This document was too large to scan as a whole document, therefore it required breaking into smaller sections.

Document number: SD-WM-DP-054

Section 4 **of** 7

Title: Grout Product Test for Tank 241AP102, 5day & 90day Runs (Ansi Section)

Date: 1-14-94 **Revision:** A000

Originator: A.P Hammitt, RA St. Denis T.L. Welsh
Co: WHC

Recipient:
Co:

References: EDT-140726

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WHC-SD-WM-DP-054 REV 0

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH

Batch 1386

102-5 day

Lab Segment Serial No. G 622, 623, 624, 625, 626	Customer ID: C-0, C-1, C-2, C-3, C-4
Analysis: Am 241	Sample Prep: Direct Liquid

Instrument: WB 57237	Procedure/ Rev: LA 503-156 D-0
Technologist: JAM Elliott	Date: 8-17-93
Starting Time: 0800	Temperature 24°C
Ending Time: 1400	Chemist: SA Catlow

Comments:

	Description	Lab ID		Description	Lab ID
1	LMCS	6620-5782	11		
2	BLK	6621-5682	12		
3	SAM	6622-5782	13		
4	SAM	6623-5782	14		
5	SAM	6624-5782	15		
6	SAM	6625-5782	16		
7	SAM	6626-5782	17		
8			18		
9			19		
10			20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	63B43- 1ml			
SPIKE	58B43-.100 ml			
SPIKE	58B43-.050 ml			

A-6000-881 (03/92)

QA

WHC-SD-WM-DP-054 REV 0

ANALYTICAL BATCH SUMMARY SHEET

METHOD: LA-503-156

DATE START: August 17, 1993

PREPARED BY: L. L. Fritts

DATE COMPLETE: August 24, 1993

	UNITS:	uCi/mL							
SPL NAME	SPL ID	ANALYTE	RESULT #1	RESULT #2	AVERAGE	RPD%	%REC	DET LIM	% CT ER
STD 63B43	G620	Am-241	3.05E+1				113.8		9.2
BLANK	G621	Am-241	<6.37E-6				47.4		35.6
C-0	G622	Am-241	<6.37E-6				19.3	6.37E-6	45.2
C-1	G623	Am-241	<6.37E-6				16.4	6.37E-6	45.1
C-2	G624	Am-241	<6.37E-6				8.4	6.37E-6	58.4
C-3	G625	Am-241	<6.37E-6				45.9	6.37E-6	35.6
C-4	G626	Am-241	<6.37E-6				44.1	6.37E-6	38.1

NARRATIVE: [X] NO SPECIAL PROBLEMS/METHOD VARIATIONS IN THIS BATCH

LIST SPECIFIC PROBLEMS/VARIATIONS FOR THIS BATCH:

The results for the standard are in uCi/L.

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

4.3 7128

Serial No	Sample Point	Date	Time Issued	Priority
G 620.-5582	102 5 DAY	7-22-93	14:54	23

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	% RECOVERY	D44B3	0

Sample Size	Customer ID
? 100-10-1ml	STD

Remarks Calculations Results

EDP R201 AR001

STD# 63B43 RESULT 30.5

STD VAL 26807 %REC 113.75%

.110ml Am243-58B43

"AEA" - 46000.0

ATTACH PRINTOUT

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
	Hrs 8-17-93 1600	Hrs	Hrs 8-19-93	Hrs

Date	Time Completed	Lab Unit Mgr
8-17-93	1400	

8/24

WHC-SD-WM-DP-0[illegible] REV 0

AM-241: LA-503-156 (D-0) LIQUIDS

Serial No.	Spike (Tracer) Book Number		STANDARD
G620-5582	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.100
1386	Volume of Sample in mL	(SS)	1
Rerun No.	Dilution Factor	(DF)	101
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	261
	Am-243 Area Peak Height from AEA	(C243)	220
Date	Total AT Count	(ATOT)	1492
08/17/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	6

Am-241 µCi/L = ((C241 * SPKA * SPKV * DF * DDF * (1000mL/L)) / ((C243 * SS * (2220000dpm/mL))

µCi/mL = µCi/L / (1000mL/L)

Tracer % Rec = ((ATOT / MIN CTd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

Am-241 µCi/L	=	3.05E+01
Am-241 µCi/mL	=	3.05E-02
Relative counting error	=	9.2%
Am-243 Tracer Recovery	=	7.1%

Data Entry by:		Date:	20-Aug-93
Approved by:		Date:	August 24, 1993

Form 3 Rev. 1.1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#1 8-17-93 AD

1497/30 -6

G620-5582

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PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

4.4 8349

Serial No	Sample Point	Date	Time Issued	Priority
G 621.-5682	102 5 DAY	7-22-93	14:56	23

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	D44B3	0

Sample Size	Customer ID
? 1 ml	BLK

Remarks Calculations Results

REAGENT BLANK $<6.37 \times 10^{-6}$ uCi/ml

COUNT AS uCI/L "AEA" - 480MIN

.050 ml Am 243- 58B43 ATTACH PRINTOUT

Analyst - 1	Analyst - 2	3	Analyst - 4	Analyst 5
Hrs	Hrs 8-17-93 1600	Hrs	Hrs 8-19-93	Hrs

Date	Time Completed	Lab Unit Mgr
8-17-93	1400	

WHC-SD-WM-DP-054 REV 0

AM-241: LA-503-156 (D-0) LIQUIDS

Serial No.			BLANK
	Spike (Tracer) Book Number		58B43
G621-5682	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.050
1386	Volume of Sample in mL	(SS)	1
Rerun No.	Dilution Factor	(DF)	1
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	8
	Am-243 Area Peak Height from AEA	(C243)	579
Date	Total AT Count	(ATOT)	2190
08/17/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	5

Am-241 µCi/L = ((C241 * SPKA * SPKV * DF * DDF * (1000mL/L)) / ((C243 * SS * (2220000dpm/mL))

µCi/mL = µCi/L / (1000mL/L)

Tracer % Rec = ((ATOT / MIN CTd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

NOTE: Reported result is a LESS THAN value using 5% of the Am-243 peak as the Am-241 peak.

Am-241 µCi/L	=	< 6.37E-03
Am-241 µCi/mL	=	< 6.37E-06
Relative counting error	=	35.6%
Am-243 Tracer Recovery	=	47.4%

Data Entry by:	Date: 20-Aug-93
Approved by:	Date: August 24, 1993

Form 3 Rev. 1.1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#3 8-17-93 AJ

2190/3d -5 G621-5682

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PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

#9 1123

Serial No	Sample Point	Date	Time Issued	Priority
G 622.-5782	102 5 DAY	7-22-93	14:58	23

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	D44B3	0

Sample Size	Customer ID
? 1 ml	C-0

Remarks, Calculations, Results

COUNT AS uCI/L <6.37 x 10^{-6} uCi/ml

1 ml Con HNO_3

.050 ml Am 243 - 58843

AEA - 488MHz

ATTACH PRINTOUT

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
	His 8-17-93 16:30	His	His	His

Date	Time Completed	Lab Unit Mgr
8-17-93	1400	

54 5800 (6/91) 0 10 931

WHC-SD-WM-DP-054 REV 0

AM-241: LA-503-156 (D-0) LIQUIDS

			SAMPLE
Serial No.	Spike (Tracer) Book Number		58843
G622-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.050
1386	Volume of Sample in mL	(SS)	1
Rerun No.	Dilution Factor	(DF)	1
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	5
	Am-243 Area Peak Height from AEA	(C243)	246
Date	Total AT Count	(ATOT)	1017
08/17/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	6

Am-241 µCi/L = ((C241 * SPKA * SPKV * DF * DDF * (1000mL/L)) / ((C243 * SS * (2220000dpm/mL))

µCi/mL = µCi/L / (1000mL/L)

Tracer % Rec = ((ATOT / MIN CTd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

NOTE: Reported result is a LESS THAN value using 5% of the Am-243 peak as the Am-241 peak.

Am-241 µCi/L	=	< 6.37E-03
Am-241 µCi/mL	=	< 6.37E-06
Relative counting error	=	45.2%
Am-243 Tracer Recovery	=	19.3%

Data Entry by:		Date:	20-Aug-93
Approved by:		Date:	August 24, 1993

Form 3 Rev. 1.1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#1 8-17-93

1017/30 -6 G622-5782

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PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

#10 2069

Serial No	Sample Point	Date	Time Issued	Priority
G 623.-5782	102 5 DAY	7-22-93	15: 3	23

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	D44B3	0

Sample Size	Customer ID
? 1 ml	C-1

Remarks Calculations Results

COUNT AS uCI/L <6.37 x 10^-6 uCi/ml - 480MIN

1 ml Con HNO3

.050 ml Am 243-58843

ATTACH PRINTOUT

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
His	His 8-17-93 16:30	His	His	His

Date	Time Completed	Lab Unit Mgr
8-17-93	1400	

WHC-SD-WM-DP-05 REV 0

AM-241: LA-503-156 (D-0) LIQUIDS

			SAMPLE
Serial No.	Spike (Tracer) Book Number		58843
G623-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.050
1386	Volume of Sample in mL	(SS)	1
Rerun No.	Dilution Factor	(DF)	1
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	5
	Am-243 Area Peak Height from AEA	(C243)	276
Date	Total AT Count	(ATOT)	860
08/17/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	5

Am-241 µCi/L = ((C241 * SPKA * SPKV * DF * DDF * (1000mL/L)) / ((C243 * SS * (2220000dpm/mL))

µCi/mL = µCi/L / (1000mL/L)

Tracer % Rec = ((ATOT / MIN CTd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

NOTE: Reported result is a LESS THAN value using 5% of the Am-243 peak as the Am-241 peak.

Am-241 µCi/L	=	< 6.37E-03
Am-241 µCi/mL	=	< 6.37E-06
Relative counting error	=	45.1%
Am-243 Tracer Recovery	=	16.4%

Data Entry by:		Date:	20-Aug-93
Approved by:		Date:	August 24, 1993

Form 3 Rev. 1.1 Page 1 of 1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

3 8-17-93

860/30 - 5 G623-5782

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PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

#4 3066

Serial No	Sample Point	Date	Time Issued	Priority
G 624.-5782	102 5 DAY	7-22-93	15: 3	23

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	D44B3	0

Sample Size	Customer ID
? 1 ml	C-2

Remarks Calculations Results

COUNT AS uCI/L

$<6.37 \times 10^{-6}$ uCi/ml

1ml Con HNO_3

.050 ml Am 243- 58B43

"AEA" - 480MIN

ATTACH PRINTOUT

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs 8-17-93 1200	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
8-17-93	1400	

WHC-SD-WM-DP-054 REV 0

AM-241: LA-503-156 (D-0) LIQUIDS

			SAMPLE
Serial No.	Spike (Tracer) Book Number		58B43
G624-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.05
1386	Volume of Sample in mL	(SS)	1
Rerun No.	Dilution Factor	(DF)	1
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	3
	Am-243 Area Peak Height from AEA	(C243)	123
Date	Total AT Count	(ATOT)	545
08/17/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	6

Am-241 µCi/L = ((C241 * SPKA * SPKV * DF * DDF * (1000mL/L)) / ((C243 * SS * (2220000dpm/mL))

µCi/mL = µCi/L / (1000mL/L)

Tracer % Rec = ((ATOT / MIN CTd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

NOTE: Reported result is a LESS THAN value using 5% of the Am-243 peak as the Am-241 peak.

Am-241 µCi/L	=	< 6.37E-03
Am-241 µCi/mL	=	< 6.37E-06
Relative counting error	=	58.4%
Am-243 Tracer Recovery	=	8.4%

Data Entry by:	Date: 24-Aug-93
Approved by:	Date: August 24, 1993

Form 3 Rev. 1.1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#1 8-17-93

545/30 -6

G624-5782

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PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

#12 4061

Serial No	Sample Point	Date	Time Issued	Priority
G 625.-5782	102 5 DAY	7-22-93	15: 6	23

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	D44B3	0

Sample Size	Customer ID
? 1 ml	C-3

Remarks Calculations Results

COUNT AS uCI/L <6.37X10^{-6} uCi/ml

1 ml Con HNO_3

.050 ml Am243-58343

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs 8-17-93 1700	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr.
8-17-93	1400	

WHC-SD-WM-DP-051 REV 0

AM-241: LA-503-156 (D-0) LIQUIDS

			SAMPLE
Serial No.	Spike (Tracer) Book Number		58843
G625-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.050
1386	Volume of Sample in mL	(SS)	1
Rerun No.	Dilution Factor	(DF)	1
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	8
	Am-243 Area Peak Height from AEA	(C243)	582
Date	Total AT Count	(ATOT)	2005
08/17/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	1

Am-241 µCi/L = ((C241 * SPKA * SPKV * DF * DDF * (1000mL/L)) / ((C243 * SS * (2220000dpm/mL))

µCi/mL = µCi/L / (1000mL/L)

Tracer % Rec = ((ATOT / MIN CTd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

NOTE: Reported result is a LESS THAN value using 5% of the Am-241 peak as the Am-241 peak.

Am-241 µCi/L	=	< 6.37E-03
Am-241 µCi/mL	=	< 6.37E-06
Relative counting error	=	35.6%
Am-243 Tracer Recovery	=	45.9%

Data Entry by:	Date: 20-Aug-93
Approved by:	Date: August 24, 1993

Form 3 Rev. 1.1 Page 1 of 1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

2 8-17-93

2005/30 - 1 G625-5782

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PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

3.2 2169

Serial No	Sample Point	Date	Time Issued	Priority
G 626.-5782	102 5 DAY	7-22-93	15: 7	23

Determination	Method-Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	D44B3	0

Sample Size	Customer ID
? 1 ml	C-4

Remarks Calculations Results

COUNT AS uCI/L <6.37 X 10-6 uCi/ml

1 ml Cit HNO3

.050 ml Am 243 - 58B43

"AEA" - 480MIN

ATTACH PRINTOUT

Analyst - 1	Analyst - 2		Analyst - 4	Analyst - 5
	Hrs 8-17-93 1700	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
8-17-93	1400	

54 6800 (4/91)

WHC-SD-WM-DP-054 REV 0

AM-241: LA-503-156 (D-0) LIQUIDS

			SAMPLE
Serial No.	Spike (Tracer) Book Number		58843
G626-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.050
1386	Volume of Sample in mL	(SS)	1
Rerun No.	Dilution Factor	(DF)	1
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	7
	Am-243 Area Peak Height from AEA	(C243)	441
Date	Total AT Count	(ATOT)	2049
08/17/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	5

Am-241 µCi/L = ((C241 * SPKA * SPKV * DF * DDF * (1000mL/L)) / ((C243 * SS * (2220000dpm/mL))

µCi/mL = µCi/L / (1000mL/L)

Tracer % Rec = ((ATOT / MIN CTd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

NOTE: Reported result is a LESS THAN value using 5% of the Am-241 peak as the Am-241 peak.

Am-241 µCi/L	=	< 6.37E-03
Am-241 µCi/mL	=	< 6.37E-06
Relative counting error	=	38.1%
Am-243 Tracer Recovery	=	44.1%

Data Entry by: Date: 20-Aug-93

Approved by: Date: August 24, 1993

Form 3 Rev. 1.1 Page 1 of 1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

3 8-17-93 AJ

2049-5 / 30 G626-5782

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Raymond 8.19.93

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

WHC-SD-WM-DP-054 REV 0

SAMPLE
G-620-5582
File ID: SD7128.SPC

Counted on: 8/18/93 @14: 0
Detector/Geometry number: 7/ 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	386.7	373.4	308.002	308.002	20.000	13.518	10.000	7.715
2	360.8	347.6	261.434	261.434	20.000	12.409	10.000	6.869
3	4.8	6.2	166.294	166.294	180.000	2.000	90.000	0.200
4	3.5	2.2	137.396	137.396	20.000	15.006	10.000	0.382

PEAK RESULTS

Peak	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1	Pu238	0.5074	5.499	5.501	-0.002	0.06	6.97	47.73	0.215E-04
	Am241		5.480	5.501	-0.021				0.165E-04
2		0.4593		5.287		0.06	6.31	31.11	0.140E-04
3		0.0177		4.849		0.01	0.24	1.20	0.541E-06
4		0.0156		4.716		0.07	0.21	1.05	0.475E-06

DETECTOR CALIBRATION

Energy(MEV) = 4.084 + (0.0046)*Channel
Energy range (MeV): 4.084 TO 6.440
Efficiency = 0.2028 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	7267.0	100.000
Smoothed	7267.0	100.000
Composite fit	6868.5	94.516
Residuals	398.5	5.484

Analyzed by: _____

```
          SPECTRUM SD7128.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC                1430.7
4
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WHC-SD-WM-DP-054 REV O

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Raw Data Dump for AEA Spectrum: SP:SD7128.SPC

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	1.	0.	1.	1.	0.	0.	1.	1.
21	1.	1.	0.	0.	3.	1.	1.	0.	1.	0.
31	0.	2.	0.	0.	0.	1.	0.	1.	2.	1.
41	2.	2.	0.	3.	2.	0.	0.	0.	1.	1.
51	1.	1.	3.	0.	0.	1.	0.	1.	0.	0.
61	0.	3.	1.	0.	0.	4.	0.	2.	2.	1.
71	1.	2.	3.	2.	2.	2.	2.	0.	1.	1.
81	2.	0.	0.	2.	0.	0.	1.	2.	1.	3.
91	0.	2.	1.	2.	0.	0.	3.	1.	1.	1.
101	3.	0.	0.	1.	1.	3.	0.	2.	2.	4.
111	2.	2.	0.	4.	2.	1.	0.	3.	1.	0.
121	1.	4.	2.	0.	0.	3.	1.	0.	5.	2.
131	3.	5.	3.	0.	2.	7.	4.	1.	4.	2.
141	2.	2.	2.	4.	2.	1.	1.	3.	5.	1.
151	2.	0.	0.	6.	2.	2.	4.	3.	1.	0.
161	0.	1.	1.	5.	3.	3.	2.	0.	2.	2.
171	1.	2.	1.	1.	2.	2.	1.	0.	3.	0.
181	1.	2.	1.	2.	3.	3.	2.	2.	2.	2.
191	5.	2.	1.	4.	5.	3.	2.	2.	0.	1.
201	2.	5.	7.	3.	2.	4.	7.	5.	3.	4.
211	2.	3.	3.	5.	7.	6.	7.	3.	4.	7.
221	16.	3.	2.	12.	5.	10.	6.	10.	14.	21.
231	10.	14.	9.	17.	18.	15.	11.	15.	16.	14.
241	22.	25.	15.	21.	25.	31.	27.	36.	54.	49.
251	78.	82.	90.	115.	134.	178.	180.	201.	216.	220.
261	200.	217.	168.	153.	107.	95.	84.	49.	48.	28.
271	33.	20.	20.	26.	12.	19.	16.	12.	9.	10.
281	21.	13.	18.	11.	13.	10.	20.	21.	19.	29.
291	22.	31.	39.	48.	51.	77.	65.	80.	102.	123.
301	152.	156.	175.	204.	223.	220.	261.	209.	195.	171.
311	133.	129.	105.	86.	55.	64.	36.	36.	20.	18.
321	14.	17.	7.	2.	4.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
351	0.	1.	0.	1.	1.	1.	1.	0.	0.	2.
361	2.	1.	0.	1.	1.	1.	0.	3.	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.	1.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Raymond
8-19-93

WHC-SD-WM-DP-054 REV 0

GENERAL ALPHA ENERGY ANALYSIS

Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
G-621-5682
File ID: SD8349.SPC

Counted on: 8/18/93 @14: 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	12.1	12.8	361.308	361.308	20.000	13.341	10.000	3.325
2	36.6	15.1	298.795	298.795	12.000	8.879	6.000	3.325
3	1035.7	1047.0	256.161	256.161	24.000	15.330	12.000	4.389
4	5.3	4.2	127.133	127.133	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	Pu236	0.0123	5.756	5.759	-0.003	0.06	0.32	1.70	0.767E-06
2	Th228	0.0107	5.430	5.465	-0.035	0.04	0.28	2.04	0.921E-06
	Am241		5.480	5.465	0.015				0.696E-06
3	Am243	0.9709	5.234	5.265	-0.031	0.07	25.33	1201.83	0.541E-03
4	Np237	0.0061	4.640	4.658	-0.018	0.01	0.16	13.94	0.628E-05

DETECTOR CALIBRATION
Energy(MEV) = 4.061 + (0.0047)*Channel
Energy range (MeV): 4.061 TO 6.467
Efficiency = 0.1916 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	13387.0	100.000
Smoothed	13387.0	100.000
Composite fit	13044.0	97.438
Residuals	343.0	2.562

Analyzed by: _____

```
          SPECTRUM SD8349.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC                3736.6

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Raw Data Dump for AEA Spectrum: SP:SD8349.SPC

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	1.	4.	2.	0.	1.
21	0.	0.	0.	1.	0.	0.	1.	1.	0.	2.
31	0.	1.	1.	1.	1.	3.	1.	1.	1.	2.
41	0.	0.	1.	0.	2.	2.	1.	0.	0.	0.
51	1.	2.	0.	1.	2.	1.	0.	1.	0.	0.
61	0.	0.	2.	3.	0.	0.	1.	1.	1.	1.
71	1.	2.	3.	2.	0.	0.	2.	2.	1.	4.
81	0.	0.	0.	2.	0.	0.	0.	4.	0.	1.
91	1.	1.	3.	1.	2.	1.	5.	2.	1.	1.
101	0.	0.	2.	3.	0.	2.	1.	3.	4.	0.
111	1.	1.	0.	0.	1.	0.	1.	1.	0.	4.
121	2.	4.	1.	3.	4.	2.	3.	0.	5.	2.
131	1.	2.	0.	3.	3.	1.	2.	3.	3.	2.
141	1.	3.	3.	5.	2.	2.	4.	1.	2.	2.
151	2.	4.	4.	2.	2.	5.	1.	3.	1.	6.
161	2.	2.	2.	2.	5.	6.	7.	1.	6.	6.
171	2.	6.	6.	1.	4.	3.	4.	9.	2.	3.
181	5.	3.	6.	7.	6.	11.	6.	6.	9.	8.
191	11.	13.	11.	13.	8.	7.	11.	14.	14.	5.
201	13.	19.	10.	14.	20.	19.	14.	21.	22.	20.
211	27.	27.	24.	31.	26.	32.	35.	35.	35.	47.
221	37.	40.	51.	55.	52.	71.	72.	66.	88.	102.
231	95.	95.	111.	106.	118.	139.	147.	171.	193.	211.
241	201.	243.	292.	282.	295.	345.	428.	440.	439.	478.
251	492.	518.	536.	553.	563.	567.	579.	510.	461.	416.
261	333.	273.	193.	148.	135.	78.	64.	76.	36.	27.
271	38.	29.	26.	20.	13.	8.	6.	3.	1.	2.
281	1.	2.	3.	4.	1.	6.	1.	6.	1.	0.
291	5.	4.	1.	8.	3.	6.	3.	3.	6.	3.
301	2.	7.	4.	2.	2.	3.	5.	1.	2.	2.
311	2.	2.	0.	0.	2.	1.	0.	0.	1.	0.
321	0.	0.	0.	0.	0.	2.	0.	1.	2.	0.
331	1.	3.	1.	1.	2.	0.	2.	0.	1.	1.
341	1.	1.	2.	2.	6.	1.	3.	3.	3.	8.
351	8.	3.	5.	10.	4.	4.	4.	7.	5.	8.
361	8.	3.	10.	5.	2.	8.	1.	3.	2.	2.
371	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	1.	0.	1.	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.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	1.	0.	0.	2.
481	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

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. 2.01

DATA REDUCTION REPORT WHC-SD-WM-DP-054 REV 0

SAMPLE
G 622-5782
File ID: 9a1173.CNF

Counted on: 8/19/93 @ 9:54
Detector: AEA9
Geometry number: 1
Count time: 28802. 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	202.7	202.7	254.365	254.365	12.000	6.234	6.000	2.100
2	65.3	65.3	228.742	227.809	16.000	5.758	8.000	1.196
3	10.4	10.4	170.735	170.598	38.000	141.377	19.000	15.850

PEAK RESULTS
Peak Error Limit: 15%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.607	5.234	5.268	-.034	0.03	7.49	3.3	61.8	0.279E-04
2	Pu239	0.262	5.143	5.145	-.002	0.03	3.23	6.1	26.4	0.119E-04
	Pu240		5.144	5.145	-.001				26.4	0.119E-04
3	Np237	0.120	4.781	4.882	-.101	0.65	1.48	14.9	13.9	0.625E-05
Totals:		0.988	<--valid peaks only-->				12.20			

DETECTOR CALIBRATION
Energy(MEV) = 4.097 + (0.0046)*Channel
Energy range (MeV): 4.097 TO 6.453
Efficiency = 0.1224 CPM/DPM

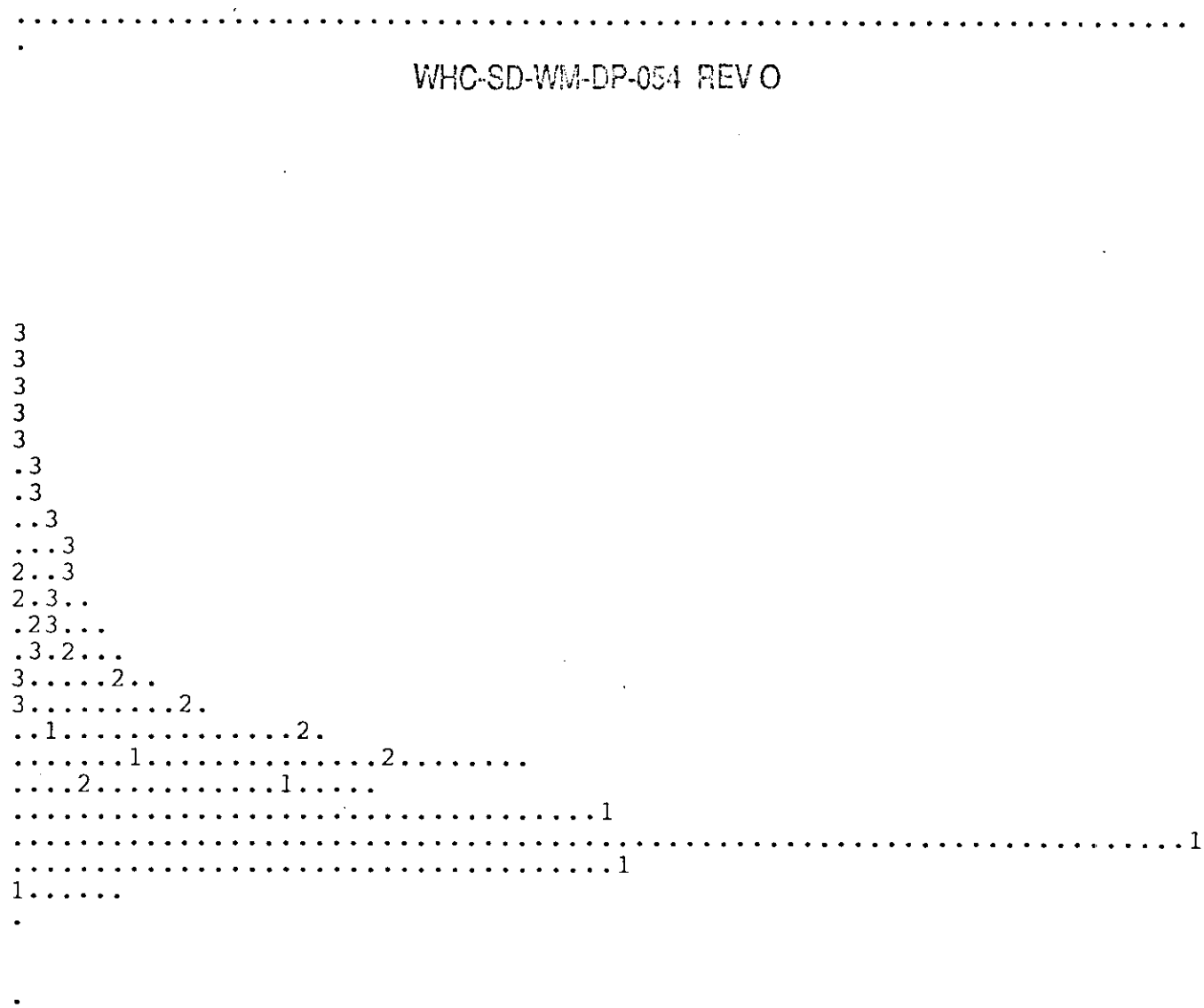
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	5930.0	100.000
Smoothed	6042.5	101.897
Composite fit	5857.4	98.776
Residuals	72.6	1.224

Analyzed by: _____
JLA

Spectrum 9a1173.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 1392.2



Raw Data Dump for AEA Spectrum: 9a1173.CNF

1	28802.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	2.	0.	1.	0.	2.	1.	0.	0.	1.
21	0.	0.	0.	1.	0.	1.	0.	2.	0.	1.
31	0.	0.	1.	1.	1.	1.	1.	1.	1.	2.
[illegible]	1.	0.	0.	0.	3.	2.	0.	1.	1.	0.
[illegible]	2.	0.	0.	1.	2.	1.	1.	0.	0.	1.
61	0.	1.	1.	0.	1.	1.	0.	0.	3.	2.
71	1.	3.	2.	1.	0.	2.	4.	1.	0.	1.
81	5.	1.	0.	1.	2.	1.	3.	1.	2.	3.
91	2.	1.	0.	3.	3.	1.	3.	3.	3.	2.
101	0.	2.	4.	2.	2.	4.	1.	4.	3.	1.
111	3.	6.	1.	0.	2.	5.	4.	5.	1.	2.
121	1.	2.	4.	4.	4.	7.	3.	4.	6.	5.
131	5.	8.	2.	4.	1.	1.	1.	4.	7.	4.
141	2.	6.	6.	10.	9.	5.	4.	6.	5.	8.
151	4.	8.	8.	7.	8.	7.	10.	4.	6.	8.
161	8.	2.	10.	9.	11.	9.	7.	3.	7.	17.
171	16.	13.	3.	12.	6.	15.	15.	10.	15.	15.
181	24.	7.	15.	13.	15.	9.	13.	15.	19.	24.
191	22.	21.	15.	22.	18.	20.	19.	17.	15.	16.
201	21.	26.	30.	24.	24.	24.	26.	26.	36.	34.
211	27.	31.	29.	34.	41.	32.	32.	45.	43.	60.
221	53.	54.	57.	69.	70.	80.	95.	104.	71.	90.
231	93.	69.	48.	63.	48.	44.	48.	48.	54.	63.
241	54.	76.	91.	95.	90.	110.	121.	117.	157.	137.
251	157.	224.	212.	192.	246.	192.	191.	124.	85.	64.
261	40.	23.	23.	20.	21.	22.	16.	16.	12.	10.
271	10.	6.	6.	1.	2.	1.	1.	0.	0.	2.
281	0.	1.	1.	0.	1.	1.	1.	0.	1.	0.
291	0.	3.	1.	1.	2.	2.	2.	2.	4.	1.
301	5.	3.	2.	3.	1.	3.	3.	0.	1.	0.
[illegible]	1.	0.	0.	0.	0.	1.	0.	1.	0.	0.
[illegible]	1.	2.	1.	0.	1.	0.	0.	0.	0.	1.
331	1.	0.	1.	2.	1.	2.	0.	0.	1.	0.
341	2.	1.	0.	1.	1.	1.	1.	0.	1.	1.
351	1.	0.	1.	0.	2.	1.	1.	3.	4.	0.
361	0.	1.	1.	1.	2.	3.	0.	0.	1.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WHC-SD-WM-ER-[illegible] REV 0

Eu Baum
8-19-93

Westinghouse Hanford Co.

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. 2.01

WHC-SD-WM-DP-054 REV 0

DATA REDUCTION REPORT

SAMPLE
G 623-5782
File ID: 10a2069.CNF

Counted on: 8/19/93 @ 9:55
Detector: AEA10
Geometry number: 1
Count time: 28801. 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	233.0	233.0	253.205	253.205	10.000	5.075	5.000	2.242

PEAK RESULTS
Peak Error Limit: 15%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.795	5.234	5.262	-.028	0.02	7.12	3.4	58.8	0.265E-04
Totals:		0.795	<--valid peaks only-->				7.12			

DETECTOR CALIBRATION
Energy(MEV) = 4.097 + (0.0046)*Channel
Energy range (MeV): 4.097 TO 6.453
Efficiency = 0.1224 CPM/DPM

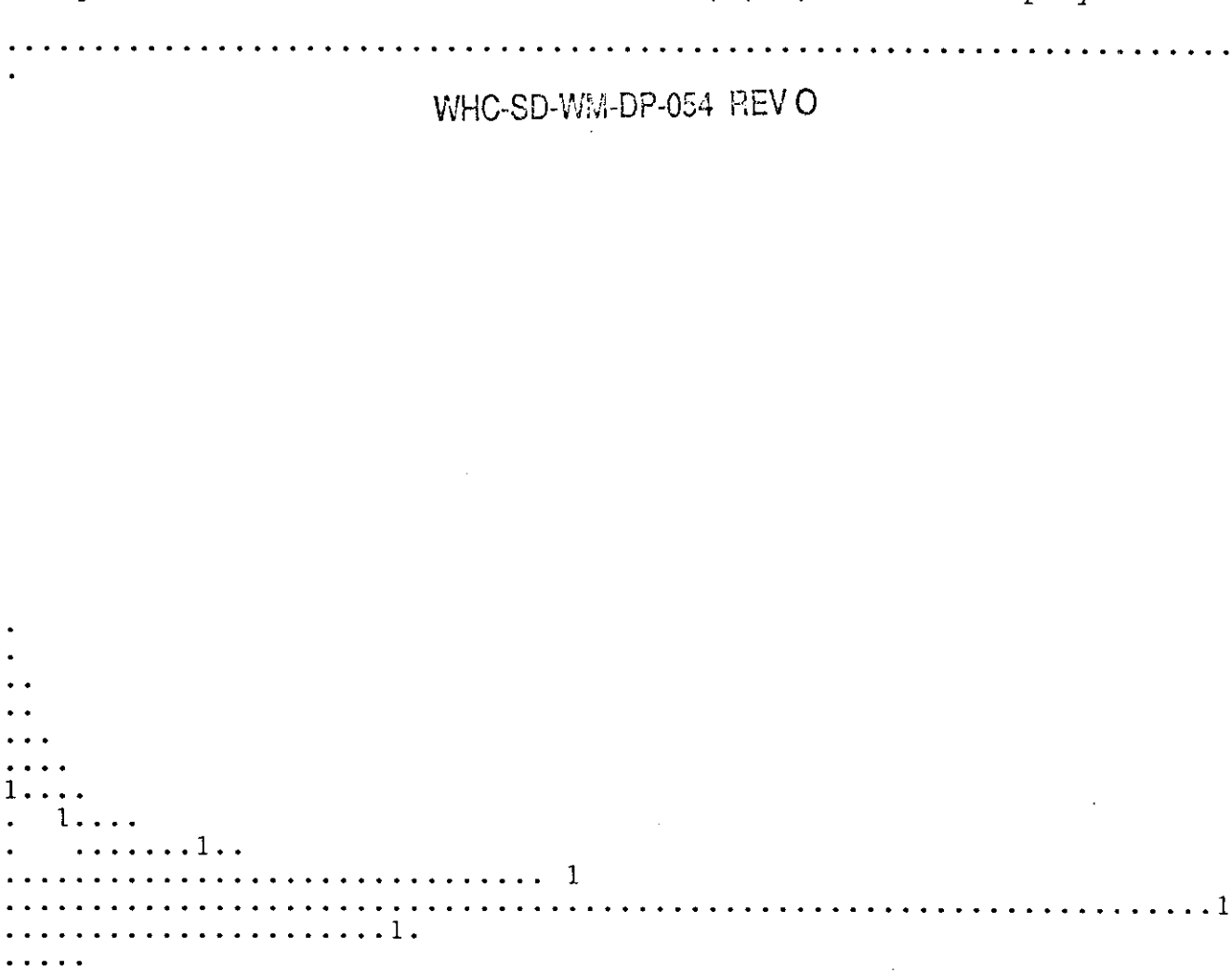
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	4302.0	100.000
Smoothed	4414.5	102.615
Composite fit	3419.1	79.476
Residuals	882.9	20.524

Analyzed by: _____
JLA

Spectrum 10a2069.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 1610.5



Raw Data Dump for AEA Spectrum: 10a2069.CNF

1	28801.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	1.	0.	1.	0.	0.	0.	0.	1.
21	0.	0.	0.	1.	0.	0.	1.	0.	0.	0.
31	0.	1.	1.	1.	2.	0.	0.	0.	0.	0.
41	0.	0.	0.	1.	0.	1.	2.	0.	0.	0.
51	0.	0.	0.	1.	0.	1.	1.	1.	2.	0.
61	1.	0.	2.	0.	0.	0.	1.	0.	0.	0.
71	0.	0.	1.	0.	3.	0.	1.	0.	0.	2.
81	0.	0.	2.	0.	1.	2.	0.	1.	0.	1.
91	0.	1.	1.	0.	0.	2.	1.	1.	1.	1.
101	3.	1.	1.	1.	1.	1.	1.	1.	0.	1.
111	3.	1.	0.	1.	1.	3.	0.	2.	0.	0.
121	1.	3.	1.	3.	0.	2.	1.	3.	3.	1.
131	3.	1.	1.	2.	1.	1.	0.	1.	2.	4.
141	1.	1.	3.	0.	1.	2.	0.	5.	1.	2.
151	1.	2.	0.	2.	3.	2.	2.	5.	2.	1.
161	4.	0.	3.	2.	2.	4.	4.	1.	6.	3.
171	3.	2.	3.	2.	4.	4.	0.	2.	7.	5.
181	11.	6.	3.	4.	3.	9.	8.	8.	5.	7.
191	9.	9.	7.	5.	8.	12.	7.	12.	6.	7.
201	8.	13.	8.	8.	17.	10.	7.	6.	11.	14.
211	15.	14.	16.	13.	23.	12.	8.	15.	18.	15.
221	22.	17.	13.	13.	18.	16.	37.	24.	29.	21.
231	26.	32.	39.	43.	46.	38.	33.	42.	58.	49.
241	69.	79.	78.	97.	97.	108.	120.	141.	161.	179.
251	241.	263.	249.	276.	242.	173.	123.	73.	45.	31.
261	18.	31.	11.	21.	22.	13.	15.	13.	10.	5.
271	5.	2.	1.	1.	3.	0.	2.	0.	1.	2.
281	2.	1.	0.	0.	1.	4.	3.	0.	2.	2.
291	0.	2.	0.	5.	2.	1.	4.	5.	3.	2.
301	2.	1.	1.	1.	0.	0.	1.	0.	0.	0.
311	0.	2.	0.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
331	0.	1.	0.	0.	0.	2.	0.	2.	0.	0.
341	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
351	0.	2.	0.	0.	0.	1.	1.	0.	2.	1.
361	1.	1.	0.	1.	1.	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.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
481	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Eric Barrelle
8-19-93

Westinghouse Hanford Co.

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. 2.01

DATA REDUCTION REPORT WHC-SD-WM-DP-054 REV 0

SAMPLE
G 624-5782
File ID: 11a3066.CNF

Counted on: 8/19/93 @ 9:56
Detector: AEA11
Geometry number: 1
Count time: 28803. 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	100.0	100.0	255.374	255.374	12.000	4.475	6.000	2.101
2?	4.9	4.9	232.306	230.014	16.000	1.948	8.000	0.573

PEAK RESULTS
Peak Error Limit: 15%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
	Am243	0.830	5.234	5.272	-.0380	2.0	2.87	5.3	23.7	0.107E-04
		????		5.156			0.16	34.5		
Totals:		0.830	<--valid peaks only-->				2.87			

DETECTOR CALIBRATION
Energy(MEV) = 4.097 + (0.0046)*Channel
Energy range (MeV): 4.097 TO 6.453
Efficiency = 0.1224 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	1661.0	100.000
Smoothed	1773.5	106.774
Composite fit	1457.8	87.769
Residuals	203.2	12.231

Analyzed by: _____
JLA

Spectrum 11a3066.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 625.8

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Raw Data Dump for AEA Spectrum: 11a3066.CNF

1	28803.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
91	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
101	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
111	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
121	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
131	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
141	0.	2.	0.	0.	1.	0.	0.	0.	0.	0.
151	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.
161	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
171	0.	0.	1.	1.	0.	1.	0.	0.	0.	0.
181	1.	0.	1.	0.	0.	0.	0.	0.	1.	2.
191	1.	5.	3.	0.	1.	1.	0.	0.	0.	0.
201	0.	0.	1.	0.	3.	2.	0.	0.	0.	1.
211	2.	0.	3.	0.	3.	2.	1.	2.	2.	6.
221	5.	6.	5.	8.	8.	10.	5.	10.	8.	8.
231	7.	17.	5.	12.	7.	6.	9.	8.	16.	16.
241	12.	18.	35.	23.	34.	32.	51.	51.	55.	70.
251	65.	82.	91.	98.	123.	106.	113.	77.	46.	21.
261	18.	11.	10.	10.	4.	6.	5.	9.	5.	7.
271	3.	4.	2.	0.	2.	0.	0.	0.	0.	0.
281	0.	1.	1.	0.	3.	0.	1.	0.	0.	1.
291	0.	2.	0.	1.	1.	0.	2.	2.	0.	1.
301	1.	1.	1.	1.	0.	0.	0.	0.	0.	1.
3	1.	0.	1.	0.	1.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	2.	1.	0.	0.	0.	2.
331	0.	0.	1.	0.	1.	1.	1.	0.	4.	1.
341	1.	0.	2.	1.	2.	2.	1.	3.	2.	2.
351	5.	0.	3.	3.	0.	2.	3.	6.	3.	2.
361	5.	5.	6.	3.	2.	2.	4.	2.	6.	1.
371	1.	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.	1.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	1.	0.	1.	2.	0.	0.
481	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

8-24-93

WHC-SD-WM-DP-[illegible] REV 0

Eric Bauer
8-19-93

Westinghouse Hanford Co.

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. 2.01

DATA REDUCTION REPORT WHC-SD-WM-DP-054 REV 0

SAMPLE
G 625-5782
File ID: 12a4066.CNF

Counted on: 8/19/93 @ 9:57
Detector: AEA12
Geometry number: 1
Count time: 28802. 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	532.1	532.1	253.192	253.192	12.000	6.102	6.000	1.284

PEAK RESULTS
Peak Error Limit: 15%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	1.008	5.234	5.262	-.028	0.03	26.33	1.7	217.3	0.979E-04
Totals:		1.008	<--valid peaks only-->				26.33			

DETECTOR CALIBRATION
Energy(MEV) = 4.097 + (0.0046)*Channel
Energy range (MeV): 4.097 TO 6.453
Efficiency = 0.1224 CPM/DPM

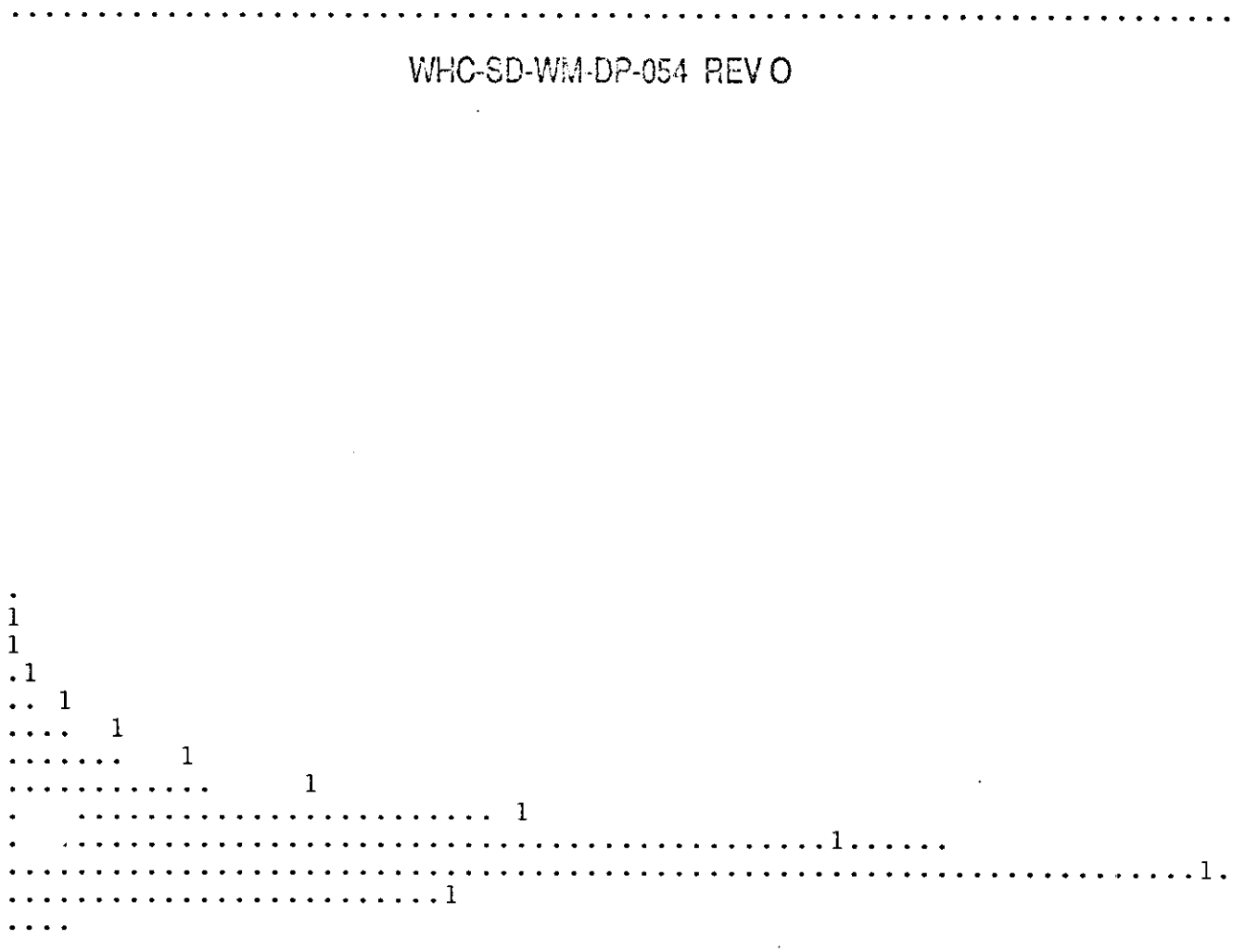
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	12538.0	100.000
Smoothed	12650.5	100.897
Composite fit	12637.8	100.796
Residuals	-99.8	-0.796

Analyzed by: _____
JLA

Spectrum 12a4066.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 3921.8



Raw Data Dump for AEA Spectrum: 12a4066.CNF

1	28802.	0.	0.	0.	0.	0.	0.	0.	0.	1.
11	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
21	0.	1.	0.	0.	0.	1.	0.	1.	0.	2.
31	0.	0.	0.	1.	0.	0.	1.	0.	0.	0.
41	1.	0.	1.	0.	1.	1.	1.	1.	0.	0.
51	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.
61	1.	0.	0.	2.	1.	0.	1.	0.	2.	1.
71	0.	0.	0.	0.	0.	1.	2.	0.	0.	2.
81	1.	1.	2.	2.	2.	2.	2.	0.	1.	2.
91	0.	0.	0.	1.	0.	0.	1.	1.	0.	2.
101	1.	2.	0.	0.	3.	4.	1.	0.	1.	0.
111	3.	0.	4.	3.	0.	3.	0.	0.	1.	1.
121	2.	1.	2.	3.	1.	1.	4.	4.	2.	5.
131	1.	1.	2.	2.	0.	3.	1.	2.	2.	4.
141	1.	5.	0.	5.	5.	6.	5.	4.	2.	1.
151	1.	4.	6.	3.	2.	4.	0.	10.	6.	5.
161	9.	1.	4.	8.	5.	9.	7.	9.	7.	6.
171	6.	5.	8.	9.	7.	11.	6.	4.	8.	10.
181	7.	6.	9.	6.	15.	11.	10.	6.	11.	15.
191	15.	8.	7.	13.	14.	12.	14.	22.	19.	19.
201	15.	9.	21.	20.	29.	23.	20.	25.	31.	18.
211	26.	38.	37.	28.	41.	37.	50.	45.	51.	48.
221	49.	53.	54.	58.	76.	82.	77.	86.	98.	111.
231	113.	124.	163.	137.	198.	220.	203.	218.	265.	296.
241	314.	348.	375.	426.	422.	472.	452.	470.	460.	436.
251	493.	557.	560.	582.	563.	448.	341.	198.	111.	80.
261	55.	67.	47.	42.	35.	33.	27.	29.	16.	11.
271	10.	6.	6.	0.	1.	1.	1.	2.	1.	0.
281	1.	2.	2.	2.	3.	3.	3.	5.	5.	5.
291	2.	4.	4.	3.	5.	2.	5.	3.	3.	8.
301	4.	5.	4.	1.	1.	1.	4.	0.	0.	0.
311	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
331	0.	1.	0.	0.	2.	0.	2.	0.	1.	1.
341	1.	0.	4.	1.	3.	1.	3.	1.	2.	1.
351	8.	5.	3.	1.	1.	1.	1.	1.	3.	3.
361	4.	5.	5.	6.	2.	2.	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.	1.	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.	0.	1.	0.	0.	1.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	1.	0.	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.								

Em Barela
8-19-93

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 WHC-SD-WM-DP-054 REV 0

SAMPLE
G-626-5782
File ID: SD2169.SPC

Counted on: 8/19/93 @10: 0
Detector/Geometry number: 2/ 1
Count time: 30000. Sec

PEAK ANALYSIS

Peak	Peak height		Peak center		FWHM		Tau	
ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	5.7	6.0	360.217	360.217	20.000	13.844	10.000	2.952
2	26.7	14.7	301.627	301.627	12.000	3.209	6.000	2.952
3	781.0	803.0	254.860	254.860	24.000	23.722	12.000	5.505
4	5.9	7.8	115.060	115.060	164.000	2.000	82.000	0.200
5	0.3	0.1	90.359	90.359	8.000	0.200	4.000	0.200

PEAK RESULTS

		AEA	Peak Centroid				Count		Activity
ID	Isotope	Fract.	Exp.	Obs.	Diff.	FWHM	Rate c/m	d/m	uCi/ea
1	Pu236	0.0066	5.756	5.740	0.016	0.06	0.16	0.84	0.377E-06
2	Am241	0.0057	5.480	5.470	0.010	0.01	0.14	0.76	0.341E-06
3	Am243	0.9756	5.234	5.255	-0.021	0.11	24.08	1098.30	0.495E-03
4		0.0120		4.612		0.01	0.30	1.49	0.671E-06
5		0.0000		4.499		0.00	0.00	0.00	0.107E-08

DETECTOR CALIBRATION

Energy(MEV) = 4.083 + (0.0046)*Channel
Energy range (MeV): 4.083 TO 6.438
Efficiency = 0.1993 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	12799.0	100.000
Smoothed	12798.3	99.994
Composite fit	12340.5	96.418
Residuals	457.8	3.576

Analyzed by: _____

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        `SPECTRUM SD2169.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC                3030.2

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Raw Data Dump for AEA Spectrum: SP:SD2169.SPC

1	0.	0.	0.	0.	0.	0.	2.	1.	1.	0.
11	0.	1.	0.	0.	0.	0.	1.	1.	0.	0.
21	1.	0.	0.	1.	0.	0.	1.	0.	0.	0.
31	0.	1.	1.	1.	1.	2.	2.	0.	0.	2.
41	1.	1.	1.	0.	0.	2.	2.	1.	0.	0.
51	1.	0.	1.	0.	1.	3.	3.	1.	1.	1.
61	0.	0.	0.	2.	2.	2.	1.	1.	2.	1.
71	1.	1.	2.	0.	3.	2.	0.	1.	4.	1.
81	2.	0.	1.	1.	0.	3.	3.	1.	3.	3.
91	4.	0.	1.	1.	1.	2.	2.	1.	2.	1.
101	3.	1.	3.	6.	1.	6.	1.	1.	3.	3.
111	3.	3.	4.	1.	5.	2.	3.	5.	1.	2.
121	1.	3.	4.	1.	4.	2.	4.	2.	4.	3.
131	3.	1.	3.	3.	7.	3.	0.	5.	9.	4.
141	2.	3.	7.	6.	3.	6.	6.	5.	5.	11.
151	6.	5.	5.	3.	8.	10.	8.	6.	7.	15.
161	3.	8.	5.	7.	7.	11.	7.	9.	9.	9.
171	9.	7.	6.	10.	8.	9.	11.	6.	12.	12.
181	10.	17.	7.	8.	21.	20.	16.	21.	18.	20.
191	20.	17.	21.	15.	19.	15.	28.	21.	18.	19.
201	25.	24.	31.	27.	22.	27.	28.	32.	31.	34.
21[illegible]	28.	34.	53.	40.	32.	45.	46.	36.	53.	60.
2[illegible]	66.	63.	62.	59.	78.	71.	87.	93.	114.	95.
231	122.	95.	126.	169.	146.	159.	187.	176.	200.	208.
241	251.	226.	282.	271.	319.	335.	363.	367.	389.	404.
251	397.	441.	418.	401.	388.	393.	396.	382.	348.	300.
261	283.	266.	201.	162.	121.	135.	104.	66.	63.	48.
271	36.	33.	16.	15.	6.	9.	12.	6.	7.	6.
281	1.	5.	3.	1.	1.	2.	1.	1.	2.	3.
291	4.	2.	4.	3.	2.	1.	5.	4.	3.	1.
301	3.	5.	7.	2.	1.	2.	2.	0.	7.	3.
311	1.	0.	0.	1.	0.	0.	0.	0.	1.	0.
321	1.	1.	0.	0.	1.	0.	1.	1.	1.	0.
331	1.	0.	1.	1.	0.	3.	0.	2.	0.	0.
341	0.	0.	1.	1.	0.	3.	2.	4.	2.	4.
351	5.	1.	3.	2.	3.	3.	2.	2.	2.	4.
361	5.	2.	1.	4.	2.	1.	1.	0.	0.	1.
371	0.	0.	2.	0.	0.	0.	0.	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.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
421	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
431	0.	0.	1.	1.	0.	0.	1.	0.	0.	0.
441	1.	0.	0.	0.	0.	0.	0.	1.	0.	1.
451	0.	0.	0.	0.	0.	0.	2.	0.	1.	0.
461	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.
47[illegible]	0.	0.	0.	2.	0.	0.	0.	1.	0.	0.
4[illegible]	0.	0.	1.	0.	0.	2.	1.	0.	0.	0.
491	0.	0.	1.	0.	0.	1.	0.	0.	0.	0.
511	0.	0.								

✓ QD 5

WHC-SD-WM-DP-054 REV 0

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH

Batch # 1758

Lab Segment Serial No. G 628, 629, 630, 633, 634	Customer ID: 102 SOx [illegible]
Analysis: [illegible]	Sample Prep: Direct

Instrument: WB537237	Procedure/ Rev: LA 503 156 (0.0)
Technologist: M.C. Bierman	Date: 8/29/93
Starting Time: 0730	Temperature 25°C
Ending Time: 1430	Chemist: Stan Cathey

Comments:

	Description	Lab ID		Description	Lab ID
1	Standard	G-628-5582	11		
2	Blank	G629-5682	12		
3	sample C-5	G630-5782	13		
4	sample C-6	G631-5782	14		
5	sample C-7	G632-5782	15		
6	sample D-0	G633-5782	16		
7	Sample D-1	G634-5782	17		
8			18		
9			19		
10			20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	63843 1.0ml			
Spike	58843 .100ml			

A-6000-881 (03/92)

QA

ANALYTICAL BATCH SUMMARY SHEET

WHC-SD-WM-DP-054 REV 0

METHOD: LA-503-156

DATE START: August 28, 1993

PREPARED BY: L. L. Fritts

DATE COMPLETE: August 31, 1993

	UNITS:	uCi/mL							
SPL NAME	SPL ID	ANALYTE	RESULT #1	RESULT #2	AVERAGE	RPD%	%REC	DET LIM	% CT ER
STD 63B43	G628	Am-241	2.71E+1				101.1		3.8
BLANK	G629	Am-241	<1.27E-5				10.1		38.2
C-5	G630	Am-241	<1.27E-5				25.4	1.27E-5	38.0
C-6	G631	Am-241	<1.27E-5				66.5	1.27E-5	40.9
C-7	G632	Am-241	<1.27E-5				25.5	1.27E-5	35.6
D-0	G633	Am-241	<1.27E-5				26.8	1.27E-5	35.5
D-1	G634	Am-241	<1.27E-5				27.0	1.27E-5	37.9

NARRATIVE: [X] NO SPECIAL PROBLEMS/METHOD VARIATIONS IN THIS BATCH

LIST SPECIFIC PROBLEMS/VARIATIONS FOR THIS BATCH:

The results for the standard are in uCi/L.

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

2 2/94

Serial No	Sample Point	Date	Time Issued	Priority
G 628.-5582	102 5 DAY	7-22-93	15: 8	23

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	% RECOVERY	D44B3	1

Sample Size	Customer ID
? ,100-10 · 1Ml	STD

Remarks Calculations Results

EDP R201 AR001

STD# 63843 RESULT 27.1

STD VAL 26.806 %REC 101.170

58843 .100-1

0.1 in 8.0 HNO_3

RERUN

"AEA" - ARUMIN

ATTACH PRINTOUT

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

Date	Time Completed	Lab Tech	
8/29/93	1430		

WHC-SD-WM-DP-054 REV 0

AM-241: LA-503-156 (D-0) LIQUIDS

			STANDARD
Serial No.	Spike (Tracer) Book Number		58843
G628-5582	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
1758	Volume of Sample in mL	(SS)	1
Rerun No.	Dilution Factor	(DF)	101
1	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	1447
	Am-243 Area Peak Height from AEA	(C243)	1374
Date	Total AT Count	(ATOT)	13690
08/29/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	6

Am-241 µCi/L = ((C241 * SPKA * SPKV * DF * DDF * (1000mL/L)) / ((C243 * SS * (2220000dpm/mL))

µCi/mL = µCi/L / (1000mL/L)

Tracer % Rec = ((ATOT / MIN CTd − BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

Am-241 µCi/L	=	2.71E+01
Am-241 µCi/mL	=	2.71E-02
Relative counting error	=	3.8%
Am-243 Tracer Recovery	=	77.6%

Data Entry by:		Date:	30-Aug-93
Approved by:		Date:	August 31, 1993

Form 3 Rev. 1.1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#1 8-29-93 DM

13690 -6
30

G628-5582

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PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

4 4795

Serial No	Sample Point	Date	Time Issued	Priority
G 629.-5682	102 5 DAY	7-22-93	15:10	23

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	D44B3	1

Sample Size	Customer ID
? 0 1 ml	BLK

Remarks Calculations Results

REAGENT BLANK

COUNT AS uCI/L
58B43, 100ml
1ml 8N HNO3

<1.27 x 10^-5 uCi/ml RERUN

"AEA" - 250MB
ATTACH PRINTOUT

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

Date	Time Completed	Lab Tech Mgr
8/29/93	1450	

WHC-SD-WM-DP-084 REV 0

AM-241: LA-503-156 (D-0) LIQUIDS

			BLANK
Serial No.	Spike (Tracer) Book Number		58B43
G629-5682	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
1758	Volume of Sample in mL	(SS)	1
Rerun No.	Dilution Factor	(DF)	1
1	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	7
	Am-243 Area Peak Height from AEA	(C243)	366
Date	Total AT Count	(ATOT)	902
08/~~28~~/93	AT Count Time in Minutes	(MIN CT'd)	30
29 JK 8/31/93	Background in CPM	(BKG)	1

Am-241 µCi/L = ((C241 * SPKA * SPKV * DF * DDF * (1000mL/L)) / ((C243 * SS * (2220000dpm/mL))
µCi/mL = µCi/L / (1000mL/L)
Tracer % Rec = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

NOTE: Reported result is a LESS THAN value using 5% of the Am-243 peak as the Am-241 peak.

Am-241 µCi/L	=	< 1.27E-02
Am-241 µCi/mL	=	< 1.27E-05
Relative counting error	=	38.2%
Am-243 Tracer Recovery	=	10.1%

Data Entry by:	Date: 31-Aug-93
Approved by:	Date: August 31, 1993

Form 3 Rev. 1.1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#2 8-29-93 DM

$\frac{902}{30}$ -1 G629-5682

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PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

5 5712

Serial No	Sample Point	Date	Time Issued	Priority
G 630.-5782	102 5 DAY	7-22-93	15:12	23

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	D44B3	1

Sample Size	Customer ID
? 1.0 ~ 1	C-5

Remarks, Calculations, Results

COUNT AS uCI/L $<1.27\times10^{-5}$ uCi/ml RERUN

58B43 .100 ~ 1

Cn HNO3 1.0 ~ 1

480MIN

CLEAN PRINTOUT

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

Date	Time Completed	Lab Unit No.
8/29/93	1430	

WHC-SD-WM-DP-054 REV 0

AM-241: LA-503-156 (D-0) LIQUIDS

			SAMPLE
Serial No.	Spike (Tracer) Book Number		58B43
G630-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
1758	Volume of Sample in mL	(SS)	1
Rerun No.	Dilution Factor	(DF)	1
1	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	7
	Am-243 Area Peak Height from AEA	(C243)	550
Date	Total AT Count	(ATOT)	2362
08/28/93	AT Count Time in Minutes	(MIN CTd)	30
AT 8/31/93	Background in CPM	(BKG)	6

Am-241 µCi/L = ((C241 * SPKA * SPKV * DF * DDF * (1000mL/L)) / ((C243 * SS * (2220000dpm/mL))

µCi/mL = µCi/L / (1000mL/L)

Tracer % Rec = ((ATOT / MIN CTd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

NOTE: Reported result is a LESS THAN value using 5% of the Am-243 peak as the Am-241 peak.

Am-241 µCi/L	=	< 1.27E-02
Am-241 µCi/mL	=	< 1.27E-05
Relative counting error	=	38.0%
Am-243 Tracer Recovery	=	25.4%

Data Entry by:	Date: 31-Aug-93
Approved by:	Date: August 31, 1993

Form 3 Rev. 1.1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#1 F-29-93 Dia

$\frac{2362}{30}$ - 6

G630-5782

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PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

6 6630

Serial No	Sample Point	Date	Time Issued	Priority
G 631.-5782	102 5 DAY	7-22-93	15:12	23

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	D44B3	1

Sample Size	Customer ID
? 1.0 ml	C-6

Remarks, Calculations, Results

COUNT AS uCI/L $<1.27 \times 10^{-5}$ uCi/ml

58B43 1.00 ml

$(NH_4)_2HNO_3$ 1.0 ml

REDUN

ATTACH PRINTOUT

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

Date	Time Completed	Lab Unit Mgr	
8/29/93	1430		8/31

WHC-SD-WM-DP-061 REV 0

AM-241: LA-503-156 (D-0) LIQUIDS

			SAMPLE
Serial No.	Spike (Tracer) Book Number		58B43
G631-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
1758	Volume of Sample in mL	(SS)	1
Rerun No.	Dilution Factor	(DF)	1
1	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	6
	Am-243 Area Peak Height from AEA	(C243)	1180
Date	Total AT Count	(ATOT)	5853
08/28/93	AT Count Time in Minutes	(MIN CT'd)	30
	Background in CPM	(BKG)	6

Am-241 µCi/L = ((C241 * SPKA * SPKV * DF * DDF * (1000mL/L)) / ((C243 * SS * (2220000dpm/mL))

µCi/mL = µCi/L / (1000mL/L)

Tracer % Rec = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

NOTE: Reported result is a LESS THAN value using 5% of the Am-243 peak as the Am-241 peak.

Am-241 µCi/L	=	< 1.27E-02
Am-241 µCi/mL	=	< 1.27E-05
Relative counting error	=	40.9%
Am-243 Tracer Recovery	=	66.5%

Data Entry by:	Date: 31-Aug-93
Approved by:	Date: August 31, 1993

Form 3 Rev. 1.1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#3 8-29-93 DM

$\frac{5853}{30}$ -6

G631-5782

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PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

7 71 60

Serial No	Sample Point	Date	Time Issued	Priority
G 632.-5782	102 5 DAY	7-22-93	15:13	23

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	D44B3	1

Sample Size	Customer ID
? 100 ml	C-7

Remarks, Calculations, Results

COUNT AS uCI/L $<1.27 \times 10^{-5}$ uCi/ml **RERUN**

58843 100 ml

Con HNO3 1.0 ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
	Hrs	Hrs	Hrs	Hrs
	8-29-93			

Date	Time Completed	Lab Unit Mgr
8/29/93	1430	

WHC-SD-WM-DP-[illegible] REV 0

AM-241: LA-503-156 (D-0) LIQUIDS

Serial No.			SAMPLE
G632-5782	Spike (Tracer) Book Number		58B43
Batch ID	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
1758	Spike (Tracer) Volume in mL	(SPKV)	0.1
Rerun No.	Volume of Sample in mL	(SS)	1
1	Dilution Factor	(DF)	1
Analyst	Digest Dilution Factor	(DDF)	1
	Am-241 Area Peak Height from AEA	(C241)	8
	Am-243 Area Peak Height from AEA	(C243)	690
Date	Total AT Count	(ATOT)	2214
08/~~28~~/93	AT Count Time in Minutes	(MIN CTd)	30
8-31-93	Background in CPM	(BKG)	1

Am-241 µCi/L = ((C241 * SPKA * SPKV * DF * DDF * (1000mL/L)) / ((C243 * SS * (2220000dpm/mL))

µCi/mL = µCi/L / (1000mL/L)

Tracer % Rec = ((ATOT / MIN CTd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

NOTE: Reported result is a LESS THAN value using 5% of the Am-243 peak as the Am-241 peak.

Am-241 µCi/L	=	< 1.27E-02
Am-241 µCi/mL	=	< 1.27E-05
Relative counting error	=	35.6%
Am-243 Tracer Recovery	=	25.5%

Data Entry by:		Date:	31-Aug-93
Approved by:		Date:	August 31, 1993

Form 3 Rev. 1.1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#2 vr 8-29-93

2214/30 -1

G632-5282

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PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

8 8378

Serial No	Sample Point	Date	Time Issued	Priority
G 633.-5782	102 5 DAY	7-22-93	15:13	23

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	D44B3	1

Sample Size	Customer ID
? 1.0 - 1	D-0

Remarks Calculations Results

COUNT AS uCI/L $<1.27 \times 10^{-5}$ uCi/ml

58843 .100 - 1

Con HNO3 1.0 - 1

RERUN

"AEA" - 480MB

ATTACH PRINTOUT

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
	Raymond	Em Boulo		
	Hrs 8-29-93	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
8/29/93	1430	

WHC-SD-WM-DP-084 REV 0

AM-241: LA-503-156 (D-0) LIQUIDS

			SAMPLE
Serial No.	Spike (Tracer) Book Number		58843
G633-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
1758	Volume of Sample in mL	(SS)	1
Rerun No.	Dilution Factor	(DF)	1
1	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	8
	Am-243 Area Peak Height from AEA	(C243)	960
Date	Total AT Count	(ATOT)	2469
08/28/93	AT Count Time in Minutes	(MIN CT'd)	30
15 AM 8-31-93	Background in CPM	(BKG)	6

Am-241 µCi/L = ((C241 * SPKA * SPKV * DF * DDF * (1000mL/L)) / ((C243 * SS * (2220000dpm/mL))

µCi/mL = µCi/L / (1000mL/L)

Tracer % Rec = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

NOTE: Reported result is a LESS THAN value using 5% of the Am-243 peak as the Am-241 peak.

Am-241 µCi/L	=	< 1.27E-02
Am-241 µCi/mL	=	< 1.27E-05
Relative counting error	=	35.5%
Am-243 Tracer Recovery	=	26.8%

Data Entry by:	Date: 31-Aug-93
Approved by:	Date: August 31, 1993

Form 3 Rev. 1.1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#1 VR 8.29.93

2469/30 -6

G633-5782

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PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

9 1203

Serial No	Sample Point	Date	Time Issued	Priority
G 634.-5782	102 5 DAY	7-22-93	15:14	23

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	D44B3	1

Sample Size	Customer ID
? 1.0 ml	D-1

Remarks Calculations Results

COUNT AS uCI/L <1.27 x 10^-5 uCi/ml

58843 .100 - 1

Con HNO3 1.0 - 1

RERUN

"AEA" - ADMIN

ATTACH PRINTOUT

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6559	Raymond	Em Bowen		
Hrs	Hrs 8.29.93	Hrs	Hrs	Hrs
Date 8/29/93	Time Completed 1450	Lab Lead Mgr		

WHC-SD-WM-ER-351 REV 0

AM-241: LA-503-156 (D-0) LIQUIDS

			SAMPLE
Serial No.	Spike (Tracer) Book Number		58B43
G634-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
1758	Volume of Sample in mL	(SS)	1
Rerun No.	Dilution Factor	(DF)	1
1	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	7
	Am-243 Area Peak Height from AEA	(C243)	1221
Date	Total AT Count	(ATOT)	2486
08/28/93	AT Count Time in Minutes	(MIN CT'd)	30
	Background in CPM	(BKG)	6

Am-241 µCi/L = ((C241 * SPKA * SPKV * DF * DDF * (1000mL/L)) / ((C243 * SS * (2220000dpm/mL))

µCi/mL = µCi/L / (1000mL/L)

Tracer % Rec = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

NOTE: Reported result is a LESS THAN value using 5% of the Am-243 peak as the Am-241 peak.

Am-241 µCi/L	=	< 1.27E-02
Am-241 µCi/mL	=	< 1.27E-05
Relative counting error	=	37.9%
Am-243 Tracer Recovery	=	27.0%

Data Entry by:		Date:	31-Aug-93
Approved by:		Date:	August 31, 1993

Form 3 Rev. 1.1

Page 1 of 1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#3 R 8-29-93
2486 - 6
30

G634-5782

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Westinghouse Hanford Co.

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. 2.01

DATA REDUCTION REPORT

WHC-SD-WM-DP-054 REV 0

SAMPLE
G628-5582
File ID: 2a2194.CNF

Counted on: 8/30/93 @ 5:36
Detector: AEA2
Geometry number: 1
Count time: 28806. 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	1349.7	1349.7	298.405	298.405	20.000	22.145	10.000	3.110
2	1075.1	1075.1	253.468	252.044	26.000	19.653	13.000	3.155
3?	12.2	12.2	126.294	125.806	70.000	275.568	35.000	88.940
4?	3.7	3.7	107.389	107.389	4.000	4.063	2.000	2.032

PEAK RESULTS
Peak Error Limit: 15%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am241	0.573	5.480	5.489	-.009	0.10	108.41	0.9	888.5	0.400E-03
	Pu238		5.499	5.489	0.010				1160.0	0.523E-03
2	Am243	0.411	5.276	5.271	0.005	0.09	77.71	1.2	604.8	0.272E-03
	Pu240		5.144	5.271	-.127				598.7	0.270E-03
3		????		4.677			2.01	20.3		
4		????		4.591			0.10	97.0		
Totals:		0.985	<--valid peaks only-->				186.13			

DETECTOR CALIBRATION
Energy(MEV) = 4.086 + (0.0047)*Channel
Energy range (MeV): 4.086 TO 6.492
Efficiency = 0.1298 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	90763.0	100.000
Smoothed	90874.9	100.123
Composite fit	90370.3	99.567
Residuals	392.7	0.433

Analyzed by: _____
EMB

Spectrum 2a2194.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 10377.3


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3
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3.2.
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.1.......2..
..1...........2...
.  .1................2.....
   ..1.......................2.........
........1.................................2.............
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2............................ 1
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1
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Raw Data Dump for AEA Spectrum: 2a2194.CNF

1	23806.	0.	0.	1.	1.	3.	2.	5.	1.	2.
11	1.	1.	4.	3.	4.	3.	1.	3.	2.	3.
21	5.	2.	0.	5.	2.	3.	3.	2.	0.	3.
31	3.	3.	4.	5.	2.	3.	3.	4.	8.	4.
41	4.	6.	1.	2.	8.	5.	4.	2.	4.	6.
51	4.	3.	6.	10.	7.	2.	6.	7.	4.	5.
61	1.	8.	8.	4.	5.	7.	4.	7.	3.	4.
71	1.	6.	6.	5.	6.	5.	0.	7.	7.	10.
81	5.	5.	10.	3.	8.	6.	10.	7.	5.	8.
91	7.	5.	6.	10.	14.	10.	20.	15.	7.	7.
101	10.	14.	12.	6.	7.	13.	17.	13.	13.	7.
111	12.	12.	8.	16.	17.	10.	11.	15.	14.	17.
121	13.	14.	15.	13.	17.	21.	17.	17.	12.	16.
131	14.	18.	15.	14.	17.	25.	29.	24.	11.	22.
141	24.	19.	28.	25.	15.	28.	21.	30.	24.	29.
151	26.	34.	24.	30.	27.	28.	42.	33.	42.	35.
161	40.	45.	38.	29.	49.	40.	40.	48.	51.	40.
171	54.	58.	43.	58.	53.	61.	40.	53.	56.	59.
181	70.	68.	51.	90.	81.	66.	68.	75.	61.	88.
191	102.	104.	103.	97.	117.	109.	134.	128.	137.	110.
201	127.	142.	139.	139.	161.	163.	198.	195.	200.	201.
211	248.	246.	215.	249.	307.	290.	314.	310.	301.	347.
221	339.	384.	406.	434.	448.	468.	497.	495.	501.	569.
231	633.	608.	661.	711.	684.	762.	813.	838.	852.	861.
241	932.	992.	1049.	1070.	1169.	1148.	1211.	1306.	1295.	1311.
251	1374.	1316.	1337.	1329.	1351.	1329.	1205.	1123.	1134.	994.
261	941.	881.	770.	686.	651.	558.	530.	537.	459.	460.
271	484.	481.	494.	556.	510.	594.	634.	647.	634.	685.
281	746.	789.	839.	884.	898.	934.	1046.	1021.	1130.	1155.
291	1191.	1185.	1355.	1278.	1386.	1398.	1380.	1341.	1289.	1447.
301	1314.	1244.	1162.	1109.	1022.	867.	820.	687.	544.	479.
311	397.	295.	246.	184.	145.	116.	64.	65.	44.	41.
321	26.	18.	6.	5.	5.	0.	3.	0.	2.	0.
331	2.	1.	0.	0.	0.	0.	1.	3.	0.	5.
341	3.	3.	2.	3.	2.	2.	4.	3.	3.	1.
351	4.	3.	3.	4.	2.	1.	4.	1.	0.	1.
361	1.	2.	0.	3.	1.	1.	1.	0.	1.	0.
371	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	1.	0.	1.	0.	0.	1.	0.	0.	0.
421	0.	0.	0.	2.	0.	0.	0.	1.	1.	0.
431	2.	0.	1.	0.	0.	1.	0.	1.	0.	0.
441	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	1.	1.	0.	0.	3.	0.	1.	0.
471	0.	0.	1.	1.	0.	1.	0.	0.	0.	0.
481	0.	1.	1.	1.	0.	0.	1.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

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. 2.01

WHC-SD-WM-DP-054 REV 0

DATA REDUCTION REPORT

F Williams
8-30-93

SAMPLE
G629-5682
File ID: 4a4795.CNF

Counted on: 8/30/93 @ 5:37
Detector: AEA4
Geometry number: 1
Count time: 28806. 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	291.9	291.9	256.687	256.687	12.000	4.251	6.000	2.815

PEAK RESULTS
Peak Error Limit: 15%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.864	5.276	5.292	-.016	0.02	7.14	3.3	55.6	0.250E-04
Totals:		0.864	<--valid peaks only-->				7.14			

DETECTOR CALIBRATION
Energy(MEV) = 4.086 + (0.0047)*Channel
Energy range (MeV): 4.086 TO 6.492
Efficiency = 0.1298 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	3967.0	100.000
Smoothed	4141.1	104.390
Composite fit	3427.1	86.391
Residuals	539.9	13.609

Analyzed by: _____
EMB

Spectrum 4a4795.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 1416.6

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Raw Data Dump for AEA Spectrum: 4a4795.CNF

1	28806.	0.	0.	78.	22.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
21	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
[illegible]	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
[illegible]	0.	0.	0.	1.	0.	1.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
71	2.	0.	0.	1.	0.	0.	0.	1.	0.	1.
81	0.	0.	0.	1.	0.	1.	0.	0.	0.	0.
91	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	0.	2.	1.	0.	0.	0.	0.	0.	0.	0.
111	0.	0.	0.	1.	0.	0.	0.	0.	0.	1.
121	1.	0.	0.	0.	0.	0.	0.	1.	0.	0.
131	0.	1.	0.	0.	0.	1.	0.	1.	2.	2.
141	0.	3.	0.	1.	1.	0.	0.	1.	0.	2.
151	1.	0.	1.	0.	0.	0.	1.	0.	0.	0.
161	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.
171	0.	1.	1.	3.	1.	2.	0.	0.	1.	1.
181	2.	0.	1.	1.	1.	0.	1.	2.	0.	0.
191	1.	1.	1.	2.	0.	2.	2.	1.	1.	0.
201	5.	0.	2.	2.	1.	3.	5.	1.	3.	6.
211	5.	6.	2.	1.	4.	4.	6.	7.	5.	7.
221	4.	8.	6.	13.	11.	4.	5.	13.	8.	11.
231	11.	11.	12.	13.	13.	24.	18.	15.	19.	13.
241	20.	31.	30.	56.	60.	74.	72.	81.	98.	111.
251	110.	143.	207.	259.	305.	366.	338.	326.	254.	163.
261	114.	53.	22.	19.	19.	15.	15.	17.	12.	10.
271	6.	7.	7.	7.	4.	4.	0.	0.	0.	0.
281	0.	0.	3.	0.	0.	1.	0.	0.	0.	3.
291	1.	0.	0.	7.	0.	2.	1.	2.	1.	1.
301	0.	1.	0.	1.	1.	4.	1.	0.	0.	1.
[illegible]	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	1.	0.	0.	0.	0.	1.	0.	0.	0.	0.
341	1.	0.	0.	0.	1.	0.	1.	0.	0.	0.
351	0.	3.	0.	0.	0.	1.	0.	1.	1.	1.
361	1.	2.	1.	0.	3.	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	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

229
8.31.93

WHC-SD-WM-DP-051 REV 0

Westinghouse Hanford Co.

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. 2.01

WHC-SD-WM-DP-054 REV 0

DATA REDUCTION REPORT

SAMPLE
G630-5782
File ID: 5a5712.CNF

R Wilkins
8-30-93

Counted on: 8/30/93 @ 5:38
Detector: AEA5
Geometry number: 1
Count time: 28804. 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	514.6	514.6	256.418	256.418	22.000	15.332	11.000	4.384
2?	13.0	13.0	201.615	199.559	50.000	118.329	25.000	44.116
3	6.1	6.1	170.410	169.506	10.000	2.587	5.000	0.069

PEAK RESULTS
Peak Error Limit: 15%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.899	5.276	5.291	-.015	0.07	25.88	1.8	201.4	0.907E-04
2		????		5.024			1.41	31.0		
3		0.044		4.883		0.01	1.26	8.8	9.7	0.438E-05
		---					---			
Totals:		0.942	<--valid peaks only-->				27.15			

DETECTOR CALIBRATION
Energy(MEV) = 4.086 + (0.0047)*Channel
Energy range (MeV): 4.086 TO 6.492
Efficiency = 0.1298 CPM/DPM

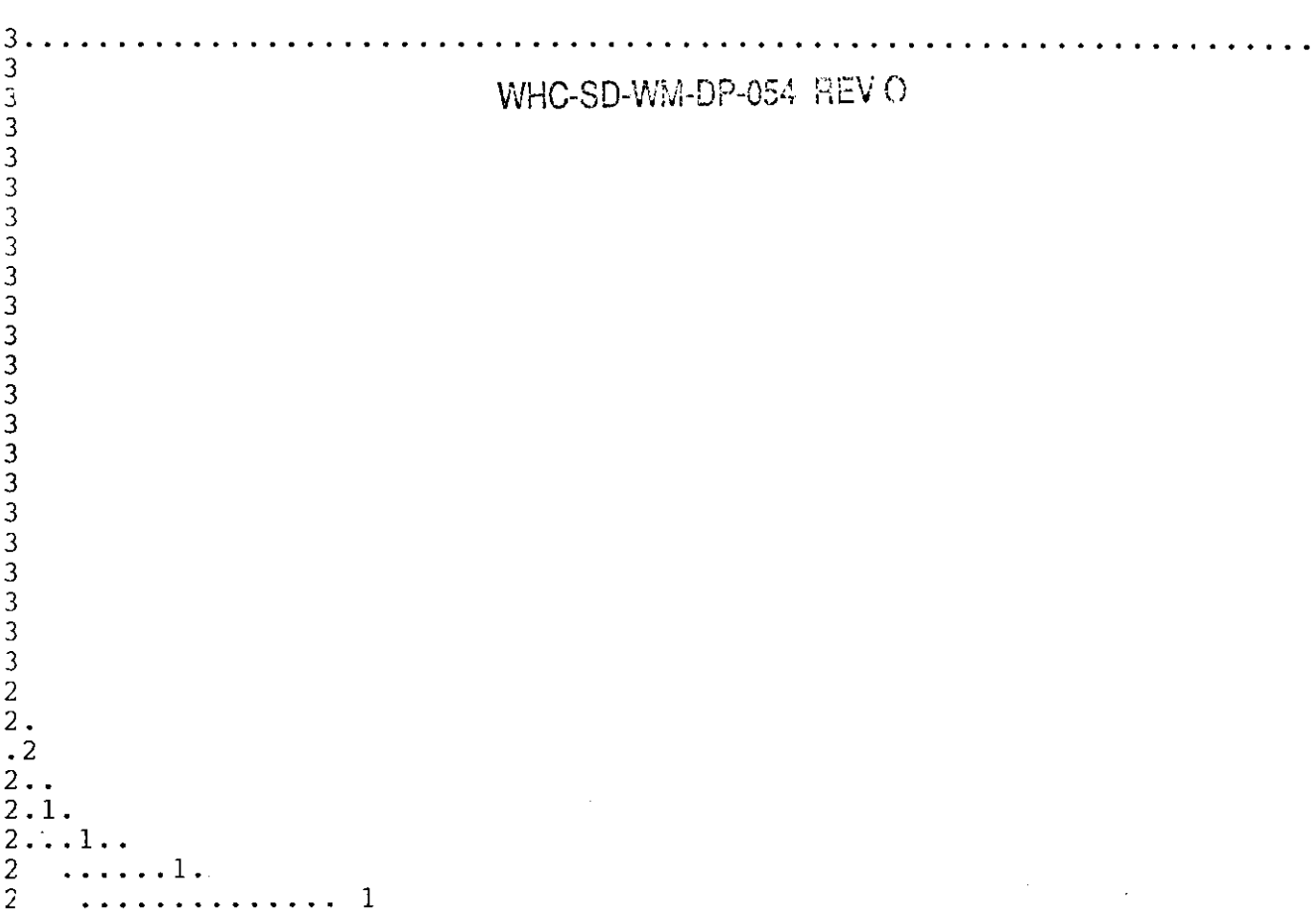
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	13829.0	100.000
Smoothed	13941.3	100.812
Composite fit	13708.1	99.126
Residuals	120.9	0.874

Analyzed by: _____
EMB

Spectrum 5a5712.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 3563.4



Raw Data Dump for AEA Spectrum: 5a5712.CNF

1	23804.	0.	0.	1.	0.	1.	1.	0.	2.	0.
11	0.	1.	2.	0.	1.	1.	1.	0.	1.	1.
21	3.	2.	3.	0.	1.	0.	2.	1.	0.	0.
31	2.	3.	1.	1.	1.	3.	2.	2.	3.	0.
41	1.	1.	2.	3.	2.	5.	1.	3.	1.	2.
51	3.	0.	1.	0.	2.	1.	1.	4.	1.	0.
61	1.	4.	2.	0.	2.	3.	0.	3.	3.	1.
71	1.	3.	0.	5.	1.	6.	1.	2.	5.	1.
81	3.	2.	3.	5.	4.	4.	4.	2.	4.	5.
91	3.	4.	3.	3.	3.	5.	3.	4.	4.	8.
101	7.	5.	4.	5.	3.	5.	3.	4.	1.	5.
111	6.	2.	7.	2.	1.	7.	3.	8.	5.	8.
121	3.	5.	5.	2.	6.	7.	5.	9.	6.	6.
131	6.	5.	6.	6.	8.	6.	2.	4.	5.	4.
141	12.	5.	5.	4.	8.	4.	10.	5.	7.	6.
151	10.	4.	11.	6.	6.	6.	7.	9.	11.	9.
161	2.	8.	7.	8.	9.	8.	10.	11.	9.	13.
171	15.	9.	9.	10.	6.	5.	13.	6.	10.	16.
181	14.	16.	16.	9.	11.	8.	15.	14.	14.	22.
191	16.	13.	18.	19.	19.	12.	21.	22.	14.	19.
201	26.	18.	23.	16.	19.	19.	19.	24.	26.	31.
211	32.	36.	26.	35.	30.	44.	40.	37.	43.	47.
221	50.	66.	57.	56.	56.	64.	61.	85.	71.	89.
231	78.	100.	81.	108.	106.	109.	111.	146.	155.	193.
241	188.	185.	219.	248.	261.	289.	295.	340.	381.	409.
251	430.	460.	511.	540.	550.	543.	527.	517.	510.	466.
261	402.	387.	323.	228.	209.	182.	141.	81.	77.	70.
271	43.	35.	49.	29.	25.	15.	18.	8.	6.	4.
281	5.	1.	5.	3.	0.	1.	2.	1.	2.	3.
291	3.	3.	4.	3.	2.	6.	4.	2.	3.	3.
301	7.	2.	2.	4.	1.	3.	3.	4.	0.	3.
311	3.	2.	0.	0.	2.	1.	1.	0.	1.	2.
321	0.	0.	1.	0.	0.	0.	1.	1.	0.	1.
331	0.	1.	0.	0.	1.	0.	1.	1.	0.	1.
341	2.	1.	2.	2.	1.	0.	3.	3.	2.	1.
351	3.	0.	1.	1.	3.	2.	1.	0.	0.	0.
361	0.	2.	0.	0.	0.	2.	0.	1.	0.	0.
371	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
421	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
441	1.	0.	0.	0.	0.	1.	0.	1.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
461	0.	0.	1.	1.	0.	1.	1.	1.	0.	0.
471	0.	1.	1.	0.	2.	0.	0.	0.	1.	0.
481	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	1.	0.								

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G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.01

WHC-SD-WM-DP-054 REV 0

DATA REDUCTION REPORT

SAMPLE
G631-5782
File ID: 6a6630.CNF

Counted on: 8/30/93 @ 6:11
Detector: AEA6
Geometry number: 1
Count time: 28802. 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	1144.8	1144.8	241.054	241.054	26.000	26.009	13.000	5.366

PEAK RESULTS
Peak Error Limit: 15%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.975	5.276	5.219	0.057	0.12	77.14	1.0	600.3	0.270E-03
	Pu240		5.144	5.219	-.075				594.3	0.268E-03
Totals:		0.975	<--valid peaks only-->				77.14			

DETECTOR CALIBRATION
Energy(MEV) = 4.086 + (0.0047)*Channel
Energy range (MeV): 4.086 TO 6.492
Efficiency = 0.1298 CPM/DPM

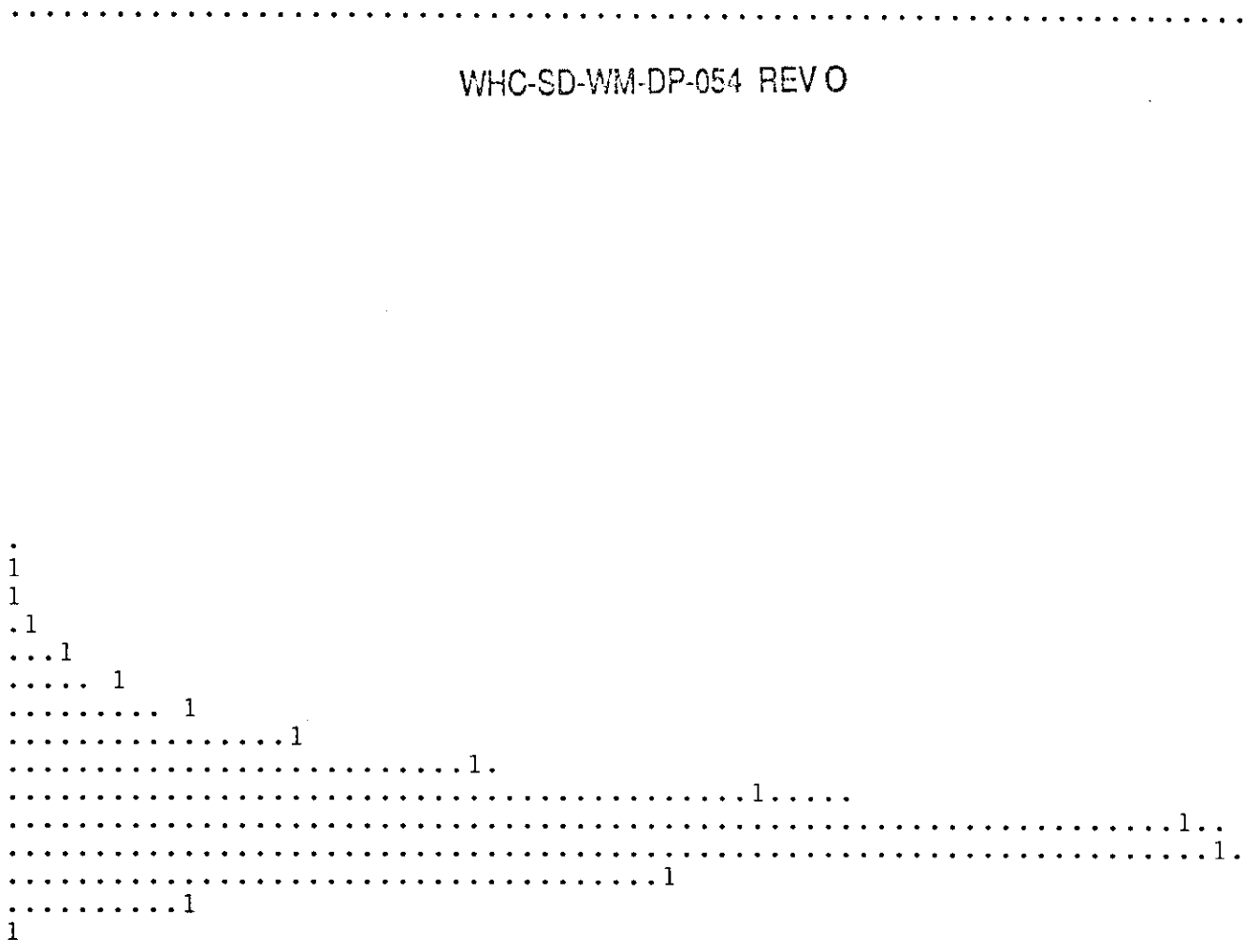
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	37993.0	100.000
Smoothed	38109.4	100.306
Composite fit	37028.6	97.462
Residuals	964.4	2.538

Analyzed by: _____
EMB

Spectrum 6a6630.CNF

Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 8409.0



Raw Data Dump for AEA Spectrum: 6a6630.CNF

1	28802.	0.	0.	0.	2.	1.	0.	2.	3.	1.
11	0.	1.	1.	1.	1.	1.	1.	1.	2.	1.
21	1.	1.	2.	0.	4.	2.	2.	1.	3.	0.
31	0.	2.	2.	4.	5.	3.	2.	1.	1.	5.
	4.	1.	2.	2.	3.	2.	1.	2.	2.	3.
51	1.	2.	2.	2.	0.	2.	3.	3.	1.	1.
61	3.	0.	3.	1.	2.	6.	2.	6.	1.	2.
71	3.	2.	0.	3.	2.	6.	1.	3.	2.	3.
81	4.	1.	4.	3.	5.	1.	1.	7.	6.	8.
91	2.	5.	6.	6.	6.	2.	4.	5.	5.	4.
101	6.	5.	4.	6.	7.	2.	4.	3.	5.	3.
111	4.	9.	6.	5.	2.	7.	5.	8.	6.	4.
121	5.	5.	12.	5.	7.	9.	7.	13.	4.	9.
131	9.	5.	5.	15.	16.	9.	14.	10.	11.	14.
141	6.	9.	12.	13.	13.	15.	16.	11.	14.	14.
151	12.	12.	11.	24.	14.	17.	19.	11.	24.	18.
161	26.	22.	29.	25.	19.	32.	25.	27.	24.	31.
171	27.	23.	25.	39.	47.	28.	33.	48.	33.	41.
181	46.	44.	46.	44.	51.	51.	58.	59.	63.	76.
191	72.	53.	78.	66.	83.	101.	97.	102.	93.	94.
201	117.	122.	122.	128.	152.	158.	173.	186.	205.	218.
211	237.	235.	256.	324.	298.	330.	348.	369.	396.	393.
221	469.	508.	541.	577.	575.	627.	709.	754.	779.	796.
231	920.	911.	982.	1009.	1027.	1076.	1131.	1163.	1160.	1164.
241	1163.	1180.	1163.	1052.	1035.	1028.	934.	798.	806.	657.
251	572.	513.	452.	354.	334.	241.	218.	157.	135.	83.
261	93.	81.	65.	36.	45.	25.	20.	14.	13.	16.
271	9.	7.	5.	3.	5.	7.	4.	8.	9.	6.
281	5.	6.	9.	5.	5.	5.	8.	2.	8.	7.
291	5.	6.	5.	3.	5.	3.	4.	1.	1.	2.
301	2.	1.	1.	1.	3.	1.	0.	0.	0.	2.
311	2.	0.	0.	0.	2.	1.	1.	1.	0.	0.
321	0.	0.	4.	1.	0.	2.	2.	2.	2.	0.
331	1.	1.	4.	2.	0.	0.	1.	1.	1.	2.
341	2.	0.	1.	4.	1.	1.	1.	1.	3.	0.
351	1.	2.	2.	0.	0.	1.	1.	0.	0.	0.
361	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.
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.	1.	0.	0.	0.	0.	0.	1.
421	0.	1.	0.	0.	0.	1.	1.	0.	0.	0.
431	2.	0.	0.	0.	1.	0.	1.	1.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	1.	1.	1.	1.	2.	2.	0.	3.
471	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	1.	1.	3.	5.	8.	1.	0.	0.	0.
511	0.	0.								

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G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.01

WHC-SD-WM-DP-054 REV O

DATA REDUCTION REPORT

SAMPLE
G632-5782
File ID: 7a7160.CNF

Counted on: 8/30/93 @ 6:12
Detector: AEA7
Geometry number: 1
Count time: 28801. 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	622.9	622.9	251.676	251.676	20.000	16.043	10.000	7.899

PEAK RESULTS
Peak Error Limit: 15%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.960	5.276	5.269	0.007	0.08	26.66	1.7	207.5	0.935E-04
	Pu240		5.144	5.269	-.125				205.4	0.925E-04
Totals:		0.960	<--valid peaks only-->				26.66			

DETECTOR CALIBRATION
Energy(MEV) = 4.086 + (0.0047)*Channel
Energy range (MeV): 4.086 TO 6.492
Efficiency = 0.1298 CPM/DPM

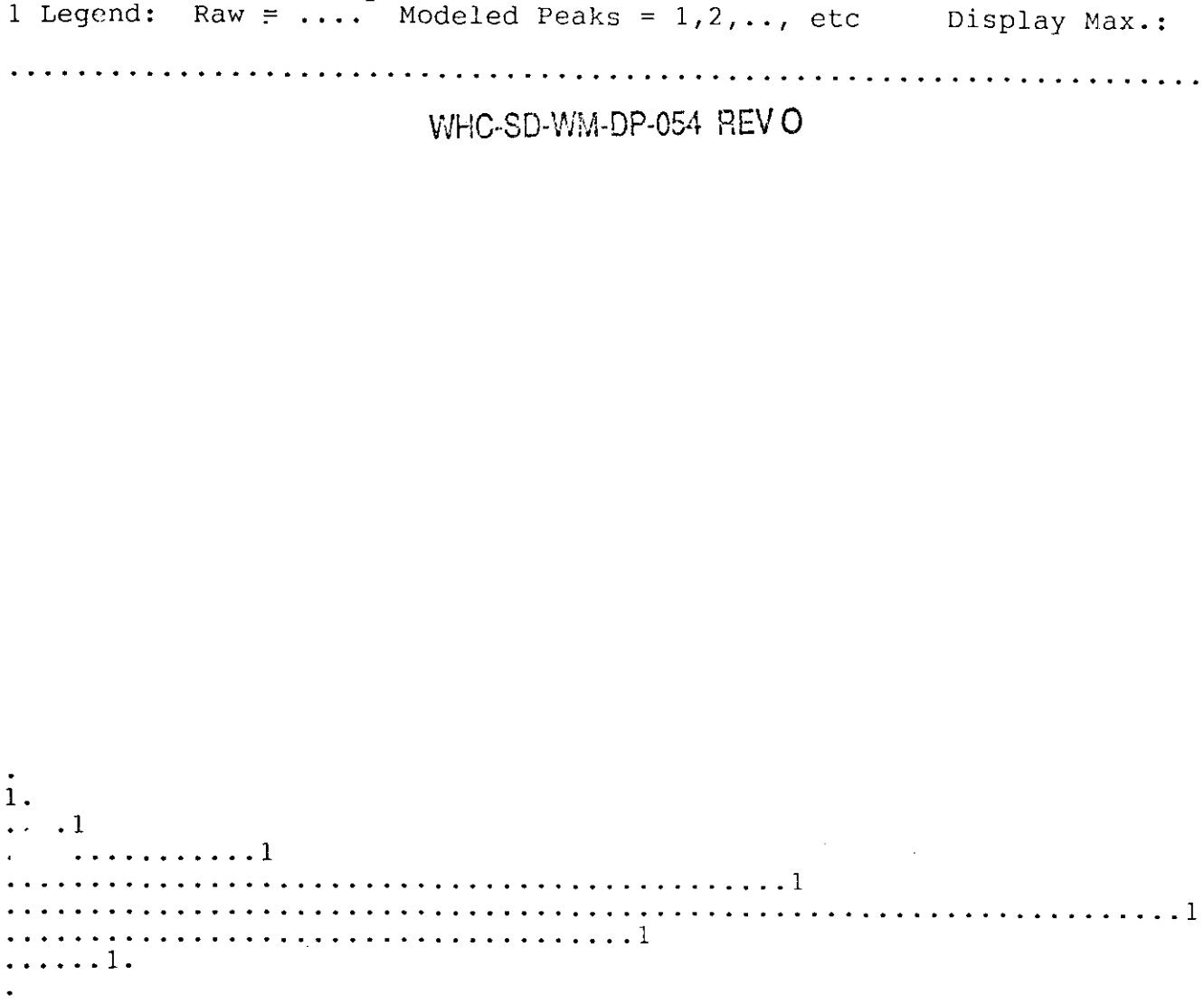
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	13330.0	100.000
Smoothed	13442.5	100.844
Composite fit	12797.2	96.003
Residuals	532.8	3.997

Analyzed by: _____
EMB

Spectrum 7a7160.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 4708.8



Raw Data Dump for AEA Spectrum: 7a7160.CNF

1	28801.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
21	1.	1.	0.	0.	0.	0.	0.	0.	1.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
61	0.	0.	0.	1.	1.	3.	1.	0.	0.	0.
71	0.	1.	1.	1.	0.	0.	1.	0.	2.	0.
81	0.	0.	0.	0.	1.	2.	0.	0.	1.	0.
91	0.	0.	1.	0.	0.	0.	0.	1.	0.	1.
101	1.	0.	0.	1.	0.	0.	0.	2.	1.	0.
111	1.	0.	1.	1.	1.	0.	0.	1.	2.	2.
121	1.	1.	0.	1.	0.	0.	1.	2.	1.	1.
131	0.	0.	4.	1.	2.	0.	2.	2.	0.	1.
141	0.	2.	1.	3.	0.	4.	2.	2.	2.	1.
151	1.	2.	0.	1.	1.	2.	1.	1.	3.	2.
161	3.	3.	3.	1.	3.	4.	2.	4.	3.	2.
171	2.	1.	1.	3.	0.	3.	1.	5.	2.	0.
181	3.	5.	1.	2.	5.	4.	8.	1.	6.	4.
191	0.	2.	1.	4.	4.	9.	4.	5.	3.	9.
201	5.	5.	7.	9.	9.	6.	9.	10.	6.	11.
211	13.	15.	8.	9.	17.	16.	22.	16.	18.	37.
221	19.	25.	35.	32.	36.	51.	36.	43.	73.	41.
231	61.	73.	84.	85.	114.	141.	133.	176.	214.	237.
241	271.	343.	370.	394.	424.	512.	529.	578.	636.	662.
251	641.	690.	607.	589.	567.	524.	466.	423.	357.	297.
261	231.	181.	142.	129.	92.	78.	63.	44.	34.	29.
271	26.	21.	23.	11.	12.	3.	7.	5.	1.	4.
281	4.	3.	4.	5.	0.	3.	3.	1.	5.	6.
291	5.	7.	1.	4.	4.	6.	5.	7.	5.	8.
301	7.	4.	6.	3.	1.	4.	1.	1.	1.	1.
311	3.	1.	0.	0.	1.	0.	0.	1.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
331	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
341	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.
351	1.	0.	0.	0.	1.	1.	0.	0.	1.	1.
361	1.	0.	1.	1.	1.	0.	0.	1.	0.	0.
371	3.	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.	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.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

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. 2.01

WHC-SD-WM-DP-054 REV O

DATA REDUCTION REPORT

SAMPLE
G633-5782
File ID: 8a8378.CNF

Tuckelloo
8-30-93

Counted on: 8/30/93 @ 6:13
Detector: AEA8
Geometry number: 1
Count time: 28805. 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	863.7	863.7	254.170	254.170	14.000	7.705	7.000	4.324
2?	13.7	13.7	200.861	200.660	60.000	305.547	30.000	93.521
3?	0.0	0.1	190.735	190.735	4.000	0.100	2.000	0.100

PEAK RESULTS
Peak Error Limit: 15%

Peak	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.406	5.276	5.281	-.0050	.04	27.22	1.7	211.8	0.954E-04
2		????		5.029			2.39	20.4		
3		????		4.982			0.00	9616.		
Totals:		0.406	<--valid peaks only-->				27.22			

DETECTOR CALIBRATION
Energy(MEV) = 4.086 + (0.0047)*Channel
Energy range (MeV): 4.086 TO 6.492
Efficiency = 0.1298 CPM/DPM

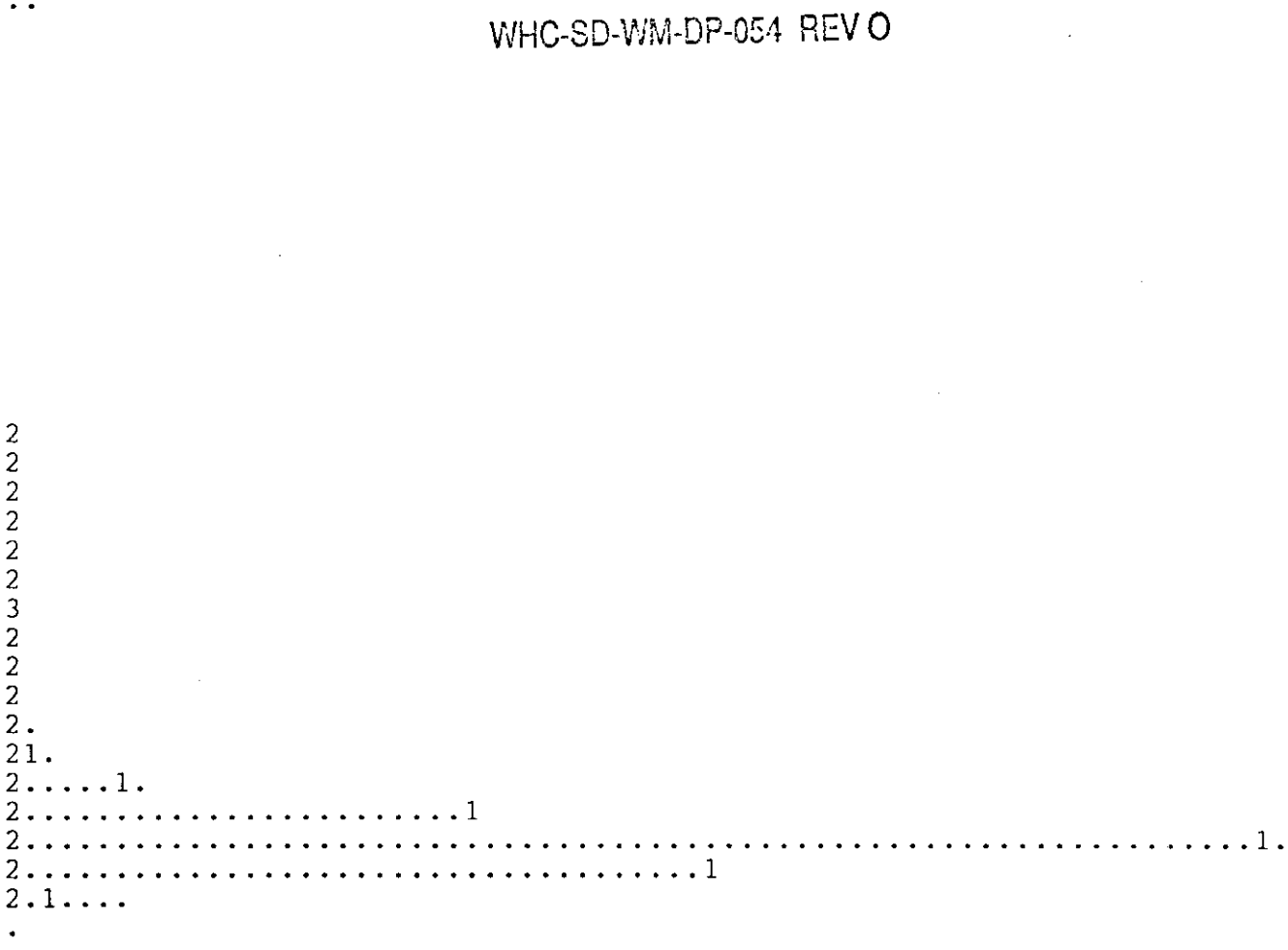
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	32181.0	100.000
Smoothed	42992.6	133.596
Composite fit	14212.5	44.164
Residuals	17968.5	55.836

Analyzed by: _____
EMB

Spectrum 8a8378.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 6095.6



Raw Data Dump for AEA Spectrum: 8a8378.CNF

1	28805.	0.	0.	13655.	3766.	2.	0.	3.	2.	1.
11	3.	2.	5.	0.	0.	0.	0.	2.	1.	1.
21	1.	0.	1.	0.	1.	3.	3.	2.	3.	1.
31	3.	2.	1.	0.	0.	2.	1.	1.	1.	0.
	0.	1.	0.	2.	3.	0.	0.	1.	0.	2.
51	3.	1.	2.	4.	4.	2.	0.	3.	3.	1.
61	0.	1.	2.	4.	0.	2.	3.	1.	1.	0.
71	5.	2.	0.	1.	3.	0.	1.	2.	0.	2.
81	1.	2.	1.	1.	0.	2.	2.	1.	0.	1.
91	0.	3.	1.	5.	3.	2.	2.	3.	2.	0.
101	7.	2.	5.	2.	3.	4.	2.	4.	4.	1.
111	3.	5.	3.	3.	3.	1.	4.	3.	3.	2.
121	1.	3.	3.	3.	4.	5.	3.	4.	1.	4.
131	3.	2.	3.	3.	4.	8.	3.	4.	7.	3.
141	6.	3.	10.	8.	5.	6.	4.	8.	3.	3.
151	5.	3.	8.	2.	4.	6.	2.	1.	4.	9.
161	6.	3.	8.	10.	7.	8.	3.	5.	3.	5.
171	6.	6.	6.	7.	3.	11.	5.	4.	5.	12.
181	12.	6.	5.	9.	7.	7.	11.	8.	11.	13.
191	12.	12.	7.	13.	7.	13.	18.	17.	7.	16.
201	12.	18.	8.	15.	9.	12.	11.	13.	20.	13.
211	13.	18.	25.	30.	20.	20.	25.	25.	30.	22.
221	26.	30.	20.	39.	29.	38.	44.	32.	48.	44.
231	61.	60.	66.	70.	77.	77.	106.	107.	130.	146.
241	144.	157.	213.	280.	297.	369.	426.	484.	609.	681.
251	851.	942.	934.	931.	960.	867.	753.	591.	410.	318.
261	225.	139.	135.	113.	102.	86.	63.	55.	51.	31.
271	37.	19.	16.	11.	4.	4.	2.	1.	0.	1.
281	3.	2.	4.	3.	1.	1.	4.	2.	0.	7.
291	1.	5.	5.	4.	6.	7.	3.	3.	8.	5.
301	8.	4.	2.	2.	7.	1.	4.	1.	2.	1.
3	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	1.	1.	0.	0.	2.	0.	0.
351	0.	1.	0.	0.	0.	0.	1.	0.	1.	1.
361	0.	2.	1.	2.	0.	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.	0.	1.	0.
431	1.	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.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	1.	2.	0.	0.	1.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WHC-SD-WM-DP-054 REV 0

Westinghouse Hanford Co.

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. 2.01

WHC-SD-WM-DP-054 REV 0

DATA REDUCTION REPORT

SAMPLE
G634-5782
File ID: 9a1203.CNF

Peek Clear
8-30-93

Counted on: 8/30/93 @ 6:13
Detector: AEA9
Geometry number: 1
Count time: 28800. 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	997.2	997.2	256.894	256.894	10.000	3.898	5.000	1.700

PEAK RESULTS
Peak Error Limit: 15%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.925	5.276	5.293	-.017	0.02	28.78	1.7	224.0	0.101E-03
Totals:		0.925	<--valid peaks only-->				28.78			

DETECTOR CALIBRATION
Energy(MEV) = 4.086 + (0.0047)*Channel
Energy range (MeV): 4.086 TO 6.492
Efficiency = 0.1298 CPM/DPM

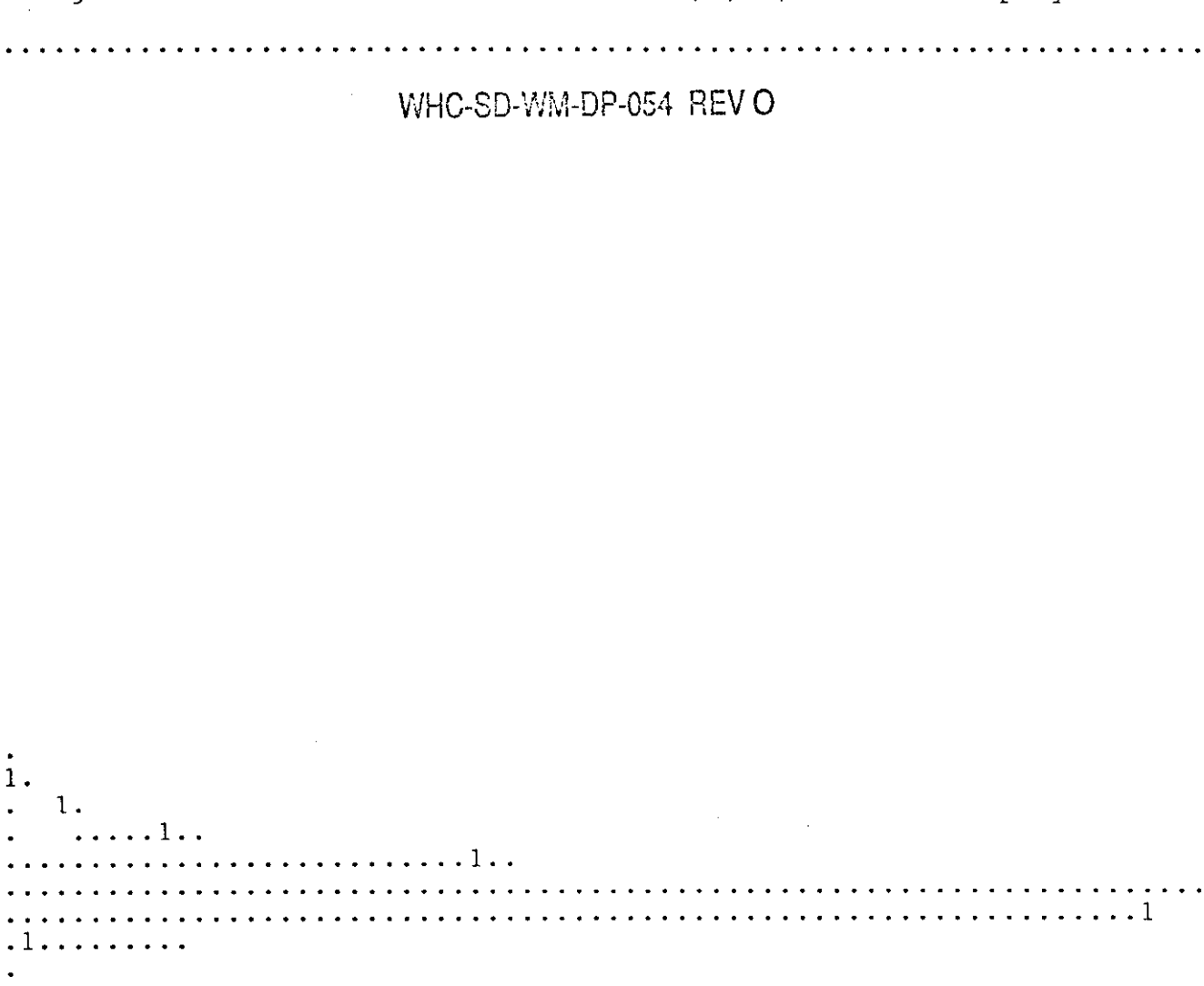
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	14929.0	100.000
Smoothed	15041.5	100.754
Composite fit	13815.6	92.542
Residuals	1113.4	7.458

Analyzed by: _____
EMB

Spectrum 9a1203.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5051.2



Raw Data Dump for AEA Spectrum: 9a1203.CNF

1	28800.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	1.	1.	1.	1.	1.	0.	1.	0.	0.
21	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	1.	0.	0.	1.	0.	1.	0.
51	1.	0.	1.	0.	0.	1.	0.	0.	1.	0.
61	2.	0.	0.	1.	0.	0.	0.	0.	0.	0.
71	1.	0.	0.	1.	0.	0.	0.	0.	2.	0.
81	0.	0.	0.	2.	3.	1.	0.	1.	0.	0.
91	0.	0.	1.	1.	2.	0.	1.	0.	0.	0.
101	0.	0.	1.	2.	1.	1.	0.	0.	0.	1.
111	1.	1.	0.	0.	0.	0.	0.	1.	0.	2.
121	0.	2.	2.	0.	1.	0.	0.	1.	0.	1.
131	0.	3.	0.	1.	1.	3.	0.	1.	0.	0.
141	0.	0.	2.	2.	2.	1.	0.	0.	2.	1.
151	3.	1.	1.	3.	1.	1.	3.	1.	1.	1.
161	3.	1.	1.	1.	2.	3.	0.	2.	2.	3.
171	3.	2.	1.	1.	3.	3.	3.	5.	0.	3.
181	0.	4.	1.	5.	7.	3.	3.	3.	1.	2.
191	3.	5.	6.	2.	2.	5.	11.	8.	4.	8.
201	9.	7.	4.	10.	3.	6.	10.	5.	8.	7.
211	9.	10.	14.	13.	9.	13.	15.	23.	18.	23.
221	16.	28.	30.	32.	36.	38.	50.	50.	44.	68.
231	74.	69.	90.	106.	109.	101.	117.	150.	154.	159.
241	195.	204.	251.	292.	281.	346.	418.	415.	462.	471.
251	465.	578.	641.	788.	913.	1114.	1221.	1130.	913.	534.
261	285.	186.	114.	90.	96.	65.	70.	65.	51.	77.
271	40.	30.	24.	21.	10.	3.	2.	0.	2.	0.
281	0.	0.	1.	2.	2.	0.	0.	0.	1.	1.
291	0.	1.	4.	2.	1.	1.	3.	1.	3.	7.
301	4.	3.	7.	4.	3.	3.	3.	2.	1.	1.
311	1.	2.	0.	2.	2.	0.	1.	1.	0.	0.
321	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
331	0.	0.	1.	1.	2.	1.	1.	2.	1.	1.
341	0.	1.	0.	1.	0.	1.	0.	1.	1.	1.
351	2.	1.	3.	1.	2.	2.	1.	1.	3.	1.
361	1.	0.	1.	2.	1.	1.	2.	0.	1.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	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.	1.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	1.	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.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

102 - 5 DAY (RSD)

WESTINGHOUSE HANFORD COMPANY

WHC-SD-WM-DP-054 REV 0

222-S LABORATORY

ANALYTICAL BATCH 1666

Lab Segment Serial No. G630 - G634	Customer ID: C-5, C-6, C-7, D-0, D-1
Analysis: Am 241	Sample Prep: UNDIGESTED

Instrument: WB537237	Procedure/ Rev: LA-503-156 D0
Technologist: Patrick J. McCown PATRICK J. McCOWN	Date: 8/19/93
Starting Time: 0200	Temperature NA
Ending Time: 0700	Chemist: S. CATLOW

Comments:

	Description	Lab ID		Description	Lab ID
1	LMCS	G628.-5582	11		
2	REAGENT BLANK	G629.-5682	12	OUT FOR RERUN	
3	SAMPLE	G630.-5782	13		
4	SAMPLE	G631.-5782	14		
5	SAMPLE	G632.-5782	15		
6	SAMPLE	G633.-5782	16		
7	SAMPLE	G634.-5782	17		
8			18		
9			19		
10			20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	63B43 / .100mL			
SPIKE	58B43 / .100mL			

500

A-6000-881 (03/92)

ANALYTICAL BATCH SUMMARY SHEET

METHOD: LA-503-156

DATE START: August 19, 1993

PREPARED BY: L. L. Fritts

DATE COMPLETE: August 24, 1993

	UNITS:	uCi/mL							
SPL NAME	SPL ID	ANALYTE	RESULT #1	RESULT #2	AVERAGE	RPD%	%REC	DET LIM	% CT ER
STD 63B43	G628	Am-241	1.82E+1				67.9		24.3
BLANK	G629	Am-241	1.02E-4				0.8		83.7
C-5	G630	Am-241	4.63E-5				4.1	1.27E-5	54.4
C-6	G631	Am-241	5.66E-5				0.3	1.27E-5	78.2
C-7	G632	Am-241	1.70E-5				2.3	1.27E-5	73.0
D-0	G633	Am-241	<1.27E-5				41.1	1.27E-5	31.8
D-1	G634	Am-241	1.78E-5				5.7	1.27E-5	59.7

NARRATIVE: [ ] NO SPECIAL PROBLEMS/METHOD VARIATIONS IN THIS BATCH

LIST SPECIFIC PROBLEMS/VARIATIONS FOR THIS BATCH:

The results for the standard are in uCi/L.

Rerun requested: The blank is not less than the detection limit and tracer recoveries are very low.

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

3.2 2176

Serial No	Sample Point	Date	Time Issued	Priority
G 628.-5582	102 5 DAY	7-22-93	15: 8	23

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	% RECOVERY	D44B3	0

Sample Size: ? . 100 ml − 10 ml = 100 ml (1 mL) 8/19/93 + . 100 ml 3/L

Customer ID: STD

Remarks Calculations Results: Acid Adj. = 1 ml 8 M HNO_3

EDP R201 AR001

STD# 63843 RESULT 1.F E+1

STD VAL 2.6807 E+1 %REC 67.89 %

SPIKE # 58B43

OUT FOR RERUN

Patrick J. McCann

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
	Hrs 8 19 93	Hrs	Hrs	Hrs

Date	Time Completed	Lab Dept Mgr
8/19/93	07:00	

8/24

54 6800 061 (R/10 831)

WHC-SD-WM-DP-064 REV 0

AM-241: LA-503-156 (D-0) LIQUIDS

			STANDARD
Serial No.	Spike (Tracer) Book Number		58B43
G628-5582	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
1666	Volume of Sample in mL	(SS)	1
Rerun No.	Dilution Factor	(DF)	101
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	29
	Am-243 Area Peak Height from AEA	(C243)	41
Date	Total AT Count	(ATOT)	809
08/19/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	1

Am-241 µCi/L = ((C241 * SPKA * SPKV * DF * DDF * (1000mL/L)) / ((C243 * SS * (2220000dpm/mL))

µCi/mL = µCi/L / (1000mL/L)

Tracer % Rec = ((ATOT / MIN CTd − BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

Am-241 µCi/L	=	1.82E+01
Am-241 µCi/mL	=	1.82E-02
Relative counting error	=	24.3%
Am-243 Tracer Recovery	=	5.4%

Data Entry by: Date: 24-Aug-93

Approved by: Date: August 24, 1993

Form 3 Rev. 1.1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#2 R 8/19/93

809/30 -1

G628-5582

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PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

3.3 3572

Serial No	Sample Point	Date	Time Issued	Priority
G 629.-5682	102 5 DAY	7-22-93	15:10	23

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	D44B3	0

Sample Size	Customer ID
? 1ml + .100 ml spike	BLK

Remarks, Calculations, Results

REAGENT BLANK

COUNT AS uCI/L

SPIKE # 58B43

1.02×10^{-4} uCi/ml

OUT FOR RERUN

Patrick J. McCann

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
	Raymond	D.H. Martin	Eric Barcen	
Hrs	Hrs 8/1993	Hrs	Hrs	Hrs

Date	Time Completed	Lab Dept Mgr
8/19/93	07:00	

54 680-2561 (R 10 93)

WHC-SD-WM-DP-061 REV 0

AM-241: LA-503-156 (D-0) LIQUIDS

			BLANK
Serial No.	Spike (Tracer) Book Number		58B43
G629-5682	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
1666	Volume of Sample in mL	(SS)	1
Rerun No.	Dilution Factor	(DF)	1
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	2
	Am-243 Area Peak Height from AEA	(C243)	5
Date	Total AT Count	(ATOT)	247
08/19/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	5

Am-241 µCi/L = ((C241 * SPKA * SPKV * DF * DDF * (1000mL/L)) / ((C243 * SS * (2220000dpm/mL))

µCi/mL = µCi/L / (1000mL/L)

Tracer % Rec = ((ATOT / MIN CTd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

Am-241 µCi/L	=	1.02E-01
Am-241 µCi/mL	=	1.02E-04
Relative counting error	=	83.7%
Am-243 Tracer Recovery	=	0.8%

Data Entry by:	Date: 24-Aug-93
Approved by:	Date: August 24, 1993

Form 3 Rev. 1.1

Page 1 of 1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#1 8-1993
247/30 - 5

G629-5682

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PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

3.4 4777

Serial No	Sample Point	Date	Time Issued	Priority
G 630.-5782	102 5 DAY	7-22-93	15:12	23

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	D44B3	0

Sample Size	Customer ID
? 1-ml + .100-ml spike	C-5

Remarks Calculations Results

COUNT AS uCI/L 4.63×10^{-5} uCi/ml

SPIKE # 58B43

OUT FOR RERUN

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Patricia L. McCown	D.H. Wilson	Em Barela		
	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
8/19/93	07:00	

54 6800 (3) 1 R 10 83)

WHC-SD-WM-DP-001 REV 0

AM-241: LA-503-156 (D-0) LIQUIDS

			SAMPLE
Serial No.	Spike (Tracer) Book Number		58B43
G630-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
1666	Volume of Sample in mL	(SS)	1
Rerun No.	Dilution Factor	(DF)	1
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	4
	Am-243 Area Peak Height from AEA	(C243)	22
Date	Total AT Count	(ATOT)	559
08/19/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	5

Am-241 µCi/L = ((C241 * SPKA * SPKV * DF * DDF * (1000mL/L)) / ((C243 * SS * (2220000dpm/mL))

µCi/mL = µCi/L / (1000mL/L)

Tracer % Rec = ((ATOT / MIN CTd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

Am-241 µCi/L	=	4.63E-02
Am-241 µCi/mL	=	4.63E-05
Relative counting error	=	54.4%
Am-243 Tracer Recovery	=	4.1%

Data Entry by:	Date: 24-Aug-93
Approved by:	Date: August 24, 1993

Form 3 Rev. 1.1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#1 8-19-93 DM

$\frac{559}{30}$ -5 G630-5782

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PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

41 5694

Serial No	Sample Point	Date	Time Issued	Priority
G 631.-5782	102 5 DAY	7-22-93	15:12	23

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	D44B3	0

Sample Size	Customer ID
? ml + .100ml spike	C-6

Remarks Calculations Results

COUNT AS uCI/L 5.66×10^{-5} uCi/ml

SPIKE # 58B43

OUT FOR RERUN

Patricia J. McCown

Analyst 1	Analyst 2	Analyst 3	Analyst 4	Analyst 5
	DA Williams	Eric Bracht		
	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Up Date
8/19/93	07:00	

WHC-SD-WM-DP-051 REV 0

AM-241: LA-503-156 (D-0) LIQUIDS

			SAMPLE
Serial No.	Spike (Tracer) Book Number		58B43
G631-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
1666	Volume of Sample in mL	(SS)	1
Rerun No.	Dilution Factor	(DF)	1
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	2
	Am-243 Area Peak Height from AEA	(C243)	9
Date	Total AT Count	(ATOT)	57
08/19/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	1

Am-241 µCi/L = ((C241 * SPKA * SPKV * DF * DDF * (1000mL/L)) / ((C243 * SS * (2220000dpm/mL))

µCi/mL = µCi/L / (1000mL/L)

Tracer % Rec = ((ATOT / MIN CTd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

Am-241 µCi/L	=	5.66E-02
Am-241 µCi/mL	=	5.66E-05
Relative counting error	=	78.2%
Am-243 Tracer Recovery	=	0.3%

Data Entry by:	Date: 24-Aug-93
Approved by:	Date: August 24, 1993

Form 3 Rev. 1.1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#2 8-19-93 [illegible]

57/30 - 1 G631-5282

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PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

4.2 6612

Serial No	Sample Point	Date	Time Issued	Priority
G 632.-5782	102 5 DAY	7-22-93	15:13	23

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	D44B3	0

Sample Size	Customer ID
? 1-ml + .100-ml spike	C-7

Remarks, Calculations, Results

COUNT AS uCI/L 1.70×10^{-5} µCi/ml

SPIKE # 58B43

OUT FOR RERUN

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

Date	Time Completed	Lab Unit Mgr
8/19/93	04:00	

WHC-SD-WM-DP-054 REV 0

AM-241: LA-503-156 (D-0) LIQUIDS

			SAMPLE
Serial No.	Spike (Tracer) Book Number		58B43
G632-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
1666	Volume of Sample in mL	(SS)	1
Rerun No.	Dilution Factor	(DF)	1
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	2
	Am-243 Area Peak Height from AEA	(C243)	30
Date	Total AT Count	(ATOT)	360
08/19/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	5

Am-241 µCi/L = ((C241 * SPKA * SPKV * DF * DDF * (1000mL/L)) / ((C243 * SS * (2220000dpm/mL))

µCi/mL = µCi/L / (1000mL/L)

Tracer % Rec = ((ATOT / MIN CTd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

Am-241 µCi/L	=	1.70E-02
Am-241 µCi/mL	=	1.70E-05
Relative counting error	=	73.0%
Am-243 Tracer Recovery	=	2.3%

Data Entry by:		Date:	24-Aug-93
Approved by:		Date:	August 24, 1993

Form 3 Rev. 1.1

Page 1 of 1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#1 8-19-93 Dm

$\frac{360}{30}$ -5

G632-5282

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PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

43 7142

Serial No	Sample Point	Date	Time Issued	Priority
G 633.-5782	102 5 DAY	7-22-93	15:13	23

Determination	Method-Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	D44B3	0

Sample Size	Customer ID
? 1ml + 100ml spike	D-0

Remarks, Calculations, Results

COUNT AS uCI/L $<1.27 \times 10^{-5}$ uCi/ml

SPIKE # 58B43

OUT FOR RERUN

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

Date	Time Completed	Lab Unit Mgr
8/19/93	07:00	

WHC-SD-WM-DP-351, REV 0

AM-241: LA-503-156 (D-0) LIQUIDS

			SAMPLE
Serial No.	Spike (Tracer) Book Number		58B43
G633-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
1666	Volume of Sample in mL	(SS)	1
Rerun No.	Dilution Factor	(DF)	1
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	10
	Am-243 Area Peak Height from AEA	(C243)	1056
Date	Total AT Count	(ATOT)	3549
08/19/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	1

Am-241 µCi/L = ((C241 * SPKA * SPKV * DF * DDF * (1000mL/L)) / ((C243 * SS * (2220000dpm/mL))

µCi/mL = µCi/L / (1000mL/L)

Tracer % Rec = ((ATOT / MIN CTd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

NOTE: Reported result is a LESS THAN value using 5% of the Am-243 peak as the Am-241 peak.

Am-241 µCi/L	=	< 1.27E-02
Am-241 µCi/mL	=	< 1.27E-05
Relative counting error	=	31.8%
Am-243 Tracer Recovery	=	41.1%

Data Entry by:		Date:	24-Aug-93
Approved by:		Date:	August 24, 1993

Form 3 Rev. 1.1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#2 8-19-93 DM

3549/30 -1

G633-5782

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PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

4.4 8359

Serial No	Sample Point	Date	Time Issued	Priority
G 634.-5782	102 5 DAY	7-22-93	15:14	23

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	D44B3	0

Sample Size	Customer ID
? 1-ml + .100-ml spike	D-1

Remarks Calculations Results

COUNT AS uCI/L 1.78×10^{-5} µCi/ml

SPIKE # 58B43

OUT FOR RERUN

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

Date	Time Completed	Lab Supervisor
8/19/93	07:00	

WHC-SD-WM-DP-054 REV 0

AM-241: LA-503-156 (D-0) LIQUIDS

			SAMPLE
Serial No.	Spike (Tracer) Book Number		58B43
G634-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
1666	Volume of Sample in mL	(SS)	1
Rerun No.	Dilution Factor	(DF)	1
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	3
	Am-243 Area Peak Height from AEA	(C243)	43
Date	Total AT Count	(ATOT)	666
08/19/93	AT Count Time in Minutes	(MIN CT'd)	30
	Background in CPM	(BKG)	5

Am-241 µCi/L = ((C241 * SPKA * SPKV * DF * DDF * (1000mL/L)) / ((C243 * SS * (2220000dpm/mL))

µCi/mL = µCi/L / (1000mL/L)

Tracer % Rec = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

Am-241 µCi/L	=	1.78E-02
Am-241 µCi/mL	=	1.78E-05
Relative counting error	=	59.7%
Am-243 Tracer Recovery	=	5.7%

Data Entry by:		Date:	24-Aug-93
Approved by:		Date:	August 24, 1993

Form 3 Rev. 1.1 Page 1 of 1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#1 8-19-93 DJ

666/30 -5

G634-5782

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Jm Davies
9-21-93

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 WHC-SD-WM-DP-054 REV 0

SAMPLE
G-628-5582
File ID: SD2176.SPC

Counted on: 8/21/93 @ 8: 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	43.7	40.5	301.764	301.764	68.000	65.305	34.000	35.236
2	109.1	54.6	261.437	261.437	20.000	61.346	10.000	35.236
3	193.1	188.6	229.742	229.742	24.000	19.155	12.000	2.648
4	5.1	2.9	138.952	138.952	20.000	213.589	10.000	2.789

PEAK RESULTS

Γ .	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1	Am241	0.1398	5.480	5.476	0.004	0.30	1.57	11.24	0.506E-05
	Pu238		5.499	5.476	0.023				0.661E-05
2	Am243	0.1827	5.234	5.290	-0.056	0.28	2.05	125.56	0.566E-04
3	Pu239	0.6404	5.143	5.145	-0.002	0.09	7.18	48.41	0.218E-04
	Pu240		5.144	5.145	-0.001				0.218E-04
4	Np237	0.0372	4.640	4.727	-0.087	0.98	0.42	46.87	0.211E-04
	Np237		4.781	4.727	0.054				0.146E-05

DETECTOR CALIBRATION

Energy(MEV) = 4.088 + (0.0046)*Channel
Energy range (MeV): 4.088 TO 6.443
Efficiency = 0.1483 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	5480.0	100.000
Smoothed	5479.1	99.983
Composite fit	5606.0	102.299
Residuals	-126.9	-2.316

Analyzed by: _____
DM

```
        SPECTRUM SD2176.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC                765.5
4
4
4
4
4
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4
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4
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4.
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43.
4.3
4..3.
4....3.
4......3..
4.........3
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2.............................................................3....
....2.....................................3......
.........2...3..........
3.............2...
..................2.
1..............2
...1......2....
....2..1.......
.2........1..
............1.
..........  1
....    1
   1
1
```

Raw Data Dump for AEA Spectrum: SP:SD2176.SPC

1	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.
11	2.	1.	1.	1.	1.	0.	1.	1.	0.	0.
21	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.
31	0.	1.	0.	0.	1.	0.	0.	0.	0.	1.
41	1.	1.	1.	2.	1.	0.	0.	1.	2.	1.
51	2.	3.	0.	4.	1.	1.	2.	0.	1.	1.
61	1.	1.	3.	3.	2.	1.	2.	2.	1.	0.
71	3.	2.	0.	0.	2.	1.	1.	3.	2.	4.
81	1.	1.	0.	2.	2.	2.	3.	1.	1.	0.
91	1.	0.	1.	2.	2.	2.	0.	5.	1.	3.
101	2.	4.	4.	2.	3.	1.	7.	1.	2.	1.
111	0.	4.	4.	4.	2.	3.	6.	0.	3.	4.
121	4.	3.	3.	2.	1.	2.	2.	5.	3.	2.
131	3.	5.	11.	5.	4.	6.	7.	7.	4.	2.
141	12.	5.	4.	2.	2.	4.	3.	7.	1.	4.
151	12.	14.	6.	4.	7.	10.	3.	10.	7.	15.
161	8.	7.	13.	9.	13.	6.	14.	7.	19.	14.
171	21.	13.	23.	12.	14.	16.	13.	16.	15.	20.
181	22.	12.	14.	16.	17.	29.	22.	18.	20.	36.
191	29.	33.	15.	24.	30.	26.	36.	27.	46.	32.
201	44.	37.	44.	41.	37.	41.	39.	36.	40.	50.
21	56.	44.	53.	50.	63.	48.	64.	74.	64.	88.
22	78.	86.	89.	103.	84.	93.	108.	121.	101.	120.
231	91.	83.	92.	74.	85.	65.	49.	48.	43.	36.
241	43.	31.	26.	13.	19.	24.	20.	25.	29.	19.
251	33.	41.	21.	24.	26.	25.	19.	35.	25.	33.
261	29.	28.	40.	20.	25.	21.	26.	19.	27.	21.
271	21.	17.	25.	24.	15.	24.	15.	18.	25.	29.
281	22.	18.	18.	16.	19.	29.	13.	24.	19.	21.
291	28.	13.	17.	25.	18.	14.	13.	27.	26.	17.
301	21.	19.	26.	29.	15.	17.	15.	10.	9.	12.
311	4.	6.	7.	7.	4.	3.	4.	1.	4.	2.
321	0.	0.	1.	0.	1.	0.	0.	0.	2.	1.
331	0.	0.	4.	0.	0.	0.	0.	0.	0.	3.
341	1.	1.	0.	0.	1.	0.	0.	0.	3.	0.
351	2.	0.	1.	0.	4.	0.	1.	2.	0.	0.
361	1.	0.	0.	0.	0.	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.	1.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	1.	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.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	3.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	1.	0.	2.	0.
47	1.	1.	1.	1.	0.	0.	1.	0.	0.	0.
48	1.	1.	3.	0.	1.	1.	0.	0.	0.	2.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Em Baseler
8-21-93

GENERAL ALPHA ENERGY ANALYSIS

Rev. 1.10

DATA REDUCTION REPORT WHC-SD-WM-DP-054 REV 0

SAMPLE
G-629-5682
File ID: SD3572.SPC

Counted on: 8/21/93 @ 8: 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	5.2	3.6	286.240	286.240	52.000	58.466	26.000	24.352
2	4.3	3.2	270.395	270.395	16.000	5.232	8.000	0.245

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1	Th228	0.3395	5.430	5.394	0.036	0.28	0.13	0.93	0.419E-06
2		0.6605		5.318		0.03	0.26	1.28	0.578E-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	272.0	100.000
Smoothed	271.9	99.962
Composite fit	195.6	71.930
Residuals	76.2	28.019

Analyzed by: _____
DM

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          SPECTRUM SD3572.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC                18.9
2
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Raw Data Dump for AEA Spectrum: SP:SD3572.SPC

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
21	1.	0.	0.	1.	0.	0.	0.	0.	0.	1.
31	0.	0.	1.	0.	0.	1.	1.	0.	0.	0.
41	0.	1.	0.	0.	1.	0.	0.	0.	1.	0.
51	0.	0.	0.	1.	0.	1.	0.	0.	2.	0.
61	1.	0.	0.	0.	0.	0.	2.	1.	1.	0.
71	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
81	1.	0.	0.	0.	0.	0.	1.	0.	0.	0.
91	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.
101	0.	2.	0.	0.	2.	0.	0.	0.	1.	2.
111	0.	1.	0.	0.	0.	0.	1.	0.	0.	0.
121	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
131	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
141	0.	0.	0.	0.	0.	2.	1.	1.	1.	0.
151	0.	1.	1.	2.	1.	0.	0.	1.	0.	1.
161	2.	0.	1.	0.	0.	0.	0.	0.	0.	0.
171	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
181	0.	0.	1.	0.	1.	0.	0.	1.	0.	1.
191	2.	0.	0.	0.	0.	0.	0.	0.	1.	1.
201	2.	2.	0.	1.	1.	1.	1.	0.	0.	0.
211	0.	0.	0.	0.	2.	2.	0.	0.	1.	0.
221	0.	0.	0.	2.	0.	3.	3.	1.	1.	1.
231	2.	0.	0.	2.	1.	1.	2.	0.	1.	2.
241	0.	0.	0.	0.	2.	0.	0.	2.	3.	2.
251	4.	1.	0.	3.	2.	3.	2.	5.	2.	2.
261	1.	0.	1.	1.	1.	1.	6.	4.	1.	5.
271	1.	3.	3.	0.	1.	3.	1.	3.	3.	0.
281	2.	3.	1.	2.	1.	1.	3.	3.	2.	3.
291	0.	0.	1.	1.	0.	1.	1.	2.	0.	0.
301	2.	0.	2.	2.	0.	2.	0.	0.	0.	0.
311	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
321	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	2.	4.	0.	3.	2.	2.	0.	1.	1.	1.
351	1.	1.	3.	2.	2.	1.	1.	1.	0.	0.
361	1.	1.	2.	1.	1.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	1.	0.	0.	0.	0.	1.	0.	0.
421	0.	0.	1.	0.	0.	0.	0.	1.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
471	0.	1.	0.	1.	3.	0.	0.	2.	1.	0.
481	0.	1.	0.	3.	2.	2.	2.	0.	0.	1.
491	0.	1.	0.	1.	0.	1.	0.	1.	0.	0.
511	0.	0.								

Eric Barker
8-31-93

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

WHC-SD-WM-DP-054 REV O

DATA REDUCTION REPORT

SAMPLE
G-630-5782
File ID: SD4777.SPC

Counted on: 8/21/93 @ 8: 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	38.5	40.0	241.813	241.813	40.000	58.608	20.000	3.535
2	1.6	1.4	72.964	72.964	12.000	2.898	6.000	0.667

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
	Am243	0.9914	5.234	5.208	0.026	0.27	3.17	227.50	0.102E-03
	Pu240		5.144	5.208	-0.064				0.113E-04
2	U 235	0.0086	4.396	4.431	-0.035	0.01	0.03	0.38	0.171E-06

DETECTOR CALIBRATION

Energy(MEV) = 4.096 + (0.0046)*Channel
Energy range (MeV): 4.096 TO 6.451
Efficiency = 0.1266 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	1670.0	100.000
Smoothed	1669.9	99.994
Composite fit	1597.8	95.678
Residuals	72.1	4.316

Analyzed by: _____
DM

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          SPECTRUM SD4777.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC                147.8
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Raw Data Dump for AEA Spectrum: SP:SD4777.SPC

1	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
11	3.	1.	1.	0.	1.	0.	0.	0.	0.	0.
21	4.	1.	2.	0.	1.	0.	1.	0.	2.	1.
31	2.	2.	1.	1.	0.	0.	0.	2.	1.	1.
41	0.	2.	0.	0.	1.	2.	1.	1.	1.	2.
51	2.	1.	1.	0.	2.	1.	1.	0.	1.	3.
61	2.	1.	2.	0.	2.	0.	2.	3.	4.	1.
71	2.	0.	1.	4.	4.	2.	0.	0.	2.	0.
81	2.	0.	2.	1.	1.	1.	2.	2.	1.	1.
91	5.	2.	1.	8.	6.	1.	1.	3.	1.	3.
101	2.	5.	3.	3.	1.	2.	2.	0.	2.	6.
111	3.	1.	3.	1.	2.	1.	4.	5.	3.	1.
121	4.	3.	4.	4.	2.	1.	4.	2.	2.	4.
131	1.	5.	3.	5.	6.	2.	5.	4.	2.	5.
141	6.	2.	6.	6.	5.	2.	3.	3.	4.	3.
151	6.	5.	5.	4.	7.	2.	9.	3.	2.	2.
161	1.	7.	5.	7.	5.	4.	4.	3.	5.	8.
171	11.	7.	6.	9.	8.	9.	3.	5.	5.	12.
181	5.	5.	8.	10.	10.	9.	12.	9.	16.	7.
191	6.	13.	9.	13.	10.	14.	12.	6.	8.	14.
201	11.	11.	15.	5.	12.	8.	14.	9.	18.	16.
21	18.	11.	5.	12.	17.	15.	15.	15.	20.	14.
22	11.	18.	13.	33.	11.	19.	12.	18.	20.	16.
231	16.	17.	17.	18.	25.	15.	12.	21.	18.	24.
241	22.	17.	20.	21.	14.	17.	18.	15.	17.	22.
251	18.	10.	17.	15.	13.	11.	10.	9.	7.	5.
261	5.	8.	1.	5.	2.	2.	5.	1.	1.	3.
271	4.	0.	0.	0.	0.	0.	0.	2.	0.	0.
281	2.	0.	0.	0.	2.	2.	2.	0.	0.	3.
291	1.	0.	1.	1.	0.	0.	1.	4.	1.	0.
301	2.	1.	0.	0.	0.	0.	0.	1.	0.	0.
311	0.	0.	0.	1.	0.	1.	0.	0.	0.	0.
321	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	1.	0.	1.	0.	0.	2.
341	0.	2.	1.	0.	1.	3.	2.	0.	1.	0.
351	2.	1.	1.	1.	1.	1.	0.	3.	0.	1.
361	0.	0.	1.	0.	1.	0.	0.	0.	1.	0.
371	0.	0.	0.	0.	0.	0.	0.	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.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
431	0.	1.	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.	0.	0.	0.	1.	0.	0.	0.	0.	0.
47	0.	0.	0.	1.	0.	0.	1.	1.	0.	1.
48	1.	0.	1.	0.	0.	0.	0.	1.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Em Barker
8-21-93

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

WHC-SD-WM-DP-054 REV 0

DATA REDUCTION REPORT

SAMPLE
G-631-5782
File ID: SD5694.SPC

Counted on: 8/21/93 @ 8: 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	10.1	8.2	259.395	259.395	24.000	45.987	12.000	6.786

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1	Am243	1.0000	5.234	5.277	-0.043	0.21	0.36	13.00	0.585E-05

DETECTOR CALIBRATION

Energy(MEV) = 4.084 + (0.0046)*Channel
Energy range (MeV): 4.084 TO 6.439
Efficiency = 0.2547 CPM/DPM

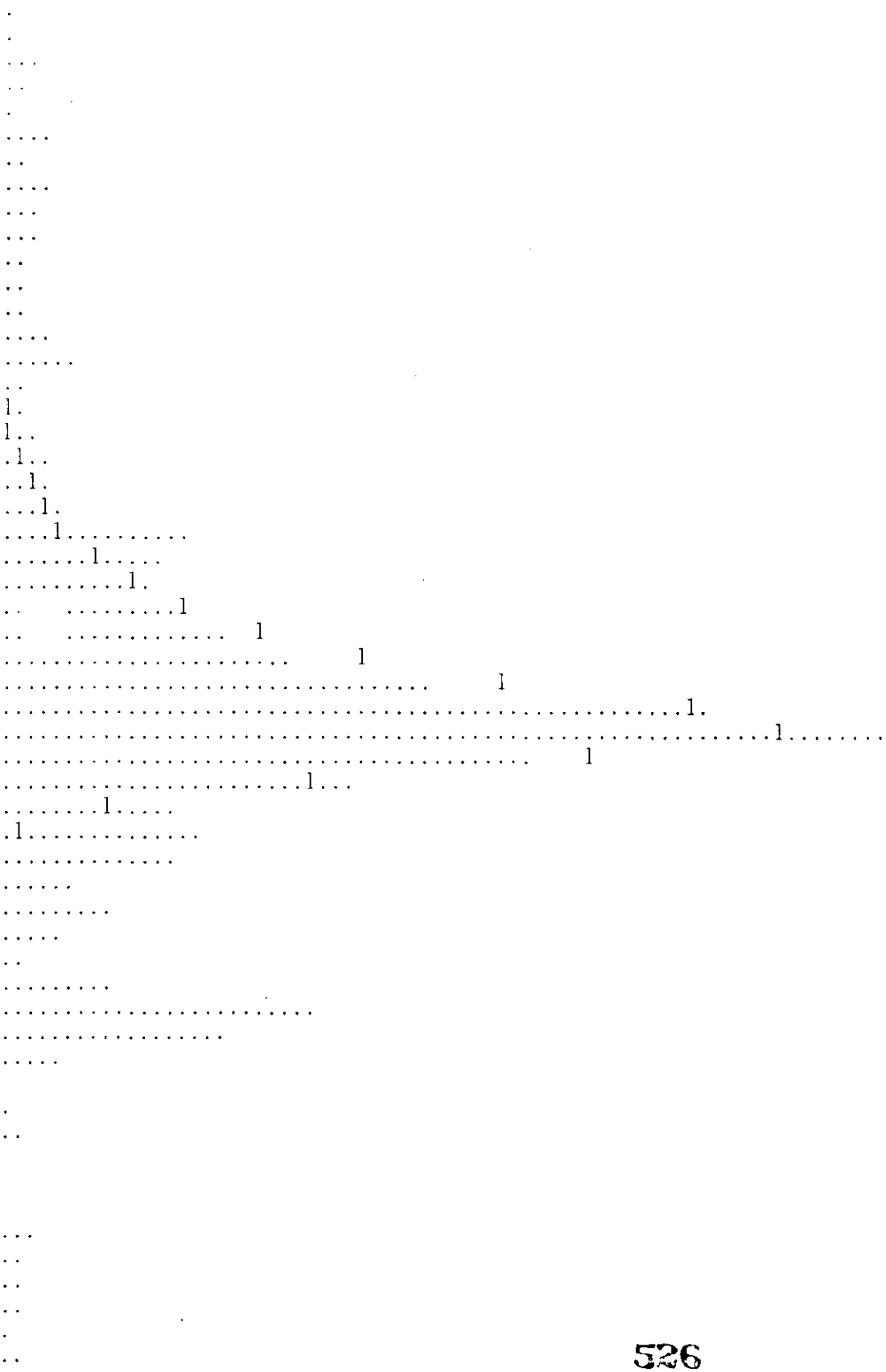
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	302.0	100.000
Smoothed	302.0	99.997
Composite fit	182.1	60.291
Residuals	119.9	39.705

Analyzed by: _____
DM

SPECTRUM SD5694.SPC

1 LEGEND: RAW = ... MODELED PEAKS = 1,2,.., ETC 36.4



Raw Data Dump for AEA Spectrum: SP:SD5694.SPC

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.
41	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
51	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	2.	0.	0.	1.	0.	0.
71	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
81	1.	0.	1.	0.	0.	0.	0.	1.	0.	0.
91	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.
101	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
111	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.
121	0.	0.	0.	0.	1.	0.	0.	0.	1.	0.
131	0.	1.	0.	1.	0.	0.	0.	1.	1.	1.
141	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
151	0.	0.	1.	0.	0.	0.	0.	0.	1.	0.
161	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.
171	0.	1.	0.	1.	0.	0.	1.	0.	0.	0.
181	1.	0.	0.	1.	0.	0.	1.	0.	0.	1.
191	0.	0.	2.	0.	2.	1.	0.	2.	3.	1.
201	2.	1.	0.	1.	1.	0.	0.	1.	0.	1.
211	1.	1.	1.	1.	0.	3.	0.	2.	0.	1.
221	1.	0.	1.	2.	0.	1.	1.	2.	0.	2.
231	2.	3.	2.	0.	1.	0.	2.	3.	2.	1.
241	3.	1.	3.	5.	1.	2.	4.	1.	1.	4.
251	3.	9.	3.	3.	5.	5.	4.	6.	5.	6.
261	8.	3.	2.	1.	5.	3.	2.	3.	1.	1.
271	3.	3.	1.	0.	3.	2.	1.	3.	2.	1.
281	0.	1.	1.	0.	1.	0.	0.	1.	3.	1.
291	2.	1.	1.	0.	1.	0.	2.	1.	0.	2.
301	2.	1.	0.	0.	0.	0.	0.	0.	2.	0.
311	0.	0.	1.	0.	1.	2.	1.	0.	0.	0.
321	1.	0.	1.	0.	0.	0.	1.	0.	0.	0.
331	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
341	1.	0.	3.	2.	1.	2.	2.	2.	2.	3.
351	1.	1.	3.	2.	1.	1.	0.	1.	0.	1.
361	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	1.	1.	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.	1.	0.	0.	0.	0.
421	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.
431	1.	0.	0.	0.	0.	0.	1.	0.	0.	0.
441	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
461	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.
471	0.	0.	0.	0.	1.	0.	2.	4.	0.	2.
481	1.	1.	2.	0.	0.	0.	1.	0.	1.	1.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Em Barr-Cc
8-21-93

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

WHC-SD-WM-DP-054 REV 0

DATA REDUCTION REPORT

SAMPLE
G-632-5782
File ID: SD6612.SPC

Counted on: 8/21/93 @ 8: 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	44.5	42.6	255.216	255.216	32.000	37.093	16.000	12.246

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1	Am243	1.0000	5.234	5.265	-0.031	0.17	1.33	62.27	0.281E-04

DETECTOR CALIBRATION
Energy(MEV) = 4.091 + (0.0046)*Channel
Energy range (MeV): 4.091 TO 6.446
Efficiency = 0.1938 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	796.0	100.000
Smoothed	795.9	99.989
Composite fit	663.8	83.387
Residuals	132.1	16.598

Analyzed by: _____
DM

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        SPECTRUM SD6612.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC                168.8

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Raw Data Dump for AEA Spectrum: SP:SD6612.SPC

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
21	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
41	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
61	0.	1.	0.	0.	1.	1.	0.	0.	0.	0.
71	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.
111	1.	1.	0.	0.	0.	0.	0.	0.	0.	1.
121	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
131	0.	0.	0.	2.	0.	0.	0.	1.	0.	1.
141	0.	1.	0.	0.	0.	0.	0.	0.	0.	3.
151	0.	0.	0.	0.	0.	0.	3.	0.	0.	0.
161	2.	0.	0.	0.	0.	0.	1.	0.	0.	1.
171	0.	0.	0.	0.	0.	0.	2.	1.	0.	0.
181	0.	0.	0.	0.	0.	1.	0.	2.	1.	0.
191	0.	0.	0.	0.	1.	1.	3.	0.	2.	0.
201	1.	1.	0.	0.	0.	1.	2.	2.	2.	0.
21	0.	1.	1.	0.	3.	2.	3.	1.	2.	2.
22	2.	2.	3.	1.	4.	4.	0.	7.	3.	3.
231	4.	2.	4.	10.	8.	7.	10.	6.	8.	16.
241	11.	10.	12.	16.	19.	13.	23.	15.	17.	24.
251	22.	30.	24.	23.	23.	24.	18.	24.	23.	10.
261	15.	19.	18.	12.	9.	7.	11.	11.	6.	13.
271	3.	6.	7.	3.	3.	3.	2.	2.	1.	3.
281	0.	0.	0.	2.	0.	3.	4.	1.	3.	2.
291	1.	2.	1.	0.	2.	0.	0.	1.	0.	1.
301	0.	0.	2.	0.	0.	0.	0.	2.	1.	0.
311	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
321	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.
331	0.	1.	2.	0.	1.	0.	1.	0.	1.	1.
341	0.	2.	1.	1.	1.	0.	1.	1.	0.	0.
351	1.	0.	0.	1.	2.	1.	0.	0.	0.	1.
361	1.	0.	0.	0.	0.	2.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	1.	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.	1.	1.	1.	0.
431	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
461	0.	0.	0.	0.	0.	1.	1.	1.	0.	2.
47	1.	0.	2.	1.	0.	0.	0.	1.	1.	1.
48	2.	0.	0.	1.	0.	0.	1.	0.	0.	1.
491	0.	0.	1.	0.	0.	1.	0.	1.	0.	0.
511	0.	0.								

Eric Barnes
9-21-93

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 WHC-SD-WM-DP-054 REV 0

SAMPLE
G-633-5782
File ID: SD7142.SPC

Counted on: 8/21/93 @ 8: 0
Detector/Geometry number: 7/ 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	10.7	10.9	363.664	363.664	24.000	17.102	12.000	5.820
2	30.8	20.1	304.733	304.733	12.000	7.441	6.000	5.820
3	1848.5	1852.3	258.667	258.667	24.000	15.920	12.000	4.734

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1	Pu236	0.0056	5.756	5.752	0.004	0.08	0.25	1.30	0.588E-06
2	Pu238	0.0062	5.499	5.481	0.018	0.03	0.28	1.94	0.874E-06
	Am241		5.480	5.481	-0.001				0.670E-06
3	Am243	0.9882	5.234	5.269	-0.035	0.07	44.56	2040.96	0.919E-03

DETECTOR CALIBRATION

Energy(MEV) = 4.079 + (0.0046)*Channel
Energy range (MeV): 4.079 TO 6.434
Efficiency = 0.1985 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	22709.0	100.000
Smoothed	22709.0	100.000
Composite fit	22547.8	99.290
Residuals	161.2	0.710

Analyzed by: _____
DM

SPECTRUM SD7142.SPC
1 LEGEND: RAW = ... MODELED PEAKS = 1,2,.., ETC 6794.6


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3
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2
2


1
1
1
1
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Raw Data Dump for AEA Spectrum: SP:SD7142.SPC

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	0.	1.	1.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	1.	0.	0.	1.	0.	0.	0.
51	0.	1.	0.	0.	1.	0.	0.	2.	0.	0.
61	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
71	0.	0.	1.	0.	1.	0.	1.	2.	0.	0.
81	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
91	1.	1.	0.	0.	0.	0.	0.	0.	1.	0.
101	0.	0.	0.	1.	0.	0.	0.	3.	0.	2.
111	1.	0.	0.	1.	0.	2.	1.	2.	0.	3.
121	0.	1.	0.	1.	3.	0.	3.	1.	0.	0.
131	0.	0.	0.	0.	3.	0.	0.	0.	0.	0.
141	1.	1.	4.	0.	1.	2.	1.	0.	3.	2.
151	0.	0.	2.	0.	1.	1.	0.	3.	0.	0.
161	1.	2.	0.	0.	0.	2.	2.	1.	5.	0.
171	2.	2.	1.	0.	1.	1.	1.	0.	3.	2.
181	3.	3.	0.	3.	7.	3.	4.	6.	0.	2.
191	5.	2.	3.	5.	5.	10.	7.	10.	5.	4.
201	10.	8.	7.	14.	12.	13.	20.	21.	15.	20.
211	17.	26.	28.	28.	28.	34.	34.	36.	56.	57.
221	58.	63.	69.	85.	73.	87.	98.	104.	100.	135.
231	139.	139.	170.	179.	192.	208.	245.	249.	253.	268.
241	294.	336.	361.	427.	421.	512.	538.	560.	591.	693.
251	718.	796.	868.	904.	962.	1002.	1056.	1035.	1013.	963.
261	846.	776.	660.	535.	423.	337.	265.	209.	167.	124.
271	100.	90.	62.	39.	43.	30.	29.	20.	21.	12.
281	10.	4.	4.	4.	1.	4.	3.	2.	3.	0.
291	2.	3.	1.	5.	4.	9.	3.	7.	10.	4.
301	5.	10.	4.	8.	7.	9.	4.	9.	3.	5.
311	1.	3.	2.	2.	2.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.
331	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.
341	1.	1.	1.	1.	2.	0.	3.	2.	0.	6.
351	4.	4.	2.	6.	2.	3.	5.	2.	9.	6.
361	3.	8.	6.	6.	6.	2.	5.	4.	6.	1.
371	5.	3.	1.	0.	0.	0.	0.	0.	1.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	1.	0.	0.	0.	0.	0.	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.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	1.	0.	0.	1.	0.	2.	1.
491	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Eric Durrer
9-21-93

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

WHC-SD-WM-DP-054 REV 0

DATA REDUCTION REPORT

SAMPLE
G-634-5782
File ID: SD8359.SPC

Counted on: 8/21/93 @ 8: 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	83.4	87.3	230.529	230.529	76.000	173.772	38.000	17.474
2	3.0	2.5	138.072	138.072	16.000	1.517	8.000	0.279

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
	Pu239	0.9915	5.143	5.142	0.001	0.82	6.63	37.21	0.168E-04
	Pu240		5.144	5.142	0.002				0.168E-04
2		0.0085		4.708		0.01	0.06	0.32	0.143E-06

DETECTOR CALIBRATION

Energy(MEV) = 4.059 + (0.0047)*Channel
Energy range (MeV): 4.059 TO 6.465
Efficiency = 0.1782 CPM/DPM

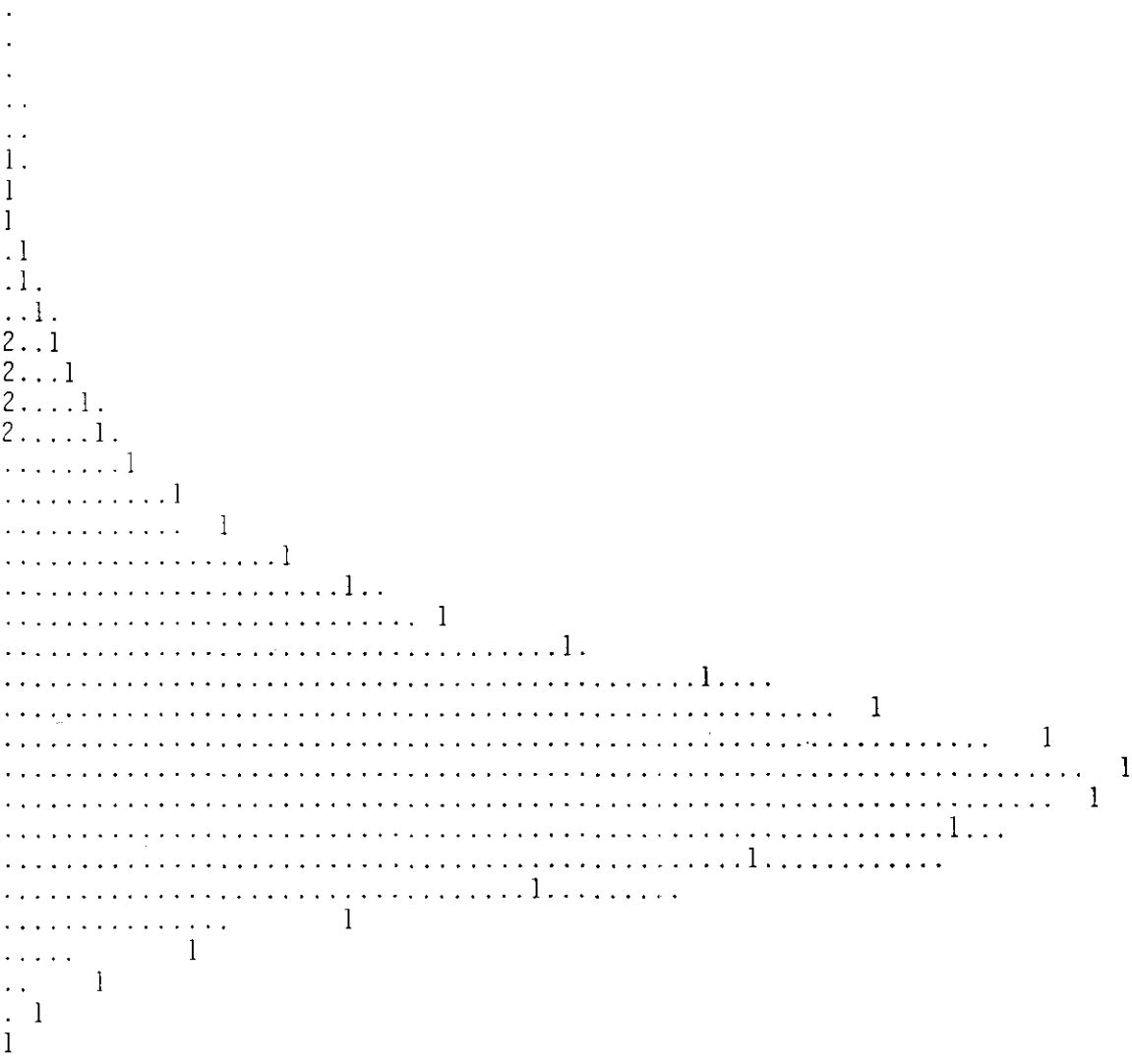
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	3333.0	100.000
Smoothed	3333.0	100.000
Composite fit	3343.4	100.312
Residuals	-10.4	-0.312

Analyzed by: _____
DM

SPECTRUM SD8359.SPC

1 LEGEND: RAW = ... MODELED PEAKS = 1,2,.., ETC 331.1



Raw Data Dump for AEA Spectrum: SP:SD8359.SPC

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	1.	0.	0.	1.	0.	0.	0.
21	0.	2.	1.	1.	2.	0.	1.	1.	1.	1.
31	0.	0.	2.	0.	1.	1.	1.	0.	0.	3.
41	0.	1.	2.	0.	0.	0.	0.	0.	0.	1.
51	2.	4.	3.	1.	1.	2.	4.	1.	3.	1.
61	2.	1.	0.	3.	0.	1.	2.	2.	2.	2.
71	0.	0.	0.	0.	3.	1.	0.	1.	2.	1.
81	1.	2.	2.	1.	1.	1.	0.	1.	0.	2.
91	2.	0.	2.	1.	3.	0.	1.	3.	4.	3.
101	3.	3.	1.	3.	3.	3.	2.	1.	3.	2.
111	2.	4.	3.	4.	1.	3.	1.	3.	1.	4.
121	3.	6.	3.	4.	0.	7.	3.	3.	5.	1.
131	4.	6.	12.	2.	3.	8.	9.	5.	3.	8.
141	4.	4.	6.	1.	6.	5.	6.	4.	3.	5.
151	4.	8.	4.	6.	9.	11.	7.	8.	9.	7.
161	6.	5.	5.	6.	10.	7.	8.	11.	7.	17.
171	16.	13.	8.	14.	10.	10.	14.	21.	21.	21.
181	13.	16.	11.	15.	14.	11.	13.	16.	18.	20.
191	20.	22.	18.	26.	21.	26.	25.	28.	21.	22.
201	33.	30.	41.	34.	31.	30.	32.	22.	42.	24.
21	31.	29.	38.	32.	35.	34.	46.	33.	31.	46.
2[illegible]	38.	45.	36.	42.	52.	36.	41.	37.	55.	38.
231	41.	33.	44.	49.	35.	44.	35.	43.	43.	31.
241	40.	37.	43.	41.	33.	36.	39.	38.	43.	29.
251	35.	37.	36.	38.	37.	31.	31.	24.	42.	26.
261	21.	17.	15.	8.	9.	4.	4.	6.	7.	3.
271	2.	8.	2.	0.	6.	3.	2.	1.	2.	1.
281	1.	1.	2.	1.	0.	2.	2.	2.	0.	0.
291	1.	2.	0.	1.	2.	3.	0.	1.	0.	2.
301	1.	0.	0.	0.	2.	0.	0.	0.	0.	1.
311	1.	0.	0.	0.	0.	0.	1.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	1.	1.	0.	1.	0.	0.	0.	1.	0.	0.
351	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
361	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	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.	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.	0.	0.	0.	0.	0.	0.	0.	0.	0.
47[illegible]	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
4[illegible]	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

WHC-SD-WM-DP-054 REV 0

ANALYTICAL BATCH

Batch 1376

102-SDA4

Lab Segment Serial No. G-637 G-638 G639 G-640 -G641 G642	Customer ID: D-2, D-3, D-4, D-5 D-6, D-7
Analysis: AM 241	Sample Prep: DIRECT

Instrument: WB67237	Procedure/ Rev: LA-503-156 D-0
Technologist: KR MONTEITH	Date: 8-15-93
Starting Time: 15:00	Temperature 24°C
Ending Time: 22:45	Chemist: S. A. CATLOW

Comments:

	Description	Lab ID		Description	Lab ID
1	STANDARD	G636-5582	11		
2	BLANK	G636-5682	12		
3	SAMPLE	G637-5782	13		
4	SAMPLE	G638-5782	14		
5	SAMPLE	G639-5782	15		
6	SAMPLE	G640-5782	16		
7	SAMPLE	G641-5782	17		
8	SAMPLE	G642-5782	18		
9			19		
10			20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	63B43 .100mL			
SPIKE	58B43 .050mL			

A-6000-881 (03/92)

WHC-SD-WM-DP-054 REV O

ANALYTICAL BATCH SUMMARY SHEET

METHOD: LA-503-156

DATE START: August 15, 1993

PREPARED BY: L. L. Fritts LL Fritts

DATE COMPLETE: August 19, 1993

	UNITS:	uCi/mL							
SPL NAME	SPL ID	ANALYTE	RESULT #1	RESULT #2	AVERAGE	RPD%	%REC	DET LIM	% CT ER
STD 63B43	G635	Am-241	2.38E+1				88.9		4.6
BLANK	G636	Am-241	<6.37E-6				61.1		26.1
D-2	G637	Am-241	<6.37E-6				19.7	6.37E-6	30.8
D-3	G638	Am-241	<6.37E-6				60.4	6.37E-6	30.6
D-4	G639	Am-241	<6.37E-6				45.6	6.37E-6	27.1
D-5	G640	Am-241	<6.37E-6				62.6	6.37E-6	45.1
D-6	G641	Am-241	7.64E-6				8.2	6.37E-6	42.0
D-7	G642	Am-241	<6.37E-6				51.3	6.37E-6	23.3

NARRATIVE: [X] NO SPECIAL PROBLEMS/METHOD VARIATIONS IN THIS BATCH

LIST SPECIFIC PROBLEMS/VARIATIONS FOR THIS BATCH:

The results for the standard are in uCi/L.

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

6 6601

Serial No	Sample Point	Date	Time Issued	Priority
G 635.-5582	102 5 DAY	7-22-93	15:16	23

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	% RECOVERY	D44B3	0

Sample Size	Customer ID
? .100mL -10mL - 1mL .050mL SPIKE 58843	STD

Remarks, Calculations, Results

EDP R201 AR001

STD# 63 B43 RESULT 23.82

STD VAL 26.807 %REC 88.86%

$\frac{1335(.05)(101)(2547E-3)(1000)}{721} = 23.82\%$

Analyst - Hrs	Analyst - Hrs	Analyst - 3 Hrs	Analyst - 4 Hrs	Analyst - 5 Hrs
	8-16-93 0300	8.18.93		

Date	Time Completed	Lab Up Date	
8.15-93	22:45		

54 5405 061 A 10 931

WHC-SD-WM-DP-051 REV 0

AM-241: LA-503-156 (D-0) LIQUIDS

			STANDARD
Serial No.	Spike (Tracer) Book Number		58843
G635-5582	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.05
1376	Volume of Sample in mL	(SS)	1
Rerun No.	Dilution Factor	(DF)	101
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	1335
1	Am-243 Area Peak Height from AEA	(C243)	721
Date	Total AT Count	(ATOT)	8914
08/15/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	6

Am-241 µCi/L = ((C241 * SPKA * SPKV * DF * DDF * (1000mL/L)) / ((C243 * SS * (2220000dpm/mL))

µCi/mL = µCi/L / (1000mL/L)

Tracer % Rec = ((ATOT / MIN CTd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

Am-241 µCi/L	=	2.38E+01
Am-241 µCi/mL	=	2.38E-02
Relative counting error	=	4.6%
Am-243 Tracer Recovery	=	72.2%

Data Entry by:		Date:	19-Aug-93
Approved by:		Date:	August 19, 1993

Form 3 Rev. 1.1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#1 8-16-93 AJ

8914-6
30

G635-5582

BEST AVAILABLE COPY

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

#7 7127

Serial No	Sample Point	Date	Time Issued	Priority
G 636.-5682	102 5 DAY	7-22-93	15:18	23

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	D44B3	0

Sample Size	Customer ID
? /ML .050 SPIKE 58843	BLK

Remarks Calculation Results

REAGENT BLANK $<6.37 \times 10^{-6}$ µCi/ml

COUNT AS uCI/L

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
	Hrs 8-16-93 0300	Hrs 8 18 93	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
8-15-93	22:45	

WHC-SD-WM-TP-054 REV 0

AM-241: LA-503-156 (D-0) LIQUIDS

Serial No.			BLANK
G636-5682	Spike (Tracer) Book Number		58843
Batch ID	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
1376	Spike (Tracer) Volume in mL	(SPKV)	0.05
Rerun No.	Volume of Sample in mL	(SS)	1
0	Dilution Factor	(DF)	1
Analyst	Digest Dilution Factor	(DDF)	1
	Am-241 Area Peak Height from AEA	(C241)	15
	Am-243 Area Peak Height from AEA	(C243)	777
Date	Total AT Count	(ATOT)	2703
08/15/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	2

Am-241 µCi/L = ((C241 * SPKA * SPKV * DF * DDF * (1000mL/L)) / ((C243 * SS * (2220000dpm/mL))

µCi/mL = µCi/L / (1000mL/L)

Tracer % Rec = ((ATOT / MIN CTd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

NOTE: Reported result is a LESS THAN value using 5% of the Am-243 peak as the Am-241 peak.

Am-241 µCi/L	=	< 6.37E-03
Am-241 µCi/mL	=	< 6.37E-06
Relative counting error	=	26.1%
Am-243 Tracer Recovery	=	61.1%

Data Entry by:		Date:	19-Aug-93
Approved by:		Date:	August 19, 1993

Form 3 Rev. 1.1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#2 8-16-93

2703/30 - 2

G836-5682

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PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

#8 8348

Serial No	Sample Point	Date	Time Issued	Priority
G 637.-5782	102 5 DAY	7-22-93	15:20	23

Determination	Method-Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	D44B3	0

Sample Size	Customer ID
? /ML .050 ml Spike 58843	D-2

Remarks Calculations Results

COUNT AS uCI/L $< 6.37 \times 10^{-6}$ uCi/ml

Analyst 1	Analyst 2	Analyst 3	Analyst 4	Analyst 5
Hrs	Hrs 8-16-93 0305	Hrs 8.18.93	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
8.15-93	22:45	

54 680 (26) (R/93 93)

WHC-SD-WM-DP-05 REV 0

AM-241: LA-503-156 (D-0) LIQUIDS

			SAMPLE
Serial No.	Spike (Tracer) Book Number		58843
G637-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.05
1376	Volume of Sample in mL	(SS)	1
Rerun No.	Dilution Factor	(DF)	1
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	11
	Am-243 Area Peak Height from AEA	(C243)	251
Date	Total AT Count	(ATOT)	1053
08/15/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	6

Am-241 µCi/L = ((C241 * SPKA * SPKV * DF * DDF * (1000mL/L)) / ((C243 * SS * (2220000dpm/mL))

µCi/mL = µCi/L / (1000mL/L)

Tracer % Rec = ((ATOT / MIN CTd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

NOTE: Reported result is a LESS THAN value using 5% of the Am-243 peak as the Am-241 peak.

Am-241 µCi/L	=	< 6.37E-03
Am-241 µCi/mL	=	< 6.37E-06
Relative counting error	=	30.8%
Am-243 Tracer Recovery	=	19.7%

Data Entry by:	Date: 19-Aug-93
Approved by:	Date: August 19, 1993

Form 3 Rev. 1.1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#3 8-16-93

$\frac{1053}{30}$ - 6 G637-5782

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PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

3.2 2166

Serial No	Sample Point	Date	Time Issued	Priority
G 638.-5782	102 5 DAY	7-22-93	15:21	23

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	D44B3	0

Sample Size	Customer ID
? 1mL .050mL Spike 58843	D-3

Remarks Qualifying Results

COUNT AS uCI/L <6.37 x 10^-6 µCi/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
	8-16-93		8-18-93	
	Hrs 0130	Hrs	Hrs 2330	Hrs
Date 8-15-93	Time Completed 22:45	Lab Unit Mgr		

WHC-SD-WM-DP-151, REV 0

AM-241: LA-503-156 (D-0) LIQUIDS

			SAMPLE
Serial No.	Spike (Tracer) Book Number		58843
G638-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.050
1376	Volume of Sample in mL	(SS)	1
Rerun No.	Dilution Factor	(DF)	1
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	11
	Am-243 Area Peak Height from AEA	(C243)	337
Date	Total AT Count	(ATOT)	2826
08/15/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	6

Am-241 µCi/L = ((C241 * SPKA * SPKV * DF * DDF * (1000mL/L)) / ((C243 * SS * (2220000dpm/mL))

µCi/mL = µCi/L / (1000mL/L)

Tracer % Rec = ((ATOT / MIN CTd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

NOTE: Reported result is a LESS THAN value using 5% of the Am-243 peak as the Am-241 peak.

Am-241 µCi/L	=	< 6.37E-03
Am-241 µCi/mL	=	< 6.37E-06
Relative counting error	=	30.6%
Am-243 Tracer Recovery	=	60.4%

Data Entry by:		Date:	19-Aug-93
Approved by:		Date:	August 19, 1993

Form 3 Rev. 1.1

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AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#1 8-16-93

2826 - 6
30

G638-5782

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PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

3.3 3562

Serial No	Sample Point	Date	Time Issued	Priority
G 639.-5782	102 5 DAY	7-22-93	15:22	23

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	D44B3	0

Sample Size	Customer ID
? 1 mL .050 mL Spike 58B43	D-4

Remarks Calculations Results

COUNT AS uCI/L $<6.37 \times 10^{-6}$ uCi/ml

Analyst - 1	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs 8-16-93 0330	Hrs	Hrs 8-18-93 2300

Date	Time Completed	Lab Unit No.
8-15-93	22:45	

54 6A 2561 (R 10 A3)

WHC-SD-WM-[illegible] REV 0

AM-241: LA-503-156 (D-0) LIQUIDS

			SAMPLE
Serial No.	Spike (Tracer) Book Number		58B43
G639-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.05
1376	Volume of Sample in mL	(SS)	1
Rerun No.	Dilution Factor	(DF)	1
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	14
1	Am-243 Area Peak Height from AEA	(C243)	543
Date	Total AT Count	(ATOT)	2046
08/15/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	2

Am-241 µCi/L = ((C241 * SPKA * SPKV * DF * DDF * (1000mL/L)) / ((C243 * SS * (2220000dpm/mL))

µCi/mL = µCi/L / (1000mL/L)

Tracer % Rec = ((ATOT / MIN CTd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

NOTE: Reported result is a LESS THAN value using 5% of the Am-243 peak as the Am-241 peak.

Am-241 µCi/L	=	< 6.37E-03
Am-241 µCi/mL	=	< 6.37E-06
Relative counting error	=	27.1%
Am-243 Tracer Recovery	=	45.6%

Data Entry by:	Date: 19-Aug-93
Approved by:	Date: August 19, 1993

Form 3 Rev. 1.1 Page 1 of 1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#2 8-16-93 AJ

2046/30 -2 G639-5782

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PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

3.4 4767

Serial No	Sample Point	Date	Time Issued	Priority
G 640.-5782	102 5 DAY	7-22-93	15:24	23

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	D44B3	0

Sample Size	Customer ID
? /mL .050 SPIKE 58B43	D-5

Remarks Calculations Results

COUNT AS uCI/L $< 6.37 \times 10^{-6}$ uCi/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 5
Hrs	Hrs 8/16-93 0330	Hrs	Hrs 8/18-93 2302	Hrs

Date	Time Completed	Lab Unit Mgr
8-15-93	22:45	

SF 5AN-151 (R 10 83)

WHC-SD-WM-EP-054 REV 0

AM-241: LA-503-156 (D-0) LIQUIDS

			SAMPLE
Serial No.	Spike (Tracer) Book Number		58B43
G640-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.050
1376	Volume of Sample in mL	(SS)	1
Rerun No.	Dilution Factor	(DF)	1
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	5
	Am-243 Area Peak Height from AEA	(C243)	275
Date	Total AT Count	(ATOT)	2885
08/15/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	6

Am-241 µCi/L = ((C241 * SPKA * SPKV * DF * DDF * (1000mL/L)) / ((C243 * SS * (2220000dpm/mL))

µCi/mL = µCi/L / (1000mL/L)

Tracer % Rec = ((ATOT / MIN CTd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

NOTE: Reported result is a LESS THAN value using 5% of the Am-243 peak as the Am-241 peak.

Am-241 µCi/L	=	< 6.37E-03
Am-241 µCi/mL	=	< 6.37E-06
Relative counting error	=	45.1%
Am-243 Tracer Recovery	=	62.6%

Data Entry by:	Date:	19-Aug-93
Approved by:	Date:	August 19, 1993

Form 3 Rev. 1.1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#3 8-16-93

2885/30 -6 G-640-5782

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PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

4.1 5684

Serial No	Sample Point	Date	Time Issued	Priority
G 641.-5782	102 5 DAY	7-22-93	15:25	23

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	D44B3	0

Sample Size	Customer ID
? /mL .050mL Spike 58B43	D-6

Remarks, Calculations, Results

COUNT AS uCI/L 7.64×10^{-6} uCi/ml

Analyst - 1	Analyst 2	Analyst 3	Analyst 4	Analyst 5
	Hrs 8-16-93 0400	Hrs	Hrs 8-18-93	Hrs 8-19-93
Date 8-15-93	Time Completed 22:45	Lab Unit Mgr		

WHC-SD-WM-DP-351 REV 0

AM-241: LA-503-156 (D-0) LIQUIDS

			SAMPLE
Serial No.	Spike (Tracer) Book Number		58B43
G641-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.05
1376	Volume of Sample in mL	(SS)	1
Rerun No.	Dilution Factor	(DF)	1
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	6
	Am-243 Area Peak Height from AEA	(C243)	100
Date	Total AT Count	(ATOT)	547
08/15/93	AT Count Time in Minutes	(MIN CT'd)	30
	Background in CPM	(BKG)	6

Am-241 µCi/L = ((C241 * SPKA * SPKV * DF * DDF * (1000mL/L)) / ((C243 * SS * (2220000dpm/mL))

µCi/mL = µCi/L / (1000mL/L)

Tracer % Rec = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

Am-241 µCi/L	=	7.64E-03
Am-241 µCi/mL	=	7.64E-06
Relative counting error	=	42.0%
Am-243 Tracer Recovery	=	8.2%

Data Entry by:		Date:	19-Aug-93
Approved by:		Date:	August 19, 1993

Form 3 Rev. 1.1

Page 1 of 1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#1 8-16-93 .89

$\frac{542}{30}$ -6 G641-5782

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PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

4.2 6602

Serial No	Sample Point	Date	Time Issued	Priority
G 642.-5782	102 5 DAY	7-22-93	15:25	23

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	D44B3	0

Sample Size	Customer ID
? /mL .050mL SPIKE 58B43	D-7

Remarks Calculations Results

COUNT AS uCI/L $<6.37 \times 10^{-6}$ uCi/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs 8-16-93 0400	Hrs	Hrs 8/19/93	Hrs

Date	Time Completed	Lab Dept Mgr
8-15-93	22:45	

WHC-SD-WM-CH-064 REV 0

AM-241: LA-503-156 (D-0) LIQUIDS

			SAMPLE
Serial No.	Spike (Tracer) Book Number		58B43
G642-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.050
1376	Volume of Sample in mL	(SS)	1
Rerun No.	Dilution Factor	(DF)	1
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	19
	Am-243 Area Peak Height from AEA	(C243)	608
Date	Total AT Count	(ATOT)	2304
08/15/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	2

Am-241 µCi/L = ((C241 * SPKA * SPKV * DF * DDF * (1000mL/L)) / ((C243 * SS * (2220000dpm/mL))

µCi/mL = µCi/L / (1000mL/L)

Tracer % Rec = ((ATOT / MIN CTd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

NOTE: Reported result is a LESS THAN value using 5% of the Am-243 peak as the Am-241 peak.

Am-241 µCi/L	=	< 6.37E-03
Am-241 µCi/mL	=	< 6.37E-06
Relative counting error	=	23.3%
Am-243 Tracer Recovery	=	51.3%

Data Entry by:	Date: 19-Aug-93
Approved by:	Date: August 19, 1993

Form 3 Rev. 1.1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#2 8-16-93

2304/30-2 G642-5782

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D. H Milbica
8-18-93

WHC-SD-WM-DP-054 REV 0

GENERAL ALPHA ENERGY ANALYSIS

Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
G-635-5582
File ID: SD6601.SPC

Counted on: 8/18/93 @ 3: 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	17.4	23.2	355.426	355.426	12.000	0.036	6.000	0.000
2	2477.4	2497.9	299.671	299.671	32.000	30.962	16.000	5.942
3	1040.1	1097.1	254.340	254.340	32.000	18.636	16.000	3.757
4	0.0	0.1	49.707	49.707	0.000	0.200	0.000	0.200

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1	Pu236	0.0630	5.756	5.767	-0.011	0.00	8.13	43.39	0.195E-04
	Cm243		5.786	5.767	0.019				0.262E-04
2	Pu238	0.6802	5.499	5.505	-0.006	0.15	87.78	637.31	0.287E-03
	Am241		5.480	5.505	-0.025				0.220E-03
3		0.2567		5.292		0.09	33.13	173.19	0.780E-04
4		0.0000		4.330		0.00	0.00	0.00	0.117E-08

DETECTOR CALIBRATION
Energy(MEV) = 4.096 + (0.0047)*Channel
Energy range (MeV): 4.096 TO 6.503
Efficiency = 0.1913 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	62387.0	100.000
Smoothed	62385.8	99.998
Composite fit	64523.1	103.424
Residuals	-2137.4	-3.426

Analyzed by: _____

```
        SPECTRUM SD6601.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC                9710.9
1
1
1
1
1
4
1
1
1
1
1
1
1
1
1
1
1
1
1
1
1
1
1
1
3
13
1.3.
2.  ?.
12    ..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..2
1
1
1
1
```

Raw Data Dump for AEA Spectrum: SP:SD6601.SPC

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	2.	0.	3.	1.
21	2.	1.	0.	1.	0.	2.	1.	2.	1.	0.
31	3.	2.	1.	0.	3.	0.	0.	1.	1.	0.
41	3.	2.	2.	1.	0.	1.	5.	3.	3.	1.
51	2.	1.	1.	2.	1.	4.	0.	1.	0.	2.
61	2.	4.	1.	1.	3.	3.	4.	2.	0.	3.
71	4.	4.	2.	2.	3.	2.	3.	1.	3.	1.
81	2.	1.	5.	1.	2.	2.	1.	2.	2.	3.
91	2.	3.	3.	1.	5.	2.	5.	4.	3.	6.
101	1.	6.	4.	4.	2.	4.	7.	4.	4.	3.
111	3.	3.	1.	3.	7.	5.	5.	3.	7.	1.
121	10.	2.	3.	5.	6.	6.	5.	6.	0.	7.
131	11.	5.	3.	7.	7.	5.	4.	4.	3.	8.
141	5.	7.	8.	10.	8.	10.	12.	10.	7.	6.
151	11.	9.	9.	13.	11.	5.	15.	7.	11.	13.
161	6.	11.	12.	12.	10.	16.	11.	10.	11.	14.
171	14.	15.	14.	11.	13.	14.	17.	22.	21.	25.
181	19.	20.	24.	17.	28.	24.	22.	23.	31.	23.
191	26.	30.	31.	37.	34.	30.	38.	37.	36.	36.
201	41.	47.	50.	53.	61.	68.	54.	67.	69.	80.
211	65.	101.	76.	90.	91.	109.	99.	94.	143.	124.
221	127.	132.	148.	159.	180.	182.	186.	177.	218.	225.
231	228.	252.	268.	321.	350.	349.	360.	401.	386.	417.
241	489.	469.	512.	549.	580.	590.	578.	626.	683.	702.
251	721.	671.	702.	669.	681.	606.	629.	628.	607.	554.
261	521.	555.	450.	439.	410.	397.	353.	382.	384.	366.
271	394.	427.	390.	370.	434.	435.	456.	512.	535.	566.
281	637.	656.	670.	707.	776.	907.	902.	910.	997.	956.
291	1085.	1175.	1175.	1212.	1261.	1288.	1335.	1317.	1291.	1311.
301	1291.	1182.	1099.	1089.	1013.	942.	883.	850.	658.	600.
311	519.	444.	400.	305.	286.	239.	206.	142.	121.	78.
321	78.	59.	46.	35.	26.	13.	11.	6.	10.	4.
331	4.	2.	3.	1.	1.	3.	1.	2.	0.	0.
341	2.	3.	2.	3.	0.	1.	2.	1.	1.	2.
351	4.	4.	5.	9.	2.	0.	4.	3.	2.	3.
361	2.	3.	2.	2.	2.	4.	5.	2.	1.	1.
371	2.	0.	1.	2.	2.	1.	0.	0.	0.	0.
381	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	1.	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.	0.	0.	0.	0.
421	0.	0.	1.	0.	0.	0.	1.	1.	1.	0.
431	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	1.	0.	0.	0.	0.	0.	1.	0.	0.	0.
451	0.	0.	0.	1.	0.	0.	0.	1.	0.	1.
461	0.	0.	0.	3.	0.	0.	0.	1.	1.	1.
471	0.	0.	0.	1.	0.	1.	0.	1.	1.	0.
481	1.	0.	0.	1.	1.	0.	0.	0.	0.	2.
491	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
511	1.	0.								

D. H. Miller
8-18-93

WHC-SD-WM-DP-054 REV 0

GENERAL ALPHA ENERGY ANALYSIS

Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
G-636-5682
File ID: SD7127.SPC

Counted on: 8/18/93 @ 3: 0
Detector/Geometry number: 7/ 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	5.6	5.0	360.292	360.292	28.000	35.070	14.000	19.689
2	23.1	20.1	304.281	304.281	16.000	19.142	8.000	19.689
3	1320.2	1328.5	258.640	258.640	24.000	15.799	12.000	5.027
4	14.1	10.5	146.734	146.734	132.000	2.000	66.000	0.200

PEAK RESULTS

Peak	Isotope	AEA Fract.	Peak Centroid Exp.	Peak Centroid Obs.	Peak Centroid Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1	Ra224	0.0045	5.680	5.742	-0.062	0.16	0.14	0.75	0.340E-06
	Pu236		5.756	5.742	0.014				0.326E-06
2	Pu238	0.0131	5.499	5.484	0.015	0.09	0.42	2.88	0.130E-05
	Am241		5.480	5.484	-0.004				0.993E-06
3		0.9696		5.274		0.07	31.02	152.98	0.689E-04
4		0.0128		4.759		0.01	0.41	2.02	0.911E-06

DETECTOR CALIBRATION

Energy(MEV) = 4.084 + (0.0046)*Channel
Energy range (MeV): 4.084 TO 6.440
Efficiency = 0.2028 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	16726.0	100.000
Smoothed	16726.0	100.000
Composite fit	15999.0	95.653
Residuals	727.0	4.347

Analyzed by: _____

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          SPECTRUM SD7127.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC              4869.0
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Raw Data Dump for AEA Spectrum: SP:SD7127.SPC

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	1.	1.	1.	0.	1.	0.
31	0.	1.	0.	1.	2.	0.	0.	2.	3.	0.
41	0.	0.	0.	1.	1.	0.	2.	0.	0.	2.
51	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.
61	0.	2.	1.	0.	2.	0.	2.	0.	2.	0.
71	1.	0.	0.	0.	0.	1.	0.	0.	2.	1.
81	3.	1.	0.	0.	3.	3.	2.	0.	1.	1.
91	2.	2.	2.	2.	3.	1.	2.	2.	3.	2.
101	1.	0.	2.	0.	1.	1.	1.	2.	4.	0.
111	3.	2.	2.	1.	1.	1.	2.	1.	3.	5.
121	2.	5.	2.	2.	3.	3.	1.	3.	3.	5.
131	3.	0.	2.	4.	5.	6.	4.	3.	4.	3.
141	1.	4.	4.	4.	9.	6.	4.	3.	4.	5.
151	0.	5.	3.	2.	6.	3.	7.	5.	7.	6.
161	13.	6.	7.	5.	9.	6.	8.	13.	3.	10.
171	4.	7.	4.	10.	9.	8.	14.	9.	12.	9.
181	10.	5.	12.	7.	13.	14.	12.	14.	17.	10.
191	7.	17.	11.	18.	12.	19.	15.	16.	16.	21.
201	20.	17.	20.	25.	19.	22.	14.	32.	18.	24.
21[illegible]	26.	28.	38.	38.	33.	29.	29.	34.	29.	47.
2[illegible]	49.	51.	56.	57.	47.	61.	54.	75.	78.	82.
231	83.	79.	94.	115.	99.	125.	126.	151.	156.	152.
241	215.	219.	232.	246.	317.	346.	356.	397.	455.	530.
251	524.	540.	640.	663.	694.	716.	777.	722.	686.	697.
261	598.	579.	492.	383.	303.	260.	172.	127.	97.	101.
271	70.	43.	49.	43.	29.	22.	15.	18.	12.	7.
281	2.	4.	6.	6.	3.	3.	3.	6.	5.	6.
291	1.	4.	5.	5.	8.	10.	13.	7.	7.	14.
301	9.	11.	9.	15.	11.	10.	8.	11.	5.	3.
311	7.	5.	4.	2.	3.	4.	2.	1.	0.	0.
321	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
331	0.	0.	0.	0.	1.	0.	1.	0.	0.	0.
341	1.	1.	0.	2.	2.	2.	2.	0.	1.	1.
351	2.	1.	2.	3.	2.	2.	6.	4.	0.	4.
361	0.	6.	4.	0.	1.	1.	6.	0.	0.	2.
371	3.	0.	1.	1.	1.	1.	0.	2.	0.	0.
381	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
47[illegible]	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
4[illegible]	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
491	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
511	0.	0.								

D. H. Rebecca
8-18-93

WHC-SD-WM-DP-054 REV 0

GENERAL ALPHA ENERGY ANALYSIS

Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
G-637-5782
File ID: SD8348.SPC

Counted on: 8/18/93 @ 3: 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	12.1	8.8	303.238	303.238	20.000	20.729	10.000	0.000
2	387.2	383.9	257.228	257.228	20.000	13.551	10.000	6.174
3	0.0	0.1	171.699	171.699	0.000	0.200	0.000	0.200

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1	Pu238	0.2647	5.499	5.486	0.013	0.10	2.72	19.72	0.888E-05
	Am241		5.480	5.486	-0.006				0.680E-05
2	Am243	0.7353	5.234	5.270	-0.036	0.06	7.56	358.49	0.161E-03
3		0.0000		4.868		0.00	0.00	0.00	0.117E-08

DETECTOR CALIBRATION

Energy(MEV) = 4.061 + (0.0047)*Channel
Energy range (MeV): 4.061 TO 6.467
Efficiency = 0.1916 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	4620.0	100.000
Smoothed	4620.0	100.000
Composite fit	5138.0	111.212
Residuals	-518.0	-11.212

Analyzed by: _____ _____

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          SPECTRUM SD8348.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC                1312.6
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1.............................................................2..
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Raw Data Dump for AEA Spectrum: SP:SD8348.SPC

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	1.	1.	1.	0.	0.	0.	2.
21	0.	0.	4.	0.	0.	1.	0.	1.	2.	1.
31	0.	0.	2.	0.	0.	0.	0.	0.	1.	0.
41	0.	1.	1.	1.	1.	1.	0.	1.	3.	0.
51	4.	2.	0.	2.	0.	1.	1.	1.	0.	2.
61	1.	0.	1.	2.	2.	1.	3.	1.	0.	1.
71	1.	0.	0.	2.	0.	0.	1.	3.	3.	0.
81	1.	3.	0.	0.	0.	2.	1.	1.	0.	0.
91	0.	1.	2.	0.	1.	0.	1.	0.	1.	1.
101	1.	1.	0.	0.	2.	0.	3.	2.	1.	2.
111	2.	4.	2.	1.	0.	1.	0.	1.	2.	3.
121	1.	0.	0.	1.	1.	0.	1.	2.	2.	2.
131	0.	0.	1.	2.	0.	0.	2.	1.	3.	1.
141	1.	2.	2.	1.	3.	2.	1.	3.	1.	4.
151	0.	2.	2.	2.	1.	5.	0.	2.	3.	1.
161	3.	1.	0.	2.	2.	3.	2.	4.	3.	4.
171	0.	4.	5.	2.	1.	2.	2.	1.	2.	4.
181	3.	1.	3.	1.	2.	3.	2.	4.	4.	2.
191	1.	4.	1.	6.	4.	2.	7.	5.	4.	6.
201	2.	4.	6.	5.	1.	5.	5.	5.	10.	5.
211	8.	2.	8.	6.	7.	12.	6.	10.	6.	10.
221	10.	14.	18.	10.	18.	23.	16.	14.	20.	17.
231	27.	25.	16.	31.	20.	30.	26.	37.	27.	45.
241	44.	42.	61.	61.	81.	98.	104.	148.	122.	155.
251	148.	185.	210.	222.	224.	251.	221.	188.	212.	170.
261	135.	117.	88.	75.	58.	31.	47.	33.	15.	13.
271	10.	20.	8.	11.	5.	3.	6.	4.	1.	3.
281	2.	3.	5.	2.	1.	3.	2.	1.	1.	0.
291	3.	1.	4.	3.	5.	3.	3.	4.	7.	8.
301	5.	11.	5.	6.	8.	4.	2.	4.	1.	2.
311	2.	1.	2.	0.	2.	1.	1.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	1.	1.	1.	0.	0.	0.	1.	1.	1.
351	1.	1.	1.	0.	3.	3.	0.	0.	0.	3.
361	1.	0.	1.	2.	0.	2.	2.	0.	0.	0.
371	1.	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.	1.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	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.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
481	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

A.J. Johnson 7-18-93

WHC-SD-WM-DP-054 REV 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
G-638-5782
File ID: SD2166.SPC

Counted on: 8/18/93 @14: 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	11.6	10.1	351.260	351.260	40.000	43.833	20.000	7.067
2	56.1	33.6	294.897	294.897	16.000	0.157	8.000	7.067
3	622.4	649.7	249.095	249.095	32.000	36.341	16.000	3.865
4	11.9	10.2	60.169	60.169	204.000	2.000	102.000	gy(MEV) = 4.082 + (0.0046)

Energy range (MeV): 4.082 TO 6.438
Efficiency = 0.1897 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	17581.0	100.000
Smoothed	17579.6	99.992
Composite fit	16803.8	95.579
Residuals	774.6	4.406

Analyzed by: ___ _____

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          SPECTRUM SD2166.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC                2400.7

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Raw Data Dump for AEA Spectrum: SP:SD2166.SPC

1	0.	0.	0.	0.	0.	0.	5.	0.	2.	2.
11	4.	3.	4.	1.	4.	1.	6.	4.	3.	3.
21	3.	2.	8.	3.	4.	7.	6.	4.	6.	4.
31	6.	2.	1.	4.	8.	7.	8.	8.	4.	5.
41	4.	4.	6.	6.	8.	4.	5.	7.	10..	
111	13.	14.	13.	13.	24.	18.	15.	15.	23.	12.
121	13.	17.	16.	17.	14.	14.	22.	15.	18.	11.
131	26.	23.	20.	22.	23.	19.	19.	29.	29.	18.
141	29.	22.	22.	28.	19.	18.	27.	22.	28.	35.
151	27.	18.	24.	27.	34.	31.	14.	22.	42.	30.
161	22.	25.	23.	33.	36.	37.	32.	37.	44.	40.
171	39.	36.	42.	41.	42.	44.	32.	50.	42.	53.
181	54.	45.	41.	57.	64.	63.	63.	62.	61.	63.
191	67.	71.	68.	70.	71.	62.	81.	77.	88.	96.
201	106.	77.	87.	95.	107.	89.	120.	107.	98.	111.
211	118.	118.	140.	117.	134.	140.	159.	145.	163.	137.
221	149.	137.	189.	151.	186.	177.	205.	196.	219.	203.
231	235.	223.	236.	285.	272.	263.	285.	269.	283.	286.
241	295.	306.	318.	295.	329.	305.	321.	337.	307.	296.
251	331.	307.	297.	307.	238.	245.	207.	232.	197.	168.
261	150.	145.	119.	76.	68.	69.	58.	32.	27.	26.
27[illegible]	23.	27.	9.	14.	9.	10.	10.	9.	8.	10.
2[illegible]	7.	8.	6.	8.	7.	5.	8.	5.	1.	7.
291	2.	7.	7.	3.	8.	11.	5.	4.	5.	5.
301	2.	2.	2.	5.	5.	3.	2.	1.	6.	1.
311	4.	0.	4.	3.	1.	0.	1.	3.	0.	2.
321	1.	3.	4.	3.	3.	0.	1.	2.	4.	2.
331	4.	3.	1.	4.	0.	3.	2.	4.	5.	3.
341	5.	1.	5.	3.	1.	8.	7.	4.	8.	5.
351	11.	5.	3.	4.	3.	5.	5.	4.	4.	3.
361	3.	1.	5.	3.	3.	3.	1.	2.	2.	0.
371	2.	1.	1.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
401	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
431	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.
441	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	1.	2.	
491	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
511	0.	0.								

8-18-93

GENERAL ALPHA ENERGY ANALYSIS
Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
G-639-5782
File ID: SD3562.SPC

Counted on: 8/18/93 @14: 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	54.7	25.1	308.897	308.897	12.000	17.467	6.000	0.000
2	915.4	926.8	264.309	264.309	28.000	22.719	14.000	8.127

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	0.2510	5.499	5.503	-0.004	C.08	7.88	54.35	0.245E-04
	Am241		5.480	5.503	-0.023				0.188E-04
2		0.7490		5.289		0.11	23.51	116.75	0.526E-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	13258.0	100.000
Smoothed	13256.7	99.990
Composite fit	15696.8	118.395
Residuals	-2441.4	-18.415

Analyzed by: _____

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          SPECTRUM SD3562.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC                3462.3
 1
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Raw Data Dump for AEA Spectrum: SP:SD3562.SPC

1	0.	0.	0.	0.	0.	0.	0.	2.	1.	0.
11	1.	1.	0.	3.	1.	1.	1.	0.	0.	1.
21	0.	1.	0.	1.	1.	0.	0.	0.	1.	1.
31	0.	1.	1.	0.	0.	1.	0.	0.	0.	0.
41	0.	1.	1.	1.	1.	1.	0.	0.	2.	1.
51	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
61	1.	0.	0.	0.	1.	0.	1.	2.	0.	1.
71	1.	1.	0.	2.	0.	1.	1.	0.	1.	2.
81	2.	1.	1.	0.	0.	0.	0.	0.	0.	0.
91	1.	4.	0.	3.	0.	0.	0.	2.	1.	0.
101	0.	0.	1.	1.	0.	0.	0.	0.	1.	1.
111	0.	0.	1.	0.	1.	0.	3.	0.	2.	2.
121	2.	0.	2.	1.	1.	0.	2.	2.	1.	1.
131	2.	0.	0.	1.	1.	0.	2.	0.	1.	2.
141	1.	1.	2.	0.	1.	1.	1.	2.	1.	1.
151	2.	0.	0.	2.	2.	0.	1.	1.	1.	2.
161	1.	5.	3.	2.	5.	3.	1.	1.	3.	1.
171	5.	2.	4.	2.	4.	3.	2.	1.	4.	5.
181	2.	6.	3.	5.	4.	5.	1.	3.	1.	1.
191	1.	7.	6.	5.	5.	6.	8.	6.	2.	3.
201	10.	5.	9.	5.	7.	6.	6.	12.	4.	5.
211	11.	9.	10.	9.	13.	13.	9.	13.	9.	8.
221	12.	20.	21.	23.	21.	33.	24.	30.	29.	34.
231	41.	41.	45.	45.	41.	56.	66.	75.	81.	108.
241	80.	83.	94.	139.	152.	155.	161.	186.	231.	261.
251	282.	287.	321.	344.	365.	401.	416.	420.	471.	480.
261	536.	479.	543.	487.	471.	444.	465.	414.	352.	358.
271	297.	235.	198.	189.	150.	124.	107.	78.	61.	53.
281	46.	46.	28.	23.	19.	20.	16.	11.	8.	10.
291	6.	3.	3.	0.	2.	5.	~~10.~~	4.	12.	9.
301	9.	8.	6.	12.	6.	8.	~~12.~~	6.	8.	3.
311	10.	14.	9.	5.	6.	5.	5.	8.	5.	4.
321	5.	2.	2.	2.	2.	0.	0.	2.	1.	1.
331	0.	2.	0.	0.	1.	0.	1.	1.	0.	0.
341	0.	0.	1.	1.	1.	2.	0.	2.	2.	4.
351	0.	4.	1.	3.	3.	1.	3.	7.	2.	7.
361	5.	1.	4.	5.	6.	2.	2.	7.	2.	4.
371	5.	3.	6.	2.	1.	5.	5.	2.	2.	2.
381	1.	4.	1.	0.	1.	1.	0.	0.	1.	0.
391	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
441	0.	0.	0.	0.	1.	0.	0.	0.	1.	0.
451	0.	1.	0.	1.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	1.	0.	0.	0.	1.	1.	0.	1.	1.
481	0.	0.	2.	0.	4.	1.	2.	2.	1.	2.
491	2.	0.	1.	2.	0.	1.	1.	0.	1.	0.
511	0.	0.								

dzf 8-14-93

8-18-93

WHC-SD-WM-DP-054 REV 0

GENERAL ALPHA ENERGY ANALYSIS

Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
G-640-5782
File ID: SD4767.SPC

Counted on: 8/18/93 @14: 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	4.0	3.3	361.742	361.742	16.000	13.245	8.000	1.836
2	7.9	5.1	296.192	296.192	60.000	125.492	30.000	26.014
3	454.0	401.5	251.393	251.393	20.000	15.377	10.000	1.754
4	11.9	9.6	39.020	39.020	320.000	2.000	160.000	0.200

PEAK RESULTS

Peak	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1	Pu236	0.0068	5.756	5.755	0.001	0.06	0.12	0.91	0.408E-06
2	Th228	0.0162	5.430	5.453	-0.023	0.58	0.29	2.98	0.134E-05
	Am241		5.480	5.453	0.027				0.101E-05
3	Am243	0.9630	5.234	5.247	-0.013	0.07	16.91	1139.50	0.513E-03
4		0.0139		4.270		0.01	0.24	1.81	0.816E-06

DETECTOR CALIBRATION

Energy(MEV) = 4.091 + (0.0046)*Channel
Energy range (MeV): 4.091 TO 6.446
Efficiency = 0.1349 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	11193.0	100.000
Smoothed	11191.6	99.987
Composite fit	8779.3	78.436
Residuals	2412.3	21.552

Analyzed by: _____ _____

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          SPECTRUM SD4767.SPC
1 LEGEND:  RAW = ....  MODELED PEAKS = 1,2,.., ETC                1683.3
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Raw Data Dump for AEA Spectrum: SP:SD4767.SPC

1	0.	0.	0.	0.	0.	1.	1.	4.	4.	4.
11	2.	0.	4.	3.	8.	4.	3.	6.	4.	1.
21	3.	4.	3.	4.	4.	1.	4.	5.	4.	5.
31	12.	1.	7.	5.	3.	8.	4.	8.	7.	2.
41	7.	7.	5.	4.	3.	2.	5.	6.	9.	7.
51	4.	7.	1.	4.	5.	5.	13.	7.	5.	7.
61	9.	5.	6.	11.	10.	8.	4.	5.	6.	10.
71	18.	9.	11.	7.	9.	5.	7.	8.	13.	12.
81	6.	8.	18.	4.	12.	13.	6.	10.	20.	12.
91	13.	15.	19.	11.	22.	17.	12.	11.	17.	15.
101	16.	13.	16.	20.	14.	17.	15.	15.	18.	14.
111	11.	17.	22.	22.	15.	22.	13.	17.	27.	21.
121	14.	31.	21.	18.	16.	21.	16.	22.	25.	16.
131	28.	18.	17.	25.	27.	24.	18.	28.	31.	28.
141	26.	37.	25.	34.	38.	30.	39.	38.	34.	31.
151	36.	35.	21.	38.	42.	21.	39.	26.	38.	37.
161	35.	43.	46.	37.	38.	49.	46.	39.	32.	43.
171	34.	44.	39.	58.	50.	43.	59.	48.	52.	44.
181	58.	61.	46.	49.	48.	47.	58.	46.	50.	35.
191	51.	61.	69.	60.	62.	63.	37.	69.	82.	69.
201	68.	45.	77.	59.	64.	54.	66.	73.	58.	63.
211	75.	59.	61.	75.	72.	76.	75.	56.	72.	76.
221	58.	80.	79.	85.	90.	80.	77.	87.	101.	110.
231	100.	87.	84.	88.	81.	109.	123.	120.	138.	128.
241	161.	151.	148.	181.	193.	199.	204.	258.	226.	255.
251	264.	275.	209.	195.	189.	139.	102.	80.	61.	57.
261	18.	17.	20.	15.	18.	8.	11.	9.	6.	5.
271	5.	2.	2.	3.	2.	0.	2.	3.	0.	1.
281	2.	0.	4.	4.	2.	3.	2.	5.	2.	4.
291	1.	3.	1.	4.	5.	5.	3.	5.	1.	1.
301	2.	2.	2.	2.	1.	1.	1.	0.	0.	0.
311	1.	0.	0.	1.	0.	0.	1.	0.	0.	0.
321	0.	0.	1.	0.	0.	0.	0.	1.	0.	0.
331	0.	1.	0.	2.	1.	1.	1.	1.	0.	0.
341	2.	0.	1.	3.	2.	1.	3.	0.	2.	0.
351	0.	1.	1.	0.	2.	0.	1.	1.	4.	2.
361	4.	2.	2.	1.	1.	0.	1.	0.	1.	0.
371	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
431	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
481	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Raymond 8-19-93

GENERAL ALPHA ENERGY ANALYSIS

Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
G-641-5782
File ID: SD5684.SPC

Counted on: 8/18/93 @14: 0
Detector/Geometry number: 5/ 1
Count time: 30000. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	162.9	161.9	256.305	256.305	28.000	19.844	14.000	7.222

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
1	Am243	1.0000	5.234	5.270	-0.036	0.09	3.89	155.58	0.701E-04

DETECTOR CALIBRATION
Energy(MEV) = 4.091 + (0.0046)*Channel
Energy range (MeV): 4.091 TO 6.447
Efficiency = 0.2275 CPM/DPM

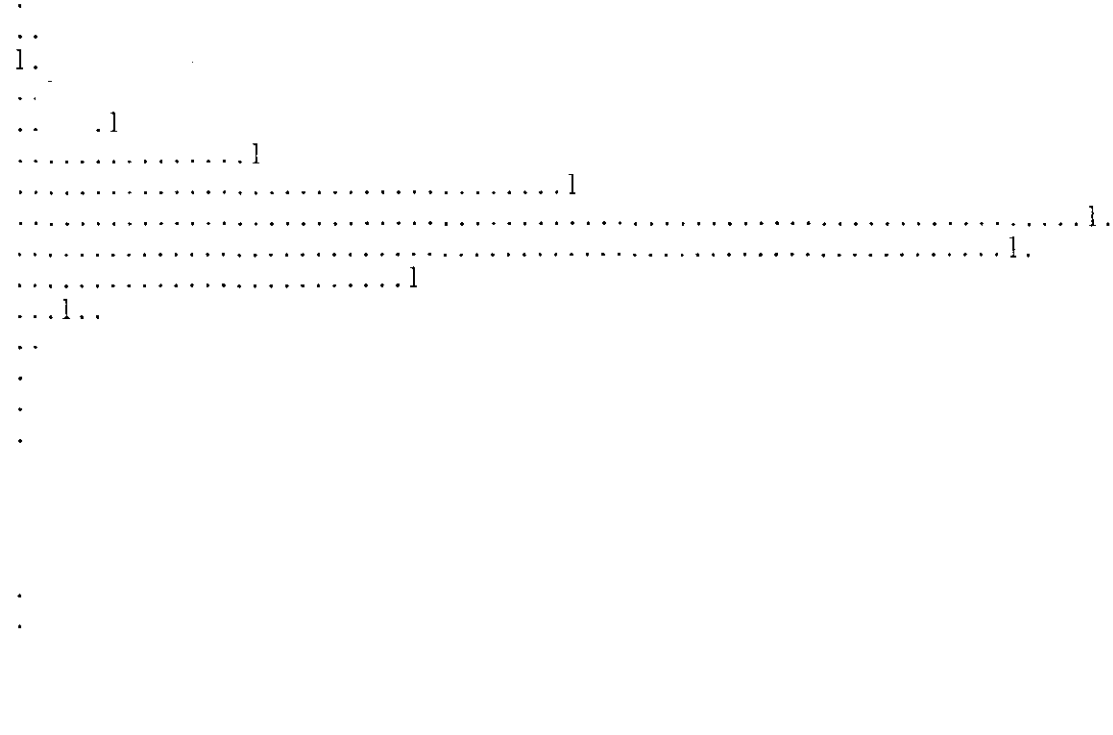
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	2217.0	100.000
Smoothed	2217.0	99.999
Composite fit	1946.7	87.809
Residuals	270.2	12.189

Analyzed by: _____

SPECTRUM SD5684.SPC

1 LEGEND: RAW = ... MODELED PEAKS = 1,2,.., ETC 585.7



Raw Data Dump for AEA Spectrum: SP:SD5684.SPC

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.
21	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
31	0.	1.	1.	0.	0.	0.	0.	0.	0.	1.
41	0.	0.	2.	0.	0.	0.	0.	0.	2.	0.
51	0.	0.	1.	0.	0.	0.	0.	0.	1.	1.
61	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
71	0.	0.	0.	1.	1.	1.	2.	1.	0.	0.
81	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
91	0.	1.	1.	0.	0.	0.	1.	0.	3.	0.
101	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
111	1.	1.	0.	1.	0.	0.	2.	1.	3.	2.
121	0.	1.	0.	1.	1.	0.	0.	0.	1.	2.
131	0.	0.	0.	0.	0.	0.	1.	0.	0.	3.
141	2.	3.	0.	1.	0.	0.	1.	1.	0.	0.
151	1.	0.	2.	0.	1.	0.	0.	1.	1.	2.
161	0.	0.	1.	1.	2.	1.	0.	1.	1.	0.
171	0.	1.	1.	0.	0.	1.	1.	1.	0.	2.
181	0.	0.	2.	1.	0.	2.	0.	0.	4.	0.
191	0.	2.	2.	2.	1.	2.	2.	1.	1.	3.
201	1.	4.	2.	3.	4.	0.	2.	1.	4.	5.
211	2.	1.	5.	5.	2.	4.	5.	7.	6.	4.
221	6.	7.	9.	3.	12.	8.	3.	7.	8.	8.
231	10.	15.	12.	15.	12.	13.	20.	21.	22.	31.
241	27.	37.	38.	44.	43.	53.	43.	51.	77.	74.
251	82.	99.	81.	100.	85.	77.	94.	78.	84.	59.
261	64.	43.	49.	39.	37.	20.	24.	13.	9.	8.
271	11.	6.	5.	5.	8.	3.	2.	2.	2.	1.
281	3.	3.	1.	1.	0.	2.	4.	0.	4.	1.
291	2.	1.	2.	0.	3.	0.	6.	2.	1.	0.
301	0.	2.	3.	2.	4.	2.	0.	2.	1.	1.
311	0.	0.	0.	0.	1.	0.	2.	0.	2.	1.
321	0.	0.	1.	1.	1.	1.	0.	0.	0.	1.
331	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
341	0.	0.	1.	3.	2.	2.	3.	2.	2.	1.
351	1.	0.	2.	2.	1.	1.	2.	1.	0.	1.
361	0.	0.	1.	1.	0.	0.	0.	0.	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.	1.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	1.	2.	0.	0.	0.	0.
431	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.
441	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	1.	0.	0.	1.	1.	0.	0.	0.	0.
461	0.	0.	0.	0.	1.	0.	1.	0.	0.	0.
471	2.	1.	0.	0.	3.	0.	1.	1.	0.	1.
481	1.	0.	1.	0.	1.	0.	1.	1.	0.	0.
491	1.	2.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Raymond 8/19/93

WHC-SD-WM-DP-054 REV 0

GENERAL ALPHA ENERGY ANALYSIS

Rev. 1.10

DATA REDUCTION REPORT

SAMPLE
G-642-5782
File ID: SD6602.SPC

Counted on: 8/18/93 @14: 0
Detector/Geometry number: 6/ 1
Count time: 30000. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	8.0	7.2	352.546	352.546	44.000	51.842	22.000	19.919
2	46.2	36.3	303.282	303.282	16.000	5.226	8.000	19.919
3	1096.9	1109.0	253.264	253.264	32.000	32.988	16.000	10.958

PEAK RESULTS

Peak ID	Isotope	AEA Fract.	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	d/m	Activity uCi/ea
	Cm243	0.0075	5.786	5.753	0.033	0.24	0.25	1.81	0.815E-06
	Pu236		5.756	5.753	0.003				0.607E-06
2	Pu238	0.0118	5.499	5.522	-0.023	0.02	0.40	2.88	0.130E-05
3	Am243	0.9807	5.234	5.287	-0.053	0.16	32.98	1567.16	0.706E-03

DETECTOR CALIBRATION

Energy(MEV) = 4.096 + (0.0047)*Channel
Energy range (MeV): 4.096 TO 6.503
Efficiency = 0.1913 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	16985.0	100.000
Smoothed	16985.0	100.000
Composite fit	16813.7	98.991
Residuals	171.3	1.009

Analyzed by: _____

SPECTRUM SD6602.SPC
1 LEGEND: RAW = ... MODELED PEAKS = 1,2,.., ETC 4313.6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Raw Data Dump for AEA Spectrum: SP:SD6602.SPC

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
31	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
51	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
71	2.	0.	0.	0.	0.	1.	0.	1.	0.	0.
81	0.	1.	2.	0.	0.	0.	1.	0.	1.	1.
91	1.	0.	1.	0.	1.	0.	0.	0.	1.	2.
101	0.	0.	0.	0.	0.	1.	1.	0.	1.	0.
111	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
121	0.	0.	0.	1.	0.	0.	1.	0.	0.	0.
131	1.	0.	2.	0.	0.	0.	2.	1.	4.	1.
141	4.	0.	1.	0.	2.	2.	0.	0.	1.	1.
151	1.	1.	2.	0.	1.	1.	1.	2.	1.	1.
161	5.	1.	1.	3.	1.	1.	3.	4.	2.	0.
171	3.	1.	1.	2.	3.	2.	1.	6.	4.	7.
181	4.	3.	5.	4.	6.	4.	2.	5.	4.	7.
191	6.	1.	7.	8.	11.	6.	8.	6.	14.	8.
201	13.	10.	7.	13.	10.	9.	11.	8.	17.	17.
211	20.	27.	23.	33.	37.	31.	29.	39.	43.	41.
221	46.	61.	74.	79.	81.	85.	105.	99.	123.	120.
231	141.	179.	172.	190.	213.	236.	266.	274.	301.	345.
241	372.	428.	395.	467.	472.	531.	565.	591.	608.	531.
251	554.	599.	562.	567.	542.	511.	496.	484.	477.	376.
261	365.	343.	306.	264.	217.	161.	166.	160.	102.	98.
271	79.	62.	57.	40.	36.	38.	15.	23.	19.	13.
281	15.	11.	13.	6.	7.	7.	10.	9.	7.	9.
291	8.	12.	5.	4.	5.	9.	9.	9.	10.	9.
301	7.	16.	19.	11.	9.	6.	5.	9.	7.	3.
311	3.	5.	0.	2.	1.	2.	0.	1.	0.	2.
321	0.	2.	1.	0.	1.	0.	1.	0.	2.	1.
331	0.	0.	1.	1.	0.	0.	3.	1.	6.	1.
341	1.	1.	6.	4.	4.	2.	2.	3.	6.	4.
351	3.	6.	5.	3.	4.	4.	1.	2.	1.	2.
361	4.	5.	6.	2.	1.	2.	3.	2.	1.	3.
371	1.	1.	2.	0.	0.	0.	1.	2.	0.	0.
381	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
401	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
411	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
421	1.	0.	1.	0.	0.	0.	0.	1.	0.	1.
431	1.	0.	0.	0.	1.	0.	0.	1.	0.	0.
441	0.	0.	0.	1.	0.	0.	1.	0.	1.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
471	4.	0.	1.	1.	2.	0.	0.	0.	1.	0.
481	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
491	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

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