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 6 **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

THIS PAGE INTENTIONALLY
LEFT BLANK.

90-DAY - PHYSICAL TEST ANALYSES

THIS PAGE INTENTIONALLY
LEFT BLANK.

WESTINGHOUSE HANFORD COMPANY

WHC-SD-WM-DP-054 REV 0

222-S LABORATORY

ANALYTICAL BATCH

ab Segment Serial No.	Customer ID:
Analysis:	Sample Prep:

Instrument: SN-246354	Procedure/ Rev:
Technologist:	Date: 10-26-93
Starting Time: 1430	Temperature 25°C
Ending Time: 1515	Chemist: R.W. Schroeder

Comments:

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD		11		
2	~~REAGENT BLANK~~ SAMPLE		12		
3	SAMPLE		13		
4	SAMPLE		14		
5	SAMPLE		15		
6			16		
7			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 STD	[illegible] T / 1.5 (			[illegible]

739

A-6000-881 (03/93)

ANALYTICAL BATCH SUMMARY SHEET

METHOD: LA 212-102/-05 ANALYTE: pH ANALYSIS START DATE: [illegible]

PREPARED BY: Rob Schroeder DATE PREPARED: 11-3-93

PROJECT: 102 10 DAY UNITS: None SAMPLE PREP: Direct / Digest wt.=

SPL PT.	SERIAL No.	RESULT #1	RESULT #2	DIFF.	AVERAGE	RPD%	%REC	DET LIM
STD	G 696	10.02					100.2	
A-9	G 698	9.37						
B-9	G 699	9.91						
C-9	G 700	10.92						
D-9	G 701	11.02						

[X] NO SPECIAL PROBLEMS / METHOD VARIATIONS IN HIS BATCH

NARRATIVE-LIST SPECIFIC PROBLEMS / VARIATIONS FOR THIS BATCH:

Robert W Schroeder
11-3-93

pH ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
G- 698'.-5513	102 90 DAY	9-23-93	14:45	26

Determination	Method-Standard	Result Units	Charge Code	Reruns
pH	LA-212-102	NONE	D44B3	1

Sample Size	Customer ID
? 1.5 ml	STD

Remarks, Calculations, Results

S350 PH MAT.
STD# 18U16-T RESULT 10.02
STD VAL 10 %REC 100.2%
S353 NBSPH1
STD# RESULT
STD VAL %REC

RERUN

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

Date	Time Completed	Lab Unit Mgr	
10-26-93	15:15	10-28-93 Rw Schroeder	

54-6800-061 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
G- 698'.-5713	102 90 DAY	9-23-93	15: 6	26

Determination	Method-Standard	Result Units	Charge Code	Reruns
pH	LA-212-102	NONE	D44B3	1

Sample Size	Customer ID
? 1.5 ml	A-9

Remarks, Calculations, Results

RERUN

pH 9.37

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

Date	Time Completed	Lab Unit Mgr	
10-26-93	15:5	10-28-93 Rw Schroeder	

54-6800-061 (R-10-83)

BEST AVAILABLE COPY

pH ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
G 699.-5713	102 90 DAY	9-23-93	15: 6	[illegible]

Determination	Method Standard	Result Units	Charge Code	Reruns
pH	LA-212-102	NONE	D44B3	1

Sample Size	Customer ID
? 1.5 ml	B-9

Remarks Calculations, Results

RERUN

pH: 9.91

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

Date	Time Completed	Lab Unit Mgr	
10-26-93	1515	10-28-93 RW Schroeder	10/27

54-6800-06 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
G 700.-5713	102 90 DAY	9-23-93	15: 6	26

Determination	Method Standard	Result Units	Charge Code	Reruns
pH	LA-212-102	NONE	D44B3	1

Sample Size	Customer ID
? 1.5 ml	C-9

Remarks Calculations Results

RERUN

pH: 10.92

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

Date	Time Completed	Lab Unit Mgr	
10-26-93	1515	10-28-93 RW Schroeder	10/27

54-6800-06 (R-10-83)

BEST AVAILABLE COPY

pH ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
G 701.-5713	103 90 DAY	9-23-93	15: 7	28

Determination	Method Standard	Result Units	Charge Code	Persons
pH	LA-212-102	NONE	D44B3	1

Sample Size	Customer ID
? 1.5ml	D-9

Remarks, Calculations, Results

RERUN

pH: 11.02

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

Date	Time Completed	Lab Unit Mgr	
10-26-93	1515	10-28-93 RW Schroeder	10/27

54-6800-001 (9-10-83)

BEST AVAILABLE COPY

WHC-SD-WM-DP-054 REV 0

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

Batch 1956

ANALYTICAL BATCH

Lab Segment Serial No. G-720, G-721, G-722, G-723	Customer ID: A-10, B-10, C-10, D-10
Analysis: Pu	Sample Prep: Dissolve

Instrument: SN 246354	Procedure/ Rev: LA-212-102 / G-5
Technologist: RG Acker	Date: 10/20/93
Starting Time: 10:30	Temperature 25°C
Ending Time: 11:00	Chemist: Rob Schroeder

Comments:

	Description	Lab ID		Description	Lab ID
1	STD	G-718-5513	11		
2	Sample	G-720-5713	12		
3	Sample	G-721-5713	13		
4	Sample	G-722-5713	14		
5	Sample	G-723-5713	15		
6			16		
7			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
LNCS	RD16-I/3ml			
		735		

A-6000-881 (03/92)

ANALYTICAL BATCH SUMMARY SHEET

METHOD: LA-212-102/L-5 ANALYTE: pH ANALYSIS START DATE: 10-22-93

PREPARED BY: Rob Schroeder DATE PREPARED: 10-21-93

PROJECT: 102 10dilu UNITS: pH SAMPLE PREP: Direct / Digest wt.=

SPL PT.	SERIAL No.	RESULT #1	RESULT #2	DIFF.	AVERAGE	RPD%	%REC	DET LIM
STd	G718	10.10					101.0	—
A-10	G720	11.17						
B-10	G721	11.09						
C-10	G722	11.05	22 10 21-93					
D-10	G723	11.14						

[X] NO SPECIAL PROBLEMS / METHOD VARIATIONS IN HIS BATCH

NARRATIVE-LIST SPECIFIC PROBLEMS / VARIATIONS FOR THIS BATCH:

Robert W Schroeder

pH ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
G 718.-5513	102 90 DAY	10-15-93	9:42	[illegible]

Determination	Method/Standard	Result Units	Charge Code	Reruns
pH	LA-212-102	NONE	D44B3	0

Sample Size	Customer ID
? 3 ml	STD

Remarks, Calculations, Results

S350 PH MAT.
STD# PH6-I RESULT 10.10
STD VAL 10.00 %REC
S353 NBSPH1
STD# RESULT
STD VAL %REC 101%

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

Date	Time Completed	Lab Unit Mgr
10/20/93	10:40	RW Schroeder

SF 6800-063 (R 10 83)

Serial No	Sample Point	Date	Time Issued	Priority
G 720.-5713	102 90 DAY	10-15-93	9:47	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
pH	LA-212-102	NONE	D44B3	0

Sample Size	Customer ID
? 3 ml	A-10

Remarks, Calculations, Results

11.17

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

Date	Time Completed	Lab Unit Mgr
10/20/93	10:45	RW Schroeder 10-21-93

SF 6800-063 (R 10 83)

BEST AVAILABLE COPY

pH ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
G 721.-5713	103 90 DAY	10-15-93	9:50	26

Determination	Method-Standard	Result Units	Charge Code	Reruns
pH	LA-212-102	NONE	D44B3	0

Sample Size	Customer ID
? 3ml	B-10

Remarks Calculations Results

11.09

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

Date	Time Completed	Lab Unit Mgr
10/20/93	10:50	RW Schroeder 10-21-93

54-6800-061 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
G 722.-5713	103 90 DAY	10-15-93	9:50	26

Determination	Method-Standard	Result Units	Charge Code	Reruns
pH	LA-212-102	NONE	D44B3	0

Sample Size	Customer ID
? 3ml	C-10

Remarks Calculations Results

11.05

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

Date	Time Completed	Lab Unit Mgr
10/20/93	10:52	RW Schroeder 10-21-93

54-6800-061 (R-10-83)

BEST AVAILABLE COPY

pH ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
G 723.-5713	102 90 DAY	10-15-93	9:51	30

Determination	Method Standard	Result Units	Charge Code	Reruns
pH	LA-212-102	NONE	D44B3	0

Sample Size	Customer ID
? 3ml	D-10

Remarks Calculations Results

11.14

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

Date	Time Completed	Lab Unit Mgr	
10/20/93	10:55	RW Schroeder 10-21-93	

54-6800-08 (R-10-83)

BEST AVAILABLE COPY

WHC-SD-WM-DP-054 REV 0

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

Batch 2211

ANALYTICAL BATCH

Segment Serial No. [illegible]	Customer ID: [illegible]
Analysis: [illegible]	Sample Prep: [illegible]

Instrument: [illegible]	Procedure/ Rev: [illegible]
Technologist: [illegible]	Date: 11-23-93
Starting Time: 1000	Temperature 25°C
Ending Time: 1100	Chemist: [illegible]

Comments:

	Description	Lab ID		Description	Lab ID
1	STD	G-745-5513	11		
2	Blank	G-745-5612	12		
3	[illegible]	[illegible]	13		
4	[illegible]	[illegible]	14		
5	[illegible]	G-749-5713	15		
6	[illegible]	[illegible]	16		
7			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
[illegible]	[illegible]			
		740		

A-6000-881 (03/92)

ANALYTICAL BATCH SUMMARY SHEET

METHOD: LA-212-102/-77 ANALYTE: pH ANALYSIS START DATE: 11-29-93

PREPARED BY: Rob Schroeder DATE PREPARED: 11-29-93

PROJECT: 102 90 DAY UNITS: None SAMPLE PREP: Direct / Digest wt.=

SPL PT.	SERIAL No.	RESULT #1	RESULT #2	DIFF.	AVERAGE	RPD%	%REC	DET LIM
STD	G745	10.01					100.1	
BLK	G746	5.50						
A-8	G747	11.44						
B-8	G748	11.12						
C-8	G749	11.11						
D-8	G750	11.11						

[X] NO SPECIAL PROBLEMS / METHOD VARIATIONS IN HIS BATCH

NARRATIVE-LIST SPECIFIC PROBLEMS / VARIATIONS FOR THIS BATCH:

Robert W Schroeder
11-29-93

pH ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
G 745.-5513	102 90 DAY	11-22-93	[illegible]	

Determination	Method Standard	Result Units	Charge Code	Reruns
pH	LA-212-102	NONE	VOGEL	

Sample Size	Customer ID
?	STD

Remarks, Calculations, Results

S350 PH MAT.
STD# 18N167 RESULT 10.01
STD VAL 10.00 %REC 100.1%
S353 NBSPH1
STD# RESULT
STD VAL %REC

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

Date	Time Completed	Lab Unit Mgr
11-23-93	1100	Lakeb

54-6800-061 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
G 746.-5613	102 90 DAY	11-22-93	[illegible]	

Determination	Method Standard	Result Units	Charge Code	Reruns
pH	LA-212-102	NONE	VOGEL	

Sample Size	Customer ID
?	BLK

Remarks, Calculations, Results

REAGENT BLANK
PH 5.50

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

Date	Time Completed	Lab Unit Mgr
11-23-93	1100	Lakeb

54-6800-061 (R-10-83)

BEST AVAILABLE COPY

pH ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
G 748.-5713	102 90 DAY	11-22-93	12:54	26

Determination	Method Standard	Result Units	Charge Code	Reruns
pH	LA-212-102	NONE	VOGEL	0

Sample Size	Customer ID
?	A-8

Remarks Calculations Results

PH 11.44

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

Date	Time Completed	Lab Unit Mgr
11-23-93	11.00	Roberts

54-6800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
G 748.-5713	102 90 DAY	11-22-93	12:54	26

Determination	Method Standard	Result Units	Charge Code	Reruns
pH	LA-212-102	NONE	VOGEL	0

Sample Size	Customer ID
?	B-8

Remarks Calculations Results

PH 11.12

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

Date	Time Completed	Lab Unit Mgr
11-22-93	1100	Roberts

54-6800-061 (R-10-83)

BEST AVAILABLE COPY

pH ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
G 750.-5713	102 90 DAY	11-22-93	13:55	26

Determination	Method Standard	Result Units	Charge Code	Reruns
pH	LA-212-102	NONE	VOGEL	0

Sample Size	Customer ID
?	C-8

Remarks, Calculations, Results

PH 11.11

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

Date	Time Completed	Lab Unit Mgr
11-23-93	1100	Rabots

54-6800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
G 750.-5713	102 90 DAY	11-22-93	13:55	26

Determination	Method Standard	Result Units	Charge Code	Reruns
pH	LA-212-102	NONE	VOGEL	0

Sample Size	Customer ID
?	D-8

Remarks, Calculations, Results

PH 11.11

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

Date	Time Completed	Lab Unit Mgr
11-23-93	1100	Rabots

54-6800-061 (R-10-83)

BEST AVAILABLE COPY

90-DAY - ANION ANALYSES

WHC-SD-WM-DP-054 REV 0

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

Batch 1898

ANALYTICAL BATCH

Lab Segment Serial No. G 698-701	Customer ID: A,B,C,D,-9
Analysis: IC	Sample Prep: DIRECT

Instrument: WC ~~41355~~ 41533 10-14-93	Procedure/ Rev: LA 533-105 / C-01
Technologist: R. WENDLAND ( )	Date: 10-14-93
Starting Time: 6:46	Temperature 22°C
Ending Time: 844	Chemist: S. BOLLING

Comments:

	Description	Lab ID		Description	Lab ID
1	LMCS	G696 - 5571	11		
2	BLANK	G697 - 5671	12		
3	SAMPLE	G698 5771	13		
4	SAMPLE	G699 5771	14		
5	SAMPLE	G700 5771	15		
6	SAMPLE	G701 5771	16		
7	LMCS	G702 5571	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	24N9E	.100 ml		
		746		

RUBBY WENDLAND
10-14-93

A-6000-881 (03/92)

THIS PAGE INTENTIONALLY
LEFT BLANK.

ANALYTICAL BATCH SUMMARY SHEET

METHOD: LA-533-115/-9

DATE START: 10/11/93

PREPARED BY: [illegible]

DATE COMPLETE: 10/14/93

SPL NAME	SPL ID	ANALYTE	RESULT #1	RESULT #2	AVERAGE	RPD%	%REC	DET LIM	ASCTER
	UNITS:								
STD	[illegible]	F	5.[illegible]						
	6696	Cl	74.9				99.[illegible]	[illegible]	
~~BLANK~~		NO_2	5.32				8[illegible]	1	
SPB		NO_3	5.69				95.27	1	
		PO_4	5.24				101.4	1	
		SO_4	5.92				98.8	1	
	6697	F	<.1						
		Cl	<.2						
		NO_2	<.1						
		NO_3	<.1						
		PO_4	[illegible]						
		SO_4	[illegible]						
		F	<.1						
		Cl	<.2						
		NO_2	<.1						
		NO_3	<.1						
		PO_4	<.1						
		SO_4	18.6						
	6699	F	<.1						
		Cl	10.6						
		NO_2	1.41						
		NO_3	2.3						
		PO_4	<.1						
		SO_4	38.6						
	6700	F	<.1	(Possible Matrix interference)					
		Cl	15.4						
		NO_2	2.00						
		NO_3	2.09						
		PO_4	<.1						
		SO_4	21.5						
	6701	F	<.1 (Possible Matrix interference)						
		Cl	18.2						
		NO_2	2.95						
		NO_3	3.43						
		PO_4	<.1						
		SO_4	43.4						
2nd std	6702	F	5.01					93.0	
		Cl	7.3.1					97.[illegible]	
		NO_2	5.41					97.43	
		NO_3	5.72					98.79	
		PO_4	5.43					105	
		SO_4	5.92					9[illegible]	

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

LIST SPECIFIC PROBLEMS/VARIATIONS FOR THIS BATCH:

6700 + 6701 had unknown peaks (possibly from organic acids) which appeared in the retention time as fluoride. This may have interfered with the F analysis.

Stacey Billing
10/14/93

ION CHROMATOGRAPHIC ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
G 696.-5571	102 90 DAY	9-23-93	14:46	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	% RECOVERY	D44B3	0

Sample Size	Customer ID
? 100-10 ZANGE	STD

Remarks, Calculations, Results

	ug/ml	% Rec
EDP 974 F	50.8	90.71
EDP 972 CL	74.9	99.87
EDP 968 NO2	53.2	95.86
EDP 978 NO3	54.9	98.27
EDP 976 PO4	52.4	101.4
EDP 970 SO4	54.92	98.18

ROBBY WENDLAND

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

Date	Time Completed	Lab Unit Mgr
10-14-93	844	Stacey Bolling

54-6600-06 R 12-83

Serial No	Sample Point	Date	Time Issued	Priority
G 697.-5671	102 90 DAY	9-23-93	14:59	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	uG/ML	D44B3	0

Sample Size	Customer ID
? DIRECT	BLK

Remarks, Calculations, Results

REAGENT BLANK

	ug/ml
F	<.1
Cl	<.2
NO_2	<1
NO_3	<1
PO_4	<1
SO_4	<1

ROBBY WENDLAND

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

Date	Time Completed	Lab Unit Mgr
10-14-93	844	Stacey Bolling

54-6600-06 R 12-83

BEST AVAILABLE COPY

ION CHROMATOGRAPHIC ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
G 698.-5771	102 90 DAY	9-23-93	15: 6	26

Determination	Method-Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	uG/ML	D44B3	0

Sample Size	Customer ID
? direct	A-9

Remarks, Calculations, Results

	µg/ml
F	<.1
Cl	<.2
NO_2	<1
NO_3	<1
PO_4	<1
SO_4	13.6

Rusty Wendland

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

Date	Time Completed	Lab Unit Mgr
10-14-93	844	Stacey Bolling

10/18

54-6800-051 (4-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
G 699.-5771	102 90 DAY	9-23-93	15: 6	26

Determination	Method-Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	uG/ML	D44B3	0

Sample Size	Customer ID
? direct & 1-10	B-9

Remarks, Calculations, Results

	µg/ml		DF
F	<.1		1
Cl	10/14/93	15.6	11
NO_2	17	199	11
NO_3	3/25	263	11
PO_4	<1		1
SO_4	10/14/93	29.6	1

Rusty Wendland

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

Date	Time Completed	Lab Unit Mgr
10-14-93	844	Stacey Bolling

10/18

54-6800-051 (4-10-83)

BEST AVAILABLE COPY

ION CHROMATOGRAPHIC ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
G 700.-5771	102 90 DAY	9-23-93	15: 6	26

Determination	Method Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	uG/ML	D44B3	0

Sample Size	Customer ID
? direct 1-10	C-9

Remarks, Calculations, Results

	DF	µg/ml
F	~~<.1~~ 1	<.1 (possible matrix interference)
Cl	11	15.4
NO_2	11	200
NO_3	11	269
PO_4	1	<1
SO_4	1	27.5

SOS 10/14/93

Robby Wendland

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

Date	Time Completed	Lab Unit Mgr	
10-14-93	844	Stacey Belling	10/14

54-6800-09 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
G 701.-5771	102 90 DAY	9-23-93	15: 7	26

Determination	Method Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	uG/ML	D44B3	0

Sample Size	Customer ID
? direct 1-10	D-9

Remarks, Calculations, Results

	DF	µg/ml
F	1	<.1 (possible matrix interference)
Cl	11	18.2
NO_2	11	245
NO_3	11	343
PO_4	1	<1
SO_4	1	43.4

Robby Wendland

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

Date	Time Completed	Lab Unit Mgr	
10-14-93	844	Stacey Belling	10/14

54-6800-09 (R-10-83)

BEST AVAILABLE COPY

ION CHROMATOGRAPHIC ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
G 702.-5571	102 90 DAY	9-23-93	15:10	26

Determination	Method Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	% RECOVERY	D4-1B3	0

Sample Size			Customer ID
?	100-10	ZANGE	STD

Remarks, Calculations, Results

	ug/ml	% Rec
EDP 974 F	521	
EDP 972 CL	73.4	93.04
EDP 968 NO2	541	97.87
EDP 978 NO3	572	97.48
EDP 976 PO4	543	98.79
EDP 970 SO4	592	105
		98.18

Bobby Wendland

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
		CA Clark		10/14

Date	Time Completed	Lab Unit Mgr
10-14-93	844	Stacey Bolling

54-6800-061 (6-10-83)

BEST AVAILABLE COPY

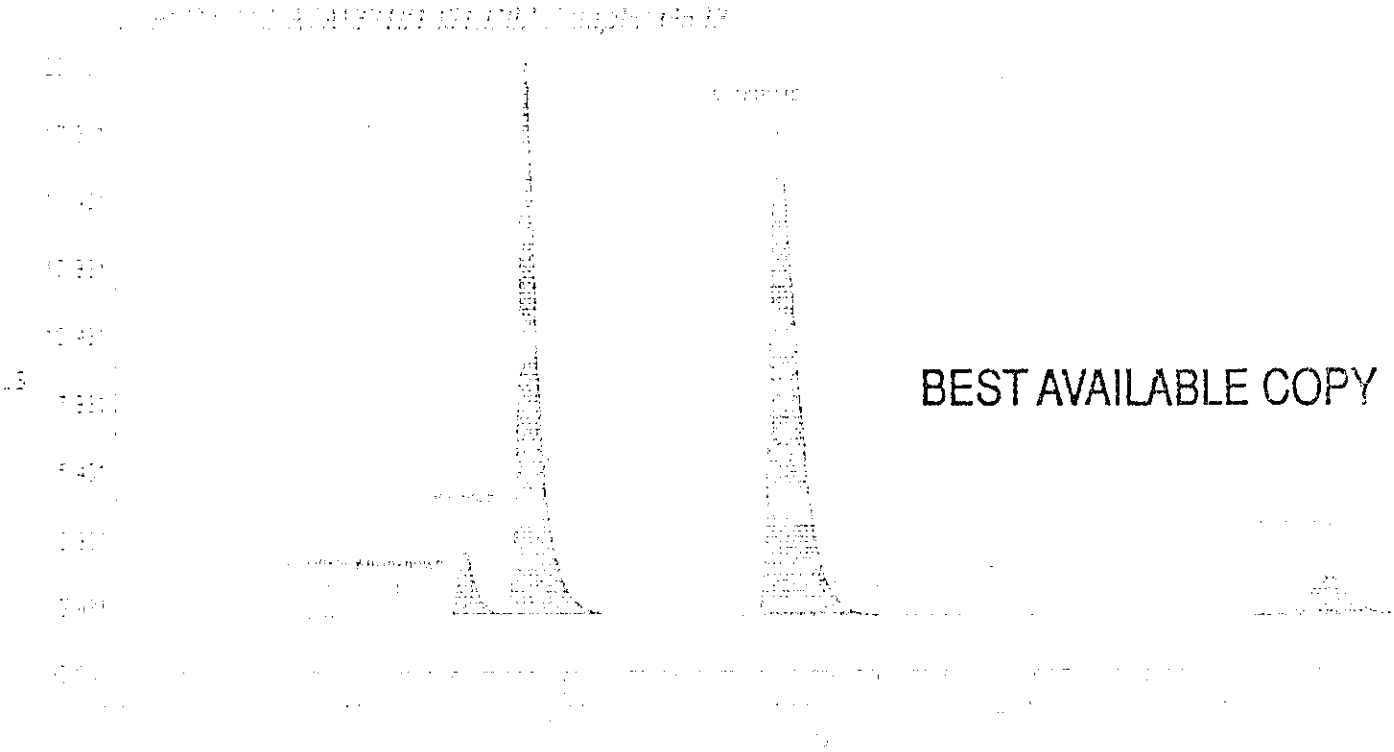
BEST AVAILABLE COPY

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 752 TO 761.

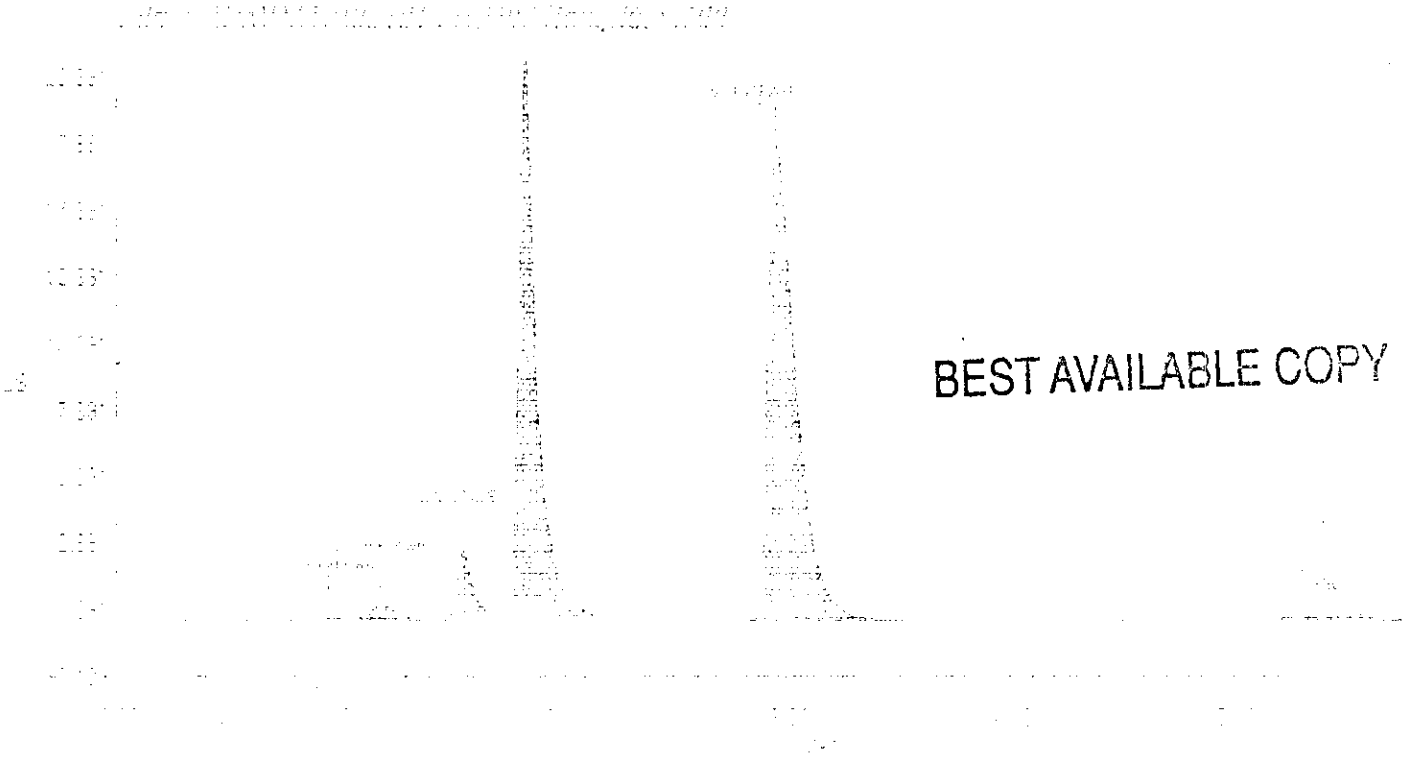
BEST AVAILABLE COPY

BEST AVAILABLE COPY

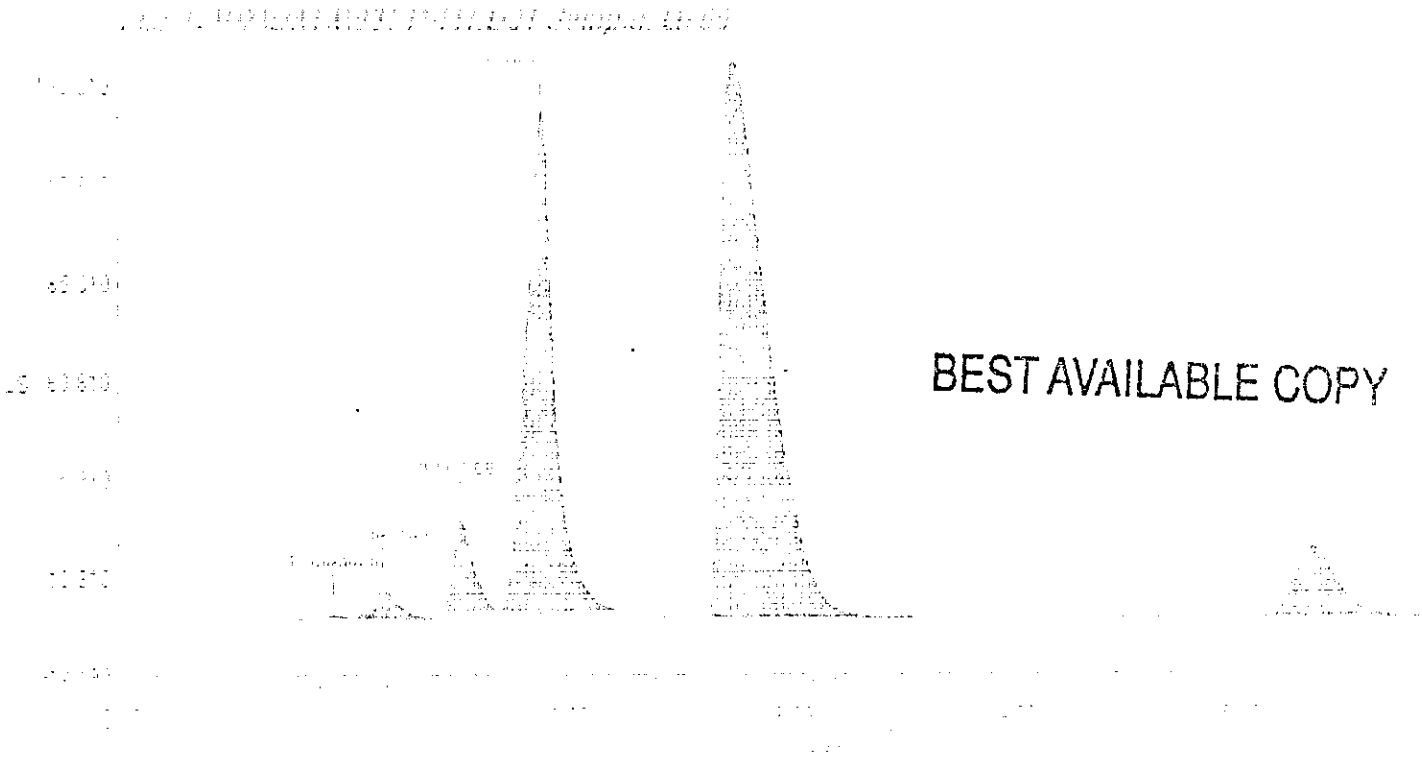
BEST AVAILABLE COPY



BEST AVAILABLE COPY



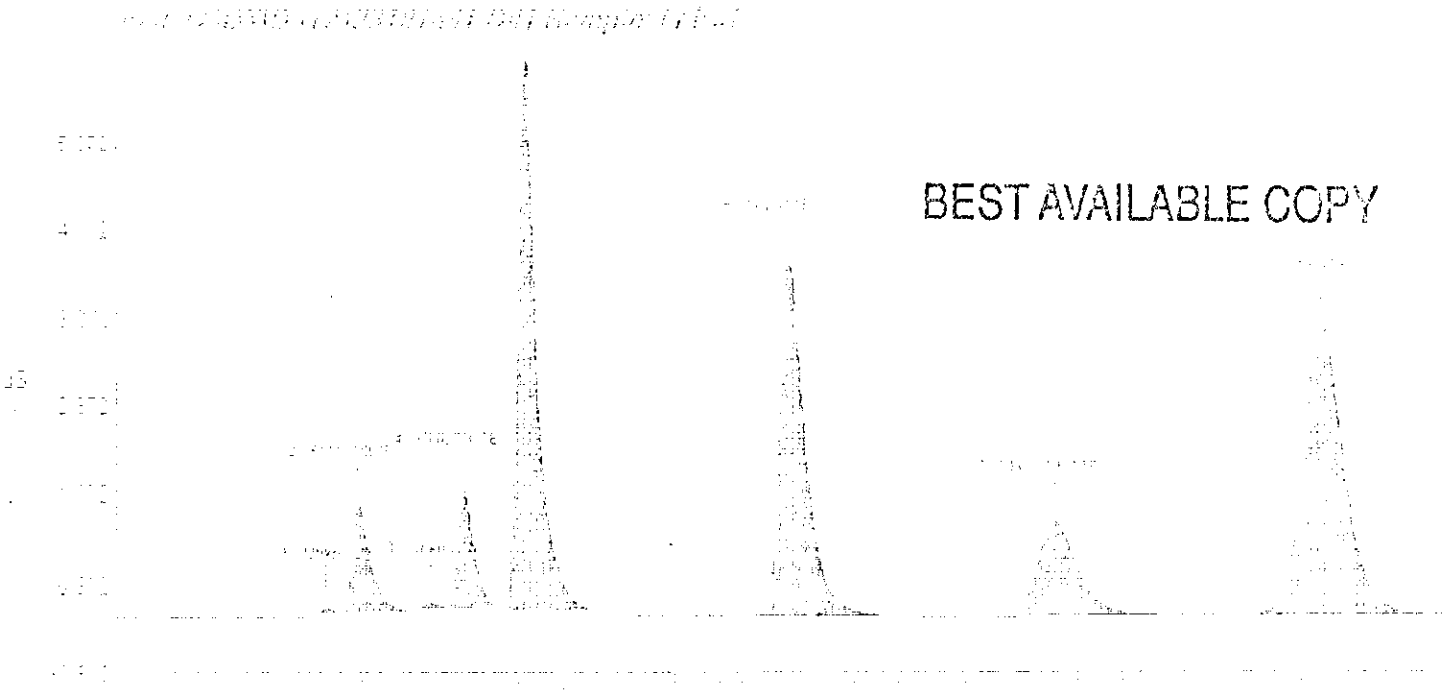
BEST AVAILABLE COPY



BEST AVAILABLE COPY

BEST AVAILABLE COPY

BEST AVAILABLE COPY



BEST AVAILABLE COPY

WHC-SD-WM-DP-054 REV 0

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

Batch 1954

ANALYTICAL BATCH

Lab Segment Serial No. G720-23	Customer ID: A10, B10, C-10, D10 102-SD-DA4
Analysis: IC	Sample Prep: DIRECT

Instrument: WC 41533	Procedure/ Rev: LA 533-105 / C-0 10/22/93
Technologist: R. WENDLAND ( )	Date: 10-21-93
Starting Time: 7:01	Temperature 23.0°C
Ending Time: 1301	Chemist: S. BOLLING

Comments:

	Description	Lab ID		Description	Lab ID
1	LMCS	G718-5571	11	LMCS	G724 5571
2	BLK	G719-5671	12		
3	SAMPLE	G720-5771	13		
4	10-21-93 RW ~~BLK~~ DUP	G720-5871	14		
5	SAMPLE	G721-5771	15		
6	DUP	G721-5871	16		
7	SAMPLE	G722-5771	17		
8	DUP	G722 5871	18		
9	SAMPLE	G723 5771	19		
10	DUP	G723 5871	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	24N9 E	.100 ml		
		762		

ROBBY WENDLAND
10-21-93

A-6000-881 (03/92)

ANALYTICAL BATCH SUMMARY SHEET

METHOD: 9 633 105/C-1

DATE START: 10/21/93

PREPARED BY: S.D. Billing

DATE COMPLETE: 10/21/93

UNITS:

SPL NAME	SPL ID	ANALYTE	RESULT #1	RESULT #2	AVERAGE	RPD%	%REC	DET LIM	% CT ER
STD	G 418	[illegible]	[illegible]	[illegible]			[illegible]		
24 NAE		NO3	56.7	[illegible]	193		97.93	1	
~~BLANK~~ blank G 419		NO2	<1						
SMS 10/22/93		NO3	<1						
	G 420	NO2	<1	<1					
		NO3	<1	<1					
	G 421	NO2	1.56E2	1.55E2	1.555E2	0.43			
		NO3	2.12E2	2.13E2	2.125E2	.471			
	G 422	NO2	1.41E2	1.40E2	1.405E2	.712			
		NO3	[illegible]	[illegible]	[illegible]	.519			
	G 423	NO2	1.49E2	1.50E2	1.495E2	[illegible]			
		NO3	2.14E2	2.15E2	2.145E2	.466			
end std	G 424	NO2	527				99.96		
		NO3	56.7				97.93		

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

LIST SPECIFIC PROBLEMS/VARIATIONS FOR THIS BATCH:

Stacey Billing
10/22/93

ION CHROMATOGRAPHIC ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
G 718.-5571	102 90 DAY	10-15-93	9:43	36

Determination	Method-Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	% RECOVERY	D44B3	0

Sample Size	Customer ID
? .100-10 ZANGE	STD

Remarks, Calculations, Results

	ug/ml	% Rec
EDP 974 F		
EDP 972 CL		
EDP 968 NO2	532	95.86
EDP 978 NO3	567	97.93
EDP 976 PO4		
EDP 970 SO4		

NO_2, NO_3 only

Robby Wendland

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

Date	Time Completed	Lab Unit Mgr
10-21-93	1301	Stacey Bolling

54-6800-001 (R 10-83)

Serial No	Sample Point	Date	Time Issued	Priority
G 719.-5671	102 90 DAY	10-15-93	9:46	36

Determination	Method-Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	uG/ML	D44B3	0

Sample Size	Customer ID
? direct	BLK

Remarks, Calculations, Results

REAGENT BLANK

NO_2, NO_3 only

	ug/ml
NO_2	<1
NO_3	<1

Robby Wendland

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

Date	Time Completed	Lab Unit Mgr
10-21-93	1301	Stacey Bolling

54-6800-001 (R 10-83)

BEST AVAILABLE COPY

ION CHROMATOGRAPHIC ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
G 720.-5771	102 90 DAY	10-15-93	9:47	26

Determination	Method Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	uG/ML	D44B3	0

Sample Size	Customer ID
? direct	A-10

Remarks, Calculations, Results

ug/ml

NO_2, NO_3 only

NO_2 <1

NO_3 <1

Robby Wendland

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

Date	Time Completed	Lab Unit Mgr
10-21-93	1301	Stacy Billing

54-6800-661 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
G 720.-5871	102 90 DAY	10-15-93	9:49	26

Determination	Method Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	uG/ML	D44B3	0

Sample Size	Customer ID
? direct	A-10

Remarks, Calculations, Results

ug/ml

DUPLICATE SAMPLE

NO_2, NO_3 only

NO_2 <1

NO_3 <1

Robby Wendland

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

Date	Time Completed	Lab Unit Mgr
10-21-93	1301	Stacy Billing

54-6800-661 (R-10-83)

BEST AVAILABLE COPY

ION CHROMATOGRAPHIC ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
G 721.-5771	102 90 DAY	10-15-93	9:50	00

Determination	Method-Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	uG/ML	D44B3	0

Sample Size	Customer ID
? 1-10	B-10

Remarks, Calculations, Results

NO_2, NO_3 only

	ug/ml
NO_2	1.56E2
NO_3	2.12E2

Robert Wendland

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

Date	Time Completed	Lab Unit Mgr
10-21-93	1301	Stacey Collins 10/25

54-6800-061 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
G 721.-5871	102 90 DAY	10-15-93	9:50	00

Determination	Method-Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	uG/ML	D44B3	0

Sample Size	Customer ID
? 1-10	B-10

Remarks, Calculations, Results

DUPLICATE SAMPLE

NO_2, NO_3 only

	ug/ml	RPD
NO_2	1.55E2	.643
NO_3	2.13E2	.471

Robert Wendland

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

Date	Time Completed	Lab Unit Mgr
10-21-93	1301	Stacey Collins 10/25

54-6800-061 (R-10-83)

BEST AVAILABLE COPY

ION CHROMATOGRAPHIC ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
G 722.-5771	102 90 DAY	10-15-93	9:50	26

Determination	Method Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	uG/ML	D44B3	0

Sample Size	Customer ID
? 1-10	C-10

Remarks, Calculations, Results

NO2, NO3 only

	ug/ml
NO2	1.41E2
NO3	1.93E2

Robby Wendland

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

Date	Time Completed	Lab Unit Mgr
RW 10-21-93	1301	Stacey Bolling

54-6800-061 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
G 722.-5871	102 90 DAY	10-15-93	9:51	26

Determination	Method Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	uG/ML	D44B3	0

Sample Size	Customer ID
? 1-10	C-10

Remarks Calculations Results

DUPLICATE SAMPLE

NO2, NO3 only

	ug/ml	RPD
NO2	1.40E2	
NO3	1.92E2	

Robby Wendland

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

Date	Time Completed	Lab Unit Mgr
10-21-93	1301	Stacey Bolling

54-6800-061 (R-10-83)

BEST AVAILABLE COPY

ION CHROMATOGRAPHIC ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
G 723.-5771	102 90 DAY	10-15-93	9:51	26

Determination	Method-Standard	Result Units	Charge Code	Returns
IC	LA-533-105	uG/ML	D44B3	0

Sample Size	Customer ID
? 1-10	D-10

Remarks, Calculations, Results

ug/ml

NO_2, NO_3 only NO_2 1.49E2

NO_3 2.14E2

Robby Wendland

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

Date	Time Completed	Lab Unit Mgr
10-21-93	10 1301	Stacy Bolling

54-6800-061 (R 10 83)

Serial No	Sample Point	Date	Time Issued	Priority
G 723.-5871	102 90 DAY	10-15-93	9:52	26

Determination	Method-Standard	Result Units	Charge Code	Returns
IC	LA-533-105	uG/ML	D44B3	0

Sample Size	Customer ID
? 1.-10	D-10

Remarks, Calculations, Results

ug/ml RPD

DUPLICATE SAMPLE

NO_2, NO_3 only NO_2 1.50E2 .669

NO_3 2.15E2 .466

Robby Wendland

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

Date	Time Completed	Lab Unit Mgr
10-21-93	1301	Stacy Bolling

54-6800-061 (R 10 83)

BEST AVAILABLE COPY

ION CHROMATOGRAPHIC ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
G 724.-5571	102 90 DAY	10-15-93	10: 6	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	% RECOVERY	D44B3	0

Sample Size	Customer ID
? .100-10 2AN9E	STD

Remarks, Calculations, Results µg/ml % Rec

EDP 974 F
EDP 972 CL
EDP 968 NO2 527 94.96
EDP 978 NO3 567 97.93
EDP 976 PO4
EDP 970 SO4

NO2, NO3 only
Rory Weatherland

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

Date	Time Completed	Lab Unit Mgr
10-21-93	1301	Stacey Bellinz

54-6800-064 (R/10-83)

BEST AVAILABLE COPY

Peggy Westland

BEST AVAILABLE COPY

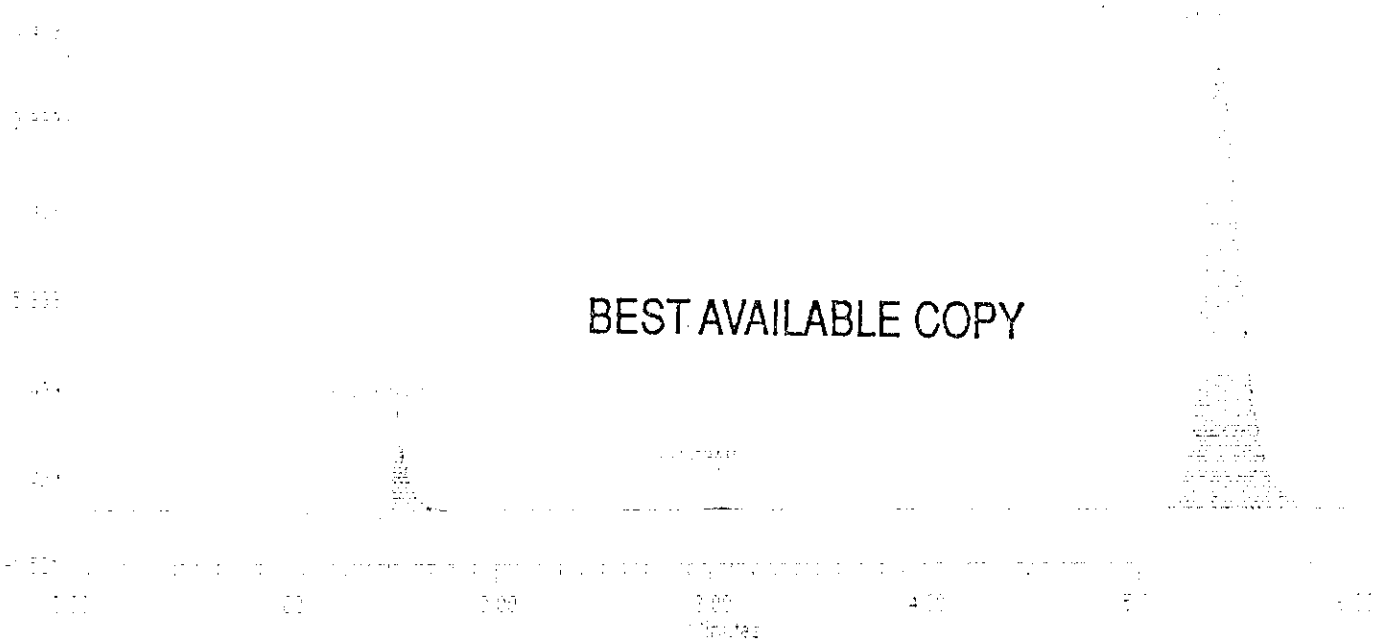
SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 770 TO 780.

/6 H9

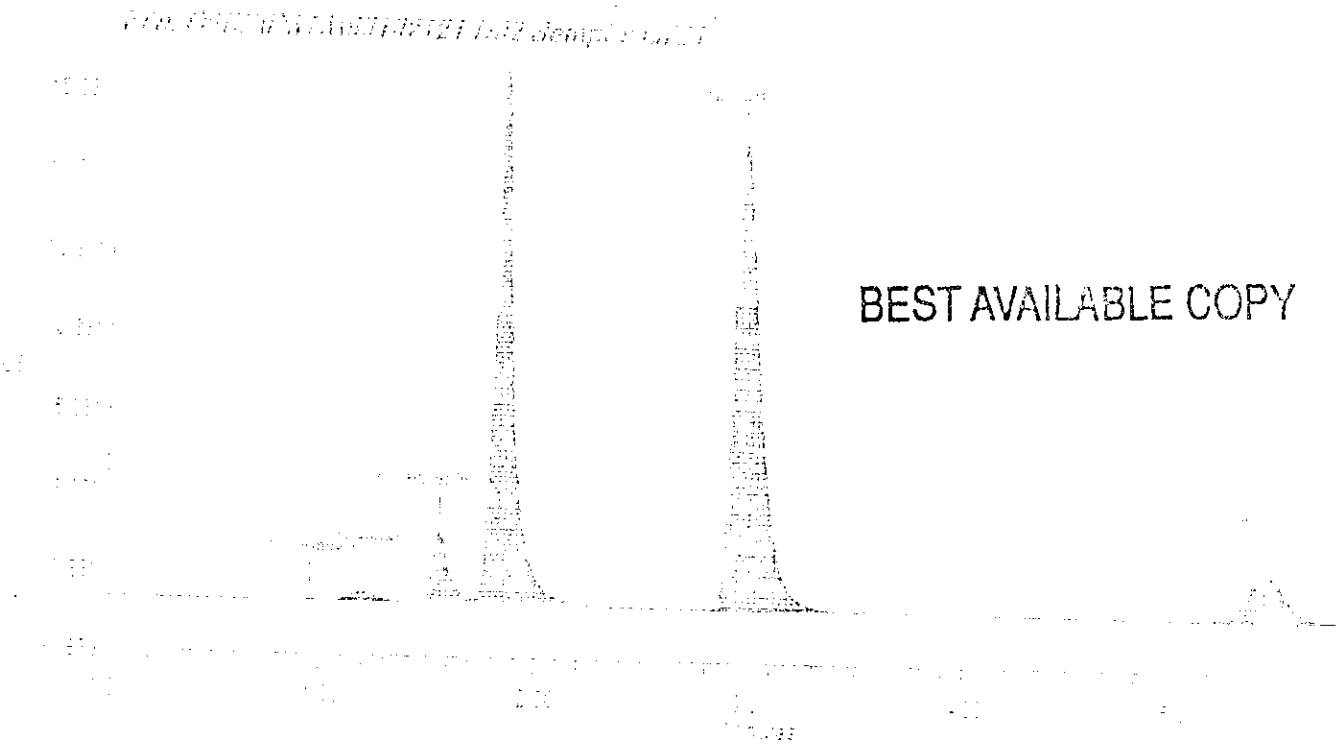
BEST AVAILABLE COPY

BEST AVAILABLE COPY

File: C:\[illegible] Sample: [illegible] DUP

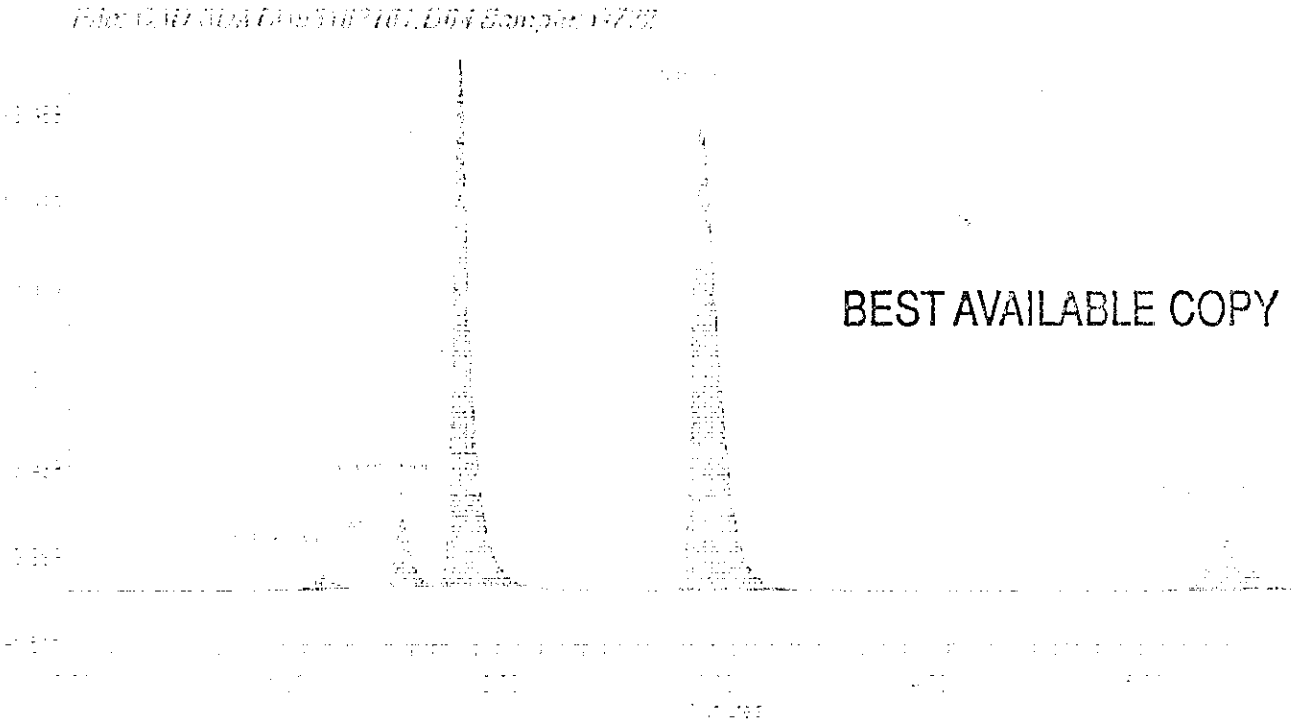


BEST AVAILABLE COPY

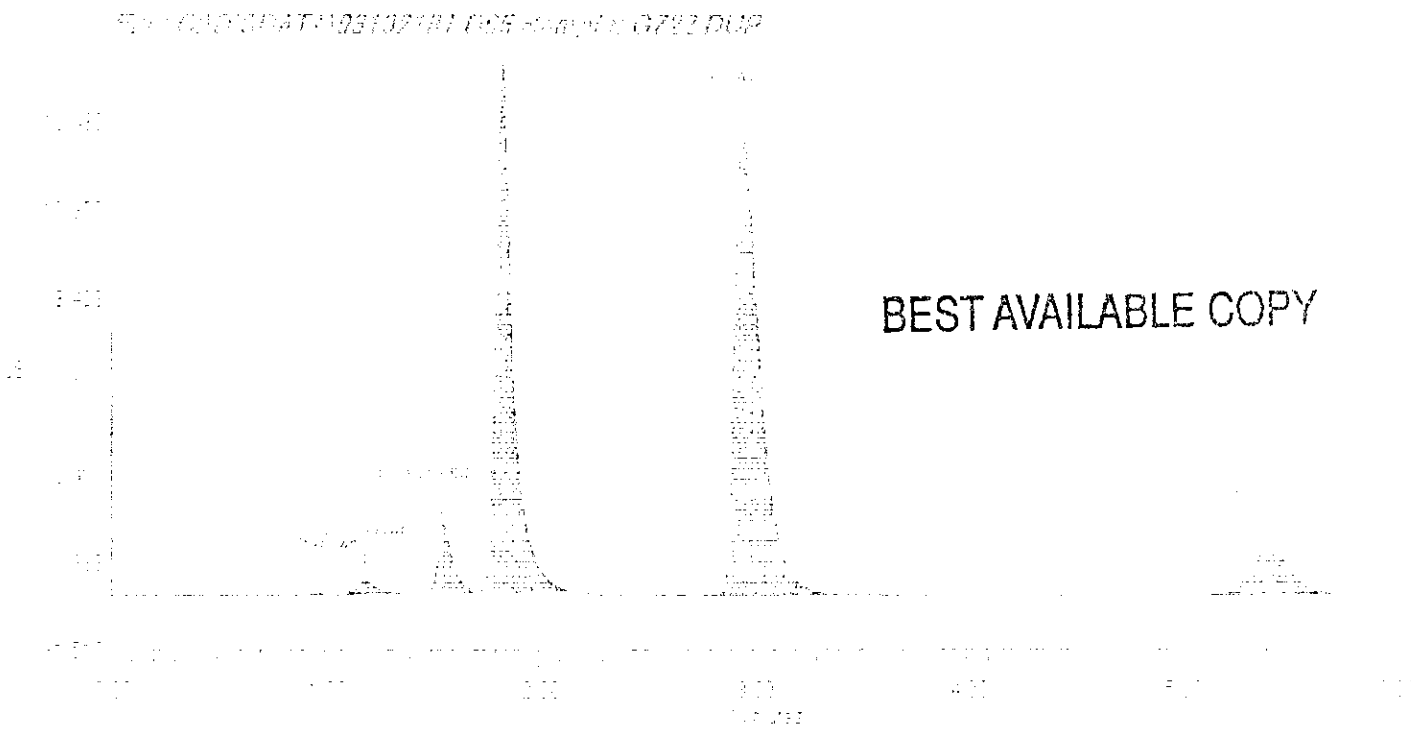


BEST AVAILABLE COPY

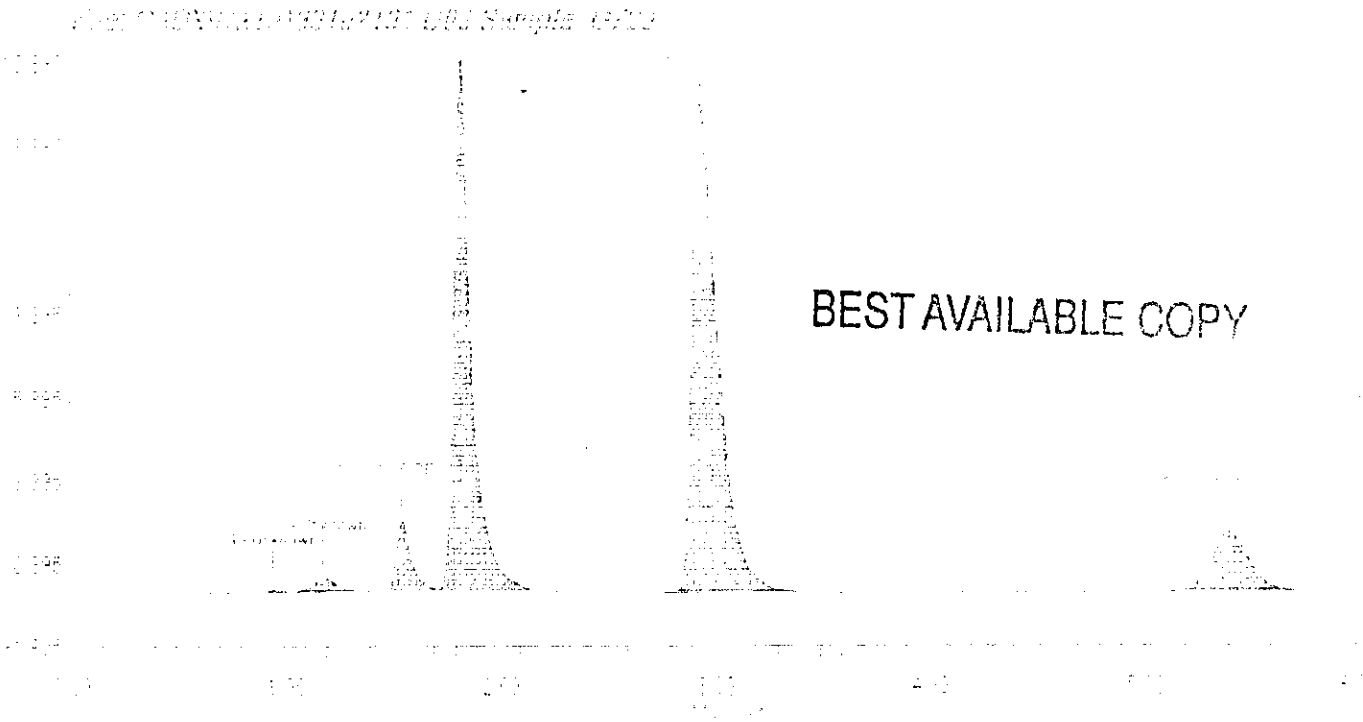
BEST AVAILABLE COPY



BEST AVAILABLE COPY



BEST AVAILABLE COPY



BEST AVAILABLE COPY

BEST AVAILABLE COPY

FIG 124

BEST AVAILABLE COPY

WHC-SD-WM-DP-054 REV 0

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

Batch 284

ANALYTICAL BATCH

Lab Segment Serial No. G747 - G750 RSD 12-16-93	Customer ID: A8 B8 C8 D8
Analyst: LC	Sample Prep: DIRECT

Instrument: WC41533	Procedure/ Rev: LA 533-105/C-1
Technologist: ROBBY WENDLAND	Date: 11/23/93
Starting Time: 839	Temperature 22.5°C
Ending Time: 1500	Chemist: S. BELLING

Comments:

	Description	Lab ID		Description	Lab ID
1	LMCS	G745-5671	11		
2	BLANK	G746-5671	12		
3	SAMPLE	G747-5771	13		
4	SAMPLE	G748-5771	14		
5	SAMPLE	G749-5771	15		
6	SAMPLE	G750-5771	16		
7	LMCS	G751-5671	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	27N9E	.100 mL		

781

ROBBY WENDLAND
11/23/93

A-6000-881 (03/92)

ANALYTICAL BATCH SUMMARY SHEET

METHOD: 353.1/300.1 DATE START: 11/23/93

PREPARED BY: DATE COMPLETE:

UNITS: mg/L

SPL NAME	SPL ID	ANALYTE	RESULT #1	RESULT #2	AVERAGE	RPD%	%REC	DET LIM	% CTER
STD	G745	F	51.7				92.32	.1	
27 NGE		Cl	76.6				102.1	.2	
~~BLANK~~		NO_2	514				93.66	1	
5003 11/23/93		NO_3	573				98.96	1	
		PO_4	516				165.6	1	
		SO_4	601				99.61	1	
blank	G746	F	<.1						
		Cl	<.2						
		NO_2	<.1						
		NO_3	<.1						
		PO_4	<.1						
		SO_4	<.1						
	G747	F	<.1						
		Cl	<.2						
		NO_2	<.1						
		NO_3	<1						
		PO_4	<1						
		SO_4	9.66						
	G748	F	Matrix	interference					
		Cl	1.62E1						
		NO_2	2.05E2						
		NO_3	2.66E2						
		PO_4	<1						
		SO_4	3.38E1						
	G749	F	Matrix	interference					
		Cl	1.30E1						
		NO_2	2.43E2						
		NO_3	3.17E2						
		PO_4	<1						
		SO_4	3.93E1						
	G750	F	Matrix	interference					
		Cl	2.61E1						
		NO_2	3.35E2						
		NO_3	4.54E2						
		PO_4	<1						
		SO_4	5.18E1						
unknown	G751	F	54.0				96.43		
		Cl	78.4				104.5		
		NO_2	515				95.42		
		NO_3	555				101.0		
		PO_4	550				106.4		
		SO_4	598				99.17		

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

An unknown peak (probably an organic acid) is interfering with the fluoride analysis

782

Stacey Billing
11/23/93

ION CHROMATOGRAPHIC ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
G 746.-5671	102 90 DAY	11-23-93	[illegible]	

Determination	Method Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	% RECOVERY	VOGEL	

Sample Size	Customer ID
? 100-10 27NG E	STD

Remarks, Calculations, Results

		µg/ml	% Rec
EDP 974	F	51.7	92.32
EDP 972	CL	76.6	102.1
EDP 968	NO2	514	98.66
EDP 978	NO3	573	98.96
EDP 976	PO4	546	105.6
EDP 970	SO4	601	99.67

Robby Wendland

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

Date	Time Completed	Lab Unit Mgr	
11/23/93	1500	Stacey Billing	

54 6800-061 (R 10 83)

Serial No	Sample Point	Date	Time Issued	Priority
G 746.-5671	102 90 DAY	11-23-93	[illegible]	

Determination	Method Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	uG/uL	VOGEL	

Sample Size	Customer ID
? DIRECT	BLK

Remarks, Calculations, Results

	µg/ml
REAGENT BLANK F	<.1
Cl	<.2
NO_2	<1
NO_3	<1
PO_4	<1
SO_4	<1

Robby Wendland

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

Date	Time Completed	Lab Unit Mgr	
11/23/93	1500	Stacey Billing	

54 6800-061 (R 10 83)

BEST AVAILABLE COPY

ION CHROMATOGRAPHIC ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
G 748.-5771	102 90 DAY	11-22-93	12:54	26

Determination	Method-Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	uG/ML	VOGEL	0

Sample Size	Customer ID
? direct	A-8

Remarks Calculations Results

	ug/ml
F	<.1
Cl	<.2
NO_2	<1
NO_3	<1
PO_4	<1
SO_4	9.60

Robby Wendland

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

Date	Time Completed	Lab Unit Mgr	
11/23/93	1500	Stacey Belling	

54-6800-061 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
G 748.-5771	102 90 DAY	11-22-93	12:54	26

Determination	Method Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	uG/ML	VOGEL	0

Sample Size	Customer ID
? direct & 1-10	B-8

Remarks Calculations Results

	DF Matrix	ug/ml Interference
F	11	1.62E1
Cl	11	2.03E2
NO_2	11	2.66E2
NO_3	1	<1
PO_4	11	3.38E1
SO_4		

Robby Wendland

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

Date	Time Completed	Lab Unit Mgr	
11/23/93	1500	Stacey Belling	

54-6800-061 (R-10-83)

BEST AVAILABLE COPY

ION CHROMATOGRAPHIC ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
G 750.-5771	102 90 DAY	11-22-93	[illegible]	

Determination	Method Standard	Result Units	Charge Code	Reruns
IC	IA-533-105	% RECOVERY	VOGEL	

Sample Size	Customer ID
? 100-10 27N9E	STD

Remarks, Calculations, Results

		ug/ml	% Rec
EDP 974	F	54.0	96.43
EDP 972	CL	78.4	104.5
EDP 968	NO2	518	99.42
EDP 978	NO3	585	101.0
EDP 976	PO4	550	106.4
EDP 970	SO4	598	99.17

Robby Wendland

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

Date	Time Completed	Lab Unit Mgr	
11/23/93	1500	Stacey Rolling	

54-6800-061 (R 10 83)

Serial No	Sample Point	Date	Time Issued	Priority
G 750.-5771	102 90 DAY	11-22-93	12:55	

Determination	Method Standard	Result Units	Charge Code	Reruns
IC	IA-533-105	UG/ML	VOGEL	

Sample Size	Customer ID
? direct & 1-10	T-8

Remarks, Calculations, Results

	DF	ug/ml
F	Matrix	Interference
Cl	11	2.60E1
NO_2	11	3.35E2
NO_3	11	4.54E2
PO_4	1	<1
SO_4	11	5.18E1

Robby Wendland

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

Date	Time Completed	Lab Unit Mgr	
11/23/93	1500	Stacey Rolling	

54-6800-061 (R 10 83)

BEST AVAILABLE COPY

ION CHROMATOGRAPHIC ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Determinand	Method Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	UG/ML	VOGEL	0

Sample Size	Customer ID
7 1-10 & direct	C-8

Remarks, Calculations, Results

	ug/ml	DF
F	matrix	interference
Cl	1.83E1	"
NO_2	2.43E2	"
NO_3	3.17E2	"
PO_4	<1	1
SO_4	3.85E1	"

Roesby Wendland

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

Date	Time Completed	Lab Unit Mgr	
11/23/93	1500	Stacey Billing	[illegible]

54-6800-061 (R-10-83)

BEST AVAILABLE COPY

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES ____ TO ____.

11/23/93

16745

11/23/93

92.32

102.1
98.66
95.96
105.6
99.67

BEST AVAILABLE COPY

BEST AVAILABLE COPY

BEST AVAILABLE COPY

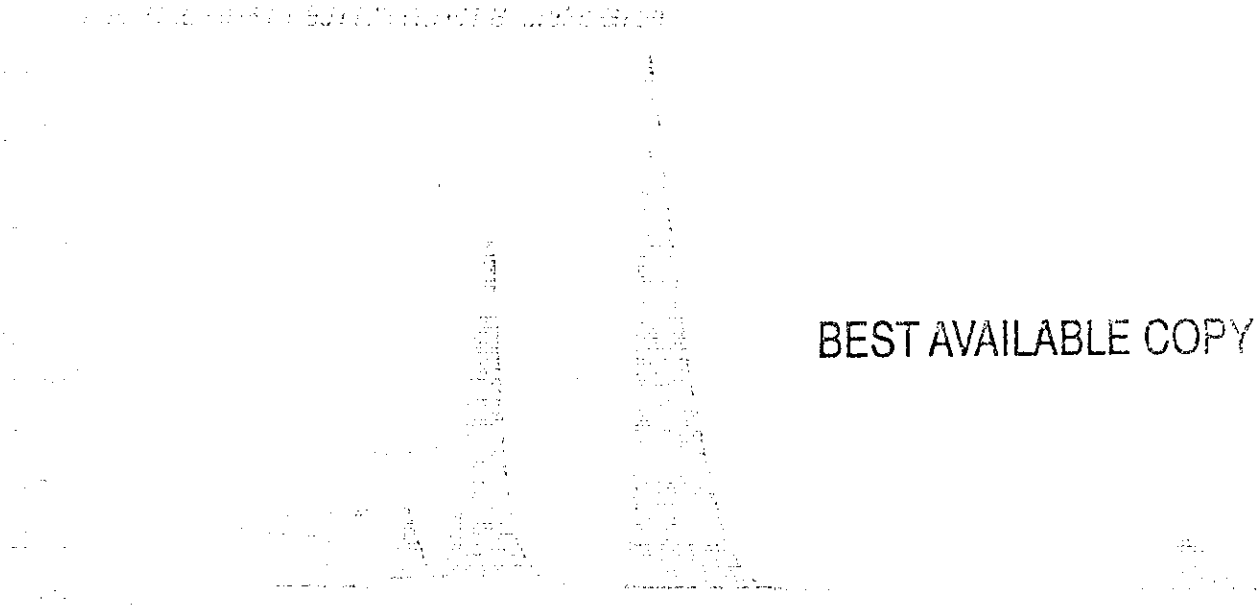
BEST AVAILABLE COPY

BEST AVAILABLE COPY

BEST AVAILABLE COPY

BEST AVAILABLE COPY

BEST AVAILABLE COPY



BEST AVAILABLE COPY

SDM 11/23/93
/G 751

BEST AVAILABLE COPY

90-DAY - ALPHA ANALYSES

THIS PAGE INTENTIONALLY
LEFT BLANK.

WHC-SD-WM-DP-054 REV 0

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

Batch 1545

ANALYTICAL BATCH

Lab Segment Serial No. G-[illegible]	Customer ID: A 9 B 9 C 9 D-9
Analyst: Hillall	Sample Prep: Direct

Instrument: 885737	Procedure/ Rev: LA 503-156 (D.0)
Technologist: McBirnie	Date: 10/12/93
Starting Time: 1500	Temperature 25°C
Ending Time: 2230	Chemist: Lay Tatts

Comments:

	Description	Lab ID		Description	Lab ID
1	LMCS	G696-5582	11		
2	Blank	G697-5682	12		
3	sample	G698-5782	13		
4	sample	G699-5782	14		
5	sample	G700-5782	15		
6	sample	G701-5782	16		
7			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, 100	10-10ml		
Am243 Tracer	52B43, 100ml			

798

A-6000-881 (03/92)

THIS PAGE INTENTIONALLY
LEFT BLANK.

ANALYTICAL BATCH SUMMARY SHEET

METHOD: LA-503-156

DATE START: October 12, 1993

PREPARED BY: L. L. Fritts

DATE COMPLETE: October 20, 1993

	UNITS:	uCi/mL							
SPL NAME	SPL ID	ANALYTE	RESULT #1	RESULT #2	AVERAGE	RPD%	%REC	DET LIM	% CT ER
STD 63B43	G696	Am-241	2.68E+1				100.0		4.4
BLANK	G697	Am-241	<1.27E-5				43.4	1.27E-5	29.0
A-9	G698	Am-241	<1.27E-5				8.6	1.27E-5	50.3
B-9	G699	Am-241	<1.27E-5				71.5	1.27E-5	33.5
C-9	G700	Am-241	<1.27E-5				56.0	1.27E-5	29.0
D-9	G701	Am-241	<1.27E-5				57.1	1.27E-5	27.9

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

WHC-SD-WM-DP-054 REV 0

#10 2205

Serial No	Sample Point	Date	Time Issued	Priority
G 696.-5582	102 90 DAY	9-23-93	14:46	26

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

Sample Size	Customer ID
? 100-10-1.0 ml	STD

"AEA" - 466MIN
ATTACH PRINTOUT

EDP R201 AN001

STD#63843 RESULT 26.8 uCi/L

STD VAL 26.801 %REC 100.00%

58B43, 100-1

Dil. in 800 HNO3

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs 10.13.93	Hrs	Hrs	Hrs

Date	Time Completed	Lab Chief
10/12/93	22:30	

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

Serial No.	Spike (Tracer) Book Number		STANDARD
G696-5582	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
1895	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)	1052
	Am-243 Area Peak Height from AEA	(C243)	1009
Date	Total AT Count	(ATOT)	2923
10/12/93	AT Count Time in Minutes	(MIN CT'd)	30
	Background in CPM	(BKG)	3

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

BEST AVAILABLE COPY

Am-241 µCi/L	=	2.68E+01
Am-241 µCi/mL	=	2.68E-02
Relative counting error	=	4.4%
Am-243 Tracer Recovery	=	16.4%

Data Entry by:		Date:	14-Oct-93
Approved by:		Date:	October 20, 1993

Form 3 Rev. 1.1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#3 10-13-93

2923/30 -3

G696-5582

BEST AVAILABLE COPY

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

WHC-SD-WM-DP-054 REV 0

#8 2304

Serial No	Sample Point	Date	Time Issued	Priority
G 697.-5682	1G2 90-DAY.	9-23-93	14:59	26

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

Sample Size: ? 1 ml

Customer ID: BLK

REAGENT BLANK

COUNT AS uCI/L

58843 .100 ml

1 ml HNO3

804

10-6-93

<1.27X10 -5 uCi/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Raymond D Hamilton Hrs 10-13-93	Hrs	Hrs	Hrs
Date 10/12/93	Time Completed 22:30	Lab Tech		

BEST AVAILABLE COPY

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

			BLANK
Serial No.	Spike (Tracer) Book Number		58843
G697-5682	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
1895	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)	12
	Am-243 Area Peak Height from AEA	(C243)	1094
Date	Total AT Count	(ATOT)	3754
10/12/93	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	=	29.0%
Am-243 Tracer Recovery	=	43.4%

Data Entry by:		Date:	14-Oct-93
Approved by:		Date:	October 20, 1993

Form 3 Rev. 1.1

802

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#2 10-17-95 DJL

3754/30 -1

G697-5682

BEST AVAILABLE COPY

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

#4 4894

Serial No	Sample Point	Date	Time Issued	Priority
G 698.-5782	102 90 DAY	9-23-93	15: 6	26

Determination	Method Number	Result Units	Charge Code	Remark
Am241	LA-503-156	uCi/ML	D14B3	0

Sample Size	Container ID
? 1.0 ml	A-9

Remarks Calculation Factor

COUNT AS uCI/L
58B43.100ml
1ml Cc HNO3

<1.27x10^-5 uCi/ml

"AEA" - ATTACH PRINT

MBrown

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
	Raymond	DH Julian		
	Hrs 10.13.93	Hrs CA Clark	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
10/12/93	09:30	

WHC-SD-WM-DP-054 Rev. 0

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

Serial No.			SAMPLE
G698-5782	Spike (Tracer) Book Number		58B43
	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
1895	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)	327
Date	Total AT Count	(ATOT)	825
10/12/93	AT Count Time in Minutes	(MIN CT'd)	30
	Background in CPM	(BKG)	3

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.

BEST AVAILABLE COPY

Am-241 µCi/L	=	< 1.27E-02
Am-241 µCi/mL	=	< 1.27E-05
Relative counting error	=	50.3%
Am-243 Tracer Recovery	=	8.6%

Data Entry by:		Date:	14-Oct-93
Approved by:		Date:	October 20, 1993

Form 3 Rev. 1.1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#3 10-13-93 [illegible]

$\frac{825}{30}$ -3

G698-5782

BEST AVAILABLE COPY

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

#5 5810 WHC-SD-WM-DP-054 REV 0

Serial No	Sample Point	Date	Time Issued	Priority
G 699.-5782	102 90 DAY	9-23-93	15: 6	26

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

Sample Size	Customer ID
2 1.0 ml	B-9

COUNT AS uCI/L
58343 .100ml
1ml Con HNO3

<1.27 x 10^-5 uCi/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
	10-13-93			
Date	Time Completed	Lab		
10/12/93	22:30			

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

Serial No.			SAMPLE
	Spike (Tracer) Book Number		58B43
G699-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
1895	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)	9
	Am-243 Area Peak Height from AEA	(C243)	1269
Date	Total AT Count	(ATOT)	6120
10/12/93	AT Count Time in Minutes	(MIN CT'd)	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 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.

BEST AVAILABLE COPY

Am-241 µCi/L	=	< 1.27E-02
Am-241 µCi/mL	=	< 1.27E-05
Relative counting error	=	33.5%
Am-243 Tracer Recovery	=	71.3%

Data Entry by:		Date:	14-Oct-93
Approved by:		Date:	October 20, 1993

Form 3 Rev. 1.1

Page 1 of 1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#2 10-15-95 DM

6120/30 - 1

G699-5782

BEST AVAILABLE COPY

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

Batch 1895

Serial No.	Sample Point	Date	Time Issued	Priority
G 700.-5782	102 90 DAY	9-23-93	15: 6	26

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

Sample Size	Customer ID
1.0 ml	C-9

COUNT AS uCi/L
58B43 .100 ml
1 ml Con HNO3

"AEA" - ATTACH PRINTOUT

$< 1.27 \times 10^{-5}$ µCi/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
	Raymond		69549	
Hrs	Hrs 10.13.93	Hrs	Hrs 10-13-93 22:00	Hrs
Date 10/12/93	Time Completed 22:30	Lab		

WHC-SD-WM-DRAFT

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

Serial No.	Spike (Tracer) Book Number		SAMPLE
G700-5782			58B43
Batch ID	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
1895	Spike (Tracer) Volume in mL	(SPKV)	0.1
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)	12
Date	Am-243 Area Peak Height from AEA	(C243)	1360
10/12/93	Total AT Count	(ATOT)	4940
	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

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

BEST AVAILABLE COPY

Am-241 µCi/L	=	< 1.27E-02
Am-241 µCi/mL	=	< 1.27E-05
Relative counting error	=	29.0%
Am-243 Tracer Recovery	=	56.0%

Data Entry by:		Date:	15-Oct-93
Approved by:		Date:	October 20, 1993

Form 3 Rev. 1.1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#1 10-14-93 DMJ

4940/30 -5

G700-5782

BEST AVAILABLE COPY

PLACE ANALYTICAL CARD IN BOX BELOW DO NOT WRITE IN SPACE

WHC-SD-WM-DP-054 REV 0

#7 7255

Serial No	Sample Point	Date	Time Issued	Priority
G 701.-5782	102 90 DAY	9-23-93	15: 7	26

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

Sample Size: 1.0 ml

Customer ID: D-0

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

$< 1.27 \times 10^{-5}$ µCi/ml

"FILA" - 250dds
ATTACH PRINTOUT

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
	Raymond			
Hrs	Hrs	Hrs	Hrs	Hrs
	10-13-93			

Date	Time Completed	Lab Unit Mgr
10/12/93	2030	

54-6A00-061 (R-10 6/1)

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

Serial No.			SAMPLE
G701-5782	Spike (Tracer) Book Number		58B43
	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
1895	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)	13
	Am-243 Area Peak Height from AEA	(C243)	1210
Date	Total AT Count	(ATOT)	4989
10/12/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	3

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.

BEST AVAILABLE COPY

Am-241 µCi/L	=	< 1.27E-02
Am-241 µCi/mL	=	< 1.27E-05
Relative counting error	=	27.9%
Am-243 Tracer Recovery	=	57.1%

Data Entry by:	Date: 18-Oct-93
Approved by:	Date: October 20, 1993

Form 3 Rev. 1.1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#3 10-17-93 DM

$\frac{4989}{30}$-3 G701-5782

BEST AVAILABLE COPY

D. H. [illegible]
10-15-95

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

SAMPLE
G696-5582 AM/102
File ID: 10a2205.CNF

Counted on: 10/13/93 @ 2:40
Detector: AEA10
Geometry number: 1
Count time: 28801. Sec

PEAK ANALYSIS

Peak	Peak height		Peak center		FWHM		Tau	
ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	856.6	856.6	301.377	301.377	14.000	5.246	7.000	3.979
2	799.8	799.8	255.768	255.768	10.000	3.658	5.000	2.861

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu238	0.504	5.499	5.481	0.018	0.02	21.60	1.9	211.7	0.954E-04
	Am241		5.480	5.481	-.001				162.2	0.730E-04
2	Am243	0.411	5.276	5.272	0.004	0.02	17.59	2.1	125.4	0.565E-04
Totals:		0.915	<--valid peaks only-->				39.19			

DETECTOR CALIBRATION
Energy(MEV) = 4.095 + (0.0046)*Channel
Energy range (MeV): 4.095 TO 6.450
Efficiency = 0.1417 CPM/DPM

TOTAL COUNT DATA:

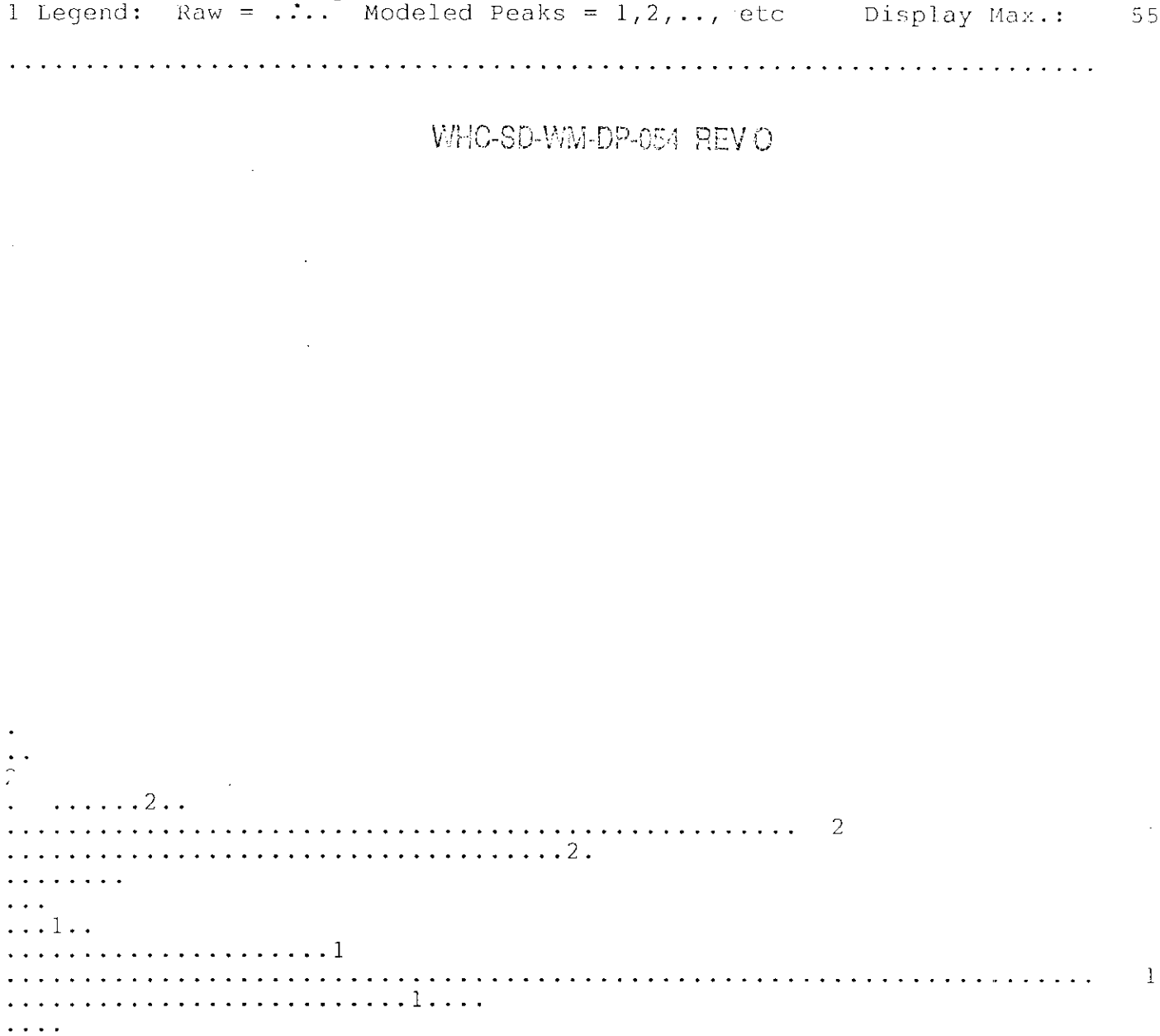
Item	Total	% Recovery
Raw spectrum	20561.0	100.000
Smoothed	20673.5	100.547
Composite fit	18811.3	91.490
Residuals	1749.7	8.510

Analyzed by: _____
VR

BEST AVAILABLE COPY

Spectrum 10a2205.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5558.8



BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 10a2205.CNF

1	28801.	0.	0.	0.	0.	0.	0.	0.	0.	1.
11	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	1.	0.	0.	0.	0.	1.	1.	1.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	0.	0.	0.	1.	1.	0.	1.	0.	0.
81	1.	0.	0.	0.	0.	0.	1.	0.	0.	0.
91	0.	0.	1.	1.	0.	0.	1.	0.	0.	0.
101	0.	0.	0.	1.	0.	0.	1.	0.	0.	0.
111	0.	1.	0.	0.	0.	0.	3.	0.	2.	1.
121	2.	2.	0.	1.	1.	0.	0.	1.	1.	1.
131	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
141	1.	0.	0.	1.	1.	0.	0.	0.	2.	0.
151	1.	0.	1.	0.	1.	1.	0.	0.	2.	0.
161	2.	2.	0.	0.	3.	0.	3.	0.	0.	2.
171	2.	3.	0.	1.	2.	1.	2.	1.	4.	2.
181	2.	2.	0.	3.	2.	2.	2.	6.	0.	3.
191	6.	3.	1.	4.	5.	3.	6.	8.	3.	3.
201	7.	9.	5.	3.	6.	5.	3.	9.	5.	13.
211	6.	8.	15.	8.	6.	8.	8.	9.	22.	11.
221	15.	15.	19.	8.	14.	16.	17.	23.	22.	35.
231	35.	27.	22.	35.	35.	47.	52.	62.	48.	70.
241	63.	69.	92.	104.	149.	175.	216.	202.	247.	247.
251	335.	438.	617.	777.	1009.	1007.	901.	655.	384.	192.
261	149.	87.	83.	86.	76.	81.	70.	78.	78.	66.
271	46.	31.	37.	27.	26.	20.	18.	38.	44.	42.
281	40.	44.	52.	58.	67.	74.	90.	99.	121.	160.
291	196.	190.	219.	265.	311.	360.	444.	565.	757.	985.
301	1048.	1052.	881.	596.	393.	314.	264.	221.	181.	158.
311	118.	103.	68.	37.	27.	11.	7.	2.	1.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	1.	0.	0.	1.	1.	0.	0.	0.	0.	0.
351	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
361	1.	0.	1.	0.	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.	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.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WHC-SD-[illegible] REV 0

BEST AVAILABLE COPY

S. H. Mellen
10-15-95

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-CM-REV 0

SAMPLE
G697-5682 AM/102
File ID: 2a2304.CNF

Counted on: 10/13/93 @ 2:37
Detector: AEA2
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	1027.0	1027.0	254.635	254.635	24.000	19.246	12.000	7.150

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.978	5.276	5.266	0.010	0.09	50.47	1.3	359.8	0.162E-03
	Pu240		5.144	5.266	-.122				356.2	0.160E-03
Totals:		0.978	<--valid peaks only-->				50.47			

DETECTOR CALIBRATION
Energy(MEV) = 4.095 + (0.0046)*Channel
Energy range (MeV): 4.095 TO 6.450
Efficiency = 0.1417 CPM/DPM

TOTAL COUNT DATA:

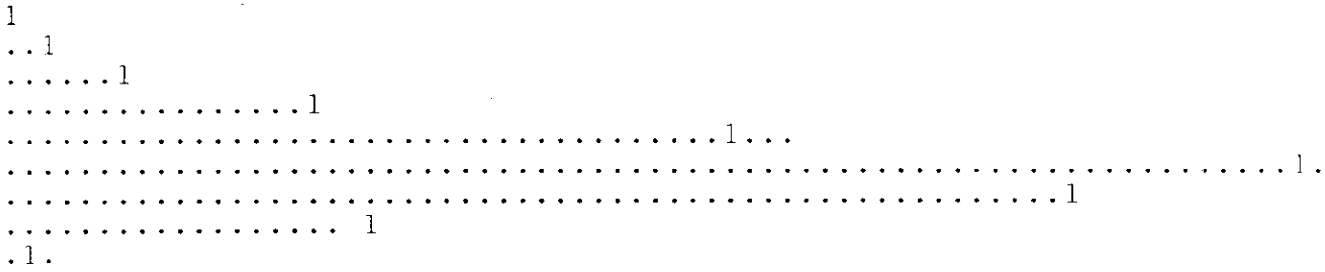
Item	Total	% Recovery
Raw spectrum	24781.0	100.000
Smoothed	24894.5	100.458
Composite fit	24228.0	97.768
Residuals	553.0	2.232

Analyzed by: _____
VR

BEST AVAILABLE COPY

Spectrum 2a2304.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 7705.4



BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 2a2304.CNF

1	28804.	0.	0.	1.	1.	1.	0.	1.	0.	0.
11	0.	0.	0.	1.	1.	2.	0.	2.	0.	0.
21	1.	2.	0.	0.	0.	0.	0.	1.	2.	1.
31	0.	2.	0.	1.	1.	1.	0.	2.	0.	0.
	1.	1.	3.	2.	3.	2.	0.	0.	1.	0.
51	1.	0.	0.	1.	0.	0.	2.	2.	1.	0.
61	1.	0.	4.	1.	3.	1.	1.	1.	1.	1.
71	3.	0.	0.	1.	2.	1.	1.	3.	2.	0.
81	0.	1.	0.	1.	1.	3.	0.	2.	2.	3.
91	2.	0.	2.	2.	2.	0.	0.	0.	2.	3.
101	3.	2.	2.	1.	1.	3.	0.	1.	0.	1.
111	2.	3.	1.	1.	0.	1.	1.	2.	0.	2.
121	2.	0.	4.	4.	2.	1.	0.	3.	2.	2.
131	2.	2.	4.	2.	3.	3.	1.	3.	3.	2.
141	3.	3.	1.	2.	3.	4.	2.	3.	2.	4.
151	5.	4.	4.	3.	3.	6.	3.	2.	3.	4.
161	4.	3.	6.	2.	6.	4.	4.	3.	6.	4.
171	3.	4.	2.	1.	4.	3.	3.	2.	1.	5.
181	3.	3.	9.	3.	3.	4.	4.	7.	7.	8.
191	8.	4.	7.	6.	9.	4.	4.	8.	7.	11.
201	9.	5.	8.	14.	9.	7.	7.	11.	7.	11.
211	14.	9.	17.	27.	24.	25.	19.	26.	26.	29.
221	23.	49.	33.	51.	62.	66.	68.	85.	91.	102.
231	117.	140.	171.	170.	203.	240.	256.	280.	350.	381.
241	420.	548.	521.	583.	659.	678.	754.	843.	928.	969.
251	976.	1031.	1057.	1087.	1094.	1001.	994.	985.	888.	787.
261	743.	619.	539.	423.	379.	288.	212.	178.	147.	127.
271	86.	78.	58.	61.	35.	30.	15.	21.	8.	7.
281	5.	5.	2.	5.	4.	5.	2.	5.	5.	2.
291	8.	7.	7.	9.	5.	9.	12.	11.	6.	10.
301	7.	6.	8.	5.	11.	2.	4.	5.	6.	3.
[illegible]	3.	0.	2.	1.	0.	2.	1.	0.	1.	2.
[illegible]	0.	1.	1.	1.	0.	0.	0.	0.	0.	0.
331	1.	0.	0.	1.	1.	0.	1.	0.	1.	1.
341	2.	2.	2.	2.	3.	3.	1.	3.	1.	2.
351	0.	1.	1.	2.	0.	1.	0.	0.	2.	1.
361	0.	0.	1.	0.	0.	0.	0.	1.	0.	0.
371	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	1.	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	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.
421	0.	0.	0.	1.	0.	1.	1.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
441	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	1.	0.	1.	0.	1.	0.
471	0.	0.	1.	2.	0.	1.	1.	1.	2.	0.
481	1.	1.	1.	1.	0.	1.	0.	0.	0.	0.
491	0.	0.	0.	0.	2.	0.	0.	0.	0.	0.
511	0.	0.								

WHC-SD-WM-[illegible] REV 0

BEST AVAILABLE COPY

D. H. Ferrebee
10-15-93

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

SAMPLE
C698-5782 AM/102
File ID: 4a4894.CNF

Counted on: 10/13/93 @ 2:38
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	264.6	264.6	254.917	254.917	12.000	4.384	6.000	4.003

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.880	5.276	5.268	0.008	0.02	5.96	3.7	42.5	0.191E-04
Totals:		0.880	<--valid peaks only-->				5.96			

DETECTOR CALIBRATION
Energy(MEV) = 4.095 + (0.0046)*Channel
Energy range (MeV): 4.095 TO 6.450
Efficiency = 0.1417 CPM/DPM

TOTAL COUNT DATA:

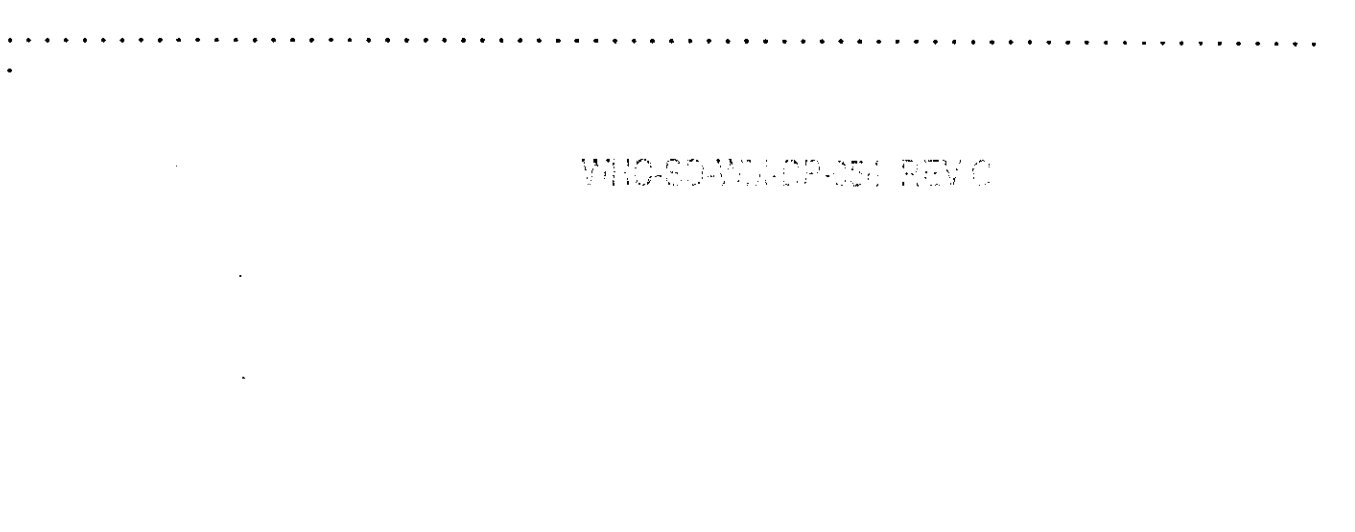
Item	Total	% Recovery
Raw spectrum	3252.0	100.000
Smoothed	3406.4	104.747
Composite fit	2860.7	87.967
Residuals	391.3	12.033

Analyzed by: _____
VR

BEST AVAILABLE COPY

Spectrum 4a4894.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 1558.5



WHO-SO-WIA-OP-251 REV C

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 4a4894.CNF

1	28896.	0.	0.	45.	19.	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	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
41	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
71	1.	0.	0.	0.	1.	1.	0.	0.	1.	0.
81	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
91	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
101	0.	0.	0.	0.	0.	2.	0.	0.	0.	0.
111	0.	0.	0.	0.	0.	1.	0.	0.	1.	1.
121	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
131	1.	0.	0.	1.	0.	2.	1.	1.	0.	2.
141	1.	0.	0.	1.	2.	1.	0.	1.	1.	0.
151	1.	0.	1.	2.	0.	0.	0.	1.	0.	1.
161	0.	1.	1.	0.	1.	0.	0.	0.	0.	0.
171	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
181	1.	0.	0.	0.	0.	0.	0.	0.	0.	2.
191	0.	0.	0.	0.	2.	0.	0.	0.	1.	0.
201	2.	1.	1.	0.	2.	0.	0.	0.	4.	1.
211	2.	2.	2.	2.	1.	3.	4.	1.	2.	5.
221	1.	4.	2.	0.	1.	4.	6.	2.	2.	6.
231	10.	5.	5.	5.	11.	6.	8.	9.	10.	15.
241	12.	31.	39.	35.	40.	43.	53.	75.	99.	120.
251	176.	219.	280.	308.	327.	282.	245.	177.	117.	53.
261	45.	23.	19.	11.	19.	18.	19.	15.	10.	11.
271	5.	3.	3.	2.	0.	0.	0.	0.	0.	0.
281	0.	0.	2.	1.	0.	0.	3.	0.	3.	1.
291	1.	2.	1.	2.	1.	2.	3.	2.	0.	4.
301	2.	2.	0.	0.	0.	0.	0.	1.	0.	1.
311	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
341	0.	1.	0.	0.	1.	1.	2.	0.	1.	1.
351	1.	2.	1.	4.	0.	0.	0.	0.	0.	0.
361	0.	0.	0.	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.	1.	1.	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.	1.	1.	1.	0.	0.
481	0.	0.	1.	1.	0.	1.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

BEST AVAILABLE COPY

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

SAMPLE
G699-5782 AM/102
File ID: 5a5810.CNF

Counted on: 10/13/93 @ 2:38
Detector: AEA5
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	1206.4	1206.4	246.814	246.814	26.000	30.119	13.000	5.791
2?	0.0	0.1	161.804	161.804	0.000	0.100	0.000	0.100

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
	Am243	1.001	5.276	5.230	0.046	0.14	87.32	1.0	622.5	0.280E-03
	Pu240		5.144	5.230	-.086				616.3	0.278E-03
2		????		4.839			0.00	8048.		
Totals:		1.001	<--valid peaks only-->				87.32			

DETECTOR CALIBRATION
Energy(MEV) = 4.095 + (0.0046)*Channel
Energy range (MeV): 4.095 TO 6.450
Efficiency = 0.1417 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	41890.0	100.000
Smoothed	42006.3	100.278
Composite fit	41915.4	100.061
Residuals	-25.4	-0.061

Analyzed by: _____
VR

BEST AVAILABLE COPY

Spectrum 5a5810.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 9366.4

```
.....................................................................
```

BEST AVAILABLE COPY

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

Raw Data Dump for AEA Spectrum: 5a5810.CNF

1	28800.	0.	0.	0.	4.	0.	1.	1.	0.	2.
11	2.	2.	1.	2.	3.	0.	2.	4.	4.	4.
21	3.	3.	1.	0.	2.	3.	1.	1.	1.	3.
31	2.	3.	1.	2.	3.	3.	1.	1.	2.	1.
	0.	2.	1.	1.	2.	2.	1.	3.	0.	6.
51	4.	1.	4.	4.	1.	1.	4.	3.	0.	3.
61	3.	3.	4.	2.	2.	1.	0.	2.	3.	3.
71	3.	1.	2.	4.	0.	1.	1.	5.	5.	4.
81	2.	2.	1.	3.	4.	2.	1.	2.	4.	5.
91	1.	4.	3.	2.	6.	4.	1.	4.	3.	2.
101	4.	2.	3.	6.	2.	2.	3.	5.	5.	1.
111	1.	4.	2.	5.	1.	0.	4.	1.	2.	2.
121	2.	3.	3.	4.	7.	2.	5.	4.	3.	7.
131	5.	7.	3.	6.	1.	7.	1.	8.	10.	5.
141	7.	3.	8.	7.	6.	8.	9.	6.	11.	6.
151	7.	5.	12.	9.	9.	9.	5.	10.	10.	12.
161	9.	16.	8.	14.	4.	10.	5.	13.	11.	13.
171	12.	11.	13.	11.	25.	13.	19.	7.	27.	21.
181	19.	19.	24.	17.	26.	27.	33.	36.	30.	38.
191	41.	50.	44.	44.	48.	46.	58.	73.	68.	60.
201	89.	70.	70.	80.	122.	103.	123.	145.	150.	159.
211	162.	162.	195.	213.	234.	245.	262.	270.	304.	313.
221	374.	397.	387.	436.	515.	513.	594.	668.	650.	710.
231	766.	783.	849.	887.	993.	1017.	1016.	1015.	1090.	1125.
241	1176.	1152.	1216.	1196.	1206.	1189.	1269.	1186.	1177.	1179.
251	1142.	1092.	1011.	961.	878.	828.	705.	631.	529.	393.
261	336.	287.	211.	155.	133.	108.	72.	80.	65.	41.
271	40.	34.	22.	14.	12.	7.	13.	12.	6.	4.
281	7.	4.	5.	7.	9.	6.	7.	7.	13.	12.
291	7.	9.	5.	5.	6.	8.	9.	8.	7.	8.
301	4.	7.	5.	5.	5.	1.	2.	0.	0.	4.
[illegible]	1.	2.	0.	0.	0.	2.	0.	0.	2.	0.
[illegible]	0.	0.	0.	0.	0.	3.	0.	1.	1.	0.
331	0.	0.	1.	1.	0.	3.	1.	2.	7.	1.
341	0.	3.	1.	3.	2.	5.	4.	1.	0.	2.
351	0.	1.	1.	2.	3.	0.	0.	0.	2.	1.
361	0.	0.	0.	0.	0.	0.	1.	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.	2.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
411	0.	1.	0.	1.	0.	0.	0.	0.	0.	0.
421	1.	3.	0.	0.	0.	0.	0.	0.	0.	3.
431	0.	1.	0.	0.	0.	0.	0.	0.	0.	2.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
471	0.	0.	1.	0.	1.	2.	2.	1.	0.	1.
481	3.	2.	1.	2.	0.	0.	0.	0.	0.	1.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WHC-SD-WM-CHM
O AER [illegible] REV 0

BEST AVAILABLE COPY

10-13-93

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

SAMPLE
G700-5782
File ID: 5a5811.CNF

Counted on: 10/13/93 @11:48
Detector: AEA5
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	1266.0	1266.0	252.815	252.815	20.000	16.337	10.000	4.812

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.964	5.276	5.266	0.010	0.08	64.01	1.1	515.6	0.232E-03
	Pu240		5.144	5.266	-.122				510.4	0.230E-03
Totals:		0.964	<--valid peaks only-->				64.01			

DETECTOR CALIBRATION
Energy(MEV) = 4.053 + (0.0048)*Channel
Energy range (MeV): 4.053 TO 6.510
Efficiency = 0.1254 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	31875.0	100.000
Smoothed	31990.9	100.364
Composite fit	30730.3	96.409
Residuals	1144.7	3.591

Analyzed by: _____
JLA

BEST AVAILABLE COPY

Spectrum 5a5811.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 9674.7

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 5a5811.CNF

1	28806.	0.	0.	1.	3.	0.	0.	3.	3.	2.
11	2.	3.	1.	0.	2.	1.	0.	1.	1.	0.
21	3.	3.	2.	1.	1.	0.	1.	1.	1.	0.
31	1.	1.	1.	2.	0.	3.	3.	0.	1.	3.
41	1.	2.	1.	2.	1.	2.	0.	2.	3.	1.
51	0.	0.	2.	0.	0.	1.	1.	3.	2.	2.
61	3.	1.	1.	1.	0.	2.	2.	3.	4.	0.
71	3.	2.	2.	2.	1.	1.	1.	0.	2.	1.
81	2.	2.	3.	0.	2.	0.	1.	5.	4.	7.
91	4.	2.	1.	1.	4.	3.	1.	5.	1.	3.
101	5.	3.	4.	5.	1.	5.	4.	6.	1.	3.
111	4.	3.	4.	1.	3.	2.	3.	2.	14.	4.
121	5.	3.	6.	2.	4.	5.	6.	3.	6.	8.
131	7.	0.	6.	3.	9.	8.	10.	2.	3.	6.
141	7.	8.	5.	5.	7.	2.	4.	10.	4.	5.
151	6.	9.	7.	8.	7.	8.	7.	9.	13.	5.
161	13.	6.	6.	10.	2.	11.	8.	14.	4.	8.
171	9.	14.	16.	11.	12.	12.	17.	8.	10.	22.
181	13.	13.	14.	12.	17.	13.	16.	17.	12.	17.
191	19.	20.	18.	24.	25.	29.	28.	35.	26.	28.
201	38.	42.	40.	28.	30.	36.	52.	50.	35.	43.
211	70.	56.	62.	66.	60.	73.	94.	88.	81.	97.
221	100.	97.	109.	152.	148.	140.	169.	199.	194.	245.
231	259.	308.	300.	341.	385.	404.	480.	511.	569.	592.
241	656.	785.	808.	829.	924.	1040.	1099.	1147.	1193.	1285.
251	1318.	1252.	1360.	1271.	1243.	1145.	1052.	966.	814.	688.
261	595.	508.	367.	312.	261.	178.	128.	115.	106.	64.
271	65.	46.	32.	22.	31.	17.	14.	10.	4.	5.
281	7.	2.	5.	2.	1.	1.	1.	8.	2.	8.
291	2.	5.	5.	7.	4.	6.	3.	12.	5.	3.
301	7.	6.	1.	3.	2.	4.	3.	0.	2.	4.
311	3.	0.	0.	1.	0.	1.	0.	0.	1.	2.
321	1.	1.	0.	0.	0.	0.	1.	0.	1.	1.
331	3.	1.	2.	2.	0.	1.	0.	0.	1.	3.
341	0.	1.	0.	1.	1.	0.	1.	2.	0.	0.
351	3.	1.	1.	2.	1.	2.	0.	4.	0.	0.
361	0.	1.	1.	2.	0.	0.	1.	1.	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.	1.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
431	0.	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.	0.	0.	1.	0.	0.	0.	0.	0.
471	0.	0.	2.	1.	0.	0.	0.	0.	2.	1.
481	2.	2.	0.	0.	1.	0.	1.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
511	0.	0.								

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

BEST AVAILABLE COPY

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

SAMPLE
G701-5782 AM/102
File ID: 7a7255.CNF

Counted on: 10/13/93 @ 2:39
Detector: AEA7
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	1128.3	1128.3	252.940	252.940	24.000	21.850	12.000	6.434
2	9.3	9.3	168.529	168.266	68.000	149.100	34.000	16.669

PEAK RESULTS

Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
	Am243	0.974	5.276	5.259	0.017	0.10	62.37	1.1	444.6	0.200E-03
	Pu240		5.144	5.259	-.115				440.2	0.198E-03
2	Np237	0.021	4.781	4.869	-.088	0.69	1.34	24.9	10.9	0.490E-05
Totals:		0.995	<--valid peaks only-->				63.72			

DETECTOR CALIBRATION

Energy(MEV) = 4.095 + (0.0046)*Channel
Energy range (MeV): 4.095 TO 6.450
Efficiency = 0.1417 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	30733.0	100.000
Smoothed	30845.0	100.364
Composite fit	30587.6	99.527
Residuals	145.4	0.473

Analyzed by: _____
VR

BEST AVAILABLE COPY

Spectrum 7a7255.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 8724.3

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 7a7255.CNF

1	28804.	0.	0.	0.	1.	3.	0.	1.	2.	2.
11	0.	0.	0.	1.	0.	0.	1.	0.	0.	0.
21	4.	1.	0.	0.	1.	1.	0.	1.	2.	0.
31	1.	3.	0.	2.	3.	0.	2.	0.	1.	0.
[illegible]	0.	1.	2.	1.	0.	0.	1.	1.	1.	2.
51	1.	0.	1.	1.	1.	2.	0.	0.	2.	2.
61	0.	1.	1.	2.	0.	1.	1.	2.	0.	2.
71	0.	2.	0.	0.	1.	1.	2.	0.	4.	2.
81	4.	3.	2.	1.	0.	1.	5.	1.	0.	[illegible]
91	2.	1.	0.	2.	1.	2.	5.	1.	0.	[illegible]
101	2.	2.	2.	1.	2.	1.	2.	2.	2.	2.
111	3.	2.	3.	3.	1.	5.	4.	6.	4.	3.
121	2.	2.	3.	3.	1.	3.	4.	6.	6.	2.
131	4.	1.	4.	5.	3.	5.	4.	3.	2.	6.
141	7.	3.	10.	4.	2.	6.	4.	5.	5.	5.
151	0.	5.	3.	4.	4.	4.	6.	7.	7.	10.
161	6.	8.	4.	7.	9.	8.	9.	16.	9.	10.
171	10.	6.	9.	6.	6.	11.	10.	12.	3.	10.
181	16.	15.	11.	18.	14.	9.	15.	18.	24.	17.
191	16.	11.	16.	19.	19.	25.	33.	39.	25.	21.
201	22.	24.	33.	39.	26.	29.	35.	39.	27.	47.
211	54.	51.	53.	39.	51.	54.	51.	79.	60.	95.
221	101.	105.	114.	126.	114.	141.	144.	168.	192.	[illegible]
231	262.	298.	313.	324.	356.	394.	470.	522.	[illegible]	[illegible]
241	650.	733.	809.	802.	876.	965.	941.	1049.	1065.	[illegible]
251	1142.	1210.	1166.	1166.	1087.	1101.	983.	922.	864.	746.
261	704.	575.	501.	408.	343.	252.	212.	189.	152.	128.
271	73.	62.	53.	34.	31.	31.	19.	17.	15.	12.
281	12.	6.	7.	6.	6.	6.	5.	5.	1.	5.
291	5.	5.	7.	5.	8.	11.	4.	6.	7.	13.
301	11.	7.	5.	6.	8.	7.	4.	5.	4.	3.
[illegible]	1.	2.	0.	2.	1.	0.	1.	0.	1.	1.
[illegible]	0.	1.	0.	2.	1.	0.	0.	0.	1.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
341	0.	1.	0.	0.	0.	0.	0.	0.	2.	1.
351	2.	0.	0.	0.	0.	0.	1.	1.	1.	1.
361	1.	0.	1.	0.	1.	0.	0.	1.	0.	1.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
431	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
481	0.	0.	2.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	2.	0.								

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

BEST AVAILABLE COPY

WESTINGHOUSE HANFORD COMPANY

Batch # 2025

222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No. G718 - G723	Customer ID: 103-90 DAQ
Analysis: Am 243	Sample Prep: DIRECT

Instrument: WB537237	Procedure/ Rev: LA-503-156 D-4 RSD 12-15-93
Technologist: L. CONLIN	Date: 10-28-93
Starting Time: 0745	Temperature N/A
Ending Time: 1600	Chemist: LARRY FRITTS

Comments:

	Description	Lab ID		Description	Lab ID
1	LMCS	G718-5582	11		
2	BLK	G719-5682	12		
3	SAMPLE	G720-5782	13		
4	SAMPLE	G721-5782	14		
5	SAMPLE	G722-5782	15		
6	SAMPLE	G723-5782	16		
7			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
AR001	63B43/.100ml			
Am243 SPIKE	58B43/.100ml			
		830		

ANALYTICAL BATCH SUMMARY SHEET

METHOD: LA-503-156

DATE START: October 28 ,1993

PREPARED BY: L. L. Fritts

DATE COMPLETE: November 4, 1993

	UNITS:	uCi/mL							
SPL NAME	SPL ID	ANALYTE	RESULT #1	RESULT #2	AVERAGE	RPD%	%REC	DET LIM	% CT ER
STD 63B43	G718	Am-241	2.90E+1				108.2	1.27E-5	3.7
BLANK	G719	Am-241	<1.27E-5				49.2	1.27E-5	57.9
A-10	G720	Am-241	<1.27E-5				48.5	1.27E-5	40.9
B-10	G721	Am-241	<1.27E-5				35.4	1.27E-5	40.9
C-10	G722	Am-241	<1.27E-5				6.5	1.27E-5	58.2
D-10	G723	Am-241	<1.27E-5				9.6	1.27E-5	58.0

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

WHC-SD-WM-DP-054 REV 0

#2 2348

Serial No.	Sample Point	Date	Time Issued	Priority
G 718.-5582	102-SX DAY	10-15-93	9:43	26

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	% RECOVERY	D4483	1

Sample Size: 1.100ml + 10 .100ml + .100 ml SAY 8 58B43 STD

Comments:

Analysis Calculations & Results

EDP R201 A2001

STD# 63B43 RESULT 29.0

STD VAL 26.8 %REC 108.2 %

+ 1 ml 8m HNO3

REDUCE 420MIN

ATTACH PRINTOUT

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Raymond Hrs 10-28-93	D.H. Hrs	10-30-93 11:50	Hrs

Date	Time Completed	Laboratory Mgr.	
10-28-93	1600		

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

			STANDARD
Serial No.	Spike (Tracer) Book Number		58B43
G718-5582	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2025	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)	1525
L CONLIN	Am-243 Area Peak Height from AEA	(C243)	1351
Date	Total AT Count	(ATOT)	8181
10/28/93	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

BEST AVAILABLE COPY

Am-241 µCi/L	=	2.90E+01
Am-241 µCi/mL	=	2.90E-02
Relative counting error	=	3.7%
Am-243 Tracer Recovery	=	45.1%

832

Data Entry by:	Date: 01-Nov-93
Approved by:	Date: November 4, 1993

Form 3 Rev. 1.1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

R 10-28-93
8181 - 1
30

G718-5582

BEST AVAILABLE COPY

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

WHC-SD-WM-DP-054 REV 0

#3 3695

Serial No	Sample Point	Date	Time Issued	Priority
G 719.-5682	102 90.DAY	10-15-93	9:46	26

Determination	Method Standard	Results	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	D4453	1

Sample Size: 1 ml H_2O + 100ml SPIKE #58B43

Comment ID: NOR

Remarks Calculations Results

REAGENT BLANK

COUNT AS uCI/L

+ 1ml 8m HNO_3

$<1.27 \times 10^{-5}$ uCi/ml

"AEA" - 430MIN

ATTACH PRINTOUT

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs 10-28-93	Hrs	Hrs 10-30-93 11:50	Hrs

Date	Time Completed	Approved
10-28-93	1600	

54-6400 061 (R 12-93)

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

Serial No.	Spike (Tracer) Book Number		BLANK
G719-5682	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2025	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)	3
L CONLIN	Am-243 Area Peak Height from AEA	(C243)	728
Date	Total AT Count	(ATOT)	4308
10/28/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	4

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.

BEST AVAILABLE COPY

Am-241 µCi/L	=	< 1.27E-02
Am-241 µCi/mL	=	< 1.27E-05
Relative counting error	=	57.9%
Am-243 Tracer Recovery	=	49.2%

334

Data Entry by:	Date: 01-Nov-93
Approved by:	Date: November 4, 1993

Form 3 Rev. 1.1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

A-B V2 10-28-93

4308/30 - 4

G719-5682

BEST AVAILABLE COPY

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

WHC-SD-WM-DP-051 REV 0

#4 4935

Serial No	Sample Point	Date	Time Issued	Priority
G 720.-5782	102 99 DAY	10-15-93	9:47	28

Determination	Method Specific	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/mL	[illegible]	1

Sample Date 10-10-93 | Sample ID

+ 1ml + 100ml Spvs #58843

Remarks Calculations Results

COUNT AS uCi/L

+ 1ml 8m HNO_3

$<1.27 \times 10^{-5}$ uCi/ml

RERUN

"AEA" - 480MIN
ATTACH PRINTOUT

L Conlin

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Raymond Hrs 10-28-93	[illegible] Hrs [illegible]	[illegible] 10-28-93 11:00	Hrs

Date	Time Completed	Supervisor Approval	
10-28-93	1600	[illegible]	[illegible]

54 6800-061 (R-10-83)

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

Serial No.			SAMPLE
G720-5782	Spike (Tracer) Book Number		58B43
Batch ID	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
2025	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
L CONLIN	Am-241 Area Peak Height from AEA	(C241)	6
Date	Am-243 Area Peak Height from AEA	(C243)	1695
10/28/93	Total AT Count	(ATOT)	4158
	AT Count Time in Minutes	(MIN CT'd)	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 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.

BEST AVAILABLE COPY

Am-241 µCi/L	=	< 1.27E-02
Am-241 µCi/mL	=	< 1.27E-05
Relative counting error	=	40.9%
Am-243 Tracer Recovery	=	48.5%

836

Data Entry by:	[illegible]	Date:	01-Nov-93
Approved by:	[illegible]	Date:	November 4, 1993

Form 3 Rev. 1.1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

4158 - 1
30

G720-5782

BEST AVAILABLE COPY

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

WHC-SD-WM-DP-054 REV 0

#5 5849

Serial No	Sample Point	Date	Time Issued	Priority
G 721.-5782	102 90 DAY	10-15-93	9:50	26

Determination	Method Standard	Requirements	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	D4483	1

Sample Size: 2 1ml + .100 ml SPKE # 58843

Customer ID: 5 10

Remarks, Special Instructions

COUNT AS uCi/L
+ 1 ml Sm HNO_3

RERUN

$<1.27 \times 10^{-5}$ uCi/ "ASA" - 480MIN
AP/mt PRINTOUT

Linda Conlin

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
	[illegible]	[illegible]		
Hrs	Hrs	10 28 93 11:55	Hrs	Hrs

Date	Time Completed		
10-28-93	1600	[illegible]	[illegible]

QA Check

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

Serial No.			SAMPLE
	Spike (Tracer) Book Number		58B43
G721-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2025	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
L CONLIN	Am-243 Area Peak Height from AEA	(C243)	1162
Date	Total AT Count	(ATOT)	3167
10/28/93	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.

BEST AVAILABLE COPY

Am-241 µCi/L	=	< 1.27E-02
Am-241 µCi/mL	=	< 1.27E-05
Relative counting error	=	40.9%
Am-243 Tracer Recovery	=	35.4%

338

Data Entry by:	[illegible]	Date:	01-Nov-93
Approved by:	[illegible]	Date:	November 4, 1993

Form 3 Rev. 1.1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#1 VR 10-28-93
5167/30 - 5

G 721-5782

BEST AVAILABLE COPY

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

WHC-SD-WM-DP-054 REV 0

#6 6759

Serial No	Sample Point	Date	Time Issued	Priority
G 722.-5782	102 90 DAY	10-15-93	9:50	25

Determination	Method Standard	Report Basis	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	D4433	1

Sample Size: 1 ml + 100ml Spike + 58B43

Customer ID: 15 10

Remarks (Calculation Method): COUNT AS uCi/L + 1ml 8m HNO3 <1.27X10-5 RERUN

"AZA" - 480MIN

ATTACH PRINTOUT

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Raymond Hrs 10-28-93	D.A. Hrs	10-28-93 11:00	Hrs
Date 10-28-93	Time Completed 1600			

54-5800 041 (R-13 93)

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

			SAMPLE
Serial No.	Spike (Tracer) Pook Number		58B43
G722-5782	Activity of Am243 Tracer in dpm/ml.	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in ml.	(SPKV)	0.1
2025	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 AFA	(C241)	3
L CONLIN	Am-243 Area Peak Height from AFA	(C243)	178
Date	Total AT Count	(ATOT)	682
10/28/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	4

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.

BEST AVAILABLE COPY

Am-241 µCi/L	=	< 1.27E-02
Am-241 µCi/mL	=	< 1.27E-05
Relative counting error	=	58.2%
Am-243 Tracer Recovery	=	6.5%

Data Entry by:	Date:	01-Nov-93
Approved by:	Date:	November 4, 1993

840

Form 3 Rev. 1.1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

3 VR 10-28-93

$\frac{682}{35}$ - 4

G722-5782

BEST AVAILABLE COPY

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

WHC-SD-WM-DP-054 REV 0

#7 7294

Serial No	Sample Point	Date	Time Issued	Priority
G 723.-5782	102.90 DAY	10-15-93	9:51	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ml	D4B8	1

Sample Size: 1ml + 100ml Spike # 5988 Sample ID

Remarks Calculations Results

COUNT AS uCi/L

+ 1ml 8m HNO_3

RERUN

ATTACH PRINTOUT

$<1.27 \times 10^{-2}$ uCi/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
			10-30-93 11:00	
Date 10-28-93	Time 1600			

54-5900-061 (R-10 93)

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

			SAMPLE
Serial No.	Spike (Tracer) Book Number		58B43
G723-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	5655
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2025	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)	3
L CONLIN	Am-243 Area Peak Height from AEA	(C243)	307
Date	Total AT Count	(ATOT)	851
10/28/93	AT Count Time in Minutes	(MIN CT'd)	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 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.

BEST AVAILABLE COPY

Am-241 µCi/L	=	< 1.27E-02
Am-241 µCi/mL	=	< 1.27E-05
Relative counting error	=	58.0%
Am-243 Tracer Recovery	=	9.6%

Data Entry by:	Date:	01-Nov-93
Approved by:	Date:	November 4, 1993

842

Form 3 Rev. 1.1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#2 10-29-93

$\frac{851}{32}$ -1 G723-5782

BEST AVAILABLE COPY

10-30-93

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

SAMPLE
G-718-5582
File ID: 2a2348.CNF

Counted on: 10/30/93 @ 3:43
Detector: AEA2
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	1409.3	1409.3	303.567	303.567	20.000	14.585	10.000	7.293
2	1240.0	1240.0	257.981	257.966	18.000	12.915	9.000	5.843
3	134.6	134.6	235.277	235.277	18.000	1.168	9.000	0.257

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am241	0.505	5.480	5.481	-.0010	07	57.11	1.2	546.4	0.246E-03
	Pu238		5.499	5.481	0.018				713.3	0.321E-03
2	Am243	0.442	5.276	5.271	0.0050	06	49.94	1.3	453.6	0.204E-03
3	Pu239	0.048	5.143	5.167	-.0240	01	5.37	5.2	48.3	0.217E-04
	Pu240		5.144	5.167	-.023				48.3	0.217E-04
Totals:		0.995	<--valid peaks only-->				112.42			

DETECTOR CALIBRATION
Energy(MEV) = 4.085 + (0.0046)*Channel
Energy range (MeV): 4.085 TO 6.440
Efficiency = 0.1112 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	54241.0	100.000
Smoothed	54241.0	100.000
Composite fit	53967.7	99.496
Residuals	273.3	0.504

Analyzed by: _____
DM

BEST AVAILABLE COPY

Spectrum 2a2348.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 9795.1


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

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 2a2348.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	1.	2.	0.	3.	0.	1.	1.	0.	0.
31	5.	3.	1.	3.	2.	2.	1.	3.	1.	1.
41	2.	0.	0.	0.	1.	1.	1.	2.	1.	1.
51	2.	1.	1.	1.	1.	1.	0.	3.	1.	0.
61	3.	0.	1.	1.	2.	0.	1.	1.	1.	1.
71	1.	4.	2.	1.	1.	0.	0.	4.	0.	1.
81	0.	1.	1.	1.	1.	1.	2.	1.	2.	[illegible]
91	1.	2.	3.	0.	2.	2.	1.	1.	1.	[illegible]
101	1.	1.	2.	4.	2.	1.	3.	3.	4.	2.
111	1.	4.	2.	6.	1.	1.	4.	2.	0.	3.
121	2.	4.	3.	3.	3.	4.	1.	2.	2.	3.
131	3.	2.	2.	1.	3.	4.	0.	1.	5.	4.
141	5.	0.	1.	2.	2.	2.	2.	2.	2.	1.
151	2.	1.	3.	1.	4.	2.	2.	6.	3.	1.
161	2.	4.	1.	5.	7.	2.	5.	2.	0.	4.
171	2.	3.	3.	3.	4.	5.	10.	3.	3.	5.
181	6.	5.	2.	6.	4.	8.	6.	8.	10.	4.
191	5.	9.	6.	4.	9.	5.	9.	11.	7.	11.
201	11.	11.	16.	7.	7.	13.	12.	13.	17.	16.
211	25.	32.	30.	24.	45.	35.	56.	60.	68.	86.
221	71.	87.	105.	125.	141.	148.	181.	177.	181.	211.
231	203.	222.	213.	204.	226.	217.	192.	219.	191.	204.
241	205.	207.	290.	314.	362.	423.	497.	576.	593.	722.
251	847.	952.	1015.	1161.	1236.	1270.	1272.	1341.	1351.	1161.
261	1077.	948.	927.	751.	623.	497.	357.	310.	257.	219.
271	151.	146.	126.	102.	85.	89.	84.	78.	80.	86.
281	81.	112.	117.	144.	171.	176.	240.	222.	330.	342.
291	435.	511.	614.	717.	802.	843.	1031.	1123.	1201.	1349.
301	1432.	1520.	1525.	1503.	1391.	1383.	1234.	1101.	998.	854.
311	694.	587.	455.	365.	306.	221.	177.	148.	102.	86.
321	55.	48.	35.	19.	7.	6.	3.	3.	4.	1.
331	1.	0.	1.	0.	0.	1.	0.	1.	0.	3.
341	1.	1.	2.	0.	0.	0.	2.	0.	2.	1.
351	0.	2.	3.	3.	2.	1.	2.	0.	0.	0.
361	1.	1.	0.	0.	0.	1.	0.	0.	1.	2.
371	0.	0.	1.	2.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
401	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
421	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	1.	0.	1.	0.	0.	1.	0.
451	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
461	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
471	1.	0.	2.	1.	1.	0.	1.	0.	1.	0.
481	2.	1.	0.	1.	2.	2.	2.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WHC-SD-WM-[illegible] REV 0

BEST AVAILABLE COPY

10-30-93
A J Johnson

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

SAMPLE
G-719-5682
File ID: 3a3695.CNF

Counted on: 10/30/93 @ 3:44
Detector: AEA3
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	696.3	696.3	271.708	271.708	34.000	40.961	17.000	6.97[illegible]

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Th228	1.036	5.430	5.334	0.096	0.19	57.94	1.2	733.9	0.331E-03
	Am243		5.276	5.334	-.058				526.3	0.237E-03
Totals:		1.036	<--valid peaks only-->				57.94			

DETECTOR CALIBRATION
Energy(MEV) = 4.085 + (0.0046)*Channel
Energy range (MeV): 4.085 TO 6.440
Efficiency = 0.1112 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	26846.0	100.000
Smoothed	26845.9	100.000
Composite fit	27811.8	103.598
Residuals	-965.8	-3.598

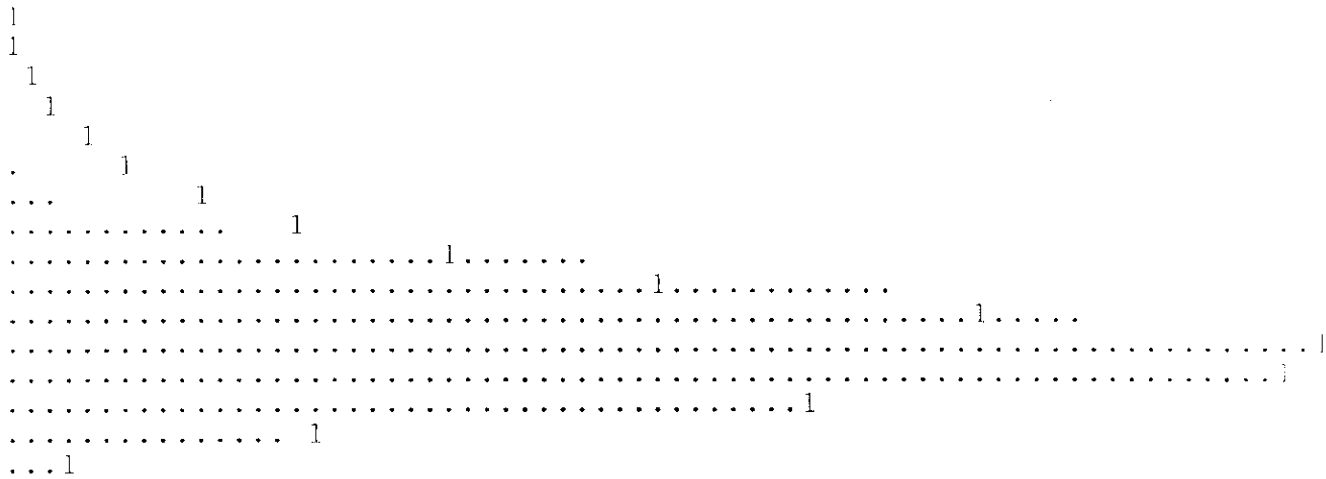
Analyzed by: _____
DM

BEST AVAILABLE COPY

Spectrum 3a3695.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5228.5

WHC-SD-WM-DP-054 REV 0



BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 3a3695.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
21	0.	1.	0.	3.	1.	0.	1.	0.	0.	0.
31	0.	0.	0.	1.	1.	0.	1.	0.	0.	0.
[illegible]	0.	2.	1.	0.	1.	2.	2.	1.	0.	2.
[illegible]	2.	0.	1.	0.	2.	0.	0.	1.	0.	0.
61	0.	1.	0.	0.	0.	0.	2.	0.	2.	6.
71	1.	0.	1.	1.	0.	1.	0.	0.	0.	0.
[illegible]	1.	0.	1.	1.	0.	0.	0.	0.	1.	0.
[illegible]	0.	1.	2.	0.	1.	2.	0.	1.	0.	2.
101	1.	0.	2.	2.	0.	1.	0.	0.	0.	0.
111	0.	2.	0.	1.	3.	0.	1.	1.	2.	1.
121	5.	1.	1.	2.	1.	0.	1.	0.	0.	1.
131	1.	0.	0.	0.	1.	3.	0.	1.	1.	0.
141	1.	2.	0.	1.	2.	1.	2.	0.	0.	1.
151	1.	1.	1.	2.	0.	2.	3.	1.	3.	1.
161	1.	0.	0.	2.	0.	2.	2.	0.	1.	2.
171	2.	3.	2.	0.	1.	1.	3.	0.	1.	2.
181	3.	0.	3.	0.	4.	2.	5.	3.	1.	1.
191	2.	1.	6.	1.	4.	2.	3.	4.	4.	5.
201	6.	0.	3.	2.	2.	9.	2.	7.	4.	4.
211	5.	8.	5.	7.	7.	4.	6.	8.	8.	11.
221	17.	15.	18.	24.	27.	16.	33.	22.	34.	[illegible]
231	59.	58.	63.	77.	89.	123.	150.	149.	176.	[illegible]
241	239.	211.	288.	320.	338.	345.	422.	395.	402.	[illegible]
251	429.	467.	463.	478.	511.	466.	493.	557.	547.	515.
261	553.	583.	579.	569.	630.	621.	616.	654.	704.	727.
271	728.	720.	680.	684.	696.	659.	622.	619.	563.	548.
281	467.	495.	421.	388.	349.	311.	286.	221.	195.	170.
291	119.	123.	91.	62.	51.	51.	47.	23.	21.	15.
301	14.	5.	13.	4.	2.	3.	4.	9.	0.	9.
[illegible]	1.	3.	1.	2.	1.	2.	2.	1.	2.	2.
[illegible]	1.	2.	1.	3.	2.	0.	3.	2.	0.	3.
331	3.	2.	2.	1.	0.	0.	1.	1.	3.	0.
341	2.	2.	2.	2.	0.	1.	1.	1.	1.	0.
351	3.	1.	0.	0.	0.	1.	0.	0.	3.	0.
361	0.	4.	0.	0.	2.	3.	0.	1.	3.	3.
371	2.	3.	2.	1.	2.	0.	1.	2.	0.	1.
381	2.	0.	0.	1.	2.	1.	1.	1.	0.	1.
391	1.	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.	1.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
451	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
461	1.	0.	0.	0.	0.	0.	0.	1.	1.	0.
471	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
481	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
491	0.	1.	1.	0.	0.	1.	0.	0.	0.	0.
511	0.	0.								

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

BEST AVAILABLE COPY

10-30-93

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

SAMPLE
G-720-5782
File ID: 4a4935.CNF

Counted on: 10/30/93 @ 3:44
Detector: AEA4
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	1443.7	1443.7	256.945	256.945	12.000	5.180	6.000	3.9[illegible]

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.949	5.276	5.267	0.009	0.02	36.20	1.5	328.8	0.148E-0[illegible]
Totals:		0.949	<--valid peaks only-->				36.20			

DETECTOR CALIBRATION
Energy(MEV) = 4.085 + (0.0046)*Channel
Energy range (MeV): 4.085 TO 6.440
Efficiency = 0.1112 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	18305.0	100.000
Smoothed	18305.0	100.000
Composite fit	17373.7	94.912
Residuals	931.3	5.088

Analyzed by: _____
DM

BEST AVAILABLE COPY

Spectrum 4a4935.CNF

! Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 7653.1

WHC-SD-WM-TP-031 REV 0

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

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 4a4935.CNF

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.	1.	1.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
51	1.	0.	1.	0.	2.	0.	0.	0.	0.	2.
61	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.
71	0.	0.	1.	1.	1.	0.	0.	0.	0.	[illegible]
81	0.	0.	0.	0.	0.	1.	0.	1.	1.	[illegible]
91	0.	1.	0.	0.	0.	0.	0.	1.	1.	[illegible]
101	1.	0.	1.	1.	0.	2.	0.	1.	0.	0.
111	0.	0.	2.	0.	1.	0.	1.	0.	1.	1.
121	0.	0.	0.	1.	1.	1.	2.	2.	2.	1.
131	0.	1.	0.	0.	0.	0.	1.	0.	1.	0.
141	3.	2.	2.	1.	0.	0.	2.	1.	1.	0.
151	2.	0.	3.	0.	1.	0.	0.	0.	3.	1.
161	0.	2.	1.	1.	0.	0.	0.	0.	1.	1.
171	1.	1.	0.	1.	1.	1.	0.	2.	0.	1.
181	1.	1.	1.	4.	0.	0.	2.	0.	2.	1.
191	2.	1.	0.	5.	2.	2.	0.	6.	2.	1.
201	3.	3.	6.	7.	2.	1.	5.	2.	1.	2.
211	5.	4.	4.	4.	8.	2.	7.	6.	7.	[illegible]
221	9.	8.	3.	9.	6.	10.	12.	9.	11.	15.
231	18.	22.	25.	22.	36.	44.	53.	56.	69.	66.
241	91.	108.	140.	155.	199.	270.	308.	380.	413.	496.
251	644.	800.	1078.	1266.	1518.	1646.	1695.	1576.	1378.	1016.
261	701.	479.	272.	180.	123.	116.	90.	59.	74.	61.
271	56.	26.	31.	23.	14.	9.	4.	2.	1.	0.
281	1.	0.	2.	0.	0.	2.	0.	0.	0.	1.
291	4.	1.	2.	2.	3.	4.	4.	3.	3.	5.
301	6.	5.	5.	4.	5.	1.	4.	1.	3.	[illegible]
311	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
341	0.	1.	2.	1.	1.	4.	1.	1.	1.	1.
351	4.	1.	1.	1.	1.	0.	0.	1.	1.	0.
361	2.	0.	0.	0.	3.	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.	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.	1.	0.	0.
481	1.	1.	2.	0.	0.	1.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

BEST AVAILABLE COPY

10-30-93

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

SAMPLE
G-721-5782
File ID: 5a5849.CNF

Counted on: 10/30/93 @ 3:45
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	1079.7	1079.7	255.074	255.074	18.000	13.784	9.000	6.139

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.968	5.276	5.258	0.018	0.06	44.68	1.3	405.8	0.183E-03
	Pu240		5.144	5.258	-.114				401.8	0.181E-03
Totals:		0.968	<--valid peaks only-->				44.68			

DETECTOR CALIBRATION
Energy(MEV) = 4.085 + (0.0046)*Channel
Energy range (MeV): 4.085 TO 6.440
Efficiency = 0.1112 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	22163.0	100.000
Smoothed	22163.0	100.000
Composite fit	21447.3	96.771
Residuals	715.7	3.229

Analyzed by: _____
DM

BEST AVAILABLE COPY

Spectrum 5a5849.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 7800.1


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

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 5a5849.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	2.	1.	2.
21	2.	2.	3.	0.	2.	2.	2.	0.	2.	1.
31	0.	0.	2.	1.	2.	1.	1.	0.	0.	0.
[illegible]	1.	4.	1.	1.	2.	1.	2.	0.	0.	0.
51	1.	0.	0.	1.	1.	2.	0.	1.	3.	0.
61	3.	0.	0.	0.	0.	1.	4.	2.	0.	3.
71	2.	1.	2.	2.	1.	1.	2.	2.	1.	1.
81	1.	1.	1.	1.	0.	0.	1.	2.	[illegible]	[illegible]
91	1.	1.	1.	1.	1.	2.	1.	1.	[illegible]	[illegible]
101	0.	3.	5.	1.	0.	1.	0.	2.	[illegible]	[illegible]
111	0.	2.	1.	0.	1.	1.	4.	2.	1.	[illegible]
121	3.	3.	1.	4.	1.	2.	1.	3.	4.	1.
131	2.	2.	2.	3.	4.	3.	2.	3.	3.	2.
141	3.	5.	7.	2.	3.	3.	1.	1.	2.	3.
151	3.	5.	2.	3.	2.	3.	1.	2.	1.	0.
161	0.	4.	4.	4.	2.	2.	3.	1.	8.	1.
171	2.	4.	2.	2.	6.	4.	3.	6.	6.	7.
181	6.	7.	8.	9.	7.	4.	3.	4.	6.	[illegible]
191	9.	7.	6.	9.	7.	8.	4.	7.	7.	[illegible]
201	10.	5.	11.	9.	7.	8.	12.	18.	13.	[illegible]
211	15.	18.	17.	16.	19.	14.	15.	19.	25.	[illegible]
221	15.	20.	27.	41.	33.	32.	52.	50.	[illegible]	
231	76.	89.	80.	112.	151.	133.	156.	175.	[illegible]	
241	303.	347.	434.	471.	543.	618.	683.	776.	[illegible]	[illegible]
251	1051.	1033.	1047.	1162.	1162.	1109.	1094.	943.	839.	[illegible]
261	660.	550.	444.	360.	281.	199.	159.	129.	119.	86.
271	69.	67.	30.	25.	22.	21.	13.	16.	4.	4.
281	3.	2.	3.	4.	2.	5.	3.	3.	2.	2.
291	1.	4.	2.	4.	4.	3.	3.	2.	3.	6.
301	1.	4.	1.	2.	4.	3.	4.	2.	3.	1.
[illegible]	4.	0.	1.	1.	0.	0.	1.	3.	0.	1.
[illegible]	1.	1.	0.	1.	2.	1.	1.	0.	0.	[illegible]
331	0.	0.	0.	1.	1.	0.	2.	2.	0.	[illegible]
341	3.	7.	2.	0.	2.	3.	1.	1.	0.	[illegible]
351	6.	0.	1.	2.	2.	0.	1.	3.	0.	[illegible]
361	0.	0.	1.	0.	1.	0.	2.	1.	0.	[illegible]
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.	1.	0.	0.	0.	0.	0.
411	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
421	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
431	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
451	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	1.	0.	0.	1.	0.	0.	2.	[illegible]
471	1.	0.	1.	2.	1.	0.	2.	0.	1.	[illegible]
481	0.	4.	0.	3.	0.	0.	2.	0.	0.	0.
491	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
511	0.	0.								

WHC-SD-WM-TRP-010 REV 0

BEST AVAILABLE COPY

10-30-93

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01

DATA REDUCTION REPORT

SAMPLE
G-722-5782
File ID: 6a6759.CNF

Counted on: 10/30/93 @ 3:46
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	160.3	160.3	252.138	252.138	20.000	22.591	10.000	[illegible]

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.932	5.276	5.244	0.032	0.10	8.23	3.1	74.7	0.337E-04
	Pu240		5.144	5.244	-.100				74.0	0.333E-04
Totals:		0.932	<--valid peaks only-->				8.23			

DETECTOR CALIBRATION
Energy(MEV) = 4.085 + (0.0046)*Channel
Energy range (MeV): 4.085 TO 6.440
Efficiency = 0.1112 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	4236.0	100.000
Smoothed	4239.3	100.079
Composite fit	3948.6	93.215
Residuals	287.4	6.785

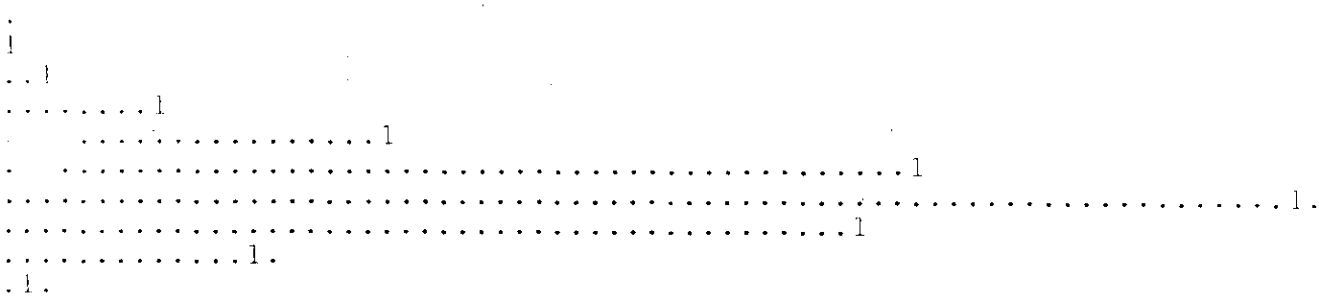
Analyzed by: _____
DM

BEST AVAILABLE COPY

Spectrum 6a6759.CNF

Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 1257.7

WHC-SD-WM-DP-054 REV 0



BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 6a6759.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	1.	0.	0.	0.	1.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
61	1.	0.	0.	1.	1.	0.	0.	0.	1.	0.
71	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
81	0.	0.	0.	0.	0.	0.	0.	1.	2.	1.
91	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.
101	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
111	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
121	1.	1.	1.	0.	0.	1.	1.	0.	0.	0.
131	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
141	0.	1.	0.	0.	0.	1.	1.	1.	0.	0.
151	0.	0.	1.	1.	2.	0.	1.	1.	0.	1.
161	0.	0.	1.	2.	1.	1.	1.	0.	2.	1.
171	2.	1.	1.	0.	0.	0.	2.	0.	2.	0.
181	2.	0.	2.	4.	1.	5.	2.	1.	0.	3.
191	1.	3.	0.	2.	1.	1.	1.	2.	2.	2.
201	1.	2.	2.	4.	3.	5.	2.	3.	4.	2.
211	2.	6.	7.	6.	4.	6.	9.	2.	8.	7.
221	7.	15.	9.	10.	10.	13.	23.	17.	23.	1.
231	31.	28.	37.	50.	44.	41.	53.	59.	[illegible]	[illegible]
241	77.	97.	84.	107.	128.	151.	145.	167.	112.	[illegible]
251	176.	151.	160.	173.	141.	178.	127.	140.	108.	97.
261	92.	86.	55.	59.	56.	39.	19.	20.	31.	17.
271	7.	16.	12.	8.	5.	4.	3.	3.	4.	1.
281	3.	3.	2.	3.	0.	1.	1.	1.	2.	1.
291	4.	2.	2.	1.	1.	3.	1.	1.	1.	2.
301	1.	1.	1.	2.	3.	0.	1.	0.	0.	0.
311	2.	2.	0.	0.	1.	0.	0.	0.	1.	0.
321	0.	0.	0.	1.	0.	0.	0.	0.	0.	1.
331	0.	0.	2.	1.	0.	1.	1.	0.	2.	1.
341	0.	1.	1.	0.	0.	2.	0.	3.	2.	1.
351	1.	3.	0.	0.	3.	0.	0.	1.	0.	0.
361	0.	1.	1.	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.	1.	0.	0.	1.
421	0.	0.	2.	0.	1.	0.	0.	0.	0.	0.
431	0.	0.	1.	0.	1.	0.	0.	1.	1.	1.
441	0.	2.	0.	0.	0.	0.	1.	1.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	1.	0.	1.	0.	0.	0.	2.	1.	0.	3.
471	1.	6.	1.	2.	1.	0.	3.	2.	0.	0.
481	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
491	1.	1.	1.	3.	3.	7.	7.	3.	0.	0.
511	0.	0.								

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

BEST AVAILABLE COPY

10-30-93

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

SAMPLE
G-723-5782
File ID: 7a7294.CNF

Counted on: 10/30/93 @ 3:46
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	269.2	269.2	256.185	256.185	16.000	8.980	8.000	3.967

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.860	5.276	5.263	0.013	0.04	9.68	2.9	88.0	0.396E-04
Totals:		0.860	<--valid peaks only-->				9.68			

DETECTOR CALIBRATION
Energy(MEV) = 4.085 + (0.0046)*Channel
Energy range (MeV): 4.085 TO 6.440
Efficiency = 0.1112 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	5406.0	100.000
Smoothed	5405.5	99.992
Composite fit	4648.3	85.985
Residuals	757.7	14.015

Analyzed by: _____
DM

BEST AVAILABLE COPY

Spectrum 7a7294.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 1642.


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

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 7a7294.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
21	2.	1.	1.	1.	0.	2.	0.	2.	3.	1.
31	0.	0.	2.	0.	2.	0.	1.	2.	2.	0.
[illegible]	0.	0.	0.	0.	1.	0.	1.	2.	3.	0.
[illegible]	2.	1.	2.	1.	4.	1.	0.	0.	1.	0.
61	1.	1.	1.	0.	2.	3.	0.	1.	0.	1.
71	2.	1.	0.	0.	0.	2.	1.	0.	0.	0.
[illegible]	3.	1.	0.	1.	0.	1.	0.	1.	1.	1.
[illegible]	[illegible]	6.	3.	0.	2.	4.	1.	1.	1.	1.
101	2.	1.	2.	3.	1.	0.	1.	0.	2.	1.
111	0.	1.	2.	2.	0.	3.	1.	3.	1.	0.
121	0.	1.	1.	2.	1.	2.	4.	1.	2.	3.
131	1.	2.	1.	1.	1.	0.	1.	0.	1.	3.
141	2.	0.	0.	0.	5.	4.	1.	1.	1.	3.
151	3.	0.	1.	2.	5.	1.	2.	3.	3.	4.
161	2.	1.	3.	2.	1.	2.	1.	3.	5.	3.
171	1.	3.	2.	3.	2.	3.	2.	3.	3.	5.
181	3.	5.	2.	4.	3.	2.	3.	3.	6.	2.
191	7.	7.	4.	2.	6.	3.	9.	5.	6.	9.
201	3.	5.	10.	7.	8.	7.	10.	4.	7.	[illegible]
211	12.	16.	13.	12.	12.	9.	19.	16.	10.	[illegible]
221	15.	17.	13.	19.	22.	24.	28.	28.	23.	[illegible]
231	20.	25.	34.	28.	39.	29.	41.	42.	[illegible]	[illegible]
241	49.	49.	66.	71.	92.	97.	122.	129.	[illegible]	[illegible]
251	176.	220.	246.	277.	272.	307.	304.	245.	229.	[illegible]
261	135.	128.	81.	85.	65.	43.	36.	41.	25.	[illegible]
271	21.	16.	8.	6.	10.	3.	4.	3.	2.	1.
281	1.	2.	4.	1.	1.	1.	1.	1.	1.	2.
291	3.	1.	0.	0.	2.	2.	0.	0.	2.	0.
301	0.	1.	0.	1.	3.	0.	3.	0.	0.	2.
[illegible]	1.	1.	1.	0.	0.	1.	1.	0.	0.	1.
[illegible]	0.	1.	0.	1.	2.	0.	1.	1.	0.	0.
331	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
341	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
351	1.	0.	0.	0.	2.	0.	0.	1.	0.	0.
361	1.	1.	1.	2.	1.	0.	0.	1.	0.	1.
371	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
381	0.	1.	0.	1.	0.	1.	0.	0.	0.	0.
391	1.	0.	0.	0.	1.	0.	1.	1.	2.	1.
401	0.	2.	0.	0.	0.	0.	0.	0.	1.	0.
411	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
421	1.	0.	0.	0.	0.	0.	1.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
441	0.	0.	0.	1.	0.	1.	1.	0.	0.	0.
451	0.	1.	0.	0.	0.	0.	0.	0.	1.	0.
461	0.	0.	0.	0.	1.	0.	1.	0.	0.	0.
471	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.
481	1.	0.	1.	0.	0.	0.	0.	0.	0.	1.
491	0.	0.	0.	0.	0.	0.	0.	0.	2.	1.
511	19.	0.								

BEST AVAILABLE COPY

WESTINGHOUSE HANFORD COMPANY

BEST AVAILABLE COPY

222-S LABORATORY

2351

ANALYTICAL BATCH

Lab Segment Serial No. [illegible]	Customer ID: B-8 C-8
[illegible]	Sample Point: [illegible]

Instrument: LA3537237	Procedure/ Rev: LA 503 -151
Technologist: [illegible]	Date: 12-9-93
Starting Time: [illegible]	Temperature 25°C
Ending Time: 21:25 RSD 12-15-93	Chemist: [illegible]

Comments:

	Description	Lab ID		Description	Lab ID
1	LMCS	G745-5582	11		
2	BLK	G-746-5162	12		
3	Sample B-8	G-748-5782	13		
4	Sample C-8	G-749-5783	14		
5			15		
6			16		
7			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 AR001	63343, 100-10	1mL		
Spike	78343 .100			

862

A-6000-881 (03/92)

ANALYTICAL BATCH SUMMARY SHEET

METHOD: LA-503-156

DATE START: December 9, 1993

PREPARED BY: L. L. Fritts 12/13/93

DATE COMPLETE: December 13, 1993

	UNITS:	uCi/mL							
SPL NAME	SPL ID	ANALYTE	RESULT #1	RESULT #2	AVERAGE	RPD%	%REC	DET LIM	% CT ER
STD 63B43	G745	Am-241	2.61E+1				97.4	1.71E-3	30.4
BLANK	G746	Am-241	<3.40E-5				3.6	3.40E-5	71.4
	G748	RSD 12-15-93							
B-8	~~G747~~	Am-241	<3.40E-5				4.9	3.40E-5	38.7
C-8	G749	Am-241	5.48E-5				1.2	3.40E-5	46.5

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.

No rerun requested--Low tracer recovery on G749 has led to an actual value but rerun not requested.

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

WHC-SD-WM-DP-054 REV 0

#2 2456 Batch 2351

Serial No	Sample Point	Date	Time Issued	Priority
G 745-5582	102 90 DAY	11-22-93	13:41	

Determination	Method Standard	Report Units	Charge Code	Returns
Am241	LA-503-156	% RECOVERY	WCHL	

Sample Size: 1.0mL-10.0mL + 100mL Spike

Date Rec'd: 12/3/93

RERUN

Remarks Calculations Results

EDP R201 AR001

STD# 68843 RESULT 26.1

STD VAL 26.796 %REC 97.4%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
	Eric Bracken	M Bunn	Eric Bracken	
Hrs	Hrs	Hrs	Hrs	12-14-93
				12-14-93
Date: 12-9-93	Time Completed: 21:25			

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

Serial No.	Spike (Tracer) Book Number		STANDARD
G745-5582	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2351	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)	19
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	25
Date	Total AT Count	(ATOT)	326
12/09/93	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

BEST AVAILABLE COPY

Am-241 µCi/L	=	2.61E+01
Am-241 µCi/mL	=	2.61E-02
Relative counting error	=	30.4%
Am-243 Tracer Recovery	=	0.7%

Data Entry by:	Date: 13-Dec-93
Approved by:	Date: December 13, 1993

Form 3 Rev. 1.2

AMERICIUN 241 ANALYSIS - UNDIGESTED SAMPLE

#1 12-9-93

326/30 -6 G745-5582

BEST AVAILABLE COPY

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

WHC-SD-WM-DP-054 REV 0

#3 3520

Serial No	Sample Point	Date	Time Issued	Priority
G 746-5682	100 SW TANK	11-22-93	13:51	26

Determination	Method Standard	Result Units	Charge Code	Reruns
AM241-A	LA-503-156	pCi/ml	90TPL	1

Sample Size: 5ml 12-3-93 Customer ID:

Remarks, Comments, etc. Results:

REAGENT BLANK 78843

COMPLETE AS WELL

$< 3.40 \times 10^{-5}$ uCi/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
	Eric Barcus	M Bu...	Eric Barcus	
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Entry		
12-9-93	21:25		12-14-93	

54-5809-561 (R-10 93)

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

Serial No.	Spike (Tracer) Book Number		BLANK
G746-5682			78843
Batch ID	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
2351	Spike (Tracer) Volume in mL	(SPKV)	0.1
Rerun No.	Volume of Sample in mL	(SS)	0.5
1	Dilution Factor	(DF)	1
Analyst	Digest Dilution Factor	(DDF)	1
J VAN SANT	Am-241 Area Peak Height from AEA	(C241)	2
Date	Am-243 Area Peak Height from AEA	(C243)	97
12/09/93	Total AT Count	(ATOT)	511
	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	3

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

BEST AVAILABLE COPY

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

Am-241 µCi/L	=	< 3.40E-02
Am-241 µCi/mL	=	< 3.40E-05
Relative counting error	=	71.4%
Am-243 Tracer Recovery	=	3.6%

Data Entry by:		Date:	13-Dec-93
Approved by:		Date:	December 13, 1993

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

~~HS~~ 12-9-93

511/30 -3 G746-5682

BEST AVAILABLE COPY

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

WHC-SD-WM-DP-054 REV 0

#4 4029

Serial No	Sample Point	Date	Time Issued	Priority
G 748 5782	102 90 DAY	11-[illegible]	[illegible]	

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	[illegible]	

Sample Size: 1-500mL + 1-100mL Spike 78B43

COUNT AS uCi/L

RERUN

$< 3.40 \times 10^{-5}$ µCi/ml

-500mL Cu HNO3

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

Date	Time Completed	Lab Chief	
12-9-93	2/125	[illegible]	12-14-93 [illegible]

54 6HM-001 (R 10/91)

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

			SAMPLE
Serial No.	Spike (Tracer) Book Number		78B43
G748-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2351	Volume of Sample in mL	(SS)	0.5
Rerun No.	Dilution Factor	(DF)	1
1	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	7
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	149
Date	Total AT Count	(ATOT)	667
12/09/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	3

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.

BEST AVAILABLE COPY

Am-241 µCi/L	=	< 3.40E-02
Am-241 µCi/mL	=	< 3.40E-05
Relative counting error	=	38.7%
Am-243 Tracer Recovery	=	4.9%

Data Entry by: [illegible]	Date: 13-Dec-93
Approved by: [illegible]	Date: December 13, 1993

Form 3 Rev. 1.2

Page 1 of 1

968

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

AB 12-9-93

G7J8-5782

667/30 - 3

BEST AVAILABLE COPY

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

WHC-SD-WM-DP-054 REV 0

#5 5952

Serial No	Sample Point	Date	Time Issued	Priority
G 749-5782	207 00 DAY	11-23-93	11:55	26

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ml	V9385	1

Sample Size: .500ml — Aliquot Spike: 78B43 — Dilution: 1

Remarks/Calculations/Results: COUNT AS uCi/L

RERUN

5.48×10^{-5} uCi/ml

.500mL Con HNO3

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date: 12-9-93	Time Completed: 7:125	Lab Unit Supv:		

54-6800-061 (R 10-93)

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

			SAMPLE
Serial No.	Spike (Tracer) Book Number		78B43
G749-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2351	Volume of Sample in mL	(SS)	0.5
Rerun No.	Dilution Factor	(DF)	1
1	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	5
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	62
Date	Total AT Count	(ATOT)	182
12/09/93	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

BEST AVAILABLE COPY

Am-241 µCi/L	=	5.48E-02
Am-241 µCi/mL	=	5.48E-05
Relative counting error	=	46.5%
Am-243 Tracer Recovery	=	1.2%

Data Entry by:		Date:	13-Dec-93
Approved by:		Date:	December 13, 1993

870

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

12-9-93

182 / 30 -1

G749-5282

BEST AVAILABLE COPY

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

SAMPLE
G 745-5582
File ID: 2a2456.CNF

Counted on: 12/10/93 @10:33
Detector: AEA2
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	14.6	14.6	301.489	300.647	22.000	19.832	11.000	3.395
2	17.3	17.3	258.202	258.202	22.000	7.477	11.000	1.689

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am241	0.511	5.480	5.497	-.017	0.09	1.02	8.9	10.1	0.453E-05
	Pu238		5.499	5.497	0.002				13.1	0.592E-05
2	Am243	0.423	5.276	5.297	-.021	0.04	0.84	10.9	7.9	0.356E-05
Totals:		0.934	<--valid peaks only-->				1.86			

DETECTOR CALIBRATION
Energy(MEV) = 4.084 + (0.0047)*Channel
Energy range (MeV): 4.084 TO 6.490
Efficiency = 0.1076 CPM/DPM

TOTAL COUNT DATA:

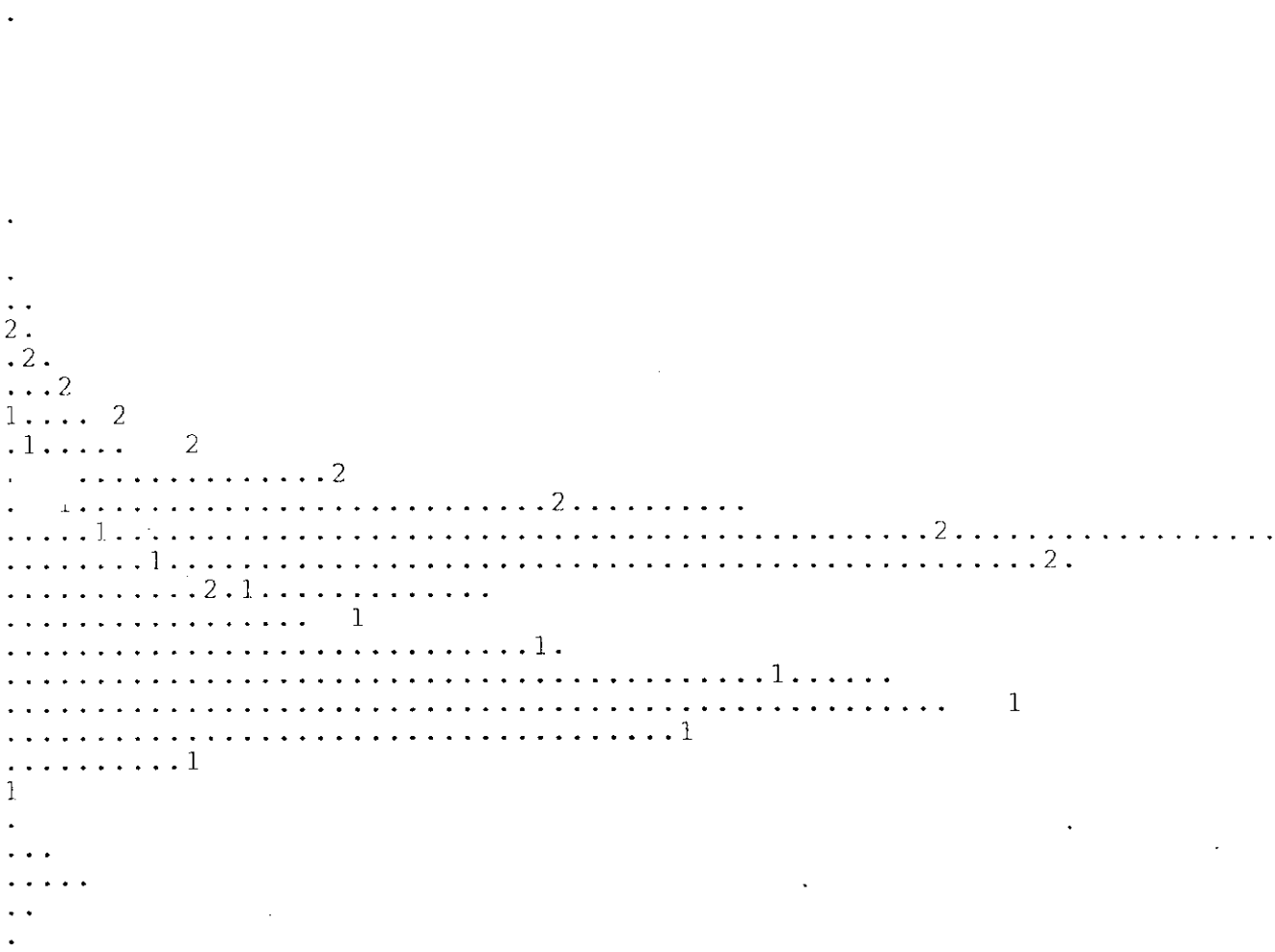
Item	Total	% Recovery
Raw spectrum	955.0	100.000
Smoothed	954.8	99.976
Composite fit	892.3	93.430
Residuals	62.7	6.570

Analyzed by: _____
MB

BEST AVAILABLE COPY

Spectrum 2a2456.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 138.4



BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 2a2456.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
21	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	1.	0.	0.	0.	0.	0.	0.	0.	1.	1.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
81	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
91	0.	0.	0.	0.	1.	0.	0.	0.	0.	[illegible]
101	0.	0.	0.	1.	0.	1.	0.	0.	0.	1.
111	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
121	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
131	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
141	0.	1.	0.	0.	0.	1.	0.	0.	0.	0.
151	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
161	0.	0.	1.	1.	0.	0.	1.	0.	0.	0.
171	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
181	1.	0.	1.	1.	0.	1.	1.	0.	0.	1.
191	1.	1.	0.	0.	1.	0.	1.	3.	0.	0.
201	0.	1.	3.	1.	0.	1.	0.	0.	2.	2.
211	1.	0.	1.	1.	0.	2.	1.	0.	1.	2.
221	2.	0.	2.	3.	2.	0.	2.	0.	2.	2.
231	4.	4.	4.	4.	4.	2.	4.	6.	6.	12.
241	2.	9.	9.	14.	10.	10.	13.	18.	18.	21.
251	17.	14.	13.	24.	19.	19.	25.	12.	17.	9.
261	15.	11.	16.	10.	7.	7.	10.	3.	9.	5.
271	2.	0.	2.	3.	4.	0.	7.	9.	4.	4.
281	7.	5.	8.	13.	8.	7.	7.	12.	7.	14.
291	15.	9.	19.	12.	11.	15.	13.	14.	9.	14.
301	19.	14.	10.	12.	11.	10.	6.	18.	7.	8.
311	4.	5.	3.	2.	3.	3.	2.	1.	1.	0.
321	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.
331	0.	0.	1.	0.	0.	2.	2.	1.	1.	0.
341	0.	0.	2.	2.	0.	1.	1.	3.	0.	4.
351	3.	0.	1.	0.	0.	0.	1.	0.	1.	0.
361	0.	1.	0.	1.	0.	0.	0.	0.	0.	0.
371	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	1.	0.	0.	0.	0.	0.	1.	0.	0.	0.
421	0.	0.	1.	0.	0.	1.	0.	1.	0.	0.
431	0.	1.	0.	0.	0.	1.	0.	0.	0.	1.
441	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
451	1.	0.	0.	0.	2.	0.	0.	0.	0.	1.
461	0.	0.	0.	0.	0.	0.	0.	1.	1.	2.
471	0.	0.	0.	0.	0.	1.	0.	0.	5.	0.
481	2.	0.	0.	1.	0.	0.	0.	1.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WHC-SD-WM-[illegible] REV 0

BEST AVAILABLE COPY

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

SAMPLE
G 746-5682
File ID: 3a3520.CNF

Counted on: 12/10/93 @10:34
Detector: AEA3
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	87.2	87.2	268.323	268.323	18.000	15.393	9.000	[illegible]

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	1.104	5.276	5.319	-.043	0.07	6.01	3.6	47.9	0.216E-04
T	als:	1.104	<--valid peaks only-->				6.01			

DETECTOR CALIBRATION
Energy(MEV) = 4.084 + (0.0046)*Channel
Energy range (MeV): 4.084 TO 6.440
Efficiency = 0.1267 CPM/DPM

TOTAL COUNT DATA:

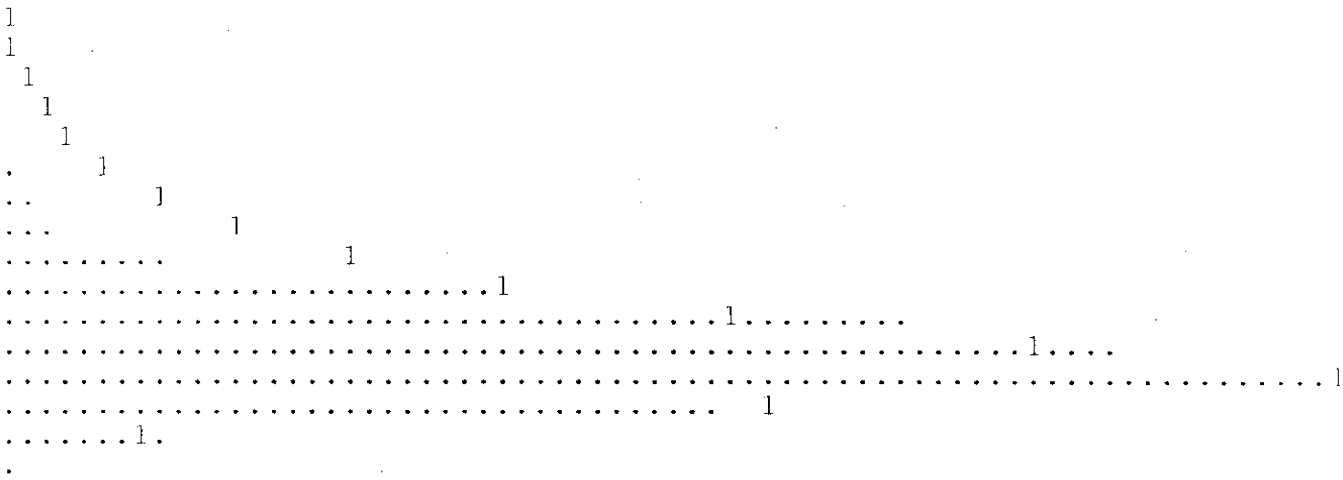
Item	Total	% Recovery
Raw spectrum	2615.0	100.000
Smoothed	2615.0	100.000
Composite fit	2886.2	110.371
Residuals	-271.2	-10.371

Analyzed by: _____
MB

BEST AVAILABLE COPY

Spectrum 3a3520.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 655.8



BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 3a3520.CNF

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.	1.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
111	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.
121	1.	1.	0.	0.	0.	1.	0.	0.	0.	0.
131	1.	0.	0.	0.	1.	0.	0.	0.	0.	0.
141	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
151	0.	2.	0.	0.	0.	0.	0.	0.	1.	0.
161	0.	1.	0.	0.	1.	1.	0.	0.	0.	1.
171	0.	0.	0.	1.	0.	2.	0.	0.	1.	1.
181	0.	0.	0.	1.	1.	2.	0.	1.	0.	1.
191	1.	1.	2.	1.	0.	2.	0.	2.	0.	0.
201	1.	0.	0.	0.	0.	2.	1.	3.	1.	2.
211	2.	2.	1.	1.	2.	3.	2.	4.	4.	1.
221	1.	2.	4.	3.	1.	0.	4.	4.	5.	8.
231	6.	8.	11.	11.	8.	6.	8.	14.	18.	15.
241	16.	27.	30.	32.	32.	45.	49.	58.	43.	67.
251	57.	53.	66.	64.	65.	59.	70.	69.	67.	58.
261	72.	74.	79.	83.	93.	78.	87.	86.	97.	84.
271	83.	67.	64.	42.	52.	41.	37.	36.	26.	14.
281	17.	16.	8.	9.	6.	2.	3.	1.	1.	0.
291	1.	1.	2.	1.	0.	0.	0.	0.	0.	0.
301	0.	1.	1.	0.	0.	1.	0.	2.	0.	1.
[illegible]	0.	1.	1.	0.	0.	0.	0.	1.	0.	1.
[illegible]	1.	0.	0.	1.	0.	1.	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.	0.	0.	0.	0.	0.	0.	0.	0.	1.
361	0.	0.	1.	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.	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.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WHC-SD-WM-TRP-010 REV 0

BEST AVAILABLE COPY

Am. Bauer
12-10-93

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

SAMPLE
C 748-5782
File ID: 4a4029.CNF

Counted on: 12/10/93 @10:35
Detector: AEA4
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	121.2	121.2	256.464	256.464	10.000	6.962	5.000	2.[illegible]

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.948	5.276	5.290	-.014	0.03	4.49	4.2	57.8	0.261E-0[illegible]
Totals:		0.948	<--valid peaks only-->				4.49			

DETECTOR CALIBRATION
Energy(MEV) = 4.085 + (0.0047)*Channel
Energy range (MeV): 4.085 TO 6.492
Efficiency = 0.0784 CPM/DPM

TOTAL COUNT DATA:

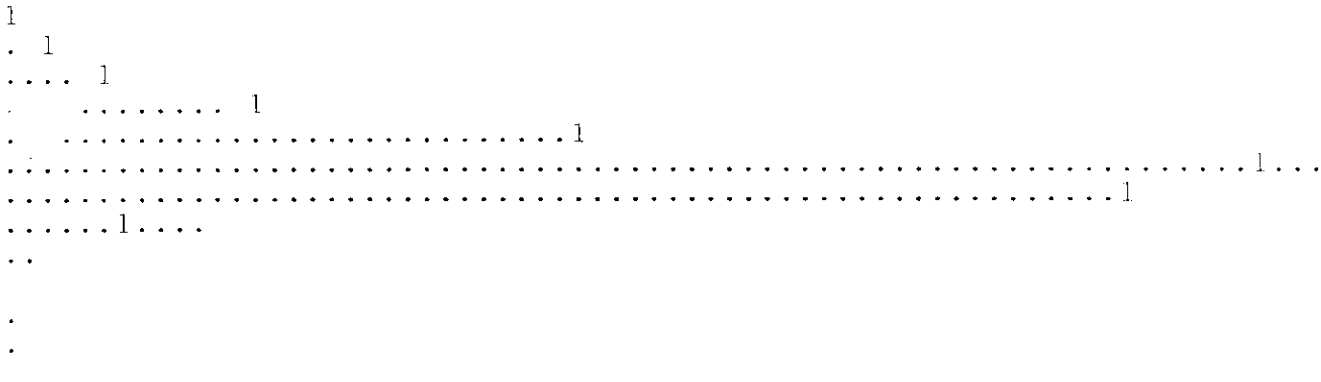
Item	Total	% Recovery
Raw spectrum	2274.0	100.000
Smoothed	2274.0	100.000
Composite fit	2154.7	94.755
Residuals	119.3	5.245

Analyzed by: _____
MB

BEST AVAILABLE COPY

Spectrum 4a4029.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 777.0



BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 4a4029.CNF

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	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
51	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
61	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
71	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
101	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
111	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
121	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
131	1.	1.	1.	0.	0.	0.	0.	0.	0.	1.
141	1.	0.	1.	2.	0.	0.	0.	1.	0.	0.
151	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
161	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
171	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
181	1.	0.	0.	0.	0.	0.	1.	0.	0.	1.
191	0.	0.	1.	2.	0.	0.	0.	0.	0.	0.
201	0.	1.	1.	1.	1.	1.	0.	1.	1.	1.
211	2.	3.	1.	1.	2.	1.	0.	2.	2.	1.
221	1.	4.	3.	6.	4.	4.	5.	11.	8.	5.
231	11.	9.	16.	10.	16.	13.	13.	21.	25.	35.
241	30.	29.	43.	49.	57.	47.	52.	68.	82.	70.
251	99.	105.	107.	108.	149.	131.	117.	143.	112.	86.
261	75.	37.	27.	18.	13.	9.	11.	11.	12.	5.
271	5.	7.	5.	4.	5.	2.	0.	0.	2.	0.
281	0.	0.	0.	0.	1.	2.	0.	2.	0.	1.
291	3.	1.	3.	7.	2.	1.	4.	3.	0.	3.
301	3.	3.	0.	1.	1.	2.	1.	2.	1.	1.
311	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
341	0.	0.	0.	1.	0.	1.	0.	0.	1.	0.
351	2.	0.	1.	1.	1.	0.	1.	0.	0.	1.
361	0.	0.	0.	1.	0.	1.	0.	1.	2.	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.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.
431	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	1.	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.	1.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WHC-SD-WM-B REV 0

BEST AVAILABLE COPY

Encl. Doc. Co.
12-16-93

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

SAMPLE
G 749-5782
File ID: 5a5952.CNF

Counted on: 12/10/93 @10:36
Detector: AEA5
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	48.9	48.9	249.927	249.927	26.000	17.546	13.000	7.951

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.830	5.276	5.244	0.032	0.08	2.21	6.0	16.1	0.723E-05
	Pu240		5.144	5.244	-.100				15.9	0.716E-05
Totals:		0.830	<--valid peaks only-->				2.21			

DETECTOR CALIBRATION
Energy(MEV) = 4.095 + (0.0046)*Channel
Energy range (MeV): 4.095 TO 6.450
Efficiency = 0.1388 CPM/DPM

TOTAL COUNT DATA:

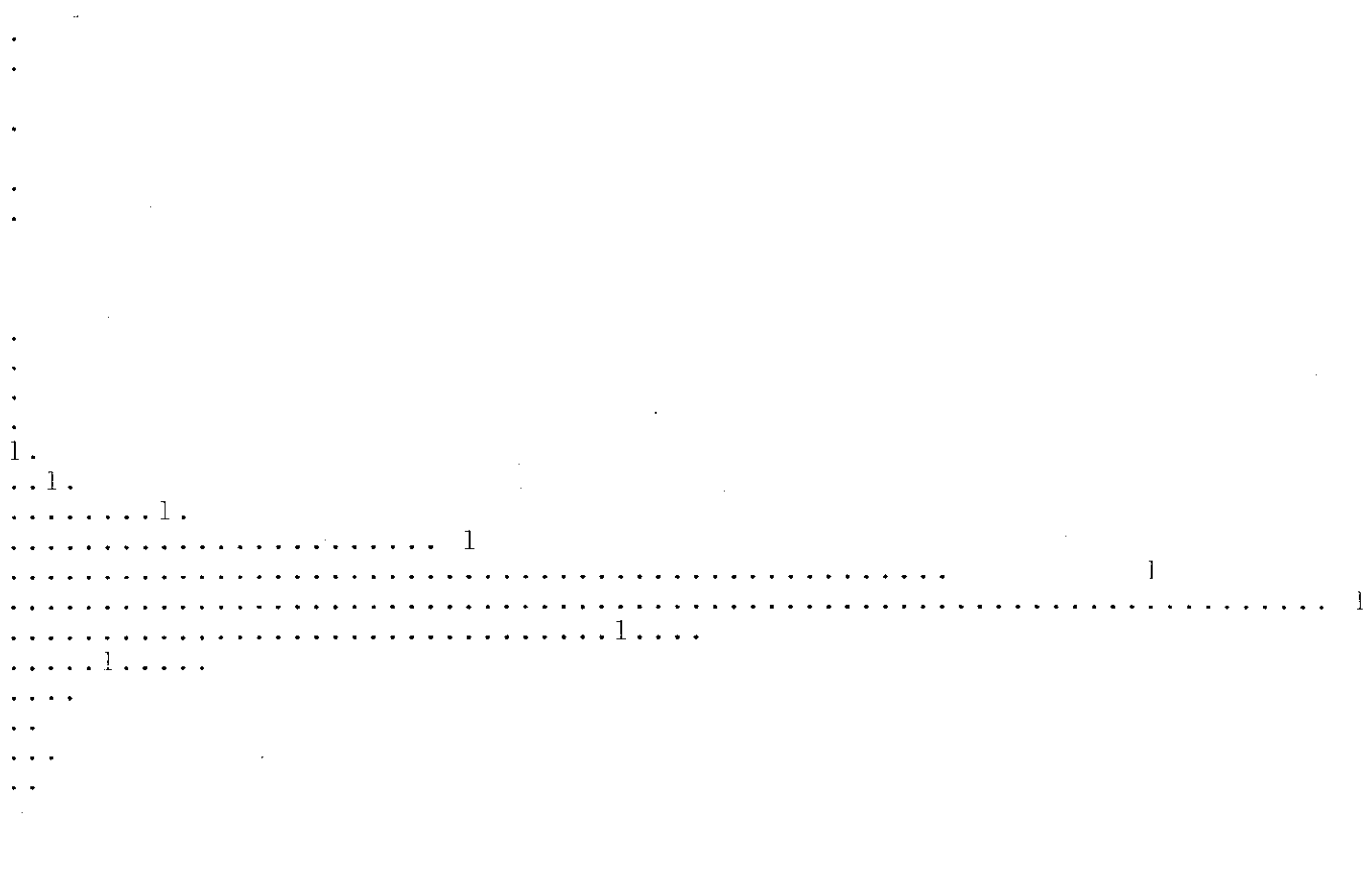
Item	Total	% Recovery
Raw spectrum	1276.0	100.000
Smoothed	1276.0	100.000
Composite fit	1059.0	82.993
Residuals	217.0	17.007

Analyzed by: _____
MB

BEST AVAILABLE COPY

Spectrum 5a5952.CNF

1 Legend. Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 345.3



BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 5a5952.CNF

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.	0.	1.	0.	1.	0.
31	0.	1.	0.	1.	0.	1.	1.	0.	1.	0.
	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	0.	1.	0.	0.	2.	0.	0.	0.	0.	0.
61	0.	0.	0.	1.	0.	1.	0.	0.	0.	1.
71	0.	1.	2.	0.	0.	0.	0.	0.	1.	0.
81	0.	0.	1.	0.	0.	1.	1.	0.	0.	1.
91	0.	0.	1.	0.	0.	2.	1.	0.	0.	1.
101	1.	0.	2.	2.	1.	1.	0.	1.	0.	1.
111	0.	1.	0.	0.	1.	1.	0.	0.	0.	3.
121	1.	0.	0.	1.	0.	3.	1.	1.	0.	0.
131	1.	0.	0.	1.	0.	0.	1.	3.	0.	0.
141	1.	1.	1.	0.	2.	1.	1.	2.	1.	0.
151	0.	0.	0.	0.	1.	0.	0.	0.	0.	1.
161	1.	1.	2.	1.	0.	0.	0.	0.	0.	0.
171	2.	0.	1.	0.	1.	1.	0.	0.	1.	0.
181	3.	1.	2.	0.	0.	1.	0.	2.	1.	2.
191	2.	1.	0.	0.	1.	1.	2.	2.	2.	1.
201	1.	0.	1.	0.	1.	2.	2.	0.	1.	1.
211	1.	1.	0.	3.	4.	1.	1.	7.	2.	2.
221	3.	5.	2.	2.	3.	6.	3.	8.	9.	1.
231	8.	12.	9.	4.	12.	17.	15.	23.	19.	[illegible]
241	16.	28.	33.	31.	35.	25.	43.	44.	62.	[illegible]
251	53.	41.	36.	44.	38.	30.	34.	25.	23.	24.
261	19.	14.	15.	7.	8.	6.	7.	6.	6.	5.
271	3.	6.	2.	2.	4.	3.	1.	0.	1.	3.
281	0.	0.	1.	1.	0.	5.	1.	2.	2.	4.
291	0.	1.	1.	5.	1.	3.	4.	2.	2.	0.
301	2.	1.	0.	0.	0.	1.	0.	0.	0.	0.
31	2.	1.	0.	0.	0.	0.	1.	1.	0.	2.
[illegible]	0.	0.	0.	1.	1.	0.	1.	1.	0.	0.
331	1.	1.	0.	2.	2.	0.	2.	1.	0.	0.
341	0.	0.	1.	1.	5.	1.	0.	3.	0.	1.
351	1.	0.	2.	1.	0.	0.	0.	0.	0.	0.
361	0.	0.	0.	1.	0.	0.	1.	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.	1.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	1.	0.	0.	1.	0.	0.	0.	2.	1.
431	0.	0.	0.	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.	1.	0.	0.	0.
461	0.	0.	0.	0.	1.	1.	0.	1.	1.	1.
471	2.	0.	0.	1.	1.	0.	2.	1.	1.	0.
481	0.	0.	0.	0.	1.	2.	0.	2.	1.	2.
491	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

BEST AVAILABLE COPY

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH

Batch 224

Lab Segment Serial No. G7747 - G7750 RSD 12-15-93	Customer ID: A8 - D8
	Sample Prep:

Instrument: LW3537237	Procedure/ Rev: LA 503-156 D.0
Technologist: Jill M Langsant	Date: 12-6-93
Starting Time: 0800	Temperature 25°C
Ending Time: 1500 12-6-93	Chemist: FOTTS

Comments: SEMI-QUANTITATION

Rerun G7748 / G7749

	Description	Lab ID
1	LMCS	G7745 - 5582
2	BK	G7746 - 5682
3	Sample A8	G7747 - 5782
4	~~Sample B8~~	~~G7748 - 5782~~
5	Sample C8	G7749 - 5782
6	Sample D8	G7750 - 5782
7		
8		
9		
10		

	Description	Lab ID
11		
12		
13		
14	Sample B-8	G7747-5782
15		
16	RSD 12-15-93	
17		
18		
19	Re Run G7487 / G7499	
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 .100	.10 - 1ml		
Spike	78843 .100	mL		
		884		