49E-01 uci/L	3.80E-01 uci/g	4.09E-01 uci/g	99.10%	99.10%
Laboratory ID:	F0293	F0308	F0294	F0295	F0296	F0297
Uranium	103.90%	<6.72E-04 g/L	9.26E+02 ug/g	1.18E+03 ug/g	152.80%	98.50%
Laboratory ID:	F0903	F0946	F0947	F0948	F0949	F0950
Plutonium	109.50%	<7.29E-03 uci/L	5.35E-03 uci/g	<3.63E-03 uci/g	*	105.90%
Laboratory ID:	F0897	F0946	F0947	F0948	F0949	F0950
Americium 241	101.30%	<1.50E-02 uci/L	<6.90E-03 uci/g	1.71E-02 uci/L	*	105.80%
Laboratory ID:	F0897	F0898	F0947	F0948	F0979	F0980
Neptunium 237	80.50%	<1.08 uci/L	<3.98E-01 uci/g	<5.09E-01 uci/g	71.20%	63.30%
Laboratory ID:	F0945	F0946	F0947	F0948	F0949	F0950
Technetium 99	110.90%	<2.28E-02 uci/L	<8.30E-03 uci/g	<1.00E-02 uci/g	107.50%	111.00%
Laboratory ID:	F0945	F0946	F0947	F0948	F0949	F0950
Iodine 129	74.20%	<1.08E-01 uci/L	<3.97E-02 uci/g	<5.07E-02 uci/g	80.50%	97.40%
Laboratory ID:	F0945	F0946	F0947	F0948	F0949	F0950
Strontium 90	99.70%	<8.58E-03 uci/L	5.61E-01 uci/g	1.14 uci/g	103.00%	88.80%

*Ratio Of Standard To Sample Inefficient To Calculate Spike recovery

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	Core 8 Composite	F0947
Digestion	Acid Digestion	Duplicate of Core 8 Composite	F0948
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	100.70%	92.02%	0.33	307798	310987	NOT CALC.	96.56%	99.27%
Antimony	103.07%	87.00%	0.02 LT	-2019 LT	-702 LT	-243.70%	67.00%	99.07%
Barium	99.30%	93.10%	0.01	-112 LT	-30 LT	103.93%	92.70%	97.17%
Beryllium	95.99%	87.90%	0.00 LT	-19 LT	-11 LT	101.02%	90.60%	94.22%
Bismuth	106.23%	94.31%	0.03 LT	-2451 LT	-1562 LT	-117.00%	101.54%	107.22%
Boron	100.71%	93.20%	0.06	164	439	76.57%	92.60%	98.05%
Cadmium	98.69%	93.70%	0.00 LT	-77 LT	-41 LT	98.39%	91.10%	96.89%
Calcium	102.21%	143.70%	0.78	2519	4046	170.51%	144.90%	99.95%
Cerium	92.37%	50.50%	-0.08 LT	-4512 LT	-1516 LT	-1338.00%	0.80%	90.43%
Cobalt	94.24%	95.40%	0.00 LT	-242 LT	69 LT	7.30%	86.60%	99.92%
Copper	100.63%	92.60%	0.01 LT	-280 LT	-76 LT	114.10%	90.60%	98.31%
Europium	98.16%	92.70%	0.00 LT	-81 LT	-25 LT	101.78%	94.90%	96.39%
Iron	103.46%	128.30%	0.58	354	632	NOT CALC.	126.30%	100.84%
Lanthanum	94.17%	89.66%	-0.01 LT	-368 LT	-103 LT	98.06%	91.90%	93.39%
Lead	105.09%	96.71%	0.03 LT	-1272 LT	-86 LT	112.52%	103.09%	108.06%
Lithium	98.13%	88.00%	-0.01 LT	-216 LT	-75 LT	99.66%	86.20%	95.95%
Magnesium	102.45%	108.40%	0.17	647	496	421.22%	107.20%	99.84%
Manganese	100.16%	97.50%	0.03	46	74	211.90%	97.00%	98.30%
Mercury	105.34%	89.88%	0.01	-73 LT	-22 LT	226.51%	94.80%	104.63%
Molybdenum	96.36%	87.60%	0.00 LT	-166 LT	-88 LT	94.24%	91.18%	94.24%
Nickel	97.87%	94.20%	0.00 LT	2104	3034	101.41%	90.70%	96.04%
Potassium	98.37%	74.68%	-0.09 LT	0	0	-733.60%	44.60%	98.37%
Samarium	95.61%	3.00%	-0.12 LT	-4951 LT	-1643 LT	-1619.00%	43.80%	99.90%
Selenium	105.26%	88.26%	-0.02 LT	-1245 LT	-135 LT	128.63%	95.04%	103.89%
Silver	102.71%	91.20%	-0.01 LT	-381 LT	-162 LT	-87.60%	96.10%	102.54%
Sodium	98.55%	97.68%	0.35	2940	7153	NOT CALC.	85.92%	96.79%
Strontium	100.99%	96.30%	0.00	29	-5 LT	146.91%	96.00%	98.64%
Sulfur	106.15%	95.42%	0.14	-200 LT	231 LT	150.68%	101.22%	105.85%
Tantalum	96.79%	76.60%	-0.01 LT	-808 LT	-358 LT	-36.62%	80.42%	95.64%
Thallium	101.95%	83.48%	-0.11 LT	-5676 LT	-2830 LT	-210.80%	91.10%	101.34%
Thorium	102.75%	87.41%	-0.08 LT	-3404 LT	-1345 LT	-112.51%	94.77%	102.26%
Tin	100.68%	98.20%	0.02 LT	-218 LT	-75 LT	100.18%	94.72%	98.67%
Titanium	99.79%	91.90%	0.09	-188 LT	-80 LT	103.53%	94.68%	96.79%
Uranium	102.10%	-13.59%	-0.89 LT	-32297 LT	-11835 LT	-1080.64%	35.91%	107.36%
Vanadium	95.92%	86.90%	-0.01 LT	-213 LT	-184 LT	31.20%	90.90%	94.94%
Zinc	100.16%	95.20%	0.08	65	143	134.21%	93.90%	98.31%
Zirconium	98.91%	88.94%	-0.01 LT	-500 LT	-179 LT	117.87%	92.02%	96.18%

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

Single Shell Tank Project

Fusion Analysis
Results Of The Laboratory Digestions

Tank: 241-U-110
Customer ID: Core 8 Composite

	Check Standard	Blank	Sample	Duplicate Sample	Spike of Sample	Check Standard
Laboratory ID:	N/A	F0168	F0294	F0295	N/A	N/A
Fusion	N/A	N/A	2.71 g/L	2.12 g/L	N/A	N/A
Laboratory ID:	F0105	F0308	F0294	F0295	F0296	F0297
Total Alpha	111.90%	<1.00E-04 uci/L	1.94E-02 uci/L	2.15E-02 uci/L	97.10%	100.30%
Total Beta	98.80%	<2.58E-04 uci/L	5.49 uci/L	8.47 uci/L	*	96.50%
Laboratory ID:	F0129	F0308	F0294	F0295	F0296	F0297
GEA Cs-137	98.10%	2.49E-01 uci/L	1.03 uci/L	8.67E-01 uci/L	99.10%	99.10%
Laboratory ID:	F0293	F0308	F0294	F0295	F0296	F0297
Uranium	103.90%	<6.72E-04 g/L	2.51E-03 g/L	2.51E-03 g/L	152.80%	98.50%
Laboratory ID:	F0903	F0946	F0947	F0948	F0949	F0950
Plutonium	109.50%	<7.29E-03 uci/L	1.45E-02 uci/L	<7.70E-03 uci/L	*	105.90%
Laboratory ID:	F0897	F0946	F0947	F0948	F0949	F0950
Americium 241	101.30%	<1.50E-02 uci/L	<1.87E-02 uci/L	3.63E-02 uci/L	*	105.80%
Laboratory ID:	F0897	F0898	F0947	F0948	F0979	F0980
Neptunium 237	80.50%	<1.08 uci/L	<1.08 uci/L	<1.08 uci/L	71.20%	63.30%
Laboratory ID:	F0945	F0946	F0947	F0948	F0949	F0950
Technetium 99	110.90%	<2.28E-02 uci/L	<2.25E-02 uci/L	<2.12E-02 uci/L	107.50%	111.00%
Laboratory ID:	F0945	F0946	F0947	F0948	F0949	F0950
Iodine 129	74.20%	<1.08E-01 uci/L	<1.08E-01 uci/L	<1.08E-01 uci/L	80.50%	97.40%
Laboratory ID:	F0945	F0946	F0947	F0948	F0949	F0950
Strontium	99.70%	<8.58E-03 uci/L	1.52 uci/L	2.41 uci/L	103.00%	88.80%

*Ratio Of Standard To Sample Inefficient To Calculate Spike Recovery.

Analytical Batch

Lab Segment Serial #: F0941

Customer ID: 000008

Fusion Dissolution

Instrument	N/A
Procedure/Rev	LA-549-141/A-1
Technologist	R. D. Hale
Date	January 03, 1990
Temperature	23 C
Starting Time	1000
Ending Time	1200
Chemist	S. A. Catlow

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

	Description	Lab ID
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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 #: F0941

Customer ID: 000008

Instrument	HW45676
Procedure/Rev	LA-508-101/C-1
Technologist	J. A. Hopkins
Date	January 05, 1990
Temperature	70 F
Starting Time	0930
Ending Time	1400
Chemist	S. A. Catlow

Total Alpha and Total Beta

Fusion Dissolution

Detector 18

	Description	Lab ID
1	Initial LMCS Check Std.	F0105
2	Reagent Blank	F0308
3	Sample 89-078	F0106
4	Duplicate Sample 89-078	F0107
5	Sample 89-047	F0130
6	Duplicate Sample 89-047	F0131
7	Sample 89-048	F0154
8	Duplicate Sample 89-048	F0155
9	Sample Composite 8	F0294
10	Duplicate Sample Composite 8	F0295
11	Spike Composite 8	F0296

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

Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std.	83B44/10 mL			N/A
Spike	83B44/10 mL	F0294/100 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 #18	PROPERTY NUMBER:	WA93415
TECHNOLOGIST:	R.A. Jones	PAYROLL NUMBER:	65801
DATE:	June 28, 1989		
CALIBRATION STANDARD ID:	36B40A3; 36B40B3; 36B40C3; 36B40A6; 36B40B6; 36B40C5; 36B40A8; 36B40B7; 36B40C7		
ANALYTE CONCENTRATION:	N/A		
TYPE OF CALIBRATION:	Efficiency		

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

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

DETECTOR No. 18

TIME ZERO DATE (HD): 15897

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

DATE COUNTED (HD): 16347

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

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

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

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

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

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

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

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

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

5" = 0.2109

Single Shell Tank

Calibration Record

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

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

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

DETECTOR No. 18

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

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

STANDARD ID	SIZE	DATE	TIME	COUNTS @ 0 DEG.	COUNTS @ 90 DEG.	COUNTS @ 180 DEG.	COUNTS @ 270 DEG.
32B40A4	2	06/28/89	1510	95552	95030	96367	94943
32B40B3	2	06/28/89	1515	179993	179923	180564	179845
32B40C4	2	06/28/89	1521	266251	266109	266791	262848
32B40A5	5	06/28/89	1526	80056	79664	81559	79720
32B40B6	5	06/28/89	1531	159760	162820	161429	163674
32B40C5	5	06/28/89	1536	234482	235955	237348	236432

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

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

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

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

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

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

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

5" = 0.2762

Analytical Batch

Lab Segment Serial #: F0941

Customer ID: 000008

Instrument	N/A
Procedure/Rev	LA-548-121/C-2
Technologist	D. M. Souuthwick
Date	January 09, 1990
Temperature	72 F
Starting Time	1230
Ending Time	1400
Chemist	S. A. Catlow

GEA Analysis

Fusion Dissolution

Detectors 1, 2, 3, & 4

Samples are prepared in batch but counted randomly.

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

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

Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std.	89B44/0.5 mL			22 mL
Spike	89B44/0.1 mL	F0294/1.0 mL		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          27-AUG-90  10:12:00


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

MCA UNIT NUMBER:   1     /     ADC UNIT NUMBER: 1.0
DETECTOR NUMBER:    4    /     GEOMETRY NUMBER:  41
SPECTRUM SIZE:  4096 CHANNELS
ORDER OF SMOOTHING FUNCTION:     5
NUMBER OF BACKGROUND CHANNELS:  4 ON EACH SIDE OF PEAK
PEAK CONFIDENCE FACTOR: 85.0%
IDENTIFICATION ENERGY WINDOW: +- 1.50 KEV
ERROR QUOTATION: 1.96 SIGMA UNCERTAINTY

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

ANALYSIS OF SPECTRUM SAVED IN DISK FILE: SD4885
ANALYZED BY:        VR

SAMPLE DESCRIPTION: F129 SEGMENT F
GEOMETRY DESCRIPTION:
SAMPLE SIZE:   1.0000E-03 LI       / CONVERSION FACTOR: 5.0000E-01
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL000

COLLECT STARTED ON 10-JAN-90 AT 07:02:02

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

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

ENERGY CALIBRATION PERFORMED 26-DEC-89
EFFICIENCY CALIBRATION PERFORMED  1-SEP-89
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222-S COUNTING ROOM WESTINGHOUSE HANFORD 27-AUG-90 10:12:00

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

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

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

C - MULTIPLET ANALYSIS CONVERGED NORMALLY
? - MULTIPLET ANALYSIS CONVERGED BUT GFIT > 4
B - ENVIRONMENTAL BACKGROUND PEAK

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

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

SAMPLE: F129 SEGMENT F
DATA COLLECTED ON 10-JAN-90 AT 07:02:02
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

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

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

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

STANDARD DEVIATION = 0.06

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.45E-09 UC/LI
TOTAL MEASURED ACTIVITY = 8.10E+01 (+-6.36E-01) UC/LI
% TECH. SPEC. = ****** (+-****)

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 85.0%

PEAKS NOT USED IN ANALYSIS

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
53.64	27.00	1316.	12.8	1.37E+03
951.26	475.55	813.	25.0	5.46E+00
1126.89	563.35	3613.	5.7	2.83E+01
1139.08	569.44	6581.	4.5	5.21E+01
1604.14	801.95	2943.	9.1	3.19E+01
2335.95	1167.96	578.	28.6	8.80E+00
2730.39	1365.30	796.	8.2	1.39E+01
2801.12	1400.69	399.	13.1	7.10E+00

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2921.56	1460.96	813.	7.9	1.50E+01

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

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

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

MCA UNIT NUMBER: 2 / ADC UNIT NUMBER: 3.0
DETECTOR NUMBER: 3 / GEOMETRY NUMBER: 42
SPECTRUM SIZE: 4096 CHANNELS
ORDER OF SMOOTHING FUNCTION: 5
NUMBER OF BACKGROUND CHANNELS: 4 ON EACH SIDE OF PEAK
PEAK CONFIDENCE FACTOR: 95.0%
IDENTIFICATION ENERGY WINDOW: +- 1.50 KEV
ERROR QUOTATION: 1.96 SIGMA UNCERTAINTY

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

ANALYSIS OF SPECTRUM SAVED IN DISK FILE: SD3888
ANALYZED BY: DM

SAMPLE DESCRIPTION: F-308 SEGMENT-U
GEOMETRY DESCRIPTION:
SAMPLE SIZE: 1.0000E-03 LI / CONVERSION FACTOR: 1.0000E+00
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL000

COLLECT STARTED ON 10-JAN-90 AT 09:24:49

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

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

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

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

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

PK	CENTROID CHANNEL	ENERGY KEV	FWHM KEV	BACKGND COUNTS	NET AREA COUNTS	ERROR %	NUCLIDES
1	2921.30	1460.75	1.81	32.	603.	8.6	K-40
1B		1460.58			611.	5.5	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 95.0%

B - ENVIRONMENTAL BACKGROUND PEAK

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

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

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

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

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

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

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 95.0%

ALL DETECTED PEAKS WERE USED IN THE ANALYSIS

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2921.30	1460.75	603.	8.6	1.64E+02

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

222-S COUNTING ROOM WESTINGHOUSE HANFORD 08-OCT-90 14:22:07

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

MCA UNIT NUMBER: 2 / ADC UNIT NUMBER: 3.0
DETECTOR NUMBER: 3 / GEOMETRY NUMBER: 42
SPECTRUM SIZE: 4096 CHANNELS
ORDER OF SMOOTHING FUNCTION: 5
NUMBER OF BACKGROUND CHANNELS: 4 ON EACH SIDE OF PEAK
PEAK CONFIDENCE FACTOR: 85.0%
IDENTIFICATION ENERGY WINDOW: +- 1.50 KEV
ERROR QUOTATION: 1.96 SIGMA UNCERTAINTY

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

ANALYSIS OF SPECTRUM SAVED IN DISK FILE: SD3887
ANALYZED BY: DM

SAMPLE DESCRIPTION: F-294 SEGMENT-G
GEOMETRY DESCRIPTION:
SAMPLE SIZE: 1.0000E-03 LI / CONVERSION FACTOR: 1.0000E+00
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL000

COLLECT STARTED ON 10-JAN-90 AT 08:20:54

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

222-S COUNTING ROOM WESTINGHOUSE HANFORD 08-OCT-90 14:22:07

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	1021.40	510.79	1.91	118.	137.	28.2	RN-222,I-133,
1B		510.92			134.	19.6	TL-208,NA-22,
							ZN-65,RH-106
2	1218.84	609.45	1.12	109.	139.	28.0	BI-214,
2B		609.19			122.	21.0	RU-103
3	1323.00	661.50	1.32	85.	252.	16.6	CS-137
3B		661.41			81.	28.8	
4	2921.39	1460.79	1.97	34.	584.	8.8	K-40
4B		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 08-OCT-90 14:22:07

SAMPLE: F-294 SEGMENT-G
DATA COLLECTED ON 10-JAN-90 AT 08:20:54
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<7.52E-01		LLD<7.52E-01		911.07	
AG-108M	LLD<1.25E-01		LLD<1.25E-01		433.94	
AG-110M	LLD<2.60E-01		LLD<2.60E-01		657.76	
AM-241	LLD<1.88E-01		LLD<1.88E-01		59.54	
AM-243	LLD<1.49E-01		LLD<1.49E-01		74.67	
AR-41	LLD<2.06E-01		LLD<2.06E-01		1293.64	
AU-198	LLD<1.19E-01		LLD<1.19E-01		411.80	
BA-133	LLD<1.76E-01		LLD<1.76E-01		356.02	
BA-139	LLD<4.59E-01		LLD<4.59E-01		165.85	
BA-140	LLD<4.97E-01		LLD<4.97E-01		537.27	
BA-141	LLD<4.73E-01		LLD<4.73E-01		190.23	
BE-7	LLD<1.22E+00		LLD<1.22E+00		477.59	
BI-207	LLD<1.23E-01		LLD<1.23E-01		569.70	
BI-212	LLD<2.16E+00		LLD<2.16E+00		727.27	
BI-214	LLD<4.13E-01		LLD<4.13E-01		609.32	
CD-109	LLD<2.27E+00		LLD<2.27E+00		88.03	
CE-139	LLD<1.04E-01		LLD<1.04E-01		165.85	
CE-141	LLD<1.83E-01		LLD<1.83E-01		145.44	
CEPR144	LLD<1.49E+00		LLD<1.49E+00		133.51	
CO-56	LLD<1.37E-01		LLD<1.37E-01		846.76	
CO-57	LLD<1.00E-01		LLD<1.00E-01		122.06	
CO-58	LLD<1.28E-01		LLD<1.28E-01		810.75	
CO-60	LLD<1.32E-01		LLD<1.32E-01		1332.50	
CR-51	LLD<9.62E-01		LLD<9.62E-01		320.09	
CS-134	LLD<1.77E-01		LLD<1.77E-01		795.84	
CS-136	LLD<1.28E-01		LLD<1.28E-01		818.51	
CS-137	7.80E-01	+-2.19E-01	7.80E-01	+-2.19E-01	661.65	-0.15
CS-138	LLD<3.48E-01		LLD<3.48E-01		1435.86	
EU-152	LLD<9.42E-01		LLD<9.42E-01		1408.01	
EU-154	LLD<4.53E-01		LLD<4.53E-01		1274.45	
EU-155	LLD<3.89E-01		LLD<3.89E-01		105.31	
FE-59	LLD<3.00E-01		LLD<3.00E-01		1099.25	
HF-181	LLD<1.39E-01		LLD<1.39E-01		482.20	
HG-203	LLD<1.28E-01		LLD<1.28E-01		279.20	
I-131	LLD<1.34E-01		LLD<1.34E-01		364.48	
I-132	LLD<1.52E-01		LLD<1.52E-01		667.69	
I-133	LLD<1.31E-01		LLD<1.31E-01		529.69	
I-134	LLD<2.00E-01		LLD<2.00E-01		847.03	
I-135	LLD<5.62E-01		LLD<5.62E-01		1260.41	
K-40	LLD<4.75E+00		LLD<4.75E+00		1460.75	
KR-85	LLD<3.76E+01		LLD<3.76E+01		513.99	
KR-85M	LLD<1.35E-01		LLD<1.35E-01		151.17	
KR-87	LLD<2.72E-01		LLD<2.72E-01		402.58	
KR-89	LLD<5.17E+00		LLD<5.17E+00		220.90	
LA-140	LLD<1.51E-01		LLD<1.51E-01		1596.20	
LA-142	LLD<3.36E-01		LLD<3.36E-01		641.83	
MN-54	LLD<1.51E-01		LLD<1.51E-01		834.83	

MN-56	LLD<1.55E-01	LLD<1.55E-01	846.76
NA-22	LLD<1.65E-01	LLD<1.65E-01	1274.55
NA-24	LLD<1.18E-01	LLD<1.18E-01	1368.60
NB-94	LLD<1.17E-01	LLD<1.17E-01	702.63
NB-95	LLD<1.50E-01	LLD<1.50E-01	765.78
NB-97	LLD<3.16E-01	LLD<3.16E-01	657.92
NP-237	LLD<6.16E-01	LLD<6.16E-01	86.50
NP-238	LLD<6.35E-01	LLD<6.35E-01	984.45
NP-239	LLD<7.17E-01	LLD<7.17E-01	277.60
PA-233	LLD<2.82E-01	LLD<2.82E-01	311.98
PA-234M	LLD<2.44E+01	LLD<2.44E+01	1001.03
PB-210	LLD<2.84E+00	LLD<2.84E+00	465.03
PB-212	LLD<2.51E-01	LLD<2.51E-01	239.00
PB-214	LLD<3.89E-01	LLD<3.89E-01	351.92
PO-210	LLD<1.07E+04	LLD<1.07E+04	804.00
PO-214	LLD<1.32E+03	LLD<1.32E+03	799.70
PO-216	LLD<7.61E+03	LLD<7.61E+03	804.90
PU-239	LLD<1.34E+03	LLD<1.34E+03	129.30
PU-241	LLD<4.44E+04	LLD<4.44E+04	148.57
RA-224	LLD<2.86E+00	LLD<2.86E+00	240.99
RA-226	LLD<2.86E+00	LLD<2.86E+00	186.10
RB-88	LLD<1.35E+00	LLD<1.35E+00	1836.00
RB-89	LLD<6.50E-01	LLD<6.50E-01	1031.88
RN-220	LLD<1.14E+02	LLD<1.14E+02	549.73
RU-103	LLD<1.34E-01	LLD<1.34E-01	497.08
RURH106	LLD<2.70E+00	LLD<2.70E+00	621.80
SB-124	LLD<1.28E-01	LLD<1.28E-01	602.72
SB-125	LLD<1.32E+00	LLD<1.32E+00	176.33
SC-46	LLD<2.32E-01	LLD<2.32E-01	1120.45
SE-75	LLD<1.70E-01	LLD<1.70E-01	264.66
SN-113	LLD<1.76E-01	LLD<1.76E-01	391.67
SR-85	LLD<1.65E-01	LLD<1.65E-01	513.99
SR-91	LLD<2.14E-01	LLD<2.14E-01	555.60
SR-92	LLD<1.88E-01	LLD<1.88E-01	1383.94
TA-182	LLD<5.08E-01	LLD<5.08E-01	1121.30
TC-99M	LLD<1.01E-01	LLD<1.01E-01	140.51
TE-123M	LLD<9.96E-02	LLD<9.96E-02	159.00
TE-125M	LLD<2.94E+01	LLD<2.94E+01	109.27
TE-132	LLD<1.17E-01	LLD<1.17E-01	228.16
TH-228	LLD<6.22E+00	LLD<6.22E+00	84.37
TL-208	LLD<1.91E-01	LLD<1.91E-01	583.14
U-235	LLD<1.71E-01	LLD<1.71E-01	185.71
U-237	LLD<4.90E-01	LLD<4.90E-01	208.00
W-187	LLD<5.09E-01	LLD<5.09E-01	685.74
XE-131M	LLD<4.39E+00	LLD<4.39E+00	163.98
XE-133	LLD<2.04E-01	LLD<2.04E-01	81.00
XE-133M	LLD<1.02E+00	LLD<1.02E+00	233.21
XE-135	LLD<1.19E-01	LLD<1.19E-01	249.79
XE-138	LLD<8.55E-01	LLD<8.55E-01	258.41
Y-88	LLD<1.28E-01	LLD<1.28E-01	1836.06
Y-91	LLD<6.70E+01	LLD<6.70E+01	1204.90
Y-91M	LLD<1.62E-01	LLD<1.62E-01	555.60
ZN-65	LLD<4.37E-01	LLD<4.37E-01	1115.55
ZR-95	LLD<2.55E-01	LLD<2.55E-01	756.73
ZR-97	LLD<1.22E-01	LLD<1.22E-01	743.33
TOTAL	7.80E-01 +-2.19E-01	7.80E-01 +-2.19E-01	

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

TOTAL MEASURED ACTIVITY = 7.80E-01 (+-2.19E-01) 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
1021.40	510.79	137.	28.2	1.60E+01
1218.84	609.45	139.	28.0	1.87E+01
2921.39	1460.79	584.	8.8	1.59E+02

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

222-S COUNTING ROOM WESTINGHOUSE HANFORD 08-OCT-90 14:26:38

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: SD4886
ANALYZED BY: DM

SAMPLE DESCRIPTION: F-295 SEGMENT-H
GEOMETRY DESCRIPTION:
SAMPLE SIZE: 1.0000E-03 LI / CONVERSION FACTOR: 1.0000E+00
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL000

COLLECT STARTED ON 10-JAN-90 AT 08:24:03

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

222-S COUNTING ROOM WESTINGHOUSE HANFORD 08-OCT-90 14:26:38

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	53.01	26.69	1.09	233.	133.	35.1	
1B		27.06			123.	34.3	
2C	1022.13	510.98	2.34	414.	359.	22.2	RN-222,I-133,
2B		510.74			335.	16.9	TL-208,NA-22,
							ZN-65,RH-106
3	1166.85	583.32	1.81	178.	146.	31.4	EU-154,
3B		583.17			120.	39.2	TL-208
4	1218.72	609.25	1.74	169.	161.	28.3	BI-214,
4B		609.25			197.	22.8	RU-103
5	1323.65	661.71	1.67	165.	3382.	3.6	CS-137
5B		661.35			379.	12.7	
6	1822.63	911.21	2.20	120.	91.	42.6	
6B		910.95			144.	27.4	
7	2921.45	1460.90	2.13	36.	802.	7.4	K-40
7B		1460.80			854.	7.1	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

C - MULTIPLET ANALYSIS CONVERGED NORMALLY
B - ENVIRONMENTAL BACKGROUND PEAK

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

222-S COUNTING ROOM WESTINGHOUSE HANFORD 08-OCT-90 14:26:38

SAMPLE: F-295 SEGMENT-H
DATA COLLECTED ON 10-JAN-90 AT 08:24:03
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<7.66E-02		LLD<7.66E-02		911.07	
AG-108M	LLD<1.06E-02		LLD<1.06E-02		433.94	
AG-110M	LLD<4.74E-02		LLD<4.74E-02		657.76	
AM-241	LLD<6.55E-02		LLD<6.55E-02		59.54	
AM-243	LLD<1.69E-02		LLD<1.69E-02		74.67	
AR-41	LLD<1.77E-02		LLD<1.77E-02		1293.64	
AU-198	LLD<1.11E-02		LLD<1.11E-02		411.80	
BA-133	LLD<1.62E-02		LLD<1.62E-02		356.02	
BA-139	LLD<3.71E-02		LLD<3.71E-02		165.85	
BA-140	LLD<4.06E-02		LLD<4.06E-02		537.27	
BA-141	LLD<3.39E-02		LLD<3.39E-02		190.23	
BE-7	LLD<9.78E-02		LLD<9.78E-02		477.59	
BI-207	LLD<1.02E-02		LLD<1.02E-02		569.70	
BI-212	LLD<1.55E-01		LLD<1.55E-01		727.27	
BI-214	LLD<3.65E-02		LLD<3.65E-02		609.32	
CD-109	LLD<2.44E-01		LLD<2.44E-01		88.03	
CE-139	LLD<8.39E-03		LLD<8.39E-03		165.85	
CE-141	LLD<1.22E-02		LLD<1.22E-02		145.44	
CEPR144	LLD<1.03E-01		LLD<1.03E-01		133.51	
CO-56	LLD<1.10E-02		LLD<1.10E-02		846.76	
CO-57	LLD<6.83E-03		LLD<6.83E-03		122.06	
CO-58	LLD<1.01E-02		LLD<1.01E-02		810.75	
CO-60	LLD<1.28E-02		LLD<1.28E-02		1332.50	
CR-51	LLD<8.22E-02		LLD<8.22E-02		320.09	
CS-134	LLD<1.21E-02		LLD<1.21E-02		795.84	
CS-136	LLD<9.40E-03		LLD<9.40E-03		818.51	
CS-137	8.67E-01	+-3.79E-02	8.67E-01	+-3.79E-02	661.65	0.06
CS-138	LLD<3.01E-02		LLD<3.01E-02		1435.86	
EU-152	LLD<6.52E-02		LLD<6.52E-02		1408.01	
EU-154	LLD<4.04E-02		LLD<4.04E-02		1274.45	
EU-155	LLD<2.85E-02		LLD<2.85E-02		105.31	
FE-59	LLD<2.47E-02		LLD<2.47E-02		1099.25	
HF-181	LLD<1.33E-02		LLD<1.33E-02		482.20	
HG-203	LLD<1.01E-02		LLD<1.01E-02		279.20	
I-131	LLD<1.05E-02		LLD<1.05E-02		364.48	
I-132	LLD<1.22E-02		LLD<1.22E-02		667.69	
I-133	LLD<1.14E-02		LLD<1.14E-02		529.69	
I-134	LLD<1.47E-02		LLD<1.47E-02		847.03	
I-135	LLD<5.14E-02		LLD<5.14E-02		1260.41	
K-40	LLD<4.38E-01		LLD<4.38E-01		1460.75	
KR-85	LLD<3.04E+00		LLD<3.04E+00		513.99	
KR-85M	LLD<8.46E-03		LLD<8.46E-03		151.17	
KR-87	LLD<2.38E-02		LLD<2.38E-02		402.58	
KR-89	LLD<3.97E-01		LLD<3.97E-01		220.90	
LA-140	LLD<1.30E-02		LLD<1.30E-02		1596.20	
LA-142	LLD<2.54E-02		LLD<2.54E-02		641.83	
MN-54	LLD<1.03E-02		LLD<1.03E-02		834.83	

MN-56	LLD<1.25E-02	LLD<1.25E-02	846.76
NA-22	LLD<1.33E-02	LLD<1.33E-02	1274.55
NA-24	LLD<1.46E-02	LLD<1.46E-02	1368.60
NB-94	LLD<1.00E-02	LLD<1.00E-02	702.63
NB-95	LLD<1.18E-02	LLD<1.18E-02	765.78
NB-97	LLD<6.69E-02	LLD<6.69E-02	657.92
NP-237	LLD<6.88E-02	LLD<6.88E-02	86.50
NP-238	LLD<4.16E-02	LLD<4.16E-02	984.45
NP-239	LLD<5.79E-02	LLD<5.79E-02	277.60
PA-233	LLD<2.32E-02	LLD<2.32E-02	311.98
PA-234M	LLD<2.10E+00	LLD<2.10E+00	1001.03
PB-210	LLD<2.63E-01	LLD<2.63E-01	465.03
PB-212	LLD<2.74E-02	LLD<2.74E-02	239.00
PB-214	LLD<2.29E-02	LLD<2.29E-02	351.92
PO-210	LLD<8.60E+02	LLD<8.60E+02	804.00
PO-214	LLD<1.12E+02	LLD<1.12E+02	799.70
PO-216	LLD<5.36E+02	LLD<5.36E+02	804.90
PU-239	LLD<9.01E+01	LLD<9.01E+01	129.30
PU-241	LLD<3.29E+03	LLD<3.29E+03	148.57
RA-224	LLD<2.12E-01	LLD<2.12E-01	240.99
RA-226	LLD<2.15E-01	LLD<2.15E-01	186.10
RB-88	LLD<1.16E-01	LLD<1.16E-01	1836.00
RB-89	LLD<5.39E-02	LLD<5.39E-02	1031.88
RN-220	LLD<8.42E+00	LLD<8.42E+00	549.73
RU-103	LLD<1.05E-02	LLD<1.05E-02	497.08
RURH106	LLD<1.91E-01	LLD<1.91E-01	621.80
SB-124	LLD<1.00E-02	LLD<1.00E-02	602.72
SB-125	LLD<9.46E-02	LLD<9.46E-02	176.33
SC-46	LLD<1.17E-02	LLD<1.17E-02	1120.45
SE-75	LLD<1.35E-02	LLD<1.35E-02	264.66
SN-113	LLD<1.45E-02	LLD<1.45E-02	391.67
SR-85	LLD<1.33E-02	LLD<1.33E-02	513.99
SR-91	LLD<1.76E-02	LLD<1.76E-02	555.60
SR-92	LLD<1.57E-02	LLD<1.57E-02	1383.94
TA-182	LLD<3.21E-02	LLD<3.21E-02	1121.30
TC-99M	LLD<6.95E-03	LLD<6.95E-03	140.51
TE-123M	LLD<7.50E-03	LLD<7.50E-03	159.00
TE-125M	LLD<2.17E+00	LLD<2.17E+00	109.27
TE-132	LLD<8.96E-03	LLD<8.96E-03	228.16
TH-228	LLD<6.79E-01	LLD<6.79E-01	84.37
TL-208	LLD<1.86E-02	LLD<1.86E-02	583.14
U-235	LLD<1.20E-02	LLD<1.20E-02	185.71
U-237	LLD<3.72E-02	LLD<3.72E-02	208.00
W-187	LLD<3.57E-02	LLD<3.57E-02	685.74
XE-131M	LLD<3.34E-01	LLD<3.34E-01	163.98
XE-133	LLD<2.73E-02	LLD<2.73E-02	81.00
XE-133M	LLD<7.60E-02	LLD<7.60E-02	233.21
XE-135	LLD<8.54E-03	LLD<8.54E-03	249.79
XE-138	LLD<6.66E-02	LLD<6.66E-02	258.41
Y-88	LLD<1.10E-02	LLD<1.10E-02	1836.06
Y-91	LLD<5.12E+00	LLD<5.12E+00	1204.90
Y-91M	LLD<1.33E-02	LLD<1.33E-02	555.60
ZN-65	LLD<3.83E-02	LLD<3.83E-02	1115.55
ZR-95	LLD<2.02E-02	LLD<2.02E-02	756.73
ZR-97	LLD<1.10E-02	LLD<1.10E-02	743.33
TOTAL	8.67E-01 +-3.79E-02	8.67E-01 +-3.79E-02	

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

TOTAL MEASURED ACTIVITY = 8.67E-01 (+-3.79E-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
53.01	26.69	133.	35.1	1.51E+02
1022.13	510.98	359.	22.2	2.57E+00
1166.85	583.32	146.	31.4	1.18E+00
1218.72	609.25	161.	28.3	1.36E+00
1822.63	911.21	91.	42.6	1.11E+00
2921.45	1460.90	802.	7.4	1.48E+01

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

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

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

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

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

ANALYSIS OF SPECTRUM SAVED IN DISK FILE: SD1009
ANALYZED BY: DM

SAMPLE DESCRIPTION: F-296 SEGMENT-I
GEOMETRY DESCRIPTION:
SAMPLE SIZE: 1.0000E-03 LI / CONVERSION FACTOR: 1.0000E+00
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL000

COLLECT STARTED ON 10-JAN-90 AT 09:18:56

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

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

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

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

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

PK	CENTROID CHANNEL	ENERGY KEV	FWHM KEV	BACKGND COUNTS	NET AREA COUNTS	ERROR %	NUCLIDES
1C	1126.55	562.75	1.40	158.	198.	21.1	CS-134, EU-152
2C	1138.99	568.97	1.40	143.	321.	18.3	CS-134, BI-207
3C	1209.70	604.31	1.41	135.	1733.	5.8	CS-134
4C	1218.83	608.87	1.41	126.	36.	33.0	BI-214, RU-103
5	1323.55	661.22	1.57	105.	3132.	3.6	CS-137
5B		661.82			35.	46.4	
6C	1591.90	795.38	1.54	68.	1260.	6.4	CS-134
7C	1604.08	801.47	1.54	70.	118.	13.7	CS-134
8	2346.30	1172.70	1.78	66.	1128.	6.2	CO-60
9	2664.77	1332.06	1.93	7.	1107.	5.9	CO-60
10	2730.32	1364.87	2.34	11.	31.	49.8	CS-134
11	2921.09	1460.35	1.56	5.	166.	15.8	K-40
11B		1461.77			182.	11.2	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

C - MULTIPLET ANALYSIS CONVERGED NORMALLY
B - ENVIRONMENTAL BACKGROUND PEAK

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

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

SAMPLE: F-296 SEGMENT-I
DATA COLLECTED ON 10-JAN-90 AT 09:18:56
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

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

NUCLIDE	ACTIVITY CONCENTRATION IN uCi/LI MEASURED	ERROR	DECAY CORRECTED	ERROR	ENERGY COMPARISON (KEV) EXPECT	DIFF
AC-228	LLD<2.18E-01		LLD<2.18E-01		911.07	
AG-108M	LLD<6.07E-02		LLD<6.07E-02		433.94	
AG-110M	LLD<2.70E-01		LLD<2.70E-01		657.76	
AM-241	LLD<2.65E-01		LLD<2.65E-01		59.54	
AM-243	LLD<6.45E-02		LLD<6.45E-02		74.67	
AR-41	LLD<3.67E-02		LLD<3.67E-02		1293.64	
AU-198	LLD<5.20E-02		LLD<5.20E-02		411.80	
BA-133	LLD<8.08E-02		LLD<8.08E-02		356.02	
BA-139	LLD<1.65E-01		LLD<1.65E-01		165.85	
BA-140	LLD<2.00E-01		LLD<2.00E-01		537.27	
BA-141	LLD<1.61E-01		LLD<1.61E-01		190.23	
BE-7	LLD<5.10E-01		LLD<5.10E-01		477.59	
BI-207	LLD<5.12E-02		LLD<5.12E-02		569.70	
BI-212	LLD<6.79E-01		LLD<6.79E-01		727.27	
BI-214	LLD<2.38E-01		LLD<2.38E-01		609.32	
CD-109	LLD<1.03E+00		LLD<1.03E+00		88.03	
CE-139	LLD<3.73E-02		LLD<3.73E-02		165.85	
CE-141	LLD<5.54E-02		LLD<5.54E-02		145.44	
CEPR144	LLD<4.71E-01		LLD<4.71E-01		133.51	
CO-56	LLD<5.17E-02		LLD<5.17E-02		846.76	
CO-57	LLD<3.12E-02		LLD<3.12E-02		122.06	
CO-58	LLD<5.26E-02		LLD<5.26E-02		810.75	
CO-60	2.63E+00	+-1.59E-01	2.63E+00	+-1.59E-01	1332.50	-0.44
					1173.24	-0.54
CR-51	LLD<4.26E-01		LLD<4.26E-01		320.09	
CS-134	2.27E+00	+-1.49E-01	2.27E+00	+-1.49E-01	795.84	-0.47
					604.70	-0.39
CS-136	LLD<4.99E-02		LLD<4.99E-02		818.51	
CS-137	4.81E+00	+-1.88E-01	4.81E+00	+-1.88E-01	661.65	-0.43
CS-138	LLD<6.42E-02		LLD<6.42E-02		1435.86	
EU-152	LLD<1.30E-01		LLD<1.30E-01		1408.01	
EU-154	LLD<9.67E-02		LLD<9.67E-02		1274.45	
EU-155	LLD<1.22E-01		LLD<1.22E-01		105.31	
FE-59	LLD<1.11E-01		LLD<1.11E-01		1099.25	
HF-181	LLD<5.98E-02		LLD<5.98E-02		482.20	
HG-203	LLD<4.99E-02		LLD<4.99E-02		279.20	
I-131	LLD<6.21E-02		LLD<6.21E-02		364.48	
I-132	LLD<5.81E-02		LLD<5.81E-02		667.69	
I-133	LLD<5.73E-02		LLD<5.73E-02		529.69	
I-134	LLD<7.22E-02		LLD<7.22E-02		847.03	
I-135	LLD<1.49E-01		LLD<1.49E-01		1260.41	
K-40	LLD<9.06E-01		LLD<9.06E-01		1460.75	
KR-85	LLD<1.31E+01		LLD<1.31E+01		513.99	
KR-85M	LLD<3.55E-02		LLD<3.55E-02		151.17	
KR-87	LLD<1.31E-01		LLD<1.31E-01		402.58	
KR-89	LLD<2.02E+00		LLD<2.02E+00		220.90	
LA-140	LLD<3.91E-02		LLD<3.91E-02		1596.20	

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

STANDARD DEVIATION = 0.05

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.53E-09 UC/LI
TOTAL MEASURED ACTIVITY = 9.71E+00 (+-2.87E-01) UC/LI
% TECH. SPEC. = ****** (+-****)

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 85.0%

PEAKS NOT USED IN ANALYSIS

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
1126.55	562.75	198.	21.1	8.47E+00
1138.99	568.97	321.	18.3	1.39E+01
1604.08	801.47	118.	13.7	6.74E+00
2730.32	1364.87	31.	49.8	2.75E+00

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

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

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

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

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

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

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

ANALYSIS OF SPECTRUM SAVED IN DISK FILE: SD2749
ANALYZED BY: DM

SAMPLE DESCRIPTION: F-297 SEGMENT-J
GEOMETRY DESCRIPTION:
SAMPLE SIZE: 1.0000E-03 LI / CONVERSION FACTOR: 5.0000E-01
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL000

COLLECT STARTED ON 10-JAN-90 AT 09:21:40

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

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

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

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

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

PK	CENTROID CHANNEL	ENERGY KEV	FWHM KEV	BACKGND COUNTS	NET AREA COUNTS	ERROR %	NUCLIDES
1C	1127.84	563.55	1.49	552.	502.	14.2	CS-134, EU-152
2C	1139.68	569.47	1.49	485.	956.	11.6	CS-134, BI-207
3	1210.48	604.86	1.70	502.	5996.	2.8	CS-134
4	1324.35	661.79	1.70	366.	8782.	2.2	CS-137
4B		661.85			36.	13.9	
5C	1592.56	795.87	1.70	266.	4293.	3.7	CS-134
6C	1604.64	801.91	1.70	270.	387.	12.5	CS-134
7	2347.01	1173.06	1.94	221.	3775.	3.4	CO-60
8	2665.46	1332.27	2.16	36.	3437.	3.4	CO-60
8B		1332.24			9.	37.4	
9	2731.09	1365.09	2.99	19.	113.	22.4	CS-134
10	2921.55	1460.32	2.32	22.	128.	21.3	K-40
10B		1460.85			156.	3.8	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

C - MULTIPLET ANALYSIS CONVERGED NORMALLY
B - ENVIRONMENTAL BACKGROUND PEAK

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

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

SAMPLE: F-297 SEGMENT-J
DATA COLLECTED ON 10-JAN-90 AT 09:21:40
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

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

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

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

STANDARD DEVIATION = 0.18

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.44E-09 UC/LI
TOTAL MEASURED ACTIVITY = 8.19E+01 (+-1.50E+00) UC/LI
% TECH. SPEC. = ****** (+-****)

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 85.0%

PEAKS NOT USED IN ANALYSIS

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
1127.84	563.55	502.	14.2	2.96E+01
1139.68	569.47	956.	11.6	5.69E+01
1604.64	801.91	387.	12.5	3.10E+01
2731.09	1365.09	113.	22.4	1.40E+01

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

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

Single Shell Tank
Calibration Record

ANALYTE:	Isotope Mixed Gamma		
PROCEDURE:	LQ-508-003	REVISION:	B-1
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: 56840 01

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 01

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	1.782470E-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
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EQUATION 165-1836 KEV

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          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:	B-1
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:	B-1
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)
           +  -9.970520E-02 *LOG(ENERGY)^2
```

EQUATION 165-1836 KEV

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

GEA CALIBRATION RECORD PROCEDURE LQ-508-003

DETECTOR: 3
GEOMETRY CODE: 43
GEOMETRY DECSRIPTION: 22 ML LIQUID, POS 3
CALIBRATION DATE: 2-Jul-89
ANALYST(S): J. L. ANDERSON/M. R. DOWELL
STANDARD ID: 56840 D1

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

EQUATION 0-165 KEV

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

EQUATION 165-1836 KEV

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

Single Shell Tank
Calibration Record

ANALYTE:	Mixed Isotope Standards		
PROCEDURE:	LQ-508-003	REVISION:	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 DECSRIPTION: 22 ML LIQUID, POS 1
CALIBRATION DATE: 1-Sep-89
ANALYST(S): J. L. ANDERSON/M. R. DOWELL
STANDARD ID: 56840 D1

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

EQUATION 0-165 KEV

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

EQUATION 165-1836 KEV

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

GEA CALIBRATION RECORD PROCEDURE LQ-508-003

Analytical Batch

Lab Segment Serial #: F0941

Customer ID: 000008

Instrument	WA77344
Procedure/Rev	LA-925-106/A-1
Technologist	M. Franz
Date	January 09, 1990
Temperature	N/A
Starting Time	1000
Ending Time	1330
Chemist	S. A. Catlow

Uranium Analysis

Fusion Dissolution

	Description	Lab ID
1	Initial LMCS Check Std.	F0293
2	Reagent Blank	F0308
3	Sample Composite 8	F0294
4	Duplicate Sample Composite 8	F0295
5	Spike Composite 8	F0296
6	Final LMCS Check Std.	F0297
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	58B38/1 uL	F0294/0.5 uL		5.8 mL

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

Analytical Batch

Lab Segment Serial #: F0941

Customer ID: 000008

Instrument	N/A
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

Fusion Dissolution

	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 Sample 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
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	83B83A/1.0 mL	77C11J/1.0 mL	1.0 mL
Digested Std	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 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
Core 8 Composite	F0947
Duplicate of Core 8 Composite	F0948
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	100.70%	92.02%	0.33	307798	310987	NOT CALC.	96.56%	99.27%
Antimony	103.07%	87.00%	0.02 LT	-2019 LT	-702 LT	-243.70%	67.00%	99.07%
Arsenic	114.94% #	99.86%	-0.02 LT	-429 LT	-123 LT	114.58%	104.44%	113.03% #
Barium	99.30%	93.10%	0.01	-112 LT	-30 LT	103.93%	92.70%	97.17%
Beryllium	95.99%	87.90%	0.00 LT	-19 LT	-11 LT	101.02%	90.60%	94.22%
Bismuth	106.23%	94.31%	0.03 LT	-2451 LT	-1562 LT	-117.00%	101.54%	107.22%
Boron	100.71%	93.20%	0.06	164	439	76.57%	92.60%	98.05%
Cadmium	98.69%	93.70%	0.00 LT	-77 LT	-41 LT	98.39%	91.10%	96.89%
Calcium	102.21%	143.70%	0.78	2519	4046	170.51%	144.90%	99.95%
Cerium	92.37%	50.50%	-0.08 LT	-4512 LT	-1516 LT	-1338.00%	0.80%	90.43%
Chromium	90.41%	87.60%	0.01	-170 LT	-50 LT	232.52%	85.80%	88.92% #
Cobalt	94.24%	95.40%	0.00 LT	-242 LT	69 LT	7.30%	86.60%	99.92%
Copper	100.63%	92.60%	0.01 LT	-280 LT	-76 LT	114.10%	90.60%	98.31%
Europium	98.16%	92.70%	0.00 LT	-81 LT	-25 LT	101.78%	94.90%	96.39%
Iron	103.46%	128.30%	0.58	354	632	NOT CALC.	126.30%	100.84%
Lanthanum	94.17%	89.66%	-0.01 LT	-368 LT	-103 LT	98.06%	91.90%	93.39%
Lead	105.09%	96.71%	0.03 LT	-1272 LT	-86 LT	112.52%	103.09%	108.06%
Lithium	98.13%	88.00%	-0.01 LT	-216 LT	-75 LT	99.66%	86.20%	95.95%
Magnesium	102.45%	108.40%	0.17	647	496	421.22%	107.20%	99.84%
Manganese	100.16%	97.50%	0.03	46	74	211.90%	97.00%	98.30%
Mercury	105.34%	89.88%	0.01	-73 LT	-22 LT	226.51%	94.80%	104.63%
Molybdenum	96.36%	87.60%	0.00 LT	-166 LT	-88 LT	94.24%	91.18%	94.24%
Neodymium	85.78% #	50.50%	-0.06 LT	-3368 LT	-1538 LT	-977.80%	18.90%	87.30% #
Nickel	97.87%	94.20%	0.00 LT	2104	3034	101.41%	90.70%	96.04%
Phosphorou	112.63% #	96.46%	0.10	-385 LT	149 LT	13.07%	105.20%	114.97% #
Potassium	98.37%	74.68%	-0.09 LT	0	0	-733.60%	44.60%	98.37%
Samarium	95.61%	3.00%	-0.12 LT	-4951 LT	-1643 LT	-1619.00%	43.80%	99.90%
Selenium	105.26%	88.26%	-0.02 LT	-1245 LT	-135 LT	128.63%	95.04%	103.89%
Silicon	90.12%	30.04%	0.82	4064	21979	102.49%	30.36%	87.78% #
Silver	102.71%	91.20%	-0.01 LT	-381 LT	-162 LT	-87.60%	96.10%	102.54%
Sodium	98.55%	97.68%	0.35	2940	7153	NOT CALC.	85.92%	96.79%
Strontium	100.99%	96.30%	0.00	29	-5 LT	146.91%	96.00%	98.64%
Sulfur	106.15%	95.42%	0.14	-200 LT	231 LT	150.68%	101.22%	105.85%
Tantalum	96.79%	76.60%	-0.01 LT	-808 LT	-358 LT	-36.62%	80.42%	95.64%
Thallium	101.95%	83.48%	-0.11 LT	-5676 LT	-2830 LT	-210.80%	91.10%	101.34%
Thorium	102.75%	87.41%	-0.08 LT	-3404 LT	-1345 LT	-112.51%	94.77%	102.26%
Tin	100.68%	98.20%	0.02 LT	-218 LT	-75 LT	100.18%	94.72%	98.67%
Titanium	99.79%	91.90%	0.09	-188 LT	-80 LT	103.53%	94.68%	96.79%
Tungsten	83.80% #	69.72%	0.01 LT	-387 LT	-147 LT	13.28%	73.20%	81.87% #
Uranium	102.10%	-13.59%	-0.89 LT	-32297 LT	-11835 LT	-1080.64%	35.91%	107.36%
Vanadium	95.92%	86.90%	-0.01 LT	-213 LT	-184 LT	31.20%	90.90%	94.94%
Zinc	100.16%	95.20%	0.08	65	143	134.21%	93.90%	98.31%
Zirconium	98.91%	88.94%	-0.01 LT	-500 LT	-179 LT	117.87%	92.02%	96.18%

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

ICP Results

RAW DATA SUMMARY

Date Analyzed: April 30,1990
Procedure: LA-505-151/A-0
Analyst: J. A. White
Digestion Procedure: Acid Digestion LA-505-159/A-0

Acid Digested LMCS Standard	F0575
Reagent Blank	F0583
Core 8 Composite	F0947
Duplicate of Core 8 Composite	F0948
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	100.70%	92.02%	0.33	307798	310987	NOT CALC.	96.56%	99.27%
Antimony	103.07%	87.00%	0.02 LT	-2019 LT	-702 LT		67.00%	99.07%
Arsenic	114.94% #	99.86%	-0.02 LT	-429 LT	-123 LT		104.44%	113.03% #
Barium	99.30%	93.10%	0.01	-112 LT	-30 LT	9.00%	92.70%	97.17%
Beryllium	95.99%	87.90%	0.00 LT	-19 LT	-11 LT		90.60%	94.22%
Bismuth	106.23%	94.31%	0.03 LT	-2451 LT	-1562 LT	NOT CALC.	101.54%	107.22%
Boron	100.71%	93.20%	0.06	164	439	9.34%	92.60%	98.05%
Cadmium	98.69%	93.70%	0.00 LT	-77 LT	-41 LT	8.31%	91.10%	96.89%
Calcium	102.21%	143.70%	0.78	2519	4046	17.05%	144.90%	99.95%
Cerium	92.37%	50.50%	-0.08 LT	-4512 LT	-1516 LT	-133.80%	0.80%	90.43%
Chromium	90.41%	87.60%	0.01	-170 LT	-50 LT	23.25%	85.80%	88.92% #
Cobalt	94.24%	95.40%	0.00 LT	-242 LT	69 LT	0.73%	86.60%	99.92%
Copper	100.63%	92.60%	0.01 LT	-280 LT	-76 LT	7.33%	90.60%	98.31%
Europium	98.16%	92.70%	0.00 LT	-81 LT	-25 LT		94.90%	96.39%
Iron	103.46%	128.30%	0.58	354	632	NOT CALC.	126.30%	100.84%
Lanthanum	94.17%	89.66%	-0.01 LT	-368 LT	-103 LT	39.26%	91.90%	93.39%
Lead	105.09%	96.71%	0.03 LT	-1272 LT	-86 LT	56.37%	103.09%	108.06%
Lithium	98.13%	88.00%	-0.01 LT	-216 LT	-75 LT	1.97%	86.20%	95.95%
Magnesium	102.45%	108.40%	0.17	647	496	42.12%	107.20%	99.84%
Manganese	100.16%	97.50%	0.03	46	74	21.19%	97.00%	98.30%
Mercury	105.34%	89.88%	0.01	-73 LT	-22 LT		94.80%	104.63%
Molybdenum	96.36%	87.60%	0.00 LT	-166 LT	-88 LT	43.03%	91.18%	94.24%
Neodymium	85.78% #	50.50%	-0.06 LT	-3368 LT	-1538 LT	-97.78%	18.90%	87.30% #
Nickel	97.87%	94.20%	0.00 LT	2104	3034	11.29%	90.70%	96.04%
Phosphorous	112.63% #	96.46%	0.10	-385 LT	149 LT	6.53%	105.20%	114.97% #
Potassium	98.37%	74.68%	-0.09 LT	0	0	-183.40%	44.60%	98.37%
Samarium	95.61%	3.00%	-0.12 LT	-4951 LT	-1643 LT		43.80%	99.90%
Selenium	105.26%	88.26%	-0.02 LT	-1245 LT	-135 LT		95.04%	103.89%
Silicon	90.12%	30.04%	0.82	4064	21979	53.57%	30.36%	87.78% #
Silver	102.71%	91.20%	-0.01 LT	-381 LT	-162 LT	-8.76%	96.10%	102.54%
[illegible]	98.55%	97.68%	0.35	2940	7153	NOT CALC.	85.92%	96.79%
[illegible]	100.99%	96.30%	0.00	29	-5 LT	14.69%	96.00%	[illegible]
[illegible]	106.15%	95.42%	0.14	-200 LT	231 LT		101.22%	[illegible]
[illegible]	96.79%	76.60%	-0.01 LT	-808 LT	-358 LT	-18.40%	80.42%	95.64%
Tantalum							91.10%	101.34%
Thallium	101.95%	83.48%	-0.11 LT	-5676 LT	-2830 LT		94.77%	102.26%
Thorium	102.75%	87.41%	-0.08 LT	-3404 LT	-1345 LT		94.72%	98.67%
Tin	100.68%	98.20%	0.02 LT	-218 LT	-75 LT	45.14%	94.68%	96.79%
Titanium	99.79%	91.90%	0.09	-188 LT	-80 LT	49.15%	73.20%	81.87% #
Tungsten	83.80% #	69.72%	0.01 LT	-387 LT	-147 LT		35.91%	107.36%
Uranium	102.10%		-0.89 LT	-32297 LT	-11835 LT		90.90%	94.94%
Vanadium	95.92%	86.90%	-0.01 LT	-213 LT	-184 LT	13.42%	93.90%	98.31%
Zinc	100.16%	95.20%	0.08	65	143	42.85%	92.02%	96.18%
Zirconium	98.91%	88.94%	-0.01 LT	-500 LT	-179 LT			

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

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	Core 8 Composite	F0947
Digestion	Acid Digestion	Duplicate of Core 8 Composite	F0948
Procedure:	LA-505-159/A-0	Spike of 89-076	F0578
		Acid Digested LMCS Standard	F0579

	SST-1	SST-2	SST-3	Starting 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				50.35	100.70%	4.60	92.02%	0.33	
Antimony	10.31				103.07%	0.87	87.00%	0.02 LT	
Arsenic				57.47	114.94% #	4.99	99.86%	-0.02 LT	
Barium	9.93				99.30%	0.93	93.10%	0.01	
Beryllium				9.60	95.99%	0.88	87.90%	0.00 LT	
Bismuth		53.22			106.23%	4.73	94.31%	0.03 LT	
Boron	10.07				100.71%	0.93	93.20%	0.06	
Cadmium	9.87				98.69%	0.94	93.70%	0.00 LT	
Calcium	10.22				102.21%	1.44	143.70%	0.78	
Cerium	9.24				92.37%	0.51	50.50%	-0.08 LT	
Chromium	9.04				90.41%	0.88	87.60%	0.01	
Cobalt	9.42				94.24%	0.95	95.40%	0.00 LT	
Copper	10.06				100.63%	0.93	92.60%	0.01 LT	
Europium		9.82			98.16%	0.93	92.70%	0.00 LT	
Iron	10.35				103.46%	1.28	128.30%	0.58	
Lanthanum		47.18			94.17%	4.49	89.66%	-0.01 LT	
Lead		52.65			105.09%	4.85	96.71%	0.03 LT	
Lithium	9.81				98.13%	0.88	88.00%	-0.01 LT	
Magnesium	10.25				102.45%	1.08	108.40%	0.17	
Manganese	10.02				100.16%	0.98	97.50%	0.03	
Mercury				26.34	105.34%	2.25	89.88%	0.01	
Molybdenum				48.18	96.36%	4.38	87.60%	0.00 LT	
Neodymium	8.58				85.78% #	0.51	50.50%	-0.06 LT	
Nickel	9.79				97.87%	0.94	94.20%	0.00 LT	
Phosphorous				56.32	112.63% #	4.82	96.46%	0.10	
Potassium	24.59				98.37%	1.87	74.68%	-0.09 LT	
Samarium		9.56			95.61%	0.03 LT	3.00%	-0.12 LT	
Selenium				52.63	105.26%	4.41	88.26%	-0.02 LT	
Silicon				45.06	90.12%	1.50	30.04%	0.82	
Silver		10.27			102.71%	0.91	91.20%	-0.01 LT	
Sodium	24.64				98.55%	2.44	97.68%	0.35	
Strontium	10.10				100.99%	0.96	96.30%	0.00	
Sulfur				53.08	106.15%	4.77	95.42%	0.14	
Tantalum				48.40	96.79%	3.83	76.60%	-0.01 LT	
Thallium				50.98	101.95%	4.17	83.48%	-0.11 LT	
Thorium		51.48			102.75%	4.38	87.41%	-0.08 LT	
Tin	50.34				100.68%	4.91	98.20%	0.02 LT	
Titanium				49.90	99.79%	4.60	91.90%	0.09	
Tungsten				20.95	83.80% #	1.74	69.72%	0.01 LT	
Uranium		51.15			102.10%	-0.68 LT		-0.89 LT	
Vanadium				9.59	95.92%	0.87	86.90%	-0.01 LT	
Zinc	10.02				100.16%	0.95	95.20%	0.08	
Zirconium				49.46	98.91%	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

	0.00271 g/mL 0.6787 g 250.00 mL Sample Dilution Two ppm	Sample Dilution One ppm	Digestion Weight Volume Sample Duplicate Dilution Three ppm	0.00212 g/mL 0.5304 g 250.00 mL Sample Duplicate Dilution Two ppm	Sample Duplicate Dilution One ppm	Digestion Weight Volume Spike of Sample Dilution Three ppm	0.00997 g/mL 0.4986 g 50.00 mL Spike of Sample Dilution Two ppm	Spike of Sample Dilution One ppm
Aluminum	835.61	828.64		659.79	662.02		546.54	533.49
Antimony	-31.58	-5.48 LT		-10.74	-1.49 LT		0.00	-2.44 LT
Arsenic	-8.27	-1.16 LT		-1.80	-0.26 LT		5.39	4.36
Barium	-1.79	-0.30 LT		0.05	-0.06 LT		1.27	0.90
Beryllium	-0.28	-0.05 LT		-0.04	-0.02 LT		0.97	0.96
Bismuth	-39.20	-6.66 LT		-10.17	-3.31 LT		178.87	171.48
Boron	1.96	0.44		5.13	0.93		4.16	0.93
Cadmium	-1.14	-0.21 LT		-0.26	-0.09 LT		0.92	0.83
Calcium	6.84	6.14		8.58	8.27		5.57	5.16
Cerium	-70.80	-12.25 LT		-1.03	-3.22 LT		2.31	-13.38 LT
Chromium	-2.59	-0.46 LT		-0.34	-0.11 LT		14.15	13.27
Cobalt	-3.28	-0.66 LT		1.05	0.15 LT		1.29	0.07 LT
Copper	-4.56	-0.76 LT		-0.21	-0.16 LT		1.61	0.73
Europium	-1.30	-0.22 LT		-0.01	-0.05 LT		0.99	0.73
Iron	0.25	0.96		1.74	1.34		262.92	258.11
Lanthanum	-5.07	-1.00 LT		0.18	-0.22 LT		4.98	3.93
Lead	-19.22	-3.45 LT		-6.12	-0.18 LT		15.73	8.27
Lithium	-3.37	-0.59 LT		-0.07	-0.16 LT		0.82	0.20
Magnesium	1.76	1.05		1.05	2.01		5.54	2.41
Manganese	-0.18	0.13		0.10	0.16		39.70	39.05
Mercury	-1.69	-0.20 LT		0.31	-0.05 LT		10.25	2.93
Molybdenum	-3.01	-0.45 LT		-1.28	-0.19 LT		4.44	4.30
Neodymium	-51.02	-9.14 LT		-4.33	-3.26 LT		-2.80	-9.78 LT
Nickel	2.65	5.71		5.83	6.44		1.50	1.13
Phosphorous	-8.63	-1.04 LT		1.20	0.32 LT		38.10	34.07
Potassium	NA	NA		NA	NA		1.64	-18.34 LT
Samarium	-79.48	-13.44 LT		-0.89	-3.49 LT		0.89	-16.19 LT
Selenium	-29.54	-3.38 LT		-6.96	-0.29 LT		9.76	6.47
Silicon	31.00	11.03		46.63	12.47		4.95	5.36
Silver	-5.73	-1.03 LT		-0.50	-0.34 LT		0.12	-0.88 LT
Sodium	0.12	7.98		43.44	15.18		923.60	911.02
Strontium	-0.58	0.08		0.02	-0.01 LT		4.99	4.85
Sulfur	-5.07	-0.54 LT		0.24	0.49 LT		18.84	16.44
Tantalum	-11.68	-2.19 LT		-1.55	-0.76 LT		0.30	-1.83 LT
Thallium	-101.10	-15.41 LT		5.18	-6.01 LT		12.16	-10.54 LT
Thorium	-52.85	-9.24 LT		-3.43	-2.85 LT		4.46	-5.64 LT
Tin	-3.90	-0.59 LT		-0.80	-0.16 LT		5.29	4.51
Titanium	-2.83	-0.51 LT		-0.41	-0.17 LT		4.92	4.58
Tungsten	-8.70	-1.05 LT		-2.32	-0.31 LT		0.61	0.33 LT
Uranium	-509.00	-87.68 LT		-21.05	-25.11 LT		41.18	-54.14 LT
Vanadium	-4.35	-0.58 LT		0.22	-0.39 LT		0.50	0.31 LT
Zinc	-0.34	0.18		0.08	0.30		3.23	2.89
Zirconium	-8.02	-1.36 LT		-0.25	-0.38 LT		5.80	4.28
Dilution Factor	101.00	21.00	1.00	101.00	21.00	1.00	101.00	21.00

	Spike Recovery %	Standard LMCS Acid Digestion ppm	Acid Digestion Standard Recovery %	SST-1	SST-2	Ending LMCS Standard SST-3	Standard Recovery %	Spike Standard LMCS ppm added	Spike Standard ID Book # 82B38G 78C11K 77C11J
Aluminum	NOT CALC.	4.83	96.56%			49.63	99.27%	10.00	
Antimony		0.67	67.00%	9.91			99.07%		
Arsenic		5.22	104.44%			56.52	113.03% #		
Barium	9.00%	0.93	92.70%	9.72			97.17%	10.00	
Beryllium		0.91	90.60%			9.42	94.22%		
Bismuth	NOT CALC.	5.09	101.54%		53.72		107.22%	10.00	
Boron	9.34%	0.93	92.60%	9.81			98.05%	10.00	
Cadmium	8.31%	0.91	91.10%	9.69			96.89%	10.00	
Calcium	17.05%	1.45	144.90%	10.00			99.95%	10.00	
Cerium	-133.80%	0.01	0.80%	9.04			90.43%	10.00	
Chromium	23.25%	0.86	85.80%	8.89			88.92% #	10.00	
Cobalt	0.73%	0.87	86.60%	9.99			99.92%	10.00	
Copper	7.33%	0.91	90.60%	9.83			98.31%	10.00	
Europium		0.95	94.90%		9.64		96.39%		
Iron	NOT CALC.	1.26	126.30%	10.08			100.84%	10.00	
Lanthanum	39.26%	4.60	91.90%		46.79		93.39%	10.00	
Lead	56.37%	5.17	103.09%		54.14		108.06%	10.00	
Lithium	1.97%	0.86	86.20%	9.60			95.95%	10.00	
Magnesium	42.12%	1.07	107.20%	9.98			99.84%	10.00	
Manganese	21.19%	0.97	97.00%	9.83			98.30%	10.00	
Mercury		2.37	94.80%			26.16	104.63%		
Molybdenum	43.03%	4.56	91.18%			47.12	94.24%	10.00	
Neodymium	-97.78%	0.19	18.90%	8.73			87.30% #	10.00	
Nickel	11.29%	0.91	90.70%	9.60			96.04%	10.00	
Phosphorous	6.53%	5.26	105.20%			57.48	114.97% #	10.00	
Potassium	-183.40%	1.12	44.60%	24.59			98.37%	10.00	
Samarium		0.44	43.80%		9.99		99.90%		
Selenium		4.75	95.04%			51.95	103.89%		
Silicon	53.57%	1.52	30.36%			43.89	87.78% #	10.00	
Silver	-8.76%	0.96	96.10%		10.25		102.54%	10.00	
Sodium	NOT CALC.	2.15	85.92%	24.20			96.79%	10.00	
Strontium	14.69%	0.96	96.00%	9.86			98.64%	10.00	
Sulfur		5.06	101.22%			52.93	105.85%		
Tantalum	-18.40%	4.02	80.42%			47.82	95.64%	9.95	
Thallium		4.56	91.10%			50.67	101.34%		
Thorium		4.75	94.77%		51.23		102.26%		
Tin	45.14%	4.74	94.72%	49.34			98.67%	10.00	
Titanium	49.15%	4.73	94.68%			48.39	96.79%	10.00	
Tungsten		1.83	73.20%			20.47	81.87% #		
Uranium		1.80	35.91%		53.79		107.36%		
Vanadium		0.91	90.90%			9.49	94.94%		
Zinc	13.42%	0.94	93.90%	9.83			98.31%	10.00	
Zirconium	42.85%	4.60	92.02%			48.09	96.18%	9.98	
Dilution Factor		10.00		1.00	1.00	1.00		1.00	

	SST-1	SST-2	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	20.76	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

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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 : CD 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

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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

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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
SST0	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
SST0	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
SST0	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 : 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

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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	-0.412269E+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

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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

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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 : ND 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

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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	5.0746	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

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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
SST0	0	5.1653	0.0000	0.0000	0.0000	0.0000		CRV1
SST5	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
SST0	0	2.4773	0.0000	0.0000	-0.000	-0.000		CRV1
SST4	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
SST0	0	3.8660	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	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

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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

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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	-0.111057E+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	-0.111857E+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 : HND3
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	1.40	(-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 : SST 30-Apr-90 10:43:33

NAME	MV INT	CONCEN	RSD
Al	2.07	(-0.271	-29.40
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
P	1.53	(-0.081	-36.19
K	3.01	(-0.715	-20.15
Sm	4.80	(-0.574	-24.73
Se	2.34	(-0.189	-20.31
Si	3.52	(-0.170	-17.75
Ag	15.49	(-0.040	-25.00
Na	5.20	(-0.284	-24.11
Sr	3.58	(-0.006	-22.84
S	0.87	(-0.047	-48.24
Ta	4.35	(-0.080	-33.71
Tl	4.64	(-0.711	-18.53
Th	1.07	(-0.357	-24.30
Sn	1.88	-0.025	-25.61
Ti	3.97	(-0.018	-22.57
W	2.01	-0.041	-55.36
U	4.90	(-3.556	-23.85
V	4.74	(-0.031	-15.04
Zn	4.56	-0.003	-40.02
Zr	4.68	(-0.057	-24.52

ICP Analysis - April 30, 1990 LMCS Check Standard

Sample name : 78C11K
Sample code 1 : SST1
Sample code 2 : DIRECT
Programme : SST 30-Apr-90 10:47:11

NAME	MV INT	CONCEN	RSD
Al	2.11	-0.184	-17.70
Sb	1.59	10.220	1.14
As	1.60	0.028	30.88
Ba	221.15	10.011	0.74
Be	0.90	-0.001	-5.08
Bi	5.86	(-0.212	-25.19
B	164.63	10.221	0.57
Cd	278.30	9.958	0.31
Ca	304.51	10.348	0.63
Ce	12.92	9.225	0.64
Cr	53.36	9.159	0.14
Co	3.36	10.760	1.05
Cu	69.24	10.149	0.64
Eu	4.69	0.012	8.16
Fe	91.46	10.402	0.50
La	0.38	0.021	40.18
Pb	0.31	-0.087	-45.00
Li	112.63	9.885	0.72
Mg	331.14	10.354	0.55
Mn	311.08	10.136	0.38
Hg	5.49	(-0.014	-26.63
Mo	2.76	-0.005	-35.28
Nd	15.28	8.697	0.53
Ni	131.03	9.880	0.45
P	1.57	(-0.065	-22.18
K	9.81	24.754	0.71
Sm	4.62	(-0.655	-7.29
Se	5.11	3.577	0.29
Si	3.50	(-0.186	-6.34
Ag	15.05	(-0.054	-9.22
Na	40.43	24.775	0.72
Sr	397.78	10.183	0.78
S	1.19	0.281	5.51
Ta	4.21	(-0.089	-9.60
Tl	4.74	(-0.531	-13.49
Th	1.08	-0.263	-13.41
Sn	194.81	50.548	0.48
Ti	3.88	(-0.025	-6.87
W	2.33	0.110	19.93
U	5.34	-0.242	-161.17
V	4.65	(-0.038	-3.84
Zn	427.59	10.076	0.38
Zr	4.62	(-0.070	-10.76

ICP Analysis - April 30, 1990 LMCS Check Standard

Sample name : 03630A
Sample code 1 : SSI2
Sample code 2 : DIRECT
Programme : SSI 30-Apr-90 10:51:22

NAME	MV INT	CONCEN	RSD
Al	4.83	5.463	1.06
Sb	0.59	0.506	15.44
As	4.86	1.904	0.49
Ba	4.18	0.008	41.72
Be	0.95	0.000	590.95
Bi	87.19	54.237	0.48
B	6.43	0.058	5.12
Cd	3.51	0.003	70.68
Ca	0.95	0.015	0.52
Ce	5.85	0.231	51.91
Cr	2.01	0.076	3.89
Co	0.26	0.022	65.74
Cu	4.84	0.252	2.62
Eu	332.08	9.847	0.53
Fe	2.28	0.052	9.49
La	18.70	147.592	0.57
Pb	4.49	54.192	0.77
Li	3.78	-0.017	-35.39
Mg	0.70	0.006	2.60
Mn	1.20	0.009	10.25
Hg	6.61	0.035	13.56
Mo	2.87	0.007	65.51
Nd	6.23	0.497	13.09
Ni	5.47	0.010	70.09
P	2.04	0.241	16.83
K	3.06	-0.510	-28.09
Sm	11.52	9.893	0.94
Se	2.61	0.186	29.70
Si	4.97	0.554	4.10
Ag	330.66	10.383	0.32
Na	5.35	-0.177	-35.46
Sr	3.93	0.003	43.12
S	1.08	0.172	11.68
Ta	5.08	0.130	12.59
Tl	8.35	6.149	1.65
Th	11.36	52.117	0.51
Sn	2.21	0.061	7.65
Ti	4.89	0.051	7.84
W	2.08	-0.006	-320.63
U	11.17	53.350	1.02
V	7.62	0.218	2.19
Zn	5.31	0.015	9.77
Zr	5.39	0.091	13.82

ICP Analysis - April 30, 1990 LMCS Check Standard

Sample name : 72C11J
Sample code 1 : SST3
Sample code 2 : DIRECT
Programme : SSI 30-Apr-90 10:55:14

NAME	MV INT	CONCEN	RSD
Al	26.63	50.724	0.78
Sb	0.66	1.100	4.00
As	102.18	57.907	0.65
Ba	4.35	0.015	14.92
Be	274.75	9.599	0.44
Bi	7.64	0.976	4.50
B	7.79	0.145	63.09
Cd	3.78	0.013	14.22
Ca	1.33	0.028	0.78
Ce	5.67	-0.003	-3791.9
Cr	1.80	0.039	8.06
Co	0.30	0.130	4.09
Cu	3.53	0.051	9.08
Eu	4.31	0.001	197.69
Fe	2.23	0.045	6.28
La	0.37	0.002	449.97
Pb	0.33	0.160	29.23
Li	3.93	-0.003	-139.58
Mg	0.75	0.008	1.41
Mn	1.35	0.017	3.97
Hg	610.23	26.551	1.04
Mo	447.34	48.942	0.75
Nd	5.76	0.078	27.28
Ni	11.76	0.505	2.03
P	83.81	>55.297	1.90
K	3.19	-0.021	-617.67
Sm	5.20	0.049	223.45
Se	41.77	53.457	0.70
Si	94.75	45.724	0.05
Ag	27.70	0.364	0.96
Na	6.67	0.764	5.72
Sr	3.93	0.003	33.90
S	52.37	>53.113	1.45
Ta	198.74	49.059	0.82
Tl	32.54	50.980	0.55
Th	1.31	0.899	6.24
Sn	2.70	0.190	1.02
Ti	666.34	50.294	1.21
W	45.40	21.163	0.74
U	6.96	14.601	0.84
V	117.64	9.734	0.45
Zn	6.22	0.036	3.11
Zr	241.29	49.573	1.15

ICP Analysis - April 30, 1990 Acid Blank

Sample name : HNO3
Programme : SST 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	-17.31
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	5.38	(-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	(-0.099	10.85
Fe	1.72	(-0.014	-23.19
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	-10.50
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	2.21	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	0.38	0.038	27.27
Pb	0.31	-0.039	-69.39
Li	108.86	9.542	0.06
Mg	320.93	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	2.72
Ni	138.67	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	3.500	3.66
Si	3.64	(-0.115	-34.45
Ag	15.91	-0.026	-43.05
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 : SSI2
Sample code 2 : DIRECI
Programme : SSI 30-Apr-90 12:41:50

NAME	MV INT	CONCEN	%SD
Al	4.93	5.675	1.44
Sb	0.60	0.632	13.20
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	2.43
Ni	5.72	0.030	12.90
P	2.16	0.318	10.32
K	3.33	0.077	83.81
Se	11.66	10.101	0.72
Ag	2.72	0.331	8.45
Si	5.13	0.636	2.33
Ag	334.69	10.185	0.31
Na	5.74	0.098	39.42
Sr	4.14	0.009	8.10
S	1.14	0.232	5.30
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 : 77C11J
Sample code 1 : SSI3
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	0.07
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	1.20
U	7.17	16.504	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	29.26	0.937	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	0.091	480.14
Mo	2.68	-0.014	-30.07
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	4.22	-0.048	-30.10

ICP Analysis - April 30, 1990 Acid Digested LMCS Check Standard

Sample name : T575
Sample code 1 : SST2
Sample code 2 : DIGEST
Sample code 3 : 89076
Programme : SST 30-Apr-90 12:54:41

NAME	MV INT	CONCEN	%SD
Al	2.35	0.315	12.90
Sb	0.51	-0.251	-22.21
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	-8.52
Mo	2.58	(-0.035	-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	-13.06
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	4.42	4.601	0.46
Sb	0.53	-0.003	-2163.4
As	10.23	4.993	0.91
Ba	3.97	-0.002	-112.71
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	20.81
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	-22.98
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	-0.469	-24.15
Sm	4.90	(-0.410	-24.87
Se	5.72	4.413	0.35
Si	6.85	1.502	6.46
Ag	16.78	0.003	220.71
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	-43.38
V	15.14	0.869	0.89
Zn	5.36	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 : 89976
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
Du	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	-68.78
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	2.77
Sb	0.53	-0.090	-9.115	-59.65
As	1.48	-0.042	-4.243	-14.50
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	-27.17
Ca	1.75	0.042	4.277	1.28
Ce	5.44	-0.297	-30.04	-37.36
Cr	2.31	0.129	13.070	4.24
Co	0.26	-0.010	-1.053	-117.06
Cu	3.10	-0.015	-1.490	-49.88
Eu	4.08	-0.006	-0.596	-35.44
Fe	27.56	2.986	301.56	1.37
La	0.36	-0.016	-1.573	-34.69
Pb	0.32	0.043	4.369	79.37
Li	3.79	-0.015	-1.565	-33.87
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	-2.228	-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 : SST 30-Apr-90 13:31:53

NAME	MV INT	CONCEN	DILCOR	RSD
Al	15.10	26.780	562.37	0.65
Sb	0.51	-0.222	-4.670	-86.98
As	1.43	(-0.072	(-1.511	-13.17
Ba	3.86	-0.007	-0.154	-20.13
Be	0.89	(-0.002	(-0.040	-18.44
Bi	20.25	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	39.92	1.880	39.489	0.42
Hg	6.14	0.014	0.295	119.39
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	99.59
P	4.48	1.846	38.776	6.70
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	-11.97
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	(-3.678	(-77.25	-16.64
V	4.66	(-0.037	(-0.779	-6.08
Zn	8.58	0.093	1.945	1.28
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	1.03
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	0.25	-0.027	-2.691	-27.15
Cu	3.08	-0.019	-1.914	-20.47
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	-18.92
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	-26.18
Ni	5.27	-0.005	-0.535	-38.77
P	2.23	0.366	36.972	11.16
K	3.04	-0.594	-59.98	-13.83
Sm	4.69	(-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	-18.36
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	1.60	-0.375	-37.80	-21.06
Sn	1.88	-0.026	-2.603	-27.22
Ti	4.03	-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	6.87
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 : SST 30-Apr-90 13:20:31

NAME	MV INT	CONCEN	DILCOR	RSD
Al	13.19	22.805	479.91	0.26
Sb	0.54	0.045	0.948	130.34
As	1.56	0.005	0.105	312.73
Ba	4.32	0.014	0.291	35.69
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	0.028	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	0.298	6.268	5.02
Li	3.94	-0.002	-0.038	-323.35
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	0.87
K	3.20	0.021	0.445	939.37
Sm	5.16	-0.010	-0.218	-1433.5
Se	2.71	0.317	6.657	12.74
Si	4.55	0.342	7.188	3.75
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
Tl	5.22	0.356	7.484	16.15
Th	1.13	-0.005	-0.107	-1751.3
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	0.16
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	DILCOR	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	28.74
Cs	2.13	0.055	5.574	1.03
Ce	5.69	0.023	2.314	1073.51
Cr	2.07	0.140	14.148	6.35
Co	0.26	0.013	1.287	81.82
Cu	3.30	0.016	1.609	95.50
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	134.72
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	5.72	0.049	4.987	4.62
S	1.10	0.186	18.855	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	399.44
Sn	2.17	0.052	5.286	27.27
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	1.30
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	0.074	230.94
Cu	3.45	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	2.55
Nd	5.16	(-0.456	(-9.778	-6.03
Ni	6.03	0.054	1.129	6.00
P	4.14	1.622	34.066	3.63
K	2.06	(-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	43.282	911.02	1.21
Sr	12.74	0.231	4.849	1.36
S	1.67	0.783	16.438	3.46
Ta	4.22	(-0.087	(-1.831	-18.85
Tl	4.76	(-0.502	(-10.54	-12.57
Th	1.08	-0.268	-5.607	-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	56.31
U	5.09	(-2.578	(-54.14	-17.73
V	5.27	0.015	0.312	18.75
Zn	10.47	0.138	2.888	1.48
Zr	5.92	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	-34.34
Sb	0.60	0.670	13.40
As	1.40	(-0.086	-15.06
Ba	24.11	0.527	0.74
Be	0.86	(-0.003	-15.48
Bi	5.61	(-0.381	-18.22
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	0.862	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	16.43
Sm	4.46	(-1.066	-10.54
Se	2.50	0.024	67.92
Si	4.33	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	0.93	0.048	29.46
Ta	3.99	(-0.146	-9.53
Tl	4.41	(-1.145	-15.29
Th	1.01	(-0.654	-11.35
Sn	20.04	4.736	1.41
Ti	4.73	0.042	10.74
W	1.92	(-0.082	-18.61
U	4.69	(-6.244	-10.51
V	4.54	(-0.048	-13.60
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 : E579
Sample code 1 : SST3
Sample code 2 : DIGEST
Sample code 3 : 89076
Programme : SST 30-Apr-90 13:36:35

NAME	MV INT	CONCEN	RSD
Al	2.45	0.516	15.33
Sb	0.53	-0.077	-36.02
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	0.26	-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	3.14	4.604	1.70
Pb	0.72	5.165	2.57
Li	3.70	(-0.034	-31.32
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	2.46
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	45.94
V	5.09	-0.000	-1256.1
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 : SST3
Sample code 2 : DIGEST
Sample code 3 : 89076
Programme : SST 30-Apr-90 13:40:16

NAME	MV INT	CONCEN	RSD
Al	4.53	4.838	1.86
Sb	0.54	0.039	52.04
As	10.63	5.222	0.96
Ba	4.07	0.002	110.87
Be	26.80	0.506	0.69
Bi	6.21	0.018	313.22
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	-103.93
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	3.60
Si	6.80	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	3.07	0.024	15.67
Ti	66.54	4.734	0.30
W	5.84	1.820	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	-54.73
Bi	5.93	-0.172	-37.67
B	5.60	0.005	19.14
Cd	3.31	-0.004	-36.91
Ca	0.53	0.001	30.03
Ce	5.47	-0.258	-56.69
Cr	1.51	-0.012	-34.09
Co	0.25	-0.014	-62.92
Cu	3.08	-0.019	-46.58
Eu	4.12	-0.005	-49.93
Fe	1.79	-0.006	-68.81
La	0.36	-0.015	-53.91
Pb	0.32	-0.025	-112.50
Li	3.82	-0.013	-55.34
Mg	0.45	-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	-0.306	-41.34
Ni	5.15	-0.015	-36.32
P	1.62	-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	-63.91
Zr	4.81	-0.030	-53.54

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	1.51	0.033	26.02
Ba	319.39	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	10.063	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	129.94	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	1.89
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	0.301	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
Co	5.62	-0.066	-181.76
Cr	1.94	0.064	6.91
Co	0.35	-0.034	-36.33
Cu	4.69	0.230	2.62
Eu	331.05	9.816	1.01
Fe	2.37	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	0.006	1.95
Mn	1.16	0.007	11.27
Hg	7.05	0.054	15.71
Mo	2.76	-0.035	-110.56
Nd	6.01	0.299	35.09
Ni	5.29	-0.004	-210.29
P	1.97	0.198	22.63
K	2.92	(-1.002	-12.94
Sm	11.31	9.561	0.79
Se	2.51	0.046	108.08
Si	4.78	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	4.80	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 13:55:33

NAME	HV 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	-116.33
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	0.43
Nd	5.68	0.005	1661.82
Ni	11.67	0.497	1.07
P	87.36	156.315	1.63
K	3.14	-0.301	-113.53
Sm	5.15	-0.029	-664.92
Se	41.17	52.632	0.98
Si	93.43	45.062	0.52
Ag	37.49	0.357	1.68
Na	6.61	0.719	12.11
Sr	3.91	0.003	73.73
S	52.34	153.077	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	49.806	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	1.23

ICP Analysis - April 30, 1990 Core 8 Composite

Sample name : F947
Sample code 1 : SAMPLE
Sample code 2 : 100-10
Sample code 3 : 000008
Programme : SST 30-Apr-90 15:00:01

NAME	MV INT	CONCEN	DILCOR	RSD
Al	6.15	8.273	835.61	0.40
Sb	0.50	(-0.313	(-31.58	-5.36
As	1.41	(-0.082	(-8.272	-7.99
Ba	3.63	(-0.018	(-1.787	-8.53
Be	0.86	(-0.003	(-0.280	-8.98
Bi	5.60	(-0.388	(-39.20	-15.20
B	5.82	0.019	1.955	13.05
Cd	3.11	(-0.011	(-1.142	-4.52
Ca	2.50	0.068	6.839	0.20
Ce	5.12	(-0.701	(-70.80	-7.77
Cr	1.43	(-0.026	(-2.590	-6.91
Co	0.25	-0.032	-3.276	-21.43
Cu	2.91	(-0.045	(-4.558	-7.00
Eu	3.85	(-0.013	(-1.298	-8.10
Fe	1.86	0.002	0.250	53.92
La	0.35	(-0.050	(-5.070	-13.69
Pb	0.30	-0.190	-19.22	-13.64
Li	3.60	(-0.033	(-3.369	-8.83
Mg	1.05	0.017	1.756	0.78
Mn	0.98	-0.002	-0.177	-1.59
Hg	5.44	(-0.017	(-1.686	-0.92
Mo	2.53	(-0.030	(-3.013	-4.69
Nd	5.12	(-0.505	(-51.02	-13.45
Ni	5.68	0.026	2.652	10.03
P	1.54	(-0.085	(-8.629	-9.74
K	36.33	)124.00	) 12524	0.24
Sm	4.66	(-0.787	(-79.48	-8.28
Se	2.26	(-0.292	(-29.54	-9.58
Si	4.48	0.307	30.997	3.90
Ag	14.99	(-0.057	(-5.725	-8.09
Na	5.60	0.001	0.120	2910.03
Sr	3.58	(-0.006	(-0.583	-10.89
S	0.87	(-0.050	(-5.074	-28.79
Ta	4.11	(-0.116	(-11.68	-9.64
Tl	4.49	(-1.001	(-101.1	-6.72
Th	1.03	(-0.523	(-52.85	-8.66
Sn	1.83	(-0.039	(-3.901	-8.65
Ti	3.84	(-0.028	(-2.826	-6.29
W	1.92	(-0.086	(-8.704	-8.84
U	4.82	(-5.040	(-509.0	-8.40
V	4.60	(-0.043	(-4.345	-5.75
Zn	4.55	-0.003	-0.340	-6.42
Zr	4.58	(-0.079	(-8.015	-6.11

Dilution factor : 101.000

ICP Analysis - April 30, 1990 Core 8 Composite

Sample name : E947
Sample code 1 : SAMPLE
Sample code 2 : 500-10
Sample code 3 : 000000
Programme : SSI 30-Apr-90 15:04:10

NAME	MV INT	CONCEN	DILCOR	RSD
Al	21.20	39.459	828.64	0.83
Sb	0.51	(-0.261	(-5.482	-22.63
As	1.46	(-0.055	(-1.164	-15.02
Ba	3.70	(-0.014	(-0.304	-25.75
Be	0.87	(-0.002	(-0.051	-25.23
Bi	5.70	(-0.317	(-6.655	-20.08
B	5.85	0.021	0.444	35.08
Cd	3.15	(-0.010	(-0.210	-25.44
Ca	9.09	0.292	6.137	0.77
Ce	5.21	(-0.583	(-12.25	-23.80
Cr	1.45	(-0.022	(-0.462	-24.58
Co	0.35	-0.031	-0.657	-27.96
Cu	3.96	(-0.036	(-0.761	-25.01
Eu	3.93	(-0.011	(-0.221	-23.57
Fe	2.23	0.046	0.960	4.70
La	0.35	-0.048	-1.000	-23.78
Pb	0.31	-0.164	-3.452	-13.79
Li	3.66	(-0.028	(-0.586	-24.69
Mg	2.10	0.050	1.053	1.27
Mn	1.13	0.006	0.125	9.59
Hg	5.61	-0.009	-0.197	-42.70
Mo	2.61	(-0.021	(-0.451	-19.19
Nd	5.20	(-0.435	(-9.144	-21.81
Ni	8.80	0.272	5.711	4.02
P	1.60	-0.050	-1.044	-97.16
K	159.11	)583.60	) 12256	0.91
Sm	4.75	(-0.640	(-13.44	-24.10
Se	2.36	-0.161	-3.381	-31.06
Si	4.91	0.525	11.034	7.61
Ag	15.21	(-0.049	(-1.034	-20.61
Na	6.13	0.380	7.981	21.24
Sr	3.95	0.004	0.079	44.76
S	0.89	-0.026	-0.542	-79.42
Ta	4.15	(-0.104	(-2.193	-20.83
Tl	4.63	(-0.734	(-15.41	-27.17
Th	1.05	(-0.440	(-9.240	-20.86
Sn	1.87	(-0.028	(-0.593	-43.00
Ti	3.89	(-0.024	(-0.510	-19.64
W	1.99	-0.050	-1.050	-30.39
U	4.92	(-4.175	(-87.68	-23.85
V	4.78	(-0.028	(-0.578	-29.25
Zn	5.05	0.008	0.177	15.88
Zr	4.65	(-0.065	(-1.357	-24.93

Dilution factor : 21.0000

ICP Analysis - April 30, 1990 Duplicate of Core 8 Composite

Sample name : P948
Sample code 1 : DUPSAM
Sample code 2 : 100-10
Sample code 3 : 000008
Programme : SST 30-Apr-90 15:08:27

NAME	MV INT	CONCEN	DILCOR	RSD
Al	5.35	6.533	659.79	0.58
Sb	0.52	-0.106	-10.74	-27.77
As	1.52	-0.018	-1.802	-50.39
Ba	4.03	0.001	0.053	267.10
Be	0.93	-0.000	-0.042	-67.87
Bi	6.03	-0.101	-10.17	-35.98
B	6.31	0.051	5.130	3.74
Cd	3.35	-0.003	-0.261	-21.28
Ca	3.00	0.085	8.583	0.42
Ce	5.66	-0.010	-1.029	-562.72
Cr	1.56	-0.003	-0.339	-140.27
Co	0.26	0.010	1.053	38.49
Cu	3.19	-0.002	-0.207	-168.76
Eu	4.27	-0.000	-0.014	-685.74
Fe	1.98	0.017	1.735	17.75
La	0.37	0.002	0.175	396.84
Pb	0.31	-0.061	-6.117	-56.69
Li	3.95	-0.001	-0.074	-375.24
Mg	0.83	0.010	1.053	1.25
Mn	1.03	0.001	0.101	40.29
Hg	5.89	0.003	0.312	116.33
Mo	2.69	-0.013	-1.275	-15.13
Nd	5.63	-0.043	-4.328	-70.10
Ni	6.08	0.058	5.825	4.98
P	1.69	0.012	1.195	99.59
K	35.75	>121.05	> 12307	0.87
Sm	5.16	0.009	-0.891	-646.51
Se	2.43	-0.069	-6.962	-46.75
Si	4.78	0.462	46.631	3.54
Ag	16.55	-0.005	-0.497	-81.05
Na	6.20	0.430	43.439	6.45
Sr	3.81	0.000	0.021	302.16
S	0.92	0.002	0.243	656.04
Ta	4.51	-0.015	-1.548	-59.37
Tl	5.06	0.051	5.177	231.81
Th	1.13	-0.034	-3.432	-134.99
Sn	1.94	-0.008	-0.803	-133.92
Ti	4.16	-0.004	-0.407	-45.49
W	2.05	-0.023	-2.320	-22.15
U	5.35	-0.208	-21.05	-200.16
V	5.12	0.002	0.218	287.44
Zn	4.73	0.001	0.082	90.19
Zr	4.94	-0.002	-0.247	-231.90

Dilution factor : 101.000

ICP Analysis - April 30, 1990 Duplicate of Core 8 Composite

Sample name : 2948
Sample code 1 : DUPSAM
Sample code 2 : 500-10
Sample code 3 : 000008
Programme : SST 30-Apr-90 15:12:25

NAME	MV INT	CONCEN	DILCOR	RSD
Al	17.38	31.535	662.02	0.73
Sb	0.53	-0.071	-1.489	-59.44
As	1.53	-0.012	-0.262	-229.38
Ba	3.95	-0.003	-0.063	-177.09
Be	0.91	-0.001	-0.024	-53.79
Bi	5.94	-0.158	-3.313	-65.23
B	6.21	0.044	0.931	16.14
Cd	3.31	-0.004	-0.086	-53.19
Ca	12.07	0.394	8.266	1.29
Ce	5.55	-0.153	-3.217	-135.00
Cr	1.55	-0.005	-0.106	-134.74
Co	0.26	0.007	0.146	152.75
Cu	3.15	-0.008	-0.162	-178.30
Eu	4.19	-0.003	-0.053	-150.34
Fe	2.38	0.064	1.341	4.26
La	0.36	-0.010	-0.218	-128.29
Pb	0.32	-0.009	-0.182	-540.82
Li	3.88	-0.008	-0.159	135.17
Mg	3.54	0.095	2.005	0.77
Mn	1.17	0.008	0.158	14.15
Hg	5.77	-0.002	-0.047	-334.87
Mo	2.73	-0.009	-0.186	-77.19
Nd	5.50	-0.155	-3.264	-89.32
Ni	9.24	0.306	6.436	2.43
P	1.70	0.015	0.317	284.45
K	161.97	)594.29	) 12480	0.81
Sm	5.06	-0.166	-3.486	-140.34
Se	2.47	-0.014	-0.286	-750.03
Si	5.05	0.594	12.467	7.05
Ag	16.20	-0.016	-0.344	-95.41
Na	6.61	0.723	15.176	14.96
Sr	3.79	-0.001	-0.011	-463.61
S	0.94	0.023	0.491	110.56
Sn	4.42	-0.036	-0.759	-73.09
Tl	4.87	-0.286	-6.005	-69.83
Th	1.11	-0.136	-2.854	-105.80
Sn	1.94	-0.008	-0.160	-109.17
Ti	4.11	-0.008	-0.170	-95.75
W	2.07	-0.015	-0.311	-204.97
U	5.24	-1.196	-25.11	-121.36
V	4.88	-0.019	-0.391	-58.47
Zn	5.30	0.014	0.303	17.95
Zr	4.87	-0.018	-0.379	-128.36

Dilution factor : 21.0000

ICP Analysis - April 30, 1990 Acid Blank

Sample name : HNO3
Programme : 66I 30-Apr-90 15:16:50

NAME	MV INT	CONCEN	RSD
Al	2.03	(-0.350	-9.84
Sb	0.50	(-0.332	-15.41
As	1.43	(-0.071	-7.79
Ba	3.65	(-0.017	-10.33
Be	0.87	(-0.003	-14.86
Bi	5.63	(-0.365	-12.58
B	5.30	-0.014	-30.20
Cd	3.12	(-0.011	-12.74
Ca	0.48	(-0.001	-1.90
Ce	5.17	(-0.635	-9.74
Cr	1.43	(-0.026	-2.95
Co	0.25	-0.038	-5.25
Cu	2.93	(-0.041	-10.37
Eu	3.90	(-0.011	-11.66
Fe	1.69	(-0.016	-5.37
La	0.35	-0.045	-23.08
Pb	0.30	-0.182	-10.91
Li	3.63	(-0.030	-10.61
Mg	0.47	(-0.001	-11.08
Mn	0.94	(-0.004	-8.22
Hg	6.09	0.012	63.11
Mo	2.56	(-0.028	-10.89
Nd	5.15	(-0.464	-8.51
Ni	4.87	(-0.037	-14.03
P	1.51	(-0.105	-15.96
K	3.04	-0.598	-43.33
Sm	4.70	(-0.719	-9.33
Se	2.25	(-0.309	-10.34
Si	3.40	(-0.235	-5.91
Ag	15.09	(-0.053	-9.98
Na	5.09	(-0.364	-10.66
Sr	3.52	(-0.007	-10.24
S	0.85	(-0.070	-14.63
Ta	4.13	(-0.111	-3.49
Tl	4.56	(-0.874	-15.88
Th	1.04	(-0.484	-9.49
Sn	1.81	(-0.042	-12.77
Ti	3.88	(-0.026	-8.86
W	1.93	(-0.082	-5.54
U	4.87	(-4.574	-9.56
V	4.67	(-0.037	-10.54
Zn	4.36	(-0.008	-4.78
Zr	4.61	(-0.072	-10.10

ICP Analysis - April 30, 1990 LMCS Check Standard

Sample name : F950
Sample code 1 : 78C11K
Sample code 2 : SST1
Sample code 3 : DIRECT
Programme : SST 30-Apr-90 15:20:35

NAME	MV INT	CONCEN	RSD
Al	2.15	-0.114	-60.60
Sb	1.56	9.907	0.70
As	1.60	0.029	63.36
Ba	214.77	9.717	1.64
Be	0.91	-0.001	-36.65
Bi	5.80	(-0.254	-36.99
B	158.16	9.805	1.16
Cd	270.88	9.689	0.37
Ca	294.14	9.995	1.67
Ce	12.77	9.043	0.57
Cr	51.85	8.892	0.55
Co	3.13	9.992	2.40
Cu	67.17	9.831	1.30
Eu	4.78	0.015	15.65
Fe	88.73	10.084	0.95
La	0.38	0.028	24.80
Pb	0.31	-0.108	-18.33
Li	109.44	9.595	1.36
Mg	319.31	9.984	1.21
Mn	204.73	9.830	0.81
Hg	5.58	-0.010	-17.90
Mo	2.71	-0.011	-43.65
Nd	15.32	8.730	1.18
Ni	127.52	9.604	0.61
P	1.63	-0.029	-91.87
K	9.77	24.593	0.52
Sm	4.74	(-0.662	-24.29
Se	5.03	3.476	1.55
Si	3.52	(-0.176	-17.82
Ag	15.31	(-0.046	-23.26
Na	39.62	24.198	1.26
Sr	385.43	9.864	1.63
S	1.19	0.279	9.19
Ta	4.29	(-0.069	-26.41
Tl	4.92	-0.204	-95.10
Th	1.10	-0.173	-55.91
Sn	190.18	49.335	0.49
Ti	3.92	(-0.022	-23.68
W	2.30	0.098	12.51
U	5.44	0.619	156.29
V	4.81	(-0.025	-33.91
Zn	417.29	9.831	0.72
Zr	4.71	-0.052	-29.95

ICP Analysis - April 30, 1990 LMCS Check Standard

Sample name : F950
Sample code 1 : 83B38A
Sample code 2 : SSI2
Sample code 3 : DIRECT
Programme : SST 30-Apr-90 15:24:24

NAME	MV INT	CONCEN	RSD
Al	4.87	5.550	2.59
Sb	0.58	0.487	6.98
As	4.87	1.907	3.00
Ba	4.34	0.015	15.56
Be	0.96	0.001	41.62
Bi	86.42	53.719	1.78
B	6.81	0.083	6.19
Cd	3.55	0.004	34.06
Ca	0.95	0.015	2.47
Ce	6.07	0.507	17.36
Cr	2.04	0.082	5.78
Co	0.26	0.014	38.19
Cu	4.92	0.264	3.01
Eu	325.15	9.639	1.05
Fe	2.33	0.058	2.04
La	18.39	146.786	1.33
Pb	4.49	54.140	1.59
Li	3.92	-0.004	-87.97
Mg	0.70	0.007	2.98
Mn	1.21	0.010	7.90
Hg	6.83	0.045	12.70
Mo	2.87	0.007	38.33
Nd	6.35	0.614	9.37
Ni	5.57	0.018	35.31
P	2.10	0.283	5.39
K	3.25	0.208	40.49
Sm	11.59	9.990	1.86
Se	2.64	0.217	16.61
Si	5.03	0.587	4.87
Ag	326.75	10.254	1.33
Na	5.58	-0.011	-431.45
Sr	4.06	0.006	13.80
S	1.12	0.211	3.18
Ta	5.21	0.162	6.23
Tl	8.50	6.431	0.96
Th	11.19	51.233	1.47
Sn	2.19	0.057	11.16
Ti	4.96	0.057	7.34
W	2.09	-0.002	-482.82
U	11.22	53.789	2.14
V	7.72	0.228	2.04
Zn	5.28	0.014	7.03
Zr	5.53	0.121	7.89

ICP Analysis - April 30, 1990 LMCS Check Standard

Sample name : F950
Sample code 1 : 77C113
Sample code 2 : SST3
Sample code 3 : DIRECT
Programme : SST 30-Apr-90 15:28:08

NAME	MV INT	CONCEN	RSD
Al	26.10	49.634	0.87
Sb	0.66	1.193	7.71
As	99.77	56.517	1.16
Ba	4.49	0.022	4.81
Be	269.72	9.422	0.83
Bi	7.61	0.958	4.91
B	6.74	0.078	4.43
Cd	3.82	0.014	9.62
Ca	1.32	0.028	1.10
Ce	5.88	0.269	15.14
Cr	1.83	0.045	3.56
Co	0.29	0.124	3.80
Cu	3.62	0.064	4.15
Eu	4.47	0.006	17.39
Fe	2.29	0.053	7.47
La	0.38	0.022	42.14
Pb	0.33	0.190	10.41
Li	4.07	0.010	14.66
Mg	0.75	0.008	1.35
Mn	1.37	0.017	2.55
Hg	601.28	26.157	1.09
Mo	430.80	47.121	1.07
Nd	5.98	0.279	14.12
Ni	11.70	0.500	1.19
P	89.14	>57.483	1.05
K	3.31	0.423	10.56
Sm	5.39	0.349	14.56
Se	40.66	51.947	1.51
Si	91.10	43.891	1.06
Ag	27.92	0.371	0.83
Na	6.84	0.886	3.55
Sr	4.04	0.006	8.96
S	52.19	>52.926	1.13
Ta	193.83	47.819	1.36
Tl	32.38	50.670	1.68
Th	1.34	1.053	3.36
Sn	2.68	0.105	3.67
Ti	641.33	48.394	0.72
W	43.98	20.467	0.99
U	7.07	15.664	2.71
V	114.86	9.494	0.99
Zn	6.20	0.036	1.05
Zr	234.22	48.091	0.82

Analytical Batch

Lab Segment Serial #: F0941

Customer ID: 000008

Instrument	E60044
Procedure/Rev	LA-503-156/C-1
Technologist	R. D. Hale
Date	February 08, 1990
Temperature	23 C
Starting Time	0900 02-07-90
Ending Time	1500 02-08-90
Chemist	S. A. Catlow

Plutonium Analysis

Fusion Dissolution

	Description	Lab ID
1	Initial LMCS Check Std.	F0903
2	Reagent Blank	F0946
3	Sample Composite 5	F0899
4	Duplicate Sample Compooosite 5	F0900
5	Sample Composite 5	F0905
6	Duplicate Sample Composite 5	F0906
7	Sample Composite 6	F0923
8	Duplicate Sample Composite 6	F0924
9	Sample Composite 6	F0929
10	Duplicate Sample Composite 6	F0930
11	Sample Composite 8	F0947

	Description	Lab ID
12	Duplicate Sample Composite 8	F0948
13	Sample Composite 8	F0953
14	Duplicate Sample Composite 8	F0954
15	Spike Composite 8	F0949
16	Final LMCS Check Std.	F0950
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	16B43/1 uL	F0947/1 mL	10B43-B/50 uL	N/A

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

Single Shell Tank Calibration Record

Analyte:	Pu-238		
Procedure:	LA-508-051	Revision:	A-2
Instrument:	Canberra Jupiter System	Property Number:	E60044
Technologist:	Varies	Payroll Number:	Varies
Date:	See Attached Sheets		
Calibration Standard ID:	N/A		
Analyte Concentration:	N/A		
Type of Calibration:	N/A		

Comments: Detectors are aligned not calibrated.

SST-103 Rev. B 9/27/90 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
F903 SEG/COMP/#13 PU
File ID: SD4709.SPC

Counted on: 2/ 9/90 @ 0: 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	5.2	4.8	469.869	469.869	20.000	12.660	10.000	5.524
2	2145.9	2208.4	358.677	358.677	20.000	10.661	10.000	4.945
3	280.4	285.9	302.189	302.189	20.000	10.454	10.000	3.516
4	229.4	64.8	264.079	264.079	12.000	6.706	6.000	4.662
5	2612.8	2618.0	229.858	229.858	20.000	10.762	10.000	5.781

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1		0.0010		6.273		0.06	0.09	0.47	0.213E-06
2	Pu236	0.4328	5.756	5.751	0.005	0.05	39.74	204.28	0.920E-04
3	Pu238	0.0630	5.499	5.485	0.014	0.05	5.79	40.50	0.182E-04
	Am241		5.480	5.485	-0.005				0.140E-04
4		0.0096		5.306		0.03	0.88	4.44	0.200E-05
5	Pu239	0.4935	5.143	5.145	-0.002	0.05	45.32	228.30	0.103E-03
	Pu240		5.144	5.145	-0.001				0.103E-03

DETECTOR CALIBRATION
Energy(MEV) = 4.065 + (0.0047)*Channel
Energy range (MeV): 4.065 TO 6.471
Efficiency = 0.1985 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	45919.0	100.000
Smoothed	45918.7	99.999
Composite fit	45910.5	99.982
Residuals	8.1	0.018

Analyzed by: _____
VR

SPECTRUM SD4709.SPC
1 LEGEND: RAW = ... MODELED PEAKS = 1,2,.., ETC 9724.5

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Raw Data Dump for AEA Spectrum: SP:SD4709.SPC

1	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
11	1.	1.	0.	0.	0.	1.	1.	1.	0.	2.
21	1.	0.	0.	1.	0.	0.	1.	0.	1.	0.
31	2.	0.	0.	0.	1.	1.	0.	1.	0.	1.
41	1.	1.	0.	0.	0.	2.	0.	2.	1.	0.
51	1.	1.	0.	0.	1.	0.	0.	1.	4.	0.
61	0.	1.	0.	1.	1.	0.	1.	0.	1.	1.
71	0.	1.	0.	0.	1.	0.	1.	1.	0.	0.
81	0.	0.	2.	1.	1.	1.	1.	0.	0.	1.
91	2.	1.	1.	1.	1.	0.	2.	2.	0.	1.
101	1.	0.	1.	1.	0.	1.	1.	0.	1.	1.
111	0.	3.	0.	0.	0.	0.	2.	2.	0.	1.
121	1.	0.	0.	1.	1.	0.	3.	0.	0.	0.
131	2.	0.	3.	0.	1.	3.	5.	2.	2.	0.
141	1.	1.	2.	4.	1.	5.	1.	4.	1.	1.
151	6.	4.	2.	1.	3.	2.	2.	7.	4.	3.
161	2.	1.	7.	4.	3.	7.	8.	2.	4.	4.
171	5.	10.	7.	8.	5.	7.	11.	11.	7.	6.
181	9.	9.	8.	12.	5.	6.	8.	9.	7.	11.
191	9.	7.	11.	13.	6.	8.	10.	12.	11.	11.
201	15.	22.	26.	29.	37.	37.	70.	47.	85.	97.
211	128.	136.	207.	238.	290.	347.	427.	535.	585.	700.
221	784.	890.	972.	1153.	1192.	1345.	1426.	1577.	1629.	1426.
231	1296.	1248.	1035.	787.	555.	407.	263.	132.	81.	59.
241	20.	15.	7.	8.	12.	8.	10.	8.	19.	24.
251	20.	21.	21.	30.	27.	27.	29.	36.	31.	35.
261	37.	35.	37.	40.	35.	41.	33.	28.	19.	15.
271	15.	9.	15.	7.	12.	8.	14.	14.	9.	27.
281	29.	25.	36.	39.	44.	36.	53.	55.	66.	74.
291	88.	80.	82.	100.	99.	139.	114.	139.	150.	170.
301	172.	150.	148.	143.	120.	106.	81.	46.	34.	25.
311	21.	9.	9.	4.	3.	5.	13.	6.	12.	18.
321	6.	14.	14.	8.	11.	18.	16.	10.	17.	14.
331	23.	32.	40.	44.	50.	49.	56.	87.	111.	142.
341	156.	223.	240.	320.	349.	455.	532.	592.	653.	754.
351	805.	890.	954.	999.	1084.	1256.	1220.	1250.	1184.	1191.
361	976.	851.	680.	466.	302.	176.	75.	43.	26.	11.
371	3.	0.	0.	1.	0.	0.	0.	1.	0.	1.
381	0.	0.	0.	0.	0.	0.	0.	2.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
411	0.	1.	0.	0.	0.	0.	0.	3.	0.	2.
421	1.	0.	1.	0.	0.	1.	1.	1.	1.	0.
431	0.	0.	1.	0.	1.	0.	1.	0.	0.	0.
441	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
451	2.	1.	1.	0.	0.	0.	1.	0.	0.	1.
461	1.	1.	4.	1.	2.	2.	3.	5.	3.	3.
471	3.	0.	1.	3.	1.	3.	1.	0.	0.	0.
481	0.	1.	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
F946 SEG/COMP/#8
File ID: SD2714.SPC

Counted on: 2/ 9/90 @ 0: 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	4.2	4.2	468.114	468.114	28.000	16.828	14.000	13.274
2	1894.2	1914.8	357.234	357.234	20.000	12.011	10.000	5.995
3	83.9	85.9	299.394	299.394	20.000	14.183	10.000	2.399
4	57.9	57.7	262.857	262.857	20.000	7.005	10.000	2.100
5	21.9	23.3	227.770	227.770	20.000	6.104	10.000	2.418
6	4.0	2.6	172.563	172.563	20.000	59.890	10.000	4.825

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1		0.0021		6.277		0.08	0.08	0.41	0.185E-06
2	Pu236	0.8871	5.756	5.755	0.001	0.06	35.19	178.28	0.803E-04
3	Pu238	0.0686	5.499	5.484	0.015	0.07	2.72	18.77	0.845E-05
	Am241		5.480	5.484	-0.004				0.648E-05
4		0.0283		5.312		0.03	1.12	5.58	0.251E-05
5	Pu239	0.0096	5.143	5.147	-0.004	0.03	0.38	1.88	0.848E-06
	Pu240		5.144	5.147	-0.003				0.848E-06
6	Np237	0.0043	4.781	4.887	-0.106	0.28	0.17	0.98	0.441E-06

DETECTOR CALIBRATION
Energy(MEV) = 4.076 + (0.0047)*Channel
Energy range (MeV): 4.076 TO 6.483
Efficiency = 0.2014 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	19661.0	100.000
Smoothed	19661.0	100.000
Composite fit	19834.1	100.880
Residuals	-173.1	-0.880

Analyzed by: _____
VR

SPECTRUM SD2714.SPC
1 LEGEND: RAW = ... MODELED PEAKS = 1,2,.., ETC 7179.2

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Raw Data Dump for AEA Spectrum: SP:SD2714.SPC

1	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
11	1.	0.	0.	1.	0.	0.	1.	0.	0.	0.
21	1.	0.	0.	2.	0.	0.	0.	1.	0.	0.
31	0.	0.	0.	1.	0.	0.	1.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	2.	0.
51	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
61	0.	1.	0.	0.	0.	0.	0.	0.	1.	0.
71	0.	0.	1.	0.	0.	0.	0.	0.	1.	1.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
91	1.	1.	1.	0.	0.	0.	1.	0.	0.	0.
101	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
111	1.	0.	0.	0.	0.	0.	1.	2.	0.	0.
121	1.	0.	1.	1.	1.	0.	2.	0.	0.	1.
131	2.	1.	0.	1.	1.	0.	1.	0.	0.	1.
141	1.	1.	0.	1.	1.	1.	0.	2.	1.	1.
151	2.	0.	0.	2.	0.	1.	0.	1.	1.	0.
161	0.	1.	3.	1.	2.	0.	1.	1.	1.	4.
171	4.	4.	1.	1.	1.	1.	2.	1.	1.	0.
181	0.	3.	2.	2.	2.	0.	0.	2.	1.	2.
191	0.	2.	1.	0.	1.	3.	4.	4.	0.	2.
201	0.	3.	0.	2.	1.	0.	3.	4.	2.	5.
211	3.	4.	6.	3.	3.	3.	10.	6.	9.	15.
221	14.	13.	15.	13.	22.	8.	15.	15.	23.	10.
231	10.	5.	14.	12.	5.	3.	4.	5.	1.	7.
241	10.	8.	6.	5.	16.	11.	17.	14.	21.	12.
251	25.	25.	33.	24.	24.	38.	26.	25.	28.	40.
261	41.	52.	52.	33.	27.	26.	18.	19.	20.	22.
271	14.	10.	10.	18.	10.	17.	13.	17.	13.	18.
281	14.	27.	30.	28.	23.	24.	33.	35.	27.	36.
291	41.	34.	39.	40.	38.	51.	38.	42.	44.	48.
301	45.	48.	34.	25.	25.	24.	19.	7.	11.	8.
311	5.	6.	7.	5.	7.	6.	4.	5.	7.	15.
321	10.	6.	9.	21.	12.	12.	12.	17.	16.	

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331	21.	44.	35.	38.	46.	56.	66.	101.	127.	133.
341	205.	250.	257.	334.	415.	511.	550.	597.	683.	687.
351	786.	904.	913.	1084.	1035.	1116.	1072.	1028.	939.	811.
361	684.	536.	405.	268.	192.	128.	66.	36.	16.	9.
371	5.	2.	2.	0.	0.	0.	0.	1.	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.	1.	0.	1.	1.	0.	2.
411	0.	0.	0.	0.	1.	1.	0.	0.	2.	0.
421	0.	2.	0.	0.	1.	1.	0.	1.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
451	0.	0.	1.	0.	1.	0.	1.	1.	2.	2.
461	1.	1.	3.	5.	0.	0.	4.	3.	3.	0.
471	2.	1.	2.	2.	3.	1.	0.	0.	1.	0.
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-947 SEG.COMP #9 PU
File ID: SD4714.SPC

Counted on: 2/10/90 @13: 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	1429.4	1453.8	357.590	357.590	20.000	10.411	10.000	4.684
2	62.3	64.6	301.013	301.013	24.000	11.716	12.000	3.575
3	151.2	0.0	255.938	255.938	12.000	12.123	6.000	6.102
4	209.1	208.9	229.099	229.099	20.000	10.816	10.000	5.712

PEAK RESULTS

Peak		AEA	Peak Centroid				Count		Activity
ID	Isotope	Fract.	Exp.	Obs.	Diff.	FWHM	Rate c/m	d/m	uCi/ea
1	Cm243	0.8384	5.786	5.810	-0.024	0.05	26.21	154.30	0.695E-04
	Cm244		5.796	5.810	-0.014				0.507E-04
2	Pu238	0.0451	5.499	5.539	-0.040	0.06	1.41	8.42	0.379E-05
3		0.0000		5.323		0.06	0.00	0.00	0.000E+00
4		0.1164		5.194		0.05	3.64	15.64	0.705E-05

DETECTOR CALIBRATION
Energy(MEV) = 4.094 + (0.0048)*Channel
Energy range (MeV): 4.094 TO 6.552
Efficiency = 0.2327 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	15638.0	100.000
Smoothed	15637.3	99.996
Composite fit	15631.3	99.957
Residuals	6.0	0.039

Analyzed by: _____
DM

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          SPECTRUM SD4714.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC                5344.2

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Raw Data Dump for AEA Spectrum: SP:SD4714.SPC

1	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
11	0.	0.	0.	0.	1.	2.	0.	0.	1.	1.
21	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
41	0.	0.	0.	2.	1.	0.	0.	1.	0.	1.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
71	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
81	0.	0.	0.	0.	0.	1.	0.	0.	1.	1.
91	0.	0.	0.	0.	0.	0.	0.	1.	0.	2.
101	0.	0.	0.	1.	0.	0.	1.	1.	0.	0.
111	0.	1.	0.	0.	0.	1.	1.	0.	0.	0.
121	0.	2.	0.	0.	0.	0.	1.	0.	0.	0.
131	0.	0.	1.	1.	0.	1.	0.	1.	0.	2.
141	0.	0.	0.	1.	0.	0.	1.	0.	0.	1.
151	1.	0.	1.	0.	1.	0.	1.	1.	0.	0.
161	0.	2.	1.	1.	1.	2.	4.	0.	1.	2.
171	1.	3.	1.	0.	0.	2.	0.	6.	1.	1.
181	0.	3.	0.	1.	1.	0.	0.	3.	1.	4.
191	0.	0.	5.	1.	1.	2.	2.	1.	2.	1.
201	1.	3.	4.	4.	5.	4.	6.	8.	8.	12.
211	12.	14.	21.	24.	28.	39.	33.	50.	42.	50.
221	67.	73.	83.	116.	110.	119.	115.	98.	146.	110.
231	99.	93.	58.	54.	36.	17.	14.	10.	7.	1.
241	4.	2.	2.	2.	1.	4.	4.	3.	5.	3.
251	8.	8.	10.	6.	5.	4.	4.	9.	8.	5.
261	4.	7.	4.	7.	6.	4.	2.	4.	5.	4.
271	1.	3.	6.	2.	6.	7.	2.	6.	7.	4.
281	7.	6.	8.	14.	15.	12.	19.	17.	14.	19.
291	23.	25.	10.	31.	27.	36.	34.	35.	40.	35.
301	34.	30.	24.	37.	28.	20.	16.	12.	13.	3.
311	7.	5.	4.	4.	9.	3.	4.	7.	9.	5.
321	8.	10.	8.	4.	8.	14.	8.	10.	21.	23.
331	14.	17.	33.	26.	31.	51.	55.	68.	75.	118.
341	155.	168.	216.	260.	315.	361.	404.	456.	514.	527.
351	598.	653.	665.	700.	776.	776.	818.	811.	786.	691.
361	512.	392.	292.	171.	94.	47.	31.	10.	4.	2.
371	1.	1.	0.	0.	0.	0.	0.	0.	0.	1.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	2.	0.	0.	0.
401	1.	1.	0.	1.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	1.	1.	1.	0.	0.	0.
421	0.	0.	1.	0.	0.	1.	0.	1.	0.	3.
431	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
441	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
451	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
461	0.	0.	3.	1.	1.	3.	1.	4.	3.	1.
471	3.	0.	1.	1.	0.	0.	0.	0.	0.	0.
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-948 SEG.COMP#10 PU
File ID: SD3951.SPC

Counted on: 2/10/90 @13: 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	5.5	5.6	470.699	470.699	20.000	14.974	10.000	14.969
2	1879.1	1897.9	359.467	359.467	20.000	13.884	10.000	7.499
3	74.4	77.8	302.256	302.256	24.000	12.474	12.000	2.388
4	105.2	104.2	229.933	229.933	20.000	11.801	10.000	6.978

PEAK RESULTS

Peak		AEA	Peak Centroid				Count		Activity
ID	Isotope	Fract.	Exp.	Obs.	Diff.	FWHM	Rate c/m	d/m	uCi/ea
1		0.0026		6.279		0.07	0.10	0.52	0.234E-06
2	Pu236	0.8969	5.756	5.745	0.011	0.07	36.20	183.41	0.826E-04
3	Am241	0.0552	5.480	5.471	0.009	0.06	2.23	11.77	0.530E-05
4	Pu239	0.0453	5.143	5.124	0.019	0.06	1.83	9.08	0.409E-05

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	20050.0	100.000
Smoothed	20050.0	100.000
Composite fit	20180.8	100.652
Residuals	-130.8	-0.652

Analyzed by: _____
DM

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        SPECTRUM SD3951.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC                6820.6

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Raw Data Dump for AEA Spectrum: SP:SD3951.SPC

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
11	0.	1.	0.	1.	0.	0.	2.	0.	0.	0.
21	0.	0.	1.	1.	1.	1.	1.	0.	0.	0.
31	1.	0.	1.	0.	0.	0.	0.	0.	0.	1.
41	1.	0.	1.	1.	0.	2.	0.	0.	0.	0.
51	0.	2.	1.	0.	1.	1.	0.	0.	0.	0.
61	0.	0.	2.	1.	1.	0.	0.	0.	1.	0.
71	0.	0.	3.	1.	1.	2.	0.	1.	1.	0.
81	1.	0.	0.	1.	0.	0.	0.	1.	2.	1.
91	0.	0.	0.	1.	0.	0.	1.	0.	0.	1.
101	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.
111	0.	0.	1.	0.	2.	2.	0.	0.	1.	0.
121	0.	3.	0.	0.	0.	2.	0.	2.	2.	1.
131	1.	0.	0.	0.	2.	1.	3.	1.	2.	1.
141	2.	1.	0.	1.	1.	1.	1.	0.	1.	0.
151	1.	0.	1.	0.	0.	1.	0.	1.	2.	0.
161	1.	0.	3.	1.	1.	0.	1.	0.	1.	4.
171	1.	1.	0.	2.	1.	1.	3.	1.	2.	0.
181	1.	2.	2.	1.	2.	1.	1.	1.	0.	0.
191	1.	0.	1.	0.	1.	3.	0.	1.	1.	1.
201	0.	2.	1.	0.	4.	0.	3.	4.	4.	1.
211	4.	6.	6.	10.	8.	16.	15.	24.	17.	33.
221	28.	38.	44.	58.	54.	60.	51.	46.	52.	81.
231	56.	48.	47.	31.	21.	17.	15.	9.	12.	3.
241	6.	6.	3.	1.	0.	1.	1.	1.	2.	1.
251	1.	4.	4.	2.	2.	2.	6.	5.	1.	7.
261	6.	6.	7.	9.	10.	7.	8.	8.	6.	9.
271	5.	4.	8.	5.	6.	9.	7.	12.	5.	16.
281	21.	22.	25.	14.	17.	30.	23.	22.	26.	25.
291	34.	28.	25.	34.	35.	27.	37.	38.	40.	34.
301	40.	46.	41.	35.	32.	38.	24.	19.	16.	13.
311	10.	7.	3.	2.	2.	2.	3.	4.	3.	1.
321	4.	5.	2.	3.	5.	4.	7.	9.	4.	6.
331	9.	14.	10.	11.	20.	37.	38.	57.	73.	73.
341	123.	173.	203.	226.	275.	361.	403.	461.	533.	562.
351	722.	748.	807.	886.	954.	1039.	1057.	1014.	1051.	1037.
361	930.	836.	765.	642.	483.	393.	263.	193.	119.	75.
371	41.	26.	14.	7.	1.	3.	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.	1.	1.
421	0.	1.	1.	0.	1.	2.	0.	1.	0.	0.
431	2.	0.	0.	0.	0.	0.	0.	1.	0.	1.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	1.	0.	1.	0.	1.
461	1.	3.	3.	3.	3.	3.	3.	2.	4.	1.
471	5.	3.	2.	1.	4.	1.	2.	0.	2.	1.
481	0.	0.	1.	0.	1.	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-949 SEG.COMP#11 PU
File ID: SD3954.SPC

Counted on: 2/11/90 @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	10.4	10.0	471.543	471.543	20.000	13.382	10.000	6.489
2	1898.2	1910.1	359.114	359.114	20.000	13.459	10.000	7.396
3	85.1	87.0	301.260	301.260	20.000	13.453	10.000	2.603
4	50.6	52.5	264.610	264.610	20.000	8.169	10.000	1.755
5	149.1	151.5	229.417	229.417	20.000	10.611	10.000	7.113

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		0.0045		6.283		0.06	0.19	0.96	0.430E-06
2	Pu236	0.8469	5.756	5.744	0.012	0.06	35.86	181.69	0.818E-04
3	Th228	0.0593	5.430	5.466	-0.036	0.06	2.51	17.54	0.790E-05
	Am241		5.480	5.466	0.014				0.597E-05
4		0.0305		5.290		0.04	1.29	6.41	0.289E-05
5		0.0588		5.121		0.05	2.49	12.35	0.556E-05

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	21109.0	100.000
Smoothed	21107.7	99.994
Composite fit	21170.5	100.291
Residuals	-62.9	-0.298

Analyzed by: _____
DM

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Raw Data Dump for AEA Spectrum: SP:SD3954.SPC

1	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.
11	0.	0.	0.	0.	0.	2.	3.	2.	0.	2.
21	0.	0.	0.	1.	0.	0.	2.	0.	0.	0.
31	0.	0.	0.	0.	1.	0.	1.	0.	1.	0.
41	0.	0.	2.	0.	0.	1.	1.	0.	1.	1.
51	0.	0.	0.	1.	0.	1.	0.	0.	1.	0.
61	0.	1.	0.	0.	0.	0.	0.	1.	2.	0.
71	0.	0.	0.	0.	1.	1.	1.	1.	0.	1.
81	1.	1.	0.	0.	2.	0.	1.	1.	0.	0.
91	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.
101	1.	0.	1.	0.	0.	0.	1.	0.	1.	1.
111	1.	0.	1.	1.	0.	1.	1.	1.	0.	1.
121	3.	1.	0.	2.	2.	0.	1.	3.	0.	0.
131	0.	1.	0.	0.	1.	2.	1.	0.	2.	1.
141	2.	1.	1.	0.	1.	3.	3.	2.	0.	1.
151	2.	2.	3.	1.	2.	1.	2.	1.	0.	1.
161	3.	3.	1.	0.	2.	1.	0.	0.	0.	2.
171	1.	3.	0.	2.	2.	0.	1.	0.	3.	0.
181	5.	0.	0.	2.	3.	0.	1.	0.	2.	1.
191	4.	0.	1.	1.	0.	0.	0.	3.	1.	2.
201	2.	5.	3.	1.	1.	2.	1.	5.	0.	5.
211	1.	6.	8.	14.	18.	24.	26.	33.	34.	41.
221	53.	59.	70.	87.	77.	77.	100.	79.	96.	86.
231	80.	69.	58.	42.	43.	28.	20.	17.	6.	10.
241	7.	5.	7.	6.	12.	12.	9.	15.	14.	10.
251	21.	28.	16.	22.	19.	25.	30.	26.	26.	29.
261	32.	46.	31.	38.	32.	25.	30.	30.	25.	24.
271	19.	11.	12.	9.	10.	8.	13.	7.	11.	9

281	25.	24.	19.	15.	27.	27.	32.	31.	21.	17.
291	39.	32.	29.	37.	36.	39.	41.	53.	48.	46.
301	44.	39.	46.	50.	38.	25.	19.	11.	15.	14.
311	13.	10.	3.	3.	0.	1.	1.	2.	1.	1.
321	1.	2.	4.	3.	4.	8.	2.	6.	5.	12.
331	15.	11.	19.	28.	19.	44.	58.	66.	61.	79.
341	111.	133.	223.	251.	317.	337.	410.	462.	517.	649.
351	696.	725.	856.	938.	951.	1047.	1069.	1106.	1083.	981.
361	942.	817.	655.	565.	445.	311.	234.	159.	99.	75.
371	48.	23.	21.	5.	6.	0.	2.	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.	1.	0.	1.	0.	2.	2.	1.	1.
421	3.	1.	1.	1.	0.	0.	1.	3.	0.	0.
431	1.	0.	0.	0.	0.	0.	1.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
451	0.	0.	0.	2.	2.	1.	0.	2.	0.	2.
461	7.	2.	5.	2.	6.	1.	5.	4.	8.	7.
471	4.	7.	7.	2.	2.	3.	5.	1.	2.	0.
481	2.	0.	0.	1.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

SPECTRUM SD3954.SPC
1 LEGEND: RAW = ... MODELED PEAKS = 1,2,.., ETC 6956.3

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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
F950 SEG/COMP/#12 PU
File ID: SD3946.SPC

Counted on: 2/ 9/90 @ 0: 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	1946.0	1958.5	357.840	357.840	24.000	14.662	12.000	8.261
2	245.9	249.9	300.354	300.354	24.000	12.967	12.000	4.179
3	321.6	69.1	262.412	262.412	12.000	5.250	6.000	6.220
4	2343.9	2333.2	228.108	228.108	24.000	13.601	12.000	8.431
5	5.2	8.2	150.480	150.480	80.000	2.000	40.000	0.200
6	1.6	0.9	126.257	126.257	8.000	0.382	4.000	0.057

PEAK RESULTS

Peak		AEA	Peak Centroid				Count		Activity
ID	Isotope	Fract.	Exp.	Obs.	Diff.	FWHM	Rate c/m	d/m	uCi/ea
1	Pu236	0.4328	5.756	5.738	0.018	0.07	37.89	191.98	0.865E-04
2	Th228	0.0625	5.430	5.462	-0.032	0.06	5.48	38.29	0.172E-04
	Am241		5.480	5.462	0.018				0.130E-04
3		0.0089		5.279		0.03	0.78	3.85	0.173E-05
4		0.4919		5.115		0.07	43.06	213.81	0.963E-04
5		0.0037		4.742		0.01	0.32	1.59	0.715E-06
6	Np237	0.0003	4.640	4.626	0.014	0.00	0.02	1.85	0.835E-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	43612.0	100.000
Smoothed	43611.1	99.998
Composite fit	43772.9	100.369
Residuals	-161.8	-0.371

Analyzed by: _____
VR

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          SPECTRUM SD3946.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC              8821.5




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Raw Data Dump for AEA Spectrum: SP:SD3946.SPC

1	0.	0.	0.	0.	0.	0.	2.	3.	1.	0.
11	2.	0.	1.	2.	1.	1.	1.	1.	0.	0.
21	1.	1.	2.	0.	0.	1.	1.	1.	1.	0.
31	1.	0.	1.	2.	1.	0.	0.	0.	0.	0.
41	0.	1.	2.	2.	0.	0.	1.	2.	1.	1.
51	0.	2.	0.	1.	1.	1.	0.	2.	1.	0.
61	0.	0.	1.	0.	1.	0.	2.	3.	1.	0.
71	0.	2.	1.	2.	1.	0.	0.	0.	1.	1.
81	1.	0.	1.	0.	1.	2.	0.	1.	0.	0.
91	2.	0.	0.	2.	0.	1.	1.	1.	2.	0.
101	2.	2.	2.	0.	1.	1.	2.	2.	1.	2.
111	2.	1.	3.	0.	3.	7.	1.	1.	2.	0.
121	2.	2.	3.	2.	3.	4.	5.	0.	1.	2.
131	3.	0.	1.	0.	0.	1.	0.	3.	4.	1.
141	1.	4.	7.	0.	5.	0.	2.	0.	3.	4.
151	4.	3.	2.	1.	3.	0.	2.	0.	1.	2.
161	2.	4.	1.	1.	3.	1.	1.	3.	0.	1.
171	6.	4.	4.	2.	6.	4.	2.	2.	1.	1.
181	0.	2.	4.	2.	1.	3.	0.	5.	4.	4.
191	4.	4.	7.	5.	2.	7.	7.	6.	9.	7.
201	16.	21.	23.	23.	42.	47.	66.	72.	112.	136.
211	164.	186.	224.	334.	394.	473.	562.	603.	726.	841.
221	902.	1109.	1134.	1198.	1312.	1294.	1379.	1310.	1233.	1074.
231	1017.	829.	709.	489.	402.	304.	204.	145.	82.	68.
241	36.	21.	16.	9.	13.	13.	16.	11.	18.	23.
251	23.	16.	20.	26.	25.	22.	16.	36.	35.	35.
261	27.	36.	30.	22.	29.	28.	21.	26.	22.	14.
271	12.	10.	4.	11.	18.	12.	14.	15.	24.	23.
281	38.	40.	34.	42.	43.	44.	69.	55.	73.	88.
291	86.	88.	107.	91.	121.	125.	121.	146.	126.	148.
301	123.	141.	115.	88.	73.	57.	41.	37.	24.	29.
311	12.	8.	7.	3.	2.	5.	3.	3.	5.	2.
321	6.	5.	1.	4.	6.	5.	4.	4.	8.	6.
331	24.	15.	24.	34.	31.	52.	68.	104.	118.	139.
341	169.	210.	290.	338.	347.	489.	518.	610.	674.	760.
351	844.	914.	957.	1047.	1099.	1043.	1095.	1059.	992.	929.
361	826.	722.	560.	460.	351.	230.	183.	130.	85.	44.
371	30.	14.	14.	6.	1.	2.	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.	2.	0.	0.	0.	0.	0.
421	0.	0.	2.	0.	0.	0.	0.	0.	0.	0.
431	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
451	0.	0.	1.	0.	1.	0.	0.	1.	1.	1.
461	0.	1.	1.	1.	1.	1.	2.	4.	1.	1.
471	3.	2.	1.	0.	0.	1.	2.	1.	2.	0.
481	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Analytical Batch

Lab Segment Serial #: F0941

Customer ID: 000008

Americium Analysis

Fusion Dissolution

Instrument	E60044
Procedure/Rev	LA-503-156/C-2
Technologist	R. D. Hale
Date	February 08, 1990
Temperature	23 C
Starting Time	0900 02-07-90
Ending Time	1500 02-08-90
Chemist	S. A. Catlow

	Description	Lab ID
1	Initial LMCS Check Std.	F0897
2	Reagent Blank	F0946
3	Sample Composite 5	F0899
4	Duplicate Sample Composite 5	F0900
5	Sample Composite 5	F0905
6	Duplicate Sample Composite 5	F0906
7	Sample Composite 6	F0923
8	Duplicate Sample Composite 6	F0924
9	Sample Composite 6	F0929
10	Duplicate Sample Composite 6	F0930
11	Sample Composite 8	F0947

	Description	Lab ID
12	Duplicate Sample Composite 8	F0948
13	Sample Composite 8	F0953
14	Duplicate Sample Composite 8	F0954
15	Spike Composite 8	F0949
16	Final LMCS Check Std.	F0950
17		
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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.	16B43/10 uL			N/A
Spike	16B43/10 uL	F0947/1 mL	9B43/100 uL	N/A

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

Single Shell Tank Calibration Record

Analyte:	Am-241		
Procedure:	LA-508-051	Revision:	A-2
Instrument:	Canberra Jupiter System	Property Number:	E60044
Technologist:	Varies	Payroll Number:	Varies
Date:	See Attached Sheets		
Calibration Standard ID:	N/A		
Analyte Concentration:	N/A		
Type of Calibration:	N/A		

Comments: Detectors are aligned not calibrated.

SST-103 Rev. B 9/27/90 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-897 SEG.COMP#7 AM
File ID: SD2726.SPC

Counted on: 2/13/90 @ 0: 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	2841.1	2830.9	298.349	298.349	24.000	16.162	12.000	5.853
2	3932.2	3937.6	253.170	253.170	20.000	13.999	10.000	4.917

PEAK RESULTS

Peak		AEA	Peak Centroid				Count		Activity
ID	Isotope	Fract.	Exp.	Obs.	Diff.	FWHM	Rate c/m	d/m	uCi/ea
1	Pu238	0.4269	5.499	5.483	0.016	0.08	63.53	443.59	0.200E-03
	Am241		5.480	5.483	-0.003				0.153E-03
2	Am243	0.5731	5.234	5.271	-0.037	0.07	85.29	3898.24	0.176E-02

DETECTOR CALIBRATION

Energy(MEV) = 4.081 + (0.0047)*Channel
Energy range (MeV): 4.081 TO 6.487
Efficiency = 0.1989 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	75197.0	100.000
Smoothed	75196.7	100.000
Composite fit	74407.8	98.950
Residuals	788.9	1.049

Analyzed by: _____
MAX

SPECTRUM SD2726.SPC
1 LEGEND: RAW = ... MODELED PEAKS = 1,2,.., ETC 15192.4

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Raw Data Dump for AEA Spectrum: SP:SD2726.SPC

1	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
11	0.	0.	3.	1.	1.	2.	0.	0.	1.	1.
21	0.	2.	0.	0.	0.	3.	0.	2.	0.	2.
31	0.	1.	2.	1.	0.	3.	1.	3.	0.	0.
41	2.	1.	2.	1.	0.	1.	0.	0.	2.	0.
51	1.	3.	2.	1.	1.	2.	1.	1.	0.	0.
61	2.	3.	0.	1.	2.	2.	0.	1.	2.	1.
71	1.	1.	2.	0.	4.	3.	0.	2.	1.	1.
81	0.	0.	3.	1.	1.	3.	1.	0.	1.	2.
91	1.	1.	0.	0.	3.	1.	1.	5.	1.	3.
101	0.	2.	2.	1.	0.	0.	0.	1.	0.	2.
111	1.	3.	1.	1.	4.	2.	6.	2.	2.	0.
121	3.	2.	4.	2.	2.	2.	1.	4.	1.	3.
131	1.	2.	1.	1.	0.	4.	0.	2.	4.	2.
141	3.	5.	3.	2.	4.	1.	3.	1.	3.	0.
151	5.	4.	4.	0.	5.	1.	3.	2.	4.	5.
161	5.	5.	2.	5.	5.	4.	4.	7.	5.	3.
171	5.	7.	9.	8.	9.	9.	4.	3.	8.	8.
181	7.	6.	8.	8.	12.	10.	16.	11.	20.	12.
191	10.	12.	8.	19.	19.	24.	16.	11.	18.	29.
201	28.	25.	27.	33.	30.	33.	54.	49.	54.	52.
211	51.	63.	71.	83.	82.	88.	97.	95.	124.	150.
221	133.	181.	173.	204.	215.	224.	237.	237.	281.	330.
231	331.	354.	403.	433.	533.	506.	580.	676.	788.	843.
241	946.	1078.	1170.	1345.	1457.	1612.	1749.	1823.	2038.	2181.
251	2189.	2326.	2241.	2102.	1961.	1704.	1479.	1218.	972.	729.
261	589.	448.	393.	342.	265.	225.	192.	180.	203.	151.
271	145.	137.	171.	170.	185.	209.	236.	259.	274.	332.
281	396.	421.	508.	541.	628.	660.	766.	872.	995.	1063.
291	1157.	1288.	1385.	1402.	1481.	1579.	1557.	1612.	1547.	1444.
301	1185.	1132.	923.	796.	635.	528.	407.	333.	242.	160.
311	130.	99.	75.	57.	45.	29.	18.	12.	5.	2.
321	2.	4.	0.	1.	0.	1.	1.	1.	0.	0.
331	1.	1.	2.	1.	2.	2.	1.	1.	2.	2.
341	3.	1.	4.	4.	3.	0.	0.	0.	2.	0.
351	1.	2.	3.	1.	0.	0.	0.	0.	2.	0.
361	0.	0.	1.	0.	0.	3.	1.	0.	1.	0.
371	0.	0.	0.	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.	1.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	1.	0.	1.	2.	0.	0.	0.	0.
421	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.
431	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	1.	0.	0.	2.	0.
471	1.	0.	1.	1.	0.	1.	0.	1.	0.	1.
481	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	1.	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
F946 AM
File ID: SD3956.SPC

Counted on: 2/12/90 @15: 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	4.9	4.3	353.061	353.061	24.000	27.195	12.000	4.586
2	122.1	47.0	296.965	296.965	12.000	0.111	6.000	4.586
3	2724.3	2794.8	253.936	253.936	24.000	18.856	12.000	4.432
4	4.3	3.1	108.186	108.186	72.000	295.052	36.000	17.485

PEAK RESULTS

Peak		AEA	Peak Centroid				Count		Activity
ID	Isotope	Fract.	Exp.	Obs.	Diff.	FWHM	Rate c/m	d/m	uCi/ea
1	Ra224	0.0020	5.680	5.715	-0.035	0.13	0.15	0.82	0.368E-06
2	Th228	0.0007	5.430	5.445	-0.015	0.00	0.05	0.38	0.171E-06
3	Am243	0.9935	5.234	5.239	-0.005	0.09	78.29	3533.97	0.159E-02
4	U 235	0.0038	4.396	4.539	-0.143	1.42	0.30	2.64	0.119E-05

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	39211.0	100.000
Smoothed	39209.6	99.996
Composite fit	39401.6	100.486
Residuals	-192.0	-0.490

Analyzed by: _____
MAX

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          SPECTRUM SD3956.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC              10532.2


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Raw Data Dump for AEA Spectrum: SP:SD3956.SPC

1	0.	0.	0.	0.	0.	2.	0.	2.	0.	0.
11	1.	1.	0.	0.	1.	1.	0.	0.	0.	1.
21	3.	2.	1.	0.	0.	0.	3.	1.	1.	1.
31	3.	0.	1.	2.	0.	0.	1.	1.	0.	1.
41	0.	1.	2.	4.	1.	0.	1.	1.	0.	1.
51	0.	0.	3.	0.	0.	0.	1.	0.	0.	0.
61	0.	0.	1.	3.	1.	1.	1.	1.	1.	2.
71	0.	1.	1.	4.	2.	1.	0.	3.	3.	2.
81	1.	1.	1.	0.	0.	3.	2.	1.	0.	0.
91	1.	0.	0.	1.	1.	0.	0.	2.	3.	0.
101	1.	2.	2.	3.	3.	1.	4.	4.	1.	0.
111	2.	3.	2.	1.	1.	1.	2.	0.	4.	3.
121	1.	1.	1.	1.	2.	0.	3.	3.	3.	1.
131	2.	2.	3.	1.	5.	2.	2.	5.	1.	2.
141	3.	0.	1.	4.	3.	4.	2.	3.	2.	2.
151	3.	3.	3.	1.	2.	9.	2.	3.	3.	3.
161	5.	8.	6.	9.	0.	4.	5.	5.	7.	7.
171	5.	11.	2.	5.	5.	8.	12.	7.	8.	6.
181	11.	13.	15.	17.	9.	15.	21.	19.	14.	20.
191	28.	26.	22.	24.	31.	47.	38.	33.	49.	42.
201	42.	43.	40.	50.	57.	48.	62.	66.	86.	70.
211	84.	95.	99.	130.	148.	116.	141.	174.	159.	214.
221	197.	216.	235.	228.	257.	304.	342.	330.	370.	386.
231	442.	468.	496.	541.	546.	628.	598.	665.	778.	826.
241	863.	911.	967.	1074.	1099.	1169.	1251.	1278.	1305.	1377.
251	1445.	1512.	1452.	1456.	1360.	1349.	1273.	1129.	961.	830.
261	725.	583.	443.	341.	246.	222.	159.	122.	101.	72.
271	65.	43.	44.	39.	28.	13.	14.	6.	9.	5.
281	6.	6.	3.	0.	6.	5.	8.	2.	9.	5.
291	9.	4.	8.	5.	3.	5.	5.	10.	8.	9.
301	2.	6.	2.	1.	5.	3.	2.	5.	1.	1.
311	1.	2.	0.	0.	2.	0.	0.	1.	0.	2.
321	0.	0.	3.	1.	1.	0.	1.	0.	2.	1.
331	0.	2.	0.	1.	0.	2.	1.	1.	1.	2.
341	3.	1.	0.	1.	0.	2.	2.	3.	2.	4.
351	2.	5.	2.	0.	1.	4.	2.	3.	1.	0.
361	1.	0.	1.	0.	2.	1.	1.	0.	1.	0.
371	0.	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.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	1.	0.	0.	0.	0.	1.	0.	0.
421	0.	0.	0.	0.	0.	3.	0.	1.	1.	0.
431	0.	1.	1.	0.	1.	2.	1.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
471	0.	0.	1.	0.	2.	2.	1.	2.	2.	3.
481	1.	0.	0.	1.	0.	0.	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-947 SEG.COMP#9 AM
File ID: SD5591.SPC

Counted on: 2/13/90 @ 1: 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	90.2	45.9	297.390	297.390	12.000	14.564	6.000	0.000
2	2201.3	2284.0	253.753	253.753	24.000	16.826	12.000	4.315
3	0.0	0.1	117.607	117.607	0.000	0.200	0.000	0.200

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	Pu238	0.1885	5.499	5.495	0.004	0.07	13.84	95.23	0.429E-04
	Am241		5.480	5.495	-0.015				0.329E-04
2		0.8115		5.290		0.08	59.58	295.12	0.133E-03
3	Np237	0.0000	4.640	4.650	-0.010	0.00	0.00	0.04	0.184E-07

DETECTOR CALIBRATION
Energy(MEV) = 4.097 + (0.0047)*Channel
Energy range (MeV): 4.097 TO 6.504
Efficiency = 0.2019 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	33335.0	100.000
Smoothed	33334.3	99.998
Composite fit	36714.0	110.137
Residuals	-3379.7	-10.139

Analyzed by: _____
MAX

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          SPECTRUM SD5591.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC              8708.8
1
1
1
1
1
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1
1
1
1
1
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3
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1.
2.
12.
1..2.
1......2
1.............2
1.......................2...
1.............................................2.....
1.................................................................2
1.............................................2.
1..........2.
2.
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Raw Data Dump for AEA Spectrum: SP:SD5591.SPC

1	0.	0.	0.	0.	0.	0.	1.	3.	1.	3.
11	1.	1.	2.	2.	7.	6.	1.	2.	3.	4.
21	2.	3.	4.	1.	6.	2.	5.	3.	2.	2.
31	2.	4.	3.	3.	3.	5.	4.	1.	4.	4.
41	5.	4.	4.	3.	3.	3.	5.	4.	4.	3.
51	3.	2.	5.	1.	5.	2.	5.	5.	2.	5.
61	3.	3.	3.	3.	6.	4.	5.	2.	6.	6.
71	3.	7.	4.	5.	3.	13.	2.	3.	3.	4.
81	1.	10.	6.	5.	4.	4.	4.	3.	7.	5.
91	4.	2.	5.	4.	7.	3.	9.	8.	10.	3.
101	5.	4.	6.	3.	6.	13.	6.	5.	6.	6.
111	11.	7.	10.	11.	6.	9.	8.	6.	7.	12.
121	6.	11.	4.	8.	8.	9.	7.	3.	6.	6.
131	4.	8.	10.	8.	6.	8.	11.	8.	8.	3.
141	5.	10.	8.	13.	14.	12.	13.	14.	10.	9.
151	16.	18.	15.	16.	14.	11.	13.	15.	16.	19.
161	13.	10.	16.	19.	13.	14.	24.	17.	21.	13.
171	13.	19.	21.	29.	21.	22.	25.	18.	30.	12.
181	30.	29.	24.	41.	29.	24.	29.	44.	33.	40.
191	33.	40.	32.	49.	33.	36.	43.	42.	58.	57.
201	49.	48.	44.	61.	86.	71.	62.	91.	71.	74.
211	82.	82.	103.	119.	118.	104.	106.	136.	154.	129.
221	127.	139.	169.	182.	216.	219.	251.	244.	265.	304.
231	311.	337.	353.	461.	422.	490.	519.	590.	649.	662.
241	665.	787.	803.	858.	987.	972.	982.	1113.	1102.	1164.
251	1198.	1189.	1216.	1154.	1175.	1097.	1017.	934.	804.	649.
261	504.	419.	322.	219.	176.	106.	100.	88.	78.	73.
271	41.	54.	35.	22.	14.	11.	7.	7.	14.	11.
281	6.	9.	13.	4.	10.	8.	12.	9.	18.	18.
291	20.	19.	20.	16.	16.	27.	29.	19.	17.	17.
301	15.	11.	13.	16.	10.	7.	7.	2.	2.	3.
311	1.	2.	3.	2.	1.	1.	0.	0.	0.	0.
321	0.	0.	1.	2.	1.	0.	2.	0.	0.	0.
331	1.	0.	0.	0.	1.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	0.	2.	0.	0.	0.
351	3.	3.	1.	0.	0.	0.	1.	0.	0.	1.
361	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	1.	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.	0.	0.	0.
431	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
461	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
471	2.	1.	2.	1.	0.	0.	0.	0.	0.	0.
481	0.	2.	1.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	1.	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-948 SEG.COMP#10 AM
File ID: SD4722.SPC

Counted on: 2/13/90 @ 1: 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	52.0	26.1	294.392	294.392	12.000	12.053	6.000	0.000
2	1089.1	1144.6	250.312	250.312	28.000	21.345	14.000	2.211

PEAK RESULTS

Peak		AEA	Peak Centroid				Count		Activity
ID	Isotope	Fract.	Exp.	Obs.	Diff.	FWHM	Rate c/m	d/m	uCi/ea
1	Pu238	0.1259	5.499	5.507	-0.008	0.06	7.78	46.46	0.209E-04
	Am241		5.480	5.507	-0.027				0.160E-04
2		0.8741		5.295		0.10	54.04	232.23	0.105E-03

DETECTOR CALIBRATION
Energy(MEV) = 4.094 + (0.0048)*Channel
Energy range (MeV): 4.094 TO 6.552
Efficiency = 0.2327 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	29296.0	100.000
Smoothed	29295.3	99.998
Composite fit	30911.4	105.514
Residuals	-1616.0	-5.516

Analyzed by: _____
MAX

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        SPECTRUM SD4722.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC                4258.0
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Raw Data Dump for AEA Spectrum: SP:SD4722.SPC

1	0.	0.	0.	0.	0.	0.	1.	3.	4.	1.
11	3.	3.	5.	4.	6.	3.	6.	3.	3.	6.
21	2.	4.	2.	2.	3.	5.	5.	3.	5.	3.
31	5.	4.	1.	1.	4.	3.	2.	4.	6.	5.
41	6.	6.	8.	4.	4.	7.	5.	5.	5.	8.
51	8.	4.	4.	6.	5.	7.	5.	10.	6.	4.
61	7.	9.	10.	7.	5.	10.	5.	4.	6.	10.
71	12.	3.	9.	6.	7.	6.	7.	11.	6.	9.
81	16.	13.	9.	13.	9.	6.	6.	9.	5.	7.
91	21.	10.	13.	9.	11.	23.	10.	13.	14.	16.
101	16.	16.	15.	23.	20.	16.	17.	14.	20.	13.
111	22.	12.	18.	17.	24.	21.	22.	15.	20.	25.
121	15.	23.	25.	29.	26.	33.	20.	21.	27.	20.
131	29.	25.	33.	30.	25.	30.	30.	39.	41.	27.
141	31.	35.	29.	43.	45.	38.	40.	42.	35.	47.
151	42.	28.	36.	42.	58.	53.	59.	54.	58.	45.
161	53.	50.	50.	63.	61.	64.	81.	56.	60.	66.
171	77.	66.	70.	72.	86.	78.	76.	72.	86.	104.
181	93.	93.	93.	93.	92.	110.	103.	109.	108.	122.
191	118.	120.	117.	125.	115.	153.	143.	149.	159.	170.
201	164.	148.	174.	184.	191.	187.	203.	204.	224.	246.
211	228.	232.	243.	247.	238.	239.	241.	249.	296.	277.
221	296.	333.	341.	321.	333.	344.	355.	397.	354.	403.
231	372.	388.	424.	441.	461.	449.	469.	458.	470.	503.
241	474.	526.	496.	496.	556.	538.	571.	571.	627.	579.
251	554.	545.	580.	468.	500.	453.	384.	340.	280.	229.
261	146.	128.	108.	82.	56.	45.	32.	33.	23.	26.
271	19.	15.	13.	11.	9.	3.	9.	6.	6.	3.
281	8.	9.	7.	5.	10.	9.	7.	6.	14.	4.
291	6.	11.	17.	7.	11.	10.	10.	8.	4.	3.
301	7.	4.	1.	6.	4.	4.	3.	0.	2.	0.
311	2.	0.	2.	0.	0.	0.	0.	0.	0.	0.
321	0.	1.	0.	2.	0.	0.	0.	1.	1.	1.
331	0.	1.	1.	0.	1.	0.	2.	0.	1.	1.
341	1.	1.	0.	2.	0.	2.	2.	2.	1.	1.
351	1.	1.	1.	1.	1.	0.	1.	1.	0.	0.
361	0.	1.	0.	0.	1.	0.	2.	0.	1.	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.	1.	0.	1.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	2.	0.	0.	0.	0.	1.	1.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
451	0.	1.	0.	0.	0.	1.	0.	1.	0.	0.
461	0.	0.	1.	0.	0.	2.	1.	2.	0.	0.
471	0.	1.	1.	1.	0.	0.	1.	1.	0.	0.
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-949 SEG.COMP#11 AM
File ID: SD3958.SPC

Counted on: 2/13/90 @ 1: 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	69.9	45.7	294.281	294.281	16.000	8.685	8.000	0.000
2	1416.7	1464.9	248.325	248.325	32.000	25.605	16.000	4.657
3	2.4	3.3	101.979	101.979	152.000	2.000	76.000	0.200
4	0.0	0.1	27.155	27.155	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	Th228	0.2115	5.430	5.432	-0.002	0.04	13.54	94.68	0.426E-04
2	Am243	0.7866	5.234	5.212	0.022	0.12	50.35	2272.65	0.102E-02
3		0.0019		4.509		0.01	0.12	0.61	0.274E-06
4		0.0000		4.150		0.00	0.00	0.00	0.106E-08

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	31305.0	100.000
Smoothed	31295.7	99.970
Composite fit	32005.0	102.236
Residuals	-709.3	-2.266

Analyzed by: _____
MAX

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          SPECTRUM SD3958.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC                5540.0
 1
 1
.1
41
.1
.1
31
31
31
31
31
31
31
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21..
21..
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.1...........2..
.1.................2.
.1.........................2...
.1.........................................2....
.1.............................................................2..
.1.............................................................2..
.1.........................2...
.1.....2.
21
.1
.1
1
```

Raw Data Dump for AEA Spectrum: SP:SD3958.SPC

1	0.	0.	0.	0.	0.	8.	10.	10.	11.	10.
11	11.	11.	18.	16.	6.	10.	10.	14.	7.	12.
21	16.	15.	9.	10.	17.	10.	16.	15.	9.	10.
31	9.	17.	16.	4.	11.	8.	10.	11.	16.	14.
41	17.	9.	11.	14.	14.	19.	23.	12.	11.	17.
51	18.	9.	12.	14.	20.	17.	16.	12.	18.	11.
61	18.	17.	12.	15.	8.	20.	17.	11.	17.	14.
71	12.	20.	20.	21.	20.	17.	13.	18.	16.	25.
81	17.	22.	18.	14.	24.	15.	19.	20.	14.	21.
91	27.	25.	23.	20.	22.	15.	24.	22.	30.	29.
101	24.	23.	20.	23.	29.	17.	23.	19.	26.	18.
111	22.	24.	25.	23.	29.	22.	26.	18.	24.	33.
121	24.	33.	25.	30.	29.	28.	27.	24.	31.	23.
131	19.	29.	28.	36.	31.	30.	29.	33.	27.	27.
141	28.	29.	31.	41.	32.	44.	46.	42.	28.	49.
151	54.	34.	47.	33.	31.	38.	37.	50.	42.	51.
161	51.	47.	41.	45.	60.	37.	60.	43.	44.	38.
171	37.	40.	59.	48.	55.	59.	60.	65.	57.	60.
181	53.	59.	68.	65.	64.	60.	74.	56.	86.	84.
191	68.	75.	82.	82.	76.	93.	101.	86.	95.	102.
201	110.	109.	110.	144.	129.	131.	137.	140.	152.	151.
211	155.	170.	165.	181.	183.	201.	199.	213.	208.	236.
221	216.	270.	261.	292.	303.	324.	347.	335.	400.	403.
231	396.	472.	456.	515.	498.	565.	564.	588.	650.	672.
241	661.	696.	733.	764.	768.	747.	758.	762.	760.	739.
251	693.	664.	626.	613.	511.	472.	422.	360.	297.	263.
261	177.	187.	139.	101.	85.	61.	52.	35.	41.	26.
271	25.	18.	16.	19.	17.	18.	7.	16.	12.	14.
281	13.	16.	11.	11.	10.	16.	12.	12.	14.	7.
291	9.	15.	16.	16.	17.	10.	8.	17.	9.	9.
301	5.	7.	5.	9.	5.	1.	3.	2.	2.	3.
311	1.	1.	2.	3.	1.	1.	0.	0.	2.	0.
321	2.	0.	1.	1.	0.	1.	1.	1.	2.	0.
331	0.	1.	1.	4.	2.	0.	1.	1.	2.	1.
341	1.	2.	1.	1.	0.	1.	1.	1.	2.	1.
351	1.	1.	0.	0.	1.	1.	0.	0.	0.	0.
361	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
371	0.	0.	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.	1.	0.	0.
401	0.	1.	0.	0.	1.	0.	0.	1.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	1.	0.	0.	0.	0.	2.	0.
431	0.	1.	0.	0.	0.	0.	0.	1.	0.	1.
441	1.	0.	0.	0.	1.	0.	1.	0.	0.	0.
451	0.	1.	2.	0.	0.	1.	0.	0.	0.	0.
461	0.	1.	1.	0.	1.	1.	1.			

281	25.	24.	19.	15.	27.	27.	32.	31.	21.	17.
291	39.	32.	29.	37.	36.	39.	41.	53.	48.	46.
301	44.	39.	46.	50.	38.	25.	19.	11.	15.	14.
311	13.	10.	3.	3.	0.	1.	1.	2.	1.	1.
321	1.	2.	4.	3.	4.	8.	2.	6.	5.	12.
331	15.	11.	19.	28.	19.	44.	58.	66.	61.	79.
341	111.	133.	223.	251.	317.	337.	410.	462.	517.	649.
351	696.	725.	856.	938.	951.	1047.	1069.	1106.	1083.	981.
361	942.	817.	655.	565.	445.	311.	234.	159.	99.	75.
371	48.	23.	21.	5.	6.	0.	2.	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.	1.	0.	1.	0.	2.	2.	1.	1.
421	3.	1.	1.	1.	0.	0.	1.	3.	0.	0.
431	1.	0.	0.	0.	0.	0.	1.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
451	0.	0.	0.	2.	2.	1.	0.	2.	0.	2.
461	7.	2.	5.	2.	6.	1.	5.	4.	8.	7.
471	4.	7.	7.	2.	2.	3.	5.	1.	2.	0.
481	2.	0.	0.	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
F950 AM
File ID: SD2724.SPC

Counted on: 2/12/90 @15: 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	17.8	11.2	347.151	347.151	12.000	0.091	6.000	0.000
2	2259.9	2267.7	299.307	299.307	24.000	17.119	12.000	4.348
3	3066.1	3106.7	253.961	253.961	24.000	14.243	12.000	3.364

PEAK RESULTS

Peak		AEA	Peak Centroid				Count		Activity
ID	Isotope	Fract.	Exp.	Obs.	Diff.	FWHM	Rate c/m	d/m	uCi/ea
1	Ra224	0.0265	5.680	5.713	-0.033	0.00	3.83	20.48	0.922E-05
2	Pu238	0.4131	5.499	5.488	0.011	0.08	59.70	416.86	0.188E-03
	Am241		5.480	5.488	-0.008				0.144E-03
3		0.5604		5.275		0.07	80.98	407.15	0.183E-03

DETECTOR CALIBRATION

Energy(MEV) = 4.081 + (0.0047)*Channel
Energy range (MeV): 4.081 TO 6.487
Efficiency = 0.1989 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	71370.0	100.000
Smoothed	71369.7	100.000
Composite fit	72254.9	101.240
Residuals	-885.3	-1.240

Analyzed by: _____
MAX

```
          SPECTRUM SD2724.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC              12207.0
1
1
1
1
1
1
1
1
1
1
1
1
1
1
1
1
1
1
1
1
1
1
1
1
1
3
3.
1.3
1...3
1.......3.
1.............3..
1.......................3
2.........................................3...
12.............................................................3...
1..2.......................................3...
1.....2.3........
1..........2.
1....................2
1.....................................2.
1.............................................2.
1......................2
1..2.
1
1
1
1
```

Raw Data Dump for AEA Spectrum: SP:SD2724.SPC

1	0.	0.	0.	0.	0.	0.	1.	0.	0.	3.
11	2.	1.	0.	0.	1.	0.	0.	1.	2.	0.
21	0.	0.	1.	0.	2.	0.	1.	1.	0.	2.
31	1.	1.	2.	0.	1.	0.	1.	2.	2.	1.
41	0.	0.	0.	0.	1.	1.	1.	1.	1.	1.
51	0.	0.	0.	3.	0.	1.	1.	1.	0.	2.
61	1.	0.	3.	0.	0.	0.	0.	0.	1.	1.
71	1.	3.	0.	1.	0.	0.	1.	1.	1.	3.
81	2.	1.	3.	2.	1.	3.	0.	2.	3.	1.
91	0.	3.	3.	4.	1.	3.	4.	3.	2.	2.
101	1.	0.	2.	2.	2.	5.	1.	2.	0.	0.
111	1.	0.	2.	0.	4.	0.	1.	2.	2.	0.
121	2.	4.	2.	0.	2.	1.	2.	0.	2.	4.
131	1.	0.	1.	4.	2.	3.	4.	3.	5.	4.
141	3.	4.	3.	5.	3.	2.	5.	6.	3.	5.
151	6.	5.	10.	10.	2.	4.	7.	7.	8.	7.
161	6.	9.	2.	1.	8.	6.	10.	7.	8.	11.
171	9.	10.	9.	12.	9.	20.	22.	10.	13.	17.
181	19.	17.	20.	14.	34.	24.	24.	21.	27.	31.
191	43.	42.	29.	45.	45.	46.	53.	58.	48.	65.
201	64.	60.	70.	83.	97.	82.	93.	116.	116.	107.
211	121.	147.	163.	150.	174.	187.	188.	193.	213.	215.
221	288.	298.	313.	329.	324.	372.	383.	403.	413.	443.
231	449.	479.	519.	562.	548.	572.	626.	662.	750.	843.
241	894.	933.	1006.	1146.	1214.	1338.	1373.	1513.	1536.	1619.
251	1686.	1740.	1708.	1741.	1678.	1583.	1410.	1245.	1020.	842.
261	701.	564.	388.	337.	309.	280.	270.	278.	227.	222.
271	211.	244.	256.	239.	264.	270.	296.	300.	339.	359.
281	435.	446.	466.	483.	567.	652.	671.	675.	733.	854.
291	934.	972.	1045.	1059.	1103.	1226.	1223.	1235.	1222.	1260.
301	1132.	1017.	891.	839.	693.	545.	470.	350.	298.	222.
311	171.	115.	93.	70.	50.	40.	21.	12.	8.	7.
321	3.	3.	0.	3.	0.	1.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	1.	2.	4.	2.	1.
341	1.	1.	2.	3.	1.	5.	1.	2.	1.	2.
351	2.	2.	1.	0.	0.	0.	1.	2.	0.	0.
361	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
381	0.	0.	1.	0.	0.	1.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	2.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	1.	2.	1.	2.	0.	0.	0.	0.
431	1.	2.	0.	0.	1.	0.	1.	0.	0.	0.
441	0.	0.	0.	2.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
461	2.	1.	0.	1.	0.	0.	0.	0.	2.	0.
471	0.	0.	1.	1.	1.	4.	1.	0.	1.	0.
481	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Analytical Batch

Lab Segment Serial #: F0941

Customer ID: 000008

Instrument	Tennelec
Procedure/Rev	LA-933-141/G-1
Technologist	R. D. Hale
Date	March 12, 1990
Temperature	23 C
Starting Time	1000
Ending Time	1700
Chemist	S. A. Catlow

Neptunium Analysis

Fusion Dissolution

Mount Volume = 500 uL

	Description	Lab ID
1	Initial LMCS Check Std.	F0897
2	Reagent Blank	F0898
3	Sample Composite 5	F0899
4	Duplicate Sample Composite 5	F0900
5	Sample Composite 6	F0923
6	Duplicate Sample Composite 6	F0924
7	Sample Composite 8	F0947
8	Duplicate Sample Composite 8	F0948
9	Sample Composite 7	F0977
10	Duplicate Sample Composite 7	F0978
11	Spike Sample Composite 7	F0979

	Description	Lab ID
12	Final LMCS Check Std.	F0980
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	F0947/250 uL		N/A

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

Analytical Batch

Lab Segment Serial #: F0941

Customer ID: 000008

Instrument	WA77930
Procedure/Rev	LA-438-101/C-2
Technologist	S. Lai
Date	March 07, 1990
Temperature	N/A
Starting Time	0800
Ending Time	1530
Chemist	S. A. Catlow

Technetium Analysis

Fusion Dissolution

	Description	Lab ID
1	Initial LMCS Check Std.	F0945
2	Reagent Blank	F0946
3	Sample Composite 8	F0947
4	Duplicate Sample Composite 8	F0948
5	Spike Composite 8	F0949
6	Final LMCS Check Std.	F0950
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.	68B39/250 uL			20 mL
Spike	68B39/250 uL	F0947/1.0 mL	49B39/100 uL	20 mL

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

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

F945

F945+

F946

F946+

F947

F947+

F948

F948+

F949

F949+

F950

F950+

Analytical Batch

Lab Segment Serial #: F0941

Customer ID: 000008

Instrument	WA77390
Procedure/Rev	LA-378-103/A-2
Technologist	M. Myers
Date	June 12, 1990
Temperature	21 C
Starting Time	0800
Ending Time	1500
Chemist	S. A. Catlow

Iodine 129

Fusion Dissolution

* Total volume sent for counting

	Description	Lab ID
1	Initial LMCS Check Std.	F0945
2	Reagent Blank	F0946
3	Sample Composite 8	F0947
4	Duplicate Sample Composite 8	F0948
5	Spike Composite 8	F0949
6	Final LMCS Check Std.	F0950
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.	124B44/1.0 mL			2 mL *
Spike	124B44/1.0 mL	F0947/1.0 mL		2 mL *

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

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

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	---	[illegible]
	39.6	7.50		
2	AM 241	1.580E+05 D	---	[illegible]
	59.5	35.90		
3	AM 243	2.700E+06 D	---	[illegible]
	74.7	66.00		
4	SB 125	1004.40 D	---	[illegible]
	176.3	6.80		
5	SE 75	119.77 D	---	[illegible]
	136.0	59.00		
	121.1	17.30		

Maximum Energy Error for Isotope Identification = 1.5 keV

MPC values are corrected for decay.

Command-- ?

```
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*                                                                   *
*          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

18-JUN-9015:29:53

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

MCA UNIT NUMBER: 2 / ADC UNIT NUMBER: 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: 69549

SAMPLE DESCRIPTION: F945-6585
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 18-JUN-90 AT 14:39:43

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 15-JUN-90
EFFICIENCY CALIBRATION PERFORMED 18-JUN-90

18-JUN-9015:29:53

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

PK	CENTROID CHANNEL	ENERGY KEV	FWHM KEV	BACKGND COUNTS	NET AREA COUNTS	ERROR %	NUCLIDES
PEAK AT CHANNEL	134.4 DROPPED FROM MULTIPLET ANALYSIS						
1C	148.67	29.63	1.60	817.	8127.	2.9	
2C	169.08	33.71	1.60	482.	1830.	6.3	CE-144
3C	198.48	39.58	1.33	172.	1223.	7.1	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

18-JUN-9015:29:53

SAMPLE: F945-6585
DATA COLLECTED ON 18-JUN-90 AT 14:39:43
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

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

NUCLIDE	ACTIVITY CONCENTRATION IN uCi/EA MEASURED	ERROR	DECAY CORRECTED	ERROR	ENERGY COMPARISON (KEV) EXPECT	DIFF
AM-241	LLD<8.86E-07		LLD<8.86E-07		59.54	
AM-243	LLD<4.74E-07		LLD<4.74E-07		74.67	
I-129	2.82E-04	+-2.00E-05	2.82E-04	+-2.00E-05	39.60	-0.02
SB-125	LLD<9.30E-06		LLD<9.30E-06		176.33	
SE-75	LLD<7.44E-07		LLD<7.44E-07		136.00	
SN-113	LLD<1.59E-06		LLD<1.59E-06		391.67	
TOTAL	2.82E-04	+-2.00E-05	2.82E-04	+-2.00E-05		

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 5.77E-03 UC/EA
TOTAL MEASURED ACTIVITY = 2.82E-04 (+-2.00E-05) UC/EA
% TECH. SPEC. = 4.89 (+-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
148.67	29.63	8127.	2.9	1.13E+01
169.08	33.71	1830.	6.3	1.73E+00