0033936

SD-WM-DP-057

105-KE FILTER BACKWASH PIT TRANSFER CHANNEL DATA PACKAGE

SECTION 2 OF 2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

WHC-SD-WM-DP-057 REV O

#2 11-15-93

J1285-5782

1462/30 -1

BEST AVAILABLE COPY

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

BEST AVAILABLE COPY

12 4249 WHC-SD-WM-DP-057 REV O

Serial No	Sample Point	Date	Time Issued	Priority
J 1285.-5982	BECHTOLD	11- 4-93	8:58	18

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	% RECOVERY	E14157	0

Sample Size	Customer ID
? 1.0-10-.05 ml	KE13A

Remarks Calculations Results

SAMPLE SPIKED ID

SPIKE ID 78B43 .200 ml

SPIKE VOLUME
COUNT AS uCI/L
63B43 .100-10-1.0 ml
Dil. in 8 AHNO3

$\frac{(92.5-53.7)(\frac{101}{1}/\frac{11}{.05})(100)}{26.796} = 66.59$

ATTACH PRINTOUT

OUT FOR RERUN

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
	[signature]	D.H. Milian		
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
11/17/93	2330	[signature]	[signature]

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

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

			CHK EXT NO.
Serial No.	Spike (Tracer) Book Number		78B43
J1285-5982	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.2
2099	Volume of Sample in mL	(SS)	0.05
Rerun No.	Dilution Factor	(DF)	11
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	852
M BIERMAN	Am-243 Area Peak Height from AEA	(C243)	1376
Date	Total AT Count	(ATOT)	3065
11/17/93	AT Count Time in Minutes	(MIN CT'd)	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 CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

Am-241 µCi/L	=	9.25E+01
Am-241 µCi/mL	=	9.25E-02
Relative counting error	=	4.4%
Am-243 Tracer Recovery	=	8.0%

Data Entry by:	[signature]	Date:	22-Nov-93
Approved by:	[signature]	Date:	22 November '93

501

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#3 11-18-93

J1285-5982

3065/30 -4

BEST AVAILABLE COPY

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

BEST AVAILABLE COPY

9 1383 WHC-SD-WM-DP-057 REV 0

Serial No	Sample Point	Date	Time Issued	Priority
J 1285.-5982	BECHTOLD	11- 4-93	8:58	1

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	% RECOVERY	E14157	

Sample Size	Customer ID
? 1.0-10-.05 ml	KE13A

Remarks Calculations Results Spike Comp

SAMPLE SPIKED ID

SPIKE ID 78B43 .200 ml

SPIKE VOLUME
COUNT AS uCI/L
63B43 .100-10-1.0 ml
Dil. in 8 ml HNO3

"AEA" ATTACH PRINT

OUT FOR RERUN

$$\frac{(107-49.9)\left(\frac{10}{1}\right)\left(\frac{11}{.05}\right)(100)}{26796} = 97.87$$

M Bierman

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
	Raymond	[signature]	D H Milicia	
Hrs	Hrs	Hrs	Hrs	Hrs
	11.17.93			

Date	Time Completed	Lab Unit	
11/17/93	2330	[signature]	[signature]

54-6800-061 (R 10 83)

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

			CHK EXT NO.
Serial No.	Spike (Tracer) Book Number		78B43
J1285-5982	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.2
2099	Volume of Sample in mL	(SS)	0.05
Rerun No.	Dilution Factor	(DF)	11
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	662
M BIERMAN	Am-243 Area Peak Height from AEA	(C243)	920
Date	Total AT Count	(ATOT)	2309
11/17/93	AT Count Time in Minutes	(MIN CT'd)	30
	Background in CPM	(BKG)	6

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

Am-241 µCi/L	=	1.07E+02
Am-241 µCi/mL	=	1.07E-01
Relative counting error	=	5.1%
Am-243 Tracer Recovery	=	5.5%

Data Entry by:	[signature]	Date:	22-Nov-93
Approved by:	[signature]	Date:	November 22, 1993

503

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#1 R 11.17.93

$\frac{2309}{30}$ - 6

J1285-5982

BEST AVAILABLE COPY

D.H. Milburn
11-18-93

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
J1284-5582
File ID: 8a8557.CNF

WHC-SD-WM-DP-057 REV 0

Counted on: 11/18/93 @10:48
Detector: AEA8
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	934.7	934.7	302.773	302.773	18.000	10.056	9.000	[illegible]
2	1108.5	1108.5	257.107	257.023	16.000	7.989	8.000	[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 [illegible]
1	Am241	0.472	5.480	5.511	-.031	0.05	45.28	1.3	361.9	0.16[illegible]
	Pu238		5.499	5.511	-.012				476.5	0.21[illegible]-03
2	Am243	0.527	5.276	5.296	-.020	0.04	50.53	1.3	386.7	0.17[illegible]
Totals:		1.000	<--valid peaks only-->				95.82			

DETECTOR CALIBRATION
Energy(MEV) = 4.088 + (0.0047)*Channel
Energy range (MeV): 4.088 TO 6.494
Efficiency = 0.1320 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	46012.0	100.000
Smoothed	46012.0	100.000
Composite fit	45993.1	99.959
Residuals	18.9	0.041

Analyzed by: _____
RW

Spectrum 8a8557.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 7182.1

WHC-SD-WM-DP-057 REV 0

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

Raw Data Dump for AEA Spectrum: 8a8557.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	2.	4.	0.
21	0.	2.	0.	2.	1.	0.	2.	1.	0.	1.
31	2.	3.	0.	1.	1.	0.	1.	1.	3.	2.
41	1.	0.	2.	1.	1.	1.	0.	0.	0.	2.
51	1.	0.	1.	0.	1.	0.	2.	3.	1.	1.
61	1.	0.	0.	1.	2.	1.	4.	3.	[illegible]	[illegible]
71	1.	3.	0.	0.	0.	1.	2.	2.	1.	[illegible]
81	1.	0.	1.	1.	0.	0.	1.	1.	1.	[illegible]
91	2.	1.	2.	3.	2.	1.	2.	2.	4.	1.
101	3.	1.	3.	4.	3.	1.	2.	4.	1.	1.
111	2.	1.	2.	3.	1.	3.	3.	2.	2.	3.
121	1.	1.	1.	3.	2.	1.	3.	4.	3.	4.
131	2.	3.	1.	3.	1.	1.	3.	3.	2.	2.
141	4.	3.	2.	5.	5.	2.	7.	3.	3.	4.
151	2.	2.	6.	1.	5.	6.	2.	2.	5.	6.
161	1.	2.	4.	4.	3.	4.	6.	6.	3.	3.
171	5.	5.	9.	5.	1.	4.	11.	3.	4.	6.
181	11.	7.	12.	6.	7.	5.	9.	9.	8.	7.
191	3.	16.	15.	10.	21.	11.	17.	16.	8.	12.
201	26.	22.	16.	21.	25.	24.	22.	17.	20.	[illegible]
211	36.	35.	39.	46.	44.	46.	57.	51.	71.	[illegible]
221	89.	102.	80.	93.	113.	120.	147.	153.	165.	[illegible]
231	226.	246.	261.	274.	296.	315.	332.	357.	[illegible]	[illegible]
241	138.	166.	486.	509.	569.	624.	607.	643.	[illegible]	[illegible]
251	801.	931.	974.	1051.	1229.	1254.	1220.	1220.	1200.	[illegible]
261	781.	642.	511.	378.	290.	256.	185.	162.	169.	185.
271	164.	158.	168.	158.	164.	189.	191.	185.	214.	233.
281	231.	257.	269.	294.	349.	351.	363.	400.	400.	[illegible]
291	460.	472.	549.	563.	607.	604.	654.	716.	817.	[illegible]
301	933.	1063.	1037.	928.	911.	784.	645.	505.	[illegible]	[illegible]
311	299.	212.	148.	121.	92.	82.	53.	35.	[illegible]	[illegible]
321	2.	8.	3.	4.	1.	0.	0.	0.	0.	[illegible]
331	0.	0.	0.	1.	1.	0.	1.	0.	0.	[illegible]
341	0.	0.	2.	1.	0.	0.	0.	0.	0.	[illegible]
351	0.	2.	1.	2.	1.	1.	2.	0.	0.	0.
361	0.	2.	2.	2.	0.	1.	2.	1.	1.	0.
371	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	1.	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.	1.	0.	0.	0.	0.	0.
481	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

D.H. Milburn
11-18-93

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-057 REV 0

SAMPLE
J1300-5682
File ID: 7a7343.CNF

Counted on: 11/18/93 @10:47
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	Area Initial	Area Final
1	30.7	30.7	301.013	301.013	20.000	11.663	10.000	1.366
2	1271.2	1271.2	256.884	256.883	16.000	8.670	8.000	5.175

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err 095	d/m	Activity [illegible]
	Am241	0.029	5.480	5.500	-.020	0.05	1.24	8.0	12.9	[illegible]
	Pu238		5.499	5.500	-.001				16.9	[illegible]
2	Am243	0.953	5.276	5.293	-.017	0.04	40.52	1.4	402.4	[illegible]
Totals:		0.982	<--valid peaks only-->				41.75			

DETECTOR CALIBRATION
Energy(MEV) = 4.085 + (0.0047)*Channel
Energy range (MeV): 4.085 TO 6.492
Efficiency = 0.1017 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	20418.0	100.000
Smoothed	20418.0	100.000
Composite fit	20042.6	98.161
Residuals	375.4	1.839

Analyzed by: _____
RW

Spectrum 7a7343.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 7651.3


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

Raw Data Dump for AEA Spectrum: 7a7343.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	2.	2.	0.	0.
21	0.	1.	0.	0.	1.	1.	0.	0.	2.	0.
31	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
41	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
61	0.	0.	1.	0.	0.	1.	0.	0.	0.	0.
71	0.	1.	0.	0.	0.	1.	0.	0.	1.	1.
81	1.	0.	1.	0.	0.	1.	1.	1.	0.	1.
91	0.	1.	1.	0.	1.	1.	0.	0.	1.	[illegible]
101	0.	1.	1.	0.	0.	0.	3.	0.	0.	[illegible]
111	0.	0.	0.	0.	0.	0.	0.	2.	1.	2.
121	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
131	0.	0.	1.	0.	2.	0.	0.	3.	1.	2.
141	1.	2.	2.	1.	0.	4.	0.	0.	1.	3.
151	1.	1.	2.	0.	3.	1.	1.	0.	0.	1.
161	1.	1.	0.	1.	0.	0.	1.	0.	1.	1.
171	0.	1.	1.	0.	2.	0.	2.	2.	2.	0.
181	1.	1.	2.	2.	3.	2.	2.	1.	0.	2.
191	1.	0.	1.	1.	0.	1.	1.	2.	0.	[illegible]
201	2.	3.	6.	5.	2.	2.	2.	2.	2.	[illegible]
211	5.	7.	5.	3.	3.	8.	4.	7.	11.	[illegible]
221	12.	5.	7.	8.	7.	13.	17.	13.	[illegible]	[illegible]
231	13.	26.	25.	42.	48.	48.	64.	68.	[illegible]	[illegible]
241	144.	163.	174.	209.	312.	343.	381.	525.	[illegible]	[illegible]
251	778.	979.	1098.	1214.	1323.	1380.	1416.	1364.	1195.	1002.
261	885.	702.	526.	366.	268.	192.	148.	121.	84.	86.
271	78.	68.	51.	38.	38.	18.	13.	12.	5.	5.
281	4.	2.	5.	4.	4.	1.	4.	6.	9.	9.
291	8.	5.	8.	18.	12.	19.	18.	28.	33.	37.
301	32.	36.	31.	27.	21.	29.	19.	23.	20.	11.
311	1.	4.	1.	1.	7.	2.	1.	0.	2.	0.
321	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	1.	0.	1.	0.	0.	0.	0.
341	0.	1.	0.	1.	1.	2.	0.	0.	1.	0.
351	0.	1.	0.	0.	1.	0.	0.	3.	0.	0.
361	2.	0.	1.	0.	1.	3.	0.	0.	1.	1.
371	0.	1.	0.	0.	0.	1.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	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.	1.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	1.	0.								

D.H. Wilson
11-18-93

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-057 REV 0

SAMPLE
J1285-5782
File ID: 2a2401.CNF

Counted on: 11/18/93 @10:47
Detector: AEA2
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	132.9	132.9	300.350	300.350	22.000	20.772	11.000	6.547
2	194.8	194.8	255.443	255.357	20.000	17.354	10.000	4.789

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	0.401	5.480	5.494	-.014	0.10	7.06	3.4	64.9	0.292E-04
	Pu238		5.499	5.494	0.005				84.8	0.382E-04
2	Am243	0.585	5.276	5.283	-.007	0.08	10.30	2.9	89.9	0.405E-04
	Pu240		5.144	5.283	-.139				89.0	0.401E-04
		---					---			
Totals:		0.987	<--valid peaks only-->				17.36			

DETECTOR CALIBRATION
Energy(MEV) = 4.083 + (0.0047)*Channel
Energy range (MeV): 4.083 TO 6.489
Efficiency = 0.1157 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	8448.0	100.000
Smoothed	8448.0	100.000
Composite fit	8335.4	98.667
Residuals	112.6	1.333

Analyzed by: _____
RW

Spectrum 2a2401.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 1460.1

WHC-SD-WM-DP-057 REV O

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

Raw Data Dump for AEA Spectrum: 2a2401.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.	1.	0.	0.	0.	2.	0.	0.
31	1.	0.	1.	0.	0.	0.	1.	0.	1.	0.
41	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
51	1.	0.	0.	1.	0.	0.	0.	0.	1.	1.
61	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
71	1.	0.	1.	1.	0.	0.	3.	1.	1.	1.
81	0.	2.	2.	2.	0.	1.	0.	1.	0.	0.
91	0.	1.	0.	1.	1.	0.	0.	0.	1.	1.
101	0.	2.	1.	0.	0.	0.	0.	0.	0.	0.
111	1.	0.	0.	0.	0.	1.	0.	1.	1.	0.
121	0.	1.	0.	1.	0.	0.	1.	0.	1.	0.
131	1.	1.	1.	0.	0.	1.	0.	0.	1.	1.
141	0.	0.	1.	1.	1.	3.	3.	1.	1.	1.
151	2.	0.	1.	0.	1.	0.	1.	0.	3.	1.
161	0.	0.	1.	0.	1.	2.	0.	0.	2.	2.
171	1.	1.	1.	1.	0.	2.	1.	1.	6.	2.
181	0.	3.	1.	2.	2.	3.	2.	5.	3.	4.
191	5.	3.	0.	2.	6.	3.	0.	3.	2.	9.
201	3.	4.	8.	4.	7.	6.	3.	9.	5.	3.
211	9.	5.	7.	6.	13.	10.	11.	15.	21.	10.
221	10.	22.	9.	19.	24.	20.	32.	27.	31.	38.
231	36.	41.	46.	45.	41.	46.	61.	86.	67.	75.
241	88.	96.	118.	107.	130.	120.	142.	165.	168.	167.
251	199.	208.	211.	162.	217.	203.	207.	178.	157.	153.
261	147.	115.	110.	80.	77.	68.	63.	46.	52.	57.
271	43.	40.	36.	25.	23.	34.	23.	30.	19.	37.
281	36.	33.	35.	35.	45.	59.	71.	67.	59.	61.
291	97.	94.	83.	115.	123.	113.	122.	143.	138.	112.
301	156.	128.	117.	116.	104.	92.	115.	94.	73.	[illegible]
311	51.	36.	37.	29.	18.	23.	17.	12.	13.	[illegible]
321	6.	6.	4.	6.	0.	1.	2.	1.	1.	2.
331	3.	2.	0.	0.	0.	2.	1.	1.	0.	2.
341	2.	1.	0.	1.	0.	1.	2.	2.	2.	2.
351	1.	0.	1.	0.	0.	1.	1.	0.	1.	0.
361	2.	1.	0.	0.	0.	0.	0.	0.	0.	1.
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.	1.	0.	0.	0.	1.
411	0.	0.	1.	0.	0.	0.	1.	0.	0.	0.
421	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
431	0.	0.	1.	0.	2.	0.	0.	1.	0.	2.
441	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
471	0.	0.	2.	0.	2.	1.	1.	2.	1.	0.
481	0.	1.	0.	2.	0.	0.	0.	0.	1.	0.
491	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

D.H. Milburn
11-18-93

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-057 REV O

SAMPLE
J1285-5782
File ID: 10a2285.CNF

Counted on: 11/18/93 @10:49
Detector: AEA10
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	1027.7	1027.7	303.712	303.712	12.000	6.795	[illegible]	[illegible]
2	1514.7	1514.7	257.939	257.914	12.000	4.927	[illegible]	[illegible]

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err 68%	d/m	Activity [illegible]
[illegible]	Pu238	0.413	5.499	5.506	-.007	0.03	39.47	1.4	[illegible]	[illegible]
	Am241		5.480	5.506	-.026				293.4	6.131[illegible]
2	Am243	0.582	5.276	5.291	-.015	0.02	55.67	1.2	399.7	0.1[illegible]
		---					---			
Totals:		0.995	<--valid peaks only-->				95.14			

DETECTOR CALIBRATION
Energy(MEV) = 4.078 + (0.0047)*Channel
Energy range (MeV): 4.078 TO 6.485
Efficiency = 0.1407 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	45909.0	100.000
Smoothed	45909.0	100.000
Composite fit	45669.8	99.479
Residuals	239.2	0.521

Analyzed by: _____
RW

Spectrum 10a2285.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 9017.5

WHC-SD-WM-DP-057 REV O

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

Raw Data Dump for AEA Spectrum: 10a2285.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
11	1.	2.	1.	0.	1.	0.	0.	0.	0.	0.
21	0.	0.	2.	0.	0.	0.	1.	1.	0.	0.
[illegible]	3.	0.	1.	0.	0.	0.	0.	0.	0.	0.
[illegible]	2.	0.	0.	0.	0.	0.	0.	1.	0.	0.
51	0.	0.	1.	0.	0.	0.	1.	0.	0.	1.
61	0.	0.	0.	1.	1.	0.	0.	1.	0.	0.
[illegible]	0.	2.	0.	1.	0.	0.	0.	0.	0.	0.
[illegible]	[illegible]	0.	[illegible]	0.	0.	1.	0.	0.	0.	0.
[illegible]	[illegible]	[illegible]	1.	0.	1.	0.	0.	2.	0.	[illegible]
101	0.	2.	0.	1.	1.	1.	1.	0.	2.	1.
111	1.	0.	1.	0.	2.	0.	1.	0.	1.	0.
121	0.	0.	2.	0.	2.	1.	0.	2.	0.	3.
131	0.	0.	2.	1.	2.	1.	2.	0.	1.	1.
141	2.	1.	2.	2.	1.	3.	2.	2.	3.	0.
151	3.	1.	1.	4.	1.	0.	2.	2.	4.	1.
161	2.	3.	1.	1.	0.	3.	3.	2.	5.	0.
171	0.	4.	0.	2.	6.	1.	1.	2.	2.	3.
181	3.	3.	7.	4.	5.	4.	5.	5.	5.	4.
191	7.	6.	4.	10.	4.	7.	6.	9.	9.	7.
201	7.	9.	7.	13.	14.	7.	16.	21.	26.	13.
211	16.	21.	15.	15.	32.	21.	34.	40.	31.	51.
221	46.	67.	79.	80.	65.	93.	102.	87.	132.	[illegible]
231	139.	144.	199.	191.	228.	200.	203.	216.	243.	[illegible]
241	434.	378.	415.	475.	586.	689.	753.	[illegible]	[illegible]	[illegible]
251	1126.	1163.	1166.	1190.	1277.	1426.	1578.	1754.	1703.	[illegible]
261	1078.	654.	355.	277.	205.	183.	164.	144.	158.	[illegible]
271	123.	130.	106.	96.	78.	77.	69.	78.	82.	85.
281	104.	125.	134.	157.	175.	206.	236.	282.	294.	325.
291	434.	443.	543.	572.	646.	688.	760.	849.	831.	862.
[illegible]	[illegible]	937.	1077.	1171.	1140.	922.	639.	471.	321.	[illegible]
[illegible]	241.	210.	162.	124.	109.	66.	50.	27.	12.	[illegible]
321	[illegible]	0.	0.	1.	0.	0.	0.	0.	0.	[illegible]
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	[illegible]
341	0.	0.	0.	0.	1.	0.	1.	3.	0.	[illegible]
351	1.	1.	1.	2.	1.	3.	3.	2.	3.	3.
361	2.	1.	4.	5.	5.	6.	6.	3.	2.	6.
371	8.	4.	3.	4.	2.	4.	0.	1.	0.	[illegible]
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
421	0.	0.	0.	1.	0.	1.	0.	0.	1.	0.
431	2.	0.	1.	0.	1.	0.	0.	1.	0.	0.
441	2.	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.	1.	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.								

D.H. Milicia
11-18-93

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
J1285-5792
File ID: 11a3262.CNF

WHC-SD-WM-DP-057 REV 0

Counted on: 11/18/93 @10:50
Detector: AEA11
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	246.8	246.8	303.390	303.390	14.000	[illegible].217	[illegible]	[illegible]
2	386.8	386.8	257.402	257.400	12.000	[illegible].22[illegible]	[illegible]	[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 [illegible]
1	Pu238	0.372	5.499	5.496	0.003	0.03	7.13	3.4	87.6	[illegible]
	Am241		5.480	5.496	-.016				66.6	[illegible]
2	Am243	0.522	5.276	5.285	-.009	0.02	9.99	2.8	88.6	[illegible]
Totals:		0.894	<--valid peaks only-->				17.11			

DETECTOR CALIBRATION
Energy(MEV) = 4.101 + (0.0046)*Channel
Energy range (MeV): 4.101 TO 6.456
Efficiency = 0.1138 CPM/DPM

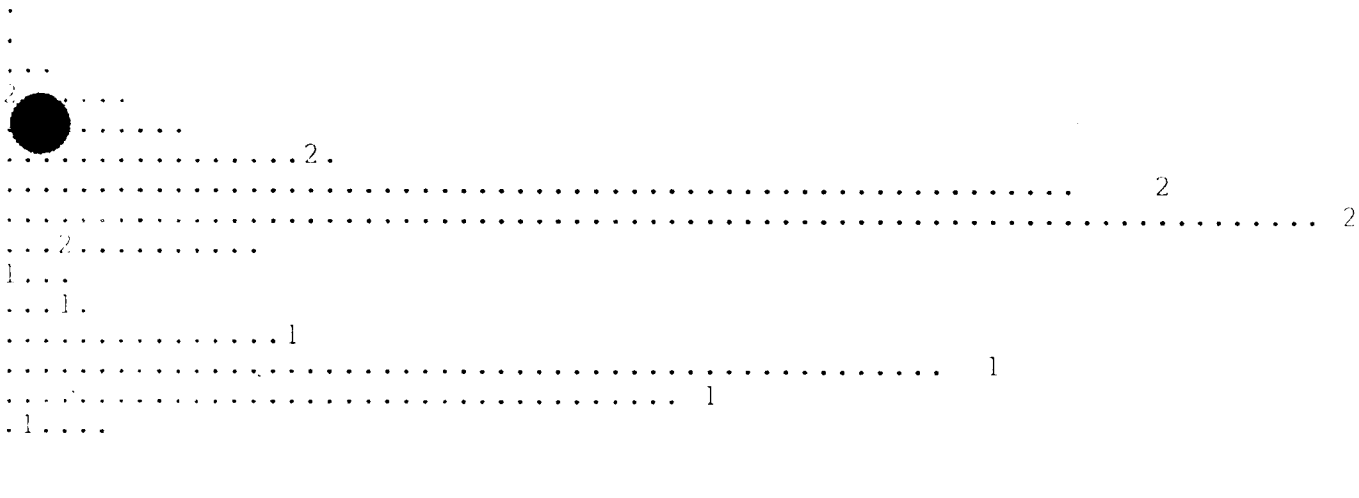
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	9189.0	100.000
Smoothed	9189.0	100.000
Composite fit	8214.1	89.391
Residuals	974.9	10.609

Analyzed by: _____
RW

Spectrum 11a3262.CNF

Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 2051.8



Raw Data Dump for AEA Spectrum: 11a3262.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
21	1.	0.	0.	0.	0.	2.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	1.	0.	0.	0.	0.	0.	1.
51	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
61	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
71	0.	0.	0.	1.	0.	0.	1.	0.	0.	1.
81	0.	0.	0.	3.	0.	0.	0.	0.	1.	1.
91	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.
101	0.	0.	1.	0.	0.	0.	1.	0.	0.	1.
111	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
121	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
131	1.	0.	0.	0.	1.	1.	1.	1.	1.	0.
141	3.	0.	1.	0.	1.	0.	1.	0.	2.	1.
151	0.	0.	0.	0.	0.	0.	2.	1.	3.	2.
161	1.	2.	1.	0.	0.	2.	0.	1.	0.	0.
171	1.	0.	3.	1.	3.	0.	2.	1.	1.	2.
181	1.	1.	2.	1.	1.	0.	1.	3.	2.	1.
191	2.	1.	0.	2.	3.	0.	1.	3.	5.	2.
201	3.	4.	2.	3.	5.	5.	2.	10.	4.	8.
211	3.	10.	8.	7.	4.	12.	10.	12.	12.	5.
221	16.	14.	20.	21.	18.	24.	22.	29.	21.	[illegible]
231	17.	29.	50.	52.	26.	34.	35.	49.	[illegible]	[illegible]
241	[illegible]	62.	53.	56.	82.	92.	97.	112.	114.	[illegible]
251	165.	162.	198.	268.	360.	402.	471.	488.	378.	[illegible]
261	161.	94.	69.	54.	47.	35.	38.	40.	32.	[illegible]
271	30.	22.	20.	20.	18.	9.	6.	9.	14.	10.
281	21.	10.	25.	26.	30.	22.	25.	26.	33.	28.
291	49.	52.	71.	88.	87.	110.	107.	132.	147.	[illegible]
301	218.	270.	294.	294.	243.	191.	149.	111.	71.	40.
311	55.	45.	30.	33.	14.	16.	7.	8.	4.	1.
321	1.	0.	2.	0.	1.	0.	0.	1.	0.	1.
331	1.	1.	0.	0.	0.	1.	0.	1.	0.	0.
341	1.	0.	2.	1.	0.	1.	0.	3.	3.	1.
351	3.	2.	2.	1.	1.	2.	1.	1.	5.	3.
361	1.	1.	7.	1.	7.	5.	3.	3.	1.	1.
371	5.	4.	2.	2.	2.	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	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
441	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

D.H. Milbrin
11-18-93

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-057 REV O

SAMPLE
J1285-5982
File ID: 12a4249.CNF

Counted on: 11/18/93 @10:50
Detector: AEA12
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	671.2	671.2	301.742	301.742	12.000	4.449	[illegible]	[illegible]
2	1011.8	1011.8	255.939	255.939	10.000	2.043	[illegible]	[illegible]

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err 99%	d/m	[illegible]
1	Pu239*	0.404	5.499	5.518	-.019	0.02	15.24	2.3	168.4	[illegible]
	Am241		5.480	5.518	-.038				129.0	0.5818-04
2	Am243	0.516	5.276	5.303	-.027	0.01	19.47	2.0	156.5	0.7058-04
Totals:		0.919	<--valid peaks only-->				34.71			

DETECTOR CALIBRATION
Energy(MEV) = 4.100 + (0.0047)*Channel
Energy range (MeV): 4.100 TO 6.506
Efficiency = 0.1257 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	18128.0	100.000
Smoothed	18128.0	100.000
Composite fit	16662.7	91.917
Residuals	1465.3	8.083

Analyzed by: _____
RW

Spectrum 12a4249.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 4615.6

WHC-SD-WM-DP-057 REV O

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

Raw Data Dump for AEA Spectrum: 12a4249.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
21	1.	0.	0.	0.	2.	0.	0.	0.	0.	1.
[illegible]	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
[illegible]	2.	0.	0.	0.	1.	1.	0.	0.	0.	0.
[illegible]	0.	0.	0.	0.	0.	1.	0.	0.	0.	[illegible]
61	1.	0.	0.	0.	2.	0.	0.	0.	0.	[illegible]
[illegible]	[illegible]	1.	1.	0.	1.	0.	0.	1.	0.	[illegible]
[illegible]	[illegible]	0.	0.	0.	0.	0.	0.	0.	0.	[illegible]
[illegible]	[illegible]	0.	0.	1.	0.	1.	0.	0.	0.	[illegible]
101	[illegible]	0.	0.	0.	0.	0.	0.	0.	0.	0.
111	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
121	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.
131	0.	0.	2.	1.	0.	0.	0.	0.	0.	0.
141	1.	0.	0.	0.	2.	1.	3.	1.	1.	2.
151	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
161	0.	0.	1.	3.	0.	1.	1.	1.	1.	1.
171	[illegible]	1.	0.	1.	0.	1.	0.	1.	0.	1.
181	1.	0.	3.	0.	0.	1.	0.	1.	0.	1.
[illegible]	[illegible]	0.	1.	0.	2.	2.	1.	1.	[illegible]	[illegible]
201	1.	2.	1.	2.	3.	3.	4.	2.	[illegible]	[illegible]
[illegible]	[illegible]	3.	3.	1.	5.	3.	9.	3.	[illegible]	[illegible]
221	11.	4.	5.	4.	8.	9.	10.	10.	[illegible]	[illegible]
[illegible]	[illegible]	22.	20.	20.	23.	40.	25.	35.	34.	[illegible]
241	97.	55.	79.	91.	121.	152.	199.	219.	231.	[illegible]
251	322.	455.	646.	946.	1163.	1376.	1186.	785.	495.	270.
261	146.	93.	70.	78.	48.	71.	76.	61.	59.	47.
271	41.	30.	15.	12.	10.	14.	18.	13.	15.	[illegible]
281	18.	18.	19.	27.	23.	30.	50.	43.	61.	[illegible]
291	[illegible]	143.	146.	162.	177.	200.	273.	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	518.	346.	212.	195.	[illegible]	[illegible]	[illegible]
[illegible]	94.	79.	59.	50.	22.	14.	1.	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	1.	0.	0.	0.	0.	0.	0.	0.	[illegible]
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
351	1.	0.	0.	0.	0.	0.	4.	2.	1.	1.
371	2.	0.	1.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	[illegible]
401	0.	0.	0.	0.	0.	0.	0.	0.	[illegible]	[illegible]
411	0.	0.	0.	0.	0.	0.	0.	0.	[illegible]	[illegible]
421	0.	0.	0.	0.	0.	0.	0.	0.	[illegible]	[illegible]
431	0.	0.	0.	0.	0.	0.	0.	1.	0.	[illegible]
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	[illegible]
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.								

D.H. Milieia
11-18-93

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
J1285-5982
File ID: 9a1383.CNF

WHC-SD-WM-DP-057 REV O

Counted on: 11/18/93 @10:48
Detector: AEA9
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	524.4	524.4	303.971	303.971	12.000	5.133	6.000	4.596
2	742.4	742.4	258.091	258.091	10.000	3.456	5.000	3.138

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	0.414	5.499	5.496	0.003	0.02	12.62	2.5	125.7	0.566E-04
	Am241		5.480	5.496	-.016				96.2	0.434E-04
2	Am243	0.502	5.276	5.285	-.009	0.02	15.31	2.3	110.9	0.499E-04
Totals:		0.916	<--valid peaks only-->				27.93			

DETECTOR CALIBRATION
Energy(MEV) = 4.098 + (0.0046)*Channel
Energy range (MeV): 4.098 TO 6.453
Efficiency = 0.1395 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	14643.0	100.000
Smoothed	14643.0	100.000
Composite fit	13408.4	91.568
Residuals	1234.6	8.432

Analyzed by: _____
RW

Spectrum 9a1383.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 4110.9


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

Raw Data Dump for AEA Spectrum: 9a1383.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	2.	0.	1.	1.	0.	0.	0.
21	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.
31	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.
41	0.	1.	0.	0.	1.	0.	1.	0.	0.	0.
51	0.	0.	0.	1.	0.	1.	0.	0.	0.	1.
61	0.	1.	0.	0.	0.	1.	0.	0.	0.	0.
71	0.	1.	2.	0.	0.	0.	0.	0.	0.	0.
81	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.
91	1.	0.	0.	0.	0.	2.	0.	0.	1.	0.
101	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
111	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
121	1.	0.	0.	0.	0.	0.	1.	2.	2.	1.
131	1.	1.	0.	0.	0.	0.	1.	0.	0.	2.
141	1.	0.	2.	2.	0.	1.	0.	1.	0.	1.
151	1.	1.	0.	1.	0.	0.	0.	0.	0.	0.
161	1.	0.	0.	0.	0.	1.	0.	1.	0.	0.
171	0.	0.	0.	2.	0.	2.	1.	1.	0.	0.
181	1.	3.	2.	1.	1.	3.	1.	1.	2.	0.
191	2.	2.	2.	1.	0.	2.	0.	1.	2.	3.
201	2.	2.	2.	0.	3.	2.	4.	1.	0.	3.
211	2.	1.	3.	4.	6.	2.	3.	7.	8.	5.
221	6.	7.	11.	6.	7.	9.	7.	8.	9.	15.
231	7.	16.	10.	19.	17.	13.	18.	24.	28.	34.
241	35.	25.	32.	51.	48.	79.	125.	103.	138.	181.
251	184.	209.	265.	359.	484.	731.	876.	920.	908.	709.
261	403.	211.	127.	81.	76.	57.	58.	63.	69.	50.
271	60.	38.	35.	28.	23.	21.	15.	8.	12.	12.
281	13.	11.	22.	29.	32.	22.	18.	22.	32.	32.
291	32.	55.	86.	104.	124.	140.	137.	185.	240.	287.
301	430.	523.	611.	662.	568.	491.	310.	214.	173.	115.
311	138.	127.	103.	72.	42.	28.	21.	10.	10.	4.
321	1.	0.	0.	0.	1.	0.	1.	2.	0.	0.
331	0.	0.	2.	0.	0.	1.	1.	0.	0.	1.
341	0.	3.	1.	1.	1.	0.	1.	1.	1.	0.
351	1.	1.	0.	2.	1.	0.	0.	0.	1.	0.
361	0.	0.	1.	1.	0.	0.	1.	1.	0.	0.
371	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	1.	0.	1.	1.
441	1.	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	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	1.	0.	1.	0.	1.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

✓ A 20

WHC-SD-WM-DP-057 REV 0

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

Batch 2100

ANALYTICAL BATCH

Lab Segment Serial No. J1286	Customer ID: KE70B 105 Ke Basin Bechtold
Analysis: Am 241	Sample Prep: DIRECT

Instrument: WB 537237	Procedure/ Rev: LA-503-156 D.0
Technologist: Joel McLaughlin	Date: 11-18-93
Starting Time: 0900	Temperature 25°C
Ending Time: 1800	Chemist: L Fritts

Comments: Evaporation Low Heat Before Electroplating
Three has Low Heat - increased heat to add H_2O_2 to correct color (organic)

	Description	Lab ID
1	STANDARD	J1301.-5592
2	BLK	J1302.-5682
3	Sample	J1286.-5782
4	Sample Dup	J1286.-5782
5	Sample Trip	J1286.-5782
6	Spike	J1286.-5982
7	Spike Dup	J1286.-5982
8		
9		
10		

	Description	Lab ID
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	63B43 .100mL	10 - 1mL		
Spike	70B43 .100mL			

526

A-6000-881 (03/92)

ANALYTICAL BATCH SUMMARY SHEET

METHOD: LA-503-156

DATE START: November 18, 1993

PREPARED BY: L.L. Fritts LLFritts 11-23-93

DATE COMPLETE: November 23, 1993

	UNITS:	uCi/mL									
SPL NAME	SPL ID	ANALYTE	RESULT #1	RESULT #2	RESULT #3	AVERAGE	2*SD	PREC	%REC	DET LIM	% CT ER
STD 63B43	J1301	Am-241	2.61E+1						97.4	1.71E-3	6.9
BLANK	J1302	Am-241	<1.70E-5						39.3	1.70E-5	26.8
KE20B	J1286	Am-241	8.68E-3	9.05E-3	9.82E-3	9.18E-3	1.16E-3	12.6	11.1	7.47E-4	11.1
									22.7	7.47E-4	8.2
									25.3	7.47E-4	6.2
KE20B	J1286	241 Spike	84.1	94.7					33.0	7.47E-4	5.2
									39.7	7.47E-4	4.2

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.

The results for the spike are in percent recovery.

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

11 3265 WHC-SD-WM-DP-057 REV 0

Serial No	Sample Point	Date	Time Issued	Priority
J 1301.-5582	BECHTOLD	11- 8-93	8:47	18

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	% RECOVERY	E14157	0

Sample Size	Customer ID
?.100mL-10-1mL + .100mL Spike	STD

Remarks, Calculations, Results

78B43

EDP R201 AR001

STD# 63B43 RESULT 2.61 E+1

STD VAL 2.6796 E+1 %REC 97.4 %

"AEA" - ATTACH PRINTOUT

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

Date	Time Completed	Lab Unit Mgr	
11-18-93	1800		

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

BEST AVAILABLE COPY

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

			STANDARD
Serial No.	Spike (Tracer) Book Number		78B43
J1301-5582	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2100	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)	375
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	492
Date	Total AT Count	(ATOT)	2872
11/18/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	6

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

µCi/mL = µCi/L / (1000mL/L)

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

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

Am-241 µCi/L	=	2.61E+01
Am-241 µCi/mL	=	2.61E-02
Relative counting error	=	6.9%
Am-243 Tracer Recovery	=	13.5%

Data Entry by:		Date:	22-Nov-93
Approved by:		Date:	November 23, 1993

Form 3 Rev. 1.2

#1 11-18-93 DM

2872/30 -6

J1301-5582

BEST AVAILABLE COPY

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

12 4252 WHC-SD-WM-DP-057 REV 0

Serial No.	Sample Point	Date	Time Issued	Priority
J 1302.-5682	BECHTOLD	11- 8-93	8:50	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	E14157	0

Sample Size	Customer ID
? 1mL + .100mL spike 78B43	BLK

Remarks, Calculations, Results

REAGENT BLANK

COUNT AS uCI/L $<1.70 \times 10^{-5}$ uCi/ml

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

Date	Time Completed	Lab Unit Mgr
11-18-93	1800	

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

BEST AVAILABLE COPY

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

			BLANK
Serial No.	Spike (Tracer) Book Number		78B43
J1302-5682	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2100	Volume of Sample in mL	(SS)	1
Rerun No.	Dilution Factor	(DF)	1
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	14
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	1524
Date	Total AT Count	(ATOT)	4513
11/18/93	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.

Am-241 µCi/L	=	< 1.70E-02
Am-241 µCi/mL	=	< 1.70E-05
Relative counting error	=	26.8%
Am-243 Tracer Recovery	=	39.3%

Data Entry by:		Date:	22-Nov-93
Approved by:	530	Date:	November 23, 1993

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#2 11-18-93 Dm

$\frac{4513}{30}$ -1

J1302-

BEST AVAILABLE COPY

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

#3 3469 WHC-SD-WM-DP-057 REV 0

Serial No.	Sample Point	Date	Time Issued	Priority
J 1286.-5782	BECHTOLD	11- 4-93	8:51	18

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	E14157	0

Sample Size: ? 1mL - 10 - .250mL + .100mL Spike 79843

Customer ID: KE20B

Remarks, Calculations, Results

COUNT AS uCI/L sample

8.68×10^{-3} uCi/ml

ASAY - 4000 MAN PRINTOUT

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
J VAN SANT	D. H. Milbrin	Em Beaver		
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-18-93	1800	

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

BEST AVAILABLE COPY

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

			SAMPLE
Serial No.	Spike (Tracer) Book Number		78B43
J1286-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2100	Volume of Sample in mL	(SS)	0.25
Rerun No.	Dilution Factor	(DF)	11
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	129
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	222
Date	Total AT Count	(ATOT)	2080
11/18/93	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

Am-241 µCi/L	=	8.68E+00
Am-241 µCi/mL	=	8.68E-03
Relative counting error	=	11.1%
Am-243 Tracer Recovery	=	11.1%

Data Entry by:		Date:	22-Nov-93
Approved by:		Date:	November 23, 1993

532

Form 3 Rev. 1.2

#3 11-18-93 Dm

J1286-5782

$\frac{2080}{30}$ -3

BEST AVAILABLE COPY

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

#4 4979

WHC-SD-WM-DP-057 REV 0

Serial No.	Sample Point	Date Issued		Priority
J 1286.-5782	BECHTOLD	11- 4-93	8:58	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	E14157	0

Sample Size: ?1mL-10 - .250mL + .100mL Spike

Customer ID: KE20B

Remarks, Calculations, Results

COUNT AS uCI/L duplicate 78B43

9.05×10^{-3} uCi/ml

"AEA" - 480MIN

ATTACH PRINTOUT

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

Date	Time Completed	Lab Unit Mgr
11-18-93	1800	

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

BEST AVAILABLE COPY

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

			SAMPLE
Serial No.	Spike (Tracer) Book Number		78B43
J1286-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2100	Volume of Sample in mL	(SS)	0.25
Rerun No.	Dilution Factor	(DF)	11
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	241
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	398
Date	Total AT Count	(ATOT)	4309
11/18/93	AT Count Time in Minutes	(MIN CT'd)	30
	Background in CPM	(BKG)	6

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

µCi/mL = µCi/L / (1000mL/L)

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

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

Am-241 µCi/L	=	9.05E+00
Am-241 µCi/mL	=	9.05E-03
Relative counting error	=	8.2%
Am-243 Tracer Recovery	=	22.7%

Data Entry by:		Date: 22-Nov-93
Approved by:		Date: November 23, 1993

534

Form 3 Rev. 1.2

#1 11-18-93 Dm
4309/30 -6

J1286-1782

BEST AVAILABLE COPY

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

#5 5902 WHC-SD-WM-DP-057 REV.0

Serial No	Sample Point	Date	Time Issued	Priority
J 1286.-5782	BECHTOLD	11- 4-93	8:58	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	E14157	0

Sample Size	Customer ID
? 1mL-10-.250mL + .100mL Spike	KE20B

Remarks, Calculations, Results

COUNT AS uCI/L triplicate 78B43

9.82×10^{-3} uCi/mL

ATTACH PRINTOUT

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		
11-18-93	1800			

54-6B00-061 (R-10-83)

BEST AVAILABLE COPY

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

			SAMPLE
Serial No.	Spike (Tracer) Book Number		78B43
J1286-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2100	Volume of Sample in mL	(SS)	0.25
Rerun No.	Dilution Factor	(DF)	11
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	438
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	666
Date	Total AT Count	(ATOT)	4776
11/18/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	1

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

µCi/mL = µCi/L / (1000mL/L)

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

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

Am-241 µCi/L	=	9.82E+00
Am-241 µCi/mL	=	9.82E-03
Relative counting error	=	6.2%
Am-243 Tracer Recovery	=	25.3%

Data Entry by:		Date: 22-Nov-93
Approved by:	536	Date: November 23, 1993

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#2 11-18-93 Dm

4776 - 1
30

J 1286-5782

BEST AVAILABLE COPY

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

#6 6812

WHC-SD-WM-DP-057 REV 0

Serial No.	Sample Point	Date	Time Issued	Priority
J 1286.-5982	BECHTOLD	11- 4-93	8:58	18

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	% RECOVERY	E14157	0

Sample Size: 2mL-10-.250 + .100m-10-1mL STD + .3002L

Customer ID: KE20B

Remarks, Calculations, Results: 63B43 Spike 78B43

SAMPLE SPIKED ID

SPIKE ID

SPIKE VOLUME

COUNT AS uCI/L 84.12%

"AEA" - 480MIN

ATTACH PRINTOUT

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

Date	Time Completed	Lab Unit Mgr
11-18-93	1800	

54-6800-067 (R-10-83)

BEST AVAILABLE COPY

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

			CHK EXT NO.
Serial No.	Spike (Tracer) Book Number		78B43
J1286-5982	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.2
2100	Volume of Sample in mL	(SS)	0.25
Rerun No.	Dilution Factor	(DF)	11
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	610
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	986
Date	Total AT Count	(ATOT)	12176
11/18/93	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

Am-241 µCi/L	=	1.85E+01
Am-241 µCi/mL	=	1.85E-02
Relative counting error	=	5.2%
Am-243 Tracer Recovery	=	33.0%

Data Entry by: Date: 22-Nov-93

Approved by: Date: November 23, 1993

538

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#3 11-18-93 DM

12176/30 — 3

J1286-5982

BEST AVAILABLE COPY

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

#7 2405 WHC-SD-WM-DP-057 REV 0

Serial No.	Sample Point	Date	Time Issued	Priority
J 1286.-5982	BECHTOLD	11- 4-93	8:58	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	% RECOVERY	E14157	0

Sample Size	Customer ID
1mL-10+.250mL +.100mL-10-1mL STD 63B43	KE20B

Remarks, Calculations, Results

SAMPLE SPIKED ID spike dup +.200mL spike 78B43

SPIKE ID

SPIKE VOLUME
COUNT AS uCI/L

~~94.65%~~ 94.66% "AEA" - 480MIN 11-23-93 ATTACH PRINTOUT

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]	D.H. Mitchell	[signature]		
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-18-93	1800	[signature] [signature]

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

BEST AVAILABLE COPY

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

			CHK EXT NO.
Serial No.	Spike (Tracer) Book Number		78B43
J1286-5982	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.2
2100	Volume of Sample in mL	(SS)	0.25
Rerun No.	Dilution Factor	(DF)	11
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	965
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	1434
Date	Total AT Count	(ATOT)	15208
11/18/93	AT Count Time in Minutes	(MIN CT'd)	30
	Background in CPM	(BKG)	6

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

µCi/mL = µCi/L / (1000mL/L)

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

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

Am-241 µCi/L	=	2.01E+01
Am-241 µCi/mL	=	2.01E-02
Relative counting error	=	4.2%
Am-243 Tracer Recovery	=	39.7%

Data Entry by:	[signature]	Date:	22-Nov-93
Approved by:	[signature]	Date:	November 23, 1993

540

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#1 11-18-93 DM

15208/30 - C

J1286-5982

BEST AVAILABLE COPY

D.H. Milicia
11-19-93

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-057 REV O

SAMPLE
J1301-5582
File ID: 11a3265.CNF

Counted on: 11/19/93 @ 8:21
Detector: AEA11
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	335.0	335.0	303.338	303.338	12.000	6.611	6.000	1.434
2	400.1	400.1	257.529	257.476	12.000	4.914	6.000	1.076
3	10.5	10.5	167.148	166.809	130.000	1.000	65.000	0.100

PEAK RESULTS
Peak Error Limit: 25%

Peak	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu238	0.419	5.499	5.493	0.006	0.03	16.43	2.2	205.1	0.924E-04
	Am241		5.480	5.493	-.013				157.1	0.708E-04
2	Am243	0.475	5.276	5.282	-.006	0.02	18.65	2.2	169.2	0.762E-04
3		0.021		4.865		0.00	0.83	10.3	7.5	0.338E-05
Totals:		0.915	<--valid peaks only-->				35.91			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.098 + (0.0046)*Channel
Energy range (MeV): 4.098 TO 6.453
Efficiency = 0.1113 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	18843.0	100.000
Smoothed	18843.0	100.000
Composite fit	17240.9	91.498
Residuals	1602.1	8.502

Analyzed by: _____
RW

Spectrum 11a3265.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc . Display Max.: 2444.2

WHC-SD-WM-DP-057 REV O

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

BEST AVAILABLE COPY

.
.

Raw Data Dump for AEA Spectrum: 11a3265.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	1.	2.	1.	1.	0.	0.	1.	2.	0.	2.
21	2.	2.	1.	0.	2.	2.	4.	0.	2.	1.
31	3.	2.	1.	1.	0.	2.	3.	2.	3.	0.
41	1.	0.	1.	2.	2.	3.	2.	2.	0.	0.
[illegible]	0.	2.	2.	2.	2.	1.	2.	3.	1.	2.
61	2.	2.	5.	1.	4.	0.	0.	5.	1.	3.
71	2.	6.	4.	4.	1.	2.	0.	0.	1.	3.
81	4.	2.	2.	3.	2.	6.	1.	2.	4.	3.
91	4.	3.	2.	4.	2.	4.	3.	4.	3.	1.
101	0.	5.	1.	1.	1.	1.	2.	2.	5.	3.
111	3.	4.	3.	2.	1.	3.	0.	2.	5.	1.
121	4.	2.	4.	4.	5.	2.	10.	6.	6.	2.
131	3.	9.	3.	3.	5.	9.	10.	5.	7.	7.
141	5.	3.	3.	11.	8.	15.	10.	7.	4.	7.
151	10.	4.	9.	5.	5.	6.	9.	11.	9.	4.
161	10.	15.	6.	12.	9.	14.	6.	18.	8.	11.
171	6.	6.	8.	14.	12.	15.	17.	14.	11.	17.
181	17.	10.	16.	17.	15.	21.	18.	9.	30.	25.
191	36.	22.	21.	10.	23.	24.	26.	30.	27.	30.
201	29.	27.	23.	25.	40.	32.	48.	43.	38.	35.
211	45.	48.	50.	51.	52.	50.	59.	57.	61.	75.
221	92.	77.	72.	80.	97.	79.	126.	118.	116.	150.
231	132.	152.	165.	145.	148.	125.	133.	144.	163.	173.
241	165.	185.	172.	180.	240.	197.	232.	237.	238.	263.
251	277.	270.	306.	299.	348.	458.	479.	468.	492.	338.
261	252.	167.	105.	88.	81.	79.	74.	76.	91.	81.
271	87.	75.	73.	87.	69.	90.	74.	86.	104.	105.
281	91.	98.	120.	114.	119.	133.	147.	156.	165.	180.
291	178.	156.	206.	207.	219.	235.	219.	204.	241.	279.
301	311.	357.	375.	369.	372.	272.	178.	128.	98.	96.
3[illegible]	59.	56.	51.	50.	32.	27.	14.	15.	4.	5.
321	2.	2.	1.	1.	0.	4.	1.	0.	1.	1.
331	0.	3.	1.	1.	2.	0.	1.	4.	1.	3.
341	0.	5.	1.	1.	5.	1.	3.	3.	5.	3.
351	4.	6.	5.	6.	7.	8.	5.	14.	4.	6.
361	8.	6.	7.	10.	12.	10.	9.	12.	6.	2.
371	1.	2.	0.	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.	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.	1.	0.	0.	1.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	1.	1.	0.	1.	1.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

BEST AVAILABLE COPY

D. H. Mikeia
11-19-93

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
J1302-5682
File ID: 12a4252.CNF

WHC-SD-WM-DP-057 REV 0

Counted on: 11/19/93 @ 8:21
Detector: AEA12
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	10.9	10.9	302.537	302.537	8.000	5.013	4.000	1.051
2	1285.0	1285.0	255.590	255.589	10.000	4.150	5.000	1.083
3	26.4	26.4	186.895	185.454	44.000	67.234	22.000	29.638
4	15.9	15.9	150.536	149.988	26.000	32.125	13.000	15.301
5	7.8	7.8	139.879	135.119	26.000	3.614	13.000	0.036

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		????		5.486			0.53	12.3		
2	Am243	0.913	5.276	5.270	0.006	0.02	51.63	1.2	408.0	0.184E-03
3	Np237	0.038	4.781	4.948	-.167	0.31	2.17	13.1	19.5	0.878E-05
4	Np237	0.016	4.640	4.784	-.144	0.15	0.92	14.2	119.9	0.540E-04
	Np237		4.781	4.784	-.003				8.3	0.372E-05
5		0.033		4.716		0.02	1.88	7.2	14.7	0.661E-05
Totals:		1.000	<--valid peaks only-->				56.59			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.095 + (0.0046)*Channel
Energy range (MeV): 4.095 TO 6.450
Efficiency = 0.1278 CPM/DPM

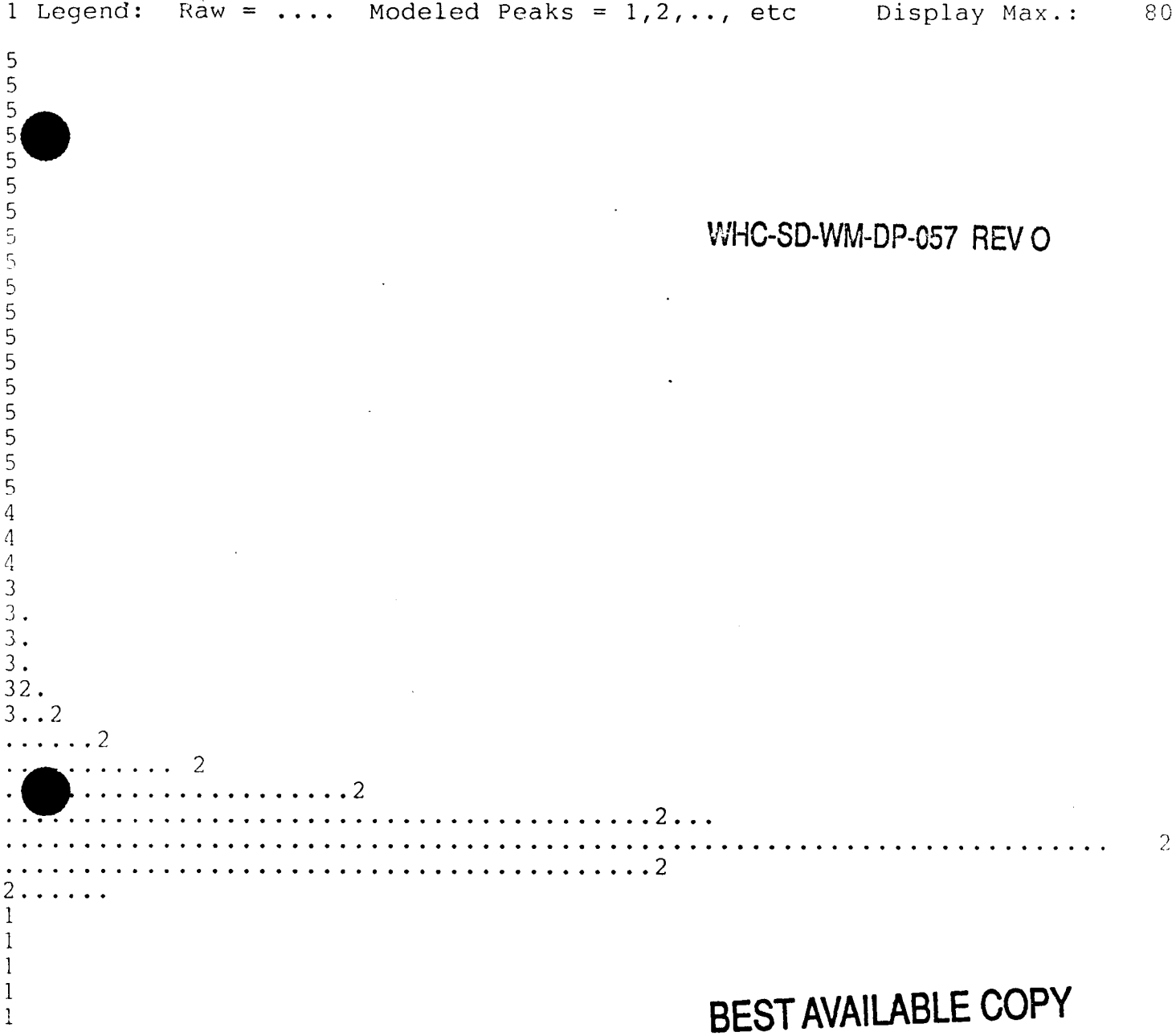
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	27154.0	100.000
Smoothed	27154.0	100.000
Composite fit	27416.5	100.967
Residuals	-262.5	-0.967

Analyzed by: _____
RW

Spectrum 12a4252.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 8062.7



WHC-SD-WM-DP-057 REV O

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 12a4252.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	7.
11	1.	5.	4.	2.	4.	2.	3.	2.	4.	1.
21	4.	5.	6.	5.	2.	7.	3.	5.	2.	3.
31	4.	4.	3.	3.	2.	4.	7.	2.	4.	1.
41	2.	4.	2.	2.	5.	3.	5.	4.	3.	8.
51	4.	4.	8.	5.	4.	5.	5.	6.	3.	1.
61	8.	2.	4.	2.	4.	4.	3.	3.	5.	3.
71	6.	7.	2.	4.	7.	2.	4.	5.	5.	8.
81	4.	6.	8.	1.	5.	7.	1.	14.	10.	4.
91	7.	5.	5.	4.	5.	14.	8.	7.	4.	7.
101	5.	11.	9.	4.	11.	12.	9.	6.	7.	3.
111	8.	7.	7.	11.	13.	9.	3.	9.	8.	8.
121	9.	8.	10.	10.	4.	11.	17.	10.	11.	10.
131	12.	14.	7.	11.	11.	17.	10.	14.	18.	19.
141	15.	15.	13.	7.	13.	18.	12.	19.	18.	16.
151	26.	16.	17.	12.	11.	15.	18.	21.	19.	16.
161	14.	23.	17.	18.	25.	30.	20.	20.	17.	22.
171	24.	22.	39.	20.	29.	24.	30.	28.	22.	32.
181	26.	26.	35.	41.	32.	33.	42.	36.	30.	36.
191	24.	35.	37.	41.	36.	56.	39.	31.	50.	35.
201	46.	43.	49.	49.	50.	47.	65.	57.	52.	63.
211	56.	61.	70.	80.	59.	81.	91.	88.	80.	104.
221	83.	109.	100.	130.	131.	119.	152.	144.	195.	201.
231	207.	222.	252.	269.	286.	315.	378.	391.	437.	466.
241	521.	561.	630.	656.	755.	808.	801.	878.	768.	789.
251	835.	929.	1037.	1180.	1466.	1524.	1463.	1015.	617.	377.
261	188.	144.	117.	102.	91.	84.	92.	75.	61.	66.
271	33.	17.	20.	6.	2.	4.	1.	1.	2.	1.
281	1.	3.	3.	2.	5.	6.	6.	4.	8.	7.
291	6.	5.	8.	5.	7.	8.	6.	7.	9.	8.
301	13.	13.	10.	14.	12.	1.	3.	3.	3.	4.
311	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
331	1.	0.	0.	0.	0.	0.	1.	1.	0.	0.
341	1.	0.	1.	1.	2.	0.	1.	1.	0.	5.
351	2.	0.	3.	2.	0.	0.	2.	1.	1.	3.
361	7.	1.	1.	2.	1.	1.	1.	0.	0.	1.
371	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
411	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

BEST AVAILABLE COPY

Em Barela
11-20-93

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01

DATA REDUCTION REPORT

WHC-SD-WM-DP-057 REV O

SAMPLE
J-1286-5782
File ID: 3a3469.CNF

Counted on: 11/19/93 @16:53
Detector: AEA3
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	117.2	117.2	296.443	296.571	42.000	54.703	21.000	26.203
2	198.4	198.4	256.446	256.446	44.000	22.910	22.000	2.048
3?	3.7	3.7	129.441	127.161	6.000	2.918	3.000	0.865
4?	4.4	4.4	87.951	86.911	12.000	13.777	6.000	9.251
5?	4.4	4.4	71.654	69.042	16.000	5.059	8.000	0.958
6?	4.0	4.0	43.975	43.561	8.000	2.067	4.000	0.517

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	0.280	5.430	5.457	-.027	0.25	8.67	3.0	95.2	0.429E-04
	Am241		5.480	5.457	0.023				71.9	0.324E-04
2	Am243	0.705	5.276	5.272	0.004	0.11	21.86	2.0	172.1	0.775E-04
	Pu240		5.144	5.272	-.128				170.4	0.767E-04
3		????		4.678			0.13	70.0		
4		????		4.492			0.17	41.9		
5		????		4.410			0.22	28.3		
6		????		4.293			0.15	33.5		
Totals:		0.985	<--valid peaks only-->				30.53			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.093 + (0.0046)*Channel
Energy range (MeV): 4.093 TO 6.448
Efficiency = 0.1283 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	14874.0	100.000
Smoothed	14874.0	100.000
Composite fit	14972.2	100.660
Residuals	-98.2	-0.660

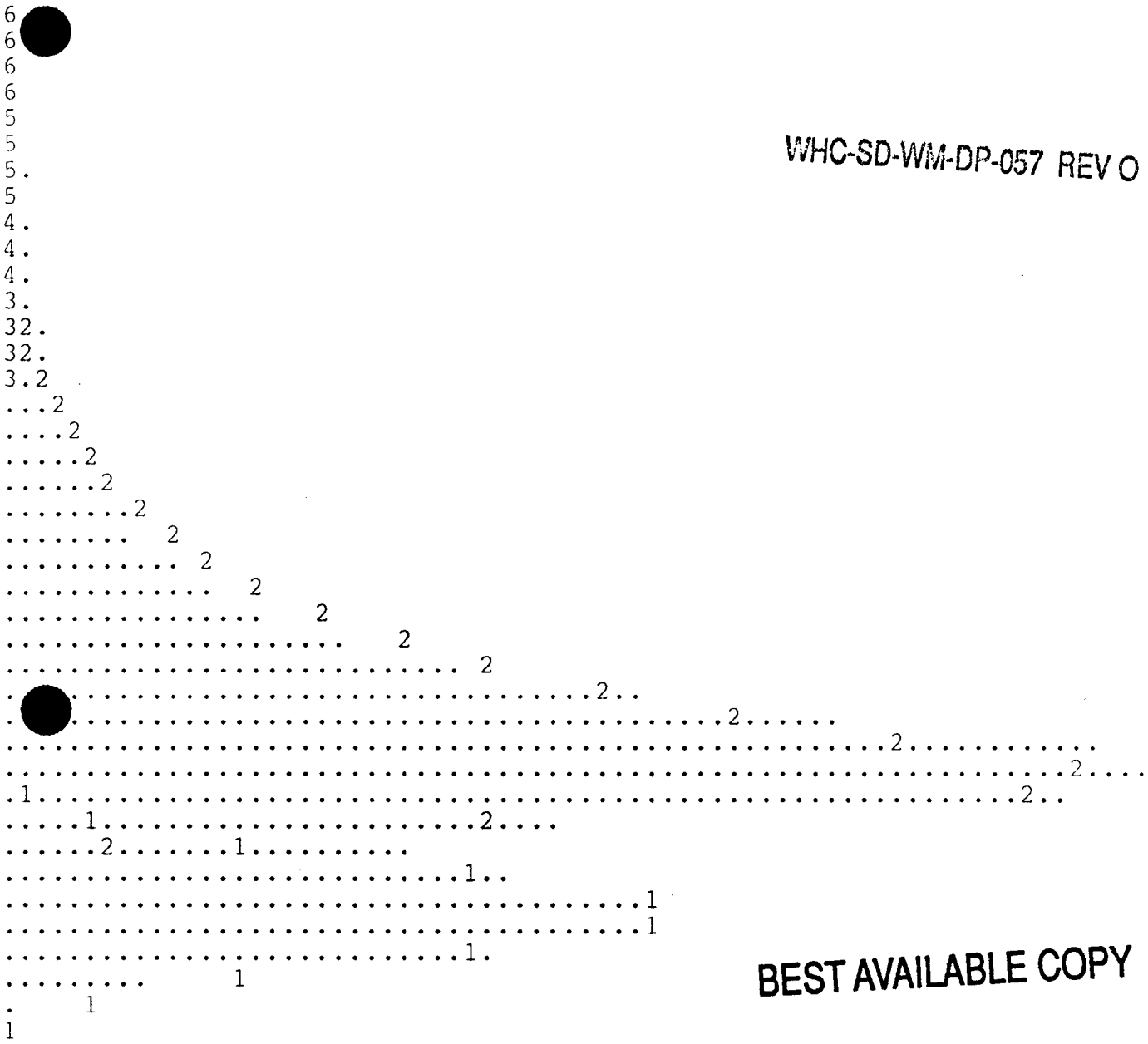
Analyzed by: _____
DM

WHC-SD-WM-DP-057 REV 0

BEST AVAILABLE COPY

Spectrum 3a3469.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 1542.4



WHC-SD-WM-DP-057 REV O

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 3a3469.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	1.	2.	2.
21	2.	4.	3.	5.	2.	1.	4.	5.	3.	3.
31	3.	1.	3.	4.	4.	5.	3.	8.	2.	8.
41	2.	6.	7.	6.	11.	2.	3.	5.	1.	3.
51	2.	5.	5.	5.	3.	7.	6.	6.	6.	3.
61	6.	1.	3.	3.	7.	4.	5.	10.	5.	9.
71	5.	7.	8.	5.	4.	6.	4.	3.	1.	6.
81	6.	7.	11.	4.	5.	10.	7.	8.	8.	6.
91	5.	5.	3.	9.	8.	6.	6.	5.	6.	6.
101	9.	7.	14.	7.	5.	7.	6.	6.	10.	11.
111	12.	5.	7.	11.	10.	12.	10.	8.	7.	7.
121	11.	7.	11.	15.	11.	11.	11.	14.	14.	8.
131	13.	7.	12.	12.	11.	7.	10.	8.	13.	20.
141	15.	15.	9.	7.	13.	9.	19.	19.	14.	16.
151	20.	8.	16.	18.	15.	22.	16.	27.	16.	11.
161	24.	24.	17.	13.	24.	30.	25.	18.	24.	15.
171	31.	22.	19.	24.	13.	28.	26.	27.	19.	18.
181	25.	37.	29.	24.	18.	29.	29.	37.	28.	35.
191	37.	37.	42.	27.	38.	36.	40.	47.	22.	46.
201	39.	42.	39.	54.	48.	46.	51.	51.	53.	54.
211	57.	57.	57.	59.	70.	90.	73.	70.	66.	94.
221	75.	85.	87.	94.	88.	92.	103.	137.	108.	115.
231	144.	98.	141.	130.	145.	139.	138.	144.	137.	187.
241	184.	173.	179.	193.	186.	222.	209.	190.	209.	191.
251	174.	193.	180.	193.	201.	205.	200.	184.	220.	202.
261	185.	153.	141.	133.	111.	118.	88.	77.	71.	75.
271	51.	76.	53.	58.	86.	75.	71.	63.	62.	72.
281	74.	84.	75.	99.	92.	80.	110.	101.	107.	110.
291	133.	115.	129.	107.	116.	109.	115.	122.	108.	100.
301	106.	103.	119.	121.	106.	108.	93.	88.	83.	57.
311	59.	51.	34.	26.	30.	23.	12.	11.	14.	4.
321	8.	2.	4.	1.	1.	1.	0.	1.	1.	0.
331	0.	0.	1.	1.	0.	1.	2.	1.	1.	0.
341	1.	0.	0.	0.	0.	0.	3.	2.	2.	1.
351	0.	0.	2.	0.	1.	0.	2.	1.	1.	0.
361	2.	2.	2.	0.	2.	3.	0.	0.	0.	0.
371	0.	0.	0.	1.	1.	0.	1.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
401	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	2.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.
481	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

BEST AVAILABLE COPY

Em Baeter
11-20-93

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01

DATA REDUCTION REPORT

WHC-SD-WM-DP-057 REV O

SAMPLE
J-1286-5782 DUP.
File ID: 4a4979.CNF

Counted on: 11/19/93 @16:54
Detector: AEA4
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	10.8	10.8	361.568	361.568	16.000	8.992	8.000	1.569
2	211.0	211.0	303.040	303.036	16.000	7.384	8.000	1.020
3	322.6	322.6	257.580	257.462	14.000	6.063	7.000	0.841
4	7.2	7.2	141.115	140.859	92.000	1.000	46.000	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
1	Cm244	0.017	5.796	5.784	0.012	0.04	0.65	11.1	7.3	0.329E-05
	Cm243		5.786	5.784	0.002				10.0	0.451E-05
2	Pu238	0.377	5.499	5.509	-.010	0.03	14.60	2.3	228.9	0.103E-03
	Am241		5.480	5.509	-.029				175.3	0.790E-04
3	Am243	0.563	5.276	5.295	-.019	0.03	21.77	2.1	248.2	0.112E-03
4		0.015		4.747		0.00	0.57	14.6	6.4	0.290E-05
Totals:		0.972	<--valid peaks only-->				37.59			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.085 + (0.0047)*Channel
Energy range (MeV): 4.085 TO 6.491
Efficiency = 0.0886 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	18567.0	100.000
Smoothed	18567.0	100.000
Composite fit	18045.2	97.189
Residuals	521.8	2.811

Analyzed by: _____
DM

Spectrum 4a4979.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 2325.7

WHC-SD-WM-DP-057 REV O

```
4
4
4
4
4
4
4
4
4
4.
3.
3..
.3..
..3..
...3.
....3..
......3..
2........3..
2............3..
.2................3.
..2.....................3...
...2..............................3.....
....2.........................................3.....
......2.........................................................3.....
.........2.........................................3..........
......3.....2...........
.................2.
.......................2
...............................2.
.........................................2
............................2
.2...
1
1
1
1
.1
.1
1
```

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 4a4979.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
21	0.	1.	0.	0.	1.	3.	0.	4.	0.	1.
31	0.	0.	0.	1.	3.	2.	0.	2.	1.	1.
41	1.	3.	3.	1.	2.	1.	1.	1.	2.	2.
51	3.	1.	0.	2.	3.	0.	3.	4.	2.	5.
61	1.	0.	1.	0.	3.	3.	2.	0.	3.	3.
71	3.	1.	1.	3.	1.	2.	3.	2.	3.	1.
81	0.	1.	3.	5.	2.	1.	2.	1.	1.	3.
91	3.	3.	3.	2.	4.	3.	6.	1.	4.	6.
101	0.	4.	6.	5.	3.	3.	4.	8.	9.	1.
111	3.	4.	9.	6.	4.	11.	4.	6.	8.	7.
121	9.	7.	6.	12.	11.	6.	7.	7.	8.	2.
131	5.	5.	12.	9.	10.	5.	8.	6.	11.	15.
141	10.	15.	12.	5.	10.	7.	10.	10.	11.	11.
151	11.	11.	13.	15.	9.	16.	14.	27.	19.	18.
161	26.	15.	13.	19.	16.	15.	17.	22.	22.	32.
171	16.	16.	27.	18.	17.	21.	28.	17.	23.	31.
181	26.	22.	27.	30.	36.	30.	19.	33.	24.	40.
191	40.	32.	38.	35.	33.	45.	42.	46.	47.	57.
201	48.	56.	43.	40.	63.	53.	65.	82.	51.	58.
211	64.	64.	72.	84.	81.	58.	78.	76.	76.	77.
221	98.	96.	84.	120.	104.	110.	124.	141.	126.	146.
231	145.	142.	128.	165.	164.	166.	171.	197.	203.	190.
241	203.	213.	212.	223.	244.	228.	254.	258.	283.	255.
251	287.	271.	267.	321.	334.	377.	398.	375.	396.	336.
261	283.	198.	159.	93.	89.	73.	77.	81.	74.	87.
271	74.	92.	71.	69.	78.	87.	68.	75.	89.	90.
281	101.	118.	96.	91.	117.	103.	135.	145.	134.	115.
291	133.	164.	156.	132.	169.	201.	169.	191.	181.	196.
301	190.	241.	222.	217.	217.	195.	130.	107.	52.	51.
311	32.	37.	27.	27.	7.	13.	11.	5.	6.	3.
321	3.	2.	1.	0.	2.	2.	1.	5.	1.	3.
331	0.	4.	1.	2.	3.	2.	4.	4.	7.	3.
341	3.	6.	3.	4.	4.	7.	7.	10.	4.	5.
351	6.	11.	9.	9.	12.	10.	5.	12.	12.	6.
361	14.	10.	10.	10.	8.	11.	2.	4.	4.	2.
371	0.	3.	2.	1.	0.	0.	0.	1.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	2.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
421	0.	0.	0.	0.	1.	0.	1.	0.	0.	1.
431	0.	0.	0.	2.	0.	2.	0.	1.	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.	1.	0.	0.
481	1.	0.	0.	1.	0.	0.	0.	1.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

BEST AVAILABLE COPY

Em Bowler
11-30-93

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
J-1286-5782 TRIP
File ID: 5a5902.CNF

WHC-SD-WM-DP-057 REV O

Counted on: 11/19/93 @16:55
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	394.9	394.9	300.140	300.140	20.000	18.108	10.000	3.739
2	585.0	585.0	254.399	254.171	22.000	18.214	11.000	3.439
3	10.7	10.7	114.894	114.860	194.000	1.000	97.000	0.100
4?	2.9	2.9	106.225	105.642	6.000	0.399	3.000	0.097

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	0.359	5.480	5.503	-.023	0.09	24.30	1.8	190.2	0.857E-04
	Pu238		5.499	5.503	-.004				248.3	0.112E-03
2	Am243	0.559	5.276	5.287	-.011	0.09	37.86	1.5	281.4	0.127E-03
	Pu240		5.144	5.287	-.143				278.6	0.125E-03
3	Np237	0.012	4.640	4.632	0.008	0.00	0.82	10.0	100.9	0.454E-04
4		????		4.589			0.10	79.5		
Totals:		0.931	<--valid peaks only-->				62.98			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.092 + (0.0047)*Channel
Energy range (MeV): 4.092 TO 6.499
Efficiency = 0.1359 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	32487.0	100.000
Smoothed	32487.0	100.000
Composite fit	30283.2	93.216
Residuals	2203.8	6.784

Analyzed by: _____
DM

Spectrum 5a5902.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 4697.0

WHC-SD-WM-DP-057 REV O

```
3
3
3
3
4
4
4
4
4
3
.
.
..
..
..
...
2..
2...
.2...
..2....
....2...
.......2...
............2.
..................2
1.........................2
.1.........................................2....
..1.........................................................2.....
....1.........................................2.....
.......1......2.........
.2..........1...
....................1
..................................1
.........................................1
.........................1
.....1
```

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 5a5902.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	5.	4.	7.
21	0.	2.	1.	5.	4.	5.	10.	4.	2.	3.
31	2.	2.	7.	8.	4.	5.	4.	4.	3.	3.
41	3.	4.	2.	7.	2.	3.	3.	4.	7.	4.
51	5.	5.	5.	3.	8.	6.	4.	7.	6.	1.
61	6.	2.	5.	6.	8.	5.	3.	5.	2.	5.
71	1.	2.	5.	13.	5.	4.	2.	4.	4.	4.
81	3.	8.	5.	5.	5.	3.	9.	8.	5.	14.
91	9.	10.	6.	9.	7.	6.	10.	9.	10.	13.
101	10.	9.	3.	9.	13.	12.	10.	11.	10.	6.
111	10.	3.	11.	13.	13.	13.	7.	10.	14.	6.
121	5.	13.	13.	14.	9.	9.	13.	14.	20.	13.
131	10.	11.	15.	15.	22.	12.	21.	16.	19.	17.
141	15.	19.	20.	12.	13.	23.	18.	17.	12.	18.
151	16.	22.	20.	22.	30.	16.	35.	24.	18.	28.
161	25.	33.	25.	19.	32.	27.	23.	36.	30.	31.
171	39.	29.	28.	32.	36.	31.	31.	32.	39.	42.
181	30.	45.	52.	42.	50.	54.	40.	42.	48.	50.
191	58.	57.	58.	52.	61.	70.	56.	64.	71.	66.
201	69.	73.	63.	72.	72.	71.	85.	65.	95.	84.
211	94.	92.	107.	102.	100.	126.	108.	115.	104.	122.
221	119.	137.	112.	144.	121.	139.	184.	150.	186.	206.
231	189.	211.	225.	231.	224.	239.	278.	276.	286.	361.
241	349.	390.	416.	440.	464.	473.	514.	543.	549.	588.
251	606.	603.	632.	638.	666.	582.	622.	547.	499.	460.
261	434.	400.	349.	264.	232.	205.	197.	183.	156.	163.
271	106.	125.	123.	142.	125.	114.	139.	107.	142.	142.
281	164.	149.	150.	170.	200.	206.	213.	201.	253.	276.
291	296.	273.	310.	335.	349.	392.	355.	395.	438.	399.
301	418.	383.	394.	327.	310.	333.	241.	217.	197.	159.
311	121.	90.	75.	73.	43.	26.	28.	21.	23.	9.
321	11.	4.	3.	1.	0.	2.	5.	1.	2.	4.
331	2.	1.	0.	3.	2.	2.	0.	2.	6.	2.
341	4.	4.	3.	4.	2.	6.	1.	2.	5.	3.
351	6.	3.	2.	6.	6.	7.	7.	2.	6.	8.
361	11.	4.	5.	7.	2.	3.	6.	8.	2.	3.
371	0.	0.	1.	0.	2.	0.	1.	1.	1.	2.
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.	1.	0.
411	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
421	1.	0.	0.	2.	0.	0.	0.	0.	0.	0.
431	0.	1.	1.	0.	0.	0.	0.	1.	0.	0.
441	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
471	2.	0.	2.	0.	0.	1.	0.	1.	1.	0.
481	0.	0.	1.	0.	2.	0.	0.	0.	1.	0.
491	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
511	0.	0.								

BEST AVAILABLE COPY

Em Bauer
11-20-93

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
J-1286-5982
File ID: 6a6812.CNF

WHC-SD-WM-DP-057 REV O

Counted on: 11/19/93 @16:55
Detector: AEA6
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	571.5	571.5	288.192	288.192	36.000	75.040	18.000	25.559
2	924.3	924.3	243.642	242.196	38.000	63.062	19.000	4.597

PEAK RESULTS
Peak Error Limit: 25%

Peak	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Th228	0.264	5.430	5.442	-.012	0.35	50.03	1.3	537.9	0.242E-03
	Am241		5.480	5.442	0.038				406.3	0.183E-03
2	Am243	0.715	5.276	5.226	0.050	0.30	135.76	0.8	1046.8	0.472E-03
	Pu240		5.144	5.226	-.082				1036.3	0.467E-03
Totals:		0.979	<--valid peaks only-->				185.79			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.087 + (0.0047)*Channel
Energy range (MeV): 4.087 TO 6.494
Efficiency = 0.1310 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	91148.0	100.000
Smoothed	91151.0	100.003
Composite fit	89189.2	97.851
Residuals	1958.8	2.149

Analyzed by: _____
DM

Spectrum 6a6812.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 7520.9

WHC-SD-WM-DP-057 REV O

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

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 6a6812.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	12.	33.	38.	25.
21	33.	24.	38.	30.	26.	18.	24.	37.	32.	29.
31	32.	40.	37.	38.	39.	34.	35.	49.	34.	37.
41	42.	44.	48.	33.	30.	44.	40.	45.	50.	53.
[illegible]	52.	48.	54.	42.	56.	57.	38.	50.	45.	57.
61	56.	49.	66.	58.	52.	57.	56.	64.	58.	58.
71	61.	61.	35.	58.	66.	68.	59.	73.	67.	65.
81	75.	68.	56.	61.	74.	75.	72.	80.	81.	70.
91	78.	76.	75.	80.	98.	102.	88.	83.	74.	105.
101	94.	83.	89.	103.	105.	74.	110.	96.	100.	92.
111	111.	98.	93.	105.	109.	104.	100.	121.	113.	100.
121	120.	132.	118.	118.	154.	103.	131.	136.	155.	136.
131	151.	130.	139.	144.	160.	130.	160.	146.	143.	162.
141	163.	165.	164.	176.	160.	169.	179.	182.	176.	177.
151	175.	172.	206.	171.	204.	198.	218.	191.	232.	180.
161	217.	192.	220.	203.	248.	244.	239.	239.	264.	243.
171	231.	231.	251.	273.	268.	246.	286.	300.	275.	289.
181	296.	283.	287.	311.	319.	344.	322.	331.	340.	335.
191	373.	370.	378.	391.	373.	385.	367.	402.	421.	427.
201	418.	414.	439.	429.	466.	427.	483.	507.	474.	484.
211	527.	515.	539.	525.	576.	578.	541.	626.	606.	640.
221	672.	642.	732.	709.	691.	679.	706.	736.	786.	848.
231	863.	822.	812.	872.	930.	892.	846.	932.	928.	970.
241	974.	927.	986.	929.	967.	943.	916.	926.	913.	867.
251	895.	849.	831.	797.	754.	710.	678.	625.	609.	566.
261	547.	516.	524.	471.	460.	453.	433.	457.	391.	442.
271	479.	515.	477.	521.	482.	466.	503.	517.	504.	503.
281	550.	565.	572.	557.	563.	510.	575.	610.	571.	550.
291	525.	590.	515.	518.	562.	496.	481.	483.	406.	376.
301	360.	330.	292.	250.	250.	207.	170.	168.	120.	118.
3[illegible]	87.	83.	70.	67.	48.	26.	23.	17.	21.	15.
321	11.	11.	12.	3.	6.	7.	9.	1.	6.	4.
331	2.	4.	7.	9.	8.	4.	5.	4.	7.	9.
341	5.	4.	5.	5.	6.	7.	3.	7.	7.	8.
351	13.	4.	4.	2.	6.	4.	4.	8.	6.	5.
361	1.	4.	5.	1.	1.	1.	2.	2.	2.	2.
371	3.	1.	1.	1.	0.	3.	0.	2.	1.	1.
381	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	2.	0.	1.	0.	1.
441	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	1.	0.	0.	0.	2.	2.	0.	3.
471	1.	3.	0.	0.	3.	1.	2.	1.	0.	1.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
491	0.	1.	0.	1.	3.	5.	9.	2.	0.	0.
511	0.	0.								

BEST AVAILABLE COPY

Emt Bawled
11-20-93

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
J-1286-5982 SPIK
File ID: 2a2405.CNF

WHC-SD-WM-DP-057 REV O

Counted on: 11/19/93 @16:52
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	907.6	907.6	298.257	298.257	22.000	20.776	11.000	2.443
2	1145.4	1145.4	253.538	253.113	20.000	18.287	10.000	1.646
3	30.8	30.8	85.803	85.292	214.000	1.000	107.000	0.100
4?	9.6	9.6	37.799	35.643	16.000	44.109	8.000	19.994

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	0.379	5.480	5.482	-.002	0.10	81.11	1.0	742.6	0.334E-03
	Pu238		5.499	5.482	0.017				969.5	0.437E-03
2	Am243	0.571	5.276	5.270	0.006	0.09	122.13	0.9	1061.6	0.478E-03
	Pu240		5.144	5.270	-.126				1051.0	0.473E-03
3		0.010		4.481		0.00	2.24	7.9	19.3	0.869E-05
4		????		4.248			0.64	25.2		
Totals:		0.961	<--valid peaks only-->				205.48			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.081 + (0.0047)*Channel
Energy range (MeV): 4.081 TO 6.487
Efficiency = 0.1162 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	102635.0	100.000
Smoothed	102635.0	100.000
Composite fit	98945.0	96.405
Residuals	3690.0	3.595

Analyzed by: _____
DM

Spectrum 2a2405.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 10659.8

WHC-SD-WM-DP-057 REV O

```
4
4
4
4
4
4
4
3
3.
3.
2.
2..
2..
.2.
.2..
..2..
..2..
...2...
....2..
.....2...
.......2..
1........2..
1..........2..
1.............2..
.1...............2...
..1.................2..
..1.......................2....
....1............................2......
.....1...............................2......
.......1.........................................2..........
..........1.............................................2............
.............1.......................2...............
..........2......1...........
2.....................1.
..............................1
.......................................1
.........................................1
.......................1
....1
```

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 2a2405.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	2.	19.	9.	15.
21	16.	12.	15.	21.	13.	21.	13.	21.	5.	18.
31	16.	29.	18.	22.	27.	22.	22.	25.	21.	24.
41	23.	13.	19.	21.	27.	22.	27.	23.	29.	25.
51	28.	29.	30.	34.	39.	20.	31.	31.	28.	38.
61	32.	35.	25.	38.	28.	33.	29.	35.	37.	35.
71	50.	43.	37.	44.	32.	32.	44.	38.	46.	45.
81	36.	31.	45.	41.	64.	51.	42.	45.	50.	39.
91	55.	45.	53.	48.	47.	48.	59.	47.	70.	77.
101	69.	63.	56.	70.	77.	59.	67.	59.	65.	66.
111	67.	76.	63.	70.	87.	62.	76.	74.	79.	75.
121	73.	65.	78.	94.	90.	77.	106.	100.	97.	90.
131	111.	92.	101.	105.	98.	120.	110.	118.	99.	114.
141	120.	118.	113.	128.	130.	133.	137.	133.	168.	143.
151	132.	151.	133.	137.	175.	136.	166.	154.	160.	149.
161	159.	171.	146.	173.	207.	195.	176.	210.	172.	217.
171	207.	202.	216.	214.	203.	216.	255.	238.	214.	260.
181	260.	265.	252.	282.	254.	286.	301.	292.	286.	305.
191	279.	307.	297.	328.	313.	360.	346.	336.	355.	370.
201	365.	372.	418.	402.	423.	468.	440.	442.	457.	464.
211	445.	506.	465.	477.	528.	512.	541.	577.	615.	586.
221	615.	646.	643.	645.	677.	709.	730.	750.	860.	815.
231	815.	867.	805.	822.	896.	892.	904.	928.	970.	1024.
241	984.	1048.	1124.	1132.	1171.	1255.	1255.	1283.	1320.	1340.
251	1343.	1385.	1387.	1396.	1434.	1307.	1242.	1190.	1105.	981.
261	936.	856.	775.	696.	660.	578.	513.	477.	487.	467.
271	458.	473.	476.	472.	480.	474.	468.	498.	496.	531.
281	519.	553.	579.	579.	634.	651.	663.	700.	735.	716.
291	778.	821.	839.	871.	910.	888.	925.	906.	965.	908.
301	833.	806.	831.	661.	611.	572.	499.	434.	345.	281.
311	249.	173.	158.	120.	104.	74.	52.	39.	32.	23.
321	7.	5.	0.	4.	1.	3.	1.	1.	1.	4.
331	3.	0.	1.	1.	0.	2.	1.	2.	0.	4.
341	1.	2.	2.	3.	4.	2.	2.	1.	3.	3.
351	4.	3.	4.	3.	4.	2.	1.	4.	2.	0.
361	6.	1.	1.	1.	4.	1.	4.	3.	6.	1.
371	0.	3.	2.	1.	6.	0.	0.	0.	0.	1.
381	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	1.	2.	1.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	1.	0.	0.	2.	0.	2.	0.
421	0.	1.	1.	1.	2.	1.	1.	0.	1.	1.
431	1.	2.	0.	0.	0.	0.	1.	0.	0.	1.
441	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
451	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.
461	0.	0.	1.	0.	0.	1.	0.	0.	1.	0.
471	1.	2.	1.	0.	1.	0.	1.	1.	1.	0.
481	1.	1.	0.	0.	2.	0.	1.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

BEST AVAILABLE COPY

✓ 04 20

WESTINGHOUSE HANFORD COMPANY

Batch 2264

WHC-SD-WM-DP-057 REV 0

222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No. J1287	Customer ID: KE20D 105KE Basin Bechtold
Analysis: Am 241	Sample Prep: DIRECT

Instrument: W8537237	Procedure/ Rev: LA 503-256 D-0
Technologist: [illegible]	Date: 11-22-93
Starting Time: 1600 11-17-93	Temperature 25°C
Ending Time: 1330 11-19-93	Chemist: L Fritz

Comments: Slow cook to evaporate

	Description	Lab ID		Description	Lab ID
1	Lmc 5	J1863-5552	11		
2	BLK	J1364-5652	12		
3	Sample	J1287-5782	13		
4	Sample Dup	J1287-5782	14		
5	Sample Trip	J1287-5782	15		
6	Spike	J1287-5982	16		
7	Spike Dup	J1287-5982	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
Lmc5	63B43 .100mL	10 · 1mL		
Spike	78B43 .100mL			

A-6000-881 (03/92)

ANALYTICAL BATCH SUMMARY SHEET

METHOD: LA-503-156

DATE START: November 22, 1993

PREPARED BY: L.L. Fritts LL Fritts 11-29-93

DATE COMPLETE: November 29, 1993

	UNITS:	uCi/mL									
SPL NAME	SPL ID	ANALYTE	RESULT #1	RESULT #2	RESULT #3	AVERAGE	2*SD	PREC	%REC	DET LIM	% CT ER
STD 63B43	J1363	Am-241	2.59E+1						96.7	1.71E-3	7.6
BLANK	J1364	Am-241	<1.70E-5						45.6	1.70E-5	33.4
KE20D	J1287	Am-241	1.06E-2	9.81E-3	1.13E-2	1.06E-2	1.49E-3	14.1	26.5	7.47E-4	6.6
									21.5	7.47E-4	8.3
									26.9	7.47E-4	6.5
KE20D	J1287	241 Spike	87.4	115.6					28.8	1.49E-3	4.5
									25.6	1.49E-3	4.1

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

LIST SPECIFIC PROBLEMS/VARIATIONS FOR THIS BATCH:

The results for the standard are in uCi/L.

The results for the spike are in percent recovery.

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

#7 7357

WHC-SD-WM-DP-057 REV O

Serial No.	Sample Point	Date	Time Issued	Priority
J 1363.-5582	DELEGARD	11-22-93	12:27	26

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

Sample Size	Customer ID
? .100mL-10-1mL + .100mL spike	STD

Remarks, Calculations, Results

78B43

EDP R201 AR001

STD# 63B43 RESULT 25.9 µCi/L

STD VAL 26.796 %REC ~~96.6%~~ 11.29.93

96.7%

Analyst 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
	D H Milicia	Em Barela		
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
11-22-93	1330	L L Fitts	

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

BEST AVAILABLE COPY

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

			STANDARD
Serial No.	Spike (Tracer) Book Number		78B43
J1363-5582	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2266	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)	301
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	399
Date	Total AT Count	(ATOT)	3061
11/22/93	AT Count Time in Minutes	(MIN CT'd)	30
	Background in CPM	(BKG)	7

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

µCi/mL = µCi/L / (1000mL/L)

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

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

Am-241 µCi/L	=	2.59E+01
Am-241 µCi/mL	=	2.59E-02
Relative counting error	=	7.6%
Am-243 Tracer Recovery	=	14.4%

Data Entry by:		Date:	24-Nov-93
Approved by: L L Fitts		Date:	November 29, 1993

566

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#1 11-22-93 DM

3061/30 -7

J1363-5582

BEST AVAILABLE COPY

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

#8 8570 WHC-SD-WM-DP-057 REV 0

Serial No.	Sample Point	Date	Time Issued	Priority
J 1364.-5682	DELEGARD	11-22-93	12:28	26

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

Sample Size	Customer ID
? 1mL + .100mL Spike 78B43	BLK

Remarks, Calculations, Results

REAGENT BLANK

COUNT AS uCI/L $<1.70 \times 10^{-5}$ µCi/mL

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

Date	Time Completed	Lab Unit Mgr
11-22-93	1330	

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

BEST AVAILABLE COPY

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

			BLANK
Serial No.	Spike (Tracer) Book Number		78B43
J1364-5682	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2266	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
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	1424
Date	Total AT Count	(ATOT)	5393
11/22/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	7

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	=	< 1.70E-02
Am-241 µCi/mL	=	< 1.70E-05
Relative counting error	=	33.4%
Am-243 Tracer Recovery	=	45.6%

Data Entry by:	Date:	24-Nov-93
Approved by:	Date:	November 29, 1993

568

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#1 11-22-93

5393/30 -7

J1364-5682

BEST AVAILABLE COPY

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

#2 2 4/6

WHC-SD-WM-DP-057 REV 0

Serial No	Sample Point	Date	Time Issued	Priority
J 1287.-5782	BECHTOLD	11- 4-93	8:59	16

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	E14157	1

Sample Size	Customer ID
?1mL-10-.250ml + .100ml spike	KE20D

Remarks, Calculations, Results

COUNT AS uCi/L Sample 78B43 **RERUN**

1.06×10^{-2} uCi/ml "AEA" - 480MIN

ATTACH PRINTOUT

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

Date	Time Completed	Lab Unit Mgr
11-22-93	1330	

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

BEST AVAILABLE COPY

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

			SAMPLE
Serial No.	Spike (Tracer) Book Number		78B43
J1287-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2266	Volume of Sample in mL	(SS)	0.25
Rerun No.	Dilution Factor	(DF)	11
1	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	393
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	553
Date	Total AT Count	(ATOT)	5147
11/22/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	1

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

µCi/mL = µCi/L / (1000mL/L)

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

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

Am-241 µCi/L	=	1.06E+01
Am-241 µCi/mL	=	1.06E-02
Relative counting error	=	6.6%
Am-243 Tracer Recovery	=	26.5%

Data Entry by:		Date:	24-Nov-93
Approved by:	570	Date:	November 29, 1993

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#2 11-22-93

J1287-5782

5147
30 -1

BEST AVAILABLE COPY

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

#3 3480

WHC-SD-WM-DP-057 REV O

Serial No.	Sample Point	Date	Time Issued	Priority
J 1287.-5782	BECHTOLD	11- 4-93	8:59	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	E14157	2

Sample Size	Customer ID
? 1ml-10-.25ml + .100ml Spike 78B43	KE20D

Remarks, Calculations, Results

COUNT AS uCI/L Sample Dup

RERUN

9.81×10^{-3} uCi/ml

"AEA" - 480MIN
ATTACH PRINTOUT

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
		D.H. Milsin		
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-22-93	1330	

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

BEST AVAILABLE COPY

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

			SAMPLE
Serial No.	Spike (Tracer) Book Number		78B43
J1287-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2266	Volume of Sample in mL	(SS)	0.25
Rerun No.	Dilution Factor	(DF)	11
1	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	243
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	370
Date	Total AT Count	(ATOT)	4152
11/22/93	AT Count Time in Minutes	(MIN CT'd)	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 CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error = Square Root of ((1 / C241) + (1/C243)) * 100

Am-241 µCi/L	=	9.81E+00
Am-241 µCi/mL	=	9.81E-03
Relative counting error	=	8.3%
Am-243 Tracer Recovery	=	21.5%

Data Entry by:	Date:	24-Nov-93
Approved by:	Date:	November 29, 1993

572

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#3 11-22-93

J1287-5782

$\frac{4152}{30}$ -4

BEST AVAILABLE COPY

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

#4 4990

WHC-SD-WM-DP-057 REV 0

Serial No.	Sample Point	Date	Time Issued	Priority
J 1287.-5782	BECHTOLD	11- 4-93	8:59	18

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	E14157	3

Sample Size	Customer ID
? 1ml-10-.250ml + .100ml Spike 78B43	KE20D

Remarks, Calculations, Results

COUNT AS uCi/L Sample Triplicate

RERUN

1.13×10^{-2} uCi/ml

"AEA" - 480MIN

ATTACH PRINTOUT

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

Date	Time Completed	Lab Unit Mgr.	
11-22-93	1330		

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

BEST AVAILABLE COPY

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

			SAMPLE
Serial No.	Spike (Tracer) Book Number		78B43
J1287-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2266	Volume of Sample in mL	(SS)	0.25
Rerun No.	Dilution Factor	(DF)	11
3 / 11-24-93	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	412
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	547
Date	Total AT Count	(ATOT)	5534
11/22/93	AT Count Time in Minutes	(MIN CT'd)	30
	Background in CPM	(BKG)	7

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

µCi/mL = µCi/L / (1000mL/L)

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

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

Am-241 µCi/L	=	1.13E+01
Am-241 µCi/mL	=	1.13E-02
Relative counting error	=	6.5%
Am-243 Tracer Recovery	=	26.9%

Data Entry by:		Date:	24-Nov-93
Approved by:		Date:	November 29, 1993

574

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#1 11-22-93

J1287-5782

5534/30 -7

BEST AVAILABLE COPY

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

#5 5914 WHC-SD-WM-DP-057 REV 0

Serial No.	Sample Point	Date	Time Issued	Priority
J 1287.-5982	BECHTOLD	11- 4-93	8:59	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	% RECOVERY	E14157	1

Sample Size	Customer ID
?1mL-10-:250ml + .100mL-10-1mL std	KE20D

Remarks, Calculations, Results

SAMPLE SPIKED ID 63B43 spike 87.4%

SPIKE ID 78B43

SPIKE VOLUME COUNT AS uCI/L .200mL ~~1.7%~~

RERUN "REA" - 480MIN PRINTOUT 11-29-93

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
	[signature]	D.H. Milicia	Em Bareau	
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
11-22-93	1330	[signature]	[signature]

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

BEST AVAILABLE COPY

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

			CHK EXT NO.
Serial No.	Spike (Tracer) Book Number		78B43
J1287-5982	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.2
2266	Volume of Sample in mL	(SS)	0.25
Rerun No.	Dilution Factor	(DF)	11
1	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	830
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	1193
Date	Total AT Count	(ATOT)	11080
11/22/93	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

Am-241 µCi/L	=	2.08E+01
Am-241 µCi/mL	=	2.08E-02
Relative counting error	=	4.5%
Am-243 Tracer Recovery	=	28.8%

Data Entry by: [signature]		Date:	29-Nov-93
Approved by: [signature]	576	Date:	November 29, 1993

Form 3 Rev. 1.2

11-22-93

J1287-5982

11080
30 -1

BEST AVAILABLE COPY

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

#6 6821 WHC-SD-WM-DP-057 REV.0

Serial No.	Sample Point	Date	Time Issued	Priority
J 1287.-5982	BECHTOLD	11- 4-93	8:59	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	% RECOVERY	E14157	2

Sample Size	Customer ID
?1mL-10-.250mL + .100mL-10-1mL Sd	KE20D

Remarks, Calculations, Results

SAMPLE SPIKED ID 63843

SPIKE ID 78B43

SPIKE VOLUME

COUNT AS uCI/L . 200mL

115.6%

RERUN

"AEA" - 480MIN

ATTACH PRINTOUT

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

Date	Time Completed	Lab Unit Mgr.	
11-22-93	1330		

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

BEST AVAILABLE COPY

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

			CHK EXT NO.
Serial No.	Spike (Tracer) Book Number		78B43
J1287-5982	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.2
2266	Volume of Sample in mL	(SS)	0.25
Rerun No.	Dilution Factor	(DF)	11
1	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	1064
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	1365
Date	Total AT Count	(ATOT)	10413
11/22/93	AT Count Time in Minutes	(MIN CT'd)	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 CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

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

Am-241 µCi/L	=	2.33E+01
Am-241 µCi/mL	=	2.33E-02
Relative counting error	=	4.1%
Am-243 Tracer Recovery	=	25.6%

Data Entry by:		Date:	29-Nov-93
Approved by:		Date:	November 29, 1993

578

Form 3 Rev. 1.2

#3 11-22-83

J12875982

10413 - 4
30

BEST AVAILABLE COPY

Em Dawson
11-23-93

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
J-1363-5582
File ID: 7a7357.CNF

WHC-SD-WM-DP-057 REV O

Counted on: 11/22/93 @21:39
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	268.1	268.1	303.318	303.318	18.000	9.699	9.000	2.696
2	342.7	342.7	257.634	257.578	14.000	7.348	7.000	2.1[illegible]3

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
[illegible]	Am241	0.439	5.480	5.505	-.025	0.05	12.17	2.6	128.7	0.580E-04
	Pu238		5.499	5.505	-.006				168.0	0.757E-04
2	Am243	0.511	5.276	5.290	-.014	0.03	14.17	2.4	142.2	0.641E-04
Totals:		0.950	<--valid peaks only-->				26.34			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.079 + (0.0047)*Channel
Energy range (MeV): 4.079 TO 6.485
Efficiency = 0.1006 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	13308.0	100.000
Smoothed	13308.0	100.000
Composite fit	12642.0	94.996
Residuals	666.0	5.004

Analyzed by: _____
DM

Spectrum 7a7357.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 2215.1

WHC-SD-WM-DP-057 REV O

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

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 7a7357.CNF

1	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	3.	1.	1.
21	0.	0.	1.	0.	1.	1.	1.	0.	1.	0.
31	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
41	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.
[illegible]	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
61	0.	0.	0.	0.	1.	0.	0.	0.	0.	1.
71	0.	0.	2.	0.	0.	0.	0.	0.	1.	0.
81	1.	0.	1.	1.	0.	0.	0.	0.	1.	2.
91	0.	1.	0.	0.	0.	0.	1.	0.	1.	1.
101	0.	1.	1.	1.	1.	0.	0.	1.	1.	0.
111	2.	4.	1.	0.	1.	0.	2.	2.	1.	0.
121	0.	2.	1.	1.	2.	1.	1.	3.	1.	2.
131	0.	1.	0.	1.	1.	1.	1.	0.	1.	1.
141	1.	2.	2.	1.	3.	2.	0.	3.	0.	1.
151	1.	1.	3.	2.	2.	1.	1.	1.	0.	0.
161	2.	2.	0.	4.	0.	1.	1.	3.	1.	3.
171	2.	0.	1.	1.	1.	2.	3.	4.	4.	4.
181	0.	2.	3.	0.	4.	3.	2.	3.	3.	5.
191	7.	4.	5.	10.	2.	9.	6.	5.	6.	9.
201	9.	8.	12.	16.	4.	20.	20.	9.	23.	15.
211	21.	17.	18.	19.	22.	35.	32.	21.	30.	36.
221	29.	37.	49.	44.	55.	44.	51.	65.	70.	57.
231	69.	77.	74.	81.	96.	69.	75.	89.	84.	107.
241	91.	105.	93.	144.	147.	143.	173.	165.	180.	188.
251	221.	225.	238.	290.	368.	351.	387.	399.	361.	323.
261	254.	198.	161.	124.	83.	78.	61.	59.	49.	50.
271	61.	49.	47.	45.	49.	44.	57.	67.	55.	52.
281	57.	49.	75.	76.	81.	77.	81.	94.	106.	102.
291	124.	119.	149.	127.	152.	161.	167.	221.	236.	215.
301	255.	301.	297.	287.	275.	239.	199.	152.	129.	116.
3[illegible]	80.	62.	53.	41.	41.	24.	19.	9.	10.	9.
321	3.	1.	1.	2.	0.	0.	1.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	2.	1.	0.	0.
341	0.	2.	0.	1.	0.	0.	0.	2.	1.	0.
351	3.	1.	3.	1.	2.	2.	1.	2.	2.	3.
361	4.	2.	4.	2.	1.	1.	1.	2.	0.	0.
371	1.	0.	0.	0.	1.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
431	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
441	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
481	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	2.	0.								

BEST AVAILABLE COPY

11-23-93

Westinghouse Hanford Co.

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

Rev. 2.01

DATA REDUCTION REPORT

WHC-SD-WM-DP-057 REV 0

SAMPLE
J-1364-5682
File ID: 8a8570.CNF

Counted on: 11/22/93 @21:40
Detector: AEA8
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	1294.6	1294.6	256.112	256.112	16.000	8.245	8.000	2.510

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	0.904	5.276	5.291	-.015	0.04	53.90	1.2	435.6	0.196E-03
Totals:		0.904	<--valid peaks only-->				53.90			

BEST AVAILABLE COPY

DETECTOR CALIBRATION

Energy(MEV) = 4.087 + (0.0047)*Channel
Energy range (MeV): 4.087 TO 6.494
Efficiency = 0.1250 CPM/DPM

TOTAL COUNT DATA:

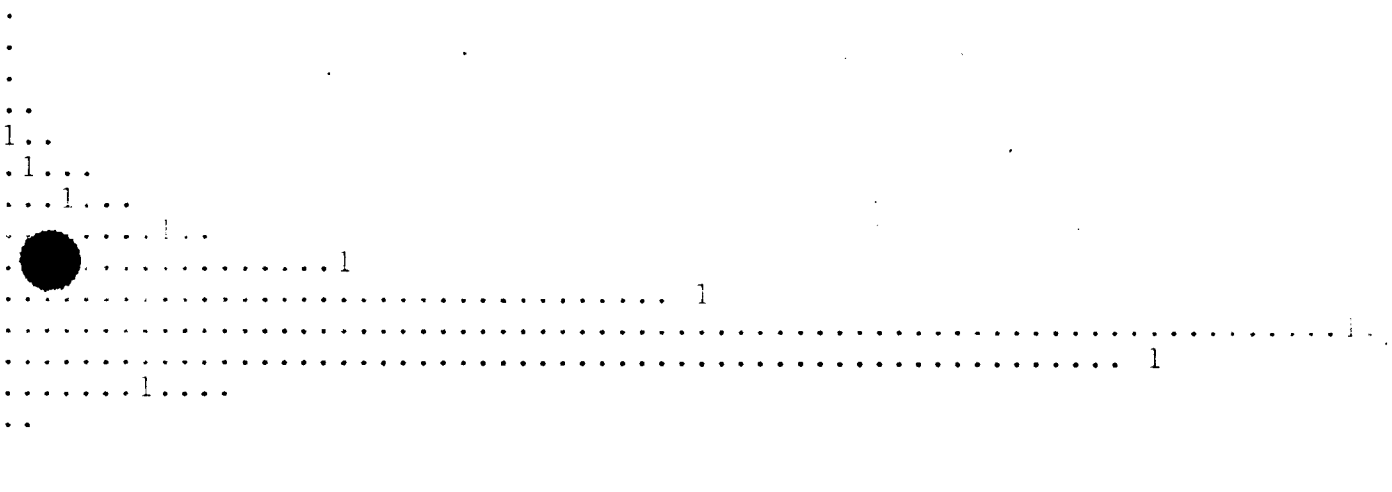
Item	Total	% Recovery
Raw spectrum	28634.0	100.000
Smoothed	28634.0	100.000
Composite fit	25873.1	90.358
Residuals	2760.9	9.642

Analyzed by: _____
DM

Spectrum 8a8570.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 8502.9

WHC-SD-WM-DP-057 REV O



BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 8a8570.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	1.	1.	2.
21	1.	2.	3.	1.	4.	2.	3.	2.	4.	3.
31	1.	0.	2.	1.	1.	1.	1.	1.	0.	3.
41	1.	0.	0.	1.	2.	0.	1.	2.	3.	0.
51	0.	2.	1.	2.	0.	2.	1.	1.	0.	0.
61	2.	1.	1.	1.	0.	1.	0.	2.	2.	5.
71	1.	3.	1.	2.	2.	5.	2.	5.	2.	2.
81	3.	2.	2.	2.	3.	3.	3.	0.	1.	0.
91	2.	2.	2.	3.	4.	2.	3.	4.	2.	2.
101	2.	4.	5.	6.	1.	2.	3.	2.	1.	2.
111	4.	2.	4.	4.	2.	3.	1.	3.	5.	4.
121	3.	4.	4.	4.	3.	4.	3.	2.	3.	8.
131	5.	4.	3.	3.	3.	6.	6.	8.	6.	2.
141	10.	8.	6.	6.	4.	7.	11.	11.	8.	18.
151	5.	5.	10.	9.	7.	10.	7.	17.	9.	10.
161	9.	11.	12.	11.	11.	7.	15.	7.	14.	10.
171	25.	19.	17.	19.	13.	16.	15.	19.	19.	15.
181	21.	14.	21.	23.	28.	26.	32.	31.	23.	20.
191	20.	34.	24.	37.	26.	41.	46.	36.	37.	46.
201	61.	46.	49.	54.	49.	67.	85.	61.	69.	79.
211	85.	80.	77.	69.	79.	98.	94.	112.	99.	132.
221	145.	128.	139.	162.	159.	170.	158.	188.	199.	200.
231	202.	243.	213.	256.	271.	268.	288.	304.	347.	373.
241	373.	408.	495.	497.	568.	625.	682.	809.	826.	919.
251	1036.	1116.	1227.	1274.	1327.	1424.	1416.	1275.	1045.	926.
261	719.	536.	324.	281.	228.	149.	136.	116.	84.	70.
271	65.	68.	33.	29.	24.	13.	15.	6.	8.	2.
281	3.	3.	4.	1.	3.	2.	2.	4.	0.	3.
291	7.	2.	3.	2.	3.	4.	2.	5.	9.	6.
301	6.	7.	9.	7.	4.	9.	3.	3.	2.	1.
311	2.	2.	0.	1.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
341	1.	0.	0.	1.	0.	1.	1.	0.	1.	0.
351	1.	0.	1.	1.	3.	1.	0.	1.	1.	1.
361	1.	2.	3.	1.	5.	1.	0.	2.	1.	2.
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.	2.	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.	2.
481	0.	0.	0.	1.	0.	0.	1.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

BEST AVAILABLE COPY

Em Darale
11-23-93

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01

DATA REDUCTION REPORT

SAMPLE
J-1287-5782
File ID: 2a2416.CNF

WHC-SD-WM-DP-057 REV 0

Counted on: 11/22/93 @21:35
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	370.9	370.9	297.201	297.201	26.000	24.362	13.000	3.495
2	460.7	460.7	251.407	251.067	26.000	24.010	13.000	3.526
3	12.8	12.8	112.501	112.369	218.000	1.000	109.000	0.100

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Peak Centroid Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am241	0.419	5.480	5.473	0.007	0.11	29.95	1.6	270.7	0.122E-03
	Pu238		5.499	5.473	0.026				353.4	0.159E-03
2	Am243	0.512	5.276	5.257	0.019	0.11	36.56	1.7	313.8	0.141E-03
	Pu240		5.144	5.257	-.113				310.6	0.140E-03
3		0.014		4.605		0.00	0.99	9.6	8.4	0.378E-05
Totals:		0.945	<--valid peaks only-->				67.50			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.077 + (0.0047)*Channel
Energy range (MeV): 4.077 TO 6.483
Efficiency = 0.1177 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	34306.0	100.000
Smoothed	34306.0	100.000
Composite fit	32402.7	94.452
Residuals	1903.3	5.548

Analyzed by: _____
DM

Spectrum 2a2416.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 4074.0

WHC-SD-WM-DP-057 REV O

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

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 2a2416.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	2.	4.	4.	2.
21	3.	4.	1.	1.	3.	3.	2.	1.	1.	1.
31	3.	4.	4.	2.	3.	2.	2.	3.	6.	4.
41	3.	3.	8.	4.	3.	4.	4.	6.	5.	5.
51	5.	1.	2.	7.	6.	8.	5.	3.	4.	10.
61	4.	7.	10.	4.	1.	3.	4.	10.	6.	5.
71	6.	8.	7.	7.	2.	8.	6.	10.	10.	11.
81	4.	7.	3.	9.	4.	7.	8.	6.	8.	12.
91	6.	6.	9.	9.	11.	13.	11.	17.	7.	15.
101	16.	11.	8.	19.	16.	9.	6.	17.	12.	12.
111	13.	17.	16.	16.	12.	8.	13.	13.	12.	21.
121	10.	14.	15.	21.	12.	16.	18.	25.	20.	10.
131	23.	25.	13.	25.	25.	15.	18.	16.	26.	17.
141	20.	33.	31.	19.	27.	28.	33.	32.	23.	22.
151	30.	28.	31.	30.	37.	46.	47.	23.	32.	33.
161	46.	34.	35.	45.	42.	33.	37.	40.	45.	44.
171	37.	58.	49.	54.	62.	49.	58.	54.	57.	66.
181	51.	62.	50.	58.	62.	59.	71.	80.	70.	56.
191	76.	75.	70.	76.	75.	86.	70.	72.	82.	105.
201	88.	103.	113.	93.	92.	101.	111.	121.	108.	116.
211	119.	129.	126.	120.	137.	132.	133.	153.	169.	166.
221	157.	176.	165.	199.	187.	191.	207.	195.	216.	220.
231	254.	252.	246.	299.	269.	314.	325.	367.	371.	379.
241	413.	446.	395.	445.	502.	493.	491.	553.	494.	542.
251	535.	546.	538.	489.	475.	483.	459.	471.	413.	334.
261	360.	337.	266.	267.	224.	202.	181.	212.	160.	180.
271	158.	155.	144.	138.	154.	170.	176.	194.	193.	224.
281	198.	220.	230.	253.	283.	250.	282.	293.	308.	307.
291	341.	337.	348.	380.	377.	369.	393.	370.	363.	360.
301	356.	330.	296.	277.	246.	233.	191.	161.	158.	113.
311	94.	75.	57.	56.	40.	34.	21.	16.	16.	13.
321	7.	7.	2.	4.	2.	2.	2.	0.	1.	1.
331	1.	0.	2.	3.	1.	1.	2.	3.	2.	0.
341	5.	1.	4.	3.	2.	4.	2.	2.	5.	4.
351	3.	7.	4.	1.	1.	6.	4.	3.	2.	5.
361	4.	4.	2.	2.	1.	4.	0.	6.	3.	1.
371	2.	1.	2.	1.	1.	1.	0.	1.	0.	1.
381	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
411	1.	0.	0.	1.	1.	1.	0.	0.	0.	1.
421	1.	1.	0.	0.	0.	2.	0.	0.	0.	2.
431	0.	1.	0.	0.	1.	0.	1.	0.	1.	1.
441	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
461	1.	0.	0.	0.	0.	0.	1.	0.	0.	1.
471	3.	2.	0.	0.	0.	0.	1.	0.	0.	0.
481	1.	0.	1.	1.	0.	1.	0.	0.	1.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

BEST AVAILABLE COPY

VM Dawson
11-23-93

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
J-1287-5782 DUP
File ID: 3a3480.CNF

WHC-SD-WM-DP-057 REV O

Counted on: 11/22/93 @21:36
Detector: AEA3
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	223.5	223.5	292.910	291.886	40.000	69.121	20.000	26.365
2	340.2	340.2	248.078	245.989	40.000	59.249	20.000	5.676

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	0.288	5.480	5.474	0.006	0.32	18.68	2.1	156.8	0.706E-04
	Pu238		5.499	5.474	0.025				204.7	0.922E-04
2	Am243	0.644	5.276	5.259	0.017	0.28	41.76	1.5	332.6	0.150E-03
	Pu240		5.144	5.259	-.115				329.3	0.148E-03
Totals:		0.932	<--valid peaks only-->				60.44			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.103 + (0.0047)*Channel
Energy range (MeV): 4.103 TO 6.509
Efficiency = 0.1268 CPM/DPM

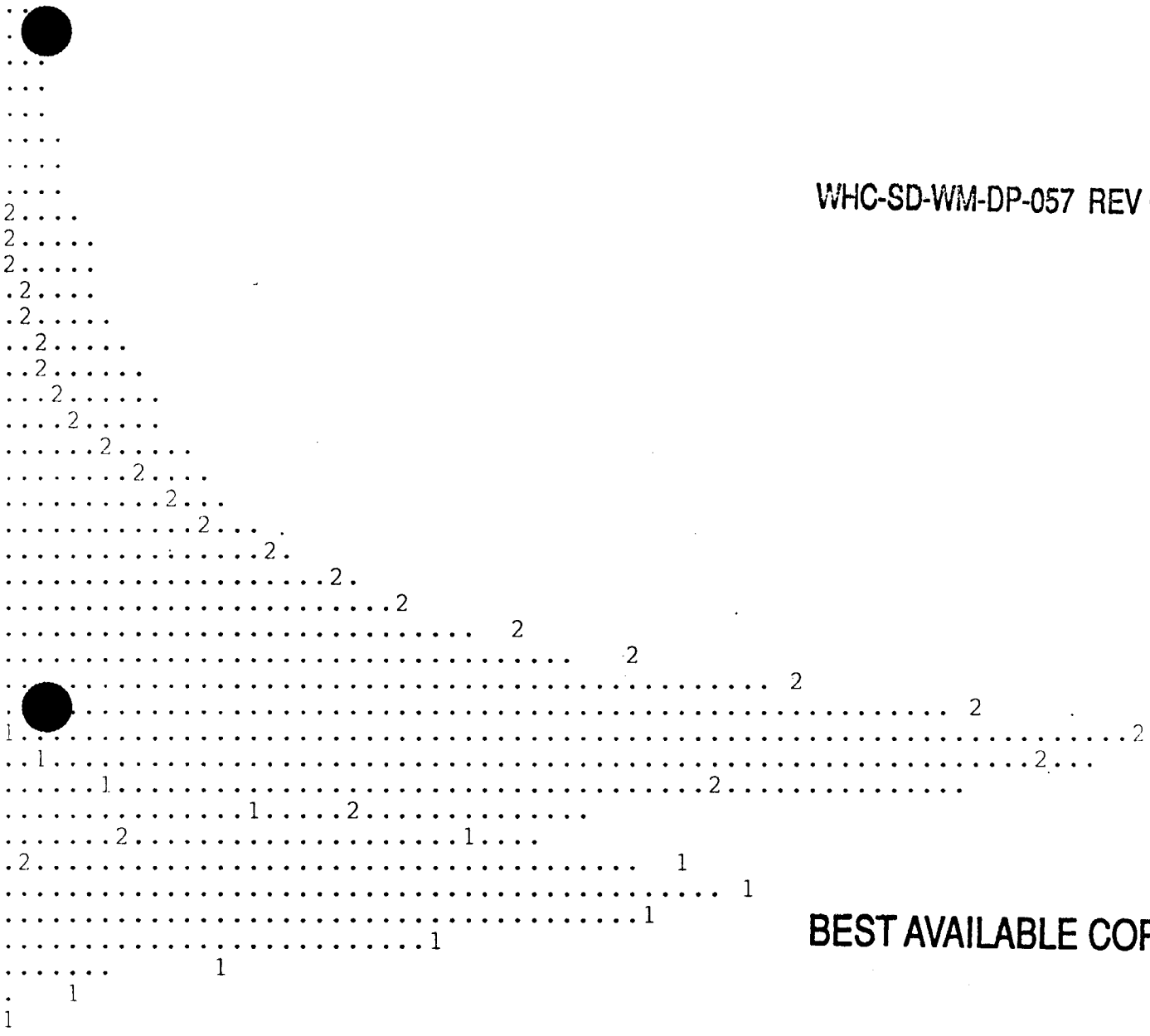
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	31149.0	100.000
Smoothed	31149.0	100.000
Composite fit	29017.0	93.155
Residuals	2132.0	6.845

Analyzed by: _____
DM

Spectrum 3a3480.CNF

1 Legend: -Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 2644.0



WHC-SD-WM-DP-057 REV O

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 3a3480.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	6.	18.	11.	8.
21	20.	20.	14.	17.	14.	11.	13.	14.	13.	21.
31	9.	17.	22.	14.	17.	12.	15.	9.	16.	24.
41	16.	21.	16.	16.	14.	14.	15.	27.	26.	11.
51	16.	17.	19.	27.	8.	20.	11.	18.	28.	20.
61	23.	22.	12.	23.	27.	15.	27.	30.	26.	20.
71	16.	22.	24.	29.	20.	16.	22.	23.	25.	25.
81	22.	24.	36.	21.	18.	26.	22.	25.	33.	22.
91	37.	33.	22.	28.	28.	35.	34.	34.	29.	33.
101	21.	23.	27.	30.	33.	23.	24.	42.	34.	35.
111	61.	18.	40.	30.	48.	38.	41.	27.	34.	34.
121	29.	36.	47.	41.	39.	49.	40.	45.	36.	43.
131	48.	45.	41.	46.	45.	44.	50.	64.	46.	55.
141	38.	54.	46.	48.	57.	41.	51.	53.	63.	49.
151	47.	50.	64.	55.	68.	60.	71.	60.	57.	66.
161	72.	63.	76.	59.	64.	72.	55.	69.	55.	67.
171	69.	69.	78.	75.	77.	68.	101.	75.	70.	68.
181	84.	85.	67.	89.	79.	87.	85.	88.	85.	84.
191	94.	114.	106.	99.	96.	105.	120.	99.	105.	116.
201	124.	109.	108.	112.	128.	123.	133.	130.	150.	132.
211	143.	127.	127.	142.	141.	155.	153.	167.	173.	170.
221	182.	176.	190.	181.	197.	208.	221.	226.	246.	205.
231	255.	244.	286.	264.	286.	254.	271.	291.	292.	324.
241	303.	310.	319.	361.	352.	362.	370.	325.	349.	308.
251	302.	330.	307.	292.	303.	297.	322.	305.	299.	326.
261	271.	268.	236.	220.	195.	170.	154.	162.	146.	148.
271	134.	153.	116.	160.	161.	176.	156.	167.	151.	170.
281	170.	162.	182.	176.	197.	214.	196.	205.	217.	218.
291	232.	243.	209.	204.	179.	198.	210.	191.	194.	183.
301	179.	196.	159.	192.	158.	148.	147.	120.	99.	107.
311	79.	51.	46.	40.	36.	30.	14.	12.	18.	12.
321	9.	5.	6.	2.	4.	1.	2.	0.	0.	0.
331	1.	1.	0.	1.	0.	1.	2.	0.	1.	1.
341	0.	2.	2.	0.	3.	0.	1.	0.	2.	3.
351	3.	1.	3.	1.	1.	1.	2.	1.	3.	1.
361	1.	2.	1.	0.	3.	2.	1.	1.	1.	1.
371	1.	0.	1.	2.	1.	2.	1.	0.	0.	0.
381	0.	3.	0.	0.	0.	1.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	1.	0.	1.	0.	0.	0.	0.	0.	0.	1.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	1.	0.	0.	0.	1.	0.	0.	1.	1.	1.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	1.	1.	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.								

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
J-1287-5782 TRIP
File ID: 4a4990.CNF

WHC-SD-WM-DP-057 REV O

Counted on: 11/22/93 @21:37
Detector: AEA4
Geometry number: 1
Count time: 28806. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	367.7	367.7	303.072	303.072	14.000	6.269	7.000	1.227
2	462.0	462.0	257.461	257.376	14.000	5.710	7.000	1.106

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
	Pu238	0.423	5.499	5.504	-.005	0.03	19.23	2.0	312.3	0.141E-03
	Am241		5.480	5.504	-.024				239.2	0.108E-03
2	Am243	0.529	5.276	5.289	-.013	0.03	24.03	1.9	283.9	0.128E-03
Totals:		0.951	<--valid peaks only-->				43.26			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.079 + (0.0047)*Channel
Energy range (MeV): 4.079 TO 6.486
Efficiency = 0.0855 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	21830.0	100.000
Smoothed	21830.0	100.000
Composite fit	20767.4	95.132
Residuals	1062.6	4.868

Analyzed by: _____
DM

Spectrum 4a4990.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 3039.4

WHC-SD-WM-DP-057 REV O

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

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 4a4990.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	3.	1.	1.
21	1.	2.	3.	1.	1.	1.	1.	3.	1.	2.
31	2.	1.	0.	1.	0.	1.	0.	1.	1.	3.
41	2.	1.	1.	0.	2.	1.	1.	2.	4.	3.
[illegible]	2.	0.	1.	1.	1.	1.	2.	4.	0.	4.
[illegible]	2.	4.	1.	2.	0.	2.	2.	2.	0.	3.
71	0.	1.	3.	1.	3.	1.	3.	1.	2.	2.
81	2.	2.	1.	2.	3.	3.	2.	2.	1.	0.
91	1.	2.	4.	2.	1.	2.	1.	2.	3.	0.
101	6.	4.	1.	5.	4.	5.	5.	1.	6.	2.
111	3.	6.	6.	1.	4.	3.	6.	6.	3.	4.
121	3.	8.	5.	8.	4.	4.	5.	8.	4.	5.
131	5.	5.	3.	3.	3.	5.	7.	10.	5.	7.
141	3.	9.	9.	4.	7.	9.	13.	11.	7.	6.
151	9.	3.	12.	10.	9.	8.	13.	10.	8.	9.
161	8.	15.	8.	12.	11.	18.	8.	9.	9.	11.
171	9.	11.	15.	6.	25.	18.	16.	24.	15.	13.
181	17.	19.	16.	22.	18.	17.	26.	21.	24.	21.
191	29.	16.	26.	24.	27.	22.	24.	25.	31.	27.
201	26.	35.	41.	31.	40.	40.	44.	52.	42.	43.
211	49.	52.	53.	49.	60.	60.	71.	61.	75.	73.
221	79.	95.	85.	85.	83.	102.	112.	104.	134.	102.
231	130.	156.	142.	163.	168.	157.	192.	178.	208.	210.
241	223.	239.	271.	267.	266.	288.	286.	326.	356.	336.
251	379.	349.	387.	385.	449.	521.	553.	547.	515.	436.
261	361.	254.	157.	120.	92.	95.	89.	62.	83.	73.
271	99.	87.	106.	96.	96.	74.	90.	114.	111.	105.
281	122.	138.	130.	148.	155.	148.	148.	167.	192.	202.
291	226.	214.	227.	263.	265.	221.	311.	292.	280.	323.
301	356.	363.	412.	408.	355.	301.	202.	141.	106.	69.
3[illegible]	43.	42.	42.	29.	26.	14.	11.	4.	0.	2.
32[illegible]	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
331	0.	0.	1.	0.	2.	0.	0.	3.	1.	0.
341	1.	1.	0.	2.	1.	4.	2.	2.	1.	0.
351	2.	2.	2.	3.	2.	3.	3.	4.	3.	0.
361	0.	1.	2.	3.	6.	0.	1.	2.	3.	2.
371	2.	2.	2.	3.	3.	0.	0.	0.	0.	0.
381	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	1.	0.	0.	2.	0.	0.
401	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
431	2.	0.	1.	0.	4.	1.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	2.	0.	0.	1.	1.	0.
481	0.	1.	1.	0.	1.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

BEST AVAILABLE COPY

Eric Dawson
11-23-93

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
J-1287-5982
File ID: 5a5914.CNF

WHC-SD-WM-DP-057 REV O

Counted on: 11/22/93 @21:37
Detector: AEA5
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	765.7	765.7	298.193	298.193	24.000	21.697	12.000	2.908
2	988.4	988.4	252.595	252.075	22.000	19.306	11.000	2.612
3	71.4	71.4	158.439	157.834	96.000	364.677	48.000	115.959
4	24.6	24.6	67.761	67.384	88.000	359.388	44.000	116.129
5?	2.0	2.0	48.443	48.087	4.000	0.000	2.000	3.758

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	0.395	5.480	5.465	0.015	0.10	63.15	1.1	485.7	0.219E-03
	Pu238		5.499	5.465	0.034				634.2	0.286E-03
2	Am243	0.497	5.276	5.252	0.024	0.09	79.38	1.1	579.7	0.261E-03
	Pu240		5.144	5.252	-.108				573.9	0.259E-03
3	Np237	0.085	4.640	4.819	-.179	1.68	13.56	6.9	1633.7	0.736E-03
	Np237		4.781	4.819	-.038				112.7	0.508E-04
4	U 235	0.028	4.396	4.403	-.007	1.65	4.47	8.5	56.8	0.256E-04
5		????		4.314			0.00	1000.		
Totals:		1.005	<--valid peaks only-->				160.55			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.093 + (0.0046)*Channel
Energy range (MeV): 4.093 TO 6.448
Efficiency = 0.1383 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	76714.0	100.000
Smoothed	76713.9	100.000
Composite fit	77078.3	100.475
Residuals	-364.3	-0.475

Analyzed by: _____
DM

WHC-SD-WM-DP-057 REV O

BEST AVAILABLE COPY

Spectrum 5a5914.CNF

```
1 Legend:  Raw = ....  Modeled Peaks = 1,2,.., etc     Display Max.:    8841.3

4
4
4
4
4
4
4
4
4
4
4
4.
4.
4.
4..
43.
43.
4.3.
4..3
2..3.
2..3..
.2.3..
..23....
..32.....
..3..2....
13.....2.....
3.........2...
31............2...
31................2...
3.1.......................2...
....1.............................2.....
......1.........................................2........
........1.........................................................2..........
...........1.........................2.............
.........2......1.........
2.....................1
............................1
.........................................1..
.........................................1
.......................1
.....1
```

WHC-SD-WM-DP-057 REV O

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 5a5914.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	6.	11.	13.	19.
21	18.	13.	16.	23.	18.	18.	15.	19.	18.	14.
31	16.	26.	17.	17.	19.	20.	22.	16.	22.	19.
41	22.	22.	14.	21.	28.	22.	18.	30.	24.	26.
[illegible]	18.	18.	24.	26.	21.	23.	21.	25.	24.	21.
61	25.	23.	27.	30.	26.	25.	31.	33.	29.	26.
71	26.	20.	30.	19.	22.	30.	25.	23.	28.	34.
81	35.	38.	39.	34.	39.	30.	36.	43.	36.	37.
91	45.	39.	29.	34.	31.	33.	47.	25.	49.	[illegible]
101	39.	43.	31.	57.	44.	48.	50.	49.	53.	[illegible]
111	53.	47.	61.	45.	36.	47.	64.	57.	66.	48.
121	53.	41.	61.	65.	55.	60.	55.	49.	62.	59.
131	58.	66.	54.	71.	83.	68.	78.	81.	80.	77.
141	70.	84.	81.	70.	70.	73.	79.	85.	88.	93.
151	93.	80.	96.	95.	100.	92.	106.	121.	109.	106.
161	88.	106.	94.	93.	123.	102.	101.	105.	108.	128.
171	119.	155.	129.	146.	145.	146.	134.	144.	159.	130.
181	165.	165.	186.	143.	173.	177.	188.	148.	164.	190.
191	166.	203.	197.	229.	193.	202.	226.	203.	212.	227.
201	215.	216.	231.	262.	232.	262.	232.	255.	215.	[illegible]
211	285.	295.	333.	302.	322.	296.	330.	364.	365.	[illegible]
221	339.	406.	445.	431.	430.	463.	475.	503.	511.	499.
231	508.	592.	564.	615.	604.	625.	668.	718.	776.	789.
241	831.	854.	865.	902.	977.	986.	1021.	1068.	1138.	1142.
251	1149.	1193.	1142.	1137.	1155.	1021.	998.	930.	856.	789.
261	706.	633.	574.	515.	452.	434.	408.	354.	351.	370.
271	322.	358.	342.	356.	333.	336.	372.	375.	382.	399.
281	396.	429.	511.	493.	488.	572.	579.	585.	632.	641.
291	669.	701.	688.	797.	830.	775.	751.	779.	773.	786.
301	731.	701.	659.	602.	505.	492.	437.	398.	291.	[illegible]
3[illegible]	224.	149.	130.	106.	69.	76.	36.	25.	28.	[illegible]
321	8.	8.	8.	11.	1.	4.	6.	3.	3.	3.
331	3.	2.	5.	5.	6.	4.	5.	7.	7.	[illegible]
341	2.	2.	3.	4.	6.	8.	7.	7.	6.	5.
351	12.	12.	3.	6.	6.	10.	7.	5.	8.	12.
361	6.	11.	11.	4.	8.	5.	3.	6.	3.	2.
371	3.	1.	2.	0.	2.	0.	1.	2.	0.	1.
381	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	1.	1.	0.	1.
411	1.	0.	0.	0.	1.	0.	1.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
431	1.	1.	0.	2.	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.	1.	1.
461	0.	1.	0.	0.	0.	0.	0.	1.	0.	1.
471	0.	2.	2.	0.	0.	0.	1.	1.	0.	0.
481	0.	1.	0.	0.	2.	0.	0.	1.	1.	1.
491	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
511	0.	0.								

BEST AVAILABLE COPY

Wm Dawson
11-23-93

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01

DATA REDUCTION REPORT

WHC-SD-WM-DP-057 REV O

SAMPLE
J-1287-5982 SPIK
File ID: 6a6821.CNF

Counted on: 11/22/93 @21:38
Detector: AEA6
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	982.1	982.1	296.111	296.111	28.000	28.606	14.000	3.776
2	1106.6	1106.6	250.474	250.078	24.000	21.972	12.000	3.866
3?	10.4	10.4	104.270	104.126	140.000	1.000	70.000	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
1	Am241	0.519	5.480	5.468	0.012	0.13	86.09	1.0	706.7	0.318E-0[illegible]
	Pu238		5.499	5.468	0.031				922.6	0.41[illegible]E-0[illegible]
2	Am243	0.468	5.276	5.252	0.024	0.10	77.65	1.2	605.2	0.273E-03
	Pu240		5.144	5.252	-.108				599.1	0.270E-03
3		????		4.566			0.79	10.8		
Totals:		0.988	<--valid peaks only-->				163.74			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.076 + (0.0047)*Channel
Energy range (MeV): 4.076 TO 6.483
Efficiency = 0.1296 CPM/DPM

TOTAL COUNT DATA:

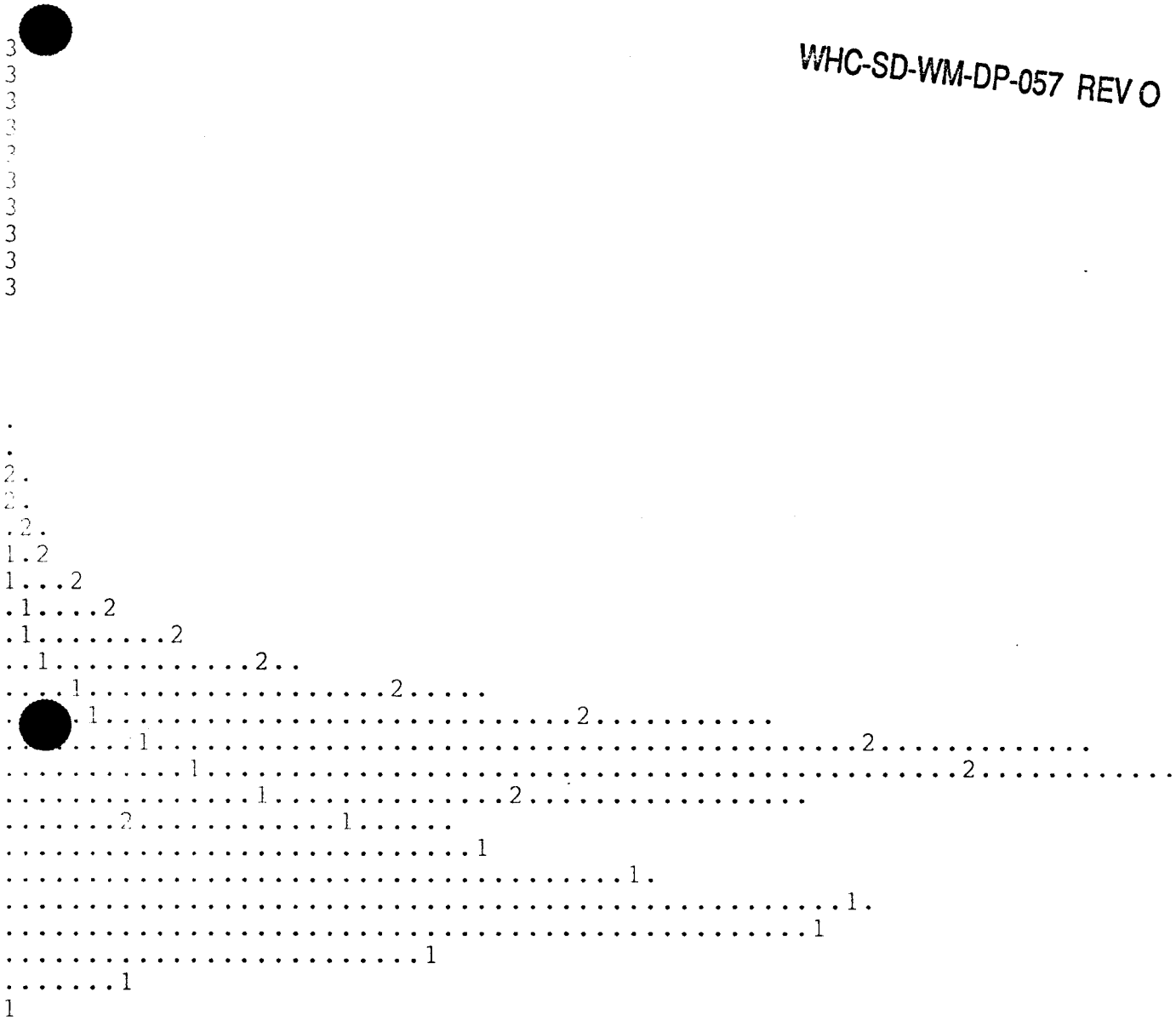
Item	Total	% Recovery
Raw spectrum	79555.0	100.000
Smoothed	79556.2	100.002
Composite fit	78974.8	99.271
Residuals	580.2	0.729

Analyzed by: _____
DM

Spectrum 6a6821.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 9932.3

WHC-SD-WM-DP-057 REV O



BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 6a6821.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	2.	2.	5.
21	3.	2.	0.	3.	5.	6.	8.	3.	3.	8.
31	8.	9.	3.	4.	7.	4.	4.	7.	7.	2.
41	7.	4.	3.	5.	5.	9.	7.	3.	5.	6.
51	5.	4.	7.	3.	2.	9.	7.	3.	5.	7.
61	7.	4.	6.	4.	5.	5.	6.	8.	6.	6.
71	5.	8.	8.	5.	8.	9.	4.	7.	4.	6.
81	6.	9.	4.	8.	9.	8.	10.	7.	11.	7.
91	6.	9.	10.	12.	7.	6.	11.	11.	15.	10.
101	9.	8.	11.	15.	15.	10.	9.	9.	8.	12.
111	5.	14.	13.	13.	10.	9.	16.	13.	16.	[illegible]
121	16.	12.	17.	15.	9.	16.	21.	17.	17.	17.
131	15.	16.	19.	13.	12.	16.	17.	14.	17.	21.
141	24.	17.	16.	14.	23.	31.	26.	19.	21.	31.
151	24.	29.	29.	36.	20.	22.	27.	35.	23.	43.
161	32.	32.	34.	38.	35.	35.	39.	42.	50.	42.
171	43.	51.	40.	41.	44.	48.	71.	44.	68.	53.
181	52.	58.	54.	54.	61.	63.	80.	73.	73.	76.
191	69.	76.	95.	65.	112.	98.	104.	99.	101.	123.
201	130.	116.	136.	137.	156.	146.	141.	174.	178.	192.
211	210.	197.	227.	232.	222.	226.	261.	304.	303.	329.
221	355.	382.	422.	412.	492.	482.	511.	540.	546.	602.
231	629.	666.	719.	730.	806.	880.	841.	939.	989.	1070.
241	1101.	1088.	1118.	1166.	1311.	1275.	1278.	1271.	1311.	[illegible]
251	1346.	1365.	1243.	1128.	1165.	1077.	1063.	982.	900.	[illegible]
261	756.	709.	634.	587.	520.	466.	444.	449.	397.	429.
271	427.	430.	475.	474.	464.	487.	481.	486.	580.	633.
281	624.	649.	704.	657.	740.	778.	843.	845.	925.	897.
291	948.	981.	953.	903.	999.	1012.	1064.	912.	929.	866.
301	854.	869.	781.	710.	633.	551.	465.	447.	373.	327.
311	277.	217.	192.	169.	121.	96.	71.	53.	43.	34.
321	25.	18.	14.	11.	6.	5.	4.	3.	3.	3.
331	1.	3.	3.	3.	2.	2.	2.	4.	1.	0.
341	0.	3.	1.	2.	2.	2.	4.	2.	5.	2.
351	5.	1.	2.	1.	5.	1.	9.	2.	3.	5.
361	3.	3.	3.	6.	5.	2.	6.	3.	1.	2.
371	3.	4.	2.	4.	2.	3.	2.	0.	1.	1.
381	1.	1.	1.	0.	0.	1.	1.	1.	0.	0.
391	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
401	1.	0.	0.	0.	1.	0.	1.	0.	0.	0.
411	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.
421	1.	1.	1.	0.	0.	0.	1.	1.	0.	2.
431	1.	0.	0.	1.	0.	1.	1.	0.	0.	0.
441	2.	2.	0.	0.	1.	2.	0.	4.	2.	1.
451	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	1.	0.	0.	0.	0.	1.	0.	0.	4.
471	0.	0.	5.	1.	1.	1.	1.	0.	0.	0.
481	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	1.	1.	4.	4.	8.	2.	0.	0.
511	0.	0.								

BEST AVAILABLE COPY

04
11

WESTINGHOUSE HANFORD COMPANY

WHC-SD-WM-DP-057 REV 0

222-S LABORATORY

Batch 2101

ANALYTICAL BATCH

Lab Segment Serial No. J1287	Customer ID: KE20D
Analysis: Am 241	Sample Prep: DIRECT

Instrument: WB537237	Procedure/ Rev: LA-503-156 D-0
Technologist: Joel M VanSant	Date: 11-15-93
Starting Time: 0800	Temperature 25°C
Ending Time: 1515	Chemist: L Fritts

Comments:

	Description	Lab ID		Description	Lab ID
1	BLANK	J1304.-5682	11		
2	STANDARD	J1330.-5592	12		
3	SAMPLE	J1287.-5792	13		
4	DUPLICATE	J1287.-5792	14		
5	TRIPLICATE	J1287.-5792	15		
6	SPIKE	J1287.-5982	16		
7	SPIKE DUPLICATE	J1287.-5982	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 .100mL-10	-1mL 63BA3		
SPIKE	78BA3 .100mL			

602

A-6000-881 (03/92)

CA

ANALYTICAL BATCH SUMMARY SHEET

METHOD: LA-503-156

DATE START: November 15, 1993

PREPARED BY: L.L. Fritts LLFritts 11-18-93

DATE COMPLETE: November 18, 1993

	UNITS:	uCi/mL									
SPL NAME	SPL ID	ANALYTE	RESULT #1	RESULT #2	RESULT #3	AVERAGE	2*SD	PREC	%REC	DET LIM	% CT ER
STD 63B43	J1303	Am-241	2.63E+1						98.1	1.71E-3	19.0
BLANK	J1304	Am-241	<1.87E-3						6.0	1.87E-3	71.0
KE20D	J1287	Am-241	1.51E-2	2.02E-2	7.82E-3	1.43E-2	1.24E-2	87.0	3.7	1.87E-3	14.8
									5.1	1.87E-3	11.5
									3.3	1.87E-3	36.7
KE20D	J1287	Am-241	97.0	118.2						3.73E-3	16.1
										3.73E-3	14.5

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.

The results for the spike are in percent recovery.

Rerun requested: The precision for the samples is outside set control limits.

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

WHC-SD-WM-DP-057 REV 0

#2 2394

Serial No	Sample Point	Date	Time Issued	Priority
J 1303.-5582	BECHTOLD	11- 8-93	11:47	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	% RECOVERY	E14157	0

Sample Size	Customer ID
? .100mL - 10 - 1mL + .100mL spike	STD

Remarks, Calculations, Results

EDP R201 AR001 78B43

STD# 63B43 RESULT 26.3 ~~30.5~~ cac 11/18/93

STD VAL 26.8 %REC ~~113.8%~~ 98.1 %

OUT FOR RERUN

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]	[signature]	[signature]		
Hrs	Hrs	Hrs 11-16-93	Hrs	11-17-93
Date 11-15-93	Time Completed 1515	Lab Mgr [signature]	[signature]	

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

BEST AVAILABLE COPY

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

			STANDARD
Serial No.	Spike (Tracer) Book Number		78B43
J1303-5582	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2101	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)	49
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	64
Date	Total AT Count	(ATOT)	734
11/15/93	AT Count Time in Minutes	(MIN CT'd)	30
	Background in CPM	(BKG)	5

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

µCi/mL = µCi/L / (1000mL/L)

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

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

Am-241 µCi/L	=	2.63E+01
Am-241 µCi/mL	=	2.63E-02
Relative counting error	=	19.0%
Am-243 Tracer Recovery	=	2.9%

Data Entry by:	[signature]	Date:	18-Nov-93
Approved by:	[signature]	Date:	November 18, 1993

604

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#1 11-15-93

J1303-558L

$\frac{734}{30}$ -5

BEST AVAILABLE COPY

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

#3 3738 WHC-SD-WM-DP-057 REV O

Serial No.	Sample Point	Date	Time Issued	Priority
J 1304.-5682	BECHTOLD	11- 8-93	11:48	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	E14157	0

Sample Size: ? 1mL 8mhotmoz + 100mL Spike (10 - .100 ML)

Customer ID: BLK

Remarks, Calculations, Results:

REAGENT BLANK

COUNT AS uCI/L

CUT FOR RERUN

< 1.87×10^{-3} uCi/mL

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs 11-16-93	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-15-93	15:15	

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

BEST AVAILABLE COPY

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

			BLANK
Serial No.	Spike (Tracer) Book Number		78B43
J1304-5682	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2101	Volume of Sample in mL	(SS)	0.1
Rerun No.	Dilution Factor	(DF)	11
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	2
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	213
Date	Total AT Count	(ATOT)	772
11/15/93	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.

Am-241 µCi/L	=	< 1.87E+00
Am-241 µCi/mL	=	< 1.87E-03
Relative counting error	=	71.0%
Am-243 Tracer Recovery	=	6.0%

Data Entry by:	CA Clark	Date:	18-Nov-93
Approved by:	606	Date:	November 18, 1993

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#3 11-15-93

J1304-5682

772/30 -3

BEST AVAILABLE COPY

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

BH 4968 WHC-SD-WM-DP-057 REV 0

Serial No	Sample Point	Date	Time Issued	Priority
J 1287.-5782	BECHTOLD	11- 4-93	8:52	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	E14157	0

Sample Size	Customer ID
? 1mL-10-.1mL + .100mL Spike	KE20D

Remarks, Calculations, Results

COUNT AS uCI/L sample 78B43

OUT FOR RERUN

1.51×10^{-2} uCi/mL

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
11-15-93	Eric Barclay	[signature]		
Hrs	Hrs	Hrs 11-16-93	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
	15:15	[signature] [signature]

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

BEST AVAILABLE COPY

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

			SAMPLE
Serial No.	Spike (Tracer) Book Number		78B43
J1287-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2101	Volume of Sample in mL	(SS)	0.1
Rerun No.	Dilution Factor	(DF)	11
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	64
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	158
Date	Total AT Count	(ATOT)	737
11/15/93	AT Count Time in Minutes	(MIN CT'd)	30
	Background in CPM	(BKG)	5

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

µCi/mL = µCi/L / (1000mL/L)

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

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

Am-241 µCi/L	=	1.51E+01
Am-241 µCi/mL	=	1.51E-02
Relative counting error	=	14.8%
Am-243 Tracer Recovery	=	3.7%

Data Entry by:	[signature]	Date:	16-Nov-93
Approved by:	[signature]	Date:	November 18, 1993

608

Form 3 Rev: 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#1 11-15-93

J1287-5782

$\frac{737}{30}$ -5

BEST AVAILABLE COPY

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

#8 8552 WHC-SD-WM-DP-057 REV 0

Serial No.	Sample Point	Date	Time Issued	Priority
J 1287.-5782	BECHTOLD	11- 4-93	8:59	18

Determination	Method-Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	E14157	0

Sample Size: ?1mL-10-.1mL + .100mL Spike

Customer ID: KE20D

Remarks, Calculations, Results: COUNT AS uCI/L duplicate 78B43

OUT FOR RERUN

2.02×10^{-2} uCi/mL

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
11-15-93		11-16-93		
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-15-93	15:15	

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

BEST AVAILABLE COPY

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

			SAMPLE
Serial No.	Spike (Tracer) Book Number		78B43
J1287-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2101	Volume of Sample in mL	(SS)	0.1
Rerun No.	Dilution Factor	(DF)	11
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	116
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	214
Date	Total AT Count	(ATOT)	980
11/15/93	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

Am-241 µCi/L	=	2.02E+01
Am-241 µCi/mL	=	2.02E-02
Relative counting error	=	11.5%
Am-243 Tracer Recovery	=	5.1%

Data Entry by: Date: 16-Nov-93

Approved by: 610 Date: November 18, 1993

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#3 11-15-93

J1287-5782

$\frac{980}{30}$ - 3

BEST AVAILABLE COPY

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

WHC-SD-WM-DP-057 REV 0

11-22-93 6801

Serial No.	Sample Point	Date	Time Issued	Priority
J 1287.-5782	BECHTOLD	11- 4-93	8:59	18

Determination	Method-Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	E14157	0

Sample Size	Customer ID
1mL-10-.100mL + .100mL Spike	KE20D

Remarks, Calculations, Results

COUNT AS uCI/L triplicate 78B43

OUT FOR RERUN

7.82×10^{-3} uCi/mL

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs 11-16-93	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11-15-93	15:15	

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

BEST AVAILABLE COPY

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

			SAMPLE
Serial No.	Spike (Tracer) Book Number		78B43
J1287-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2101	Volume of Sample in mL	(SS)	0.1
Rerun No.	Dilution Factor	(DF)	11
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	9
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	43
Date	Total AT Count	(ATOT)	475
11/15/93	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

Am-241 µCi/L	=	7.82E+00
Am-241 µCi/mL	=	7.82E-03
Relative counting error	=	36.7%
Am-243 Tracer Recovery	=	3.3%

Data Entry by:		Date:	16-Nov-93
Approved by:	612	Date:	November 18, 1993

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#2 11-15-93

J12875782

$\frac{475}{30}$ -1

BEST AVAILABLE COPY

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

7 7338 WHC-SD-WM-DP-057 REV 0

Serial No.	Sample Point	Date	Time Issued	Priority
J 1287.-5982	BECHTOLD	11- 4-93	8:59	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	% RECOVERY	E14157	0

Sample Size	Customer ID
? 1mL-10-.1mL + 1mL STD + .200mL Sp	KE20D

Remarks, Calculations, Results

SAMPLE SPIKED ID

SPIKE ID 63B43 .1mL-10mL-1mL

SPIKE VOLUME
COUNT AS uCI/L .200mL 78B43 OUT FOR RERUN

$$\frac{(43.4 - 15.1)(\frac{101}{1}/\frac{11}{.1})(100)}{26.797} = 97.0\%$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs 11-16-93	Hrs	Hrs
Date 11-15-93	Time Completed 15:15	Lab Unit Mgr		

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

BEST AVAILABLE COPY

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

Serial No.			CHK EXT NO.
	Spike (Tracer) Book Number		78B43
J1287-5982	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.2
2101	Volume of Sample in mL	(SS)	0.1
Rerun No.	Dilution Factor	(DF)	11
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	61
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	105
Date	Total AT Count	(ATOT)	724
11/15/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	1

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

Am-241 µCi/L	=	4.34E+01
Am-241 µCi/mL	=	4.34E-02
Relative counting error	=	16.1%
Am-243 Tracer Recovery	=	1.9%

Data Entry by:		Date:	16-Nov-93
Approved by:	614	Date:	November 18, 1993

Form 3 Rev. 1.2

#2 11-15-93

J1287-5982

$\frac{724}{30}$ -1

BEST AVAILABLE COPY

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

5 5,935891 WHC-SD-WM-DP-057 REV 0

Serial No.	Sample Point	Date	Time Issued	Priority
J 1287.-5982	BECHTOLD	11- 4-93	8:59	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	% RECOVERY	E14157	0

Sample Size	Customer ID
?1mL-10-.100mL + 1m STD 63B43 +.200mL Sp	KE20D

Remarks, Calculations, Results: spike dup

SAMPLE SPIKED ID

SPIKE ID 63B43 .100m -10- 1mL OUT FOR RERUN

SPIKE VOLUME

COUNT AS uCI/L .200mL 78B43

$$\frac{(54.7 - 20.2)\left(\frac{10}{1} / \frac{11}{.1}\right)(100)}{26.797} = 118.2\%$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs 11-16-93	Hrs	Hrs
Date 11-15-93	Time Completed 15:15	Lab Unit Mgr.		

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

BEST AVAILABLE COPY

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

			CHK EXT NO.
Serial No.	Spike (Tracer) Book Number		78B43
J1287-5982	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.2
2101	Volume of Sample in mL	(SS)	0.1
Rerun No.	Dilution Factor	(DF)	11
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	82
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	112
Date	Total AT Count	(ATOT)	701
11/15/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	5

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

µCi/mL = µCi/L / (1000mL/L)

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

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

Am-241 µCi/L	=	5.47E+01
Am-241 µCi/mL	=	5.47E-02
Relative counting error	=	14.5%
Am-243 Tracer Recovery	=	1.4%

Data Entry by:		Date:	16-Nov-93
Approved by:	616	Date:	November 18, 1993

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#1 11-15-93

J1287-5982

701 -5
30

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

11-16-93

SAMPLE
J1303-5582
File ID: 2a2394.CNF

WHC-SD-WM-DP-057 REV O

Counted on: 11/16/93 @ 1: 4
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	36.8	36.8	300.370	300.370	30.000	20.353	15.000	15.471
2?	26.5	26.5	294.753	294.753	18.000	0.000	9.000	7.343
3	29.6	29.6	274.388	274.180	16.000	58.022	8.000	4.123
4	31.9	31.9	251.416	251.193	20.000	10.989	10.000	10.383
5	19.1	19.1	237.814	236.368	20.000	3.877	10.000	0.603

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	0.221	5.480	5.488	-.008	0.10	1.66	6.9	15.0	0.677E-05
	Pu238		5.499	5.488	0.011				19.6	0.884E-05
2		????		5.461			0.00	1000.		
3	Th228	0.583	5.430	5.364	0.066	0.27	4.38	5.0	52.4	0.236E-04
	Am243		5.276	5.364	-.088				37.6	0.169E-04
4	Am243	0.142	5.276	5.256	0.020	0.05	1.06	17.2	9.1	0.411E-05
5		0.150		5.187		0.02	1.13	14.7	9.6	0.432E-05
Totals:		1.097	<--valid peaks only-->				8.24			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.076 + (0.0047)*Channel
Energy range (MeV): 4.076 TO 6.482
Efficiency = 0.1177 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	3605.0	100.000
Smoothed	3605.0	100.000
Composite fit	3953.9	109.679
Residuals	-348.9	-9.679

Analyzed by: _____

Spectrum 2a2394.CNF
i Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 367.4

WHC-SD-WM-DP-057 REV O

```
.
3
3
3
3
.3
.3
.3
..3
...3
...3
5.  3
5... 3
.5... 3
..5... 3
....5....3.
......5....3....
.........5...3............
..............53................
..................3.5.......................
...4.................3..5.........................
...5.....................34...............................
..............................3.............4.........................
................4.................3................
4..............................          3
.1...................................        3
..........1.......................3................
...................3...............1...............
.......3.........................................    1
.3........................         1
.......  1
1.
..
....
.....
....
..
```

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 2a2394.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.	1.	0.	0.	0.	0.	0.	2.	0.
31	2.	0.	0.	0.	2.	0.	1.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	1.	0.	1.	1.
[illegible]	0.	0.	1.	0.	0.	0.	0.	2.	1.	1.
[illegible]	1.	2.	0.	0.	1.	0.	1.	0.	1.	0.
71	0.	0.	1.	0.	1.	0.	0.	1.	0.	0.
81	0.	2.	0.	0.	0.	1.	1.	0.	0.	0.
91	0.	2.	0.	0.	2.	1.	0.	1.	1.	2.
101	1.	1.	1.	0.	1.	1.	0.	0.	2.	2.
111	0.	0.	0.	0.	2.	0.	2.	1.	1.	2.
121	0.	4.	1.	0.	0.	2.	0.	0.	0.	0.
131	0.	2.	2.	1.	1.	2.	0.	3.	1.	1.
141	3.	0.	1.	3.	0.	1.	2.	5.	2.	4.
151	1.	3.	2.	3.	2.	1.	3.	1.	3.	2.
161	1.	2.	3.	2.	1.	3.	2.	0.	4.	1.
171	2.	6.	2.	2.	1.	4.	6.	2.	2.	5.
181	3.	2.	4.	6.	6.	4.	3.	5.	2.	5.
191	4.	6.	8.	9.	6.	6.	10.	7.	6.	13.
201	9.	7.	7.	6.	21.	11.	10.	12.	18.	26.
211	17.	19.	11.	19.	22.	11.	29.	19.	26.	27.
221	14.	23. 11/18/93	21.	21.	23.	36.	28.	31.	29.	32.
231	27.	36.	42.	29.	29.	34.	37.	42.	33.	35.
241	31.	32.	31.	31.	50.	45.	51.	49.	34.	45.
251	64.	55.	42.	47.	41.	34.	44.	37.	43.	38.
261	23.	27.	27.	29.	17.	16.	17.	24.	19.	15.
271	25.	19.	26.	30.	24.	25.	22.	18.	23.	28.
281	35.	26.	46.	35.	28.	34.	39.	39.	31.	24.
291	38.	37.	23.	45.	36.	37.	30.	33.	32.	36.
301	35.	49.	26.	16.	22.	19.	23.	18.	9.	13.
3[illegible]	8.	12.	9.	4.	4.	2.	4.	2.	1.	3.
3[illegible]	0.	1.	1.	1.	0.	2.	1.	2.	2.	1.
331	2.	1.	1.	3.	3.	3.	1.	4.	1.	1.
341	4.	3.	5.	3.	2.	5.	2.	2.	6.	3.
351	5.	1.	4.	3.	1.	6.	1.	2.	1.	3.
361	1.	2.	1.	3.	2.	0.	1.	1.	0.	1.
371	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
421	1.	0.	0.	1.	0.	1.	0.	0.	0.	1.
431	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	1.	0.	1.	0.	0.	0.	1.	1.	0.
471	1.	2.	0.	1.	1.	0.	0.	1.	1.	1.
481	0.	0.	1.	1.	1.	1.	0.	1.	0.	0.
491	0.	1.	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

R Willis 11-16-93

SAMPLE
J1304-5682
File ID: 3a3738.CNF

WHC-SD-WM-DP-057 REV O

Counted on: 11/16/93 @ 1: 5
Detector: AEA3
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	187.3	187.3	249.821	249.821	18.000	9.371	9.000	1.942

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	1.013	5.276	5.252	0.024	0.04	10.05	2.8	67.5	0.304E-04
Totals:		1.013	<--valid peaks only-->				10.05			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.078 + (0.0047)*Channel
Energy range (MeV): 4.078 TO 6.484
Efficiency = 0.1504 CPM/DPM

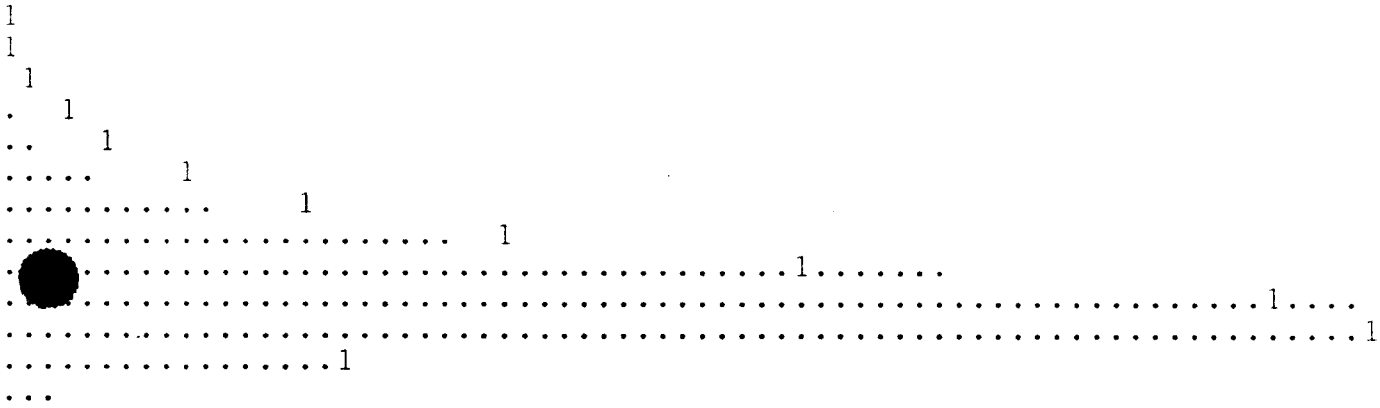
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	4762.0	100.000
Smoothed	4762.0	100.000
Composite fit	4823.6	101.293
Residuals	-61.6	-1.293

Analyzed by: _____
ALJ

Spectrum 3a3738.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 1263.5



BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 3a3738.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.	0.	0.	0.	0.
31	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	1.	1.	0.	0.	0.	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	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
111	1.	0.	0.	0.	0.	1.	0.	0.	1.	0.
121	1.	0.	0.	1.	1.	0.	0.	0.	0.	0.
131	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
141	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.
151	0.	1.	2.	0.	0.	1.	0.	0.	0.	0.
161	0.	1.	2.	0.	1.	1.	1.	0.	0.	2.
171	0.	0.	1.	0.	0.	0.	1.	2.	2.	3.
181	1.	1.	4.	1.	1.	3.	2.	0.	3.	2.
191	4.	2.	1.	3.	2.	7.	5.	8.	5.	4.
201	10.	5.	4.	6.	4.	5.	7.	11.	12.	13.
211	12.	17.	10.	9.	16.	21.	19.	23.	23.	23.
221	39.	29.	35.	29.	42.	34.	57.	51.	56.	53.
231	68.	100.	97.	87.	114.	124.	115.	125.	120.	158.
241	141.	147.	159.	163.	158.	165.	167.	201.	210.	191.
251	173.	213.	161.	138.	110.	73.	34.	38.	26.	30.
261	18.	19.	20.	15.	9.	9.	3.	6.	4.	0.
271	2.	1.	0.	0.	0.	0.	0.	1.	1.	0.
281	0.	2.	2.	0.	1.	2.	1.	0.	2.	0.
291	0.	1.	0.	0.	2.	2.	0.	2.	0.	1.
301	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
311	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
321	0.	0.	0.	0.	2.	0.	1.	0.	0.	0.
331	0.	1.	0.	0.	1.	0.	0.	0.	1.	2.
341	3.	4.	1.	4.	0.	2.	2.	4.	3.	1.
351	2.	0.	2.	4.	0.	2.	3.	1.	2.	1.
361	1.	0.	0.	0.	1.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	1.	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.	1.
471	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

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
J1287-5782
File ID: 4a4968.CNF

RWilliams 11-16-93

WHC-SD-WM-DP-057 REV O

Counted on: 11/16/93 @ 1: 6
Detector: AEA4
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	40.8	40.8	304.324	304.324	10.000	4.524	5.000	2.803
2	121.9	121.9	259.125	259.125	12.000	3.675	6.000	2.275

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
	Pu238	0.224	5.499	5.512	-.013	0.02	1.04	8.8	19.4	0.872E-05
	Am241		5.480	5.512	-.032				14.8	0.668E-05
2	Am243	0.630	5.276	5.299	-.023	0.02	2.93	5.2	39.6	0.178E-04
Totals:		0.855	<--valid peaks only-->				3.97			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.081 + (0.0047)*Channel
Energy range (MeV): 4.081 TO 6.488
Efficiency = 0.0747 CPM/DPM

TOTAL COUNT DATA:

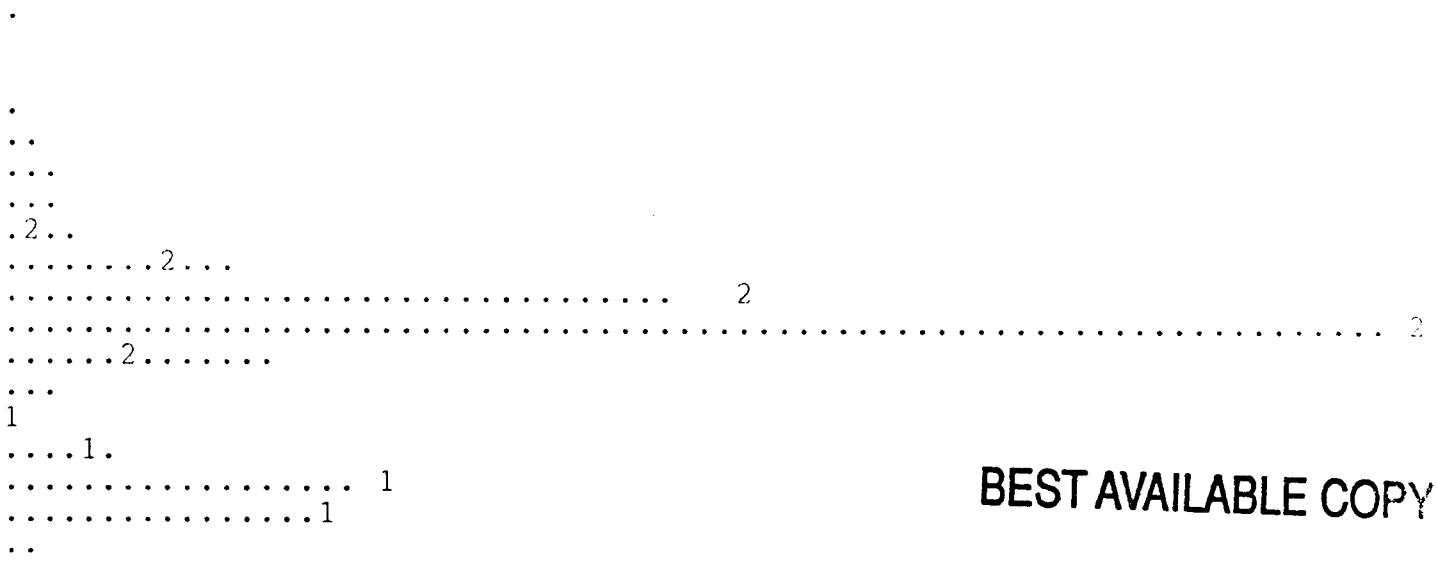
Item	Total	% Recovery
Raw spectrum	2229.0	100.000
Smoothed	2229.0	100.000
Composite fit	1904.9	85.459
Residuals	324.1	14.541

Analyzed by: _____
ALJ

Spectrum 4a4968.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 744.2

WHC-SD-WM-DP-057 REV O



BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 4a4968.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	1.	0.	0.	0.	1.	0.	0.	0.	0.	1.
31	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
[illegible]	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
61	0.	0.	1.	0.	0.	1.	0.	0.	1.	0.
71	1.	0.	0.	0.	0.	0.	0.	0.	0.	2.
81	0.	0.	2.	0.	0.	0.	0.	0.	0.	0.
91	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	0.	1.	1.	1.	0.	0.	0.	0.	0.	0.
111	0.	2.	0.	0.	1.	0.	1.	0.	0.	0.
121	0.	0.	0.	1.	2.	0.	2.	1.	0.	0.
131	0.	2.	0.	0.	0.	1.	0.	1.	0.	0.
141	2.	1.	0.	2.	0.	0.	0.	0.	0.	1.
151	0.	0.	0.	0.	1.	2.	1.	1.	2.	1.
161	1.	0.	2.	0.	1.	0.	2.	1.	2.	1.
171	2.	1.	1.	0.	1.	2.	0.	2.	2.	5.
181	0.	0.	3.	1.	2.	1.	2.	1.	1.	0.
191	0.	2.	1.	1.	1.	1.	2.	1.	2.	1.
201	1.	1.	1.	1.	0.	3.	4.	5.	6.	2.
211	1.	5.	1.	2.	3.	4.	3.	4.	5.	4.
221	4.	2.	8.	4.	6.	6.	5.	3.	4.	5.
231	6.	4.	3.	6.	7.	3.	7.	6.	12.	8.
241	11.	22.	10.	17.	15.	15.	22.	42.	29.	37.
251	45.	40.	43.	36.	62.	93.	109.	137.	158.	138.
261	117.	68.	51.	18.	17.	12.	9.	7.	12.	8.
271	9.	10.	7.	4.	2.	4.	0.	1.	0.	2.
281	1.	3.	5.	0.	5.	3.	1.	0.	2.	10.
291	4.	8.	11.	15.	14.	15.	16.	18.	12.	22.
301	25.	30.	43.	47.	64.	26.	27.	23.	12.	10.
3[illegible]	9.	11.	1.	2.	4.	1.	0.	0.	1.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
341	0.	0.	0.	0.	1.	0.	1.	0.	3.	0.
351	0.	0.	2.	2.	0.	1.	1.	1.	0.	1.
361	1.	0.	1.	0.	1.	2.	1.	1.	0.	0.
371	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	1.	0.	0.	0.	0.	1.	1.	0.	1.	1.
481	0.	2.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

BEST AVAILABLE COPY

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

11-16-93

SAMPLE
J1287-5782
File ID: 8a8552.CNF

Counted on: 11/16/93 @ 1: 9
Detector: AEA8
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	99.5	99.5	303.335	303.335	16.000	9.056	8.000	2.769
2	170.0	170.0	257.427	257.401	16.000	8.396	8.000	2.567

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	0.337	5.480	5.513	-.033	0.04	4.23	4.4	40.0	0.180E-04
	Pu238		5.499	5.513	-.014				52.2	0.235E-04
2	Am243	0.573	5.276	5.297	-.021	0.04	7.18	3.4	64.6	0.291E-04
Totals:		0.910	<--valid peaks only-->				11.41			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.088 + (0.0047)*Channel
Energy range (MeV): 4.088 TO 6.494
Efficiency = 0.1124 CPM/DPM

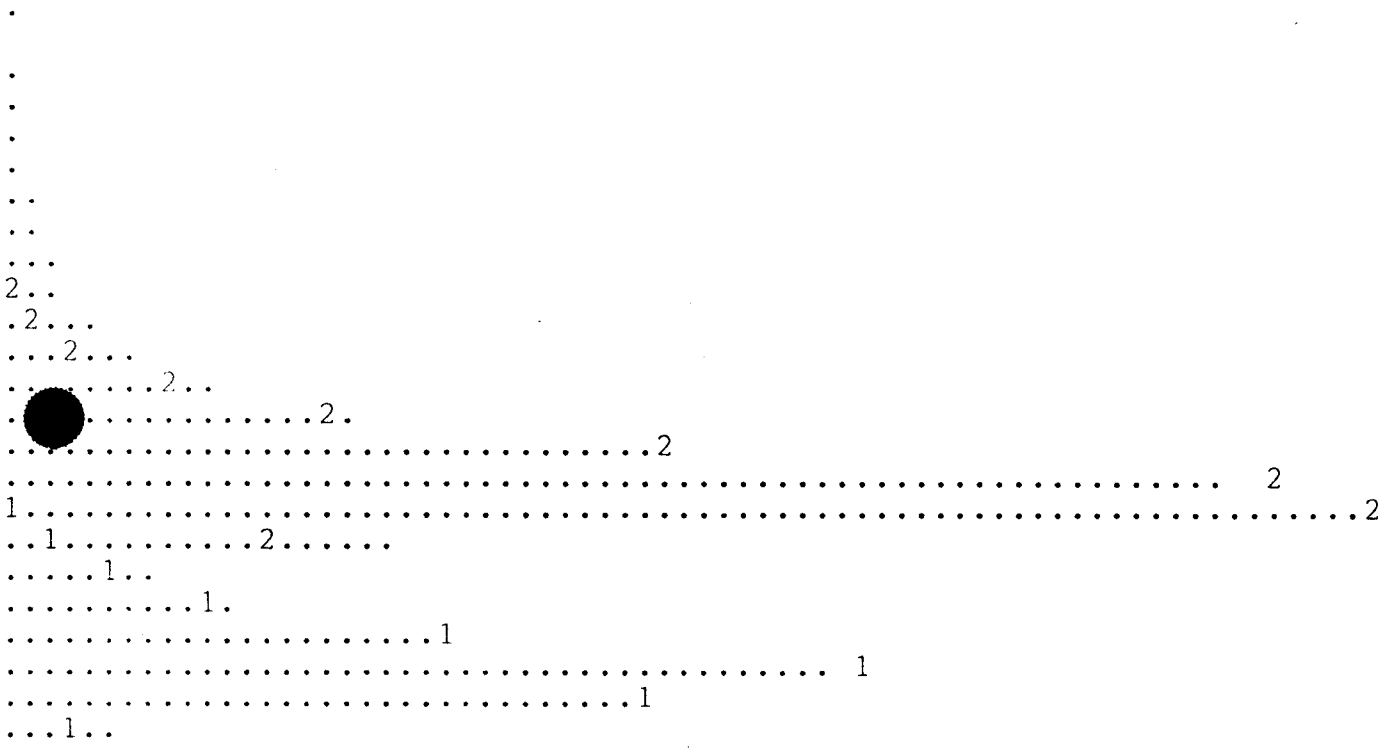
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	6018.0	100.000
Smoothed	6018.0	100.000
Composite fit	5476.4	91.001
Residuals	541.6	8.999

Analyzed by: _____
ALJ

Spectrum 8a8552.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 1089.1



BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 8a8552.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	2.	2.	1.
21	0.	1.	0.	0.	1.	3.	0.	1.	1.	1.
31	0.	2.	1.	3.	0.	2.	0.	3.	0.	3.
41	1.	0.	1.	1.	2.	1.	1.	0.	1.	3.
51	4.	0.	0.	1.	5.	1.	0.	1.	1.	2.
61	2.	1.	1.	1.	3.	1.	2.	3.	0.	0.
71	0.	4.	0.	2.	1.	1.	1.	1.	0.	2.
81	2.	1.	1.	1.	1.	0.	1.	2.	3.	2.
91	2.	1.	1.	4.	1.	3.	3.	1.	1.	0.
101	1.	2.	2.	1.	1.	3.	1.	1.	1.	1.
111	0.	2.	1.	2.	1.	0.	3.	3.	1.	1.
121	1.	4.	0.	2.	1.	3.	1.	2.	0.	0.
131	6.	1.	1.	2.	5.	2.	2.	4.	0.	0.
141	1.	0.	3.	4.	5.	2.	0.	1.	3.	3.
151	4.	3.	2.	5.	1.	1.	3.	2.	5.	1.
161	1.	4.	1.	2.	4.	1.	6.	2.	2.	1.
171	3.	6.	5.	5.	2.	2.	3.	4.	5.	3.
181	4.	6.	8.	4.	4.	2.	10.	5.	4.	4.
191	2.	6.	5.	11.	9.	5.	9.	6.	4.	11.
201	2.	3.	13.	7.	12.	5.	9.	6.	4.	11.
211	10.	4.	14.	13.	17.	15.	12.	22.	11.	8.
221	13.	16.	13.	12.	17.	25.	10.	29.	27.	17.
231	25.	35.	33.	22.	31.	40.	34.	41.	51.	48.
241	53.	48.	45.	85.	77.	86.	91.	93.	87.	97.
251	98.	131.	121.	161.	137.	183.	193.	214.	154.	136.
261	145.	110.	85.	58.	39.	42.	25.	30.	36.	17.
271	15.	13.	18.	21.	10.	12.	11.	13.	21.	22.
281	17.	22.	29.	20.	28.	23.	25.	31.	35.	37.
291	44.	37.	64.	53.	65.	52.	50.	71.	93.	67.
301	83.	115.	115.	109.	94.	88.	81.	56.	49.	28.
311	36.	22.	15.	17.	8.	11.	7.	2.	3.	1.
321	1.	0.	1.	1.	0.	0.	0.	1.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
341	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
351	1.	1.	3.	1.	1.	0.	1.	0.	1.	0.
361	0.	1.	0.	1.	0.	1.	1.	0.	0.	0.
371	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
441	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
471	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
481	1.	0.	1.	0.	1.	0.	0.	0.	1.	0.
491	0.	1.	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

Rullelli 11-16-93

SAMPLE
J1287-5782
File ID: 6a6801.CNF

WHC-SD-WM-DP-057 REV O

Counted on: 11/16/93 @ 1: 7
Detector: AEA6
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	35.9	35.9	241.864	240.869	40.000	108.313	20.000	38.600
2?	17.5	17.5	225.060	221.221	24.000	5.723	12.000	38.600

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	0.482	5.276	5.219	0.057	0.51	3.73	4.6	29.1	0.131E-04
	Pu240		5.144	5.219	-.075				28.8	0.130E-04
2		????		5.126			0.42	30.1		
Totals:		0.482	<--valid peaks only-->				3.73			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.087 + (0.0047)*Channel
Energy range (MeV): 4.087 TO 6.493
Efficiency = 0.1295 CPM/DPM

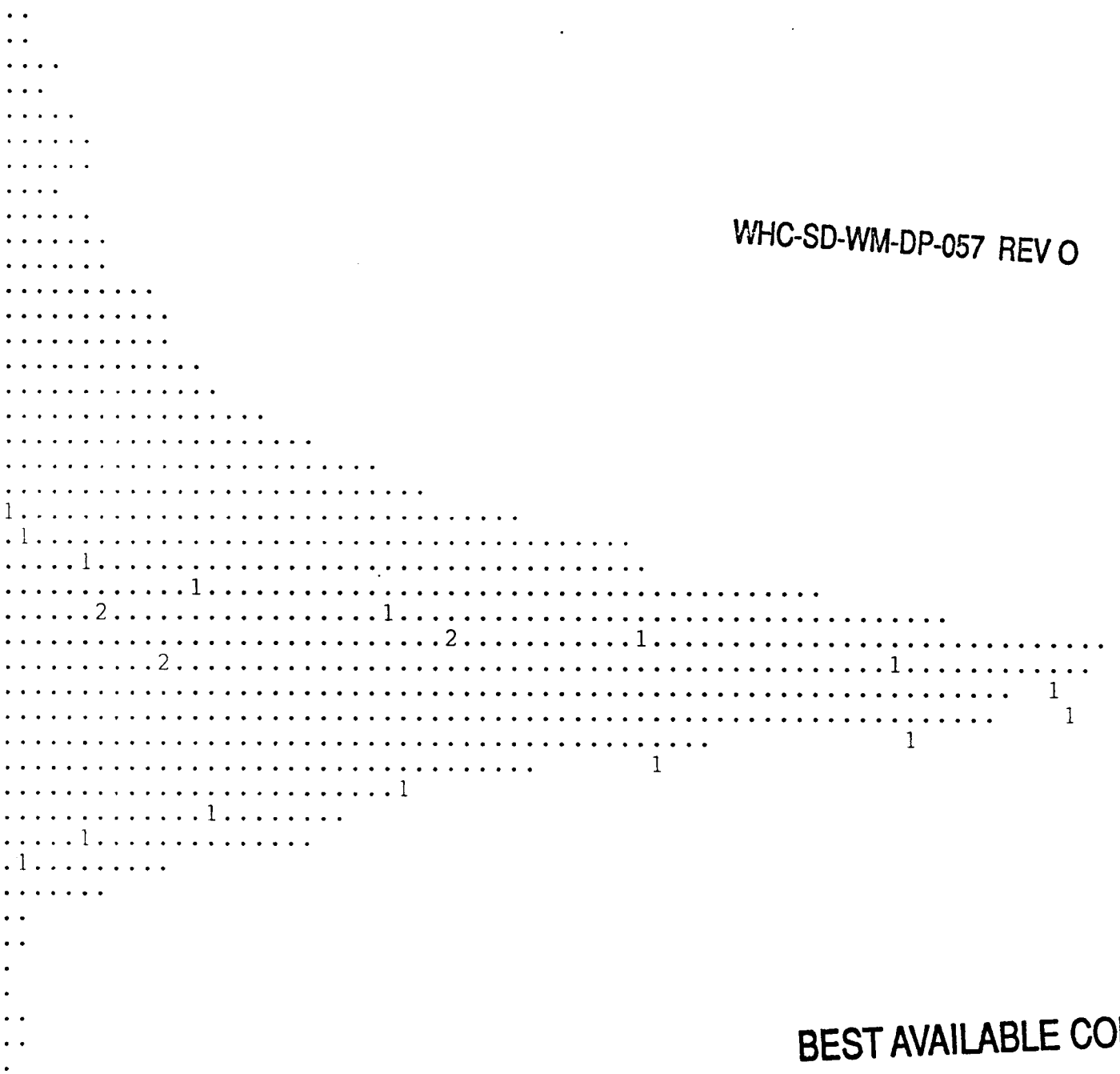
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	3713.0	100.000
Smoothed	3717.8	100.130
Composite fit	1990.6	53.611
Residuals	1722.4	46.389

Analyzed by: _____
ALJ

Spectrum 6a6801.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 287.2



WHC-SD-WM-DP-057 REV O

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 6a6801.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	2.	0.	1.	1.
21	2.	1.	1.	4.	2.	1.	0.	0.	0.	3.
31	0.	1.	1.	4.	4.	0.	5.	2.	3.	0.
41	3.	2.	0.	2.	3.	2.	3.	2.	0.	1.
[illegible]	3.	1.	3.	6.	4.	3.	3.	5.	2.	3.
[illegible]	1.	2.	4.	5.	5.	4.	2.	1.	6.	6.
71	4.	1.	4.	0.	2.	2.	0.	2.	2.	4.
81	2.	4.	5.	4.	2.	5.	2.	2.	7.	2.
91	5.	4.	5.	4.	2.	5.	4.	6.	2.	5.
101	1.	5.	2.	3.	3.	8.	5.	6.	7.	5.
111	6.	6.	4.	7.	6.	6.	5.	8.	6.	8.
121	6.	6.	4.	3.	7.	8.	6.	7.	5.	13.
131	7.	6.	6.	5.	5.	9.	11.	6.	5.	7.
141	5.	10.	6.	10.	10.	12.	11.	9.	9.	7.
151	6.	10.	8.	20.	6.	9.	9.	14.	13.	8.
161	12.	20.	18.	12.	7.	15.	7.	9.	18.	12.
171	14.	12.	17.	16.	14.	17.	18.	15.	13.	19.
181	13.	28.	16.	18.	23.	16.	24.	20.	33.	17.
191	16.	17.	20.	21.	20.	22.	26.	19.	21.	22.
201	27.	22.	35.	24.	26.	36.	23.	28.	30.	33.
211	32.	27.	39.	23.	37.	28.	38.	41.	30.	35.
221	35.	46.	34.	36.	40.	38.	34.	45.	30.	24.
231	30.	40.	40.	29.	27.	43.	26.	24.	39.	35.
241	[illegible]	31.	33.	39.	32.	32.	27.	27.	26.	21.
251	21.	28.	23.	22.	15.	20.	18.	17.	18.	16.
261	15.	22.	16.	11.	19.	16.	14.	10.	10.	11.
271	17.	10.	10.	16.	9.	15.	15.	9.	6.	11.
281	11.	11.	10.	13.	9.	14.	5.	12.	11.	6.
291	1.	5.	5.	9.	2.	0.	8.	4.	5.	2.
301	6.	5.	1.	3.	3.	2.	1.	0.	1.	0.
[illegible]	1.	0.	2.	1.	0.	1.	4.	1.	0.	2.
[illegible]	1.	0.	1.	1.	1.	1.	0.	1.	0.	0.
331	1.	1.	0.	2.	1.	0.	0.	1.	2.	1.
341	0.	3.	2.	0.	2.	2.	0.	1.	2.	1.
351	1.	0.	0.	1.	1.	1.	2.	0.	0.	0.
361	0.	1.	1.	0.	0.	0.	1.	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.	2.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	1.	0.	0.	0.	0.	0.	0.	1.	1.	1.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
451	0.	0.	0.	0.	0.	1.	0.	0.	1.	1.
461	0.	0.	1.	1.	1.	3.	1.	0.	0.	1.
471	0.	3.	3.	1.	1.	1.	0.	1.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	1.	0.	3.	1.	5.	6.	5.	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

Pullen 11-16-93

SAMPLE
J1287-5982
File ID: 7a7338.CNF

WHC-SD-WM-DP-057 REV O

Counted on: 11/16/93 @ 1: 8
Detector: AEA7
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	50.2	50.2	300.055	302.046	22.000	10.762	11.000	1.167
2	71.3	71.3	256.996	256.824	12.000	6.650	6.000	0.604

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	0.509	5.480	5.497	-.017	0.05	4.37	4.3	38.9	0.175E-04
	Pu238		5.499	5.497	0.002				50.8	0.229E-04
2	Am243	0.800	5.276	5.285	-.009	0.03	6.88	3.8	58.1	0.262E-04
Totals:		1.309	<--valid peaks only-->				11.25			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.078 + (0.0047)*Channel
Energy range (MeV): 4.078 TO 6.484
Efficiency = 0.1196 CPM/DPM

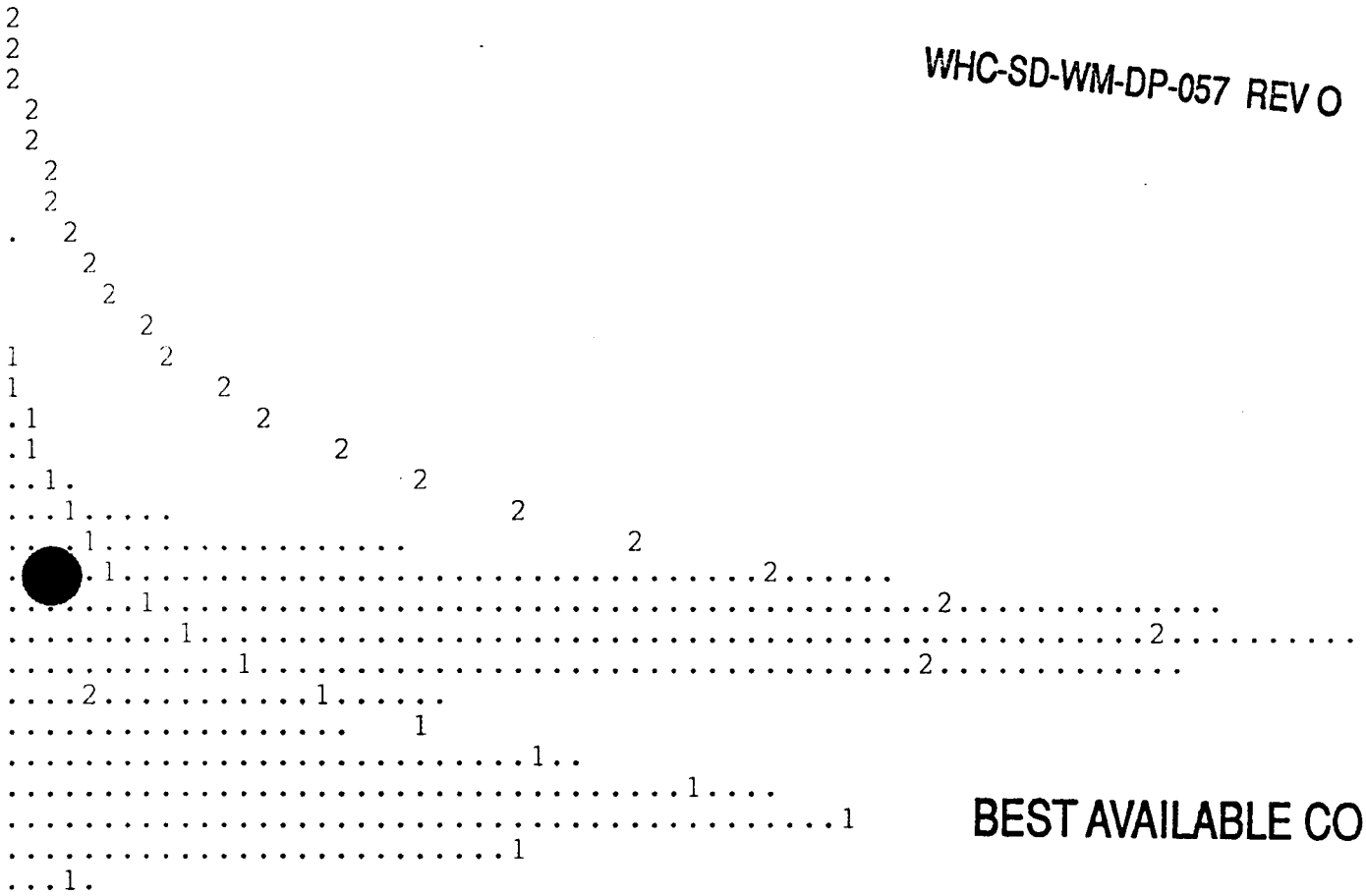
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	4126.0	100.000
Smoothed	4126.0	100.000
Composite fit	5399.9	130.874
Residuals	-1273.9	-30.874

Analyzed by: _____
J128

Spectrum 7a7338.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 595.9



WHC-SD-WM-DP-057 REV O

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 7a7338.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
21	0.	1.	0.	0.	0.	1.	0.	0.	1.	0.
31	0.	0.	1.	0.	2.	0.	1.	0.	0.	0.
41	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
51	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	1.	0.	0.	1.	0.	0.	1.	0.
71	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
81	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
91	1.	0.	1.	0.	1.	0.	1.	0.	0.	0.
101	0.	0.	0.	2.	0.	2.	0.	0.	3.	0.
111	0.	1.	1.	0.	1.	0.	2.	0.	1.	0.
121	0.	2.	1.	1.	1.	0.	0.	0.	0.	0.
131	1.	1.	0.	1.	0.	0.	1.	1.	0.	0.
141	1.	1.	2.	3.	0.	1.	0.	2.	1.	3.
151	0.	1.	0.	1.	0.	1.	1.	0.	0.	0.
161	0.	0.	0.	1.	1.	0.	2.	0.	2.	0.
171	0.	2.	0.	0.	2.	1.	1.	0.	1.	0.
181	1.	0.	1.	1.	0.	0.	1.	4.	3.	1.
191	0.	2.	1.	1.	5.	2.	3.	2.	0.	2.
201	1.	5.	0.	1.	3.	3.	6.	4.	4.	4.
211	3.	5.	5.	6.	7.	9.	6.	7.	8.	9.
221	14.	11.	14.	15.	23.	11.	12.	25.	36.	36.
231	31.	34.	29.	42.	44.	55.	54.	69.	65.	61.
241	65.	57.	90.	59.	71.	64.	67.	80.	75.	73.
251	68.	70.	72.	81.	78.	83.	84.	105.	76.	63.
261	62.	48.	42.	30.	32.	16.	20.	18.	27.	16.
271	20.	8.	13.	17.	22.	15.	18.	21.	25.	31.
281	29.	23.	38.	34.	32.	37.	42.	42.	31.	47.
291	46.	35.	58.	38.	40.	54.	51.	43.	48.	61.
301	41.	50.	45.	49.	44.	47.	24.	23.	19.	19.
311	15.	11.	5.	6.	4.	1.	3.	2.	3.	4.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	1.	0.	0.	0.	2.	0.	0.	0.	0.
341	0.	1.	1.	0.	0.	1.	0.	1.	2.	0.
351	1.	0.	0.	0.	1.	0.	0.	0.	1.	1.
361	2.	1.	0.	0.	1.	0.	0.	1.	0.	0.
371	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	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.	1.	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.	0.	0.	2.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	3.	0.								

BEST AVAILABLE COPY

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

11-16-93

SAMPLE
J1287-5982
File ID: 5a5891.CNF

Counted on: 11/16/93 @ 1: 7
Detector: AEA5
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	63.8	63.8	300.710	300.710	18.000	13.754	9.000	6.854
2	95.8	95.8	256.240	256.224	20.000	14.783	10.000	5.912

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
	Am241	0.359	5.480	5.499	-.019	0.06	2.56	5.6	20.1	0.904E-05
	Pu238		5.499	5.499	0.000				26.2	0.118E-04
2	Am243	0.588	5.276	5.290	-.014	0.07	4.20	4.4	31.2	0.141E-04
Totals:		0.948	<--valid peaks only-->				6.76			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.086 + (0.0047)*Channel
Energy range (MeV): 4.086 TO 6.492
Efficiency = 0.1359 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	3426.0	100.000
Smoothed	3426.0	100.000
Composite fit	3246.2	94.752
Residuals	179.8	5.248

Analyzed by: _____
ALJ

Spectrum 5a5891.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 672.5


```
.
.
.
.
.2
....2
.......... 2
..............................2....
.............................................................2...
.............................................................  2
1...................2
.21....
........1
...........................1
.............................................  1
...........................1
....1..
.
.
```

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 5a5891.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.	0.	0.	0.	1.	0.	0.	0.	0.
31	1.	0.	1.	0.	1.	0.	0.	0.	0.	1.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
[illegible]	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
61	0.	1.	0.	1.	0.	0.	0.	0.	1.	0.
71	0.	1.	0.	1.	1.	1.	0.	1.	0.	0.
81	0.	1.	0.	0.	0.	0.	2.	0.	1.	0.
91	0.	0.	1.	0.	2.	1.	0.	1.	2.	1.
101	1.	3.	0.	2.	3.	1.	0.	0.	2.	2.
111	2.	1.	0.	2.	0.	1.	1.	1.	1.	1.
121	1.	1.	0.	0.	1.	1.	1.	0.	1.	0.
131	0.	1.	1.	1.	0.	0.	0.	1.	0.	1.
141	1.	0.	0.	2.	1.	1.	1.	1.	0.	0.
151	0.	1.	1.	1.	0.	0.	3.	2.	0.	1.
161	1.	0.	1.	1.	0.	0.	2.	2.	0.	1.
171	0.	1.	0.	0.	2.	1.	0.	3.	0.	0.
181	1.	0.	3.	1.	0.	1.	3.	1.	0.	1.
191	0.	1.	2.	1.	1.	2.	0.	1.	2.	0.
201	1.	1.	3.	0.	5.	1.	2.	4.	1.	1.
211	1.	2.	2.	2.	1.	5.	1.	2.	2.	5.
221	6.	3.	4.	4.	3.	4.	5.	7.	5.	4.
231	7.	8.	5.	5.	15.	14.	20.	10.	15.	16.
241	20.	38.	28.	37.	47.	65.	76.	71.	66.	95.
251	85.	74.	99.	94.	91.	112.	90.	96.	89.	76.
261	84.	49.	53.	47.	28.	22.	17.	20.	18.	12.
271	12.	8.	14.	4.	10.	12.	5.	4.	5.	6.
281	12.	6.	9.	14.	12.	12.	15.	14.	19.	25.
291	34.	34.	33.	55.	45.	44.	58.	60.	57.	65.
301	82.	57.	54.	49.	53.	43.	47.	26.	26.	17.
3[illegible]	20.	13.	15.	11.	5.	8.	3.	2.	3.	3.
321	3.	0.	0.	1.	0.	1.	0.	0.	0.	1.
331	0.	1.	1.	0.	1.	1.	0.	1.	3.	1.
341	0.	1.	0.	1.	1.	2.	3.	1.	3.	1.
351	3.	1.	2.	2.	2.	0.	0.	1.	0.	1.
361	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
371	1.	0.	0.	0.	1.	1.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
431	0.	0.	1.	0.	0.	0.	1.	1.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
471	0.	0.	0.	1.	1.	1.	1.	0.	1.	0.
481	1.	1.	2.	5.	1.	0.	0.	0.	1.	0.
491	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

BEST AVAILABLE COPY

23 ~~GA~~ 30

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY WHC-SD-WM-DP-057 REV O

ANALYTICAL BATCH

Lab Segment Serial No. J1289	Customer ID: KE24A
Analysis: Am 241	Sample Prep: Direct

Instrument: WB537237	Procedure/ Rev: LA-503-156 D-0
Technologist: Joel M Van Sant	Date: 12-7-93
Starting Time: 0900	Temperature N/A
Ending Time: 2100	Chemist: L L FRITTS

Comments:

	Description	Lab ID		Description	Lab ID
1	LMCS CHECK STD	J1305-5582	11		
2	REAGENT BLANK	J1306-5682	12		
3	SAMPLE	J1289-5782	13		
4	SAMPLE DUP	J1289-5782	14		
5	SAMPLE TRIP	J1289-5782	15		
6	SPIKE	J1289-5982	16		
7	SPIKE DUP	J1289-5982	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 .100-10-1ml			
SPIKE	78B43 .100ml			

639

A-6000-881 (03/92)

ANALYTICAL BATCH SUMMARY SHEET WHC-SD-WM-DP-057 REV O

METHOD: LA-503-156

DATE START: December 7, 1993

PREPARED BY: L.L. Fritts LLFritts 12.9.93

DATE COMPLETE: December 9, 1993

	UNITS:	uCi/mL									
SPL NAME	SPL ID	ANALYTE	RESULT #1	RESULT #2	RESULT #3	AVERAGE	2*SD	PREC	%REC	DET LIM	% CT ER
STD 63B43	J1305	Am-241	2.80E+1						104.5	1.71E-3	5.2
BLANK	J1306	Am-241	1.30E-2						25.2	7.47E-4	5.6
KE24A	J1289	Am-241	1.17E-2	1.19E-2	1.23E-2	1.20E-2	6.11E-4	5.1	4.2	7.47E-4	11.9
									15.4	7.47E-4	9.4
			LLF 12.20.93						37.9	7.47E-4	4.2
			105.4	101.9							
KE24A	J1289	241 Spike	~~103.7~~	~~103.7~~					50.7	1.49E-3	2.2
									63.0	1.49E-3	2.6

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.

The results for the spike are in percent recovery.

The blank has an actual value, but precision and spike recoveries are within control limits.

Value on blank does not appear to be a contamination problem involving the values for the sample--no rerun requested.

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

#5 5946 Batch 2342

RERUN

Serial No	Sample Point		Time Issued	Priority
J 1305.-5582	BECHTOLD	11- 8-93	11:56	18

Determination	Method-Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	% RECOVERY	E14157	2

Sample Size	Customer ID
?.100mL-10-1mL + .100mL spike	STD

Remarks, Calculations, Results:

EDP R201 AR001 78B43

STD# 63B43 RESULT 28.0

STD VAL 26.796 %REC 104.5%

"AEA" - 480MIN

ATTACH PRINTOUT

WHC-SD-WM-DP-057 REV O

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
J Van Sant	[signature]	Raymond	D.H. Milicia	
Hrs	Hrs	Hrs	Hrs	Hrs
		12-8-93	E. Cabrera's	

Date	Time Completed	Lab Unit Mgr	
12-7-93		[signature]	E. Cabreras

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

BEST AVAILABLE COPY

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

			STANDARD
Serial No.	Spike (Tracer) Book Number		78B43
J1305-5582	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2342	Volume of Sample in mL	(SS)	1
Rerun No.	Dilution Factor	(DF)	101
2	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	664
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	813
Date	Total AT Count	(ATOT)	6950
12/07/93	AT Count Time in Minutes	(MIN CT'd)	30
	Background in CPM	(BKG)	6

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

µCi/mL = µCi/L / (1000mL/L)

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

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

Am-241 µCi/L	=	2.80E+01
Am-241 µCi/mL	=	2.80E-02
Relative counting error	=	5.2%
Am-243 Tracer Recovery	=	33.0%

Data Entry by:	[signature]	Date:	09-Dec-93
Approved by:	[signature]	Date:	December 9, 1993

641

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#1 12-7-93 KJ
6950-6
30

J1305-5582

WHC-SD-WM-DP-057 REV O

BEST AVAILABLE COPY

PLACE ANALYTICAL CARD IN BOX BELOW DO NOT WRITE IN SPACE

WHC-SD-WM-DP-057 REV 0

#6 6856

RERUN

Serial No.	Sample Point		Time Issued	Priority
J 1306.-5682	BECHTOLD	11- 8-93	12: 2	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	E14157	2

Sample Size: 1-10-.25 12.9.93 + .100mL Spike

Customer ID: BLK

Remarks, Calculations, Results:

REAGENT BLANK

COUNT AS uCI/L

78B43

1.30×10^{-2} uCi/ml

"AEA" - 480MIN

ATTACH PRINTOUT

Analyst 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
	A. Johanse	Raymond	D.A. Meticia	
Hrs	Hrs 12-7-93	Hrs 12.8.93	Hrs E. Cativeras	Hrs

Date	Time Completed	Lab Unit Mgr	
12-7-93		K. Fitts	E. Cativeras

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

BEST AVAILABLE COPY

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

			BLANK
Serial No.	Spike (Tracer) Book Number		78B43
J1306-5682	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2342	Volume of Sample in mL	(SS)	0.25
Rerun No.	Dilution Factor	(DF)	11
2	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	588
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	676
Date	Total AT Count	(ATOT)	5359
12/07/93	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

Am-241 µCi/L	=	1.30E+01
Am-241 µCi/mL	=	1.30E-02
Relative counting error	=	5.6%
Am-243 Tracer Recovery	=	25.2%

Data Entry by:	K. Fitts	Date:	09-Dec-93
Approved by:	K. Fitts	Date:	December 9, 1993

Form 3 Rev. 1.2

643

Page 1 of 1

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#2 12-7-93 AO

5359/30 -1

J1306-568z

WHC-SD-WM-DP-057 REV O

BEST AVAILABLE COPY

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

#1 7386 - RERUN WHC-SD-WM-DP-057 REV O

Serial No	Sample Point		Time Issued	Priority
J 1289.-5782	BECHTOLD	11- 4-93	9: 2	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	E14157	5

Sample Size	Customer ID
?1mL-10-.250mL + .100mL Spike	KE24A

Remarks, Calculations, Results Sample 78B43

COUNT AS uCI/L

1.17×10^{-2} uCi/ml

ATTACH PRINTOUT

1mL8MHNO3

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
		Raymond	D Hamilton	
Hrs	Hrs 12-7-93	Hrs 12-8-93	Hrs E. Contreras	Hrs
Date 12-7-93	Time Completed	Lab Unit Mgr.	E. Contreras	

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

BEST AVAILABLE COPY

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

			SAMPLE
Serial No.	Spike (Tracer) Book Number		78B43
J1289-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2342	Volume of Sample in mL	(SS)	0.25
Rerun No.	Dilution Factor	(DF)	11
2	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	126
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	161
Date	Total AT Count	(ATOT)	969
12/07/93	AT Count Time in Minutes	(MIN CT'd)	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 CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

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

Am-241 µCi/L	=	1.17E+01
Am-241 µCi/mL	=	1.17E-02
Relative counting error	=	11.9%
Am-243 Tracer Recovery	=	4.2%

Data Entry by:		Date:	09-Dec-93
Approved by:	645	Date:	December 9, 1993

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#3 12-7-93

969/30 - 4

J1289-5782

WHC-SD-WM-DP-057 REV O

BEST AVAILABLE COPY

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

#31 4023 RERUN WHC-SD-WM-DP-057 REV 0

Serial No.	Sample Point	Date	Time Issued	Priority
J 1289.-5782	BECHTOLD	11- 4-93	9: 2.	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	E14157	6

Sample Size	Customer ID
7mL-10-.250mL + .100 Spike 78B43	KE24A

Remarks, Calculations, Results: Sample Trip

COUNT AS uCI/L

1.19×10^{-2} µCi/ml

1mL 8mHNO3

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
	Raymond	D H Milian		
Hrs	Hrs 12.8.93	Hrs	Hrs E. Cantreras	Hrs
Date 12-7-93	Time Completed	Lab Unit Mgr	E. Cantreras	

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

BEST AVAILABLE COPY

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

			SAMPLE
Serial No.	Spike (Tracer) Book Number		78B43
J1289-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2342	Volume of Sample in mL	(SS)	0.25
Rerun No.	Dilution Factor	(DF)	11
2	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	205
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	258
Date	Total AT Count	(ATOT)	3253
12/07/93	AT Count Time in Minutes	(MIN CT'd)	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 CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

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

Am-241 µCi/L	=	1.19E+01
Am-241 µCi/mL	=	1.19E-02
Relative counting error	=	9.4%
Am-243 Tracer Recovery	=	15.4%

Data Entry by:	[signature]	Date:	09-Dec-93
Approved by:	[signature]	Date:	December 9, 1993

647

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#3 12.8.93

3253/30 - 4

J1289-5782

WHC-SD-WM-DP-057 REV O

BEST AVAILABLE COPY

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

WHC-SD-WM-DP-057 REV 0

#3 3514

RERUN

Serial No	Sample Point	Date	Time Issued	Priority
J 1289.-5782	BECHTOLD	11- 4-93	9: 2	18

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	E14157	7

Sample Size	Customer ID
?1mL-10-.250mL + .100mL spike	KE24A

Remarks, Calculations, Results Sample Triplicate 78B43

COUNT AS uCI/L

1.23×10^{-2} uCi/ml

ATTACH PRINTOUT

1m8MHNO3

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]	Raymond D H Milicia			
Hrs	Hrs 12.8.93	Hrs [signature]	Hrs E Cantrers	Hrs

Date	Time Completed	Lab Unit Mgr	
12-7-93		[signature]	E. Cantrers

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

BEST AVAILABLE COPY

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

			SAMPLE
Serial No.	Spike (Tracer) Book Number		78B43
J1289-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2342	Volume of Sample in mL	(SS)	0.25
Rerun No.	Dilution Factor	(DF)	11
2	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	1045
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	1266
Date	Total AT Count	(ATOT)	7844
12/07/93	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

Am-241 µCi/L	=	1.23E+01
Am-241 µCi/mL	=	1.23E-02
Relative counting error	=	4.2%
Am-243 Tracer Recovery	=	37.9%

Data Entry by: [signature]		Date:	09-Dec-93
Approved by: [signature]	649	Date:	December 9, 1993

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#2 R 12.8.93

7844/30 - 1

J1289-5782

BEST AVAILABLE COPY

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

#2 2450

WHC-SD-WM-DP-057 REV 0

RERUN

Serial No.	Sample Point	Date	Time Issued	Priority
J 1289.-5982	BECHTOLD	11- 4-93	9: 2	18

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	% RECOVERY	E14157	3

Sample Size	Customer ID
?mL-10-.250mL + .100-10-1mL std 63B43	KE24A

Remarks, Calculations, Results Spike + .200mL Spike 78B43

SAMPLE SPIKED ID 63B43

SPIKE ID 78B43

SPIKE VOLUME
COUNT AS uCI/L .200mL ~~103.7%~~ 105.4%

ATTACH PRINTOUT 12.20.93

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]	Raymond	D H Milian		
Hrs	Hrs 12.8.93	Hrs	Hrs E. Contreras	Hrs
Date 12-7-93	Time Completed	Lab Unit Mgr [signature]	E Contreras	

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

BEST AVAILABLE COPY

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

			CHK EXT NO.
Serial No.	Spike (Tracer) Book Number		78B43
J1289-5982	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.2
2342	Volume of Sample in mL	(SS)	0.25
Rerun No.	Dilution Factor	(DF)	11
2	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	2633
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	3281
Date	Total AT Count	(ATOT)	25845
12/07/93	AT Count Time in Minutes	(MIN CT'd)	30
	Background in CPM	(BKG)	6

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

Am-241 µCi/L	=	2.40E+01
Am-241 µCi/mL	=	2.40E-02
Relative counting error	=	2.6%
Am-243 Tracer Recovery	=	63.0%

Data Entry by: [signature]		Date:	09-Dec-93
Approved by: [signature]	651	Date:	December 9, 1993

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#1 VR 12.8.93

25845 - 6
30

J1289-5982

WHC-SD-WM-DP-057 REV O

BEST AVAILABLE COPY

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

WHC-SD-WM-DP-057 REV O

X8 8599

RERUN

Serial No.	Sample Point	Date	Time Issued	Priority
J 1289.-5982	BECHTOLD	11- 4-93	9: 2	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	% RECOVERY	E14157	4

Sample Size	Customer ID
9mL-10-.250mL + .100mL-10-1mL Std 63B43	KE24A

Remarks, Calculations, Results

Spike Dup

SAMPLE SPIKED ID 63B43 + .200 mL Spike 78B43

SPIKE ID 78B43

SPIKE VOLUME
COUNT AS uCI/L .200mL

"AEA" - 480MIN
ATTACH PRINTOUT

~~103.7%~~ 101.9% 12-20-93

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
	Raymond	D H Milian		
Hrs	Hrs 12.8.93	Hrs	Hrs E. Contreras	Hrs
Date 12.7.93	Time Completed	Lab Unit Mgr L L Fitts	E Contreras	

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

BEST AVAILABLE COPY

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

			CHK EXT NO.
Serial No.	Spike (Tracer) Book Number		78B43
J1289-5982	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.2
2342	Volume of Sample in mL	(SS)	0.25
Rerun No.	Dilution Factor	(DF)	11
2	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	3689
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	4625
Date	Total AT Count	(ATOT)	20644
12/07/93	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

Am-241 µCi/L	=	2.38E+01
Am-241 µCi/mL	=	2.38E-02
Relative counting error	=	2.2%
Am-243 Tracer Recovery	=	50.7%

Data Entry by: L L Fitts		Date:	09-Dec-93
Approved by: L L Fitts	653	Date:	December 9, 1993

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

2 12.8.93

20644/30 - 1

J1289-5982

WHC-SD-WM-DP-057 REV O

BEST AVAILABLE COPY

D. H. Milburn
12-8-93

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01

DATA REDUCTION REPORT

SAMPLE
J1305-5582
File ID: 5a5946.CNF

WHC-SD-WM-DP-057 REV O

Counted on: 12/ 8/93 @ 2:52
Detector: AEA5
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	616.1	616.1	299.536	299.536	22.000	18.015	11.000	3.380
2	711.5	711.5	253.831	253.558	20.000	16.141	10.000	1.957
3?	3.4	3.4	114.133	113.445	14.000	10.777	7.000	3.278

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	0.397	5.480	5.484	-.004	0.08	39.92	1.4	311.6	0.140E-03
	Pu238		5.499	5.484	0.015				406.8	0.183E-03
2	Am243	0.597	5.276	5.268	0.008	0.08	59.92	1.2	444.1	0.200E-03
	Pu240		5.144	5.268	-.124				439.6	0.198E-03
3		????		4.609			0.15	58.9		
		---					---			
Totals:		0.994	<--valid peaks only-->				99.84			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.076 + (0.0047)*Channel
Energy range (MeV): 4.076 TO 6.482
Efficiency = 0.1363 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	48216.0	100.000
Smoothed	48216.0	100.000
Composite fit	47998.3	99.548
Residuals	217.7	0.452

Analyzed by: _____
VR

Spectrum 5a5946.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5934.6

WHC-SD-WM-DP-057 REV O

```
3
3
3
3
3
2
2
.2
.2
..2
...2
.....2
......2.
.........2.
............2..
................2...
1.....................2.....
1.........................2...
.............................  2
..1.............................................. 2
....1.........................................................2......
.......1.................................2........
..........21............
2.................1.
.........................1
.........................................1
.........................................................1
..............................1
......1
```

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 5a5946.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	2.	2.	1.	1.
21	3.	4.	1.	2.	5.	2.	6.	4.	6.	3.
31	2.	2.	4.	2.	4.	0.	4.	3.	1.	5.
41	3.	3.	4.	3.	3.	1.	4.	3.	5.	3.
51	4.	3.	3.	5.	4.	4.	2.	5.	4.	6.
61	4.	0.	4.	2.	3.	5.	2.	3.	3.	10.
71	1.	1.	6.	5.	4.	3.	5.	2.	6.	4.
81	5.	4.	2.	7.	3.	1.	2.	3.	6.	2.
91	6.	5.	4.	9.	4.	3.	6.	4.	6.	5.
101	7.	5.	4.	5.	9.	12.	6.	3.	6.	14.
111	10.	8.	9.	11.	14.	6.	8.	12.	6.	11.
121	13.	11.	10.	10.	12.	11.	13.	13.	10.	14.
131	20.	11.	12.	15.	12.	22.	18.	23.	23.	17.
141	17.	19.	22.	16.	17.	21.	17.	26.	21.	14.
151	24.	30.	22.	22.	29.	22.	20.	43.	40.	30.
161	27.	30.	36.	44.	31.	35.	43.	43.	40.	38.
171	45.	60.	43.	48.	47.	57.	64.	65.	70.	71.
181	68.	68.	72.	76.	83.	71.	97.	84.	97.	90.
191	94.	82.	104.	119.	125.	127.	163.	121.	127.	146.
201	160.	138.	153.	159.	165.	171.	186.	207.	207.	199.
211	217.	204.	237.	240.	261.	253.	260.	294.	310.	308.
221	314.	309.	330.	386.	314.	359.	351.	354.	399.	380.
231	372.	345.	339.	398.	373.	383.	402.	392.	374.	419.
241	444.	456.	520.	530.	533.	559.	622.	684.	707.	770.
251	754.	799.	813.	797.	807.	763.	702.	666.	629.	559.
261	474.	453.	367.	306.	298.	262.	230.	227.	219.	186.
271	189.	194.	190.	207.	197.	184.	231.	234.	259.	244.
281	234.	289.	278.	273.	339.	358.	386.	351.	403.	448.
291	457.	479.	509.	518.	593.	598.	597.	626.	613.	664.
301	634.	561.	533.	512.	448.	449.	370.	330.	263.	206.
311	173.	150.	89.	80.	54.	44.	35.	33.	20.	18.
321	12.	8.	6.	1.	4.	0.	1.	2.	0.	0.
331	1.	1.	0.	2.	1.	2.	3.	1.	1.	5.
341	1.	0.	5.	3.	3.	4.	2.	4.	2.	0.
351	3.	2.	2.	3.	4.	2.	1.	2.	1.	3.
361	0.	2.	1.	3.	1.	1.	1.	0.	1.	0.
371	2.	0.	0.	0.	1.	1.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
431	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
471	0.	0.	0.	0.	0.	0.	1.	2.	1.	0.
481	1.	1.	1.	1.	2.	1.	1.	0.	1.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
511	0.	0.								

BEST AVAILABLE COPY

DIH Milbau
12-8-93

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01

DATA REDUCTION REPORT

SAMPLE
J1306-5682
File ID: 6a6856.CNF

WHC-SD-WM-DP-057 REV O

Counted on: 12/ 8/93 @ 2:53
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	535.1	535.1	297.140	297.140	26.000	28.155	13.000	4.189
2	561.3	561.3	251.975	250.496	26.000	24.356	13.000	4.836
3	9.9	9.9	155.233	154.947	18.000	70.561	9.000	22.876
4?	3.0	3.0	144.539	144.539	10.000	0.000	5.000	4.608
5?	3.1	3.1	139.678	137.191	10.000	2.820	5.000	9.127

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	0.524	5.480	5.468	0.012	0.13	43.56	1.4	354.6	0.160E-03
	Pu238		5.499	5.468	0.031				462.9	0.209E-03
2	Am243	0.455	5.276	5.249	0.027	0.11	37.87	1.7	292.7	0.132E-03
	Pu240		5.144	5.249	-.105				289.7	0.131E-03
3	Np237	0.010	4.640	4.800	-.160	0.33	0.85	19.6	108.4	0.488E-04
	Np237		4.781	4.800	-.019				7.5	0.337E-05
4		????		4.751			0.00	1000.		
5		????		4.717			0.05	120.		
Totals:		0.989	<--valid peaks only-->				82.28			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.072 + (0.0047)*Channel
Energy range (MeV): 4.072 TO 6.478
Efficiency = 0.1307 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	39932.0	100.000
Smoothed	39933.3	100.003
Composite fit	39522.0	98.973
Residuals	410.0	1.027

Analyzed by: _____
VR

WHC-SD-WM-DP-057 REV O

BEST AVAILABLE COPY

Spectrum 6a6856.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5079.4

WHC-SD-WM-DP-057 REV O

```
3
5
5
3
3
3
3.
3.
.2.
1.2.
1...2.
1......2.
.1..........2...
..1.................2...
.....1.............................2.......
......1.........................................2...........
.........1.........................................2............
.............1....................2...............
.........2........1.........
2.........................1
.....................................1.
.......................................................1.
.........................................................1
..............................1
.........1
1
```

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 6a6856.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	1.	1.	4.
21	2.	0.	3.	1.	0.	0.	2.	1.	2.	2.
31	0.	3.	1.	4.	4.	0.	1.	0.	1.	3.
41	1.	1.	1.	0.	4.	2.	0.	3.	1.	3.
51	2.	3.	3.	3.	4.	0.	4.	2.	3.	5.
61	3.	5.	4.	1.	1.	3.	4.	0.	1.	5.
71	2.	0.	0.	2.	7.	3.	3.	3.	3.	5.
81	3.	5.	4.	4.	4.	4.	4.	5.	4.	3.
91	9.	4.	3.	6.	4.	5.	5.	3.	7.	8.
101	7.	4.	6.	1.	8.	6.	2.	2.	8.	8.
111	3.	5.	5.	9.	8.	6.	6.	8.	6.	9.
121	7.	4.	6.	4.	6.	10.	11.	9.	7.	5.
131	7.	9.	6.	5.	9.	12.	10.	13.	12.	9.
141	14.	8.	10.	15.	11.	12.	10.	10.	12.	6.
151	11.	11.	9.	19.	18.	17.	14.	11.	8.	11.
161	16.	5.	13.	17.	17.	9.	15.	23.	20.	24.
171	15.	17.	12.	30.	23.	22.	22.	25.	24.	22.
181	22.	25.	31.	22.	28.	19.	29.	22.	37.	35.
191	22.	35.	43.	46.	38.	51.	37.	49.	42.	54.
201	49.	51.	44.	52.	63.	69.	47.	69.	79.	64.
211	100.	101.	98.	88.	90.	107.	121.	116.	152.	153.
221	159.	172.	171.	201.	194.	188.	226.	220.	232.	266.
231	263.	274.	303.	325.	373.	371.	382.	428.	431.	484.
241	523.	571.	509.	566.	619.	639.	634.	629.	672.	672.
251	652.	641.	662.	676.	611.	581.	525.	519.	498.	441.
261	396.	392.	349.	310.	286.	269.	239.	237.	201.	206.
271	213.	213.	196.	215.	231.	247.	240.	261.	301.	287.
281	285.	341.	335.	358.	339.	407.	471.	434.	444.	487.
291	476.	508.	519.	519.	516.	546.	522.	588.	516.	487.
301	470.	448.	454.	423.	361.	337.	312.	278.	245.	200.
311	169.	134.	119.	103.	92.	62.	54.	37.	38.	20.
321	24.	13.	15.	17.	4.	9.	4.	3.	2.	1.
331	0.	2.	2.	0.	0.	0.	0.	1.	0.	1.
341	3.	2.	0.	0.	1.	0.	1.	1.	0.	0.
351	1.	2.	1.	2.	2.	1.	1.	1.	1.	2.
361	0.	2.	0.	0.	0.	0.	1.	1.	0.	0.
371	0.	0.	0.	1.	0.	0.	0.	0.	0.	1.
381	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
421	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
431	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
441	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
461	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
471	3.	0.	3.	1.	0.	1.	2.	1.	0.	0.
481	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.
491	0.	0.	0.	1.	1.	2.	4.	2.	0.	0.
511	0.	0.								

BEST AVAILABLE COPY

D.H. Wilcox
12-8-93

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
J1289-5782
File ID: 7a7386.CNF

WHC-SD-WM-DP-057 REV O

Counted on: 12/ 8/93 @ 2:54
Detector: AEA7
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	110.4	110.4	301.232	301.232	20.000	13.611	10.000	5.978
2	138.5	138.5	255.488	255.470	18.000	11.610	9.000	5.269

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
	Am241	0.448	5.480	5.502	-.022	0.06	4.57	4.2	47.3	0.213E-04
	Pu238		5.499	5.502	-.003				61.8	0.278E-04
2	Am243	0.526	5.276	5.287	-.011	0.05	5.37	3.9	52.8	0.238E-04
Totals:		0.974	<--valid peaks only-->				9.94			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.086 + (0.0047)*Channel
Energy range (MeV): 4.086 TO 6.492
Efficiency = 0.1028 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	4898.0	100.000
Smoothed	4898.0	100.000
Composite fit	4772.6	97.441
Residuals	125.4	2.559

Analyzed by: _____
VR

Spectrum 7a7386.CNF
1 Legend: ¯Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 951.6

WHC-SD-WM-DP-057 REV 0

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

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 7a7386.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
21	0.	0.	0.	0.	1.	1.	1.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
[illegible]	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
71	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.
91	0.	0.	0.	1.	1.	0.	0.	0.	1.	0.
101	0.	0.	0.	0.	1.	0.	0.	0.	2.	0.
111	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.
121	1.	0.	1.	0.	0.	0.	0.	1.	0.	0.
131	1.	0.	0.	0.	0.	1.	0.	1.	0.	1.
141	1.	1.	0.	2.	1.	0.	0.	1.	0.	1.
151	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
161	1.	0.	0.	0.	0.	0.	1.	1.	0.	1.
171	1.	0.	0.	0.	0.	1.	0.	0.	0.	0.
181	0.	0.	1.	1.	2.	1.	2.	0.	1.	1.
191	1.	2.	1.	0.	2.	0.	1.	4.	5.	2.
201	1.	2.	0.	1.	4.	2.	1.	1.	1.	3.
211	4.	2.	2.	5.	2.	2.	3.	4.	4.	7.
221	3.	8.	9.	7.	2.	5.	4.	8.	7.	8.
231	4.	11.	12.	14.	23.	18.	20.	22.	33.	25.
241	25.	37.	42.	42.	62.	66.	73.	85.	103.	121.
251	118.	135.	116.	140.	161.	154.	125.	125.	121.	111.
261	88.	71.	50.	50.	33.	17.	18.	16.	20.	14.
271	11.	4.	6.	6.	10.	13.	14.	10.	12.	9.
281	12.	15.	13.	20.	20.	25.	34.	31.	39.	46.
291	54.	57.	59.	74.	73.	95.	103.	101.	115.	115.
301	126.	110.	102.	98.	125.	94.	66.	62.	48.	35.
3[illegible]	31.	18.	14.	13.	15.	7.	4.	3.	2.	3.
321	2.	1.	0.	0.	0.	0.	0.	1.	0.	0.
331	0.	0.	2.	0.	1.	0.	0.	0.	0.	0.
341	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
351	0.	1.	0.	1.	0.	0.	0.	0.	0.	1.
361	1.	1.	0.	0.	1.	0.	2.	1.	0.	0.
371	1.	1.	0.	0.	1.	0.	1.	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.	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.	1.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	1.	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	2.	0.								

BEST AVAILABLE COPY

12-8-93

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-057 REV O

SAMPLE
J1289-5782
File ID: 4a4023.CNF

Counted on: 12/ 8/93 @ 2:51
Detector: AEA4
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	189.1	189.1	300.564	300.564	32.000	8.063	16.000	16.278
2	154.1	154.1	292.115	289.368	14.000	4.443	7.000	0.616
3	194.5	194.5	249.558	245.620	32.000	33.978	16.000	6.315

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Peak Centroid Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am241	0.173	5.480	5.492	-.012	0.04	5.34	3.9	65.3	0.294E-04
	Pu238		5.499	5.492	0.007				85.2	0.384E-04
2	Th228	0.328	5.430	5.440	-.010	0.02	10.10	3.3	163.5	0.737E-04
3	Am243	0.479	5.276	5.234	0.042	0.16	14.78	2.8	171.6	0.773E-04
	Pu240		5.144	5.234	-.090				169.8	0.765E-04
Totals:		0.980	<--valid peaks only-->				30.22			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.080 + (0.0047)*Channel
Energy range (MeV): 4.080 TO 6.486
Efficiency = 0.0870 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	14805.0	100.000
Smoothed	14805.0	100.000
Composite fit	14504.3	97.969
Residuals	300.7	2.031

Analyzed by: _____
VR

Spectrum 4a4023.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 1695.0


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

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 4a4023.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
21	1.	0.	1.	2.	0.	1.	0.	0.	2.	1.
31	1.	0.	1.	1.	1.	0.	1.	0.	1.	0.
41	1.	1.	0.	1.	0.	1.	0.	0.	1.	0.
51	0.	1.	0.	0.	1.	2.	0.	3.	0.	1.
61	1.	0.	0.	0.	4.	0.	0.	0.	1.	1.
71	0.	1.	2.	2.	0.	2.	1.	2.	3.	1.
81	1.	0.	2.	1.	3.	1.	0.	4.	1.	2.
91	1.	2.	0.	5.	0.	3.	1.	2.	5.	1.
101	0.	6.	2.	1.	2.	2.	5.	2.	3.	3.
111	4.	3.	5.	3.	4.	2.	5.	2.	1.	6.
121	3.	7.	2.	5.	1.	1.	3.	2.	8.	3.
131	2.	3.	4.	4.	4.	4.	8.	4.	6.	3.
141	5.	10.	4.	7.	15.	4.	4.	5.	5.	8.
151	6.	7.	4.	8.	9.	7.	10.	7.	11.	5.
161	9.	7.	15.	12.	9.	12.	13.	14.	18.	11.
171	16.	20.	8.	18.	13.	14.	12.	16.	13.	13.
181	21.	21.	25.	19.	22.	28.	21.	21.	24.	25.
191	14.	34.	16.	22.	28.	28.	22.	29.	41.	34.
201	31.	29.	37.	41.	42.	40.	53.	36.	58.	52.
211	65.	44.	64.	58.	64.	59.	70.	70.	76.	75.
221	68.	74.	94.	88.	89.	89.	90.	100.	117.	106.
231	113.	125.	130.	150.	134.	144.	141.	179.	145.	189.
241	186.	201.	219.	218.	226.	258.	213.	213.	216.	225.
251	212.	232.	202.	189.	198.	214.	202.	190.	193.	144.
261	118.	97.	77.	64.	71.	59.	64.	74.	73.	76.
271	75.	72.	87.	86.	99.	109.	96.	77.	97.	103.
281	138.	127.	133.	156.	133.	164.	153.	153.	192.	187.
291	199.	205.	190.	195.	163.	151.	153.	170.	163.	166.
301	172.	174.	192.	124.	114.	82.	70.	43.	34.	13.
311	20.	21.	10.	4.	7.	3.	2.	3.	3.	1.
321	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
331	0.	0.	0.	0.	0.	2.	0.	2.	1.	0.
341	0.	0.	3.	0.	0.	0.	0.	0.	1.	3.
351	0.	1.	2.	2.	1.	0.	1.	2.	2.	0.
361	0.	0.	2.	0.	0.	1.	3.	0.	2.	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.	1.	0.	0.	0.	0.	0.	0.	0.	1.
421	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
431	1.	0.	1.	2.	1.	0.	0.	1.	0.	1.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	1.	1.	0.	0.	0.	1.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

BEST AVAILABLE COPY

D.H. Mercier
12-8-93

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
J1289-5782
File ID: 3a3514.CNF

WHC-SD-WM-DP-057 REV O

Counted on: 12/ 8/93 @ 2:50
Detector: AEA3
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	986.1	986.1	308.039	308.039	20.000	14.728	10.000	3.661
2	1152.0	1152.0	262.356	262.186	16.000	12.683	8.000	2.909

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
[illegible]	Am241	0.434	5.480	5.496	-.016	0.07	52.44	1.2	409.6	0.184E-03
	Pu238		5.499	5.496	0.003				534.7	0.241E-03
2	Am243	0.510	5.276	5.285	-.009	0.06	61.74	1.2	457.9	0.206E-03
Totals:		0.944	<--valid peaks only-->				114.18			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.079 + (0.0046)*Channel
Energy range (MeV): 4.079 TO 6.434
Efficiency = 0.1362 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	58063.0	100.000
Smoothed	58063.0	100.000
Composite fit	54804.9	94.389
Residuals	3258.1	5.611

Analyzed by: _____
VR

Spectrum 3a3514.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 9158.3

WHC-SD-WM-DP-057 REV O

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

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 3a3514.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	3.	2.	0.
21	2.	2.	0.	0.	1.	2.	5.	5.	2.	2.
31	1.	1.	1.	2.	2.	2.	3.	2.	4.	0.
41	5.	5.	4.	3.	0.	3.	1.	3.	2.	0.
[illegible]	1.	2.	2.	1.	4.	2.	6.	1.	0.	3.
61	2.	4.	6.	3.	1.	5.	3.	3.	2.	2.
71	1.	2.	4.	7.	6.	4.	1.	7.	4.	2.
81	4.	6.	5.	2.	3.	3.	3.	6.	4.	6.
91	5.	2.	3.	2.	6.	6.	4.	10.	6.	2.
101	2.	8.	8.	3.	6.	9.	2.	8.	3.	8.
111	6.	8.	7.	6.	12.	6.	10.	7.	7.	11.
121	7.	3.	7.	11.	7.	10.	9.	8.	11.	10.
131	14.	10.	11.	11.	13.	11.	8.	8.	9.	15.
141	15.	9.	8.	13.	15.	15.	15.	14.	14.	17.
151	15.	10.	17.	13.	17.	20.	18.	18.	26.	25.
161	24.	25.	24.	23.	17.	23.	23.	25.	24.	35.
171	38.	22.	26.	33.	30.	32.	38.	24.	32.	37.
181	36.	27.	42.	38.	40.	33.	42.	35.	39.	56.
191	59.	46.	42.	49.	70.	55.	57.	58.	55.	55.
201	65.	65.	61.	80.	77.	56.	86.	82.	74.	82.
211	87.	100.	99.	108.	80.	102.	109.	102.	97.	119.
221	133.	129.	145.	133.	142.	149.	130.	163.	174.	170.
231	159.	203.	189.	189.	218.	217.	246.	257.	268.	316.
241	325.	360.	346.	375.	436.	461.	542.	535.	611.	703.
251	743.	802.	932.	966.	1011.	1076.	1115.	1154.	1133.	1189.
261	1242.	1223.	1266.	1214.	1155.	1036.	920.	840.	597.	561.
271	417.	334.	282.	257.	226.	239.	206.	210.	204.	189.
281	207.	195.	190.	206.	246.	241.	262.	246.	295.	271.
291	309.	380.	398.	434.	488.	508.	577.	681.	739.	772.
301	779.	818.	922.	924.	958.	976.	1024.	1045.	1015.	981.
[illegible]	896.	812.	703.	630.	556.	450.	334.	272.	241.	182.
321	134.	115.	65.	68.	35.	29.	25.	7.	9.	7.
331	1.	1.	0.	0.	0.	1.	0.	1.	1.	0.
341	1.	2.	0.	1.	1.	0.	0.	0.	2.	2.
351	0.	1.	0.	1.	0.	0.	2.	2.	0.	2.
361	1.	2.	3.	1.	4.	7.	5.	4.	1.	0.
371	7.	3.	8.	3.	4.	1.	0.	7.	2.	7.
381	7.	3.	3.	0.	0.	2.	1.	0.	0.	1.
391	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
401	0.	0.	0.	0.	1.	0.	0.	0.	0.	1.
411	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	1.	0.	2.	0.
431	0.	1.	2.	0.	0.	1.	0.	3.	1.	0.
441	1.	0.	2.	0.	0.	1.	0.	0.	0.	0.
451	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

BEST AVAILABLE COPY

Dith Milican
12-8-93

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01

DATA REDUCTION REPORT

WHC-SD-WM-DP-057 REV O

SAMPLE
J1289-5982
File ID: 2a2450.CNF

Counted on: 12/ 8/93 @ 2:47
Detector: AEA2
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	2539.2	2539.2	297.341	297.341	22.000	21.426	11.000	4.831
2	2915.7	2915.7	251.735	251.489	24.000	19.844	12.000	4.339
3	44.6	44.6	114.114	114.072	206.000	1.000	103.000	0.100
4?	9.5	9.5	72.722	72.178	12.000	16.138	6.000	2.735
5?	6.6	6.6	56.974	55.217	4.000	1.953	2.000	0.667

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	0.442	5.480	5.475	0.005	0.10	155.90	0.7	1416.3	0.638E-03
	Pu238		5.499	5.475	0.024				1849.1	0.833E-03
2	Am243	0.504	5.276	5.259	0.017	0.09	178.11	0.7	1536.4	0.692E-03
	Pu240		5.144	5.259	-.115				1521.0	0.685E-03
3		????		4.613			3.44	4.9		
4		????		4.416			0.62	23.0		
5		????		4.337			0.20	49.9		
Totals:		0.946	<--valid peaks only-->				334.01			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.077 + (0.0047)*Channel
Energy range (MeV): 4.077 TO 6.484
Efficiency = 0.1171 CPM/DPM

TOTAL COUNT DATA:

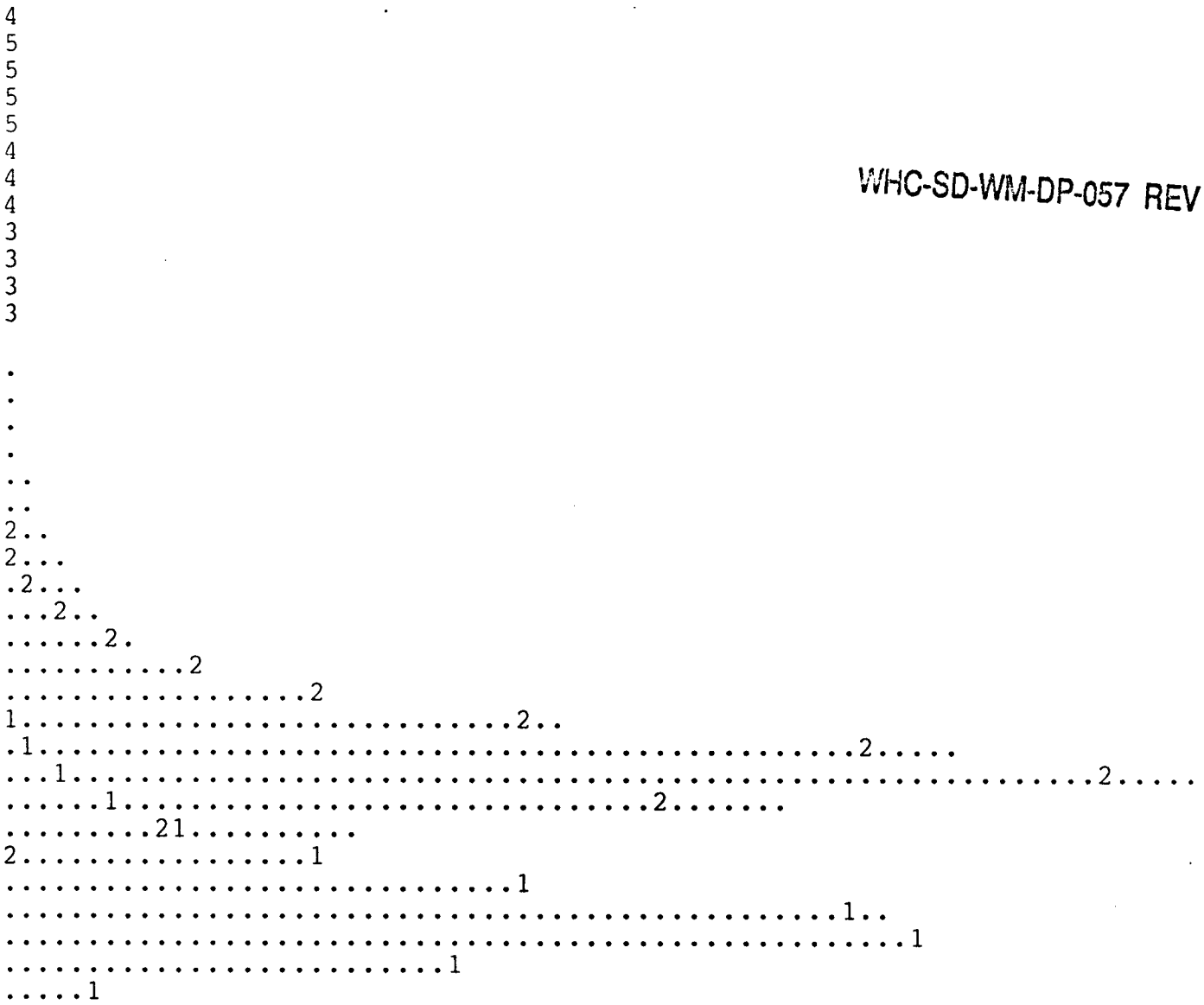
Item	Total	% Recovery
Raw spectrum	169467.0	100.000
Smoothed	169467.0	100.000
Composite fit	162366.2	95.810
Residuals	7100.8	4.190

Analyzed by: _____

BEST AVAILABLE COPY

Spectrum 2a2450.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 23805.4



WHC-SD-WM-DP-057 REV O

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 2a2450.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	6.	10.	13.	11.
21	10.	12.	11.	7.	12.	11.	13.	11.	11.	14.
31	13.	14.	8.	11.	16.	18.	7.	16.	15.	18.
41	13.	10.	16.	13.	15.	18.	14.	17.	8.	20.
[illegible]	11.	19.	24.	20.	15.	13.	32.	15.	15.	22.
61	12.	13.	18.	21.	19.	27.	15.	18.	24.	21.
71	17.	28.	25.	25.	16.	25.	15.	24.	25.	23.
81	18.	18.	27.	26.	28.	22.	34.	28.	28.	29.
91	22.	31.	22.	38.	27.	24.	23.	31.	30.	28.
101	33.	30.	29.	26.	40.	36.	34.	40.	33.	33.
111	46.	46.	50.	49.	44.	52.	33.	40.	34.	43.
121	32.	33.	40.	52.	34.	43.	46.	50.	48.	48.
131	46.	40.	56.	49.	48.	59.	56.	65.	58.	61.
141	59.	58.	61.	69.	67.	71.	76.	73.	73.	69.
151	80.	75.	92.	77.	84.	83.	77.	98.	77.	98.
161	94.	84.	76.	99.	98.	116.	104.	108.	99.	115.
171	109.	119.	129.	132.	124.	131.	112.	140.	144.	166.
181	158.	149.	169.	147.	151.	152.	201.	181.	205.	181.
191	202.	207.	224.	224.	231.	218.	242.	247.	259.	233.
201	272.	275.	266.	302.	317.	276.	326.	320.	316.	352.
211	325.	395.	362.	388.	438.	430.	467.	537.	540.	501.
221	553.	596.	624.	695.	697.	720.	733.	774.	831.	914.
231	987.	1083.	1139.	1269.	1268.	1449.	1478.	1705.	1762.	1910.
241	2038.	2133.	2270.	2495.	2605.	2805.	2854.	2957.	3002.	3169.
251	3281.	3154.	3170.	2956.	2934.	2711.	2518.	2333.	2186.	1930.
261	1706.	1457.	1232.	1089.	1065.	883.	853.	732.	711.	683.
271	667.	700.	673.	696.	667.	775.	821.	869.	953.	1045.
281	1038.	1149.	1247.	1339.	1444.	1650.	1701.	1816.	1972.	2084.
291	2156.	2274.	2514.	2563.	2583.	2633.	2583.	2611.	2591.	2430.
301	2322.	2150.	1937.	1875.	1671.	1441.	1158.	1018.	847.	692.
[illegible]	567.	454.	348.	254.	185.	128.	119.	72.	53.	28.
321	33.	22.	12.	11.	4.	2.	2.	1.	2.	1.
331	4.	0.	0.	1.	2.	2.	3.	1.	2.	1.
341	2.	6.	1.	4.	4.	2.	5.	6.	4.	4.
351	4.	9.	3.	1.	4.	5.	5.	6.	3.	7.
361	13.	5.	2.	5.	2.	3.	4.	5.	6.	5.
371	6.	4.	1.	2.	4.	1.	1.	1.	1.	1.
381	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
401	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
411	0.	1.	0.	0.	0.	1.	0.	1.	1.	0.
421	0.	1.	0.	1.	0.	1.	2.	0.	0.	3.
431	1.	2.	2.	1.	0.	0.	1.	1.	0.	0.
441	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	1.	2.	0.	0.	0.	1.	1.
471	1.	1.	0.	1.	0.	0.	3.	4.	1.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

BEST AVAILABLE COPY

D.H. Milburn
12-8-93

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-057 REV 0

SAMPLE
J1289-5982
File ID: 8a8599.CNF

Counted on: 12/ 8/93 @ 2:55
Detector: AEA8
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	3325.1	3325.1	302.153	302.153	16.000	9.665	8.000	4.402
2	4101.2	4101.2	256.167	256.155	16.000	8.618	8.000	3.903

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	0.423	5.480	5.507	-.027	0.05	121.05	0.8	993.6	0.448E-03
	Pu238		5.499	5.507	-.008				1297.3	0.584E-03
2	Am243	0.504	5.276	5.291	-.015	0.04	144.20	0.8	1123.9	0.506E-03
Totals:		0.927	<--valid peaks only-->				265.25			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.087 + (0.0047)*Channel
Energy range (MeV): 4.087 TO 6.493
Efficiency = 0.1296 CPM/DPM

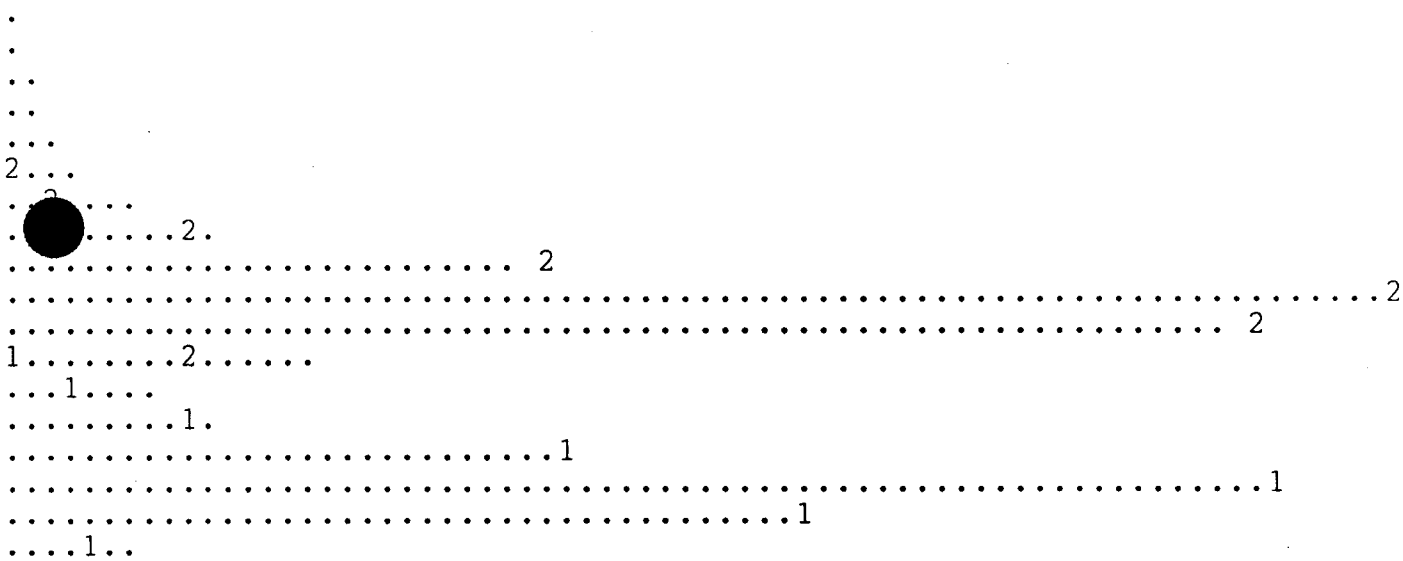
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	137375.0	100.000
Smoothed	137375.0	100.000
Composite fit	127338.2	92.694
Residuals	10036.8	7.306

Analyzed by: _____
VR

Spectrum 8a8599.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 25390.6



BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 8a8599.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	5.	4.	2.
21	4.	8.	5.	0.	3.	4.	5.	5.	3.	2.
31	3.	3.	0.	3.	1.	4.	5.	3.	7.	5.
41	1.	5.	2.	4.	2.	5.	4.	4.	6.	3.
51	8.	0.	2.	6.	2.	2.	4.	2.	3.	3.
61	7.	10.	3.	4.	3.	6.	7.	3.	3.	7.
71	7.	3.	1.	6.	8.	2.	7.	9.	4.	5.
81	6.	8.	6.	8.	5.	7.	11.	6.	7.	10.
91	9.	5.	6.	9.	10.	8.	6.	12.	7.	7.
101	8.	12.	8.	7.	9.	6.	6.	9.	10.	5.
111	9.	10.	5.	11.	9.	12.	11.	4.	14.	11.
121	9.	14.	10.	16.	11.	9.	14.	7.	16.	13.
131	11.	14.	13.	24.	23.	17.	20.	12.	11.	16.
141	18.	18.	22.	27.	22.	19.	23.	24.	21.	25.
151	27.	23.	26.	31.	29.	17.	33.	26.	30.	30.
161	27.	41.	35.	45.	35.	36.	30.	41.	54.	45.
171	24.	44.	48.	42.	38.	41.	37.	53.	52.	50.
181	57.	63.	61.	46.	56.	55.	73.	57.	67.	71.
191	90.	91.	93.	77.	93.	105.	94.	97.	105.	118.
201	100.	130.	115.	126.	131.	128.	147.	144.	142.	141.
211	161.	155.	190.	157.	165.	168.	174.	205.	197.	218.
221	228.	255.	241.	292.	290.	267.	274.	327.	344.	359.
231	405.	408.	440.	457.	442.	536.	551.	586.	643.	718.
241	795.	892.	998.	1082.	1271.	1492.	1731.	1896.	2216.	2467.
251	2868.	3385.	3866.	4221.	4397.	4625.	4446.	4006.	3504.	3011.
261	2259.	1726.	1316.	991.	811.	648.	601.	497.	504.	434.
271	406.	384.	402.	344.	305.	319.	326.	346.	325.	360.
281	391.	447.	440.	508.	561.	638.	710.	731.	847.	959.
291	1111.	1257.	1368.	1601.	1848.	2172.	2437.	2890.	3115.	3423.
301	3689.	3603.	3590.	3367.	2811.	2478.	1962.	1582.	1313.	998.
311	722.	584.	458.	380.	269.	229.	101.	96.	61.	45.
321	25.	10.	4.	2.	3.	0.	0.	1.	1.	1.
331	0.	0.	0.	0.	3.	0.	0.	0.	0.	0.
341	1.	0.	0.	1.	1.	0.	1.	2.	1.	3.
351	3.	1.	3.	1.	3.	2.	0.	3.	3.	7.
361	3.	6.	5.	5.	8.	9.	4.	5.	9.	5.
371	9.	4.	3.	3.	3.	2.	3.	3.	1.	2.
381	0.	0.	0.	0.	1.	0.	0.	0.	0.	1.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	1.	0.	1.	1.
431	1.	2.	0.	1.	4.	2.	1.	4.	0.	0.
441	4.	1.	0.	1.	1.	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.	2.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

BEST AVAILABLE COPY

WHC-SD-WM-DP-057 REV O

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH 2273

Segment Serial No. J1299	Customer ID: KE24A
Analysis: Am 241	Sample Prep: DIRECT

Instrument: WB537237	Procedure/ Rev: LA 503-156 DO
Technologist: Joel M Van Sant	Date: 11-30-93
Starting Time: 0900	Temperature N/A
Ending Time: 2030	Chemist: L L Fitts 12.13.93

Comments: Slow evaporation

Rerun Requested!!

OUT FOR RERUN

	Description	Lab ID
1	INITIAL LMCS CHECK STD	J1305-5582
2	REAGENT BLANK	J1306-5682
3	Sample	J1299-5792
4	Sample Dup	J1299-5792
5	Sample Triplicate	J1299-5792
6	Spike	J1299-5982
7	Spike Dup	J1299-5982
8		
9		
10		

	Description	Lab ID
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	63B43 .100mL	10-1mL		
Spike	78B43 ~~.200mL~~ 11-30-93	.100mL		

678

A-6000-881 (03/92)

ANALYTICAL BATCH SUMMARY SHEET WHC-SD-WM-DP-057 REV 0

METHOD: LA-503-156

DATE START: November 30, 1993

PREPARED BY: L.L. Fritts LL Fritts 12.6.93

DATE COMPLETE: December 6, 1993

	UNITS:	uCi/mL									
SPL NAME	SPL ID	ANALYTE	RESULT #1	RESULT #2	RESULT #3	AVERAGE	2*SD	PREC	%REC	DET LIM	% CT ER
STD 63B43	J1305	Am-241	2.32E+1						86.6	1.71E-3	5.1
BLANK	J1306	Am-241	<1.70E-5						5.9	1.70E-5	58.1
KE24A	J1289	Am-241	1.59E-2	1.30E-2	1.34E-2	1.41E-2	3.14E-3	22.3	45.4	7.47E-4	3.4
									11.6	7.47E-4	8.5
									1.7	7.47E-4	19.3
KE24A	J1289	241 Spike	93.4	131.1					5.7	1.49E-3	7.5
									45.7	1.49E-3	2.6

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.

The results for the spike are in percent recovery.

Rerun requested: Spike duplicate recovery is outside control limits.

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

#3 3499 WHC-SD-WM-DP-057 REV 0

Serial No	Sample Point	Date	Time Issued	Priority
J 1305.-5582	BECHTOLD	11- 8-93	11:58	10

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	% RECOVERY	E14157	1

Sample Size	Customer ID
2.100mL-10-1mL + .100mL Spike	STD

Remarks, Calculations, Results

78B43

EDP R201 AR001

STID# 63B43 RESULT ~~2.53 E+1~~ 2.32 x 10¹ 11.6.93

STID VAL 2.6795 E+1 %REC ~~94.4%~~ 86.6%

11.6.93

1mL 8mHNO3

OUT FOR RERUN

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

Date	Time Completed	Lab Unit Mgr	
11-30-93			

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

BEST AVAILABLE COPY

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

			STANDARD
Serial No.	Spike (Tracer) Book Number		78B43
J1305-5582	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2273	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)	649
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	961
Date	Total AT Count	(ATOT)	9133
11/30/93	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

Am-241 µCi/L	=	2.32E+01
Am-241 µCi/mL	=	2.32E-02
Relative counting error	=	5.1%
Am-243 Tracer Recovery	=	47.6%

Data Entry by:	Date:	06-Dec-93
Approved by:	Date:	December 6, 1993

680

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

WTU P3 12/1/93. MS

J1305-5582

9133.
30 -4

WHC-SD-WM-DP-057 REV O

BEST AVAILABLE COPY

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

#4 4008

Serial No.	Sample Point	Date	Time Issued	Priority
J 1306.-5682	BECHTOLD	11- 8-93	12: 2	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	E14157	1

Sample Size	Customer ID
? 1mL 8mHNO3 + .100ml Spike	BLK

Remarks, Calculations, Results

REAGENT BLANK

COUNT AS uCI/L

78843

WHC-SD-WM-DP-057 REV 0

"AEA" - 480 MIN

ATTACH PRINTOUT

<1.70 X 10-2 uCi/ml

OUT FOR RERUN

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

Date	Time Completed	Lab Unit Mgr
11-30-93		

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

BEST AVAILABLE COPY

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

			BLANK
Serial No.	Spike (Tracer) Book Number		78B43
J1306-5682	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2273	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
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	249
Date	Total AT Count	(ATOT)	710
11/30/93	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	=	< 1.70E-02
Am-241 µCi/mL	=	< 1.70E-05
Relative counting error	=	58.1%
Am-243 Tracer Recovery	=	5.9%

Data Entry by:		Date:	03-Dec-93
Approved by:	682	Date:	December 6, 1993

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#2 12/1/93 MS

710/30 -1

J1306-5682

WHC-SD-WM-DP-057 REV O

BEST AVAILABLE COPY

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

#5 5931 WHC-SD-WM-DP-057 REV 0

Serial No	Sample Point	Date	Time Issued	Priority
J 1289.-5782	BECHTOLD	11-4-93	9: 2	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	E14157	1

Sample Size	Customer ID
? 1mL-10-.25mL + .100mL Spike	KE24A

Remarks, Calculations, Results Sample 78B43

COUNT AS uCI/L

1.59×10^{-2} µCi/ml

"AEA ... ATTACH PRINTOUT

1mL 8mHNO3

OUT FOR RERUN

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
	M Blum	D.H. Miliai		
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
11-30-93		[signature]	[signature]

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

BEST AVAILABLE COPY

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

			SAMPLE
Serial No.	Spike (Tracer) Book Number		78B43
J1289-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2273	Volume of Sample in mL	(SS)	0.25
Rerun No.	Dilution Factor	(DF)	11
1	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	1752
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	1643
Date	Total AT Count	(ATOT)	10720
11/30/93	AT Count Time in Minutes	(MIN CT'd)	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 CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

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

Am-241 µCi/L	=	1.59E+01
Am-241 µCi/mL	=	1.59E-02
Relative counting error	=	3.4%
Am-243 Tracer Recovery	=	45.4%

Data Entry by:	[signature]	Date:	03-Dec-93
Approved by:	[signature]	Date:	December 6, 1993

684

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#3 12/1/93 MB

J1289-5782

$\frac{10720}{30}$ - 4

BEST AVAILABLE COPY

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

#6 6839

WHC-SD-WM-DP-057 REV O

RERUN

Serial No.	Sample Point	Date	Time Issued	Priority
J 1289.-5782	BECHTOLD	11- 4-93	9: 2	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	E14157	2

Sample Size	Customer ID
?1mL-10-.250mL + .100mL Spike	KE24A

Remarks, Calculations, Results Sample Dup 78B43

COUNT AS uCI/L

1.30×10^{-2} µCi/ml

"AEA" - 480MIN

1mL 8mHNO3

OUT FOR RERUN ATTACH PRINTOUT

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
J Van Sant	[signature]	D H Milian		
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
11-30-93		[signature]	[signature]

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

BEST AVAILABLE COPY

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

			SAMPLE
Serial No.	Spike (Tracer) Book Number		78B43
J1289-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2273	Volume of Sample in mL	(SS)	0.25
Rerun No.	Dilution Factor	(DF)	11
2	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	256
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	294
Date	Total AT Count	(ATOT)	2700
11/30/93	AT Count Time in Minutes	(MIN CT'd)	30
	Background in CPM	(BKG)	8

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

µCi/mL = µCi/L / (1000mL/L)

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

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

Am-241 µCi/L	=	1.30E+01
Am-241 µCi/mL	=	1.30E-02
Relative counting error	=	8.5%
Am-243 Tracer Recovery	=	11.6%

Data Entry by:	[signature]	Date:	03-Dec-93
Approved by:	[signature]	Date:	December 6, 1993

686

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

WHC-SD-WM-DP-057 REV 0

#1 12/1/93 MB

J1289-5782

$\frac{2700}{30} - 8$

BEST AVAILABLE COPY

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

WHC-SD-WM-DP-057 REV O

#7 7373

Serial No	Sample Point	Date	Time Issued	Priority
J 1289.-5782	BECHTOLD	11- 4-93	9: 2	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	E14157	3

Sample Size	Customer ID
?1mL-10-.250mL + .100mL Spike	KE24A

Remarks, Calculations, Results: Sample Triplicate 78B43

COUNT AS uCI/L

1.34×10^{-2} uCi/mL

EAT - 480MIN

ATTACH PRINTOUT

1mL 8mH2O3

OUT FOR RERUN

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
J VAN SANT	M Brown	D H Milicia		
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
11-30-93		K Fitts	[signature]

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

BEST AVAILABLE COPY

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

			SAMPLE
Serial No.	Spike (Tracer) Book Number		78B43
J1289-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2273	Volume of Sample in mL	(SS)	0.25
Rerun No.	Dilution Factor	(DF)	11
3	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	51
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	57
Date	Total AT Count	(ATOT)	396
11/30/93	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

Am-241 µCi/L	=	1.34E+01
Am-241 µCi/mL	=	1.34E-02
Relative counting error	=	19.3%
Am-243 Tracer Recovery	=	1.7%

Data Entry by:	[signature]	Date:	03-Dec-93
Approved by:	K Fitts 688	Date:	December 6, 1993

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#2 12/1/93 MB

J1 289-5782

396/30 -1

WHC-SD-WM-DP-057 REV O

BEST AVAILABLE COPY

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

#8 8586 WHC-SD-WM-DP-057 REV 0

Serial No.	Sample Point	Date	Time Issued	Priority
J 1289.-5982	BECHTOLD	11- 4-93	9: 2	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	% RECOVERY	E14157	1

Sample Size	Customer ID
? 1mL-10-.250mL + .100mL-10-1mL Std 63843	KE24A

Remarks, Calculations, Results

SAMPLE SPIKED ID Spike + .200mL Spike 78B93

SPIKE ID 63B43

SPIKE VOLUME .200mL

COUNT AS uCI/L

93.4% OUT FOR RERUN

"AEA" - 480MIN
ATTACH PRINTOUT

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

Date	Time Completed	Lab Unit Mgr	
11-30-93			

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

BEST AVAILABLE COPY

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

			CHK EXT NO.
Serial No.	Spike (Tracer) Book Number		78B43
J1289-5982	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.2
2273	Volume of Sample in mL	(SS)	0.25
Rerun No.	Dilution Factor	(DF)	11
1	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	337
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	376
Date	Total AT Count	(ATOT)	2487
11/30/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	1

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

µCi/mL = µCi/L / (1000mL/L)

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

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

Am-241 µCi/L	=	2.68E+01
Am-241 µCi/mL	=	2.68E-02
Relative counting error	=	7.5%
Am-243 Tracer Recovery	=	5.7%

Data Entry by:		Date:	03-Dec-93
Approved by:	690	Date:	December 6, 1993

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

12/1/93 MB

$\frac{2482}{30}$ - 1

J1289-5982

BEST AVAILABLE COPY

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

2 2435 WHC-SD-WM-DP-057 REV 0

Serial No.	Sample Point	Date	Time Issued	Priority
J 1289.-5982	BECHTOLD	11- 4-93	9: 2	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	% RECOVERY	E14157	2

Sample Size: ?1mL-10-.250mL + .100mL-10-1mL std 63B43

Customer ID: KE24A

Remarks, Calculations, Results:

SAMPLE SPIKED ID + .200mL Spike 78B43

SPIKE ID

SPIKE VOLUME

COUNT AS uCI/L .200mL 131.1% "AEA" - ATTACH PRINTOUT

OUT FOR RERUN

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

Date	Time Completed	Lab Unit Mgr.	
11-30-93			

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

BEST AVAILABLE COPY

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

Serial No.			CHK EXT NO.
J1289-5982	Spike (Tracer) Book Number		78B43
	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.2
2273	Volume of Sample in mL	(SS)	0.25
Rerun No.	Dilution Factor	(DF)	11
2	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	2829
J VAN SANT	Am-243 Area Peak Height from AEA	(C243)	2988
Date	Total AT Count	(ATOT)	20222
11/30/93	AT Count Time in Minutes	(MIN CT'd)	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 CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

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

Am-241 µCi/L	=	2.83E+01
Am-241 µCi/mL	=	2.83E-02
Relative counting error	=	2.6%
Am-243 Tracer Recovery	=	45.7%

Data Entry by:	Date:	06-Dec-93
Approved by:	Date:	December 6, 1993

692

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#3 12/1/93 MB

J1289-5982

20222 - 4
30

WHC-SD-WM-DP-057 REV O

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

Rulellei
12-1-93

SAMPLE
J-1305-5582
File ID: 3a3499.CNF

WHC-SD-WM-DP-057 REV O

Counted on: 12/ 1/93 @ 3:19
Detector: AEA3
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	630.5	630.5	307.918	307.918	26.000	32.703	13.000	3.163
2	706.3	706.3	263.225	261.816	24.000	22.668	12.000	2.601
3?	17.2	17.2	73.810	72.375	264.000	1.000	132.000	0.100
4?	5.1	5.1	36.726	35.552	8.000	2.603	4.000	0.199

PEAK RESULTS
Peak Error Limit: 25%

P ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am241	0.489	5.480	5.524	-.044	0.15	69.17	1.1	569.6	0.257E-03
	Pu238		5.499	5.524	-.025				743.6	0.335E-03
2	Am243	0.459	5.276	5.308	-.032	0.11	65.06	1.4	508.6	0.229E-03
	Pu240		5.144	5.308	-.164				503.5	0.227E-03
3		????		4.417			1.20	8.9		
4		????		4.244			0.29	27.2		
Totals:		0.948	<--valid peaks only-->				134.23			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.077 + (0.0047)*Channel
Energy range (MeV): 4.077 TO 6.484
Efficiency = 0.1292 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	67970.0	100.000
Smoothed	67970.0	100.000
Composite fit	65149.1	95.850
Residuals	2820.9	4.150

Analyzed by: _____
DM

Spectrum 3a3499.CNF

```
1 Legend:  Raw = ....  Modeled Peaks = 1,2,.., etc     Display Max.:     6979.8

4
4
4
4
4
3
3
3
3
3
.
.
.
..
..
..
...
2..
2...
.2...
12....
1.2....
1..2....
.1..2....
.1....2....
..1.....2.....
...1.......2....
....1.........2....
.....1............2....
......1.................2......
........1.......................2...........
...........1..............................2..................
.............1.......................................2...............
................1.......................2.....................
...............2.....1...............
.2.......................1
...............................1
.......................................1....
.............................................1
...................................1
.............  1
.. 1
```

WHC-SD-WM-DP-057 REV O

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 3a3499.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	2.	9.	3.	13.
21	17.	10.	3.	10.	13.	12.	10.	9.	9.	8.
31	9.	14.	8.	14.	11.	11.	18.	9.	9.	12.
41	5.	12.	9.	9.	2.	12.	8.	15.	15.	12.
[illegible]	9.	18.	13.	19.	15.	19.	21.	19.	8.	14.
61	16.	20.	14.	9.	19.	10.	16.	19.	20.	18.
71	21.	25.	16.	22.	19.	20.	17.	15.	12.	18.
81	12.	17.	10.	23.	21.	20.	22.	15.	15.	18.
91	19.	14.	27.	19.	23.	30.	19.	17.	30.	26.
101	20.	26.	29.	24.	19.	21.	33.	25.	28.	29.
111	18.	35.	28.	25.	31.	23.	35.	29.	42.	36.
121	37.	30.	31.	41.	44.	31.	50.	34.	24.	37.
131	45.	35.	45.	39.	48.	42.	29.	45.	49.	53.
141	46.	55.	50.	70.	57.	56.	69.	43.	55.	58.
151	60.	61.	50.	73.	65.	68.	67.	57.	74.	62.
161	68.	82.	82.	73.	91.	82.	75.	87.	71.	87.
171	93.	93.	89.	94.	104.	114.	110.	89.	97.	89.
181	113.	111.	101.	113.	110.	106.	119.	114.	139.	127.
191	108.	143.	152.	127.	154.	162.	157.	144.	121.	159.
201	189.	179.	143.	180.	174.	191.	211.	196.	185.	194.
211	190.	202.	218.	217.	219.	233.	228.	204.	255.	229.
221	246.	247.	262.	283.	285.	297.	294.	309.	322.	341.
231	345.	358.	362.	387.	389.	421.	426.	409.	485.	501.
241	461.	548.	617.	544.	628.	607.	699.	732.	737.	772.
251	774.	827.	873.	822.	876.	871.	865.	878.	863.	822.
261	883.	961.	907.	874.	858.	873.	853.	821.	768.	750.
271	655.	657.	522.	496.	453.	427.	393.	368.	362.	329.
281	320.	304.	323.	359.	370.	336.	345.	421.	405.	440.
291	405.	457.	453.	449.	519.	567.	591.	543.	621.	635.
301	631.	607.	618.	579.	628.	649.	632.	589.	630.	656.
[illegible]	600.	591.	555.	490.	481.	481.	407.	381.	324.	295.
321	248.	199.	162.	123.	86.	70.	53.	38.	31.	26.
331	16.	17.	8.	8.	3.	1.	2.	0.	0.	0.
341	0.	1.	0.	0.	0.	2.	0.	0.	0.	1.
351	2.	1.	0.	0.	1.	0.	0.	3.	1.	2.
361	0.	0.	0.	0.	1.	1.	0.	0.	1.	0.
371	1.	0.	2.	0.	1.	0.	0.	0.	1.	0.
381	1.	0.	0.	0.	0.	1.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	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.	2.	0.	0.	1.	0.	0.	0.	1.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
481	0.	0.	0.	0.	0.	0.	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
J-1306-5682
File ID: 4a4008.CNF

R Wilkins
12-1-93

Counted on: 12/ 1/93 @ 3:20
Detector: AEA4
Geometry number: 1
Count time: 28802. Sec

WHC-SD-WM-DP-057 REV O

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	204.7	204.7	257.966	257.966	12.000	4.490	6.000	2.480

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	0.900	5.276	5.290	-.014	0.02	5.47	3.8	64.6	0.291E-04
Totals:		0.900	<--valid peaks only-->				5.47			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.078 + (0.0047)*Channel
Energy range (MeV): 4.078 TO 6.484
Efficiency = 0.0855 CPM/DPM

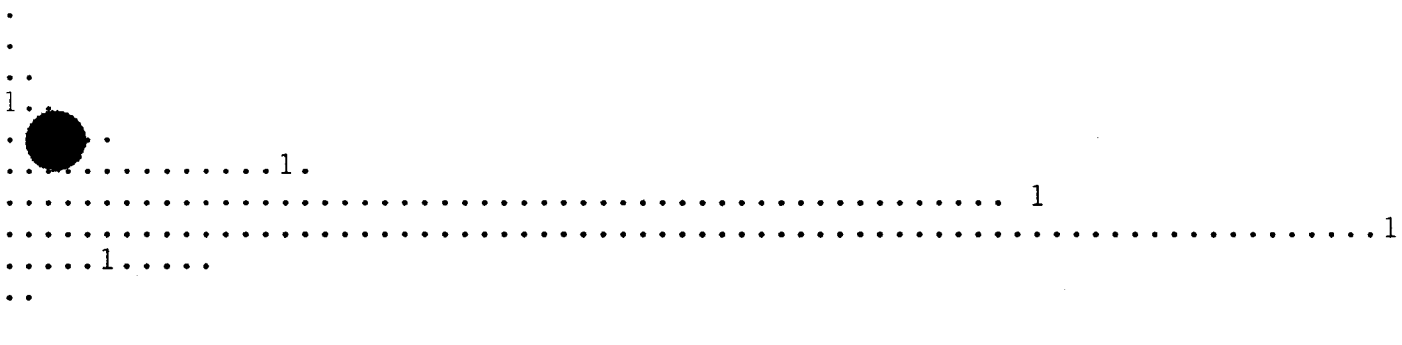
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	2916.0	100.000
Smoothed	2916.0	100.000
Composite fit	2623.9	89.983
Residuals	292.1	10.017

Analyzed by: _____
DM

Spectrum 4a4008.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 1187.5



BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 4a4008.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.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
51	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
71	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.
81	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
91	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
101	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.
111	1.	0.	1.	0.	0.	0.	0.	1.	0.	0.
121	1.	0.	0.	0.	0.	0.	0.	1.	0.	0.
131	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
141	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
151	0.	0.	0.	0.	1.	2.	0.	1.	0.	0.
161	1.	0.	1.	0.	1.	1.	2.	0.	1.	0.
171	2.	0.	0.	0.	1.	0.	2.	1.	1.	1.
181	2.	0.	1.	0.	1.	2.	2.	3.	1.	0.
191	1.	1.	2.	0.	1.	1.	3.	2.	3.	1.
201	2.	1.	4.	3.	1.	3.	2.	4.	1.	1.
211	4.	4.	3.	2.	1.	3.	2.	4.	6.	10.
221	5.	3.	3.	4.	4.	5.	6.	8.	8.	6.
231	9.	8.	13.	12.	19.	14.	17.	14.	17.	20.
241	15.	23.	19.	34.	36.	61.	51.	58.	69.	88.
251	80.	93.	116.	128.	175.	202.	232.	249.	219.	199.
261	134.	78.	62.	29.	15.	19.	12.	6.	9.	13.
271	9.	8.	8.	6.	5.	5.	0.	1.	1.	0.
281	0.	0.	0.	1.	0.	2.	0.	0.	0.	0.
291	0.	2.	0.	1.	1.	0.	0.	1.	0.	1.
301	0.	3.	1.	0.	1.	0.	0.	0.	0.	0.
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.	2.	0.	0.	0.	0.
341	0.	1.	0.	0.	0.	0.	0.	1.	0.	1.
351	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.
361	1.	0.	0.	1.	1.	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	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

BEST AVAILABLE COPY

Westinghouse Hanford Co. WHC-SD-WM-DP-057 REV O

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
J-1289-5782
File ID: 5a5931.CNF

RWelliver
12-1-93

Counted on: 12/ 1/93 @ 3:20
Detector: AEA5
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	1593.5	1593.5	301.076	301.076	24.000	17.298	12.000	5.905
2	1524.5	1524.5	255.240	255.137	20.000	15.874	10.000	5.548
3?	11.7	11.7	152.825	152.807	148.000	1.000	74.000	0.100

PEAK RESULTS
Peak Error Limit: 25%

Peak	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am241	0.506	5.480	5.503	-.023	0.08	77.54	1.0	609.2	0.274E-03
	Pu238		5.499	5.503	-.004				795.4	0.358E-03
2	Am243	0.466	5.276	5.287	-.011	0.07	71.55	1.1	533.8	0.240E-03
	Pu240		5.144	5.287	-.143				528.4	0.238E-03
3		????		4.806			0.93	9.3		
Totals:		0.972	<--valid peaks only-->				149.09			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.088 + (0.0047)*Channel
Energy range (MeV): 4.088 TO 6.494
Efficiency = 0.1354 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	73632.0	100.000
Smoothed	73632.0	100.000
Composite fit	72010.2	97.797
Residuals	1621.8	2.203

Analyzed by: _____
DM

Spectrum 5a5931.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 12283.6

WHC-SD-WM-DP-057 REV O

```
3
3
3
3
3
3
3
3
3
3

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

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 5a5931.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	3.	3.	3.
21	1.	2.	3.	4.	5.	2.	4.	1.	0.	2.
31	0.	1.	1.	3.	5.	3.	2.	2.	5.	1.
41	3.	5.	2.	4.	2.	2.	3.	2.	2.	6.
[illegible]	4.	1.	1.	4.	1.	1.	5.	1.	5.	3.
[illegible]	6.	3.	1.	8.	4.	5.	7.	1.	10.	4.
71	5.	3.	1.	6.	6.	7.	3.	1.	2.	5.
81	4.	4.	3.	4.	6.	4.	6.	6.	5.	5.
91	3.	4.	6.	5.	4.	9.	6.	7.	5.	3.
101	4.	8.	6.	3.	3.	6.	6.	1.	5.	5.
111	2.	4.	6.	3.	2.	9.	4.	4.	6.	7.
121	5.	6.	4.	3.	12.	3.	2.	3.	6.	3.
131	11.	13.	10.	4.	7.	3.	8.	7.	7.	8.
141	7.	8.	8.	8.	14.	9.	7.	2.	6.	10.
151	11.	16.	12.	13.	9.	9.	13.	4.	9.	11.
161	11.	11.	16.	12.	8.	7.	14.	8.	10.	15.
171	14.	12.	7.	7.	15.	21.	14.	10.	11.	15.
181	15.	16.	9.	17.	12.	21.	25.	24.	20.	25.
191	28.	19.	24.	25.	34.	24.	29.	26.	27.	30.
201	31.	32.	37.	53.	35.	41.	39.	49.	59.	47.
211	51.	64.	67.	78.	81.	67.	76.	83.	84.	91.
221	95.	106.	111.	113.	108.	139.	158.	158.	157.	177.
231	238.	194.	238.	270.	282.	297.	345.	362.	450.	506.
241	543.	557.	674.	769.	847.	978.	1046.	1175.	1217.	1433.
251	1442.	1515.	1574.	1609.	1643.	1637.	1503.	1488.	1346.	1206.
261	1032.	974.	801.	707.	571.	468.	425.	325.	314.	284.
271	236.	202.	217.	212.	208.	240.	227.	256.	261.	285.
281	312.	316.	379.	481.	469.	501.	581.	637.	702.	846.
291	866.	955.	1071.	1208.	1320.	1450.	1507.	1566.	1670.	1752.
301	1626.	1626.	1612.	1527.	1408.	1282.	1164.	963.	825.	682.
[illegible]	551.	501.	353.	288.	234.	177.	146.	85.	83.	43.
[illegible]	29.	31.	21.	12.	8.	4.	4.	3.	1.	2.
331	3.	1.	1.	1.	2.	1.	1.	1.	2.	1.
341	1.	1.	1.	0.	6.	0.	2.	3.	2.	5.
351	7.	6.	3.	5.	5.	7.	2.	4.	5.	6.
361	5.	11.	4.	13.	4.	8.	10.	4.	3.	11.
371	8.	4.	7.	5.	3.	2.	4.	2.	1.	1.
381	0.	2.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	1.	0.	0.	1.	0.	0.	0.	1.	0.
411	0.	0.	0.	1.	0.	0.	3.	1.	0.	0.
421	0.	2.	1.	0.	0.	1.	0.	2.	0.	2.
431	1.	1.	0.	0.	0.	0.	1.	0.	2.	3.
441	1.	1.	4.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
461	0.	0.	0.	0.	0.	0.	1.	0.	1.	1.
471	2.	1.	0.	0.	2.	1.	1.	0.	0.	0.
481	1.	0.	1.	1.	0.	1.	1.	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
J-1289-5782 DUP
File ID: 6a6839.CNF

R Willis
12-1-93

Counted on: 12/ 1/93 @ 3:21
Detector: AEA6
Geometry number: 1
Count time: 28801. Sec

WHC-SD-WM-DP-057 REV O

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	245.0	245.0	295.556	295.556	26.000	29.200	13.000	4.834
2	232.4	232.4	248.521	248.095	28.000	28.704	14.000	5.695
3	12.6	12.6	170.418	170.089	26.000	125.574	13.000	38.858
4?	0.8	0.1	154.006	154.000	4.000	0.100	2.000	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
1	Am241	0.510	5.480	5.470	0.010	0.14	18.96	2.1	154.0	0.694E-04
	Pu238		5.499	5.470	0.029				201.0	0.906E-04
2	Am243	0.440	5.276	5.247	0.029	0.13	16.37	2.6	126.2	0.569E-04
	Pu240		5.144	5.247	-.103				125.0	0.563E-04
3	Np237	0.038	4.781	4.880	-.099	0.59	1.42	17.2	12.4	0.560E-05
4		????		4.805			0.00	6621.		
Totals:		0.988	<--valid peaks only-->				36.75			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.081 + (0.0047)*Channel
Energy range (MeV): 4.081 TO 6.487
Efficiency = 0.1310 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	17862.0	100.000
Smoothed	17864.9	100.016
Composite fit	17640.7	98.761
Residuals	221.3	1.239

Analyzed by: _____
DM

Spectrum 6a6839.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 1946.8

WHC-SD-WM-DP-057 REV O

```
.
.
.
.
3.
3.
43
43
..3
2.3.
2.3.
.32...
3..2...
3.....2...
3.........2..
.1..............2..
..1.....................2...
.....1.................................2.....
.......1.................................................2......
..........1.................................................2..........
..............1................2..................
........2............1.........
2............................ 1
.............................................1..
.................................................................1
.................................................................1
..............................1
........1
1
```

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 6a6839.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	0.	3.	1.
21	0.	4.	0.	1.	2.	0.	1.	1.	0.	2.
31	1.	1.	2.	1.	0.	0.	0.	2.	4.	0.
41	5.	1.	2.	2.	0.	3.	1.	0.	1.	0.
51	3.	4.	3.	3.	3.	4.	1.	2.	0.	2.
61	1.	0.	4.	2.	2.	3.	5.	1.	0.	2.
71	3.	3.	2.	4.	3.	2.	8.	1.	0.	2.
81	0.	2.	1.	2.	1.	1.	4.	3.	1.	3.
91	2.	7.	0.	4.	6.	4.	2.	3.	5.	6.
101	4.	5.	6.	4.	3.	2.	3.	5.	3.	8.
111	8.	5.	2.	3.	8.	4.	4.	3.	4.	5.
121	5.	1.	6.	2.	5.	10.	6.	9.	5.	10.
131	9.	6.	7.	10.	13.	5.	9.	5.	7.	5.
141	7.	9.	7.	6.	4.	9.	10.	9.	6.	14.
151	8.	8.	7.	20.	11.	8.	7.	9.	7.	9.
161	16.	8.	12.	6.	20.	13.	13.	18.	15.	21.
171	16.	22.	11.	12.	10.	16.	20.	16.	11.	15.
181	19.	14.	13.	17.	23.	28.	20.	21.	19.	24.
191	38.	23.	25.	26.	33.	18.	22.	25.	28.	32.
201	25.	32.	40.	31.	44.	35.	35.	48.	46.	44.
211	53.	40.	55.	43.	67.	51.	61.	70.	59.	65.
221	67.	81.	79.	67.	86.	85.	95.	106.	114.	123.
231	124.	124.	125.	149.	162.	168.	167.	170.	211.	207.
241	222.	210.	238.	234.	249.	255.	255.	294.	271.	246.
251	255.	245.	230.	233.	231.	227.	218.	183.	183.	178.
261	149.	143.	138.	113.	129.	109.	106.	89.	100.	93.
271	105.	84.	86.	107.	94.	93.	124.	130.	106.	146.
281	139.	157.	181.	183.	179.	206.	210.	196.	220.	209.
291	245.	255.	248.	247.	247.	256.	236.	256.	212.	229.
301	222.	192.	172.	145.	148.	125.	127.	105.	95.	71.
311	53.	54.	56.	35.	32.	21.	20.	15.	12.	5.
321	13.	6.	5.	2.	1.	0.	2.	2.	0.	2.
331	0.	2.	0.	1.	0.	1.	0.	1.	1.	2.
341	3.	1.	1.	3.	1.	0.	1.	5.	0.	1.
351	1.	0.	0.	0.	0.	0.	6.	1.	1.	1.
361	1.	1.	1.	0.	0.	2.	1.	0.	2.	2.
371	1.	0.	0.	0.	0.	0.	1.	2.	0.	0.
381	0.	0.	1.	0.	0.	0.	1.	1.	0.	0.
391	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
421	0.	1.	1.	1.	1.	1.	1.	0.	0.	0.
431	0.	0.	0.	0.	1.	0.	0.	1.	2.	0.
441	2.	1.	0.	1.	0.	1.	0.	0.	0.	0.
451	0.	0.	0.	1.	0.	0.	0.	0.	0.	2.
461	2.	0.	0.	1.	1.	2.	0.	1.	1.	0.
471	0.	1.	1.	1.	0.	0.	1.	0.	0.	0.
481	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
491	0.	0.	1.	2.	4.	9.	6.	3.	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

WHC-SD-WM-DP-057 REV 0

DATA REDUCTION REPORT

12-1-93

SAMPLE
J-1289-5782 TRIP
File ID: 7a7373.CNF

Counted on: 12/ 1/93 @ 3:21
Detector: AEA7
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	42.0	42.0	302.851	302.851	16.000	7.969	8.000	1.982
2	46.4	46.4	255.470	255.340	18.000	10.459	9.000	3.345

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
	Pu238	0.437	5.499	5.509	-.010	0.04	1.95	6.4	26.4	0.119E-04
	Am241		5.480	5.509	-.029				20.2	0.911E-05
2	Am243	0.448	5.276	5.286	-.010	0.05	2.00	6.6	19.7	0.887E-05
Totals:		0.885	<--valid peaks only-->				3.95			

BEST AVAILABLE COPY

DETECTOR CALIBRATION

Energy(MEV) = 4.086 + (0.0047)*Channel
Energy range (MeV): 4.086 TO 6.492
Efficiency = 0.1026 CPM/DPM

TOTAL COUNT DATA:

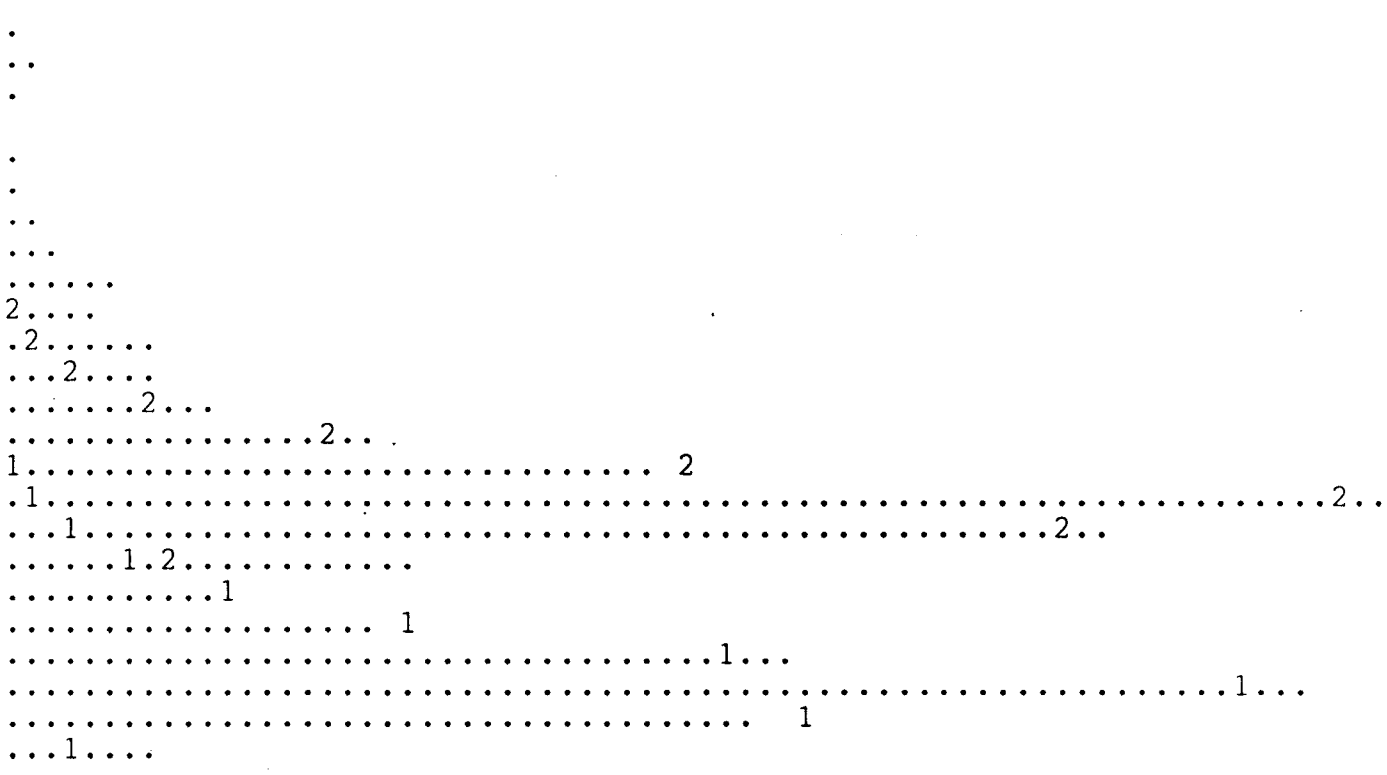
Item	Total	% Recovery
Raw spectrum	2144.0	100.000
Smoothed	2144.0	100.001
Composite fit	1897.0	88.480
Residuals	247.0	11.520

Analyzed by: _____
DM

Spectrum 7a7373.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 330.0

WHC-SD-WM-DP-057 REV O



BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 7a7373.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.	1.	0.	2.	0.	1.
31	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
[illegible]	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
61	0.	1.	0.	0.	2.	0.	0.	0.	1.	2.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
81	1.	0.	0.	0.	1.	0.	0.	0.	0.	1.
91	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	1.	1.	0.	1.	0.	1.	0.	0.	0.	2.
111	0.	0.	2.	2.	0.	0.	0.	1.	0.	0.
121	0.	0.	0.	1.	0.	1.	3.	0.	1.	0.
131	1.	1.	0.	0.	2.	2.	1.	1.	3.	1.
141	2.	5.	1.	0.	0.	2.	1.	1.	1.	0.
151	0.	0.	1.	0.	0.	0.	0.	1.	1.	1.
161	1.	1.	1.	1.	0.	1.	0.	1.	0.	2.
171	0.	0.	1.	1.	0.	3.	1.	1.	2.	2.
181	2.	0.	2.	4.	3.	3.	1.	1.	2.	1.
191	3.	3.	0.	3.	5.	4.	5.	4.	5.	5.
201	3.	0.	1.	6.	4.	4.	1.	2.	12.	7.
211	2.	3.	4.	5.	6.	3.	8.	4.	5.	7.
221	7.	5.	0.	5.	8.	4.	10.	6.	8.	10.
231	6.	7.	8.	8.	12.	8.	11.	19.	13.	21.
241	10.	10.	16.	20.	28.	24.	24.	29.	30.	41.
251	38.	47.	44.	57.	55.	44.	48.	49.	41.	46.
261	22.	16.	14.	12.	10.	16.	18.	10.	6.	11.
271	10.	4.	4.	9.	7.	10.	6.	6.	6.	8.
281	11.	8.	11.	11.	15.	13.	12.	15.	23.	19.
291	21.	12.	24.	37.	36.	37.	40.	35.	45.	39.
301	35.	51.	38.	42.	45.	37.	22.	13.	15.	9.
[illegible]	10.	6.	6.	3.	7.	5.	2.	0.	1.	1.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
341	0.	1.	0.	1.	1.	0.	0.	1.	0.	0.
351	0.	0.	3.	1.	0.	0.	1.	1.	0.	1.
361	0.	1.	0.	1.	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.	0.	0.	0.
391	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	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.	1.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	1.	0.	0.	1.	0.	0.	1.	1.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	2.	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

Results 12-1-93

SAMPLE
J-1289-5982
File ID: 8a8586.CNF

WHC-SD-WM-DP-057 REV O

Counted on: 12/ 1/93 @ 3:22
Detector: AEA8
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	291.1	291.1	298.920	298.920	20.000	13.249	10.000	4.288
2	321.4	321.4	252.364	252.299	20.000	14.513	10.000	4.513
3	32.3	32.3	210.358	209.522	30.000	36.622	15.000	2.027

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	0.396	5.480	5.492	-.012	0.06	13.31	2.5	109.1	0.491E-04
	Pu238		5.499	5.492	0.007				142.4	0.642E-04
2	Am243	0.457	5.276	5.273	0.003	0.07	15.35	2.4	119.4	0.538E-04
	Pu240		5.144	5.273	-.129				118.2	0.533E-04
3	Pu239	0.156	5.143	5.072	0.071	0.17	5.25	5.6	40.4	0.182E-04
	Pu240		5.144	5.072	0.072				40.4	0.182E-04
		---					---			
Totals:		1.010	<--valid peaks only-->				33.91			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.087 + (0.0047)*Channel
Energy range (MeV): 4.087 TO 6.493
Efficiency = 0.1298 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	16122.0	100.000
Smoothed	16122.0	100.000
Composite fit	16277.0	100.961
Residuals	-155.0	-0.961

Analyzed by: _____
DM

Spectrum 8a8586.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 2431.7

WHC-SD-WM-DP-057 REV O

```
.
.
3
3
3
3
3
3
.3
.3
.3
.3
..3
..3
...3
...3.
....3
.....3.
2....3..
..2...3..
...32.....
3.........2...
.................. 2
.......................................    2
1.......................................................................2
.1.................................2...
....1.2.........
..........1..
.................. 1
.........................................1
.........................................................1
.........................1
..1.
```

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 8a8586.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	2.	2.	3.	4.
21	8.	3.	4.	3.	6.	7.	4.	8.	4.	4.
31	2.	3.	3.	3.	4.	5.	1.	6.	2.	4.
41	4.	2.	6.	3.	4.	2.	5.	5.	5.	4.
51	6.	2.	8.	3.	3.	2.	3.	9.	4.	4.
61	5.	5.	4.	5.	11.	1.	4.	5.	8.	3.
71	2.	3.	6.	8.	5.	7.	3.	7.	1.	4.
81	5.	5.	4.	7.	6.	7.	5.	8.	10.	5.
91	7.	7.	8.	6.	6.	7.	9.	7.	5.	6.
101	11.	9.	7.	6.	4.	6.	8.	8.	3.	5.
111	3.	9.	7.	6.	3.	8.	8.	7.	6.	7.
121	6.	9.	4.	7.	8.	11.	15.	9.	5.	8.
131	11.	10.	13.	7.	12.	15.	12.	13.	16.	12.
141	9.	8.	15.	16.	11.	11.	10.	13.	15.	11.
151	14.	15.	17.	15.	20.	17.	8.	19.	15.	16.
161	20.	9.	14.	17.	19.	16.	17.	15.	12.	26.
171	24.	18.	19.	20.	20.	18.	24.	22.	18.	26.
181	20.	27.	28.	18.	32.	19.	20.	24.	29.	19.
191	27.	22.	32.	26.	29.	36.	28.	33.	37.	33.
201	40.	27.	35.	42.	38.	40.	31.	44.	36.	46.
211	52.	36.	39.	34.	37.	33.	42.	50.	51.	55.
221	43.	53.	49.	44.	54.	59.	58.	67.	77.	55.
231	72.	76.	85.	78.	83.	91.	111.	98.	108.	127.
241	124.	140.	151.	171.	193.	236.	255.	252.	294.	348.
251	324.	376.	338.	327.	269.	300.	260.	230.	213.	161.
261	121.	121.	96.	88.	79.	59.	75.	56.	63.	61.
271	56.	44.	49.	45.	69.	79.	48.	54.	64.	58.
281	73.	72.	87.	83.	89.	95.	117.	130.	144.	143.
291	199.	225.	223.	274.	273.	271.	296.	337.	282.	309.
301	290.	263.	232.	195.	191.	153.	109.	101.	66.	52.
311	43.	33.	21.	18.	14.	6.	7.	4.	1.	0.
321	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	1.	0.	0.	0.	2.	0.	1.	1.
351	0.	0.	0.	0.	0.	2.	1.	1.	1.	4.
361	0.	0.	0.	3.	1.	2.	1.	0.	0.	0.
371	0.	1.	0.	1.	0.	0.	0.	1.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
431	1.	1.	1.	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.								

BEST AVAILABLE COPY

DH Wilson
12-2-93

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
J1289-5982
File ID: 2a2435.CNF

WHC-SD-WM-DP-057 REV O

Counted on: 12/ 1/93 @12:47
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	2646.6	2646.6	300.367	300.367	22.000	17.767	11.000	5.781
2	2802.4	2802.4	254.965	254.835	20.000	16.430	10.000	5.144
3?	15.7	15.7	130.625	130.612	170.000	1.000	85.000	0.100
4?	2.2	2.2	112.624	112.116	4.000	0.314	2.000	0.289

PEAK RESULTS
Peak Error Limit: 25%

Pk 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	0.476	5.480	5.489	-.009	0.08	132.11	0.8	1204.3	0.542E-03
	Pu238		5.499	5.489	0.010				1572.3	0.708E-03
2	Am243	0.499	5.276	5.275	0.001	0.08	138.49	0.8	1198.7	0.540E-03
	Pu240		5.144	5.275	-.131				1186.7	0.535E-03
3		????		4.691			1.23	8.1		
4		????		4.604			0.02	323.		
Totals:		0.975	<--valid peaks only-->				270.60			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.077 + (0.0047)*Channel
Energy range (MeV): 4.077 TO 6.484
Efficiency = 0.1167 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	133224.0	100.000
Smoothed	133224.0	100.000
Composite fit	130501.5	97.956
Residuals	2722.5	2.044

Analyzed by: _____
RW

Spectrum 2a2435.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 21244.8

WHC-SD-WM-DP-057 REV O

```
3
3
3
3
3
3
4
3
3
3
.
.
2.
.2.
...2.
........2
..................2
.....................................2...
1.............................................................2...
.1.......................................................2..
....1..........2.....
2........1..
.....................1
.........................................1.
.............................................................1
.......................................1
.........1
1
```

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 2a2435.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	3.	3.	0.
21	1.	3.	4.	1.	5.	2.	4.	4.	3.	7.
31	1.	5.	3.	5.	5.	6.	4.	4.	5.	3.
41	4.	7.	5.	4.	7.	3.	6.	3.	7.	4.
[illegible]	5.	3.	6.	5.	7.	7.	3.	3.	8.	8.
61	4.	3.	4.	6.	6.	4.	6.	10.	4.	5.
71	5.	8.	3.	8.	9.	7.	12.	2.	13.	4.
81	10.	7.	4.	4.	8.	7.	5.	6.	11.	6.
91	5.	5.	5.	3.	5.	7.	7.	8.	7.	14.
101	9.	10.	7.	6.	5.	11.	9.	13.	9.	8.
111	12.	6.	18.	10.	9.	7.	7.	6.	6.	9.
121	8.	13.	11.	10.	11.	11.	18.	9.	9.	20.
131	18.	9.	13.	13.	12.	16.	9.	19.	19.	13.
141	18.	14.	14.	12.	16.	26.	15.	16.	15.	15.
151	20.	17.	18.	16.	19.	15.	18.	27.	26.	17.
161	16.	23.	24.	19.	24.	19.	17.	27.	28.	30.
171	26.	22.	51.	34.	27.	33.	33.	25.	36.	46.
181	37.	35.	37.	42.	47.	41.	40.	41.	44.	49.
191	36.	69.	67.	64.	57.	71.	76.	67.	79.	71.
201	89.	82.	74.	72.	82.	110.	110.	87.	104.	117.
211	131.	127.	129.	159.	153.	161.	168.	179.	183.	198.
221	223.	191.	243.	246.	266.	295.	360.	337.	338.	399.
231	460.	469.	527.	582.	671.	673.	749.	829.	945.	1015.
241	1153.	1292.	1375.	1603.	1777.	1895.	2099.	2267.	2401.	2568.
251	2706.	2918.	2982.	2971.	2947.	2988.	2854.	2658.	2291.	2223.
261	1978.	1750.	1476.	1222.	1106.	860.	730.	648.	540.	469.
271	445.	438.	378.	357.	424.	396.	434.	470.	499.	531.
281	569.	640.	738.	779.	903.	999.	1118.	1218.	1336.	1486.
291	1706.	1772.	1984.	2160.	2261.	2397.	2621.	2631.	2829.	2825.
301	2712.	2654.	2518.	2384.	2178.	1974.	1699.	1560.	1266.	1024.
[illegible]	832.	649.	552.	448.	349.	251.	185.	139.	108.	76.
321	55.	26.	28.	13.	13.	4.	6.	3.	4.	1.
331	1.	1.	2.	3.	1.	0.	2.	1.	1.	1.
341	2.	1.	1.	4.	3.	6.	4.	3.	2.	1.
351	1.	2.	3.	3.	2.	2.	3.	2.	4.	7.
361	2.	6.	6.	6.	8.	6.	10.	8.	7.	3.
371	5.	3.	4.	3.	6.	3.	0.	1.	1.	1.
381	2.	0.	1.	0.	0.	0.	0.	0.	0.	0.
391	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
401	0.	0.	0.	0.	0.	0.	0.	0.	1.	2.
411	2.	0.	0.	0.	1.	0.	1.	0.	1.	0.
421	1.	3.	2.	1.	3.	2.	1.	1.	1.	1.
431	1.	0.	2.	2.	3.	0.	0.	1.	6.	2.
441	2.	2.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	1.	0.	0.	0.	0.	0.	2.	0.	0.	0.
471	0.	0.	0.	1.	1.	2.	0.	2.	1.	1.
481	0.	1.	0.	1.	0.	2.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

BEST AVAILABLE COPY

OH 20

WHC-SD-WM-DP-057 REV O

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

Batch 2102

ANALYTICAL BATCH

Lab Segment Serial No. J1289	Customer ID: 105 Ke Basin Bechtold
Analysis: Am	Sample Prep: Direct

Instrument:	WB537237	Procedure/ Rev:	LA-503-156 / D-0
Technologist:	[illegible]	Date:	11/22/93
Starting Time:	00:15	Temperature	20°C
Ending Time:	07:15	Chemist:	Stan Catlow

Comments: Electroplating - STD LEAKER - Spike Duplicate
STD Dilution used 1mL-10mL-1mL should have been
-100mL - 10 - 1mL for Spike + Spike Dup (TALKE TO ROD the used -100 - 10 - 1mL on spike

	Description	Lab ID
1	LmCS	J1305-5582
2	Reagent Blank	J1306-5682
3	Sample	J1289-5782
4	Sample Dup.	J1289-5782
5	Sample Trip.	J1289-5782
6	Sample spiked	J1289-5982
7	Sample spiked Dup	J1289-5982
8		
9		
10		

	Description	Lab ID
11		
12		
13		
14	OUT FOR RERUN	
15		
16		
17		
18		
19		
20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LmCS	63B43 / 1ml ~~.100ml~~			
spike	78B43 / .100ml			
spike LmCS	63B43 / 1ml-10ml	8m HNO3-1ml		
Spike	78B43 / .200ml			

715

A-6000-881 (03/92)

ANALYTICAL BATCH SUMMARY SHEET

METHOD: **LA-503-156**

DATE START: **November 22, 1993**

PREPARED BY: **L.L. Fritts** LL Fritts 11-24-93

DATE COMPLETE: **November 24, 1993**

	UNITS:	uCi/mL									
SPL NAME	SPL ID	ANALYTE	RESULT #1	RESULT #2	RESULT #3	AVERAGE	2*SD	PREC	%REC	DET LIM	% CT ER
STD 63B43	J1305	Am-241	2.69E+1						100.4	1.71E-3	23.3
BLANK	J1306	Am-241	1.12E-2						0.3	7.47E-4	76.4
KE24A	J1289	Am-241	8.43E-3	7.47E-3	4.98E-3	6.96E-3	3.56E-3	51.2	8.8	7.47E-4	14.1
									0.2	7.47E-4	86.6
									0.3	7.47E-4	115.5
KE24A	J1289	241 Spike	28.0	30.2					0.1	1.49E-3	50.4
									0.1	1.49E-3	76.4

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.

The results for the spike are in percent recovery.

Rerun requested: Precision and spike recoveries are outside control limits.
Tracer recoveries are not acceptable.

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

8 8568 WHC-SD-WM-DP-057 REV 0

Serial No	Sample Point	Date	Time Issued	Priority
J 1305.-5582	BECHTOLD	11- 8-93	11:56	18

Determination	Method Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	% RECOVERY	E14157	0

Sample Size	Customer ID
? .1ml 11-24-93 ~~100~~ 10ml 8m HNO_3 - 1ml	STD

Remarks, Calculations, Results

EDP R201 AR001

STD#63643 RESULT 26.9

STD VAL 26.796 %REC 100.4%

1mL 8m HNO_3 acid adj

100ml spike #78B43

Rob King

OUT FOR RERUN

Analyst - 1	Analyst - 2 54084	Analyst - 3	Analyst - 4	Analyst - 5
	C.J. Opinion	[signature]	[signature]	
Hrs	Hrs	Hrs	Hrs	Hrs
		Rakita		[signature]

Date	Time Completed	Lab Unit Mgr	
11/22/93	07:15	[signature]	[signature]

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

BEST AVAILABLE COPY

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

			STANDARD
Serial No.	Spike (Tracer) Book Number		78B43
J1305-5582	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2102	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)	33
R KING	Am-243 Area Peak Height from AEA	(C243)	42
Date	Total AT Count	(ATOT)	1337
11/22/93	AT Count Time in Minutes	(MIN CT'd)	30
	Background in CPM	(BKG)	7

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

µCi/mL = µCi/L / (1000mL/L)

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

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

Am-241 µCi/L	=	2.69E+01
Am-241 µCi/mL	=	2.69E-02
Relative counting error	=	23.3%
Am-243 Tracer Recovery	=	5.6%

Data Entry by:	[signature]	Date:	23-Nov-93
Approved by:	[signature]	Date:	November 24, 1993

717

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#1 11-22-93 JQ

J1305-5582

1337-7
30

BEST AVAILABLE COPY

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

4 · 4988 WHC-SD-WM-DP-057 REV 0

Serial No.	Sample Point	Date	Time Issued	Priority
J 1306.-5682	BECHTOLD	11- 8-93	12: 2	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	E14157	0

Sample Size	Customer ID
? 1ml-10ml 8m HNO3 ~.250ml	BLK

Remarks, Calculations, Results

REAGENT BLANK

COUNT AS uCI/L

1mL 8m HNO3 adj

.100ml spike # 78B43

1.12 x 10^-2 uCi/ml

OUT FOR RERUN

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
11/22/93	Time Completed 07:15	Lab Unit Mgr		

64-6800-061 (R-10-83)

BEST AVAILABLE COPY

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

			BLANK
Serial No.	Spike (Tracer) Book Number		78B43
J1306-5682	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2102	Volume of Sample in mL	(SS)	0.25
Rerun No.	Dilution Factor	(DF)	11
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	3
R KING	Am-243 Area Peak Height from AEA	(C243)	4
Date	Total AT Count	(ATOT)	80
11/22/93	AT Count Time in Minutes	(MIN CTd)	30
	Background in CPM	(BKG)	1

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

µCi/mL = µCi/L / (1000mL/L)

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

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

Am-241 µCi/L	=	1.12E+01
Am-241 µCi/mL	=	1.12E-02
Relative counting error	=	76.4%
Am-243 Tracer Recovery	=	0.3%

Data Entry by:	Date:	23-Nov-93
Approved by:	Date:	November 24, 1993

719

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#2 11-22-83

J1306-5682

$\frac{80}{30}$ -1

BEST AVAILABLE COPY

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

6 6819 WHC-SD-WM-DP-057 REV.0

Serial No.	Sample Point	Date	Time Issued	Priority
J 1289.-5782	BECHTOLD	11- 4-93	8:53	18

Determination	Method-Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	E14157	0

Sample Size	Customer ID
? 1ml - 1ml 8M HNO3 - .250ml	KE24A

Remarks, Calculations, Results

COUNT AS uCI/L Sample

1mL 8M HNO3 ddJ 8.43 X 10^-3 uCi/ml

100ml spike # 78B43

OUT FOR RERUN

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		
11/22/93	0 7:15			

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

BEST AVAILABLE COPY

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

			SAMPLE
Serial No.	Spike (Tracer) Book Number		78B43
J1289-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2102	Volume of Sample in mL	(SS)	0.25
Rerun No.	Dilution Factor	(DF)	11
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	79
R KING	Am-243 Area Peak Height from AEA	(C243)	140
Date	Total AT Count	(ATOT)	1678
11/22/93	AT Count Time in Minutes	(MIN CT'd)	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 CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100

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

Am-241 µCi/L	=	8.43E+00
Am-241 µCi/mL	=	8.43E-03
Relative counting error	=	14.1%
Am-243 Tracer Recovery	=	8.8%

Data Entry by:	Date:	23-Nov-93
Approved by:	Date:	November 24, 1993

721

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#3 11-22-93

J1289-5782

1678 - 4
30

BEST AVAILABLE COPY

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

5 5912 WHC-SD-WM-DP-057 REV 0

Serial No.	Sample Point	Date	Time Issued	Priority
J 1289.-5782	BECHTOLD	11- 4-93	9: 2	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	E14157	0

Sample Size	Customer ID
? 1ml-10ml 8m HNO_3 - .250ml	KE24A

Remarks, Calculations, Results

COUNT AS uCI/L Duplicate

1ml 8m HNO_3 acts

.100 ml spike #78B43

7.47×10^{-3} uCi/ml

OUT FOR RERUN

Not King

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
	[signature]	[signature]		
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
11/22/93	07:15	[signature]	[signature]

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

BEST AVAILABLE COPY

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

			SAMPLE
Serial No.	Spike (Tracer) Book Number		78B43
J1289-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2102	Volume of Sample in mL	(SS)	0.25
Rerun No.	Dilution Factor	(DF)	11
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	2
R KING	Am-243 Area Peak Height from AEA	(C243)	4
Date	Total AT Count	(ATOT)	250
11/22/93	AT Count Time in Minutes	(MIN CT'd)	30
	Background in CPM	(BKG)	7

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

µCi/mL = µCi/L / (1000mL/L)

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

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

Am-241 µCi/L	=	7.47E+00
Am-241 µCi/mL	=	7.47E-03
Relative counting error	=	86.6%
Am-243 Tracer Recovery	=	0.2%

Data Entry by:	[signature]	Date:	23-Nov-93
Approved by:	[signature] 723	Date:	November 24, 1993

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#1 11-22-93

250/30 - 7

J1289-5782

BEST AVAILABLE COPY

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

7 7355 WHC-SD-WM-DP-057 REV 0

Serial No	Sample Point	Date	Time Issued	Priority
J 1289.-5782	BECHTOLD	11- 4-93	9: 2	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	uCi/ML	E14157	0

Sample Size	Customer ID
? 1ml - 10ml 8M HNO3 - .250ml	KE24A

Remarks, Calculations, Results

COUNT AS uCI/L triplicate

1ml 8M HNO3 adj

.100ml spike# 78B43 4.98 x10^-3 uCi/ml

OUT FOR RERUN

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
	54054			
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11/22/93	07:15	

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

BEST AVAILABLE COPY

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

			SAMPLE
Serial No.	Spike (Tracer) Book Number		78B43
J1289-5782	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.1
2102	Volume of Sample in mL	(SS)	0.25
Rerun No.	Dilution Factor	(DF)	11
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	1
R KING	Am-243 Area Peak Height from AEA	(C243)	3
Date	Total AT Count	(ATOT)	72
11/22/93	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

Am-241 µCi/L	=	4.98E+00
Am-241 µCi/mL	=	4.98E-03
Relative counting error	=	115.5%
Am-243 Tracer Recovery	=	0.3%

Data Entry by:		Date: 24-Nov-93
Approved by:		Date: November 24, 1993

725

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#2 11-22-93 JQ

J1289-5782

72/30 - 1

BEST AVAILABLE COPY

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

3 3428 WHC-SD-WM-DP-057 REV 0

Serial No	Sample Point	Date	Time Issued	Priority
J 1289.-5982	BECHTOLD	11- 4-93	9: 2	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	% RECOVERY	E14157	0

Sample Size	Customer ID
? 1ml-10ml 2m HNO3 -.250ml	KE24A

Remarks, Calculations, Results

SAMPLE SPIKED ID Lmcs 63843 1ml-10ml 2m HNO3 -1ml

SPIKE ID 78843

SPIKE VOLUME .200ml

COUNT AS uCI/L 28.0%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		
11/22/93	07:15			

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

BEST AVAILABLE COPY

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

			CHK EXT NO.
Serial No.	Spike (Tracer) Book Number		78B43
J1289-5982	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.2
2102	Volume of Sample in mL	(SS)	0.25
Rerun No.	Dilution Factor	(DF)	11
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	9
R KING	Am-243 Area Peak Height from AEA	(C243)	7
Date	Total AT Count	(ATOT)	181
11/22/93	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

Am-241 µCi/L	=	3.84E+01
Am-241 µCi/mL	=	3.84E-02
Relative counting error	=	50.4%
Am-243 Tracer Recovery	=	0.1%

Data Entry by:		Date:	24-Nov-93
Approved by:	727	Date:	November 24, 1993

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#3 11-22-83

J1289 5982

181/30 -4

WHC-SD-WM-DP-057 REV O

BEST AVAILABLE COPY

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

2 2414 WHC-SD-WM-DP-057 REV 0

Serial No.	Sample Point	Date	Time Issued	Priority
J 1289.-5982	BECHTOLD	11- 4-93	9: 2	18

Determination	Method-Standard	Result Units	Charge Code	Reruns
Am241	LA-503-156	% RECOVERY	E14157	0

Sample Size	Customer ID
? 1ml - 10ml 8m HNO_3 - .250ml	KE24A

Remarks, Calculations, Results: spike Cup

SAMPLE SPIKED ID LMCS 63B43 1ml - 10ml 8m HNO_3 - 1ml

SPIKE ID 78B43

SPIKE VOLUME .200ml
COUNT AS uCI/L 30.2%

Rob King

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
	[signature]	D.H. Milliner		
Hrs	Hrs	Hrs	Hrs	Hrs
		[signature]		

Date	Time Completed	Lab Unit Mgr	
11/22/93	07:15	[signature]	[signature]

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

BEST AVAILABLE COPY

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

			CHK EXT NO.
Serial No.	Spike (Tracer) Book Number		78B43
J1289-5982	Activity of Am243 Tracer in dpm/mL	(SPKA)	7537
Batch ID	Spike (Tracer) Volume in mL	(SPKV)	0.2
2102	Volume of Sample in mL	(SS)	0.25
Rerun No.	Dilution Factor	(DF)	11
0	Digest Dilution Factor	(DDF)	1
Analyst	Am-241 Area Peak Height from AEA	(C241)	4
R KING	Am-243 Area Peak Height from AEA	(C243)	3
Date	Total AT Count	(ATOT)	254
11/22/93	AT Count Time in Minutes	(MIN CT'd)	30
	Background in CPM	(BKG)	7

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

Am-241 µCi/L	=	3.98E+01
Am-241 µCi/mL	=	3.98E-02
Relative counting error	=	76.4%
Am-243 Tracer Recovery	=	0.1%

Data Entry by: [signature]		Date:	24-Nov-93
Approved by: [signature]	729	Date:	November 24, 1993

Form 3 Rev. 1.2

AMERICIUM 241 ANALYSIS - UNDIGESTED SAMPLE

#1 11-22-83

J1289-5982

254/30 -7

WHC-SD-WM-DP-057 REV O

BEST AVAILABLE COPY

D. H. Mitecia
11-22-93

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
J1305-5582
File ID: 8a8568.CNF

WHC-SD-WM-DP-057 REV O

Counted on: 11/22/93 @12:10
Detector: AEA8
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	26.6	26.6	296.641	296.641	16.000	6.319	8.000	1.985
2	30.7	30.7	250.471	252.271	20.000	6.959	10.000	1.648

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	0.313	5.480	5.489	-.009	0.03	1.03	8.8	8.6	0.385E-05
	Pu238		5.499	5.489	0.010				11.2	0.503E-05
2	Am243	0.437	5.276	5.280	-.004	0.03	1.43	7.6	11.3	0.510E-05
Totals:		0.751	<--valid peaks only-->				2.46			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.095 + (0.0047)*Channel
Energy range (MeV): 4.095 TO 6.501
Efficiency = 0.1278 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	1574.0	100.000
Smoothed	1574.0	100.000
Composite fit	1181.5	75.062
Residuals	392.5	24.938

Analyzed by: _____
RW

Spectrum 8a8568.CNF

1 Legend: "Raw" = ... Modeled Peaks = 1,2,.., etc Display Max.: 222.5

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 8a8568.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	1.	0.	3.
21	1.	3.	3.	1.	0.	1.	3.	2.	0.	0.
31	1.	1.	1.	1.	2.	1.	0.	0.	2.	0.
41	0.	0.	1.	2.	0.	3.	0.	1.	0.	2.
51	0.	2.	1.	2.	0.	0.	1.	1.	0.	1.
61	1.	2.	2.	1.	2.	1.	2.	0.	0.	0.
71	1.	0.	1.	2.	0.	0.	1.	2.	1.	2.
81	3.	4.	1.	2.	2.	1.	0.	1.	1.	2.
91	1.	1.	1.	0.	2.	3.	2.	2.	1.	3.
101	0.	1.	2.	2.	0.	1.	4.	3.	2.	4.
111	2.	4.	1.	3.	0.	2.	1.	1.	1.	1.
121	3.	3.	0.	1.	0.	4.	2.	3.	0.	1.
131	1.	1.	3.	3.	2.	2.	2.	3.	1.	1.
141	2.	1.	2.	0.	3.	4.	0.	0.	3.	6.
151	3.	1.	3.	0.	4.	3.	2.	3.	1.	4.
161	1.	4.	5.	6.	1.	2.	2.	3.	1.	1.
171	2.	3.	1.	2.	3.	2.	1.	0.	1.	1.
181	4.	3.	3.	3.	3.	5.	4.	3.	4.	3.
191	8.	4.	4.	4.	2.	6.	1.	6.	4.	5.
201	4.	1.	1.	6.	2.	5.	1.	5.	5.	8.
211	7.	6.	4.	5.	6.	10.	6.	8.	6.	8.
221	9.	5.	6.	2.	5.	3.	2.	11.	6.	4.
231	7.	11.	10.	6.	9.	9.	8.	14.	8.	9.
241	14.	17.	23.	22.	20.	31.	21.	27.	42.	32.
251	29.	29.	32.	32.	22.	12.	22.	16.	5.	7.
261	1.	10.	4.	5.	4.	6.	4.	10.	6.	6.
271	6.	8.	10.	8.	4.	6.	7.	4.	9.	5.
281	7.	9.	8.	7.	9.	13.	11.	19.	22.	10.
291	19.	13.	15.	25.	32.	33.	26.	30.	27.	17.
301	13.	8.	10.	5.	3.	1.	4.	0.	0.	0.
311	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	0.	0.	1.	3.	0.
351	2.	1.	0.	0.	0.	0.	0.	0.	1.	0.
361	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	1.	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.	1.
481	0.	1.	0.	0.	0.	1.	0.	2.	1.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

BEST AVAILABLE COPY

D.H. Milburn
11-22-93

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-057 REV O

SAMPLE
J1306-5682
File ID: 4a4988.CNF

Counted on: 11/22/93 @12: 8
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

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
Totals:		0.000	<--valid peaks only-->				0.00			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.081 + (0.0047)*Channel
Energy range (MeV): 4.081 TO 6.487
Efficiency = 0.0872 CPM/DPM

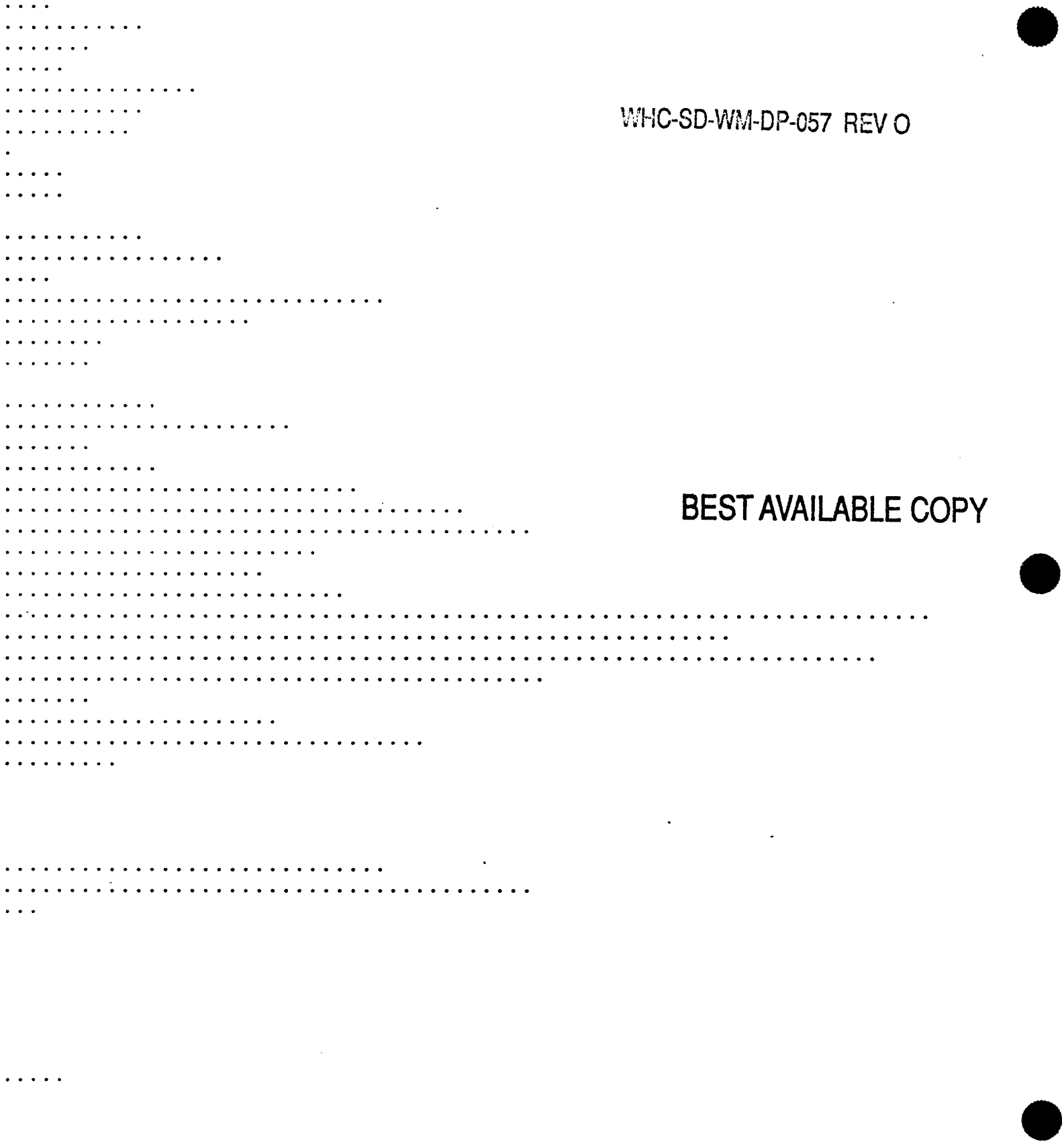
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	136.0	100.000
Smoothed	135.9	99.928
Composite fit	0.0	0.000
Residuals	136.0	100.000

Analyzed by: _____
RW

Spectrum 4a4988.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 11.4



BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 4a4988.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.	1.	0.	0.	0.
31	1.	0.	0.	0.	0.	0.	1.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
[illegible]	0.	1.	0.	0.	1.	1.	0.	1.	0.	0.
61	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
91	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
111	0.	0.	0.	1.	0.	1.	0.	1.	0.	0.
121	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
131	2.	0.	1.	0.	2.	0.	0.	0.	0.	0.
141	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.
151	1.	0.	0.	0.	0.	0.	1.	0.	0.	0.
161	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
171	0.	0.	1.	0.	0.	2.	0.	0.	2.	0.
181	1.	0.	0.	0.	0.	0.	0.	1.	0.	0.
191	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
201	2.	0.	1.	1.	0.	0.	0.	1.	0.	1.
211	0.	1.	2.	0.	2.	0.	0.	2.	0.	1.
221	1.	1.	1.	1.	0.	1.	0.	0.	1.	0.
231	1.	0.	1.	0.	1.	0.	0.	0.	0.	1.
241	2.	0.	1.	0.	0.	1.	0.	0.	2.	2.
251	0.	3.	1.	0.	2.	4.	2.	1.	0.	0.
261	0.	3.	1.	1.	1.	1.	1.	1.	2.	0.
271	1.	6.	0.	0.	2.	1.	0.	1.	0.	0.
281	0.	0.	0.	0.	0.	0.	0.	0.	2.	0.
291	0.	1.	0.	0.	0.	2.	0.	0.	3.	0.
301	1.	0.	1.	0.	0.	1.	0.	0.	0.	0.
3[illegible]	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.	0.	0.	0.
341	0.	0.	0.	0.	0.	0.	2.	1.	1.	0.
351	0.	0.	4.	0.	3.	0.	0.	1.	0.	0.
361	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	1.	1.	0.	0.	0.	1.	0.	2.	1.
481	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

BEST AVAILABLE COPY

D. H. Milian
11-22-93

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
J1289-5782
File ID: 6a6819.CNF

WHC-SD-WM-DP-057 REV 0

Counted on: 11/22/93 @12: 9
Detector: AEA6
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	70.8	70.8	287.474	287.607	40.000	75.889	20.000	27.428
2	118.5	118.5	247.549	246.726	30.000	34.314	15.000	[illegible]
3?	4.5	4.5	133.437	130.393	8.000	1.163	4.000	[illegible]
4?	3.1	3.1	81.386	77.809	8.000	1.930	4.000	2.502
5?	2.8	2.8	43.839	45.248	6.000	0.757	3.000	0.196

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	0.259	5.430	5.433	-.003	0.36	6.20	3.6	66.6	0.300E-04
	Am241		5.480	5.433	0.047				50.3	0.227E-04
2	Am243	0.746	5.276	5.241	0.035	0.16	17.88	2.2	137.7	0.620E-04
	Pu240		5.144	5.241	-.097				136.3	0.614E-04
3		????		4.694			0.08	162.		
4		????		4.447			0.05	167.		
5		????		4.294			0.09	62.0		
Totals:		1.005	<--valid peaks only-->				24.08			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.081 + (0.0047)*Channel
Energy range (MeV): 4.081 TO 6.488
Efficiency = 0.1312 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	11510.0	100.000
Smoothed	11516.1	100.053
Composite fit	11666.2	101.357
Residuals	-156.2	-1.357

Analyzed by: _____

WHC-SD-WM-DP-057 REV O

BEST AVAILABLE COPY

Spectrum 6a6819.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 909.5

WHC-SD-WM-DP-057 REV O

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 6a6819.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	2.	5.	5.	4.
21	7.	6.	3.	5.	4.	3.	7.	4.	2.	2.
31	3.	5.	3.	5.	4.	4.	8.	5.	7.	3.
41	7.	8.	7.	2.	8.	9.	2.	5.	4.	5.
[illegible]	5.	2.	7.	3.	8.	4.	8.	6.	7.	6.
[illegible]	4.	7.	3.	8.	8.	6.	5.	6.	8.	4.
71	6.	6.	9.	7.	7.	6.	9.	14.	9.	9.
81	6.	11.	8.	10.	5.	10.	4.	9.	7.	10.
91	4.	5.	12.	6.	6.	11.	8.	9.	17.	8.
101	10.	7.	9.	20.	8.	21.	12.	12.	12.	10.
111	11.	13.	10.	14.	24.	11.	9.	7.	17.	10.
121	18.	20.	17.	15.	15.	14.	24.	23.	18.	22.
131	23.	21.	19.	17.	12.	20.	29.	18.	15.	23.
141	9.	13.	19.	13.	18.	34.	25.	26.	10.	25.
151	22.	21.	23.	34.	20.	31.	27.	22.	38.	26.
161	34.	34.	31.	38.	45.	29.	31.	30.	16.	30.
171	25.	30.	48.	53.	45.	35.	30.	37.	39.	50.
181	49.	34.	51.	52.	40.	42.	44.	43.	53.	49.
191	39.	56.	55.	46.	45.	41.	35.	61.	48.	56.
201	47.	68.	55.	50.	51.	70.	60.	59.	58.	69.
211	74.	81.	77.	83.	75.	82.	87.	85.	69.	86.
221	83.	77.	79.	80.	86.	80.	82.	94.	73.	86.
231	95.	99.	95.	106.	114.	104.	100.	105.	106.	99.
241	106.	103.	113.	106.	122.	123.	140.	118.	125.	100.
251	106.	83.	102.	99.	104.	101.	84.	85.	72.	74.
261	65.	75.	48.	66.	46.	51.	45.	51.	61.	58.
271	66.	63.	42.	68.	67.	49.	61.	82.	61.	58.
281	60.	67.	63.	57.	71.	61.	79.	76.	71.	45.
291	65.	61.	61.	54.	58.	64.	57.	58.	48.	45.
301	[illegible]	41.	37.	31.	36.	31.	24.	20.	22.	15.
3[illegible]	11.	10.	5.	9.	9.	6.	8.	7.	2.	0.
32[illegible]	2.	2.	2.	2.	1.	0.	3.	2.	1.	1.
331	3.	4.	0.	1.	1.	2.	5.	5.	3.	1.
341	0.	5.	2.	1.	1.	2.	0.	0.	1.	4.
351	0.	4.	1.	4.	2.	1.	5.	0.	2.	4.
361	1.	0.	0.	0.	0.	2.	0.	1.	0.	2.
371	0.	1.	0.	2.	0.	0.	0.	0.	1.	1.
381	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
411	1.	1.	0.	1.	0.	1.	1.	0.	1.	1.
421	0.	0.	0.	0.	1.	0.	0.	0.	0.	1.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	3.
441	0.	0.	2.	1.	0.	0.	0.	0.	0.	1.
451	0.	1.	0.	0.	0.	1.	0.	0.	1.	0.
461	1.	0.	0.	0.	0.	0.	1.	0.	1.	1.
471	1.	6.	1.	1.	1.	0.	3.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
491	1.	1.	0.	2.	1.	5.	3.	0.	0.	0.
511	0.	0.								

BEST AVAILABLE COPY

D H Williams
11-22-93

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
J1289-5782
File ID: 5a5912.CNF

WHC-SD-WM-DP-057 REV O

Counted on: 11/22/93 @12: 8
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

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
Totals:		0.000	<--valid peaks only-->				0.00			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.094 + (0.0047)*Channel
Energy range (MeV): 4.094 TO 6.501
Efficiency = 0.1340 CPM/DPM

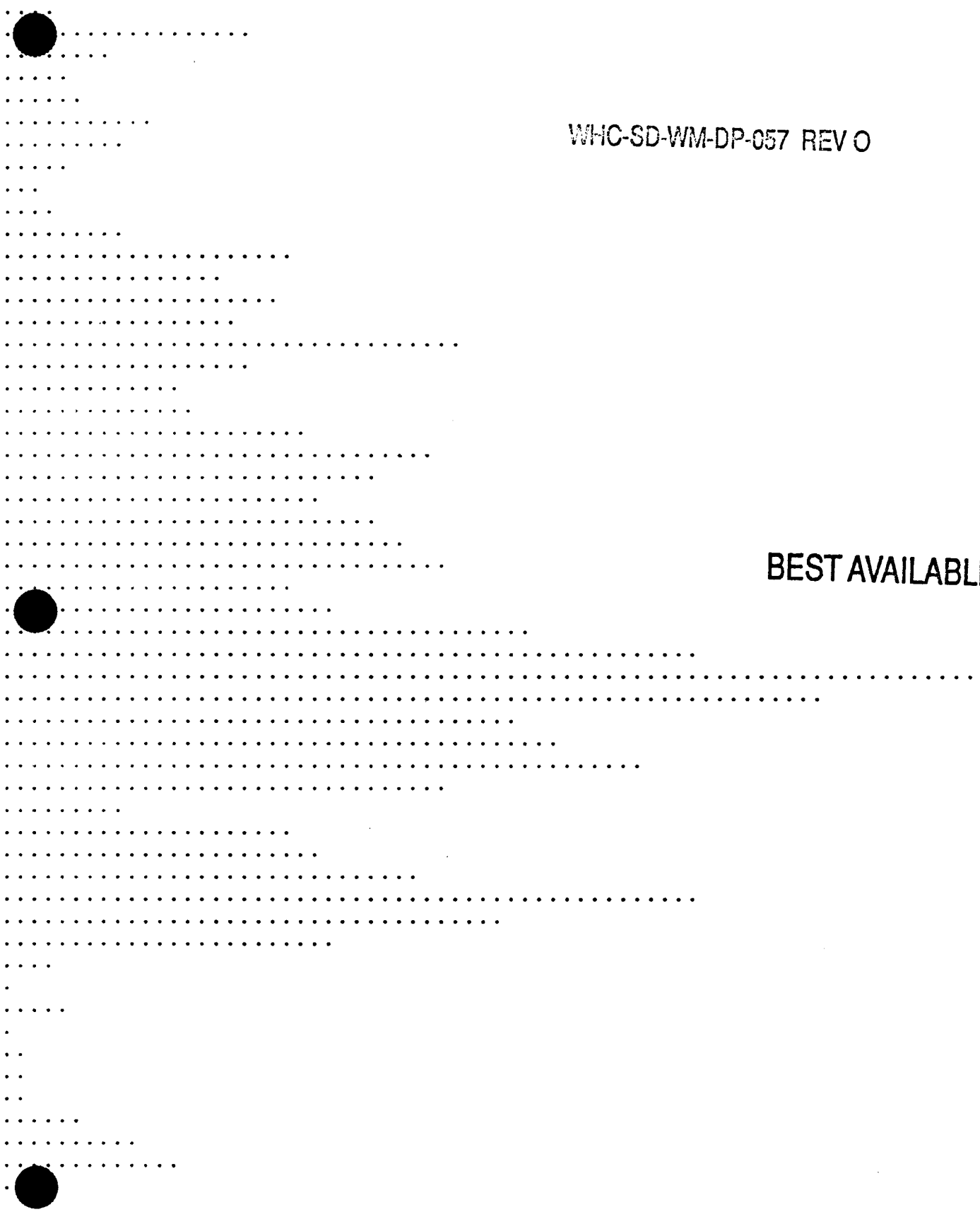
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	321.0	100.000
Smoothed	320.4	99.803
Composite fit	0.0	0.000
Residuals	321.0	100.000

Analyzed by: _____
RW

Spectrum 5a5912.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 18.9



WHC-SD-WM-DP-057 REV O

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 5a5912.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.	1.	0.	0.	1.	2.	1.	0.
31	1.	0.	0.	0.	0.	1.	0.	1.	0.	0.
41	0.	0.	0.	0.	1.	0.	0.	0.	1.	1.
51	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
61	1.	0.	0.	1.	2.	0.	0.	0.	0.	0.
71	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.
81	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
91	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
101	0.	1.	0.	1.	0.	0.	0.	2.	1.	2.
111	1.	0.	1.	0.	1.	0.	0.	0.	1.	1.
121	1.	1.	1.	1.	0.	0.	0.	2.	1.	0.
131	1.	0.	0.	0.	2.	0.	1.	3.	2.	2.
141	1.	0.	0.	1.	0.	1.	0.	1.	1.	1.
151	0.	1.	0.	0.	0.	1.	1.	1.	0.	0.
161	1.	0.	1.	1.	0.	1.	0.	0.	0.	1.
171	1.	0.	2.	1.	0.	1.	3.	1.	0.	0.
181	2.	0.	4.	0.	0.	1.	0.	1.	2.	2.
191	0.	1.	1.	0.	0.	2.	1.	1.	0.	1.
201	1.	2.	0.	0.	1.	2.	0.	2.	0.	3.
211	2.	0.	0.	1.	0.	1.	3.	0.	0.	0.
221	4.	1.	0.	2.	1.	2.	0.	0.	0.	0.
231	2.	0.	1.	0.	3.	1.	1.	0.	0.	1.
241	0.	2.	1.	1.	2.	1.	4.	1.	0.	2.
251	0.	1.	4.	1.	3.	2.	3.	3.	2.	3.
261	0.	6.	1.	1.	3.	2.	1.	3.	0.	4.
271	2.	2.	1.	1.	2.	2.	0.	1.	0.	1.
281	2.	1.	0.	3.	2.	2.	0.	2.	0.	4.
291	3.	1.	1.	1.	0.	2.	2.	1.	0.	2.
301	0.	2.	1.	1.	0.	1.	0.	0.	0.	0.
311	0.	0.	1.	0.	3.	2.	0.	0.	0.	0.
321	1.	1.	0.	1.	1.	1.	1.	2.	0.	0.
331	1.	2.	1.	0.	4.	0.	1.	0.	3.	1.
341	3.	1.	4.	1.	3.	2.	0.	2.	1.	0.
351	0.	0.	2.	2.	2.	1.	0.	0.	0.	0.
361	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
381	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
411	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.
421	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.
431	0.	1.	1.	2.	0.	0.	0.	0.	1.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
451	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
461	0.	0.	0.	1.	0.	0.	0.	0.	0.	1.
471	1.	0.	0.	1.	2.	0.	1.	0.	0.	1.
481	2.	0.	1.	1.	1.	3.	0.	0.	0.	0.
491	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.
511	0.	0.								

BEST AVAILABLE COPY

D.H. Miller
11-22-93

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
J1289-5782
File ID: 7a7355.CNF

WHC-SD-WM-DP-057 REV 0

Counted on: 11/22/93 @12:10
Detector: AEA7
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final

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
Totals:		0.000	<--valid peaks only-->				0.00			

DETECTOR CALIBRATION
Energy(MEV) = 4.088 + (0.0047)*Channel
Energy range (MeV): 4.088 TO 6.494
Efficiency = 0.1029 CPM/DPM

BEST AVAILABLE COPY

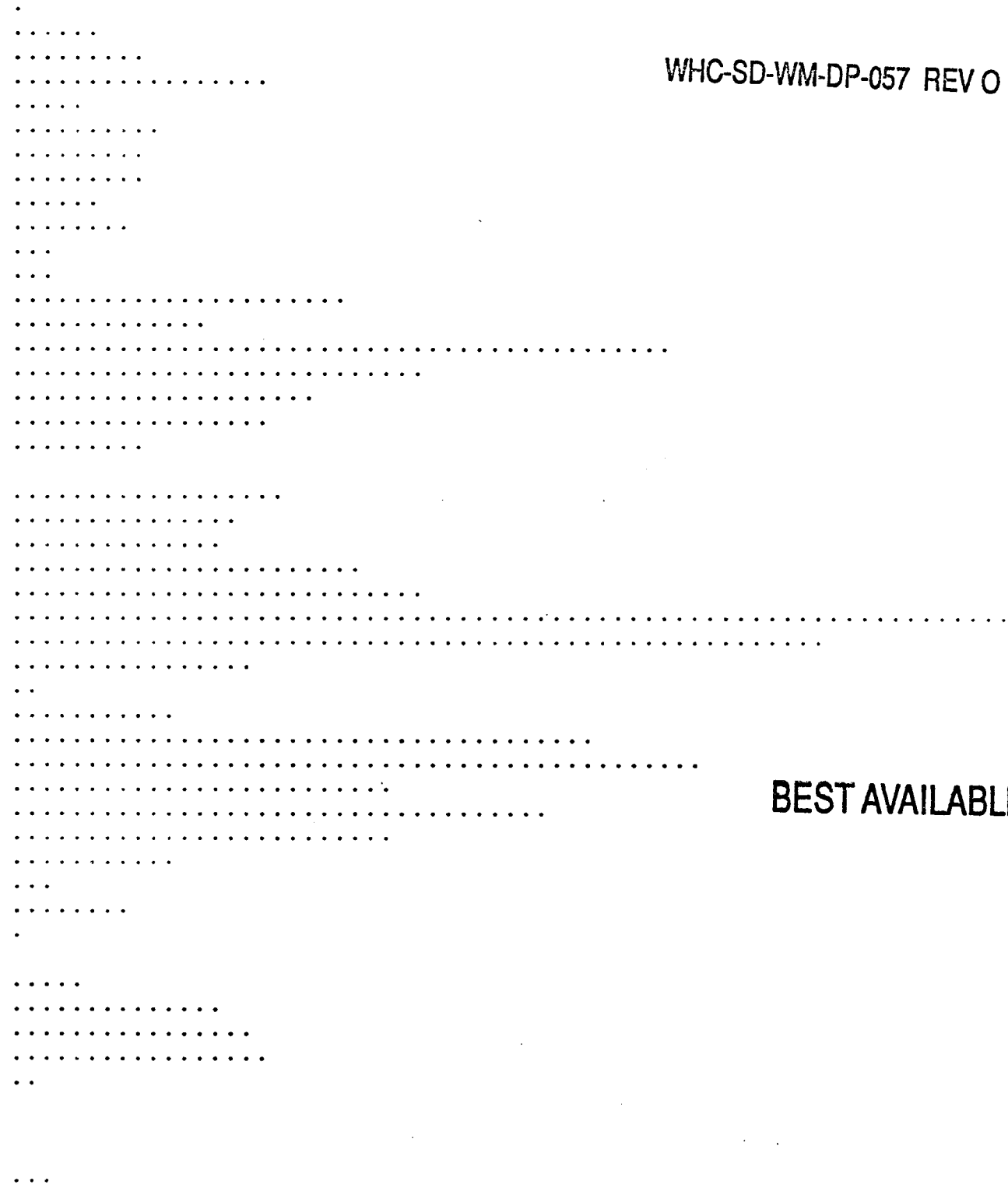
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	193.0	100.000
Smoothed	189.9	98.407
Composite fit	0.0	0.000
Residuals	193.0	100.000

Analyzed by: _____
RW

Spectrum 7a7355.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 17.3



WHC-SD-WM-DP-057 REV O

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 7a7355.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.	0.	0.	0.	0.
31	0.	1.	1.	0.	0.	0.	0.	0.	0.	1.
41	1.	3.	0.	0.	0.	0.	0.	1.	0.	0.
[illegible]	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
61	0.	0.	3.	0.	1.	0.	0.	0.	1.	0.
71	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.
81	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	0.	0.	2.	0.	0.	0.	1.	0.	0.	0.
101	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
111	0.	1.	1.	0.	0.	1.	2.	0.	1.	2.
121	0.	0.	0.	1.	0.	0.	1.	0.	0.	1.
131	2.	2.	1.	1.	2.	4.	1.	1.	0.	0.
141	1.	0.	2.	0.	0.	1.	0.	2.	0.	1.
151	1.	0.	0.	0.	0.	0.	1.	2.	1.	0.
161	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.
171	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
181	2.	2.	0.	0.	1.	0.	0.	0.	1.	1.
191	0.	1.	0.	1.	0.	0.	1.	0.	0.	1.
201	1.	2.	1.	0.	0.	1.	0.	1.	1.	1.
211	1.	0.	3.	0.	0.	0.	2.	3.	2.	3.
221	3.	2.	3.	2.	2.	2.	3.	1.	2.	0.
231	1.	1.	1.	0.	0.	1.	1.	0.	0.	0.
241	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
251	0.	0.	0.	1.	1.	0.	2.	0.	2.	2.
261	0.	1.	2.	2.	1.	3.	2.	1.	2.	0.
271	0.	2.	1.	0.	2.	0.	2.	0.	0.	0.
281	1.	1.	2.	2.	1.	0.	0.	3.	1.	1.
291	0.	3.	0.	0.	0.	0.	1.	1.	0.	1.
301	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
3[illegible]	0.	1.	0.	0.	0.	1.	1.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	1.	0.	0.	1.	0.	0.	0.	0.	1.	1.
351	2.	0.	0.	0.	1.	1.	1.	0.	0.	0.
361	1.	2.	0.	1.	0.	0.	0.	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.	1.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	1.	0.	0.	0.	1.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	3.	0.								

11-24-93

BEST AVAILABLE COPY

D. H. Milligan
11-22-93

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
J1289-5982
File ID: 3a3478.CNF

WHC-SD-WM-DP-057 REV O

Counted on: 11/22/93 @12: 7
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	5.6	5.6	298.895	299.132	14.000	5.888	7.000	1.355
2?	4.4	4.4	254.639	251.316	16.000	7.460	8.000	4.199

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Peak Centroid Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu238	0.562	5.499	5.504	-.0050	0.03	0.26	17.6	2.8	0.127E-05
	Am241		5.480	5.504	-.024				2.2	0.970E-06
2		????		5.280			0.14	26.6		
Totals:		0.562	<--valid peaks only-->				0.26			

BEST AVAILABLE COPY

DETECTOR CALIBRATION
Energy(MEV) = 4.098 + (0.0047)*Channel
Energy range (MeV): 4.098 TO 6.505
Efficiency = 0.1273 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	220.0	100.000
Smoothed	220.0	100.000
Composite fit	188.8	85.829
Residuals	31.2	14.171

Analyzed by: _____
RW

Spectrum 3a3478.GNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 35.2

BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 3a3478.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.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	1.	0.	0.	0.	1.	0.	0.	0.	0.	0.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
91	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
111	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
121	1.	0.	2.	2.	0.	0.	0.	0.	0.	0.
131	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.
141	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
151	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
161	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
171	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
181	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
191	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
201	0.	0.	0.	0.	0.	0.	0.	1.	2.	1.
211	0.	0.	1.	0.	2.	1.	1.	0.	0.	0.
221	1.	0.	0.	2.	0.	1.	0.	2.	0.	0.
231	1.	0.	0.	1.	0.	0.	1.	0.	1.	0.
241	3.	3.	1.	1.	3.	4.	6.	2.	4.	2.
251	7.	6.	1.	3.	4.	4.	3.	1.	4.	0.
261	0.	2.	0.	0.	0.	1.	0.	2.	1.	1.
271	1.	0.	1.	2.	3.	2.	1.	0.	0.	1.
281	2.	4.	1.	3.	3.	2.	3.	0.	3.	5.
291	9.	5.	6.	2.	5.	2.	4.	4.	8.	6.
301	5.	2.	5.	2.	3.	1.	0.	0.	0.	0.
311	1.	1.	0.	0.	1.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	1.	0.	0.	0.	0.	1.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.
351	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
361	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	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.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

BEST AVAILABLE COPY

D.H. Milbrea
11-22-93

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-057 REV O

SAMPLE
J1289-5982
File ID: 2a2414.CNF

Counted on: 11/22/93 @12: 7
Detector: AEA2
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

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
Totals:		0.000	<--valid peaks only-->				0.00			

DETECTOR CALIBRATION
Energy(MEV) = 4.081 + (0.0047)*Channel
Energy range (MeV): 4.081 TO 6.488
Efficiency = 0.1171 CPM/DPM

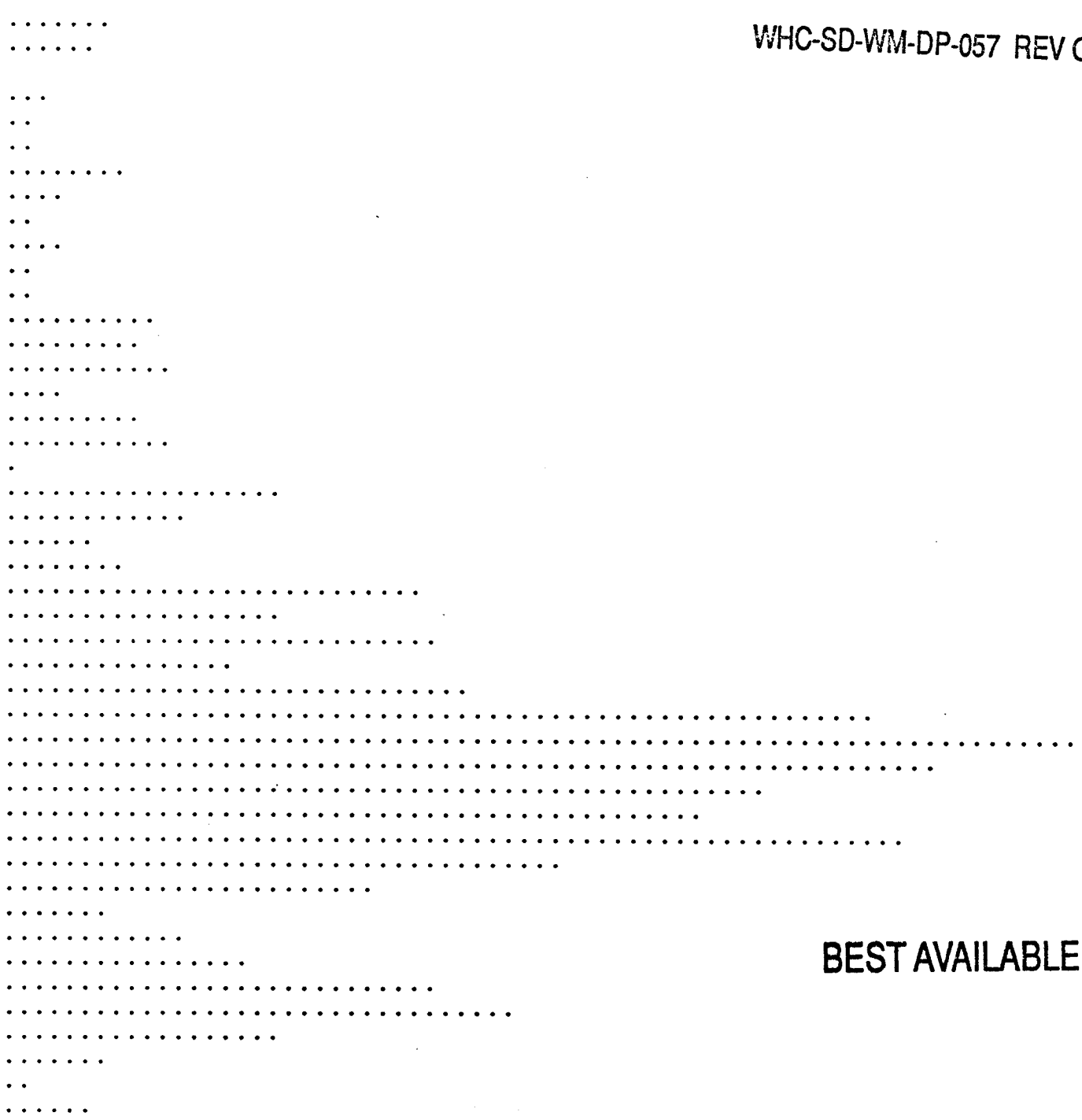
BEST AVAILABLE COPY

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	248.0	100.000
Smoothed	247.6	99.855
Composite fit	0.0	0.000
Residuals	248.0	100.000

Analyzed by: _____
RW

Spectrum 2a2414.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 18.6



BEST AVAILABLE COPY

Raw Data Dump for AEA Spectrum: 2a2414.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.	1.	1.	0.	0.	0.
31	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
[illegible]	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
71	0.	0.	1.	0.	0.	0.	0.	0.	2.	0.
81	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
101	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
111	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
121	1.	0.	0.	0.	0.	1.	1.	1.	0.	0.
131	1.	0.	0.	0.	1.	0.	0.	0.	0.	2.
141	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
151	0.	1.	1.	0.	0.	0.	0.	0.	0.	2.
161	1.	0.	1.	0.	0.	0.	1.	0.	0.	0.
171	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
181	1.	3.	1.	0.	0.	0.	1.	0.	0.	1.
191	0.	0.	2.	0.	0.	0.	0.	0.	0.	0.
201	0.	0.	1.	0.	1.	0.	0.	0.	1.	2.
211	2.	1.	0.	2.	0.	0.	1.	0.	0.	1.
221	0.	0.	1.	2.	1.	3.	0.	1.	0.	1.
231	1.	1.	0.	1.	0.	0.	0.	1.	0.	1.
241	2.	0.	1.	0.	3.	0.	2.	1.	1.	2.
251	3.	2.	0.	2.	3.	2.	5.	2.	2.	1.
261	3.	3.	1.	3.	2.	1.	1.	3.	3.	2.
271	1.	3.	1.	2.	3.	2.	0.	1.	2.	1.
281	1.	1.	3.	1.	1.	1.	2.	2.	2.	3.
291	2.	4.	1.	2.	1.	1.	1.	1.	1.	3.
301	0.	2.	1.	0.	1.	0.	2.	2.	1.	0.
3[illegible]	0.	0.	0.	1.	0.	0.	0.	0.	0.	1.
32[illegible]	0.	1.	0.	0.	1.	0.	1.	0.	1.	1.
331	0.	0.	1.	0.	0.	2.	1.	1.	0.	2.
341	0.	1.	3.	0.	0.	2.	1.	1.	1.	1.
351	3.	0.	1.	0.	2.	1.	0.	0.	0.	0.
361	0.	1.	0.	0.	0.	0.	1.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
421	0.	0.	1.	2.	0.	0.	0.	0.	0.	1.
431	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
441	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.
451	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	1.	3.
471	2.	3.	1.	0.	0.	1.	1.	2.	2.	1.
481	0.	1.	1.	0.	1.	0.	1.	0.	0.	1.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

BEST AVAILABLE COPY

WESTINGHOUSE HANFORD COMPANY Batch 2341

WHC-SD-WM-DP-057 REV O

222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No. J 1285	Customer ID: KE 13A
Analysis: U	Sample Prep: DIRECT

Instrument: UV88807	Procedure/ Rev: EA-925-106/B-0
Technologist: TANIA BATES	Date: 12-15-93
Starting Time: 1100	Temperature 23°C
Ending Time: 1300	Chemist: J. Slippern

Comments: Bail Down (10 → 10 FINAL SAMPLE)

	Description	Lab ID		Description	Lab ID
1	LMCS	J1284-5540	11		
2	BLK	J1300-5640	12		
3	SAMPLE	J1285-5740	13		
4	SAMPLE	J1285-5740	14		
5	SAMPLE	J1285-5740	15		
6	SAMPLE SPIKE	J1285-5940	16		
7	SAMPLE SPIKE	J1285-5940	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
UFIC	141B38, 100 mL			
U-CAL	141B38, 100 mL			

753

Tania Bates 12-15-93

A-6000-881 (03/92)

ANALYTICAL BATCH SUMMARY SHEET

METHOD: LA-925-106

DATE START: DECEMBER 15, 1993

PREPARED BY: S.L. FITZGERALD

DATE COMPLETE: DECEMBER 17, 1993

		UNITS:	ug/mL									
SPL NAME	SPL ID	ANALYTE	RESULT #1	RESULT #2	RESULT #3	AVERAGE	2*SD	PREC	ACCU	%REC	DET LIM	% CT ER
std 144b38	J1284	U	4.27E-02							111	3.28E+00	
BLANK	J1300	U	<1.43E+01								1.43E+01	
KE13A	J1285	U	2.38E+02	2.51E+02	2.51E+02	2.47E+02	1.50E+01	6.086			1.40E+01	
											1.40E+01	
											1.40E+01	
KE 13A	J1285	U/SPIKE				288			11.81	305		
										271		

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

Standard results are reported as gU/L

Spike recoveries exceed control limits but due to number of reruns no new reruns requested

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

Serial No	Sample Point	Date	Time Issued	Priority
J1284.-5540	BECHTOLD	11- 4-93	8:47	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	2

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

Remarks, Calculations, Results
STD# 144B38 RESULT 4.27E-2
STD VAL 3.86E-2 %REC 110.62%
SPIKE ID/VAL 146B38/5.04-4 g/l
SPIKE VOL. 100 ml

Tania Bates .26 .56

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	12-16-93 AKM Garland

Date	Time Completed	Lab Unit Mgr	
12-15-93	1300	[signature]	12-16-93 AKM Garland

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

BEST AVAILABLE COPY

URANIUM : LA-925-106 (B-0) LIQUIDS

			STANDARD
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1284-5540	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2341	Volume of sample (mL)	VSAM	0.100
Rerun No.	Volume of liquid in cell	VSUB	5.60
2	(sample + fluran + water)		
Instrument	Deflection (sample + fluran)	DSAM	0.26
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL)	VTOT	5.70
T. BATES	(sample + fluran + water + spike)		
Date:	Deflection (sample + fluran + spike)	DS+S	0.56
12/15/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		4.27E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/(I({VTOT/VSUB}*(DS+S))-DSAMI*VSAM))
gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/(I({VTOT/VSUB}*(DS+S))-DSAMI*VSAM))
0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level
Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/(I{VTOT/VSUB}*(DS+S))-DSAMI*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	4.27E-02
U in µg/mL=	4.27E+01

DETECTION LEVEL µg/mL= 3.28E+00

Data Entry by:	[signature]	Date:	15-Dec-93
Approved by:	[signature]	Date:	17-Dec-93

Form 1 Rev. 1.2 Page 1 of 1

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

BEST AVAILABLE COPY

Serial No	Sample Point	Date	Time Issued	Priority
J 1300.-5640	BECHTOLD	11- 4-93	15:23	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	2

Sample Size	Customer ID
? , 100 - 10 - .025 ml	BLK

Remarks, Calculations, Results

REAGENT BLANK
146838/15.04-4 gl
.100 ml

~~< 1.43 E+0~~ 12-20-93
< 1.43 E+1

Dana Bates

.00
.30

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

Date	Time Completed	Lab Unit Mgr	
12-15-93	1300		12-16-93

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			BLANK
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1300-5640	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2341	Volume of sample (mL)	VSAM	0.025
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.53
2			
Instrument	Deflection (sample + fluran)	DSAM	0
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	5.63
T. BATES			
Date:	Deflection (sample + fluran + spike)	DS+S	0.3
12/15/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)	<	1.43E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))–DSAM)*VSAM))
gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))–DSAM)*VSAM))
0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level
Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))–DSAM)*VSAM))*(1 E6 µg/g / 1000 mL/L)

U in sample gU/L = <	1.43E-02
U in µg/mL = <	1.43E+01

DETECTION LEVEL µg/mL= 1.43E+01
REPORT RESULT AS A < (LESS THAN) VALUE

Data Entry by:		Date:	15-Dec-93
Approved by:		Date:	17 Dec-93

Form 1 Rev. 1.2

Page 1 of 1

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1285.-5740	BECHTOLD	11- 4-93	8:58	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	4

Sample Size	Customer ID
7 , 100 - 10 - .025 ml	KE13A

Remarks, Calculations, Results

Sample
146338/5.04-4 g/l
.100 ml

2.38 E+2 RERUN
~~2.38 E+2~~ JS 12-20-93
~~2.38 E+1~~ JS 12-20-93
.34
.62

Dania Bates

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

Date	Time Completed	Lab Unit Mgr	
12-15-93	1300	[signature]	[signature]

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

BEST AVAILABLE COPY

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1285-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2341	Volume of sample (mL)	VSAM	0.025
Rerun No.	Volume of liquid in cell	VSUB	5.53
4	(sample + fluran + water)		
Instrument	Deflection (sample + fluran)	DSAM	0.34
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL)	VTOT	5.63
T. BATES	(sample + fluran + water + spike)		
Date:	Deflection (sample + fluran + spike)	DS+S	0.62
12/15/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		2.38E-01

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/(I({VTOT/VSUB}*(DS+S))-DSAM]*VSAM))
gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/(I({VTOT/VSUB}*(DS+S))-DSAM]*VSAM))
0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level
Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/(I{VTOT/VSUB}*(DS+S))-DSAM]*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	2.38E-01
U in µg/mL=	2.38E+02

DETECTION LEVEL µg/mL= 1.40E+01

Data Entry by:	[signature]	Date:	15-Dec-93
Approved by:	[signature]	Date:	17-Dec-93

Form 1 Rev. 1.2

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

BEST AVAILABLE COPY

Serial No	Sample Point	Date	Time Issued	Priority
J 1285.-5740	BECHTOLD	11- 4-93	8:58	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	5

Sample Size	Customer ID
? .100 - 10 - .025 ml	KE13A

Remarks, Calculations, Results

Duplicate
146B38 / 5.04-4 g/l
.100 ml

2.51 E+2
~~2.51 E+2~~ 88 12-20-93
~~2.52 E+1~~ 88 12-20-93
.36
.64

Daniel Bates

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

Date	Time Completed	Lab Unit Mgr	
12-15-93	1300		12-16-93

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1285-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2341	Volume of sample (mL)	VSAM	0.025
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.53
5			
Instrument	Deflection (sample + fluran)	DSAM	0.36
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	5.63
T. BATES			
Date:	Deflection (sample + fluran + spike)	DS+S	0.64
12/15/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		2.51E-01

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level

Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	2.51E-01
U in µg/mL=	2.51E+02

DETECTION LEVEL µg/mL= 1.40E+01

Data Entry by:		Date:	15-Dec-93
Approved by:		Date:	17-Dec-93

Form 1 Rev. 1.2

Page 1 of 1

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1285.-5740	BECHTOLD	11- 4-93	8:58	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	6

Sample Size	Customer ID
? .100-10 - .025 ml	KE13A

Remarks, Calculations, Results

Triplicate
146B38/5.04-4 gle
.100 ml

RERUN
2.51E+2
~~2.51E+2~~ gg 12-20-93
~~2.52E+1~~ gg 12-20-93
.36
.64

Dania Bates

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

Date	Time Completed	Lab Unit Mgr	
12-15-93	1300	[signature]	12-16-93 [signature]

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

BEST AVAILABLE COPY

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1285-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2341	Volume of sample (mL)	VSAM	0.025
Rerun No.	Volume of liquid in cell	VSUB	5.53
6	(sample + fluran + water)		
Instrument	Deflection (sample + fluran)	DSAM	0.36
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL)	VTOT	5.63
T. BATES	(sample + fluran + water + spike)		
Date:	Deflection (sample + fluran + spike)	DS+S	0.64
12/15/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		2.51E-01

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/(I({VTOT/VSUB}*(DS+S))-DSAMI*VSAM))
gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/(I({VTOT/VSUB}*(DS+S))-DSAMI*VSAM))
0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level
Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/(I{VTOT/VSUB}*(DS+S))-DSAMI*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	2.51E-01
U in µg/mL=	2.51E+02

DETECTION LEVEL µg/mL= 1.40E+01

Data Entry by:	[signature]	Date:	15-Dec-93
Approved by:	[signature]	Date:	17-Dec-93

Form 1 Rev. 1.2

Page 1 of 1

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1285.-5940	BECHTOLD	11- 4-93	8:58	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	3

Sample Size: ? .100 / .100 > 10 → .025 ml

Customer ID: KE13A

Remarks, Calculations, Results: Spike
SAMPLE SPIKED ID 144B38
SPIKE ID 146B38/5.04-4 g/l
SPIKE VOLUME .100 ml

~~30.7%~~ RERUN JJ 12-20-93

305.0% JJ 12-20-93

~~305.0% recovery~~

.40
.62

Dania Bates

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

Date	Time Completed	Lab Unit Mgr	
12-15-93	1300	[signature]	12-16-93 KM Garland

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

BEST AVAILABLE COPY

URANIUM : LA-925-106 (B-0) SPIKE

			SPIKE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1285-5940	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2341	Volume of sample (mL)	VSAM	0.0250
Rerun No.	Volume of liquid in cell	VSUB	5.53
3	(sample + fluran + water)		
Instrument	Volume of spike (mL)	VSP	0.1000
WB88807	Volume of liquid in cell	VTOT	5.63
Analyst:	(sample + fluran + water + spike)		
T. BATES	Deflection (sample + fluran)	DSAM	0.4
Date:	Deflection (sample + fluran + spike)	DS+S	0.62
12/15/93	Dilution factor of sample	DF	102
	Dilution factor of spike	DFS	102
	Spike value (matrix) (gU/L)	SV	3.8600E-02
	Preparation factor of sample	PF	1
	Concentration (gU/L) Form 1 or Form 3 (SAMPLE)	gU/L1	2.3800E-01
	Concentration (gU/L)	gU/LS	3.557E-01
	% Recovery		305.0

gU/L = (DSAM*VSP*CSP*DF*PF) / (((VTOT/VSUB) * DS+S - DSAM) * VSAM)
%Recovery = ((gU/LS - gU/L1) * (DFS / (DF * PF) / SV) * 100

% RECOVERY =	305.00

Data Entry by:	[signature]	Date:	15-Dec-93
Approved by:	[signature]	Date:	17-Dec-93

Form 2 Rev. 2.1 Page 1 of 1

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1285.-5940	BECHTOLD	11- 4-93	8:58	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	4

Sample Size	Customer ID
? .100 / .100 > 10 → .025 ml	KE13A

Remarks, Calculations, Results Spike Duplicate

SAMPLE SPIKED ID 144B38
SPIKE ID 146B38 / 5.04 gl
SPIKE VOLUME .100 ml

~~27.1 %~~ RERUN 12-20-93 271.3 %

~~271.32 % recovery~~ 12-20-93 .40 .62

Dania Bates

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

Date	Time Completed	Lab Unit Mgr	
12-15-93	1300	[signature]	12-16-93 [signature]

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

BEST AVAILABLE COPY

URANIUM : LA-925-106 (B-0) SPIKE

			SPIKE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1285-5940	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2341	Volume of sample (mL)	VSAM	0.0250
Rerun No.	Volume of liquid in cell	VSUB	5.53
4	(sample + fluran + water)		
Instrument	Volume of spike (mL)	VSP	0.1000
WB88807	Volume of liquid in cell	VTOT	5.63
Analyst:	(sample + fluran + water + spike)		
T. BATES	Deflection (sample + fluran)	DSAM	0.4
Date:	Deflection (sample + fluran + spike)	DS+S	0.62
12/15/93	Dilution factor of sample	DF	102
	Dilution factor of spike	DFS	102
	Spike value (matrix) (gU/L)	SV	3.8600E-02
	Preparation factor of sample	PF	1
	Concentration (gU/L) Form 1 or Form 3 (SAMPLE)	gU/L1	2.5100E-01
	Concentration (gU/L)	gU/LS	3.557E-01
	% Recovery		271.3

gU/L = (DSAM*VSP*CSP*DF*PF) / (((VTOT/VSUB) * DS+S - DSAM) * VSAM)
%Recovery = ((gU/LS - gU/L1) * (DFS / (DF * PF) / SV) * 100

% RECOVERY =	271.32

Data Entry by:	[signature]	Date:	15-Dec-93
Approved by:	[signature]	Date:	17-Dec-93

Form 2 Rev. 2.1 Page 1 of 1

WESTINGHOUSE HANFORD COMPANY

WHC-SD-WM-DP-057 REV O

222-S LABORATORY

ANALYTICAL BATCH 2270

Segment Serial No. J 1285	Customer ID: KE13A
Analysis: URANIUM	Sample Prep: DIRECT

Instrument: WB88807	Procedure/ Rev: LA-925-106 / B-0
Technologist: TANIA BATES	Date: 12-2-93
Starting Time: 0810	Temperature 23°C
Ending Time: 0930	Chemist: JENNIFER SLIPPERN

Comments: 10 mL SAMPLE — 10 mL SAMPLE (FINAL PREP.) COULD NOT ELIMINATE BROWN [illegible] DURING SAMPLE PREPARATION.

OUT FOR RERUN

	Description	Lab ID
1	INITIAL LMCS CHECK STD	J 1284-5540
2	REAGENT BLANK	J 1300-5640
3	SAMPLE	J 1285-5740
4	SAMPLE	J 1285-5740
5	SAMPLE	J 1285-5740
6	SPIKE	J 1285-5940
7	SPIKE	J 1285-5940
8		
9		
10		

	Description	Lab ID
11		
12		
13		
14		
15		
16		
17		
18		
19		
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
UFIC	144B38 , 100 mL			
U-CAL	146B38 , 100 mL			

A-6000-881 (03/92)

Tania Bates 12-2-93

ANALYTICAL BATCH SUMMARY SHEET

METHOD: LA-925-106

DATE START: DECEMBER 2, 1993

PREPARED BY: J.L. Slippern J.L. Slippern 12/15/93

DATE COMPLETE: DECEMBER 15, 1993

	UNITS:	ug/mL										
SPL NAME	SPL ID	ANALYTE	RESULT #1	RESULT #2	RESULT #3	AVERAGE	2*SD	PREC	ACCU	%REC	DET LIM	% CT ER
STD 144B38	J1284	U	3.62E-02							93.8	3.29E+00	
BLANK	J1300	U	<1.43E+00								1.43E+00	
KE13A	J1285	U	2.23E+01	2.23E+01	2.35E+01	2.27E+01	1.4	6.1			2.31E+00	
KE13A	J1285	U SPIKE				28.0			78.9	16.9		
										39.0		

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

The results for the standard are in gU/L.

SPIKE RECOVERIES EXCEED CONTROL LIMITS. RERUN REQUESTED.

This sample appears to have a dil. error of 10x, but there is no way to confirm this. The tech was questioned and stands by what is recorded. Two other runs give results about 10x this batch; and these (10x) results fit the general pattern for J1255 vs other samples, so the higher values will be used.

AR
12-21-93

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1284.-5540	BECHTOLD	11- 4-93	8:47	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	1

Sample Size	Customer ID
2 .100-10-.100 mL	STD

Remarks, Calculations, Results

OUT FOR RERUN

S267 UE1C
STD# 146B38 RESULT 3.62E-2
STD VAL %REC 93.8 %

SPIKE ID/VAL 146B38/5.04-4 g/l
SPIKE VOL. .100 ml

.22(.1)(1010)(5.04E-4) / (5.7/5.4) .52 - .22

.22
.52

Tania Bates

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

Date	Time Completed	Lab Chief
12-2-93	0930	

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

BEST AVAILABLE COPY

URANIUM : LA-925-106 (B-0) LIQUIDS

			STANDARD
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1284-5540	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2270	Volume of sample (mL)	VSAM	0.100
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.60
1			
Instrument	Deflection (sample + fluran)	DSAM	0.22
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	5.70
T BATES			
Date:	Deflection (sample + fluran + spike)	DS+S	0.52
12/02/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		3.62E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))
gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))
0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level
Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	3.62E-02
U in µg/mL=	3.62E+01

DETECTION LEVEL µg/mL= 3.29E+00

Data Entry by:	R Acosta	Date:	02-Dec-93
Approved by:	Jennifer Slippern	Date:	12/15/93

Form 1 Rev. 1.2

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1300.-5640	BECHTOLD	11- 4-93	15:23	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	1

Sample Size	Customer ID
? ,100 - 10 - .25 ml	BLK

Remarks, Calculations, Results

REAGENT BLANK
146338/5.04-4 g/l
.100 ml

OUT FOR RERUN

<1.43E+0 µg/mL

Dania Bates

.00
.30

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date: 12-2-93	Time Completed: 0930	Lab Unit Mgr		

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

BEST AVAILABLE COPY

URANIUM : LA-925-106 (B-0) LIQUIDS

			BLANK
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1300-5640	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2270	Volume of sample (mL)	VSAM	0.250
Rerun No.	Volume of liquid in cell	VSUB	5.75
1	(sample + fluran + water)		
Instrument	Deflection (sample + fluran)	DSAM	0
WB-88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL)	VTOT	5.85
T.BATES	(sample + fluran + water + spike)		
Date:	Deflection (sample + fluran + spike)	DS+S	0.3
12/02/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)	<	1.43E-03

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level

Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L = <	1.43E-03
U in µg/mL = <	1.43E+00

DETECTION LEVEL µg/mL= 1.43E+00

REPORT RESULT AS A < (LESS THAN) VALUE

Data Entry by:	C A Clark	Date:	06-Dec-93
Approved by:	Jennifer L. Skippen	Date:	12/15/93

Form 1 Rev. 1.2

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

BEST AVAILABLE COPY

Serial No	Sample Point	Date	Time Issued	Priority
J 1285 -5740	BECHTOLD	11- 4-93	8:58	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	1

Sample Size	Customer ID
2 .100 - 10 - .25 mL	KE13A

Remarks, Calculations, Results
146538/5.04-4 gle
.100 mL

OUT FOR RERUN

2.23E+1 µg/mL .34 .64

Janice Bates

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Manager		
12-2-93	0930			

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1285-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2270	Volume of sample (mL)	VSAM	0.250
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.75
1			
Instrument	Deflection (sample + fluran)	DSAM	0.34
WB-88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	5.85
T. BATES			
Date:	Deflection (sample + fluran + spike)	DS+S	0.64
12/02/03	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		2.23E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))
gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))
0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level
Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	2.23E-02
U in µg/mL=	2.23E+01

DETECTION LEVEL µg/mL= 1.31E+00

Data Entry by:	CA Clark	Date:	06-Dec-93
Approved by:	Jennifer L Skuppen	Date:	12/15/93

Form 1 Rev. 1.2

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

BEST AVAILABLE COPY

Serial No	Sample Point	Date	Time Issued	Priority
J 1285.-5740	BECHTOLD	11- 4-93	8:58	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	2

Sample Size	Customer ID
? .100 - 10 - .25 mL	KE13A

Remarks, Calculations, Results
146838/5.04-gle
.100 mL

OUT FOR RERUN

2.23E+1 µg/mL

Dania Bates

.34
.64

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date: 12-2-93	Time Completed: 0930	Lab Chief:		

54-0800-061 (A-10-83)

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1285-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2270	Volume of sample (mL)	VSAM	0.250
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.75
1			
Instrument	Deflection (sample + fluran)	DSAM	0.34
WB-88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	5.85
T.BATES			
Date:	Deflection (sample + fluran + spike)	DS+S	0.64
12/02/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		2.23E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level

Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	2.23E-02
U in µg/mL=	2.23E+01

DETECTION LEVEL µg/mL= 1.31E+00

Data Entry by:	CA Clark	Date:	06-Dec-93
Approved by:	Jennifer L Skipper	Date:	12/15/93

Form 1 Rev. 1.2

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1285.-5740	BECHTOLD	RERUN 11- 4-93	8:58	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	3

Sample Size	Customer ID
? .100-10-.25 mL	KE13A

Remarks, Calculations, Results

146B38/5.04-4 g/l
.100 mL

OUT FOR RERUN

2.35E+1 µg/mL

.36
.66

Tania Bates

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

Date	Time Completed	Lab Unit Mgr
12-2-93	0930	J L Slippen [signature]

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

BEST AVAILABLE COPY

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1285-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2270	Volume of sample (mL)	VSAM	0.250
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.75
1			
Instrument	Deflection (sample + fluran)	DSAM	0.36
WB-88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	5.85
T.BATES			
Date:	Deflection (sample + fluran + spike)	DS+S	0.66
12/02/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		2.35E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/(([{VTOT/VSUB}*(DS+S))-DSAM]*VSAM))
gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/(([{VTOT/VSUB}*(DS+S))-DSAM]*VSAM))
0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level
Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/(([{VTOT/VSUB}*(DS+S))-DSAM]*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	2.35E-02
U in µg/mL=	2.35E+01

DETECTION LEVEL µg/mL= 1.31E+00

Data Entry by:	C A Clark	Date:	06-Dec-93
Approved by:	Jennifer L Slippen	Date:	12/15/93

Form 1 Rev. 1.2

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

Serial No.	Sample Point	Date	Time Issued	Priority
J 1285.-5940	BECHTOLD	11- 4-93	8:58	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	1

Sample Size .100 (144B38) ? .100 (J1285) > 10 → .25 mL

Customer ID: KE13A

Remarks, Calculations, Results

SAMPLE SPIKED ID 144B38
SPIKE ID 146B38/5.04-4g/L
SPIKE VOLUME .100 mL

OUT FOR RERUN

16.9 %

.38
.64

Tania Bates

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

Date	Time Completed	Lab Use
12-2-93	0930	

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

BEST AVAILABLE COPY

URANIUM : LA-925-106 (B-0) SPIKE

			SPIKE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1285-5940	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
227	Volume of sample (mL)	VSAM	0.2500
Rerun No.	Volume of liquid in cell	VSUB	5.75
1	(sample + fluran + water)		
Instrument	Volume of spike (mL)	VSP	0.1000
WB-88807	Volume of liquid in cell	VTOT	5.85
Analyst:	(sample + fluran + water + spike)		
T. BATES	Deflection (sample + fluran)	DSAM	0.38
Date:	Deflection (sample + fluran + spike)	DS+S	0.64
12/02/93	Dilution factor of sample	DF	102
	Dilution factor of spike	DFS	102
	Spike value (matrix) (gU/L)	SV	3.8600E-02
	Preparation factor of sample	PF	1
	Concentration (gU/L) Form 1 or Form 3 (SAMPLE)	gU/L1	2.2300E-02
	Concentration (gU/L)	gU/LS	2.882E-02
	% Recovery		16.9

gU/L = (DSAM*VSP*CSP*DF*PF) / (((VTOT/VSUB) * DS+S - DSAM) * VSAM)
%Recovery = ((gU/LS - gU/L1) * (DFS / (DF * PF) / SV) * 100

% RECOVERY =	16.89

Data Entry by:	CA Clark	Date:	06-Dec-93
Approved by:	Jennifer L Skippen	Date:	12/15/93

Form 2 Rev. 2.1

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1285.-5940	BECHTOLD	11-4-93	8:58	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	2

Sample Size .100 (144B38) ? .100 (J 1285) > 10 → .25 mL

Customer ID: KE13A

Remarks, Calculations, Results

SAMPLE SPIKED ID 144B38
SPIKE ID 146B38/5.04-4 g/l
SPIKE VOLUME .100 mL

39.0%

OUT FOR RERUN

.42
.64

Janice Bates

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

Date	Time Completed	Lab Unit Dig
12-2-93	0930	J L Slippers

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

BEST AVAILABLE COPY

URANIUM : LA-925-106 (B-0) SPIKE

			SPIKE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1285-5940	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2270	Volume of sample (mL)	VSAM	0.2500
Rerun No.	Volume of liquid in cell	VSUB	5.75
1	(sample + fluran + water)		
Instrument	Volume of spike (mL)	VSP	0.1000
WB-88807	Volume of liquid in cell	VTOT	5.85
Analyst:	(sample + fluran + water + spike)		
T. BATES	Deflection (sample + fluran)	DSAM	0.42
Date:	Deflection (sample + fluran + spike)	DS+S	0.64
12/02/93	Dilution factor of sample	DF	102
	Dilution factor of spike	DFS	102
	Spike value (matrix) (gU/L)	SV	3.8600E-02
	Preparation factor of sample	PF	1
	Concentration (gU/L) Form 1 or Form 3 (SAMPLE)	gU/L1	2.2300E-02
	Concentration (gU/L)	gU/LS	3.737E-02
	% Recovery		39.0

gU/L = (DSAM*VSP*CSP*DF*PF) / (((VTOT/VSUB) * DS+S - DSAM) * VSAM)
%Recovery = ((gU/LS - gU/L1) * (DFS / (DF * PF) / SV) * 100

% RECOVERY =	39.03

Data Entry by:	CA Clark	Date:	06-Dec-93
Approved by:	Jennifer L Slippers	Date:	12/15/93

Form 2 Rev. 2.1

Page 1 of 1

✓ QA 21

WESTINGHOUSE HANFORD COMPANY Batch 2089

222-S LABORATORY

WHC-SD-WM-DP-057 REV O

ANALYTICAL BATCH

Lab Segment Serial No. J-1285 ~~AL-10621~~ RGA 11/9/93	Customer ID: JS 12-14-93 ~~KE 13A~~ Bachtold 105 KE BASIN
Analysis: U	Sample Prep: Direct

Instrument: AL-10620	Procedure/ Rev: LA-925-106 / B-0
Technologist: RG Achen Rodney Achen	Date: 11/9/93
Starting Time: 08:30	Temperature 25°C
Ending Time: 11:00	Chemist: Jennifer Slippern

Comments: Did Sample Prep on J-1285 with a total vol of 10 ml.

	Description	Lab ID
1	STD	J-1284-5540
2	BLK	J-1300-5640
3	Sample	J-1285-5740
4	Sample Dup	J-1285-5740
5	Sample Trip	J-1285-5740
6	Sample Spike	J-1285-5940
7	Sample Spike Dup	J-1285-5940
8		
9		
10		

	Description	Lab ID
11		
12		
13		
14		
15		
16		
17		
18		
19	OUT FOR RERUN	
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	144B381 .100ml			
Pro. Spike	146B381 .100ml			
Sample Spike	144B381 .100ml			

771

A-6000-881 (03/92)

QH

ANALYTICAL BATCH SUMMARY SHEET

METHOD: LA-925-106

DATE START: NOVEMBER 9, 1993

PREPARED BY: J.L. Slippern

DATE COMPLETE: NOVEMBER 22, 1993

	UNITS:	ug/mL										
SPL NAME	SPL ID	ANALYTE	RESULT #	RESULT #	RESULT #	AVERAGE	2*SD	PREC	ACC	%RE	DET LIM	% CT ER
STD 144B38	J1301	U	3.555E+02							103.4	4.70E+00	
BLANK	J1300	U	<2.27E-01								2.27E-01	
KE13A	J1285	U	2.14E+02	1.97E+02	2.14E+02	2.08E+02	19.6	9.4			3.29E+01	
											3.29E+01	
											3.29E+01	
KE13A	J1285	U SPIKE	4.44E-01	5.41E-01					19.7	115.0		
										140.2		

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

LIST SPECIFIC PROBLEMS/VARIATIONS FOR THIS BATCH:

The results for the standard are in gU/L.

Rerun requested - spike recoveries exceed control limits.

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1284.-5540	BECHTOLD	11- 4-93	8:47	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	0

Sample Size	Customer ID
100-10-100	STD

Remarks Calculations Results

S267 UF1C
STD#146B38 RESULT 3.99 E-2
STD VAL 3.86 %REC 103.4%
SPIKE ID/VAL 146B38/5.04-4 g/l
SPIKE VOL. 100 ml

.17
.38

OUT FOR RERUN

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

Date	Time Completed	Lab Unit Mgr	
11/9/93	09:30		

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			STANDARD
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1284-5540	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2089	Volume of sample (mL)	VSAM	0.100
Rerun No.	Volume of liquid in cell	VSUB	5.60
0	(sample + fluran + water)		
Instrument	Deflection (sample + fluran)	DSAM	0.17
AL10620	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL)	VTOT	5.70
R ACHEN	(sample + fluran + water + spike)		
Date:	Deflection (sample + fluran + spike)	DS+S	0.38
11/09/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		3.99E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))
gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))
0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level
Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	3.99E-02
U in µg/mL=	3.99E+01

DETECTION LEVEL µg/mL= 4.70E+00

Data Entry by:		Date:	10-Nov-93
Approved by:		Date:	11-22-93

Form 1 Rev. 1.2

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1300.-5640	BECHTOLD	11- 4-93	15:23	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	0

Sample Size	Customer ID
? 100-10-200	BLK

Remarks, Calculations, Results

REAGENT BLANK

.02

Spike ID/val - 146B38/4.58 sgl .22

Spike vol - .100 ml

<2.27E-1

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

OUT FOR RERUN

Date	Time Completed	Lab Unit Mgr	
11/9/93	09:45	J L Slippen	Gary Hammond

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			BLANK
Serial No.	Spike concentration (gU/L)	CSP	4.58E-05
J1300-5640	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2089	Volume of sample (mL)	VSAM	0.200
Rerun No.	Volume of liquid in cell	VSUB	5.70
0	(sample + fluran + water)		
Instrument	Deflection (sample + fluran)	DSAM	0.02
AL-10620	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL)	VTOT	5.80
R. ACHEN	(sample + fluran + water + spike)		
Date:	Deflection (sample + fluran + spike)	DS+S	0.22
11/09/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)	<	2.27E-04

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/([({VTOT/VSUB}*(DS+S))-DSAM]*VSAM))

gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/([({VTOT/VSUB}*(DS+S))-DSAM]*VSAM))

0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level

Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/([{VTOT/VSUB}*(DS+S))-DSAM]*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L = <	2.27E-04
U in µg/mL = <	2.27E-01

DETECTION LEVEL µg/mL= 2.27E-01

REPORT RESULT AS A < (LESS THAN) VALUE

Data Entry by:	[signature]	Date:	11-Nov-93
Approved by:	Jennifer L. Slippen	Date:	11-22-93

Form 1 Rev. 1.2

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1285.-5740	BECHTOLD	11- 4-93	8:48	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	0

Sample Size	Customer ID
100-10-200 P.F.=10	KE13A

Remarks, Calculations, Results

sample

Spike ID/Val -146B38/5.04-4g/l .13

Spike vol- .100ml .28

2.14E+2

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
		OUT FOR RERUN		
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
11/9/93	10:00	J L Sleppert	Gary Hammond

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1285-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2089	Volume of sample (mL)	VSAM	0.200
Rerun No.	Volume of liquid in cell	VSUB	5.70
0	(sample + fluran + water)		
Instrument	Deflection (sample + fluran)	DSAM	0.13
AL-10620	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL)	VTOT	5.80
R. ACHEN	(sample + fluran + water + spike)		
Date:	Deflection (sample + fluran + spike)	DS+S	0.28
11/09/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	10
	Concentration in sample (gU/L)		2.14E-01

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/([({VTOT/VSUB}*(DS+S))-DSAM]*VSAM))

gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/([({VTOT/VSUB}*(DS+S))-DSAM]*VSAM))

0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level

Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/([{VTOT/VSUB}*(DS+S))-DSAM]*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	2.14E-01
U in µg/mL=	2.14E+02

DETECTION LEVEL µg/mL= 3.29E+01

Data Entry by:	[signature]	Date:	11-Nov-93
Approved by:	Jennifer L Sleppert	Date:	11-22-93

Form 1 Rev. 1.2

Page 1 of 1

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1285.-5740	BECHTOLD	11- 4-93	8:58	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	0

Sample Size	Customer ID
? 100-10-200 P.F=10	KE13A

Remarks, Calculations, Results

duplicate
spike ID/ vol - 14GB38/5.04-4g/L .12 .27
spike vol - .100ml

1.97 E+2

Rodney Achen

OUT FOR RERUN

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

Date	Time Completed	Lab Unit Mgr	
11/9/93	10:10	J L Sleppein	Gary Hammond

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1285-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2089	Volume of sample (mL)	VSAM	0.200
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.70
0			
Instrument	Deflection (sample + fluran)	DSAM	0.12
AL-10620	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	5.80
R. ACHEN			
Date:	Deflection (sample + fluran + spike)	DS+S	0.27
11/09/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	10
	Concentration in sample (gU/L)		1.97E-01

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/([({VTOT/VSUB}*(DS+S))-DSAM]*VSAM))
gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/([({VTOT/VSUB}*(DS+S))-DSAM]*VSAM))
0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level
Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/([{VTOT/VSUB}*(DS+S))-DSAM]*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	1.97E-01
U in µg/mL=	1.97E+02

DETECTION LEVEL µg/mL= 3.29E+01

Data Entry by:	[signature]	Date:	11-Nov-93
Approved by:	Jennifer L Sleppein	Date:	11-22-93

Form 1 Rev. 1.2

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1285.-5740	BECHTOLD	11- 4-93	8:58	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	0

Sample Size	Customer ID
100-10-200 P.F.=10	KE13A

Remarks, Calculations, Results

triplicate
Spike ID/Vol — 146B38) 5.04 ug/l .13
Spike Vol — .100ml .28

2.14 E+2

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
		OUT FOR RERUN		
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
11/9/93	10:25	J L Sleppert	Gary Hammond

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1285-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2089	Volume of sample (mL)	VSAM	0.200
Rerun No.	Volume of liquid in cell	VSUB	5.70
0	(sample + fluran + water)		
Instrument	Deflection (sample + fluran)	DSAM	0.13
AL-10620	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL)	VTOT	5.80
R. ACHEN	(sample + fluran + water + spike)		
Date:	Deflection (sample + fluran + spike)	DS+S	0.28
11/09/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	10
	Concentration in sample (gU/L)		2.14E-01

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/([({VTOT/VSUB}*(DS+S))-DSAM]*VSAM))
gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/([({VTOT/VSUB}*(DS+S))-DSAM]*VSAM))
0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level
Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/([{VTOT/VSUB}*(DS+S))-DSAM]*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	2.14E-01
U in µg/mL=	2.14E+02

DETECTION LEVEL µg/mL= 3.29E+01

Data Entry by:	[signature]	Date:	11-Nov-93
Approved by:	Jennifer L Sleppert	Date:	11-22-93

Form 1 Rev. 1.2

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1285.-5940	BECHTOLD	11- 4-93	8:58	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	0

Sample Size: STD -100-10 → 100; Sample 100-10 P.F=10

Customer ID: KE13A

Remarks, Calculations, Results

SAMPLE SPIKED ID
SPIKE ID- 144B38
SPIKE VOLUME- .100ml
spike ID(ua)-146B38/5.04-4g/l
spike 001- .100ml

.20
.35

115.0%
OUT FOR RERUN

Rodney Cohen

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

Date	Time Completed	Lab Unit Mgr	
11/9/93	10:45	J L Slippern	Gary Hammond

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

URANIUM : LA-925-106 (B-0) SPIKE

			SPIKE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1285-5940	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2089	Volume of sample (mL)	VSAM	0.1000
Rerun No.	Volume of liquid in cell	VSUB	5.60
0	(sample + fluran + water)		
Instrument	Volume of spike (mL)	VSP	0.1000
AL-10620	Volume of liquid in cell	VTOT	5.70
Analyst:	(sample + fluran + water + spike)		
R ACHEN	Deflection (sample + fluran)	DSAM	0.2
Date:	Deflection (sample + fluran + spike)	DS+S	0.35
11/09/93	Dilution factor of sample	DF	102
	Dilution factor of spike	DFS	102
	Spike value (matrix) (gU/L)	SV	3.8600E-02
	Preparation factor of sample	PF	10
	Concentration (gU/L) Form 1 or Form 3 (SAMPLE)	gU/L1	2.1400E-01
	Concentration (gU/L)	gU/LS	6.580E-01
	% Recovery		115.0

gU/L = (DSAM*VSP*CSP*DF*PF) / (((VTOT/VSUB) * DS+S - DSAM) * VSAM)
%Recovery = ((gU/LS - gU/L1) * (DFS / (DF * PF) / SV) * 100

% RECOVERY =	115.03

Data Entry by:	C.A. Clark	Date:	15-Nov-93
Approved by:	Jennifer L Slippern	Date:	11-22-93

Form 2 Rev. 2.1

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1285.-5940	BECHTOLD	11- 4-93	8:58	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	0

Sample Size: ? STD — 100 - 10 / Sample — 10x - 10 > 100 ; P.F. = 10

Customer ID: KE13A

Remarks, Calculations, Results: spike Dup

SAMPLE SPIKED ID
SPIKE ID ~ 144B38
SPIKE VOLUME — .100ml
spike ID/Vol — 146B38 5.04 ~ 4g/L
spike Vol — .100ml

.21
.35

140.2%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
			OUT FOR RERUN	
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
11/9/93	11:00	J L Sleppen	Gary Hammond

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

URANIUM : LA-925-106 (B-0) SPIKE

			SPIKE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1285-5940	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2089	Volume of sample (mL)	VSAM	0.1000
Rerun No.	Volume of liquid in cell	VSUB	5.60
0	(sample + fluran + water)		
Instrument	Volume of spike (mL)	VSP	0.1000
AL-10620	Volume of liquid in cell	VTOT	5.70
Analyst:	(sample + fluran + water + spike)		
R ACHEN	Deflection (sample + fluran)	DSAM	0.21
Date:	Deflection (sample + fluran + spike)	DS+S	0.35
11/09/93	Dilution factor of sample	DF	102
	Dilution factor of spike	DFS	102
	Spike value (matrix) (gU/L)	SV	3.8600E-02
	Preparation factor of sample	PF	10
	Concentration (gU/L) Form 1 or Form 3 (SAMPLE)	gU/L1	1.9700E-01
	Concentration (gU/L)	gU/LS	7.382E-01
	% Recovery		140.2

gU/L = (DSAM*VSP*CSP*DF*PF) / (((VTOT/VSUB) * DS+S - DSAM) * VSAM)
%Recovery = ((gU/LS - gU/L1) * (DFS / (DF * PF) / SV) * 100

% RECOVERY =	140.20

Data Entry by:	C A Clark	Date:	15-Nov-93
Approved by:	Jennifer L Sleppen	Date:	11-22-93

Form 2 Rev. 2.1

Page 1 of 1

2392 (1286)

WESTINGHOUSE HANFORD COMPANY

WHC-SD-WM-DP-057 REV O 222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No. J 1286, 1287	Customer ID: KE20B, KE20D
Analysis: URANIUM	Sample Prep: DIRECT

Instrument: UV88807	Procedure/ Rev: LA-925-106 / B-0
Technologist: TANIA BATES	Date: 12-16-93
Starting Time: 1000	Temperature 23°C
Ending Time: 1100	Chemist: J. SLIPPERN

Comments: (10 ml → 10 ml FINAL SAMPLE PREP.)

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	J301-5540	11	SPIKE	J1287-5940
2	REAGENT BLANK	J302-5640	12	SPIKE	J1287-5940
3	SAMPLE	J1286-5740	13		
4	SAMPLE	J1286-5740	14		
5	SAMPLE	J1286-5740	15		
6	SPIKE	J1286-5940	16		
7	SPIKE	J1286-5940	17		
8	SAMPLE	J1287-5740	18		
9	SAMPLE	J1287-5740	19		
10	SAMPLE	J1287-5740	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
LFIC	144B38 / 100 ml			
U-CAL	146B38 / .100 ml			

780

A-6000-801 (03/92)

Tania Bates 12-16-93

OA

ANALYTICAL BATCH SUMMARY SHEET

METHOD: LA-925-106

DATE START: DECEMBER 16, 1993

PREPARED BY: S.L. FITZGERALD

DATE COMPLETE: DECEMBER 17, 1993

	UNITS:	ug/mL										
SPL NAME	SPL ID	ANALYTE	RESULT #1	RESULT #2	RESULT #3	AVERAGE	2*SD	PREC	ACCU	%REC	DET LIM	% CT ER
STD 144B38	J1301	U	3.62E-02							93.8	3.29E+00	
BLANK	J1302	U	<3.57E+00								3.57E+00	
KE20B	J1286	U	5.88E+01	5.56E+01	5.56E+01	5.67E+01	3.70E+00	6.5			3.27E+00	
											3.27E+00	
											3.27E+00	
KE20B	J1286	U/SPIKE				75			10.7	71		
										79		
KE20D	J1287	U	6.20E+01	6.20E+01	6.52E+01	6.31E+01	3.70E+00	5.9			3.26E+00	
											3.26E+00	
											3.26E+00	
KE20D	J1287	U/SPIKE				199			11.1	210		
										188		

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

Standard results are reported as gU/L

Spike recoveries exceed the control limits, However due to high number of reruns already completed For these samples no Further rerun is requested

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

Batch 2392

Serial No	Sample Point	Date	Time Issued	Priority
J 1301.-5540	BECHTOLD	11- 8-93	8:47	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	2

Sample Size	Customer ID
? .100 - 10 → .100 mL	STD

Remarks, Calculations, Results

S267 UF1C
STD# 146838 RESULT 3.62 E-2
STD VAL 3.86 E-2 %REC 93.8%

SPIKE ID/VAL 146838/5.04 E-4 g/L
SPIKE VOL. 100 mL

Dania Bates

.22
.52

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

Date	Time Completed	Lab Unit Mgr	
12-16-93	1100		

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			STANDARD
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1301-5540	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2392	Volume of sample (mL)	VSAM	0.100
Rerun No.	Volume of liquid in cell	VSUB	5.60
2	(sample + fluran + water)		
Instrument	Deflection (sample + fluran)	DSAM	0.22
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL)	VTOT	5.70
T BATES	(sample + fluran + water + spike)		
Date:	Deflection (sample + fluran + spike)	DS+S	0.52
12/16/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		3.62E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level

Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1 E6 µg/g / 1000 mL/L)

U in sample gU/L=	3.62E-02
U in µg/mL=	3.62E+01

DETECTION LEVEL µg/mL= 3.29E+00

Data Entry by:		Date:	16-Dec-93
Approved by:		Date:	17-Dec-93

Form 1 Rev. 1.2

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1302.-5640	BECHTOLD	11- 8-93	8:50	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	2

Sample Size	Customer ID
? ,100 - 10 → .100 mL	BLK

Remarks, Calculations, Results

REAGENT BLANK
146638/5.04-4 gU
.100 mL

Tania Bates

.00
.30

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

Date	Time Completed	Lab Unit Mgr
12-16-93	1100	

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			BLANK
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1302-5640	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2392	Volume of sample (mL)	VSAM	0.100
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.60
2			
Instrument	Deflection (sample + fluran)	DSAM	0
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	5.70
T BATES			
Date:	Deflection (sample + fluran + spike)	DS+S	0.3
12/16/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)	<	3.57E-03

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))
gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))
0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level
Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L = <	3.57E-03
U in µg/mL = <	3.57E+00

DETECTION LEVEL µg/mL= 3.57E+00
REPORT RESULT AS A < (LESS THAN) VALUE

Data Entry by:		Date:	16-Dec-93
Approved by:		Date:	17-Dec-93

Form 1 Rev. 1.2

Page 1 of 1

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

RERUN

Serial No.	Sample Point		Time Issued	Priority
J 1286.-5740	BECHTOLD	11- 4-93	8:58	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	4

Sample Size	Customer ID
? .100-10 → .100 ml	KE20B

Remarks, Calculations, Results
146638/5.04-4 gtl
.100 mL

Tania Bates

.36
.66

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

Date	Time Completed	Lab Unit Mgr	
12-16-93 ~~1100~~	1100	[signature]	[signature]

T.B. 12-16-93

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1286-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2392	Volume of sample (mL)	VSAM	0.100
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.60
2			
Instrument	Deflection (sample + fluran)	DSAM	0.36
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	5.70
T BATES			
Date:	Deflection (sample + fluran + spike)	DS+S	0.66
12/16/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		5.88E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/(I({VTOT/VSUB}*(DS+S))-DSAMI*VSAM))
gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/(I({VTOT/VSUB}*(DS+S))-DSAMI*VSAM))
0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level
Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/(I{VTOT/VSUB}*(DS+S))-DSAMI*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	5.88E-02
U in µg/mL=	5.88E+01

DETECTION LEVEL µg/mL= 3.27E+00

Data Entry by:	[signature]	Date:	16-Dec-93
Approved by:	[signature]	Date:	17-Dec-93

Form 1 Rev. 1.2

Page 1 of 1

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

RERUN

Serial No.	Sample Point		Time Issued	Priority
J 1286.-5740	BECHTOLD	11- 4-93	8:58	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	6

Sample Size	Customer ID
? .100-10 → .100 ml	KE20B

Remarks, Calculations, Results
146838/5.04-4 gU
.100 ml

.34
.64

Tania Bates

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

Date	Time Completed	Lab Unit Mgr.	
12-16-93	1100		

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1286-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2392	Volume of sample (mL)	VSAM	0.100
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.60
2			
Instrument	Deflection (sample + fluran)	DSAM	0.34
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	5.70
T BATES			
Date:	Deflection (sample + fluran + spike)	DS+S	0.64
12/16/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		5.56E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level

Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	5.56E-02
U in µg/mL=	5.56E+01

DETECTION LEVEL µg/mL= 3.27E+00

Data Entry by:		Date:	16-Dec-93
Approved by:		Date:	17-Dec-93

Form 1 Rev. 1.2

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

RERUN

Serial No.	Sample Point	Date	Time Issued	Priority
J 1286.-5740	BECHTOLD	11- 4-93	8:58	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	5

Sample Size	Customer ID
? .100 -10 → .100 ml	KE20B

Remarks, Calculations, Results

146838/5.04-4 g/l

.100 ml

Sonia Bates

.34
.64

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

Date	Time Completed	Lab Unit Mgr	
12-16-93	1100	[signature]	[signature]

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1286-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2392	Volume of sample (mL)	VSAM	0.100
Rerun No.	Volume of liquid in cell	VSUB	5.60
2	(sample + fluran + water)		
Instrument	Deflection (sample + fluran)	DSAM	0.34
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL)	VTOT	5.70
T BATES	(sample + fluran + water + spike)		
Date:	Deflection (sample + fluran + spike)	DS+S	0.64
12/16/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		5.56E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/(([{VTOT/VSUB}*(DS+S))-DSAM]*VSAM))

gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/(([{VTOT/VSUB}*(DS+S))-DSAM]*VSAM))

0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level

Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/(([{VTOT/VSUB}*(DS+S))-DSAM]*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	5.56E-02
U in µg/mL=	5.56E+01

DETECTION LEVEL µg/mL= 3.27E+00

Data Entry by:	[signature]	Date:	16-Dec-93
Approved by:	[signature]	Date:	17-Dec-93

Form 1 Rev. 1.2

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

RERUN

Serial No	Sample Point	Date	Time Issued	Priority
J 1286.-5940	BECHTOLD	11- 4-93	8:58	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	3

Sample Size: .100 ? .100 > 10 → .050 ml

Customer ID: KE20B

Remarks, Calculations, Results

SAMPLE SPIKED ID 144638
SPIKE ID 146638/5.04-4 gU
SPIKE VOLUME, 10 mL

Daniel Bates .26 .56

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

Date	Time Completed	Lab Unit Mgr	
12-16-93	1100		

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

URANIUM : LA-925-106 (B-0) SPIKE

			SPIKE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1286-5940	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2392	Volume of sample (mL)	VSAM	0.0500
Rerun No.	Volume of liquid in cell	VSUB	5.55
3	(sample + fluran + water)		
Instrument	Volume of spike (mL)	VSP	0.1000
WB88807	Volume of liquid in cell	VTOT	5.65
Analyst:	(sample + fluran + water + spike)		
T BATES	Deflection (sample + fluran)	DSAM	0.26
Date:	Deflection (sample + fluran + spike)	DS+S	0.56
12/16/93	Dilution factor of sample	DF	102
	Dilution factor of spike	DFS	102
	Spike value (matrix) (gU/L)	SV	3.8600E-02
	Preparation factor of sample	PF	1
	Concentration (gU/L) Form 1 or Form 3 (SAMPLE)	gU/L1	5.8800E-02
	Concentration (gU/L)	gU/LS	8.621E-02
	% Recovery		71.0

gU/L = (DSAM*VSP*CSP*DF*PF) / (((VTOT/VSUB) * DS+S - DSAM) * VSAM)
%Recovery = ((gU/LS - gU/L1) * (DFS / (DF * PF) / SV) * 100

% RECOVERY =	71.00

Data Entry by:		Date:	16-Dec-93
Approved by:		Date:	17-Dec-93

Form 2 Rev. 2.1

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

RERUN

Serial No.	Sample Point	Date	Time Issued	Priority
J 1286.-5940	BECHTOLD	11- 4-93	8:58	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	4

Sample Size	Customer ID
100? .100 > 10 → .050 ml	KE20B

Remarks, Calculations, Results

SAMPLE SPIKED ID 144B38
SPIKE ID 96B38/5.04-4 g/l
SPIKE VOLUME .100 ml

Tonia Bates .26 .56

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

Date	Time Completed	Lab Unit Mgr.	
12-16-93	1100		

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

URANIUM : LA-925-106 (B-0) SPIKE

			SPIKE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1286-5940	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2392	Volume of sample (mL)	VSAM	0.0500
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.55
3			
Instrument	Volume of spike (mL)	VSP	0.1000
WB88807	Volume of liquid in cell (sample + fluran + water + spike)	VTOT	5.65
Analyst:			
T BATES	Deflection (sample + fluran)	DSAM	0.26
Date:	Deflection (sample + fluran + spike)	DS+S	0.56
12/16/93	Dilution factor of sample	DF	102
	Dilution factor of spike	DFS	102
	Spike value (matrix) (gU/L)	SV	3.8600E-02
	Preparation factor of sample	PF	1
	Concentration (gU/L) Form 1 or Form 3 (SAMPLE)	gU/L1	5.5600E-02
	Concentration (gU/L)	gU/LS	8.621E-02
	% Recovery		79.3

gU/L = (DSAM*VSP*CSP*DF*PF) / (((VTOT/VSUB) * DS+S − DSAM) * VSAM)
%Recovery = ((gU/LS − gU/L1) * (DFS / (DF * PF) / SV) * 100

% RECOVERY =	79.29

Data Entry by:		Date:	16-Dec-93
Approved by:		Date:	17-Dec-93

Form 2 Rev. 2.1

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

RERUN

Serial No.	Sample Point	Date	Time Issued	Priority
J 1287.-5740	BECHTOLD	11- 4-93	8:59	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	4

Sample Size	Customer ID
?, 100-10 → .100 ml	KE20D

Remarks, Calculations, Results
146B38/5.04-4 gU
.100 ml

Tania Bates

.38
.68

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

Date	Time Completed	Lab Unit Mgr.	
12-16-93	1100		

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1287-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2392	Volume of sample (mL)	VSAM	0.100
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.60
2			
Instrument	Deflection (sample + fluran)	DSAM	0.38
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	5.70
T BATES			
Date:	Deflection (sample + fluran + spike)	DS+S	0.68
12/16/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		6.20E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level

Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	6.20E-02
U in µg/mL=	6.20E+01

DETECTION LEVEL µg/mL= 3.26E+00

Data Entry by:		Date:	16-Dec-93
Approved by:		Date:	17-Dec-93

Form 1 Rev. 1.2

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

RERUN

Serial No	Sample Point	Date	Time Issued	Priority
J 1287.-5740	BECHTOLD	11- 4-93	8:59	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	6

Sample Size	Customer ID
.100-10 → .100 ml	KE20D

Remarks, Calculations, Results

146B38/5.04^{-4} g/l
.100 ml

Sania Bates

.38
.68

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

Date	Time Completed	Lab Unit Mgr	
12-16-93	1100	[signature]	[signature]

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1287-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2392	Volume of sample (mL)	VSAM	0.100
Rerun No.	Volume of liquid in cell	VSUB	5.60
2	(sample + fluran + water)		
Instrument	Deflection (sample + fluran)	DSAM	0.38
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL)	VTOT	5.70
T BATES	(sample + fluran + water + spike)		
Date:	Deflection (sample + fluran + spike)	DS+S	0.68
12/16/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		6.20E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/([({VTOT/VSUB}*(DS+S))-DSAM]*VSAM))
gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/([({VTOT/VSUB}*(DS+S))-DSAM]*VSAM))
0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level
Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/([{VTOT/VSUB}*(DS+S))-DSAM]*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	6.20E-02
U in µg/mL=	6.20E+01

DETECTION LEVEL µg/mL= 3.26E+00

Data Entry by:	[signature]	Date:	16-Dec-93
Approved by:	[signature]	Date:	17-Dec-93

Form 1 Rev. 1.2

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1287 -5740	BECHTOLT	11-4-93	8:59	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	5

Sample Size	Customer ID
.100 - 10 → .100 ml	KE20D

Remarks, Calculations, Results
146638 / 5.04-4 gal
.100 ml

.40
.70

Danica Bates

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

Date	Time Completed	Lab Unit Mgr
12-16-93	1100	

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1287-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2392	Volume of sample (mL)	VSAM	0.100
Rerun No.	Volume of liquid in cell	VSUB	5.60
2	(sample + fluran + water)		
Instrument	Deflection (sample + fluran)	DSAM	0.4
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL)	VTOT	5.70
T BATES	(sample + fluran + water + spike)		
Date:	Deflection (sample + fluran + spike)	DS+S	0.7
12/16/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		6.52E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))
gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))
0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level
Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	6.52E-02
U in µg/mL=	6.52E+01

DETECTION LEVEL µg/mL= 3.26E+00

Data Entry by:		Date:	16-Dec-93
Approved by:		Date:	17-Dec-93

Form 1 Rev. 1.2

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1287.-5940	BECHTOLD	11- 4-93	8:59	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	3

Sample Size: 102 .100 .100 > 10 → .050 ml

Customer ID: KE20D

Remarks, Calculations, Results

SAMPLE SPIKED ID 144838
SPIKE ID 146638/5.04-4 gU
SPIKE VOLUME .100 ml

Sonia Bates

.54 .32 ~~.54~~

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
				TB. 12-16-93
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
12-16-93	1100	[signature]	[signature]

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

URANIUM : LA-925-106 (B-0) SPIKE

			SPIKE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1287-5940	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2392	Volume of sample (mL)	VSAM	0.0500
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.55
3			
Instrument	Volume of spike (mL)	VSP	0.1000
WB88807	Volume of liquid in cell (sample + fluran + water + spike)	VTOT	5.65
Analyst:			
T BATES	Deflection (sample + fluran)	DSAM	0.32
Date:	Deflection (sample + fluran + spike)	DS+S	0.54
12/16/93	Dilution factor of sample	DF	102
	Dilution factor of spike	DFS	102
	Spike value (matrix) (gU/L)	SV	3.8600E-02
	Preparation factor of sample	PF	1
	Concentration (gU/L) Form 1 or Form 3 (SAMPLE)	gU/L1	6.2000E-02
	Concentration (gU/L)	gU/LS	1.432E-01
	% Recovery		210.4

gU/L = (DSAM*VSP*CSP*DF*PF) / (((VTOT/VSUB) * DS+S - DSAM) * VSAM)

%Recovery = ((gU/LS - gU/L1) * (DFS / (DF * PF) / SV) * 100

% RECOVERY =	210.41

Data Entry by:	[signature]	Date:	16-Dec-93
Approved by:	[signature]	Date:	17-Dec-93

Form 2 Rev. 2.1

Page 1 of 1

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1287.-5940	BECHTOLD	11- 4-93	8:59	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	4

Sample Size	Customer ID
.100 / 100 >10 → .050 ml	KE20D

Remarks, Calculations, Results

SAMPLE SPIKED ID 144B38
SPIKE ID 146B38 / 5.04-4 gl
SPIKE VOLUME .100 ml

Tania Bates .30 .52

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

Date	Time Completed	Lab Unit Mgr	
12-16-93	1100	[signature]	[signature]

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

URANIUM : LA-925-106 (B-0) SPIKE

			SPIKE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1287-5940	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2392	Volume of sample (mL)	VSAM	0.0500
Rerun No.	Volume of liquid in cell	VSUB	5.55
3	(sample + fluran + water)		
Instrument	Volume of spike (mL)	VSP	0.1000
WB88807	Volume of liquid in cell	VTOT	5.65
Analyst:	(sample + fluran + water + spike)		
T BATES	Deflection (sample + fluran)	DSAM	0.3
Date:	Deflection (sample + fluran + spike)	DS+S	0.52
12/16/93	Dilution factor of sample	DF	102
	Dilution factor of spike	DFS	102
	Spike value (matrix) (gU/L)	SV	3.8600E-02
	Preparation factor of sample	PF	1
	Concentration (gU/L) Form 1 or Form 3 (SAMPLE)	gU/L1	6.2000E-02
	Concentration (gU/L)	gU/LS	1.345E-01
	% Recovery		187.8

gU/L = (DSAM*VSP*CSP*DF*PF) / (((VTOT/VSUB) * DS+S - DSAM) * VSAM)
%Recovery = ((gU/LS - gU/L1) * (DFS / (DF * PF) / SV) * 100

% RECOVERY =	187.76

Data Entry by:	[signature]	Date:	16-Dec-93
Approved by:	[signature]	Date:	17-Dec-93

Form 2 Rev. 2.1

(1287) 4/29

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

WHC-SD-WM-DP-057 REV 0

ANALYTICAL BATCH 2269

Segment Serial No. J 1286, J 1287	Customer ID: KE20B, KE20D
Analysis: URANIUM	Sample Prep: DIRECT

Instrument: U-B 88807	Procedure/ Rev: LA-925-106/B-C
Technologist: TANIA BATES	Date: 12-2-93
Starting Time: 1200	Temperature 23°C
Ending Time: 1310	Chemist: JENNIFER SLIPPERN

Comments: 10 mL SAMPLE — 10 mL FINAL SAMPLE PREP. COULD NOT ELIMINATE BROWN PRECIPITATE DURING SAMPLE PREPARATION

	Description	Lab ID
1	INITIAL LMCS CHECK STD	J 1301-5540
2	REAGENT BLANK	J 1302-5640
3	SAMPLE	J 1286-5740
4	SAMPLE	J 1286-5740
5	SAMPLE	J 1286-5740
6	SPIKE	J 1286-5940
7	SPIKE	J 1286-5940
8	SAMPLE	J 1287-5740
9	SAMPLE	J 1287-5740
10	SAMPLE	J 1287-5740

	Description	Lab ID
11	SPIKE	J 1287-5940
12	SPIKE	J 1287-5940
13		
14		
15		
16		
17		
18		
19		
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
UFIC	144B38, 100mL			
U-CAL	146B38, 100mL			

794

A-6000-881 (03/92)

Tania Bates 12-2-93

QA

ANALYTICAL BATCH SUMMARY SHEET

METHOD: LA-925-106

DATE START: DECEMBER 2, 1993

PREPARED BY: J.L. Slippern J.L. Slippern 12/20/93 JS 12-20-93

DATE COMPLETE: DECEMBER 19, 1993

	UNITS:	ug/mL										
SPL NAME	SPL ID	ANALYTE	RESULT #1	RESULT #2	RESULT #3	AVERAGE	2*SD	PREC	ACCU	%REC	DET LIM	% CT ER
STD 144B38	J1301	U	3.30E-02							85.5	3.30E+00	
BLANK	J1302	U	<7.13E+00								7.13E+00	
KE20B	J1286	U	5.66E+01	5.66E+01	5.31E+01	5.54E+01	4.0	7.3			7.07E+01	
											7.07E+01	
											7.08E+01	
KE20B	J1286	U SPIKE							16.0	152.5		
										129.9		
KE20D	J1287	U	6.09E+01	6.09E+01	5.86E+01	6.01E+01	2.7	4.4			7.61E+00	
											7.61E+00	
											7.33E+00	
KE20D	J1287	U SPIKE	5.10E-01	5.23E-01					17.4	118.7		
										141.3		

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

The results for the standard are in gU/L.

RECOVERY OF THE SPIKE DUPLICATE EXCEEDS CONTROL LIMITS.
RERUN REQUESTED.

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

Serial No.	Sample Point	Date	Time Issued	Priority
J 1301.-5540	BECHTOLD	11- 8-93	8:47	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	1

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

Remarks, Calculations, Results

S267 UF1C
STD# 146838 RESULT 3.30E+1 µg/mL
STD VAL 3.86-2 %REC 85.5%
SPIKE ID/VAL 146838/5.04-4 g/l
SPIKE VOL. .100 ml

Dania Bates .20 .50

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

Date	Time Completed	Lab Unit Mgr	
12-2-93	1310		

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			STANDARD
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1301-5540	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2269	Volume of sample (mL)	VSAM	0.100
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.60
1			
Instrument	Deflection (sample + fluran)	DSAM	0.2
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	5.70
82580			
Date:	Deflection (sample + fluran + spike)	DS+S	0.5
12/02/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		3.30E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))
gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))
0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level
Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	3.30E-02
U in µg/mL=	3.30E+01

DETECTION LEVEL µg/mL= 3.30E+00

Data Entry by:		Date:	06-Dec-93
Approved by:		Date:	12/15/93

Form 1 Rev. 1.2

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1302.-5640	BECHTOLD	11- 8-93	8:50	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	1

Sample Size	Customer ID
? .100 - 10 - .050 mL	BLK

Remarks, Calculations, Results

REAGENT BLANK
146638/5.04-4 g/L
.100 mL

RERUN

< 7.13 E+0 µg/mL

OUT FOR RERUN

~~< 7.31 E+0 µg/mL~~
JS 12-19-93
.00
.30

Dania Bates

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

Date	Time Completed	Lab Unit Mgr	
12-2-93	1310		

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			BLANK
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1302-5640	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2269	Volume of sample (mL)	VSAM	0.050
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.55
1			
Instrument	Deflection (sample + fluran)	DSAM	0
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	5.65
82580			
Date:	Deflection (sample + fluran + spike)	DS+S	0.3
12/02/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)	<	7.13E-03

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))
gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))
0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level
Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L = <	7.13E-03
U in µg/mL = <	7.13E+00

DETECTION LEVEL µg/mL= 7.13E+00
REPORT RESULT AS A < (LESS THAN) VALUE

Data Entry by:		Date:	06-Dec-93
Approved by:		Date:	12/13/93

Form 1 Rev. 1.2

Page 1 of 1

WHC-SD-WM-DP-057 REV 0

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

RERUN

Serial No	Sample Point	Date	Time Issued	Priority
J 1286.-5740	BECHTOLD	11- 4-93	8:58	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	1

Sample Size	Customer ID
? ,100-10-,050 mL	KE20B

Remarks, Calculations, Results

146B38/5.04-4 g/l
.100 mL

OUT FOR RERUN

5.66E+1 µg/mL

Dania Bates

.16
.44

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

Date	Time Completed	Lab Unit Mgr	
12-2-93	1310	J L Sleppern	[signature]

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1286-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2269	Volume of sample (mL)	VSAM	0.050
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.55
1			
Instrument	Deflection (sample + fluran)	DSAM	0.16
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	5.65
82580			
Date:	Deflection (sample + fluran + spike)	DS+S	0.44
12/02/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		5.66E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/([({VTOT/VSUB}*(DS+S))-DSAM]*VSAM))

gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/([({VTOT/VSUB}*(DS+S))-DSAM]*VSAM))

0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level

Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/([{VTOT/VSUB}*(DS+S))-DSAM]*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	5.66E-02
U in µg/mL=	5.66E+01

DETECTION LEVEL µg/mL= 7.07E+00

Data Entry by:	[signature]	Date:	06-Dec-93
Approved by:	J L Sleppern	Date:	12/15/93

Form 1 Rev. 1.2

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

Serial No.	Sample Point	Date	Time Issued	Priority
J 1286.-5740	BECHTOLD	11- 4-93	8:58	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	2

Sample Size	Customer ID
? . 100 - 10 - . 050 mL	KE20B

Remarks, Calculations, Results
146638 / 5.04-4 g/L
.100 mL

OUT FOR RERUN 5.66 E+1 µg/mL
.16
.44

Dania Bates

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

Date	Time Completed	Lab Unit Mgr
12-2-93	1310	

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1286-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2269	Volume of sample (mL)	VSAM	0.050
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.55
2			
Instrument	Deflection (sample + fluran)	DSAM	0.16
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	5.65
82580			
Date:	Deflection (sample + fluran + spike)	DS+S	0.44
12/02/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		5.66E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))
gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))
0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level
Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	5.66E-02
U in µg/mL=	5.66E+01

DETECTION LEVEL µg/mL= 7.07E+00

Data Entry by:		Date:	06-Dec-93
Approved by:		Date:	12/15/93

Form 1 Rev. 1.2

Page 1 of 1

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1286.-5740	BECHTOLD	11- 4-93	8:58	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	3

Sample Size	Customer ID
? .100 - 10 - .050 ml	KE20B

Remarks, Calculations, Results
146638/5.04 -4 g/l
.100 ml

OUT FOR RERUN.

5.31 E+1 MG/ML

.15
.43

Dania Bates

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

Date	Time Completed	Lab Unit Mgr	
12-2-93	1310		

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1286-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2269	Volume of sample (mL)	VSAM	0.050
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.55
3			
Instrument	Deflection (sample + fluran)	DSAM	0.15
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	5.65
82580			
Date:	Deflection (sample + fluran + spike)	DS+S	0.43
12/02/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		5.31E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))
gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))
0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level
Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	5.31E-02
U in µg/mL=	5.31E+01

DETECTION LEVEL µg/mL= 7.08E+00

Data Entry by:		Date:	06-Dec-93
Approved by:		Date:	12/15/93

Form 1 Rev. 1.2

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

RERUN

Serial No.	Sample Point	Date	Time Issued	Priority
J 1286.-5940	BECHTOLD	11- 4-93	8:58	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	1

Sample Size	Customer ID
.100 (144B38) > 10 → .050 mL ? .100 (J 1284)	KE20B

Remarks, Calculations, Results

SAMPLE SPIKED ID 144B38
SPIKE ID 146B38/5.04-4 g/L
SPIKE VOLUME .100 mL

152.5 %

.28
.52

Dania Bates

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

Date	Time Completed	Lab Unit Mgr	
12-2-93	1310		

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

URANIUM : LA-925-106 (B-0) SPIKE

			SPIKE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1286-5940	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2269	Volume of sample (mL)	VSAM	0.0500
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.55
1			
Instrument	Volume of spike (mL)	VSP	0.1000
WB88807	Volume of liquid in cell (sample + fluran + water + spike)	VTOT	5.65
Analyst:			
82580	Deflection (sample + fluran)	DSAM	0.28
Date:	Deflection (sample + fluran + spike)	DS+S	0.52
12/02/93	Dilution factor of sample	DF	102
	Dilution factor of spike	DFS	102
	Spike value (matrix) (gU/L)	SV	3.8600E-02
	Preparation factor of sample	PF	1
	Concentration (gU/L) Form 1 or Form 3 (SAMPLE)	gU/L1	5.6600E-02
	Concentration (gU/L)	gU/LS	1.154E-01
	% Recovery		152.4

gU/L = (DSAM*VSP*CSP*DF*PF) / (((VTOT/VSUB) * DS+S - DSAM) * VSAM)
%Recovery = ((gU/LS - gU/L1) * (DFS / (DF * PF) / SV) * 100

% RECOVERY =	152.45

Data Entry by:		Date:	06-Dec-93
Approved by:		Date:	12/15/93

Form 2 Rev. 2.1

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

RERUN

Serial No	Sample Point	Date	Time Issued	Priority
J 1286.-5940	BECHTOLD	11- 4-93	8:58	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	2

Sample Size .100 (144838) ? .100 (J 1286) > 10 → .050 mL

Customer ID KE20B

Remarks, Calculations, Results

SAMPLE SPIKED ID 144838
SPIKE ID 146638/5.04-4 g/L
SPIKE VOLUME .100 mL

OUT FOR RERUN 129.9%

Jania Bates 28 54

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

Date	Time Completed	Lab Unit Mgr
12-2-93	1310	

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

URANIUM : LA-925-106 (B-0) SPIKE

			SPIKE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1286-5940	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2269	Volume of sample (mL)	VSAM	0.0500
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.55
2			
Instrument	Volume of spike (mL)	VSP	0.1000
WB88807	Volume of liquid in cell (sample + fluran + water + spike)	VTOT	5.65
Analyst			
82580	Deflection (sample + fluran)	DSAM	0.28
Date	Deflection (sample + fluran + spike)	DS+S	0.54
12/02/93	Dilution factor of sample	DF	102
	Dilution factor of spike	DFS	102
	Spike value (matrix) (gU/L)	SV	3.8600E-02
	Preparation factor of sample	PF	1
	Concentration (gU/L) Form 1 or Form 3 (SAMPLE)	gU/L1	5.6600E-02
	Concentration (gU/L)	gU/LS	1.067E-01
	% Recovery		129.9

gU/L = (DSAM*VSP*CSP*DF*PF) / (((VTOT/VSUB) * DS+S - DSAM) * VSAM)
%Recovery = ((gU/LS - gU/L1) * (DFS / (DF * PF) / SV) * 100

% RECOVERY =	129.87

Data Entry by:		Date:	06-Dec-93
Approved by:		Date:	12/15/93

Form 2 Rev. 2.1

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

RERUN

Serial No	Sample Point	Date	Time Issued	Priority
J 1287.-5740	BECHTOLD	11- 4-93	8:59	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	1

Sample Size	Customer ID
2, 100-10-.050 mL	KE20D

Remarks, Calculations, Results
146B38/5.04-4 gle
.100 mL

OUT FOR RERUN

6.09E+1 µg/mL
.16
.42

Tania Bates

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

Date	Time Completed	Lab Unit Mgr
12-2-93	1310	

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1287-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2269	Volume of sample (mL)	VSAM	0.050
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.55
1			
Instrument	Deflection (sample + fluran)	DSAM	0.16
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	5.65
82580			
Date:	Deflection (sample + fluran + spike)	DS+S	0.42
12/02/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		6.09E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level

Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	6.09E-02
U in µg/mL=	6.09E+01

DETECTION LEVEL µg/mL= 7.61E+00

Data Entry by:		Date:	06-Dec-93
Approved by:		Date:	12/15/93

Form 1 Rev. 1.2

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1287.-5740	BECHTOLD	11- 4-93	8:50	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	2

Sample Size	Customer ID
? .100 - 10 - .050 ml	KE20D

Remarks, Calculations, Results
146B38/5.04 4g/l
.100mL

OUT FOR RERUN

6.09 E+1 µg/mL

Daniel Bates

.16
.42

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

Date	Time Completed	Lab Unit Mgr	
12-2-93	1310	[signature]	[signature]

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1287-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2269	Volume of sample (mL)	VSAM	0.050
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.55
2			
Instrument	Deflection (sample + fluran)	DSAM	0.16
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	5.65
82580			
Date:	Deflection (sample + fluran + spike)	DS+S	0.42
12/02/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		6.09E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/(|({VTOT/VSUB}*(DS+S))-DSAM|*VSAM))
gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/(|({VTOT/VSUB}*(DS+S))-DSAM|*VSAM))
0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level
Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/(|{VTOT/VSUB}*(DS+S))-DSAM|*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	6.09E-02
U in µg/mL=	6.09E+01

DETECTION LEVEL µg/mL= 7.61E+00

Data Entry by:	[signature]	Date:	06-Dec-93
Approved by:	[signature]	Date:	12/15/93

Form 1 Rev. 1.2

Page 1 of 1

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1287 -5740	BECHTOLD	11- 4-93	8:59	19

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	2

Sample Size	Customer ID
2 .100-10 → .050 ml	[illegible]

Remarks, Calculations, Results

OUT FOR RERUN

5.86E+1 µg/mL

.16
.43

Dania Bates

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

Date	Time Completed	Lab Unit Mgr	
12-2-93	1310	[signature]	[signature]

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1287-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2269	Volume of sample (mL)	VSAM	0.050
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.55
3			
Instrument	Deflection (sample + fluran)	DSAM	0.16
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	5.65
82580			
Date:	Deflection (sample + fluran + spike)	DS+S	0.43
12/02/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		5.86E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level

Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1 E6 µg/g / 1000 mL/L)

U in sample gU/L=	5.86E-02
U in µg/mL=	5.86E+01

DETECTION LEVEL µg/mL= 7.33E+00

Data Entry by:	[signature]	Date:	06-Dec-93
Approved by:	[signature]	Date:	12/15/93

Form 1 Rev. 1.2

Page 1 of 1

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1287.-5940	BECHTOLD	11- 4-93	8:59	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	1

Sample Size: .100 (144B38) > 10 → .050 mL
? .100 (J 1287)

Customer ID: KE20D

Remarks, Calculations, Results

SAMPLE SPIKED ID 144B38
SPIKE ID 146B38 / 5.04-4g/L
SPIKE VOLUME .100 mL

OUT FOR RERUN 118.7 %

.28
.54

Janice Bates

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

Date	Time Completed	Lab Unit Mgr	
12-2-93	1310	[signature]	[signature]

54-6800-061 (R 10-83)

URANIUM : LA-925-106 (B-0) SPIKE

			SPIKE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1287-5940	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2269	Volume of sample (mL)	VSAM	0.0500
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.55
1			
Instrument	Volume of spike (mL)	VSP	0.1000
WB88807	Volume of liquid in cell (sample + fluran + water + spike)	VTOT	5.65
Analyst:			
82580	Deflection (sample + fluran)	DSAM	0.28
Date:	Deflection (sample + fluran + spike)	DS+S	0.54
12/02/93	Dilution factor of sample	DF	102
	Dilution factor of spike	DFS	102
	Spike value (matrix) (gU/L)	SV	3.8600E-02
	Preparation factor of sample	PF	1
	Concentration (gU/L) Form 1 or Form 3 (SAMPLE)	gU/L1	6.0900E-02
	Concentration (gU/L)	gU/LS	1.067E-01
	% Recovery		118.7

gU/L = (DSAM*VSP*CSP*DF*PF) / (((VTOT/VSUB) * DS+S - DSAM) * VSAM)
%Recovery = ((gU/LS - gU/L1) * (DFS / (DF * PF) / SV) * 100

% RECOVERY =	118.73

Data Entry by:	[signature]	Date:	06-Dec-93
Approved by:	[signature]	Date:	12/15/93

Form 2 Rev. 2.1

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

Serial No.	Sample Point	Date	Time Issued	Priority
J 1287.-5940	BECHTOLD	11- 4-93	8:59	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	2

Sample Size: .100 (144B38) ? .100 (J1287) >10 → .050 mL

Customer ID: KK500

Remarks, Calculations, Results

SAMPLE SPIKED ID 144B38
SPIKE ID 146B38/5.04-4 g/L
SPIKE VOLUME .100 mL

OUT FOR RERUN

141.3%

.28
.52

Danica Bates

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

Date	Time Completed	Lab Unit Mgr
12-2-93	1310	

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

URANIUM : LA-925-106 (B-0) SPIKE

			SPIKE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1287-5940	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2269	Volume of sample (mL)	VSAM	0.0500
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.55
2			
Instrument	Volume of spike (mL)	VSP	0.1000
WB88807	Volume of liquid in cell (sample + fluran + water + spike)	VTOT	5.65
Analyst:			
82580	Deflection (sample + fluran)	DSAM	0.28
Date:	Deflection (sample + fluran + spike)	DS+S	0.52
12/02/93	Dilution factor of sample	DF	102
	Dilution factor of spike	DFS	102
	Spike value (matrix) (gU/L)	SV	3.8600E-02
	Preparation factor of sample	PF	1
	Concentration (gU/L) Form 1 or Form 3 (SAMPLE)	gU/L1	6.0900E-02
	Concentration (gU/L)	gU/LS	1.154E-01
	% Recovery		141.3

gU/L = (DSAM*VSP*CSP*DF*PF) / (((VTOT/VSUB) * DS+S - DSAM) * VSAM)
%Recovery = ((gU/LS - gU/L1) * (DFS / (DF * PF) / SV) * 100

% RECOVERY =	141.31

Data Entry by:	Jennifer H. Blepper	Date:	06-Dec-93
Approved by:		Date:	12/15/93

Form 2 Rev. 2.1

WESTINGHOUSE HANFORD COMPANY Batch 2107

222-S LABORATORY

ANALYTICAL BATCH

Segment Serial No. J-1286, J-1287	Customer ID: 105 KE Basin ~~KE 20B~~, ~~KE 20D~~ Backfold
Analysis: U	Sample Prep: Direct

Instrument: AL-10620	Procedure/ Rev: LA-925-106 / B-0
Technologist: RG Archer	Date: 11-9-93
Starting Time: 12:30.	Temperature 25°C
Ending Time: 15:00	Chemist: Jennifer Slippern

Comments: Did sample Prep on J-1286 & J-1287 with a Total vol of 10ml in each one.

	Description	Lab ID		Description	Lab ID
1	STD	J-1301-5540	11	Sample Spike	J-1287-5940
2	BK	J-1302-5640	12	Sample Spike Dup	J-1287-5940
3	Sample	J-1286-5740	13		
4	Sample Dup	J-1286-5740	14		
5	Sample Trip	J-1286-5740	15		
6	Sample Spike	J-1286-5940	16	OUT FOR RERUN	
7	Sample Spike Dup	J-1286-5940	17		
8	Sample	J-1287-5740	18		
9	Sample Dup	J-1287-5740	19		
10	Sample Trip	J-1287-5740	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	1443381 / .100ml		OUT FOR RERUN	
Pro. Spike	1461338 / .100ml			
Sample Spike	1443381 .100ml			
		808		

01A

ANALYTICAL BATCH SUMMARY SHEET

METHOD: LA-925-106

DATE START: NOVEMBER 9, 1993

PREPARED BY: J.L. Slippern

DATE COMPLETE: NOVEMBER 22, 1993

UNITS: ug/mL

SPL NAME	SPL ID	ANALYTE	RESULT #	RESULT #	RESULT #	AVERAGE	2*SD	PREC	ACC	%RE	DET LIM	% CT ER
STD 144B38	J1301	U	3.09E-02							103.4	4.70E+00	
BLANK	J1302	U	<5.01E-01								5.01E-01	
KE20B	J1286	U	4.94E+01	4.37E+01	4.94E+01	4.75E+01	6.6	13.9			6.17E+00	
											5.82E+00	
											6.17E+00	
KE20B	J1286	U SPIKE	5.63E-01	5.53E-01					2.2	146.4		
										143.2		
KE20D	J1287	U	4.[illegible]E+01	4.94E+01	4.59E+01	4.71E+01	4.0	8.6			7.06E+00	
											6.58E+00	
											7.06E+00	
KE20D	J1287	U SPIKE	5.10E-01	5.23E-01					2.6	132.0		
										135.4		

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

LIST SPECIFIC PROBLEMS/VARIATIONS FOR THIS BATCH:

The results for the standard are in gU/L.

Rerun requested - spike recoveries exceed control limits.

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1301.-5540	BECHTOLD	11- 8-93	8:47	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	0

Sample Size	Customer ID
? 100-10-100	STD

Remarks, Calculations, Results

S267 UF1C
STD# 144B38 RESULT 3.99 -2 .17
STD VAL 3.86 -2 %REC 103.4 % .38
SPIKE ID/VAL 146B38/ 5.04 -4 g/l
SPIKE VOL. 100 ml

OUT FOR RERUN

Rody Achen

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

Date	Time Completed	Lab Unit Mgr	
11/9/93	12:30	J L Slippern	Gary Hammond

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

BEST AVAILABLE COPY

URANIUM : LA-925-106 (B-0) LIQUIDS

			STANDARD
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1301-5540	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2107	Volume of sample (mL)	VSAM	0.100
Rerun No.	Volume of liquid in cell	VSUB	5.60
0	(sample + fluran + water)		
Instrument	Deflection (sample + fluran)	DSAM	0.17
AL10620	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL)	VTOT	5.70
R ACHEN	(sample + fluran + water + spike)		
Date:	Deflection (sample + fluran + spike)	DS+S	0.38
11/09/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		3.99E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/([({VTOT/VSUB}*(DS+S))-DSAM]*VSAM))
gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/([({VTOT/VSUB}*(DS+S))-DSAM]*VSAM))
0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level
Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/([{VTOT/VSUB}*(DS+S))-DSAM]*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	3.99E-02
U in µg/mL=	3.99E+01

DETECTION LEVEL µg/mL= 4.70E+00

Data Entry by:	[signature]	Date:	10-Nov-93
Approved by:	Jennifer L Slippern	Date:	11-22-93

Form 1 Rev. 1.2

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1302.-5640	BECHTOLD	11- 8-93	8:50	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	0

Sample Size: 100-10-1ml ? ~~100-10-200~~ RCA 11/9/93

Customer ID: BLK

OUT FOR RERUN

Remarks Calculations Results

REAGENT BLANK

Spike ID (ua)-146B38/5.04-4 g/l .02 .22

Spike vol - .100ml

< 5.01 E-1

Rody Achen

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

Date	Time Completed	Lab Unit Mgr	
11/9/93	12:45	J L Sleppern	Gary Hammitt

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

BEST AVAILABLE COPY

URANIUM : LA-925-106 (B-0) LIQUIDS

			BLANK
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1302-5640	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2107	Volume of sample (mL)	VSAM	1.000
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	6.50
0			
Instrument	Deflection (sample + fluran)	DSAM	0.02
AL10620	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	6.60
R ACHEN			
Date:	Deflection (sample + fluran + spike)	DS+S	0.22
11/09/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)	<	5.01E-04

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/(I({VTOT/VSUB}*(DS+S))-DSAM]*VSAM))

gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/(I({VTOT/VSUB}*(DS+S))-DSAM]*VSAM))

0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level

Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/(I{VTOT/VSUB}*(DS+S))-DSAM]*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L = <	5.01E-04
U in µg/mL = <	5.01E-01

DETECTION LEVEL µg/mL= 5.01E-01

REPORT RESULT AS A < (LESS THAN) VALUE

Data Entry by:	[signature]	Date:	10-Nov-93
Approved by:	Jennifer L Sleppern	Date:	11-22-93

Form 1 Rev. 1.2

Page 1 of 1

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1286.-5740	BECHTOLD	11- 4-93	8:51	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	0

Sample Size	Customer ID
? 100/0 -1ml P.F. = 10	KE20B

Remarks, Calculations, Results

sample .16

Spike FD/0d -146 ~~B~~ 5.04-4 g/l .32

Spike 0d/ - .1 com)

4.94 E+1

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
		OUT FOR RERUN		
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
11/9/93	800		

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

BEST AVAILABLE COPY

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1286-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2107	Volume of sample (mL)	VSAM	1.000
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	6.50
0			
Instrument	Deflection (sample + fluran)	DSAM	0.16
AL10620	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	6.60
R ACHEN			
Date:	Deflection (sample + fluran + spike)	DS+S	0.32
11/09/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	10
	Concentration in sample (gU/L)		4.94E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level

Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	4.94E-02
U in µg/mL=	4.94E+01

DETECTION LEVEL µg/mL= 6.17E+00

Data Entry by:		Date:	10-Nov-93
Approved by:		Date:	11-22-93

Form 1 Rev. 1.2

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1286.-5740	BECHTOLD	11- 4-93	8:58	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	0

Sample Size	Customer ID
? 100-10-1ml P.F. =10	KE20B

Remarks, Calculations, Results

duplicate

Spike ID/Vol -146B38/5.04-4g/l .15

Spike vol -.100ml .32

4.37E+1

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

OUT FOR RERUN

Date	Time Completed	Lab Unit Mgr	
11/9/93	13:25	J L Sleppern	Gary Hammond

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

BEST AVAILABLE COPY

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1286-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2107	Volume of sample (mL)	VSAM	1.000
Rerun No.	Volume of liquid in cell	VSUB	6.50
0	(sample + fluran + water)		
Instrument	Deflection (sample + fluran)	DSAM	0.15
AL10620	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL)	VTOT	6.60
R ACHEN	(sample + fluran + water + spike)		
Date:	Deflection (sample + fluran + spike)	DS+S	0.32
11/09/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	10
	Concentration in sample (gU/L)		4.37E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/(({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/(({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level

Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/(({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	4.37E-02
U in µg/mL=	4.37E+01

DETECTION LEVEL µg/mL= 5.82E+00

Data Entry by:	[signature]	Date:	10-Nov-93
Approved by:	Jennifer L. Sleppern	Date:	11-22-93

Form 1 Rev. 1.2

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1286.-5740	BECHTOLD	11- 4-93	8:58	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	0

Sample Size	Customer ID
? 100-10-1ml P.F.=10	KE20B

Remarks, Calculations, Results

triplicate

.16

Spike ID/vol-146B38/5.04-4g/L .32

Spike vol-.100ml

4.94E+1

Rodney Achen

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
			OUT FOR RERUN	
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
11/9/93	13:40 ~~14:00~~ RGA 11/9/93	J L Sleppern	Gary Hammond

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

BEST AVAILABLE COPY

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1286-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2107	Volume of sample (mL)	VSAM	1.000
Rerun No.	Volume of liquid in cell	VSUB	6.50
0	(sample + fluran + water)		
Instrument	Deflection (sample + fluran)	DSAM	0.16
AL10620	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL)	VTOT	6.60
R ACHEN	(sample + fluran + water + spike)		
Date:	Deflection (sample + fluran + spike)	DS+S	0.32
11/09/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	10
	Concentration in sample (gU/L)		4.94E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/(((VTOT/VSUB)*(DS+S))-DSAM)*VSAM))

gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/(((VTOT/VSUB)*(DS+S))-DSAM)*VSAM))

0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level

Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/(((VTOT/VSUB)*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	4.94E-02
U in µg/mL=	4.94E+01

DETECTION LEVEL µg/mL= 6.17E+00

Data Entry by:	[signature]	Date:	10-Nov-93
Approved by:	Jennifer L. Sleppern	Date:	11-22-93

Form 1 Rev. 1.2

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1286.-5940	BECHTOLD	11- 4-93	8:58	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	0

Sample Size	Customer ID
? STD Sample 100-10 100-10 200 P.F. =10	KE20B

Remarks, Calculations, Results

SAMPLE SPIKED ID
SPIKE ID - 144B38
SPIKE VOLUME - .100ml
spike ID/Vol - 146B38 / 5.04-4g/l
Spike Vol - .100ml

.33
.46

146.4%

CUT FOR RERUN

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

Date	Time Completed	Lab Unit Mgr	
11/8/93	13:58	J L Sleppern	Gary Hammond

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

BEST AVAILABLE COPY

URANIUM : LA-925-106 (B-0) SPIKE

			SPIKE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1286-5940	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2107	Volume of sample (mL)	VSAM	0.2000
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.70
0			
Instrument	Volume of spike (mL)	VSP	0.1000
AL10620	Volume of liquid in cell (sample + fluran + water + spike)	VTOT	5.80
Analyst:			
R ACHEN	Deflection (sample + fluran)	DSAM	0.33
Date:	Deflection (sample + fluran + spike)	DS+S	0.46
11/09/93	Dilution factor of sample	DF	102
	Dilution factor of spike	DFS	102
	Spike value (matrix) (gU/L)	SV	3.8600E-02
	Preparation factor of sample	PF	10
	Concentration (gU/L) Form 1 or Form 3 (SAMPLE)	gU/L1	4.9400E-02
	Concentration (gU/L)	gU/LS	6.143E-01
	% Recovery		146.4

gU/L = (DSAM*VSP*CSP*DF*PF) / (((VTOT/VSUB) * DS+S - DSAM) * VSAM)
%Recovery = ((gU/LS - gU/L1) * (DFS / (DF * PF) / SV) * 100

% RECOVERY =	146.36

Data Entry by:	[signature]	Date:	10-Nov-93
Approved by:	Jennifer L Sleppern	Date:	11-22-93

Form 2 Rev. 2.1

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

BEST AVAILABLE COPY

Serial No	Sample Point	Date	Time Issued	Priority
J 1286.-5940	BECHTOLD	11- 4-93	8:58	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	0

Sample Size: ? STD — 100-10 / Sample — 100-10 .200 P.F.=10

Customer ID: KE20B

Remarks, Calculations, Results: spike dup

SAMPLE SPIKED ID
SPIKE ID - 144B38
SPIKE VOLUME - .100ml
Spike ID/vol - 146B38 / 5.04-4g/l
Spike vol - .100ml

.32
.45

143.2%

Rody Ache

OUT FOR RERUN

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

Date	Time Completed	Lab Unit Mgr	
11/9/93	14:05	J L Slippern	Gary Hammond

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

URANIUM : LA-925-106 (B-0) SPIKE

Serial No.			SPIKE
J1286-5940	Spike concentration (gU/L)	CSP	5.04E-04
Batch ID	Volume of water (mL)		4.5
2107	Volume of fluran (mL)		1
Rerun No.	Volume of sample (mL)	VSAM	0.2000
0	Volume of liquid in cell (sample + fluran + water)	VSUB	5.70
Instrument	Volume of spike (mL)	VSP	0.1000
AL10620	Volume of liquid in cell (sample + fluran + water + spike)	VTOT	5.80
Analyst:			
R ACHEN	Deflection (sample + fluran)	DSAM	0.32
Date:	Deflection (sample + fluran + spike)	DS+S	0.45
11/09/93	Dilution factor of sample	DF	102
	Dilution factor of spike	DFS	102
	Spike value (matrix) (gU/L)	SV	3.8600E-02
	Preparation factor of sample	PF	10
	Concentration (gU/L) Form 1 or Form 3 (SAMPLE)	gU/L1	4.3700E-02
	Concentration (gU/L)	gU/LS	5.965E-01
	% Recovery		143.2

gU/L = (DSAM*VSP*CSP*DF*PF) / (((VTOT/VSUB) * DS+S - DSAM) * VSAM)
%Recovery = ((gU/LS - gU/L1) * (DFS / (DF * PF) / SV) * 100

% RECOVERY =	143.21

Data Entry by:	[signature]	Date:	10-Nov-93
Approved by:	Jennifer L Slippern	Date:	11-22-93

Form 2 Rev. 2.1

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1287.-5740	BECHTOLD	11- 4-93	8:52	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	0

Sample Size	Customer ID
? 100-10-1ml P.F.=10	KE20D

Remarks, Calculations, Results

sample
Spike ID/vol -146B38/5.04-4g/l .13
Spike vol -.100ml .27

4.59 E+1

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
			OUT FOR RERUN	
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
11/9/93	14:15	J L Slippern	Gary Hammond

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

BEST AVAILABLE COPY

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1287-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2107	Volume of sample (mL)	VSAM	1.000
Rerun No.	Volume of liquid in cell	VSUB	6.50
0	(sample + fluran + water)		
Instrument	Deflection (sample + fluran)	DSAM	0.13
AL10620	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL)	VTOT	6.60
R ACHEN	(sample + fluran + water + spike)		
Date:	Deflection (sample + fluran + spike)	DS+S	0.27
11/09/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	10
	Concentration in sample (gU/L)		4.59E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/(I({VTOT/VSUB}*(DS+S))-DSAM]*VSAM))
gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/(I({VTOT/VSUB}*(DS+S))-DSAM]*VSAM))
0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level
Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/(I{VTOT/VSUB}*(DS+S))-DSAM]*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	4.59E-02
U in µg/mL=	4.59E+01

DETECTION LEVEL µg/mL= 7.06E+00

Data Entry by:	[signature]	Date:	10-Nov-93
Approved by:	Jennifer L Slippern	Date:	11-22-93

Form 1 Rev. 1.2

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

BEST AVAILABLE COPY

Serial No	Sample Point	Date	Time Issued	Priority
J 1287.-5740	BECHTOLD	11- 4-93	8:59	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	0

Sample Size	Customer ID
? 100-10-1 ml P.F.=10	KE20D

Remarks, Calculations, Results

duplicate

spike ID/vol -146338/5.04-4 g/l ; .15

spike vol - .100 ml ; .30

4.94 E+1

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
			OUT FOR	RERUN
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
11/9/93	14:25	J. J. Slippern	Gary Hammond

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1287-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2107	Volume of sample (mL)	VSAM	1.000
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	6.50
0			
Instrument	Deflection (sample + fluran)	DSAM	0.15
AL10620	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	6.60
R ACHEN			
Date:	Deflection (sample + fluran + spike)	DS+S	0.3
11/09/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	10
	Concentration in sample (gU/L)		4.94E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level

Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	4.94E-02
U in µg/mL=	4.94E+01

DETECTION LEVEL µg/mL= 6.58E+00

Data Entry by:		Date:	10-Nov-93
Approved by:	Jennifer J. Slippern	Date:	11-22-93

Form 1 Rev. 1.2

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

BEST AVAILABLE COPY

Serial No	Sample Point	Date	Time Issued	Priority
J 1287.-5740	BECHTOLD	11- 4-93	8:59	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	0

Sample Size	Customer ID
? 100-10 -1ml 1>, F=10	KE20D

Remarks, Calculations, Results

Triplicate

Spike ID/Vol-1416(338) 5.04-4 gl .13

Spike vol-,100ml .27

4.59E+1

OUT FOR RERUN

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

Date	Time Completed	Lab Unit Mgr	
11/9/93	14:35		

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1287-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2107	Volume of sample (mL)	VSAM	1.000
Rerun No.	Volume of liquid in cell	VSUB	6.50
0	(sample + fluran + water)		
Instrument	Deflection (sample + fluran)	DSAM	0.13
AL10620	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL)	VTOT	6.60
R ACHEN	(sample + fluran + water + spike)		
Date:	Deflection (sample + fluran + spike)	DS+S	0.27
11/09/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	10
	Concentration in sample (gU/L)		4.59E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level

Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	4.59E-02
U in µg/mL=	4.59E+01

DETECTION LEVEL µg/mL= 7.06E+00

Data Entry by:		Date:	10-Nov-93
Approved by:		Date:	11-22-93

Form 1 Rev. 1.2

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1287.-5940	BECHTOLD	11- 4-93	8:59	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	0

Sample Size: ? STD — 100-10 / Sample — 100-10 > .200 P.F. = 10

Customer ID: KE20D

Remarks, Calculations, Results

SAMPLE SPIKED ID
SPIKE ID 1491338
SPIKE VOLUME -.100ml
Spike ID/vol -1461338/5.04 mg/L
Spike vol -.100ml

.32
.46
132.0%

OUT FOR RERUN

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

Date	Time Completed	Lab Unit Mgr
11/9/93	14:45	J. Schlippen / Gary Hammond

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

BEST AVAILABLE COPY

URANIUM : LA-925-106 (B-0) SPIKE

			SPIKE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1287-5940	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2107	Volume of sample (mL)	VSAM	0.2000
Rerun No.	Volume of liquid in cell	VSUB	5.70
0	(sample + fluran + water)		
Instrument	Volume of spike (mL)	VSP	0.1000
AL10620	Volume of liquid in cell	VTOT	5.80
Analyst:	(sample + fluran + water + spike)		
R ACHEN	Deflection (sample + fluran)	DSAM	0.32
Date:	Deflection (sample + fluran + spike)	DS+S	0.46
11/09/93	Dilution factor of sample	DF	102
	Dilution factor of spike	DFS	102
	Spike value (matrix) (gU/L)	SV	3.8600E-02
	Preparation factor of sample	PF	10
	Concentration (gU/L) Form 1 or Form 3 (SAMPLE)	gU/L1	4.5900E-02
	Concentration (gU/L)	gU/LS	5.555E-01
	% Recovery		132.0

gU/L = (DSAM*VSP*CSP*DF*PF) / (((VTOT/VSUB) * DS+S - DSAM) * VSAM)
%Recovery = ((gU/LS - gU/L1) * (DFS / (DF * PF) / SV) * 100

% RECOVERY =	132.02

Data Entry by:	[signature]	Date:	10-Nov-93
Approved by:	Jennifer L. Schlippen	Date:	11-22-93

Form 2 Rev. 2.1

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

BEST AVAILABLE COPY

Serial No	Sample Point	Date	Time Issued	Priority
J 1287.-5940	BECHTOLD	11- 4-93	8:59	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	0

Sample Size: STD — 100-10 ? Sample — 100-10 .200 P.F.=10

Customer ID: KE20D

Remarks, Calculations, Results: Spike Dup

SAMPLE SPIKED ID .33
SPIKE ID 144B38 .47
SPIKE VOLUME .100ml
spike ID/vol 146B38/5.04-4 g/l
spike vol - .100ml

135.4 %

Rody Ch

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
			OUT FOR RERUN	
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
11/9/93	15:00	J L Sleppern	Gary Hammett

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

URANIUM : LA-925-106 (B-0) SPIKE

			SPIKE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1287-5940	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2107	Volume of sample (mL)	VSAM	0.2000
Rerun No.	Volume of liquid in cell	VSUB	5.70
0	(sample + fluran + water)		
Instrument	Volume of spike (mL)	VSP	0.1000
AL10620	Volume of liquid in cell	VTOT	5.80
Analyst:	(sample + fluran + water + spike)		
R ACHEN	Deflection (sample + fluran)	DSAM	0.33
Date:	Deflection (sample + fluran + spike)	DS+S	0.47
11/09/93	Dilution factor of sample	DF	102
	Dilution factor of spike	DFS	102
	Spike value (matrix) (gU/L)	SV	3.8600E-02
	Preparation factor of sample	PF	10
	Concentration (gU/L) Form 1 or Form 3 (SAMPLE)	gU/L1	4.9400E-02
	Concentration (gU/L)	gU/LS	5.722E-01
	% Recovery		135.4

gU/L = (DSAM*VSP*CSP*DF*PF) / (((VTOT/VSUB) * DS+S - DSAM) * VSAM)
%Recovery = ((gU/LS - gU/L1) * (DFS / (DF * PF) / SV) * 100

% RECOVERY =	135.44

Data Entry by:	[signature]	Date:	10-Nov-93
Approved by:	Jennifer L. Sleppern	Date:	11-22-93

Form 2 Rev. 2.1

2595 ✓ OK 23

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

WHC-SD-WM-DP-057 REV 0

ANALYTICAL BATCH

Segment Serial No. J 1289	Customer ID: KE24A
Analysis: URANIUM LASER	Sample Prep: DIRECT

Instrument: WB888807	Procedure/ Rev: LA - 925 - 106 / B-0
Technologist: TANIA BATES	Date: 12-16-93
Starting Time: 0900	Temperature 23°C
Ending Time: 1000	Chemist: J. SLIPPERN

Comments: 10 mL → 10 mL FINAL PREP

	Description	Lab ID
1	INITIAL LMCS CHECK STD	J 1303-5546
2	REAGENT BLANK	J 1304-5640
3	SAMPLE	J 1289-5740
4	SAMPLE	J 1289-5740
5	SAMPLE	J 1289-5740
6	SAMPLE SPIKE	J 1289-5940
7	SAMPLE SPIKE	J 1289-5940
8		
9		
10		

	Description	Lab ID
11		
12		
13		
14		
15		
16		
17		
18		
19		
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
UFIC	144B38, 100 ML			
U-CAL	146B38, 100 ML			
		822		

A-6000-881 (03/92)

Tania Bates 12-16-93

ANALYTICAL BATCH SUMMARY SHEET

METHOD: LA-925-106

DATE START: DECEMBER 16, 1993

PREPARED BY: S.L. FITZGERALD

DATE COMPLETE: DECEMBER 17, 1993

		UNITS:	ug/mL									
SPL NAME	SPL ID	ANALYTE	RESULT #1	RESULT #2	RESULT #3	AVERAGE	2*SD	PREC	ACCU	%REC	DET LIM	% CT ER
STD 144B38	J1303	U	4.59E-02							119	3.28E+00	
BLANK	J1304	U	<3.57E+00								3.57E+00	
KE24A	J1289	U	6.52E+01	5.56E+01	6.52E+01	6.20E+01	1.11E+01	17.9			3.26E+00	
											3.27E+00	
											3.26E+00	
KE24A	J1289	U/SPIKE				110.5			24.4	124		
										97		

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

LIST SPECIFIC PROBLEMS/VARIATIONS FOR THIS BATCH:

Standard results are reported as gU/L

SLF 12-12-93

Spike recovery out of controll limit.
Due to number of reruns already performed
No rerun requested

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

BEST AVAILABLE COPY

2393

Serial No	Sample Point	Date	Time Issued	Priority
J 1303.-5540	BECHTOLD	11- 8-93	11:46	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	2

Sample Size: ~~25 10 25~~ T.B. 12-16-93 .100-10 -> .100 ml

Customer ID: STD

Remarks, Calculations, Results

S267 UF1C
STD# 144638 RESULT 4.59E-2 5 11
STD VAL 3.86E-2 %REC 118.9%
SPIKE ID/VAL 146B38/High RANGE 5.04 g/L
SPIKE VOL. 100 ml

Dania Bates

.28
.58

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

Date	Time Completed	Lab Unit Mgr
12-16-93	1000	

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

URANIUM : LA-925-106 (B-0) LIQUIDS

Serial No.			STANDARD
J1303-5540	Spike concentration (gU/L)	CSP	5.04E-04
	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2393	Volume of sample (mL)	VSAM	0.100
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.60
2			
Instrument	Deflection (sample + fluran)	DSAM	0.28
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	5.70
T BATES			
Date:	Deflection (sample + fluran + spike)	DS+S	0.58
12/16/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		4.59E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))
gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))
0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level
Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/(({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	4.59E-02
U in µg/mL=	4.59E+01

DETECTION LEVEL µg/mL= 3.28E+00

Data Entry by:		Date:	16-Dec-93
Approved by:		Date:	17-Dec-93

Form 1 Rev. 1.2

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

BEST AVAILABLE COPY

Serial No	Sample Point		Time Issued	Priority
J 1304.-5640	BECHTOLD	11- 8-93	11:47	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	2

Sample Size	Customer ID
~~S5-10-25~~ .100-10 → .100 ml	BLK

Remarks, Calculations, Results

REAGENT BLANK
146B38/High 5.04 $^{-4}$ g/l
.100 ml

Danica Bates .00 .30

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

Date	Time Completed	Lab Unit Mgr	
12-16-93	1000	[signature]	[signature]

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			BLANK
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1304-5640	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2393	Volume of sample (mL)	VSAM	0.100
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.60
2			
Instrument	Deflection (sample + fluran)	DSAM	0
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	5.70
T BATES			
Date:	Deflection (sample + fluran + spike)	DS+S	0.3
12/16/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)	<	3.57E-03

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/(I({VTOT/VSUB}*(DS+S))-DSAM]*VSAM))
gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/(I({VTOT/VSUB}*(DS+S))-DSAM]*VSAM))
0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level
Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/(I({VTOT/VSUB}*(DS+S))-DSAM]*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L = <	3.57E-03
U in µg/mL = <	3.57E+00

DETECTION LEVEL µg/mL= 3.57E+00

REPORT RESULT AS A < (LESS THAN) VALUE

Data Entry by:	[signature]	Date:	16-Dec-93
Approved by:	[signature]	Date:	17-Dec-93

Form 1 Rev. 1.2

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1289.-5740	BECHTOLD	11- 4-93	9: 2	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	UG/ML	E14157	4

Sample Size	Customer ID
7 . 100 - 10 → . 100 mL	KE24A

Remarks, Calculations, Results
146B33/High 5.04 g/L
.100 mL

Janice Bates

.40
.70

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

Date	Time Completed	Lab Unit Mgr	
12-16-93	1000		

54-6600-061 (R-10-83)

BEST AVAILABLE COPY

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1289-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2393	Volume of sample (mL)	VSAM	0.100
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.60
4			
Instrument	Deflection (sample + fluran)	DSAM	0.4
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	5.70
T BATES			
Date:	Deflection (sample + fluran + spike)	DS+S	0.7
12/16/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		6.52E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((((VTOT/VSUB)*(DS+S))-DSAM)*VSAM))
gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((((VTOT/VSUB)*(DS+S))-DSAM)*VSAM))
0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level
Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/((((VTOT/VSUB)*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	6.52E-02
U in µg/mL=	6.52E+01

DETECTION LEVEL µg/mL= 3.26E+00

Data Entry by:		Date:	16-Dec-93
Approved by:		Date:	17-Dec-93

Form 1 Rev. 1.2

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

BEST AVAILABLE COPY

Serial No	Sample Point		Time Issued	Priority
J 1289.-5740	BECHTOLD	11- 4-93	9: 2	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	6

Sample Size	Customer ID
? .100 -10 → .100 ml	KE24A

Remarks, Calculations, Results
146838/High 5.04 gU/L
.100 ml

Tania Bates

.40
.70

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

Date	Time Completed	Last Unit Man	
12-16-93	1000		

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1289-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2393	Volume of sample (mL)	VSAM	0.100
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.60
5			
Instrument	Deflection (sample + fluran)	DSAM	0.34
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	5.70
T BATES			
Date:	Deflection (sample + fluran + spike)	DS+S	0.64
12/16/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		5.56E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level

Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1 E6 µg/g / 1000 mL/L)

U in sample gU/L=	5.56E-02
U in µg/mL=	5.56E+01

DETECTION LEVEL µg/mL= 3.27E+00

Data Entry by:		Date:	16-Dec-93
Approved by:		Date:	17-Dec-93

Form 1 Rev. 1.2

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

BEST AVAILABLE COPY

Serial No	Sample Point	Date	Time Issued	Priority
J 1289.-5740	BECHTOLD	11 RERU 93	9: 2	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	5

Sample Size	Customer ID
? .100-10 → .100 mL	KE24A

Remarks, Calculations, Results
146B38 / High 5.04-4 g/l
.100 mL

Dania Bates

.34
.64

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

Date	Time Completed	Lab Unit Mgr	
12-16-93	1000	[signature]	[signature]

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1289-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2393	Volume of sample (mL)	VSAM	0.100
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.60
6			
Instrument	Deflection (sample + fluran)	DSAM	0.4
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	5.70
T BATES			
Date:	Deflection (sample + fluran + spike)	DS+S	0.7
12/16/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		6.52E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/(((VTOT/VSUB)*(DS+S))-DSAM)*VSAM))
gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/(((VTOT/VSUB)*(DS+S))-DSAM)*VSAM))
0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level
Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/(((VTOT/VSUB)*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	6.52E-02
U in µg/mL=	6.52E+01

DETECTION LEVEL µg/mL= 3.26E+00

Data Entry by:	[signature]	Date:	16-Dec-93
Approved by:	[signature]	Date:	17-Dec-93

Form 1 Rev. 1.2

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

WHC-SD-WM-DP-057 REV 0

Serial No.	Sample Point	Date Issued	Time Issued	Priority
J.1289.-5940	BECHTOLD	11- 4-93	9: 2	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	3

Sample Size	Customer ID
? .100 >10 → .050 ml	KE24A

Remarks, Calculations, Results

SAMPLE SPIKED ID 144B38
SPIKE ID 146B33/5.04-4gle
SPIKE VOLUME .100 ml

Dania Bates .32 .60

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

Date	Time Completed	Lab Unit Mgr
12-16-93	1000	

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

BEST AVAILABLE COPY

URANIUM : LA-925-106 (B-0) SPIKE

			SPIKE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1289-5940	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2393	Volume of sample (mL)	VSAM	0.0500
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.55
3			
Instrument	Volume of spike (mL)	VSP	0.1000
WB88807	Volume of liquid in cell (sample + fluran + water + spike)	VTOT	5.65
Analyst			
T BATES	Deflection (sample + fluran)	DSAM	0.32
Date:	Deflection (sample + fluran + spike)	DS+S	0.6
12/16/93	Dilution factor of sample	DF	102
	Dilution factor of spike	DFS	102
	Spike value (matrix) (gU/L)	SV	3.8600E-02
	Preparation factor of sample	PF	1
	Concentration (gU/L) Form 1 or Form 3 (SAMPLE)	gU/L1	6.5200E-02
	Concentration (gU/L)	gU/LS	1.131E-01
	% Recovery		124.2

gU/L = (DSAM*VSP*CSP*DF*PF) / (((VTOT/VSUB) * DS+S - DSAM) * VSAM)

%Recovery = ((gU/LS - gU/L1) * (DFS / (DF * PF) / SV) * 100

% RECOVERY =	124.19

Data Entry by:		Date:	16-Dec-93
Approved by:		Date:	17-Dec-93

Form 2 Rev. 2.1

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

WHC-SD-WM-DP-057 REV O

Serial No	Sample Point	Date	Time Issued	Priority
J 1289.-5940	BECHTOLD	11-4-93	9: 2	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	4

Sample Size	Customer ID
.100 .100 >10 → .050 ml	KE24A

Remarks, Calculations, Results

SAMPLE SPIKED ID 144B38
SPIKE ID 196B38/5.04-4 gle
SPIKE VOLUME .100 ml

Dinia L Bates .30 .62

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

Date	Time Completed	Lab Unit Mgr	
12-16-93	1000	[signature]	[signature]

54-6600-061 (R-10-83)

BEST AVAILABLE COPY

URANIUM : LA-925-106 (B-0) SPIKE

			SPIKE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1289-5940	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2393	Volume of sample (mL)	VSAM	0.0500
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.55
4			
Instrument	Volume of spike (mL)	VSP	0.1000
WB88807	Volume of liquid in cell (sample + fluran + water + spike)	VTOT	5.65
Analyst:			
T BATES	Deflection (sample + fluran)	DSAM	0.3
Date:	Deflection (sample + fluran + spike)	DS+S	0.62
12/16/93	Dilution factor of sample	DF	102
	Dilution factor of spike	DFS	102
	Spike value (matrix) (gU/L)	SV	3.8600E-02
	Preparation factor of sample	PF	1
	Concentration (gU/L) Form 1 or Form 3 (SAMPLE)	gU/L1	5.5600E-02
	Concentration (gU/L)	gU/LS	9.314E-02
	% Recovery		97.3

gU/L = (DSAM*VSP*CSP*DF*PF) / (((VTOT/VSUB) * DS+S - DSAM) * VSAM)
%Recovery = ((gU/LS - gU/L1) * (DFS / (DF * PF) / SV) * 100

% RECOVERY =	97.25

Data Entry by:	[signature]	Date:	16-Dec-93
Approved by:	[signature]	Date:	17-Dec-93

Form 2 Rev. 2.1

Page 1 of 1

WHC-SD-WM-DP-057 REV 0

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY
ANALYTICAL BATCH

OUT FOR RERUN

2271

Lab Segment Serial No. J 1289	Customer ID: KE24A
Analysis: URANIUM	Sample Prep: DIRECT

Instrument: WB88807	Procedure/ Rev: LA-925-106 / B-0
Technologist: TANIA BATES	Date: 11-30-93
Starting Time: 0900	Temperature 23° C
Ending Time: 1400	Chemist: JENNIFER Slippern

Comments: SAMPLE PREP 10mL (SAMPLE) → 10mL (FINAL PREP)

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	J1303-5540	11		
2	REAGENT BLANK	J1304-5640	12		
3	SAMPLE	J1289-5740	13		
4	SAMPLE	J1289-5740	14		
5	SAMPLE	J1289-5740	15		
6	SAMPLE SPIKE	J1289-5940	16		
7	SAMPLE SPIKE	J1289-5940	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	UEIC ~~146B38~~ 144B38	~~146B38~~ T.B. 11-30-93		
SPIKE	U-CAL 146B38			
		831		

A-6000-881 (03/92)

Tania Bates 11-30-93

ANALYTICAL BATCH SUMMARY SHEET

METHOD: LA-925-106

DATE START: NOVEMBER 30, 1993

PREPARED BY: J.L. Slippern 12/20/93

DATE COMPLETE: DECEMBER 19, 1993

	UNITS:	ug/mL										
SPL NAME	SPL ID	ANALYTE	RESULT #1	RESULT #2	RESULT #3	AVERAGE	2*SD	PREC	ACCU	%REC	DET LIM	% CT ER
STD 144B38	J1303	U	3.62E-02							93.8	3.29E+00	
BLANK	J1304	U	<3.22E+00								3.22E+00	
KE24A	J1289	U	6.91E+01	6.52E+01	6.52E+01	6.65E+01	4.5	6.8			4.07E+00	
KE24A	J1289	U SPIKE							22.8	120.1		
										151.1		

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

The results for the standard are in gU/L.

RECOVERY OF THE SPIKE DUPLICATE EXCEEDS CONTROL LIMITS.
RERUN REQUESTED.

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

BEST AVAILABLE COPY

Serial No	Sample Point	Date	Time Issued	Priority
J 1303.-5540	DECHTOLD	11- 8-93	11:48	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	1

Sample Size	Customer ID
100-10-100 T.B. 11-30-93	STD

Remarks, Calculations, Results

SAMP. HEIG 44838
STD ~~44838~~ T.B. RESULT 3.62 E-2 g/l
STD VAL 3.86 E-2 g/l 11-30-93 %REC 93.8%
SPIKE ID/VAL 5.04 E-4 g/l
SPIKE VOL. 100 mL

Donna Bates

OUT FOR RERUN 22, 52

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

Date	Time Completed	Lab Unit Mgr	
11-30-93	1400		12-16-93

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			STANDARD
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1303-5540	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2271	Volume of sample (mL)	VSAM	0.100
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.60
1			
Instrument	Deflection (sample + fluran)	DSAM	0.22
WB 88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	5.70
Date:	Deflection (sample + fluran + spike)	DS+S	0.52
11/30/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		3.62E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level

Detection Level=(((0.02*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	3.62E-02
U in µg/mL=	3.62E+01

DETECTION LEVEL µg/mL= 3.29E+00

Data Entry by:		Date:	06-Dec-93
Approved by:		Date:	12/15/93

Form 1 Rev. 1.2

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

BEST AVAILABLE COPY

Serial No	Sample Point	Date	Time Issued	Priority
J 1304.-5640	BECHTOLD	11- 8-93	11:47	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	1

Sample Size	Customer ID
100-10-100 TB. 11-30-93	BLK

Remarks, Calculations, Results

REAGENT BLANK
5.04-4 g/l
.100 ml

< 3.22 E+0

OUT FOR RERUN: 02 33

Dania Bates

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

Date	Time Completed	Lab Unit Mgr	
11-30-93	1900		12-16-93

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			BLANK
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1304-5640	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2271	Volume of sample (mL)	VSAM	0.100
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.60
1			
Instrument	Deflection (sample + fluran)	DSAM	0.02
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	5.70
Date:	Deflection (sample + fluran + spike)	DS+S	0.33
11/30/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)	<	3.22E-03

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))
gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))
0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level
Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L = <	3.22E-03
U in µg/mL = <	3.22E+00

DETECTION LEVEL µg/mL= 3.22E+00
REPORT RESULT AS A < (LESS THAN) VALUE

Data Entry by:		Date:	06-Dec-93
Approved by:		Date:	12/15/93

Form 1 Rev. 1.2

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

BEST AVAILABLE COPY

Serial No	Sample Point	Date	Time Issued	Priority
J 1289.-5740	BECHTOLD	11-1-93	9: 2	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	1

Sample Size	Customer ID
10 ml (STRIPE) → 10 ml FINAL PREP. ? .100 - 10 - 100 ml	KE24A

Remarks, Calculations, Results

.504 - 4 g/l
.100 ml

6.91 E+1 µg/mL

Dania Bates

OUT FOR RERUN 34 58

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

Date	Time Completed	Lab Unit Mgr	
11-30-93	1400		

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1289-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2271	Volume of sample (mL)	VSAM	0.100
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.60
1			
Instrument	Deflection (sample + fluran)	DSAM	0.34
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	5.70
Date:	Deflection (sample + fluran + spike)	DS+S	0.58
11/30/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		6.91E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level

Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	6.91E-02
U in µg/mL=	6.91E+01

DETECTION LEVEL µg/mL= 4.07E+00

Data Entry by:		Date:	06-Dec-93
Approved by:		Date:	12/15/93

Form 1 Rev. 1.2

Page 1 of 1

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

BEST AVAILABLE COPY

Serial No	Sample Point	Date	Time Issued	Priority
J 1289.-5740	BECHTOLD	11- 4-93	9: 3	16

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	2

Sample Size	Customer ID
10 ml (sample) → 10 ml Fluor/prep. ? .100 - 10 - .100 ml	KF24A

Remarks, Calculations, Results

5.04-4 g/l
.100 ml

6.52 E+1 µg/mL

Janice Bates

OUT FOR RERUN 32/56

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

Date	Time Completed	Lab Unit Mgr	
11-30-93	1400	J L Skippen	K M Garland

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1289-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2271	Volume of sample (mL)	VSAM	0.100
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.60
2			
Instrument	Deflection (sample + fluran)	DSAM	0.32
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	5.70
Date:	Deflection (sample + fluran + spike)	DS+S	0.56
11/30/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		6.52E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level

Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	6.52E-02
U in µg/mL=	6.52E+01

DETECTION LEVEL µg/mL= 4.07E+00

Data Entry by:		Date:	06-Dec-93
Approved by:	J L Skippen	Date:	12/15/93

Form 1 Rev. 1.2

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

BEST AVAILABLE COPY

Serial No	Sample Point	Date	Time Issued	Priority
J 1289.-5740	BECHTOLD	11-4-93	9: 2	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	UG/ML	E14157	3

Sample Size	Customer ID
10 ml SAMPLE - 10 ml FINAL PREP ? .100-10-.100 ml	KE24A

Remarks, Calculations Results

5.04-4 g/l
.100 ml

6.52E+1 µg/ml

Dania Bates

OUT FOR RERUN 32/56

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

Date	Time Completed	Lab Unit Mgr	
11-30-93	1400		12-16-93

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1289-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2271	Volume of sample (mL)	VSAM	0.100
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.60
3			
Instrument	Deflection (sample + fluran)	DSAM	0.32
WB88807	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	5.70
Date:	Deflection (sample + fluran + spike)	DS+S	0.56
11/30/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		6.52E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level

Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	6.52E-02
U in µg/mL=	6.52E+01

DETECTION LEVEL µg/mL= 4.07E+00

Data Entry by:		Date:	06-Dec-93
Approved by:		Date:	12/15/93

Form 1 Rev. 1.2

PLACE ANALYTICAL CARD IN BOX BELOW DO NOT WRITE IN SPACE

Serial No	Sample Point	Date	Time Issued	Priority
J 1289.-5940	BECHTOLD	11- 4-93	9: 2	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	1

Sample Size 10 ml SAMPLE – 10 ML FINAL prep
? .100 144838 > 10 ml GH2O → .050 ml
.100 (SAMPLE)

Customer ID KE24A

Remarks, Calculations, Results

SAMPLE SPIKED ID 146838
SPIKE ID 5.04-4g/l
SPIKE VOLUME .100 ml

120.1 %

Dania Bates

OUT FOR RERUN 28 52

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

Date	Time Completed	Lab Unit Mgr	
11-30-93	1400	J L Slippen	12-16-93 K M Garland

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

BEST AVAILABLE COPY

URANIUM : LA-925-106 (B-0) SPIKE

			SPIKE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1289-5940	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2271	Volume of sample (mL)	VSAM	0.0500
Rerun No.	Volume of liquid in cell	VSUB	5.55
1	(sample + fluran + water)		
Instrument	Volume of spike (mL)	VSP	0.1000
WB88807	Volume of liquid in cell	VTOT	5.65
Analyst:	(sample + fluran + water + spike)		
	Deflection (sample + fluran)	DSAM	0.28
Date:	Deflection (sample + fluran + spike)	DS+S	0.52
11/30/93	Dilution factor of sample	DF	102
	Dilution factor of spike	DFS	102
	Spike value (matrix) (gU/L)	SV	3.8600E-02
	Preparation factor of sample	PF	1
	Concentration (gU/L) Form 1 or Form 3 (SAMPLE)	gU/L1	6.9100E-02
	Concentration (gU/L)	gU/LS	1.154E-01
	% Recovery		120.1

gU/L = (DSAM*VSP*CSP*DF*PF) / (((VTOT/VSUB) * DS+S – DSAM) * VSAM)
%Recovery = ((gU/LS – gU/L1) * (DFS / (DF * PF) / SV) * 100

% RECOVERY =	120.07

Data Entry by:	[signature]	Date:	06-Dec-93
Approved by:	J L Slippen	Date:	12/15/93

Form 2 Rev. 2.1

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1289.-5940	BECHTOLD	11- 4-93	9: 2	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	2

Sample Size 10 ml SAMPLE - 10 ml FINAL PREP
.100 (146B38) > 10 ml QH_2O → .050 ml
? .100 (SAMPLE)

Customer ID: KE24A

Remarks, Calculations, Results

SAMPLE SPIKED ID 146B38
SPIKE ID 5.04-4 g/l
SPIKE VOLUME .100 ml

151.1%

Dania Bates

OUT FOR RERUN 30 54

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

Date	Time Completed	Lab Unit Mgr	
11-30-92	1400	J F Slippern	12-16-93 K M Garland

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

BEST AVAILABLE COPY

URANIUM : LA-925-106 (B-0) SPIKE

Serial No.			SPIKE
J1289-5940	Spike concentration (gU/L)	CSP	5.04E-04
Batch ID	Volume of water (mL)		4.5
2271	Volume of fluran (mL)		1
Rerun No.	Volume of sample (mL)	VSAM	0.0500
2	Volume of liquid in cell (sample + fluran + water)	VSUB	5.55
Instrument	Volume of spike (mL)	VSP	0.1000
WB88807	Volume of liquid in cell (sample + fluran + water + spike)	VTOT	5.65
Analyst:	Deflection (sample + fluran)	DSAM	0.3
Date:	Deflection (sample + fluran + spike)	DS+S	0.54
11/30/93	Dilution factor of sample	DF	102
	Dilution factor of spike	DFS	102
	Spike value (matrix) (gU/L)	SV	3.8600E-02
	Preparation factor of sample	PF	1
	Concentration (gU/L) Form 1 or Form 3 (SAMPLE)	gU/L1	6.5200E-02
	Concentration (gU/L)	gU/LS	1.235E-01
	% Recovery		151.1

gU/L = (DSAM*VSP*CSP*DF*PF) / (((VTOT/VSUB) * DS+S - DSAM) * VSAM)
%Recovery = ((gU/LS - gU/L1) * (DFS / (DF * PF) / SV) * 100

% RECOVERY =	151.07

Data Entry by:	[signature]	Date:	06-Dec-93
Approved by:	J F Slippern	Date:	12/15/93

Form 2 Rev. 2.1

OA 21

WESTINGHOUSE HANFORD COMPANY

WHC-SD-WM-DP-057 REV O 222-S LABORATORY

Batch 2108

ANALYTICAL BATCH

Segment Serial No. J-1289	Customer ID: JS 12-14-93 ~~KE 24 A~~ Bechtold 105 KE Basin
Analysis: U	Sample Prep: Direct

Instrument: AL-10620	Procedure/ Rev: LA-925-106 / B-0
Technologist: RG Acken	Date: 11-10-93
Starting Time: 08:30	Temperature 25°C
Ending Time: 13:00	Chemist: Jennifer Slippern

Comments: Did Sample Prep on J-1289 with a total Volume of 10 ml.

	Description	Lab ID		Description	Lab ID
1	STD	J-1313-5540	11	OUT FOR RERUN	
2	BLK	J-1304-5640	12		
3	Sample	J-1289-5740	13		
4	Sample Dup	J-1289-5740	14		
5	Sample Trip	J-1289-5740	15		
6	Sample Spike	J-1289-5940	16		
7	Sample Spike Dup	J-1289-5940	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
Lab LS	144B38 / .100ml			
Pro. Spike	146B38 / .100ml			
Sample Spike	144B38 / .100ml			
	LAD 11-8-93			

840

A-6000-881 (03/92)

ANALYTICAL BATCH SUMMARY SHEET

METHOD: LA-925-106

DATE START: NOVEMBER 10, 1993

PREPARED BY: J.L. Slippern

DATE COMPLETE: NOVEMBER 22, 1993

SPL NAME	SPL ID	UNITS: pg/mL ANALYTE	RESULT #	RESULT #	RESULT #	AVERAGE	2*SD	PREC	ACC	%RE	DET LIM	% CT ER
STD 144B38	J1303	U	3.70E-02							95.8	4.11E+00	
BLANK	J1304	U	<4.55E-02								4.55E-02	
KE24A	J1280	U	4.30E+01	3.72E+01	4.30E-02	4.11E+01	6.7	16.3			4.30E+00	
											4.13E+00	
											4.30E+00	
KE24A	J1280	U SPIKE	6.07E-01	6.74E-01					10.6	157.1		
										174.7		

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

The results for the standard are in g/U/L.

Rerun requested - spike recoveries exceed control limits.

WHC-SD-WM-DR-057 REV 0

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

BEST AVAILABLE COPY

Serial No	Sample Point	Date	Time Issued	Priority
J 1303.-5540	BECHTOLD	11- 8-93	11:46	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	0

Sample Size	Customer ID
~~25-10-25~~ RGA 11-10-93 100-10-100	STD

Remarks, Calculations, Results

S267 UF1C
STD# 144B38 RESULT 3.70E-2 .18
STD VAL 3.86E-2 %REC 95.8% .42

SPIKE ID/VAL 146B38/5.04-4g/l
SPIKE VOL. .100~)

OUT FOR RERUN

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

Date	Time Completed	Lab Unit Mgr	
11/10/93	09:30	J L Slippen	Gary Hammond

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			STANDARD
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1303-5540	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2108	Volume of sample (mL)	VSAM	0.100
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.60
0			
Instrument	Deflection (sample + fluran)	DSAM	0.18
AL10620	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	5.70
R ACHEN			
Date:	Deflection (sample + fluran + spike)	DS+S	0.42
11/10/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)		3.70E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/(((VTOT/VSUB)*(DS+S))-DSAM)*VSAM))
gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/(((VTOT/VSUB)*(DS+S))-DSAM)*VSAM))
0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level
Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/(((VTOT/VSUB)*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	3.70E-02
U in µg/mL=	3.70E+01

DETECTION LEVEL µg/mL= 4.11E+00

Data Entry by:	Jennifer L Slippen	Date:	10-Nov-93
Approved by:	J L Slippen	Date:	11-22-93

Form 1 Rev. 1.2

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1304.-5640	BECHTOLD	11- 8-93	11:47	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	0

Sample Size	Customer ID
~~25-10-25~~ RGA 11/10/93 100-10-1ml	BLK

Remarks, Calculations, Results

REAGENT BLANK

Spike ID/vol - 146B38 / 4.58 - Spl .02 .22

Spike vol - .100ml

< 4.55 E-2

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

OUT FOR RERUN

Date	Time Completed	Lab Unit Mgr	
11/10/93	09:45	J L Sleppern	Gary Hammond

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

BEST AVAILABLE COPY

URANIUM : LA-925-106 (B-0) LIQUIDS

			BLANK
Serial No.	Spike concentration (gU/L)	CSP	4.58E-05
J1304-5640	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2108	Volume of sample (mL)	VSAM	1.000
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	6.50
0			
Instrument	Deflection (sample + fluran)	DSAM	0.02
AL10620	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	6.60
R ACHEN			
Date:	Deflection (sample + fluran + spike)	DS+S	0.22
11/10/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	1
	Concentration in sample (gU/L)	<	4.55E-05

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/(((VTOT/VSUB)*(DS+S))-DSAM)*VSAM))

gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/(((VTOT/VSUB)*(DS+S))-DSAM)*VSAM))

0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level

Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/(((VTOT/VSUB)*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L = <	4.55E-05
U in µg/mL = <	4.55E-02

DETECTION LEVEL µg/mL= 4.55E-02

REPORT RESULT AS A < (LESS THAN) VALUE

Data Entry by:	[signature]	Date:	10-Nov-93
Approved by:	Jennifer L Sleppern	Date:	11-22-93

Form 1 Rev. 1.2

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

BEST AVAILABLE COPY

Serial No	Sample Point	Date	Time Issued	Priority
J 1289.-5740	BECHTOLD	11- 4-93	9: 2	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	0

Sample Size	Customer ID
? 100-10-1ml P.F.=10	KE24A

Remarks, Calculations, Results

sample .20
spike 10 ml -146338/5.04-4 g/l .43
spike vol - .100 ml
4.30E+1

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
			OUT FOR RERUN	
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
11/10/93	10:00		

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1289-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2108	Volume of sample (mL)	VSAM	1.000
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	6.50
0			
Instrument	Deflection (sample + fluran)	DSAM	0.2
AL10620	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	6.60
R ACHEN			
Date:	Deflection (sample + fluran + spike)	DS+S	0.43
11/10/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	10
	Concentration in sample (gU/L)		4.30E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))
gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))
0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level
Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	4.30E-02
U in µg/mL=	4.30E+01

DETECTION LEVEL µg/mL= 4.30E+00

Data Entry by:		Date:	10-Nov-93
Approved by:		Date:	11-22-93

Form 1 Rev. 1.2

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

BEST AVAILABLE COPY

Serial No	Sample Point	Date	Time Issued	Priority
J 1289.-5740	BECHTOLT	11- 4-93	8:53	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	0

Sample Size	Customer ID
? 100-10-1ml P.F.=10	KE24A

Remarks, Calculations, Results

Duplicate .18

Spike ID/vol - 146B38/5.04-4g/l .42

Spike vol - .100ml

3.72 E+1

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

OUT FOR RERUN

Date	Time Completed	Lab Unit Mgr	
11/10/93	10:30		

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1289-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2108	Volume of sample (mL)	VSAM	1.000
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	6.50
0			
Instrument	Deflection (sample + fluran)	DSAM	0.18
AL10620	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	6.60
R ACHEN			
Date:	Deflection (sample + fluran + spike)	DS+S	0.42
11/10/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	10
	Concentration in sample (gU/L)		3.72E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level

Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	3.72E-02
U in µg/mL=	3.72E+01

DETECTION LEVEL µg/mL= 4.13E+00

Data Entry by:		Date:	10-Nov-93
Approved by:		Date:	11-22-93

Form 1 Rev. 1.2

Page 1 of 1

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

BEST AVAILABLE COPY

Serial No	Sample Point	Date	Time Issued	Priority
J 1289.-5740	BECHTOLD	11- 4-93	9: 2	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	uG/ML	E14157	0

Sample Size	Customer ID
7 100-10-1ml P.F. =10	KE24A

Remarks, Calculations, Results

triplicate

Spike ID 1021 -146B58/5.04-4/12 .20 .43

Spike = 0.1 - .100ml

4.30E+1

OUT FOR RERUN

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

Date	Time Completed	Lab Unit Mgr	
11/10/93	11:00		

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

URANIUM : LA-925-106 (B-0) LIQUIDS

			SAMPLE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1289-5740	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2108	Volume of sample (mL)	VSAM	1.000
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	6.50
0			
Instrument	Deflection (sample + fluran)	DSAM	0.2
AL10620	Volume of spike (mL)	VSP	0.100
Analyst:	Volume of liquid in cell (mL) (sample + fluran + water + spike)	VTOT	6.60
R ACHEN			
Date:	Deflection (sample + fluran + spike)	DS+S	0.43
11/10/93	Dilution factor of sample	DF	101
	Digestion Dilution Factor of Sample	DDF	1
	Preparation Factor	PF	10
	Concentration in sample (gU/L)		4.30E-02

gU/L in Sample = ((DSAM*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

gU/L in Digest = ((DSAM*VSP*CSP*DF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))

0.02 is used as the Sample Deflection Reading for Calculating Less Than Values & Detection Level

Detection Level=((0.02*VSP*CSP*DF*DDF*PF)/((({VTOT/VSUB}*(DS+S))-DSAM)*VSAM))*(1E6 µg/g / 1000 mL/L)

U in sample gU/L=	4.30E-02
U in µg/mL=	4.30E+01

DETECTION LEVEL µg/mL= 4.30E+00

Data Entry by:		Date:	10-Nov-93
Approved by:		Date:	

Form 1 Rev. 1.2

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

BEST AVAILABLE COPY

Serial No	Sample Point	Date	Time Issued	Priority
J 1289.-5940	BECHTOLD	11- 4-93	9: 2	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	0

Sample Size: 500 — 100-10 ; 2 Sample — 100-10 > 100 P.F. = 10

Customer ID: KE24A

Remarks Calculations Results

SAMPLE SPIKED ID
SPIKE ID-144B38
SPIKE VOLUME-.100ml
Spike FP 1ul - 146B38/5.04-4g/l
Spike vol - .100ml

.25
.44
157.1%

OUT FOR RERUN

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

Date	Time Completed	Lab Unit Mgr	
11/10/93	11:30		

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

URANIUM : LA-925-106 (B-0) SPIKE

			SPIKE
Serial No.	Spike concentration (gU/L)	CSP	5.04E-04
J1289-5940	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2108	Volume of sample (mL)	VSAM	0.1000
Rerun No.	Volume of liquid in cell (sample + fluran + water)	VSUB	5.60
0			
Instrument	Volume of spike (mL)	VSP	0.1000
AL10620	Volume of liquid in cell (sample + fluran + water + spike)	VTOT	5.70
Analyst:			
R ACHEN	Deflection (sample + fluran)	DSAM	0.25
Date:	Deflection (sample + fluran + spike)	DS+S	0.44
11/10/93	Dilution factor of sample	DF	102
	Dilution factor of spike	DFS	102
	Spike value (matrix) (gU/L)	SV	3.8600E-02
	Preparation factor of sample	PF	10
	Concentration (gU/L) Form 1 or Form 3 (SAMPLE)	gU/L1	4.3000E-02
	Concentration (gU/L)	gU/LS	6.496E-01
	% Recovery		157.1

gU/L = (DSAM*VSP*CSP*DF*PF) / (((VTOT/VSUB) * DS+S - DSAM) * VSAM)
%Recovery = ((gU/LS - gU/L1) * (DFS / (DF * PF) / SV) * 100

% RECOVERY =	157.14

Data Entry by:		Date:	10-Nov-93
Approved by:		Date:	11-22-93

Form 2 Rev. 2.1

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1289.-5940	BECHTOLD	11- 4-93	9: 2	18

Determination	Method Standard	Result Units	Charge Code	Reruns
U	LA-925-106	% RECOVERY	E14157	0

Sample Size: STD — 100-10 / ? sample — 100-10 > 100 P.F.=10

Customer ID: KE24A

Remarks, Calculations, Results: spike dup

SAMPLE SPIKED ID
SPIKE ID-144B38
SPIKE VOLUME-.100ml
Spike ID(Vol) -146B38/5.04-4g/l
Spike vol .100ml

.26
.44

174.7%

Rody Cohen

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
			OUT FOR RERUN	
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
11/10/93	12:50	J.L. Slippen	Gary Hammond

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

BEST AVAILABLE COPY

URANIUM : LA-925-106 (B-0) SPIKE

Serial No.			SPIKE
J1289-5940	Spike concentration (gU/L)	CSP	5.04E-04
	Volume of water (mL)		4.5
Batch ID	Volume of fluran (mL)		1
2108	Volume of sample (mL)	VSAM	0.1000
Rerun No.	Volume of liquid in cell	VSUB	5.60
0	(sample + fluran + water)		
Instrument	Volume of spike (mL)	VSP	0.1000
AL10620	Volume of liquid in cell	VTOT	5.70
Analyst:	(sample + fluran + water + spike)		
R ACHEN	Deflection (sample + fluran)	DSAM	0.26
Date:	Deflection (sample + fluran + spike)	DS+S	0.44
11/10/93	Dilution factor of sample	DF	102
	Dilution factor of spike	DFS	102
	Spike value (matrix) (gU/L)	SV	3.8600E-02
	Preparation factor of sample	PF	10
	Concentration (gU/L) Form 1 or Form 3 (SAMPLE)	gU/L1	3.7200E-02
	Concentration (gU/L)	gU/LS	7.115E-01
	% Recovery		174.7

gU/L = (DSAM*VSP*CSP*DF*PF) / (((VTOT/VSUB) * DS+S - DSAM) * VSAM)
%Recovery = ((gU/LS - gU/L1) * (DFS / (DF * PF) / SV) * 100

% RECOVERY =	174.69

Data Entry by:	[signature]	Date:	10-Nov-93
Approved by:	Jennifer L. Slippen	Date:	11-22-93

Form 2 Rev. 2.1

P.O. Box 1970 Richland, WA 99352

J1284D
CASE NARRATIVE - ICP

WHCPAL LABORATORIES

WHCPAL/CUSTOMER SAMPLE NOS:	J1285 KE13A
	J1286 KE20B
	J1287 KE20D
	J1288 KE23B
INORGANIC ANALYSIS	J1289 KE24A

The data evaluation for this project will follow the guidelines specified in "Sampling and Analysis Plan for 105-KE Basin Filter Backwash Pit," (WHC-SD-NR-PLN-013). Contained in this report is the evaluation of the data generated by Westinghouse Hanford Company - Processing and Analytical Laboratories (WHC-PAL), 222-S Laboratory. Information will be organized by quality control parameter.

INITIAL AND CONTINUING CALIBRATION VERIFICATION

All instrument calibration requirements were within specified control limits of ±25% during analysis.

INITIAL AND CONTINUING CALIBRATION BLANKS

All ICB and CCB analytical measurements were 0±2xIDL (Instrument Detection Limits) with the following exceptions: The high values reported for Iron in CCB-2 and CCB-3 are attributed to carryover from the samples. The amount of carryover is insignificant relative to sample concentrations. The high values reported for Silver are attributed to a low calibration blank. A high bias near detection limits is indicated for Silver. Beryllium exceeded 2xIDL in the ICB and Zinc in the ICB and CCB-4. The cause of these high readings is unclear.

PRECISION

Precision requirements were met for all analytes except

For J1285: Boron (31.7%), Molybdenum (27.3%) and Samarium (76.3%).
For J1286: Boron (121.4%).
For J1287: Boron (62.6%).
For J1288: Copper (44.0%), Iron (65.3%), Lead (44.5%), Manganese (100.7%) and Zinc (25.9%).
For J1289: Molybdenum (44.0%).

Failures for Lead, Molybdenum and Samarium are attributed to the low level (< 2xIDL) of these analytes in the samples. The failures for Copper, Iron, Manganese and Zinc may be attributed to carryover from the previous runs. Boron is subject to interference from Iron. Although correction factors were in place, the magnitude of Iron relative to Boron results in poor precision for Boron.

J1285 KE13A
J1286 KE20B
J1287 KE20D
J1288 KE23B
J1289 KE24A

SERIAL DILUTION
Serial dilution failures were noted for Calcium and Magnesium in all samples, Aluminum and Iron in J1288, and Cadmium, Iron, Manganese and Zinc in J1289.

COMMENTS
Instrument Detection Limits, Interelement Correction Factors and Linear Ranges have been reported with sample J1226.

Brian Wels
11-23-93
Brian Wels
Senior Scientist, WHCPAL

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: WHC_PAL Contract: _____

Lab Code: 105KE_ Case No.: _____ SAS No.: _____ SDG No.:J1284D

SOW No.: 3/90_

EPA Sample No.	Lab Sample ID
J1285	J1285
J1285D	J1285T
J1285D	J1285D
J1286	J1286
J1286D	J1286T
J1286D	J1286D
J1287	J1287
J1287D	J1287T
J1287D	J1287D
J1288	J1288
J1288D	J1288T
J1288D	J1288D
J1289	J1289
J1289D	J1289T
J1289D	J1289D

Were ICP interelement corrections applied ? Yes/No YES

Were ICP background corrections applied ? Yes/No YES
If yes - were raw data generated before application of background corrections ? Yes/No NO_

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Thomas Bishaw Name: T.H. BISHAW

Date: 11/23/93 Title: Mgr. Inorganic Chem.

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

J1285

Lab Name: WHC_PAL Contract: _____

Lab Code: 105KE_ Case No.: _____ SAS No.: _____ SDG No.: J1284D

Matrix (soil/water): WATER Lab Sample ID: J1285

Level (low/med): LOW Date Received: 11/04/93

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	96700			P
7440-39-3	Barium	677			P
7440-41-7	Beryllium	112			P
7440-42-8	Boron	51.5		*	P
7440-43-9	Cadmium	743			P
7440-70-2	Calcium	11600		E	P
7440-47-3	Chromium	1410			P
7440-50-8	Copper	2190			P
7439-89-6	Iron	209000			P
7439-92-1	Lead	1120			P
7439-95-4	Magnesium	2530		E	P
7439-96-5	Manganese	3710			P
7439-98-7	Molydenum	33.2		*	P
7440-19-9	Samarium	68.0	U	*	P
7440-21-3	Silicon	7370			P
7440-22-4	Silver	19.7		*	P
7440-23-5	Sodium	2020			P
7440-28-0	Thallium	847			P
7440-66-6	Zinc	3200			P

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

U.S. EPA - CLP

WHC-SD-WM-DP-057 REV 0

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

J1286

Lab Name: WHC_PAL Contract: _____

Lab Code: 105KE_ Case No.: _____ SAS No.: _____ SDG No.: J1284D

Matrix (soil/water): WATER Lab Sample ID: J1286_____

Level (low/med): LOW__ Date Received: 11/04/93

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	29000			P
7440-39-3	Barium___	318			P
7440-41-7	Beryllium	28.1			P
7440-42-8	Boron____	30.0		*	P
7440-43-9	Cadmium__	243			P
7440-70-2	Calcium__	4990		E	P
7440-47-3	Chromium_	865			P
7440-50-8	Copper___	781			P
7439-89-6	Iron_____	558000			P
7439-92-1	Lead_____	519			P
7439-95-4	Magnesium	1410		E	P
7439-96-5	Manganese	1480			P
7439-98-7	Molydenum	32.7			P
7440-19-9	Samarium_	68.0	U		P
7440-21-3	Silicon__	6860			P
7440-22-4	Silver___	6.0	U		P
7440-23-5	Sodium___	1460			P
7440-28-0	Thallium_	161	U		P
7440-66-6	Zinc_____	2540			P

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

J1287

Lab Name: WHC_PAL Contract: _____

Lab Code: 105KE_ Case No.: _____ SAS No.: _____ SDG No.: J1284D

Matrix (soil/water): WATER Lab Sample ID: J1287_____

Level (low/med): LOW__ Date Received: 11/04/93

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	49300			P
7440-39-3	Barium	382			P
7440-41-7	Beryllium	27.1			P
7440-42-8	Boron	34.7		*	P
7440-43-9	Cadmium	194			P
7440-70-2	Calcium	9640		E	P
7440-47-3	Chromium	808			P
7440-50-8	Copper	1040			P
7439-89-6	Iron	456000			P
7439-92-1	Lead	735			P
7439-95-4	Magnesium	3570		E	P
7439-96-5	Manganese	1610			P
7439-98-7	Molydenum	49.2			P
7440-19-9	Samarium	68.0	U		P
7440-21-3	Silicon	7130			P
7440-22-4	Silver	6.0	U		P
7440-23-5	Sodium	2160			P
7440-28-0	Thallium	161	U		P
7440-66-6	Zinc	1850			P

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

U.S. EPA - CLP

WHC-SD-WM-DP-057 REV 0

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

J1288

Lab Name: WHC_PAL Contract: _____

Lab Code: 105KE_ Case No.: _____ SAS No.: _____ SDG No.: J1284D

Matrix (soil/water): WATER Lab Sample ID: J1288_____

Level (low/med): LOW__ Date Received: 11/04/93

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	2370		E	P
7440-39-3	Barium___	10.9		*	P
7440-41-7	Beryllium	3.0	U		P
7440-42-8	Boron____	118			P
7440-43-9	Cadmium__	8.0	U		P
7440-70-2	Calcium__	2190		E	P
7440-47-3	Chromium_	20.2			P
7440-50-8	Copper___	17.5		*	P
7439-89-6	Iron_____	1950		E*	P
7439-92-1	Lead_____	86.4		*	P
7439-95-4	Magnesium	494		E	P
7439-96-5	Manganese	11.6		*	P
7439-98-7	Molydenum	17.0	U		P
7440-19-9	Samarium_	68.0	U		P
7440-21-3	Silicon__	8350			P
7440-22-4	Silver___	6.0	U		P
7440-23-5	Sodium___	2540			P
7440-28-0	Thallium_	161	U		P
7440-66-6	Zinc_____	39.1		*	P

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

U.S. EPA - CLP

WHC-SD-WM-DP-057 REV 0

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

J1289

Lab Name: WHC_PAL Contract: _____

Lab Code: 105KE_ Case No.: _____ SAS No.: _____ SDG No.: J1284D

Matrix (soil/water): WATER Lab Sample ID: J1289_____

Level (low/med): LOW__ Date Received: 11/04/93

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	48100			P
7440-39-3	Barium___	461			P
7440-41-7	Beryllium	44.9			P
7440-42-8	Boron____	29.8		*	P
7440-43-9	Cadmium__	401		E	P
7440-70-2	Calcium__	6200		E	P
7440-47-3	Chromium_	402			P
7440-50-8	Copper___	1230			P
7439-89-6	Iron_____	136000		E	P
7439-92-1	Lead_____	534			P
7439-95-4	Magnesium	2690		E	P
7439-96-5	Manganese	2150		E	P
7439-98-7	Molydenum	18.3		*	P
7440-19-9	Samarium_	68.0	U		P
7440-21-3	Silicon__	7680			P
7440-22-4	Silver___	6.0	U		P
7440-23-5	Sodium___	2480			P
7440-28-0	Thallium_	161	U		P
7440-66-6	Zinc_____	1470		E	P

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

FORM I - IN

ILMO2.1

U.S. EPA - CLP

WHC-SD-WM-DP-057 REV O

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: WHC_PAL_____ Contract: _____

Lab Code: 105KE_ Case No.: _____ SAS No.: _____ SDG No.: J1284D

Initial Calibration Source: PLASMACHEM__

Continuing Calibration Source: PLASMACHEM__

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum_	5000.0	4833.72	96.7	5000.0	4826.31	96.5	4857.41	97.1	P_
Barium___	5000.0	4770.89	95.4	5000.0	4726.81	94.5	4740.65	94.8	P_
Beryllium	5000.0	4734.05	94.7	5000.0	4691.56	93.8	4711.77	94.2	P_
Boron____	5000.0	4753.16	95.1	5000.0	4730.87	94.6	4738.14	94.8	P_
Cadmium__	5000.0	4515.55	90.3	5000.0	4490.81	89.8	4506.04	90.1	P_
Calcium__	5000.0	4751.46	95.0	5000.0	4723.22	94.5	4728.22	94.6	P_
Chromium_	5000.0	4694.34	93.9	5000.0	4680.05	93.6	4696.42	93.9	P_
Copper___	5000.0	4903.26	98.1	5000.0	4897.09	97.9	4895.28	97.9	P_
Iron_____	5000.0	4802.59	96.1	5000.0	4806.85	96.1	5333.48	106.7	P_
Lead_____	5000.0	4607.63	92.2	5000.0	4590.33	91.8	4600.31	92.0	P_
Magnesium	5000.0	4592.92	91.9	5000.0	4566.76	91.3	4586.55	91.7	P_
Manganese	5000.0	4637.00	92.7	5000.0	4622.73	92.5	4628.22	92.6	P_
Molydenum	5000.0	4692.55	93.9	5000.0	4638.59	92.8	4653.02	93.1	P_
Samarium_	5000.0	4834.24	96.7	5000.0	4751.90	95.0	4860.35	97.2	P_
Silicon__	5000.0	4764.09	95.3	5000.0	4810.00	96.2	4777.72	95.6	P_
Silver___	5000.0	5260.75	105.2	5000.0	4848.05	97.0	4896.84	97.9	P_
Sodium___	5000.0	4901.25	98.0	5000.0	4893.87	97.9	4873.22	97.5	P_
Thallium_	5000.0	4373.33	87.5	5000.0	4288.90	85.8	4362.26	87.2	P_
Zinc_____	5000.0	4849.83	97.0	5000.0	4845.75	96.9	4857.56	97.2	P_

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

WHC-SD-WM-DP-057 REV O

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: WHC_PAL_____ Contract: _____

Lab Code: 105KE_ Case No.: _____ SAS No.: _____ SDG No.: J1284D

Initial Calibration Source: PLASMACHEM__

Continuing Calibration Source: PLASMACHEM__

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum				5000.0	5059.54	101.2	4920.98	98.4	P
Barium				5000.0	4954.92	99.1	4778.83	95.6	P
Beryllium				5000.0	5046.28	100.9	4817.43	96.3	P
Boron				5000.0	4921.49	98.4	4775.36	95.5	P
Cadmium				5000.0	4856.27	97.1	4619.35	92.4	P
Calcium				5000.0	4962.79	99.3	4803.57	96.1	P
Chromium				5000.0	4970.90	99.4	4779.18	95.6	P
Copper				5000.0	5077.66	101.6	4917.43	98.3	P
Iron				5000.0	5360.52	107.2	5072.79	101.5	P
Lead				5000.0	4907.71	98.2	4724.73	94.5	P
Magnesium				5000.0	4851.58	97.0	4690.50	93.8	P
Manganese				5000.0	4909.87	98.2	4709.12	94.2	P
Molydenum				5000.0	4937.14	98.7	4725.90	94.5	P
Samarium				5000.0	5123.12	102.5	4886.99	97.7	P
Silicon				5000.0	4960.14	99.2	4794.14	95.9	P
Silver				5000.0	4822.39	96.4	4607.20	92.1	P
Sodium				5000.0	4953.77	99.1	4855.26	97.1	P
Thallium				5000.0	4558.78	91.2	4359.49	87.2	P
Zinc				5000.0	5067.92	101.4	4909.79	98.2	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

FORM II (PART 1) - IN

ILMO2.1

U.S. EPA - CLP

3
BLANKS

WHC-SD-WM-DP-057 REV O

Lab Name: WHC_PAL_____ Contract: _____

Lab Code: 105KE_ Case No.: _____ SAS No.: _____ SDG No.: J1284D

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	38.0	U	38.0	U	38.0	U	38.0	U			P
Barium	8.1		6.0	U	6.0	U	6.0	U			P
Beryllium	6.6		3.0	U	3.0	U	3.0	U			P
Boron	12.0	U	12.0	U	12.0	U	12.0	U			P
Cadmium	10.3		8.0	U	8.0	U	8.0	U			P
Calcium	19.7		19.0	U	19.0	U	19.2				P
Chromium	11.0	U	11.0	U	11.0	U	11.0	U			P
Copper	8.3		5.0	U	5.1		5.0	U			P
Iron	21.0	U	21.0	U	171.1		49.3				P
Lead	89.1		64.0	U	64.0	U	64.0	U			P
Magnesium	5.9		5.0	U	5.0	U	5.0	U			P
Manganese	5.2		3.0	U	3.0	U	3.0	U			P
Molydenum	17.0	U	17.0	U	17.0	U	17.0	U			P
Samarium	68.0	U	68.0	U	68.0	U	68.0	U			P
Silicon	29.0	U	29.0	U	29.0	U	29.0	U			P
Silver	6.4		66.3		62.1		76.8				P
Sodium	28.0	U	28.0	U	28.0	U	28.0	U			P
Thallium	161.0	U	161.0	U	161.0	U	161.0	U			P
Zinc	8.2		3.0	U	4.2		4.9				P

U.S. EPA - CLP

3
BLANKS

WHC-SD-WM-DP-057 REV O

Lab Name: WHC_PAL_____ Contract: _____

Lab Code: 105KE_ Case No.: _____ SAS No.: _____ SDG No.: J1284D

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum			38.0	U							P
Barium			6.0	U							P
Beryllium			3.7								P
Boron			12.0	U							P
Cadmium			9.0								P
Calcium			25.7								P
Chromium			11.0	U							P
Copper			5.0	U							P
Iron			27.9								P
Lead			64.0	U							P
Magnesium			9.0								P
Manganese			3.0	U							P
Molydenum			17.0	U							P
Samarium			68.0	U							P
Silicon			29.0	U							P
Silver			93.9								P
Sodium			28.0	U							P
Thallium			161.0	U							P
Zinc			6.2								P

FORM III - IN

ILMO2.1

6
DUPLICATES

EPA SAMPLE NO.

J1285D

Lab Name: WHC_PAL Contract: _____

Lab Code: 105KE_ Case No.: _____ SAS No.: _____ SDG No.: J1284D

Matrix (soil/water): WATER Level (low/med): _LOW__

% Solids for Sample: __0.0 % Solids for Duplicate: ___0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		96713.3310		95198.8060		1.6		P
Barium		677.0970		656.1580		3.1		P
Beryllium		112.3560		104.6870		7.1		P
Boron		51.5430		41.9900		20.4	*	P
Cadmium		742.5470		712.9740		4.1		P
Calcium		11551.2670		11153.0560		3.5		P
Chromium		1406.9460		1355.4430		3.7		P
Copper		2192.7890		2132.4550		2.8		P
Iron		209405.8800		202301.9460		3.5		P
Lead		1120.4260		1065.8660		5.0		P
Magnesium		2534.7750		2453.0270		3.3		P
Manganese		3712.5590		3583.7410		3.5		P
Molydenum		33.2260		25.2230		27.4	*	P
Samarium		68.0000	U	68.0000	U			P
Silicon		7371.2100		7164.5830		2.8		P
Silver		19.6990		6.0000	U	200.0	*	P
Sodium		2019.9230		1988.2620		1.6		P
Thallium		846.8800		751.3840		11.9		P
Zinc		3195.8380		3132.2240		2.0		P

U.S. EPA - CLP

WHC-SD-WM-DP-057 REV 0

6
DUPLICATES

EPA SAMPLE NO.

J1285TD

Lab Name: WHC_PAL Contract: _____

Lab Code: 105KE_ Case No.: _____ SAS No.: _____ SDG No.: J1284D

Matrix (soil/water): WATER Level (low/med): _LOW__

% Solids for Sample: __0.0 % Solids for Duplicate: ___0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		96713.3310		96760.7040		0.0		P
Barium		677.0970		672.9320		0.6		P
Beryllium		112.3560		111.0170		1.2		P
Boron		51.5430		57.8610		11.5		P
Cadmium		742.5470		747.1950		0.6		P
Calcium		11551.2670		11518.3600		0.3		P
Chromium		1406.9460		1407.3930		0.0		P
Copper		2192.7890		2192.1020		0.0		P
Iron		209405.8800		211357.8840		0.9		P
Lead		1120.4260		1121.7570		0.1		P
Magnesium		2534.7750		2539.6800		0.2		P
Manganese		3712.5590		3734.2620		0.6		P
Molydenum		33.2260		30.1950		9.6		P
Samarium		68.0000	U	80.5000		200.0	*	P
Silicon		7371.2100		7358.2700		0.2		P
Silver		19.6990		6.0000	U	200.0	*	P
Sodium		2019.9230		1974.0350		2.3		P
Thallium		846.8800		784.6000		7.6		P
Zinc		3195.8380		3215.9640		0.6		P

U.S. EPA - CLP

WHC-SD-WM-DP-057 REV 0

6
DUPLICATES

EPA SAMPLE NO.

J1286D

Lab Name: WHC_PAL Contract: _____

Lab Code: 105KE_ Case No.: _____ SAS No.: _____ SDG No.: J1284D

Matrix (soil/water): WATER Level (low/med): _LOW__

% Solids for Sample: __0.0 % Solids for Duplicate: ___0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		29048.9670		27942.2400		3.9		P
Barium		318.3150		307.8580		3.3		P
Beryllium		28.1190		26.5370		5.8		P
Boron		29.9920		12.0100		85.6	*	P
Cadmium		243.4100		231.6290		5.0		P
Calcium		4990.1260		4819.7020		3.5		P
Chromium		864.5310		828.5080		4.3		P
Copper		780.8210		755.5890		3.3		P
Iron		557682.3210		543374.9940		2.6		P
Lead		518.9320		484.9980		6.8		P
Magnesium		1407.0900		1344.1010		4.6		P
Manganese		1477.7060		1411.3090		4.6		P
Molydenum		32.7410		29.1030		11.8		P
Samarium		68.0000	U	68.0000	U			P
Silicon		6864.4510		6647.2490		3.2		P
Silver		6.0000	U	6.0000	U			P
Sodium		1461.9920		1463.3830		0.1		P
Thallium		161.0000	U	161.0000	U			P
Zinc		2538.5700		2460.4920		3.1		P

U.S. EPA - CLP

WHC-SD-WM-DP-057 REV 0

6
DUPLICATES

EPA SAMPLE NO.

J1286TD

Lab Name: WHC_PAL Contract: _____

Lab Code: 105KE_ Case No.: _____ SAS No.: _____ SDG No.: J1284D

Matrix (soil/water): WATER Level (low/med): _LOW__

% Solids for Sample: __0.0 % Solids for Duplicate: ___0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		29048.9670		27340.7620		6.1		P
Barium		318.3150		298.6720		6.4		P
Beryllium		28.1190		25.4410		10.0		P
Boron		29.9920		12.0000	U	200.0	*	P
Cadmium		243.4100		219.5510		10.3		P
Calcium		4990.1260		4699.0220		6.0		P
Chromium		864.5310		788.0210		9.3		P
Copper		780.8210		737.5660		5.7		P
Iron		557682.3210		529755.5290		5.1		P
Lead		518.9320		447.7380		14.7		P
Magnesium		1407.0900		1308.2180		7.3		P
Manganese		1477.7060		1370.2890		7.5		P
Molydenum		32.7410		31.1650		4.9		P
Samarium		68.0000	U	68.0000	U			P
Silicon		6864.4510		6540.1090		4.8		P
Silver		6.0000	U	6.0000	U			P
Sodium		1461.9920		1471.9400		0.7		P
Thallium		161.0000	U	161.0000	U			P
Zinc		2538.5700		2407.7180		5.3		P

U.S. EPA - CLP

WHC-SD-WM-DP-057 REV 0

6
DUPLICATES

EPA SAMPLE NO.

J1287D

Lab Name: WHC_PAL Contract: _____

Lab Code: 105KE_ Case No.: _____ SAS No.: _____ SDG No.: J1284D

Matrix (soil/water): WATER Level (low/med): _LOW__

% Solids for Sample: __0.0 % Solids for Duplicate: ___0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		49292.3790		49903.6890		1.2		P
Barium		381.5710		388.0260		1.7		P
Beryllium		27.1460		26.4150		2.7		P
Boron		34.7200		40.9450		16.5		P
Cadmium		193.6250		193.8000		0.1		P
Calcium		9635.8830		9892.6080		2.6		P
Chromium		807.8180		824.9360		2.1		P
Copper		1038.3770		1056.3150		1.7		P
Iron		455537.2390		465998.5630		2.3		P
Lead		734.5120		742.4960		1.1		P
Magnesium		3574.0870		3636.6450		1.7		P
Manganese		1607.0910		1644.7400		2.3		P
Molydenum		49.2330		49.1120		0.2		P
Samarium		68.0000	U	68.0000	U			P
Silicon		7131.1880		7111.7080		0.3		P
Silver		6.0000	U	6.0000	U			P
Sodium		2159.7270		2146.7840		0.6		P
Thallium		161.0000	U	161.0000	U			P
Zinc		1854.6390		1868.8760		0.8		P

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

J1287TD

Lab Name: WHC_PAL Contract: _____

Lab Code: 105KE_ Case No.: _____ SAS No.: _____ SDG No.: J1284D

Matrix (soil/water): WATER Level (low/med): _LOW__

% Solids for Sample: __0.0 % Solids for Duplicate: ___0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		49292.3790		48613.3820		1.4		P
Barium		381.5710		377.0600		1.2		P
Beryllium		27.1460		24.4680		10.4		P
Boron		34.7200		21.1930		48.4	*	P
Cadmium		193.6250		185.0450		4.5		P
Calcium		9635.8830		9611.3630		0.3		P
Chromium		807.8180		787.8720		2.5		P
Copper		1038.3770		1035.4590		0.3		P
Iron		455537.2390		450043.1810		1.2		P
Lead		734.5120		681.2820		7.5		P
Magnesium		3574.0870		3481.1530		2.6		P
Manganese		1607.0910		1586.4860		1.3		P
Molydenum		49.2330		40.6230		19.2		P
Samarium		68.0000	U	68.0000	U			P
Silicon		7131.1880		6876.5570		3.6		P
Silver		6.0000	U	6.0000	U			P
Sodium		2159.7270		2108.5980		2.4		P
Thallium		161.0000	U	161.0000	U			P
Zinc		1854.6390		1803.2240		2.8		P

FORM VI - IN

ILMO2.1

U.S. EPA - CLP

WHC-SD-WM-DP-057 REV O

6
DUPLICATES

EPA SAMPLE NO.

J1288D

Lab Name: WHC_PAL Contract: _____

Lab Code: 105KE_ Case No.: _____ SAS No.: _____ SDG No.: J1284D

Matrix (soil/water): WATER Level (low/med): _LOW__

% Solids for Sample: __0.0 % Solids for Duplicate: ___0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		2366.6210		2181.1060		8.2		P
Barium		10.8970		9.3010		15.8		P
Beryllium		3.0000	U	3.0000	U			P
Boron		117.6110		115.2890		2.0		P
Cadmium		8.0000	U	8.0000	U			P
Calcium		2185.5530		2052.4530		6.3		P
Chromium		20.2440		17.5650		14.2		P
Copper		17.5080		13.2160		27.9	*	P
Iron		1946.5970		1193.0280		48.0	*	P
Lead		86.4420		135.0140		43.9	*	P
Magnesium		494.2710		439.7160		11.7		P
Manganese		11.5520		6.2120		60.1	*	P
Molydenum		17.0000	U	17.0000	U			P
Samarium		68.0000	U	68.0000	U			P
Silicon		8348.6890		8072.0730		3.4		P
Silver		6.0000	U	6.0000	U			P
Sodium		2541.0590		2484.5810		2.2		P
Thallium		161.0000	U	161.0000	U			P
Zinc		39.1200		32.3570		18.9		P

6
DUPLICATES

EPA SAMPLE NO.

J1288TD

Lab Name: WHC_PAL Contract: _____

Lab Code: 105KE_ Case No.: _____ SAS No.: _____ SDG No.: J1284D

Matrix (soil/water): WATER Level (low/med): _LOW__

% Solids for Sample: __0.0 % Solids for Duplicate: ___0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		2366.6210		2136.1140		10.2		P
Barium		10.8970		8.8380		20.9	*	P
Beryllium		3.0000	U	3.0000	U			P
Boron		117.6110		110.1590		6.5		P
Cadmium		8.0000	U	8.0000	U			P
Calcium		2185.5530		2014.6810		8.1		P
Chromium		20.2440		18.4580		9.2		P
Copper		17.5080		11.5000		41.4	*	P
Iron		1946.5970		1106.5130		55.0	*	P
Lead		86.4420		107.0690		21.3	*	P
Magnesium		494.2710		429.4760		14.0		P
Manganese		11.5520		4.3940		89.8	*	P
Molydenum		17.0000	U	17.0000	U			P
Samarium		68.0000	U	68.0000	U			P
Silicon		8348.6890		8010.1540		4.1		P
Silver		6.0000	U	6.0000	U			P
Sodium		2541.0590		2485.2230		2.2		P
Thallium		161.0000	U	161.0000	U			P
Zinc		39.1200		30.8360		23.7	*	P

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

J1289D

Lab Name: WHC_PAL Contract: _____

Lab Code: 105KE_ Case No.: _____ SAS No.: _____ SDG No.: J1284D

Matrix (soil/water): WATER Level (low/med): _LOW__

% Solids for Sample: __0.0 % Solids for Duplicate: ___0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		48113.7000		47850.1500		0.5		P
Barium		461.2080		456.9510		0.9		P
Beryllium		44.9180		43.7010		2.7		P
Boron		29.7500		23.6840		22.7	*	P
Cadmium		401.4350		395.1800		1.6		P
Calcium		6203.6470		6137.2570		1.1		P
Chromium		401.7510		410.9800		2.3		P
Copper		1230.4500		1223.7560		0.5		P
Iron		136193.0050		134593.9440		1.2		P
Lead		534.2360		445.0760		18.2		P
Magnesium		2685.2760		2659.1170		1.0		P
Manganese		2151.6010		2137.4350		0.7		P
Molydenum		18.3110		18.3110		0.0		P
Samarium		68.0000	U	68.0000	U			P
Silicon		7677.4640		7531.7810		1.9		P
Silver		6.0000	U	6.0000	U			P
Sodium		2484.6880		2466.9320		0.7		P
Thallium		161.0000	U	161.0000	U			P
Zinc		1471.2730		1464.8020		0.4		P

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

J1289TD

Lab Name: WHC_PAL Contract: _____

Lab Code: 105KE_ Case No.: _____ SAS No.: _____ SDG No.: J1284D

Matrix (soil/water): WATER Level (low/med): _LOW__

% Solids for Sample: __0.0 % Solids for Duplicate: ___0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		48113.7000		48619.5740		1.0		P
Barium		461.2080		464.3550		0.7		P
Beryllium		44.9180		45.7700		1.9		P
Boron		29.7500		24.8410		18.0		P
Cadmium		401.4350		406.2630		1.2		P
Calcium		6203.6470		6218.1800		0.2		P
Chromium		401.7510		411.7240		2.5		P
Copper		1230.4500		1234.5700		0.3		P
Iron		136193.0050		136595.5960		0.3		P
Lead		534.2360		498.9710		6.8		P
Magnesium		2685.2760		2723.9130		1.4		P
Manganese		2151.6010		2169.2510		0.8		P
Molydenum		18.3110		17.0000	U	200.0	*	P
Samarium		68.0000	U	68.0000	U			P
Silicon		7677.4640		7679.5510		0.0		P
Silver		6.0000	U	6.0000	U			P
Sodium		2484.6880		2498.3800		0.5		P
Thallium		161.0000	U	161.0000	U			P
Zinc		1471.2730		1495.1850		1.6		P

9

ICP SERIAL DILUTION

EPA SAMPLE NO.

J1285LL

Lab Name: WHC_PAL Contract: _____

Lab Code: 105KE_ Case No.: _____ SAS No.: _____ SDG No.: J1284D

Matrix (soil/water): WATER Level (low/med): LOW__

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum	96713.33		98066.57		1.4		P
Barium	677.10		673.86		0.5		P
Beryllium	112.36		109.56		2.5		P
Boron	51.54		60.00	U	100.0		P
Cadmium	742.55		758.06		2.1		P
Calcium	11551.27		13138.74		13.7	E	P
Chromium	1406.95		1391.02		1.1		P
Copper	2192.79		2181.63		0.5		P
Iron	209405.88		214876.18		2.6		P
Lead	1120.43		1240.64		10.7		P
Magnesium	2534.78		4102.86		61.9	E	P
Manganese	3712.56		3719.26		0.2		P
Molydenum	33.23		85.00	U	100.0		P
Samarium	68.00	U	340.00	U			P
Silicon	7371.21		7300.70		1.0		P
Silver	19.70		30.00	U	100.0		P
Sodium	2019.92		1982.02		1.9		P
Thallium	846.88		805.00	U	100.0		P
Zinc	3195.84		3224.22		0.9		P

9

ICP SERIAL DILUTION

EPA SAMPLE NO.

J1286LL

Lab Name: WHC_PAL Contract: _____

Lab Code: 105KE_ Case No.: _____ SAS No.: _____ SDG No.: J1284D

Matrix (soil/water): WATER Level (low/med): LOW__

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum	29048.97		29450.70		1.4		P
Barium	318.32		313.16		1.6		P
Beryllium	28.12		30.43		8.2		P
Boron	29.99		60.00	U	100.0		P
Cadmium	243.41		261.90		7.6		P
Calcium	4990.13		5870.42		17.6	E	P
Chromium	864.53		820.92		5.0		P
Copper	780.82		763.40		2.2		P
Iron	557682.32		565092.49		1.3		P
Lead	518.93		538.67		3.8		P
Magnesium	1407.09		2360.78		67.8	E	P
Manganese	1477.71		1441.20		2.5		P
Molydenum	32.74		86.10		163.0		P
Samarium	68.00	U	340.00	U			P
Silicon	6864.45		6802.56		0.9		P
Silver	6.00	U	30.00	U			P
Sodium	1461.99		1460.56		0.1		P
Thallium	161.00	U	805.00	U			P
Zinc	2538.57		2554.58		0.6		P

U.S. EPA - CLP

WHC-SD-WM-DP-057 REV 0

9

ICP SERIAL DILUTION

EPA SAMPLE NO.

J1287LL

Lab Name: WHC_PAL Contract: _____

Lab Code: 105KE_ Case No.: _____ SAS No.: _____ SDG No.: J1284D

Matrix (soil/water): WATER Level (low/med): LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum	49292.38		52150.64		5.8		P
Barium	381.57		397.84		4.3		P
Beryllium	27.15		28.00		3.1		P
Boron	34.72		60.00	U	100.0		P
Cadmium	193.62		209.88		8.4		P
Calcium	9635.88		11091.02		15.1	E	P
Chromium	807.82		855.90		6.0		P
Copper	1038.38		1076.66		3.7		P
Iron	455537.24		488414.09		7.2		P
Lead	734.51		957.85		30.4		P
Magnesium	3574.09		4774.06		33.6	E	P
Manganese	1607.09		1701.40		5.9		P
Molydenum	49.23		90.95		84.7		P
Samarium	68.00	U	340.00	U			P
Silicon	7131.19		7393.22		3.7		P
Silver	6.00	U	30.00	U			P
Sodium	2159.73		2269.22		5.1		P
Thallium	161.00	U	805.00	U			P
Zinc	1854.64		1959.86		5.7		P

9

ICP SERIAL DILUTION

EPA SAMPLE NO.

J1288LL

Lab Name: WHC_PAL Contract: _____

Lab Code: 105KE_ Case No.: _____ SAS No.: _____ SDG No.: J1284D

Matrix (soil/water): WATER Level (low/med): LOW__

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum	2366.62		8554.54		261.5	E	P
Barium	10.90		30.00	U	100.0		P
Beryllium	3.00	U	15.00	U			P
Boron	117.61		122.34		4.0		P
Cadmium	8.00	U	40.00	U			P
Calcium	2185.55		7320.50		235.0	E	P
Chromium	20.24		55.00	U	100.0		P
Copper	17.51		25.00	U	100.0		P
Iron	1946.60		12600.45		547.3	E	P
Lead	86.44		320.00	U	100.0		P
Magnesium	494.27		5477.08		999.9	E	P
Manganese	11.55		15.00	U	100.0		P
Molydenum	17.00	U	85.00	U			P
Samarium	68.00	U	340.00	U			P
Silicon	8348.69		8641.34		3.5		P
Silver	6.00	U	30.00	U			P
Sodium	2541.06		2563.37		0.9		P
Thallium	161.00	U	805.00	U			P
Zinc	39.12		41.10		5.1		P

U.S. EPA - CLP

9

ICP SERIAL DILUTION

EPA SAMPLE NO.

J1289LL

Lab Name: WHC_PAL Contract: _____

Lab Code: 105KE_ Case No.: _____ SAS No.: _____ SDG No.: J1284D

Matrix (soil/water): WATER Level (low/med): LOW__

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum	48113.70		51798.39		7.7		P
Barium	461.21		497.32		7.8		P
Beryllium	44.92		49.91		11.1		P
Boron	29.75		60.00	U	100.0		P
Cadmium	401.44		493.66		23.0	E	P
Calcium	6203.65		7245.59		16.8	E	P
Chromium	401.75		481.54		19.9		P
Copper	1230.45		1319.96		7.3		P
Iron	136193.00		154380.09		13.4	E	P
Lead	534.24		608.54		13.9		P
Magnesium	2685.28		3423.07		27.5	E	P
Manganese	2151.60		2420.48		12.5	E	P
Molydenum	18.31		85.00	U	100.0		P
Samarium	68.00	U	340.00	U			P
Silicon	7677.46		8346.35		8.7		P
Silver	6.00	U	30.00	U			P
Sodium	2484.69		2602.95		4.8		P
Thallium	161.00	U	805.00	U			P
Zinc	1471.27		1641.47		11.6	E	P

U.S. EPA - CLP

14
ANALYSIS RUN LOG

WHC-SD-WM-DP-057 REV 0

Lab Name: WHC_PAL_____ Contract: _____

Lab Code: 105KE_ Case No.: _____ SAS No.: _____ SDG No.:J1284D

Instrument ID Number: ICP-1_____ Method: P_

Start Date: 11/15/93 End Date: 11/15/93

EPA Sample No.	D/F	Time	% R	Analytes																						
				AL	BA	BE	B	CD	CA	CR	CU	FE	PB	MG	MN	MO	SM	SI	AG	NA	TL	ZN					
WP-284	1.00	1000																									
ICV	1.00	1001		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
ICB	1.00	1003		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
ICSA-I	1.00	1006																									
RINSE	1.00	1012																									
J1288L	1.00	1014		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
J1285L	1.00	1018		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
J1286L	1.00	1022		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
J1287L	1.00	1025		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
J[illegible]89L	1.00	1029		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
J[illegible]88	1.00	1033		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
J1288D	1.00	1036		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
J1288T	1.00	1039		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
CCV-1	1.00	1043		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
CCB-1	1.00	1050		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
J1285	1.00	1053		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
ZZZZZZ	1.00	1057																									
J1285D	1.00	1102		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
J1285T	1.00	1105		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
J1286	1.00	1108		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
J1286D	1.00	1111		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
J1286T	1.00	1115		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
CCV-2	1.00	1119		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
CCB-2	1.00	1122		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
J1287	1.00	1124		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
J1287D	1.00	1127		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
J1287T	1.00	1131		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
J1289	1.00	1134		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
J1289D	1.00	1137		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
J1289T	1.00	1141		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
CCV-3	1.00	1144		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
CCB-3	1.00	1147		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					

FORM XIV - IN ILMO2.1

U.S. EPA - CLP

14
ANALYSIS RUN LOG

WHC-SD-WM-DP-057 REV O

Lab Name: WHC_PAL_____ Contract: _____

Lab Code: 105KE_ Case No.: _____ SAS No.: _____ SDG No.:J1284D

Instrument ID Number: ICP-1_____ Method: P_

Start Date: 11/15/93 End Date: 11/15/93

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	BA	BE	B	CD	CA	CR	CU	FE	PB	MG	MN	MO	SM	SI	AG	NA	TL	ZN					
ICSA-F	1.00	1150																									
ICSAB-F	1.00	1152																									
RINSE	1.00	1158																									
CCV-4	1.00	1200		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
CCB-4	1.00	1203		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					

FORM XIV - IN ILMO2

	J1288	dup	trip	2 sd	RPD	J1285	dup	trip	2 sd	RPD
Ag						19.699				
Al	2366.621	2181.106	2136.114	244.368	10.9683	96713.33	95198.81	96760.7	1776.805	1.846525
B	117.611	115.289	110.159	7.626309	6.669094	51.543	41.99	57.861	15.98052	31.66675
Ba	10.897	9.301	8.838	2.160411	22.32137	677.097	656.158	672.932	22.16839	3.315003
Be						112.356	104.687	111.017	8.192492	7.491762
Ca	2185.553	2052.453	2014.681	179.5171	8.613117	11551.27	11153.06	11518.36	442.0421	3.874993
Cd						742.547	712.974	747.195	37.12361	5.056068
Cr	20.244	17.565	18.458	2.72816	14.54579	1406.946	1355.443	1407.393	59.73029	4.297368
Cu	17.508	13.216	11.5	6.189345	43.97507	2192.789	2132.455	2192.102	69.27447	3.188774
Fe	1946.597	1193.028	1106.513	924.1545	65.29377	209405.9	202301.9	211357.9	9531.919	4.589525
Mg	494.271	439.715	429.476	69.66389	15.32802	2534.775	2453.027	2539.68	97.35001	3.879784
Mn	11.552	6.212	4.394	7.441222	100.7477	3712.559	3583.741	3734.262	162.7302	4.425799
Mo						33.226	25.223	30.195	8.081079	27.34899
Na	2541.059	2484.581	2485.223	64.8477	2.590156	2019.923	1988.262	1974.035	46.97897	2.35593
Pb	86.442	135.014	107.069	48.75541	44.5221	1120.426	1065.866	1121.757	63.7828	5.784328
Si	8348.689	8072.073	8010.154	360.5147	4.426949	7371.21	7164.583	7358.27	231.4834	3.171865
Sm						36.807	55.261	80.5	43.86825	76.26255
Tl						846.88	751.384	784.6	96.95905	12.20704
Zn	39.12	32.357	30.836	8.819534	25.86045	3195.838	3132.224	3215.964	87.42305	2.747993

	J1286	dup	trip	2 sd	RPD	J1287	dup	trip	2 sd	RPD
Ag										
Al	29048.97	27942.24	27340.76	1732.933	6.164683	49292.38	49903.69	48613.38	1290.899	2.62006
B	29.992	12.01	10.932	21.41336	121.3588	34.72	40.945	21.193	20.1969	62.5562
Ba	318.315	307.858	298.672	19.6567	6.376215	381.571	388.026	377.06	11.02329	2.884024
Be	28.119	26.537	25.441	2.69266	10.08525	27.146	26.415	24.468	2.768496	10.6441
Ca	4990.126	4819.702	4699.022	292.5173	6.04839	9635.883	9892.608	9611.363	311.5635	3.207602
Cd	243.41	231.629	219.551	23.85962	10.30519	193.625	193.8	185.045	10.0099	5.245636
Cr	864.531	828.509	788.021	76.55344	9.256536	807.818	824.936	787.872	37.09995	4.597977
Cu	780.821	755.589	737.566	43.45478	5.732882	1038.377	1056.315	1035.459	22.58701	2.164784
Fe	557682.3	543375	529755.5	27929.62	5.137858	455537.2	465998.6	450043.2	16211.07	3.545782
Mg	1407.09	1344.101	1308.218	100.1029	7.397841	3574.087	3636.645	3481.153	156.4779	4.39056
Mn	1477.706	1411.309	1370.289	108.4116	7.635868	1607.091	1644.74	1586.486	59.07928	3.663213
Mo	32.741	29.103	31.165	3.648805	11.7692	49.233	49.112	40.623	9.872854	21.31322
Na	1461.992	1463.383	1471.94	10.77404	0.735042	2159.727	2146.784	2108.598	53.16557	2.486266
Pb	518.932	484.998	447.738	71.21989	14.71822	734.512	742.496	681.282	66.55489	9.251059
Si	6864.451	6647.249	6540.109	330.5081	4.944812	7131.188	7111.708	6876.557	283.4459	4.026325
Sm										
Zn	2538.57	2460.492	2407.718	131.665	5.332885	1854.639	1868.876	1803.224	69.07184	3.749327
Tl										

	J1289	dup	trip	2 sd	RPD
Ag					
Al	48113.7	47850.15	48619.57	782.0402	1.622676
B	29.75	23.684	24.841	6.441184	24.68675
Ba	461.208	456.951	464.355	7.431683	1.612645
Be	44.918	43.701	45.77	2.079704	4.642577
Ca	6203.647	6137.257	6218.18	86.28392	1.394744
Cd	401.435	395.18	406.263	11.11358	2.771747
Cr	401.751	410.98	411.724	11.11122	2.722325
Cu	1230.45	1223.756	1234.57	10.91564	0.887744
Fe	136193	134593.9	136595.6	2117.497	1.559343
Mg	2685.276	2659.117	2723.913	65.19526	2.424124
Mn	2151.601	2137.435	2169.251	31.87952	1.480866
Mo	18.311	18.311	12.126	7.141823	43.95148
Na	2484.688	2466.932	2498.38	31.53541	1.269882
Pb	534.236	445.076	498.971	89.80645	18.22515
Si	7677.464	7531.781	7679.551	169.438	2.220799
Sm					
Tl					
Zn	1471.273	1464.802	1495.185	32.00817	2.16698

INDUCTIVELY COUPLED PLASMA ANALYSIS - UNDIGESTED SAMPLE

Batch 2104

Serial No	Sample Point	Date	Time Issued	Priority
J 1303.-5550	BECHTOLD	11- 8-93	11:47	18

Determination	Method Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	% RECOVERY	E14157	0

Sample Size	Customer ID
~~25-10-93~~ BATCHED W/ J1284	STD

Remarks, Calculations, Results

LMCS CHECK SAMPLE

COMPLETED 11/~~12~~ 15 93
SEE WARD'S PACKAGE

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 11-15-93	Time Completed	Lab Unit Mgr 11-16-93 Brian Wels	11-15-93	

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1304.-5650	BECHTOLD	11- 8-93	11:48	18

Determination	Method Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	uG/ML	E14157	0

Sample Size	Customer ID
~~25-10-93~~ BATCHED W/ J1300	BLK

Remarks, Calculations, Results

REAGENT BLANK

COMPLETED 11/~~12~~ 15 93
SEE WARD'S PACKAGE

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 11-15-93	Time Completed	Lab Unit Mgr 11-16-93 Brian Wels	11-15-93	

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

BEST AVAILABLE COPY

INDUCTIVELY COUPLED PLASMA ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
J 1289.-5750	BECHTOLD	11- 4-93	8:53	18

Determination	Method Standard	Result Units	Charge Code	Reruns
ICP-LIQ	LA-505-151	uG/ML	E14157	0

Sample Size	Customer ID
? DIRECT 1mL - 4mL	KE24A

Remarks, Calculations, Results

sample

COMPLETED 11/15/93
SEE WARD'S PACKAGE

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr 11-16-93		
11-15-93		Brian Wells	11-15-93	

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1289.-5750	BECHTOLD	11- 4-93	9: 2	18

Determination	Method Standard	Result Units	Charge Code	Reruns
ICP-LIQ	LA-505-151	uG/ML	E14157	0

Sample Size	Customer ID
? DIRECT	KE24A

Remarks, Calculations, Results

duplicate

COMPLETED 11/15/93
SEE WARD'S PACKAGE

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr 11-16-93		
11-15-93		Brian Wells	11-15-93	

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

BEST AVAILABLE COPY

INDUCTIVELY COUPLED PLASMA ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
J 1289.-5750	BECHTOLD	11- 4-93	9: 2	18

Determination	Method Standard	Result Units	Charge Code	Reruns
ICP-LIQ	LA-505-151	uG/ML	E14157	0

Sample Size	Customer ID
? DIRECT	KE24A

Remarks, Calculations, Results

triplicate

COMPLETED 11 15 93
SEE WARD'S PACKAGE

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
11-15-93		11-16-93 Brian Wells	[signature] 11-15-93

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

BEST AVAILABLE COPY

INDUCTIVELY COUPLED PLASMA ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
J 1800.-5550	BECHTOLD	11- 4-93	15:22	18

Determination	Method Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	uG/ML	E14157	0

Sample Size	Customer ID
? DIRECT (ICB)	BLK

Remarks, Calculations, Results

REAGENT BLANK

COMPLETED 11 [illegible] 93
SEE WARD'S PACKAGE

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

Date	Time Completed	Lab Unit Mgr 11-16-93	
11-15-93		Brian Wells	11-15-93

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

Batch 2098

Serial No	Sample Point	Date	Time Issued	Priority
J 1264.-5550	BECHTOLD	11- 4-93	8:47	18

Determination	Method Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	% RECOVERY	E14157	0

Sample Size	Customer ID
? SST4 30NiOA (ICV)	STD

Remarks, Calculations, Results

LMCS CHECK SAMPLE

COMPLETED 11 [illegible] 93
SEE WARD'S PACKAGE

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

Date	Time Completed	Lab Unit Mgr 11-16-93	
11-15-93		Brian Wells	11-15-93

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

BEST AVAILABLE COPY

INDUCTIVELY COUPLED PLASMA ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
J 1285.-5750	BECHTOLD	11- 4-93	8:46	18

Determination	Method Standard	Result Units	Charge Code	Reruns
ICP-LIQ	LA-505-151	uG/ML	E14157	0

Sample Size	Customer ID
? DIRECT, -1AL-4AC	KE13A

Remarks, Calculations, Results
sample

COMPLETED 11/15/93
SEE WARD'S PACKAGE

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr 11-16-93	
11-15-93		Brian Wells	11-17-93

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1285.-5750	BECHTOLD	11- 4-93	8:58	18

Determination	Method Standard	Result Units	Charge Code	Reruns
ICP-LIQ	LA-505-151	uG/ML	E14157	0

Sample Size	Customer ID
? Direct	KE13A

Remarks, Calculations, Results
duplicate

COMPLETED 11/15/93
SEE WARD'S PACKAGE

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr 11-16-93	
11-15-93		Brian Wells	11-17-93

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

BEST AVAILABLE COPY

INDUCTIVELY COUPLED PLASMA ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
J 1285.-5750	BECHTOLD	11- 4-93	8:58	18

Determination	Method Standard	Result Units	Charge Code	Reruns
ICP-LIQ	LA-505-151	uG/ML	E14157	0

Sample Size	Customer ID
? DIRECT	KE13A

Remarks, Calculations, Results - triplicate

COMPLETED 11/15/93
SEE WARD'S PACKAGE

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

Date	Time Completed	Lab Unit Mgr 11-16-93	
11-15-93		Brian Wells	11-15-93

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1288.-5750	BECHTOLD	11- 4-93	8:51	18

Determination	Method Standard	Result Units	Charge Code	Reruns
ICP-LIQ	LA-505-151	uG/ML	E14157	0

Sample Size	Customer ID
? DIRECT -1mL-4mL	KE20B

Remarks, Calculations, Results sample

COMPLETED 11/15/93
SEE WARD'S PACKAGE

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

Date	Time Completed	Lab Unit Mgr 11-16-93	
11-15-93		Brian Wells	11-15-93

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

BEST AVAILABLE COPY

INDUCTIVELY COUPLED PLASMA ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
J 1286.-5750	BECHTOLD	11- 4-93	8:58	18

Determination	Method Standard	Result Units	Charge Code	Reruns
ICP-LIQ	LA-505-151	uG/ML	E14157	0

Sample Size	Customer ID
? DIRECT	KE20B

Remarks, Calculations, Results
duplicate

COMPLETED 11/15/93
SEE WARD'S PACKAGE

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

Date	Time Completed	Lab Unit Mgr	
11-15-93		11-16-93 Brian Wells	11-15-93

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1286.-5750	BECHTOLD	11- 4-93	8:58	18

Determination	Method Standard	Result Units	Charge Code	Reruns
ICP-LIQ	LA-505-151	uG/ML	E14157	0

Sample Size	Customer ID
? DIRECT	KE20B

Remarks, Calculations, Results
triplicate

COMPLETED 11/15/93
SEE WARD'S PACKAGE

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

Date	Time Completed	Lab Unit Mgr	
11-15-93		11-16-93 Brian Wells	11-15-93

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

BEST AVAILABLE COPY

INDUCTIVELY COUPLED PLASMA ANALYSIS - UNDIGESTED SAMPLE

Batch 2103

Serial No	Sample Point	Date	Time Issued	Priority
J 1301.-5550	BECHTOLD	11- 8-93	8:47	18

Determination	Method Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	% RECOVERY	E14157	0

Sample Size	Customer ID
? BATCHED W / J1284	STD

Remarks, Calculations, Results

LMCS CHECK SAMPLE

COMPLETED 11/16/93
SEE WARD'S PACKAGE

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

Date	Time Completed	Lab Unit Mgr	
11-15-93		11-16-93 Brian Wells	11-15-93

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1302.-5650	BECHTOLD	11- 8-93	8:50	18

Determination	Method Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	uG/ML	E14157	0

Sample Size	Customer ID
? BATCHED W / J1300	BLK

Remarks, Calculations, Results

REAGENT BLANK

COMPLETED 11/16/93
SEE WARD'S PACKAGE

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

Date	Time Completed	Lab Unit Mgr	
11-15-93		11-16-93 Brian Wells	11-15-93

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

BEST AVAILABLE COPY

INDUCTIVELY COUPLED PLASMA ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
J 1287.-5750	BECHTOLD	11- 4-93	8:52	18

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP-LIQ	LA-505-151	uG/ML	E14157	0

Sample Size	Customer ID
? Direct -1mL-4mL	KE20D

Remarks, Calculations, Results: Sample

COMPLETED 11/~~12~~ 15 93
SEE WARD'S PACKAGE

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
11-15-93		11-16-93 Brian Wels	[signature] 11-15-93

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1287.-5750	BECHTOLD	11- 4-93	8:59	18

Determination	Method Standard	Result Units	Charge Code	Reruns
ICP-LIQ	LA-505-151	uG/ML	E14157	0

Sample Size	Customer ID
? Direct	KE20D

Remarks, Calculations, Results: duplicate

COMPLETED 11/~~12~~ 15 93
SEE WARD'S PACKAGE

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
11-15-93		11-16-93 Brian Wels	[signature] 11-15-93

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

BEST AVAILABLE COPY

INDUCTIVELY COUPLED PLASMA ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
J 1287.-5750	BECHTOLD	11- 4-93	8:59	18

Determination	Method Standard	Result Units	Charge Code	Reruns
ICP-LIQ	LA-505-151	uG/ML	E14157	0

Sample Size	Customer ID
? Direct	KE20D

Remarks, Calculations, Results: Duplicate

COMPLETED 11/15/93
SEE WARD'S PACKAGE

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr 11-16-93	
11-15-93		Brian Wels	[signature] 11-11-93

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1288.-5750	BECHTOLD	11- 4-93	8:53	18

Determination	Method Standard	Result Units	Charge Code	Reruns
ICP-LIQ	LA-505-151	uG/ML	E14157	0

Sample Size	Customer ID
? Direct, -1uL-4uL	KE23B

Remarks, Calculations, Results: Sample

COMPLETED 11/15/93
SEE WARD'S PACKAGE

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr 11-16-93	
11-15-93		Brian Wels	[signature] 11-11-93

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

BEST AVAILABLE COPY

INDUCTIVELY COUPLED PLASMA ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
J 1288.-5750	BECHTOLD	11- 4-93	9: 1	18

Determination	Method Standard	Result Units	Charge Code	Reruns
ICP-LIQ	LA-505-151	uG/ML	PG13H	0

Sample Size	Customer ID
? DIRECT	KE23B

Remarks, Calculations, Results: Duplicate

COMPLETED 11/12/93
SEE WARD'S PACKAGE

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

Date	Time Completed	Lab Unit Mgr	
11-15-93		11-16-93 Brian Wells	11-15-93

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1288.-5750	BECHTOLD	11- 4-93	9: 1	18

Determination	Method Standard	Result Units	Charge Code	Reruns
ICP-LIQ	LA-505-151	uG/ML	E14157	0

Sample Size	Customer ID
? DIRECT	KE23B

Remarks, Calculations, Results: Triplicate

COMPLETED 11/12/93
SEE WARD'S PACKAGE

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

Date	Time Completed	Lab Unit Mgr	
11-15-93		11-16-93 Brian Wells	11-15-93

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

BEST AVAILABLE COPY

Calibration Standard : BLANK ~~2:35 PM 12/11/93~~ 11/15/93

Task name : KBASIN

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Ag (KPulses)	Al (KPulses)	B (KPulses)	Ba (KPulses)	Be (KPulses)	Ca (KPulses)	Cd (KPulses)	Cr (KPulses)
On Peak 1	1.814	7.997	1.521	3.797	1.124	0.261	4.220	1.204
On Peak 2	1.814	7.995	1.538	3.797	1.122	0.260	4.102	1.209
On Peak 3	1.817	7.980	1.538	3.794	1.122	0.260	4.154	1.205
OffPeak1 1	1.946	7.939	1.454	3.830	1.121		4.382	1.212
OffPeak2 1	1.838		1.433			0.241		
Mean	-0.077	0.052	0.089	-0.034	0.002	0.019	-0.223	-0.006
S.D.	0.002	0.009	0.010	0.002	0.001	0.001	0.059	0.003
% R.S.D.	2.249	17.984	11.049	5.094	69.282	2.986	26.480	44.096

	Cu (KPulses)	Fe (KPulses)	Mg (KPulses)	Mn (KPulses)	Mo (KPulses)	Na (KPulses)	Pb (KPulses)	Si (KPulses)
On Peak 1	2.049	0.766	0.237	0.580	0.976	6.177	1.074	2.510
On Peak 2	2.046	0.793	0.237	0.584	0.984	6.193	1.054	2.511
On Peak 3	2.040	0.784	0.236	0.581	0.972	6.156	1.070	2.506
OffPeak1 1	2.006	0.771	0.234		0.985	6.086	1.107	2.416
OffPeak2 1				0.566		6.146		2.401
Mean	0.039	0.010	0.003	0.016	-0.008	0.059	-0.041	0.100
S.D.	0.005	0.014	0.001	0.002	0.006	0.019	0.011	0.003
% R.S.D.	11.750	137.477	21.651	13.287	79.697	31.275	25.812	2.633

	Sm (KPulses)	Tl (KPulses)	U (KPulses)	Zn (KPulses)
On Peak 1	4.013	4.423	4.518	0.873
On Peak 2	4.016	4.416	4.519	0.872
On Peak 3	4.012	4.418	4.515	0.879
OffPeak1 1				0.831
OffPeak2 1	3.987	4.529	4.487	
Mean	0.027	-0.110	0.030	0.044
S.D.	0.002	0.004	0.002	0.004
% R.S.D.	7.806	3.278	6.863	8.670

Calibration Standard : 1 PPM 2:37 PM 12/11/93

WHC-SD-WM-DP-057 REV O

Task name : KBASIN

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Ag (KPulses)	Al (KPulses)	B (KPulses)	Ba (KPulses)	Be (KPulses)	Ca (KPulses)	Cd (KPulses)	Cr (KPulses)
On Peak 1	4.920	10.108	6.790	18.099	3.843	5.494	26.197	3.439
On Peak 2	4.953	10.136	6.831	18.279	3.872	5.557	26.344	3.473
On Peak 3	4.945	10.098	6.714	18.226	3.862	5.537	26.266	3.447
OffPeak1 1	1.965	8.023	1.499	3.935	1.129		4.263	1.242
OffPeak2 1	1.853		1.467			0.268		
Mean	3.030	2.091	5.295	14.266	2.730	5.261	22.006	2.211
S.D.	0.017	0.020	0.059	0.093	0.015	0.032	0.074	0.018
% R.S.D.	0.568	0.942	1.121	0.648	0.540	0.612	0.334	0.804

	Cu (KPulses)	Fe (KPulses)	Mg (KPulses)	Mn (KPulses)	Mo (KPulses)	Na (KPulses)	Pb (KPulses)	Si (KPulses)
On Peak 1	5.932	2.853	4.092	9.357	3.681	7.718	1.559	3.751
On Peak 2	5.986	2.861	4.135	9.449	3.730	7.731	1.582	3.753
On Peak 3	5.958	2.832	4.125	9.382	3.708	7.720	1.551	3.757
OffPeak1 1	2.015	0.784	0.243		0.978	6.049	1.100	2.418
OffPeak2 1				0.596		6.134		2.413
Mean	3.944	2.065	3.874	8.800	2.728	1.631	0.464	1.338
S.D.	0.027	0.015	0.023	0.048	0.025	0.007	0.016	0.003
% R.S.D.	0.685	0.725	0.581	0.541	0.900	0.429	3.468	0.228

	Sm (KPulses)	Tl (KPulses)	Zn (KPulses)
On Peak 1	4.362	4.632	13.427
On Peak 2	4.350	4.626	13.517
On Peak 3	4.356	4.633	13.470
OffPeak1 1			0.867
OffPeak2 1	4.113	4.492	
Mean	0.243	0.138	12.604
S.D.	0.006	0.004	0.045
% R.S.D.	2.469	2.737	0.357

Calibration Standard : 10 PPM 2:39 PM 12/11/93

WHC-SD-WM-DP-057 REV O

Task name : KBASIN

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Ag (KPulses)	Al (KPulses)	B (KPulses)	Ba (KPulses)	Be (KPulses)	Ca (KPulses)	Cd (KPulses)	Cr (KPulses)
On Peak 1	27.780	29.779	53.954	150.138	28.692	52.191	226.154	23.989
On Peak 2	27.851	29.770	54.216	150.586	28.748	52.365	226.757	24.124
On Peak 3	27.793	29.750	54.078	150.162	28.634	52.202	225.678	23.944
OffPeak1 1	2.273	9.388	1.916	5.170	1.206		5.019	1.402
OffPeak2 1	2.055		2.119			0.514		
Mean	25.644	20.378	52.065	145.125	27.485	51.739	221.177	22.617
S.D.	0.038	0.015	0.131	0.252	0.057	0.097	0.541	0.094
% R.S.D.	0.147	0.073	0.252	0.174	0.207	0.188	0.244	0.414

	Cu (KPulses)	Fe (KPulses)	Mg (KPulses)	Mn (KPulses)	Mo (KPulses)	Na (KPulses)	Pb (KPulses)	Si (KPulses)
On Peak 1	40.828	21.563	39.064	88.944	28.838	21.711	6.098	14.419
On Peak 2	40.958	21.547	39.159	89.277	28.833	21.768	6.063	14.469
On Peak 3	40.845	21.649	39.033	88.980	28.797	21.733	6.085	14.445
OffPeak1 1	2.200	0.897	0.325		1.212	6.139	1.159	2.703
OffPeak2 1				0.883		6.312		2.678
Mean	38.677	20.689	38.760	88.184	27.611	15.512	4.923	11.754
S.D.	0.071	0.055	0.066	0.183	0.022	0.029	0.018	0.025
% R.S.D.	0.183	0.265	0.169	0.207	0.081	0.185	0.359	0.213

	Sm (KPulses)	Tl (KPulses)	Zn (KPulses)
On Peak 1	7.683	6.760	104.169
On Peak 2	7.687	6.754	104.479
On Peak 3	7.679	6.756	104.180
OffPeak1 1			1.215
OffPeak2 1	5.500	4.584	
Mean	2.183	2.173	103.061
S.D.	0.004	0.003	0.176
% R.S.D.	0.183	0.141	0.171

Calibration Standard : 50 PPM 2:41 PM 12/11/93

Task name : KBASIN

On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-057 REV O

	Al (KPulses)	Ca (KPulses)	Fe (KPulses)
On Peak 1	109.564	240.650	101.133
On Peak 2	108.556	238.486	100.056
On Peak 3	108.413	238.247	100.162
OffPeak1 1	8.541		1.307
OffPeak2 1		1.538	
Mean	100.303	237.590	99.143
S.D.	0.627	1.324	0.594
% R.S.D.	0.625	0.557	0.599

Calibration Standard : U 50 2:43 PM 12/11/93

Task name : KBASIN

On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-057 REV O

	U (KPulses)
On Peak 1	8.237
On Peak 2	8.250
On Peak 3	8.233
OffPeak1 1	
OffPeak2 1	4.549
Mean	3.691
S.D.	0.009
% R.S.D.	0.241

Identity 1: SST4 Identity 2: Quality Control 2:48 PM November 12, 1993
Task name : KBASIN
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-057 REV O

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	4752.122	4759.055	4824.994	4812.879	4775.062	4685.578	4700.438	86.505
S.D.	27.237	14.360	19.219	17.863	36.880	16.193	14.325	28.433
% R.S.D.	0.573	0.302	0.398	0.371	0.772	0.346	0.305	32.868

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	4704.192	4683.988	4572.181	4805.730	4640.167	5227.765	4529.114	4501.992
S.D.	30.754	19.099	20.031	37.753	25.103	18.204	21.125	21.540
% R.S.D.	0.654	0.408	0.438	0.786	0.541	0.348	0.466	0.478

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	4716.709	4622.915	4682.800	4262.606
S.D.	28.670	19.351	17.981	73.143
% R.S.D.	0.608	0.419	0.384	1.716

Identity 1: hno3 Identity 2: blank 2:51 PM November 12, 1993
Task name : KBASIN
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-057 REV O

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	8.738	0.618	1.459	2.103	-9.832	2.625	1.786	163.905
S.D.	7.002	4.569	0.595	0.498	2.554	0.384	0.893	47.968
% R.S.D.	80.125	739.172	40.767	23.684	25.980	14.635	49.998	29.266

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	35.696	1.851	1.463	-0.652	3.032	0.194	59.827	6.898
S.D.	13.690	0.244	0.149	9.950	1.470	0.389	29.405	1.593
% R.S.D.	38.352	13.169	10.189	1524.882	48.497	200.000	49.149	23.091

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	4.627	2.727	2.069	30.317
S.D.	1.075	0.399	0.422	18.098
% R.S.D.	23.230	14.633	20.377	59.697

Identity 1: wp-284 Identity 2: wp-284 9:59 AM November 15, 1993

Task name : KBASIN

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-057 REV O

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	312.348	157.459	9.268	10.581	16.713	25.544	5.061	191.222
S.D.	1.928	7.793	1.030	0.404	4.689	0.111	3.469	41.728
% R.S.D.	0.617	4.950	11.112	3.820	28.057	0.434	68.535	21.822

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	38.561	30.494	0.086	118.828	-0.849	2.138	99.084	9.312
S.D.	38.568	0.342	0.000	13.355	1.667	1.029	5.762	1.056
% R.S.D.	100.017	1.123	0.000	11.239	196.404	48.105	5.816	11.345

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	26.848	12.158	28.363	13.709
S.D.	0.981	0.430	0.211	36.196
% R.S.D.	3.654	3.538	0.743	264.039

[illegible] 11-15-93

Identity 1: ICV Identity 2: Quality Control 10:01 AM November 15, 1993

Task name : KBASIN

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-057 REV O

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	4764.088	4833.717	4903.265	4849.831	4802.590	4751.456	4694.335	-150.246
S.D.	33.083	22.057	18.497	17.662	16.177	17.375	15.053	28.433
% R.S.D.	0.694	0.456	0.377	0.364	0.337	0.366	0.321	18.924

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	4834.235	4770.890	4592.919	4901.250	4692.553	5260.747	4607.628	4515.554
S.D.	29.802	16.594	15.273	20.390	22.219	14.786	57.032	17.596
% R.S.D.	0.616	0.348	0.333	0.416	0.473	0.281	1.238	0.390

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	4753.157	4637.005	4734.048	4373.327
S.D.	23.759	21.242	17.711	40.893
% R.S.D.	0.500	0.458	0.374	0.935

Identity 1: ICB Identity 2: Quality Control 10:03 AM November 15, 1993
Task name : KBASIN
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-057 REV O

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	-3.367	-4.166	8.324	8.154	5.571	19.654	5.359	-36.423
S.D.	1.275	6.992	1.418	1.074	3.004	1.250	3.488	88.869
% R.S.D.	37.873	167.850	17.035	13.167	53.915	6.358	65.085	243.990

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	-13.616	8.075	5.851	12.397	12.854	6.350	89.104	10.276
S.D.	4.755	0.945	1.164	11.067	4.089	0.809	24.958	0.953
% R.S.D.	34.920	11.702	19.894	89.267	31.811	12.745	28.010	9.272

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	1.933	5.151	6.573	-40.267
S.D.	3.304	1.229	1.476	52.025
% R.S.D.	170.932	23.860	22.453	129.198

Identity 1: icsa-i Identity 2: icsa 10:05 AM November 15, 1993
Task name : KBASIN
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-057 REV 0

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	317.914	286366.680	30.810	70.053	474541.472	176783.705	65.644	-45.529
S.D.	4.648	627.017	1.552	1.318	1029.419	304.218	5.150	72.275
% R.S.D.	1.462	0.219	5.037	1.881	0.217	0.172	7.845	158.745

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	333.770	8.422	184299.910	141.291	12.005	-51.126	-95.204	9.034
S.D.	44.395	0.281	355.421	4.209	0.840	0.778	29.629	1.503
% R.S.D.	13.301	3.331	0.193	2.979	6.998	1.521	31.122	16.642

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	-8.936	183.700	4.626	-445.781
S.D.	1.790	1.402	0.211	50.054
% R.S.D.	20.029	0.763	4.558	11.228

Identity 1: xxx Identity 2: rinse 10:10 AM November 15, 1993
Task name : KBASIN
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-057 REV O

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	-6.289	74.475	-0.601	1.165	119.778	58.387	-2.828	100.164
S.D.	3.476	7.458	0.595	0.791	5.415	0.866	4.939	88.869
% R.S.D.	55.266	10.014	98.897	67.871	4.521	1.483	174.643	88.724

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	19.234	1.203	56.879	-4.075	0.849	0.259	55.170	3.265
S.D.	31.759	0.382	0.683	13.168	3.680	2.245	13.587	1.422
% R.S.D.	165.121	31.773	1.201	323.124	433.526	866.025	24.628	43.555

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	-5.252	-0.606	0.730	34.469
S.D.	3.581	0.131	0.211	47.158
% R.S.D.	68.186	21.651	28.867	136.813

Identity 1: J1288 sam dil Identity 2: 1ml-4ml 10:14 AM November 15, 1993
Task name : KBASIN
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-057 REV O

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	1728.267	1710.907	3.175	8.219	2520.090	1464.099	-2.977	127.481
S.D.	8.528	193.277	0.904	0.848	348.359	159.422	2.728	146.048
% R.S.D.	0.493	11.297	28.479	10.319	13.823	10.889	91.654	114.564

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	-13.403	2.985	1095.416	512.674	8.610	2.268	45.189	5.743
S.D.	29.296	0.617	156.747	7.657	2.272	1.918	23.135	3.120
% R.S.D.	218.573	20.670	14.309	1.494	26.387	84.564	51.197	54.329

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	24.468	1.667	-0.243	2.637
S.D.	3.441	0.347	0.365	24.329
% R.S.D.	14.062	20.830	150.001	922.682

Identity 1: J1285 sam dil Identity 2: 1ml-4ml 10:18 AM November 15, 1993
Task name : KBASIN
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	1460.139	19613.314	436.326	644.843	42975.236	2627.747	278.204	43443.817
S.D.	7.575	36.746	0.536	0.341	93.491	23.627	4.260	119.074
% R.S.D.	0.519	0.187	0.123	0.053	0.218	0.899	1.531	0.274

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	-25.603	134.772	820.573	396.403	11.641	-3.240	248.127	151.612
S.D.	1.717	0.557	21.559	2.941	1.111	1.188	10.994	2.547
% R.S.D.	6.704	0.413	2.627	0.742	9.547	36.661	4.431	1.680

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	2.816	743.853	21.911	111.973
S.D.	0.893	1.674	0.211	34.572
% R.S.D.	31.697	0.225	0.962	30.876

Identity 1: J1286 sam dil Identity 2: 1ml-4ml 10:22 AM November 15, 1993
Task name : KBASIN
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-057 REV O

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	1360.512	5890.140	152.679	510.917	113018.500	1174.083	164.183	12260.973
S.D.	4.118	22.406	0.446	1.526	312.668	3.459	2.248	62.592
% R.S.D.	0.303	0.380	0.292	0.299	0.277	0.295	1.369	0.510

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	-25.504	62.631	472.156	292.112	17.220	-11.080	107.734	52.381
S.D.	25.825	0.441	0.830	3.209	1.377	1.347	8.701	1.139
% R.S.D.	101.259	0.704	0.176	1.099	7.998	12.155	8.076	2.175

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	0.419	288.239	6.086	-146.836
S.D.	3.579	1.812	0.211	35.312
% R.S.D.	854.492	0.629	3.464	24.049

Identity 1: J1287 sam dil Identity 2: 1ml-4ml 10:25 AM November 15, 1993
Task name : KBASIN
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	1478.645	10430.128	215.331	391.973	97682.818	2218.204	171.179	11778.365
S.D.	5.683	32.432	1.552	1.492	164.151	11.904	5.997	41.728
% R.S.D.	0.384	0.311	0.721	0.381	0.168	0.537	3.503	0.354

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	10.832	79.567	954.811	453.843	18.190	-7.776	191.570	41.976
S.D.	17.200	0.906	11.125	5.013	1.867	1.029	10.562	2.019
% R.S.D.	158.794	1.139	1.165	1.104	10.263	13.229	5.514	4.809

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	3.657	340.281	5.600	-5.667
S.D.	2.119	0.512	0.633	20.481
% R.S.D.	57.940	0.151	11.296	361.396

Identity 1: J1289 sam dil Identity 2: 1ml-4ml 10:29 AM November 15, 1993
Task name : KBASIN
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	1669.270	10359.678	263.992	328.294	30876.018	1449.118	96.307	12570.570
S.D.	7.935	68.359	1.552	0.923	236.483	11.457	2.836	43.907
% R.S.D.	0.475	0.660	0.588	0.281	0.766	0.791	2.945	0.349

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	-3.320	99.465	684.614	520.590	9.095	-1.814	121.707	98.732
S.D.	41.345	0.208	4.880	2.941	0.420	1.796	5.988	1.690
% R.S.D.	1245.222	0.209	0.713	0.565	4.619	98.974	4.920	1.712

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	0.703	484.097	9.982	-36.115
S.D.	1.728	3.543	0.365	43.744
% R.S.D.	245.716	0.732	3.659	121.123

Identity 1: J1288 sam Identity 2: direct 10:33 AM November 15, 1993
Task name : KBASIN
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-057 REV O

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	8348.689	2366.621	17.508	39.120	1946.597	2185.553	20.244	159.352
S.D.	52.233	20.889	0.681	1.696	108.556	12.096	1.289	62.592
% R.S.D.	0.626	0.883	3.891	4.336	5.577	0.553	6.368	39.279

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	-32.186	10.897	494.271	2541.059	5.699	0.842	86.442	5.986
S.D.	20.713	0.318	7.814	9.527	0.728	0.449	16.977	2.575
% R.S.D.	64.354	2.919	1.581	0.375	12.766	53.294	19.639	43.014

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	117.611	11.552	0.122	-23.659
S.D.	2.523	0.286	0.365	24.912
% R.S.D.	2.145	2.475	299.997	105.295

Identity 1: J1288 dup Identity 2: direct 10:36 AM November 15, 1993
Task name : KBASIN
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-057 REV O

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	8072.073	2181.106	13.216	32.357	1193.028	2052.453	17.565	-72.846
S.D.	36.989	14.666	0.393	0.795	8.848	9.758	2.728	98.494
% R.S.D.	0.458	0.672	2.976	2.456	0.742	0.475	15.534	135.208

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	-31.843	9.301	439.715	2484.581	0.970	-1.361	135.014	6.417
S.D.	11.187	0.455	2.250	7.603	1.819	1.029	3.049	0.050
% R.S.D.	35.132	4.894	0.512	0.306	187.494	75.593	2.258	0.786

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	115.289	6.212	0.000	-43.035
S.D.	2.604	0.174	0.211	17.286
% R.S.D.	2.259	2.794	17232052.384	40.167

Identity 1: J1288 trip Identity 2: direct 10:39 AM November 15, 1993
Task name : KBASIN
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	8010.154	2136.114	11.500	30.836	1106.513	2014.681	18.458	-168.457
S.D.	32.294	13.475	1.714	0.498	9.340	8.785	3.040	122.928
% R.S.D.	0.403	0.631	14.907	1.615	0.844	0.436	16.468	72.973

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	-46.503	8.838	429.476	2485.223	3.032	-3.629	107.069	5.068
S.D.	38.387	0.879	1.972	12.450	0.916	2.944	6.417	0.720
% R.S.D.	82.547	9.944	0.459	0.501	30.199	81.127	5.993	14.210

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	110.159	4.394	0.365	-124.692
S.D.	3.611	0.838	0.558	39.243
% R.S.D.	3.278	19.063	152.752	31.472

Identity 1: CCV Identity 2: Quality Control 10:43 AM November 15, 1993

Task name : KBASIN

WHC-SD-WM-DP-057 REV O

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	4810.005	4826.310	4897.086	4845.754	4806.850	4723.222	4680.046	104.717
S.D.	2.932	20.739	17.962	21.638	16.468	16.639	5.811	106.678
% R.S.D.	0.061	0.430	0.367	0.447	0.343	0.352	0.124	101.873

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	4751.896	4726.814	4566.760	4893.869	4638.591	4848.049	4590.328	4490.807
S.D.	16.872	21.063	20.915	23.338	35.482	33.064	43.793	15.495
% R.S.D.	0.355	0.446	0.458	0.477	0.765	0.682	0.954	0.345

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	4730.866	4622.726	4691.565	4288.902
S.D.	12.112	18.317	16.966	33.816
% R.S.D.	0.256	0.396	0.362	0.788

Identity 1: CCB Identity 2: Quality Control 10:46 AM November 15, 1993
Task name : KBASIN
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-057 REV O

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	-8.376	-7.532	-0.859	2.200	-10.323	16.261	-7.591	177.563
S.D.	5.101	4.684	0.393	0.848	3.070	0.000	0.773	51.711
% R.S.D.	60.898	62.187	45.801	38.545	29.737	0.000	10.189	29.123

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	7.800	1.134	0.344	17.532	4.851	66.288	11.255	1.384
S.D.	18.715	0.106	0.258	5.344	1.470	3.563	14.162	2.255
% R.S.D.	239.933	9.352	75.000	30.482	30.311	5.375	125.821	162.862

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	-7.261	0.038	0.852	10.941
S.D.	0.771	0.455	0.365	39.243
% R.S.D.	10.621	1199.833	42.857	358.689

J1285 Direct

Identity 1: ~~CCB~~ Identity 2: ~~Quality Control~~ 10:52 AM November 15, 1993

Task name : KBASIN

WHC-SD-WM-DP-057 REV O

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	7371.210	96713.331	2192.789	3195.838	209405.881	11551.267	1406.946	221262.065
S.D.	22.970	146.211	3.219	4.240	357.438	24.372	11.095	503.029
% R.S.D.	0.312	0.151	0.147	0.133	0.171	0.211	0.789	0.227

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	36.807	677.097	2534.775	2019.923	33.226	19.699	1120.426	742.547
S.D.	27.047	3.025	12.043	14.919	0.556	10.355	18.002	2.782
% R.S.D.	73.484	0.447	0.475	0.739	1.672	52.566	1.607	0.375

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	51.543	3712.559	112.356	846.880
S.D.	3.277	8.664	2.231	19.622
% R.S.D.	6.358	0.233	1.986	2.317

Air bubble

Identity 1: zzz Identity 2: zzz 10:56 AM November 15, 1993

Task name : KBASIN

WHC-SD-WM-DP-057 REV O

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	4225.466	53672.406	1168.057	1799.794	116901.536	6513.125	624.731	130586.414
S.D.	3955.622	43446.782	1014.553	1400.553	90356.147	4954.298	775.494	96343.970
% R.S.D.	93.614	80.948	86.858	77.817	77.293	76.066	124.133	73.778

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	3414.341	383.492	1412.769	1407.547	-27.527	42.443	441.084	391.483
S.D.	1697.958	288.460	1098.654	939.263	63.912	178.290	714.194	336.601
% R.S.D.	49.730	75.219	77.766	66.731	232.180	420.074	161.918	85.981

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	149.116	2106.187	45.770	2796.944
S.D.	248.528	1611.708	62.296	1382.942
% R.S.D.	166.667	76.523	136.107	49.445

Identity 1: J1285 dup Identity 2: direct 11:02 AM November 15, 1993

Task name : KBASIN

WHC-SD-WM-DP-057 REV O

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	7164.583	95198.806	2132.455	3132.224	202301.947	11153.056	1355.443	215188.490
S.D.	11.688	325.320	6.891	15.231	644.430	43.285	11.596	912.071
% R.S.D.	0.163	0.342	0.323	0.486	0.319	0.388	0.856	0.424

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	55.261	656.158	2453.027	1988.262	25.223	-6.545	1065.866	712.974
S.D.	30.048	2.219	8.807	13.345	1.831	0.978	45.211	8.289
% R.S.D.	54.374	0.338	0.359	0.671	7.259	14.950	4.242	1.163

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	41.990	3583.741	104.687	751.384
S.D.	1.682	14.150	0.211	26.694
% R.S.D.	4.005	0.395	0.201	3.553

Identity 1: J1285 trip Identity 2: direct 11:04 AM November 15, 1993
Task name : KBASIN
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	7358.270	96760.704	2192.102	3215.964	211357.885	11518.360	1407.393	220633.764
S.D.	23.863	312.331	5.570	7.994	756.533	21.590	5.947	467.067
% R.S.D.	0.324	0.323	0.254	0.249	0.358	0.187	0.423	0.212

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	80.500	672.932	2539.680	1974.035	30.195	-4.860	1121.757	747.195
S.D.	32.362	1.102	4.322	9.804	2.004	1.695	48.772	5.664
% R.S.D.	40.201	0.164	0.170	0.497	6.636	34.871	4.348	0.758

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	57.861	3734.262	111.017	784.600
S.D.	1.294	5.243	1.476	31.712
% R.S.D.	2.236	0.140	1.329	4.042

Identity 1: J1286 sam Identity 2: direct 11:08 AM November 15, 1993
Task name : KBASIN
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-057 REV O

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	6864.451	29048.967	780.821	2538.570	557682.322	4990.126	864.531	64337.097
S.D.	10.122	58.961	1.898	4.446	1329.458	12.678	13.684	47.968
% R.S.D.	0.147	0.203	0.243	0.175	0.238	0.254	1.583	0.075

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	-101.128	318.315	1407.090	1461.992	32.741	-46.460	518.932	243.410
S.D.	16.647	0.501	3.467	9.634	1.169	1.029	27.946	1.588
% R.S.D.	16.462	0.157	0.246	0.659	3.572	2.214	5.385	0.652

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	29.992	1477.706	28.119	-130.228
S.D.	1.358	2.285	0.558	8.643
% R.S.D.	4.527	0.155	1.984	6.637

Identity 1: J1286 dup Identity 2: direct 11:11 AM November 15, 1993

WHC-SD-WM-DP-057 REV 0

Task name : KBASIN

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	6647.249	27942.240	755.589	2460.492	543374.994	4819.702	828.509	61687.307
S.D.	16.324	69.217	1.675	8.427	1707.457	17.287	2.014	171.868
% R.S.D.	0.246	0.248	0.222	0.343	0.314	0.359	0.243	0.279

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	-99.675	307.858	1344.101	1463.383	29.103	-48.210	484.998	231.629
S.D.	36.413	0.722	4.429	11.606	2.310	2.165	12.466	2.889
% R.S.D.	36.532	0.235	0.330	0.793	7.939	4.490	2.570	1.247

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	12.010	1411.309	26.537	-192.508
S.D.	3.371	4.352	0.422	12.685
% R.S.D.	28.067	0.308	1.589	6.589

Identity 1: J1286 trip Identity 2: direct 11:15 AM November 15, 1993
Task name : KBASIN
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-057 REV O

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	6540.109	27340.762	737.566	2407.718	529755.530	4699.022	788.021	59743.216
S.D.	26.028	100.710	3.360	6.767	1558.603	11.579	6.161	181.888
% R.S.D.	0.398	0.368	0.456	0.281	0.294	0.246	0.782	0.304

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	-110.127	298.672	1308.218	1471.940	31.165	-46.978	447.738	219.551
S.D.	17.882	1.339	3.884	16.863	0.630	1.796	5.023	4.878
% R.S.D.	16.238	0.448	0.297	1.146	2.022	3.822	1.122	2.222

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	10.932	1370.289	25.441	-224.340
S.D.	5.593	7.863	0.760	33.816
% R.S.D.	51.166	0.574	2.988	15.074

Identity 1: CCV Identity 2: Quality Control 11:18 AM November 15, 1993

Task name : KBASIN

WHC-SD-WM-DP-057 REV O

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	4777.724	4857.413	4895.283	4857.564	5333.480	4728.216	4696.419	245.857
S.D.	13.794	14.815	13.507	11.456	49.930	13.543	7.432	70.091
% R.S.D.	0.289	0.305	0.276	0.236	0.936	0.286	0.158	28.509

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	4860.346	4740.650	4586.551	4873.225	4653.021	4896.842	4600.309	4506.035
S.D.	9.962	12.124	8.310	17.832	26.072	17.527	47.962	5.041
% R.S.D.	0.205	0.256	0.181	0.366	0.560	0.358	1.043	0.112

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	4738.141	4628.218	4711.772	4362.255
S.D.	13.494	10.913	9.217	12.685
% R.S.D.	0.285	0.236	0.196	0.291

Identity 1: CCB Identity 2: Quality Control 11:21 AM November 15, 1993

Task name : KBASIN

WHC-SD-WM-DP-057 REV 0

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	-9.211	27.095	5.149	4.174	171.064	17.094	2.977	132.034
S.D.	2.101	3.135	0.928	0.593	5.474	0.111	0.516	27.317
% R.S.D.	22.809	11.570	18.029	14.210	3.200	0.649	17.320	20.690

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	18.975	2.938	1.463	15.178	1.455	62.141	11.255	5.478
S.D.	9.040	0.106	0.149	10.604	1.470	3.020	10.047	1.209
% R.S.D.	47.640	3.608	10.189	69.863	101.034	4.860	89.263	22.080

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	-11.019	1.515	1.948	17.861
S.D.	4.551	0.682	0.633	21.970
% R.S.D.	41.303	45.000	32.476	123.009

Identity 1: J1287 sam Identity 2: direct 11:24 AM November 15, 1993
Task name : KBASIN
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-057 REV O

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	7131.188	49292.379	1038.377	1854.639	455537.240	9635.883	807.818	56314.879
S.D.	19.686	293.402	5.169	9.577	2302.913	54.578	5.701	289.852
% R.S.D.	0.276	0.595	0.498	0.516	0.506	0.566	0.706	0.515

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	-34.432	381.571	3574.087	2159.727	49.233	-1.555	734.512	193.625
S.D.	25.898	1.668	19.752	4.008	1.831	23.678	35.930	2.702
% R.S.D.	75.215	0.437	0.553	0.186	3.719	1522.539	4.892	1.396

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	34.720	1607.091	27.146	-85.940
S.D.	1.877	4.539	1.265	27.227
% R.S.D.	5.407	0.282	4.660	31.681

Identity 1: J1287 dup Identity 2: direct 11:27 AM November 15, 1993

Task name : KBASIN

WHC-SD-WM-DP-057 REV O

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	7111.708	49903.689	1056.315	1868.876	465998.563	9892.608	824.936	57202.695
S.D.	35.980	206.201	4.847	5.970	2053.636	47.436	5.402	189.425
% R.S.D.	0.506	0.413	0.459	0.319	0.441	0.480	0.655	0.331

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	-86.407	388.026	3636.645	2146.784	49.112	-41.082	742.496	193.800
S.D.	20.618	1.583	15.132	13.559	4.578	1.472	17.055	6.041
% R.S.D.	23.861	0.408	0.416	0.632	9.321	3.583	2.297	3.117

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	40.945	1644.740	26.415	-156.524
S.D.	3.581	8.017	0.365	7.192
% R.S.D.	8.747	0.487	1.382	4.595

Identity 1: J1287 trip Identity 2: direct 11:31 AM November 15, 1993
Task name : KBASIN
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-057 REV O

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	6876.557	48613.382	1035.459	1803.224	450043.182	9611.363	787.872	55504.462
S.D.	17.847	239.396	3.991	5.999	837.250	28.583	4.775	239.320
% R.S.D.	0.260	0.492	0.385	0.333	0.186	0.297	0.606	0.431

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	-146.708	377.060	3481.153	2108.598	40.623	-38.944	681.282	185.045
S.D.	14.806	1.492	9.095	23.793	2.272	1.365	32.941	1.081
% R.S.D.	10.092	0.396	0.261	1.128	5.593	3.506	4.835	0.584

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	21.193	1586.486	24.468	-195.276
S.D.	1.212	1.115	0.211	39.462
% R.S.D.	5.717	0.070	0.862	20.209

Identity 1: J1289 sam Identity 2: direct 11:34 AM November 15, 1993
Task name : KBASIN
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-057 REV O

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	7677.464	48113.700	1230.450	1471.273	136193.005	6203.647	401.751	57685.303
S.D.	39.989	249.946	4.460	8.531	448.347	27.368	2.292	284.001
% R.S.D.	0.521	0.519	0.362	0.580	0.329	0.441	0.570	0.492

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	-17.777	461.208	2685.276	2484.688	18.311	-8.165	534.236	401.435
S.D.	18.949	1.876	12.065	7.494	4.185	1.166	25.275	2.522
% R.S.D.	106.595	0.407	0.449	0.302	22.855	14.286	4.731	0.628

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	29.750	2151.601	44.918	15.093
S.D.	3.607	10.607	0.558	45.923
% R.S.D.	12.125	0.493	1.242	304.272

Identity 1: J1289 dup Identity 2: direct 11:37 AM November 15, 1993
Task name : KBASIN
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-057 REV O

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	7531.781	47850.150	1223.756	1464.802	134593.944	6137.257	410.980	57307.412
S.D.	54.976	406.125	10.270	12.573	1043.953	50.320	6.336	473.940
% R.S.D.	0.730	0.849	0.839	0.858	0.776	0.820	1.542	0.827

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	-45.580	456.951	2659.117	2466.932	18.311	-12.636	445.076	395.180
S.D.	21.795	3.323	19.547	22.272	0.916	1.347	23.534	4.389
% R.S.D.	47.816	0.727	0.735	0.903	5.000	10.659	5.288	1.111

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	23.684	2137.435	43.701	-4.283
S.D.	5.100	18.671	0.558	71.595
% R.S.D.	21.534	0.874	1.276	1671.484

Identity 1: J1289 trip Identity 2: direct 11:40 AM November 15, 1993
Task name : KBASIN
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-057 REV O

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	7679.551	48619.574	1234.570	1495.185	136595.597	6218.180	411.724	58044.983
S.D.	13.392	80.701	3.793	4.635	227.515	14.542	7.187	95.611
% R.S.D.	0.174	0.166	0.307	0.310	0.167	0.234	1.745	0.165

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	-14.524	464.355	2723.913	2498.380	12.126	-11.469	498.971	406.263
S.D.	31.117	0.800	4.880	18.934	3.380	1.402	15.590	1.997
% R.S.D.	214.250	0.172	0.179	0.758	27.875	12.222	3.124	0.492

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	24.841	2169.251	45.770	91.213
S.D.	1.604	2.193	1.096	43.216
% R.S.D.	6.457	0.101	2.394	47.379

Identity 1: CCV Identity 2: Quality Control 11:44 AM November 15, 1993
Task name : KBASIN
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-057 REV O

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	4960.141	5059.542	5077.658	5067.917	5360.516	4962.789	4970.902	391.550
S.D.	19.093	29.583	11.833	7.976	42.673	10.443	21.023	161.034
% R.S.D.	0.385	0.585	0.233	0.157	0.796	0.210	0.423	41.127

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	5123.120	4954.920	4851.585	4953.770	4937.143	4822.389	4907.709	4856.266
S.D.	37.568	9.799	11.194	21.507	17.708	26.464	27.969	22.076
% R.S.D.	0.733	0.198	0.231	0.434	0.359	0.549	0.570	0.455

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	4921.487	4909.866	5046.283	4558.783
S.D.	7.832	15.016	5.113	45.923
% R.S.D.	0.159	0.306	0.101	1.007

Identity 1: CCB Identity 2: Quality Control 11:47 AM November 15, 1993

Task name : KBASIN

WHC-SD-WM-DP-057 REV O

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	0.390	29.235	4.806	4.918	49.320	19.206	-5.210	132.034
S.D.	2.684	9.288	0.904	0.438	6.782	0.111	6.257	130.296
% R.S.D.	688.730	31.769	18.816	8.900	13.750	0.577	120.104	98.683

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	25.150	2.823	1.979	-0.759	6.670	76.786	11.921	7.111
S.D.	6.272	0.175	0.149	5.458	0.916	2.057	25.949	1.517
% R.S.D.	24.940	6.188	7.531	718.735	13.727	2.679	217.684	21.333

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	-7.917	1.515	1.582	51.077
S.D.	2.410	0.819	0.365	12.456
% R.S.D.	30.444	54.083	23.077	24.387

Identity 1: icsa-f Identity 2: icsa 11:49 AM November 15, 1993
Task name : KBASIN
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	346.438	296582.829	32.956	72.156	505610.184	184114.764	46.442	77.399
S.D.	2.551	1889.496	1.122	1.934	1928.908	617.554	4.705	72.275
% R.S.D.	0.736	0.637	3.405	2.680	0.382	0.335	10.130	93.379

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	325.053	7.612	190994.944	118.935	12.733	11.664	-123.815	9.881
S.D.	39.811	0.313	540.999	7.069	0.556	0.778	36.316	1.271
% R.S.D.	12.248	4.112	0.283	5.944	4.364	6.667	29.331	12.867

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	-1.429	191.048	3.652	-423.637
S.D.	5.855	1.871	0.558	40.327
% R.S.D.	409.834	0.979	15.275	9.519

Identity 1: ICSAB Identity 2: Quality Control 11:52 AM November 15, 1993
Task name : KBASIN
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-057 REV O

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	307.061	286774.486	541.717	985.821	489596.634	178497.935	519.046	47573.302
S.D.	9.482	2967.432	4.392	6.684	3696.735	1278.581	6.476	362.492
% R.S.D.	3.088	1.035	0.811	0.678	0.755	0.716	1.248	0.762

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	346.828	476.062	183186.079	64.489	16.977	532.315	765.784	863.447
S.D.	31.462	4.257	1328.793	8.376	3.798	4.300	29.223	8.207
% R.S.D.	9.071	0.894	0.725	12.988	22.372	0.808	3.816	0.951

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	-12.544	635.791	442.973	-282.468
S.D.	8.294	4.045	2.974	30.605
% R.S.D.	66.119	0.636	0.671	10.835

Identity 1: xxx Identity 2: rinse 11:57 AM November 15, 1993
Task name : KBASIN
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	-9.072	77.764	1.115	2.071	134.525	53.778	-2.530	-13.659
S.D.	6.266	10.391	0.393	0.540	7.684	3.193	1.691	175.626
% R.S.D.	69.070	13.362	35.265	26.099	5.712	5.937	66.812	1285.820

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	-6.083	1.874	51.028	1.166	2.789	18.727	59.162	3.442
S.D.	36.041	0.735	3.112	11.306	1.667	1.365	13.291	1.668
% R.S.D.	592.510	39.196	6.099	969.694	59.772	7.291	22.465	48.448

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	-15.733	-0.038	1.217	-43.035
S.D.	1.429	0.430	0.365	44.006
% R.S.D.	9.079	1135.940	30.000	102.256

Identity 1: CCV Identity 2: Quality Control 11:59 AM November 15, 1993

Task name : KBASIN

WHC-SD-WM-DP-057 REV O

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	4794.143	4920.980	4917.426	4909.789	5072.787	4803.569	4779.181	195.775
S.D.	22.188	0.260	16.130	14.401	14.301	10.892	10.720	41.728
% R.S.D.	0.463	0.005	0.328	0.293	0.282	0.227	0.224	21.314

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	4886.994	4778.826	4690.499	4855.255	4725.901	4607.195	4724.733	4619.350
S.D.	30.523	13.846	11.746	22.899	34.241	9.012	52.812	18.404
% R.S.D.	0.625	0.290	0.250	0.472	0.725	0.196	1.118	0.398

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	4775.358	4709.122	4817.433	4359.487
S.D.	35.813	11.125	18.366	30.036
% R.S.D.	0.750	0.236	0.381	0.689

Identity 1: CCB Identity 2: Quality Control 12:03 PM November 15, 1993
Task name : KBASIN
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-057 REV O

	Si (ppb)	Al (ppb)	Cu (ppb)	Zn (ppb)	Fe (ppb)	Ca (ppb)	Cr (ppb)	U (ppb)
Mean	-4.759	26.179	2.317	6.213	27.855	25.672	-4.317	59.188
S.D.	2.892	1.128	0.928	0.943	7.395	1.152	2.578	67.377
% R.S.D.	60.774	4.309	40.070	15.176	26.549	4.489	59.727	113.836

	Sm (ppb)	Ba (ppb)	Mg (ppb)	Na (ppb)	Mo (ppb)	Ag (ppb)	Pb (ppb)	Cd (ppb)
Mean	13.392	3.910	9.035	3.412	6.063	93.892	61.823	9.009
S.D.	13.778	0.582	1.299	4.508	1.260	2.057	10.562	1.786
% R.S.D.	102.878	14.887	14.381	132.108	20.784	2.191	17.085	19.830

	B (ppb)	Mn (ppb)	Be (ppb)	Tl (ppb)
Mean	-6.099	1.629	3.652	8.173
S.D.	2.822	0.902	0.760	22.868
% R.S.D.	46.271	55.376	20.817	279.802

BJ Cook 11-15-93

WESTINGHOUSE HANFORD COMPANY
222–S LABORATORY WHC-SD-WM-DP-057 REV 0

ANALYTICAL BATCH

Lab Segment Serial No.: J-1252 & J-1153	Customer ID: KE-11-A & KE-11-B
Analysis: X-RAY DIFF.	Sample Prep: DIRECT

Instrument: D-MAX-B	Procedure/Rev: LA-507-151-B-3
Technologist: JOHN WORRELL	Date: 10-27-93
Starting Time: 0800	Temperature: 20 °C
Ending Time: 1500 10-28-93	Chemist: K. FULLER

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD		11		
2	REAGENT BLANK		12		
3	KE-11-A	J-1252-4606	13		
4	KE-11-B	J-1253-4606	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

A–6000–881 (03/92)

X-RAY ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
J 1252.-4606	BECHTOLD	10-26-93	10: 7	26

Determination	Method Standard	Result Units	Charge Code	Reruns
XRAY	LA-507-151	M	E11457	0

Sample Size	Customer ID
?	KE-11-A

Remarks, Calculations, Results:

SILICON OXIDE

SiO_2

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

Date	Time Completed	Lab Unit Mgr
10-28-93	1500	CA Clark

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

Serial No.	Sample Point	Date	Time Issued	Priority
J 1253.-4606	BECHTOLD	10-26-93	10: 8	26

Determination	Method Standard	Result Units	Charge Code	Reruns
XRAY	LA-507-151	M	E11457	0

Sample Size	Customer ID
?	KE-11-B

Remarks, Calculations, Results:

SILICON OXIDE

SiO_2

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

Date	Time Completed	Lab Unit Mgr
10-28-93	1500	CA Clark

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

BEST AVAILABLE COPY

X-RAY ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
J 1252.-4611	BECHTOLD	10-26-93	10: 7	26

Determination	Method Standard	Result Units	Charge Code	Reruns
XRF	LA-507-131	NONE	E11457	0

Sample Size	Customer ID
?	KE-11-A

Remarks, Calculations, Results

LINK XRF IS DOWN FOR REPAIR

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

Date	Time Completed	Lab Unit Mgr
10-27-93	N/A	CA Clark

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

Serial No	Sample Point	Date	Time Issued	Priority
J 1253.-4611	BECHTOLD	10-26-93	10: 8	26

Determination	Method Standard	Result Units	Charge Code	Reruns
XRF	LA-507-131	NONE	E11457	0

Sample Size	Customer ID
?	KE-11-B

Remarks, Calculations, Results

LINK XRF IS DOWN FOR REPAIR

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

Date	Time Completed	Lab Unit Mgr
10-27-93	N/A	CA Clark

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

BEST AVAILABLE COPY

WHC-SD-WM-DP-057 REV O

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

HJH 11-19-93

Lab Segment Serial No.: J-1290	Customer ID: DAVE BECKTOLD KE-24B
Analysis: ~~X-RAY~~ X-RAY JH 11-19-93	Sample Prep: DIRECT

Instrument: D-MAX-B	Procedure/Rev: LA JH 11-19-93 ~~LA~~-507-151 B3
Technologist: JOHN WORRELL	Date: 11-12-93
Starting Time: 11-11-93 @ 0800	Temperature: 20°C
Ending Time: 11-12-93 @ 1100	Chemist: K. FULLER

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD		11		
2	REAGENT BLANK		12		
3	KE-24B	J1290-4606	13		
4			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

A-6000-881 (03/92)

X-RAY ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
J 1890.-4608	BECHTOLD	11- 4-93	8:55	18

Determination	Method Standard	Result Units	Charge Code	Reruns
XRAY	LA-507-151	M	E14157	0

Sample Size	Customer ID
? DIRECT	KE24B

Remarks, Calculations, Results:

SILICON OXIDE
SiO_2

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

Date	Time Completed	Lab Unit Mgr	
11-12-93	1100	RA Clark	

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

BEST AVAILABLE COPY

DISTRIBUTION SHEET

To	From	Page 1 of 1
DISTRIBUTION	PROCESSING AND ANALYTICAL LABORATORIES	Date: 01/04/94
Project Title/Work Order 105-KE FILTER BACKWASH (SFBWP) TRANSFER CHANNEL		EDT No. 140728 ECN NO. NA

Name	MSIN	Text With all Attach	Addendum 1A Only	EDT/ECN Only
D. B. Bechtold	T6-09			X
C. L. Bennett	X0-44			X
D. A. Dodd	T6-50			X
K. K. Giamberardini	T6-06			X
T. L. Welsh	T6-07			X
Central Files	L8-04	2		
EDMC	H6-08	X		