0012371

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

DATA PACKAGE

SECTION

1 OF 12

1 of 12

Westinghouse
Hanford Company

P.O. Box 1970 Richland, WA 99352

222-S/RCRA Analytical Laboratories

Project: Single-Shell Tank Waste Characterization

Tank: 241-U-110

Core: 7

Customer Id. Number: Core 7 Composite

Report Revision: 1

Date Printed: October 12, 1990

OCT 1990
RECEIVED
J.H. KESSNER

JAN 1991
RECEIVED
EDMC

Hanford Operations and Engineering Contractor for the US Department of Energy

Table of Contents

Signature Form....4

Introduction....5

Sampling Data....8

Sample Data Summary....11

Physical Test Results....16

Thermo Gravimetric Analysis....17
Differential Scanning Calorimeter....17

Undigested Sample Analysis Results....20

Untreated Sample Results Summary for Wet Weight....21
pH Analysis....22
Percent Water....23
Mercury....24
Cyanide....29

KOH Fusion Results....31

Fusion Analysis Results Summary for Solids....32
ICP Data Summary....33
Fusion Analysis Results Summary for Lab Digestion....34
Fusion Dissolution....35
Total Alpha and Total Beta Analysis....36
GEA Analysis....41
Uranium Analysis....78
Inductively Coupled Plasma Spectrographic Analysis....79
Plutonium....119
Americium 241....138
Neptunium 237....157
Technetium 99....158
Iodine 129....165
Strontium 89/90....188

Water Digestion Test Results....193

Water Digestion Results in Wet Weight 1st Leaching....194
Water Digestion Results in Wet Weight 2nd Leaching....195
Water Digestion Results in Wet Weight 3rd Leaching....196
ICP Data Summary....197
Water Digestion Results for Lab Digestion 1st Leaching.198
Water Digestion Results for Lab Digestion 2nd Leaching.199
Water Digestion Results for Lab Digestion 3rd Leaching.200
Water Digestion 1st Leaching....201
Water Digestion 2nd Leaching....202
Water Digestion 3rd Leaching....203

pH Analysis.....205
Ion Chromatographic Analysis.....206
Inductively Coupled Plasma Spectrographic Analysis.....227
Total Organic Carbon Analysis.....265
Ammonia.....272
Carbonate.....273
Nitrite.....280
Total Alpha and Total Beta Analysis.....282
GEA Analysis.....287
Plutonium.....327
Americium 241.....346
Carbon 14.....365
Iodine 129.....371
Neptunium 237.....388
Strontium 89/90.....389
Technetium 99.....392
Tritium.....399
Arsenic.....403
Mercury.....406
Selenium.....408

Acid Digestion Test Results.....412

Acid Digestion Results in Wet Weight.....413
ICP Data Summary.....414
Acid Digestion Results for Laboratory Digestion.....415
Acid Digestion.....416
Inductively Coupled Plasma Specrographic Analysis 417
ICP Raw Data Summary.....418
Arsenic.....454
Mercury.....456
Selenium.....458

Appendix A.....461
Analytical Cards

Appendix B.....462
Analytical Detection Limits

This report consists of pages 1 - 462, plus page 79.1.
Appendix A consists of pages 1 - 126.
Appendix B consists of pages 1 - 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 15, 1990
Shirley A. Cervantes
Data Coordinator

Cary M Seidel — Date October 15, 1990
Cary M. Seidel
Unit Manager

L. H. Taylor — Date October 23, 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 (Reduction-Oxidation) high-level waste, coating waste, and laboratory waste until 1975. Between July 7, 1975, and February 2, 1976, P-10 pumps were installed, and 41,700 gallons of liquid waste 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 gamma energy analysis (GEA) analysis reports has no relationship to the sampling activities or the sample identification. All results in this data package relate only to the composite of Sample 89-046, Sample 89-047, Sample 89-048 and Sample 89-049 which comprises core 7 from riser 7 of tank 241-U-110. The Core 7 Composite Sample was prepared by compositing 37.3 grams of segment 1 (89-046), 58.2 grams of segment 2 (89-047), 24.5 grams of segment 3 (89-048), and 30.5 grams of segment 4 (89-049).

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 analysis on the water digestion was not performed because sufficient sample to complete this analysis was not available. Sample for additional digestions was not available as this sample was completely consumed performing other analyses.

All sample results reported here by weight are reported as the "wet weight" of the sample. Some samples noticeably lost moisture during the process of aliquoting and weighing for digestion. In order to minimize errors due to loss of moisture, the percent moisture was determined at the earliest opportunity. Attempts to dry the sample before analysis resulted in approximately a tenfold increase in radiation levels. In order to reduce and control radiation exposure to laboratory personnel, the samples were not dried before aliquoting and digestion. This may result in some laboratory results being biased high.

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

SAMPLING DATA

Single Shell Tank Waste Characterization
Summary of Core Sample

TANK ID:	241-U-110
RISER ID:	#7
CORE ID:	#007

DATE SAMPLING INITIATED:	11-15-89
DATE SAMPLING COMPLETED:	11-16-89

SEGMENT		
1	Lab Serial No.	F0197
	Customer ID No.	89-046
	Last Segment?	NO
2	Lab Serial No.	F0125
	Customer ID No.	89-047
	Last Segment?	NO
3	Lab Serial No.	F0149
	Customer ID No.	89-048
	Last Segment?	NO
4	Lab Serial No.	F0173
	Customer ID No.	89-049
	Last Segment?	YES
5	Lab Serial No.	
	Customer ID No.	
	Last Segment?	
6	Lab Serial No.	
	Customer ID No.	
	Last Segment?	
7	Lab Serial No.	
	Customer ID No.	
	Last Segment?	

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

SST-1 Rev. D 9/25/90 Interim

Single Shell Tank
Core Composite

Lab Segment Serial #:	F0971	Customer ID:	Core 000007

Simi-Volatile Organic Analysis

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

Particle Size Distribution Analysis

Particle Size Sample	Lab Serial #: N/A	Date Sampled: N/A

Homogenized Solids

Undigested Solids Analysis

Laboratory Serial Number for Sample:	F0893	Date Sampled: 02-06-90
Laboratory Serial Number of Duplicate Sample:	F0894	

Fusion Analysis of Solids

Laboratory Serial Number for Sample:	F0977	Date Sampled: 02-06-90
Laboratory Serial Number of Duplicate Sample:	F0978	
Laboratory Serial Number of Spiked Sample:	F0979	

Acid Digestion Analysis of Solids

Laboratory Serial Number for Sample:	F0989	Date Sampled: 02-06-90
Laboratory Serial Number of Duplicate Sample:	F0990	
Laboratory Serial Number of Spiked Sample:	F0991	

Water Digestion Analysis of Solids

Laboratory Serial Number for Sample:	F0983	Date Sampled: 02-06-90
Laboratory Serial Number of Duplicate Sample:	F0984	
Laboratory Serial Number of Spiked Sample:	F0985	

Laboratory Notebook Reference	WHC-N-313-4	20
	Notebook No.	Page No.

SST-17 Rev. C 9/25/90 Interim

SAMPLE DATA SUMMARY

Analytical Laboratory Data Summary

SINGLE SHELL TANK PROJECT

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

Core 7 Composite Sample
Tank 241-U-110

UNTREATED SAMPLE RESULTS

	Sample	Duplicate
pH	12.33	12.99
% H20	23.79%	27.83%
Mercury	4.43 ug/g	1.26 ug/g
Cyanide	<1.0 ug/g	<1.0 ug/g
Carbon 14	This Analysis was not completed	

DATA SUMMARY

Sample units are Wet Weight

Core 7 Composite
Fusion Dissolution

Tank: 241-U-110

Customer ID: Core Composite 7

Radiological Analysis

	Sample		Duplicate Sample	
Fusion	3.02	g/L	3.57	g/L
Total Alpha	1.64E-01	uci/g	2.11E-01	uci/g
Total Beta	6.13E+02	uci/g	6.39E+02	uci/g
GEA Cs-137	1.81E+01	uci/g	1.74E+01	uci/L
Uranium	3.91E+03	ug/g	4.26E+03	ug/g
Plutonium	1.82E-01	uci/g	2.08E-01	uci/g
Americium 241	6.16E-02	uci/g	6.83E-02	uci/g
Neptunium	<3.58E-01	uci/g	<3.03E-01	uci/g
Technetium 99	<6.22E-03	uci/g	<5.24E-03	uci/g
Iodine 129	<1.07E-02	uci/g	<9.47E-03	uci/g
Strontium 90	2.91E+02	uci/g	2.46E+02	uci/g

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

ICP Results

	Sample	Duplicate
Aluminum	52011 ug/g	61606 ug/g
Antimony	LT	LT
Barium	27 ug/g	22 ug/g
Beryllium	LT	LT
Bismuth	6055 ug/g	6686 ug/g
Boron	50 ug/g	LT
Cadmium	LT	LT
Calcium	758 ug/g	1690 ug/g
Cerium	669 ug/g	480 ug/g
Chromium	120 ug/g	138 ug/g
Copper	112 ug/g	143 ug/g
Europium	12 ug/g	8 ug/g
Iron	3859 ug/g	4396 ug/g
Lanthanum	LT	LT
Lead	93 ug/g	323 ug/g
Lithium	LT	LT
Magnesium	303 ug/g	806 ug/g
Manganese	708 ug/g	799 ug/g
Mercury	LT	LT
Molybdenum	32 ug/g	29 ug/g
Neodymium	LT	LT
Nickel	2356 ug/g	2207 ug/g
Samarium	726 ug/g	530 ug/g
Selenium	364 ug/g	365 ug/g
Silicon	3364 ug/g	3988 ug/g
Silver	LT	LT
Sodium	33649 ug/g	37361 ug/g
Strontium	135 ug/g	182 ug/g
Sulfur	159 ug/g	144 ug/g
Tantalum	102 ug/g	LT
Thallium	5577 ug/g	6924 ug/g
Thorium	1516 ug/g	3422 ug/g
Tin	49 ug/g	55 ug/g
Titanium	28 ug/g	25 ug/g
Vanadium	56 ug/g	LT
Zinc	55 ug/g	72 ug/g
Zirconium	113 ug/g	78 ug/g

DATA SUMMARY

Units For Samples Are Wet Weight

Core 7 Composite
Water Digestion

Tank: 241-U-110
Customer Id.: Core 7 Composite

	Sample	Duplicate
pH of Digested Solution		
pH	10.97	10.55

Anion Analysis

Fluoride	6.01E+03	ug/g	5.79E+03	ug/g
Chloride	7.62E+02	ug/g	1.12E+03	ug/g
Nitrate	2.81E+04	ug/g	2.83E+04	ug/g
Phosphate	3.94E+04	ug/g	3.30E+04	ug/g
Sulfate	<2.04E+3	ug/g	<2.10E+3	ug/g
Total Organic Carbon	1.09E+03	ug/g	8.76E+02	ug/g
Ammonia	<1.73E+03	ug/g	<1.64E+03	ug/g
Carbonate	5.25E+03	ug/g	5.12E+03	ug/g
Nitrite	3.76E+03	ug/g	5.94E+03	ug/g

Radiological Analysis

Total Alpha	1.46E-03	uci/g	7.00E-04	uci/g
Total Beta	3.49	uci/g	4.04	uci/g
GEA Cs-137	2.16	uci/g	2.09	uci/g
Americium 241	<2.31E-03	uci/g	<1.49E-03	uci/g
Carbon 14	<1.14E-04	uci/g	<1.13E-04	uci/g
Iodine 129	<2.86E-03	uci/g	<5.10E-03	uci/g
Neptunium 237	<1.13E-01	uci/g	<1.07E-01	uci/g
Plutonium	1.54E-03	uci/g	<8.58E-04	uci/g
Strontium	4.19E-01	uci/g	2.72E-01	uci/g
Technetium 99	2.86E-03	uci/g	3.24E-03	uci/g
Tritium	<1.14E-03	uci/g	<1.12E-03	uci/g

Atomic Absorption Spectroscopy

Arsenic	2.50E-01	ug/g	3.83E-01	ug/g
Mercury	3.68E-02	ug/g	<1.69E-01	ug/g
Selenium	<5.06E-01	ug/g	<4.98E-01	ug/g

ICP Results

	Sample	Duplicate
Aluminum	2533 ug/g	2243 ug/g
Antimony	LT	LT
Barium	LT	LT
Beryllium	LT	LT
Boron	294 ug/g	269 ug/g
Cadmium	LT	LT
Calcium	219 ug/g	104 ug/g
Cerium	LT	LT
Chromium	163 ug/g	164 ug/g
Cobalt	LT	LT
Copper	LT	LT
Europium	LT	LT
Iron	LT	41 ug/g
Lanthanum	LT	LT
Lithium	LT	LT
Magnesium	288 ug/g	708 ug/g
Manganese	LT	LT
Mercury	36 ug/g	34 ug/g
Molybdenum	LT	LT
Neodymium	LT	LT
Nickel	LT	LT
Potassium	LT	LT
Selenium	LT	LT
Silver	LT	LT
Sodium	57752 ug/g	18219 ug/g
Strontium	LT	LT
Sulfur	112 ug/g	225 ug/g
Tantalum	LT	LT
Thallium	LT	1044
Tin	LT	LT
Titanium	LT	LT
Vanadium	LT	LT
Zinc	11 ug/g	23 ug/g
Zirconium	LT	LT

DATA SUMMARY

Units For Samples Are Wet Weight

Core 7 Composite
Acid Digestion

Tank: 241-U-110
Customer Id.: Core 7 Composite

Atomic Absorption Spectroscopy

Hydride Analysis

	Sample		Duplicate	
Arsenic	3.11E-01	ug/g	4.38E-01	ug/g
Mercury	1.05	ug/g	1.53	ug/g
Selenium	<3.70	ug/g	<5.20	ug/g

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

ICP Results

	Sample	Duplicate
Aluminum	144784 ug/g	136021 ug/g
Antimony	LT	667 ug/g
Arsenic	114 ug/g	200 ug/g
Barium	27 ug/g	43 ug/g
Beryllium	LT	2 ug/g
Bismuth	8829 ug/g	12220 ug/g
Boron	LT	LT
Cadmium	LT	21 ug/g
Calcium	354 ug/g	321 ug/g
Cerium	LT	1082 ug/g
Chromium	344 ug/g	443 ug/g
Cobalt	LT	283 ug/g
Copper	290 ug/g	299 ug/g
Europium	LT	17 ug/g
Iron	8568 ug/g	9064 ug/g
Lead	284 ug/g	674 ug/g
Lithium	LT	25 ug/g
Magnesium	346 ug/g	320 ug/g
Manganese	2389 ug/g	2148 ug/g
Mercury	1032 ug/g	647 ug/g
Molybdenum	41 ug/g	78 ug/g
Neodymium	LT	LT
Nickel	80 ug/g	127 ug/g
Phosphorous	8209 ug/g	18341 ug/g
Potassium	LT	1611 ug/g
Samarium	LT	949 ug/g
Selenium	706 ug/g	1041 ug/g
Silver	LT	80 ug/g
Sodium	60976 ug/g	83949 ug/g
Strontium	358 ug/g	330 ug/g
Sulfur	159 ug/g	247 ug/g
Tantalum	LT	237 ug/g
Thallium	572 ug/g	4972 ug/g
Thorium	107 ug/g	2326 ug/g
Tin	95 ug/g	163 ug/g
Titanium	40 ug/g	71 ug/g
Vanadium	32 ug/g	63 ug/g
Zinc	1284 ug/g	81 ug/g
Zirconium	61 ug/g	191 ug/g

PHYSICAL TEST RESULTS

Analytical Batch

Lab Segment Serial #: F0971

Customer ID: 000007

Instrument	WA63090/WA58053
Procedure/Rev	L1-000-200
Technologist	D. B. Bechtold
Date	03-08-90, 03-12-90
Temperature	N/A
Starting Time	0912 03-08-90
Ending Time	1304 03-12-90
Chemist	D. B. Bechtold

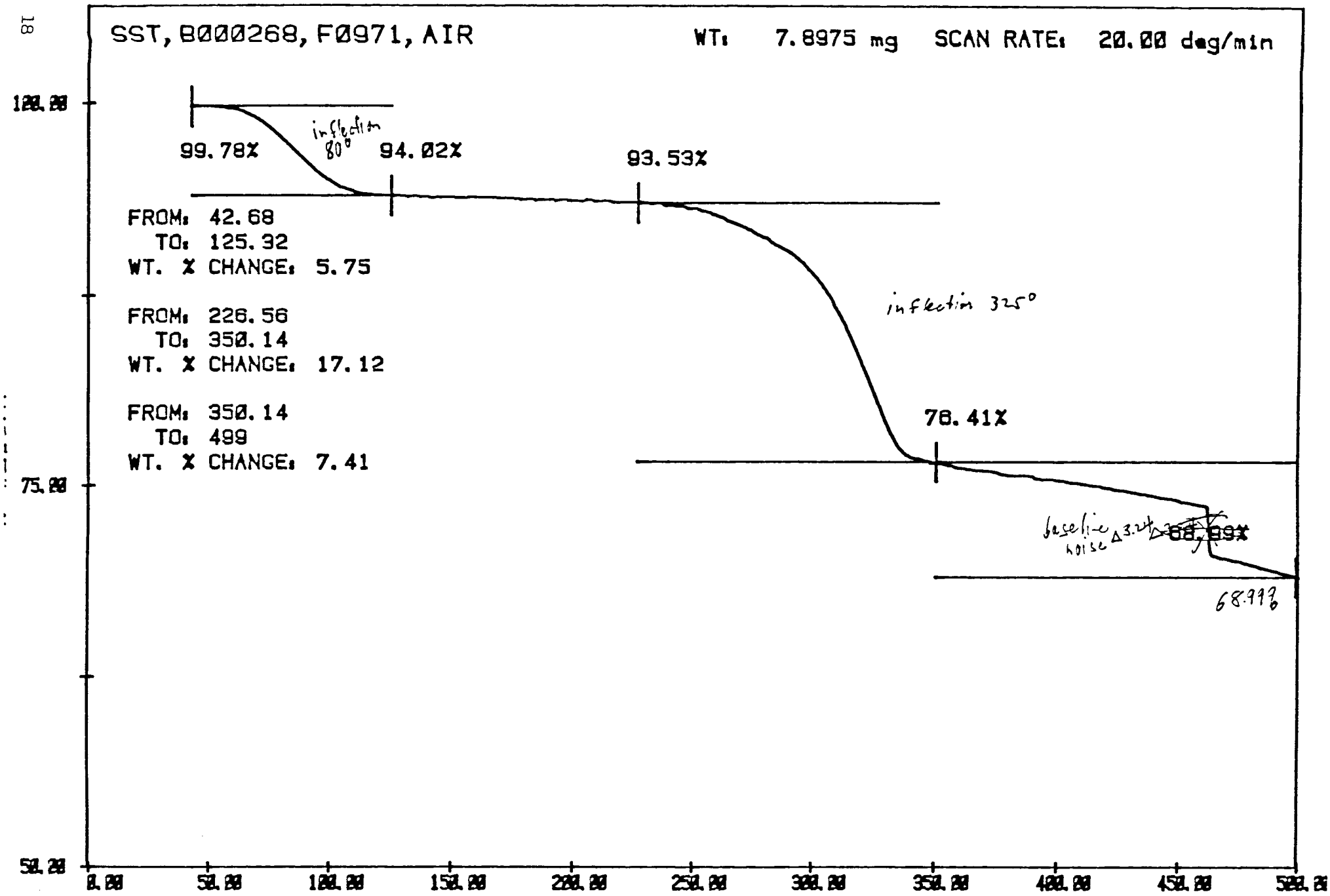
Thermographic/Differential Scanning Calorimeter Analysis

	Description	Lab ID
1	Thermographic Analysis	F0971
2	Diff. Scanning Calorimeter	F0971
3		
4		
5		
6		
7		
8		
9		
10		
11		

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

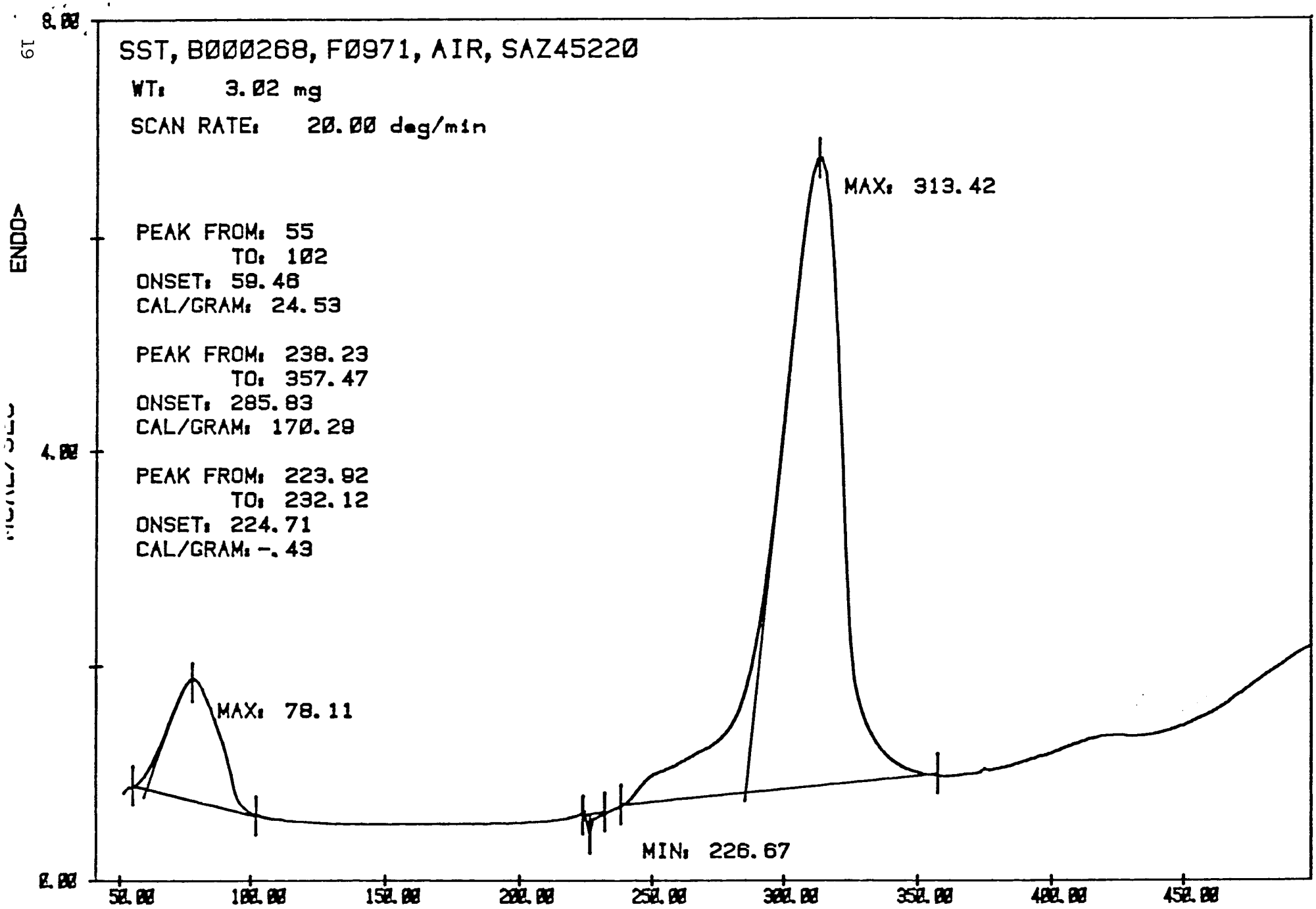
Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Bk# & Alqt.Vol.	Final Vol. of Std.
N/A				

SST-102 Rev. G 9/21/90 Interim



DBR, SBK FILE: F0971. TG

DATE: 90/03/12 TIME: 13:04



DBB/SBK FILE: F0971.D4

DATE: 90/03/08 TIME: 09:12

UNDIGESTED SAMPLE ANALYSIS RESULTS

Single Shell Tank Project

Undigested Sample
Analysis Results
Units For Samples Are Wet Weight

Tank: 241-U-110
Core: 7
Segment: F0971
Customer ID: Core Composite 7

	Check Standard	Blank		Sample		Duplicate Sample		Spike of Sample	Check Standard
Laboratory ID:	F0969	F0970		F0971		F0972		N/A	F0974
pH	100.70%	6.72		12.33		12.99		N/A	100.20%
Laboratory ID:	F0969	F0970		F0971		F0972		N/A	F0974
% Water	96.80%	-6.40	mg	23.79%		27.83%		N/A	96.50%
Laboratory ID:	F0969	F0970		F0971		F0972		F0973	F0974
Mercury	101.60%	<1.00E-02	ug/g	4.43	ug/g	1.26	ug/g	66.80%	88.10%
Laboratory ID:	F0969	F0970		F0971		F0972		F0973	F0974
Cyanide	100.90%	0.3	ug	<1.0	ug/g	<1.0	ug/g	93.80%	99.50%

Analytical Batch

Lab Segment Serial #: F0971

Customer ID: 000007

pH analysis of the solid sample

Instrument	A110653
Procedure/Rev	LA-212-103/A-3
Technologist	M. Franz
Date	Feb. 08, 1990
Temperature	22.9 C
Starting Time	0800
Ending Time	1330
Chemist	R. E. Brandt

	Description	Lab ID
1	Initial LMCS Check Std.	F0969
2	Reagent Blank	F0970
3	Sample Composite 7	F0971
4	Duplicate Sample Composite 7	F0972
5	Final LMCS Check Std.	F0974
6		
7		
8		
9		
10		
11		

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

Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Bk# & Alqt. Vol.	Final Vol. of Std.
LMCS Check Std.	72C11/1.0 ml			1.0 ml

SST-102 Rev. G 9/21/90 Interim

Analytical Batch

Lab Segment Serial #: F0971

Customer ID: 000007

Instrument	N/A
Procedure/Rev	LA-564-101/D-0
Technologist	R. Hale
Date	Feb. 14, 1990
Temperature	120 C
Starting Time	1000 02-07-90
Ending Time	1400 02-08-90
Chemist	R. E. Brandt

Percent Water

Undigested Sample

	Description	Lab ID
1	Initial LMCS Check Std.	F0969
2	Reagent Blank	F0970
3	Sample Composite 7	F0971
4	Duplicate Sample Composite 7	F0972
5	Final LMCS Check Std.	F0974
6		
7		
8		
9		
10		
11		

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

Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Bk# & Alqt. Vol.	Final Vol. of Std.
LMCS Check Std.	11C11AH/1.0 g			1.0 g

SST-102 Rev. G 9/21/90 Interim

Analytical Batch

Lab Segment Serial #: F0971

Customer ID: 000007

Instrument	Perkin-Elmer
Procedure/Rev	LA-325-102/A-2
Technologist	M. Myers
Date	July 17, 1990
Temperature	22 C
Starting Time	1100
Ending Time	1200
Chemist	R. K. Fuller

Mercury Analysis
Undigested Sample

	Description	Lab ID
1	Initial LMCS Check Std.	F0969
2	Reagent Blank	F0970
3	Sample	F0971
4	Duplicate Sample	F0972
5	Spike	F0973
6	Final LMCS Check Std.	F0974
7		
8		
9		
10		
11		

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

Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Bk# & Alqt. Vol.	Final Vol. of Std.
LMCS Check Std.	58C11-CE/25 ul			25ml
Spike	58C11-CE/15 ul	F0971/0.0136 g		25 ml

SST-102 Rev. G 9/21/90 Interim

Single Shell Tank
Calibration Record

Analyte:	Hg		
Procedure:	LA-325-102	Revision:	A-2
Instrument:	Perkins Elmer	Property Number:	WA77479
Technologist:	Melanie Myers	Payroll Number:	6C823
Date:	July 17, 1990		

Calibration Standard ID: 102C3.AG

Analyte Concentration: 1.00ppm

Type of Calibration: Linear Regression

Aliquot	Weight	Instrument Reading Units= mm
0ul	0ng	1.50
10ul	10ng	33.00
20ul	20ng	58.00
40ul	40ng	105.00

Comments:

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

****
** JET_WT ** REV 0 **
****

SEQUENCE # : 225
WT 1: 26.9426
WT 2: 26.9650

972

NET WEIGHT:

---> 0.0224 GRAMS

07/13/90 @ 08:05:33
****

****
** JET_WT ** REV 0 **
****

SEQUENCE # : 226
WT 1: 26.4964
WT 2: 26.5100

974

NET WEIGHT:

---> 0.0136 GRAMS

07/13/90 @ 08:09:21
****

****
[illegible]

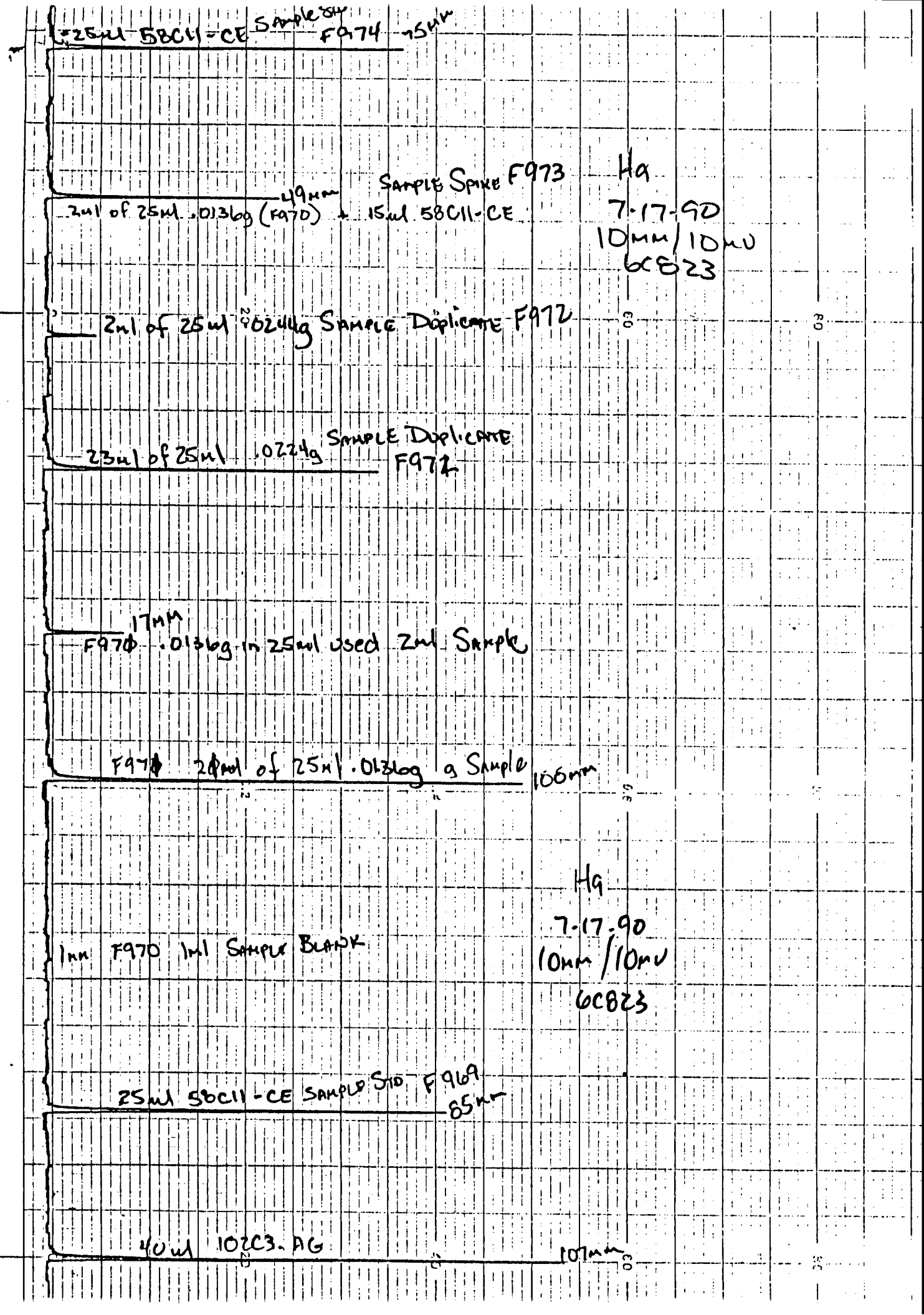
SE[illegible]ICE # [illegible]7
WT [illegible] 27.0[illegible]
WT [illegible] 27.0[illegible]

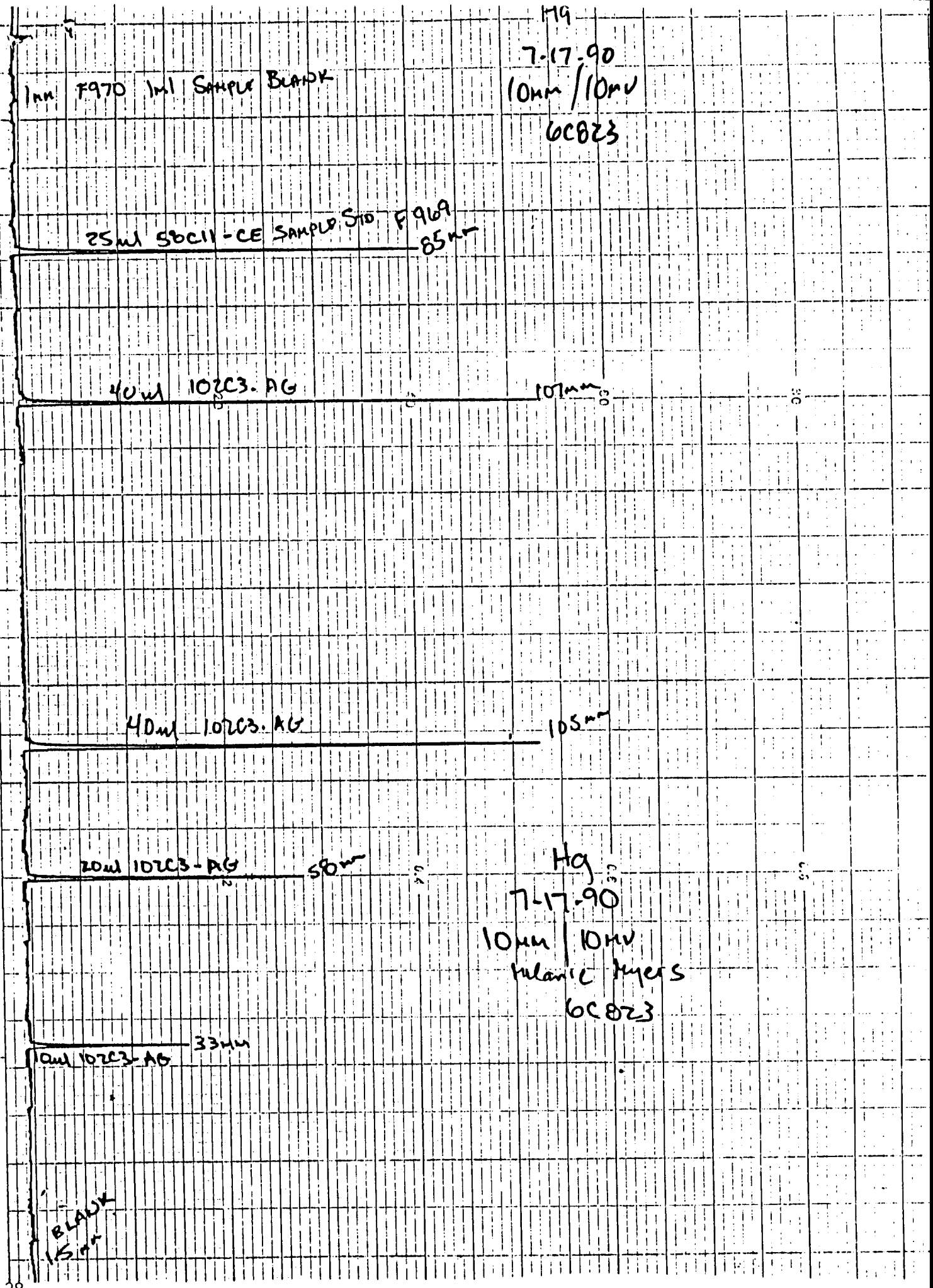
973

NET WEIGHT:

---> 0.0129 GRAMS

07/13/90 @ 08:17:20
****


25ul 58C11-CE Sample Std F974 75mm
49mm Sample Spike F973
2ml of 25ml .0136g (F970) + 15ul 58C11-CE
Hg
7-17-90
10mm/10mV
6C823
2ml of 25ml .0244g Sample Duplicate F972
23ml of 25ml .0224g Sample Duplicate F972
17mm
F970 .0136g in 25ml used 2ml Sample
F970 20ml of 25ml .0136g g Sample 100mm
Hg
7-17-90
10mm/10mV
6C823
1mm F970 1ml Sample Blank
25ul 58C11-CE Sample Std F969
85mm
40ul 102C3-AG
107mm


Hg
7-17-90
10mm / 10mV
6C823
1mm F970 1ml Sample Blank
25ml 58C11-CE Sample Std F969
85mm
40ml 102C3-AG
107mm
40ml 102C3-AG
105mm
20ml 102C3-AG
58mm
Hg
7-17-90
10mm | 10mV
Atlantic Myers
6C823
10ml 102C3-AG
33mm
Blank
15mm

Analytical Batch

Lab Segment Serial #: F0971

Customer ID: 000007

Cyanide Analysis

Instrument	WA66684
Procedure/Rev	LA-695-101/A-2
Technologist	Ed Colvin
Date	March 07, 1990
Temperature	N/A
Starting Time	0900 03-05-90
Ending Time	1400 03-07-90
Chemist	S. A. Catlow

	Description	Lab ID
1	Initial LMCS Check Std.	F0969
2	Reagent Blank	F0970
3	Sample Composite 7	F0971
4	Duplicate Sample Composite 7	F0972
5	Spike Composite 7	F0973
6	Final LMCS Check Std.	F0974
7		
8		
9		
10		
11		

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

Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Bk# & Alqt. Vol.	Final Vol. of Std.
LMCS Check Std.	75C11-C/10.0 ul			50 ml
Spike	75C11-C/10.0 ul	F0971/0.4042g		50 ml

SST-102 Rev. G 9/21/90 Interim

Single Shell Tank
Calibration Record

ANALYTE:	CN-		
PROCEDURE:	LA-695-101	REVISION:	A-1
INSTRUMENT:	Baush & Lomb Spectronic 21	PROPERTY NUMBER:	WA66684
TECHNOLOGIST:	R.Brandt	PAYROLL NUMBER:	69090
DATE:	July 20, 1989		

CALIBRATION STANDARD ID: 88C15C

ANALYTE CONCENTRATION: 817 ug/ml

TYPE OF CALIBRATION: Least Square Linear Regression

Dilution	Concentration	Instrument Reading Units= Abs.
Blank	0	0.016
100 ul	81.7 ug	0.091
200 ul	163.4 ug	0.150
500 ul	408.5 ug	0.354
1000 ul	817.0 ug	0.663
2000 ul	1634.0 ug	1.275
3000 ul	2451.0 ug	1.720

COMMENTS: Y - intercept - 0.01682

Slope - 0.076317

Correlation Coefficient - 0.999874

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

KOH FUSION RESULTS

Single Shell Tank Project

Core 7 Composite
Fusion Analysis
Units For Samples Are Wet Weight

Tank: 241-U-110
Core: 7
Segment: F0971
Customer ID: Core Composite 7

	Check Standard	Blank	Sample	Duplicate Sample	Spike of Sample	Check Standard
Laboratory ID:	N/A	F0976	F0977	F0978	N/A	N/A
Fusion	N/A	N/A	3.02 g/L	3.57 g/L	N/A	g/L
Laboratory ID:	F0975	F0976	F0977	F0978	F0979	F0989
Total Alpha	102.10%	<1.60E-04 uci/L	1.64E-01 uci/g	2.11E-01 uci/g	91.70%	95.50%
Total Beta	103.50%	<1.30E-03 uci/L	6.13E+02 uci/g	6.39E+02 uci/g	150.48%	100.98%
Laboratory ID:	F0975	F0976	F0977	F0978	F0979	F0980
GEA Cs-137	103.60%	<5.19E-02 uci/L	1.81E+01 uci/g	1.74E+01 uci/g	95.50%	102.80%
Laboratory ID:	F0975	F0976	F0977	F0978	F0979	F0980
Uranium	99.50%	<3.59E-07 g/L	3.91E+03 ug/g	4.26E+03 ug/g	*	99.50%
Laboratory ID:	F0975	F0976	F0977	F0978	F1027	F1028
Plutonium	115.10%	2.45E-02 uci/L	1.82E-01 uci/g	2.08E-01 uci/g	109.90%	102.50%
Laboratory ID:	F0975	F0976	F0977	F0978	F1033	F1034
Americium 241	107.10%	<3.52E-02 uci/L	6.16E-02 uci/g	6.83E-02 uci/g	108.30%	108.10%
Laboratory ID:	F0897	F0898	F0977	F0978	F0979	F0980
Neptunium	80.50%	<1.08 uci/L	<3.58E-01 uci/g	<3.03E-01 uci/g	71.20%	63.30%
Laboratory ID:	F0975	F0976	F0977	F0978	F0979	F0980
Technetium 99	116.00%	<1.83E-02 uci/L	<6.22E-03 uci/g	<5.24E-03 uci/g	97.70%	90.30%
Laboratory ID:	F0975	F0976	F0977	F0978	F0979	F0980
Iodine 129	95.70%	<3.22E-02 uci/L	<1.07E-02 uci/g	<9.47E-03 uci/g	97.70%	90.30%
Laboratory ID:	F0975	F0976	F0977	F0978	F0979	F0980
Strontium 90	102.50%	6.36E-02 uci/L	2.91E+02 uci/g	2.46E+02 uci/g	114.60%	101.60%

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

ICP Results Data Summary

Date Analyzed:	April 20,1990	Reagent Blank	F0976
Procedure:	LA-505-151/A-0	Core 7 Composite	F0977
Analyst:	J. A. White	Duplicate of Core 7 Composite	F0978
Digestion	Acid Digestion	Spike of Core 7 Composite	F0979
Procedure:	LA-505-159/A-0		

	Instrument Starting LMCS Standard %	Acid Digest. LMCS Standard %	Reagent BLANK ppm	Wet Weight Sample ug/g	Wet Weight Sample Duplicate ug/g	Spike Recovery %	LMCS ACID Digestion %	Closing LMCS Standard %
Aluminum	103.23%	NOT RUN	-0.78 LT	52011	61606		NOT RUN	101.37%
Antimony	100.45%		-2.24 LT	160 LT	223 LT	85.43%		99.82%
Barium	97.11%		-0.03 LT	27	22	92.43%		96.95%
Beryllium	97.96%		-0.01 LT	1 LT	0 LT			98.10%
Bismuth	106.18%		-0.62 LT	6055	6686			107.82%
Boron	98.16%		0.07 LT	50	16 LT	92.28%		98.20%
Cadmium	100.20%		-0.05 LT	8 LT	6 LT	95.05%		99.97%
Calcium	99.66%		1.65	758	1690	97.02%		99.49%
Cerium	91.19%		-1.75 LT	669	480	41.86%		92.81%
Chromium	92.49%		-0.10 LT	120	138	87.23%		91.85%
Copper	99.05%		-0.20 LT	112	143	92.64%		98.94%
Europium	98.44%		-0.02 LT	12	8			99.95%
Iron	99.15%		0.10 LT	3859	4396	98.09%		99.27%
Lanthanum	93.83%		-0.31 LT	35 LT	44 LT			95.34%
Lead	105.10%		-1.47 LT	93	323			106.36%
Lithium	95.70%		-1.50 LT	-122 LT	-123 LT	83.23%		95.69%
Magnesium	100.11%		1.19	303	806	105.33%		100.45%
Manganese	99.23%		0.03 LT	708	799	95.58%		98.78%
Mercury	107.34%		0.01 LT	10 LT	11 LT			105.06%
Molybdenum	101.02%		-0.02 LT	32	29			98.62%
Neodymium	92.52%		-1.14 LT	545 LT	630 LT	68.62%		90.79%
Nickel	99.44%		18.11	2356	2207	95.17%		99.49%
Potassium	99.70%		NA	0	0	0.00%		101.87%
Samarium	100.68%		-1.93 LT	726	530			102.43%
Selenium	107.43%		-0.63 LT	364	365			105.43%
Silicon	92.44%		1.09	3364	3988			90.62%
Silver	105.03%		-0.14 LT	42 LT	29 LT			106.65%
Sodium	96.81%		10.66	33649	37361	94.32%		96.99%
Strontium	98.22%		-0.01 LT	135	182	94.60%		98.34%
Sulfur	106.14%		0.03 LT	159	144			105.95%
Tantalum	100.56%		-0.31 LT	102	74 LT			98.56%
Thallium	107.92%		-0.09 LT	5577	6924			107.06%
Thorium	105.08%		-2.62 LT	1516	3422			106.97%
Tin	97.87%		0.07 LT	49	55	93.82%		98.31%
Titanium	103.51%		-0.08 LT	28	25			101.17%
Vanadium	99.71%		0.05 LT	56	33 LT			98.46%
Zinc	98.83%		0.09	55	72	94.44%		98.97%
Zirconium	101.83%		-0.20 LT	113	78			99.75%

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

Single Shell Tank Project

Core 7 Composite
Fusion Analysis
Results On Laboratory Digestions

Tank: 241-U-110
Core: 7
Segment: F0971
Customer ID: Core Composite 7

	Check Standard	Blank		Sample		Duplicate Sample		Spike of Sample	Check Standard
Laboratory ID:	N/A	F0976		F0977		F0978		N/A	N/A
Fusion	N/A	N/A		3.02	g/L	3.57	g/L	N/A	N/A
Laboratory ID:	F0975	F0976		F0977		F0978		F0979	F0980
Total Alpha	102.10%	<1.60E-04	uci/L	4.96E-01	uci/L	7.54E-01	uci/L	91.70%	95.50%
Total Beta	103.50%	<1.30E-03	uci/L	1.85E+03	uci/L	2.28E+03	uci/L	150.48%	100.98%
Laboratory ID:	F0975	F0976		F0977		F0978		F0979	F0980
GEA Cs-137	103.60%	<5.19E-02	uci/L	5.48E+01	uci/L	6.21E+01	uci/L	95.50%	102.80%
Laboratory ID:	F0975	F0976		F0977		F0978		F0979	980
Uranium	99.50%	<3.59E-07	g/L	1.18E-02	g/L	1.52E-02	g/L	*	99.50%
Laboratory ID:	F0975	F0976		F0977		F0978		F1027	F1028
Plutonium	115.10%	2.45E-02	uci/L	5.51E-01	uci/L	7.44E-01	uci/L	109.90%	102.50%
Laboratory ID:	F0975	F0976		F0977		F0978		F1033	F1034
Americium 241	107.10%	<3.52E-02	uci/L	1.86E-01	uci/L	2.44E-01	uci/L	108.30%	108.10%
Laboratory ID:	F0897	F0898		F0977		F0978		F0979	F0980
Neptunium 237	80.50%	<1.08	uci/L	<1.08	uci/L	<1.08	uci/L	71.20%	63.30%
Laboratory ID:	F0975	F0976		F0977		F0978		F0979	F0980
Technetium 99	116.00%	<1.83E-02	uci/L	<1.88E-02	uci/L	<1.87E-02	uci/L	114.70%	112.40%
Laboratory ID:	F0975	F0976		F0977		F0978		F0979	F0980
Iodine 129	95.70%	<3.22E-02	uci/L	<3.22E-02	uci/L	<3.38E-02	uci/L	97.70%	90.30%
Laboratory ID:	F0975	F0976		F0977		F0978		F0979	F0980
Strontium 90	102.50%	6.36E-02	uci/L	8.79E+02	uci/L	8.79E+02	uci/L	114.60%	101.60%

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

Analytical Batch

Lab Segment Serial #: F0971

Customer ID: 000007

KOH Fusion Dissolution

Instrument	N/A
Procedure/Rev	LA-549-141/A-1
Technologist	R. Hale
Date	Feb. 12, 1990
Temperature	450 C
Starting Time	1300
Ending Time	1400
Chemist	S. A. Catlow

	Description	Lab ID
1	Initial LMCS Check Std.	N/A
2	Reagent Blank	F0976
3	Sample Composite 7	F0977
4	Duplicate Sample Composite 7	F0978
5		
6		
7		
8		
9		
10		
11		

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

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

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

Analytical Batch

Lab Segment Serial #: F0971

Customer ID: 000007

Instrument	HW45676
Procedure/Rev	LA-508-101/C-2
Technologist	M. Franz
Date	Feb. 14, 1990
Temperature	N/A
Starting Time	0800
Ending Time	0930
Chemist	S. A. Catlow

Total Alpha and Total Beta
Fusion Dissolution
Detector #14

	Description	Lab ID
1	Initial LMCS Check Std.	F0975
2	Reagent Blank	F0976
3	Sample Composite 7	F0977
4	Duplicate Sample Composite 7	F0978
5	Spike Composite 7	F0979
6	Final LMCS Check Std.	F0989
7		
8		
9		
10		
11		

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

Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Bk# & Alqt. Vol.	Final Vol. of Std.
LMCS Check Std.	102B44/10ml			N/A
Spike	102B44/10ml	F0977/5.0 ul		N/A

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

Single Shell Tank

Calibration Record

ANALYTE:	Am^{241}		
PROCEDURE:	LQ-508-002	REVISION:	A-0
INSTRUMENT:	Detector #14	PROPERTY NUMBER:	WA45709
TECHNOLOGIST:	R.A. Jones	PAYROLL NUMBER:	65801
DATE:	November 28,1988		
CALIBRATION STANDARD ID:	36B40A8; 36B40B7; 36B40C7; 36B40A3; 36B40B3; 36B40C3; 36B40A6;36B40B6; 36B40C5		
ANALYTE CONCENTRATION:	N/A		
TYPE OF CALIBRATION:	Efficiency		

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

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

DETECTOR No. 14

TIME ZERO DATE (HD): 15897

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

DATE COUNTED (HD): 16135

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

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

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

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

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

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

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

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

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

5" = 0.2228

Single Shell Tank

Calibration Record

ANALYTE:	Co^{60}		
PROCEDURE:	LQ-508-002	REVISION:	A-0
INSTRUMENT:	Detector #14	PROPERTY NUMBER:	WA57276
TECHNOLOGIST:	R.A. Jones	PAYROLL NUMBER:	65801
DATE:	November 28, 1988		
CALIBRATION STANDARD ID:	32B40A8; 32B40B7; 32B40C7; 32B40A4; 32B40B3; 32B40C4; 32B40A5; 32B40B6; 32B40C5		
ANALYTE CONCENTRATION:	N/A		
TYPE OF CALIBRATION:	Efficiency		

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

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

DETECTOR No. 14

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

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

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

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

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

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

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

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

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

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

5" = 0.2577

Analytical Batch

Lab Segment Serial #: F0971

Customer ID: 000007

Instrument	WA77228/401934
Procedure/Rev	LA-548-121/C-1
Technologist	M. Franz
Date	Feb. 13, 1990
Temperature	N/A
Starting Time	1000
Ending Time	1130
Chemist	S. A. Catlow

GEA Analysis
Fusion Dissolution
Samples are run in batch, but counted randomly.
Detectors #2 & #3

	Description	Lab ID
1	Initial LMCS Check Std.	F0975
2	Reagent Blank	F0976
3	Sample Composite 7	F0977
4	Duplicate Sample Composite 7	F0978
5	Spike Composite 7	F0979
6	Final LMCS Check Std.	F0980
7		
8		
9		
10		
11		

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

Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Bk# & Alqt. Vol.	Final Vol. of Std.
LMCS Check Std.	89B44/500 uL			22 mL
Spike	89B44/500 uL	F0977/100 uL		22 mL

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

```
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*                                                                     *
*          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                                  08-OCT-90  13:52:42


                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: SD2010
ANALYZED BY:        DM

SAMPLE DESCRIPTION: F-975 SEG.COMP#7
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 13-FEB-90 AT 14:56:53

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 08-OCT-90 13:52:42

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	1127.54	563.40	1.53	561.	544.	13.4	CS-134, EU-152
2C	1139.68	569.47	1.53	536.	1028.	10.9	CS-134, BI-207
3	1210.43	604.84	1.62	525.	6083.	2.8	CS-134
4	1324.25	661.74	1.67	389.	9158.	2.2	CS-137
4B		661.85			36.	13.9	
5C	1592.48	795.84	1.68	302.	4110.	3.8	CS-134
6C	1604.68	801.93	1.68	249.	443.	12.6	CS-134
7	2347.04	1173.08	2.01	246.	3670.	3.5	CO-60
8	2665.48	1332.28	2.18	37.	3503.	3.4	CO-60
8B		1332.24			9.	37.4	
9	2730.73	1364.91	2.24	22.	105.	24.4	CS-134
10	2922.26	1460.67	2.92	15.	160.	17.6	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 08-OCT-90 13:52:42

SAMPLE: F-975 SEG.COMP#7
DATA COLLECTED ON 13-FEB-90 AT 14:56:53
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

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

NUCLIDE	ACTIVITY CONCENTRATION IN uCi/LI				ENERGY COMPARISON (KEV)	
	MEASURED	ERROR	DECAY CORRECTED	ERROR	EXPECT	DIFF
AC-228	LLD<1.18E+00		LLD<1.18E+00		911.07	
AG-108M	LLD<2.86E-01		LLD<2.86E-01		433.94	
AG-110M	LLD<1.39E+00		LLD<1.39E+00		657.76	
AM-241	LLD<1.31E+00		LLD<1.31E+00		59.54	
AM-243	LLD<3.45E-01		LLD<3.45E-01		74.67	
AR-41	LLD<2.22E-01		LLD<2.22E-01		1293.64	
AU-198	LLD<2.54E-01		LLD<2.54E-01		411.80	
BA-133	LLD<3.42E-01		LLD<3.42E-01		356.02	
BA-139	LLD<7.17E-01		LLD<7.17E-01		165.85	
BA-140	LLD<1.02E+00		LLD<1.02E+00		537.27	
BA-141	LLD<7.05E-01		LLD<7.05E-01		190.23	
BE-7	LLD<2.38E+00		LLD<2.38E+00		477.59	
BI-207	LLD<2.65E-01		LLD<2.65E-01		569.70	
BI-212	LLD<3.57E+00		LLD<3.57E+00		727.27	
BI-214	LLD<2.05E+00		LLD<2.05E+00		609.32	
CD-109	LLD<4.32E+00		LLD<4.32E+00		88.03	
CE-139	LLD<1.62E-01		LLD<1.62E-01		165.85	
CE-141	LLD<2.66E-01		LLD<2.66E-01		145.44	
CEPR144	LLD<2.09E+00		LLD<2.09E+00		133.51	
CO-56	LLD<2.50E-01		LLD<2.50E-01		846.76	
CO-57	LLD<1.36E-01		LLD<1.36E-01		122.06	
CO-58	LLD<2.29E-01		LLD<2.29E-01		810.75	
CO-60	2.29E+01	+-8.23E-01	2.29E+01	+-8.23E-01	1332.50	-0.22
					1173.24	-0.16
CR-51	LLD<1.95E+00		LLD<1.95E+00		320.09	
CS-134	2.07E+01	+-8.23E-01	2.07E+01	+-8.23E-01	795.84	-0.01
					604.70	0.14
CS-136	LLD<2.58E-01		LLD<2.58E-01		818.51	
CS-137	3.94E+01	+-9.81E-01	3.94E+01	+-9.81E-01	661.65	0.09
CS-138	LLD<1.91E-01		LLD<1.91E-01		1435.86	
EU-152	LLD<7.64E-01		LLD<7.64E-01		1408.01	
EU-154	LLD<4.77E-01		LLD<4.77E-01		1274.45	
EU-155	LLD<6.00E-01		LLD<6.00E-01		105.31	
FE-59	LLD<6.30E-01		LLD<6.30E-01		1099.25	
HF-181	LLD<3.02E-01		LLD<3.02E-01		482.20	
HG-203	LLD<2.05E-01		LLD<2.05E-01		279.20	
I-131	LLD<2.68E-01		LLD<2.68E-01		364.48	
I-132	LLD<7.43E-01		LLD<7.43E-01		667.69	
I-133	LLD<2.66E-01		LLD<2.66E-01		529.69	
I-134	LLD<3.83E-01		LLD<3.83E-01		847.03	
I-135	LLD<6.06E-01		LLD<6.06E-01		1260.41	
K-40	LLD<2.07E+00		LLD<2.07E+00		1460.75	
KR-85	LLD<5.86E+01		LLD<5.86E+01		513.99	
KR-85M	LLD<1.62E-01		LLD<1.62E-01		151.17	
KR-87	LLD<5.94E-01		LLD<5.94E-01		402.58	
KR-89	LLD<8.68E+00		LLD<8.68E+00		220.90	
LA-140	LLD<1.25E-01		LLD<1.25E-01		1596.20	

LA-142	LLD<5.76E-01	LLD<5.76E-01	641.83
MN-54	LLD<2.33E-01	LLD<2.33E-01	834.83
MN-56	LLD<2.82E-01	LLD<2.82E-01	846.76
NA-22	LLD<1.69E-01	LLD<1.69E-01	1274.55
NA-24	LLD<2.21E-01	LLD<2.21E-01	1368.60
NB-94	LLD<2.38E-01	LLD<2.38E-01	702.63
NB-95	LLD<2.28E-01	LLD<2.28E-01	765.78
NB-97	LLD<1.57E+00	LLD<1.57E+00	657.92
NP-237	LLD<1.28E+00	LLD<1.28E+00	86.50
NP-238	LLD<1.12E+00	LLD<1.12E+00	984.45
NP-239	LLD<1.32E+00	LLD<1.32E+00	277.60
PA-233	LLD<4.78E-01	LLD<4.78E-01	311.98
PA-234M	LLD<5.24E+01	LLD<5.24E+01	1001.03
PB-210	LLD<6.12E+00	LLD<6.12E+00	465.03
PB-212	LLD<3.99E-01	LLD<3.99E-01	239.00
PB-214	LLD<5.46E-01	LLD<5.46E-01	351.92
PO-210	LLD<2.01E+04	LLD<2.01E+04	804.00
PO-214	LLD<9.92E+03	LLD<9.92E+03	799.70
PO-216	LLD<1.62E+04	LLD<1.62E+04	804.90
PU-239	LLD<1.96E+03	LLD<1.96E+03	129.30
PU-241	LLD<6.24E+04	LLD<6.24E+04	148.57
RA-224	LLD<4.15E+00	LLD<4.15E+00	240.99
RA-226	LLD<3.75E+00	LLD<3.75E+00	186.10
RB-88	LLD<6.30E-01	LLD<6.30E-01	1836.00
RB-89	LLD<1.44E+00	LLD<1.44E+00	1031.88
RN-220	LLD<2.30E+02	LLD<2.30E+02	549.73
RU-103	LLD<2.56E-01	LLD<2.56E-01	497.08
RURH106	LLD<4.76E+00	LLD<4.76E+00	621.80
SB-124	LLD<5.21E-01	LLD<5.21E-01	602.72
SB-125	LLD<1.96E+00	LLD<1.96E+00	176.33
SC-46	LLD<3.25E-01	LLD<3.25E-01	1120.45
SE-75	LLD<3.04E-01	LLD<3.04E-01	264.66
SN-113	LLD<3.56E-01	LLD<3.56E-01	391.67
SR-85	LLD<2.57E-01	LLD<2.57E-01	513.99
SR-91	LLD<4.50E-01	LLD<4.50E-01	555.60
SR-92	LLD<9.63E-02	LLD<9.63E-02	1383.94
TA-182	LLD<9.58E-01	LLD<9.58E-01	1121.30
TC-99M	LLD<1.38E-01	LLD<1.38E-01	140.51
TE-123M	LLD<1.52E-01	LLD<1.52E-01	159.00
TE-125M	LLD<4.17E+01	LLD<4.17E+01	109.27
TE-132	LLD<1.83E-01	LLD<1.83E-01	228.16
TH-228	LLD<1.42E+01	LLD<1.42E+01	84.37
TL-208	LLD<3.19E-01	LLD<3.19E-01	583.14
U-235	LLD<2.50E-01	LLD<2.50E-01	185.71
U-237	LLD<7.21E-01	LLD<7.21E-01	208.00
W-187	LLD<8.13E-01	LLD<8.13E-01	685.74
XE-131M	LLD<6.58E+00	LLD<6.58E+00	163.98
XE-133	LLD<4.84E-01	LLD<4.84E-01	81.00
XE-133M	LLD<1.64E+00	LLD<1.64E+00	233.21
XE-135	LLD<1.87E-01	LLD<1.87E-01	249.79
XE-138	LLD<1.41E+00	LLD<1.41E+00	258.41
Y-88	LLD<5.98E-02	LLD<5.98E-02	1836.06
Y-91	LLD<7.19E+01	LLD<7.19E+01	1204.90
Y-91M	LLD<3.40E-01	LLD<3.40E-01	555.60
ZN-65	LLD<6.68E-01	LLD<6.68E-01	1115.55
ZR-95	LLD<4.27E-01	LLD<4.27E-01	756.73
ZR-97	LLD<2.42E-01	LLD<2.42E-01	743.33
	---	---	
TOTAL	8.30E+01 +-1.52E+00	8.30E+01 +-1.52E+00	

STANDARD DEVIATION = 0.15

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.48E-09 UC/LI
TOTAL MEASURED ACTIVITY = 8.30E+01 (+-1.52E+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
1127.54	563.40	544.	13.4	3.21E+01
1139.68	569.47	1028.	10.9	6.12E+01
1604.68	801.93	443.	12.6	3.55E+01
2730.73	1364.91	105.	24.4	1.30E+01

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2922.26	1460.67	160.	17.6	2.10E+01

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

CANBERRA SPECTRAN-F V2.06 SOFTWARE

222-S COUNTING ROOM 08-OCT-90 13:56:26

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: SD2011
ANALYZED BY: EMB

SAMPLE DESCRIPTION: F976
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 13-FEB-90 AT 16:09:47

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

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

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

222-S COUNTING ROOM 08-OCT-90 13:56:26

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

PK	CENTROID CHANNEL	ENERGY KEV	FWHM KEV	BACKGND COUNTS	NET AREA COUNTS	ERROR %	NUCLIDES
1	2922.97	1461.02	2.64	12.	158.	17.3	K-40
1B		1460.85			156.	3.8	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

B - ENVIRONMENTAL BACKGROUND PEAK

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

222-S COUNTING ROOM 08-OCT-90 13:56:26

SAMPLE: F976
DATA COLLECTED ON 13-FEB-90 AT 16:09:47
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

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

NUCLIDE	ACTIVITY CONCENTRATION IN uCi/LI				ENERGY COMPARISON (KEV)	
	MEASURED	ERROR	DECAY CORRECTED	ERROR	EXPECT	DIFF
AC-228	LLD<1.57E-01		LLD<1.57E-01		911.07	
AG-108M	LLD<3.18E-02		LLD<3.18E-02		433.94	
AG-110M	LLD<5.66E-02		LLD<5.66E-02		657.76	
AM-241	LLD<2.52E-01		LLD<2.52E-01		59.54	
AM-243	LLD<6.52E-02		LLD<6.52E-02		74.67	
AR-41	LLD<4.97E-02		LLD<4.97E-02		1293.64	
AU-198	LLD<3.18E-02		LLD<3.18E-02		411.80	
BA-133	LLD<5.30E-02		LLD<5.30E-02		356.02	
BA-139	LLD<1.27E-01		LLD<1.27E-01		165.85	
BA-140	LLD<1.49E-01		LLD<1.49E-01		537.27	
BA-141	LLD<1.17E-01		LLD<1.17E-01		190.23	
BE-7	LLD<3.49E-01		LLD<3.49E-01		477.59	
BI-207	LLD<3.28E-02		LLD<3.28E-02		569.70	
BI-212	LLD<6.29E-01		LLD<6.29E-01		727.27	
BI-214	LLD<9.28E-02		LLD<9.28E-02		609.32	
CD-109	LLD<8.26E-01		LLD<8.26E-01		88.03	
CE-139	LLD<2.88E-02		LLD<2.88E-02		165.85	
CE-141	LLD<4.69E-02		LLD<4.69E-02		145.44	
CEPR144	LLD<4.08E-01		LLD<4.08E-01		133.51	
CO-56	LLD<3.20E-02		LLD<3.20E-02		846.76	
CO-57	LLD<2.50E-02		LLD<2.50E-02		122.06	
CO-58	LLD<4.08E-02		LLD<4.08E-02		810.75	
CO-60	LLD<5.24E-02		LLD<5.24E-02		1332.50	
CR-51	LLD<2.89E-01		LLD<2.89E-01		320.09	
CS-134	LLD<4.42E-02		LLD<4.42E-02		795.84	
CS-136	LLD<4.79E-02		LLD<4.79E-02		818.51	
CS-137	LLD<6.02E-02		LLD<6.02E-02		661.65	
CS-138	LLD<1.11E-01		LLD<1.11E-01		1435.86	
EU-152	LLD<2.10E-01		LLD<2.10E-01		1408.01	
EU-154	LLD<1.18E-01		LLD<1.18E-01		1274.45	
EU-155	LLD<1.13E-01		LLD<1.13E-01		105.31	
FE-59	LLD<7.87E-02		LLD<7.87E-02		1099.25	
HF-181	LLD<3.82E-02		LLD<3.82E-02		482.20	
HG-203	LLD<2.80E-02		LLD<2.80E-02		279.20	
I-131	LLD<3.50E-02		LLD<3.50E-02		364.48	
I-132	LLD<4.42E-02		LLD<4.42E-02		667.69	
I-133	LLD<3.96E-02		LLD<3.96E-02		529.69	
I-134	LLD<5.49E-02		LLD<5.49E-02		847.03	
I-135	LLD<1.98E-01		LLD<1.98E-01		1260.41	
K-40	LLD<1.03E+00		LLD<1.03E+00		1460.75	
KR-85	LLD<1.05E+01		LLD<1.05E+01		513.99	
KR-85M	LLD<3.16E-02		LLD<3.16E-02		151.17	
KR-87	LLD<8.49E-02		LLD<8.49E-02		402.58	
KR-89	LLD<1.32E+00		LLD<1.32E+00		220.90	
LA-140	LLD<5.34E-02		LLD<5.34E-02		1596.20	
LA-142	LLD<9.02E-02		LLD<9.02E-02		641.83	
MN-54	LLD<4.48E-02		LLD<4.48E-02		834.83	

MN-56	LLD<3.61E-02	LLD<3.61E-02	846.76
NA-22	LLD<4.18E-02	LLD<4.18E-02	1274.55
NA-24	LLD<3.30E-02	LLD<3.30E-02	1368.60
NB-94	LLD<3.94E-02	LLD<3.94E-02	702.63
NB-95	LLD<3.56E-02	LLD<3.56E-02	765.78
NB-97	LLD<6.48E-02	LLD<6.48E-02	657.92
NP-237	LLD<2.46E-01	LLD<2.46E-01	86.50
NP-238	LLD<1.38E-01	LLD<1.38E-01	984.45
NP-239	LLD<1.91E-01	LLD<1.91E-01	277.60
PA-233	LLD<6.77E-02	LLD<6.77E-02	311.98
PA-234M	LLD<7.19E+00	LLD<7.19E+00	1001.03
PB-210	LLD<6.73E-01	LLD<6.73E-01	465.03
PB-212	LLD<6.43E-02	LLD<6.43E-02	239.00
PB-214	LLD<8.93E-02	LLD<8.93E-02	351.92
PO-210	LLD<3.22E+03	LLD<3.22E+03	804.00
PO-214	LLD<3.96E+02	LLD<3.96E+02	799.70
PO-216	LLD<2.20E+03	LLD<2.20E+03	804.90
PU-239	LLD<3.58E+02	LLD<3.58E+02	129.30
PU-241	LLD<1.08E+04	LLD<1.08E+04	148.57
RA-224	LLD<6.40E-01	LLD<6.40E-01	240.99
RA-226	LLD<5.92E-01	LLD<5.92E-01	186.10
RB-88	LLD<5.17E-02	LLD<5.17E-02	1836.00
RB-89	LLD<2.38E-01	LLD<2.38E-01	1031.88
RN-220	LLD<2.40E+01	LLD<2.40E+01	549.73
RU-103	LLD<3.38E-02	LLD<3.38E-02	497.08
RURH106	LLD<7.21E-01	LLD<7.21E-01	621.80
SB-124	LLD<3.95E-02	LLD<3.95E-02	602.72
SB-125	LLD<3.30E-01	LLD<3.30E-01	176.33
SC-46	LLD<5.53E-02	LLD<5.53E-02	1120.45
SE-75	LLD<4.24E-02	LLD<4.24E-02	264.66
SN-113	LLD<3.93E-02	LLD<3.93E-02	391.67
SR-85	LLD<4.62E-02	LLD<4.62E-02	513.99
SR-91	LLD<6.80E-02	LLD<6.80E-02	555.60
SR-92	LLD<7.67E-02	LLD<7.67E-02	1383.94
TA-182	LLD<1.73E-01	LLD<1.73E-01	1121.30
TC-99M	LLD<2.34E-02	LLD<2.34E-02	140.51
TE-123M	LLD<2.78E-02	LLD<2.78E-02	159.00
TE-125M	LLD<8.47E+00	LLD<8.47E+00	109.27
TE-132	LLD<2.73E-02	LLD<2.73E-02	228.16
TH-228	LLD<2.86E+00	LLD<2.86E+00	84.37
TL-208	LLD<4.56E-02	LLD<4.56E-02	583.14
U-235	LLD<3.83E-02	LLD<3.83E-02	185.71
U-237	LLD<1.12E-01	LLD<1.12E-01	208.00
W-187	LLD<1.20E-01	LLD<1.20E-01	685.74
XE-131M	LLD<1.20E+00	LLD<1.20E+00	163.98
XE-133	LLD<9.50E-02	LLD<9.50E-02	81.00
XE-133M	LLD<2.43E-01	LLD<2.43E-01	233.21
XE-135	LLD<3.00E-02	LLD<3.00E-02	249.79
XE-138	LLD<1.88E-01	LLD<1.88E-01	258.41
Y-88	LLD<4.90E-03	LLD<4.90E-03	1836.06
Y-91	LLD<1.44E+01	LLD<1.44E+01	1204.90
Y-91M	LLD<5.14E-02	LLD<5.14E-02	555.60
ZN-65	LLD<1.39E-01	LLD<1.39E-01	1115.55
ZR-95	LLD<6.84E-02	LLD<6.84E-02	756.73
ZR-97	LLD<3.83E-02	LLD<3.83E-02	743.33
TOTAL	0.00E-01 +-0.00E-01	0.00E-01 +-0.00E-01	

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 85.0%

ALL DETECTED PEAKS WERE USED IN THE ANALYSIS

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2922.97	1461.02	158.	17.3	2.07E+01

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

CANBERRA SPECTRAN-F V2.06 SOFTWARE

222-S COUNTING ROOM WESTINGHOUSE HANFORD 08-OCT-90 14:07:38

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

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

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

ANALYSIS OF SPECTRUM SAVED IN DISK FILE: SD3123
ANALYZED BY: EMB

SAMPLE DESCRIPTION: F977
GEOMETRY DESCRIPTION:
SAMPLE SIZE: 1.0000E-03 LI / CONVERSION FACTOR: 1.0000E-01
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL000

COLLECT STARTED ON 13-FEB-90 AT 16:10:38

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 14:07:38

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	64.00	32.59	1.26	1434.	808.	14.3	CE-144
2	1166.46	583.27	1.11	155.	76.	54.7	EU-154,
2B		583.13			94.	24.1	TL-208
3	1218.63	609.34	1.55	121.	169.	24.8	BI-214,
3B		609.19			122.	21.0	RU-103
4	1323.24	661.62	1.59	120.	4146.	3.1	CS-137
4B		661.41			81.	28.8	
5	1821.96	910.91	0.85	76.	78.	42.1	
5B		910.98			84.	23.3	
6	2921.03	1460.61	1.93	23.	680.	7.9	K-40
6B		1460.58			611.	5.5	
7	3526.45	1763.61	3.13	10.	49.	36.7	BI-214
7B		1764.79			47.	25.0	

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 14:07:38

SAMPLE: F977
DATA COLLECTED ON 13-FEB-90 AT 16:10:38
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

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

NUCLIDE	ACTIVITY CONCENTRATION IN uCi/LI				ENERGY COMPARISON (KEV)	
	MEASURED	ERROR	DECAY CORRECTED	ERROR	EXPECT	DIFF
AC-228	LLD<2.36E+00		LLD<2.36E+00		911.07	
AG-108M	LLD<4.92E-01		LLD<4.92E-01		433.94	
AG-110M	LLD<2.75E+00		LLD<2.75E+00		657.76	
AM-241	LLD<7.99E-01		LLD<7.99E-01		59.54	
AM-243	LLD<4.80E-01		LLD<4.80E-01		74.67	
AR-41	LLD<6.89E-01		LLD<6.89E-01		1293.64	
AU-198	LLD<4.70E-01		LLD<4.70E-01		411.80	
BA-133	LLD<6.42E-01		LLD<6.42E-01		356.02	
BA-139	LLD<1.71E+00		LLD<1.71E+00		165.85	
BA-140	LLD<1.84E+00		LLD<1.84E+00		537.27	
BA-141	LLD<1.69E+00		LLD<1.69E+00		190.23	
BE-7	LLD<4.74E+00		LLD<4.74E+00		477.59	
BI-207	LLD<4.25E-01		LLD<4.25E-01		569.70	
BI-212	LLD<6.93E+00		LLD<6.93E+00		727.27	
BI-214	LLD<1.24E+00		LLD<1.24E+00		609.32	
CD-109	LLD<8.03E+00		LLD<8.03E+00		88.03	
CE-139	LLD<3.87E-01		LLD<3.87E-01		165.85	
CE-141	LLD<6.18E-01		LLD<6.18E-01		145.44	
CEPR144	LLD<5.58E+00		LLD<5.58E+00		133.51	
CO-56	LLD<4.46E-01		LLD<4.46E-01		846.76	
CO-57	LLD<3.42E-01		LLD<3.42E-01		122.06	
CO-58	LLD<4.42E-01		LLD<4.42E-01		810.75	
CO-60	LLD<5.39E-01		LLD<5.39E-01		1332.50	
CR-51	LLD<3.61E+00		LLD<3.61E+00		320.09	
CS-134	LLD<5.25E-01		LLD<5.25E-01		795.84	
CS-136	LLD<4.33E-01		LLD<4.33E-01		818.51	
CS-137	5.48E+01	+-1.95E+00	5.48E+01	+-1.95E+00	661.65	-0.03
CS-138	LLD<1.10E+00		LLD<1.10E+00		1435.86	
EU-152	LLD<2.46E+00		LLD<2.46E+00		1408.01	
EU-154	LLD<1.61E+00		LLD<1.61E+00		1274.45	
EU-155	LLD<1.31E+00		LLD<1.31E+00		105.31	
FE-59	LLD<1.03E+00		LLD<1.03E+00		1099.25	
HF-181	LLD<5.89E-01		LLD<5.89E-01		482.20	
HG-203	LLD<4.35E-01		LLD<4.35E-01		279.20	
I-131	LLD<4.76E-01		LLD<4.76E-01		364.48	
I-132	LLD<6.93E-01		LLD<6.93E-01		667.69	
I-133	LLD<5.04E-01		LLD<5.04E-01		529.69	
I-134	LLD<6.97E-01		LLD<6.97E-01		847.03	
I-135	LLD<1.90E+00		LLD<1.90E+00		1260.41	
K-40	1.46E+01	+-1.34E+01	1.46E+01	+-1.34E+01	1460.75	-0.14
KR-85	LLD<1.24E+02		LLD<1.24E+02		513.99	
KR-85M	LLD<4.82E-01		LLD<4.82E-01		151.17	
KR-87	LLD<1.05E+00		LLD<1.05E+00		402.58	
KR-89	LLD<1.76E+01		LLD<1.76E+01		220.90	
LA-140	LLD<4.30E-01		LLD<4.30E-01		1596.20	
LA-142	LLD<1.03E+00		LLD<1.03E+00		641.83	
MN-54	LLD<4.90E-01		LLD<4.90E-01		834.83	

MN-56	LLD<5.03E-01	LLD<5.03E-01	846.76
NA-22	LLD<5.90E-01	LLD<5.90E-01	1274.55
NA-24	LLD<4.73E-01	LLD<4.73E-01	1368.60
NB-94	LLD<4.77E-01	LLD<4.77E-01	702.63
NB-95	LLD<4.26E-01	LLD<4.26E-01	765.78
NB-97	LLD<3.33E+00	LLD<3.33E+00	657.92
NP-237	LLD<2.19E+00	LLD<2.19E+00	86.50
NP-238	LLD<1.62E+00	LLD<1.62E+00	984.45
NP-239	LLD<2.55E+00	LLD<2.55E+00	277.60
PA-233	LLD<9.68E-01	LLD<9.68E-01	311.98
PA-234M	LLD<8.92E+01	LLD<8.92E+01	1001.03
PB-210	LLD<1.31E+01	LLD<1.31E+01	465.03
PB-212	LLD<8.56E-01	LLD<8.56E-01	239.00
PB-214	LLD<1.30E+00	LLD<1.30E+00	351.92
PO-210	LLD<3.32E+04	LLD<3.32E+04	804.00
PO-214	LLD<4.87E+03	LLD<4.87E+03	799.70
PO-216	LLD<2.38E+04	LLD<2.38E+04	804.90
PU-239	LLD<4.63E+03	LLD<4.63E+03	129.30
PU-241	LLD<1.67E+05	LLD<1.67E+05	148.57
RA-224	LLD<9.47E+00	LLD<9.47E+00	240.99
RA-226	LLD<1.01E+01	LLD<1.01E+01	186.10
RB-88	LLD<2.92E+00	LLD<2.92E+00	1836.00
RB-89	LLD<2.43E+00	LLD<2.43E+00	1031.88
RN-220	LLD<4.03E+02	LLD<4.03E+02	549.73
RU-103	LLD<4.84E-01	LLD<4.84E-01	497.08
RURH106	LLD<8.52E+00	LLD<8.52E+00	621.80
SB-124	LLD<4.28E-01	LLD<4.28E-01	602.72
SB-125	LLD<4.81E+00	LLD<4.81E+00	176.33
SC-46	LLD<8.03E-01	LLD<8.03E-01	1120.45
SE-75	LLD<5.96E-01	LLD<5.96E-01	264.66
SN-113	LLD<6.26E-01	LLD<6.26E-01	391.67
SR-85	LLD<5.45E-01	LLD<5.45E-01	513.99
SR-91	LLD<6.91E-01	LLD<6.91E-01	555.60
SR-92	LLD<7.47E-01	LLD<7.47E-01	1383.94
TA-182	LLD<1.81E+00	LLD<1.81E+00	1121.30
TC-99M	LLD<3.42E-01	LLD<3.42E-01	140.51
TE-123M	LLD<3.62E-01	LLD<3.62E-01	159.00
TE-125M	LLD<1.05E+02	LLD<1.05E+02	109.27
TE-132	LLD<4.13E-01	LLD<4.13E-01	228.16
TH-228	LLD<2.21E+01	LLD<2.21E+01	84.37
TL-208	LLD<6.17E-01	LLD<6.17E-01	583.14
U-235	LLD<6.17E-01	LLD<6.17E-01	185.71
U-237	LLD<1.76E+00	LLD<1.76E+00	208.00
W-187	LLD<1.56E+00	LLD<1.56E+00	685.74
XE-131M	LLD<1.59E+01	LLD<1.59E+01	163.98
XE-133	LLD<7.08E-01	LLD<7.08E-01	81.00
XE-133M	LLD<3.61E+00	LLD<3.61E+00	233.21
XE-135	LLD<3.80E-01	LLD<3.80E-01	249.79
XE-138	LLD<2.94E+00	LLD<2.94E+00	258.41
Y-88	LLD<2.77E-01	LLD<2.77E-01	1836.06
Y-91	LLD<2.04E+02	LLD<2.04E+02	1204.90
Y-91M	LLD<5.23E-01	LLD<5.23E-01	555.60
ZN-65	LLD<1.44E+00	LLD<1.44E+00	1115.55
ZR-95	LLD<7.84E-01	LLD<7.84E-01	756.73
ZR-97	LLD<3.94E-01	LLD<3.94E-01	743.33
	---	---	
TOTAL	6.94E+01 +-1.35E+01	6.94E+01 +-1.35E+01	

STANDARD DEVIATION = 0.07

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.46E-08 UC/LI
TOTAL MEASURED ACTIVITY = 6.94E+01 (+-1.35E+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
64.00	32.59	808.	14.3	1.26E+01

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
1166.46	583.27	76.	54.7	2.86E+00
1218.63	609.34	169.	24.8	6.65E+00
1821.96	910.91	78.	42.1	4.39E+00
3526.45	1763.61	49.	36.7	4.67E+00

```
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*                                                                     *
*          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          08-OCT-90  14:12:31


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

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

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

ANALYSIS OF SPECTRUM SAVED IN DISK FILE: SD3124
ANALYZED BY:        EMB

SAMPLE DESCRIPTION: F978
GEOMETRY DESCRIPTION:
SAMPLE SIZE:   1.0000E-03 LI       / CONVERSION FACTOR: 1.0000E-01
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL000

COLLECT STARTED ON 13-FEB-90 AT 18:52:33

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 08-OCT-90 14:12:31

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

PK	CENTROID CHANNEL	ENERGY KEV	FWHM KEV	BACKGND COUNTS	NET AREA COUNTS	ERROR %	NUCLIDES
1	63.87	32.52	1.08	1628.	1024.	12.2	CE-144
2	1020.52	510.34	1.65	248.	118.	43.3	RN-222,I-133,
2B		510.92			134.	19.6	TL-208,NA-22, ZN-65
3	1166.31	583.19	1.49	150.	122.	35.1	EU-154,
3B		583.13			94.	24.1	TL-208
4	1218.61	609.33	1.37	143.	134.	31.8	BI-214,
4B		609.19			122.	21.0	RU-103
5	1323.25	661.63	1.60	140.	4683.	3.0	CS-137
5B		661.41			81.	28.8	
6	1822.14	911.00	1.59	75.	101.	33.4	
6B		910.98			84.	23.3	
7	2921.09	1460.64	2.22	27.	687.	7.9	K-40
7B		1460.58			611.	5.5	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

B - ENVIRONMENTAL BACKGROUND PEAK

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

222-S COUNTING ROOM WESTINGHOUSE HANFORD 08-OCT-90 14:12:31

SAMPLE: F978
DATA COLLECTED ON 13-FEB-90 AT 18:52:33
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

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

NUCLIDE	ACTIVITY CONCENTRATION IN uCi/LI MEASURED	ERROR	DECAY CORRECTED	ERROR	ENERGY COMPARISON (KEV) EXPECT	DIFF
AC-228	LLD<2.35E+00		LLD<2.35E+00		911.07	
AG-108M	LLD<5.08E-01		LLD<5.08E-01		433.94	
AG-110M	LLD<2.92E+00		LLD<2.92E+00		657.76	
AM-241	LLD<8.40E-01		LLD<8.40E-01		59.54	
AM-243	LLD<5.04E-01		LLD<5.04E-01		74.67	
AR-41	LLD<7.27E-01		LLD<7.27E-01		1293.64	
AU-198	LLD<4.49E-01		LLD<4.49E-01		411.80	
BA-133	LLD<6.58E-01		LLD<6.58E-01		356.02	
BA-139	LLD<1.78E+00		LLD<1.78E+00		165.85	
BA-140	LLD<1.82E+00		LLD<1.82E+00		537.27	
BA-141	LLD<1.76E+00		LLD<1.76E+00		190.23	
BE-7	LLD<5.06E+00		LLD<5.06E+00		477.59	
BI-207	LLD<4.22E-01		LLD<4.22E-01		569.70	
BI-212	LLD<6.88E+00		LLD<6.88E+00		727.27	
BI-214	LLD<1.29E+00		LLD<1.29E+00		609.32	
CD-109	LLD<8.20E+00		LLD<8.20E+00		88.03	
CE-139	LLD<4.03E-01		LLD<4.03E-01		165.85	
CE-141	LLD<6.56E-01		LLD<6.56E-01		145.44	
CEPR144	LLD<5.64E+00		LLD<5.64E+00		133.51	
CO-56	LLD<4.65E-01		LLD<4.65E-01		846.76	
CO-57	LLD<3.50E-01		LLD<3.50E-01		122.06	
CO-58	LLD<4.39E-01		LLD<4.39E-01		810.75	
CO-60	LLD<5.39E-01		LLD<5.39E-01		1332.50	
CR-51	LLD<3.64E+00		LLD<3.64E+00		320.09	
CS-134	LLD<5.34E-01		LLD<5.34E-01		795.84	
CS-136	LLD<4.21E-01		LLD<4.21E-01		818.51	
CS-137	6.21E+01	+-2.09E+00	6.21E+01	+-2.09E+00	661.65	-0.02
CS-138	LLD<8.37E-01		LLD<8.37E-01		1435.86	
EU-152	LLD<2.75E+00		LLD<2.75E+00		1408.01	
EU-154	LLD<1.83E+00		LLD<1.83E+00		1274.45	
EU-155	LLD<1.34E+00		LLD<1.34E+00		105.31	
FE-59	LLD<1.02E+00		LLD<1.02E+00		1099.25	
HF-181	LLD<6.27E-01		LLD<6.27E-01		482.20	
HG-203	LLD<4.25E-01		LLD<4.25E-01		279.20	
I-131	LLD<4.94E-01		LLD<4.94E-01		364.48	
I-132	LLD<7.86E-01		LLD<7.86E-01		667.69	
I-133	LLD<5.03E-01		LLD<5.03E-01		529.69	
I-134	LLD<7.21E-01		LLD<7.21E-01		847.03	
I-135	LLD<2.26E+00		LLD<2.26E+00		1260.41	
K-40	1.61E+01	+-1.35E+01	1.61E+01	+-1.35E+01	1460.75	-0.11
KR-85	LLD<1.30E+02		LLD<1.30E+02		513.99	
KR-85M	LLD<4.95E-01		LLD<4.95E-01		151.17	
KR-87	LLD<1.06E+00		LLD<1.06E+00		402.58	
KR-89	LLD<1.83E+01		LLD<1.83E+01		220.90	
LA-140	LLD<5.96E-01		LLD<5.96E-01		1596.20	
LA-142	LLD<1.09E+00		LLD<1.09E+00		641.83	
MN-54	LLD<4.52E-01		LLD<4.52E-01		834.83	

MN-56	LLD<5.25E-01	LLD<5.25E-01	846.76
NA-22	LLD<6.90E-01	LLD<6.90E-01	1274.55
NA-24	LLD<5.04E-01	LLD<5.04E-01	1368.60
NB-94	LLD<4.21E-01	LLD<4.21E-01	702.63
NB-95	LLD<4.29E-01	LLD<4.29E-01	765.78
NB-97	LLD<3.53E+00	LLD<3.53E+00	657.92
NP-237	LLD<2.27E+00	LLD<2.27E+00	86.50
NP-238	LLD<2.01E+00	LLD<2.01E+00	984.45
NP-239	LLD<2.51E+00	LLD<2.51E+00	277.60
PA-233	LLD<9.82E-01	LLD<9.82E-01	311.98
PA-234M	LLD<9.12E+01	LLD<9.12E+01	1001.03
PB-210	LLD<1.34E+01	LLD<1.34E+01	465.03
PB-212	LLD<8.98E-01	LLD<8.98E-01	239.00
PB-214	LLD<1.31E+00	LLD<1.31E+00	351.92
PO-210	LLD<3.61E+04	LLD<3.61E+04	804.00
PO-214	LLD<3.92E+03	LLD<3.92E+03	799.70
PO-216	LLD<2.38E+04	LLD<2.38E+04	804.90
PU-239	LLD<4.81E+03	LLD<4.81E+03	129.30
PU-241	LLD<1.70E+05	LLD<1.70E+05	148.57
RA-224	LLD<9.71E+00	LLD<9.71E+00	240.99
RA-226	LLD<1.04E+01	LLD<1.04E+01	186.10
RB-88	LLD<5.84E+00	LLD<5.84E+00	1836.00
RB-89	LLD<2.18E+00	LLD<2.18E+00	1031.88
RN-220	LLD<3.83E+02	LLD<3.83E+02	549.73
RU-103	LLD<4.96E-01	LLD<4.96E-01	497.08
RURH106	LLD<9.43E+00	LLD<9.43E+00	621.80
SB-124	LLD<4.74E-01	LLD<4.74E-01	602.72
SB-125	LLD<4.88E+00	LLD<4.88E+00	176.33
SC-46	LLD<7.71E-01	LLD<7.71E-01	1120.45
SE-75	LLD<6.10E-01	LLD<6.10E-01	264.66
SN-113	LLD<6.97E-01	LLD<6.97E-01	391.67
SR-85	LLD<5.72E-01	LLD<5.72E-01	513.99
SR-91	LLD<7.07E-01	LLD<7.07E-01	555.60
SR-92	LLD<7.16E-01	LLD<7.16E-01	1383.94
TA-182	LLD<1.73E+00	LLD<1.73E+00	1121.30
TC-99M	LLD<3.62E-01	LLD<3.62E-01	140.51
TE-123M	LLD<3.84E-01	LLD<3.84E-01	159.00
TE-125M	LLD<1.06E+02	LLD<1.06E+02	109.27
TE-132	LLD<4.19E-01	LLD<4.19E-01	228.16
TH-228	LLD<2.32E+01	LLD<2.32E+01	84.37
TL-208	LLD<6.12E-01	LLD<6.12E-01	583.14
U-235	LLD<6.28E-01	LLD<6.28E-01	185.71
U-237	LLD<1.70E+00	LLD<1.70E+00	208.00
W-187	LLD<1.57E+00	LLD<1.57E+00	685.74
XE-131M	LLD<1.65E+01	LLD<1.65E+01	163.98
XE-133	LLD<7.60E-01	LLD<7.60E-01	81.00
XE-133M	LLD<3.76E+00	LLD<3.76E+00	233.21
XE-135	LLD<4.27E-01	LLD<4.27E-01	249.79
XE-138	LLD<3.10E+00	LLD<3.10E+00	258.41
Y-88	LLD<5.54E-01	LLD<5.54E-01	1836.06
Y-91	LLD<2.14E+02	LLD<2.14E+02	1204.90
Y-91M	LLD<5.34E-01	LLD<5.34E-01	555.60
ZN-65	LLD<1.39E+00	LLD<1.39E+00	1115.55
ZR-95	LLD<7.32E-01	LLD<7.32E-01	756.73
ZR-97	LLD<4.39E-01	LLD<4.39E-01	743.33
	---	---	
TOTAL	7.82E+01 +-1.37E+01	7.82E+01 +-1.37E+01	

STANDARD DEVIATION = 0.06

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.46E-08 UC/LI
TOTAL MEASURED ACTIVITY = 7.82E+01 (+-1.37E+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
63.87	32.52	1024.	12.2	1.59E+01

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
1020.52	510.34	118.	43.3	3.94E+00
1166.31	583.19	122.	35.1	4.62E+00
1218.61	609.33	134.	31.8	5.27E+00
1822.14	911.00	101.	33.4	5.73E+00

```
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*                                                                   *
*          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 08-OCT-90 14:17:32

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

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

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

ANALYSIS OF SPECTRUM SAVED IN DISK FILE: SD3125
ANALYZED BY: EMB

SAMPLE DESCRIPTION: F979
GEOMETRY DESCRIPTION:
SAMPLE SIZE: 1.0000E-03 LI / CONVERSION FACTOR: 1.0000E-01
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL000

COLLECT STARTED ON 13-FEB-90 AT 19:59:18

COLLECT LIVE TIME: 3000. SECONDS
REAL TIME: 3012. SECONDS
DEAD TIME: 0.40 %

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 14:17:32

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?	59.37	30.27	1.37	3075.	607.	34.1	
2?	63.92	32.54	1.37	2994.	4449.	8.5	CE-144
3?	72.72	36.94	1.37	2837.	968.	22.2	TE-125M
4C	1126.37	563.24	1.52	929.	800.	11.5	CS-134, EU-152
5C	1138.57	569.34	1.52	909.	1445.	9.7	CS-134, BI-207
6C	1209.36	604.71	1.51	887.	8875.	2.7	CS-134
7C	1219.28	609.66	1.51	748.	149.	33.2	BI-214, RU-103
8	1323.26	661.63	1.59	656.	17613.	1.5	CS-137
8B		661.41			81.	28.8	
9C	1591.51	795.70	1.64	545.	6273.	3.2	CS-134
10C	1603.65	801.77	1.64	477.	596.	10.1	CS-134
11C	2335.16	1167.53	1.83	330.	111.	33.8	CS-134
12C	2345.98	1172.94	1.83	298.	5775.	3.1	CO-60
13	2664.44	1332.24	2.02	115.	5393.	2.8	CO-60
14	2729.78	1364.93	1.70	55.	141.	24.7	CS-134
15	2920.93	1460.57	1.97	54.	625.	8.9	K-40
15B		1460.58			611.	5.5	

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 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 14:17:32

SAMPLE: F979
DATA COLLECTED ON 13-FEB-90 AT 19:59:18
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

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

NUCLIDE	ACTIVITY CONCENTRATION IN uCi/LI				ENERGY COMPARISON (KEV)	
	MEASURED	ERROR	DECAY CORRECTED	ERROR	EXPECT	DIFF
AC-228	LLD<4.89E+00		LLD<4.89E+00		911.07	
AG-108M	LLD<1.05E+00		LLD<1.05E+00		433.94	
AG-110M	LLD<5.66E+00		LLD<5.66E+00		657.76	
AM-241	LLD<1.17E+00		LLD<1.17E+00		59.54	
AM-243	LLD<6.55E-01		LLD<6.55E-01		74.67	
AR-41	LLD<8.85E-01		LLD<8.85E-01		1293.64	
AU-198	LLD<9.87E-01		LLD<9.87E-01		411.80	
BA-133	LLD<1.26E+00		LLD<1.26E+00		356.02	
BA-139	LLD<2.73E+00		LLD<2.73E+00		165.85	
BA-140	LLD<4.11E+00		LLD<4.11E+00		537.27	
BA-141	LLD<2.93E+00		LLD<2.93E+00		190.23	
BE-7	LLD<1.02E+01		LLD<1.02E+01		477.59	
BI-207	LLD<1.07E+00		LLD<1.07E+00		569.70	
BI-212	LLD<1.50E+01		LLD<1.50E+01		727.27	
BI-214	LLD<7.84E+00		LLD<7.84E+00		609.32	
CD-109	LLD<1.13E+01		LLD<1.13E+01		88.03	
CE-139	LLD<6.19E-01		LLD<6.19E-01		165.85	
CE-141	LLD<9.65E-01		LLD<9.65E-01		145.44	
CEPR144	LLD<8.21E+00		LLD<8.21E+00		133.51	
CO-56	LLD<1.05E+00		LLD<1.05E+00		846.76	
CO-57	LLD<5.08E-01		LLD<5.08E-01		122.06	
CO-58	LLD<1.01E+00		LLD<1.01E+00		810.75	
CO-60	1.13E+02	+-3.45E+00	1.13E+02	+-3.45E+00	1332.50	-0.26
					1173.24	-0.29
CR-51	LLD<7.12E+00		LLD<7.12E+00		320.09	
CS-134	9.95E+01	+-3.41E+00	9.95E+01	+-3.41E+00	795.84	-0.14
					604.70	0.01
CS-136	LLD<1.02E+00		LLD<1.02E+00		818.51	
CS-137	2.37E+02	+-4.96E+00	2.37E+02	+-4.96E+00	661.65	-0.02
CS-138	LLD<9.21E-01		LLD<9.21E-01		1435.86	
EU-152	LLD<4.64E+00		LLD<4.64E+00		1408.01	
EU-154	LLD<2.04E+00		LLD<2.04E+00		1274.45	
EU-155	LLD<1.91E+00		LLD<1.91E+00		105.31	
FE-59	LLD<2.77E+00		LLD<2.77E+00		1099.25	
HF-181	LLD<1.28E+00		LLD<1.28E+00		482.20	
HG-203	LLD<8.34E-01		LLD<8.34E-01		279.20	
I-131	LLD<1.03E+00		LLD<1.03E+00		364.48	
I-132	LLD<1.62E+00		LLD<1.62E+00		667.69	
I-133	LLD<1.07E+00		LLD<1.07E+00		529.69	
I-134	LLD<1.60E+00		LLD<1.60E+00		847.03	
I-135	LLD<2.71E+00		LLD<2.71E+00		1260.41	
K-40	LLD<1.50E+01		LLD<1.50E+01		1460.75	
KR-85	LLD<2.33E+02		LLD<2.33E+02		513.99	
KR-85M	LLD<7.34E-01		LLD<7.34E-01		151.17	
KR-87	LLD<2.31E+00		LLD<2.31E+00		402.58	
KR-89	LLD<3.16E+01		LLD<3.16E+01		220.90	
LA-140	LLD<5.32E-01		LLD<5.32E-01		1596.20	

LA-142	LLD<2.39E+00	LLD<2.39E+00	641.83
MN-54	LLD<1.10E+00	LLD<1.10E+00	834.83
MN-56	LLD<1.19E+00	LLD<1.19E+00	846.76
NA-22	LLD<7.69E-01	LLD<7.69E-01	1274.55
NA-24	LLD<6.70E-01	LLD<6.70E-01	1368.60
NB-94	LLD<9.44E-01	LLD<9.44E-01	702.63
NB-95	LLD<9.36E-01	LLD<9.36E-01	765.78
NB-97	LLD<6.87E+00	LLD<6.87E+00	657.92
NP-237	LLD<3.20E+00	LLD<3.20E+00	86.50
NP-238	LLD<4.99E+00	LLD<4.99E+00	984.45
NP-239	LLD<4.65E+00	LLD<4.65E+00	277.60
PA-233	LLD<1.92E+00	LLD<1.92E+00	311.98
PA-234M	LLD<2.25E+02	LLD<2.25E+02	1001.03
PB-210	LLD<2.63E+01	LLD<2.63E+01	465.03
PB-212	LLD<1.56E+00	LLD<1.56E+00	239.00
PB-214	LLD<2.38E+00	LLD<2.38E+00	351.92
PO-210	LLD<8.70E+04	LLD<8.70E+04	804.00
PO-214	LLD<3.87E+04	LLD<3.87E+04	799.70
PO-216	LLD<6.50E+04	LLD<6.50E+04	804.90
PU-239	LLD<7.05E+03	LLD<7.05E+03	129.30
PU-241	LLD<2.49E+05	LLD<2.49E+05	148.57
RA-224	LLD<1.61E+01	LLD<1.61E+01	240.99
RA-226	LLD<1.70E+01	LLD<1.70E+01	186.10
RB-88	LLD<6.44E+00	LLD<6.44E+00	1836.00
RB-89	LLD<5.94E+00	LLD<5.94E+00	1031.88
RN-220	LLD<9.54E+02	LLD<9.54E+02	549.73
RU-103	LLD<1.08E+00	LLD<1.08E+00	497.08
RURH106	LLD<1.93E+01	LLD<1.93E+01	621.80
SB-124	LLD<1.98E+00	LLD<1.98E+00	602.72
SB-125	LLD<7.68E+00	LLD<7.68E+00	176.33
SC-46	LLD<1.46E+00	LLD<1.46E+00	1120.45
SE-75	LLD<1.11E+00	LLD<1.11E+00	264.66
SN-113	LLD<1.43E+00	LLD<1.43E+00	391.67
SR-85	LLD<1.02E+00	LLD<1.02E+00	513.99
SR-91	LLD<1.76E+00	LLD<1.76E+00	555.60
SR-92	LLD<7.62E-01	LLD<7.62E-01	1383.94
TA-182	LLD<3.66E+00	LLD<3.66E+00	1121.30
TC-99M	LLD<5.48E-01	LLD<5.48E-01	140.51
TE-123M	LLD<5.71E-01	LLD<5.71E-01	159.00
TE-125M	LLD<1.50E+02	LLD<1.50E+02	109.27
TE-132	LLD<7.26E-01	LLD<7.26E-01	228.16
TH-228	LLD<3.16E+01	LLD<3.16E+01	84.37
TL-208	LLD<1.23E+00	LLD<1.23E+00	583.14
U-235	LLD<1.03E+00	LLD<1.03E+00	185.71
U-237	LLD<3.01E+00	LLD<3.01E+00	208.00
W-187	LLD<3.23E+00	LLD<3.23E+00	685.74
XE-131M	LLD<2.56E+01	LLD<2.56E+01	163.98
XE-133	LLD<1.06E+00	LLD<1.06E+00	81.00
XE-133M	LLD<6.46E+00	LLD<6.46E+00	233.21
XE-135	LLD<7.23E-01	LLD<7.23E-01	249.79
XE-138	LLD<5.54E+00	LLD<5.54E+00	258.41
Y-88	LLD<6.10E-01	LLD<6.10E-01	1836.06
Y-91	LLD<3.13E+02	LLD<3.13E+02	1204.90
Y-91M	LLD<1.33E+00	LLD<1.33E+00	555.60
ZN-65	LLD<2.56E+00	LLD<2.56E+00	1115.55
ZR-95	LLD<1.67E+00	LLD<1.67E+00	756.73
ZR-97	LLD<9.65E-01	LLD<9.65E-01	743.33
TOTAL	4.50E+02 +-6.94E+00	4.50E+02 +-6.94E+00	

STANDARD DEVIATION = 0.14

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.62E-09 UC/LI
TOTAL MEASURED ACTIVITY = 4.50E+02 (+-6.94E+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
59.37	30.27	607.	34.1	9.98E+00
63.92	32.54	4449.	8.5	6.93E+01
72.72	36.94	968.	22.2	1.39E+01
1126.37	563.24	800.	11.5	2.93E+01
1138.57	569.34	1445.	9.7	5.35E+01
1603.65	801.77	596.	10.1	3.01E+01
2335.16	1167.53	111.	33.8	7.76E+00
2729.78	1364.93	141.	24.7	1.12E+01

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
1219.28	609.66	149.	33.2	5.86E+00
2920.93	1460.57	625.	8.9	5.22E+01

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

CANBERRA SPECTRAN-F V2.06  SOFTWARE

222-S COUNTING ROOM                                  08-OCT-90  14:00:36


                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: SD2013
ANALYZED BY:        EMB

SAMPLE DESCRIPTION: F980
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 13-FEB-90 AT 19:58:25

COLLECT LIVE TIME:    3000. SECONDS
        REAL TIME:    3007. SECONDS
        DEAD TIME:     0.23 %

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

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

222-S COUNTING ROOM 08-OCT-90 14:00:36

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

PK	CENTROID CHANNEL	ENERGY KEV	FWHM KEV	BACKGND COUNTS	NET AREA COUNTS	ERROR %	NUCLIDES
1C	1127.33	563.30	1.55	594.	452.	14.8	CS-134, EU-152
2C	1139.73	569.49	1.55	563.	974.	12.1	CS-134, BI-207
3	1210.41	604.83	1.62	545.	6028.	2.8	CS-134
4	1324.26	661.74	1.59	342.	9096.	2.1	CS-137
4B		661.85			36.	13.9	
5C	1592.45	795.82	1.68	348.	4223.	3.9	CS-134
6C	1604.49	801.84	1.68	351.	379.	14.7	CS-134
7	2347.02	1173.07	1.93	257.	3733.	3.5	CO-60
8	2665.51	1332.30	2.20	46.	3426.	3.4	CO-60
8B		1332.24			9.	37.4	
9	2729.91	1364.50	1.59	16.	109.	22.5	CS-134
10	2921.97	1460.53	2.63	14.	170.	16.8	K-40
10B		1460.85			156.	3.8	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

C - MULTIPLET ANALYSIS CONVERGED NORMALLY
B - ENVIRONMENTAL BACKGROUND PEAK

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

222-S COUNTING ROOM 08-OCT-90 14:00:36

SAMPLE: F980
DATA COLLECTED ON 13-FEB-90 AT 19:58:25
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<1.11E+00		LLD<1.11E+00		911.07	
AG-108M	LLD<2.99E-01		LLD<2.99E-01		433.94	
AG-110M	LLD<1.39E+00		LLD<1.39E+00		657.76	
AM-241	LLD<1.37E+00		LLD<1.37E+00		59.54	
AM-243	LLD<3.45E-01		LLD<3.45E-01		74.67	
AR-41	LLD<1.98E-01		LLD<1.98E-01		1293.64	
AU-198	LLD<2.62E-01		LLD<2.62E-01		411.80	
BA-133	LLD<3.51E-01		LLD<3.51E-01		356.02	
BA-139	LLD<7.16E-01		LLD<7.16E-01		165.85	
BA-140	LLD<1.02E+00		LLD<1.02E+00		537.27	
BA-141	LLD<7.20E-01		LLD<7.20E-01		190.23	
BE-7	LLD<2.41E+00		LLD<2.41E+00		477.59	
BI-207	LLD<2.66E-01		LLD<2.66E-01		569.70	
BI-212	LLD<3.72E+00		LLD<3.72E+00		727.27	
BI-214	LLD<2.04E+00		LLD<2.04E+00		609.32	
CD-109	LLD<4.25E+00		LLD<4.25E+00		88.03	
CE-139	LLD<1.62E-01		LLD<1.62E-01		165.85	
CE-141	LLD<2.64E-01		LLD<2.64E-01		145.44	
CEPR144	LLD<2.03E+00		LLD<2.03E+00		133.51	
CO-56	LLD<2.57E-01		LLD<2.57E-01		846.76	
CO-57	LLD<1.34E-01		LLD<1.34E-01		122.06	
CO-58	LLD<2.62E-01		LLD<2.62E-01		810.75	
CO-60	2.24E+01	+-8.16E-01	2.24E+01	+-8.16E-01	1332.50	-0.20
					1173.24	-0.17
CR-51	LLD<1.94E+00		LLD<1.94E+00		320.09	
CS-134	2.13E+01	+-8.70E-01	2.13E+01	+-8.70E-01	795.84	-0.03
					604.70	0.13
CS-136	LLD<2.68E-01		LLD<2.68E-01		818.51	
CS-137	3.91E+01	+-9.73E-01	3.91E+01	+-9.73E-01	661.65	0.09
CS-138	LLD<1.27E-01		LLD<1.27E-01		1435.86	
EU-152	LLD<7.43E-01		LLD<7.43E-01		1408.01	
EU-154	LLD<5.40E-01		LLD<5.40E-01		1274.45	
EU-155	LLD<6.15E-01		LLD<6.15E-01		105.31	
FE-59	LLD<5.89E-01		LLD<5.89E-01		1099.25	
HF-181	LLD<3.07E-01		LLD<3.07E-01		482.20	
HG-203	LLD<2.11E-01		LLD<2.11E-01		279.20	
I-131	LLD<2.65E-01		LLD<2.65E-01		364.48	
I-132	LLD<7.16E-01		LLD<7.16E-01		667.69	
I-133	LLD<2.61E-01		LLD<2.61E-01		529.69	
I-134	LLD<4.00E-01		LLD<4.00E-01		847.03	
I-135	LLD<7.91E-01		LLD<7.91E-01		1260.41	
K-40	LLD<2.12E+00		LLD<2.12E+00		1460.75	
KR-85	LLD<5.91E+01		LLD<5.91E+01		513.99	
KR-85M	LLD<1.64E-01		LLD<1.64E-01		151.17	
KR-87	LLD<5.95E-01		LLD<5.95E-01		402.58	
KR-89	LLD<8.44E+00		LLD<8.44E+00		220.90	
LA-140	LLD<1.25E-01		LLD<1.25E-01		1596.20	

LA-142	LLD<5.69E-01	LLD<5.69E-01	641.83
MN-54	LLD<2.35E-01	LLD<2.35E-01	834.83
MN-56	LLD<2.90E-01	LLD<2.90E-01	846.76
NA-22	LLD<1.92E-01	LLD<1.92E-01	1274.55
NA-24	LLD<2.13E-01	LLD<2.13E-01	1368.60
NB-94	LLD<2.07E-01	LLD<2.07E-01	702.63
NB-95	LLD<2.47E-01	LLD<2.47E-01	765.78
NB-97	LLD<1.57E+00	LLD<1.57E+00	657.92
NP-237	LLD<1.24E+00	LLD<1.24E+00	86.50
NP-238	LLD<1.09E+00	LLD<1.09E+00	984.45
NP-239	LLD<1.31E+00	LLD<1.31E+00	277.60
PA-233	LLD<4.94E-01	LLD<4.94E-01	311.98
PA-234M	LLD<5.25E+01	LLD<5.25E+01	1001.03
PB-210	LLD<6.47E+00	LLD<6.47E+00	465.03
PB-212	LLD<3.96E-01	LLD<3.96E-01	239.00
PB-214	LLD<5.57E-01	LLD<5.57E-01	351.92
PO-210	LLD<2.23E+04	LLD<2.23E+04	804.00
PO-214	LLD<1.02E+04	LLD<1.02E+04	799.70
PO-216	LLD<1.72E+04	LLD<1.72E+04	804.90
PU-239	LLD<2.01E+03	LLD<2.01E+03	129.30
PU-241	LLD<6.24E+04	LLD<6.24E+04	148.57
RA-224	LLD<4.09E+00	LLD<4.09E+00	240.99
RA-226	LLD<3.77E+00	LLD<3.77E+00	186.10
RB-88	LLD<8.49E-01	LLD<8.49E-01	1836.00
RB-89	LLD<1.42E+00	LLD<1.42E+00	1031.88
RN-220	LLD<2.25E+02	LLD<2.25E+02	549.73
RU-103	LLD<2.47E-01	LLD<2.47E-01	497.08
RURH106	LLD<4.77E+00	LLD<4.77E+00	621.80
SB-124	LLD<5.19E-01	LLD<5.19E-01	602.72
SB-125	LLD<2.05E+00	LLD<2.05E+00	176.33
SC-46	LLD<3.16E-01	LLD<3.16E-01	1120.45
SE-75	LLD<3.10E-01	LLD<3.10E-01	264.66
SN-113	LLD<3.66E-01	LLD<3.66E-01	391.67
SR-85	LLD<2.59E-01	LLD<2.59E-01	513.99
SR-91	LLD<4.74E-01	LLD<4.74E-01	555.60
SR-92	LLD<9.63E-02	LLD<9.63E-02	1383.94
TA-182	LLD<8.97E-01	LLD<8.97E-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<4.23E+01	LLD<4.23E+01	109.27
TE-132	LLD<1.82E-01	LLD<1.82E-01	228.16
TH-228	LLD<1.45E+01	LLD<1.45E+01	84.37
TL-208	LLD<3.20E-01	LLD<3.20E-01	583.14
U-235	LLD<2.49E-01	LLD<2.49E-01	185.71
U-237	LLD<7.18E-01	LLD<7.18E-01	208.00
W-187	LLD<8.24E-01	LLD<8.24E-01	685.74
XE-131M	LLD<6.77E+00	LLD<6.77E+00	163.98
XE-133	LLD<4.86E-01	LLD<4.86E-01	81.00
XE-133M	LLD<1.60E+00	LLD<1.60E+00	233.21
XE-135	LLD<1.78E-01	LLD<1.78E-01	249.79
XE-138	LLD<1.41E+00	LLD<1.41E+00	258.41
Y-88	LLD<8.05E-02	LLD<8.05E-02	1836.06
Y-91	LLD<7.12E+01	LLD<7.12E+01	1204.90
Y-91M	LLD<3.58E-01	LLD<3.58E-01	555.60
ZN-65	LLD<6.63E-01	LLD<6.63E-01	1115.55
ZR-95	LLD<4.43E-01	LLD<4.43E-01	756.73
ZR-97	LLD<2.57E-01	LLD<2.57E-01	743.33
TOTAL	8.28E+01 +-1.54E+00	8.28E+01 +-1.54E+00	

STANDARD DEVIATION = 0.15

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.47E-09 UC/LI
TOTAL MEASURED ACTIVITY = 8.28E+01 (+-1.54E+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
1127.33	563.30	452.	14.8	2.66E+01
1139.73	569.49	974.	12.1	5.80E+01
1604.49	801.84	379.	14.7	3.03E+01
2729.91	1364.50	109.	22.5	1.35E+01

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2921.97	1460.53	170.	16.8	2.23E+01

Single Shell Tank

Calibration Record

Analyte:	Mixed Isotope Standards		
Procedure:	LQ-508-003	Revision:	A-0
Instrument:	GEA Detector #2	Property Number:	401934
Technologist:	J. L. Anderson	Payroll Number:	61413
Date:	October 21, 1988		

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: 56840 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: 56840 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:0	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: 56B40 D1

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

EQUATION 0-165 KEV

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

EQUATION 165-1836 KEV

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

GEA CALIBRATION RECORD PROCEDURE LQ-508-003

DETECTOR: 3
GEOMETRY CODE: 42
GEOMETRY DECSRIPTION: 22 ML LIQUID, POS 2
CALIBRATION DATE: 2-Jul-89
ANALYST(S): J. L. ANDERSON/M. R. DOWELL
STANDARD ID: 56B40 D1

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

EQUATION 0-165 KEV

```
LOG(EFF) =    -6.838496E+00
           +   8.819509E-01 *LOG(ENERGY)
           +  -9.970528E-02 *LOG(ENERGY)^2
```

EQUATION 165-1836 KEV

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

GEA CALIBRATION RECORD PROCEDURE LQ-508-003

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

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

EQUATION 0-165 KEV

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

EQUATION 165-1836 KEV

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

Analytical Batch

Lab Segment Serial #: F0971

Customer ID: 000007

Instrument	WA77344
Procedure/Rev	LA-925-106/A-1
Technologist	M. Franz
Date	Feb. 14, 1990
Temperature	N/A
Starting Time	1230
Ending Time	1520
Chemist	S. A. Catlow

Uranium Analysis

Fusion Dissolution

	Description	Lab ID
1	Initial LMCS Check Std.	F0975
2	Reagent Blank	F0976
3	Sample Composite 7	F0977
4	Duplicate Sample Composite 7	F0978
5	Spike Composite 7	F0979
6	Final LMCS Check Std.	F0980
7		
8		
9		
10		
11		

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

Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Bk# & Alqt. Vol.	Final Vol. of Std.
LMCS Check Std.	58B38/1.0 ul			5.7 ml
Spike	58B38/1.0 ul	F0977/0.25 ul		5.725 ml

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

Analytical Batch

Lab Segment Serial #: F0971

Customer ID: 000007

Instrument	WB39939
Procedure/Rev	LA-505-151/A-0
Technologist	J. A. White
Date	April 20, 1990
Temperature	N/A
Starting Time	0800
Ending Time	1410
Chemist	S. A. Jones

ICP

Fusion Digestion

	Description	Lab ID
1	LMCS Check Std.	NA
2	Reagent Blank	F0976
3	Sample Composite 7	F0977
4	Duplicate Sample Composite 7	F0978
5	Spike Composite 7	F0979
6	LMCS Check Std.	NA
7		
8		
9		
10		
11		

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

Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std.	78C11J/1.0 mL	82B38F/1.0 mL	77C11I/1.0 mL	1.0 mL
Spike	78C11J/1.0 mL	F0977/0.5 mL		11.5 mL

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

DATA SUMMARY

Sample units are Wet Weight

Core 7 Composite
Fusion Dissolution

Tank: 241-U-110

Customer ID: Core Composite 7

Radiological Analysis

	Sample		Duplicate Sample	
Fusion	3.02	g/L	3.57	g/L
Total Alpha	1.64E-01	uci/g	2.11E-01	uci/g
Total Beta	6.13E+02	uci/g	6.39E+02	uci/g
GEA Cs-137	1.81E+01	uci/g	1.74E+01	uci/L
Uranium	3.91E+03	ug/g	4.26E+03	ug/g
Plutonium	1.82E-01	uci/g	2.08E-01	uci/g
Americium 241	6.16E-02	uci/g	6.83E-02	uci/g
Neptunium	<3.58E-01	uci/g	<3.03E-01	uci/g
Technetium 99	<6.22E-03	uci/g	<5.24E-03	uci/g
Iodine 129	<1.07E-02	uci/g	<9.47E-03	uci/g
Strontium 90	2.91E+02	uci/g	2.46E+02	uci/g

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

ICP Results

	Sample	Duplicate
Aluminum	52011 ug/g	61606 ug/g
Antimony	LT	LT
Barium	27 ug/g	22 ug/g
Beryllium	LT	LT
Bismuth	6055 ug/g	6686 ug/g
Boron	50 ug/g	LT
Cadmium	LT	LT
Calcium	758 ug/g	1690 ug/g
Cerium	669 ug/g	480 ug/g
Chromium	120 ug/g	138 ug/g
Copper	112 ug/g	143 ug/g
Europium	12 ug/g	8 ug/g
Iron	3859 ug/g	4396 ug/g
Lanthanum	LT	LT
Lead	93 ug/g	323 ug/g
Lithium	LT	LT
Magnesium	303 ug/g	806 ug/g
Manganese	708 ug/g	799 ug/g
Mercury	LT	LT
Molybdenum	32 ug/g	29 ug/g
Neodymium	LT	LT
Nickel	2356 ug/g	2207 ug/g
Samarium	726 ug/g	530 ug/g
Selenium	364 ug/g	365 ug/g
Silicon	3364 ug/g	3988 ug/g
Silver	LT	LT
Sodium	33649 ug/g	37361 ug/g
Strontium	135 ug/g	182 ug/g
Sulfur	159 ug/g	144 ug/g
Tantalum	102 ug/g	LT
Thallium	5577 ug/g	6924 ug/g
Thorium	1516 ug/g	3422 ug/g
Tin	49 ug/g	55 ug/g
Titanium	28 ug/g	25 ug/g
Vanadium	56 ug/g	LT
Zinc	55 ug/g	72 ug/g
Zirconium	113 ug/g	78 ug/g

ICP Results Raw Data Summary

Date Analyzed:	April 20,1990	Reagent Blank	F0976
Procedure:	LA-505-151/A-0	Core 7 Composite	F0977
Analyst:	J. A. White	Duplicate of Core 7 Composite	F0978
Digestion	Acid Digestion	Spike of Core 7 Composite	F0979
Procedure:	LA-505-159/A-0		

	Instrument Starting LMCS Standard %	Acid Digest. LMCS Standard %	Reagent BLANK ppm	Wet Weight Sample ug/g	Wet Weight Sample Duplicate ug/g	Spike Recovery %	LMCS ACID Digestion %	Closing LMCS Standard %
Aluminum	103.23%	NOT RUN	-0.78 LT	52011	61606		NOT RUN	101.37%
Antimony	100.45%		-2.24 LT	160 LT	223 LT	85.43%		99.82%
Arsenic	116.51% #		0.10 LT	100	82			114.04% #
Barium	97.11%		-0.03 LT	27	22	92.43%		96.95%
Beryllium	97.96%		-0.01 LT	1 LT	0 LT			98.10%
Bismuth	106.18%		-0.62 LT	6055	6686			107.82%
Boron	98.16%		0.07 LT	50	16 LT	92.28%		98.20%
Cadmium	100.20%		-0.05 LT	8 LT	6 LT	95.05%		99.97%
Calcium	99.66%		1.65	758	1690	97.02%		99.49%
Cerium	91.19%		-1.75 LT	669	480	41.86%		92.81%
Chromium	92.49%		-0.10 LT	120	138	87.23%		91.85%
Cobalt	82.57% #		-1.10 LT	-47 LT	-56 LT	73.05%		90.18%
Copper	99.05%		-0.20 LT	112	143	92.64%		98.94%
Europium	98.44%		-0.02 LT	12	8			99.95%
Iron	99.15%		0.10 LT	3859	4396	98.09%		99.27%
Lanthanum	93.83%		-0.31 LT	35 LT	44 LT			95.34%
Lead	105.10%		-1.47 LT	93	323			106.36%
Lithium	95.70%		-1.50 LT	-122 LT	-123 LT	83.23%		95.69%
Magnesium	100.11%		1.19	303	806	105.33%		100.45%
Manganese	99.23%		0.03 LT	708	799	95.58%		98.78%
Mercury	107.34%		0.01 LT	10 LT	11 LT			105.06%
Molybdenum	101.02%		-0.02 LT	32	29			98.62%
Neodymium	92.52%		-1.14 LT	545 LT	630 LT	68.62%		90.79%
Nickel	99.44%		18.11	2356	2207	95.17%		99.49%
Phosphorous	110.15% #		-0.13 LT	7891	9207			112.79% #
Potassium	99.70%		NA	0	0	0.00%		101.87%
Samarium	100.68%		-1.93 LT	726	530			102.43%
Selenium	107.43%		-0.63 LT	364	365			105.43%
Silicon	92.44%		1.09	3364	3988			90.62%
Silver	105.03%		-0.14 LT	42 LT	29 LT			106.65%
Sodium	96.81%		10.66	33649	37361	94.32%		96.99%
Strontium	98.22%		-0.01 LT	135	182	94.60%		98.34%
Sulfur	106.14%		0.03 LT	159	144			105.95%
Tantalum	100.56%		-0.31 LT	102	74 LT			98.56%
Thallium	107.92%		-0.09 LT	5577	6924			107.06%
Thorium	105.08%		-2.62 LT	1516	3422			106.97%
Tin	97.87%		0.07 LT	49	55	93.82%		98.31%
Titanium	103.51%		-0.08 LT	28	25			101.17%
Tungsten	86.82% #		-0.40 LT	131	145			84.18% #
Uranium	109.57%		-14.40 LT	5496	4526			111.52% #
Vanadium	99.71%		0.05 LT	56	33 LT			98.46%
Zinc	98.83%		0.09	55	72	94.44%		98.97%
Zirconium	101.83%		-0.20 LT	113	78			99.75%

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

ICP Results — Raw Data Report

Date Analyzed:	April 20,1990	Reagent Blank	F0976
Procedure:	LA-505-151/A-0	Core 7 Composite	F0977
Analyst:	J. A. White	Duplicate of Core 7 Composite	F0978
Digestion Procedure:	Acid Digestion LA-505-159/A-0	Spike of Core 7 Composite	F0979

	SST-1	SST-2	Starting LMCS Instrument Standard ppm	LMCS Standard Recovery %		LMCS Acid Digestion Standard ppm	Acid Digestion Standard Recovery %	Reagent Blank ppm	Weight Volume Sample Dilution Three ppm
Aluminum			51.62	103.23%		NOT RUN		-0.78 LT	
Antimony	10.05			100.45%				-2.24 LT	
Arsenic			58.26	116.51%	#			0.10 LT	
Barium	9.71			97.11%				-0.03 LT	
Beryllium			9.80	97.96%				-0.01 LT	
Bismuth		53.19		106.18%				-0.62 LT	
Boron	9.82			98.16%				0.07 LT	
Cadmium	10.02			100.20%				-0.05 LT	
Calcium	9.97			99.66%				1.65	
Cerium	9.12			91.19%				-1.75 LT	
Chromium	9.25			92.49%				-0.10 LT	
Cobalt	8.26			82.57%	#			-1.10 LT	
Copper	9.91			99.05%				-0.20 LT	
Europium		9.84		98.44%				-0.02 LT	
Iron	9.92			99.15%				0.10 LT	
Lanthanum		47.01		93.83%				-0.31 LT	
Lead		52.66		105.10%				-1.47 LT	
Lithium	9.57			95.70%				-1.50 LT	
Magnesium	10.01			100.11%				1.19	
Manganese	9.92			99.23%				0.03 LT	
Mercury			26.84	107.34%				0.01 LT	
Molybdenum			50.51	101.02%				-0.02 LT	
Neodymium	9.25			92.52%				-1.14 LT	
Nickel	9.94			99.44%				18.11	
Phosphorous			55.07	110.15%	#			-0.13 LT	
Potassium	24.93			99.70%				NA	
Samarium		10.07		100.68%				-1.93 LT	
Selenium			53.72	107.43%				-0.63 LT	
Silicon			46.22	92.44%				1.09	
Silver		10.50		105.03%				-0.14 LT	
Sodium	24.20			96.81%				10.66	
Strontium	9.82			98.22%				-0.01 LT	
Sulfur			53.07	106.14%				0.03 LT	
Tantalum			50.28	100.56%				-0.31 LT	
Thallium			53.96	107.92%				-0.09 LT	
Thorium		52.64		105.08%				-2.62 LT	
Tin	48.94			97.87%				0.07 LT	
Titanium			51.76	103.51%				-0.08 LT	
Tungsten			21.70	86.82%	#			-0.40 LT	
Uranium		54.90		109.57%				-14.40 LT	
Vanadium			9.97	99.71%				0.05 LT	
Zinc	9.88			98.83%				0.09	
Zirconium			50.91	101.83%				-0.20 LT	
Dilution Factor	1.00	1.00	1.00			10.00		21.00	1.00

ICP Results Raw Data Report

	0.4778 g 50.00 mL Sample Dilution Two ppm	Sample Dilution One ppm	Weight Volume Sample Duplicate Dilution Three ppm	0.5018 g 50.00 mL Sample Duplicate Dilution Two ppm	Sample Duplicate Dilution One ppm	Weight Volume Spike of Sample Dilution Three ppm	0.5143 g 50.00 mL Spike of Sample Dilution Two ppm	Spike of Sample Dilution One ppm	Spike Recovery %
Aluminum	497.02	492.75		618.28	594.70		490.29	494.80	
Antimony	2.45	1.53 LT		10.76	2.24 LT		85.43	22.05	85.43%
Arsenic	2.07	0.96		4.21	0.82		-0.48	0.78	
Barium	0.75	0.25		1.40	0.22		93.12	19.83	92.43%
Beryllium	0.04	0.01 LT		0.10	0.01 LT		-0.08	0.01 LT	
Bismuth	64.16	57.86		82.55	67.10		51.24	56.74	
Boron	0.98	0.48		0.71	0.16 LT		93.19	19.73	92.28%
Cadmium	0.22	0.07 LT		0.47	0.06 LT		95.05	20.35	95.05%
Calcium	7.24	6.93		16.96	16.19		103.75	26.81	97.02%
Cerium	23.49	6.40		46.33	4.82		63.68	23.02	41.86%
Chromium	1.46	1.15		2.81	1.39		88.59	19.72	87.23%
Cobalt	-3.51	-0.45 LT		-0.95	-0.56 LT		73.05	17.14	73.05%
Copper	1.70	1.08		3.17	1.44		94.21	20.95	92.64%
Europium	0.45	0.12		0.87	0.08		-0.20	0.13	
Iron	36.88	36.34		44.11	42.30		132.35	56.55	98.09%
Lanthanum	1.07	0.33 LT		3.20	0.44 LT		-2.49	0.27 LT	
Lead	-7.09	0.88		8.51	3.24		-15.58	-0.16 LT	
Lithium	-5.86	-1.17 LT		-4.94	-1.24 LT		83.23	17.93	83.23%
Magnesium	2.90	1.24		8.09	1.82		108.02	22.73	105.33%
Manganese	6.76	6.64		8.02	7.75		101.86	26.66	95.58%
Mercury	0.39	0.09 LT		0.47	0.11 LT		0.94	0.34	
Molybdenum	0.70	0.31		1.43	0.29		-0.14	0.30	
Neodymium	21.66	5.21 LT		41.61	6.33 LT		68.62	21.91	68.62%
Nickel	22.52	21.84		22.15	20.13		116.09	41.90	95.17%
Phosphorous	75.41	76.33		92.40	76.06		66.28	79.70	
Potassium	NA	NA		NA	NA		NA	NA	0.00%
Samarium	27.33	6.94		53.88	5.32		-27.62	4.69 LT	
Selenium	8.46	3.48		16.04	3.66		23.36	9.48	
Silicon	32.15	26.24		40.02	30.46		23.85	26.00	
Silver	1.50	0.40 LT		3.00	0.29 LT		-1.85	0.27 LT	
Sodium	321.55	297.07		374.95	326.12		534.53	341.24	94.32%
Strontium	1.29	1.07		1.83	1.32		95.80	21.01	94.60%
Sulfur	3.58	1.52		5.91	1.44		3.15	2.26	
Tantalum	2.65	0.98		7.61	0.75 LT		-2.88	0.51 LT	
Thallium	53.30	11.63		69.49	8.28		-2.92	11.65	
Thorium	14.49	4.52		34.34	3.68		-18.58	4.22	
Tin	1.41	0.47		3.09	0.55		470.40	100.71	93.82%
Titanium	0.84	0.27		1.71	0.25		-0.88	0.19	
Tungsten	3.48	1.25		6.04	1.45		-0.12	1.72	
Uranium	163.26	52.52		319.04	45.42		-130.10	45.28	
Vanadium	2.10	0.54		3.18	0.33 LT		0.05	0.40 LT	
Zinc	0.83	0.53		1.11	0.72		95.21	20.61	94.44%
Zirconium	3.30	1.08		5.68	0.78		-2.03	0.89	
Dilution Factor	101.00	21.00	1.00	101.00	21.00	1.00	111.00	23.00	

ICP Results Raw Data Report

	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 # 78C11J	SST-1
Aluminum	NOT RUN				50.69	101.37%				
Antimony			9.98			99.82%		10.00		10.00
Arsenic					57.02	114.04%	#			
Barium			9.70			96.95%		10.00		10.00
Beryllium					9.81	98.10%				
Bismuth				54.02		107.82%				
Boron			9.82			98.20%		10.00		10.00
Cadmium			10.00			99.97%		10.00		10.00
Calcium			9.95			99.49%		10.00		10.00
Cerium			9.28			92.81%		10.00		10.00
Chromium			9.19			91.85%		10.00		10.00
Cobalt			9.02			90.18%		10.00		10.00
Copper			9.89			98.94%		10.00		10.00
Europium				10.00		99.95%				
Iron			9.93			99.27%		10.00		10.00
Lanthanum				47.77		95.34%				
Lead				53.29		106.36%				
Lithium			9.57			95.69%		10.00		10.00
Magnesium			10.05			100.45%		10.00		10.00
Manganese			9.88			98.78%		10.00		10.00
Mercury					26.27	105.06%				
Molybdenum					49.31	98.62%				
Neodymium			9.08			90.79%		10.00		10.00
Nickel			9.95			99.49%		10.00		10.00
Phosphorous					56.40	112.79%	#			
Potassium			25.47			101.87%		25.00		25.00
Samarium				10.24		102.43%				
Selenium					52.72	105.43%				
Silicon					45.31	90.62%				
Silver				10.67		106.65%				
Sodium			24.25			96.99%		25.00		25.00
Strontium			9.83			98.34%		10.00		10.00
Sulfur					52.98	105.95%				
Tantalum					49.28	98.56%				
Thallium					53.53	107.06%				
Thorium				53.59		106.97%				
Tin			49.16			98.31%		50.00		50.00
Titanium					50.58	101.17%				
Tungsten					21.04	84.18%	#			
Uranium				55.87		111.52%	#			
Vanadium					9.85	98.46%				
Zinc			9.90			98.97%		10.00		10.00
Zirconium					49.87	99.75%				
Dilution Factor			1.00	1.00	1.00					

ICP Results Raw Data Report

	SST-2	LMCS Standards Values ppm SST-3	LMCS Standard IDs Book # 78C11J 82B32F 77C11I	ACID DIGESTION LMCS STANDARD VALUES ppm in Sample	ACID DIGEST. LMCS IDs Book #
Aluminum		50.00		100.00	
Antimony					
Arsenic		50.00			
Barium				100.00	
Beryllium		10.00			
Bismuth	50.10			100.00	
Boron				100.00	
Cadmium				100.00	
Calcium				100.00	
Cerium				100.00	
Chromium				100.90	
Cobalt				100.00	
Copper				100.00	
Europium	10.00				
Iron				100.00	
Lanthanum	50.10			100.00	
Lead	50.10			100.00	
Lithium				100.00	
Magnesium				100.00	
Manganese				100.00	
Mercury		25.00			
Molybdenum		50.00		99.80	
Neodymium				100.00	
Nickel				100.00	
Phosphorous		50.00		100.00	
Potassium				100.00	
Samarium	10.00				
Selenium		50.00			
Silicon		50.00		100.00	
Silver	10.00				
Sodium				100.00	
Strontium				100.00	
Sulfur		50.00			
Tantalum		50.00		99.50	
Thallium		50.00			
Thorium	50.10				
Tin				100.00	
Titanium		50.00		100.10	
Tungsten		25.00			
Uranium	50.10				
Vanadium		10.00			
Zinc				100.00	
Zirconium		50.00		99.80	
Dilution Factor				10.00	

ICP Calibration Report

Procedure:	LA-505-151	Revision: A-0	
Instrument:	WB39939		
Technologist:	J. A. White		
Date:	April 20, 1990	Time: 08:08	

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 HNO_3.

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 20, 1990

20-Apr-90 08:08:44

Condition		Value	Min	/	Max
VACUUM	=	18.52	7.000	/	50.00
SPTEMP	=	38.80	37.00	/	39.00
MAINS	=	233.2	220.0	/	247.0
-1000V	=	-1005	-1010	/	-990
CTEMP	=	24.90	19.00	/	35.00
+5V	=	5.160	4.750	/	5.250
+12V	=	12.16	11.70	/	12.30
-12V	=	-12.2	-12.3	/	-11.7
+24V	=	23.19	22.50	/	26.50
-100V	=	-100	-101	/	-99.0
+5VSQ	=	5.160	4.750	/	5.250
-12VSQ	=	15.16	14.70	/	15.30
-15VSQ	=	-15.2	-15.3	/	-14.7

Position Calibration in Progress

	SLIT	PM	ALPHA SLIT	BETA SLIT	ALPHA LAMBDA1	BETA LAMBDA1	ALPHA LAMBDA2	BETA LAMBDA2
Previous data :								
INCTR	0.00000	587.522	1.00102	0.31641	1.00005	-0.0667	0.00000	0.00000
Current data :								
INCTR	0.00000	587.454	1.00099	-0.6958	1.00009	-0.0666	0.00000	0.00000

[illegible] THE PLASMA NOW. PLEASE.20-Apr-90 08:[illegible]:36

ICP Calibration April 20, 1990

Sample name : SSI0
Programme : SST 20-Apr-90 10:53:32

NAME	MV INT	RSD
AL	2.00	1.18
SB	0.38	0.79
AS	1.09	0.49
BA	3.95	1.25
BE	0.71	0.85
BI	3.83	1.08
B	4.81	1.39
CD	2.31	0.87
CA	0.51	0.49
CE	5.34	1.43
CR	1.33	1.77
CO	0.26	0.79
CU	2.96	1.21
EU	4.14	1.42
FE	1.64	1.65
LA	0.36	0.98
PB	0.27	0.21
LI	4.56	1.90
MG	0.46	0.89
MN	0.77	0.91
HG	3.89	1.33
MO	1.68	1.48
NB	5.49	1.66
NI	3.40	1.52
P	[illegible]	1.32
K	3.35	1.00
SM	5.12	1.32
SU	[illegible]	[illegible]
SI	2.34	1.10
AG	15.33	1.44
NA	5.50	1.17
SR	3.70	1.07
S	0.71	0.99
TA	3.73	1.59
TL	4.31	1.36
TH	1.07	1.07
SN	1.24	1.99
TI	3.55	1.09
W	1.35	2.00
U	5.18	1.34
VI	4.30	1.11
ZN	2.39	1.66
ZR	4.68	1.04

Sample name : SSI1
Programme : SST 20-Apr-90 10:58:03

NAME	MV INT	RSD
LI	427.08	0.08
K	13.54	0.33
NA	60.97	0.20

Sample name : SSI2
Programme : SST 20-Apr-90 11:00:02

ICP Calibration April 20, 1990

Sample name : SST2
Programme : SST 20-Apr-90 11:00:02

NAME	MV INT	RSD
BA	283.45	0.36
BE	483.09	0.38
CD	315.70	0.13
CA	397.23	0.42
CR	68.24	0.92
CO	5.35	2.65
CU	96.22	0.31
FE	122.89	0.06
MG	417.01	0.18
MN	269.24	0.44
NI	156.22	0.21
AG	447.45	0.20
SR	502.07	0.28
V1	167.58	0.77
ZN	610.77	0.15

Sample name : SST3
Programme : SST 20-Apr-90 11:02:45

NAME	MV INT	RSD
AL	30.85	0.23
B	642.56	0.06
HG	743.64	0.24
MO	287.55	0.40
P	52.83	1.55
SI	76.48	0.43
S	38.34	1.35
TA	120.91	0.44
TI	427.88	0.11
W	63.24	0.20
ZR	150.47	0.13

Sample name : SST4
Programme : SST 20-Apr-90 11:04:50

NAME	MV INT	RSD
SB	7.26	0.57
AS	123.39	0.51
BI	103.37	0.48
PB	5.02	0.44
SE	51.49	0.76
TL	43.60	0.55
TH	13.62	0.33
SN	237.74	0.49
U	12.37	0.31

Sample name : SST5
Programme : SST 20-Apr-90 11:07:30

NAME	MV INT	RSD

ICP Calibration April 20, 1990

Sample name : SST5
Programme : SST 20-Apr-90 11:07:30

NAME	MV INT	RSD
CE	15.71	0.39
EU	431.60	1.00
LA	5.41	0.81
ND	16.86	0.85
SM	13.70	0.44

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.9016	21.896	-0.530909E+01	0.265233E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	2.0017	0.0000	0.0000	-0.000	-0.000		CRV1
SST3	0	20.853	50.000	50.000	50.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.3591	7.6272	-0.548940E+01	0.145222E+02		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.3780	0.0000	0.0000	-0.000	-0.000		CRV1
SST4	0	7.2640	100.00	100.00	100.00	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.0365	129.56	-0.892054E+00	0.817648E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.0910	0.0000	0.0000	0.0000	0.0000		CRV1
SST4	0	122.39	100.00	100.00	100.00	0.0000	0.0000	CRV1

ICP Calibration April 20, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.7522	297.62	-0.282624E+00	0.715565E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	3.9497	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	283.45	20.000	20.000	20.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.6726	507.24	-0.293546E-01	0.414613E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.7080	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	483.09	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.6353	108.54	-0.384404E+01	0.100454E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	3.8267	0.0000	0.0000	0.0000	0.0000		CRV1
SST4	0	103.37	100.00	100.00	100.00	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.5679	675.74	-0.376386E+00	0.782778E-01		

Name	Number	Int.	Conc	True	Calc	Conc	% Error	Curve

ICP Calibration April 20, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.5679	675.74	-0.376386E+00	0.782778E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	4.8083	0.0000	0.0000	0.0000	0.0000		CRV1
SSI3	0	643.56	50.000	50.000	50.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	2.1929	331.48	-0.147313E+00	0.638181E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	2.3083	0.0000	0.0000	0.0000	0.0000		CRV1
SSI2	0	315.70	20.000	20.000	20.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.4886	417.09	-0.259298E-01	0.504143E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	0.5143	0.0000	0.0000	0.0000	0.0000		CRV1
SSI2	0	397.23	20.000	20.000	20.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	5.0698	16.499	-0.102856E+02	0.192734E+01		

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

ICP Calibration April 20, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	5.0698	16.499	-0.102856E+02	0.192734E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	5.3367	0.0000	0.0000	-0.000	-0.000		CRV1
SST5	0	15.714	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.2603	71.647	-0.396563E+00	0.298916E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.3267	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	68.233	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	0.2502	5.5101	-0.105664E+01	0.401257E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.2633	0.0000	0.0000	-0.000	-0.000		CRV1
SST2	0	5.2477	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	2.8164	101.03	-0.635815E+00	0.214464E+00		

Name	Number	Int.	Conc	True	Calc	Conc	% Error	Curve

ICP Calibration April 20, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	2.8164	101.03	-0.635815E+00	0.214464E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	2.9647	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	96.220	20.000	20.000	20.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.9292	453.18	-0.193516E+00	0.467881E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.1360	0.0000	0.0000	-0.000	-0.000		CRV1
SST5	0	431.60	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	1.5539	129.03	-0.269793E+00	0.164944E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.6357	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	122.89	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	0.3398	5.6795	-0.141613E+01	0.395935E+01		

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

ICP Calibration April 20, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.3398	5.6795	-0.141313E+01	0.395935E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSTO	0	0.3577	0.0000	0.0000	0.0000	0.0000		CRV1
SSI5	0	5.4090	20.000	20.000	30.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.2571	5.2713	-0.569865E+01	0.210541E+02		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSTO	0	0.2707	0.0000	0.0000	0.0000	0.0000		CRV1
SSI4	0	5.0203	100.00	100.00	100.00	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.3317	448.43	-0.539581E+00	0.118338E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSTO	0	4.5597	0.0000	0.0000	-0.000	-0.000		CRV1
SSI1	0	427.08	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	0.4335	437.86	-0.219100E-01	0.480132E-01		

Name	Number	Int.	Conc	True	Calc	Conc	% Error	Curve

ICP Calibration April 20, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.4335	437.86	-0.219100E-01	0.480132E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	0.4563	0.0000	0.0000	0.0000	0.0000		CRV1
SSI2	0	417.01	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.7306	282.70	-0.572873E-01	0.744959E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	0.7690	0.0000	0.0000	-0.000	-0.000		CRV1
SSI2	0	269.24	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.6958	780.82	-0.262951E+00	0.675908E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	3.8903	0.0000	0.0000	0.0000	0.0000		CRV1
SSI3	0	743.64	50.000	50.000	50.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.5925	301.92	-0.293199E+00	0.174905E+00		

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

ICP Calibration April 20, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.5925	301.92	-0.293199E+00	0.174905E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSTO	0	1.6763	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	287.55	50.000	50.000	50.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	5.2108	17.705	-0.964226E+01	0.175793E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSTO	0	5.4850	0.0000	0.0000	0.0000	0.0000		CRV1
SST5	0	16.862	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	3.2338	164.03	-0.445497E+00	0.130875E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSTO	0	3.4040	0.0000	0.0000	-0.000	-0.000		CRV1
SST2	0	156.22	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.1527	55.468	-0.117541E+01	0.968748E+00		

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

ICP Calibration April 20, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.1527	55.468	-0.117541E+01	0.968748E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.2133	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	52.826	50.000	50.000	50.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.1767	14.216	-0.164132E+02	0.490533E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	3.3460	0.0000	0.0000	-0.000	-0.000		CRV1
SST1	0	13.539	50.000	50.000	50.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.8684	14.383	-0.119554E+02	0.233291E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	5.1247	0.0000	0.0000	-0.000	-0.000		CRV1
SST5	0	13.698	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.6603	54.061	-0.351370E+01	0.201051E+01		

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

ICP Calibration April 20, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.6603	54.061	-0.351370E+01	0.201051E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.7477	0.0000	0.0000	0.0000	0.0000		CRV1
SST4	0	51.486	100.00	100.00	100.00	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.1689	80.209	-0.228005E+01	0.683536E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	3.3357	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	76.485	50.000	50.000	50.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	14.465	469.83	-0.704536E+00	0.462719E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	15.226	0.0000	0.0000	-0.000	-0.000		CRV1
SST2	0	447.45	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	5.2234	64.033	-0.495557E+01	0.901285E+00		

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

ICP Calibration April 20, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	5.2234	64.023	-0.495557E+01	0.901285E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	5.4983	0.0000	0.0000	0.0000	0.0000		CRV1
SSI1	0	60.975	50.000	50.000	50.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.5166	527.17	-0.148553E+00	0.401313E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	3.7017	0.0000	0.0000	0.0000	0.0000		CRV1
SSI2	0	502.07	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.6780	40.261	-0.948276E+00	0.132874E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	0.7137	0.0000	0.0000	0.0000	0.0000		CRV1
SSI3	0	38.343	50.000	50.000	50.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.5416	126.85	-0.159201E+01	0.427043E+00		

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

ICP Calibration April 20, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.5416	126.85	-0.159201E+01	0.427043E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	3.7280	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	120.81	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	4.0986	45.785	-0.109807E+02	0.234516E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.3143	0.0000	0.0000	-0.000	-0.000		CRV1
SST4	0	43.605	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	1.0194	14.303	-0.855071E+01	0.796897E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.0730	0.0000	0.0000	0.0000	0.0000		CRV1
SST4	0	13.622	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	1.1755	249.63	-0.523174E+00	0.422823E+00		

Name	Number	Int.	Conc	True	Calc	Conc	% Error	Curve

ICP Calibration April 20, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.1755	249.63	-0.523174E+00	0.422823E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	1.2373	0.0000	0.0000	0.0000	0.0000		CRV1
SSI4	0	237.74	100.00	100.00	100.00	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.3697	449.28	-0.417949E+00	0.117832E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	3.5470	0.0000	0.0000	-0.000	-0.000		CRV1
SSI3	0	427.88	50.000	50.000	50.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.2841	66.402	-0.109202E+01	0.807907E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	1.3517	0.0000	0.0000	0.0000	0.0000		CRV1
SSI3	0	63.240	50.000	50.000	50.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.9178	12.992	-0.719315E+02	0.138953E+02		

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

ICP Calibration April 20, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.9178	12.992	-0.719315E+02	0.138953E+02		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	5.1767	0.0000	0.0000	-0.000	-0.000		CRV1
SST4	0	12.373	100.00	100.00	100.00	0.0001	0.0001	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.0894	175.96	-0.527284E+00	0.123491E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.3047	0.0000	0.0000	-0.000	-0.000		CRV1
SST2	0	167.58	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	2.2702	641.30	-0.785590E-01	0.328744E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	2.3897	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	610.77	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	4.4485	157.99	-0.160602E+01	0.342972E+00		

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

ICP Calibration April 20, 1990

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.4485	157.99	-0.160602E+01	0.342972E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SSI0	0	4.6827	0.0000	0.0000	-0.000	-0.000		CRV1
SST3	0	150.47	50.000	50.000	50.000	-0.000	-0.000	CRV1

Sample name : HNO3
Programme : SST 20-Apr-90 12:42:11

NAME	MV INT	CONCEN	RSD
Al	1.94	-0.169	-23.77
Sb	0.37	-0.174	-14.43
As	1.07	-0.016	-53.89
Ba	3.85	-0.007	-33.25
Be	0.69	-0.001	-25.46
Bi	3.75	-0.073	-34.45
B	4.86	0.004	26.95
Cd	2.25	-0.004	-22.46
Ca	0.48	(-0.002	-4.82
Ce	5.19	-0.279	-39.35
Cr	1.30	-0.009	-34.49
Co	0.24	(-0.078	-5.17
Cu	2.87	-0.019	-34.83
Eu	4.03	-0.005	-36.87
Fe	1.56	-0.013	-13.44
La	0.35	-0.038	-20.69
Pb	0.27	-0.119	-35.29
Li	3.90	(-0.078	-3.90
Mg	0.44	-0.001	-20.93
Mn	0.75	-0.001	-24.22
Hg	4.88	0.067	5.86
Mo	1.63	-0.007	-41.18
Nd	5.37	-0.209	-54.88
Ni	3.32	-0.011	-10.08
P	1.18	-0.034	-90.00
K	3.26	-0.437	-29.45

ICP Analysis April 20, 1990 Acid Blank

Sample name : HNO3
Programme : SST 20-Apr-90 12:42:11

NAME	MV INT	CONCEN	RSD
Al	1.94	-0.169	-23.77
Sb	0.37	-0.174	-14.43
As	1.07	-0.016	-53.89
Ba	3.85	-0.007	-33.25
Be	0.69	-0.001	-25.46
Bi	3.75	-0.073	-34.45
B	4.86	0.004	26.93
Cd	2.25	-0.004	-22.46
Ca	0.48	(-0.002	-4.82
Ce	5.19	-0.279	-29.35
Cr	1.30	-0.009	-34.49
Co	0.24	(-0.078	-5.17
Cu	2.87	-0.019	-24.83
Eu	4.03	-0.005	-36.87
Fe	1.56	-0.013	-13.44
La	0.35	-0.038	-20.69
Pb	0.37	-0.119	-35.29
Li	3.90	(-0.078	-3.90
Mg	0.44	-0.001	-20.93
Mn	0.75	-0.001	-24.22
Hg	4.88	0.067	5.86
Mo	1.63	-0.007	-41.18
Nd	5.37	-0.209	-54.88
Ni	3.32	-0.011	-10.08
P	1.18	-0.034	-90.00
K	3.26	-0.437	-29.45
Sm	4.99	-0.316	-30.51
Se	1.72	-0.062	-72.62
Si	3.23	-0.073	-23.58
Ag	14.80	-0.020	-27.84
Na	5.35	-0.138	-32.66
Sr	3.62	-0.003	-30.68
S	0.69	-0.037	-53.01
Ta	3.64	-0.039	-46.98
Tl	4.22	-0.232	-32.09
Th	1.04	-0.250	-28.60
Sn	1.21	-0.012	-67.93
Ti	3.46	-0.010	-28.55
W	1.32	-0.025	-55.62
U	5.03	-2.006	-27.02
V	4.25	-0.007	-22.94
Zn	2.30	-0.003	-24.34
Zr	4.59	-0.031	-33.91

ICP Analysis April 20, 1990 LMCS Check Standard

F975

Sample name : 78C11J
Sample code 1 : SST1
Sample code 2 : DIRECT
Programme : SST 20-Apr-90 12:46:22

NAME	MV INT	CONCEN	RSD
Al	2.06	0.143	26.98
Sb	1.07	10.045	0.80
As	1.20	0.087	2.47
Ba	139.67	9.711	0.60
Be	0.72	0.001	61.99
Bi	3.99	0.167	26.14
B	130.21	9.816	0.09
Cd	159.31	10.020	0.13
Ca	198.21	9.966	0.59
Ce	10.07	9.119	0.16
Cr	32.27	9.249	0.07
Co	2.32	8.257	0.47
Cu	49.15	9.905	0.39
Eu	4.70	0.036	5.16
Fe	61.75	9.915	0.31
La	0.37	0.053	7.50
Pb	0.27	-0.007	-173.20
Li	85.43	9.570	0.36
Mg	208.96	10.011	0.54
Mn	133.98	9.923	0.33
Hg	4.50	0.041	15.59
Mo	1.77	0.017	15.00
Nd	10.75	9.352	2.39
Ni	79.38	9.944	0.03
P	1.30	0.086	13.12
K	8.43	24.926	0.47
Sm	5.13	0.022	429.81
Se	3.41	3.346	1.00
Si	3.38	0.028	50.79
Ag	15.35	0.006	88.79
Na	32.35	34.202	0.47
Sr	248.45	9.832	0.62
S	0.91	0.261	2.84
Ta	3.81	0.035	50.09
Tl	4.56	0.626	14.14
Th	1.10	0.252	20.30
Sn	116.97	48.935	0.31
Ti	3.56	0.002	184.38
W	1.61	0.210	6.10
U	5.49	4.340	12.68
V	4.42	0.014	27.67
Zn	303.03	9.883	0.18
Zr	4.73	0.017	52.63

ICP Analysis April 20, 1990 LMCS Check Standard

E975

Sample name : 82B38F
Sample code 1 : SST2
Sample code 2 : DIRECT
Programme : SSI 20-Apr-90 12:51:05

NAME	MV INT	CONCEN	RSD
Al	3.65	4.383	1.02
Sb	0.42	0.542	4.09
As	2.98	1.541	1.58
Ba	4.33	0.027	7.42
Be	0.74	0.001	26.95
Bi	56.78	53.194	0.27
B	5.74	0.073	8.75
Cd	2.49	0.012	8.18
Ca	0.75	0.012	1.13
Ce	5.80	0.894	6.69
Cr	1.66	0.101	3.42
Co	0.26	-0.016	-28.87
Cu	4.11	0.245	0.88
Eu	214.54	9.844	0.27
Fe	1.99	0.058	8.42
La	12.23	147.007	0.12
Pb	2.77	52.656	0.35
Li	4.48	-0.009	-92.76
Mg	0.59	0.007	1.12
Mn	0.93	0.012	5.70
Hg	5.03	0.077	12.82
Mo	1.84	0.028	11.97
Nd	6.15	1.166	9.48
Ni	3.73	0.042	6.34
P	1.57	0.348	7.05
K	3.41	0.324	32.81
Sm	9.44	10.068	0.70
Se	1.92	0.345	6.23
Si	4.23	0.612	2.13
Ag	242.22	10.503	0.21
Na	5.73	0.207	11.32
Sr	3.99	0.011	7.19
S	0.85	0.178	3.84
Ta	4.29	0.240	4.62
Tl	6.82	6.389	2.28
Th	7.68	52.643	0.25
Sn	1.46	0.093	3.77
Ti	4.16	0.072	3.65
W	1.41	0.050	27.41
U	9.13	54.896	0.90
V	6.37	0.253	1.91
Zn	2.67	0.009	10.80
Zr	5.18	0.170	4.96

ICP Analysis April 20, 1990 LMCS Check Standard

F975

Sample name : 77C11I
Sample code 1 : SST3
Sample code 2 : DIRECT
Programme : SST 20-Apr-90 12:55:23

NAME	MV INT	CONCEN	RSD
Al	21.46	51.617	0.96
Sb	0.47	1.346	9.18
As	72.34	58.256	0.99
Ba	4.39	0.032	6.18
Be	236.97	9.796	1.10
Bi	4.97	1.149	2.94
B	5.73	0.073	6.37
Cd	2.65	0.022	4.52
Ca	0.76	0.012	1.04
Ce	5.65	0.597	14.34
Cr	1.54	0.064	6.14
Co	0.29	0.107	7.50
Cu	3.34	0.080	4.34
Eu	4.39	0.012	9.70
Fe	1.99	0.058	2.22
La	0.37	0.042	10.83
Pb	0.28	0.295	8.25
Li	4.26	(-0.036	-1.82
Mg	0.53	0.003	3.35
Mn	1.05	0.021	2.32
Hg	400.92	26.836	1.21
Mo	290.47	50.511	1.15
Nd	5.83	0.611	7.45
Ni	7.53	0.540	1.73
P	58.06	)55.074	0.93
K	3.47	0.607	17.46
Sm	5.45	0.757	11.77
Se	28.47	53.717	1.58
Si	70.96	46.222	0.97
Ag	22.77	0.349	0.78
Na	5.93	0.389	10.38
Sr	3.95	0.010	8.88
S	40.66	)53.072	1.54
Ta	121.47	50.281	1.41
Tl	25.51	53.958	1.38
Th	1.25	1.371	4.97
Sn	1.77	0.225	2.98
Ti	443.79	51.756	0.91
W	28.22	21.704	0.58
U	6.34	16.179	1.79
V	85.70	9.971	0.50
Zn	3.63	0.041	0.93
Zr	153.13	50.913	0.97

ICP Analysis April 20, 1990 Reagent Blank

Sample code 1 : REAGEN
Sample code 2 : 500-10
Sample code 3 : 000007
Programme : SST 20-Apr-90 13:05:41

NAME	MV INT	CONCEN	DILCOR	RSD
Al	1.99	-0.037	-0.780	-83.48
Sb	0.37	-0.106	-2.236	-7.87
As	1.10	0.005	0.103	367.81
Ba	3.93	-0.002	-0.034	-84.05
Be	0.70	-0.000	-0.006	-67.64
Bi	3.80	-0.029	-0.619	-173.31
B	4.85	0.003	0.066	14.10
Cd	2.27	-0.002	-0.049	-39.02
Ca	2.08	0.079	1.653	0.55
Ce	5.29	-0.084	-1.754	-63.30
Cr	1.31	-0.005	-0.103	-49.49
Co	0.25	-0.052	-1.095	-16.01
Cu	2.92	-0.009	-0.197	-28.14
Eu	4.11	-0.001	-0.024	-82.12
Fe	1.66	0.005	0.100	61.33
La	0.35	-0.015	-0.303	-27.27
Pb	0.27	-0.070	-1.474	-62.45
Li	3.96	(-0.071	(-1.495	-3.41
Mg	1.64	0.057	1.189	1.17
Mn	0.79	0.001	0.028	19.88
Hg	3.90	0.001	0.014	232.94
Mo	1.67	-0.001	-0.021	-327.94
Nd	5.45	-0.054	-1.144	-43.64
Ni	9.99	0.862	18.109	1.25
P	1.21	-0.006	-0.129	-289.87
K	166.08	)798.25	) 16763	0.36
Sm	5.09	-0.092	-1.927	-65.43
Se	1.73	-0.030	-0.633	-26.94
Si	3.41	0.052	1.091	38.05
Ag	15.08	-0.007	-0.142	-53.89
Na	6.06	0.507	10.656	6.10
Sr	3.69	-0.001	-0.012	-107.46
S	0.71	0.001	0.028	1365.02
Ta	3.69	-0.015	-0.308	-94.57
Tl	4.31	-0.004	-0.089	-809.82
Th	1.06	-0.125	-2.622	-31.49
Sn	1.25	0.003	0.068	34.51
Ti	3.52	-0.004	-0.079	-51.63
W	1.33	-0.019	-0.402	-45.70
U	5.13	-0.686	-14.40	-54.78
V	4.33	0.003	0.054	176.67
Zn	2.53	0.004	0.094	16.46
Zr	4.65	-0.010	-0.202	-78.68

Dilution factor : 21.0000

ICP Analysis April 20, 1990 Core 7 Composite Fusion Digestion

Sample name : F977
Sample code 1 : SAMPLE
Sample code 2 : 100-10
Sample code 3 : 000007
Programme : SSI 20-Apr-90 13:10:41

NAME	MV INT	CONCEN	DILCOR	RSD
Al	3.86	4.921	497.02	0.43
Sb	0.38	0.024	2.445	91.65
As	1.12	0.020	2.065	42.33
Ba	4.05	0.007	0.752	38.15
Be	0.72	0.000	0.040	63.21
Bi	4.46	0.635	64.156	3.24
B	4.93	0.010	0.978	29.19
Cd	2.34	0.002	0.221	27.06
Ca	1.94	0.072	7.242	1.17
Ce	5.46	0.233	23.489	32.23
Cr	1.38	0.014	1.459	10.95
Co	0.25	-0.035	-3.512	-17.63
Cu	3.04	0.017	1.697	23.85
Eu	4.23	0.004	0.451	23.27
Fe	3.85	0.365	36.878	1.62
La	0.36	0.011	1.066	57.28
Pb	0.27	-0.070	-7.080	-45.82
Li	4.07	(-0.058	(-5.861	-5.10
Mg	1.05	0.029	2.898	0.84
Mn	1.67	0.067	6.764	0.33
Hg	3.95	0.004	0.391	44.82
Mo	1.72	0.007	0.695	26.95
Nd	5.61	0.214	21.661	15.18
Ni	5.11	0.223	22.515	1.29
P	1.98	0.747	75.405	5.37
K	36.15	)160.91	) 16252	1.15
Sm	5.24	0.271	27.332	29.77
Se	1.79	0.084	8.461	20.13
Si	3.80	0.318	32.148	2.54
Ag	15.55	0.015	1.495	40.02
Na	9.03	3.184	321.55	0.18
Sr	4.02	0.013	1.286	5.38
S	0.74	0.035	3.579	15.16
Ta	3.79	0.026	2.645	48.10
Tl	4.52	0.528	53.297	8.30
Th	1.09	0.143	14.488	30.93
Sn	1.27	0.014	1.409	42.57
Ti	3.62	0.008	0.841	32.59
W	1.39	0.034	3.482	25.06
U	5.29	1.616	163.26	28.52
V	4.47	0.021	2.095	6.71
Zn	2.64	0.008	0.829	6.67
Zr	4.78	0.033	3.302	27.13

Dilution factor : 101.000

ICP Analysis April 20, 1990 Core 7 Composite Fusion Digestion

Sample name : E977
Sample code 1 : SAMPLE
Sample code 2 : 500-10
Sample code 3 : 000007
Programme : SST 20-Apr-90 13:14:44

NAME	MV INT	CONCEN	DILCOR	%SD
Al	10.85	23.464	492.75	0.15
Sb	0.38	0.073	1.525	52.92
As	1.15	0.046	0.956	16.69
Ba	4.12	0.012	0.254	17.16
Be	0.72	0.001	0.012	68.14
Bi	6.57	2.755	57.958	1.00
B	5.10	0.023	0.476	9.87
Cd	2.36	0.003	0.073	19.33
Ca	7.06	0.330	6.934	0.55
Ce	5.49	0.305	6.395	22.47
Cr	1.51	0.055	1.147	9.86
Co	0.26	-0.021	-0.449	-18.75
Cu	3.20	0.051	1.075	6.40
Eu	4.26	0.006	0.118	27.93
Fe	12.13	1.730	36.339	0.43
La	0.36	0.016	0.333	76.38
Pb	0.27	0.042	0.884	208.17
Li	4.09	(-0.056	(-1.166	-5.43
Mg	1.69	0.059	1.240	0.29
Mn	5.02	0.316	6.644	0.67
Hg	3.96	0.004	0.093	48.41
Mo	1.76	0.015	0.307	7.27
Nd	5.63	0.248	5.205	42.91
Ni	11.35	1.040	21.844	0.68
P	4.97	3.635	76.330	0.91
K	158.37	)760.45	) 15969	0.56
Sm	5.27	0.330	6.940	20.49
Se	1.83	0.166	3.476	21.07
Si	5.16	1.249	26.235	1.26
Ag	15.64	0.019	0.404	25.11
Na	21.19	14.146	297.07	0.29
Sr	4.97	0.051	1.066	1.14
S	0.77	0.072	1.516	5.52
Ta	3.84	0.046	0.975	26.56
Tl	4.53	0.554	11.634	5.18
Th	1.10	0.215	4.518	23.13
Sn	1.29	0.022	0.465	13.01
Ti	3.65	0.013	0.267	15.82
W	1.43	0.060	1.250	13.60
U	5.36	2.501	52.524	17.23
V	4.51	0.026	0.539	8.11
Zn	3.16	0.035	0.530	2.51
Zr	4.83	0.052	1.083	15.04

Dilution factor : 21.0000

ICP Analysis April 20, 1990 Duplicate of Core 7 Composite

Sample name : F978
Sample code 1 : DUPSAN
Sample code 2 : 100-10
Sample code 3 : 000007
Programme : SST 20-Apr-90 13:18:50

NAME	MV INT	CONCEN	DILCOR	RSD
Al	4.31	6.122	618.28	0.98
Sb	0.39	0.106	10.756	20.83
As	1.14	0.042	4.212	22.61
Ba	4.14	0.014	1.395	6.44
Be	0.73	0.001	0.099	17.08
Bi	4.64	0.817	82.553	5.89
B	4.90	0.007	0.706	37.23
Cd	2.38	0.005	0.473	43.39
Ca	3.84	0.168	16.956	1.26
Ce	5.57	0.459	46.329	7.05
Cr	1.42	0.028	2.808	12.92
Co	0.26	-0.009	-0.946	-24.23
Cu	3.11	0.031	3.170	6.07
Eu	4.32	0.009	0.874	6.09
Fe	4.28	0.437	44.114	1.56
La	0.37	0.032	3.199	7.22
Pb	0.27	0.084	8.506	38.19
Li	4.15	(-0.049	(-4.936	-1.78
Mg	2.12	0.080	8.090	1.18
Mn	1.84	0.079	8.021	0.84
Hg	3.96	0.005	0.471	17.29
Mo	1.76	0.014	1.425	11.83
Nd	5.72	0.412	41.606	6.91
Ni	5.08	0.219	22.143	2.21
P	2.16	0.915	92.397	1.06
K	33.50	)147.90	) 14938	1.09
Sn	5.35	0.533	53.879	8.76
Se	1.83	0.159	16.042	16.03
Si	3.92	0.396	40.019	0.36
Ag	15.87	0.030	2.999	7.07
Na	9.62	3.712	374.95	0.87
Sr	4.15	0.018	1.828	1.91
S	0.76	0.058	5.905	17.21
Ta	3.90	0.075	7.605	7.72
Tl	4.58	0.688	69.492	1.07
Th	1.12	0.340	34.341	5.90
Sn	1.31	0.031	3.089	19.57
Ti	3.69	0.017	1.714	8.01
W	1.43	0.060	6.038	5.12
U	5.40	3.159	319.04	7.63
V	4.56	0.031	3.179	4.87
Zn	2.72	0.011	1.108	2.27
Zr	4.85	0.056	5.681	4.28

Dilution factor : 101.000

ICP Analysis April 20, 1990 Duplicate of Core 7 Composite

Sample name : E978
Sample code 1 : DUPSAM
Sample code 2 : 500-10
Sample code 3 : 000007
Programme : SSI 20-Apr-90 13:23:03

NAME	MV INT	CONCEN	DILCOR	RSD
Al	12.68	28.319	594.70	0.52
Sb	0.39	0.106	2.236	56.77
As	1.14	0.039	0.824	34.80
Ba	4.10	0.011	0.224	28.22
Be	0.71	0.000	0.005	180.17
Bi	7.01	3.195	67.104	2.03
B	4.90	0.007	0.156	30.30
Cd	2.35	0.003	0.061	17.10
Ca	15.81	0.771	16.190	0.43
Ce	5.46	0.239	4.816	46.72
Cr	1.55	0.066	1.387	9.05
Co	0.26	-0.027	-0.562	-37.75
Cu	3.28	0.068	1.435	9.26
Eu	4.22	0.004	0.083	54.08
Fe	13.85	2.014	42.299	0.68
La	0.36	0.021	0.443	64.95
Pb	0.28	0.154	3.242	13.64
Li	4.06	(-0.059	(-1.238	-8.24
Mg	2.26	0.087	1.820	0.60
Mn	5.73	0.369	7.753	0.62
Hg	3.97	0.005	0.113	57.94
Mo	1.76	0.014	0.294	12.77
Nd	5.66	0.301	6.325	54.86
Ni	10.73	0.959	20.131	1.31
P	4.95	3.622	76.058	4.27
K	146.19	)700.72	) 14715	0.65
Sm	5.23	0.254	5.324	53.87
Se	1.83	0.174	3.659	4.66
Si	5.46	1.450	30.460	1.90
Ag	15.53	0.014	0.292	58.78
Na	22.73	15.530	326.12	0.64
Sr	5.27	0.063	1.321	2.41
S	0.77	0.069	1.442	43.12
Ta	3.81	0.036	0.747	34.83
Tl	4.47	0.394	8.284	47.09
Th	1.10	0.175	3.682	47.89
Sn	1.30	0.026	0.548	52.47
Ti	3.65	0.012	0.247	32.19
W	1.44	0.069	1.453	10.20
U	5.33	2.163	45.424	35.98
V	4.43	0.016	0.334	55.50
Zn	3.44	0.034	0.723	3.10
Zr	4.79	0.037	0.783	34.05

Dilution factor : 21.0000

ICP Analysis April 20, 1990 Spike of Core 7 Composite

Sample name : F97
Sample code 1 : SPIKE
Sample code 2 : 100-10
Sample code 3 : 000007
Programme : SSI 20-Apr-90 13:29:43

NAME	MV INT	CONCEN	DILCOR	RSD
Al	3.67	4.417	490.29	1.04
Sb	0.43	0.770	85.434	1.89
As	1.09	-0.004	-0.484	-290.67
Ba	15.67	0.839	93.124	0.70
Be	0.69	-0.001	-0.078	-11.77
Bi	4.29	0.462	51.329	10.76
B	15.53	0.840	93.188	0.71
Cd	15.73	0.856	95.046	0.83
Ca	19.05	0.935	103.75	0.93
Ce	5.63	0.574	63.681	16.87
Cr	4.00	0.798	88.590	0.70
Co	0.43	0.658	73.045	1.86
Cu	6.92	0.849	94.214	0.62
Eu	4.10	-0.002	-0.201	-117.84
Fe	8.86	1.192	132.33	0.26
La	0.35	-0.022	-2.490	-35.29
Pb	0.26	-0.140	-15.58	-15.00
Li	10.90	0.750	83.231	0.59
Mg	20.73	0.973	108.02	0.82
Mn	13.09	0.918	101.86	0.51
Hg	4.02	0.008	0.943	20.67
Mo	1.67	-0.001	-0.136	-189.71
Nd	5.84	0.618	68.621	34.43
Ni	11.40	1.046	116.09	0.32
P	1.83	0.597	66.275	7.40
K	33.27	)146.78	) 16392	0.57
Sm	5.02	-0.249	-27.62	-51.77
Se	1.85	0.210	23.358	20.07
Si	3.65	0.215	23.849	10.22
Ag	14.87	-0.017	-1.851	-47.12
Na	10.84	4.816	534.53	0.77
Sr	25.21	0.863	95.796	0.86
S	0.74	0.028	3.146	48.94
Ta	3.67	-0.026	-2.876	-44.67
Tl	4.30	-0.026	-2.919	-396.75
Th	1.05	-0.167	-18.58	-42.32
Sn	11.26	4.238	470.40	0.78
Ti	3.48	-0.008	-0.876	-53.42
W	1.35	-0.001	-0.120	-1242.1
U	5.09	-1.172	-130.1	-65.91
V	4.31	0.000	0.050	513.51
Zn	28.48	0.858	95.210	0.70
Zr	4.63	-0.018	-2.030	-62.93

Dilution factor : 111.000

ICP Analysis April 20, 1990 Spike of Core 7 Composite

Sample name : F979
Sample code 1 : SPIKE
Sample code 2 : 500-10
Sample code 3 : 000007
Programme : SST 20-Apr-90 13:36:08

NAME	MV INT	CONCEN	DILCOR	RSD
Al	10.11	21.513	494.80	0.85
Sb	0.44	0.958	22.045	1.52
As	1.13	0.034	0.784	15.98
Ba	16.00	0.862	19.825	0.92
Be	0.72	0.000	0.007	27.15
Bi	6.28	2.467	56.737	1.24
B	15.77	0.858	19.729	0.93
Cd	16.17	0.885	20.346	0.64
Ca	23.64	1.166	26.813	1.00
Ce	5.86	1.001	23.021	4.43
Cr	4.19	0.857	19.718	1.42
Co	0.45	0.745	17.135	5.39
Cu	7.21	0.911	20.949	0.83
Eu	4.26	0.006	0.132	9.58
Fe	16.54	2.459	56.547	0.71
La	0.36	0.012	0.273	38.49
Pb	0.27	-0.007	-0.161	-173.20
Li	11.15	0.780	17.929	0.90
Mg	21.04	0.988	22.730	0.93
Mn	16.33	1.159	26.661	0.85
Hg	4.11	0.015	0.339	12.37
Mo	1.75	0.013	0.300	8.15
Nd	6.03	0.953	21.914	5.68
Ni	17.32	1.822	41.897	1.06
P	4.79	3.465	79.700	2.57
K	145.58	)697.70	) 16047	5.86
Sm	5.21	0.204	4.686	16.63
Se	1.95	0.412	9.480	3.97
Si	4.99	1.130	25.998	0.82
Ag	15.48	0.012	0.271	20.44
Na	21.96	14.837	341.24	0.95
Sr	26.46	0.913	21.009	0.99
S	0.79	0.098	2.262	8.79
Ta	3.78	0.022	0.511	37.88
Tl	4.51	0.506	11.649	14.08
Th	1.10	0.183	4.216	15.68
Sn	11.59	4.379	100.71	0.89
Ti	3.62	0.008	0.193	16.25
W	1.44	0.075	1.716	6.76
U	5.32	1.968	45.275	9.19
V	4.45	0.018	0.403	9.39
Zn	29.64	0.896	20.605	0.60
Zr	4.80	0.039	0.894	9.21

Dilution factor : 23.0000

ICP Analysis April 20, 1990 Acid Blank

Sample name : HNO3
Programme : SST 20-Apr-90 13:52:41

NAME	MV INT	CONCEN	RSD
Al	1.93	-0.197	-13.07
Sb	0.37	-0.184	-9.12
As	1.06	-0.029	-16.58
Ba	3.80	-0.011	-4.99
Be	0.68	-0.001	-21.71
Bi	3.69	-0.148	-12.15
B	4.49	(-0.025	-4.74
Cd	2.20	-0.007	-6.17
Ca	0.47	(-0.002	-2.71
Ce	5.13	-0.395	-4.40
Cr	1.27	-0.015	-18.67
Co	0.25	(-0.054	-7.50
Cu	2.83	-0.029	-4.04
Eu	3.97	-0.008	-7.83
Fe	1.55	(-0.014	-6.72
La	0.35	-0.038	-20.69
Pb	0.26	-0.154	-39.36
Li	3.84	(-0.086	-1.34
Mg	0.44	-0.001	-3.40
Mn	0.74	-0.002	-15.23
Hg	4.08	0.013	18.77
Mo	1.62	-0.010	-16.10
Nd	5.30	-0.330	-49.97
Ni	3.27	-0.018	-16.50
P	1.18	-0.035	-23.51
K	3.32	-0.126	-53.75
Sm	4.93	-0.456	-3.98
Se	1.69	-0.115	-23.95
Si	3.19	-0.101	-8.98
Ag	14.58	-0.030	-4.58
Na	5.28	-0.201	-5.26
Sr	3.58	-0.005	-2.39
S	0.69	-0.036	-42.12
Ta	3.57	-0.066	-6.99
Tl	4.17	-0.372	-14.35
Th	1.03	-0.332	-3.67
Sn	1.20	-0.016	-21.06
Ti	3.41	-0.016	-10.01
W	1.28	(-0.057	-11.38
U	4.96	-2.960	-4.46
V	4.20	-0.013	-34.75
Zn	2.28	-0.003	-7.51
Zr	4.55	-0.046	-6.33

ICP Analysis April 20, 1990 LMCS Check Standard

Sample name : F980
Sample code 1 : 78C11J
Sample code 2 : SST1
Sample code 3 : DIRECT
Programme : SSI 20-Apr-90 13:56:56

NAME	MV INT	CONCEN	RSD
Al	2.08	0.197	29.96
Sb	1.07	9.982	1.31
As	1.21	0.100	15.54
Ba	139.44	9.695	1.32
Be	0.73	0.001	18.65
Bi	4.01	0.181	39.58
B	130.27	9.820	1.22
Cd	158.96	9.997	1.06
Ca	197.85	9.949	1.26
Ce	10.15	9.281	1.01
Cr	32.05	9.185	1.39
Co	2.51	9.018	1.76
Cu	49.10	9.894	1.19
Eu	4.72	0.027	6.94
Fe	61.82	9.927	1.00
La	0.38	0.073	5.45
Pb	0.27	0.028	75.00
Li	85.42	9.569	1.24
Mg	209.66	10.045	1.09
Mn	133.36	9.878	1.31
Hg	4.24	0.023	25.10
Mo	1.79	0.019	12.06
Nd	10.65	9.079	2.37
Ni	79.42	9.949	1.07
P	1.32	0.106	9.81
K	8.54	25.468	0.74
Sm	5.18	0.117	115.18
Se	3.39	3.305	1.66
Si	3.40	0.042	47.78
Ag	15.45	0.010	80.95
Na	32.40	24.248	0.98
Sr	248.75	9.834	1.24
S	0.91	0.267	6.09
Ta	3.82	0.040	44.90
Tl	4.60	0.737	15.58
Th	1.12	0.335	25.75
Sn	117.49	49.156	0.87
Ti	3.58	0.004	89.72
W	1.62	0.218	6.51
U	5.52	4.817	15.05
V	4.45	0.018	30.74
Zn	303.44	9.897	1.03
Zr	4.76	0.028	48.50

ICP Analysis April 20, 1990 LMCS Check Standard

Sample name : F980
Sample code 1 : 82B38F
Sample code 2 : SST2
Sample code 3 : DIRECT
Programme : SST 20-Apr-90 14:01:13

NAME	MV INT	CONCEN	RSD
Al	3.69	4.483	1.88
Sb	0.42	0.595	10.63
As	2.98	1.546	2.51
Ba	4.34	0.028	2.32
Be	0.75	0.002	6.96
Bi	57.60	54.016	2.14
B	5.55	0.058	5.97
Cd	2.50	0.012	8.79
Ca	0.76	0.012	2.13
Ce	5.81	0.910	2.23
Cr	1.66	0.100	4.25
Co	0.26	0.001	173.23
Cu	4.12	0.248	1.87
Eu	217.76	9.995	2.03
Fe	2.02	0.063	5.86
La	12.42	147.767	2.04
Pb	2.80	53.288	2.00
Li	4.34	-0.025	-21.64
Mg	0.60	0.007	1.88
Mn	0.93	0.012	1.90
Hg	5.03	0.077	8.29
Mo	1.84	0.028	6.85
Nd	6.18	1.221	4.50
Ni	3.71	0.040	1.37
P	1.61	0.383	1.86
K	3.52	0.852	7.86
Sm	9.52	10.243	1.77
Se	1.93	0.361	12.23
Si	4.24	0.617	2.31
Ag	245.71	10.665	2.03
Na	5.73	0.205	8.81
Sr	3.99	0.012	1.89
S	0.85	0.182	10.64
Ta	4.29	0.241	1.16
Tl	6.83	6.401	1.05
Th	7.80	53.594	2.08
Sn	1.46	0.095	4.52
Ti	4.17	0.073	1.30
W	1.42	0.053	30.15
U	9.20	55.873	1.93
V	6.38	0.255	1.56
Zn	2.69	0.010	2.83
Zr	5.19	0.175	2.30

ICP Analysis April 20, 1990 LMCS Check Standard

Sample name : F980
Sample code 1 : 77C11I
Sample code 2 : SST3
Sample code 3 : DIRECT
Programme : SST 20-Apr-90 14:05:16

NAME	MV INT	CONCEN	RSD
Al	21.11	50.686	1.03
Sb	0.47	1.283	8.34
As	70.83	57.021	1.35
Ba	4.37	0.030	8.58
Be	237.31	9.810	0.85
Bi	4.96	1.138	2.26
B	5.53	0.056	5.84
Cd	2.63	0.021	3.39
Ca	0.75	0.012	2.01
Ce	5.63	0.360	18.77
Cr	1.51	0.054	7.83
Co	0.29	0.090	6.84
Cu	3.31	0.074	6.84
Eu	4.38	0.011	16.67
Fe	1.95	0.052	9.71
La	0.37	0.040	30.55
Pb	0.28	0.295	16.50
Li	4.23	<-0.039	-3.03
Mg	0.52	0.003	4.70
Mn	1.03	0.020	6.71
Hg	392.48	26.365	1.49
Mo	283.59	49.308	1.59
Nd	5.83	0.599	11.16
Ni	7.40	0.523	2.26
P	59.43	>56.396	2.06
K	3.53	0.927	7.50
Sm	5.43	0.701	16.41
Se	27.97	52.717	1.76
Si	69.63	45.311	1.55
Ag	22.62	0.342	1.26
Na	5.91	0.372	12.77
Sr	3.94	0.009	11.44
S	40.58	>52.976	1.93
Ta	119.13	49.282	1.65
Tl	25.35	53.528	1.72
Th	1.24	1.299	4.42
Sn	1.73	0.210	2.79
Ti	432.84	50.584	0.74
W	27.40	21.044	1.24
U	6.28	15.285	2.23
V	84.68	9.846	0.51
Zn	3.58	0.039	1.96
Zr	150.10	49.874	0.78

Analytical Batch

Lab Segment Serial #: F0971

Customer ID: 000007

Instrument	E60044
Procedure/Rev	LA-503-156/C-2
Technologist	R. Hale
Date	Feb. 21, 1990
Temperature	23 C
Starting Time	0900
Ending Time	1500
Chemist	S. A. Catlow

Plutonium Analysis
Fusion Dissolution

	Description	Lab ID
1	Initial LMCS Check Std.	F0975
2	Reagent Blank	F0976
3	Sample Composite 7	F0977
4	Duplicate Sample Composite 7	F0978
5	Sample Composite 7	F0983
6	Duplicate Sample Composite 7	F0984
7	Sample Composite 14	F1001
8	Duplicate Sample Composite 14	F1002
9	Sample Composite 14	F1007
10	Duplicate Sample Composite 14	F1008
11	Sample Composite 15	F1025

	Description	Lab ID
12	Duplicate Sample Comp. 15	F1026
13	Sample Composite 15	F1031
14	Duplicate Sample Comp. 15	F1032
15	Spike Composite 15	F1027
16	Final LMCS Check Std.	F1028
17		
18		
19		
20		
21		
22		

Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Bk# & Alqt. Vol.	Final Vol. of Std.
LMCS Check Std.	16B43/1 uL			N/A
Spike	16B43/1 uL	F1032/1.0 mL		N/A

SST-102 Rev. H 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-975 PU
File ID: SD4738.SPC

Counted on: 2/21/90 @14: 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	1529.4	1627.9	362.618	362.618	20.000	12.525	10.000	3.173
2	197.5	216.7	304.295	304.295	20.000	9.257	10.000	1.946
3	2108.5	2157.8	231.404	231.404	20.000	13.228	10.000	4.050

PEAK RESULTS

Peak		AEA	Peak Centroid				Count		Activity
ID	Isotope	Fract.	Exp.	Obs.	Diff.	FWHM	Rate c/m	d/m	uCi/ea
1	Pu236	0.4389	5.756	5.774	-0.018	0.06	39.67	192.13	0.865E-04
	Cm243		5.786	5.774	0.012				0.116E-03
2	Pu238	0.0612	5.499	5.500	-0.001	0.04	5.53	36.47	0.164E-04
	Am241		5.480	5.500	-0.020				0.126E-04
3	Pu239	0.4999	5.143	5.157	-0.014	0.06	45.10	214.45	0.966E-04
	Pu240		5.144	5.157	-0.013				0.966E-04

DETECTOR CALIBRATION

Energy(MEV) = 4.070 + (0.0047)*Channel
Energy range (MeV): 4.070 TO 6.476
Efficiency = 0.2107 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	45200.0	100.000
Smoothed	45199.4	99.999
Composite fit	45195.0	99.989
Residuals	4.4	0.010

Analyzed by: _____
DM

Raw Data Dump for AEA Spectrum: SP:SD4730.SPC

1	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
11	1.	0.	0.	0.	0.	0.	3.	1.	0.	0.
21	1.	0.	1.	0.	1.	0.	0.	0.	0.	1.
31	1.	0.	0.	2.	1.	2.	4.	2.	0.	1.
41	1.	1.	1.	1.	0.	1.	2.	0.	1.	2.
51	2.	1.	1.	0.	0.	0.	0.	0.	1.	0.
61	1.	0.	2.	0.	2.	1.	3.	0.	2.	0.
71	0.	1.	2.	2.	2.	0.	1.	1.	1.	1.
81	1.	0.	4.	4.	2.	1.	2.	1.	1.	1.
91	1.	0.	2.	2.	3.	0.	1.	0.	2.	0.
101	2.	2.	1.	3.	1.	0.	1.	3.	5.	2.
111	3.	4.	3.	0.	1.	1.	2.	3.	0.	3.
121	4.	1.	3.	2.	3.	4.	1.	2.	3.	4.
131	3.	3.	2.	3.	2.	2.	4.	4.	6.	3.
141	2.	0.	1.	8.	1.	2.	5.	2.	6.	7.
151	10.	6.	7.	6.	7.	7.	2.	9.	5.	5.
161	6.	10.	4.	6.	4.	9.	13.	9.	7.	11.
171	9.	13.	10.	17.	16.	16.	16.	16.	18.	14.
181	23.	17.	18.	23.	28.	25.	26.	33.	24.	34.
191	29.	30.	29.	40.	32.	44.	52.	44.	52.	59.
201	53.	61.	79.	90.	91.	120.	114.	115.	145.	162.
211	198.	214.	275.	252.	309.	356.	440.	465.	543.	558.
221	637.	720.	760.	899.	942.	1025.	1061.	1118.	1167.	1135.
231	1183.	1123.	1071.	1001.	840.	706.	582.	440.	287.	191.
241	132.	71.	45.	27.	18.	9.	6.	12.	6.	4.
251	13.	1.	6.	7.	9.	13.	15.	11.	21.	16.
261	9.	19.	18.	15.	15.	14.	12.	17.	21.	22.
271	15.	20.	15.	16.	24.	17.	23.	21.	29.	24.
281	26.	33.	30.	44.	49.	54.	62.	52.	66.	83.
291	74.	71.	89.	92.	90.	120.	113.	102.	104.	113.
301	115.	128.	135.	106.	120.	108.	114.	108.	95.	85.
311	48.	58.	33.	29.	34.	17.	22.	28.	29.	21.
321	32.	34.	37.	33.	36.	48.	49.	59.	65.	70.
331	83.	71.	98.	129.	124.	146.	120.	178.	162.	210.
341	237.	257.	272.	293.	367.	348.	398.	414.	410.	529.
351	560.	593.	676.	662.	674.	709.	718.	682.	756.	784.
361	838.	860.	822.	765.	773.	727.	602.	423.	320.	193.
371	155.	86.	33.	25.	9.	4.	3.	0.	0.	0.
381	0.	0.	1.	0.	0.	0.	0.	1.	0.	1.
391	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
401	0.	0.	0.	0.	1.	0.	0.	1.	1.	0.
411	0.	1.	0.	0.	0.	0.	0.	0.	1.	0.
421	0.	0.	0.	0.	0.	0.	1.	0.	1.	1.
431	0.	0.	0.	1.	0.	1.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
471	0.	1.	0.	0.	2.	0.	0.	2.	0.	1.
481	0.	0.	0.	3.	0.	1.	1.	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-976
File ID: SD5610.SPC

Counted on: 2/21/90 @14: 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	2051.1	2090.8	364.484	364.484	20.000	9.433	10.000	4.382
2	187.8	187.1	306.570	306.570	20.000	9.400	10.000	2.889
3	38.4	16.2	269.027	269.027	12.000	4.544	6.000	3.636
4	596.0	597.6	233.123	233.123	16.000	9.718	8.000	5.134

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	Cm244	0.7201	5.796	5.785	0.011	0.04	36.14	155.38	0.700E-04
	Cm243		5.786	5.785	0.001				0.959E-04
2	Pu238	0.0767	5.499	5.513	-0.014	0.04	3.85	22.98	0.104E-04
	Am241		5.480	5.513	-0.033				0.793E-05
3		0.0037		5.336		0.02	0.18	0.79	0.356E-06
4	Pu239	0.1995	5.143	5.167	-0.024	0.05	10.01	43.04	0.194E-04
	Pu240		5.144	5.167	-0.023				0.194E-04

DETECTOR CALIBRATION

Energy(MEV) = 4.072 + (0.0047)*Channel
Energy range (MeV): 4.072 TO 6.478
Efficiency = 0.2326 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	25113.0	100.000
Smoothed	25113.0	100.000
Composite fit	25092.6	99.919
Residuals	20.4	0.081

Analyzed by: _____
DM

Raw Data Dump for AEA Spectrum: SP:SD5610.SPC

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
21	1.	1.	0.	0.	1.	1.	0.	0.	0.	0.
31	0.	0.	0.	1.	0.	0.	0.	0.	0.	1.
41	0.	1.	0.	0.	0.	0.	1.	0.	1.	0.
51	0.	0.	0.	0.	2.	1.	0.	0.	0.	0.
61	0.	0.	1.	0.	0.	0.	3.	0.	0.	1.
71	1.	0.	0.	1.	0.	1.	1.	0.	2.	1.
81	0.	0.	0.	1.	0.	0.	1.	0.	2.	1.
91	2.	1.	0.	0.	1.	0.	1.	0.	0.	0.
101	1.	0.	1.	0.	1.	0.	1.	0.	1.	0.
111	0.	1.	1.	2.	1.	0.	0.	2.	1.	1.
121	0.	1.	0.	0.	0.	0.	0.	2.	0.	0.
131	2.	1.	2.	0.	0.	0.	1.	0.	0.	2.
141	1.	0.	2.	1.	0.	2.	2.	2.	1.	1.
151	2.	0.	1.	2.	4.	1.	3.	2.	1.	1.
161	0.	4.	0.	1.	0.	0.	3.	3.	1.	7.
171	0.	2.	3.	2.	4.	5.	1.	8.	1.	1.
181	3.	1.	3.	3.	2.	4.	3.	2.	3.	5.
191	3.	4.	5.	3.	2.	5.	1.	3.	4.	4.
201	4.	6.	5.	3.	4.	7.	8.	8.	13.	13.
211	15.	20.	13.	19.	33.	47.	54.	41.	83.	86.
221	112.	137.	155.	154.	161.	235.	227.	278.	286.	311.
231	351.	379.	347.	354.	267.	221.	192.	126.	84.	50.
241	24.	17.	3.	2.	5.	2.	4.	0.	6.	12.
251	8.	2.	9.	9.	7.	7.	8.	12.	4.	9.
261	16.	15.	12.	5.	8.	18.	13.	13.	12.	10.
271	13.	8.	12.	11.	8.	11.	9.	10.	7.	10.
281	13.	11.	13.	19.	14.	17.	28.	22.	24.	39.
291	38.	43.	55.	50.	45.	49.	49.	69.	72.	58.
301	62.	86.	104.	103.	116.	112.	118.	99.	78.	56.
311	55.	33.	15.	16.	13.	8.	6.	5.	2.	7.
321	8.	6.	8.	14.	14.	7.	6.	14.	6.	14.
331	15.	17.	15.	13.	16.	25.	15.	29.	33.	36.
341	33.	39.	50.	73.	92.	126.	125.	194.	237.	294.
351	345.	463.	490.	575.	608.	727.	756.	799.	862.	930.
361	1023.	1151.	1219.	1248.	1179.	1058.	923.	715.	501.	291.
371	194.	77.	38.	29.	9.	0.	2.	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.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
421	0.	0.	1.	1.	1.	2.	0.	1.	0.	1.
431	0.	0.	0.	0.	0.	0.	0.	1.	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.	1.	0.	1.
471	0.	0.	2.	4.	0.	0.	0.	2.	1.	1.
481	0.	0.	1.	0.	0.	0.	0.	1.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

```
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,..., ETC                    7667.B
```

```
4
....4.
...............4
...............4
..4

3
3

2
.2
...2
....2
2

1
..  1
.............1
.......................................1....
.......................................................................1
..........................1
.1.
```

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

Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
F-977 PU
File ID: SD6045.SPC

Counted on: 2/21/90 @14: 0
Detector/Geometry number: 6/ 1
Count time: 30000. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1736.9	1788.2	363.361	363.361	20.000	12.144	10.000	4.559
2	130.3	134.0	305.024	305.024	24.000	9.637	12.000	1.795
3	142.7	39.0	269.397	269.397	12.000	1.817	6.000	3.177
4	2928.9	2976.5	231.448	231.448	20.000	11.741	10.000	4.814
5	24.1	19.7	151.793	151.793	32.000	52.739	16.000	14.827
6	10.3	10.3	24.372	24.372	20.000	10.236	10.000	1.788

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Peak Centroid Obs.	Peak Centroid Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1	Pu236	0.3661	5.756	5.747	0.009	0.06	36.14	188.04	0.847E-04
2	Am241	0.0378	5.480	5.478	0.002	0.04	3.73	20.23	0.911E-05
3		0.0027		5.314		0.01	0.26	1.33	0.601E-06
4	Pu239	0.5839	5.143	5.140	0.003	0.05	57.63	293.86	0.132E-03
	Pu240		5.144	5.140	0.004				0.132E-03
5	Np237	0.0074	4.781	4.773	0.008	0.24	0.73	4.28	0.193E-05
6	U 238	0.0022	4.200	4.187	0.013	0.05	0.21	1.42	0.638E-06

DETECTOR CALIBRATION

Energy(MEV) = 4.075 + (0.0046)*Channel
Energy range (MeV): 4.075 TO 6.430
Efficiency = 0.1961 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	48853.0	100.000
Smoothed	48851.6	99.997
Composite fit	49348.8	101.015
Residuals	-497.2	-1.018

Analyzed by: _____
DM

Raw Data Dump for AEA Spectrum: SP:SD6045.SPC

1	0.	0.	0.	0.	0.	0.	3.	4.	5.	4.
11	2.	3.	2.	6.	6.	4.	2.	5.	3.	5.
21	4.	7.	5.	8.	3.	8.	4.	3.	4.	1.
31	0.	0.	1.	0.	0.	1.	0.	0.	1.	0.
41	0.	1.	0.	0.	1.	2.	0.	0.	1.	0.
51	2.	1.	1.	1.	2.	0.	0.	0.	0.	0.
61	1.	0.	3.	2.	0.	1.	0.	1.	2.	1.
71	1.	2.	0.	0.	0.	1.	0.	0.	0.	1.
81	0.	2.	1.	0.	0.	0.	2.	1.	1.	0.
91	1.	2.	1.	0.	0.	0.	1.	2.	2.	0.
101	2.	0.	0.	1.	2.	2.	1.	2.	0.	0.
111	2.	3.	1.	3.	1.	2.	2.	5.	0.	0.
121	0.	0.	1.	0.	1.	4.	2.	4.	1.	5.
131	3.	5.	2.	3.	4.	5.	5.	6.	5.	9.
141	13.	8.	3.	9.	12.	15.	8.	9.	15.	12.
151	15.	13.	14.	16.	7.	6.	2.	6.	9.	10.
161	4.	8.	8.	6.	7.	5.	5.	3.	6.	5.
171	11.	8.	2.	6.	9.	7.	11.	11.	9.	9.
181	10.	13.	15.	15.	13.	14.	5.	19.	12.	16.
191	17.	18.	15.	17.	27.	29.	23.	36.	38.	38.
201	47.	64.	61.	71.	65.	111.	129.	127.	154.	182.
211	210.	223.	291.	346.	359.	450.	487.	592.	653.	735.
221	854.	960.	1025.	1069.	1213.	1305.	1433.	1572.	1633.	1674.
231	1565.	1679.	1494.	1309.	1141.	926.	648.	459.	318.	201.
241	108.	56.	35.	17.	9.	6.	2.	5.	6.	4.
251	9.	10.	13.	14.	14.	14.	15.	12.	20.	15.
261	14.	22.	11.	29.	27.	20.	32.	25.	23.	17.
271	24.	20.	21.	20.	25.	12.	12.	10.	10.	10.
281	15.	26.	21.	21.	37.	31.	35.	34.	46.	40.
291	40.	55.	45.	47.	34.	49.	53.	60.	70.	49.
301	65.	59.	82.	91.	73.	67.	65.	61.	56.	35.
311	31.	19.	14.	12.	6.	15.	9.	3.	8.	10.
321	6.	7.	5.	10.	7.	11.	17.	15.	20.	23.
331	20.	29.	31.	37.	37.	48.	48.	73.	60.	91.
341	101.	110.	133.	187.	195.	219.	252.	267.	363.	391.
351	480.	559.	504.	657.	704.	700.	770.	825.	789.	901.
361	900.	984.	963.	930.	931.	839.	632.	538.	418.	295.
371	190.	111.	62.	31.	25.	6.	2.	2.	0.	0.
381	0.	1.	0.	0.	0.	0.	1.	0.	0.	0.
391	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
421	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
431	0.	0.	1.	0.	0.	1.	0.	1.	0.	0.
441	0.	0.	1.	0.	0.	0.	0.	0.	1.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	1.	1.	0.	1.	1.	0.	0.	0.	0.	0.
471	0.	2.	0.	2.	0.	1.	2.	0.	1.	0.
481	0.	0.	1.	1.	2.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

```
          SPECTRUM SD6045.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,..., ETC                10543.3
6
6
6
6

5
5
5
5
5
5

.4
... 4
............4
..............................4...
.......................................................................4
.................................................4
.........4
.

3
2
2
.2
..2
.2
.
1
.1
.... 1
.............1
..............................1..
.........................................1
................1
1.
```

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

DATA REDUCTION REPORT

SAMPLE
F-978 PU
File ID: SD8094.SPC

Counted on: 2/21/90 @14: 0
Detector/Geometry number: 8/ 1
Count time: 30000. Sec

PEAK ANALYSIS

Peak	Peak height		Peak center		FWHM		Tau	
ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1343.6	1359.3	361.013	361.013	20.000	10.822	10.000	4.263
2	186.1	172.4	307.794	307.794	40.000	46.048	20.000	18.040
3	161.2	28.7	268.155	268.155	12.000	2.000	6.000	0.200
4	3082.0	3069.2	232.090	232.090	20.000	9.978	10.000	4.710
5	287.1	292.8	193.187	193.187	36.000	24.187	18.000	14.002
6	18.0	17.5	154.418	154.418	20.000	6.440	10.000	0.977
7	9.7	8.9	29.763	29.763	24.000	18.175	12.000	4.575

PEAK RESULTS

Peak		AEA	Peak Centroid				Count		Activity
ID	Isotope	Fract.	Exp.	Obs.	Diff.	FWHM	Rate c/m	d/m	uCi/ea
1	Pu236	0.2758	5.756	5.748	0.008	0.05	26.03	136.06	0.613E-04
2	Am241	0.0608	5.480	5.490	-0.010	0.22	5.74	31.28	0.141E-04
	Pu238		5.499	5.498	0.001				0.184E-04
3		0.0121		5.312		0.01	1.14	5.86	0.264E-05
4	Pu239	0.5690	5.143	5.142	0.001	0.05	53.70	275.11	0.124E-03
	Pu240		5.144	5.142	0.002				0.124E-03
5		0.0744		4.959		0.11	7.02	35.96	0.162E-04
6	Np237	0.0057	4.781	4.777	0.004	0.03	0.53	3.14	0.142E-05
7	U 238	0.0022	4.200	4.191	0.009	0.09	0.21	1.41	0.633E-06

DETECTOR CALIBRATION
Energy(MEV) = 4.051 + (0.0047)*Channel
Energy range (MeV): 4.051 TO 6.458
Efficiency = 0.1952 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	47266.0	100.000
Smoothed	47264.8	99.997
Composite fit	47187.9	99.835
Residuals	76.9	0.163

Analyzed by: _____
DM

Raw Data Dump for AEA Spectrum: SP:SD8094.SPC

1	0.	0.	0.	0.	0.	0.	3.	3.	2.	3.
11	2.	3.	1.	3.	4.	0.	4.	2.	3.	1.
21	3.	1.	4.	4.	4.	6.	6.	9.	4.	5.
31	4.	2.	4.	8.	2.	0.	1.	2.	0.	1.
41	0.	3.	0.	0.	2.	0.	3.	2.	0.	2.
51	1.	1.	0.	0.	1.	0.	2.	0.	1.	0.
61	1.	1.	0.	4.	1.	1.	1.	1.	0.	2.
71	0.	1.	0.	4.	0.	1.	0.	4.	1.	0.
81	2.	0.	1.	3.	0.	0.	0.	0.	0.	0.
91	0.	0.	4.	1.	3.	2.	0.	0.	0.	3.
101	0.	0.	3.	2.	5.	2.	2.	2.	2.	2.
111	1.	3.	4.	3.	4.	1.	1.	4.	1.	5.
121	1.	4.	3.	5.	4.	1.	2.	5.	3.	5.
131	1.	1.	2.	4.	5.	6.	3.	2.	6.	7.
141	6.	1.	10.	11.	8.	10.	7.	8.	6.	11.
151	13.	11.	10.	14.	13.	8.	9.	9.	7.	4.
161	8.	6.	1.	5.	7.	8.	8.	8.	11.	17.
171	22.	22.	27.	29.	34.	51.	47.	49.	72.	66.
181	99.	105.	122.	127.	147.	151.	173.	160.	188.	179.
191	153.	159.	152.	164.	157.	150.	134.	139.	152.	131.
201	130.	138.	108.	143.	122.	129.	133.	146.	162.	145.
211	171.	178.	194.	241.	253.	268.	317.	425.	440.	523.
221	609.	689.	816.	969.	1066.	1228.	1467.	1590.	1744.	1820.
231	1811.	1813.	1642.	1478.	1214.	971.	701.	448.	305.	175.
241	123.	52.	26.	26.	11.	11.	10.	8.	13.	6.
251	8.	8.	17.	11.	14.	12.	20.	18.	18.	19.
261	11.	14.	20.	18.	20.	19.	15.	31.	15.	24.
271	14.	19.	8.	13.	14.	11.	9.	13.	10.	14.
281	17.	18.	13.	19.	25.	31.	19.	38.	30.	36.
291	29.	41.	44.	43.	43.	66.	60.	64.	68.	74.
301	93.	76.	106.	107.	120.	84.	117.	108.	80.	80.
311	104.	68.	74.	66.	70.	74.	64.	75.	60.	70.
321	57.	59.	73.	58.	61.	63.	48.	61.	50.	37.
331	71.	70.	53.	62.	50.	62.	70.	55.	93.	67.
341	97.	98.	113.	136.	163.	213.	229.	248.	302.	371.
351	386.	458.	517.	511.	556.	654.	646.	706.	743.	766.
361	790.	771.	641.	545.	430.	329.	233.	159.	95.	48.
371	29.	7.	6.	2.	1.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
411	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
421	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	1.	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.	2.	0.	0.	0.	0.	0.	0.
471	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.
481	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

```
          SPECTRUM SD8094.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,..,  ETC                10385.1

7
7
7
7

6
6
6
6
6

5
..5
.....5.
4.....5.
..5....
........4.
3.........................4
3.................................................................4.
3.................................................4
3........4.
3
3
3

2
.2
...2
...2
..2.
2..
.1.
....1
...........1.
............................1
............................1
.....1
```

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

Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
F-1027 SEG.COMP#11
File ID: SD3905.SPC

Counted on: 2/23/90 @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	8.6	8.2	477.985	477.985	16.000	8.761	8.000	1.808
2	1128.4	1147.1	362.320	362.320	24.000	15.712	12.000	6.931
3	159.1	150.8	303.816	303.816	24.000	15.039	12.000	4.365
4	318.1	64.2	265.136	265.136	12.000	5.150	6.000	4.368
5	1427.4	1427.5	231.420	231.420	20.000	14.888	10.000	7.609
6	4.8	4.1	149.091	149.091	40.000	214.793	20.000	19.946

PEAK RESULTS

Peak		AEA	Peak Centroid				Count		Activity
ID	Isotope	Fract.	Exp.	Obs.	Diff.	FWHM	Rate c/m	d/m	uCi/ea
1		0.0036		6.314		0.04	0.21	1.04	0.467E-06
2	Pu236	0.4184	5.756	5.759	-0.003	0.08	24.04	121.81	0.549E-01
3	Am241	0.0661	5.480	5.478	0.002	0.07	3.80	20.06	0.904E-05
4		0.0131		5.293		0.02	0.75	3.74	0.169E-05
5	Pu239	0.4928	5.143	5.131	0.012	0.07	28.32	140.59	0.633E-04
	Pu240		5.144	5.131	0.013				0.633E-04
6	Np237	0.0060	4.640	4.736	-0.096	1.03	0.34	28.32	0.128E-04
	Np237		4.781	4.736	0.045				0.380E-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	28560.0	100.000
Smoothed	28559.9	100.000
Composite fit	28729.7	100.594
Residuals	-169.8	-0.595

Analyzed by: _____
JA

Raw Data Dump for AEA Spectrum: SP:SD3985.SPC

1	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
11	1.	1.	2.	1.	0.	1.	1.	0.	0.	1.
21	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
31	1.	0.	1.	2.	1.	1.	0.	0.	0.	0.
41	1.	0.	1.	1.	0.	1.	3.	0.	0.	2.
51	3.	0.	0.	1.	0.	1.	0.	2.	2.	1.
61	1.	3.	0.	0.	1.	1.	0.	0.	1.	1.
71	0.	0.	0.	2.	2.	1.	1.	0.	1.	1.
81	0.	0.	0.	0.	2.	0.	1.	1.	0.	0.
91	1.	1.	0.	1.	2.	1.	0.	2.	1.	0.
101	1.	0.	2.	1.	3.	1.	0.	0.	0.	1.
111	0.	0.	1.	0.	1.	1.	0.	0.	1.	2.
121	1.	2.	0.	1.	0.	2.	3.	1.	2.	1.
131	1.	3.	1.	2.	4.	3.	1.	2.	1.	1.
141	1.	3.	0.	2.	3.	3.	5.	1.	1.	3.
151	4.	1.	2.	0.	4.	1.	1.	1.	2.	0.
161	2.	4.	2.	2.	1.	3.	3.	3.	5.	1.
171	1.	5.	1.	1.	4.	2.	2.	1.	3.	3.
181	4.	2.	2.	4.	4.	3.	1.	3.	3.	2.
191	3.	4.	5.	9.	5.	5.	5.	4.	11.	15.
201	11.	14.	18.	28.	23.	32.	19.	39.	62.	51.
211	80.	89.	133.	156.	156.	178.	229.	271.	277.	337.
221	409.	441.	486.	562.	611.	715.	703.	780.	829.	842.
231	742.	700.	717.	620.	578.	461.	389.	312.	230.	180.
241	139.	87.	60.	42.	33.	22.	16.	14.	13.	17.
251	12.	11.	19.	16.	16.	12.	21.	16.	23.	17.
261	28.	19.	29.	26.	20.	15.	27.	22.	15.	17.
271	21.	20.	13.	17.	8.	13.	8.	17.	16.	14.
281	11.	19.	23.	31.	26.	26.	31.	27.	36.	36.
291	37.	44.	44.	47.	51.	61.	68.	78.	57.	97.
301	97.	88.	88.	88.	84.	68.	73.	49.	51.	52.
311	36.	28.	27.	17.	15.	9.	5.	3.	2.	3.
321	6.	6.	5.	10.	5.	11.	10.	13.	16.	15.
331	10.	15.	14.	29.	31.	34.	37.	46.	44.	60.
341	56.	97.	85.	112.	128.	141.	177.	219.	244.	309.
351	308.	352.	367.	473.	469.	519.	558.	571.	604.	624.
361	642.	598.	590.	583.	502.	447.	396.	358.	225.	210.
371	170.	99.	71.	55.	32.	13.	10.	8.	2.	2.
381	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	1.	1.	1.	0.	0.	0.	0.	0.	0.
421	1.	1.	0.	1.	2.	2.	1.	0.	0.	1.
431	0.	0.	0.	3.	0.	0.	1.	0.	1.	0.
441	0.	0.	0.	1.	0.	0.	1.	0.	0.	3.
451	0.	1.	0.	0.	3.	1.	1.	1.	0.	3.
461	1.	5.	4.	3.	2.	2.	4.	5.	1.	4.
471	2.	0.	4.	4.	4.	4.	5.	8.	5.	1.
481	4.	2.	1.	0.	1.	0.	0.	1.	0.	0.
491	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

```
          SPECTRUM SD3985.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,..,  ETC                5193.1

6
6
6
6
6
6
6
6
6
6
6
6
6
6
5
..5
.........5
...............................5..
.................................................................5
.................................................5
..............5
5..
.4
.4
3
.3
...3
......3
.....3
3.
2
.2
......2
..................2.
.............................................2.
.................................................2
.......................2
..2

1
1
1
1
1
```

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

DATA REDUCTION REPORT

SAMPLE
F1028 SEG/COMP/#12
File ID: SD2764.SPC

Counted on: 2/26/90 @16: 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	17.5	17.8	473.739	473.739	20.000	12.220	10.000	9.236
2	5.1	5.0	428.101	428.101	20.000	11.636	10.000	5.122
3	2086.3	2109.6	361.933	361.933	20.000	11.319	10.000	5.232
4	273.4	275.1	304.347	304.347	20.000	11.433	10.000	3.991
5	213.2	45.0	266.291	266.291	12.000	3.220	6.000	5.095
6	2521.3	2522.6	231.196	231.196	20.000	11.637	10.000	6.630

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1		0.0034		6.299		0.06	0.31	1.49	0.673E-06
2		0.0010		6.084		0.05	0.09	0.46	0.206E-06
3	Pu236	0.4331	5.756	5.773	-0.017	0.05	38.79	193.28	0.871E-04
	Cm243		5.786	5.773	0.013				0.117E-03
4	Pu238	0.0628	5.499	5.503	-0.004	0.05	5.62	38.12	0.172E-04
	Am241		5.480	5.503	-0.023				0.132E-04
5		0.0044		5.324		0.02	0.39	1.91	0.858E-06
6	Pu239	0.4954	5.143	5.159	-0.016	0.05	44.37	216.66	0.976E-04
	Pu240		5.144	5.159	-0.015				0.976E-04

DETECTOR CALIBRATION

Energy(MEV) = 4.072 + (0.0047)*Channel
Energy range (MeV): 4.072 TO 6.479
Efficiency = 0.2048 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	44811.0	100.000
Smoothed	44810.2	99.998
Composite fit	44787.2	99.947
Residuals	23.0	0.051

Analyzed by: _____
VR

Raw Data Dump for AEA Spectrum: SP:SD2764.SPC

1	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
11	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.
21	1.	0.	0.	0.	0.	0.	0.	0.	0.	2.
31	0.	0.	1.	0.	1.	1.	0.	0.	0.	0.
41	1.	0.	0.	0.	0.	0.	1.	1.	0.	0.
51	0.	2.	1.	0.	0.	0.	0.	0.	0.	1.
61	1.	3.	1.	1.	1.	0.	0.	1.	1.	0.
71	0.	1.	1.	1.	3.	1.	1.	0.	2.	0.
81	0.	0.	0.	1.	0.	1.	1.	0.	0.	1.
91	1.	1.	1.	1.	2.	0.	0.	2.	0.	0.
101	1.	0.	1.	1.	0.	2.	1.	0.	0.	2.
111	4.	0.	2.	4.	1.	2.	0.	0.	1.	1.
121	1.	2.	2.	3.	1.	1.	2.	2.	3.	1.
131	0.	1.	1.	2.	0.	1.	1.	2.	3.	0.
141	1.	3.	1.	2.	0.	1.	4.	0.	2.	4.
151	0.	1.	2.	1.	2.	0.	2.	6.	0.	3.
161	2.	3.	4.	5.	2.	4.	1.	5.	6.	6.
171	12.	11.	5.	5.	6.	4.	9.	5.	3.	3.
181	3.	4.	13.	9.	7.	10.	8.	5.	7.	10.
191	6.	5.	7.	11.	11.	11.	8.	10.	11.	17.
201	7.	22.	18.	24.	26.	26.	39.	52.	52.	73.
211	82.	114.	116.	168.	235.	273.	323.	412.	444.	493.
221	604.	698.	798.	945.	1023.	1250.	1321.	1388.	1440.	1441.
231	1474.	1388.	1228.	1038.	840.	641.	545.	376.	222.	130.
241	94.	42.	35.	18.	8.	11.	8.	8.	6.	12.
251	14.	11.	15.	4.	10.	17.	7.	19.	17.	13.
261	23.	22.	18.	26.	19.	24.	19.	20.	29.	14.
271	10.	9.	6.	8.	3.	3.	14.	16.	9.	15.
281	20.	18.	21.	25.	29.	26.	36.	48.	48.	62.
291	63.	65.	80.	82.	83.	83.	108.	118.	120.	126.
301	150.	152.	162.	162.	150.	135.	129.	86.	71.	71.
311	44.	27.	18.	19.	13.	15.	12.	6.	5.	9.
321	4.	6.	6.	7.	9.	14.	6.	16.	8.	14.
331	17.	15.	16.	19.	22.	31.	31.	47.	62.	69.
341	77.	93.	120.	160.	195.	256.	294.	365.	427.	475.
351	561.	656.	689.	765.	810.	876.	978.	1076.	1135.	1149.
361	1186.	1204.	1127.	1008.	814.	668.	528.	396.	199.	139.
371	82.	57.	23.	19.	7.	0.	2.	1.	1.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
401	1.	0.	0.	0.	1.	0.	0.	0.	1.	0.
411	0.	0.	0.	1.	1.	1.	1.	0.	3.	4.
421	2.	1.	3.	1.	3.	2.	4.	3.	2.	4.
431	1.	1.	2.	0.	0.	2.	0.	0.	0.	0.
441	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	1.	0.	1.	1.	0.	1.	1.	2.	2.
461	2.	4.	3.	1.	5.	7.	10.	6.	6.	13.
471	13.	12.	5.	11.	8.	8.	6.	9.	6.	3.
481	2.	0.	1.	2.	1.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

```
          SPECTRUM SD2764.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,..., ETC                9056.8

.6
.......6
..........................6.
.................................................
.................................................
........6.
.
5
5

4
..4
......4
.....4
4

.3
.... 3
................3.
.................................................3.
.................................................3
...............3
3


2
2
2


1
1
1
```

Spilled this one (f 1056)
while filtering
resulting in low
recovery.

Analytical Batch

Lab Segment Serial #: F0971

Customer ID: 000007

Instrument	E60044
Procedure/Rev	LA-503-156/C-2
Technologist	R. Hale
Date	Feb. 22, 1990
Temperature	24 C
Starting Time	0900 02-21-90
Ending Time	1533 02-22-90
Chemist	S. A. Catlow

Americium Analysis
Fusion Dissolution

	Description	Lab ID
1	Initial LMCS Check Std.	F0975
2	Reagent Blank	F0976
3	Sample Composite 7	F0977
4	Duplicate Sample Composite 7	F0978
5	Sample Composite 14	F1001
6	Duplicate Sample Composite 14	F1002
7	Sample Composite 14	F1007
8	Duplicate Sample Composite 14	F1008
9	Sample Composite 6	F0923
10	Sample Composite 15	F1025
11	Duplicate Sample Composite 15	F1026

	Description	Lab ID
12	Sample Composite 15	F1031
13	Duplicate Sample Comp. 15	F1032
14	Spike Composite 15	F1033
15	Sample Composite 7	F0983
16	Duplicate Sample Comp. 7	F0984
17	Final LMCS Check Std.	F1034
18		
19		
20		
21		
22		

Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Bk# & Alqt. Vol.	Final Vol. of Std.
LMCS Check Std.	16B43/10 ul			N/A
Spike	16B43/10 ul	F1032/1 ml		N/A

SST-102 Rev. H 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-975 SEG.COMP#7 AM
File ID: SD3001.SPC

Counted on: 2/27/90 @20: 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	1421.0	1419.0	303.091	303.091	24.000	16.601	12.000	6.741
2	1924.3	1905.6	257.236	257.236	20.000	15.423	10.000	6.115
3	9.0	9.9	118.940	118.940	188.000	2.000	94.000	0.200
4	0.7	0.1	93.285	93.285	12.000	0.200	6.000	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	Am241	0.4300	5.480	5.475	0.005	0.08	31.13	164.41	0.741E-04
2	Am243	0.5640	5.234	5.255	-0.021	0.07	40.00	1045.40	0.831E-03
3		0.0052		4.591		0.01	0.30	1.00	0.046E-06
4		0.0000		4.468		0.00	0.00	0.00	0.100E-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	37304.0	100.000
Smoothed	37304.0	100.000
Composite fit	36194.4	96.818
Residuals	1189.5	3.182

Analyzed by: _____
VR

```
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,..., ETC                6547.0



3
3
3
4
3
3
3




.
.
.
..
.2.
....2
...........2
..............................2
.................................................................2.
.....................................................................2.
.1.......................2..
..2.1....
...........1
..............................1
.....................................................1
.........................................1
............1
1.
```

Raw Data Dump for AEA Spectrum: SP:SD3001.SPC

1	0.	0.	0.	0.	0.	0.	0.	0.	2.	0.
11	0.	1.	2.	0.	0.	0.	0.	1.	1.	0.
21	0.	1.	0.	3.	2.	0.	1.	0.	0.	2.
31	1.	1.	2.	1.	0.	0.	0.	0.	2.	0.
41	2.	2.	0.	0.	0.	1.	0.	1.	1.	2.
51	1.	0.	4.	2.	0.	1.	1.	0.	3.	3.
61	2.	0.	2.	2.	0.	1.	1.	3.	1.	3.
71	0.	3.	2.	1.	3.	0.	0.	1.	2.	3.
81	1.	0.	1.	2.	4.	1.	2.	0.	2.	2.
91	4.	2.	3.	3.	2.	1.	0.	4.	0.	2.
101	0.	0.	0.	6.	2.	3.	0.	3.	4.	3.
111	2.	2.	4.	5.	1.	2.	6.	6.	3.	6.
121	2.	2.	2.	2.	2.	4.	4.	4.	1.	1.
131	11.	2.	8.	2.	2.	3.	8.	5.	5.	2.
141	5.	7.	6.	2.	5.	4.	3.	6.	6.	5.
151	6.	8.	6.	6.	5.	9.	5.	4.	8.	8.
161	6.	9.	10.	4.	9.	5.	4.	10.	3.	8.
171	3.	9.	13.	16.	9.	16.	10.	6.	9.	13.
181	5.	16.	12.	10.	17.	11.	11.	17.	16.	14.
191	19.	18.	17.	17.	22.	15.	33.	14.	28.	27.
201	10.	13.	19.	14.	25.	36.	21.	26.	22.	30.
211	39.	43.	31.	31.	37.	40.	48.	39.	48.	49.
221	48.	42.	48.	49.	55.	70.	65.	63.	62.	75.
231	89.	93.	111.	119.	143.	153.	148.	190.	215.	208.
241	260.	307.	341.	389.	442.	481.	542.	646.	675.	763.
251	861.	874.	1058.	1032.	1106.	1135.	1069.	1027.	945.	859.
261	700.	596.	513.	436.	324.	228.	234.	152.	140.	144.
271	129.	87.	89.	94.	75.	84.	72.	70.	90.	93.
281	108.	94.	122.	142.	145.	162.	196.	215.	270.	283.
291	326.	353.	423.	455.	561.	586.	656.	725.	744.	763.
301	831.	811.	788.	741.	668.	602.	539.	510.	387.	310.
311	253.	213.	141.	129.	100.	67.	45.	40.	30.	18.
321	10.	12.	5.	10.	2.	3.	1.	0.	0.	0.
331	0.	1.	0.	1.	1.	0.	1.	1.	2.	0.
341	1.	0.	2.	1.	0.	5.	0.	4.	2.	0.
351	1.	2.	2.	3.	3.	1.	2.	0.	1.	0.
361	0.	1.	0.	1.	0.	0.	1.	1.	3.	1.
371	0.	2.	1.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	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.	0.	1.	0.	1.	0.	0.	1.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
451	0.	0.	0.	0.	1.	0.	0.	0.	0.	1.
461	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	1.	1.	2.	1.	3.	0.	0.	0.	2.	1.
481	1.	2.	1.	0.	0.	0.	1.	0.	0.	0.
491	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

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

DATA REDUCTION REPORT

SAMPLE
F-976 SEG.COMP#8 AM
File ID: SD0116.SPC

Counted on: 2/27/90 @20: 0
Detector/Geometry number: 0/ 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	103.4	102.9	304.971	304.971	20.000	13.833	10.000	3.350
2	1060.5	1030.3	260.517	260.517	20.000	12.010	10.000	3.713
3	4.8	3.3	152.554	152.554	36.000	422.341	10.000	30.683

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1	Pu230	0.0961	5.499	5.480	0.019	0.07	2.45	10.75	0.844E-05
	Am241		5.400	5.400	-0.000				0.647E-05
2	Am243	0.8904	5.234	5.272	-0.038	0.06	22.70	1137.11	0.512E-03
3	Np237	0.0135	4.640	4.764	-0.124	1.99	0.34	31.45	0.143E-04
	Np237		4.781	4.764	0.017				0.903E-06

DETECTOR CALIBRATION

Energy(MEV) = 4.047 + (0.0047)*Channel
Energy range (MeV): 4.047 TO 6.454
Efficiency = 0.1815 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	13240.0	100.000
Smoothed	13240.0	100.000
Composite fit	12748.4	96.287
Residuals	491.5	3.712

Analyzed by: _____
VR

```
  1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,..., ETC                4043.6

3
3
3
3
3
3
3
3
3
3
3
3
3
3
3
3
3
.2..
....2.....
..........2..
..................  2
.........................................  2
...............................................................................2...
...............................2
...2...
1.
..1
.....1
....1
1
```

.Raw Data Dump for ACA Srectrum: SP:SDC116.SPC

1	0.	0.	0.	0.	0.	0.	0.	0.	2.	0.
11	2.	0.	0.	0.	0.	0.	1.	2.	0.	0.
21	0.	1.	1.	0.	0.	0.	1.	1.	1.	0.
31	0.	2.	1.	1.	0.	1.	0.	0.	0.	0.
41	0.	0.	1.	1.	1.	0.	0.	1.	0.	2.
51	0.	0.	0.	0.	1.	0.	1.	0.	1.	0.
61	0.	0.	0.	1.	1.	1.	0.	0.	1.	1.
71	0.	2.	0.	1.	1.	0.	0.	0.	0.	1.
81	1.	1.	0.	0.	0.	1.	1.	0.	2.	1.
91	0.	0.	1.	0.	0.	0.	1.	1.	1.	1.
101	1.	1.	0.	0.	1.	1.	1.	1.	0.	4.
111	0.	0.	0.	1.	0.	0.	1.	2.	1.	1.
121	1.	0.	0.	1.	0.	1.	0.	0.	1.	0.
131	2.	2.	2.	1.	1.	2.	2.	0.	4.	2.
141	0.	1.	1.	2.	3.	2.	0.	1.	1.	7.
151	1.	4.	3.	2.	1.	2.	1.	1.	1.	2.
161	0.	0.	2.	5.	1.	0.	2.	1.	1.	1.
171	4.	2.	4.	1.	1.	1.	3.	2.	2.	5.
181	7.	3.	1.	4.	1.	3.	2.	4.	3.	1.
191	3.	6.	2.	9.	1.	4.	0.	6.	6.	6.
201	6.	8.	11.	11.	3.	4.	9.	7.	12.	15.
211	9.	10.	14.	10.	20.	15.	25.	17.	40.	33.
221	45.	38.	47.	71.	54.	70.	86.	105.	86.	103.
231	99.	87.	92.	95.	101.	104.	106.	100.	111.	109.
241	99.	117.	110.	159.	169.	173.	199.	221.	223.	250.
251	297.	323.	354.	434.	477.	557.	582.	583.	646.	614.
261	584.	501.	400.	350.	310.	210.	146.	112.	84.	61.
271	56.	52.	46.	39.	35.	22.	26.	24.	13.	21.
281	6.	19.	12.	21.	12.	3.	8.	15.	14.	16.
291	21.	18.	20.	30.	23.	30.	30.	35.	49.	62.
301	44.	58.	74.	64.	53.	66.	50.	31.	34.	32.
311	19.	21.	15.	7.	12.	7.	2.	4.	2.	2.
321	1.	2.	2.	2.	2.	0.	0.	0.	1.	0.
331	2.	1.	0.	0.	2.	0.	1.	2.	0.	1.
341	0.	0.	0.	2.	0.	2.	0.	1.	3.	0.
351	2.	3.	2.	3.	2.	0.	1.	2.	1.	2.
361	0.	1.	2.	1.	2.	0.	2.	0.	2.	2.
371	5.	2.	1.	2.	1.	0.	0.	1.	1.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
431	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
441	0.	1.	0.	0.	0.	0.	1.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
481	1.	0.	0.	1.	1.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

F-971.-6080

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-977 SEG.COMP#9 AM
File ID: SD4760.SPC

Counted on: 2/27/90 @20: 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	7.6	5.8	349.183	349.183	12.000	22.313	6.000	0.000
2	676.4	662.3	302.574	302.574	24.000	14.510	12.000	5.666
3	3315.0	3282.1	257.449	257.449	20.000	12.839	10.000	5.811
4	0.0	0.1	145.533	145.533	0.000	0.200	0.000	0.200

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1	Ra224	0.0261	5.680	5.705	-0.025	0.10	2.07	9.21	0.415E-05
2	Pu238	0.1758	5.499	5.485	0.014	0.07	13.98	81.07	0.365E-04
	Am241		5.480	5.485	-0.005				0.280E-04
3	Am243	0.7981	5.234	5.273	-0.039	0.06	63.48	2400.58	0.108E-02
4		0.0000		4.747		0.00	0.00	0.00	0.929E-09

DETECTOR CALIBRATION

Energy(MEV) = 4.063 + (0.0047)*Channel
Energy range (MeV): 4.063 TO 6.470
Efficiency = 0.2396 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	40010.0	100.000
Smoothed	40009.0	99.997
Composite fit	39769.8	99.400
Residuals	239.2	0.598

Analyzed by: _____
VR

```
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,..,  ETC                11011.7
1
1
1
1
1
1
1
1
1
1
1
1
1
1
1
1
1
4
1
1
1
1
1
1
1
1
1
3
1.3
1.......3
1.......................3.
1.............................................................3.
1.............................................................3
1...................3.
3....
1.2
1......2
1.............2.
1.........2
12.
1
1
1
1
1
```

Raw Data Dump for AEA Spectrum: SP:SD4760.SPC

1	0.	0.	0.	0.	0.	1.	1.	0.	3.	2.
11	0.	1.	0.	1.	2.	0.	2.	0.	1.	1.
21	4.	0.	1.	1.	2.	0.	0.	1.	1.	1.
31	1.	1.	0.	0.	1.	0.	0.	0.	1.	1.
41	2.	0.	0.	1.	0.	0.	0.	2.	2.	1.
51	0.	0.	0.	0.	1.	1.	1.	1.	2.	0.
61	1.	4.	1.	1.	0.	0.	0.	0.	0.	1.
71	0.	2.	1.	0.	3.	0.	1.	2.	4.	1.
81	1.	2.	0.	2.	1.	2.	1.	1.	0.	0.
91	2.	0.	1.	0.	1.	1.	2.	1.	0.	1.
101	2.	3.	1.	1.	2.	1.	3.	1.	1.	0.
111	1.	1.	1.	2.	0.	2.	1.	0.	1.	2.
121	3.	3.	3.	1.	1.	0.	2.	0.	0.	1.
131	4.	2.	3.	4.	1.	3.	2.	2.	4.	3.
141	3.	1.	2.	2.	5.	2.	5.	2.	1.	1.
151	4.	1.	1.	1.	1.	1.	2.	1.	3.	2.
161	3.	3.	3.	2.	1.	6.	3.	2.	3.	2.
171	4.	4.	2.	7.	3.	8.	2.	4.	7.	9.
181	8.	4.	7.	6.	6.	6.	3.	6.	6.	8.
191	16.	13.	8.	11.	10.	9.	17.	16.	19.	17.
201	8.	16.	18.	17.	12.	16.	7.	22.	23.	17.
211	25.	30.	25.	34.	29.	30.	32.	35.	41.	36.
221	39.	37.	48.	64.	52.	63.	71.	60.	84.	82.
231	102.	99.	116.	148.	150.	177.	223.	250.	311.	326.
241	337.	439.	489.	571.	646.	743.	826.	965.	1155.	1255.
251	1388.	1533.	1619.	1796.	1815.	1900.	1953.	1814.	1705.	1490.
261	1201.	951.	725.	534.	398.	284.	224.	171.	166.	118.
271	110.	121.	97.	68.	61.	52.	50.	37.	41.	43.
281	42.	53.	49.	52.	69.	72.	81.	106.	127.	124.
291	144.	188.	175.	209.	267.	279.	313.	357.	359.	386.
301	400.	379.	378.	370.	284.	254.	212.	175.	142.	120.
311	91.	76.	56.	44.	36.	26.	14.	22.	11.	7.
321	6.	4.	3.	0.	0.	0.	1.	1.	1.	0.
331	3.	0.	1.	0.	2.	2.	0.	1.	1.	0.
341	0.	3.	1.	4.	3.	4.	4.	4.	2.	3.
351	4.	1.	3.	1.	1.	1.	2.	1.	1.	3.
361	0.	0.	0.	2.	2.	1.	1.	1.	0.	1.
371	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	1.	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.	1.
411	0.	0.	0.	1.	1.	0.	0.	0.	2.	0.
421	1.	0.	2.	2.	0.	2.	2.	0.	2.	0.
431	1.	4.	2.	0.	1.	0.	2.	1.	0.	0.
441	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	1.	0.	0.	1.	0.	1.	0.	2.
471	0.	3.	1.	1.	1.	0.	0.	1.	1.	0.
481	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

F978-6182

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
F978 AM
File ID: SD8114.SPC

Counted on: 2/27/90 @10: 0
Detector/Geometry number: 8/ 1
Count time: 30000. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	401.1	391.1	304.981	304.981	24.000	13.677	12.000	3.666
2	1545.1	1488.9	259.840	259.840	20.000	13.023	10.000	3.791

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1	Pu238	0.2168	5.499	5.481	0.018	0.06	7.46	72.43	0.326E-04
	Am241		5.480	5.481	-0.001				0.250E-04
2	Am243	0.7832	5.234	5.268	-0.034	0.06	34.19	1712.73	0.772E-03

DETECTOR CALIBRATION

Energy(MEV) = 4.047 + (0.0047)*Channel
Energy range (MeV): 4.047 TO 6.454
Efficiency = 0.1815 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	22400.0	100.000
Smoothed	22399.3	99.997
Composite fit	21829.7	97.454
Residuals	569.6	2.543

Analyzed by: _____
MAX

```
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,..., ETC                5802.6
```

```
2
2
..2.
......2....
............2..
.......................  2
.................................................2
.................................................................2...
1.............................2.
.1.2.....
....1
........1
...............1.
...............1
...1
```

Raw Data Dump for AEA Spectrum: SP:SD8114.SPC

1	0.	0.	0.	0.	0.	0.	2.	1.	0.	1.
11	0.	0.	3.	0.	2.	1.	1.	0.	1.	0.
21	0.	0.	0.	1.	0.	2.	0.	0.	1.	0.
31	1.	1.	0.	1.	1.	3.	1.	0.	1.	1.
41	2.	0.	0.	1.	0.	0.	3.	0.	0.	1.
51	0.	0.	0.	2.	1.	1.	2.	2.	1.	2.
61	1.	1.	2.	0.	0.	1.	1.	1.	1.	1.
71	1.	3.	2.	0.	1.	0.	0.	0.	2.	0.
81	2.	1.	1.	1.	0.	1.	0.	1.	2.	1.
91	1.	1.	2.	0.	1.	2.	1.	1.	0.	2.
101	0.	1.	1.	0.	0.	0.	1.	1.	0.	3.
111	0.	1.	0.	3.	0.	1.	1.	0.	1.	2.
121	2.	0.	0.	0.	1.	0.	1.	0.	1.	2.
131	1.	1.	3.	2.	2.	2.	1.	4.	0.	0.
141	1.	2.	2.	0.	3.	1.	2.	2.	1.	2.
151	2.	3.	0.	3.	3.	0.	2.	0.	1.	2.
161	3.	3.	0.	2.	0.	1.	2.	1.	2.	0.
171	1.	3.	0.	2.	2.	1.	1.	3.	0.	1.
181	0.	3.	1.	3.	5.	1.	2.	1.	4.	4.
191	1.	1.	1.	0.	2.	3.	5.	2.	3.	4.
201	3.	5.	6.	6.	2.	5.	6.	11.	5.	7.
211	11.	18.	9.	25.	30.	31.	31.	29.	47.	71.
221	60.	70.	81.	90.	126.	123.	155.	123.	159.	162.
231	158.	157.	168.	163.	161.	156.	146.	151.	178.	175.
241	203.	220.	201.	224.	256.	291.	328.	338.	369.	430.
251	465.	572.	622.	648.	769.	769.	858.	914.	953.	877.
261	778.	698.	619.	519.	397.	281.	190.	163.	125.	110.
271	103.	101.	88.	88.	62.	67.	67.	55.	47.	55.
281	42.	43.	45.	46.	31.	62.	50.	59.	57.	80.
291	92.	88.	99.	106.	87.	146.	155.	148.	164.	182.
301	194.	219.	250.	256.	211.	207.	199.	158.	149.	89.
311	71.	73.	58.	44.	28.	20.	16.	11.	5.	13.
321	4.	1.	1.	1.	0.	1.	0.	2.	0.	1.
331	0.	1.	1.	0.	1.	0.	0.	1.	0.	1.
341	0.	0.	1.	1.	0.	2.	2.	2.	0.	0.
351	4.	2.	2.	1.	4.	0.	0.	2.	3.	1.
361	0.	1.	1.	1.	1.	1.	1.	3.	1.	0.
371	2.	0.	1.	2.	0.	0.	0.	1.	0.	1.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
421	0.	0.	0.	1.	1.	0.	0.	1.	0.	1.
431	1.	1.	3.	1.	1.	0.	0.	1.	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.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	1.	0.	1.	1.	0.
481	1.	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
F1033 SEG/COMP#17
File ID: SD5627.SPC

Counted on: 2/26/90 @16: 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	2516.4	2505.7	303.215	303.215	20.000	14.473	10.000	4.314
2	3353.5	3365.0	257.501	257.501	20.000	12.250	10.000	3.820
3	0.2	6.4	158.503	158.503	64.000	2.000	32.000	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	Pu239	0.4422	5.499	5.491	0.008	0.07	58.60	348.12	0.157E-03
	Am241		5.480	5.491	-0.011				0.120E-03
2		0.5560		5.276		0.06	73.69	315.16	0.142E-03
3	Np237	0.0019	4.701	4.811	-0.030	0.01	0.25	1.23	0.553E-06

DETECTOR CALIBRATION

Energy(MEV) = 4.066 + (0.0047)*Channel
Energy range (MeV): 4.066 TO 6.472
Efficiency = 0.2330 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	66771.0	100.000
Smoothed	66770.7	100.000
Composite fit	66268.3	99.247
Residuals	502.3	0.752

Analyzed by: _____
VR

```
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,..., ETC                    11515.6

3
3
3
3
3
3
3

2
.2
...2
.......2
...............2
...............................2..
1.............................................................2..
.1.............................................................2..
...1...............2.....
2......1...
...............1
...............................1
.......................................................1.
.........................................1
..........1
.
```

Raw Data Dump for AEA Spectrum: SP:SD5627.SPC

1	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
11	0.	1.	1.	1.	0.	1.	1.	0.	1.	0.
21	1.	1.	0.	0.	0.	0.	1.	2.	0.	1.
31	2.	0.	0.	0.	1.	1.	0.	0.	1.	1.
41	0.	0.	0.	1.	0.	1.	1.	2.	1.	3.
51	0.	0.	1.	0.	0.	0.	2.	3.	0.	0.
61	2.	0.	0.	2.	0.	1.	1.	5.	2.	2.
71	0.	2.	2.	1.	0.	2.	2.	1.	1.	0.
81	0.	2.	2.	1.	1.	2.	0.	2.	0.	0.
91	0.	2.	1.	0.	1.	0.	0.	3.	1.	1.
101	1.	3.	0.	0.	3.	3.	1.	0.	1.	1.
111	1.	2.	1.	1.	1.	0.	1.	0.	0.	3.
121	1.	1.	1.	2.	0.	4.	6.	2.	1.	0.
131	2.	2.	2.	0.	5.	1.	2.	0.	3.	0.
141	2.	4.	3.	3.	3.	4.	1.	3.	2.	1.
151	3.	1.	3.	6.	5.	4.	1.	8.	6.	2.
161	2.	4.	1.	3.	3.	4.	2.	3.	7.	2.
171	6.	6.	9.	2.	7.	9.	4.	11.	4.	5.
181	7.	8.	6.	12.	8.	5.	12.	12.	11.	8.
191	5.	17.	17.	19.	17.	19.	25.	25.	19.	24.
201	26.	25.	22.	21.	20.	27.	35.	31.	46.	61.
211	43.	52.	56.	65.	58.	56.	88.	84.	67.	84.
221	94.	105.	95.	134.	132.	179.	157.	167.	180.	209.
231	229.	227.	258.	313.	296.	344.	360.	441.	460.	539.
241	630.	619.	744.	796.	881.	953.	991.	1147.	1207.	1300.
251	1383.	1610.	1607.	1709.	1050.	1084.	1976.	1895.	1791.	1570.
261	1293.	1063.	808.	585.	442.	330.	298.	260.	224.	200.
271	208.	187.	212.	179.	170.	203.	210.	196.	215.	223.
281	236.	262.	310.	379.	363.	420.	457.	479.	540.	610.
291	670.	733.	790.	847.	933.	1029.	1073.	1108.	1248.	1304.
301	1393.	1411.	1463.	1307.	1271.	1114.	952.	757.	565.	463.
311	352.	299.	224.	161.	135.	108.	79.	49.	36.	22.
321	19.	2.	4.	2.	4.	1.	0.	0.	1.	1.
331	0.	3.	0.	1.	2.	1.	0.	0.	0.	1.
341	2.	2.	0.	0.	1.	2.	1.	2.	2.	1.
351	5.	1.	1.	2.	2.	0.	0.	0.	0.	1.
361	1.	0.	0.	0.	1.	1.	0.	1.	0.	0.
371	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
421	0.	1.	0.	1.	1.	0.	1.	0.	1.	0.
431	0.	0.	0.	1.	1.	0.	0.	1.	1.	1.
441	0.	1.	0.	0.	0.	2.	0.	0.	0.	0.
451	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
471	0.	0.	0.	0.	1.	0.	0.	2.	0.	3.
481	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

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

DATA REDUCTION REPORT

SAMPLE
F-1034 SEG.COMP#1C A
File ID: SD2769.SPC

Counted on: 2/27/90 @20: 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	430.1	605.0	300.091	300.091	20.000	15.060	10.000	5.297
2	803.7	849.9	255.163	255.163	20.000	14.350	10.000	2.509

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1	Pu238	0.3733	5.499	5.482	0.017	0.07	15.75	95.72	0.431E-04
	Am241		5.480	5.482	-0.002				0.330E-04
2	Am243	0.6267	5.234	5.267	-0.033	0.07	26.43	1051.70	0.474E-03

DETECTOR CALIBRATION

Energy(MEV) = 4.060 + (0.0047)*Channel
Energy range (MeV): 4.060 TO 6.475
Efficiency = 0.2205 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	20989.0	100.000
Smoothed	20989.0	100.000
Composite fit	21091.0	100.486
Residuals	-102.0	-0.486

Analyzed by: _____
VR

```
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,..., ETC                    3300.6

2
2
.2
. 2
.. 2
...  2
........ 2
.............2....
....................2........
............................ 2
.......................................      2
.........................................................................2....
1.........................................................2..
...1.......2.....
2......1.
................1
.................................1.
.........................................................1
...............................1
......1
```

Raw Data Dump for AEA Spectrum: SP:SD2769.SPC

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	1.	1.	0.	0.	1.	0.	1.	1.	1.
21	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
31	0.	1.	0.	0.	1.	0.	0.	0.	0.	1.
41	0.	0.	1.	3.	1.	0.	0.	1.	0.	0.
51	1.	0.	1.	0.	0.	0.	0.	0.	1.	0.
61	0.	0.	3.	0.	3.	1.	0.	0.	1.	1.
71	0.	1.	0.	3.	1.	0.	0.	1.	1.	1.
81	1.	2.	2.	0.	0.	0.	0.	2.	1.	0.
91	0.	3.	1.	0.	2.	0.	2.	2.	0.	3.
101	1.	0.	0.	0.	1.	2.	0.	2.	1.	0.
111	0.	0.	0.	0.	1.	1.	0.	3.	2.	1.
121	2.	0.	2.	2.	0.	3.	2.	0.	1.	0.
131	1.	2.	1.	1.	2.	1.	3.	3.	1.	1.
141	1.	5.	5.	1.	2.	1.	4.	4.	3.	3.
151	3.	3.	3.	4.	0.	5.	0.	2.	6.	0.
161	6.	3.	6.	1.	1.	6.	5.	5.	5.	5.
171	6.	8.	5.	7.	4.	6.	13.	6.	2.	10.
181	6.	9.	8.	9.	9.	9.	9.	12.	6.	9.
191	9.	5.	13.	20.	9.	10.	9.	19.	16.	14.
201	19.	12.	27.	28.	32.	27.	36.	29.	39.	55.
211	45.	49.	71.	62.	64.	91.	78.	110.	98.	130.
221	108.	177.	145.	150.	175.	152.	197.	207.	206.	206.
231	197.	198.	188.	191.	165.	172.	179.	152.	166.	182.
241	165.	209.	226.	234.	278.	310.	328.	353.	398.	431.
251	444.	500.	489.	497.	541.	460.	421.	425.	325.	285.
261	211.	164.	148.	119.	71.	61.	58.	47.	45.	61.
271	56.	53.	36.	45.	38.	51.	50.	62.	57.	60.
281	62.	87.	90.	113.	132.	127.	142.	181.	186.	196.
291	197.	263.	259.	289.	308.	335.	355.	388.	400.	377.
301	353.	349.	326.	331.	237.	215.	164.	134.	95.	88.
311	65.	51.	46.	24.	26.	18.	15.	5.	3.	2.
321	1.	1.	0.	0.	0.	1.	0.	0.	1.	0.
331	0.	1.	0.	0.	1.	0.	0.	1.	0.	1.
341	0.	2.	1.	0.	0.	1.	0.	0.	1.	2.
351	1.	1.	1.	1.	0.	1.	2.	0.	0.	0.
361	0.	1.	0.	1.	0.	1.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
421	0.	0.	1.	1.	1.	1.	0.	0.	0.	1.
431	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
441	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
461	0.	0.	0.	0.	0.	0.	1.	1.	0.	1.
471	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
481	2.	0.	0.	1.	1.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Analytical Batch

LAB SEGMENT SERIAL #: F0971

CUSTOMER ID: 000007

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 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 BK# & ALQT. 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. H 9/27/90 Interim

Analytical Batch

Lab Segment Serial #: F0971

Customer ID: 000007

Instrument	WA77930
Procedure/Rev	LA-438-101/C-2
Technologist	S. Lai
Date	March 06, 1990
Temperature	24 C
Starting Time	0800
Ending Time	1500
Chemist	S. A. Catlow

Technetium Analysis
Fusion Dissolution

	Description	Lab ID
1	Initial LMCS Check Std.	F0975
2	Reagent Blank	F0976
3	Sample Composite 7	F0977
4	Duplicate Sample Composite 7	F0978
5	Spike Composite 7	F0979
6	Final LMCS Check Std.	F0980
7		
8		
9		
10		
11		

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

Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Bk# & Alqt. Vol.	Final Vol. of Std.
LMCS Check Std.	68B39/250 ul			20 ml
Spike	68B39/250 ul	F0977/1.0 ml		20 ml

SST-102 Rev. H 9/27/90 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

[illegible]

UNKNOWN ID(20CHAR) [illegible]
UNKNOWN APPL. [illegible]
UNKNOWN NORM. FACTOR [illegible] 1.00000
UNKNOWN UNITS(2CHAR) [illegible] DPM
[illegible] EQUAL UNKNOWN NORM. FACTOR(Y/N) [illegible]
HALF LIFE CORRECTION(Y/N) [illegible]

BACKGROUND QUENCH CURVE [illegible]
[illegible]

STANDARD ID(20CHAR) [illegible]
QUENCH LIMITS [illegible] HIGH [illegible]
QUENCH MODE [illegible]

[illegible]

[illegible] STANDARDS [illegible]

STANDARD ID(20CHAR) [illegible]
[illegible] QUENCH STANDARDS [illegible] QUENCH MODE(A/H) [illegible]

[illegible]
STANDARD DPM [illegible]
[illegible]
[illegible]
[illegible] 00.00
QUENCH LIMITS [illegible]
[illegible] QUENCH CURVES(Y/N) [illegible]

[illegible] QUENCH [illegible]

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]
73.67	[illegible]	[illegible]	[illegible]
100.3	[illegible]	[illegible]	[illegible]
125.0	94.55	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
179.3	[illegible]	207.7	[illegible]

[illegible]

F975

F975+

F976

F976+

F977

F977+

F978

F978+

F979

F979+

F986

F986+

Analytical Batch

Lab Segment Serial #: F0971

Customer ID: 000007

Instrument	N/A
Procedure/Rev	LA-378-103/A-2
Technologist	M. Myers
Date	June 21, 1990
Temperature	21 C
Starting Time	0800
Ending Time	1530
Chemist	S. A. Catlow

Iodine 129 Analysis
Fusion Dissolution

	Description	Lab ID
1	Initial LMCS Check Std.	F0975
2	Reagent Blank	F0976
3	Sample Composite 7	F0977
4	Duplicate Sample Composite 7	F0978
5	Spike Composite 7	F0979
6	Final LMCS Check Std.	F0980
7		
8		
9		
10		
11		

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

Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Bk# & Alqt. Vol.	Final Vol. of Std.
LMCS Check Std.	38B46/1.0 ml			N/A
Spike	38B46/1.0 ml	F0977/1.0 ml		N/A

SST-102 Rev. H 9/27/90 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

[illegible] ISOTOPE FILE

No.	Isotope	Half-life	RPC value	Calc.Limit
	Energy	Abs.Int.(%)		
1	I 129	1.600E+06 b	---	[illegible]
	39.6	7.50		
2	AM 241	1.[illegible]E+05 b	---	[illegible]
	59.5	35.90		
3	AM 243	2.700E+06 b	---	[illegible]
	74.7	66.00		
4	SB 125	1004.40 b	---	[illegible]
	176.3	6.80		
5	SE 75	119.77 b	---	[illegible]
	136.0	59.00		
	121.1	17.30		

Maximum Energy Error for Isotope Identification = 1.5 keV

RPC values are corrected for decay.

Command-- 7

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

10-SEP-9009:58:58

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

```
MCA UNIT NUMBER:   2     /     ADC UNIT NUMBER: 4.0
DETECTOR NUMBER:    6    /     GEOMETRY NUMBER:   1
SPECTRUM SIZE:  4096 CHANNELS
ORDER OF SMOOTHING FUNCTION:     5
NUMBER OF BACKGROUND CHANNELS:  4 ON EACH SIDE OF PEAK
PEAK CONFIDENCE FACTOR: 95.0%
IDENTIFICATION ENERGY WINDOW: +- 1.50 KEV
ERROR QUOTATION: 1.96 SIGMA UNCERTAINTY

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

ANALYSIS OF SPECTRUM SAVED IN DISK FILE: SD6172
ANALYZED BY:        69549

SAMPLE DESCRIPTION: F975-6585
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 22-JUN-90 AT 19:46:42

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

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

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

10-SEP-9009:58:58

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	148.56	29.57	1.56	745.	10155.	2.5	
2C	169.27	33.71	1.56	527.	2200.	4.9	CE-144
3C	198.30	39.51	1.52	209.	1413.	6.6	I-129,BI-212, CE-144

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 95.0%

C - MULTIPLET ANALYSIS CONVERGED NORMALLY

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

10-SEP-9009:58:58

SAMPLE: F975-6585
DATA COLLECTED ON 22-JUN-90 AT 19:46:42
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

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

NUCLIDE	ACTIVITY CONCENTRATION IN uCi/EA				ENERGY COMPARISON (KEV)	
	MEASURED	ERROR	DECAY CORRECTED	ERROR	EXPECT	DIFF
AM-241	LLD<1.83E-06		LLD<1.83E-06		59.54	
AM-243	LLD<9.16E-07		LLD<9.16E-07		74.67	
I-129	3.26E-04	+-2.16E-05	3.26E-04	+-2.16E-05	39.60	-0.09
SB-125	LLD<1.97E-05		LLD<1.97E-05		176.33	
SE-75	LLD<1.44E-06		LLD<1.44E-06		136.00	
SN-113	LLD<3.44E-06		LLD<3.44E-06		391.67	
TOTAL	3.26E-04	+-2.16E-05	3.26E-04	+-2.16E-05		

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 5.77E-03 UC/EA
TOTAL MEASURED ACTIVITY = 3.26E-04 (+-2.16E-05) UC/EA
% TECH. SPEC. = 5.65 (+-0.37)

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 95.0%

PEAKS NOT USED IN ANALYSIS

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
148.56	29.57	10155.	2.5	1.42E+01
169.27	33.71	2200.	4.9	2.08E+00

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

10-SEP-9010:06:25

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

MCA UNIT NUMBER: 2 / ADC UNIT NUMBER: 4.0
DETECTOR NUMBER: 6 / GEOMETRY NUMBER: 1
SPECTRUM SIZE: 4096 CHANNELS
ORDER OF SMOOTHING FUNCTION: 5
NUMBER OF BACKGROUND CHANNELS: 4 ON EACH SIDE OF PEAK
PEAK CONFIDENCE FACTOR: 95.0%
IDENTIFICATION ENERGY WINDOW: +- 1.50 KEV
ERROR QUOTATION: 1.96 SIGMA UNCERTAINTY

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

ANALYSIS OF SPECTRUM SAVED IN DISK FILE: SD6173
ANALYZED BY: 69549

SAMPLE DESCRIPTION: F976-6385
GEOMETRY DESCRIPTION: I-129/CULTURE TUBE
SAMPLE SIZE: 1.0000E+00 EA / CONVERSION FACTOR: 1.0000E+00
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL129

COLLECT STARTED ON 22-JUN-90 AT 21:34:04

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

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

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

10-SEP-9010:06:25

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

PK	CENTROID CHANNEL	ENERGY KEV	FWHM KEV	BACKGND COUNTS	NET AREA COUNTS	ERROR %	NUCLIDES

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 95.0%

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

10-SEP-9010:06:25

SAMPLE: F976-6385
DATA COLLECTED ON 22-JUN-90 AT 21:34:04
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

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

NUCLIDE	ACTIVITY CONCENTRATION IN uCi/EA				ENERGY COMPARISON (KEV)	
	MEASURED	ERROR	DECAY CORRECTED	ERROR	EXPECT	DIFF
AM-241	LLD<1.89E-06		LLD<1.89E-06		59.54	
AM-243	LLD<9.16E-07		LLD<9.16E-07		74.67	
I-129	LLD<1.82E-05		LLD<1.82E-05		39.60	
SB-125	LLD<1.95E-05		LLD<1.95E-05		176.33	
SE-75	LLD<1.53E-06		LLD<1.53E-06		136.00	
SN-113	LLD<2.50E-06		LLD<2.50E-06		391.67	
TOTAL	0.00E-01	+-0.00E-01	0.00E-01	+-0.00E-01		

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 95.0%

ALL DETECTED PEAKS WERE USED IN THE ANALYSIS

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

10-SEP-9010:09:16


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

MCA UNIT NUMBER:   2     /     ADC UNIT NUMBER: 4.0
DETECTOR NUMBER:    6    /     GEOMETRY NUMBER:   1
SPECTRUM SIZE:  4096 CHANNELS
ORDER OF SMOOTHING FUNCTION:     5
NUMBER OF BACKGROUND CHANNELS:  4 ON EACH SIDE OF PEAK
PEAK CONFIDENCE FACTOR: 95.0%
IDENTIFICATION ENERGY WINDOW: +- 1.50 KEV
ERROR QUOTATION: 1.96 SIGMA UNCERTAINTY

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

ANALYSIS OF SPECTRUM SAVED IN DISK FILE: SD6174
ANALYZED BY:        69549

SAMPLE DESCRIPTION: F977-6085
GEOMETRY DESCRIPTION:  I-129/CULTURE TUBE
SAMPLE SIZE:   1.0000E+00 EA       / CONVERSION FACTOR: 1.0000E+00
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL129

COLLECT STARTED ON 22-JUN-90 AT 22:45:07

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

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

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

10-SEP-9010:09:16

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

PK	CENTROID CHANNEL	ENERGY KEV	FWHM KEV	BACKGND COUNTS	NET AREA COUNTS	ERROR %	NUCLIDES

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 95.0%

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

10-SEP-9010:09:16

SAMPLE: F977-6085
DATA COLLECTED ON 22-JUN-90 AT 22:45:07
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

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

NUCLIDE	ACTIVITY CONCENTRATION IN uCi/EA				ENERGY COMPARISON (KEV)	
	MEASURED	ERROR	DECAY CORRECTED	ERROR	EXPECT	DIFF
AM-241	LLD<1.95E-06		LLD<1.95E-06		59.54	
AM-243	LLD<9.98E-07		LLD<9.98E-07		74.67	
I-129	LLD<1.55E-05		LLD<1.55E-05		39.60	
SB-125	LLD<1.80E-05		LLD<1.80E-05		176.33	
SE-75	LLD<1.44E-06		LLD<1.44E-06		136.00	
SN-113	LLD<4.32E-06		LLD<4.32E-06		391.67	
TOTAL	0.00E-01	+-0.00E-01	0.00E-01	+-0.00E-01		

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 95.0%

ALL DETECTED PEAKS WERE USED IN THE ANALYSIS