0012368

SINGLE-SHELL TANK WASTE CHARACTERIZATION FOR TANK 241-U-110 CORE 12
SEGMENT 2 3 4

DATA PACKAGE

SECTION

2 OF 10

2 of 10

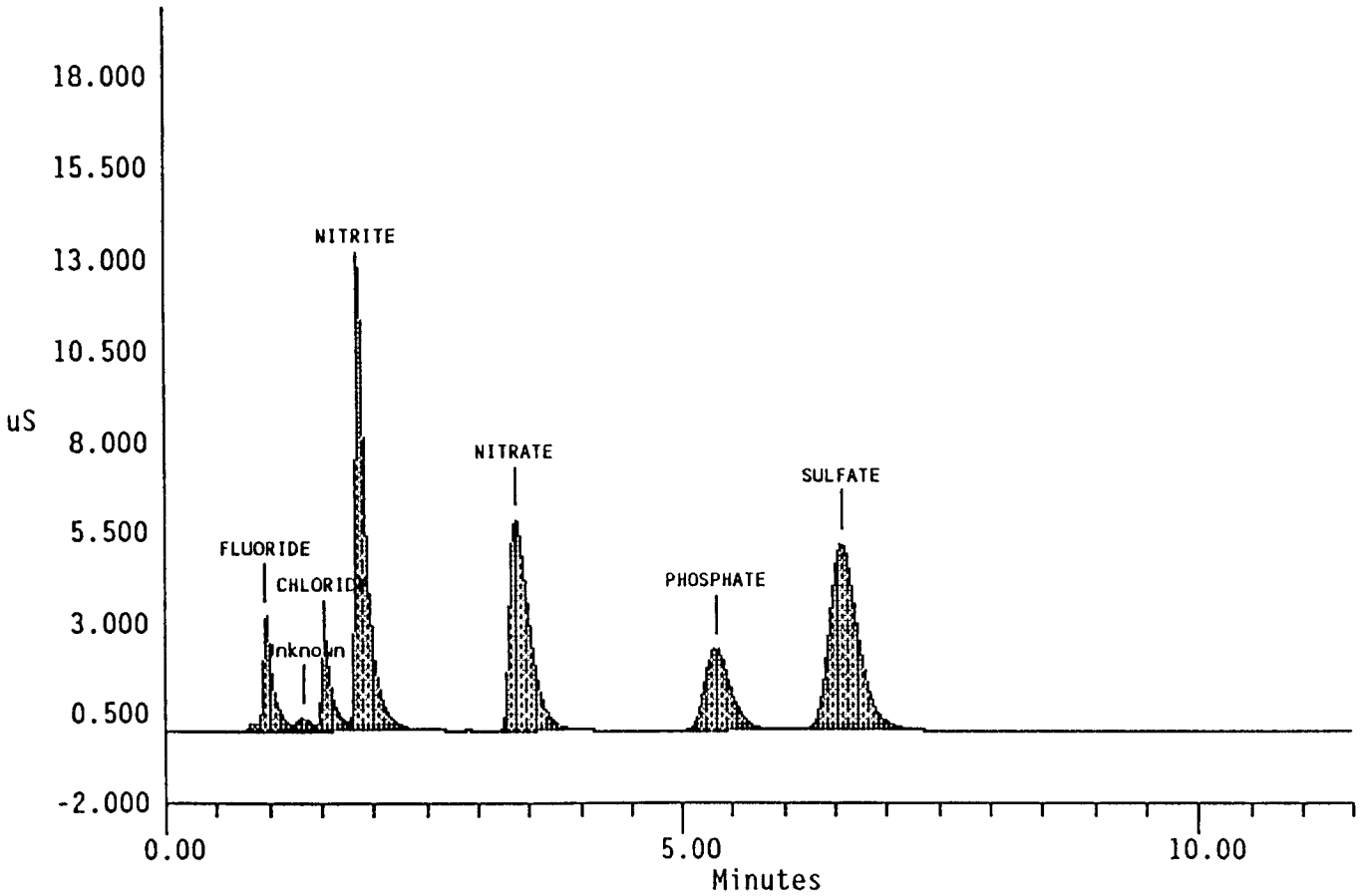
DATA REPROCESSED ON Wed Oct 10 13:14:09 1990

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

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

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

File: A:\90022700.D06 Sample: AUTOCAL4R



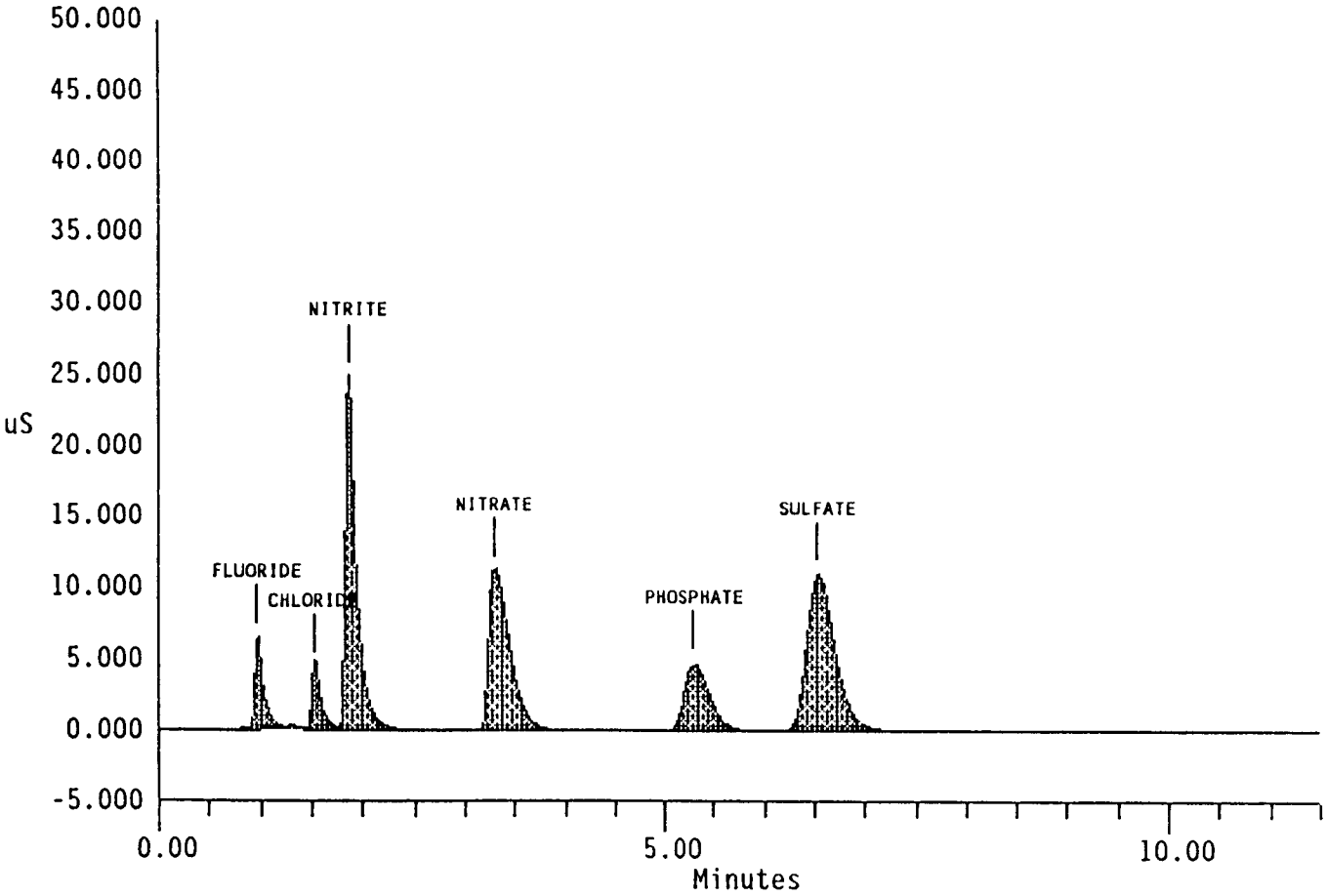
DATA REPROCESSED ON Wed Oct 10 13:16:18 1990

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

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

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

File: A:\90022700.D07 Sample: AUTOCAL5R



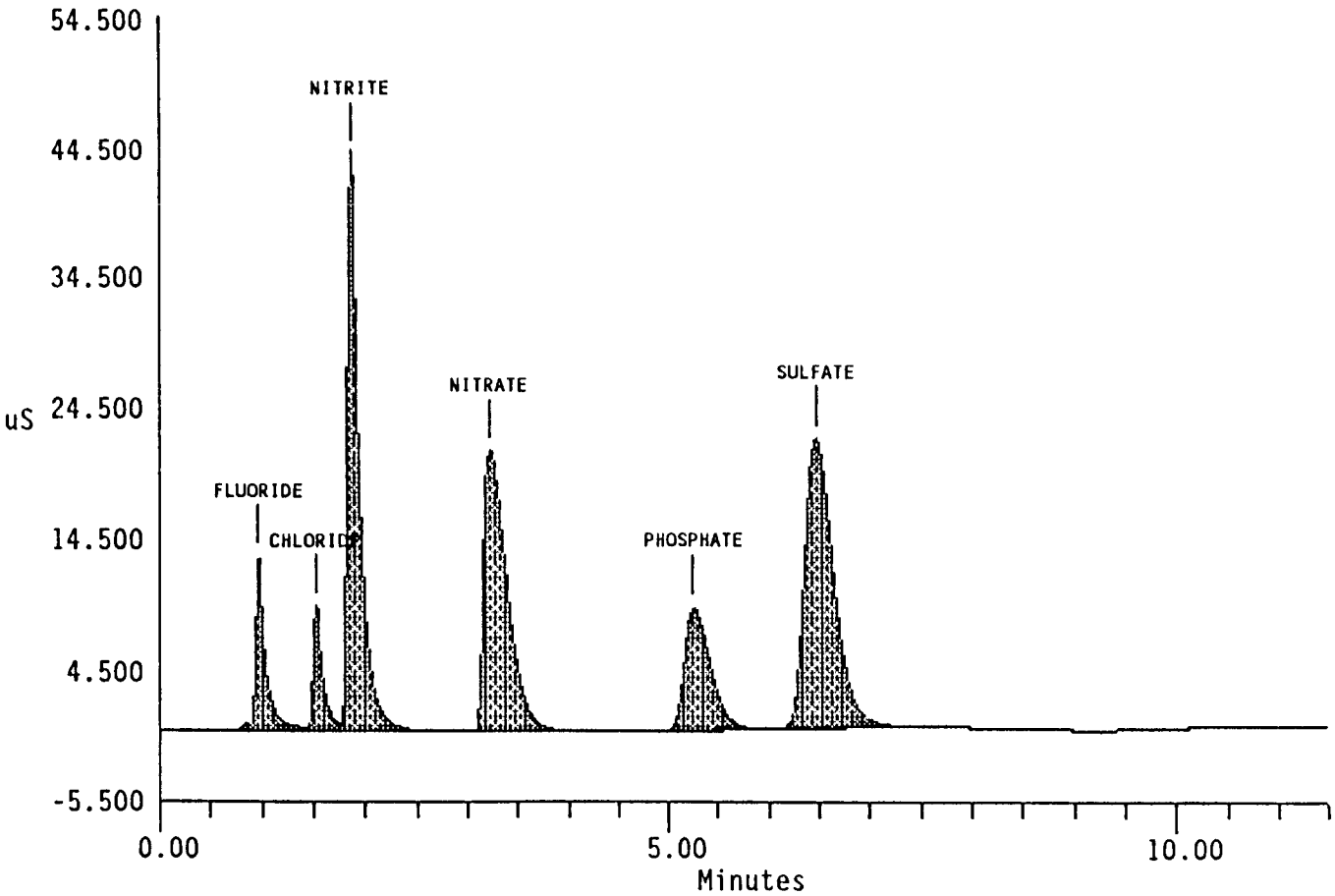
DATA REPROCESSED ON Wed Oct 10 13:18:22 1990

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

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

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

File: A:\90022700.D08 Sample: AUTOCAL6R



Analytical Batch

Lab Segment Serial #: F1043

Customer ID: 000012

Total Organic Carbon Analysis
Water Digestion

Instrument	WB39937
Procedure/Rev	LA-344-105/A-3
Technologist	E. Colvin
Date	February 26, 1990
Temperature	N/A
Starting Time	1230
Ending Time	1430
Chemist	R. E. Brandt

	Description	Lab ID
1	Initial LMCS Check Std	F1053
2	Reagent Blank	F1054
3	Sample Comp 12	F1055
4	Duplicate Sample Comp 12	F1056
5	Spike Sample Comp 12	F1057
6	Final LMCS Check Std	F1058
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	70C11C/.200 mL			2.20 mL
Spike	80C11/.200 mL	F1055/.200 mL		.500 mL

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

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-1053 Date: 02-26-1990 Time: 09:39:36

Blank = .4995993 Sample Size = 200 Dilution Factor = 11
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	33.70	100.00
3	3.01	44.50	24.27
4	4.01	49.60	10.28
5	5.01	52.20	4.98
6	6.01	54.30	3.87
7	7.01	55.50	2.16

(55.5 - 3.500031)(11)/(200) = 2.859998 g/L Carbon

(55.5 - 3.500031)(11)/(200)(12) = .2383332 Molar Carbon

Sample Run By: 80028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-1054 Date: 02-26-1990 Time: 09:27:47

Blank = N/A Sample Size = 200 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading =====	Analysis Time =====	Coulometer =====	% Difference ==
1	1.01	0.00	0.00
2	2.01	1.20	100.00
3	3.01	1.90	36.84
4	4.01	2.30	17.39
5	5.01	2.80	17.86
6	6.01	3.10	9.68
7	7.01	3.50	11.43

BLANK VALUE = 3.5 / 7.005615 = .4995993 ug/minute

Sample Run By: 80028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-1055 Date: 02-26-1990 Time: 09:50:46

Blank = .4995993 Sample Size = 200 Dilution Factor = 1.1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading ====	Analysis Time ====	Coulometer ====	% Difference ==
1	1.01	0.00	0.00
2	2.01	2.20	100.00
3	3.01	3.20	31.25
4	4.01	3.80	15.79
5	5.01	4.40	13.64
6	6.01	4.70	6.38
7	7.01	5.20	9.62

(5.2 - 3.500519)(1.1)/(200) = 9.347146E-03 g/L Carbon

(5.2 - 3.500519)(1.1)/(200)(12) = 7.789288E-04 Molar Carbon

Sample Run By: 80028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-1056 Date: 02-26-1990 Time: 10:08:59

Blank = .4995993 Sample Size = 200 Dilution Factor = 1.1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading ====	Analysis Time ====	Coulometer ====	% Difference ==
1	1.01	0.20	%-2050.00
2	2.01	2.00	90.00
3	3.01	2.70	25.93
4	4.01	3.40	20.59
5	5.01	3.80	10.53
6	6.01	4.30	11.63
7	7.01	4.90	12.24

(4.9 - 3.500488)(1.1)/(200) = 7.697316E-03 g/L Carbon

(4.9 - 3.500488)(1.1)/(200)(12) = 6.41443E-04 Molar Carbon

Sample Run By: 80028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-1057 Date: 02-26-1990 Time: 10:17:05

Blank = .4995993 Sample Size = 200 Dilution Factor = 1.1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading ====	Analysis Time ====	Coulometer ====	% Difference ==
1	1.01	0.00	0.00
2	2.01	62.20	100.00
3	3.01	90.90	31.57
4	4.01	104.90	13.35
5	5.01	111.90	6.26
6	6.01	116.20	3.70
7	7.01	118.60	2.02

(118.6 - 3.500519)(1.1)/(200) = .6330472 g/L Carbon

(118.6 - 3.500519)(1.1)/(200)(12) = 5.275393E-02 Molar Carbon

Sample Run By: 80028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-1058 Date: 02-26-1990 Time: 10:53:03

Blank = .4995993 Sample Size = 200 Dilution Factor = 11
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading ====	Analysis Time ====	Coulometer ====	% Difference ==
1	1.01	0.00	0.00
2	2.01	32.90	100.00
3	3.01	44.80	26.56
4	4.01	50.00	10.40
5	5.01	53.20	6.02
6	6.01	55.00	3.27
7	7.01	56.30	2.31

(56.3 - 3.500031)(11)/(200) = 2.903998 g/L Carbon

(56.3 - 3.500031)(11)/(200)(12) = .2419999 Molar Carbon

Sample Run By: 80028_____

Analytical Batch

Lab Segment Serial #: F1043

Customer ID: 000012

Instrument	WB39939
Procedure/Rev	LA-505-151/A-0
Technologist	J. A. White
Date	July 09, 1990
Temperature	N/A
Starting Time	1302
Ending Time	1508
Chemist	S. A. Jones

ICP
Water Digestion

2nd ICP batch ran this date.

	Description		Lab ID
1	Initial LMCS Check Std		N/A
2	Reagent Blank		F0904
3	Sample	Comp 05	F0905
4	Duplicate Sample	Comp 05	F0906
5	Spike Sample	Comp 05	F0907
6	Sample	Comp 06	F0929
7	Duplicate Sample	Comp 06	F0930
8	Sample	Comp 07	F0983
9	Duplicate Sample	Comp 07	F0984
10	Sample	Comp 15	F1031
11	Duplicate Sample	Comp 15	F1032

	Description		Lab ID
12	Sample	Comp 12	F1055
13	Duplicate Sample	Comp 12	F1056
14	Final LMCS Check Std		N/A
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	78C11T/1.0 mL	87B38B/1.0 mL	77C11R/1.0 mL	1.0 mL
Spike	78C11T/1.0 mL	87B38B/1.0 mL	77C11R/1.0 mL	
spike cont	F0907/ .5 mL			13.5 mL

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

ICP Results

RAW DATA SUMMARY

		Acid Digested LMCS Standard	NONE
Date Analyzed:	JULY 9, 1990	Reagent Blank	F0904
Procedure:	LA-505-151/A-0	Core 12 Composite	F1055
Analyst:	J. A. WHITE	Duplicate of Core 12 Composite	F1056
Digestion	Acid Digestion	Spike of Core 5 Composite	F0907
Procedure:	LA-505-159/A-0	Acid Digested LMCS Standard	NONE

	Instrument Starting LMCS Standard %	Acid Digest. LMCS Standard %	Reagent BLANK ppm	Wet Weight Sample ug/g	Wet Weight Sample Duplicate ug/g	Spike Recovery %	LMCS ACID Digestion %	Closing LMCS Standard %
Aluminum	101.94%	NA	0.62 LT	3928	2862	125.25%	NA	102.50%
Antimony	103.10%	NA	-0.25 LT	277 LT	259 LT	108.72%	NA	103.33%
Arsenic	108.56%	NA	0.26 LT	76	67 LT	110.09%	NA	109.09%
Barium	108.49%	NA	0.04 LT	36	28	108.99%	NA	106.68%
Beryllium	107.33%	NA	0.01 LT	2	2	108.14%	NA	106.33%
Bismuth	108.88%	NA	0.27 LT	406	314	117.60%	NA	128.00% #
Boron	103.83%	NA	2.40	565	398	103.11%	NA	103.08%
Cadmium	102.99%	NA	0.02 LT	14	11 LT	101.47%	NA	103.17%
Calcium	104.32%	NA	1.04	393	88	103.30%	NA	102.78%
Cerium	96.87%	NA	1.06 LT	1027	799	99.99%	NA	99.00%
Chromium	90.82%	NA	0.03 LT	760	764	90.91%	NA	90.53%
Cobalt	104.45%	NA	-0.31 LT	61 LT	15 LT	NOT CALC.	NA	104.74%
Copper	104.12%	NA	0.08 LT	75	57	106.69%	NA	102.75%
Europium	96.18%	NA	0.02 LT	23	19	95.39%	NA	96.20%
Iron	106.43%	NA	0.22 LT	64	37	106.52%	NA	106.33%
Lanthanum	93.88%	NA	0.06 LT	86	63	95.46%	NA	98.40%
Lead	102.18%	NA	0.40 LT	289	235	104.70%	NA	121.40% #
Lithium	102.50%	NA	0.06 LT	50	38	101.09%	NA	101.12%
Magnesium	107.64%	NA	0.45	417	94	124.83%	NA	107.44%
Manganese	103.54%	NA	0.01 LT	7	5	101.98%	NA	102.93%
Mercury	104.05%	NA	0.77	52	41	100.76%	NA	104.93%
Molybdenum	98.32%	NA	0.03 LT	32	28	100.07%	NA	98.41%
Neodymium	95.33%	NA	-0.21 LT	499 LT	373 LT	89.02%	NA	93.97%
Nickel	102.34%	NA	-0.01 LT	52	36 LT	101.50%	NA	102.75%
Phosphorous	111.86% #	NA	-0.27 LT	14437	8739	NOT CALC.	NA	114.28% #
Potassium	104.45%	NA	2.24 LT	1791	1410	122.48%	NA	106.83%
Samarium	99.10%	NA	1.56 LT	1342	1045	109.76%	NA	0.00% #
Selenium	99.48%	NA	0.30 LT	535	415	110.85%	NA	100.23%
Silicon	89.64% #	NA	3.00	3405	2911	67.11%	NA	90.05%
Silver	103.78%	NA	0.08 LT	78	63	102.92%	NA	107.60%
Sodium	101.90%	NA	4.10	91342	81990	NOT CALC.	NA	101.79%
Strontium	104.58%	NA	0.02 LT	13	10	102.99%	NA	103.14%
Sulfur	101.58%	NA	0.05 LT	922	832	94.22%	NA	102.49%
Tantalum	96.99%	NA	0.09 LT	157	119	98.38%	NA	97.63%
Thallium	99.91%	NA	1.51	1259	1009	NOT CALC.	NA	99.80%
Thorium	103.93%	NA	0.77	829	634	103.61%	NA	113.48% #
Tin	102.44%	NA	0.06 LT	59	46	106.91%	NA	102.92%
Titanium	101.96%	NA	0.03 LT	46	37	103.44%	NA	101.79%
Tungsten	72.75% #	NA	0.03 LT	124	91	74.30%	NA	73.05% #
Uranium	101.61%	NA	6.47 LT	7569	5925	132.92%	NA	0.00% #
Vanadium	99.65%	NA	0.01 LT	60	46	102.07%	NA	98.23%
Zinc	103.98%	NA	0.21	46	14	103.43%	NA	103.54%
Zirconium	96.87%	NA	0.16 LT	126	101	99.10%	NA	96.70%

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

ICP Results

RAW DATA

Date Analyzed:	JULY 9, 1990	Acid Digested Standard	NONE
Procedure:	LA-505-151/A-0	Reagent Blank	F0904
Analyst:	J. A. WHITE	Core 12 Composite	F1055
Digestion	Acid Digestion	Duplicate of Core 12 Composite	F1056
Procedure:	LA-505-159/A-0	Spike of Core 05 Composite	F0907
		Acid Digested Standard	NONE

	SST-1	SST-2	Starting LMCS Instrument Standard ppm	Standard Recovery %		LMCS Acid Digestion Standard ppm	Acid Digestion Standard Recovery %	Reagent Blank ppm	Digestion Weight Volume Sample Dilution Three ppm
Aluminum			10.19	101.94%			NA	0.62 LT	
Antimony	10.31			103.10%			NA	-0.25 LT	
Arsenic			21.71	108.56%			NA	0.26 LT	
Barium	10.85			108.49%			NA	0.04 LT	
Beryllium			4.29	107.33%			NA	0.01 LT	
Bismuth		5.44		108.88%			NA	0.27 LT	
Boron	10.38			103.83%			NA	2.40	
Cadmium	10.30			102.99%			NA	0.02 LT	
Calcium	10.43			104.32%			NA	1.04	
Cerium	9.69			96.87%			NA	1.06 LT	
Chromium	9.08			90.82%			NA	0.03 LT	
Cobalt	10.45			104.45%			NA	-0.31 LT	
Copper	10.41			104.12%			NA	0.08 LT	
Europium		4.81		96.18%			NA	0.02 LT	
Iron	10.64			106.43%			NA	0.22 LT	
Lanthanum		4.69		93.88%			NA	0.06 LT	
Lead		5.11		102.18%			NA	0.40 LT	
Lithium	10.25			102.50%			NA	0.06 LT	
Magnesium	10.76			107.64%			NA	0.45	
Manganese	10.35			103.54%			NA	0.01 LT	
Mercury			10.41	104.05%			NA	0.77	
Molybdenum			9.83	98.32%			NA	0.03 LT	
Neodymium	9.53			95.33%			NA	-0.21 LT	
Nickel	10.23			102.34%			NA	-0.01 LT	
Phosphorous			11.19	111.86%	#		NA	-0.27 LT	
Potassium	10.45			104.45%			NA	2.24 LT	
Samarium		4.96		99.10%			NA	1.56 LT	
Selenium			19.90	99.48%			NA	0.30 LT	
Silicon			8.96	89.64%	#		NA	3.00	
Silver		5.19		103.78%			NA	0.08 LT	
Sodium	10.19			101.90%			NA	4.10	
Strontium	10.46			104.58%			NA	0.02 LT	
Sulfur			20.32	101.58%			NA	0.05 LT	
Tantalum			9.70	96.99%			NA	0.09 LT	
Thallium			19.98	99.91%			NA	1.51	
Thorium		25.98		103.93%			NA	0.77	
Tin	5.12			102.44%			NA	0.06 LT	
Titanium			10.20	101.96%			NA	0.03 LT	
Tungsten			7.28	72.75%	#		NA	0.03 LT	
Uranium		25.40		101.61%			NA	6.47 LT	
Vanadium			3.99	99.65%			NA	0.01 LT	
Zinc	10.40			103.98%			NA	0.21	
Zirconium			9.69	96.87%			NA	0.16 LT	
Dilution Factor	1.00	11.00	1.00					21.00	

	0.01003 g/mL 1.00 g 100.00 mL Sample Dilution Two ppm	Sample Dilution One ppm	Digestion Weight Volume Sample Duplicate Dilution Three ppm	0.01009 g/mL 1.01 g 100.00 mL Sample Duplicate Dilution Two ppm	Sample Duplicate Dilution One ppm	Digestion Weight Volume Spike of Sample Dilution Three ppm	0.01009 g/mL 1.01 g 100.00 mL Spike of Sample Dilution Two ppm	Spike of Sample Dilution One ppm
Aluminum		39.39			28.86			68.62
Antimony		2.78 LT			2.61 LT			21.74
Arsenic		0.76			0.68 LT			44.04
Barium		0.36			0.28			21.80
Beryllium		0.02			0.02			8.65
Bismuth		4.07			3.17			11.76
Boron		5.66			4.02			27.33
Cadmium		0.14			0.11 LT			20.29
Calcium		3.94			0.89			21.29
Cerium		10.30			8.06			20.00
Chromium		7.62			7.70			26.30
Cobalt		0.61 LT			0.15 LT			19.71
Copper		0.76			0.57			21.34
Europium		0.23			0.19			9.54
Iron		0.65			0.37			21.60
Lanthanum		0.86			0.64			9.55
Lead		2.90			2.37			11.69
Lithium		0.51			0.39			20.22
Magnesium		4.18			0.95			25.89
Manganese		0.07			0.05			20.40
Mercury		0.53			0.41			20.82
Molybdenum		0.32			0.28			20.01
Neodymium		5.01 LT			3.76 LT			17.80
Nickel		0.52			0.36 LT			20.30
Phosphorous		144.77			88.14			193.09
Potassium		17.96			14.22			24.50
Samarium		13.46			10.54			10.98
Selenium		5.36			4.19			46.91
Silicon		34.15			29.36			64.49
Silver		0.78			0.63			10.29
Sodium		915.98			826.95			1217.16
Strontium		0.14			0.10			20.60
Sulfur		9.25			8.40			55.81
Tantalum		1.57			1.20			19.68
Thallium		12.62			10.17			51.13
Thorium		8.32			6.40			53.08
Tin		0.59			0.46			10.69
Titanium		0.46			0.37			20.69
Tungsten		1.25			0.92			16.26
Uranium		75.90			59.76			66.46
Vanadium		0.60			0.47			8.17
Zinc		0.46			0.15			20.88
Zirconium		1.26			1.01			19.82
Dilution Factor		21.00			21.00			27.00

ICP Results RAW DATA

	Spike Recovery %	Standard LMCS Acid Digestion ppm	Acid Digestion Standard Recovery %	SST-1	SST-2	Ending LMCS Standard ppm SST-3	Standard Recovery %		Spike Standard LMCS ppm added	Spike Standard ID Book # 78C11S 87B38B 77C11R
Aluminum	125.25%		NA			10.25	102.50%		10.00	
Antimony	108.72%		NA	10.33			103.33%		10.00	
Arsenic	110.09%		NA			21.82	109.09%		20.00	
Barium	108.99%		NA	10.67			106.68%		10.00	
Beryllium	108.14%		NA			4.25	106.33%		4.00	
Bismuth	117.60%		NA		6.40		128.00%	#	5.00	
Boron	103.11%		NA	10.31			103.08%		10.00	
Cadmium	101.47%		NA	10.32			103.17%		10.00	
Calcium	103.30%		NA	10.28			102.78%		10.00	
Cerium	99.99%		NA	9.90			99.00%		10.00	
Chromium	90.91%		NA	9.05			90.53%		10.00	
Cobalt	NOT CALC.		NA	10.47			104.74%		10.00	
Copper	106.69%		NA	10.28			102.75%		10.00	
Europium	95.39%		NA		4.81		96.20%		5.00	
Iron	106.52%		NA	10.63			106.33%		10.00	
Lanthanum	95.46%		NA		4.92		98.40%		5.00	
Lead	104.70%		NA		6.07		121.40%	#	5.00	
Lithium	101.09%		NA	10.11			101.12%		10.00	
Magnesium	124.83%		NA	10.74			107.44%		10.00	
Manganese	101.98%		NA	10.29			102.93%		10.00	
Mercury	100.76%		NA			10.49	104.93%		10.00	
Molybdenum	100.07%		NA			9.84	98.41%		10.00	
Neodymium	89.02%		NA	9.40			93.97%		10.00	
Nickel	101.50%		NA	10.28			102.75%		10.00	
Phosphorous	NOT CALC.		NA			11.43	114.28%	#	10.00	
Potassium	122.48%		NA	10.68			106.83%		10.00	
Samarium	109.76%		NA				0.00%	#	5.00	
Selenium	110.85%		NA			20.05	100.23%		20.00	
Silicon	67.11%		NA			9.01	90.05%		10.00	
Silver	102.92%		NA		5.38		107.60%		5.00	
Sodium	NOT CALC.		NA	10.18			101.79%		10.00	
Strontium	102.99%		NA	10.31			103.14%		10.00	
Sulfur	94.22%		NA			20.50	102.49%		20.00	
Tantalum	98.38%		NA			9.76	97.63%		10.00	
Thallium	NOT CALC.		NA			19.96	99.80%		20.00	
Thorium	103.61%		NA		28.37		113.48%	#	25.00	
Tin	106.91%		NA	5.15			102.92%		5.00	
Titanium	103.44%		NA			10.18	101.79%		10.00	
Tungsten	74.30%		NA			7.31	73.05%	#	10.00	
Uranium	132.92%		NA				0.00%	#	25.00	
Vanadium	102.07%		NA			3.93	98.23%		4.00	
Zinc	103.43%		NA	10.35			103.54%		10.00	
Zirconium	99.10%		NA			9.67	96.70%		10.00	
Dilution Factor	27.00			1.00	1.00	1.00				

	SST-1	SST-2	LMCS Standards Values ppm SST-3	LMCS Standard IDs Book # 78C11T 87B38B 77C11R	ACID DIGESTION LMCS STANDARD VALUES ppm in Sample	ACID DIGEST. LMCS IDs Book # Not Ran
Aluminum			10.00		100.00	
Antimony	10.00					
Arsenic			20.00			
Barium	10.00				100.00	
Beryllium			4.00			
Bismuth		5.00			100.00	
Boron	10.00				100.00	
Cadmium	10.00				100.00	
Calcium	10.00				100.00	
Cerium	10.00				100.00	
Chromium	10.00				100.90	
Cobalt	10.00				100.00	
Copper	10.00				100.00	
Europium		5.00				
Iron	10.00				100.00	
Lanthanum		5.00			100.00	
Lead		5.00			100.00	
Lithium	10.00				100.00	
Magnesium	10.00				100.00	
Manganese	10.00				100.00	
Mercury			10.00			
Molybdenum			10.00		99.80	
Neodymium	10.00				100.00	
Nickel	10.00				100.00	
Phosphorous			10.00		100.00	
Potassium	10.00				100.00	
Samarium		5.00				
Selenium			20.00			
Silicon			10.00		100.00	
Silver		5.00				
Sodium	10.00				100.00	
Strontium	10.00				100.00	
Sulfur			20.00			
Tantalum			10.00		99.50	
Thallium			20.00			
Thorium		25.00				
Tin	5.00				100.00	
Titanium			10.00		100.10	
Tungsten			10.00			
Uranium		25.00				
Vanadium			4.00			
Zinc	10.00				100.00	
Zirconium			10.00		99.80	
Dilution Factor					10.00	

ICP Calibration Report

Procedure: LA-505-151 Revision: A-0
Instrument: WB39939
Technologist: J.A. White
Date: July 9, 1990 Time: 13:02
(Second ICP batch ran this date.)

Calibration Standards for ICP Program "SST"

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

ICP Standard Formulations

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

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

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

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

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

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

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

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

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

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

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

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

Solution is used directly for calibration.

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

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

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

ICP Calibration - July 9, 1990 - Second Run

Sample name : SST0
Programme : SST 09-Jul-90 13:02:18

NAME	MV INT	RSD	BCOR
AL	2.09	0.29	0.00000
SB	0.37	0.71	0.00000
AS	1.26	0.65	0.00000
BA	5.38	0.44	0.00000
BE	0.70	0.30	0.00000
BI	4.51	0.57	0.00000
B	5.47	0.61	0.00000
CD	2.87	0.82	0.00000
CA	0.57	0.57	0.00000
CE	6.89	0.41	0.00000
CR	2.20	1.24	0.00000
CO	0.21	0.28	0.00000
CU	3.61	0.42	0.00000
EU	5.24	0.47	0.00000
FE	1.79	1.30	0.00000
LA	0.45	0.47	0.00000
PB	0.28	0.21	0.00000
LI	5.08	0.37	0.00000
MG	0.50	0.40	0.00000
MN	0.89	0.68	0.00000
HG	2.89	0.09	0.00000
MO	1.94	0.55	0.00000
ND	11.08	0.15	0.00000
NI	3.97	1.05	0.00000
P	1.49	1.87	0.00000
K	4.20	0.47	0.00000
SM	6.52	0.38	0.00000
SE	2.06	0.46	0.00000
SI	4.05	0.51	0.00000
AG	5.43	0.53	0.00000
NA	8.06	0.34	0.00000
SR	4.61	0.36	0.00000
S	0.86	0.68	0.00000
TA	4.58	0.52	0.00000
TL	4.59	0.40	0.00000
TH	1.44	0.22	0.00000
SN	1.73	0.49	0.00000
TI	4.39	0.53	0.00000
W	3.39	0.89	0.00000
U	6.88	0.45	0.00000
V1	4.42	0.54	0.00000
ZN	2.94	1.03	0.00000
ZR	5.62	0.32	0.00000

Sample name : SST1
Programme : SST 09-Jul-90 13:06:11

NAME	MV INT	RSD	BCOR
LI	478.79	1.23	0.00000
K	15.13	0.65	0.00000
NA	82.35	1.13	0.00000

ICP Calibration - July 9, 1990 - Second Run

Sample name : SST2
Programme : SST 09-Jul-90 13:08:29

NAME	MV INT	RSD	BCOR
BA	329.62	0.60	0.00000
BE	502.26	0.51	0.00000
CD	402.15	0.52	0.00000
CA	461.12	0.55	0.00000
CR	109.38	0.21	0.00000
CO	1.12	2.01	0.00000
CU	106.37	0.49	0.00000
FE	117.78	0.39	0.00000
MG	531.13	0.62	0.00000
MN	303.40	0.47	0.00000
NI	184.24	0.47	0.00000
AG	146.54	0.37	0.00000
SR	619.02	0.64	0.00000
V1	141.42	0.45	0.00000
ZN	768.00	0.47	0.00000

Sample name : SST3
Programme : SST 09-Jul-90 13:11:46

NAME	MV INT	RSD	BCOR
AL	21.94	0.74	0.00000
B	702.34	1.08	0.00000
HG	585.91	0.66	0.00000
MO	359.48	0.92	0.00000
P	49.78	2.77	0.00000
SI	99.03	0.11	0.00000
S	44.00	0.94	0.00000
TA	171.88	0.79	0.00000
TI	512.89	1.00	0.00000
W	177.07	0.95	0.00000
ZR	193.71	0.92	0.00000

Sample name : SST4
Programme : SST 09-Jul-90 13:14:40

NAME	MV INT	RSD	BCOR
SB	2.52	0.77	0.00000
AS	37.93	0.57	0.00000
BI	37.65	0.42	0.00000
PB	1.61	0.35	0.00000
SE	17.65	0.61	0.00000
TL	13.72	0.32	0.00000
TH	5.55	0.40	0.00000
SN	98.61	0.61	0.00000
U	9.18	0.24	0.00000

Sample name : SST5
Programme : SST 09-Jul-90 13:17:03

NAME	MV INT	RSD	BCOR
CE	20.71	0.21	0.00000
EU	447.23	0.52	0.00000

ICP Calibration - July 9, 1990 - Second Run

```
Sample name     : SST5
Programme       : SST              09-Jul-90  13:17:03

NAME       MV INT      RSD     BCOR

CE          20.71      0.21  0.00000
EU         447.33      0.52  0.00000
LA           7.46      0.41  0.00000
ND          49.10      0.30  0.00000
SM          16.24      0.14  0.00000


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

Curve    Min Int Max Int                  Curve Coefficients
                                C0            C1            C2            C3

CRV1     1.9899  23.042  -0.527633E+01  0.251093E+01

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

SST0     0       2.0947  0.0000  0.0000  -0.000  -0.000          CRV1
SST3     0       21.944  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     0.3553  2.6418  -0.436508E+01  0.116713E+02

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

SST0     0       0.3740  0.0000  0.0000  -0.000  -0.000          CRV1
SST4     0       2.5160  25.000  25.000  25.000  0.0000  0.0000  CRV1


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

Curve    Min Int Max Int                  Curve Coefficients
                                C0            C1            C2            C3

CRV1     1.2008  39.826  -0.861842E+00  0.681837E+00

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

SST0     0       1.2640  0.0000  0.0000  0.0000  0.0000          CRV1
SST4     0       37.930  25.000  25.000  25.000  0.0000  0.0000  CRV1
```

ICP Calibration - July 9, 1990 - Second Run

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	5.1075	346.10	-0.331624E+00	0.616822E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	5.3763	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	329.62	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.6609	527.37	-0.277398E-01	0.398751E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.6957	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	502.26	20.000	20.000	20.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.2848	39.529	-0.340283E+01	0.754451E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.5103	0.0000	0.0000	-0.000	-0.000		CRV1
SST4	0	37.647	25.000	25.000	25.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	5.2000	737.46	-0.392735E+00	0.717499E-01		

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

ICP Calibration - July 9, 1990 - Second Run

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	5.2000	737.46	-0.392735E+00	0.717499E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	5.4737	0.0000	0.0000	-0.000	-0.000		CRV1
SST3	0	702.34	50.000	50.000	50.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	2.7256	422.26	-0.143707E+00	0.500895E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	2.8690	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	402.15	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.5383	484.18	-0.246081E-01	0.434260E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.5667	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	461.12	20.000	20.000	20.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	6.5445	21.741	-0.997225E+01	0.144756E+01		

Name	Number	Int.	Conc	True	Calc	Conc	% Error	Curve

ICP Calibration - July 9, 1990 - Second Run

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	6.5445	21.741	-0.997225E+01	0.144756E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	6.8890	0.0000	0.0000	0.0000	0.0000		CRV1
SST5	0	20.705	20.000	20.000	20.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	2.0922	114.85	-0.410982E+00	0.186612E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	2.2023	0.0000	0.0000	-0.000	-0.000		CRV1
SST2	0	109.38	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	0.1973	1.1770	-0.454745E+01	0.218978E+02		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.2077	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	1.1210	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.4248	111.69	-0.701619E+00	0.194624E+00		

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

ICP Calibration - July 9, 1990 - Second Run

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.4248	111.69	-0.701619E+00	0.194624E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	3.6050	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	106.37	20.000	20.000	20.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.9818	469.70	-0.237238E+00	0.452398E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	5.2440	0.0000	0.0000	0.0000	0.0000		CRV1
SST5	0	447.33	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	1.6999	123.67	-0.308518E+00	0.172421E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.7893	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	117.78	20.000	20.000	20.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.4231	7.8323	-0.126984E+01	0.285144E+01		

Name	Number	Int.	Conc	True	Calc	Conc	% Error	Curve

ICP Calibration - July 9, 1990 - Second Run

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.4231	7.8323	-0.126984E+01	0.285144E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.4453	0.0000	0.0000	0.0000	0.0000		CRV1
SST5	0	7.4593	20.000	20.000	20.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.2663	1.6884	-0.527868E+01	0.188300E+02		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.2803	0.0000	0.0000	0.0000	0.0000		CRV1
SST4	0	1.6080	25.000	25.000	25.000	-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	4.8292	502.73	-0.536550E+00	0.105551E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	5.0833	0.0000	0.0000	-0.000	-0.000		CRV1
SST1	0	478.79	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	0.4750	557.69	-0.188454E-01	0.376908E-01		

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

ICP Calibration - July 9, 1990 - Second Run

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.4750	557.69	-0.188454E-01	0.376908E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.5000	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	531.13	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.8468	318.57	-0.589288E-01	0.661131E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.8913	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	303.40	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	2.7420	615.20	-0.247532E+00	0.857600E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	2.8863	0.0000	0.0000	-0.000	-0.000		CRV1
SST3	0	585.91	50.000	50.000	50.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.8446	377.45	-0.271535E+00	0.139847E+00		

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

ICP Calibration - July 9, 1990 - Second Run

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.8446	377.45	-0.271535E+00	0.139847E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.9417	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	359.48	50.000	50.000	50.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	10.525	51.550	-0.582872E+01	0.526090E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	11.079	0.0000	0.0000	-0.000	-0.000		CRV1
SST5	0	49.096	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.7715	193.45	-0.440450E+00	0.110944E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	3.9700	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	184.24	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	1.4193	52.271	-0.154698E+01	0.103546E+01		

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

ICP Calibration - July 9, 1990 - Second Run

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.4193	52.271	-0.154698E+01	0.103546E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.4940	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	49.782	50.000	50.000	50.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.9913	15.888	-0.192187E+02	0.457443E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.2013	0.0000	0.0000	0.0000	0.0000		CRV1
SST1	0	15.132	50.000	50.000	50.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	6.1899	17.052	-0.134008E+02	0.205670E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	6.5157	0.0000	0.0000	-0.000	-0.000		CRV1
SST5	0	16.240	20.000	20.000	20.000	0.0000	0.0001	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.9538	18.537	-0.329636E+01	0.160277E+01		

Name	Number	Int.	Conc	True	Calc	Conc	% Error	Curve

ICP Calibration - July 9, 1990 - Second Run

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.9538	18.537	-0.329636E+01	0.160277E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	2.0567	0.0000	0.0000	-0.000	-0.000		CRV1
SST4	0	17.655	25.000	25.000	25.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.8440	103.98	-0.212999E+01	0.526401E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.0463	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	99.031	50.000	50.000	50.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	5.1541	153.86	-0.768949E+00	0.141733E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	5.4253	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	146.54	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	7.6614	86.465	-0.542834E+01	0.673101E+00		

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

ICP Calibration - July 9, 1990 - Second Run

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	7.6614	86.465	-0.542834E+01	0.673101E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	8.0647	0.0000	0.0000	0.0000	0.0000		CRV1
SST1	0	82.348	50.000	50.000	50.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.3779	649.98	-0.150007E+00	0.325512E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.6083	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	619.02	20.000	20.000	20.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	0.8148	46.202	-0.993943E+00	0.115889E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	0.8577	0.0000	0.0000	-0.000	-0.000		CRV1
SST3	0	44.002	50.000	50.000	50.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.3532	180.48	-0.136950E+01	0.298865E+00		

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

ICP Calibration - July 9, 1990 - Second Run

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.3532	180.48	-0.136950E+01	0.298865E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.5823	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	171.88	50.000	50.000	50.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.3570	14.408	-0.125511E+02	0.273663E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.5863	0.0000	0.0000	-0.000	-0.000		CRV1
SST4	0	13.722	25.000	25.000	25.000	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	1.3715	5.8240	-0.879641E+01	0.609310E+01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.4437	0.0000	0.0000	0.0000	0.0000		CRV1
SST4	0	5.5467	25.000	25.000	25.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.6438	103.54	-0.446507E+00	0.258047E+00		

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

ICP Calibration - July 9, 1990 - Second Run

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	1.6438	103.54	-0.446507E+00	0.258047E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	1.7303	0.0000	0.0000	0.0000	0.0000		CRV1
SST4	0	98.612	25.000	25.000	25.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.1661	538.53	-0.431203E+00	0.983285E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.3853	0.0000	0.0000	-0.000	-0.000		CRV1
SST3	0	512.89	50.000	50.000	50.000	0.0000	0.0000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	3.2186	185.93	-0.975334E+00	0.287879E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	3.3880	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	177.07	50.000	50.000	50.000	-0.000	-0.000	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	6.5385	9.6404	-0.748554E+02	0.108759E+02		

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

ICP Calibration - July 9, 1990 - Second Run

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	6.5385	9.6404	-0.748554E+02	0.108759E+02		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	6.8827	0.0000	0.0000	-0.000	-0.000		CRV1
SST4	0	9.1813	25.000	25.000	25.000	0.0001	0.0003	CRV1

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	4.2025	148.49	-0.645810E+00	0.145990E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	4.4237	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	141.42	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	2.7883	806.40	-0.767256E-01	0.261416E-01		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	2.9350	0.0000	0.0000	0.0000	0.0000		CRV1
SST2	0	768.00	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	5.3380	203.40	-0.149368E+01	0.265826E+00		

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

ICP Calibration - July 9, 1990 - Second Run

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

Curve	Min Int	Max Int	Curve Coefficients C0	C1	C2	C3
CRV1	5.3380	203.40	-0.149368E+01	0.265826E+00		

Name	Number	Int. (X)	Conc (Y)	True (Y)	Calc Conc	Conc Error	% Error	Curve
SST0	0	5.6190	0.0000	0.0000	0.0000	0.0000		CRV1
SST3	0	193.71	50.000	50.000	50.000	-0.000	-0.000	CRV1

Sample name : HN03
Programme : SST 09-Jul-90 13:28:40

NAME	MV INT	CONCEN	RSD
Al	2.11	0.037	51.63
Sb	0.37	0.008	312.24
As	1.28	0.010	45.40
Ba	5.42	0.003	52.70
Be	0.70	0.000	109.96
Bi	4.57	0.043	47.97
B	5.54	0.005	74.98
Cd	2.89	0.001	74.52
Ca	0.57	0.000	12.37
Ce	6.96	0.105	43.90
Cr	2.22	0.004	107.79
Co	0.20	-0.058	0.00
Cu	3.64	0.007	58.03
Eu	5.28	0.002	67.49
Fe	1.80	0.002	127.58
La	0.45	0.006	104.08
Pb	0.28	-0.056	-50.92
Li	5.14	0.006	42.02
Mg	0.50	0.000	45.83
Mn	0.89	0.000	135.28
Hg	4.41	0.130	0.67
Mo	1.96	0.002	81.34
Nd	11.15	0.040	98.36
Ni	4.01	0.005	43.58
P	1.49	-0.007	-75.60
K	4.25	0.213	39.34
Sm	6.58	0.130	40.35
Se	2.06	0.008	94.51
Si	4.08	0.019	59.67
Ag	5.48	0.008	50.34
Na	8.13	0.046	60.35
Sr	4.64	0.001	58.86
S	0.86	0.000	900.12
Ta	4.62	0.012	52.10
Tl	4.62	0.100	60.74
Th	1.45	0.067	42.96
Sn	1.77	0.009	51.59
Ti	4.42	0.004	58.15
W	3.43	0.011	91.81
U	6.94	0.660	51.24
V	4.45	0.004	81.48
Zn	2.94	0.000	357.89
Zr	5.67	0.012	48.95

ICP Analysis - July 9, 1990 LMCS Check Standard

Sample name : 78C11T
Sample code 1 : SST1
Sample code 2 : DIRECT
Programme : SST 09-Jul-90 13:33:33

NAME	MV INT	CONCEN	RSD
Al	2.16	0.165	16.43
Sb	1.26	10.310	1.13
As	1.36	0.064	7.72
Ba	181.26	10.849	1.36
Be	0.73	0.001	22.19
Bi	4.74	0.175	7.99
B	150.18	10.383	1.15
Cd	208.49	10.299	1.52
Ca	240.78	10.432	1.34
Ce	13.58	9.687	1.50
Cr	50.87	9.082	1.31
Co	0.68	10.445	1.75
Cu	57.10	10.412	1.32
Eu	5.78	0.024	3.23
Fe	63.52	10.643	1.45
La	0.48	0.105	4.72
Pb	0.29	0.107	30.57
Li	102.19	10.250	1.17
Mg	286.08	10.764	1.35
Mn	157.51	10.354	1.43
Hg	4.38	0.128	6.75
Mo	2.08	0.019	13.86
Nd	29.20	9.533	3.01
Ni	96.22	10.234	1.14
P	1.61	0.121	1.48
K	6.48	10.445	1.54
Sm	6.57	0.110	40.61
Se	3.76	2.725	2.50
Si	4.19	0.074	10.51
Ag	5.54	0.016	20.02
Na	23.20	10.190	1.29
Sr	325.89	10.458	1.33
S	1.07	0.246	4.01
Ta	4.72	0.040	13.44
Tl	4.81	0.605	5.53
Th	1.50	0.372	13.94
Sn	21.58	5.122	1.77
Ti	4.43	0.005	22.39
W	4.39	0.287	2.96
U	7.33	4.909	6.00
V	4.47	0.007	12.06
Zn	400.68	10.398	1.34
Zr	5.73	0.029	18.05

ICP Analysis - July 9, 1990 LMCS Check Standard

Sample name : 87B38B
Sample code 1 : SSI2
Sample code 2 : 1-10
Programme : SSI 09-Jul-90 13:38:06

NAME	MV INT	CONCEN	DILCOR	RSD
Al	2.19	0.228	2.503	6.91
Sb	0.37	0.008	0.086	229.13
As	1.30	0.024	0.265	37.37
Ba	5.41	0.002	0.021	11.38
Be	0.70	0.000	0.001	155.89
Bi	5.17	0.495	5.444	1.48
B	5.86	0.028	0.306	49.59
Cd	2.92	0.003	0.030	14.61
Ca	0.94	0.016	0.178	1.53
Ce	6.90	0.011	0.122	169.73
Cr	2.26	0.012	0.127	12.67
Co	0.20	-0.058	-0.642	0.00
Cu	3.67	0.013	0.146	7.22
Eu	14.91	0.437	4.809	0.40
Fe	1.88	0.015	0.164	38.82
La	0.60	0.427	4.694	0.00
Pb	0.31	0.464	5.109	7.02
Li	5.10	0.002	0.020	54.66
Mg	5.56	0.191	2.100	0.20
Mn	0.91	0.001	0.014	10.77
Hg	4.18	0.111	1.220	2.26
Mo	1.95	0.002	0.019	84.41
Nd	11.02	-0.029	-0.322	-90.42
Ni	3.99	0.003	0.028	76.18
P	1.50	0.011	0.118	175.89
K	4.21	0.027	0.302	143.69
Sm	6.73	0.450	4.955	6.17
Se	2.06	-0.001	-0.012	-1522.2
Si	4.16	0.059	0.647	4.10
Ag	8.75	0.472	5.189	0.29
Na	8.09	0.014	0.151	88.66
Sr	4.65	0.001	0.016	6.41
S	0.87	0.015	0.161	98.08
Ta	4.61	0.008	0.088	42.26
Tl	4.66	0.195	2.147	36.16
Th	1.83	2.362	25.983	0.98
Sn	1.78	0.012	0.132	6.43
Ti	4.42	0.003	0.032	33.72
W	3.41	0.005	0.059	152.68
U	7.09	2.309	25.402	7.25
V	4.48	0.008	0.084	38.67
Zn	3.22	0.007	0.082	7.59
Zr	5.65	0.008	0.090	14.70

Dilution factor : 11.0000

LOW ON
STD 87B38-B
1-10 Dil

ICP Analysis - July 9, 1990 LMCS Check Standard

Sample name : 77C11R
Sample code 1 : SSST3
Sample code 2 : DIRECT
Programme : SST 09-Jul-90 13:43:07

NAME	MV INT	CONCEN	RSD
Al	6.14	10.194	0.12
Sb	0.40	0.358	9.96
As	33.11	21.712	0.35
Ba	5.58	0.012	8.12
Be	108.37	4.293	0.24
Bi	4.82	0.236	2.25
B	6.69	0.087	0.77
Cd	3.00	0.007	3.79
Ca	0.76	0.008	0.79
Ce	7.00	0.163	23.17
Cr	2.33	0.023	6.97
Co	0.21	-0.029	-43.30
Cu	3.73	0.024	9.83
Eu	5.33	0.004	17.61
Fe	2.12	0.057	4.09
La	0.45	0.011	38.19
Pb	0.28	0.088	21.43
Li	5.19	0.011	13.45
Mg	0.57	0.003	0.84
Mn	1.02	0.009	5.38
Hg	124.21	10.405	0.25
Mo	72.25	9.832	0.31
Nd	11.14	0.034	31.01
Ni	5.24	0.141	1.69
P	12.30	11.186	0.50
K	4.31	0.494	6.02
Sm	6.63	0.228	22.15
Se	14.47	19.895	0.56
Si	21.08	8.964	0.18
Ag	5.94	0.073	3.00
Na	8.33	0.180	12.65
Sr	4.69	0.003	18.62
S	18.39	20.315	0.39
Ta	37.04	9.699	0.32
Tl	11.89	19.982	0.85
Th	1.49	0.286	6.84
Sn	2.09	0.093	5.90
Ti	108.08	10.196	0.52
W	28.66	7.275	0.17
U	7.08	2.186	9.73
V	31.73	3.986	0.57
Zn	3.37	0.011	1.41
Zr	42.06	9.687	0.53

ICP Analysis - July 9, 1990 Reagent Blank

Sample name : F904
Sample code 1 : BLANK
Sample code 2 : 500-10
Sample code 3 : H2ODIG
Programme : SST 09-Jul-90 13:50:30

NAME	NV INT	CONCEN	DILCOR	RSD
Al	2.11	0.029	0.617	35.69
Sb	0.37	-0.012	-0.245	-360.56
As	1.28	0.012	0.258	69.61
Ba	5.40	0.002	0.035	40.80
Be	0.70	0.000	0.007	26.02
Bi	4.53	0.013	0.269	205.83
B	7.07	0.114	2.399	1.99
Cd	2.89	0.001	0.024	90.37
Ca	1.71	0.049	1.039	0.22
Ce	6.92	0.051	1.064	51.67
Cr	3.21	0.002	0.034	196.83
Co	0.21	-0.015	-0.307	0.00
Cu	3.62	0.004	0.079	52.83
Eu	5.26	0.001	0.017	83.85
Fe	1.85	0.011	0.221	14.13
La	0.45	0.003	0.060	57.73
Pb	0.28	0.019	0.395	152.75
Li	5.11	0.003	0.063	43.85
Mg	1.07	0.021	0.451	0.10
Mn	0.90	0.001	0.012	92.31
Hg	3.31	0.036	0.766	11.22
Mo	1.95	0.001	0.026	61.19
Nd	11.06	-0.010	-0.214	-62.92
Ni	3.97	-0.000	-0.005	-1427.1
P	1.48	-0.013	-0.268	-100.73
K	4.22	0.107	2.241	32.73
Sm	6.55	0.074	1.555	53.89
Se	2.07	0.014	0.303	158.69
Si	4.32	0.143	2.999	3.30
Ag	5.45	0.004	0.079	71.25
Na	8.36	0.195	4.104	5.98
Sr	4.64	0.001	0.019	39.82
S	0.86	0.002	0.049	480.48
Ta	4.60	0.004	0.092	171.54
Tl	4.61	0.072	1.513	83.58
Th	1.45	0.037	0.768	19.24
Sn	1.74	0.003	0.058	67.60
Ti	4.40	0.002	0.034	69.20
W	3.39	0.001	0.026	244.57
U	6.91	0.308	6.470	66.13
V	4.43	0.000	0.006	1805.27
Zn	3.31	0.010	0.207	1.22
Zr	5.65	0.008	0.162	45.61

Dilution factor : 21.0000

ICP Analysis - July 9, 1990 Core 5 Composite - Water Digestion

Sample name : E905
Sample code 1 : SAMPLE
Sample code 2 : 500-10
Sample code 3 : H20016
Programme : SST 09-Jul-90 13:55:18

NAME	MV INT	CONCEN	DILCOR	RSD
Al	2.89	2.012	42.248	0.83
Sb	0.38	0.054	1.144	61.86
As	1.28	0.008	0.162	53.19
Ba	5.42	0.002	0.051	58.71
Be	0.70	0.000	0.006	57.73
Bi	4.56	0.034	0.718	74.03
B	9.79	0.310	6.500	0.21
Cd	2.89	0.001	0.018	163.81
Ca	1.24	0.029	0.610	0.54
Ce	6.93	0.065	1.368	61.14
Cr	4.21	0.375	7.874	0.73
Co	0.21	-0.007	-0.153	-173.20
Cu	3.63	0.006	0.117	47.49
Eu	5.28	0.001	0.031	74.75
Fe	1.87	0.014	0.285	37.13
La	0.45	0.009	0.180	107.15
Pb	0.28	0.056	1.186	19.25
Li	5.11	0.003	0.061	70.37
Mg	1.63	0.043	0.898	0.42
Mn	0.90	0.001	0.016	92.71
Hg	3.25	0.031	0.647	5.21
Mo	1.97	0.004	0.089	21.62
Nd	11.14	0.033	0.689	60.08
Ni	4.01	0.004	0.091	54.81
P	10.61	9.438	198.20	0.47
K	4.25	0.207	4.355	25.57
Sm	6.56	0.090	1.886	55.36
Se	2.13	0.119	2.491	17.16
Si	8.53	2.358	49.513	0.23
Ag	5.46	0.005	0.100	55.49
Na	96.34	)59.417	)1247.8	0.44
Sr	4.64	0.001	0.023	41.36
S	1.58	0.837	17.571	1.78
Ta	4.62	0.013	0.264	29.58
Tl	4.58	-0.027	-0.575	-61.10
Th	1.45	0.059	1.237	93.87
Sn	1.77	0.009	0.199	91.76
Ti	4.43	0.004	0.089	33.73
W	3.61	0.064	1.352	7.28
U	6.93	0.529	11.114	61.39
V	4.43	0.000	0.007	894.73
Zn	3.27	0.009	0.184	4.97
Zr	5.66	0.012	0.246	45.62

Dilution factor : 21.0000

ICP Analysis - July 9, 1990 Duplicate Core 5 Composite

Sample name : F906
Sample code 1 : DUP
Sample code 2 : 500-10
Sample code 3 : H2ODIG
Programme : SSI 09-Jul-90 14:00:11

NAME	MV INT	CONCEN	DILCOR	RSD
Al	3.06	2.425	50.923	0.96
Sb	0.38	0.027	0.572	65.47
As	1.27	0.006	0.124	75.08
Ba	5.40	0.001	0.030	21.45
Be	0.69	-0.000	-0.001	-503.29
Bi	4.54	0.023	0.481	89.21
B	6.79	0.094	1.979	5.58
Cd	2.89	0.001	0.021	48.06
Ca	1.05	0.021	0.442	0.72
Ce	6.92	0.039	0.821	7.41
Cr	4.81	0.486	10.206	1.15
Co	0.21	0.000	0.000	
Cu	3.62	0.004	0.076	45.56
Du	5.26	0.001	0.016	49.11
Fe	1.84	0.009	0.189	36.33
La	0.45	0.000	0.000	2762000
Pb	0.28	0.013	0.264	150.00
Li	5.10	0.002	0.038	18.54
Mg	4.57	0.153	3.218	0.38
Mn	0.89	0.000	0.001	983.74
Hg	3.19	0.026	0.542	12.89
Mo	1.95	0.002	0.036	82.29
Nd	11.03	-0.028	-0.597	-161.12
Ni	4.00	0.003	0.068	15.80
P	4.21	2.815	59.109	2.36
K	4.23	0.151	3.170	16.69
Sm	6.54	0.051	1.080	33.31
Se	2.14	0.126	2.648	8.27
Si	4.85	0.422	8.869	1.20
Ag	5.44	0.003	0.056	45.77
Na	79.70	48.221	1012.6	0.40
Sr	4.63	0.001	0.012	19.51
S	1.24	0.443	9.313	0.80
Ta	4.59	0.002	0.038	141.75
Tl	4.58	-0.006	-0.134	-413.09
Th	1.45	0.030	0.640	11.55
Sn	1.76	0.007	0.155	63.46
Ti	4.40	0.001	0.024	45.35
W	3.73	0.098	2.062	7.54
U	6.91	0.261	5.481	25.12
V	4.42	-0.001	-0.021	-396.35
Zn	3.31	0.010	0.204	0.95
Zr	5.64	0.005	0.114	47.26

Dilution factor : 21.0000

ICP Analysis - July 9, 1990 Spike of Core 5 Composite

Sample name : F907
Sample code 1 : SPIKE
Sample code 2 : 500-10
Sample code 3 : H2ODIG
Programme : SST 09-Jul-90 14:04:27

NAME	MV INT	CONCEN	DILCOR	RSD
Al	3.10	2.542	53.374	1.23
Sb	0.44	0.805	16.912	0.00
As	3.66	1.631	34.250	1.77
Ba	18.19	0.790	16.594	1.45
Be	8.73	0.320	6.729	0.31
Bi	5.09	0.436	9.147	2.80
B	19.58	1.012	21.253	1.29
Cd	17.88	0.752	15.784	1.52
Ca	18.72	0.788	16.558	1.69
Ce	7.40	0.741	15.554	4.89
Cr	7.42	0.974	20.458	1.52
Co	0.24	0.730	15.328	0.00
Cu	7.67	0.790	16.596	1.25
Eu	13.05	0.353	7.419	1.12
Fe	6.43	0.800	16.799	1.16
La	0.57	0.354	7.425	1.23
Pb	0.30	0.433	9.095	2.51
Li	12.18	0.749	15.725	1.30
Mg	25.94	0.959	20.139	1.65
Mn	13.32	0.755	15.864	1.59
Hg	11.88	0.771	16.193	1.20
Mo	7.24	0.741	15.567	1.96
Nd	12.33	0.659	13.847	3.34
Ni	10.75	0.752	15.789	0.79
P	8.40	7.151	150.18	1.55
K	4.40	0.907	19.052	8.59
Sm	6.71	0.407	8.537	14.42
Se	3.14	1.737	36.485	0.77
Si	8.58	2.388	50.158	1.30
Ag	8.11	0.381	8.005	0.67
Na	75.04	45.080	946.68	1.65
Sr	28.04	0.763	16.021	1.66
S	2.64	2.067	43.409	2.02
Ta	7.02	0.729	15.303	0.51
Tl	5.28	1.894	39.769	16.93
Th	1.77	1.966	41.387	0.78
Sn	3.26	0.396	8.315	2.27
Ti	12.18	0.766	16.091	1.33
W	5.48	0.602	12.643	0.71
U	7.11	2.462	51.692	11.95
V	6.50	0.302	6.351	1.16
Zn	32.51	0.773	16.237	1.50
Zr	8.38	0.734	15.415	0.86

Dilution factor : 21.0000

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ICP Analysis - July 9, 1990 Core 12 Composite - Water Digestion

Sample name : FI066
Sample code 1 : SAMPLE
Sample code 2 : 500-10
Sample code 3 : H2ODIG
Programme : SST 09-Jul-90 14:39:10

NAME	HV INT	CONCEN	DILCOR	RSD
Al	2.84	1.876	39.391	1.04
Sb	0.39	0.132	2.778	5.09
As	1.32	0.036	0.759	22.24
Ba	5.66	0.017	0.363	3.52
Be	0.72	0.001	0.023	16.10
Bi	4.77	0.194	4.072	16.34
B	9.33	0.270	5.663	0.92
Cd	3.01	0.007	0.143	23.15
Ca	4.89	0.188	3.943	0.74
Ce	7.23	0.490	10.295	2.48
Cr	4.15	0.363	7.621	1.34
Co	0.31	0.029	0.613	75.00
Cu	3.79	0.036	0.755	4.21
Eu	5.49	0.011	0.234	2.76
Fe	1.97	0.031	0.645	3.29
La	0.46	0.041	0.858	4.03
Pb	0.29	0.138	2.900	28.39
Li	5.31	0.024	0.506	2.57
Mg	5.78	0.199	4.183	0.66
Mn	0.94	0.003	0.072	3.35
Hg	3.18	0.025	0.526	12.30
Mo	2.05	0.015	0.318	13.94
Nd	11.53	0.238	5.008	15.20
Ni	4.19	0.025	0.520	12.83
P	8.15	6.894	144.77	2.34
K	4.39	0.855	17.964	5.05
Sm	6.83	0.641	13.461	4.06
Se	2.22	0.255	5.363	3.14
Si	7.14	1.626	34.147	1.09
Ag	5.69	0.037	0.783	3.73
Na	72.87	43.618	915.98	0.70
Sr	4.81	0.006	0.135	3.95
S	1.24	0.440	9.248	1.87
Ta	4.83	0.075	1.573	6.14
Tl	4.81	0.601	12.624	16.97
Th	1.51	0.396	8.317	4.95
Sn	1.84	0.028	0.592	16.01
Ti	4.61	0.022	0.460	6.44
W	3.59	0.059	1.247	21.59
U	7.22	3.614	75.902	2.39
V	4.62	0.029	0.604	11.26
Zn	3.77	0.022	0.457	2.62
Zr	5.85	0.060	1.263	1.55

Dilution factor : 21.0000

ICP Analysis - July 9, 1990 Duplicate Core 12 Composite

Sample name : F1056
Sample code 1 : DUP
Sample code 2 : 500-10
Sample code 3 : H2ODIG
Programme : SST 09-Jul-90 14:44:22

NAME	MV INT	CONCEN	DILCOR	RSD
Al	2.64	1.374	28.864	1.70
Sb	0.38	0.124	2.614	5.41
As	1.31	0.032	0.678	5.32
Ba	5.59	0.013	0.278	9.61
Be	0.72	0.001	0.018	27.08
Bi	4.71	0.151	3.169	7.97
B	8.14	0.191	4.018	3.50
Cd	2.98	0.005	0.113	8.66
Ca	1.54	0.042	0.890	0.10
Ce	7.15	0.384	8.056	11.62
Cr	4.17	0.367	7.704	0.34
Co	0.21	0.007	0.153	0.00
Cu	3.75	0.027	0.574	11.85
Eu	5.45	0.009	0.191	6.07
Fe	1.89	0.018	0.373	19.08
La	0.46	0.030	0.639	9.38
Pb	0.29	0.113	2.373	34.69
Li	5.26	0.018	0.385	14.12
Mg	1.70	0.045	0.947	0.22
Mn	0.92	0.002	0.046	24.68
Hg	3.12	0.020	0.412	4.29
Mo	2.04	0.013	0.278	27.99
Nd	11.42	0.179	3.764	31.56
Ni	4.13	0.017	0.362	17.23
P	5.55	4.197	88.138	2.28
K	4.35	0.677	14.217	8.45
Sm	6.76	0.502	10.538	8.66
Se	2.18	0.199	4.185	22.29
Si	6.70	1.398	29.364	0.55
Ag	5.64	0.030	0.634	9.49
Na	66.57	39.379	826.95	0.46
Sr	4.76	0.005	0.103	12.37
S	1.20	0.400	8.396	2.25
Ta	4.77	0.057	1.199	1.51
Tl	4.76	0.484	10.172	5.49
Th	1.49	0.305	6.398	16.17
Sn	1.83	0.022	0.462	4.12
Ti	4.57	0.018	0.372	10.29
W	3.54	0.044	0.915	4.25
U	7.14	2.846	59.762	10.82
V	4.58	0.022	0.466	9.54
Zn	3.20	0.007	0.146	6.30
Zr	5.80	0.048	1.014	10.74

Dilution factor : 21.0000

ICP Analysis - July 9, 1990 Acid Blank

Sample name : HNO3
Programme : SST 09-Jul-90 14:48:48

NAME	MV INT	CONCEN	RSD
Al	2.16	0.170	10.40
Sb	0.39	0.132	18.37
As	1.32	0.035	12.68
Ba	5.56	0.011	13.18
Be	0.72	0.001	16.21
Bi	4.70	0.142	20.05
B	5.59	0.008	9.57
Cd	2.97	0.005	19.67
Ca	0.58	0.000	8.82
Ce	7.14	0.361	10.63
Cr	2.27	0.012	31.27
Co	0.31	0.022	57.74
Cu	3.73	0.025	11.92
Eu	5.43	0.008	14.10
Fe	1.84	0.009	21.10
La	0.46	0.030	18.75
Pb	0.29	0.138	20.83
Li	5.25	0.017	13.47
Mg	0.51	0.000	5.41
Mn	0.91	0.001	33.61
Hg	3.25	0.031	11.49
Mo	2.00	0.008	20.93
Nd	11.42	0.181	17.71
Ni	4.11	0.015	28.51
P	1.53	0.036	42.03
K	4.33	0.569	7.25
Sm	6.75	0.476	11.62
Se	2.11	0.090	16.93
Si	4.20	0.081	10.38
Ag	5.61	0.027	8.00
Na	8.31	0.168	10.73
Sr	4.74	0.004	12.22
S	0.86	0.003	157.53
Ta	4.75	0.049	21.83
Tl	4.74	0.414	13.35
Th	1.49	0.274	16.68
Sn	1.80	0.018	10.53
Ti	4.54	0.015	12.35
W	3.49	0.030	15.02
U	7.12	2.621	10.60
V	4.57	0.022	0.67
Zn	3.01	0.002	14.74
Zr	5.79	0.044	12.09

ICP Analysis - July 9, 1990 LMCS Check Standard

Sample name : 78C11T
Sample code 1 : SST1
Sample code 2 : DIRECT
Programme : SST 09-Jul-90 14:57:41

NAME	MV INT	CONCEN	RSD
Al	2.22	0.320	6.32
Sb	1.26	10.333	1.14
As	1.40	0.090	7.74
Ba	178.32	10.668	1.49
Be	0.75	0.002	2.78
Bi	4.90	0.292	9.10
B	149.14	10.308	1.68
Cd	208.83	10.317	1.42
Ca	237.26	10.278	1.58
Ce	13.73	9.900	0.96
Cr	50.71	9.053	1.56
Co	0.69	10.474	1.09
Cu	56.40	10.275	1.46
Eu	5.94	0.032	2.16
Fe	63.46	10.633	1.66
La	0.49	0.128	4.63
Pb	0.29	0.239	7.89
Li	100.89	10.112	1.56
Mg	285.56	10.744	1.36
Mn	156.58	10.293	1.50
Hg	3.31	0.036	8.65
Mo	2.16	0.031	10.57
Nd	28.94	9.397	3.57
Ni	96.58	10.275	1.44
P	1.64	0.148	11.64
K	6.54	10.683	1.55
Sm	6.78	0.549	7.50
Se	3.79	2.783	3.44
Si	4.31	0.141	4.37
Ag	5.70	0.039	6.43
Na	23.19	10.179	1.47
Sr	321.45	10.314	1.41
S	1.09	0.265	2.67
Ta	4.88	0.088	1.67
Tl	4.96	1.030	3.82
Th	1.54	0.611	4.34
Sn	21.67	5.146	1.41
Ti	4.58	0.019	7.62
W	4.50	0.319	3.57
U	7.56	7.323	2.63
V	4.63	0.030	8.70
Zn	399.00	10.354	1.33
Zr	5.88	0.069	4.68

ICP Analysis - July 9, 1990 LMCS Check Standard

Sample name : 87B35B
Sample code 1 : SST2 x11 DF
Sample code 2 : 1-10
Programme : SST 09-Jul-90 15:02:21

NAME	HV	INT	CONCEN	RSD	
Al		2.24	0.370	0.79	
Sb		0.38	0.113	15.80	
As		1.33	0.044	27.03	
Ba		5.55	0.011	10.44	
Be		0.72	0.001	6.64	
Bi		5.28	0.582	3.89	6.40
B		6.01	0.039	17.96	
Cd		2.99	0.006	9.63	
Ca		0.94	0.016	3.28	
Ce		7.10	0.308	10.89	
Cr		2.33	0.023	8.53	
Co		0.21	0.044	28.87	
Cu		3.78	0.034	4.17	
Eu		14.91	0.437	1.51	4.81
Fe		1.93	0.024	12.76	
La		0.60	0.447	1.69	4.92
Pb		0.31	0.552	7.10	6.07
Li		5.24	0.016	10.94	
Mg		5.58	0.191	1.77	
Mn		0.93	0.003	24.46	
Hg		3.34	0.039	4.48	
Mo		2.02	0.010	14.89	
Nd		11.39	0.162	17.18	
Ni		4.12	0.017	14.06	
P		1.53	0.037	78.32	
K		4.29	0.418	18.53	
Sm		6.92	0.841	5.46	~~9.25~~ High RSD
Se		2.11	0.088	21.67	
Si		4.28	0.123	2.58	
Ag		8.88	0.489	0.87	5.38
Na		8.31	0.165	15.47	
Sr		4.76	0.005	5.01	
S		0.89	0.038	16.96	
Ta		4.74	0.048	14.19	
Tl		4.81	0.613	4.22	
Th		1.87	2.579	0.71	28.37
Sn		1.81	0.020	28.87	
Ti		4.55	0.016	8.61	
W		3.51	0.035	6.45	
U		7.29	4.445	4.35	48.90
V		4.60	0.026	6.70	
Zn		3.31	0.010	5.98	
Zr		5.78	0.042	9.51	

ICP Analysis - July 9, 1990 LMCS Check Standard

Sample name : 77C11R
Sample code 1 : SSI3
Sample code 2 : DIRECT
Programme : SSI 09-Jul-90 15:07:56

NAME	MV INT	CONCEN	RSD
Al	6.16	10.250	0.95
Sb	0.41	0.285	8.02
As	33.26	21.818	1.31
Ba	5.70	0.020	3.53
Be	107.36	4.253	0.51
Bi	4.95	0.331	8.58
B	6.75	0.092	2.42
Cd	3.05	0.009	12.86
Ca	0.77	0.009	0.74
Ce	7.16	0.388	7.82
Cr	2.37	0.032	16.23
Co	0.31	0.051	0.00
Cu	3.80	0.038	3.95
Eu	5.44	0.009	14.18
Fe	2.16	0.064	6.36
La	0.46	0.033	0.00
Pb	0.29	0.157	6.93
Li	5.30	0.023	4.70
Mg	0.58	0.003	10.44
Mn	1.03	0.009	0.42
Hg	125.24	10.493	1.03
Mo	72.31	9.841	1.17
Nd	11.47	0.203	29.02
Ni	5.30	0.148	1.04
P	12.53	11.428	1.79
K	4.37	0.794	5.18
Sm	6.77	0.520	5.49
Se	14.56	20.045	0.80
Si	21.15	9.005	0.76
Ag	6.05	0.088	1.30
Na	8.49	0.285	7.67
Sr	4.78	0.006	6.76
S	18.55	20.498	1.00
Ta	37.25	9.763	0.93
Tl	11.88	19.960	1.45
Th	1.52	0.453	3.56
Sn	2.14	0.105	6.06
Ti	107.91	10.179	1.17
W	28.76	7.305	0.78
U	7.23	3.778	3.96
V	31.34	3.929	0.82
Zn	3.42	0.013	6.17
Zr	42.00	9.670	1.13

Analytical Batch

Lab Segment Serial #: F1043

Customer ID: 000012

Instrument	AL10664/AL10665
Procedure/Rev	LA-634-102/C-7
Technologist	M. Franz
Date	March 01, 1990
Temperature	N/A
Starting Time	1030
Ending Time	1430
Chemist	R. E. Brandt

Ammonia Analysis
Water Digestion

	Description		Lab ID
1	Initial LMCS Check Std		F1053
2	Reagent Blank		F1054
3	Sample	Comp 12	F1055
4	Duplicate Sample	Comp 12	F1056
5	Sample	Comp 15	F1031
6	Duplicate Sample	Comp 15	F1032
7	Spike Sample	Comp 15	F1033
8	Final LMCS Check Std		F1034
9			
10			
11			

	Description	Lab ID
12		
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Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std	4C110M/.250 mL			30 mL
Spike	4C110M/.250 mL	F1031/2.00 mL		30 mL

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

Analytical Batch

Lab Segment Serial #: F1043

Customer ID: 000012

Instrument	WB39937
Procedure/Rev	LA-622-102/A-1
Technologist	E. Colvin
Date	February 28, 1990
Temperature	N/A
Starting Time	0830
Ending Time	1130
Chemist	R. E. Brandt

Carbonate Analysis
Water Digestion

	Description	Lab ID
1	Initial LMCS Check Std	F1053
2	Reagent Blank	F1054
3	Sample Comp 12	F1055
4	Duplicate Sample Comp 12	F1056
5	Spike Sample Comp 12	F1057
6	Final LMCS Check Std	F1058
7		
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9		
10		
11		

	Description	Lab ID
12		
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22		

Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std	69C11D/.050 mL			.050 mL
Spike	69C11D/.100 mL	F1055/.200 mL		.300 mL

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

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-1053 Date: 02-28-1990 Time: 10:09:43

Blank = .4567725 Sample Size = 50 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading =====	Analysis Time =====	Coulometer =====	% Difference ==
1	1.01	0.00	0.00
2	2.01	53.20	100.00
3	3.01	81.90	35.04
4	4.01	100.70	18.67
5	5.01	113.30	11.12
6	6.01	121.10	6.44
7	7.01	126.70	4.42

(126.7 - 3.200056)(1)/(50) = 2.469999 g/L Carbon

(126.7 - 3.200056)(1)/(50)(12) = .2058332 Molar Carbon

Sample Run By: 80028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-1054 Date: 02-28-1990 Time: 09:39:30

Blank = N/A Sample Size = 200 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	1.00	100.00
3	3.01	1.60	37.50
4	4.01	2.00	20.00
5	5.01	2.50	20.00
6	6.01	2.80	10.71
7	7.01	3.20	12.50

BLANK VALUE = 3.2 / 7.005677 = .4567725 ug/minute

Sample Run By: 80028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-1055 Date: 02-28-1990 Time: 10:27:46

Blank = .4567725 Sample Size = 200 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading ====	Analysis Time ====	Coulometer ====	% Difference ==
1	1.01	0.00	0.00
2	2.01	6.80	100.00
3	3.01	9.60	29.17
4	4.01	11.70	17.95
5	5.01	13.30	12.03
6	6.01	14.50	8.28
7	7.01	15.40	5.84

(15.4 - 3.200084)(1)/(200) = 6.099958E-02 g/L Carbon

(15.4 - 3.200084)(1)/(200)(12) = 5.083299E-03 Molar Carbon

Sample Run By: 80028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-1056 Date: 02-28-1990 Time: 10:35:49

Blank = .4567725 Sample Size = 200 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading =====	Analysis Time =====	Coulometer =====	% Difference ==
1	1.01	0.00	0.00
2	2.01	6.30	100.00
3	3.01	9.60	34.38
4	4.01	11.70	17.95
5	5.01	13.20	11.36
6	6.01	14.30	7.69
7	7.01	15.20	5.92

(15.2 - 3.200056)(1)/(200) = 5.999972E-02 g/L Carbon

(15.2 - 3.200056)(1)/(200)(12) = 4.999977E-03 Molar Carbon

Sample Run By: 80020_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-1057 Date: 02-28-1990 Time: 10:52:19

Blank = .4567735 Sample Size = 200 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	61.60	100.00
3	3.01	98.90	37.71
4	4.01	124.40	20.50
5	5.01	141.50	12.08
6	6.01	153.40	7.76
7	7.01	161.10	4.76

(161.1 - 3.2)(1)/(200) = .7895001 g/L Carbon

(161.1 - 3.2)(1)/(200)(12) = 6.579168E-02 Molar Carbon

Sample Run By: 30028_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: F-1058 Date: 02-28-1990 Time: 11:00:50

Blank = .4567725 Sample Size = 50 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading ====	Analysis Time ====	Coulometer ====	% Difference ==
1	1.00	0.00	0.00
2	2.01	53.90	100.00
3	3.01	80.00	32.63
4	4.00	97.90	18.28
5	5.01	110.30	11.24
6	6.01	118.40	6.84
7	7.01	124.50	4.90

(124.5 - 3.2)(1)/(50) = 2.426 g/L Carbon

(124.5 - 3.2)(1)/(50)(12) = .2021667 Molar Carbon

Sample Run By: 80028_____

Analytical Batch

Lab Segment Serial #: F1043

Customer ID: 000012

Instrument	WA93603
Procedure/Rev	LA-645-001/A-3
Technologist	M. Franz
Date	February 27, 1990
Temperature	N/A
Starting Time	0730
Ending Time	0930
Chemist	R. K. Fuller

Nitrite Analysis
Water Digestion

	Description	Lab ID
1	Initial LMCS Check Std	F1053
2	Reagent Blank	F1054
3	Sample Comp 12	F1055
4	Duplicate Sample Comp 12	F1056
5	Spike Sample Comp 12	F1057
6	Final LMCS Check Std	F1058
7		
8		
9		
10		
11		

	Description	Lab ID
12		
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22		

Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std	8C11AU/.5 uL			10.05 mL
Spike	8C11AU/.5 uL	F1055/1 mL		11.05 mL

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

Single Shell Tank
Calibration Record

ANALYTE:	NO_2		
PROCEDURE:	LA-645-001	REVISION:	A-2
INSTRUMENT:	Spectronic 1001	PROPERTY NUMBER:	WA93603
TECHNOLOGIST:	J. Winters	PAYROLL NUMBER:	80029
DATE:	February 22, 1989		

CALIBRATION STANDARD ID: 79C15

ANALYTE CONCENTRATION: 2×10^{-4}

TYPE OF CALIBRATION: Linear Regression

Dilution	Concentration	Instrument Reading Units= Absorbance
0 ul	0	0
50 ul	9.95×10^{-7} M	0.054
100 ul	1.98×10^{-6} M	0.098
500 ul	9.52×10^{-6} M	0.460
1000 ul	1.82×10^{-5} M	0.841
1500 ul	2.61×10^{-5} M	1.185
2000 ul	3.33×10^{-5} M	1.494
2500 ul	4.00×10^{-5} M	1.775

COMMENTS: Curve fit (r^2) 0.99959

Y-intercept 0.02269

Slope 44182.30561

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

Analytical Batch

Lab Segment Serial #: F1043

Customer ID: 000012

Instrument	WA57276
Procedure/Rev	LA-508-101/C-2
Technologist	M. Franz
Date	February 27, 1990
Temperature	N/A
Starting Time	1100
Ending Time	1300
Chemist	S. A. Catlow

Total Alpha & Total Beta
Analysis
Water Digestion

	Description	Lab ID
1	Initial LMCS Check Std	F1053
2	Reagent Blank	F1054
3	Sample Comp 12	F1055
4	Duplicate Sample Comp 12	F1056
5	Spike Sample Comp 12	F1057
6	Final LMCS Check Std	F1058
7		
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10		
11		

	Description	Lab ID
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22		

Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std	102B44/10 mL			N/A
Spike	102B44/10 mL	F1055/.050 mL		N/A

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

Single Shell Tank
Calibration Record

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

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

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

DETECTOR No. 14

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

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

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

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

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

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

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

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

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

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

5" = 0.2577

Single Shell Tank
Calibration Record

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

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

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

DETECTOR No. 14

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

TIME ZERO DATE (HD): 15897

DATE COUNTED (HD): 16135

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

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

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

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

STANDARD ID		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

Analytical Batch

Lab Segment Serial #: F1043

Customer ID: 000012

Instrument	WA401934/WA77228
Procedure/Rev	LA-548-121/C-2
Technologist	R. Hale
Date	February 28, 1990
Temperature	N/A
Starting Time	1400
Ending Time	1500
Chemist	S. A. Catlow

GEA Analysis
Water Digestion

	Description		Lab ID
1	Initial LMCS Check Std		F1047
2	Reagent Blank		F1048
3	Sample	Comp 12	F1049
4	Duplicate Sample	Comp 12	F1050
5	Sample	Comp 12	F1055
6	Duplicate Sample	Comp 12	F1056
7	Spike Sample	Comp 12	F1057
8	Final LMCS Check Std		F1058
9			
10			
11			

	Description	Lab ID
12		
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22		

Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std	122B44/.500 mL			N/A
Spike	122B44/.500 mL	F1055/1.00 mL		N/A

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

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

222-S COUNTING ROOM WESTINGHOUSE HANFORD 17-OCT-90 16:45:56

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

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

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

ANALYSIS OF SPECTRUM SAVED IN DISK FILE: SD4248
ANALYZED BY: VR

SAMPLE DESCRIPTION: F1047 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 27-FEB-90 AT 18:27:05

COLLECT LIVE TIME: 3000. SECONDS
REAL TIME: 3027. SECONDS
DEAD TIME: 0.89 %

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

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

222-S COUNTING ROOM WESTINGHOUSE HANFORD 17-OCT-90 16:45:56

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

PK	CENTROID CHANNEL	ENERGY KEV	FWHM KEV	BACKGND COUNTS	NET AREA COUNTS	ERROR %	NUCLIDES
1	53.47	26.91	1.09	2215.	1227.	12.0	
1B		27.06			123.	34.3	
2C	1127.44	563.62	1.52	2503.	2278.	7.0	CS-134, EU-152
3C	1139.60	569.70	1.52	2442.	4332.	5.7	CS-134, BI-207
4	1210.43	605.11	1.65	2493.	27916.	1.3	CS-134
5	1324.37	662.07	1.67	1848.	52285.	0.9	CS-137
5B		661.35			379.	12.7	
6C	1592.75	796.26	1.75	1637.	20417.	1.9	CS-134
7C	1604.93	802.35	1.75	1556.	1991.	9.5	CS-134
8?	2337.07	1168.52	2.10	968.	398.	39.8	CS-134
9?	2347.71	1173.85	2.10	851.	26660.	1.5	CO-60
10	2666.55	1333.36	2.36	328.	24002.	1.3	CO-60
11	2731.98	1366.10	2.28	122.	547.	10.7	CS-134
12	2803.13	1401.70	2.51	99.	251.	18.1	BI-214
13	2922.97	1461.66	2.47	73.	793.	7.8	K-40
13B		1460.80			854.	7.1	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

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

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

222-S COUNTING ROOM WESTINGHOUSE HANFORD 17-OCT-90 16:45:56

SAMPLE: F1047 SEG/COMP#7
DATA COLLECTED ON 27-FEB-90 AT 18:27:05
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<3.80E-01		LLD<3.80E-01		911.07	
AG-108M	LLD<7.39E-02		LLD<7.39E-02		433.94	
AG-110M	LLD<3.20E-01		LLD<3.20E-01		657.76	
AM-241	LLD<3.49E-01		LLD<3.49E-01		59.54	
AM-243	LLD<8.33E-02		LLD<8.33E-02		74.67	
AR-41	LLD<6.58E-02		LLD<6.58E-02		1293.64	
AU-198	LLD<7.49E-02		LLD<7.49E-02		411.80	
BA-133	LLD<9.49E-02		LLD<9.49E-02		356.02	
BA-139	LLD<1.89E-01		LLD<1.89E-01		165.85	
BA-140	LLD<2.78E-01		LLD<2.78E-01		537.27	
BA-141	LLD<1.86E-01		LLD<1.86E-01		190.23	
BE-7	LLD<7.24E-01		LLD<7.24E-01		477.59	
BI-207	LLD<7.18E-02		LLD<7.18E-02		569.70	
BI-212	LLD<1.02E+00		LLD<1.02E+00		727.27	
BI-214	LLD<5.46E-01		LLD<5.46E-01		609.32	
CD-109	LLD<1.17E+00		LLD<1.17E+00		88.03	
CE-139	LLD<4.26E-02		LLD<4.26E-02		165.85	
CE-141	LLD<6.39E-02		LLD<6.39E-02		145.44	
CEPR144	LLD<5.25E-01		LLD<5.25E-01		133.51	
CO-56	LLD<8.75E-02		LLD<8.75E-02		846.76	
CO-57	LLD<3.52E-02		LLD<3.52E-02		122.06	
CO-58	LLD<8.19E-02		LLD<8.19E-02		810.75	
CO-60	2.21E+01	+-3.25E-01	2.21E+01	+-3.25E-01	1332.50	0.86
					1173.24	0.61
CR-51	LLD<5.24E-01		LLD<5.24E-01		320.09	
CS-134	1.39E+01	+-2.82E-01	1.39E+01	+-2.82E-01	795.84	0.42
					604.70	0.41
CS-136	LLD<7.88E-02		LLD<7.88E-02		818.51	
CS-137	3.00E+01	+-3.53E-01	3.00E+01	+-3.53E-01	661.65	0.42
CS-138	LLD<8.60E-02		LLD<8.60E-02		1435.86	
EU-152	LLD<2.51E-01		LLD<2.51E-01		1408.01	
EU-154	LLD<1.61E-01		LLD<1.61E-01		1274.45	
EU-155	LLD<1.48E-01		LLD<1.48E-01		105.31	
FE-59	LLD<1.95E-01		LLD<1.95E-01		1099.25	
HF-181	LLD<8.93E-02		LLD<8.93E-02		482.20	
HG-203	LLD<5.82E-02		LLD<5.82E-02		279.20	
I-131	LLD<7.12E-02		LLD<7.12E-02		364.48	
I-132	LLD<1.19E-01		LLD<1.19E-01		667.69	
I-133	LLD<8.05E-02		LLD<8.05E-02		529.69	
I-134	LLD<1.17E-01		LLD<1.17E-01		847.03	
I-135	LLD<2.12E-01		LLD<2.12E-01		1260.41	
K-40	LLD<9.11E-01		LLD<9.11E-01		1460.75	
KR-85	LLD<1.52E+01		LLD<1.52E+01		513.99	
KR-85M	LLD<4.45E-02		LLD<4.45E-02		151.17	
KR-87	LLD<1.60E-01		LLD<1.60E-01		402.58	
KR-89	LLD<2.31E+00		LLD<2.31E+00		220.90	
LA-140	LLD<4.04E-02		LLD<4.04E-02		1596.20	

LA-142	LLD<1.67E-01	LLD<1.67E-01	641.83
MN-54	LLD<8.30E-02	LLD<8.30E-02	834.83
MN-56	LLD<9.88E-02	LLD<9.88E-02	846.76
NA-22	LLD<5.31E-02	LLD<5.31E-02	1274.55
NA-24	LLD<4.16E-02	LLD<4.16E-02	1368.60
NB-94	LLD<6.54E-02	LLD<6.54E-02	702.63
NB-95	LLD<7.66E-02	LLD<7.66E-02	765.78
NB-97	LLD<4.98E-01	LLD<4.98E-01	657.92
NP-237	LLD<3.38E-01	LLD<3.38E-01	86.50
NP-238	LLD<3.52E-01	LLD<3.52E-01	984.45
NP-239	LLD<3.34E-01	LLD<3.34E-01	277.60
PA-233	LLD<1.44E-01	LLD<1.44E-01	311.98
PA-234M	LLD<1.77E+01	LLD<1.77E+01	1001.03
PB-210	LLD<1.76E+00	LLD<1.76E+00	465.03
PB-212	LLD<1.16E-01	LLD<1.16E-01	239.00
PB-214	LLD<1.57E-01	LLD<1.57E-01	351.92
PO-210	LLD<6.49E+03	LLD<6.49E+03	804.00
PO-214	LLD<2.90E+03	LLD<2.90E+03	799.70
PO-216	LLD<5.13E+03	LLD<5.13E+03	804.90
PU-239	LLD<4.61E+02	LLD<4.61E+02	129.30
PU-241	LLD<1.64E+04	LLD<1.64E+04	148.57
RA-224	LLD<1.18E+00	LLD<1.18E+00	240.99
RA-226	LLD<1.16E+00	LLD<1.16E+00	186.10
RB-88	LLD<3.49E-01	LLD<3.49E-01	1836.00
RB-89	LLD<4.23E-01	LLD<4.23E-01	1031.88
RN-220	LLD<6.14E+01	LLD<6.14E+01	549.73
RU-103	LLD<7.55E-02	LLD<7.55E-02	497.08
RURH106	LLD<1.33E+00	LLD<1.33E+00	621.80
SB-124	LLD<2.01E-01	LLD<2.01E-01	602.72
SB-125	LLD<5.02E-01	LLD<5.02E-01	176.33
SC-46	LLD<1.09E-01	LLD<1.09E-01	1120.45
SE-75	LLD<8.02E-02	LLD<8.02E-02	264.66
SN-113	LLD<9.92E-02	LLD<9.92E-02	391.67
SR-85	LLD<6.68E-02	LLD<6.68E-02	513.99
SR-91	LLD<1.27E-01	LLD<1.27E-01	555.60
SR-92	LLD<4.51E-02	LLD<4.51E-02	1383.94
TA-182	LLD<2.88E-01	LLD<2.88E-01	1121.30
TC-99M	LLD<3.52E-02	LLD<3.52E-02	140.51
TE-123M	LLD<3.85E-02	LLD<3.85E-02	159.00
TE-125M	LLD<1.11E+01	LLD<1.11E+01	109.27
TE-132	LLD<5.25E-02	LLD<5.25E-02	228.16
TH-228	LLD<3.62E+00	LLD<3.62E+00	84.37
TL-208	LLD<8.96E-02	LLD<8.96E-02	583.14
U-235	LLD<6.46E-02	LLD<6.46E-02	185.71
U-237	LLD<2.08E-01	LLD<2.08E-01	208.00
W-187	LLD<2.25E-01	LLD<2.25E-01	685.74
XE-131M	LLD<1.74E+00	LLD<1.74E+00	163.98
XE-133	LLD<1.31E-01	LLD<1.31E-01	81.00
XE-133M	LLD<4.19E-01	LLD<4.19E-01	233.21
XE-135	LLD<4.85E-02	LLD<4.85E-02	249.79
XE-138	LLD<4.07E-01	LLD<4.07E-01	258.41
Y-88	LLD<3.29E-02	LLD<3.29E-02	1836.06
Y-91	LLD<2.31E+01	LLD<2.31E+01	1204.90
Y-91M	LLD<9.61E-02	LLD<9.61E-02	555.60
ZN-65	LLD<2.35E-01	LLD<2.35E-01	1115.55
ZR-95	LLD<1.30E-01	LLD<1.30E-01	756.73
ZR-97	LLD<7.43E-02	LLD<7.43E-02	743.33
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TOTAL	6.60E+01 +-5.56E-01	6.60E+01 +-5.56E-01	

STANDARD DEVIATION = 0.19

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.45E-09 UC/LI
TOTAL MEASURED ACTIVITY = 6.60E+01 (+-5.56E-01) UC/LI
% TECH. SPEC. = ****** (+-****)

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 85.0%

PEAKS NOT USED IN ANALYSIS

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
53.47	26.91	1104.	13.9	1.17E+03
1127.44	563.62	2278.	7.0	1.78E+01
1139.60	569.70	4332.	5.7	3.43E+01
1604.93	802.35	1991.	9.5	2.16E+01
2337.07	1168.52	398.	39.8	6.06E+00
2731.98	1366.10	547.	10.7	9.54E+00
2803.13	1401.70	251.	18.1	4.46E+00

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2922.97	1461.66	793.	7.8	1.46E+01

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

222-S COUNTING ROOM WESTINGHOUSE HANFORD 17-OCT-90 16:19:46

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: SD3211
ANALYZED BY: VR

SAMPLE DESCRIPTION: F1048 SEG/COMP#8
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 27-FEB-90 AT 16:32:43

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 17-OCT-90 16:19:46

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	704.11	352.27	0.87	239.	100.	48.5	PB-214
1B		351.90			109.	28.2	
2	1166.36	583.22	1.07	103.	101.	36.1	EU-154,
2B		583.13			94.	24.1	TL-208
3	1218.50	609.28	1.46	107.	157.	25.4	BI-214,
3B		609.19			122.	21.0	RU-103
4	1323.33	661.66	1.61	96.	76.	45.1	CS-137
4B		661.41			81.	28.8	
5	2921.19	1460.70	1.82	29.	634.	8.3	K-40
5B		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 17-OCT-90 16:19:46

SAMPLE: F1048 SEG/COMP#8
DATA COLLECTED ON 27-FEB-90 AT 16:32:43
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

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

NUCLIDE	ACTIVITY CONCENTRATION IN uCi/LI MEASURED	ERROR	DECAY CORRECTED	ERROR	ENERGY COMPARISON (KEV) EXPECT	DIFF
AC-228	LLD<2.31E-01		LLD<2.31E-01		911.07	
AG-108M	LLD<3.29E-02		LLD<3.29E-02		433.94	
AG-110M	LLD<5.45E-02		LLD<5.45E-02		657.76	
AM-241	LLD<5.17E-02		LLD<5.17E-02		59.54	
AM-243	LLD<3.93E-02		LLD<3.93E-02		74.67	
AR-41	LLD<7.15E-02		LLD<7.15E-02		1293.64	
AU-198	LLD<3.04E-02		LLD<3.04E-02		411.80	
BA-133	LLD<5.56E-02		LLD<5.56E-02		356.02	
BA-139	LLD<1.45E-01		LLD<1.45E-01		165.85	
BA-140	LLD<1.56E-01		LLD<1.56E-01		537.27	
BA-141	LLD<1.48E-01		LLD<1.48E-01		190.23	
BE-7	LLD<3.38E-01		LLD<3.38E-01		477.59	
BI-207	LLD<3.86E-02		LLD<3.86E-02		569.70	
BI-212	LLD<5.57E-01		LLD<5.57E-01		727.27	
BI-214	LLD<1.21E-01		LLD<1.21E-01		609.32	
CD-109	LLD<6.49E-01		LLD<6.49E-01		88.03	
CE-139	LLD<3.29E-02		LLD<3.29E-02		165.85	
CE-141	LLD<5.61E-02		LLD<5.61E-02		145.44	
CEPR144	LLD<4.66E-01		LLD<4.66E-01		133.51	
CO-56	LLD<3.94E-02		LLD<3.94E-02		846.76	
CO-57	LLD<2.95E-02		LLD<2.95E-02		122.06	
CO-58	LLD<4.50E-02		LLD<4.50E-02		810.75	
CO-60	LLD<5.26E-02		LLD<5.26E-02		1332.50	
CR-51	LLD<2.74E-01		LLD<2.74E-01		320.09	
CS-134	LLD<5.20E-02		LLD<5.20E-02		795.84	
CS-136	LLD<4.05E-02		LLD<4.05E-02		818.51	
CS-137	LLD<6.23E-02		LLD<6.23E-02		661.65	
CS-138	LLD<1.06E-01		LLD<1.06E-01		1435.86	
EU-152	LLD<2.75E-01		LLD<2.75E-01		1408.01	
EU-154	LLD<1.14E-01		LLD<1.14E-01		1274.45	
EU-155	LLD<1.09E-01		LLD<1.09E-01		105.31	
FE-59	LLD<8.81E-02		LLD<8.81E-02		1099.25	
HF-181	LLD<4.37E-02		LLD<4.37E-02		482.20	
HG-203	LLD<3.67E-02		LLD<3.67E-02		279.20	
I-131	LLD<3.71E-02		LLD<3.71E-02		364.48	
I-132	LLD<4.58E-02		LLD<4.58E-02		667.69	
I-133	LLD<3.77E-02		LLD<3.77E-02		529.69	
I-134	LLD<6.20E-02		LLD<6.20E-02		847.03	
I-135	LLD<2.09E-01		LLD<2.09E-01		1260.41	
K-40	LLD<1.44E+00		LLD<1.44E+00		1460.75	
KR-85	LLD<9.76E+00		LLD<9.76E+00		513.99	
KR-85M	LLD<4.28E-02		LLD<4.28E-02		151.17	
KR-87	LLD<7.82E-02		LLD<7.82E-02		402.58	
KR-89	LLD<1.47E+00		LLD<1.47E+00		220.90	
LA-140	LLD<6.54E-02		LLD<6.54E-02		1596.20	
LA-142	LLD<8.92E-02		LLD<8.92E-02		641.83	
MN-54	LLD<4.73E-02		LLD<4.73E-02		834.83	

MN-56	LLD<4.45E-02	LLD<4.45E-02	846.76
NA-22	LLD<4.68E-02	LLD<4.68E-02	1274.55
NA-24	LLD<5.04E-02	LLD<5.04E-02	1368.60
NB-94	LLD<4.08E-02	LLD<4.08E-02	702.63
NB-95	LLD<4.73E-02	LLD<4.73E-02	765.78
NB-97	LLD<6.61E-02	LLD<6.61E-02	657.92
NP-237	LLD<1.71E-01	LLD<1.71E-01	86.50
NP-238	LLD<1.54E-01	LLD<1.54E-01	984.45
NP-239	LLD<2.07E-01	LLD<2.07E-01	277.60
PA-233	LLD<8.05E-02	LLD<8.05E-02	311.98
PA-234M	LLD<7.50E+00	LLD<7.50E+00	1001.03
PB-210	LLD<8.49E-01	LLD<8.49E-01	465.03
PB-212	LLD<7.15E-02	LLD<7.15E-02	239.00
PB-214	LLD<1.16E-01	LLD<1.16E-01	351.92
PO-210	LLD<3.55E+03	LLD<3.55E+03	804.00
PO-214	LLD<4.28E+02	LLD<4.28E+02	799.70
PO-216	LLD<2.20E+03	LLD<2.20E+03	804.90
PU-239	LLD<4.09E+02	LLD<4.09E+02	129.30
PU-241	LLD<1.42E+04	LLD<1.42E+04	148.57
RA-224	LLD<7.93E-01	LLD<7.93E-01	240.99
RA-226	LLD<8.60E-01	LLD<8.60E-01	186.10
RB-88	LLD<3.51E-01	LLD<3.51E-01	1836.00
RB-89	LLD<2.06E-01	LLD<2.06E-01	1031.88
RN-220	LLD<3.43E+01	LLD<3.43E+01	549.73
RU-103	LLD<3.64E-02	LLD<3.64E-02	497.08
RURH106	LLD<7.30E-01	LLD<7.30E-01	621.80
SB-124	LLD<4.11E-02	LLD<4.11E-02	602.72
SB-125	LLD<4.14E-01	LLD<4.14E-01	176.33
SC-46	LLD<6.72E-02	LLD<6.72E-02	1120.45
SE-75	LLD<4.81E-02	LLD<4.81E-02	264.66
SN-113	LLD<4.88E-02	LLD<4.88E-02	391.67
SR-85	LLD<4.28E-02	LLD<4.28E-02	513.99
SR-91	LLD<6.82E-02	LLD<6.82E-02	555.60
SR-92	LLD<7.32E-02	LLD<7.32E-02	1383.94
TA-182	LLD<1.40E-01	LLD<1.40E-01	1121.30
TC-99M	LLD<3.07E-02	LLD<3.07E-02	140.51
TE-123M	LLD<3.21E-02	LLD<3.21E-02	159.00
TE-125M	LLD<8.45E+00	LLD<8.45E+00	109.27
TE-132	LLD<3.38E-02	LLD<3.38E-02	228.16
TH-228	LLD<1.70E+00	LLD<1.70E+00	84.37
TL-208	LLD<5.51E-02	LLD<5.51E-02	583.14
U-235	LLD<5.23E-02	LLD<5.23E-02	185.71
U-237	LLD<1.46E-01	LLD<1.46E-01	208.00
W-187	LLD<1.36E-01	LLD<1.36E-01	685.74
XE-131M	LLD<1.41E+00	LLD<1.41E+00	163.98
XE-133	LLD<5.46E-02	LLD<5.46E-02	81.00
XE-133M	LLD<2.99E-01	LLD<2.99E-01	233.21
XE-135	LLD<3.33E-02	LLD<3.33E-02	249.79
XE-138	LLD<2.50E-01	LLD<2.50E-01	258.41
Y-88	LLD<3.33E-02	LLD<3.33E-02	1836.06
Y-91	LLD<2.07E+01	LLD<2.07E+01	1204.90
Y-91M	LLD<5.16E-02	LLD<5.16E-02	555.60
ZN-65	LLD<1.56E-01	LLD<1.56E-01	1115.55
ZR-95	LLD<7.78E-02	LLD<7.78E-02	756.73
ZR-97	LLD<3.91E-02	LLD<3.91E-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
704.11	352.27	100.	48.5	2.42E+00
1166.36	583.22	101.	36.1	3.81E+00
1218.50	609.28	157.	25.4	6.17E+00
1323.33	661.66	76.	45.1	3.21E+00
2921.19	1460.70	634.	8.3	5.29E+01

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

222-S COUNTING ROOM WESTINGHOUSE HANFORD 17-OCT-90 16:41:23

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

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

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

ANALYSIS OF SPECTRUM SAVED IN DISK FILE: SD4246
ANALYZED BY: MAX

SAMPLE DESCRIPTION: F1055
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 27-FEB-90 AT 14:35:57

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

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

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

222-S COUNTING ROOM WESTINGHOUSE HANFORD 17-OCT-90 16:41:23

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

PK	CENTROID CHANNEL	ENERGY KEV	FWHM KEV	BACKGND COUNTS	NET AREA COUNTS	ERROR %	NUCLIDES
1	53.46	26.91	1.09	3378.	2067.	8.9	
1B		27.06			123.	34.3	
2	1324.36	662.07	1.68	1423.	235414.	0.4	CS-137
2B		661.35			379.	12.7	
3	1823.48	911.64	1.76	123.	64.	59.0	
3B		910.95			144.	27.4	
4	2923.19	1461.78	2.15	46.	805.	7.5	K-40
4B		1460.80			854.	7.1	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

B - ENVIRONMENTAL BACKGROUND PEAK

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

222-S COUNTING ROOM WESTINGHOUSE HANFORD 17-OCT-90 16:41:23

SAMPLE: F1055
DATA COLLECTED ON 27-FEB-90 AT 14:35:57
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

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

NUCLIDE	ACTIVITY CONCENTRATION IN uCi/LI MEASURED	ERROR	DECAY CORRECTED	ERROR	ENERGY COMPARISON (KEV) EXPECT	DIFF
AC-228	LLD<7.35E-02		LLD<7.35E-02		911.07	
AG-108M	LLD<5.23E-02		LLD<5.23E-02		433.94	
AG-110M	LLD<3.34E-01		LLD<3.34E-01		657.76	
AM-241	LLD<2.20E-01		LLD<2.20E-01		59.54	
AM-243	LLD<5.19E-02		LLD<5.19E-02		74.67	
AR-41	LLD<1.54E-02		LLD<1.54E-02		1293.64	
AU-198	LLD<4.87E-02		LLD<4.87E-02		411.80	
BA-133	LLD<5.85E-02		LLD<5.85E-02		356.02	
BA-139	LLD<1.18E-01		LLD<1.18E-01		165.85	
BA-140	LLD<1.45E-01		LLD<1.45E-01		537.27	
BA-141	LLD<1.22E-01		LLD<1.22E-01		190.23	
BE-7	LLD<5.19E-01		LLD<5.19E-01		477.59	
BI-207	LLD<3.02E-02		LLD<3.02E-02		569.70	
BI-212	LLD<1.72E-01		LLD<1.72E-01		727.27	
BI-214	LLD<7.34E-02		LLD<7.34E-02		609.32	
CD-109	LLD<7.25E-01		LLD<7.25E-01		88.03	
CE-139	LLD<2.68E-02		LLD<2.68E-02		165.85	
CE-141	LLD<3.95E-02		LLD<3.95E-02		145.44	
CEPR144	LLD<3.35E-01		LLD<3.35E-01		133.51	
CO-56	LLD<1.10E-02		LLD<1.10E-02		846.76	
CO-57	LLD<2.16E-02		LLD<2.16E-02		122.06	
CO-58	LLD<1.12E-02		LLD<1.12E-02		810.75	
CO-60	LLD<1.26E-02		LLD<1.26E-02		1332.50	
CR-51	LLD<3.28E-01		LLD<3.28E-01		320.09	
CS-134	LLD<1.19E-02		LLD<1.19E-02		795.84	
CS-136	LLD<1.06E-02		LLD<1.06E-02		818.51	
CS-137	6.79E+01	+-5.82E-01	6.79E+01	+-5.82E-01	661.65	0.42
CS-138	LLD<3.13E-02		LLD<3.13E-02		1435.86	
EU-152	LLD<7.12E-02		LLD<7.12E-02		1408.01	
EU-154	LLD<4.28E-02		LLD<4.28E-02		1274.45	
EU-155	LLD<9.14E-02		LLD<9.14E-02		105.31	
FE-59	LLD<2.43E-02		LLD<2.43E-02		1099.25	
HF-181	LLD<6.08E-02		LLD<6.08E-02		482.20	
HG-203	LLD<3.68E-02		LLD<3.68E-02		279.20	
I-131	LLD<4.51E-02		LLD<4.51E-02		364.48	
I-132	LLD<1.02E-01		LLD<1.02E-01		667.69	
I-133	LLD<4.36E-02		LLD<4.36E-02		529.69	
I-134	LLD<1.43E-02		LLD<1.43E-02		847.03	
I-135	LLD<5.62E-02		LLD<5.62E-02		1260.41	
K-40	LLD<4.44E-01		LLD<4.44E-01		1460.75	
KR-85	LLD<8.91E+00		LLD<8.91E+00		513.99	
KR-85M	LLD<2.77E-02		LLD<2.77E-02		151.17	
KR-87	LLD<1.04E-01		LLD<1.04E-01		402.58	
KR-89	LLD<1.40E+00		LLD<1.40E+00		220.90	
LA-140	LLD<1.27E-02		LLD<1.27E-02		1596.20	
LA-142	LLD<7.96E-02		LLD<7.96E-02		641.83	
MN-54	LLD<1.11E-02		LLD<1.11E-02		834.83	

MN-56	LLD<1.24E-02	LLD<1.24E-02	846.76
NA-22	LLD<1.45E-02	LLD<1.45E-02	1274.55
NA-24	LLD<1.29E-02	LLD<1.29E-02	1368.60
NB-94	LLD<1.07E-02	LLD<1.07E-02	702.63
NB-95	LLD<1.34E-02	LLD<1.34E-02	765.78
NB-97	LLD<5.22E-01	LLD<5.22E-01	657.92
NP-237	LLD<2.14E-01	LLD<2.14E-01	86.50
NP-238	LLD<4.13E-02	LLD<4.13E-02	984.45
NP-239	LLD<2.10E-01	LLD<2.10E-01	277.60
PA-233	LLD<9.02E-02	LLD<9.02E-02	311.98
PA-234M	LLD<2.10E+00	LLD<2.10E+00	1001.03
PB-210	LLD<1.33E+00	LLD<1.33E+00	465.03
PB-212	LLD<7.06E-02	LLD<7.06E-02	239.00
PB-214	LLD<9.91E-02	LLD<9.91E-02	351.92
PO-210	LLD<7.61E+02	LLD<7.61E+02	804.00
PO-214	LLD<1.12E+02	LLD<1.12E+02	799.70
PO-216	LLD<5.69E+02	LLD<5.69E+02	804.90
PU-239	LLD<2.93E+02	LLD<2.93E+02	129.30
PU-241	LLD<1.03E+04	LLD<1.03E+04	148.57
RA-224	LLD<7.26E-01	LLD<7.26E-01	240.99
RA-226	LLD<7.57E-01	LLD<7.57E-01	186.10
RB-88	LLD<1.23E-01	LLD<1.23E-01	1836.00
RB-89	LLD<5.39E-02	LLD<5.39E-02	1031.88
RN-220	LLD<2.97E+01	LLD<2.97E+01	549.73
RU-103	LLD<4.85E-02	LLD<4.85E-02	497.08
RURH106	LLD<6.02E-01	LLD<6.02E-01	621.80
SB-124	LLD<3.05E-02	LLD<3.05E-02	602.72
SB-125	LLD<3.13E-01	LLD<3.13E-01	176.33
SC-46	LLD<1.33E-02	LLD<1.33E-02	1120.45
SE-75	LLD<4.99E-02	LLD<4.99E-02	264.66
SN-113	LLD<6.23E-02	LLD<6.23E-02	391.67
SR-85	LLD<3.91E-02	LLD<3.91E-02	513.99
SR-91	LLD<5.75E-02	LLD<5.75E-02	555.60
SR-92	LLD<2.07E-02	LLD<2.07E-02	1383.94
TA-182	LLD<3.44E-02	LLD<3.44E-02	1121.30
TC-99M	LLD<2.21E-02	LLD<2.21E-02	140.51
TE-123M	LLD<2.43E-02	LLD<2.43E-02	159.00
TE-125M	LLD<6.96E+00	LLD<6.96E+00	109.27
TE-132	LLD<3.22E-02	LLD<3.22E-02	228.16
TH-228	LLD<2.24E+00	LLD<2.24E+00	84.37
TL-208	LLD<3.86E-02	LLD<3.86E-02	583.14
U-235	LLD<4.20E-02	LLD<4.20E-02	185.71
U-237	LLD<1.33E-01	LLD<1.33E-01	208.00
W-187	LLD<3.84E-02	LLD<3.84E-02	685.74
XE-131M	LLD<1.10E+00	LLD<1.10E+00	163.98
XE-133	LLD<8.24E-02	LLD<8.24E-02	81.00
XE-133M	LLD<2.60E-01	LLD<2.60E-01	233.21
XE-135	LLD<3.03E-02	LLD<3.03E-02	249.79
XE-138	LLD<2.48E-01	LLD<2.48E-01	258.41
Y-88	LLD<1.16E-02	LLD<1.16E-02	1836.06
Y-91	LLD<5.03E+00	LLD<5.03E+00	1204.90
Y-91M	LLD<4.36E-02	LLD<4.36E-02	555.60
ZN-65	LLD<3.58E-02	LLD<3.58E-02	1115.55
ZR-95	LLD<2.03E-02	LLD<2.03E-02	756.73
ZR-97	LLD<1.18E-02	LLD<1.18E-02	743.33
	---	---	
TOTAL	6.79E+01 +-5.82E-01	6.79E+01 +-5.82E-01	

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

TOTAL MEASURED ACTIVITY = 6.79E+01 (+-5.82E-01) UC/LI
% TECH. SPEC. = ****** (+-****)

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 85.0%

PEAKS NOT USED IN ANALYSIS

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
53.46	26.91	1944.	9.7	2.07E+03

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
1823.48	911.64	64.	59.0	7.81E-01
2923.19	1461.78	805.	7.5	1.48E+01

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

222-S COUNTING ROOM WESTINGHOUSE HANFORD 17-OCT-90 16:24:48

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: SD3210
ANALYZED BY: MAX

SAMPLE DESCRIPTION: F1056
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 27-FEB-90 AT 14:37:39

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 17-OCT-90 16:24:48

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?	59.46	30.31	1.28	3110.	2202.	32.5	
2?	63.99	32.58	1.28	2864.	13545.	7.3	CE-144
3?	72.82	36.99	1.28	2384.	3085.	24.2	
4	1218.69	609.37	1.00	499.	102.	69.0	BI-214,
4B		609.19			122.	21.0	RU-103
5	1323.28	661.64	1.55	701.	57266.	0.8	CS-137
5B		661.41			81.	28.8	
6	1822.25	911.06	1.80	44.	95.	29.9	
6B		910.98			84.	23.3	
7	2920.88	1460.54	1.79	20.	639.	8.1	K-40
7B		1460.58			611.	5.5	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

? - 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 17-OCT-90 16:24:48

SAMPLE: F1056
DATA COLLECTED ON 27-FEB-90 AT 14:37:39
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<2.09E-01		LLD<2.09E-01		911.07	
AG-108M	LLD<1.29E-01		LLD<1.29E-01		433.94	
AG-110M	LLD<1.01E+00		LLD<1.01E+00		657.76	
AM-241	LLD<1.09E-01		LLD<1.09E-01		59.54	
AM-243	LLD<6.32E-02		LLD<6.32E-02		74.67	
AR-41	LLD<8.10E-02		LLD<8.10E-02		1293.64	
AU-198	LLD<1.12E-01		LLD<1.12E-01		411.80	
BA-133	LLD<1.37E-01		LLD<1.37E-01		356.02	
BA-139	LLD<2.84E-01		LLD<2.84E-01		165.85	
BA-140	LLD<3.92E-01		LLD<3.92E-01		537.27	
BA-141	LLD<3.23E-01		LLD<3.23E-01		190.23	
BE-7	LLD<1.28E+00		LLD<1.28E+00		477.59	
BI-207	LLD<8.41E-02		LLD<8.41E-02		569.70	
BI-212	LLD<6.34E-01		LLD<6.34E-01		727.27	
BI-214	LLD<1.97E-01		LLD<1.97E-01		609.32	
CD-109	LLD<1.13E+00		LLD<1.13E+00		88.03	
CE-139	LLD<6.42E-02		LLD<6.42E-02		165.85	
CE-141	LLD<1.01E-01		LLD<1.01E-01		145.44	
CEPR144	LLD<8.38E-01		LLD<8.38E-01		133.51	
CO-56	LLD<4.21E-02		LLD<4.21E-02		846.76	
CO-57	LLD<5.36E-02		LLD<5.36E-02		122.06	
CO-58	LLD<4.27E-02		LLD<4.27E-02		810.75	
CO-60	LLD<5.88E-02		LLD<5.88E-02		1332.50	
CR-51	LLD<7.70E-01		LLD<7.70E-01		320.09	
CS-134	LLD<5.62E-02		LLD<5.62E-02		795.84	
CS-136	LLD<4.05E-02		LLD<4.05E-02		818.51	
CS-137	7.71E+01	+-1.26E+00	7.71E+01	+-1.26E+00	661.65	-0.01
CS-138	LLD<9.21E-02		LLD<9.21E-02		1435.86	
EU-152	LLD<2.82E-01		LLD<2.82E-01		1408.01	
EU-154	LLD<1.49E-01		LLD<1.49E-01		1274.45	
EU-155	LLD<1.92E-01		LLD<1.92E-01		105.31	
FE-59	LLD<1.02E-01		LLD<1.02E-01		1099.25	
HF-181	LLD<1.51E-01		LLD<1.51E-01		482.20	
HG-203	LLD<8.99E-02		LLD<8.99E-02		279.20	
I-131	LLD<1.16E-01		LLD<1.16E-01		364.48	
I-132	LLD<2.28E-01		LLD<2.28E-01		667.69	
I-133	LLD<1.08E-01		LLD<1.08E-01		529.69	
I-134	LLD<6.07E-02		LLD<6.07E-02		847.03	
I-135	LLD<2.09E-01		LLD<2.09E-01		1260.41	
K-40	LLD<1.42E+00		LLD<1.42E+00		1460.75	
KR-85	LLD<2.42E+01		LLD<2.42E+01		513.99	
KR-85M	LLD<7.71E-02		LLD<7.71E-02		151.17	
KR-87	LLD<2.61E-01		LLD<2.61E-01		402.58	
KR-89	LLD<3.37E+00		LLD<3.37E+00		220.90	
LA-140	LLD<6.35E-02		LLD<6.35E-02		1596.20	
LA-142	LLD<1.92E-01		LLD<1.92E-01		641.83	
MN-54	LLD<4.34E-02		LLD<4.34E-02		834.83	

MN-56	LLD<4.75E-02	LLD<4.75E-02	846.76
NA-22	LLD<5.90E-02	LLD<5.90E-02	1274.55
NA-24	LLD<4.73E-02	LLD<4.73E-02	1368.60
NB-94	LLD<4.27E-02	LLD<4.27E-02	702.63
NB-95	LLD<5.01E-02	LLD<5.01E-02	765.78
NB-97	LLD<1.22E+00	LLD<1.22E+00	657.92
NP-237	LLD<3.22E-01	LLD<3.22E-01	86.50
NP-238	LLD<1.69E-01	LLD<1.69E-01	984.45
NP-239	LLD<5.12E-01	LLD<5.12E-01	277.60
PA-233	LLD<2.14E-01	LLD<2.14E-01	311.98
PA-234M	LLD<8.08E+00	LLD<8.08E+00	1001.03
PB-210	LLD<3.56E+00	LLD<3.56E+00	465.03
PB-212	LLD<1.65E-01	LLD<1.65E-01	239.00
PB-214	LLD<2.64E-01	LLD<2.64E-01	351.92
PO-210	LLD<3.70E+03	LLD<3.70E+03	804.00
PO-214	LLD<4.39E+02	LLD<4.39E+02	799.70
PO-216	LLD<2.36E+03	LLD<2.36E+03	804.90
PU-239	LLD<7.18E+02	LLD<7.18E+02	129.30
PU-241	LLD<2.59E+04	LLD<2.59E+04	148.57
RA-224	LLD<1.77E+00	LLD<1.77E+00	240.99
RA-226	LLD<1.88E+00	LLD<1.88E+00	186.10
RB-88	LLD<4.84E-01	LLD<4.84E-01	1836.00
RB-89	LLD<2.38E-01	LLD<2.38E-01	1031.88
RN-220	LLD<7.80E+01	LLD<7.80E+01	549.73
RU-103	LLD<1.21E-01	LLD<1.21E-01	497.08
RURH106	LLD<1.58E+00	LLD<1.58E+00	621.80
SB-124	LLD<7.80E-02	LLD<7.80E-02	602.72
SB-125	LLD<7.92E-01	LLD<7.92E-01	176.33
SC-46	LLD<7.20E-02	LLD<7.20E-02	1120.45
SE-75	LLD<1.20E-01	LLD<1.20E-01	264.66
SN-113	LLD<1.56E-01	LLD<1.56E-01	391.67
SR-85	LLD<1.06E-01	LLD<1.06E-01	513.99
SR-91	LLD<1.46E-01	LLD<1.46E-01	555.60
SR-92	LLD<6.68E-02	LLD<6.68E-02	1383.94
TA-182	LLD<1.65E-01	LLD<1.65E-01	1121.30
TC-99M	LLD<5.67E-02	LLD<5.67E-02	140.51
TE-123M	LLD<5.94E-02	LLD<5.94E-02	159.00
TE-125M	LLD<1.52E+01	LLD<1.52E+01	109.27
TE-132	LLD<7.66E-02	LLD<7.66E-02	228.16
TH-228	LLD<3.19E+00	LLD<3.19E+00	84.37
TL-208	LLD<9.73E-02	LLD<9.73E-02	583.14
U-235	LLD<1.13E-01	LLD<1.13E-01	185.71
U-237	LLD<3.25E-01	LLD<3.25E-01	208.00
W-187	LLD<1.51E-01	LLD<1.51E-01	685.74
XE-131M	LLD<2.62E+00	LLD<2.62E+00	163.98
XE-133	LLD<1.05E-01	LLD<1.05E-01	81.00
XE-133M	LLD<6.83E-01	LLD<6.83E-01	233.21
XE-135	LLD<8.08E-02	LLD<8.08E-02	249.79
XE-138	LLD<5.92E-01	LLD<5.92E-01	258.41
Y-88	LLD<4.58E-02	LLD<4.58E-02	1836.06
Y-91	LLD<2.07E+01	LLD<2.07E+01	1204.90
Y-91M	LLD<1.11E-01	LLD<1.11E-01	555.60
ZN-65	LLD<1.42E-01	LLD<1.42E-01	1115.55
ZR-95	LLD<7.78E-02	LLD<7.78E-02	756.73
ZR-97	LLD<3.87E-02	LLD<3.87E-02	743.33
	---	---	
TOTAL	7.71E+01 +-1.26E+00	7.71E+01 +-1.26E+00	

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

TOTAL MEASURED ACTIVITY = 7.71E+01 (+-1.26E+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
59.46	30.31	2202.	32.5	3.61E+01
63.99	32.58	13545.	7.3	2.11E+02
72.82	36.99	3085.	24.2	4.42E+01

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
1218.69	609.37	102.	69.0	4.01E+00
1822.25	911.06	95.	29.9	5.38E+00
2920.88	1460.54	639.	8.1	5.33E+01

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

222-S COUNTING ROOM WESTINGHOUSE HANFORD          17-OCT-90  16:36:59


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

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

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

ANALYSIS OF SPECTRUM SAVED IN DISK FILE: SD4247
ANALYZED BY:        VR

SAMPLE DESCRIPTION: F1057 SEG/COMP#17
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 27-FEB-90 AT 16:34:02

COLLECT LIVE TIME:    3000. SECONDS
        REAL TIME:    3054. SECONDS
        DEAD TIME:     1.77 %

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

ENERGY CALIBRATION PERFORMED 26-DEC-89
EFFICIENCY CALIBRATION PERFORMED  1-SEP-89
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222-S COUNTING ROOM WESTINGHOUSE HANFORD 17-OCT-90 16:36:59

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

PK	CENTROID CHANNEL	ENERGY KEV	FWHM KEV	BACKGND COUNTS	NET AREA COUNTS	ERROR %	NUCLIDES
1	53.47	26.91	1.09	5366.	3131.	7.4	
1B		27.06			123.	34.3	
2C	1127.42	563.61	1.50	4160.	2279.	8.3	CS-134, EU-152
3C	1139.52	569.66	1.50	4043.	4158.	7.0	CS-134, BI-207
4	1210.41	605.10	1.61	3983.	26712.	1.4	CS-134
5	1324.33	662.05	1.67	3123.	284092.	0.4	CS-137
5B		661.35			379.	12.7	
6?	1592.75	796.26	1.73	1582.	19959.	2.0	CS-134
7?	1605.00	802.38	1.73	1445.	1893.	11.4	CS-134
8?	2336.85	1168.41	2.08	1025.	309.	38.6	CS-134
9?	2347.66	1173.82	2.08	851.	25773.	1.4	CO-60
10	2666.40	1333.28	2.40	277.	23220.	1.3	CO-60
11	2731.78	1366.00	2.49	135.	464.	12.3	CS-134
12	2801.96	1401.11	2.61	101.	219.	20.2	BI-214
13	2923.22	1461.79	2.56	96.	780.	8.2	K-40
13B		1460.80			854.	7.1	

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

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

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

222-S COUNTING ROOM WESTINGHOUSE HANFORD 17-OCT-90 16:36:59

SAMPLE: F1057 SEG/COMP#17
DATA COLLECTED ON 27-FEB-90 AT 16:34:02
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

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

NUCLIDE	ACTIVITY CONCENTRATION IN uCi/LI MEASURED	ERROR	DECAY CORRECTED	ERROR	ENERGY COMPARISON (KEV) EXPECT	DIFF
AC-228	LLD<1.79E-01		LLD<1.79E-01		911.07	
AG-108M	LLD<6.27E-02		LLD<6.27E-02		433.94	
AG-110M	LLD<3.71E-01		LLD<3.71E-01		657.76	
AM-241	LLD<2.72E-01		LLD<2.72E-01		59.54	
AM-243	LLD<6.49E-02		LLD<6.49E-02		74.67	
AR-41	LLD<3.06E-02		LLD<3.06E-02		1293.64	
AU-198	LLD<6.01E-02		LLD<6.01E-02		411.80	
BA-133	LLD<7.22E-02		LLD<7.22E-02		356.02	
BA-139	LLD<1.47E-01		LLD<1.47E-01		165.85	
BA-140	LLD<1.98E-01		LLD<1.98E-01		537.27	
BA-141	LLD<1.49E-01		LLD<1.49E-01		190.23	
BE-7	LLD<6.17E-01		LLD<6.17E-01		477.59	
BI-207	LLD<4.58E-02		LLD<4.58E-02		569.70	
BI-212	LLD<5.09E-01		LLD<5.09E-01		727.27	
BI-214	LLD<2.75E-01		LLD<2.75E-01		609.32	
CD-109	LLD<8.97E-01		LLD<8.97E-01		88.03	
CE-139	LLD<3.32E-02		LLD<3.32E-02		165.85	
CE-141	LLD<4.92E-02		LLD<4.92E-02		145.44	
CEPR144	LLD<4.15E-01		LLD<4.15E-01		133.51	
CO-56	LLD<4.28E-02		LLD<4.28E-02		846.76	
CO-57	LLD<2.70E-02		LLD<2.70E-02		122.06	
CO-58	LLD<3.84E-02		LLD<3.84E-02		810.75	
CO-60	1.07E+01	+-1.59E-01	1.07E+01	+-1.59E-01	1332.50	0.78
					1173.24	0.58
CR-51	LLD<4.06E-01		LLD<4.06E-01		320.09	
CS-134	6.80E+00	+-1.44E-01	6.80E+00	+-1.44E-01	795.84	0.41
					604.70	0.40
CS-136	LLD<3.78E-02		LLD<3.78E-02		818.51	
CS-137	8.19E+01	+-6.90E-01	8.19E+01	+-6.90E-01	661.65	0.40
CS-138	LLD<3.33E-02		LLD<3.33E-02		1435.86	
EU-152	LLD<1.20E-01		LLD<1.20E-01		1408.01	
EU-154	LLD<8.21E-02		LLD<8.21E-02		1274.45	
EU-155	LLD<1.16E-01		LLD<1.16E-01		105.31	
FE-59	LLD<9.37E-02		LLD<9.37E-02		1099.25	
HF-181	LLD<7.45E-02		LLD<7.45E-02		482.20	
HG-203	LLD<4.57E-02		LLD<4.57E-02		279.20	
I-131	LLD<5.64E-02		LLD<5.64E-02		364.48	
I-132	LLD<1.15E-01		LLD<1.15E-01		667.69	
I-133	LLD<5.77E-02		LLD<5.77E-02		529.69	
I-134	LLD<5.73E-02		LLD<5.73E-02		847.03	
I-135	LLD<1.06E-01		LLD<1.06E-01		1260.41	
K-40	LLD<4.51E-01		LLD<4.51E-01		1460.75	
KR-85	LLD<1.13E+01		LLD<1.13E+01		513.99	
KR-85M	LLD<3.43E-02		LLD<3.43E-02		151.17	
KR-87	LLD<1.28E-01		LLD<1.28E-01		402.58	
KR-89	LLD<1.77E+00		LLD<1.77E+00		220.90	
LA-140	LLD<2.02E-02		LLD<2.02E-02		1596.20	

LA-142	LLD<1.13E-01	LLD<1.13E-01	641.83
MN-54	LLD<4.18E-02	LLD<4.18E-02	834.83
MN-56	LLD<4.84E-02	LLD<4.84E-02	846.76
NA-22	LLD<2.72E-02	LLD<2.72E-02	1274.55
NA-24	LLD<2.40E-02	LLD<2.40E-02	1368.60
NB-94	LLD<3.40E-02	LLD<3.40E-02	702.63
NB-95	LLD<3.70E-02	LLD<3.70E-02	765.78
NB-97	LLD<5.77E-01	LLD<5.77E-01	657.92
NP-237	LLD<2.66E-01	LLD<2.66E-01	86.50
NP-238	LLD<1.72E-01	LLD<1.72E-01	984.45
NP-239	LLD<2.63E-01	LLD<2.63E-01	277.60
PA-233	LLD<1.11E-01	LLD<1.11E-01	311.98
PA-234M	LLD<8.79E+00	LLD<8.79E+00	1001.03
PB-210	LLD<1.56E+00	LLD<1.56E+00	465.03
PB-212	LLD<8.74E-02	LLD<8.74E-02	239.00
PB-214	LLD<1.23E-01	LLD<1.23E-01	351.92
PO-210	LLD<3.04E+03	LLD<3.04E+03	804.00
PO-214	LLD<1.43E+03	LLD<1.43E+03	799.70
PO-216	LLD<2.48E+03	LLD<2.48E+03	804.90
PU-239	LLD<3.59E+02	LLD<3.59E+02	129.30
PU-241	LLD<1.28E+04	LLD<1.28E+04	148.57
RA-224	LLD<9.02E-01	LLD<9.02E-01	240.99
RA-226	LLD<9.21E-01	LLD<9.21E-01	186.10
RB-88	LLD<2.01E-01	LLD<2.01E-01	1836.00
RB-89	LLD<2.14E-01	LLD<2.14E-01	1031.88
RN-220	LLD<4.19E+01	LLD<4.19E+01	549.73
RU-103	LLD<5.93E-02	LLD<5.93E-02	497.08
RURH106	LLD<8.72E-01	LLD<8.72E-01	621.80
SB-124	LLD<1.02E-01	LLD<1.02E-01	602.72
SB-125	LLD<3.89E-01	LLD<3.89E-01	176.33
SC-46	LLD<5.45E-02	LLD<5.45E-02	1120.45
SE-75	LLD<6.25E-02	LLD<6.25E-02	264.66
SN-113	LLD<7.81E-02	LLD<7.81E-02	391.67
SR-85	LLD<4.94E-02	LLD<4.94E-02	513.99
SR-91	LLD<8.41E-02	LLD<8.41E-02	555.60
SR-92	LLD<2.35E-02	LLD<2.35E-02	1383.94
TA-182	LLD<1.45E-01	LLD<1.45E-01	1121.30
TC-99M	LLD<2.75E-02	LLD<2.75E-02	140.51
TE-123M	LLD<3.04E-02	LLD<3.04E-02	159.00
TE-125M	LLD<8.53E+00	LLD<8.53E+00	109.27
TE-132	LLD<4.02E-02	LLD<4.02E-02	228.16
TH-228	LLD<2.76E+00	LLD<2.76E+00	84.37
TL-208	LLD<5.54E-02	LLD<5.54E-02	583.14
U-235	LLD<5.15E-02	LLD<5.15E-02	185.71
U-237	LLD<1.64E-01	LLD<1.64E-01	208.00
W-187	LLD<1.11E-01	LLD<1.11E-01	685.74
XE-131M	LLD<1.37E+00	LLD<1.37E+00	163.98
XE-133	LLD<1.01E-01	LLD<1.01E-01	81.00
XE-133M	LLD<3.27E-01	LLD<3.27E-01	233.21
XE-135	LLD<3.79E-02	LLD<3.79E-02	249.79
XE-138	LLD<3.14E-01	LLD<3.14E-01	258.41
Y-88	LLD<1.89E-02	LLD<1.89E-02	1836.06
Y-91	LLD<1.17E+01	LLD<1.17E+01	1204.90
Y-91M	LLD<6.39E-02	LLD<6.39E-02	555.60
ZN-65	LLD<1.14E-01	LLD<1.14E-01	1115.55
ZR-95	LLD<6.40E-02	LLD<6.40E-02	756.73
ZR-97	LLD<3.65E-02	LLD<3.65E-02	743.33
TOTAL	9.94E+01 +-7.22E-01	9.94E+01 +-7.22E-01	

STANDARD DEVIATION = 0.17

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 3.55E-09 UC/LI
TOTAL MEASURED ACTIVITY = 9.94E+01 (+-7.22E-01) UC/LI
% TECH. SPEC. = ****** (+-****)

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 85.0%

PEAKS NOT USED IN ANALYSIS

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
53.47	26.91	3008.	7.8	3.19E+03
1127.42	563.61	2279.	8.3	1.79E+01
1139.52	569.66	4158.	7.0	3.29E+01
1605.00	802.38	1893.	11.4	2.06E+01
2336.85	1168.41	309.	38.6	4.71E+00
2731.78	1366.00	464.	12.3	8.09E+00
2801.96	1401.11	219.	20.2	3.89E+00

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2923.22	1461.79	780.	8.2	1.44E+01

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

222-S COUNTING ROOM                                 17-OCT-90  13:44:38


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

MCA UNIT NUMBER:   1     /     ADC UNIT NUMBER: 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: SD2102
ANALYZED BY:        VR

SAMPLE DESCRIPTION: F1058 SEG/COMP#18
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 27-FEB-90 AT 16:31:29

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-MAR-89
EFFICIENCY CALIBRATION PERFORMED 21-OCT-88
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222-S COUNTING ROOM 17-OCT-90 13:44:38

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
1C	1127.78	563.52	1.56	437.	383.	19.4	CS-134, EU-152
2C	1139.82	569.54	1.56	451.	701.	15.1	CS-134, BI-207
3	1210.60	604.92	1.51	424.	4109.	3.4	CS-134
4	1324.42	661.82	1.72	323.	7322.	2.4	CS-137
4B		661.85			36.	13.9	
5C	1592.72	795.95	1.67	247.	2924.	4.7	CS-134
6C	1604.93	802.06	1.67	214.	317.	15.2	CS-134
7	2347.22	1173.16	1.96	216.	3649.	3.5	CO-60
8	2665.64	1332.37	2.21	40.	3317.	3.5	CO-60
8B		1332.24			9.	37.4	
9	2922.32	1460.70	1.57	12.	157.	17.3	K-40
9B		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 17-OCT-90 13:44:38

SAMPLE: F1058 SEG/COMP#18
DATA COLLECTED ON 27-FEB-90 AT 16:31:29
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<1.15E+00		LLD<1.15E+00		911.07	
AG-108M	LLD<2.54E-01		LLD<2.54E-01		433.94	
AG-110M	LLD<1.23E+00		LLD<1.23E+00		657.76	
AM-241	LLD<1.22E+00		LLD<1.22E+00		59.54	
AM-243	LLD<3.21E-01		LLD<3.21E-01		74.67	
AR-41	LLD<1.42E-01		LLD<1.42E-01		1293.64	
AU-198	LLD<2.32E-01		LLD<2.32E-01		411.80	
BA-133	LLD<3.05E-01		LLD<3.05E-01		356.02	
BA-139	LLD<6.35E-01		LLD<6.35E-01		165.85	
BA-140	LLD<9.24E-01		LLD<9.24E-01		537.27	
BA-141	LLD<6.12E-01		LLD<6.12E-01		190.23	
BE-7	LLD<2.11E+00		LLD<2.11E+00		477.59	
BI-207	LLD<2.31E-01		LLD<2.31E-01		569.70	
BI-212	LLD<3.63E+00		LLD<3.63E+00		727.27	
BI-214	LLD<1.75E+00		LLD<1.75E+00		609.32	
CD-109	LLD<3.99E+00		LLD<3.99E+00		88.03	
CE-139	LLD<1.44E-01		LLD<1.44E-01		165.85	
CE-141	LLD<2.40E-01		LLD<2.40E-01		145.44	
CEPR144	LLD<1.88E+00		LLD<1.88E+00		133.51	
CO-56	LLD<2.71E-01		LLD<2.71E-01		846.76	
CO-57	LLD<1.21E-01		LLD<1.21E-01		122.06	
CO-58	LLD<2.38E-01		LLD<2.38E-01		810.75	
CO-60	2.17E+01	+-8.00E-01	2.17E+01	+-8.00E-01	1332.50	-0.14
					1173.24	-0.07
CR-51	LLD<1.74E+00		LLD<1.74E+00		320.09	
CS-134	1.47E+01	+-7.06E-01	1.47E+01	+-7.06E-01	795.84	0.11
					604.70	0.22
CS-136	LLD<2.63E-01		LLD<2.63E-01		818.51	
CS-137	3.15E+01	+-8.55E-01	3.15E+01	+-8.55E-01	661.65	0.17
CS-138	LLD<2.63E-01		LLD<2.63E-01		1435.86	
EU-152	LLD<6.78E-01		LLD<6.78E-01		1408.01	
EU-154	LLD<4.23E-01		LLD<4.23E-01		1274.45	
EU-155	LLD<5.54E-01		LLD<5.54E-01		105.31	
FE-59	LLD<5.85E-01		LLD<5.85E-01		1099.25	
HF-181	LLD<2.73E-01		LLD<2.73E-01		482.20	
HG-203	LLD<1.88E-01		LLD<1.88E-01		279.20	
I-131	LLD<2.43E-01		LLD<2.43E-01		364.48	
I-132	LLD<7.17E-01		LLD<7.17E-01		667.69	
I-133	LLD<2.43E-01		LLD<2.43E-01		529.69	
I-134	LLD<3.89E-01		LLD<3.89E-01		847.03	
I-135	LLD<5.49E-01		LLD<5.49E-01		1260.41	
K-40	LLD<2.07E+00		LLD<2.07E+00		1460.75	
KR-85	LLD<5.29E+01		LLD<5.29E+01		513.99	
KR-85M	LLD<1.54E-01		LLD<1.54E-01		151.17	
KR-87	LLD<5.30E-01		LLD<5.30E-01		402.58	
KR-89	LLD<7.89E+00		LLD<7.89E+00		220.90	
LA-140	LLD<1.25E-01		LLD<1.25E-01		1596.20	

LA-142	LLD<5.51E-01	LLD<5.51E-01	641.83
MN-54	LLD<2.36E-01	LLD<2.36E-01	834.83
MN-56	LLD<3.05E-01	LLD<3.05E-01	846.76
NA-22	LLD<1.50E-01	LLD<1.50E-01	1274.55
NA-24	LLD<1.83E-01	LLD<1.83E-01	1368.60
NB-94	LLD<2.09E-01	LLD<2.09E-01	702.63
NB-95	LLD<2.24E-01	LLD<2.24E-01	765.78
NB-97	LLD<1.39E+00	LLD<1.39E+00	657.92
NP-237	LLD<1.13E+00	LLD<1.13E+00	86.50
NP-238	LLD<1.06E+00	LLD<1.06E+00	984.45
NP-239	LLD<1.19E+00	LLD<1.19E+00	277.60
PA-233	LLD<4.34E-01	LLD<4.34E-01	311.98
PA-234M	LLD<5.08E+01	LLD<5.08E+01	1001.03
PB-210	LLD<5.52E+00	LLD<5.52E+00	465.03
PB-212	LLD<3.50E-01	LLD<3.50E-01	239.00
PB-214	LLD<4.97E-01	LLD<4.97E-01	351.92
PO-210	LLD<2.20E+04	LLD<2.20E+04	804.00
PO-214	LLD<8.15E+03	LLD<8.15E+03	799.70
PO-216	LLD<1.50E+04	LLD<1.50E+04	804.90
PU-239	LLD<1.79E+03	LLD<1.79E+03	129.30
PU-241	LLD<5.64E+04	LLD<5.64E+04	148.57
RA-224	LLD<3.77E+00	LLD<3.77E+00	240.99
RA-226	LLD<3.32E+00	LLD<3.32E+00	186.10
RB-88	LLD<8.48E-01	LLD<8.48E-01	1836.00
RB-89	LLD<1.29E+00	LLD<1.29E+00	1031.88
RN-220	LLD<2.05E+02	LLD<2.05E+02	549.73
RU-103	LLD<2.33E-01	LLD<2.33E-01	497.08
RURH106	LLD<4.56E+00	LLD<4.56E+00	621.80
SB-124	LLD<4.77E-01	LLD<4.77E-01	602.72
SB-125	LLD<1.82E+00	LLD<1.82E+00	176.33
SC-46	LLD<3.20E-01	LLD<3.20E-01	1120.45
SE-75	LLD<2.66E-01	LLD<2.66E-01	264.66
SN-113	LLD<3.20E-01	LLD<3.20E-01	391.67
SR-85	LLD<2.32E-01	LLD<2.32E-01	513.99
SR-91	LLD<4.08E-01	LLD<4.08E-01	555.60
SR-92	LLD<1.40E-01	LLD<1.40E-01	1383.94
TA-182	LLD<8.97E-01	LLD<8.97E-01	1121.30
TC-99M	LLD<1.24E-01	LLD<1.24E-01	140.51
TE-123M	LLD<1.39E-01	LLD<1.39E-01	159.00
TE-125M	LLD<3.95E+01	LLD<3.95E+01	109.27
TE-132	LLD<1.61E-01	LLD<1.61E-01	228.16
TH-228	LLD<1.31E+01	LLD<1.31E+01	84.37
TL-208	LLD<2.73E-01	LLD<2.73E-01	583.14
U-235	LLD<2.23E-01	LLD<2.23E-01	185.71
U-237	LLD<6.62E-01	LLD<6.62E-01	208.00
W-187	LLD<8.29E-01	LLD<8.29E-01	685.74
XE-131M	LLD<6.15E+00	LLD<6.15E+00	163.98
XE-133	LLD<4.48E-01	LLD<4.48E-01	81.00
XE-133M	LLD<1.46E+00	LLD<1.46E+00	233.21
XE-135	LLD<1.70E-01	LLD<1.70E-01	249.79
XE-138	LLD<1.25E+00	LLD<1.25E+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<3.09E-01	LLD<3.09E-01	555.60
ZN-65	LLD<6.68E-01	LLD<6.68E-01	1115.55
ZR-95	LLD<4.12E-01	LLD<4.12E-01	756.73
ZR-97	LLD<2.65E-01	LLD<2.65E-01	743.33
TOTAL	6.79E+01 +-1.37E+00	6.79E+01 +-1.37E+00	

STANDARD DEVIATION = 0.16

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.47E-09 UC/LI
TOTAL MEASURED ACTIVITY = 6.79E+01 (+-1.37E+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
1127.78	563.52	383.	19.4	2.26E+01
1139.82	569.54	701.	15.1	4.17E+01
1604.93	802.06	317.	15.2	2.54E+01

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2922.32	1460.70	157.	17.3	2.06E+01

Single Shell Tank
Calibration Record

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

CALIBRATION STANDARD ID: 56B40 D1

ANALYTE CONCENTRATION: N/A

TYPE OF CALIBRATION: Gamma Energy Analysis (Efficiency)

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

DETECTOR: 1
GEOMETRY CODE: 42
GEOMETRY DESCRIPTION: 22 ML LIQUID, POS 2
CALIBRATION DATE: 14-Feb-89
ANALYST(S): J. L. ANDERSON/M. R. DOWELL
STANDARD ID: 56840 D1

ENERGY (KEV)	EFFICIENCY (COUNTS/GAMMA)
59.536	5.721347E-03
88.032	1.512568E-02
122.0614	2.041958E-02
165.853	1.856472E-02
279.1967	
391.668	1.042777E-02
513.99	7.856059E-03
661.65	6.838966E-03
898.021	5.300244E-03
1173.237	4.218416E-03
1332.501	3.785537E-03
1836.129	2.931033E-03

EQUATION 0-165 KEV

```
LOG(EFF) =   -5.343694E+01
         +    2.034704E+01 *LOG(ENERGY)
         +   -2.088264E+00 *LOG(ENERGY)^2
```

EQUATION 165-1836 KEV

```
LOG(EFF) =    8.372735E+00
         +   -7.762489E+00 *LOG(ENERGY)
         +    2.017698E+00 *LOG(ENERGY)^2
         +   -2.447560E-01 *LOG(ENERGY)^3
         +    1.067720E-02 *LOG(ENERGY)^4
```

GEA CALIBRATION RECORD PROCEDURE LQ-508-003

DETECTOR: 1
GEOMETRY CODE: 43
GEOMETRY DESCRIPTION: 22 ML LIQUID, POS 3
CALIBRATION DATE: 16-Feb-89
ANALYST(S): J. L. ANDERSON/M. R. DOWELL
STANDARD ID: 56840 D1

ENERGY (KEV)	EFFICIENCY (COUNTS/GAMMA)
59.536	1.397695E-03
88.032	3.641448E-03
122.0614	5.035820E-03
165.853	4.620516E-03
279.1967	
391.668	2.619018E-03
513.99	1.890740E-03
661.65	1.782478E-02
898.021	1.392563E-03
1173.237	1.117189E-03
1332.501	1.007670E-03
1836.129	7.78250E-04

EQUATION 0-165 KEV

```
LOG(EFF) =   -5.354869E+01
```

```
                                  +   1.975356E+01 *LOG(ENERGY)
                                  +  -2.020858E+00 *LOG(ENERGY)^2
```

EQUATION 165-1836 KEV

```
                        LOG(EFF) =    4.001880E+01
                                  +  -2.857555E01  *LOG(ENERGY)
                                  +   6.748440E+00 *LOG(ENERGY)^2
                                  +   7.173093E-01 *LOG(ENERGY)^3
                                  +   2.821780E-02 *LOG(ENERGY)^4
```

GEA CALIBRATION RECORD PROCEDURE LQ-508-003

Single Shell Tank
Calibration Record

ANALYTE:	Mixed Isotope Standards		
PROCEDURE:	LQ-508-003	REVISION:	A-0
INSTRUMENT:	GEA Detector #2	PROPERTY NUMBER:	401934
TECHNOLOGIST:	J. L. Anderson	PAYROLL NUMBER:	61413
DATE:	See Attached Sheets		

CALIBRATION STANDARD ID: 56B40 D1

ANALYTE CONCENTRATION: N/A

TYPE OF CALIBRATION: Gamma Energy Analysis (Efficiency)

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

DETECTOR: 2
GEOMETRY CODE: 42
GEOMETRY DECSRIPTION: 22 ML LIQUID, POS 2
CALIBRATION DATE: 21-Oct-88
ANALYST(S): J. L. ANDERSON/M. R. DOWELL
STANDARD ID: 56B40 D1

ENERGY (KEV)	EFFICIENCY (COUNTS/GAMMA)
59.536	3.417000E-03
88.032	1.090000E-02
122.0614	1.408000E-02
165.853	1.516000E-02
279.1967	9.929000E-03
391.668	7.578000E-03
513.99	5.875000E-03
661.65	4.927000E-03
898.021	3.727000E-03
1173.237	3.085000E-03
1332.501	2.683000E-03
1836.129	2.102000E-03

EQUATION 0-122 KEV

```
LOG(EFF) =   -6.654070E+01
           +  2.583780E+01 *LOG(ENERGY)
           +  -2.677550E+00 *LOG(ENERGY)^2
```

EQUATION 122-1836 KEV

```
LOG(EFF) =   -1.050740E+02
           +  6.428950E+01 *LOG(ENERGY)
           +  -1.503170E+01 *LOG(ENERGY)^2
           +  1.533670E+00 *LOG(ENERGY)^3
           +  -5.838530E-02 *LOG(ENERGY)^4
```

GEA CALIBRATION RECORD PROCEDURE LQ-508-003

DETECTOR: 2
GEOMETRY CODE: 43
GEOMETRY DECSRIPTION: 22 ML LIQUID, POS 3
CALIBRATION DATE: 28-Sep-88
ANALYST(S): J. L. ANDERSON/M. R. DOWELL
STANDARD ID: 56B40 D1

ENERGY (KEV)	EFFICIENCY (COUNTS/GAMMA)
59.536	1.476000E-03
88.032	4.721000E-03
122.0614	6.589000E-03
165.853	6.613000E-03
279.1967	4.692000E-03
391.668	3.542000E-03
513.99	2.810000E-03
661.65	2.327000E-03
898.021	1.790000E-03
1173.237	1.437000E-03
1332.501	1.277000E-03
1836.129	9.824000E-04

EQUATION 0-165 KEV

```
LOG(EFF) =    -5.826830E+01
            +  2.165450E+01 *LOG(ENERGY)
            +  -2.198930E+00 *LOG(ENERGY)**2
```

EQUATION 165-1836 KEV

```
LOG(EFF) =    -2.233890E+01
            +  1.174520E+01 *LOG(ENERGY)
            +  -2.739550E+00 *LOG(ENERGY)**2
            +  2.655450E-01 *LOG(ENERGY)**3
            +  -9.668420E-03 *LOG(ENERGY)**4
```

Single Shell Tank
Calibration Record

ANALYTE:	Mixed Isotope Standards		
PROCEDURE:	LQ-508-003	REVISION:	A-3
INSTRUMENT:	GEA Detector #3	PROPERTY NUMBER:	401934
TECHNOLOGIST:	J. L. Anderson	PAYROLL NUMBER:	61413
DATE:	July 2, 1989		

CALIBRATION STANDARD ID: 56B40 D1

ANALYTE CONCENTRATION: N/A

TYPE OF CALIBRATION: Gamma Energy Analysis (Efficiency)

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

DETECTOR: 3
GEOMETRY CODE: 41
GEOMETRY DECSRIPTION: 22 ML LIQUID, POS 1
CALIBRATION DATE: 2-Jul-89
ANALYST(S): J. L. ANDERSON/M. R. DOWELL
STANDARD ID: 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)
            +  -9.970520E-02 *LOG(ENERGY)^2
```

EQUATION 165-1836 KEV

```
LOG(EFF) =     3.082260E-01
            +  -1.410839E+00 *LOG(ENERGY)
            +   1.042098E-01 *LOG(ENERGY)^2
            +  -5.874725E-03 *LOG(ENERGY)^3
```

GEA CALIBRATION RECORD PROCEDURE LQ-508-003

DETECTOR: 3
GEOMETRY CODE: 43
GEOMETRY DESCRIPTION: 22 ML LIQUID, POS 3
CALIBRATION DATE: 2-Jul-89
ANALYST(S): J. L. ANDERSON/M. R. DOWELL
STANDARD ID: 56840 01

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

EQUATION 0-165 KEV

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

EQUATION 165-1836 KEV

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

Single Shell Tank
Calibration Record

Analyte:	Mixed Isotope Standards		
Procedure:	LQ-508-003	Revision:	A-3
Instrument:	GEA Detector #4	Property Number:	401934
Technologist:	J. L. Anderson	Payroll Number:	61413
Date:	September 1, 1989		

Calibration Standard ID: 56B40 D1

Analyte Concentration: N/A

Type of Calibration: Gamma Energy Analysis (Efficiency)

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

GEA CALIBRATION RECORD PROCEDURE LQ-508-003

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

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

EQUATION 0-165 KEV

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

EQUATION 165-1836 KEV

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

GEA CALIBRATION RECORD PROCEDURE LQ-508-003

Analytical Batch

Lab Segment Serial #: F1043

Customer ID: 000012

Instrument	E60044
Procedure/Rev	LA-503-156/C-2
Technologist	R. Hale
Date	February 27, 1990
Temperature	N/A
Starting Time	0900 02-26-90
Ending Time	1300 02-27-90
Chemist	S. A. Catlow

Americium Analysis
Water Digestion

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

	Description	Lab ID
12	Final LMCS Check Std	F1076
13		
14		
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16		
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19		
20		
21		
22		

Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std	16B43/.010 mL			N/A
Spike	16B43/.010 mL	F1055/1 mL		N/A

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

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

DATA REDUCTION REPORT

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

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

PEAK ANALYSIS

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

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Peak Centroid Obs.	Peak Centroid Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1	Pu238	0.4746	5.499	5.509	-0.010	0.09	60.48	360.69	0.162E-03
	Am241		5.480	5.509	-0.029				0.124E-03
2		0.5254		5.297		0.06	66.95	287.45	0.129E-03

DETECTOR CALIBRATION

Energy(MEV) = 4.091 + (0.0047)*Channel
Energy range (MeV): 4.091 TO 6.498
Efficiency = 0.2329 CPM/DPM

TOTAL COUNT DATA:

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

Analyzed by: _____
DM

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          SPECTRUM SD5633.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC                8454.8

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Raw Data Dump for AEA Spectrum: SP:SD5633.SPC

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

	1.	4.	3.	2.	0.	0.	2.	1.	0.	0.
361	0.	0.	1.	0.	2.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
431	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
441	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
451	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
461	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
481	0.	2.	0.	1.	1.	2.	0.	0.	1.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

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

DATA REDUCTION REPORT

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

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

PEAK ANALYSIS

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

PEAK RESULTS

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

TOTAL COUNT DATA:

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

Analyzed by: _____
DM

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

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

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

DATA REDUCTION REPORT

SAMPLE
F-1055 AM
File ID: SD8120.SPC

Counted on: 3/ 1/90 @ 2: 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	18.4	18.7	352.397	352.397	40.000	41.682	20.000	8.395
2	19.2	16.8	302.575	302.575	60.000	9.968	30.000	8.395
3	1178.2	1247.5	254.271	254.271	28.000	19.852	14.000	2.823

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1		0.0147		6.276		0.22	0.70	36.18	0.163E-04
2		0.0054		6.012		0.05	0.26	13.41	0.604E-05
3	Pu236	0.9799	5.756	5.756	-0.000	0.11	46.93	2468.34	0.111E-02

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

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	23886.0	100.000
Smoothed	23885.7	99.999
Composite fit	23945.1	100.247
Residuals	-59.4	-0.249

Analyzed by: _____
DM

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          SPECTRUM SD8120.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC              4597.7

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Raw Data Dump for AEA Spectrum: SP:SD8120.SPC

1	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
11	1.	0.	0.	1.	1.	1.	1.	1.	1.	1.
21	0.	0.	0.	2.	1.	0.	0.	1.	1.	1.
31	2.	1.	1.	1.	2.	1.	4.	0.	2.	3.
41	0.	0.	2.	0.	0.	0.	4.	1.	1.	2.
51	2.	0.	1.	2.	2.	4.	1.	1.	2.	0.
61	0.	3.	0.	0.	3.	2.	1.	4.	0.	2.
71	2.	2.	1.	1.	2.	0.	1.	5.	1.	3.
81	2.	2.	2.	4.	0.	1.	4.	2.	0.	2.
91	5.	3.	1.	3.	4.	6.	2.	3.	6.	2.
101	4.	5.	2.	3.	1.	4.	9.	3.	1.	6.
111	6.	6.	5.	5.	3.	10.	2.	10.	4.	3.
121	4.	6.	2.	3.	2.	5.	5.	7.	4.	5.
131	4.	9.	1.	9.	7.	5.	4.	9.	10.	5.
141	13.	13.	14.	5.	13.	9.	9.	16.	13.	10.
151	12.	8.	15.	12.	8.	13.	16.	19.	23.	14.
161	26.	19.	12.	19.	19.	11.	19.	10.	20.	27.
171	28.	25.	23.	28.	20.	33.	19.	32.	35.	36.
181	38.	32.	30.	39.	43.	50.	40.	44.	45.	49.
191	53.	54.	53.	55.	64.	52.	55.	75.	66.	59.
201	76.	82.	77.	87.	87.	75.	82.	114.	103.	122.
211	99.	123.	116.	117.	148.	159.	170.	162.	189.	184.
221	174.	215.	232.	202.	260.	238.	284.	272.	288.	328.
231	305.	347.	362.	358.	359.	388.	368.	420.	415.	431.
241	470.	498.	500.	501.	512.	539.	542.	526.	612.	588.
251	566.	612.	616.	622.	622.	602.	591.	530.	468.	424.
261	362.	313.	265.	176.	160.	107.	84.	53.	44.	35.
271	22.	20.	29.	20.	17.	16.	7.	5.		

									5.	3.
281	5.	6.	7.	1.	2.	6.	3.	4.	10.	6.
291	7.	8.	5.	8.	12.	5.	8.	11.	7.	5.
301	11.	6.	14.	10.	11.	6.	6.	1.	4.	1.
311	1.	4.	4.	3.	0.	2.	2.	4.	0.	0.
321	1.	0.	2.	4.	3.	2.	5.	4.	4.	4.
331	4.	2.	4.	8.	2.	5.	11.	9.	3.	7.
341	4.	10.	8.	6.	5.	10.	9.	6.	18.	8.
351	8.	11.	9.	8.	4.	14.	8.	8.	7.	6.
361	11.	4.	8.	7.	4.	6.	5.	0.	4.	2.
371	1.	0.	0.	0.	0.	1.	0.	0.	0.	1.
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.	1.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	1.	1.	0.	0.	1.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
481	0.	0.	0.	0.	0.	1.	0.	1.	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
F1056
File ID: SD6069.SPC

Counted on: 2/28/90 @16: 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	17.2	17.9	360.756	360.756	28.000	18.443	14.000	5.896
2	20.5	14.9	303.335	303.335	12.000	8.211	6.000	5.896
3	1606.3	1602.6	257.058	257.058	20.000	13.794	10.000	5.524

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1	Pu236	0.0130	5.756	5.763	-0.007	0.08	0.44	6.48	0.292E-05
2	Pu238	0.0065	5.499	5.499	0.000	0.04	0.22	4.39	0.198E-05
	Am241		5.480	5.499	-0.019				0.151E-05
3		0.9805		5.286		0.06	32.99	478.18	0.215E-03

DETECTOR CALIBRATION
Energy(MEV) = 4.103 + (0.0046)*Channel
Energy range (MeV): 4.103 TO 6.459
Efficiency = 0.0690 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	17098.0	100.000
Smoothed	17098.0	100.000
Composite fit	16825.2	98.405
Residuals	272.8	1.595

Analyzed by: _____
EMB

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          SPECTRUM SD6069.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC              5321.3

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.3
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2
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2



1
1
1
1
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Raw Data Dump for AEA Spectrum: SP:SD6069.SPC

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
21	1.	1.	0.	1.	0.	0.	1.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
41	2.	0.	0.	0.	0.	0.	0.	0.	1.	0.
51	0.	1.	0.	1.	0.	0.	0.	0.	0.	0.
61	0.	0.	1.	0.	0.	0.	1.	1.	0.	0.
71	0.	0.	1.	0.	0.	1.	0.	0.	0.	0.
81	0.	0.	1.	1.	0.	1.	1.	1.	0.	0.
91	0.	1.	1.							

				0.	1.	0.	0.	0.	0.	0.
101	0.	0.	0.	0.	0.	1.	0.	2.	0.	0.
111	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.
121	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.
131	0.	0.	1.	0.	1.	0.	1.	0.	1.	0.
141	0.	0.	1.	0.	1.	0.	1.	0.	0.	0.
151	0.	0.	0.	0.	1.	0.	0.	0.	1.	2.
161	0.	0.	2.	0.	0.	1.	3.	2.	1.	0.
171	4.	1.	3.	1.	5.	1.	1.	1.	0.	1.
181	1.	3.	3.	2.	3.	1.	4.	1.	2.	3.
191	1.	4.	6.	4.	4.	3.	2.	6.	5.	3.
201	4.	10.	5.	7.	9.	7.	8.	14.	8.	6.
211	8.	7.	14.	12.	8.	17.	13.	14.	24.	20.
221	30.	20.	25.	27.	42.	38.	53.	42.	39.	47.
231	64.	70.	72.	95.	114.	141.	130.	149.	192.	215.
241	222.	249.	287.	321.	356.	452.	473.	530.	584.	678.
251	689.	706.	778.	902.	952.	942.	906.	850.	776.	665.
261	562.	449.	350.	263.	191.	134.	92.	103.	71.	57.
271	55.	38.	32.	29.	18.	10.	6.	8.	4.	5.
281	0.	1.	2.	3.	3.	0.	0.	2.	2.	3.
291	5.	2.	4.	4.	4.	6.	4.	1.	12.	6.
301	6.	9.	6.	10.	6.	2.	8.	4.	1.	1.
311	1.	0.	0.	1.	1.	1.	1.	0.	3.	1.
321	0.	0.	1.	1.	1.	0.	1.	1.	1.	0.
331	0.	1.	1.	2.	2.	1.	0.	0.	2.	6.
341	2.	5.	4.	2.	0.	5.	3.	3.	4.	7.
351	13.	5.	3.	13.	8.	4.	12.	9.	12.	6.
361	9.	12.	5.	6.	11.	4.	8.	5.	4.	5.
371	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
431	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	1.	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.	1.	0.
471	0.	0.	0.	1.	1.	0.	0.	0.	0.	2.
481	0.	0.	1.	0.	0.	0.	0.	0.	1.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

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

DATA REDUCTION REPORT

SAMPLE
F-1075 AM
File ID: SD6071.SPC

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

PEAK ANALYSIS

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

PEAK RESULTS

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

TOTAL COUNT DATA:

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

Analyzed by: _____
DM

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          SPECTRUM SD6071.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC              5803.8
3
3
3
3
3
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4
4
4
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1.........2.
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2................1...
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1
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Raw Data Dump for AEA Spectrum: SP:SD6071.SPC

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

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

DATA REDUCTION REPORT

SAMPLE
F1076
File ID: SD2774.SPC

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

PEAK ANALYSIS

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

PEAK RESULTS

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

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

TOTAL COUNT DATA:

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

Analyzed by: _____
EMB

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          SPECTRUM SD2774.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC                6008.8
1
1
1
1
4
1
1
1
1
1
1
1
1
1
1
1
1
1
1
1.
3.
3..
13..
1.3..
1...3.
2......3
2.........3.
12............3..
1.2....................3...
1..2............................3.......
1....2.........................................3..........
1......2.......................................................3.......
1..........2.......................3.............
1......3........2.........
1....................2.
1..............................2
1.......................................2.
1.......................................2
1.......................2
1....2
1
1
1
1
1
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Raw Data Dump for AEA Spectrum: SP:SD2774.SPC

1	0.	0.	0.	0.	0.	2.	0.	2.	0.	2.
11	1.	1.	0.	3.	1.	3.	2.	1.	3.	1.
21	0.	1.	1.	1.	4.	3.	1.	0.	5.	5.
31	0.	3.	2.	2.	1.	3.	0.	3.	3.	2.
41	3.	4.	2.	3.	1.	1.	1.	3.	1.	3.
51	0.	3.	1.	3.	3.	2.	0.	3.	0.	2.
61	4.	4.	4.	1.	4.	4.	1.	5.	4.	9.
71	1.	4.	3.	7.	2.	4.	2.	2.	1.	7.
81	6.	4.	3.	4.	3.	6.	3.	2.	6.	3.
91	4.	5.	3.	3.	6.	8.	4.	3.	3.	1.
101	6.	5.	8.	5.	7.	6.	3.	5.	8.	4.
111	8.	8.	11.	8.	10.	16.	15.	13.	14.	11.
121	7.	9.	12.	9.	17.	7.	16.	8.	10.	10.
131	21.	11.	15.	14.	16.	13.	15.	14.	16.	25.
141	7.	12.	13.	13.	12.	16.	16.	19.	13.	20.
151	17.	14.	29.	19.	26.	23.	27.	28.	26.	11.
161	22.	28.	37.	32.	29.	36.	23.	42.	35.	44.
171	30.	37.	29.	39.	38.	36.	45.	53.	49.	53.
181	40.	39.	48.	57.	43.	56.	55.	50.	65.	68.
191	62.	68.	65.	68.	79.	82.	98.	68.	67.	88.
201	90.	88.	101.	101.	89.	103.	123.	100.	112.	152.
211	140.	131.	170.	161.	163.	165.	179.	197.	206.	218.
221	226.	233.	248.	260.	274.	265.	292.	301.	309.	358.
231	388.	356.	408.	404.	441.	468.	499.	550.	567.	555.
241	606.	593.	643.	718.	748.	756.	760.	752.	796.	812.
251	762.	764.	807.	792.	759.	687.	725.	580.	553.	464.
261	406.	371.	299.	283.	258.	233.	237.	222.	208.	222.
271	199.	210.	223.	251.	284.	227.	256.	275.	304.	326.
281	331.	353.	344.	370.	385.	431.	450.	423.	519.	455.
291	511.	553.	568.	564.	590.	592.	540.	582.	564.	534.
301	534.	478.	462.	402.	360.	302.	258.	191.	171.	130.
311	95.	76.	60.	51.	47.	27.	15.	12.	11.	8.
321	4.	0.	2.	1.	4.	0.	1.	0.	2.	1.
331	0.	1.	1.	1.	1.	4.	2.	0.	0.	1.
341	3.	2.	2.	2.	2.	1.	0.	7.	5.	2.
351	5.	2.	5.	0.	2.	0.	2.	0.	1.	0.
361	0.	0.	2.	0.	1.	0.	1.	1.	0.	0.
371	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
381	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
421	1.	0.	0.	1.	0.	0.	0.	1.	1.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	1.	0.							

				0.	0.	0.	1.	0.	0.	0.
451	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	1.	1.	0.	1.	0.	2.	0.
481	0.	0.	2.	0.	0.	0.	0.	1.	1.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Analytical Batch

Lab Segment Serial #: F1043

Customer ID: 000012

Instrument	E60044
Procedure/Rev	LA-503-156/C-2
Technologist	R. Hale
Date	February 26, 1990
Temperature	N/A
Starting Time	0900 02-25-90
Ending Time	1300 02-25-90
Chemist	S. A. Catlow

Plutonium Analysis
Water Digestion

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

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

Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std	16B43/.001 mL			N/A
Spike	16B43/.010 mL	F1055/1 mL		N/A

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

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

DATA REDUCTION REPORT

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

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

PEAK ANALYSIS

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

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1		0.0012		6.241		0.04	0.10	0.52	0.233E-06
2		0.4286		5.727		0.06	36.74	182.50	0.822E-04
3	Th228	0.0642	5.430	5.464	-0.034	0.05	5.50	38.49	0.173E-04
	Am241		5.480	5.464	0.016				0.131E-04
4	Pu239	0.4984	5.143	5.129	0.014	0.05	42.72	212.23	0.956E-04
	Pu240		5.144	5.129	0.015				0.956E-04
5	Np237	0.0076	4.640	4.769	-0.129	2.13	0.65	54.04	0.243E-04
	Np237		4.781	4.769	0.012				0.168E-05

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

TOTAL COUNT DATA:

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

Analyzed by: _____
DM

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          SPECTRUM SD2770.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC              8862.5 ...
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Raw Data Dump for AEA Spectrum: SP:SD2770.SPC

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

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

DATA REDUCTION REPORT

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

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

PEAK ANALYSIS

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

PEAK RESULTS

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

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

TOTAL COUNT DATA:

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

Analyzed by: _____
DM

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

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

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

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

DATA REDUCTION REPORT

SAMPLE
F-1055 PU
File ID: SD3005.SPC

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

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	10.0	9.1	479.403	479.403	24.000	15.222	12.000	4.077
2	1197.6	1220.4	365.279	365.279	24.000	15.129	12.000	4.807
3	61.8	61.1	308.186	308.186	28.000	31.745	14.000	2.393
4	58.8	62.3	232.928	232.928	24.000	10.762	12.000	4.088
5	2.7	2.2	175.668	175.668	12.000	3.550	6.000	1.115
6	2.6	2.4	151.642	151.642	28.000	12.906	14.000	16.397
7	2.5	2.1	134.034	134.034	24.000	4.841	12.000	0.135

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1		0.0068		6.321		0.07	0.23	1.13	0.508E-06
2	Pu236	0.8358	5.756	5.773	-0.017	0.07	28.15	142.60	0.642E-04
	Cm243		5.786	5.773	0.013				0.862E-04
3	Am241	0.1140	5.480	5.499	-0.019	0.15	3.84	20.27	0.913E-05
	Pu238		5.499	5.499	-0.000				0.119E-04
4	Pu239	0.0359	5.143	5.138	0.005	0.05	1.21	6.00	0.270E-05
	Pu240		5.144	5.138	0.006				0.270E-05
5		0.0011		4.863		0.02	0.04	0.18	0.827E-07
6		0.0012		4.748		0.06	0.04	0.21	0.934E-07
7	Np237	0.0053	4.640	4.663	-0.023	0.02	0.18	14.83	0.668E-05

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

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	16768.0	100.000
Smoothed	16766.9	99.994
Composite fit	16838.5	100.420
Residuals	-71.6	-0.427

Analyzed by: _____

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          SPECTRUM SD3005.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC              4606.8
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Raw Data Dump for AEA Spectrum: SP:SD3005.SPC

1	0.	0.	0.	0.	0.	0.	3.	0.	0.	2.
11	2.	0.	0.	1.	2.	1.	0.	1.	1.	0.
21	0.	1.	0.	1.	2.	0.	0.	3.	0.	0.
31	0.	1.	1.	0.	0.	1.	2.	0.	1.	0.
41	1.	0.	2.	1.	1.	1.	0.	1.	0.	0.
51	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	1.	2.	2.	0.	3.	0.	1.	3.	1.
71	1.	0.	0.	0.	1.	0.	1.	0.	0.	2.
81	0.	1.	0.	1.	0.	0.	1.	1.	2.	1.
91	2.	2.	0.	2.	1.	2.	1.	2.	3.	2.
101	2.	1.	2.	3.	1.	1.	3.	2.	1.	0.
111	1.	2.	3.	1.	1.	0.	0.	2.	0.	2.
121	0.	1.	0.	4.	2.	1.	2.	2.	2.	3.
131	4.	0.	2.	1.	4.	1.	3.	1.	4.	0.
141	0.	0.	1.	3.	0.	3.	5.	3.	4.	1.
151	5.	1.	0.	3.	3.	2.	5.	2.	2.	4.
161	4.	1.	1.	1.	0.	3.	2.	2.	1.	6.
171	4.	2.	4.	3.	5.	3.	2.	2.	3.	4.
181	3.	1.	4.	0.	4.	3.	3.	3.	3.	5.
191	3.	4.	2.	1.	5.	4.	2.	2.	3.	4.
201	5.	4.	11.	2.	7.	7.	7.	4.	6.	9.
211	7.	9.	9.	12.	11.	13.	11.	22.	16.	19.
221	16.	23.	27.	27.	26.	28.	41.	40.	38.	37.
231	36.	43.	43.	25.	33.	37.	36.	23.	26.	14.
241	13.	8.	10.	4.	8.	5.	5.	7.	4.	7.
251	5.	6.	11.	11.	9.	10.	11.	9.	11.	13.
261	12.	18.	18.	12.	18.	12.	12.	14.	19.	13.
271	13.	13.	16.	15.	14.	19.	18.	18.	18.	13.
281	17.	20.	18.	19.	19.	31.	29.	25.	24.	17.
291	27.	43.	29.	19.	27.	32.	35.	24.	26.	46.
301	32.	31.	34.	36.	40.	32.	33.	42.	40.	41.
311	21.	40.	25.	33.	21.	33.	35.	17.	27.	22.
321	35.	19.	32.	30.	40.	46.	41.	45.	42.	47.
331	59.	45.	51.	57.	59.	66.	69.	79.	77.	87.
341	95.	98.	117.	119.	121.	172.	132.	192.	222.	242.
351	254.	293.	337.	380.	385.	418.	462.	482.	583.	557.
361	599.	672.	651.	629.	682.	626.	604.	539.	466.	434.
371	351.	312.	204.	150.	106.	71.	45.	29.	11.	11.
381	2.	2.	1.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	1.	0.	1.	0.	0.	0.	0.	1.
411	0.	1.	1.	0.	0.	0.	1.	0.	1.	0.
421	0.	3.	1.	1.	0.	5.	1.	1.	3.	0.
431	0.	0.	2.	3.	1.	2.	1.	2.	1.	2.
441	1.	0.	0.	1.	0.	0.	1.	0.	0.	1.
451	0.	2.	1.	1.	0.	0.	0.	1.	1.	1.
461	2.	3.	0.	0.	1.	0.	2.	1.	2.	5.
471	3.	2.	5.	6.	3.	5.	7.	7.	7.	2.
481	6.	4.	3.	5.	0.	5.	1.	0.	1.	0.
491	1.	0.	1.	0.	0.	1.	1.	0.	0.	1.
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
F1056 PU
File ID: SD2775.SPC

Counted on: 3/ 1/90 @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	12.5	12.6	476.286	476.286	20.000	8.547	10.000	7.140
2	1721.4	1740.2	364.237	364.237	20.000	11.836	10.000	5.396
3	80.4	80.7	305.346	305.346	20.000	13.677	10.000	2.429
4	11.9	13.0	270.292	270.292	12.000	1.447	6.000	0.454
5	63.0	65.5	232.993	232.993	16.000	9.018	8.000	3.867
6	3.9	2.7	176.573	176.573	40.000	102.934	20.000	47.960

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1		0.0050		6.257		0.04	0.18	0.91	0.409E-06
2	Pu236	0.8880	5.756	5.741	0.015	0.05	32.64	165.43	0.745E-04
3	Am241	0.0670	5.480	5.470	0.010	0.06	2.46	13.02	0.586E-05
4		0.0052		5.309		0.01	0.19	0.95	0.428E-06
5	Pu239	0.0312	5.143	5.137	0.006	0.04	1.15	5.70	0.257E-05
	Pu240		5.144	5.137	0.007				0.257E-05
6	Np237	0.0036	4.781	4.878	-0.097	0.47	0.13	0.76	0.341E-06

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

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	18187.0	100.000
Smoothed	18187.0	100.000
Composite fit	18376.7	101.043
Residuals	-189.7	-1.043

Analyzed by: _____
MAX

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          SPECTRUM SD2775.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC                6449.2

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Raw Data Dump for AEA Spectrum: SP:SD2775.SPC

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	1.	0.	0.	0.	1.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	1.	0.	0.	0.	0.	0.	0.	1.	0.
51	0.	1.	0.	0.	1.	0.	0.	0.	0.	1.
61	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
71	1.	1.	0.	0.	0.	0.	0.	0.	0.	1.
81	0.	0.	2.	1.	0.	0.	0.	0.	0.	2.
91	0.	0.	3.	0.	0.	0.	1.	1.	0.	0.
101	1.	0.	0.	0.	1.	0.	0.	1.	0.	0.
111	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
121	0.	1.	0.	1.	0.	0.	0.	0.	0.	0.
131	1.	2.	1.	0.	1.	0.	1.	0.	0.	1.
141	0.	0.	0.	3.	0.	1.	0.	1.	0.	3.
151	0.	0.	1.	4.	1.	1.	0.	0.	1.	2.
161	0.	1.	2.	0.	0.	1.	0.	0.	2.	1.
171	2.	1.	4.	3.	4.	0.	2.	2.	3.	0.
181	3.	0.	1.	2.	0.	0.	4.	1.	1.	1.
191	2.	2.	0.	3.	0.	3.	4.	0.	1.	1.
201	2.	1.	2.	0.	1.	1.	1.	0.	2.	3.
211	2.	5.	2.	5.	6.	8.	10.	5.	10.	7.
221	24.	12.	29.	25.	22.	26.	24.	33.	36.	33.
231	36.	36.	41.	33.	34.	35.	16.	13.	13.	7.
241	4.	2.	3.	4.	0.	3.	3.	0.	5.	3.
251	2.	4.	6.	3.	3.	8.	5.	8.	11.	18.
261	10.	9.	7.	13.	14.	7.	15.	14.	14.	24.
271	11.	9.	10.	12.	8.	8.	10.	4.	7.	8.
281	9.	7.	13.	7.	21.	21.	34.	22.	28.	37.
291	28.	28.	22.	26.	28.	27.	28.	28.	39.	32.
301	42.	52.	32.	47.	47.	53.	34.	38.	23.	39.
311	20.	17.	17.	11.	12.	6.	5.	7.	9.	5.
321	7.	6.	11.	5.	9.	11.	10.	12.	5.	17.
331	15.	10.	12.	23.	19.	15.	25.	36.	28.	33.
341	36.	67.	54.	73.	105.	141.	156.	197.	221.	282.
351	337.	398.	470.	518.	633.	591.	674.	741.	760.	854.
361	892.	942.	987.	1036.	964.	775.	728.	626.	486.	367.
371	257.	156.	101.	59.	25.	14.	9.	2.	0.	1.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
411	2.	0.	0.	0.	0.	0.	1.	1.	1.	2.
421	1.	2.	1.	1.	1.	0.	2.	2.	1.	2.
431	0.	0.	0.	0.	4.	0.	1.	0.	0.	0.
441	0.	0.	0.	2.	0.	0.	0.	1.	0.	0.
451	1.	1.	0.	0.	0.	1.	0.	0.	0.	1.
461	1.	1.	0.	2.	1.	1.	1.	0.	5.	6.
471	7.	10.	4.	8.	7.	6.	10.	4.	5.	6.
481	2.	0.	2.	0.	0.	0.	0.	0.	0.	1.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

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

DATA REDUCTION REPORT

SAMPLE
F-1081 PU
File ID: SD4764.SPC

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

PEAK ANALYSIS

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

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1		0.0028		6.287		0.05	0.24	1.05	0.472E-06
2	Bi212	0.0012	6.040	6.063	-0.023	0.09	0.11	1.28	0.577E-06
3	Pu236	0.4265	5.756	5.758	-0.002	0.05	37.17	164.06	0.739E-04
4	Pu238	0.0642	5.499	5.486	0.013	0.05	5.59	33.61	0.151E-04
	Am241		5.480	5.486	-0.006				0.116E-04
5	Pu239	0.5021	5.143	5.143	-0.000	0.05	43.76	189.27	0.853E-04
	Pu240		5.144	5.143	0.001				0.853E-04
6	Np237	0.0032	4.640	4.645	-0.005	0.01	0.28	19.94	0.898E-05

DETECTOR CALIBRATION
Energy(MEV) = 4.045 + (0.0047)*Channel
Energy range (MeV): 4.045 TO 6.452
Efficiency = 0.2312 CPM/DPM

TOTAL COUNT DATA:

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

Analyzed by: _____
DM

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          SPECTRUM SD4764.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC                7838.7



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Raw Data Dump for AEA Spectrum: SP:SD4764.SPC

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

							0.	0.	1.	2.
411	0.	2.	1.	0.	0.	0.	1.	0.	3.	0.
421	3.	1.	1.	1.	0.	5.	5.	4.	2.	1.
431	3.	2.	0.	2.	3.	1.	1.	0.	1.	1.
441	0.	1.	1.	0.	0.	1.	0.	0.	0.	1.
451	0.	0.	0.	0.	0.	1.	2.	0.	2.	0.
461	2.	0.	2.	1.	0.	1.	1.	5.	5.	3.
471	8.	10.	6.	11.	7.	10.	4.	9.	5.	10.
481	5.	4.	1.	1.	6.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

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

DATA REDUCTION REPORT

SAMPLE
F1082
File ID: SD3006.SPC

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

PEAK ANALYSIS

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

PEAK RESULTS

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

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

TOTAL COUNT DATA:

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

Analyzed by: _____
EMB

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

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

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

Analytical Batch

Lab Segment Serial #: F1043

Customer ID: 000012

Instrument	WA77390
Procedure/Rev	LA-348-104/A-0
Technologist	S. Lai
Date	July 18, 1990
Temperature	N/A
Starting Time	0800
Ending Time	1130
Chemist	S. A. Catlow

Carbon Analysis
Water Digestion

*Results based upon 3rd leaching.

	Description	Lab ID
1	Initial LMCS Check Std	F1053
2	Reagent Blank	F1054
3	Sample Comp 12	F1055
4	Duplicate Sample Comp 12	F1056
5	Spike Comp 12	F1057
6	Final LMCS Check Std	F1058
7		
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	Description	Lab ID
12		
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Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std	31B46/1.00 mL			N/A
Spike	31B46/1.00 mL	F1055/10 mL		N/A

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

Single Shell Tank
Calibration Record

Analyte:	C-14		
Procedure:	LA-508-121	Revision:	A-0
Instrument:	Liquid Scientillation Counter	Property Number:	WA77390
Technologist:	R. A. Jones	Payroll Number:	65801
Date:	September 20, 1988		

Calibration Standard ID: Packard 6008502 #2

Analyte Concentration: (See Attached)

Type of Calibration:

Comments:

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

9-20-88 RAJones

PAGE:

USER: 2 ID:CARBON-14 PRESET TIME: 10.00 MON 19 SEP 1988 16:51
SAMPLE REPEAT: 1 CYCLE REPEAT: 1 SCR:N RS232:N
H#: 3 AQC:Y QCF:N RCM:Y 2 PHASE MONITOR:Y POST CHK:N VIAL:G VOLUME:1
RCM-TIME: 0.10 INT:999.95
CHANNEL 1-LL: 0 UL: 700 2SIGMA: 0.10 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR:

SINGLE LABEL DPM
UNKNOWN ID:C-14 UNKNOWN REPLICATES: 1
UNKNOWN NORM FACTOR ISO1:Q 1.00000
UNKNOWN UNITS ISO1:DPM
UNKNOWN HALF LIFE CORRECTION:N
INDIVIDUAL UNKNOWN NORM FACTORS:N BACKGROUND QUENCH CURVES:Y
STANDARD ID:PACKARD 6008502 #2
HALF LIFE(DAYS) ISO1:N
STANDARD DPM ISO1: 108600.0 T_0 = 5-7-86

SAM	POS	CH	CPM	2SIG%	TIME	EL TIME	AVG H#	RCM%	2P	ER
B1	**- 1	1	44.90	9.44	10.00	11.02	58.3	0.15		
	H#: 58, 58, 59									

BACKGROUND QUENCH CURVES: CONSTANT

CHANNEL 1
QUENCH CURVE COEFFICIENTS
A: 44.90000 B:0.00000000 C:0.00000000 D:0.00000000000

BACKGROUND QUENCH CURVE CORRELATION TABLE

BKG	H#	MEASURED CPM.	CALCULATED CPM.	PERCENT DIFF.	FLAG
1	58.3	44.90	44.90	0.00	

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

	SAM	POS	CH	CPM	2SIG%	TIME	EL TIME	AVG H#	RCM%	2P	ER
A	S1	**- 3	1	105004.40	0.20	10.00	22.67	-5.3	0.00		
		H#: -6, -5, -5									
		ISO1 %EFF CH1:96.65									
B	S2	**- 4	1	104881.70	0.20	10.00	34.15	11.7	0.00		
		H#: 11, 11, 13									
		ISO1 %EFF CH1:96.53									
C	S3	**- 5	1	104007.30	0.20	10.00	45.61	36.0	0.00		
		H#: 36, 36, 36									
		ISO1 %EFF CH1:95.73									

7-88
RAJones

SAM	POS	CH	CPM	2SIG%	TIME	EL TIME	AVG H#	RCM%	2P	ERR
S4	**- 6	1	102265.80	0.20	10.00	57.08	73.3	0.00		
	H#: 74, 73. 73									
	ISO1 %EFF CH1:94.13									
S5	**- 7	1	101574.90	0.20	10.00	68.57	100.0	0.00		
	H#: 99, 100, 101									
	ISO1 %EFF CH1:93.49									
S6	**- 8	1	98969.60	0.20	10.00	80.03	134.7	0.00		
	H#: 133. 135. 136									
	ISO1 %EFF CH1:91.09									
S7	**- 9	1	96142.50	0.20	10.00	91.49	166.3	0.00		
	H#: 167, 167, 165									
	ISO1 %EFF CH1:88.49									
S8	**-10	1	94268.30	0.21	10.00	102.91	195.3	0.00		
	H#: 195, 196, 195									
	ISO1 %EFF CH1:86.76									
S9	**-11	1	90921.30	0.21	10.00	114.31	218.3	0.00		
	H#: 218, 218, 219									
	ISO1 %EFF CH1:83.68									
S10	**-12	1	85164.00	0.22	10.00	125.65	253.7	0.00		
	H#: 252, 254, 255									
	ISO1 %EFF CH1:78.38									

ISOTOPE 1 QUENCH STANDARDS

STANDARD	H#	%EFF CH1
1	-5.33	96.65
2	11.67	96.54
3	36.00	95.73
4	73.33	94.12
5	100.0	93.49
6	134.7	91.09
7	166.3	88.49
8	195.3	86.76
9	218.3	83.68
10	253.7	78.38

QUENCH LIMITS LOW:0.000 HIGH:253.7

[illegible] 10.00 [illegible]

[illegible] VOLUME [illegible]

[illegible] 10:5[illegible]

[illegible] BACKGROUND QUENCH [illegible]

[illegible] QUENCH LIMITS LOW:0.000 HIGH:[illegible]

[illegible] TIME [illegible] FWHM [illegible]

[illegible] 47.00 [illegible] 10.00 [illegible] 0.3[illegible]

[illegible] CONSTANT

[illegible]

[illegible] 1.0000000[illegible] [illegible] [illegible]

[illegible] CORRELATION TABLE

		[illegible]	[illegible]	PERCENT	
[illegible]	[illegible]	[illegible]	[illegible]	DIFF.	FLAG
	[illegible]	47.00	47.00	0.00	

[illegible] QUENCH LIMITS LOW:0.000 HIGH:1000.
TOTAL QUENCH LIMITS LOW:0.000 HIGH:253.7

[illegible] CPM 2SIG% TIME EL TIME AVG MH [illegible] FWHM [illegible]

[illegible] 1.56 10.00 22.90 145.0 0.[illegible]
[illegible] ISO1 DPM [illegible]

[illegible] 4 1 [illegible] 10.00 [illegible] 144.7 2.5[illegible]
[illegible] ISO1 DPM [illegible]

[illegible] 10.00 45.86 137.[illegible]
[illegible] ISO1 DPM [illegible]

Analytical Batch

Lab Segment Serial #: F1043

Customer ID: 000012

Instrument	WA45242
Procedure/Rev	LA-378-103/A-2
Technologist	S. Cervantes
Date	February 27, 1990
Temperature	26 C
Starting Time	1030 02-28-90
Ending Time	1500 03-01-90
Chemist	S. A. Catlow

Iodine 129 Analysis
Water Digestion

	Description	Lab ID
1	Initial LMCS Check Std	F1053
2	Reagent Blank	F1054
3	Sample Comp 12	F1055
4	Duplicate Sample Comp 12	F1056
5	Spike Sample Comp 12	F1057
6	Final LMCS Check Std	F1058
7		
8		
9		
10		
11		

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

Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std	124B44/1.00 mL			2 mL
Spike	124B44/1.00 mL	F1055/1.00 mL		2 mL

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

Single Shell Tank
Calibration Record

ANALYTE:	I-129		
PROCEDURE:	LA-508-152	REVISION:	A-1
INSTRUMENT:	TN-4500	PROPERTY NUMBER:	WA45242
TECHNOLOGIST:	R. A. Jones	PAYROLL NUMBER:	65801
DATE:	January 09, 1989		

CALIBRATION STANDARD ID: 45B40A & B

ANALYTE CONCENTRATION: Se^{75} = 4.06 uci, SB^{125} = 4.67 uci, I^{129} = 57.8 uci

TYPE OF CALIBRATION: Efficiency

COMMENTS: T zero = June 06, 1988

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

Single Shell Tank
Calibration Record

ANALYTE:	I-129		
PROCEDURE:	LA-508-152	REVISION:	A-1
INSTRUMENT:	TN-4500	PROPERTY NUMBER:	WA45242
TECHNOLOGIST:	R. A. Jones	PAYROLL NUMBER:	65801
DATE:	January 09, 1989		

CALIBRATION STANDARD ID: 45B40A & B

ANALYTE CONCENTRATION: Se^{75} = 4.06 uci, SB^{125} = 4.67 uci, I^{129} = 57.8 uci

TYPE OF CALIBRATION: Efficiency

No.	Energy (Kev)	Efficiency
1	29.7	0.589E+00
2	39.6	0.589E+00
3	121.1	0.419E-01
4	176.3	0.447E-01
5	264.7	0.419E-01
6	279.5	0.419E-01
7	380.6	0.447E-01

COMMENTS: T zero = June 06, 1988

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

H-2 DET, ISOTOPE FILE

No.	Isotope	Half-Life	MPC Value	Calc.Limit
	Energy	Abs.Int.(%)		
1	I 129	1.600E+06 D	---	Yes
	39.6	7.50		
2	AM 241	1.580E+05 D	---	Yes
	59.5	35.90		
3	AM 243	2.700E+06 D	---	Yes
	74.7	66.00		
4	SB 125	1004.40 D	---	Yes
	176.3	6.80		
5	SE 75	119.77 D	---	Yes
	136.0	59.00		
	121.1	17.30		

Maximum Energy Error for Isotope Identification = 1.5 keV

MDL values are corrected for decay.

Command--?

SAMPLE PARAMETERS

Spectrum Length	[illegible]	
Sample Counting Date	[illegible]	[illegible]
Sample Collection Date	[illegible]	[illegible]
Decay Time	[illegible] Sec	[illegible]
Live Time	[illegible] Sec.	
Real Clock Time	[illegible] Sec.	
[illegible]	[illegible]	
Sample Mass	[illegible] Gm	
[illegible]	[illegible]	

PEAK SEARCH PARAMETERS

[illegible]	[illegible]
Search Range	[illegible] - [illegible] keV
[illegible] Error	[illegible] %
Filter Class	[illegible]
Multiplet Det.Factor	[illegible]
Sensitivity-E	[illegible]
[illegible]	[illegible]
Zero Offset	[illegible]

[illegible] File Used [illegible] -- [illegible] File [illegible]
[illegible] File Used [illegible] -- [illegible] File [illegible]
[illegible] File Used [illegible] -- [illegible] FILE

[illegible] PEAK SEARCH FINAL RESULTS

[illegible]	[illegible] Energy keV	[illegible] [illegible]	Net Cnts.	Bckg.	% Err.	FWHM keV	Int.	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	

***** IDENTIFIED ISOTOPES *****

Nuclide Energy	UCi/Gm	Decay Abundance(%)	Corr. Rate(CPM)	% Err	Delta-E	ZMPC
I 129 ?	0.1a9E-02 +/- 0.103E-04		1.00			
39.5	0.1a9E-03	7.50	14.27	1.1	0.3	
[illegible] ?	0.831E-06 +/- 0.324E-06		1.00			
74.7	0.831E-06	86.00	[illegible]	38.9	0.5	
SE 75	0.470E-04 +/- 0.121E-05		1.00			
136.0	0.4e3E-04	59.00	20.[illegible]	2.2	1.0	
121.1	0.506E-04	17.30	16.49	5.9	0.9	

***** MDL TABLE *****

Nuclide Energy	UCi/Gm	Decay Abundance(%)	Corr. Rate(CPM)	% Err	Delta-E	ZMPC
[illegible] 241			1.00			
59.5	<0.219E-05	35.90	<	0.98		
SE 125			1.00			
170.3	<0.1a9E-04	6.80	<	1.00		

***** UNIDENTIFIED PEAKS *****

Energy	Rate	% Err.	Energy	Rate	% Err.	Energy	Rate	% Err.
39.3	82.56	1.8	46.9	0.68	39.1	183.3	0.71	37.0
34.0	18.20	4.8	9[illegible].0	2.47	16.8			

STOP --
SC4500

SAMPLE PARAMETERS

Spectrum Label	P-1984 SED.Comm#14	
Sample Counting Date	3-MAR-90	[illegible]
Energy Calibration Date	3-MAR-90	[illegible]
Live Time	1. Sec	[illegible] hrs.
Real Time	[illegible]. Sec.	
Acq.Start Time	[illegible]. Sec.	
Humidity	[illegible] %	
Sample Mass	[illegible] Gm	
Det.Corr.Factor	1.000	

PEAK SEARCH PARAMETERS

Min.Group	10
Search Range	25 - 200 keV
Max. % Error	50.0 %
Filter Width	[illegible] keV
Multiplet Det.Factor	0.1
Min.Delta-E	1.5 keV
Min.Ch.	0.20
Zero Offset	0.00 keV

[illegible] File Name:	[illegible]	-- H. [illegible] FILE 5/13/83
[illegible] File Name:	[illegible]	-- [illegible] FILE 5/17/86
Nuclide File Name:	[illegible]	-- H-3 DET. ISOTOPE FILE

[illegible] PEAK SEARCH FILE [illegible]

No.	Centroid (keV)	Centroid (ch.)	Net Cnts.	Sig.	% Err.	FWHM (keV)	Eff.	
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	

[illegible] IDENTIFIED [illegible]

Nuclide Energy	[illegible]	Decay Corr. [illegible]	[illegible]	% Err	Delta-E
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] NOT [illegible]

[illegible]	[illegible]	Decay Corr. [illegible]	[illegible]	% Err	Delta-E
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] UNIDENTIFIED PEAKS [illegible]

Energy	Rate	% Err	Energy	Rate	% Err	Energy	Rate	% Err
31.6	0.95	39.2	96.2	2.52	15.2	147.4	0.71	37.2

Stop --
[illegible]

SAMPLE PARAMETERS

Spectrum Label:	F-1055 SEC.SAMPLE	
Sample Counting Date	2-MAR-90	03:15:13
Sample Collection Date	2-MAR-90	03:15:00
Decay Time	0. Days	0.004 Hrs.
Acq.Live Time	3000. Sec.	
Acq.Clock Time	3003. Sec.	
Deadtime	0.1 %	
Sample Mass	1.000 GM	
Eff.Corr.Factor	1.000	

PEAK SEARCH PARAMETERS

Acq.Group	1AB
Search Range	25 - 200 keV
Max. % Error	50.0 %
Filter Width	1.6 keV
Multiplet Det.Factor	0.1
Max.Delta-E	1.5 keV
keV/Ch.	0.20
Zero Offset	0.30 keV

Lineshape File Name:	JIM	-- H2 Gmp FILE 5/13/86
Efficiency File Name:	WEM01	-- H2 EFF TABLE 5/13/86
Isotope File Name:	WIN01	-- H-2 WET. ISOTOPE FILE

**** PEAK SEARCH TABLE ****

No.	O.Energy (keV)	T.Energy (keV)	Net Cnts.	Bund.	% Err.	FWHM (keV)	Eff.	
1	31.5*	31.5	91.	299.	24.2	1.375	0.4309E+00	
2	74.3	74.4	27.	100.	48.6	1.367	0.6151E+00	AM 243
3	96.1	95.8	122.	182.	15.5	1.366	0.5837E+00	
4	120.3	120.1	476.	112.	5.6	1.366	0.5376E+00	SE 75
5	135.4	135.0	1403.	217.	2.8	1.367	0.5048E+00	SE 75

***** IDENTIFIED ISOTOPES *****

Nuclide / Energy	UCI/GM	Decay Abundance(%)	Corr. Rate(CPM)	% Err	Delta-E	%MPC
AM 243 ?	0.609E-06 +/- 0.296E-06		1.00			
74.7	0.609E-06	66.00	0.55	48.6	0.3	
SE 75	0.480E-04 +/- 0.118E-05		1.00			
136.0	0.485E-04	59.00	22.06	2.8	1.0	
121.1	0.461E-04	17.30	9.52	5.6	1.0	

- -

***** MDL TABLE *****

Nuclide / Energy	UCI/GM	Decay Abundance(%)	Corr. Rate(CPM)	% Err	Delta-E	%MPC
I 129			1.00			
39.6	<0.120E-04	7.50	<	1.01		
AM 241			1.00			
59.5	<0.231E-05	35.90	<	1.04		
SB 125			1.00			
176.3	<0.162E-04	6.80	<	0.96		

- -

***** UNIDENTIFIED PEAKS *****

Energy	Rate	% Err.	Energy	Rate	% Err.	Energy	Rate	% Err.
31.5	1.63	26.2	95.8	2.63	15.5			

Need batch form filled out by Shirley

STOP --
004500

AUTOMATIC ISOTOPE ANALYSIS 02-MAR-90 06:09:26

SAMPLE PARAMETERS

Spectrum Label:	F-1056 SEG.COMP#16	
Sample Counting Date	2-MAR-90	05:07:25
Sample Collection Date	2-MAR-90	05:07:00
Decay Time	0. Days	0.007 Hrs.
Acq.Live Time	3000. Sec.	
Acq.Clock Time	3002. Sec.	
Deadtime	0.1 %	
Sample Mass	1.000 GM	
Eff.Corr.Factor	1.000	

PEAK SEARCH PARAMETERS

Mem.Group	1AB
Search Range	25 - 200 keV
Max. % Error	50.0 %
Filter Width	1.6 keV
Multiplet Det.Factor	0.1
Max.Delta-E	1.5 keV
keV/Ch.	0.20
Zero Offset	0.60 keV

Lineshape File Name:	JIM	-- H2 SHP FILE 5/13/86
Efficiency File Name:	WEM01	-- H2 EFF TABLE 5/13/86
Isotope File Name:	WIM01	-- H-2 DET. ISOTOPE FILE

***** PEAK SEARCH TABLE *****

No.	O.Energy (keV)	T.Energy (keV)	Net Cnts.	Bgnd.	% Err.	FWHM (keV)	Eff.	
1	31.6	31.6	71.	190.	26.8	1.375	0.4316E+00	
2	65.9	65.7	31.	99.	43.7	1.368	0.5875E+00	
3	74.6	74.4	54.	116.	28.0	1.367	0.6151E+00	AM 243
4	96.4	96.1	122.	188.	16.8	1.366	0.5832E+00	
5	120.6	120.2	487.	225.	6.0	1.366	0.5374E+00	SE 75
6	135.4	135.0	1576.	190.	2.8	1.367	0.5048E+00	SE 75
7	193.1	192.6	23.	72.	47.7	1.380	0.3249E+00	

***** IDENTIFIED ISOTOPES *****

Nuclide Energy	UCI/GM	Decay Abundance(%)	Corr. Rate(CPM)	% Err	Delta-E	%MPC
AM 243 ?	0.120E-05 +/- 0.337E-06		1.00			
74.7	0.120E-05	66.00	1.08	28.0	0.3	
SE 75	0.476E-04 +/- 0.119E-05		1.00			
136.0	0.477E-04	59.00	31.52	2.8	1.0	
121.1	0.472E-04	17.30	9.75	6.0	0.9	

- -

***** MDL TABLE *****

Nuclide Energy	UCI/GM	Decay Abundance(%)	Corr. Rate(CPM)	% Err	Delta-E	%MPC
I 129			1.00			
39.6	<0.116E-04	7.50	<	0.98		
AM 241			1.00			
59.5	<0.202E-05	35.90	<	0.91		
SB 125			1.00			
176.3	<0.169E-04	6.80	<	1.00		

- -

***** UNIDENTIFIED PEAKS *****

Energy	Rate	% Err.	Energy	Rate	% Err.	Energy	Rate	% Err.
31.6	1.42	26.8	96.1	2.43	16.8	192.6	0.47	47.7
65.7	0.62	43.7						

STOP --
BG4500

[illegible]

SAMPLE PARAMETERS

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	
[illegible]	[illegible]	
[illegible]	[illegible]	
[illegible]	[illegible]	
[illegible]	[illegible]	

PEAK SEARCH PARAMETERS

[illegible]		128
[illegible]	[illegible]	[illegible]
[illegible]		[illegible]
[illegible]		[illegible]
[illegible]		[illegible]
[illegible]		[illegible]
[illegible]		0.50
[illegible]		0.60 [illegible]

[illegible]

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

***** IDENTIFIED NUCLIDES *****

Nuclide / Energy	UCI/GM	Decay Corr. Abundance(%)	Rate(CPM)	% Err	Delta-E	MPC
I 129 ?	0.219E-03 +/- 0.110E-04		1.00			
39.6	0.219E-03	7.50	15.48	5.1	0.6	
Am 243 ?	0.132E-05 +/- 0.325E-06		1.00			
74.7	0.132E-05	11.00	1.19	24.6	0.3	
Sr 90	0.491E-04 +/- 0.121E-05		1.00			
136.0	0.485E-04	59.00	33.23	2.0	1.0	
121.1	0.507E-04	17.30	10.44	5.6	0.9	

***** NOT IDENTIFIED *****

Nuclide / Energy	UCI/GM	Decay Corr. Abundance(%)	Rate(CPM)	% Err	Delta-E	MPC
Am 241			1.00			
59.5	<0.206E-05	35.90	0.93			
Ba 133			1.00			
176.3	<0.161E-04	6.00	0.76			

***** UNIDENTIFIED PEAKS *****

Energy	Rate	% Err.	Energy	Rate	% Err.	Energy	Rate	% Err.
24.3	112.42	1.5	65.8	0.70	39.5	95.9	3.96	10.2
34.0	22.40	4.2	90.4	0.12	44.2	185.4	0.73	41.4

SUBr -
RD45.00

SAMPLE PARAMETERS

Spectrum Label	[illegible]	
Sample Counting Date	2-MAR-90	[illegible]
Sample Collection Date	2-MAR-90	[illegible]
Dead Time	0.0[illegible]	[illegible]
Live Time	[illegible]	
Acq.Clock Time	[illegible] Sec.	
Feedtime	[illegible]	
Sample size	[illegible] Gm	
[illegible] Factor	[illegible]	

PEAK SEARCH PARAMETERS

Acq.Group	[illegible]
Search Range	25 - [illegible]
Max. % Error	[illegible]
Filter Width	[illegible]
Multiplet Det.Factor	[illegible]
Min.Delta-A	[illegible]
FWHM	[illegible]
Zero Offset	[illegible]

Efficiency File Name:	[illegible]	-- [illegible]
Differences File Name:	[illegible]	-- [illegible]
Isotope File Name:	[illegible]	-- [illegible] ISOTOPE FILE

[illegible] PEAK SEARCH TABLE [illegible]

No.	O.Energy (keV)	T.Energy (keV)	Net Cnts.	Bckd.	% Err.	FWHM (keV)	Int.	
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	I 137
4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	

[illegible]

[illegible]	[illegible]	[illegible]				
[illegible]		[illegible]	[illegible]	[illegible]	% Err	Delta-E
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

[illegible]	[illegible]	[illegible]				
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

Energy					% Err.	Energy	Rate	% Err.
[illegible]	[illegible]	[illegible]	45.5	0.55	46.6	96.0	3.05	13.0
	[illegible]	[illegible]	51.3	0.52	45.8	185.7	[illegible]	[illegible]

Analytical Batch

Lab Segment Serial #: F1043

Customer ID: 000012

Neptunium Analysis
Water Digestion

Instrument	E60044
Procedure/Rev	LA-933-141/B-1
Technologist	R. Hale
Date	March 09, 1990
Temperature	N/A
Starting Time	0900
Ending Time	1500
Chemist	S. A. Catlow

	Description		Lab ID
1	Initial LMCS Check Std		F1029
2	Reagent Blank		F1054
3	Sample	Comp 07	F0983
4	Duplicate Sample	Comp 07	F0984
5	Sample	Comp 14	F1007
6	Duplicate Sample	Comp 14	F1008
7	Sample	Comp 15	F1031
8	Duplicate Sample	Comp 15	F1032
9	Sample	Comp 12	F1055
10	Duplicate Sample	Comp 12	F1056
11	Spike Sample	Comp 12	F1057

	Description	Lab ID
12	Final LMCS Check Std	F1058
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		

Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std	148B33/.100 mL			N/A
Spike	148B33/.100 mL	F1055/.250 mL		N/A

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

Analytical Batch

Lab Segment Serial #: F1043

Customer ID: 000012

Instrument	WA38316
Procedure/Rev	LA-220-101/C-0
Technologist	R. Hale
Date	June 25, 1990
Temperature	N/A
Starting Time	0900
Ending Time	1245
Chemist	S. A. Catlow

Strontium Analysis
Water Digestion

*Results based upon 3rd leaching.

	Description		Lab ID
1	Initial LMCS Check Std		F1053
2	Reagent Blank		F1054
3	Sample	Comp 06	F0929
4	Sample	Comp 12	F1055
5	Duplicate Sample	Comp 12	F1056
6	Spike Sample	Comp 12	F1057
7	Final LMCS Check Std		F1058
8			
9			
10			
11			

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

Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std	18B46/1.0 mL			N/A
Spike	18B46/1.0 mL	F1055/1.0 mL		N/A

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

Single Shell Tank
Calibration Record

Analyte:	SrY^{90}		
Procedure:	LQ-508-002	Revision:	A-0
Instrument:	Detector #10	Property Number:	WA38316
Technologist:	R.A. Jones	Payroll Number:	65801
Date:	May 21, 1989		

Calibration Standard ID: 48B16T, 48B16U, 48B16TV, 48B16G, 48B16J, 48B16L

Analyte Concentration: N/A

Type of Calibration: Efficiency

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

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

DETECTOR No. 10

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

TIME ZERO DATE (HD): 13977

DATE COUNTED (HD): 16309

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

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

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

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

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

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

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

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

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

5" = ERR

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

Analytical Batch

Lab Segment Serial #: F1043

Customer ID: 000012

Technetium Analysis
Water Digestion

Instrument	WA77390
Procedure/Rev	LA-438-101/C-2
Technologist	R. Hale
Date	March 19, 1990
Temperature	N/A
Starting Time	1300
Ending Time	1530
Chemist	S. A. Catlow

	Description	Lab ID
1	Initial LMCS Check Std	F1053
2	Reagent Blank	F1054
3	Sample Comp 12	F1055
4	Duplicate Sample Comp 12	F1056
5	Spike Sample Comp 12	F1057
6	Final LMCS Check Std	F1058
7		
8		
9		
10		
11		

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

Standard Type	Primary Book # & Aliquot Vol.	Second Book # & Aliquot Vol.	Third Book # & Aliquot Vol.	Final Vol. of Std.
LMCS Check Std	68B39/.250 mL			20 mL
Spike	68B39/.250 mL	F1055/1.00 mL		20 mL

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

Single Shell Tank
Calibration Record

Analyte:	TC 99		
Procedure:	LA-508-121	Revision:	A-0
Instrument:	Liquid Scintillation Counter	Property Number:	WA77390
Technologist:	R. A. Jones	Payroll Number:	65801
Date:	September 02, 1988		

Calibration Standard ID: Packard 6008502 #2

Analyte Concentration: See attached calibration sheets.

Type of Calibration: Quench Curve

Comments: Quench Curve

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

```
SAMPLE LABEL ARM  SET UP ON [illegible]                    [illegible]

UNKNOWN ID(20CHAR)TO 99 DIRECT
UNKNOWN REPLICATES(1-10)  1
UNKNOWN NORM FACTOR(P/D 7DIGITS) 1001:0 1.00000
UNKNOWN UNITS(8CHAR)              1001:    DPM
INDIVIDUAL UNKNOWN NORM FACTORS(Y/N)N
HALF LIFE CORRECTION(Y/N)N

BACKGROUND QUENCH CURVES(Y/N)Y  COUNT BACKGROUND [illegible](Y/N)Y
STORE AND RE-USE THIS BACKGROUND COUNT(Y/N)N

STANDARD ID(20CHAR)131B29-A 1-10
QUENCH LIMITS(5DIGITS)LOW:73.17   HIGH:207.7
QUENCH MODE(S/H)H

SINGLE LABEL IPM QUENCH STANDARDS                          [illegible]

QUENCH STANDARDS STORED                          SET UP ON [illegible]

STANDARD ID(20CHAR)131B29-A 1-10
COUNT QUENCH STANDARDS(Y/N)N QUENCH MODE(S/H) H

                                    1001
STANDARD DPM(10DIGITS)              0.00000000
HALF LIFE, DAYS(N/10DIGITS)         N
REFERENCE DATE (DAY MON YEAR)       1 JAN 1900
                (HOUR MIN)              00 00
QUENCH LIMITS(5DIGITS)LOW:73.17     HIGH:207.7
PLOT QUENCH CURVES(Y/N)N

EDIT OR RE-COUNT QUENCH STANDARDS(N=NO/E=EDIT/R=RE-COUNT)N
```

QUENCH STANDARDS FOR ISOTOPE 1

H#	EFF1	H#	EFF1
73.67	95.93	[illegible]	[illegible]
100.3	95.45	[illegible]	[illegible]
125.0	94.66	[illegible]	[illegible]
145.7	94.32	[illegible]	[illegible]
179.3	92.96	[illegible]	[illegible]

DELETE STANDARD(N/ H#)N RE-ORDER(Y/N)Y
DISPLAY QUENCH CURVE(Y/N)N PLOT QUENCH CURVE(Y/N)N

```
ID(12CHAR)TC-99, ALL            USER  5                          THU 03 MAY 1990 [illegible]
PRESET TIME(.01-999.99) 10.00   HR(0-10) 3   SC1(0/1/2) 0
SAMPLE REPEAT(0-10) 1           SEC(Y/N) Y   PROGRA: SUMMAR(Y/N) Y
CYCLE REPEAT(1-10) 1            PCF(Y/N) N   LCS: TIME(.1-999.99)   0.10 INT(99.2
RS232 OUTPUT(Y/N) N             RPK(Y/N) Y   RCS: TIME(.1-999.99)   0.10 INT(99.2
2 PHASE(Y/N) Y POST CHK(Y/N)N   VTM(C/T)C    VOLUME(1-10-1INL/S) 1-INL/S-0-SP [illegible]

COUNT CHANNELS(1,2,3) 1
CHANNEL SETTINGS      LL      UL      DISCRM   SMC CVR   CVA SBIG      LTR
        CHANNEL 1     150     800      0.10      0.04      0.00        0

DATA CALCULATION PROGRAM (SELECT ONE) 5
 1 CPM          2 COUNTS       3 CL 2 RPT    4 DL 2 RPT    5 SL DPM      6 AL [illegible]
 7 TL DPM       8 SL 2TS TRE   9 SL 2TS INT 10 SL PT.
PRINT FORMAT(1=STANDARD/2=SHORT/3=FILED) 1
```

```
USER: 5 ID:TC-99, ALL   PRESET TIME: 10.00              THU 15 MAR 1990 20:02
SAMPLE REPEAT: 1 CYCLE REPEAT: 1 SCR:N   RS232:N
H#: 3 AQC:Y QCF:N RCM:Y 2 PHASE MONITOR:Y POST CHK:N VIAL:6 VOLUME:1
RCM-TIME:  0.10 INT:999.95
CHANNEL 1-LL:150 UL: 800 2SIGMA: 0.10 BKG SUB:   0.00 BKG 2SIG:  0.00 LSR:   0

SINGLE LABEL DPM  SET UP ON  19 SEP 1988  08:22

UNKNOWN ID:TC 99 DIRECT            UNKNOWN REPLICATES: 1
UNKNOWN NORM FACTOR  ISO1:0 1.00000
UNKNOWN UNITS        ISO1:DPM
UNKNOWN HALF LIFE CORRECTION:N
INDIVIDUAL UNKNOWN NORM FACTORS:N    BACKGROUND QUENCH CURVES:Y
STANDARD ID:131B28-A 1-10          QUENCH LIMITS   LOW:73.67    HIGH:207.7
HALF LIFE(DAYS)  ISO1:N
STANDARD DPM     ISO1:0.00000000

SAM  POS  CH      CPM    2SIG%  TIME   EL TIME AVG H#        RCM%  2P        ERR

B1  **- 1  1      56.20  8.44  10.00    10.64 113.0          0.86 **

BACKGROUND QUENCH CURVES: CONSTANT

CHANNEL 1
QUENCH CURVE COEFFICIENTS
A:  56.20000       B:0.00000000       C:0.00000000       D:0.00000000000
```

BACKGROUND QUENCH CURVE CORRELATION TABLE

BKG	H#	MEASURED CPM.	CALCULATED CPM.	PERCENT DIFF.	FLAG
1	113.0	56.20	56.20	0.00	

```
BACKGROUND QUENCH LIMITS   LOW:0.000    HIGH:1000.
     TOTAL QUENCH LIMITS   LOW:73.67    HIGH:207.7

SAM  POS  CH      CPM    2SIG%  TIME   EL TIME AVG H#        RCM%  2P        ERR
F1053 std
  1 **- 3  1     192.20  4.56  10.00    22.08 159.3          3.40
    H#: 160, 160, 158
      ISO1 %EFF CH1:93.36                          ISO1 DPM  :145.6727
+ spike
  2 **- 4  1    2143.70  1.37  10.00    33.31 158.7          0.53
    H#: 158, 159, 159
      ISO1 %EFF CH1:93.41                          ISO1 DPM  :2234.740
F1054
  3 **- 5  1      72.70  7.42  10.00    44.55 164.7         13.35
    H#: 165, 164, 165
      ISO1 %EFF CH1:93.04                          ISO1 DPM  :17.73380
```

```
                SAM  POS  CH      CPM     2SIG%  TIME   EL TIME AVG H#        RCM%  2P        ERR
F1054 + Spike    4 **- 6  1     2261.60  1.33  10.00    55.37 160.0          0.62 **
                    ISO1 %EFF CH1:93.31                              ISO1 DPM  :2363.508
F1055            5 **- 7  1       94.70  6.50  10.00    66.61 159.0          8.57 **
                   H#: 160, 159, 158
                    ISO1 %EFF CH1:93.39                              ISO1 DPM  :41.22699
+ Spike          6 **- 8  1     2055.10  1.40  10.00    77.83 160.0          0.44
                   H#: 160, 160, 160
                    ISO1 %EFF CH1:93.31                              ISO1 DPM  :2142.203
F1056            7 **- 9  1       98.50  6.37  10.00    89.05 159.3          7.86
                   H#: 159, 160, 159
                    ISO1 %EFF CH1:93.36                              ISO1 DPM  :45.30851
+ Spike          8 **-10  1     1738.10  1.52  10.00   100.08 159.5          0.62 **
                   H#: 159, 160
                    ISO1 %EFF CH1:93.35                              ISO1 DPM  :1801.764
F1057            9 **-11  1      227.40  4.19  10.00   111.27 159.3          3.61
                   H#: 158, 160, 160
                    ISO1 %EFF CH1:93.36                              ISO1 DPM  :183.3763
+ Spike         10 **-12  1     2203.20  1.35  10.00   122.45 160.0          0.29
                   H#: 161, 159, 160
                    ISO1 %EFF CH1:93.31                              ISO1 DPM  :2300.921
F1058 Std       11 **- 1  1      199.50  4.48  10.00   133.70 161.3          3.08
                   H#: 161, 160, 163
                    ISO1 %EFF CH1:93.22                              ISO1 DPM  :153.7251
+ Spike         12 **- 2  1     2232.60  1.34  10.00   144.91 161.0          0.48
                   H#: 161, 161, 161
                    ISO1 %EFF CH1:93.24                              ISO1 DPM  :2334.181
```