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

Document number: SD-WM-DP-074

Section 8 **of** 8

Title: 216 Day Final Report for Tank 241-SY-103 Push Mode Core 62

Date: 08-11-95 **Revision:** A000

Originator: A D Rice
Co: WHC

Recipient:
Co:

References: EDT-612158

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WHC-SD-WM-DP-074, REV. 0

PLUTONIUM ANALYSES

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LABCORE Data Entry Template for Worklist# 179

OA
AR

Analyst: JVS **Instrument:** PU01 **Method:** LA-503-156 D-1

Worklist Comment: Sample Size = 0.5 mL WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test		Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@PU23902	PU23901	SOLID			N/A	uCi/g
1	BLNK-PREP				@PU23902	PU23901T	SOLID			N/A	% Rec
1	BLNK-PREP				@PU23902	PU23901E	SOLID			N/A	% Ct.
1	BLNK-PREP				@PU23902	PU23801	SOLID			N/A	uCi/g ~~uCi/m~~ 11.28.94
1	BLNK-PREP				@PU23902	PU23801E	SOLID			N/A	% Ct.
2	STD	83B43			@PU23902	PU23901	SOLID			N/A	uCi/g
2	STD				@PU23902	PU23901E	SOLID			N/A	% Ct.
2	STD				@PU23902	PU23901T	SOLID			N/A	% Rec
3	SAMPLE	S94T000005	0		@PU23902	PU23901	SOLID	N/A			uCi/g
3	SAMPLE	S94T000005	0		@PU23902	PU23901T	SOLID	N/A			% Rec
3	SAMPLE	S94T000005	0		@PU23902	PU23901E	SOLID	N/A			% Ct.
3	SAMPLE	S94T000005	0		@PU23902	PU23801	SOLID	N/A			uCi/g ~~uCi/m~~ 11.28.94
3	SAMPLE	S94T000005	0		@PU23902	PU23801E	SOLID	N/A			% Ct.
4	DUP	S94T000005	0		@PU23902	PU23901	SOLID			N/A	uCi/g
4	DUP	S94T000005	0		@PU23902	PU23901T	SOLID			N/A	% Rec
4	DUP	S94T000005	0		@PU23902	PU23901E	SOLID			N/A	% Ct.
4	DUP	S94T000005	0		@PU23902	PU23801	SOLID			N/A	uCi/m
4	DUP	S94T000005	0		@PU23902	PU23801E	SOLID			N/A	% Ct.

Data Entry Comments:

Units shown for QC (SPK) may not reflect the actual units.

LABCORE Data Entry Template for Worklist# 179

JMV

Analyst: ~~JVS~~ **Instrument:** PU01 **Method:** LA-503-156

Worklist Comment: Sample Size = 0.5 mL

WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep Al	Test	Matrix	Actual	Found	DL	Unit

Final page for worklist # 179

Joel M Vanderbilt
Analyst Signature

11-28-94
Date

Data Entry Comments:

Units shown for QC (SPK) may not reflect the actual units.

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

							blank
Type	Date Counted		11/30/94	Pu 236 AEA Frac.	(C236)		0.792
blank	Sample Volume in mL	(SS)	0.500	Pu 238 AEA Frac.	(C238)		0.095
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)		0.034
179	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts			1602
Test Code	Digest Grams of Solids/L	(Dg/L)	2.2092	AT Count Time (min)	(TC)		30
PU01	Tracer Book No.		92B43	Background in cpm	(Bkg)		6
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm			15.79
solid	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm			1.89
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2097.91	Pu 239 cpm			0.67
S94T000006	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)		480
Instrument Code				Pu 239/240 µCi/g =		<	9.0548E-03
WC38931	Decay Time = Date Counted - Tracer Preparation Date						
Analyst	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]						
VAN SANT	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV						
Date	Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]						
11/28/94	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)						
Time	Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]						
02:00 PM	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100						

NOTE: Pu 239\240 Result is a LESS THAN Value.

Pu 239/240	µCi/g	=	< 9.05E-03	DETECTION LEVELS in µCi/g
Relative Counting Error		=	11.2%	
				Pu 239/240
Pu 238	µCi/g	=	1.03E-02	9.05E-03
Relative Counting Error		=	6.9%	Pu 238
Pu 236 Tracer Recovery		=	35.8%	9.05E-03

Data Entry by:	[signature]	Date:	12/01/94
Approved by:	[signature]	Date:	1 Dec 94

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						STANDARD
Type	Date Counted		11/30/94	Pu 236 AEA Frac.	(C236)	0.371
STANDARD	Sample Volume in mL	(SS)	0.100	Pu 238 AEA Frac.	(C238)	0
Work List	Sample D.F.	(DF)	101	Pu 239 AEA Frac.	(C239)	0.542
179	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		3833
Test Code	Digest D.F.	(DDF)	1	AT Count Time (min)	(TC)	30
PU01	Tracer Book No.		92B43	Background in cpm	(Bkg)	6
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		21.26
LIQUID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2097.91	Pu 239 cpm		31.09
	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/L		1.3944E+02
WC38931	Decay Time = Date Counted - Tracer Preparation Date					
Analyst	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]					
VAN SANT	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV					
Date	Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]					
11/28/94	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)					
Time	Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]					
02:00 PM	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100					

Pu 239/240	µCi/mL	=	1.39E-01	DETECTION LEVELS in µCi/mL
Relative Counting Error		=	2.5%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238	µCi/mL	=	< 1.79E-02	1.79E-02
Relative Counting Error		=	100.0%	Pu 238
Pu 236 Tracer Recovery		=	43.1%	1.79E-02

Data Entry by:	[signature]	Date:	12/01/94
Approved by:	[signature]	Date:	1 Dec 94

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

							SAMPLE
Type	Date Counted		11/30/94	Pu 236 AEA Frac.	(C236)		0.958
SAMPLE	Sample Volume in mL	(SS)	0.500	Pu 238 AEA Frac.	(C238)		0.019
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)		0.017
179	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts			2261
Test Code	Digest Grams of Solids/L	(Dg/L)	2.2092	AT Count Time (min)	(TC)		30
PU01	Tracer Book No.		92B43	Background in cpm	(Bkg)		6
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm			26.48
solid	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm			0.52
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2097.91	Pu 239 cpm			0.47
S94T000006	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)		480
Instrument Code				Pu 239/240 µCi/g =		<	4.2289E-03
WC38931	Decay Time = Date Counted - Tracer Preparation Date						
Analyst	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]						
VAN SANT	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV						
Date	Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]						
11/28/94	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)						
Time	Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]						
02:00 PM	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100						

NOTE: Pu 239\240 Result is a LESS THAN Value.

Pu 239/240	µCi/g	=	< 4.23E-03	DETECTION LEVELS in µCi/g
Relative Counting Error		=	13.2%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238	µCi/g	=	< 4.23E-03	4.23E-03
Relative Counting Error		=	12.5%	Pu 238
Pu 236 Tracer Recovery		=	63.4%	4.23E-03

Data Entry by:	[signature]	Date:	12/01/94
Approved by:	[signature]	Date:	1 Dec 94

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

							DUPLICATE
Type	Date Counted		11/30/94	Pu 236 AEA Frac.	(C236)		0.954
DUPLICATE	Sample Volume in mL	(SS)	0.500	Pu 238 AEA Frac.	(C238)		0.02
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)		0.019
179	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts			2591
Test Code	Digest Grams of Solids/L	(Dg/L)	2.216	AT Count Time (min)	(TC)		30
PU01	Tracer Book No.		92B43	Background in cpm	(Bkg)		6
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm			32.64
solid	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm			0.69
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2097.91	Pu 239 cpm			0.66
S94T000005	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)		480
Instrument Code				Pu 239/240 µCi/g =		<	3.6694E-03
WC38931	Decay Time = Date Counted - Tracer Preparation Date						
Analyst	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]						
VAN SANT	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV						
Date	Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]						
11/28/94	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)						
Time	Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]						
02:00 PM	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100						

NOTE: Pu 239\240 Result is a LESS THAN Value.

Pu 239/240	µCi/g	=	< 3.67E-03	DETECTION LEVELS in µCi/g
Relative Counting Error		=	11.1%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240 3.67E-03
Pu 238	µCi/g	=	< 3.67E-03	
Relative Counting Error		=	10.9%	Pu 238 3.67E-03
Pu 236 Tracer Recovery		=	73.1%	

Data Entry by:	[signature]	Date:	12/01/94
Approved by:	[signature]	Date:	1 Dec 94

Form 503156PC Rev. 2.0

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
STANDARD
File ID: 5a5809.CNF

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 2327 TO 2338.

Counted on: 11/30/94 @ 2:10
Detector: AEA5
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	401.4	401.4	362.824	362.824	22.000	18.438	11.000	5.290
2	15.0	15.0	276.581	276.492	92.000	1.000	46.000	0.100
3	605.3	605.3	230.724	230.711	24.000	19.276	12.000	6.235
4	13.4	13.4	138.022	137.962	104.000	1.000	52.000	0.100
5?	1.0	1.0	125.331	124.733	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	Cm243	0.371	5.786	5.775	0.011	0.09	21.26	1.9	206.7	0.931E-04
	Pu236		5.756	5.775	-.019				154.0	0.694E-04
2		0.021		5.369		0.00	1.21	8.2	8.6	0.386E-05
3	Pu239	0.542	5.143	5.154	-.011	0.09	31.09	1.6	220.7	0.994E-04
	Pu240		5.144	5.154	-.010				220.7	0.994E-04
4		0.018		4.718		0.00	1.05	8.9	7.5	0.337E-05
5		????		4.656			0.00	1000.		
Totals:		0.953	<--valid peaks only-->				54.62			

DETECTOR CALIBRATION
Energy(MEV) = 4.070 + (0.0047)*Channel
Energy range (MeV): 4.070 TO 6.476
Efficiency = 0.1409 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	27514.0	100.000
Smoothed	27513.9	100.000
Composite fit	26217.9	95.289
Residuals	1296.1	4.711

Analyzed by: _____

Spectrum 5a5809.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 4527.9


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Raw Data Dump for AEA Spectrum: 5a5809.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	2.	5.	1.	5.
21	2.	1.	5.	4.	2.	4.	1.	5.	5.	2.
31	0.	8.	4.	2.	0.	3.	4.	3.	4.	4.
41	3.	3.	5.	5.	4.	4.	2.	4.	6.	3.
51	2.	2.	2.	6.	5.	2.	2.	12.	3.	4.
61	3.	7.	5.	5.	4.	9.	7.	2.	3.	6.
71	3.	3.	5.	9.	2.	4.	3.	5.	4.	7.
81	12.	1.	5.	4.	4.	4.	7.	1.	10.	13.
91	7.	8.	6.	4.	2.	6.	5.	6.	6.	5.
101	5.	7.	2.	7.	13.	1.	9.	3.	8.	6.
111	10.	7.	7.	8.	5.	8.	10.	5.	3.	10.
121	10.	3.	9.	11.	14.	13.	5.	12.	9.	10.
131	8.	12.	13.	9.	6.	14.	9.	18.	11.	12.
141	10.	9.	5.	13.	7.	18.	12.	18.	16.	10.
151	8.	13.	14.	14.	9.	18.	7.	13.	16.	16.
161	13.	16.	17.	17.	22.	18.	20.	18.	19.	28.
171	21.	28.	18.	21.	19.	33.	16.	18.	31.	27.
181	16.	26.	31.	35.	37.	36.	28.	37.	39.	44.
191	42.	43.	39.	46.	47.	55.	49.	60.	56.	65.
201	51.	59.	79.	82.	79.	97.	94.	95.	104.	136.
211	124.	142.	165.	186.	214.	227.	248.	277.	308.	354.
221	365.	399.	446.	459.	535.	556.	581.	600.	631.	664.
231	627.	608.	619.	515.	559.	491.	424.	363.	351.	318.
241	282.	226.	128.	124.	103.	80.	62.	31.	28.	18.
251	15.	14.	10.	12.	8.	11.	5.	9.	8.	8.
261	9.	11.	6.	10.	9.	9.	12.	9.	14.	9.
271	9.	12.	11.	15.	7.	23.	16.	12.	10.	18.
281	8.	6.	10.	7.	7.	14.	14.	21.	9.	16.
291	10.	13.	14.	16.	13.	21.	19.	14.	16.	21.
301	19.	25.	20.	20.	18.	22.	16.	23.	15.	28.
311	23.	25.	29.	24.	28.	25.	24.	23.	19.	32.
321	20.	21.	20.	27.	35.	26.	30.	40.	36.	38.
331	38.	35.	41.	36.	52.	48.	45.	60.	77.	62.
341	83.	97.	103.	108.	115.	138.	168.	154.	198.	206.
351	239.	265.	249.	295.	326.	301.	332.	377.	381.	405.
361	387.	398.	439.	415.	363.	369.	327.	311.	265.	270.
371	226.	178.	167.	119.	92.	70.	53.	38.	26.	22.
381	19.	13.	4.	6.	5.	0.	0.	3.	0.	0.
391	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
401	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	1.	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.	2.	0.	0.	0.	0.
461	0.	0.	1.	1.	0.	0.	1.	0.	0.	0.
471	0.	0.	1.	1.	0.	0.	3.	0.	0.	0.
481	0.	0.	0.	0.	1.	2.	1.	1.	0.	0.
491	0.	1.	1.	0.	1.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
BLANK
File ID: 6a6638.CNF

Counted on: 11/30/94 @ 2:11
Detector: AEA6
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	360.5	360.5	363.467	363.467	14.000	8.165	7.000	2.258
2	20.8	20.8	311.069	310.228	44.000	82.435	22.000	33.062
3	14.9	14.9	267.063	266.415	14.000	25.836	7.000	4.330
4	13.7	13.7	230.504	230.219	14.000	7.065	7.000	1.564

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	Pu236	0.792	5.756	5.761	-.005	0.04	15.79	2.3	128.9	0.581E-04
	Cm243		5.786	5.761	0.025				173.1	0.780E-04
2	Am241	0.095	5.480	5.516	-.036	0.38	1.89	16.8	16.1	0.725E-05
	Pu238		5.499	5.516	-.017				21.0	0.946E-05
3	Am243	0.056	5.276	5.314	-.038	0.12	1.11	10.1	9.0	0.404E-05
	Pu240		5.144	5.314	-.170				8.9	0.400E-05
4	Pu239	0.034	5.143	5.148	-.005	0.03	0.67	13.2	5.4	0.241E-05
	Pu240		5.144	5.148	-.004				5.4	0.241E-05
		---					---			
Totals:		0.976	<--valid peaks only-->				19.46			

DETECTOR CALIBRATION
Energy(MEV) = 4.089 + (0.0046)*Channel
Energy range (MeV): 4.089 TO 6.444
Efficiency = 0.1250 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	9570.0	100.000
Smoothed	9570.0	100.000
Composite fit	9343.9	97.638
Residuals	226.1	2.362

Analyzed by: _____

Spectrum 6a6638.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 2658.1


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34
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2.....1..
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1
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Raw Data Dump for AEA Spectrum: 6a6638.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.	1.	1.	2.	1.	0.	0.	0.
31	1.	0.	1.	0.	1.	0.	0.	3.	0.	1.
41	0.	0.	1.	1.	0.	0.	0.	1.	0.	0.
51	0.	0.	1.	0.	1.	2.	0.	2.	0.	0.
61	1.	0.	2.	0.	0.	2.	0.	4.	1.	1.
71	0.	3.	1.	0.	0.	1.	1.	3.	0.	1.
81	0.	1.	0.	0.	1.	0.	2.	0.	3.	0.
91	1.	2.	0.	0.	2.	0.	1.	1.	1.	2.
101	1.	0.	0.	0.	0.	4.	1.	0.	1.	0.
111	1.	0.	1.	1.	2.	1.	0.	1.	0.	2.
121	4.	1.	0.	3.	1.	0.	1.	2.	0.	4.
131	2.	2.	3.	3.	1.	2.	3.	2.	2.	1.
141	0.	5.	3.	0.	2.	4.	3.	2.	3.	2.
151	2.	1.	1.	2.	3.	1.	3.	2.	3.	2.
161	3.	7.	1.	3.	0.	2.	1.	4.	3.	3.
171	2.	3.	1.	4.	3.	7.	1.	4.	5.	1.
181	4.	3.	3.	1.	9.	2.	3.	4.	3.	7.
191	7.	5.	1.	3.	0.	6.	5.	5.	4.	5.
201	10.	6.	4.	4.	10.	6.	3.	6.	8.	2.
211	7.	8.	6.	7.	7.	11.	6.	10.	5.	5.
221	13.	7.	13.	9.	9.	8.	15.	15.	15.	22.
231	19.	11.	19.	10.	11.	11.	5.	9.	9.	5.
241	7.	9.	7.	5.	8.	10.	13.	4.	9.	2.
251	7.	13.	14.	13.	7.	10.	13.	9.	11.	11.
261	14.	14.	15.	16.	18.	17.	14.	18.	17.	15.
271	11.	10.	12.	5.	13.	9.	13.	8.	14.	11.
281	10.	19.	19.	6.	14.	16.	16.	14.	22.	12.
291	15.	18.	18.	19.	23.	18.	13.	22.	17.	15.
301	25.	31.	21.	26.	17.	29.	24.	26.	24.	22.
311	35.	28.	25.	21.	20.	24.	32.	32.	36.	32.
321	35.	27.	34.	47.	34.	28.	35.	47.	41.	41.
331	57.	48.	44.	39.	55.	54.	62.	54.	63.	61.
341	70.	72.	67.	79.	93.	98.	91.	135.	133.	140.
351	171.	181.	215.	228.	222.	261.	256.	281.	342.	297.
361	374.	381.	381.	391.	353.	358.	295.	251.	189.	134.
371	71.	48.	19.	13.	3.	3.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
471	1.	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.	1.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
SAMPLE
File ID: 7a7244.CNF

Counted on: 11/30/94 @ 2:11
Detector: AEA7
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	740.1	740.1	359.785	359.785	14.000	8.175	7.000	3.402
2	8.6	8.6	303.747	302.538	16.000	9.810	8.000	1.712
3	14.3	14.3	230.029	229.939	14.000	8.527	7.000	4.691

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	Cm243	0.958	5.786	5.751	0.035	0.04	26.48	1.7	166.8	0.751E-04
	Pu236		5.756	5.751	0.005				124.2	0.560E-04
2	Am241	0.019	5.480	5.482	-.002	0.05	0.52	14.6	2.6	0.115E-05
	Pu238		5.499	5.482	0.017				3.3	0.150E-05
3	Pu239	0.017	5.143	5.141	0.002	0.04	0.47	13.4	2.2	0.971E-06
	Pu240		5.144	5.141	0.003				2.2	0.971E-06
		---					---			
Totals:		0.994	<--valid peaks only-->				27.47			

DETECTOR CALIBRATION
Energy(MEV) = 4.060 + (0.0047)*Channel
Energy range (MeV): 4.060 TO 6.466
Efficiency = 0.2175 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	13263.0	100.000
Smoothed	13263.0	100.000
Composite fit	13187.4	99.430
Residuals	75.6	0.570

Analyzed by: _____
DM

Spectrum 7a7244.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5014.8


```
3
3
3

2
2
2
2
2
2
2

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

Raw Data Dump for AEA Spectrum: 7a7244.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.	1.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	2.	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	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
101	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
111	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
121	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
131	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
141	0.	0.	0.	1.	1.	0.	1.	0.	0.	0.
151	0.	0.	0.	0.	0.	2.	1.	0.	0.	0.
161	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.
171	0.	3.	2.	0.	1.	0.	1.	1.	2.	0.
181	0.	0.	0.	1.	0.	0.	1.	1.	0.	1.
191	1.	0.	1.	0.	0.	0.	0.	3.	2.	0.
201	0.	0.	0.	0.	0.	1.	0.	2.	3.	2.
211	1.	4.	1.	2.	1.	5.	2.	6.	4.	2.
221	8.	3.	8.	9.	9.	10.	21.	17.	12.	12.
231	20.	10.	14.	12.	8.	6.	6.	2.	2.	3.
241	1.	2.	2.	1.	2.	3.	2.	2.	7.	5.
251	7.	9.	7.	4.	11.	6.	5.	7.	11.	8.
261	7.	7.	11.	7.	12.	4.	4.	5.	6.	5.
271	2.	7.	1.	3.	3.	1.	2.	2.	2.	3.
281	2.	3.	2.	3.	3.	5.	5.	3.	12.	3.
291	6.	6.	10.	3.	5.	5.	5.	14.	7.	8.
301	11.	11.	11.	8.	11.	13.	5.	5.	7.	4.
311	8.	3.	8.	8.	5.	7.	10.	10.	8.	5.
321	12.	10.	12.	11.	15.	10.	17.	12.	14.	16.
331	24.	24.	22.	27.	27.	33.	25.	40.	60.	64.
341	74.	97.	112.	136.	190.	207.	239.	287.	309.	343.
351	402.	481.	512.	542.	623.	664.	776.	724.	792.	801.
361	792.	660.	667.	525.	411.	271.	175.	106.	71.	34.
371	16.	5.	1.	2.	1.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	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.	1.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	3.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	4.	0.								

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
DUPLICATE
File ID: 8a8419.CNF

Counted on: 11/30/94 @ 2:12
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	869.9	869.9	362.066	362.066	16.000	8.722	8.000	3.416
2	10.4	10.4	304.329	304.329	20.000	4.357	10.000	0.596
3	8.0	8.0	266.008	264.418	16.000	5.347	8.000	0.861
4	23.1	23.1	231.074	231.005	16.000	6.168	8.000	3.699

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	Pu236	0.954	5.756	5.776	-.020	0.04	32.54	1.6	145.8	0.657E-04
	Cm243		5.786	5.776	0.010				195.7	0.881E-04
2	Pu238	0.020	5.499	5.504	-.005	0.02	0.69	12.0	4.2	0.188E-05
	Am241		5.480	5.504	-.024				3.2	0.144E-05
3	Am243	0.014	5.276	5.317	-.041	0.03	0.48	15.7	2.1	0.952E-06
4	Pu239	0.019	5.143	5.160	-.017	0.03	0.66	12.8	2.9	0.131E-05
	Pu240		5.144	5.160	-.016				2.9	0.131E-05
Totals:		1.008	<--valid peaks only-->				34.36			

DETECTOR CALIBRATION
Energy(MEV) = 4.074 + (0.0047)*Channel
Energy range (MeV): 4.074 TO 6.480
Efficiency = 0.2278 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	16366.0	100.000
Smoothed	16366.0	100.000
Composite fit	16495.3	100.790
Residuals	-129.3	-0.790

Analyzed by: _____
DM

Spectrum 8a8419.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5952.0


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4
4
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1
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.....................................................................1.
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Raw Data Dump for AEA Spectrum: 8a8419.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	3.
21	1.	0.	2.	2.	0.	0.	0.	0.	0.	0.
31	1.	0.	1.	0.	0.	0.	0.	0.	0.	1.
41	0.	1.	0.	0.	0.	0.	0.	0.	2.	0.
51	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
61	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
71	0.	0.	0.	0.	0.	0.	1.	2.	0.	0.
81	0.	1.	0.	0.	1.	1.	0.	0.	0.	0.
91	1.	0.	0.	0.	0.	0.	1.	0.	0.	0.
101	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
111	0.	0.	0.	2.	0.	0.	1.	0.	1.	0.
121	1.	1.	0.	0.	0.	0.	1.	0.	0.	0.
131	0.	0.	1.	1.	1.	0.	1.	0.	1.	0.
141	1.	2.	2.	0.	0.	1.	2.	0.	0.	0.
151	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.
161	0.	0.	0.	0.	0.	0.	0.	0.	2.	0.
171	0.	0.	0.	0.	0.	1.	0.	0.	2.	0.
181	1.	0.	0.	1.	0.	1.	2.	1.	1.	0.
191	0.	2.	1.	0.	0.	0.	0.	0.	0.	1.
201	0.	2.	2.	1.	1.	3.	0.	1.	2.	0.
211	3.	5.	2.	1.	1.	1.	4.	5.	5.	9.
221	13.	14.	10.	17.	13.	12.	17.	31.	16.	25.
231	33.	30.	19.	14.	19.	14.	15.	11.	7.	5.
241	4.	3.	4.	1.	4.	2.	3.	7.	5.	5.
251	6.	9.	7.	7.	10.	9.	2.	14.	9.	8.
261	9.	8.	13.	11.	7.	11.	12.	10.	8.	6.
271	4.	2.	3.	3.	1.	1.	3.	2.	4.	5.
281	3.	3.	3.	5.	6.	4.	9.	3.	3.	11.
291	11.	4.	15.	13.	9.	10.	11.	11.	8.	14.
301	12.	11.	12.	12.	12.	13.	12.	9.	3.	6.
311	4.	9.	6.	10.	7.	5.	7.	4.	9.	11.
321	4.	7.	12.	10.	12.	6.	15.	15.	22.	13.
331	15.	25.	17.	26.	26.	29.	35.	35.	56.	49.
341	58.	97.	92.	117.	150.	167.	193.	232.	293.	371.
351	429.	451.	486.	564.	597.	681.	789.	818.	811.	880.
361	903.	938.	918.	851.	776.	685.	553.	393.	258.	168.
371	95.	52.	31.	9.	3.	1.	1.	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.	1.	0.
421	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	1.	0.	0.	0.	2.	0.	0.	0.
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.								

LABCORE Data Entry Template for Worklist# 200

OA

Analyst: AKL **Instrument:** PU01 AA#3 **Method:** LA-503-156 D-1

Worklist Comment: Use 0.1 - 10 - 0.1 sample size--LLF

WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test	Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@PU23902 PU23901	SOLID			N/A	uCi/g
1	BLNK-PREP				@PU23902 PU23901T	SOLID			N/A	% Rec
1	BLNK-PREP				@PU23902 PU23901E	SOLID			N/A	% Ct.
1	BLNK-PREP				@PU23902 PU23801	SOLID			N/A	uCi/g
1	BLNK-PREP				@PU23902 PU23801E	SOLID			N/A	% Ct.
2	STD	83B43			@PU23902 PU23901	SOLID			N/A	uCi/g
2	STD				@PU23902 PU23901E	SOLID			N/A	% Ct.
2	STD				@PU23902 PU23901T	SOLID			N/A	% Rec
3	SAMPLE	S94T000067	0		@PU23902 PU23901	SOLID	N/A			uCi/g
3	SAMPLE	S94T000067	0		@PU23902 PU23901T	SOLID	N/A			% Rec
3	SAMPLE	S94T000067	0		@PU23902 PU23901E	SOLID	N/A			% Ct.
3	SAMPLE	S94T000067	0		@PU23902 PU23801	SOLID	N/A			uCi/g
3	SAMPLE	S94T000067	0		@PU23902 PU23801E	SOLID	N/A			% Ct.
4	DUP	S94T000067	0		@PU23902 PU23901	SOLID			N/A	uCi/g
4	DUP	S94T000067	0		@PU23902 PU23901T	SOLID			N/A	% Rec
4	DUP	S94T000067	0		@PU23902 PU23901E	SOLID			N/A	% Ct.
4	DUP	S94T000067	0		@PU23902 PU23801	SOLID			N/A	uCi/g
4	DUP	S94T000067	0		@PU23902 PU23801E	SOLID			N/A	% Ct.

Data Entry Comments: Rerun - (det limit too high) rr

Units shown for QC (SPK) may not reflect the actual units.

2339

LABCORE Data Entry Template for Worklist# 200

Analyst: AKL **Instrument:** PU01 APC#3 **Method:** LA-503-156

Worklist Comment: Use 0.1 - 10 - 0.1 sample size--LLF WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test	Matrix	Actual	Found	DL	Unit

Final page for worklist # 200

Alta Lewis
Analyst Signature

12-2-94
Date

M G Bierman 12/6/94

Data Entry Comments:

Units shown for QC (SPK) may not reflect the actual units.

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						BLANK
Type	Date Counted		12/03/94	Pu 236 AEA Frac.	(C236)	0.961
BLANK	Sample Volume in mL	(SS)	0.100	Pu 238 AEA Frac.	(C238)	0
Work List	Sample D.F.	(DF)	101	Pu 239 AEA Frac.	(C239)	0.068
200	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		2732
Test Code	Digest Grams of Solids/L	(Dg/L)	1.82	AT Count Time (min)	(TC)	30
PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	6
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		39.48
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2093.73	Pu 239 cpm		2.8
S94T000067	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/g		3.7034E+00
WC38931						
Analyst						
AKL						
Date						
12/02/94						
Time						
12:00 PM						

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of ((-ln2 * Decay Time) / 1040.95)]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV

Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

Pu 239/240	µCi/g	=	3.70E+00	DETECTION LEVELS in µCi/g
Relative Counting Error		=	5.5%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238	µCi/g	=	< 2.09E+00	2.09E+00
Relative Counting Error		=	100.0%	Pu 238
Pu 236 Tracer Recovery		=	78.1%	2.09E+00

Data Entry by:	M V Simmons	Date:	12/05/94
Approved by:	[illegible]	Date:	6 Dec 94

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						STANDARD
Type	Date Counted		12/03/94	Pu 236 AEA Frac.	(C236)	0.389
STANDARD	Sample Volume in mL	(SS)	0.100	Pu 238 AEA Frac.	(C238)	0
Work List	Sample D.F.	(DF)	101	Pu 239 AEA Frac.	(C239)	0.596
200	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		6295
Test Code	Digest D.F.	(DDF)	1	AT Count Time (min)	(TC)	30
PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	6
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		32.66
LIQUID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2093.73	Pu 239 cpm		50.11
S94T000067	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/L		1.4632E+02
WC38931						
Analyst						
AKL						
Date						
12/02/94						
Time						
12:00 PM						

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV

Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

Pu 239/240	µCi/mL	=	1.46E-01	DETECTION LEVELS in µCi/mL
Relative Counting Error		=	2.0%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238	µCi/mL	=	< 9.75E-03	9.75E-03
Relative Counting Error		=	100.0%	Pu 238
Pu 236 Tracer Recovery		=	75.5%	9.75E-03

Data Entry by:	[signature]	Date:	12/05/94
Approved by:	[signature]	Date:	6 Dec 94

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						SAMPLE
Type	Date Counted		12/03/94	Pu 236 AEA Frac.	(C236)	0.936
SAMPLE	Sample Volume in mL	(SS)	0.100	Pu 238 AEA Frac.	(C238)	0.016
Work List	Sample D.F.	(DF)	101	Pu 239 AEA Frac.	(C239)	0.047
200	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		3150
Test Code	Digest Grams of Solids/L	(Dg/L)	1.82	AT Count Time (min)	(TC)	30
PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	6
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		26.27
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0.46
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2093.73	Pu 239 cpm		1.31
S94T000067	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/g =		2.6281E+00
WC38931	Decay Time = Date Counted - Tracer Preparation Date					
Analyst	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]					
AKL	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV					
Date	Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]					
12/02/94	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)					
Time	Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]					
12:00 PM	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100					

				DETECTION LEVELS in µCi/g
Pu 239/240	µCi/g	=	2.63E+00	
Relative Counting Error		=	8.0%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238	µCi/g	=	< 1.89E+00	1.89E+00
Relative Counting Error		=	13.3%	Pu 238
Pu 236 Tracer Recovery		=	88.8%	1.89E+00

Data Entry by:	[signature]	Date:	12/05/94
Approved by:	[signature]	Date:	6 Dec 94

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						DUPLICATE
Type	Date Counted		12/03/94	Pu 236 AEA Frac.	(C236)	0.865
DUPLICATE	Sample Volume in mL	(SS)	0.100	Pu 238 AEA Frac.	(C238)	0.03
Work List	Sample D.F.	(DF)	101	Pu 239 AEA Frac.	(C239)	0.094
200	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		3173
Test Code	Digest Grams of Solids/L	(Dg/L)	1.8964	AT Count Time (min)	(TC)	30
PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	6
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		40.39
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		1.42
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2093.73	Pu 239 cpm		4.39
S94T000067	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/g		5.4585E+00
WC38931	Decay Time = Date Counted - Tracer Preparation Date					
Analyst	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]					
AKL	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV					
Date	Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]					
12/02/94	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)					
Time	Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]					
12:00 PM	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100					

Pu 239/240	µCi/g	=	5.46E+00	DETECTION LEVELS in µCi/g
Relative Counting Error		=	4.5%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238	µCi/g	=	< 2.11E+00	2.11E+00
Relative Counting Error		=	7.6%	Pu 238
Pu 236 Tracer Recovery		=	82.4%	2.11E+00

Data Entry by:	[signature]	Date:	12/05/94
Approved by:	[signature]	Date:	6 Dec 94

Form 503156PC Rev. 2.0

Em Bowen
12.3.94

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01

DATA REDUCTION REPORT WHC-SD-WM-DP-074, REV. 0

SAMPLE
S94T000067 std LJF 4.19.95
File ID: 2a2685.CNF

Counted on: 12/ 3/94 @ 2:20
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	735.1	735.1	367.576	367.576	20.000	15.432	10.000	6.197
2?	20.5	20.5	312.082	308.520	20.000	11.184	10.000	10.298
3?	7.9	7.9	307.413	307.413	12.000	0.006	6.000	0.000
4	1218.9	1218.9	234.060	234.059	20.000	14.132	10.000	6.704

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	Cm243	0.388	5.786	5.763	0.023	0.07	32.66	1.6	391.1	0.176E-03
	Pu236		5.756	5.763	-.007				291.3	0.131E-03
2		????		5.492			0.69	12.6		
3		????		5.487			0.75	12.7		
4	Pu239	0.596	5.143	5.149	-.006	0.07	50.11	1.3	438.0	0.197E-03
	Pu240		5.144	5.149	-.005				438.0	0.197E-03
Totals:		0.984	<--valid peaks only-->				82.76			

DETECTOR CALIBRATION
Energy(MEV) = 4.073 + (0.0046)*Channel
Energy range (MeV): 4.073 TO 6.428
Efficiency = 0.1144 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	40374.0	100.000
Smoothed	40374.0	100.000
Composite fit	40419.8	100.114
Residuals	-45.8	-0.114

Analyzed by: _____
VR

Spectrum 2a2685.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 8692.9


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Raw Data Dump for AEA Spectrum: 2a2685.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	2.	0.	1.
21	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
31	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
41	1.	0.	0.	0.	1.	0.	1.	1.	0.	1.
51	1.	3.	0.	1.	4.	0.	1.	0.	1.	2.
61	0.	1.	2.	1.	1.	0.	0.	3.	1.	0.
71	0.	1.	0.	0.	2.	2.	2.	1.	0.	3.
81	1.	0.	1.	2.	0.	3.	2.	0.	0.	1.
91	3.	1.	0.	0.	0.	0.	3.	2.	2.	5.
101	1.	1.	2.	0.	1.	3.	0.	2.	1.	1.
111	4.	1.	3.	1.	1.	2.	4.	1.	3.	1.
121	3.	6.	2.	5.	2.	2.	0.	2.	2.	3.
131	1.	5.	2.	3.	3.	2.	7.	3.	3.	0.
141	4.	5.	1.	1.	8.	4.	4.	5.	1.	3.
151	2.	6.	5.	4.	0.	10.	6.	6.	4.	6.
161	5.	5.	2.	4.	4.	3.	4.	3.	1.	7.
171	4.	7.	6.	5.	6.	5.	3.	5.	9.	8.
181	4.	7.	8.	5.	10.	4.	5.	8.	9.	9.
191	9.	8.	7.	11.	16.	10.	7.	19.	10.	11.
201	17.	17.	20.	24.	31.	21.	48.	40.	59.	60.
211	59.	99.	106.	133.	163.	193.	223.	241.	286.	327.
221	413.	464.	509.	647.	665.	790.	842.	985.	986.	1073.
231	1188.	1294.	1291.	1312.	1257.	1220.	1107.	971.	900.	735.
241	618.	556.	448.	354.	264.	233.	143.	95.	68.	47.
251	34.	26.	14.	8.	6.	10.	8.	4.	4.	7.
261	8.	7.	9.	6.	8.	5.	5.	7.	6.	9.
271	6.	7.	6.	4.	6.	5.	4.	2.	4.	3.
281	2.	8.	6.	6.	3.	7.	6.	5.	4.	10.
291	3.	11.	8.	11.	11.	12.	14.	12.	20.	10.
301	20.	17.	20.	14.	25.	14.	31.	15.	26.	14.
311	19.	20.	13.	23.	21.	9.	8.	12.	9.	5.
321	9.	8.	7.	5.	7.	11.	6.	15.	6.	4.
331	10.	12.	13.	14.	15.	19.	11.	27.	23.	29.
341	30.	26.	36.	45.	52.	68.	86.	100.	119.	140.
351	170.	202.	276.	313.	317.	391.	398.	481.	495.	548.
361	598.	641.	691.	728.	756.	746.	785.	733.	794.	710.
371	630.	545.	534.	427.	393.	303.	239.	195.	140.	103.
381	76.	55.	29.	22.	6.	12.	5.	3.	2.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.
431	0.	0.	0.	0.	0.	0.	2.	1.	0.	0.
441	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
481	0.	2.	0.	1.	5.	2.	0.	0.	1.	0.
491	1.	0.	2.	3.	0.	0.	0.	1.	0.	0.
511	0.	0.								

12-3-94

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-074, REV. 0

SAMPLE
S94T000067 Blank
File ID: 3a3414.CNF

4.19.95

Counted on: 12/ 3/94 @ 2:21
Detector: AEA3
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	728.4	728.4	370.797	370.797	16.000	13.182	8.000	3.008
2?	1.5	1.5	309.590	305.665	4.000	0.000	2.000	1.843
3?	9.8	9.8	270.539	270.240	28.000	13.064	14.000	14.566
4?	6.1	6.1	265.317	265.317	14.000	0.036	7.000	6.472
5	54.3	54.3	237.604	237.593	20.000	15.957	10.000	4.414

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	0.961	5.796	5.816	-.020	0.06	39.48	1.4	321.0	0.145E-03
	Cm243		5.786	5.816	-.030				439.7	0.198E-03
2		????		5.517			0.00	1000.		
3		????		5.354			0.35	18.7		
4		????		5.331			0.01	347.		
5	Pu239	0.068	5.143	5.204	-.061	0.07	2.80	5.4	22.8	0.103E-04
	Pu240		5.144	5.204	-.060				22.8	0.103E-04
Totals:		1.029	<--valid peaks only-->				42.28			

DETECTOR CALIBRATION
Energy(MEV) = 4.111 + (0.0046)*Channel
Energy range (MeV): 4.111 TO 6.466
Efficiency = 0.1230 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	19722.0	100.000
Smoothed	19722.0	100.000
Composite fit	20472.9	103.807
Residuals	-750.9	-3.807

Analyzed by: _____
VR

Spectrum 3a3414.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5488.7


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5
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.................................................................1..
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Raw Data Dump for AEA Spectrum: 3a3414.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.	1.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
61	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
71	0.	0.	0.	0.	0.	0.	1.	1.	0.	1.
81	0.	1.	2.	0.	1.	0.	0.	0.	0.	0.
91	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.
111	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
121	0.	0.	2.	0.	1.	0.	0.	1.	0.	0.
131	0.	1.	0.	0.	0.	0.	1.	2.	0.	1.
141	0.	2.	1.	1.	1.	1.	1.	5.	3.	0.
151	4.	3.	4.	1.	2.	3.	1.	1.	3.	3.
161	7.	0.	1.	1.	1.	1.	1.	0.	0.	0.
171	1.	1.	0.	0.	1.	1.	1.	1.	1.	2.
181	1.	1.	0.	1.	0.	0.	0.	0.	0.	0.
191	0.	1.	1.	0.	1.	0.	0.	0.	0.	0.
201	0.	3.	4.	0.	3.	0.	1.	0.	2.	2.
211	5.	5.	5.	9.	4.	12.	12.	12.	12.	27.
221	26.	36.	21.	32.	38.	41.	43.	42.	46.	45.
231	33.	50.	48.	48.	42.	57.	67.	50.	51.	58.
241	46.	37.	44.	34.	24.	18.	14.	12.	20.	14.
251	3.	7.	6.	8.	6.	6.	6.	8.	12.	10.
261	8.	11.	8.	15.	8.	9.	13.	9.	9.	8.
271	12.	12.	9.	4.	11.	7.	2.	10.	8.	6.
281	7.	4.	8.	6.	2.	3.	3.	5.	6.	4.
291	6.	7.	7.	8.	8.	6.	7.	9.	11.	11.
301	14.	13.	10.	8.	13.	20.	13.	16.	15.	15.
311	20.	10.	16.	7.	8.	10.	8.	2.	6.	10.
321	5.	10.	8.	6.	5.	6.	7.	9.	4.	9.
331	16.	8.	12.	12.	16.	11.	23.	17.	25.	24.
341	41.	48.	43.	68.	80.	87.	119.	137.	151.	177.
351	237.	241.	285.	356.	355.	390.	460.	530.	536.	623.
361	646.	692.	658.	649.	678.	645.	684.	707.	776.	750.
371	729.	744.	758.	662.	629.	540.	462.	352.	287.	188.
381	127.	69.	49.	33.	11.	5.	3.	4.	3.	2.
391	3.	0.	3.	2.	1.	2.	0.	0.	0.	1.
401	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	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.	3.	0.	0.	0.	0.	1.	0.	0.
481	0.	0.	1.	0.	0.	0.	1.	0.	1.	1.
491	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
511	0.	0.								

Em Bauer
12-3-94

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-074, REV. 0

SAMPLE
S94T000067 sample
File ID: 4a4889.CNF
4.19.95

Counted on: 12/ 3/94 @ 2:21
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	975.3	975.3	365.232	365.232	12.000	3.694	6.000	1.793
2	14.0	14.0	305.536	305.475	8.000	4.166	4.000	1.477
3	50.2	50.2	234.107	234.106	14.000	4.919	7.000	3.089

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	0.936	5.796	5.792	0.004	0.02	26.27	1.7	302.3	0.136E-03
	Cm243		5.786	5.792	-.006				414.1	0.187E-03
2	Pu238	0.016	5.499	5.511	-.012	0.02	0.46	13.6	7.4	0.332E-05
	Am241		5.480	5.511	-.031				5.7	0.255E-05
3	Pu239	0.047	5.143	5.176	-.033	0.02	1.31	7.8	15.1	0.680E-05
	Pu240		5.144	5.176	-.032				15.1	0.680E-05
Totals:		0.999	<--valid peaks only-->				28.04			

DETECTOR CALIBRATION
Energy(MEV) = 4.076 + (0.0047)*Channel
Energy range (MeV): 4.076 TO 6.482
Efficiency = 0.0869 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	13479.0	100.000
Smoothed	13479.0	100.000
Composite fit	13463.4	99.884
Residuals	15.6	0.116

Analyzed by: _____
VR

Spectrum 4a4889.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 6523.5


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Raw Data Dump for AEA Spectrum: 4a4889.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
21	0.	0.	1.	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.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
71	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
81	1.	0.	0.	0.	0.	0.	0.	1.	1.	2.
91	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.
101	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
111	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
121	1.	0.	0.	0.	1.	1.	1.	0.	0.	2.
131	0.	2.	1.	1.	2.	1.	0.	0.	0.	0.
141	2.	0.	2.	1.	0.	1.	1.	1.	1.	2.
151	1.	0.	2.	3.	0.	2.	0.	1.	1.	2.
161	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.
171	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
181	0.	0.	0.	0.	1.	0.	0.	0.	0.	1.
191	0.	0.	0.	0.	0.	1.	1.	1.	2.	1.
201	1.	0.	1.	1.	0.	0.	0.	1.	2.	1.
211	1.	3.	1.	3.	2.	1.	3.	2.	9.	6.
221	8.	13.	8.	13.	17.	16.	19.	23.	31.	30.
231	47.	46.	66.	55.	58.	48.	41.	28.	17.	7.
241	5.	2.	1.	1.	0.	2.	3.	0.	2.	2.
251	1.	0.	1.	0.	7.	3.	6.	13.	12.	8.
261	6.	7.	8.	2.	6.	3.	5.	3.	2.	3.
271	0.	3.	4.	1.	0.	4.	1.	2.	2.	2.
281	2.	2.	1.	0.	2.	2.	4.	2.	5.	7.
291	9.	6.	6.	3.	3.	5.	8.	7.	4.	6.
301	8.	13.	18.	13.	17.	12.	22.	10.	5.	6.
311	4.	2.	3.	1.	3.	1.	0.	4.	4.	3.
321	5.	1.	0.	3.	1.	3.	1.	5.	5.	5.
331	5.	7.	11.	6.	5.	10.	10.	15.	10.	13.
341	17.	18.	25.	22.	31.	43.	53.	68.	82.	124.
351	179.	240.	305.	379.	427.	462.	462.	455.	400.	457.
361	618.	736.	891.	1079.	1180.	1108.	1008.	699.	406.	216.
371	61.	30.	12.	2.	1.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	1.	0.	0.	0.	0.	0.	0.	0.	0.	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.	1.	1.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Em Barker
12-3-94

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-074, REV. 0

SAMPLE
S94T000067 O.S. 4-19-95
File ID: 5a5817.CNF

Counted on: 12/ 3/94 @ 2:22
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	853.7	853.7	363.368	363.368	24.000	20.063	12.000	9.360
2	19.6	19.6	305.393	305.164	24.000	22.971	12.000	3.881
3	97.3	97.3	233.122	233.110	20.000	17.814	10.000	8.345

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
1	Cm243	0.865	5.786	5.773	0.013	0.09	40.39	1.4	823.4	0.371E-03
	Pu236		5.756	5.773	-.017				613.4	0.276E-03
2	Am241	0.030	5.480	5.499	-.019	0.11	1.42	8.8	22.5	0.101E-04
	Pu238		5.499	5.499	0.000				29.3	0.132E-04
3	Pu239	0.094	5.143	5.160	-.017	0.08	4.39	4.3	65.3	0.294E-04
	Pu240		5.144	5.160	-.016				65.3	0.294E-04
Totals:		0.989	<--valid peaks only-->				46.20			

DETECTOR CALIBRATION
Energy(MEV) = 4.065 + (0.0047)*Channel
Energy range (MeV): 4.065 TO 6.471
Efficiency = 0.0672 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	22426.0	100.000
Smoothed	22426.0	100.000
Composite fit	22178.5	98.896
Residuals	247.5	1.104

Analyzed by: _____
VR

Spectrum 5a5817.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 6550.5


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Raw Data Dump for AEA Spectrum: 5a5817.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	3.	0.	0.
21	0.	1.	1.	2.	0.	1.	1.	0.	0.	0.
31	2.	1.	0.	1.	1.	0.	1.	0.	1.	0.
41	2.	0.	1.	2.	0.	1.	0.	1.	0.	2.
51	1.	1.	0.	1.	2.	1.	1.	0.	1.	0.
61	0.	0.	1.	0.	0.	2.	1.	0.	1.	1.
71	1.	0.	0.	1.	0.	1.	0.	1.	0.	0.
81	2.	0.	0.	1.	1.	0.	0.	0.	0.	0.
91	0.	2.	1.	1.	0.	2.	0.	0.	2.	0.
101	1.	1.	2.	1.	0.	0.	1.	1.	2.	2.
111	0.	0.	2.	1.	3.	3.	4.	1.	3.	2.
121	0.	0.	0.	2.	3.	0.	1.	1.	1.	1.
131	1.	3.	1.	0.	2.	1.	2.	1.	1.	3.
141	1.	1.	1.	3.	1.	3.	1.	1.	2.	1.
151	0.	3.	6.	2.	2.	2.	3.	2.	2.	2.
161	3.	0.	4.	2.	3.	1.	2.	1.	0.	3.
171	2.	0.	0.	0.	1.	2.	4.	2.	2.	4.
181	2.	0.	3.	2.	2.	0.	3.	0.	2.	3.
191	2.	1.	2.	0.	0.	1.	1.	2.	3.	2.
201	3.	3.	5.	4.	3.	2.	9.	4.	9.	12.
211	10.	11.	8.	15.	17.	19.	29.	24.	29.	31.
221	43.	53.	51.	53.	76.	68.	69.	90.	85.	89.
231	103.	104.	99.	107.	106.	70.	85.	68.	59.	56.
241	49.	52.	44.	41.	20.	16.	17.	17.	10.	19.
251	14.	4.	11.	12.	9.	11.	14.	15.	9.	15.
261	6.	19.	16.	12.	16.	6.	11.	15.	7.	4.
271	9.	8.	12.	8.	8.	12.	7.	6.	10.	2.
281	3.	7.	2.	7.	8.	5.	2.	5.	12.	9.
291	9.	7.	12.	15.	15.	12.	13.	10.	18.	11.
301	18.	22.	22.	13.	25.	22.	18.	18.	16.	8.
311	23.	16.	13.	13.	18.	11.	11.	12.	16.	11.
321	8.	14.	13.	11.	16.	12.	15.	18.	24.	26.
331	15.	25.	15.	27.	28.	36.	45.	53.	52.	62.
341	101.	110.	115.	110.	148.	180.	227.	258.	285.	319.
351	408.	408.	465.	533.	632.	653.	752.	761.	808.	849.
361	867.	871.	899.	888.	863.	778.	796.	741.	714.	585.
371	515.	469.	338.	296.	243.	205.	149.	113.	99.	70.
381	52.	27.	27.	27.	10.	8.	6.	1.	1.	3.
391	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	1.	0.	0.	1.	0.	0.	0.	0.	1.	0.
421	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.
441	0.	1.	2.	0.	0.	0.	1.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
461	0.	0.	0.	0.	0.	2.	0.	0.	0.	0.
471	0.	0.	0.	1.	0.	3.	2.	1.	1.	0.
481	0.	1.	2.	1.	0.	1.	0.	0.	0.	1.
491	0.	0.	2.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

LABCORE Data Entry Template for Worklist# 216

Analyst: ~~JVS~~ JMV 12.7.94 **Instrument:** PU01 _____ **Method:** LA-503-156 D-1

Worklist Comment: Use 0.1 - 10 - 1 sample size. --LLF **WHC-SD-WM-DP-074, REV. 0**

Seg	Type	Sample#	Rep	Al	Test		Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@PU23902	PU23901	SOLID			N/A	uCi/g
1	BLNK-PREP				@PU23902	PU23901T	SOLID			N/A	% Rec
1	BLNK-PREP				@PU23902	PU23901E	SOLID			N/A	% Ct.
1	BLNK-PREP				@PU23902	PU23801	SOLID			N/A	uCi/g
1	BLNK-PREP				@PU23902	PU23801E	SOLID			N/A	% Ct.
2	STD	83843			@PU23902	PU23901	SOLID			N/A	uCi/g
2	STD				@PU23902	PU23901E	SOLID			N/A	% Ct.
2	STD				@PU23902	PU23901T	SOLID			N/A	% Rec
3	SAMPLE	S94T000067	0		@PU23902	PU23901	SOLID	N/A			uCi/g
3	SAMPLE	S94T000067	0		@PU23902	PU23901T	SOLID	N/A			% Rec
3	SAMPLE	S94T000067	0		@PU23902	PU23901E	SOLID	N/A			% Ct.
3	SAMPLE	S94T000067	0		@PU23902	PU23801	SOLID	N/A			uCi/g
3	SAMPLE	S94T000067	0		@PU23902	PU23801E	SOLID	N/A			% Ct.
4	DUP	S94T000067	0		@PU23902	PU23901	SOLID			N/A	uCi/g
4	DUP	S94T000067	0		@PU23902	PU23901T	SOLID			N/A	% Rec
4	DUP	S94T000067	0		@PU23902	PU23901E	SOLID			N/A	% Ct.
4	DUP	S94T000067	0		@PU23902	PU23801	SOLID			N/A	uCi/g
4	DUP	S94T000067	0		@PU23902	PU23801E	SOLID			N/A	% Ct.

Data Entry Comments:

Units shown for QC (SPK) may not reflect the actual units.

LABCORE Data Entry Template for Worklist# 216

Analyst: JMVS **Instrument:** PU01 _____ **Method:** LA-503-156 D.1

Worklist Comment: Use 0.1 - 10 - 1 sample size. --LLF **WHC-SD-WM-DP-074, REV. 0**

Seg	Type	Sample#	Rep Al	Test	Matrix	Actual	Found	DL	Unit

Final page for worklist # 216

[signature]
Analyst Signature
M G Bielman

12-7-94
Date
12-7-94

Data Entry Comments:

Units shown for QC (SPK) may not reflect the actual units.

2358

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						BLANK
Type	Date Counted		12/08/94	Pu 236 AEA Frac.	(C236)	0.803
BLANK	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)	0
Work List	Sample D.F.	(DF)	101	Pu 239 AEA Frac.	(C239)	0.06
216	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		2563
Test Code	Digest Grams of Solids/L	(Dg/L)	1.82	AT Count Time (min)	(TC)	30
@PU239-01	Tracer Book No.		92B43	Background in cpm	(Bkg)	5
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		18.49
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2086.77	Pu 239 cpm		1.38
S94T67	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/g		3.8977E-01
WC38931	Decay Time = Date Counted - Tracer Preparation Date					
Analyst	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]					
JMV	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV					
Date	Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]					
12/07/94	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)					
Time	Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]					
12:00 PM	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100					

Pu 239/240	µCi/g	=	3.90E-01	DETECTION LEVELS in µCi/g
Relative Counting Error		=	7.9%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238	µCi/g	=	< 3.15E-01	3.15E-01
Relative Counting Error		=	100.0%	Pu 238
Pu 236 Tracer Recovery		=	61.9%	3.15E-01

Data Entry by:	[signature]	Date:	12/08/94
Approved by:	[signature]	Date:	8 Dec 94

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						STANDARD
Type	Date Counted		12/08/94	Pu 236 AEA Frac.	(C236)	0.39
STANDARD	Sample Volume in mL	(SS)	0.100	Pu 238 AEA Frac.	(C238)	0
Work List	Sample D.F.	(DF)	101	Pu 239 AEA Frac.	(C239)	0.696
216	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		7392
Test Code	Digest D.F.	(DDF)	1	AT Count Time (min)	(TC)	30
@PU239-01	Tracer Book No.		92B43	Background in cpm	(Bkg)	5
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		43.96
LIQUID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2086.77	Pu 239 cpm		67.21
S94T67	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/L		1.4509E+02
WC38931						
Analyst						
JMV						
Date						
12/07/94						
Time						
12:00 PM						

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV

Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

				DETECTION LEVELS in µCi/mL
Pu 239/240	µCi/mL	=	1.45E-01	
Relative Counting Error		=	1.7%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238	µCi/mL	=	< 8.09E-03	8.09E-03
Relative Counting Error		=	100.0%	Pu 238
Pu 236 Tracer Recovery		=	90.2%	8.09E-03

Data Entry by: [signature] Date: 12/08/94

Approved by: [signature] Date: 8 Dec 94

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						SAMPLE
Type	Date Counted		12/08/94	Pu 236 AEA Frac.	(C236)	0.882
SAMPLE	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)	0
Work List	Sample D.F.	(DF)	101	Pu 239 AEA Frac.	(C239)	0.064
216	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		3293
Test Code	Digest Grams of Solids/L	(Dg/L)	1.82	AT Count Time (min)	(TC)	30
@PU238-01	Tracer Book No.		92B43	Background in cpm	(Bkg)	5
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		41.66
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2086.77	Pu 239 cpm		3.02
S94T67	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/g		3.7851E-01
WC38931	Decay Time = Date Counted - Tracer Preparation Date					
Analyst	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]					
JMV	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV					
Date	Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]					
12/07/94	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)					
Time	Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]					
12:00 PM	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100					

				DETECTION LEVELS in µCi/g
Pu 239/240	µCi/g	=	3.79E-01	
Relative Counting Error		=	5.3%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238	µCi/g	=	< 2.01E-01	2.01E-01
Relative Counting Error		=	100.0%	Pu 238
Pu 236 Tracer Recovery		=	88.3%	2.01E-01

Data Entry by:	[illegible]	Date:	12/08/94
Approved by:	[illegible]	Date:	8 Dec 94

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						DUPLICATE
Type	Date Counted		12/08/94	Pu 236 AEA Frac.	(C236)	0.884
DUPLICATE	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)	0
Work List	Sample D.F.	(DF)	101	Pu 239 AEA Frac.	(C239)	0.074
216	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		1863
Test Code	Digest Grams of Solids/L	(Dg/L)	1.8967	AT Count Time (min)	(TC)	30
@PU239-01	Tracer Book No.		92B43	Background in cpm	(Bkg)	5
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		19.41
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2086.77	Pu 239 cpm		1.62
S94T67	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/g		4.1901E-01
WC38931	Decay Time = Date Counted - Tracer Preparation Date					
Analyst	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]					
JMV	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV					
Date	Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]					
12/07/94	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)					
Time	Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]					
12:00 PM	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100					

Pu 239/240	µCi/g	=	4.19E-01	DETECTION LEVELS in µCi/g
Relative Counting Error		=	7.3%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238	µCi/g	=	< 3.51E-01	3.51E-01
Relative Counting Error		=	100.0%	Pu 238
Pu 236 Tracer Recovery		=	48.4%	3.51E-01

Data Entry by:	[signature]	Date:	12/08/94
Approved by:	[signature]	Date:	8 Dec 94

Form 503156PC Rev. 2.0

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT WHC-SD-WM-DP-074, REV. 0

SAMPLE
BLANK-216
File ID: 4a4901.CNF

Counted on: 12/ 8/94 @ 2:35
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	584.4	584.4	365.092	365.092	12.000	4.146	6.000	1.572
2	10.3	10.3	326.348	323.531	26.000	1.000	13.000	0.100
3	9.8	9.8	270.514	270.343	14.000	18.519	7.000	1.247
4	59.1	59.1	233.832	233.802	10.000	3.260	5.000	1.985

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	Pu236	0.803	5.756	5.752	0.004	0.02	18.49	2.1	237.7	0.107E-03
2		0.036		5.561		0.00	0.83	11.6	10.5	0.471E-05
3	Am243	0.057	5.276	5.316	-.040	0.09	1.31	8.9	16.7	0.752E-05
4	Pu239	0.060	5.143	5.148	-.005	0.01	1.38	9.5	17.4	0.784E-05
	Pu240		5.144	5.148	-.004				17.4	0.784E-05
Totals:		0.956	<--valid peaks only-->				22.02			

DETECTOR CALIBRATION
Energy(MEV) = 4.073 + (0.0046)*Channel
Energy range (MeV): 4.073 TO 6.428
Efficiency = 0.0794 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	11054.0	100.000
Smoothed	11054.0	100.000
Composite fit	10570.1	95.622
Residuals	483.9	4.378

Analyzed by: [signature]
VR 12/7/94

Spectrum 4a4901.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 4011.3


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Raw Data Dump for AEA Spectrum: 4a4901.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.	2.	1.	2.	0.	2.	1.	3.	2.	2.
31	0.	3.	2.	0.	0.	3.	0.	0.	2.	2.
41	0.	0.	1.	2.	1.	3.	2.	2.	0.	4.
51	1.	3.	3.	0.	1.	1.	1.	1.	1.	2.
61	0.	1.	3.	1.	1.	0.	3.	1.	2.	1.
71	4.	2.	1.	1.	2.	2.	2.	2.	2.	0.
81	1.	3.	2.	1.	2.	1.	0.	3.	3.	4.
91	0.	1.	0.	1.	1.	2.	3.	2.	3.	2.
101	1.	1.	1.	3.	1.	3.	3.	3.	2.	3.
111	2.	3.	3.	1.	1.	2.	2.	5.	4.	3.
121	0.	3.	1.	2.	3.	3.	2.	1.	2.	3.
131	2.	2.	3.	1.	2.	1.	4.	4.	3.	5.
141	4.	1.	4.	3.	3.	1.	2.	1.	5.	7.
151	3.	4.	4.	4.	2.	1.	4.	3.	3.	2.
161	4.	1.	5.	3.	5.	0.	1.	3.	1.	3.
171	7.	3.	4.	7.	3.	2.	5.	1.	6.	2.
181	3.	6.	2.	4.	1.	7.	3.	9.	4.	6.
191	2.	6.	8.	6.	7.	2.	5.	5.	4.	5.
201	7.	8.	8.	13.	7.	5.	6.	4.	5.	6.
211	7.	8.	6.	9.	16.	9.	7.	13.	17.	12.
221	22.	16.	31.	21.	18.	19.	19.	28.	23.	39.
231	63.	61.	61.	89.	71.	45.	41.	29.	12.	12.
241	12.	5.	8.	4.	7.	5.	4.	6.	6.	13.
251	8.	9.	12.	11.	9.	9.	10.	6.	10.	8.
261	9.	10.	8.	13.	14.	9.	14.	7.	8.	16.
271	13.	9.	11.	10.	10.	3.	3.	8.	9.	10.
281	6.	7.	7.	8.	7.	10.	10.	12.	9.	12.
291	13.	9.	14.	9.	13.	10.	10.	13.	10.	14.
301	12.	16.	18.	21.	15.	17.	17.	20.	22.	19.
311	15.	10.	17.	19.	14.	13.	12.	14.	7.	9.
321	11.	20.	14.	18.	20.	21.	15.	20.	18.	12.
331	12.	25.	29.	23.	25.	32.	32.	29.	24.	34.
341	44.	40.	54.	55.	64.	59.	59.	85.	95.	114.
351	148.	204.	254.	307.	310.	317.	327.	302.	341.	322.
361	376.	475.	559.	651.	674.	669.	581.	400.	296.	146.
371	52.	19.	9.	1.	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.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	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.	1.
471	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
481	0.	0.	1.	1.	2.	0.	0.	0.	0.	1.
491	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
STD-216
File ID: 3a3426.CNF

Counted on: 12/ 8/94 @ 2:34
Detector: AEA3
Geometry number: 1
Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	976.0	976.0	364.658	364.658	22.000	15.488	11.000	5.976
2?	22.1	22.1	308.449	308.146	24.000	4.819	12.000	0.963
3?	9.8	9.8	269.291	268.933	26.000	3.554	13.000	13.157
4?	27.1	27.1	261.438	261.438	8.000	0.036	4.000	6.699
5	1592.0	1592.0	231.403	231.403	20.000	13.921	10.000	5.876

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	Cm243	0.390	5.786	5.757	0.029	0.07	43.96	1.3	413.3	0.186E-03
	Pu236		5.756	5.757	-.001				307.8	0.139E-03
2		????		5.497			1.10	9.5		
3		????		5.317			0.18	29.7		
4		????		5.282			0.04	73.4		
5	Pu239	0.596	5.143	5.144	-.001	0.06	67.21	1.1	461.3	0.208E-03
	Pu240		5.144	5.144	0.000				461.3	0.208E-03
Totals:		0.986	<--valid peaks only-->				111.17			

DETECTOR CALIBRATION
Energy(MEV) = 4.080 + (0.0046)*Channel
Energy range (MeV): 4.080 TO 6.435
Efficiency = 0.1457 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	54105.0	100.000
Smoothed	54105.0	100.000
Composite fit	53997.8	99.802
Residuals	107.2	0.198

Analyzed by: M. G. [illegible] 12/8/94 VR

2366

Spectrum 3a3426.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 11565.1


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 1
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Raw Data Dump for AEA Spectrum: 3a3426.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
21	3.	1.	1.	1.	2.	1.	1.	2.	0.	0.
31	2.	2.	2.	1.	0.	0.	1.	0.	1.	1.
41	0.	3.	2.	1.	1.	0.	3.	0.	1.	1.
51	1.	1.	1.	0.	0.	0.	1.	0.	1.	1.
61	1.	4.	0.	3.	1.	2.	1.	3.	0.	2.
71	0.	0.	0.	1.	1.	2.	2.	3.	3.	0.
81	2.	0.	3.	1.	0.	2.	4.	0.	1.	0.
91	0.	2.	1.	1.	0.	1.	0.	1.	2.	2.
101	3.	2.	4.	3.	1.	0.	1.	4.	1.	3.
111	3.	0.	2.	1.	2.	0.	1.	1.	5.	3.
121	3.	2.	0.	1.	1.	2.	0.	3.	2.	3.
131	4.	1.	2.	4.	1.	2.	2.	3.	5.	5.
141	1.	4.	2.	1.	2.	5.	2.	2.	4.	1.
151	4.	4.	1.	3.	3.	4.	4.	4.	4.	6.
161	6.	9.	3.	11.	7.	6.	5.	8.	5.	4.
171	12.	8.	10.	14.	6.	7.	7.	10.	13.	11.
181	9.	8.	9.	13.	17.	14.	9.	13.	12.	24.
191	14.	16.	27.	16.	20.	28.	23.	29.	35.	35.
201	39.	54.	51.	64.	60.	71.	75.	104.	130.	155.
211	199.	201.	249.	273.	325.	405.	479.	512.	629.	739.
221	843.	1018.	1003.	1206.	1342.	1462.	1433.	1562.	1586.	1651.
231	1710.	1653.	1563.	1522.	1445.	1313.	1167.	896.	747.	590.
241	405.	281.	160.	119.	64.	37.	27.	22.	8.	8.
251	6.	8.	5.	2.	11.	6.	10.	9.	10.	6.
261	14.	12.	14.	7.	4.	10.	8.	9.	14.	11.
271	9.	11.	5.	4.	7.	8.	6.	5.	3.	4.
281	8.	4.	7.	3.	6.	10.	3.	6.	11.	8.
291	5.	5.	13.	13.	12.	11.	18.	19.	17.	11.
301	22.	23.	33.	20.	29.	25.	14.	24.	26.	35.
311	9.	16.	21.	11.	9.	8.	15.	6.	10.	7.
321	11.	7.	7.	14.	7.	15.	15.	10.	18.	14.
331	20.	16.	20.	22.	23.	32.	35.	50.	49.	73.
341	78.	80.	112.	126.	150.	180.	234.	233.	265.	328.
351	374.	414.	501.	556.	605.	725.	778.	848.	901.	930.
361	961.	1008.	1019.	1023.	983.	994.	995.	884.	851.	778.
371	673.	574.	425.	312.	218.	131.	77.	40.	31.	11.
381	6.	2.	1.	1.	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.	1.	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.	2.
471	0.	0.	1.	0.	0.	0.	1.	0.	0.	0.
481	0.	0.	0.	0.	0.	2.	0.	1.	1.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
SAM-216
File ID: 5a5830.CNF

Counted on: 12/ 8/94 @ 2:35
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	750.5	750.5	362.360	362.360	28.000	23.840	14.000	7.571
2	11.4	11.4	263.873	263.763	38.000	1.000	19.000	0.100
3	58.7	58.7	233.050	232.903	20.000	15.203	10.000	4.120

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	Cm243	0.882	5.786	5.796	-.010	0.11	41.66	1.4	283.1	0.128E-03
	Cm244		5.796	5.796	0.000				206.6	0.931E-04
2		0.019		5.333		0.00	0.92	9.4	4.6	0.205E-05
3	Pu239	0.064	5.143	5.188	-.045	0.07	3.02	5.7	15.0	0.674E-05
	Pu240		5.144	5.188	-.044				15.0	0.674E-05
Totals:		0.965	<--valid peaks only-->				45.59			

DETECTOR CALIBRATION
Energy(MEV) = 4.093 + (0.0047)*Channel
Energy range (MeV): 4.093 TO 6.500
Efficiency = 0.2016 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	22672.0	100.000
Smoothed	22671.9	100.000
Composite fit	21886.2	96.534
Residuals	785.8	3.466

Analyzed by: M B[illegible]
VR 12/8/94

Spectrum 5a5830.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5749.1


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2
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23.
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1
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Raw Data Dump for AEA Spectrum: 5a5830.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.	2.	1.	1.	1.	3.	0.	0.	0.	1.
31	0.	0.	1.	1.	1.	1.	1.	2.	1.	1.
41	0.	2.	2.	0.	0.	1.	1.	1.	1.	1.
51	0.	2.	1.	2.	0.	0.	1.	1.	2.	2.
61	0.	0.	0.	0.	0.	2.	0.	2.	1.	1.
71	2.	0.	1.	2.	1.	2.	2.	1.	3.	1.
81	1.	2.	3.	4.	0.	1.	0.	0.	0.	1.
91	0.	0.	1.	2.	0.	2.	2.	0.	1.	2.
101	2.	0.	4.	3.	0.	1.	2.	0.	1.	1.
111	0.	1.	0.	0.	3.	2.	2.	1.	2.	1.
121	0.	3.	3.	2.	4.	1.	3.	0.	1.	4.
131	2.	3.	1.	3.	2.	4.	3.	4.	2.	1.
141	2.	3.	7.	4.	3.	4.	3.	3.	3.	8.
151	2.	8.	5.	3.	4.	5.	3.	2.	8.	11.
161	6.	4.	3.	3.	5.	2.	2.	2.	4.	2.
171	3.	4.	4.	5.	0.	4.	1.	3.	1.	1.
181	1.	2.	0.	3.	3.	3.	7.	4.	3.	8.
191	7.	4.	6.	3.	9.	5.	7.	6.	5.	8.
201	6.	4.	7.	8.	13.	14.	9.	7.	11.	14.
211	23.	13.	16.	19.	19.	24.	20.	27.	38.	41.
221	22.	44.	50.	44.	54.	64.	57.	61.	54.	55.
231	65.	59.	75.	58.	61.	62.	57.	37.	40.	37.
241	29.	33.	24.	27.	13.	16.	14.	12.	17.	3.
251	10.	6.	12.	8.	7.	10.	13.	7.	5.	11.
261	13.	10.	14.	11.	11.	13.	9.	7.	7.	8.
271	5.	9.	9.	11.	10.	11.	10.	9.	5.	7.
281	4.	8.	5.	5.	6.	7.	11.	12.	14.	9.
291	13.	12.	19.	21.	9.	16.	16.	12.	20.	23.
301	23.	23.	22.	21.	13.	23.	17.	33.	17.	24.
311	23.	21.	27.	27.	11.	35.	19.	26.	31.	27.
321	32.	35.	46.	49.	33.	39.	49.	57.	64.	65.
331	66.	81.	66.	92.	78.	112.	102.	109.	132.	143.
341	195.	173.	197.	208.	236.	254.	277.	322.	351.	448.
351	440.	473.	566.	592.	591.	651.	649.	699.	778.	759.
361	811.	772.	761.	744.	760.	691.	661.	615.	619.	503.
371	447.	394.	358.	291.	218.	194.	149.	114.	78.	65.
381	42.	24.	17.	20.	8.	6.	3.	2.	2.	1.
391	0.	1.	0.	0.	0.	1.	1.	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.	1.
431	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
441	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
461	1.	0.	2.	1.	0.	0.	0.	0.	2.	1.
471	0.	1.	0.	1.	0.	0.	0.	0.	1.	0.
481	0.	0.	1.	1.	1.	0.	1.	1.	0.	3.
491	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
DUP-216
File ID: 6a6658.CNF

Counted on: 12/ 8/94 @ 2:36
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	553.0	553.0	365.141	365.141	14.000	6.885	7.000	2.689
2	46.7	46.7	232.456	232.456	14.000	6.892	7.000	2.778

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	Pu236	0.884	5.756	5.764	-.008	0.03	19.41	2.0	79.8	0.360E-04
	Cm243		5.786	5.764	0.022				107.2	0.483E-04
2	Pu239	0.074	5.143	5.153	-.010	0.03	1.62	7.0	6.5	0.293E-05
	Pu240		5.144	5.153	-.009				6.5	0.293E-05
		---					---			
Totals:		0.957	<--valid peaks only-->				21.03			

DETECTOR CALIBRATION
Energy(MEV) = 4.084 + (0.0046)*Channel
Energy range (MeV): 4.084 TO 6.439
Efficiency = 0.2481 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	10544.0	100.000
Smoothed	10544.9	100.009
Composite fit	10094.0	95.732
Residuals	450.0	4.268

Analyzed by: M S [illegible]
VR 12/8/94

Spectrum 6a6658.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 4035.9


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2
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1
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Raw Data Dump for AEA Spectrum: 6a6658.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.	1.	0.	0.	1.	1.	0.	1.	0.	1.
31	0.	2.	0.	0.	1.	0.	0.	0.	0.	0.
41	1.	1.	0.	0.	0.	0.	0.	1.	1.	0.
51	1.	1.	1.	1.	0.	1.	0.	0.	0.	1.
61	1.	0.	0.	0.	2.	0.	0.	0.	0.	0.
71	0.	0.	1.	0.	2.	2.	2.	0.	1.	0.
81	0.	1.	0.	1.	0.	0.	1.	0.	0.	0.
91	0.	1.	1.	1.	1.	0.	0.	0.	0.	1.
101	1.	0.	1.	0.	0.	0.	1.	0.	0.	0.
111	1.	0.	0.	1.	2.	1.	0.	1.	1.	1.
121	1.	1.	0.	0.	0.	4.	2.	0.	1.	3.
131	1.	0.	2.	1.	0.	2.	1.	3.	0.	1.
141	3.	0.	3.	2.	2.	2.	4.	2.	2.	4.
151	6.	5.	1.	1.	4.	1.	4.	0.	0.	2.
161	0.	0.	0.	0.	1.	4.	1.	0.	0.	1.
171	0.	0.	0.	2.	4.	1.	0.	1.	0.	0.
181	0.	0.	0.	0.	0.	1.	2.	1.	2.	2.
191	2.	0.	2.	3.	1.	0.	2.	0.	0.	1.
201	3.	1.	2.	2.	0.	3.	2.	1.	5.	3.
211	6.	3.	6.	8.	9.	5.	4.	10.	15.	15.
221	12.	21.	20.	34.	29.	31.	39.	44.	42.	38.
231	44.	48.	58.	45.	38.	29.	27.	18.	14.	5.
241	8.	4.	2.	0.	1.	2.	1.	1.	2.	2.
251	2.	4.	3.	4.	2.	3.	2.	5.	6.	5.
261	4.	9.	4.	7.	6.	7.	7.	4.	9.	2.
271	8.	0.	3.	5.	4.	1.	4.	6.	1.	0.
281	5.	3.	3.	4.	8.	5.	5.	5.	7.	4.
291	7.	9.	4.	9.	3.	9.	3.	6.	6.	3.
301	12.	8.	11.	8.	12.	6.	6.	9.	9.	11.
311	16.	5.	11.	6.	7.	7.	9.	11.	6.	6.
321	4.	12.	9.	9.	7.	11.	13.	10.	11.	11.
331	15.	8.	14.	17.	19.	17.	18.	23.	23.	31.
341	18.	37.	40.	34.	50.	52.	50.	85.	129.	123.
351	149.	156.	213.	259.	282.	312.	310.	350.	410.	405.
361	446.	514.	558.	587.	614.	585.	561.	472.	373.	283.
371	206.	120.	74.	35.	12.	8.	2.	0.	0.	0.
381	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	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.	1.	0.	0.
471	0.	0.	0.	1.	0.	0.	1.	0.	0.	2.
481	0.	0.	1.	2.	0.	0.	1.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

1-21-95 KAD

LABCORE Data Entry Template for Worklist# 312

Analyst: ~~JVSJM~~ **Instrument:** PU01 _____ **Method:** LA-503-156 D-1

Worklist Comment: Sample 299 use 1 mL. Sample 300 use 0.3 mL. --LLF WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test	Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@PU23902 PU23901	SOLID			N/A	uCi/g
1	BLNK-PREP				@PU23902 PU23901T	SOLID			N/A	% Rec
1	BLNK-PREP				@PU23902 PU23901E	SOLID			N/A	% Ct.
1	BLNK-PREP				@PU23902 PU23801	SOLID			N/A	uCi/g
1	BLNK-PREP				@PU23902 PU23801E	SOLID			N/A	% Ct.
2	STD	83B43			@PU23902 PU23901	SOLID			N/A	uCi/g
2	STD				@PU23902 PU23901E	SOLID			N/A	% Ct.
2	STD				@PU23902 PU23901T	SOLID			N/A	% Rec
3	SAMPLE	S94T000299	0		@PU23902 PU23901	SOLID	N/A			uCi/g
3	SAMPLE	S94T000299	0		@PU23902 PU23901T	SOLID	N/A			% Rec
3	SAMPLE	S94T000299	0		@PU23902 PU23901E	SOLID	N/A			% Ct.
3	SAMPLE	S94T000299	0		@PU23902 PU23801	SOLID	N/A			uCi/g
3	SAMPLE	S94T000299	0		@PU23902 PU23801E	SOLID	N/A			% Ct.
4	DUP	S94T000299	0		@PU23902 PU23901	SOLID			N/A	uCi/g
4	DUP	S94T000299	0		@PU23902 PU23901T	SOLID			N/A	% Rec
4	DUP	S94T000299	0		@PU23902 PU23901E	SOLID			N/A	% Ct.
4	DUP	S94T000299	0		@PU23902 PU23801	SOLID			N/A	uCi/g
4	DUP	S94T000299	0		@PU23902 PU23801E	SOLID			N/A	% Ct.
5	SAMPLE	S94T000300	0		@PU23902 PU23901	SOLID	N/A			uCi/g
5	SAMPLE	S94T000300	0		@PU23902 PU23901T	SOLID	N/A			% Rec

Data Entry Comments: STD 83B43 .100-10-.100

Units shown for QC (SPK) may not reflect the actual units.

LABCORE Data Entry Template for Worklist# 312

Analyst: JVS **Instrument:** PU01 _____ **Method:** LA-503-156 D-1

Worklist Comment: Sample 299 use 1 mL. Sample 300 use 0.3 mL. --LLF WHC-SD-WM-DP-074, REV. 0

Seg Type	Sample#	Rep Al	Test	Matrix	Actual	Found	DL	Unit
5 SAMPLE	S94T000300	0	@PU23902 PU23901E	SOLID	N/A			% Ct.
5 SAMPLE	S94T000300	0	@PU23902 PU23801	SOLID	N/A			uCi/g
5 SAMPLE	S94T000300	0	@PU23902 PU23801E	SOLID	N/A			% Ct.
6 DUP	S94T000300	0	@PU23902 PU23901	SOLID			N/A	uCi/g
6 DUP	S94T000300	0	@PU23902 PU23901T	SOLID			N/A	% Rec
6 DUP	S94T000300	0	@PU23902 PU23901E	SOLID			N/A	% Ct.
6 DUP	S94T000300	0	@PU23902 PU23801	SOLID			N/A	uCi/g
6 DUP	S94T000300	0	@PU23902 PU23801E	SOLID			N/A	% Ct.

Final page for worklist # 312

Joseph M LaSant
Analyst Signature

12-27-94
Date
12/29/94

Data Entry Comments:

Units shown for QC (SPK) may not reflect the actual units.

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY
RADCHEM ANALYTICAL BATCH AND SUMMARY SHEET
PLUTONIUM SOLIDS LA-503-156 / D-1

TEST CODE:	@PU239-02	SAMPLE POINT:	0
INSTRUMENT:	WC38931	SAMPLE PREP:	0
ANALYST:	JMV	BATCH ID:	0
		ANALYSIS DATE:	January 3, 1995

Pu 239/240

	UNITS:	µCi/g					
SAMPLE TYPE	SAMPLE ID	Pu 239/240	% REC	DET LIM	%CT ER	AVERAGE	RPD%
STANDARD	83B43	1.60E-01	112.6%	1.17E-02	1.9%		
BLANK	S94T299	< 2.90E-03	56.9%	2.90E-03	100.0%		
SAMPLE 1	S94T299	< 2.42E-03	72.9%	2.42E-03	8.6%	N/A	N/A
DUPLICATE 1	S94T299	< 2.78E-03	62.5%	2.78E-03	11.6%		
SPIKE						N/A	N/A
SAMPLE 2	S94T300	6.67E-02	77.3%	8.15E-03	2.6%	6.23E-02	14.3%
DUPLICATE 2	S94T300	5.79E-02	77.7%	7.75E-03	2.8%		
SPIKE 2						N/A	N/A
STANDARD END							

Pu 238

	UNITS:	µCi/g					
SAMPLE TYPE	SAMPLE ID	Pu 238	% REC	DET LIM	%CT ER	AVERAGE	RPD%
BLANK	S94T299	< 2.90E-03	56.9%	2.90E-03	100.0%		
SAMPLE 1	S94T299	< 2.42E-03	72.9%	2.42E-03	10.9%	N/A	N/A
DUPLICATE 1	S94T299	3.99E-03	62.5%	2.78E-03	6.1%		
SAMPLE 2	S94T300	1.55E-02	77.3%	8.15E-03	4.6%	1.62E-02	8.3%
DUPLICATE 2	S94T300	1.69E-02	77.7%	7.75E-03	4.6%		

NARRATIVE: **Analyst Comments:**

Chemist Comments:

Form Completed By:	MC BIERMAN	Signature:	[signature]	Date:	01/03/95
Chemist Approval:	LL FRITTS	Signature:	[signature]	Date:	6 Jan 95

LAB LEADER INFO:

Method:	LA-503-154 / D-1
Test Code	SP-U238-00
Matrix:	SOLID
Work List #	1912
Batch #	
Prepared By:	MC BIERMAN
Date Complete:	1/6/94
Time Complete:	12:30
Chemist:	LL PRITTS
Analyst:	JMV
Analysis Date:	12/27/93
Instrument Code:	0C30001
Rerun:	
Sample Prep:	
Sample Point:	

Sample Type	Sample #
STANDARD	93K13
BLANK	094T200
SAMPLE 1	094T200
DUPLICATE 1	094T200
SPIKE 1	
SPIKE DUPLICATE 1	
SAMPLE 2	094T200
DUPLICATE 2	094T200
SPIKE 2	
SPIKE DUPLICATE 2	
ST-BKD	

PRINT

TECH INFO:

Standard Run

INPUT

DATE COUNTED	12/30/93
SAMPLE VOLUME in mL	0.100
SAMPLE DILUTION FACTOR	1011.0
TRACER VOLUME in mL	0.100
DIGEST DILUTION FACTOR	1.0
TRACER BOOK NO.	93K13
PU 236 AEA FRAC.	0.330
PU 238 AEA FRAC.	0.000
PU 239 AEA FRAC.	0.372
TOTAL AT COUNTS	5704
AT COUNT TIME (MIN)	20
BACKGROUND in cpm	0.0
PU 236 cpm	36.7
PU 238 cpm	0
PU 239 cpm	46.4
AEA COUNT TIME	400
STANDARD VALUE in µCi/mL	0.102

RESULT

TRACER PREPARATION DATE	09/02/94
PU 236 PREPARATION VALUE	2226.00
PU-236 DECAY CORR'D VALUE	2050.10
PU-236 TRACER VALUE	0.00
PU 239/240:	
DETECTION LEVEL	1.17E-02
CONC in µCi/g	1.00E-01
RELATIVE COUNTING ERROR	1.0%
PU 236 TRACER RECOVERY	71.7%

Solid Blank Run:

INPUT

DATE COUNTED	12/30/93
SAMPLE VOLUME in mL	1.000
SAMPLE DILUTION FACTOR	1.0
TRACER VOLUME in mL	0.100
DIGEST GRAMS of SOLIDS/L	1.0
TRACER BOOK NO.	93K13
PU 236 AEA FRAC.	0.000
PU 238 AEA FRAC.	0.000
PU 239 AEA FRAC.	0.000
TOTAL AT COUNTS	2011
AT COUNT TIME (MIN)	20
BACKGROUND in cpm	0.0
PU 236 cpm	25.600
PU 238 cpm	0.000
PU 239 cpm	0.000
AEA COUNT TIME	400

RESULT

TRACER PREPARATION DATE	09/02/94
PU 236 PREPARATION VALUE	2226.00
PU-236 DECAY CORR'D VALUE	2050.10
PU-236 TRACER VALUE	0.00
PU 239/240:	
DETECTION LEVEL	2.90E-03
CONC in µCi/g	< 2.90E-03
RELATIVE COUNTING ERROR	100.0%
PU 238:	
DETECTION LEVEL	2.90E-03
CONC in µCi/g	< 2.90E-03
RELATIVE COUNTING ERROR	100.0%
PU 236 TRACER RECOVERY	56.9%

Standard End

INPUT

DATE COUNTED	
SAMPLE VOLUME in mL	
SAMPLE DILUTION FACTOR	
TRACER VOLUME in mL	
DIGEST DILUTION FACTOR	
TRACER BOOK NO.	
PU 236 AEA FRAC.	
PU 238 AEA FRAC.	
PU 239 AEA FRAC.	
TOTAL AT COUNTS	
AT COUNT TIME (MIN)	
BACKGROUND in cpm	
PU 236 cpm	
PU 238 cpm	
PU 239 cpm	
AEA COUNT TIME	
STANDARD VALUE in µCi/mL	

RESULT

TRACER PREPARATION DATE	
PU 236 PREPARATION VALUE	
PU-236 DECAY CORR'D VALUE	
PU-236 TRACER VALUE	
PU 239/240:	
DETECTION LEVEL	
CONC in µCi/g	
RELATIVE COUNTING ERROR	
PU 236 TRACER RECOVERY	

Solid Sample Run

INPUT

DATE COUNTED	12/30/94
SAMPLE VOLUME in mL	1.000
SAMPLE DILUTION FACTOR	1.0
TRACER VOLUME in mL	0.100
DIGEST GRAMS of SOLIDS/L	1.2
TRACER BOOK NO.	93K13
PU 236 AEA FRAC.	0.217
PU 238 AEA FRAC.	0.031
PU 239 AEA FRAC.	0.400
TOTAL AT COUNTS	3037
AT COUNT TIME (MIN)	20
BACKGROUND in cpm	7.0
PU 236 cpm	21.450
PU 238 cpm	0.731
PU 239 cpm	1.100
AEA COUNT TIME	400

RESULT

TRACER PREPARATION DATE	09/02/94
PU 236 PREPARATION VALUE	2226.00
PU-236 DECAY CORR'D VALUE	2050.10
PU-236 TRACER VALUE	0.00
PU 239/240:	
DETECTION LEVEL	2.42E-03
CONC in µCi/g	< 2.42E-03
RELATIVE COUNTING ERROR	0.0%
PU 238:	
DETECTION LEVEL	2.42E-03
CONC in µCi/g	< 2.42E-03
RELATIVE COUNTING ERROR	10.0%
PU 236 TRACER RECOVERY	72.5%

Solid Duplicate Run

INPUT

DATE COUNTED	12/30/94
SAMPLE VOLUME in mL	1.000
SAMPLE DILUTION FACTOR	1.0
TRACER VOLUME in mL	0.100
DIGEST GRAMS of SOLIDS/L	1.0
TRACER BOOK NO.	93K13
PU 236 AEA FRAC.	0.201
PU 238 AEA FRAC.	0.000
PU 239 AEA FRAC.	0.310
TOTAL AT COUNTS	2510
AT COUNT TIME (MIN)	20
BACKGROUND in cpm	7.0
PU 236 cpm	19.570
PU 238 cpm	0.000
PU 239 cpm	0.010
AEA COUNT TIME	400

RESULT

TRACER PREPARATION DATE	09/02/94
PU 236 PREPARATION VALUE	2226.00
PU-236 DECAY CORR'D VALUE	2050.10
PU-236 TRACER VALUE	0.00
PU 239/240:	
DETECTION LEVEL	2.79E-03
CONC in µCi/g	< 2.79E-03
RELATIVE COUNTING ERROR	11.5%
PU 238:	
DETECTION LEVEL	2.79E-03
CONC in µCi/g	3.99E-03
RELATIVE COUNTING ERROR	6.1%
PU 236 TRACER RECOVERY	62.5%

Solid Spike Run

INPUT

DATE COUNTED	
SAMPLE VOLUME in mL	
SAMPLE DILUTION FACTOR	
TRACER VOLUME in mL	
DIGEST GRAMS of SOLIDS/L	
TRACER BOOK NO.	
SPIKE (MATRIX) VOLUME IN mL	
SPIKE (MATRIX) DILUTION FACTOR	
SPIKE (MATRIX) VALUE IN µCi/L	
PU 236 AEA FRAC.	
PU 239 AEA FRAC.	
Pu 239/240 µCi/g FROM SAMPLE FORM	

RESULT

TRACER PREPARATION DATE	
PU 236 PREPARATION VALUE	
PU-236 DECAY CORR'D VALUE	
Pu 239/240 µCi/g in SPIKED SAMPLE	
PERCENT SPIKE RECOVERY	

Solid Spike Duplicate Run

INPUT

DATE COUNTED	
SAMPLE VOLUME in mL	
SAMPLE DILUTION FACTOR	
TRACER VOLUME in mL	
DIGEST GRAMS of SOLIDS/L	
TRACER BOOK NO.	
SPIKE (MATRIX) VOLUME IN mL	
SPIKE (MATRIX) DILUTION FACTOR	
SPIKE (MATRIX) VALUE IN µCi/L	
PU 236 AEA FRAC.	
PU 239 AEA FRAC.	
Pu 239/240 µCi/g FROM SAMPLE FORM	

RESULT

TRACER PREPARATION DATE	
PU 236 PREPARATION VALUE	
PU-236 DECAY CORR'D VALUE	
Pu 239/240 µCi/g in SPIKED SAMPLE	
PERCENT SPIKE RECOVERY	

Solid Sample Run 2

INPUT

DATE COUNTED	12/30/94
SAMPLE VOLUME in mL	1.000
SAMPLE DILUTION FACTOR	1.0
TRACER VOLUME in mL	0.100
DIGEST GRAMS of SOLIDS/L	1.2
TRACER BOOK NO.	93K13
PU 236 AEA FRAC.	0.243
PU 238 AEA FRAC.	0.074
PU 239 AEA FRAC.	0.318
TOTAL AT COUNTS	4513
AT COUNT TIME (MIN)	20
BACKGROUND in cpm	7
PU 236 cpm	24.770
PU 238 cpm	6.350
PU 239 cpm	10.900
AEA COUNT TIME	400

RESULT

TRACER PREPARATION DATE	09/02/94
PU 236 PREPARATION VALUE	2226.00
PU-236 DECAY CORR'D VALUE	2050.10
PU-236 TRACER VALUE	0.00
PU 239/240:	
DETECTION LEVEL	8.15E-03
CONC in µCi/g	5.07E-02
RELATIVE COUNTING ERROR	2.0%
PU 238:	
DETECTION LEVEL	8.15E-03
CONC in µCi/g	1.53E-02
RELATIVE COUNTING ERROR	4.5%
PU 236 TRACER RECOVERY	77.3%

Solid Duplicate Run 2

INPUT

DATE COUNTED	12/30/94
SAMPLE VOLUME in mL	1.000
SAMPLE DILUTION FACTOR	1.0
TRACER VOLUME in mL	0.100
DIGEST GRAMS of SOLIDS/L	1.2
TRACER BOOK NO.	93K13
PU 236 AEA FRAC.	0.247
PU 238 AEA FRAC.	0.064
PU 239 AEA FRAC.	0.320
TOTAL AT COUNTS	3504
AT COUNT TIME (MIN)	20
BACKGROUND in cpm	7.0
PU 236 cpm	30.440
PU 238 cpm	6.350
PU 239 cpm	14.610
AEA COUNT TIME	400

RESULT

TRACER PREPARATION DATE	09/02/94
PU 236 PREPARATION VALUE	2226.00
PU-236 DECAY CORR'D VALUE	2050.10
PU-236 TRACER VALUE	0.00
PU 239/240:	
DETECTION LEVEL	7.75E-03
CONC in µCi/g	5.79E-02
RELATIVE COUNTING ERROR	2.0%
PU 238:	
DETECTION LEVEL	7.75E-03
CONC in µCi/g	1.09E-02
RELATIVE COUNTING ERROR	4.5%
PU 236 TRACER RECOVERY	77.3%

Solid Spike Run 2

INPUT

DATE COUNTED	
SAMPLE VOLUME in mL	
SAMPLE DILUTION FACTOR	
TRACER VOLUME in mL	
DIGEST GRAMS of SOLIDS/L	
TRACER BOOK NO.	
SPIKE (MATRIX) VOLUME IN mL	
SPIKE (MATRIX) DILUTION FACTOR	
SPIKE (MATRIX) VALUE IN µCi/L	
PU 236 AEA FRAC.	
PU 239 AEA FRAC.	
Pu 239/240 µCi/g FROM SAMPLE FORM	

RESULT

TRACER PREPARATION DATE	
PU 236 PREPARATION VALUE	
PU-236 DECAY CORR'D VALUE	
Pu 239/240 µCi/g in SPIKED SAMPLE	
PERCENT SPIKE RECOVERY	

Solid Spike Duplicate Run 2

INPUT

DATE COUNTED	
SAMPLE VOLUME in mL	
SAMPLE DILUTION FACTOR	
TRACER VOLUME in mL	
DIGEST GRAMS of SOLIDS/L	
TRACER BOOK NO.	
SPIKE (MATRIX) VOLUME IN mL	
SPIKE (MATRIX) DILUTION FACTOR	
SPIKE (MATRIX) VALUE IN µCi/L	
PU 236 AEA FRAC.	
PU 239 AEA FRAC.	
Pu 239/240 µCi/g FROM SAMPLE FORM	

RESULT

TRACER PREPARATION DATE	
PU 236 PREPARATION VALUE	
PU-236 DECAY CORR'D VALUE	
Pu 239/240 µCi/g in SPIKED SAMPLE	
PERCENT SPIKE RECOVERY	

WHC-SD-WM-DP-074, REV. 0

Form Completed By:	MC BIERMAN	Signature:	Date: 01/03/95
Chemist Approval:	LL PRITTS	Signature:	Date: 1.5.95

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

							BLANK
Type	DATE COUNTED		DEC-29-94	PU 236 AEA FRAC.		(C236)	0.968
BLANK	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC.		(C238)	
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC.		(C239)	
312	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			2025
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	1.746	AT COUNT TIME (MIN)			30
@PU239-02	TRACER BOOK NO.		92B43	BACKGROUND in cpm		(Bkg)	7
Matrix	TRACER PREPARATION DATE		09/02/94	PU 236 cpm			23.500
SOLID	TRACER PREPARATION VALUE (dpm/mL		2226.00	PU 238 cpm			
Sample #	PU-236 DECAY CORR'D VALUE	(dpm/m	2059.16	PU 239 cpm			
S94T299	PU-238 TRACER VALUE	(dpm/	0.00	AEA COUNT TIME			480
Instrument Code				Pu 239/240 µCi/g =		<	2.8961E-03
WC38931							
Analyst	Decay Time = Date Counted - Tracer Preparation Date						
JMV	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]						
Date	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)* 2 *C236*100/Pu-236 Decay Corr'd Value * SPKV						
1/3/95	Pu 239/240 µCi/g = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]						
Time	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery /.100)						
12:30	Pu 238 µCi/g = [(Pu 238 dpm)(DF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]						
	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100						

v RESULTS v

Pu 239/240	µCi/g	=	< 2.90E-03	DETECTION LEVELS in µCi/g
Relative Counting Error		=	100.0%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238	µCi/g	=	< 2.90E-03	2.90E-03
Relative Counting Error		=	100.0%	Pu 238
Pu 236 Tracer Recovery		=	56.9%	2.90E-03

Data Entry by:	[signature]	Date:	03-Jan-95
Approved by:	[signature]	Date:	3 Jan 95

Form WB Rev. 1.0

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						STANDARD
Type	DATE COUNTED		12/28/94	PU 236 AEA FRAC.	(C236)	0.335
STANDARD	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC.	(C238)	
Work List	SAMPLE DILUTION FACTOR	DF	101.0	PU 239 AEA FRAC.	(C239)	0.572
312	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		6764
Test Code	DIGEST DILUTION FACTOR	DDF	1.0	AT COUNT TIME (MIN)		30
@PU239-02	TRACER BOOK NO.		92B43	BACKGROUND in cpm	(Bkg)	5
Matrix	TRACER PREPARATION DATE		09/02/94	PU 236 cpm		35.700
LIQUID	TRACER PREPARATION VALUE (dpm/mL		2226.00	PU 238 cpm		
Sample #	PU-236 DECAY CORR'D VALUE (dpm/m		2059.16	PU 239 cpm		60.900
83B43	PU-238 TRACER VALUE (dpm/		0.00	AEA COUNT TIME		480
Instrument Code				Pu 239/240 µCi/L		1.5996E+02
WC38931						
Analyst	Decay Time = Date Counted - Tracer Preparation Date					
JMV	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]					
Date	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)* 2 *C236*100/Pu-236 Decay Corr'd Value * SPKV					
1/3/95	Pu 239/240 µCi/g = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]					
Time	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)					
12:30	Pu 238 µCi/g = [(Pu 238 dpm)(DF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]					
	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100					

v RESULTS v

				DETECTION LEVELS in µCi/mL
Pu 239/240	µCi/mL	=	1.60E-01	
Relative Counting Error		=	1.9%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238	µCi/mL	=	< 1.17E-02	1.17E-02
Relative Counting Error		=	100.0%	
Pu 236 Tracer Recovery		=	71.7%	

Data Entry by:	[signature]	Date:	03-Jan-95
Approved by:	[signature]	Date:	3 Jan 95

FormWB Rev. 1.0

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

							SAMPLE
TYPE	DATE COUNTED		DEC-28-94	PU 236 AEA FRAC.		(C236)	0.927
SAMPLE	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC.		(C238)	0.03
Work List	SAMPLE DILUTION FACTOR	DF	1.0	PU 239 AEA FRAC.		(C239)	
312	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			2639
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	1.7	AT COUNT TIME (MIN)			30
@PU239-02	TRACER BOOK NO.		92B43	BACKGROUND in cpm		(Bkg)	7
Matrix	TRACER PREPARATION DATE		09/02/94	PU 236 cpm			21.450
SOLID	TRACER PREPARATION VALUE (dpm/m		2226.00	PU 238 cpm			0.700
Sample #	PU-236 DECAY CORR'D VALUE	(dpm/m	2059.16	PU 239 cpm			1.140
S94T298	PU-238 TRACER VALUE	(dpm/	0.00	AEA COUNT TIME			450
Instrument Code				Pu 239/240 µCi/g =		<	2.4222E-03
WC38931							

Analyst
JMV

Date
1/3/95

Time
12:30

Decay Time = Date Counted - Tracer Preparation Date
Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)}]
Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)* 2 *C236*100/Pu-236 Decay Corr'd Value * SPKV
Pu 239/240 µCi/g = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
Pu 238 µCi/g = [(Pu 238 dpm)(DF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

v RESULTS v

Pu 239/240	µCi/g	=	< 2.42E-03	DETECTION LEVELS in µCi/g
Relative Counting Error		=	8.6%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240 2.42E-03
Pu 238	µCi/g	=	< 2.42E-03	
Relative Counting Error		=	10.9%	Pu 238 2.42E-03
Pu 236 Tracer Recovery		=	72.9%	

Data Entry by:	[signature]	Date:	03-Jan-95
Approved by:	[signature]	Date:	3 Jan 95

Form WB Rev 1.0

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

							DUPLICATE
Type	DATE COUNTED		DEC-28-94	PU 236 AEA FRAC.		(C236)	0.891
DUPLICATE	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC.		(C238)	0.069
Work List	SAMPLE DILUTION FACTOR	DF	1.0	PU 239 AEA FRAC.		(C239)	
312	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			2315
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	1.8	AT COUNT TIME (MIN)			30
PU239-02	TRACER BOOK NO.		B2B43	BACKGROUND in cpm		(Bkg)	5
Matrix	TRACER PREPARATION DATE		09/02/94	PU 236 cpm			29.970
SOLID	TRACER PREPARATION VALUE (dpm/m		2226.00	PU 238 cpm			2.330
Sample #	PU-236 DECAY CORR'D VALUE (dpm/		2059.16	PU 239 cpm			0.610
S94T299	PU-238 TRACER VALUE (dp		0.00	AEA COUNT TIME			480
Instrument Code				Pu 239/240 µCi/g =		<	2.7781E-03
WC38931							
Analyst							
JMV							
Date							
1/3/95							
Time							
12:30							

Decay Time = Date Counted - Tracer Preparation Date
Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]
Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)* 2 *C236*100/Pu-236 Decay Corr'd Value * SPKV
Pu 239/240 µCi/g = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
Pu 238 µCi/g = [(Pu 238 dpm)(DF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

v RESULTS v

				DETECTION LEVELS in µCi/g
Pu 239/240	µCi/g	=	< 2.78E-03	
Relative Counting Error		=	11.6%	
				Pu 239/240 2.78E-03
Pu 238	µCi/g	=	3.99E-03	
Relative Counting Error		=	6.1%	Pu 238 2.78E-03
Pu 236 Tracer Recovery		=	62.5%	

Data Entry by:	[signature]	Date:	03-Jan-95
Approved by:	[signature]	Date:	3 Jan 95

Form WB Rev 1.0

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						SAMPLE 2
Type	DATE COUNTED		DEC-28-94	PU 236 AEA FRAC.	(C236)	0.692
SAMPLE 2	SAMPLE VOLUME in mL	SS	0.300	PU 238 AEA FRAC.	(C238)	0.074
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC.	(C239)	0.316
312	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		4312
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	2.531	AT COUNT TIME (MIN)		30
@PU239-02	TRACER BOOK NO.		92B43	BACKGROUND in cpm	(Bkg)	7
Matrix	TRACER PREPARATION DATE		09/02/94	PU 236 cpm		34.770
SOLID	TRACER PREPARATION VALUE (dpm/mL)		2226.00	PU 238 cpm		4.390
Sample #	PU-236 DECAY CORR'D VALUE	(dpm/mL	2059.16	PU 239 cpm		18.980
S94T300	PU-238 TRACER VALUE	(dpm/	0.00	AEA COUNT TIME		480
Instrument Code				Pu 239/240 µCi/g		6.6746E-02
WC38931						
Analyst						
JMV						
Date						
1/3/95						
Time						
12:36						

Decay Time = Date Counted - Tracer Preparation Date
Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)}]
Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)* 2 *C236*100/Pu-236 Decay Corr'd Value * SPKV
Pu 239/240 µCi/g = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
Pu 238 µCi/g = [(Pu 238 dpm)(DF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

v RESULTS v

Pu 239/240	µCi/g	=	6.67E-02	DETECTION LEVELS in µCi/g
Relative Counting Error		=	2.6%	
				Pu 239/240
Pu 238	µCi/g	=	1.55E-02	8.15E-03
Relative Counting Error		=	4.5%	Pu 238
Pu 236 Tracer Recovery		=	77.3%	8.15E-03

Data Entry by:	[signature]	Date:	03-Jan-95
Approved by:	[signature]	Date:	3 Jan 95

Form WB Rev 1.0

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						DUPLICATE 2
Type	DATE COUNTED		DEC-28-94	PU 236 AEA FRAC.	(C236)	0.592
DUPLICATE 2	SAMPLE VOLUME in mL	SS	0.300	PU 238 AEA FRAC.	(C238)	0.084
Work List	SAMPLE DILUTION FACTOR	DF	1.0	PU 239 AEA FRAC.	(C239)	0.288
312	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		4200
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	2.6	AT COUNT TIME (MIN)		30
@PU239-02	TRACER BOOK NO.		92B43	BACKGROUND in cpm	(Bkg)	8
Matrix	TRACER PREPARATION DATE		09/02/94	PU 236 cpm		30.440
SOLID	TRACER PREPARATION VALUE (dpm/mL)		2226.00	PU 238 cpm		4.350
Sample #	PU-236 DECAY CORR'D VALUE	(dpm/m	2059.16	PU 239 cpm		14.810
S94T300	PU-238 TRACER VALUE	(dpm/	0.00	AEA COUNT TIME		480
Instrument Code				Pu 239/240 µCi/g		5.7851E-02
WC38931						
Analyst						
JMV						
Date						
1/3/95						
Time						
12:30						

Decay Time = Date Counted - Tracer Preparation Date
Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]
Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)* 2 *C236*100/Pu-236 Decay Corr'd Value * SPKV
Pu 239/240 µCi/g = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
Pu 238 µCi/g = [(Pu 238 dpm)(DF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

v RESULTS v

				DETECTION LEVELS in µCi/g
Pu 239/240	µCi/g	=	5.79E-02	
Relative Counting Error		=	2.8%	
				Pu 239/240 7.75E-03
Pu 238	µCi/g	=	1.69E-02	
Relative Counting Error		=	4.6%	Pu 238 7.75E-03
Pu 236 Tracer Recovery		=	77.7%	

Data Entry by: [signature] Date: 03-Jan-95
Approved by: [signature] Date: 3 Jan 95
Form WB Rev 1.0

WHC-SD-WM-DP-074, REV. 0

Raymond 12-28-94

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-074, REV. 0

SAMPLE
STANDARD
File ID: 3a3481.CNF

Counted on: 12/28/94 @ 6:20
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	586.1	586.1	351.694	351.502	22.000	16.226	11.000	3.260
2	1025.4	1025.4	218.686	217.948	20.000	13.735	10.000	2.716

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	Cm243	0.335	5.786	5.741	0.045	0.07	35.71	1.5	340.0	0.153E-03
	Pu236		5.756	5.741	0.015				253.2	0.114E-03
2	Pu239	0.572	5.143	5.127	0.016	0.06	60.90	1.1	423.2	0.191E-03
	Pu240		5.144	5.127	0.017				423.2	0.191E-03
		---					---			
Totals:		0.907	<--valid peaks only-->				96.61			

DETECTOR CALIBRATION
Energy(MEV) = 4.124 + (0.0046)*Channel
Energy range (MeV): 4.124 TO 6.479
Efficiency = 0.1439 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	51148.0	100.000
Smoothed	51148.0	100.000
Composite fit	46375.2	90.669
Residuals	4772.8	9.331

Analyzed by: _____
DM

Spectrum 3a3481.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 7448.2


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Raw Data Dump for AEA Spectrum: 3a3481.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	5.	7.	4.	4.
21	8.	10.	9.	7.	5.	7.	9.	7.	9.	8.
31	9.	5.	9.	6.	7.	15.	13.	7.	11.	10.
41	11.	21.	13.	11.	7.	13.	19.	12.	18.	12.
51	6.	7.	7.	8.	17.	13.	14.	18.	21.	12.
61	7.	17.	13.	22.	11.	17.	18.	12.	17.	16.
71	18.	15.	10.	14.	16.	12.	19.	17.	13.	14.
81	16.	10.	12.	25.	28.	16.	20.	18.	20.	20.
91	23.	17.	22.	16.	24.	16.	20.	30.	29.	20.
101	20.	30.	20.	32.	26.	27.	28.	29.	37.	28.
111	21.	30.	19.	36.	31.	40.	28.	26.	47.	40.
121	26.	32.	38.	44.	44.	34.	48.	39.	33.	37.
131	50.	29.	30.	38.	47.	37.	39.	47.	49.	52.
141	50.	38.	43.	42.	61.	53.	66.	54.	52.	59.
151	54.	79.	66.	40.	74.	68.	72.	67.	68.	79.
161	80.	85.	91.	85.	89.	97.	83.	90.	93.	105.
171	100.	102.	94.	107.	105.	147.	119.	124.	123.	157.
181	145.	170.	155.	154.	196.	200.	227.	226.	203.	249.
191	241.	276.	301.	278.	311.	325.	374.	370.	372.	411.
201	426.	468.	522.	587.	608.	609.	728.	719.	780.	767.
211	804.	902.	892.	992.	988.	1058.	1056.	1062.	1084.	1009.
221	909.	910.	776.	708.	562.	452.	357.	250.	174.	102.
231	69.	50.	26.	31.	12.	21.	21.	20.	12.	18.
241	13.	16.	22.	21.	25.	15.	25.	18.	23.	34.
251	28.	31.	21.	22.	30.	23.	26.	24.	36.	24.
261	31.	19.	33.	25.	24.	26.	34.	22.	33.	27.
271	30.	30.	27.	31.	34.	36.	38.	31.	50.	43.
281	35.	48.	36.	48.	38.	44.	46.	44.	47.	44.
291	59.	47.	74.	52.	54.	62.	45.	58.	60.	49.
301	58.	55.	48.	53.	64.	62.	51.	71.	70.	85.
311	79.	70.	82.	76.	76.	104.	97.	101.	121.	100.
321	117.	127.	124.	139.	134.	177.	181.	178.	192.	212.
331	238.	229.	250.	246.	269.	293.	343.	402.	385.	428.
341	442.	472.	479.	476.	539.	506.	555.	576.	621.	609.
351	617.	558.	586.	538.	517.	501.	430.	356.	293.	222.
361	177.	112.	72.	49.	16.	9.	4.	0.	2.	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.	1.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	1.	0.	0.	0.	1.	0.	0.	1.	0.	0.
461	1.	0.	0.	0.	0.	0.	0.	1.	0.	0.
471	0.	1.	0.	0.	0.	0.	0.	1.	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.								

Raymond
12-28-94

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-074, REV. 0

SAMPLE
BLANK
File ID: 2a2751.CNF

Counted on: 12/28/94 @ 6:19
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
1	262.1	262.1	358.426	358.426	26.000	27.363	13.000	3.432

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	Cm243	0.968	5.786	5.742	0.044	0.13	23.52	1.8	271.9	0.122E-03
	Pu236		5.756	5.742	0.014				202.5	0.912E-04
Totals:		0.968	<--valid peaks only-->				23.52			

DETECTOR CALIBRATION
Energy(MEV) = 4.093 + (0.0046)*Channel
Energy range (MeV): 4.093 TO 6.449
Efficiency = 0.1185 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	11659.0	100.000
Smoothed	11659.0	100.000
Composite fit	11289.0	96.826
Residuals	370.0	3.174

Analyzed by: _____
DM

Spectrum 2a2751.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 2050.4


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Raw Data Dump for AEA Spectrum: 2a2751.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	2.	0.
21	1.	0.	2.	0.	0.	0.	1.	1.	0.	0.
31	2.	0.	0.	1.	0.	0.	0.	0.	1.	0.
41	0.	0.	0.	2.	0.	0.	0.	1.	0.	2.
51	0.	1.	0.	1.	1.	1.	0.	0.	1.	0.
61	2.	1.	0.	1.	0.	1.	0.	0.	1.	1.
71	1.	0.	1.	2.	1.	0.	1.	0.	0.	2.
81	1.	0.	2.	1.	1.	1.	1.	2.	1.	1.
91	2.	2.	0.	0.	1.	1.	1.	3.	1.	1.
101	1.	0.	3.	1.	1.	0.	0.	2.	2.	2.
111	0.	1.	1.	0.	1.	2.	2.	0.	1.	1.
121	1.	0.	3.	0.	0.	1.	1.	1.	0.	2.
131	0.	0.	2.	1.	2.	1.	4.	3.	1.	4.
141	1.	3.	0.	1.	1.	2.	2.	1.	0.	0.
151	5.	1.	2.	1.	1.	1.	1.	1.	2.	2.
161	5.	2.	1.	1.	3.	3.	0.	2.	1.	2.
171	1.	3.	1.	1.	1.	4.	3.	1.	4.	4.
181	3.	3.	1.	6.	1.	1.	5.	0.	2.	1.
191	2.	3.	6.	4.	0.	1.	4.	7.	4.	6.
201	2.	1.	5.	5.	4.	5.	6.	4.	3.	3.
211	8.	9.	4.	8.	5.	12.	5.	10.	6.	7.
221	7.	8.	3.	2.	11.	3.	7.	12.	7.	5.
231	4.	6.	4.	5.	11.	14.	6.	4.	10.	9.
241	8.	4.	10.	10.	10.	12.	9.	9.	3.	10.
251	10.	9.	5.	8.	14.	10.	8.	13.	11.	10.
261	8.	16.	12.	16.	15.	14.	11.	10.	23.	12.
271	10.	20.	13.	21.	15.	20.	18.	11.	22.	14.
281	14.	13.	17.	17.	20.	18.	20.	22.	21.	19.
291	27.	22.	29.	32.	24.	30.	21.	12.	35.	31.
301	33.	38.	39.	42.	31.	42.	43.	51.	52.	42.
311	54.	43.	46.	46.	55.	59.	57.	65.	76.	64.
321	77.	74.	73.	75.	74.	92.	77.	97.	111.	93.
331	119.	107.	139.	115.	127.	160.	141.	158.	135.	171.
341	181.	186.	179.	209.	191.	202.	249.	206.	201.	216.
351	247.	256.	254.	242.	265.	268.	268.	266.	262.	267.
361	266.	248.	207.	234.	195.	220.	182.	162.	131.	126.
371	101.	92.	72.	50.	37.	30.	22.	17.	6.	8.
381	4.	0.	0.	2.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	1.	0.	0.	0.	0.	0.	1.	0.	1.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	3.	2.	0.	1.	0.	1.	0.	0.	0.	1.
481	2.	1.	0.	2.	0.	0.	1.	0.	1.	0.
491	0.	0.	0.	1.	0.	0.	0.	0.	0.	1.
511	0.	0.								

Raymond 12-28-94

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-074, REV. 0

SAMPLE
S94T000299SAM
File ID: 4a4952.CNF

Counted on: 12/28/94 @ 6:20
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	619.5	619.5	363.664	363.664	12.000	4.905	6.000	1.693
2	17.2	17.2	304.345	304.021	14.000	5.974	7.000	1.669
3?	5.5	5.5	291.756	290.699	8.000	1.097	4.000	0.359
4	9.0	9.0	262.225	261.915	26.000	21.254	13.000	1.560

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	Pu236	0.927	5.756	5.756	0.000	0.02	21.45	1.9	293.8	0.132E-03
2	Am241	0.030	5.480	5.482	-.002	0.03	0.70	12.2	10.0	0.453E-05
	Pu238		5.499	5.482	0.017				13.1	0.591E-05
3		????		5.420			0.16	39.4		
4	Am243	0.049	5.276	5.288	-.012	0.10	1.14	9.4	15.4	0.694E-05
	Pu240		5.144	5.288	-.144				15.2	0.687E-05
Totals:		1.006	<--valid peaks only-->				23.29			

DETECTOR CALIBRATION
Energy(MEV) = 4.083 + (0.0046)*Channel
Energy range (MeV): 4.083 TO 6.438
Efficiency = 0.0745 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	11109.0	100.000
Smoothed	11109.0	100.000
Composite fit	11254.9	101.313
Residuals	-145.9	-1.313

Analyzed by: _____
DM

Spectrum 4a4952.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 4255.3


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Raw Data Dump for AEA Spectrum: 4a4952.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
21	0.	1.	0.	0.	0.	0.	0.	2.	0.	1.
31	0.	0.	1.	0.	1.	1.	1.	0.	0.	1.
41	0.	0.	0.	0.	0.	0.	0.	2.	0.	0.
51	1.	2.	0.	0.	1.	0.	0.	0.	1.	1.
61	2.	1.	0.	1.	0.	0.	0.	0.	1.	0.
71	0.	0.	1.	0.	1.	1.	1.	1.	0.	0.
81	0.	1.	1.	1.	0.	3.	0.	0.	0.	0.
91	0.	1.	0.	1.	0.	0.	0.	3.	0.	0.
101	3.	0.	0.	0.	0.	1.	3.	0.	1.	0.
111	0.	1.	1.	2.	0.	0.	1.	1.	0.	2.
121	1.	0.	0.	0.	0.	0.	2.	1.	0.	1.
131	3.	2.	1.	0.	0.	0.	1.	2.	4.	1.
141	1.	2.	1.	0.	1.	5.	0.	0.	0.	1.
151	0.	2.	1.	2.	0.	1.	6.	1.	1.	0.
161	0.	1.	1.	2.	3.	2.	1.	1.	1.	2.
171	0.	1.	4.	0.	0.	0.	1.	2.	0.	5.
181	1.	1.	0.	0.	2.	1.	1.	1.	1.	1.
191	2.	0.	1.	2.	3.	2.	2.	2.	4.	3.
201	0.	0.	5.	2.	1.	2.	3.	4.	4.	2.
211	2.	2.	5.	5.	3.	3.	6.	3.	2.	2.
221	0.	8.	6.	5.	7.	6.	6.	3.	11.	9.
231	11.	11.	8.	4.	9.	6.	6.	9.	2.	2.
241	5.	2.	1.	1.	8.	6.	3.	4.	1.	5.
251	9.	6.	5.	8.	7.	6.	9.	9.	9.	6.
261	12.	13.	9.	8.	11.	8.	5.	7.	9.	10.
271	13.	7.	4.	8.	5.	5.	10.	6.	6.	3.
281	3.	5.	3.	5.	5.	9.	16.	11.	9.	9.
291	17.	15.	11.	12.	9.	5.	18.	8.	17.	15.
301	20.	21.	9.	26.	20.	19.	11.	16.	16.	7.
311	7.	9.	3.	11.	7.	6.	10.	14.	7.	9.
321	13.	9.	8.	9.	19.	19.	14.	23.	18.	17.
331	17.	17.	25.	26.	27.	36.	36.	34.	45.	45.
341	44.	63.	65.	85.	83.	95.	100.	150.	153.	200.
351	209.	274.	338.	364.	402.	386.	406.	433.	487.	477.
361	556.	610.	681.	700.	669.	562.	419.	293.	151.	79.
371	24.	15.	2.	1.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	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.	1.	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.	1.	0.
471	0.	1.	0.	1.	0.	0.	0.	0.	0.	1.
481	1.	0.	3.	1.	1.	0.	1.	1.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Raymond 12-28-94

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-074, REV. 0

SAMPLE
S94T000299DUP
File ID: 5a5879.CNF

Counted on: 12/28/94 @ 6:21
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	534.5	534.5	362.965	362.965	24.000	20.117	12.000	5.349
2?	16.8	16.8	309.798	307.948	24.000	6.541	12.000	12.381
3	14.9	14.9	302.577	302.577	24.000	0.026	12.000	0.001
4	6.2	6.2	266.870	266.541	10.000	2.865	5.000	0.244

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm243	0.891	5.786	5.798	-.012	0.09	29.97	1.6	198.2	0.893E-04
	Cm244		5.796	5.798	-.002				144.7	0.652E-04
2		????		5.539			0.43	25.2		
3	Pu238	0.069	5.499	5.514	-.015	0.00	2.33	6.3	15.6	0.703E-05
	Am241		5.480	5.514	-.034				12.0	0.539E-05
4		0.018		5.344		0.01	0.61	22.4	2.9	0.132E-05
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Totals:		0.978	<--valid peaks only-->				32.90			

DETECTOR CALIBRATION
Energy(MEV) = 4.092 + (0.0047)*Channel
Energy range (MeV): 4.092 TO 6.498
Efficiency = 0.2071 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	16153.0	100.000
Smoothed	16152.9	99.999
Composite fit	16000.2	99.054
Residuals	152.8	0.946

Analyzed by: _____
DM

Spectrum 5a5879.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 4071.6


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Raw Data Dump for AEA Spectrum: 5a5879.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	3.	1.	1.	2.
21	1.	3.	1.	0.	4.	2.	0.	2.	0.	3.
31	1.	1.	0.	3.	2.	1.	2.	1.	1.	2.
41	1.	3.	1.	3.	0.	3.	4.	4.	0.	5.
51	4.	2.	0.	0.	1.	1.	1.	1.	3.	0.
61	1.	2.	2.	1.	3.	2.	2.	1.	0.	4.
71	1.	1.	2.	1.	2.	3.	3.	2.	0.	3.
81	1.	3.	1.	1.	1.	5.	0.	2.	1.	1.
91	4.	4.	4.	0.	1.	0.	2.	4.	2.	4.
101	1.	0.	4.	1.	1.	3.	1.	4.	0.	1.
111	5.	1.	1.	2.	0.	4.	3.	1.	0.	0.
121	2.	3.	2.	1.	4.	1.	4.	2.	1.	5.
131	2.	2.	2.	2.	0.	3.	3.	2.	3.	2.
141	6.	1.	3.	5.	3.	3.	4.	4.	3.	2.
151	1.	1.	2.	4.	2.	4.	3.	4.	3.	2.
161	2.	4.	5.	2.	4.	5.	1.	6.	1.	3.
171	0.	3.	5.	0.	5.	4.	2.	3.	3.	3.
181	1.	4.	3.	2.	3.	2.	4.	4.	6.	4.
191	4.	7.	6.	5.	3.	4.	5.	2.	4.	5.
201	1.	4.	5.	5.	7.	11.	6.	7.	7.	9.
211	7.	2.	5.	5.	4.	5.	3.	8.	10.	10.
221	12.	6.	7.	13.	12.	13.	17.	12.	10.	12.
231	15.	14.	13.	8.	17.	10.	15.	9.	9.	17.
241	7.	9.	5.	9.	7.	18.	6.	12.	10.	12.
251	14.	21.	10.	14.	11.	16.	14.	12.	16.	12.
261	11.	18.	11.	16.	12.	20.	13.	21.	13.	14.
271	8.	9.	12.	19.	15.	6.	7.	10.	13.	14.
281	13.	10.	10.	11.	11.	21.	21.	11.	18.	13.
291	13.	24.	20.	15.	22.	16.	24.	22.	22.	18.
301	23.	28.	25.	27.	16.	24.	20.	25.	33.	24.
311	27.	25.	23.	24.	27.	26.	30.	31.	23.	32.
321	36.	24.	32.	36.	35.	43.	37.	38.	28.	48.
331	66.	70.	58.	76.	72.	68.	78.	76.	98.	97.
341	119.	143.	146.	171.	184.	183.	244.	244.	265.	299.
351	351.	361.	383.	438.	441.	427.	491.	520.	531.	568.
361	509.	565.	537.	558.	532.	494.	457.	441.	421.	349.
371	292.	276.	209.	179.	147.	112.	81.	72.	41.	24.
381	19.	22.	11.	10.	0.	0.	0.	2.	1.	0.
391	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	2.	1.	0.	1.	0.	0.	0.	0.
451	0.	1.	0.	0.	0.	0.	1.	0.	0.	1.
461	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
471	1.	1.	1.	1.	2.	0.	0.	0.	2.	0.
481	0.	2.	1.	2.	1.	0.	1.	0.	0.	1.
491	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.
511	0.	0.								

Raymond 12-28-94

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-074, REV. 0

SAMPLE
S94T000300SAM
File ID: 6a6705.CNF

Counted on: 12/28/94 @ 6:22
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	861.3	861.3	363.859	364.651	14.000	7.597	7.000	2.364
2	111.8	111.8	304.726	303.890	14.000	7.252	7.000	2.324
3	15.2	15.2	266.503	264.246	16.000	5.810	8.000	0.779
4	494.3	494.3	230.722	230.324	14.000	7.997	7.000	2.809
5	11.4	11.4	157.116	154.926	22.000	31.107	11.000	6.565

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	Pu236	0.582	5.756	5.760	-.004	0.03	34.77	1.5	143.6	0.647E-04
	Cm243		5.786	5.760	0.026				192.8	0.868E-04
2	Am241	0.074	5.480	5.480	0.000	0.03	4.39	4.5	18.9	0.852E-05
	Pu238		5.499	5.480	0.019				24.7	0.111E-04
3	Am243	0.018	5.276	5.298	-.022	0.03	1.05	10.1	4.3	0.193E-05
4	Pu239	0.318	5.143	5.142	0.001	0.04	18.98	2.1	76.8	0.346E-04
	Pu240		5.144	5.142	0.002				76.8	0.346E-04
5	Pu242	0.013	4.878	4.795	0.083	0.14	0.80	11.5	3.2	0.146E-05
	Np237		4.781	4.795	-.014				3.7	0.168E-05
		---					---			
Totals:		1.005	<--valid peaks only-->				60.00			

DETECTOR CALIBRATION
Energy(MEV) = 4.082 + (0.0046)*Channel
Energy range (MeV): 4.082 TO 6.437
Efficiency = 0.2471 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	28665.0	100.000
Smoothed	28667.0	100.007
Composite fit	28801.1	100.475
Residuals	-136.1	-0.475

2397

Analyzed by: _____
DM

Spectrum 6a6705.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 6151.4


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Raw Data Dump for AEA Spectrum: 6a6705.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	2.	4.	0.
21	3.	4.	1.	3.	2.	1.	2.	3.	5.	6.
31	3.	2.	2.	1.	0.	1.	1.	0.	0.	0.
41	3.	0.	2.	1.	2.	0.	0.	1.	1.	1.
51	0.	1.	1.	0.	1.	1.	2.	0.	1.	0.
61	1.	0.	0.	2.	1.	1.	0.	1.	2.	1.
71	1.	0.	0.	0.	0.	0.	2.	0.	0.	0.
81	1.	1.	0.	1.	2.	0.	1.	0.	3.	2.
91	1.	0.	0.	0.	0.	3.	4.	0.	0.	2.
101	3.	1.	1.	3.	1.	0.	1.	0.	3.	2.
111	0.	2.	1.	1.	3.	3.	2.	1.	1.	5.
121	2.	7.	4.	4.	4.	3.	4.	2.	6.	1.
131	6.	2.	6.	2.	3.	5.	3.	7.	4.	7.
141	3.	7.	3.	6.	6.	6.	6.	8.	5.	11.
151	8.	10.	6.	15.	17.	11.	9.	9.	5.	12.
161	12.	7.	7.	6.	6.	6.	8.	6.	6.	5.
171	9.	7.	7.	7.	4.	8.	8.	15.	3.	9.
181	17.	10.	9.	8.	15.	12.	21.	4.	12.	11.
191	10.	11.	24.	18.	15.	19.	18.	22.	29.	22.
201	29.	28.	38.	27.	43.	35.	48.	52.	57.	71.
211	84.	92.	120.	105.	132.	134.	177.	195.	211.	251.
221	259.	303.	359.	390.	418.	445.	487.	519.	495.	499.
231	551.	511.	452.	376.	289.	198.	177.	119.	66.	47.
241	35.	24.	10.	13.	5.	10.	4.	3.	7.	13.
251	10.	14.	10.	10.	10.	12.	13.	17.	9.	15.
261	17.	12.	7.	32.	16.	14.	15.	16.	16.	11.
271	16.	16.	5.	8.	6.	9.	13.	14.	12.	16.
281	18.	27.	27.	27.	28.	26.	32.	29.	31.	35.
291	42.	44.	48.	54.	67.	76.	84.	98.	88.	84.
301	102.	110.	116.	147.	112.	104.	102.	83.	68.	35.
311	41.	41.	19.	27.	22.	8.	13.	17.	20.	16.
321	18.	22.	26.	27.	26.	15.	26.	35.	33.	35.
331	38.	44.	38.	48.	50.	60.	43.	72.	59.	87.
341	94.	123.	130.	136.	158.	184.	215.	233.	288.	340.
351	365.	454.	478.	551.	512.	650.	728.	773.	727.	806.
361	810.	829.	890.	875.	897.	808.	676.	540.	452.	296.
371	199.	109.	65.	31.	18.	2.	2.	0.	1.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	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.	1.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	1.	0.	0.	0.	0.	0.	0.	1.	1.
481	1.	0.	1.	0.	1.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Raymond
12-28-94

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-074, REV. 0

SAMPLE
S94T000300DUP
File ID: 7a7308.CNF

Counted on: 12/28/94 @ 6:23
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	703.7	703.7	360.473	360.473	14.000	8.738	7.000	2.540
2	83.8	83.8	303.160	302.842	18.000	9.661	9.000	2.131
3?	7.4	7.4	266.320	266.320	20.000	1.014	10.000	2.336
4	365.7	365.7	231.218	231.212	16.000	8.516	8.000	2.774

PEAK RESULTS
Peak Error Limit: 25%

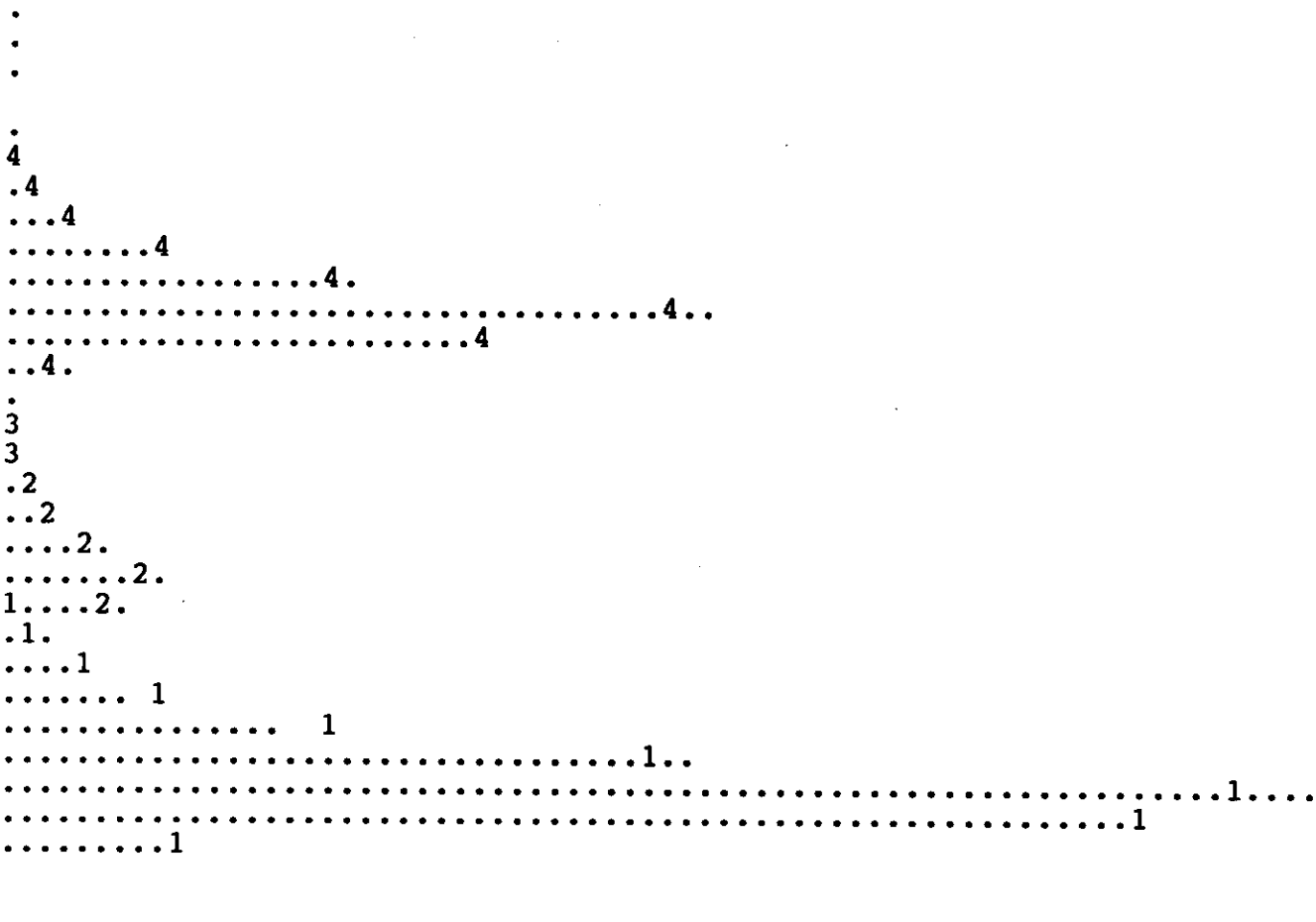
Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm243	0.592	5.786	5.760	0.026	0.04	30.44	1.6	165.1	0.744E-04
	Pu236		5.756	5.760	-.004				123.0	0.554E-04
2	Am241	0.084	5.480	5.489	-.009	0.05	4.35	4.7	18.3	0.825E-05
	Pu238		5.499	5.489	0.010				23.9	0.108E-04
3		????		5.318			0.08	90.3		
4	Pu239	0.288	5.143	5.153	-.010	0.04	14.81	2.3	58.7	0.264E-04
	Pu240		5.144	5.153	-.009				58.7	0.264E-04
		---					---			
Totals:		0.964	<--valid peaks only-->				49.60			

DETECTOR CALIBRATION
Energy(MEV) = 4.066 + (0.0047)*Channel
Energy range (MeV): 4.066 TO 6.472
Efficiency = 0.2525 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	24687.0	100.000
Smoothed	24687.0	100.000
Composite fit	23845.9	96.593
Residuals	841.1	3.407

Analyzed by: _____
DM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Raw Data Dump for AEA Spectrum: 7a7308.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	0.	3.	1.
21	1.	1.	1.	0.	4.	5.	0.	1.	1.	1.
31	3.	2.	1.	5.	0.	2.	2.	0.	1.	0.
41	1.	1.	0.	2.	0.	1.	0.	1.	1.	1.
51	2.	3.	1.	2.	4.	1.	0.	0.	2.	0.
61	0.	0.	2.	0.	0.	0.	2.	1.	1.	3.
71	1.	1.	2.	2.	3.	0.	0.	2.	0.	1.
81	1.	0.	1.	3.	1.	0.	3.	3.	4.	2.
91	2.	0.	4.	1.	2.	3.	0.	2.	3.	0.
101	3.	1.	3.	0.	3.	0.	1.	3.	4.	0.
111	1.	5.	0.	2.	6.	5.	2.	7.	0.	2.
121	2.	4.	4.	1.	2.	7.	2.	2.	5.	6.
131	1.	2.	1.	6.	6.	8.	5.	3.	10.	7.
141	2.	4.	4.	8.	5.	8.	13.	7.	11.	5.
151	11.	13.	16.	9.	13.	5.	14.	12.	10.	11.
161	13.	10.	12.	6.	10.	6.	3.	10.	7.	11.
171	7.	2.	11.	7.	16.	9.	3.	11.	14.	9.
181	9.	11.	11.	12.	13.	16.	21.	12.	14.	20.
191	26.	20.	24.	24.	16.	20.	23.	30.	25.	16.
201	38.	41.	31.	32.	32.	45.	47.	54.	49.	53.
211	60.	74.	83.	80.	91.	130.	117.	130.	156.	169.
221	175.	217.	225.	243.	254.	300.	340.	369.	369.	375.
231	391.	392.	384.	321.	254.	221.	181.	127.	90.	61.
241	34.	20.	14.	9.	9.	9.	9.	7.	7.	12.
251	10.	11.	9.	9.	15.	11.	13.	9.	14.	17.
261	14.	17.	12.	18.	12.	19.	17.	17.	12.	14.
271	13.	17.	16.	16.	22.	20.	15.	16.	19.	15.
281	21.	26.	27.	29.	18.	39.	41.	39.	55.	51.
291	46.	52.	67.	69.	64.	78.	64.	89.	82.	86.
301	78.	108.	89.	96.	88.	87.	71.	68.	54.	45.
311	33.	34.	24.	25.	32.	29.	20.	30.	28.	35.
321	30.	33.	47.	43.	38.	53.	51.	44.	60.	51.
331	75.	60.	74.	77.	92.	71.	107.	102.	122.	124.
341	176.	168.	170.	192.	229.	256.	284.	355.	389.	420.
351	414.	431.	506.	560.	607.	623.	620.	736.	698.	744.
361	762.	713.	663.	578.	465.	392.	262.	189.	110.	75.
371	33.	23.	9.	8.	3.	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.	1.	1.	1.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	1.	0.	0.	1.	0.	0.	1.	1.	1.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	4.	0.								

5/103

LABCORE Data Entry Template for Worklist# 388

Analyst: AKL **Instrument:** PU01 _____ **Method:** LA-503-156 0-1

Worklist Comment: Use a 1 mL sample size. --LLF WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test	Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@PU23902 PU23901	SOLID			N/A	uCi/g
1	BLNK-PREP				@PU23902 PU23901T	SOLID			N/A	% Rec
1	BLNK-PREP				@PU23902 PU23901E	SOLID			N/A	% Ct.
1	BLNK-PREP				@PU23902 PU23801	SOLID			N/A	uCi/g
1	BLNK-PREP				@PU23902 PU23801E	SOLID			N/A	% Ct.
2	STD	83B93			@PU23902 PU23901	SOLID			N/A	uCi/g
2	STD				@PU23902 PU23901E	SOLID			N/A	% Ct.
2	STD				@PU23902 PU23901T	SOLID			N/A	% Rec
3	SAMPLE	S94T000268	0	R	@PU23902 PU23901	SOLID	N/A			uCi/g
3	SAMPLE	S94T000268	0	R	@PU23902 PU23901T	SOLID	N/A			% Rec
3	SAMPLE	S94T000268	0	R	@PU23902 PU23901E	SOLID	N/A			% Ct.
3	SAMPLE	S94T000268	0	R	@PU23902 PU23801	SOLID	N/A			uCi/g
3	SAMPLE	S94T000268	0	R	@PU23902 PU23801E	SOLID	N/A			% Ct.
4	DUP	S94T000268	0	R	@PU23902 PU23901	SOLID			N/A	uCi/g
4	DUP	S94T000268	0	R	@PU23902 PU23901T	SOLID			N/A	% Rec
4	DUP	S94T000268	0	R	@PU23902 PU23901E	SOLID			N/A	% Ct.
4	DUP	S94T000268	0	R	@PU23902 PU23801	SOLID			N/A	uCi/g
4	DUP	S94T000268	0	R	@PU23902 PU23801E	SOLID			N/A	% Ct.
5	SAMPLE	S94T000282	0	R	@PU23902 PU23901	SOLID	N/A			uCi/g
5	SAMPLE	S94T000282	0	R	@PU23902 PU23901T	SOLID	N/A			% Rec

Data Entry Comments:

Units shown for QC (SPK) may not reflect the actual units.

LABCORE Data Entry Template for Worklist# 388

Analyst: AKL **Instrument:** PU01 **Method:** LA-503-156 D-1

Worklist Comment: Use a 1 mL sample size. --LLF

WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test		Matrix	Actual	Found	DL	Unit
5	SAMPLE	S94T000282	0	R	@PU23902	PU23901E	SOLID	N/A			% Ct.
5	SAMPLE	S94T000282	0	R	@PU23902	PU23801	SOLID	N/A			uCi/g
5	SAMPLE	S94T000282	0	R	@PU23902	PU23801E	SOLID	N/A			% Ct.
6	DUP	S94T000282	0	R	@PU23902	PU23901	SOLID			N/A	uCi/g
6	DUP	S94T000282	0	R	@PU23902	PU23901T	SOLID			N/A	% Rec
6	DUP	S94T000282	0	R	@PU23902	PU23901E	SOLID			N/A	% Ct.
6	DUP	S94T000282	0	R	@PU23902	PU23801	SOLID			N/A	uCi/g
6	DUP	S94T000282	0	R	@PU23902	PU23801E	SOLID			N/A	% Ct.

Final page for worklist # 388

Alita Lewis
Analyst Signature

1-11-95
Date

MCBrown

1-12-95

Data Entry Comments:

Units shown for QC (SPK) may not reflect the actual units.

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						BLANK
Type	Date Counted		01/11/95	Pu 236 AEA Frac.	(C236)	0.962
BLANK	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)	0
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)	0
388	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		2674
Test Code	Digest Grams of Solids/L	(Dg/L)	10.1704	AT Count Time (min)	(TC)	30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	4
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		21.81
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2040.05	Pu 239 cpm		0
S94T268	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/g =	<	3.5094E-04
WC38931	Decay Time = Date Counted - Tracer Preparation Date					
Analyst	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]					
AKL	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV					
Date	Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(CZ36) (SS) (D g/L) (2220000dpm/µCi)]					
01/11/95	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)					
Time	Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]					
02:30 PM	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100					

NOTE: Pu 239\240 Result is a LESS THAN Value.

Pu 239/240	µCi/g	=	< 3.51E-04
Relative Counting Error		=	100.0%

NOTE: Pu 238 Result is a LESS THAN Value.

Pu 238	µCi/g	=	< 3.51E-04
Relative Counting Error		=	100.0%
Pu 236 Tracer Recovery		=	80.3%

DETECTION LEVELS in µCi/g	
Pu 239/240	3.51E-04
Pu 238	3.51E-04

Data Entry by: [signature] Date: 01/12/95

Approved by: [signature] Date: 17 Jan 95

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						STANDARD
Type	Date Counted		01/11/95	Pu 236 AEA Frac.	(C236)	0.381
STANDARD	Sample Volume in mL	(SS)	0.100	Pu 238 AEA Frac.	(C238)	0.012
Work List	Sample D.F.	(DF)	101	Pu 239 AEA Frac.	(C239)	0.676
388	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		7497
Test Code	Digest D.F.	(DDF)	1	AT Count Time (min)	(TC)	30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	7
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		41.86
LIQUID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		1.29
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2040.05	Pu 239 cpm		63.18
WORKLIST#388	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/L		1.4032E+02
WC38931						
Analyst						
AKL						
Date						
01/11/95						
Time						
02:30 PM						

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV

Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

				DETECTION LEVELS in µCi/mL
Pu 239/240	µCi/mL	=	1.40E-01	
Relative Counting Error		=	1.8%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238	µCi/mL	=	< 8.05E-03	8.05E-03
Relative Counting Error		=	8.0%	Pu 238
Pu 236 Tracer Recovery		=	90.7%	8.05E-03

Data Entry by:	[signature]	Date:	01/12/95
Approved by:	[signature]	Date:	17 Jan 95

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						SAMPLE
Type	Date Counted		01/11/95	Pu 236 AEA Frac.	(C236)	0.963
SAMPLE	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)	0.016
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)	0.019
388	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		2836
Test Code	Digest Grams of Solids/L	(Dg/L)	10.1704	AT Count Time (min)	(TC)	30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	5
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		40.06
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0.63
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2040.05	Pu 239 cpm		0.8
S94T268	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/g =	<	3.3313E-04
WC38931						
Analyst						
AKL						
Date						
01/11/95						
Time						
02:30 PM						

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of ((-ln2 * Decay Time) / 1040.95)]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV

Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

NOTE: Pu 239\240 Result is a LESS THAN Value.

Pu 239/240	µCi/g	=	< 3.33E-04	DETECTION LEVELS in µCi/g
Relative Counting Error		=	10.1%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240 3.33E-04
Pu 238	µCi/g	=	< 3.33E-04	
Relative Counting Error		=	11.4%	Pu 238 3.33E-04
Pu 236 Tracer Recovery		=	84.5%	

Data Entry by:	[signature]	Date:	01/12/95
Approved by:	[signature]	Date:	17 Jan 95

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						DUPLICATE
Type	Date Counted		01/11/95	Pu 236 AEA Frac.	(C236)	0.98
DUPLICATE	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)	0
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)	0.028
388	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		3092
Test Code	Digest Grams of Solids/L	(Dg/L)	10.1704	AT Count Time (min)	(TC)	30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	7
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		41.06
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2040.05	Pu 239 cpm		1.16
S94T268	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/g =	<	2.9968E-04
WC38931						
Analyst						
AKL						
Date						
01/11/95						
Time						
02:30 PM						

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV

Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

NOTE: Pu 239\240 Result is a LESS THAN Value.

Pu 239/240	µCi/g	=	< 3.00E-04
Relative Counting Error		=	8.4%
NOTE: Pu 238 Result is a LESS THAN Value.			
Pu 238	µCi/g	=	< 3.00E-04
Relative Counting Error		=	100.0%
Pu 236 Tracer Recovery		=	92.3%

DETECTION LEVELS in µCi/g	
Pu 239/240	3.00E-04
Pu 238	3.00E-04

Data Entry by: [signature] Date: 01/12/95

Approved by: [signature] Date: 17 Jan 95

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

							SAMPLE
Type	Date Counted		01/11/95	Pu 236 AEA Frac.		(C236)	0.985
SAMPLE	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.		(C238)	0
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.		(C239)	0.017
388	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts			2878
Test Code	Digest Grams of Solids/L	(Dg/L)	10.0594	AT Count Time (min)		(TC)	30
@PU239-02	Tracer Book No.		92843	Background in cpm		(Bkg)	4
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm			33.87
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm			0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2040.05	Pu 239 cpm			0.68
S94T282	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time		(min)	480
Instrument Code				Pu 239/240 µCi/g =		<	3.1340E-04
WC38931							

Decay Time = Date Counted - Tracer Preparation Date

Analyst
AKL
Date
01/11/95
Time
02:30 PM

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV

Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

NOTE: Pu 239\240 Result is a LESS THAN Value.

Pu 239/240	µCi/g	=	< 3.13E-04	DETECTION LEVELS in µCi/g
Relative Counting Error		=	11.8%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240 3.13E-04
Pu 238	µCi/g	=	< 3.13E-04	
Relative Counting Error		=	100.0%	Pu 238 3.13E-04
Pu 236 Tracer Recovery		=	88.8%	

Data Entry by:	[signature]	Date:	01/12/95
Approved by:	[signature]	Date:	17 Jan 95

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

							DUPLICATE
Type	Date Counted		01/11/95	Pu 236 AEA Frac.	(C236)		0.845
DUPLICATE	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)		0
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)		0.024
388	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts			2879
Test Code	Digest Grams of Solids/L	(Dg/L)	10.0282	AT Count Time (min)	(TC)		30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)		5
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm			36.39
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm			0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2040.05	Pu 239 cpm			1.02
S94T282	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)		480
Instrument Code				Pu 239/240 µCi/g =		<	4.3172E-04
WC38931	Decay Time = Date Counted - Tracer Preparation Date						
Analyst	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]						
AKL	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV						
Date	Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]						
01/11/95	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)						
Time	Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]						
02:30 PM	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100						

NOTE: Pu 239\240 Result is a LESS THAN Value.

Pu 239/240	µCi/g	=	< 4.32E-04
Relative Counting Error		=	9.0%
NOTE: Pu 238 Result is a LESS THAN Value.			
Pu 238	µCi/g	=	< 4.32E-04
Relative Counting Error		=	100.0%
Pu 236 Tracer Recovery		=	75.4%

DETECTION LEVELS in µCi/g	
Pu 239/240	4.32E-04
Pu 238	4.32E-04

Data Entry by:	[signature]	Date:	01/12/95
Approved by:	[signature]	Date:	17 Jan 95

Form 503156PC Rev. 2.0

A Johnson 1-12-5

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-074, REV. 0**

SAMPLE
S94T268-BLANK
File ID: 4a4985.CNF

Counted on: 1/11/95 @19:57
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	760.1	760.1	365.170	365.170	12.000	3.815	6.000	1.667

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	Cm244	0.962	5.796	5.780	0.016	0.02	21.81	1.9	139.6	0.629E-04
	Cm243		5.786	5.780	0.006				191.2	0.861E-04
Totals:		0.962	<--valid peaks only-->				21.81			

DETECTOR CALIBRATION
Energy(MEV) = 4.064 + (0.0047)*Channel
Energy range (MeV): 4.064 TO 6.470
Efficiency = 0.1562 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	10886.0	100.000
Smoothed	10886.0	100.000
Composite fit	10467.7	96.157
Residuals	418.3	3.843

Analyzed by: _____
EMB

Spectrum 4a4985.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5120.4


```
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1.
...1
.......... 1
..............................1..
.................................................................1
................1.
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Raw Data Dump for AEA Spectrum: 4a4985.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	1.	0.	0.	0.	1.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	1.	0.	1.	0.	0.	0.	0.	0.	0.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
101	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
111	1.	0.	0.	0.	0.	0.	0.	2.	0.	0.
121	0.	0.	0.	0.	0.	0.	1.	0.	2.	0.
131	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.
141	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
151	0.	0.	0.	1.	1.	0.	0.	0.	1.	0.
161	0.	0.	1.	0.	0.	0.	0.	0.	1.	1.
171	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
181	1.	1.	0.	0.	0.	0.	0.	2.	0.	1.
191	0.	0.	0.	0.	1.	1.	1.	1.	0.	0.
201	1.	0.	0.	0.	1.	0.	1.	0.	2.	1.
211	0.	0.	2.	1.	0.	0.	0.	2.	2.	1.
221	2.	2.	0.	0.	3.	2.	2.	0.	3.	1.
231	3.	3.	1.	7.	6.	4.	0.	2.	1.	0.
241	2.	1.	1.	0.	1.	1.	1.	1.	0.	1.
251	0.	1.	1.	0.	0.	1.	2.	1.	2.	1.
261	6.	1.	1.	2.	2.	0.	1.	1.	1.	2.
271	3.	0.	4.	4.	3.	0.	1.	2.	3.	2.
281	0.	1.	4.	0.	2.	1.	4.	5.	7.	6.
291	12.	7.	6.	4.	6.	6.	6.	4.	4.	1.
301	3.	5.	8.	8.	5.	10.	3.	6.	12.	5.
311	3.	8.	6.	7.	5.	16.	7.	14.	10.	7.
321	11.	8.	9.	12.	13.	9.	14.	11.	15.	17.
331	26.	17.	16.	28.	17.	38.	37.	25.	27.	28.
341	30.	39.	38.	51.	43.	52.	63.	71.	121.	126.
351	159.	221.	242.	332.	384.	364.	379.	354.	373.	395.
361	480.	555.	724.	848.	883.	906.	758.	539.	310.	155.
371	82.	25.	12.	0.	1.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
411	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	1.	0.	1.	0.	0.	0.	0.	1.	0.	0.
431	0.	0.	0.	1.	0.	0.	2.	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.	0.	0.	0.	0.	1.	0.	0.	0.
481	0.	1.	0.	0.	1.	0.	1.	0.	0.	0.
491	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
S94T268-STD
File ID: 3a3518.CNF

Counted on: 1/11/95 @19:57
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	923.5	923.5	356.666	356.666	14.000	6.490	7.000	1.578
2	19.6	19.6	300.088	298.942	12.000	3.060	6.000	0.408
3	1585.4	1585.4	223.136	223.135	14.000	6.423	7.000	1.917

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	Pu236	0.381	5.756	5.768	-.0120	.03	41.85	1.4	294.7	0.133E-03
	Cm243		5.786	5.768	0.018				395.6	0.178E-03
2	Pu238	0.012	5.499	5.503	-.0040	.01	1.29	11.3	12.4	0.556E-05
	Am241		5.480	5.503	-.023				9.5	0.426E-05
3	Pu239	0.576	5.143	5.154	-.0110	.03	63.18	1.1	436.0	0.196E-03
	Pu240		5.144	5.154	-.010				436.0	0.196E-03
		---					---			
Totals:		0.968	<--valid peaks only-->				106.32			

DETECTOR CALIBRATION
Energy(MEV) = 4.128 + (0.0046)*Channel
Energy range (MeV): 4.128 TO 6.483
Efficiency = 0.1449 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	52702.0	100.000
Smoothed	52702.0	100.000
Composite fit	51040.9	96.848
Residuals	1661.1	3.152

Analyzed by: _____
EMB

Spectrum 3a3518.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 10917.9


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Raw Data Dump for AEA Spectrum: 3a3518.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.	0.	0.	0.	2.	0.	1.	0.
31	1.	0.	1.	2.	0.	1.	3.	0.	2.	0.
41	1.	2.	0.	1.	0.	1.	1.	1.	1.	0.
51	1.	1.	1.	2.	1.	0.	1.	2.	1.	1.
61	1.	1.	1.	0.	1.	1.	1.	2.	1.	1.
71	1.	2.	0.	4.	2.	2.	1.	0.	4.	1.
81	1.	2.	0.	2.	3.	3.	2.	2.	2.	4.
91	1.	5.	1.	3.	4.	4.	3.	6.	3.	3.
101	2.	3.	3.	3.	1.	2.	3.	4.	3.	3.
111	5.	6.	4.	5.	9.	9.	5.	9.	10.	3.
121	6.	7.	7.	9.	7.	4.	11.	7.	8.	3.
131	9.	9.	13.	11.	9.	15.	8.	11.	17.	15.
141	10.	17.	19.	15.	17.	12.	22.	17.	18.	13.
151	18.	23.	23.	24.	21.	29.	29.	26.	24.	26.
161	46.	34.	29.	29.	41.	28.	47.	47.	51.	48.
171	49.	49.	59.	57.	61.	55.	62.	65.	86.	81.
181	101.	72.	90.	79.	107.	107.	114.	122.	128.	140.
191	178.	169.	192.	173.	220.	223.	225.	232.	269.	280.
201	323.	294.	363.	374.	357.	434.	477.	510.	547.	576.
211	667.	739.	806.	872.	923.	1020.	1090.	1185.	1306.	1439.
221	1593.	1716.	1716.	1768.	1547.	1358.	1145.	781.	502.	314.
231	169.	90.	32.	23.	8.	4.	4.	3.	1.	4.
241	2.	4.	2.	4.	3.	3.	3.	3.	6.	7.
251	4.	7.	3.	6.	7.	8.	5.	9.	8.	9.
261	6.	8.	10.	13.	6.	10.	10.	8.	10.	10.
271	9.	16.	9.	14.	11.	15.	14.	15.	18.	21.
281	15.	17.	15.	16.	20.	28.	20.	30.	21.	19.
291	24.	33.	38.	36.	32.	23.	32.	37.	48.	46.
301	37.	39.	37.	32.	33.	28.	41.	35.	35.	32.
311	37.	39.	46.	47.	65.	49.	61.	69.	61.	76.
321	91.	76.	88.	84.	115.	108.	99.	120.	118.	145.
331	145.	152.	206.	186.	190.	232.	244.	289.	248.	293.
341	336.	390.	464.	481.	533.	588.	602.	660.	700.	679.
351	783.	752.	829.	830.	945.	990.	995.	968.	887.	747.
361	543.	360.	261.	141.	62.	25.	4.	2.	0.	0.
371	0.	0.	0.	0.	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.	1.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
431	0.	0.	0.	1.	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.	1.	0.	0.
471	0.	0.	1.	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	1.	0.								

A B Johansen 1-12-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
S94T268-SAM
File ID: 5a5912.CNF

Counted on: 1/11/95 @19:58
Detector: AEA5
Geometry number: 1
Count time: 28800. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	816.7	816.7	362.982	362.982	22.000	20.443	11.000	8.317
2?	10.0	10.0	312.670	311.698	26.000	2.546	13.000	12.855
3	10.1	10.1	301.614	301.292	14.000	3.431	7.000	0.493
4	17.7	17.7	229.878	229.852	24.000	16.717	12.000	7.167

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	Cm243	0.963	5.786	5.782	0.004	0.10	40.08	1.4	382.3	0.172E-03
	Cm244		5.796	5.782	0.014				279.1	0.126E-03
2		????		5.541			0.16	35.1		
3	Pu238	0.015	5.499	5.492	0.007	0.02	0.63	12.8	6.1	0.275E-05
	Am241		5.480	5.492	-.012				4.7	0.211E-05
4	Pu239	0.019	5.143	5.156	-.013	0.08	0.80	10.5	5.5	0.250E-05
	Pu240		5.144	5.156	-.012				5.5	0.250E-05
		---					---			
Totals:		0.997	<--valid peaks only-->				41.51			

DETECTOR CALIBRATION
Energy(MEV) = 4.076 + (0.0047)*Channel
Energy range (MeV): 4.076 TO 6.482
Efficiency = 0.1436 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	19974.0	100.000
Smoothed	19974.0	100.000
Composite fit	19999.4	100.127
Residuals	-25.4	-0.127

Analyzed by: _____
EMB

Spectrum 5a5912.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 6237.8


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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.	1.	0.	1.	0.
21	0.	0.	1.	1.	0.	0.	1.	0.	1.	1.
31	0.	0.	0.	1.	2.	0.	1.	1.	0.	2.
41	0.	0.	2.	0.	0.	0.	1.	2.	0.	2.
51	0.	1.	1.	1.	0.	1.	0.	1.	0.	0.
61	0.	0.	0.	0.	0.	0.	1.	1.	0.	1.
71	0.	0.	0.	1.	0.	2.	1.	1.	1.	0.
81	2.	1.	0.	3.	1.	1.	0.	2.	0.	0.
91	1.	1.	2.	0.	0.	1.	0.	0.	0.	0.
101	2.	0.	1.	0.	0.	1.	0.	0.	0.	0.
111	0.	0.	2.	1.	1.	0.	0.	1.	2.	2.
121	1.	2.	0.	0.	1.	1.	1.	0.	0.	1.
131	0.	0.	0.	1.	3.	0.	2.	0.	1.	0.
141	1.	2.	0.	2.	1.	2.	0.	0.	0.	1.
151	0.	0.	0.	2.	2.	0.	2.	0.	0.	1.
161	2.	0.	1.	3.	2.	3.	1.	2.	0.	0.
171	2.	1.	0.	2.	0.	3.	1.	0.	1.	3.
181	1.	2.	0.	2.	0.	2.	1.	1.	1.	2.
191	0.	0.	0.	2.	2.	0.	2.	1.	1.	1.
201	0.	0.	6.	1.	2.	6.	0.	3.	3.	2.
211	7.	1.	4.	3.	3.	5.	8.	10.	4.	13.
221	10.	3.	12.	9.	18.	12.	15.	19.	20.	20.
231	23.	14.	13.	16.	11.	17.	11.	12.	13.	8.
241	9.	4.	7.	3.	2.	3.	2.	2.	1.	3.
251	1.	4.	2.	2.	1.	4.	1.	3.	2.	1.
261	1.	1.	4.	6.	0.	6.	3.	4.	1.	3.
271	4.	4.	5.	3.	5.	4.	6.	2.	6.	5.
281	2.	4.	7.	5.	8.	2.	10.	4.	8.	6.
291	10.	9.	6.	7.	9.	13.	8.	4.	6.	16.
301	12.	13.	12.	10.	9.	7.	6.	8.	10.	11.
311	8.	13.	19.	7.	13.	5.	9.	7.	6.	12.
321	10.	8.	11.	18.	17.	14.	15.	12.	29.	31.
331	13.	25.	28.	39.	41.	47.	51.	60.	82.	88.
341	105.	118.	114.	156.	181.	221.	248.	285.	358.	352.
351	443.	480.	532.	575.	617.	612.	707.	775.	822.	805.
361	805.	854.	878.	802.	806.	764.	731.	719.	634.	546.
371	465.	429.	299.	283.	217.	161.	146.	100.	64.	49.
381	33.	13.	12.	12.	3.	7.	0.	2.	0.	1.
391	1.	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.	1.	0.	0.	0.	0.	0.
421	1.	0.	0.	0.	0.	0.	0.	1.	0.	1.
431	0.	0.	1.	0.	0.	0.	1.	0.	1.	0.
441	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
451	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
461	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.
471	0.	1.	0.	0.	3.	0.	0.	1.	0.	0.
481	0.	0.	0.	1.	3.	0.	0.	0.	1.	0.
491	1.	0.	0.	0.	0.	1.	0.	0.	0.	0.
511	0.	0.								

A Johnson 1-12-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
S94T268-DUP
File ID: 6a6736.CNF

Counted on: 1/11/95 @19:59
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	987.6	987.6	364.176	364.176	16.000	8.836	8.000	2.784
2	5.4	5.4	304.554	303.377	18.000	1.437	9.000	0.111
3	30.9	30.9	231.370	231.341	16.000	7.033	8.000	2.439

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	Cm243	0.980	5.786	5.756	0.030	0.04	41.06	1.4	462.5	0.208E-03
	Pu236		5.756	5.756	0.000				344.5	0.155E-03
2	Am241	0.013	5.480	5.476	0.004	0.01	0.56	14.6	4.9	0.220E-05
3	Pu239	0.028	5.143	5.145	-.002	0.03	1.16	8.9	9.5	0.429E-05
	Pu240		5.144	5.145	-.001				9.5	0.429E-05
Totals:		1.021	<--valid peaks only-->				42.77			

DETECTOR CALIBRATION
Energy(MEV) = 4.081 + (0.0046)*Channel
Energy range (MeV): 4.081 TO 6.436
Efficiency = 0.1216 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	20107.0	100.000
Smoothed	20106.8	99.999
Composite fit	20533.9	102.123
Residuals	-426.9	-2.123

Analyzed by: EMB

Spectrum 6a6736.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 7445.0


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Raw Data Dump for AEA Spectrum: 6a6736.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	1.	0.	1.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	1.	0.	1.	0.	0.	0.	0.
51	0.	0.	1.	0.	0.	0.	0.	1.	0.	0.
61	1.	0.	0.	0.	0.	1.	0.	0.	0.	0.
71	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
91	0.	0.	0.	1.	0.	1.	3.	1.	0.	0.
101	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.
111	1.	2.	1.	1.	1.	2.	0.	0.	0.	0.
121	1.	1.	0.	1.	0.	0.	1.	1.	0.	1.
131	0.	0.	0.	1.	0.	0.	1.	0.	1.	1.
141	1.	0.	1.	2.	1.	0.	0.	0.	1.	0.
151	1.	0.	0.	1.	1.	0.	0.	0.	0.	0.
161	0.	0.	0.	1.	0.	1.	0.	0.	0.	1.
171	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
181	0.	0.	0.	0.	1.	1.	1.	0.	3.	0.
191	0.	2.	3.	1.	0.	0.	3.	0.	5.	2.
201	0.	0.	3.	1.	1.	6.	1.	6.	5.	3.
211	6.	7.	8.	10.	11.	6.	6.	10.	16.	15.
221	14.	18.	25.	16.	24.	26.	25.	31.	31.	27.
231	41.	30.	31.	27.	29.	19.	13.	6.	9.	3.
241	3.	4.	3.	3.	0.	0.	2.	0.	0.	0.
251	1.	0.	2.	2.	1.	2.	2.	1.	4.	2.
261	1.	1.	1.	1.	0.	1.	2.	4.	5.	3.
271	5.	1.	3.	2.	1.	4.	4.	2.	3.	5.
281	2.	7.	2.	5.	10.	4.	6.	9.	5.	10.
291	8.	5.	4.	9.	7.	8.	7.	9.	11.	10.
301	10.	6.	11.	11.	14.	11.	7.	10.	7.	5.
311	7.	7.	4.	1.	4.	7.	2.	2.	4.	8.
321	7.	7.	5.	14.	13.	10.	8.	19.	20.	25.
331	19.	21.	29.	28.	38.	37.	46.	54.	62.	67.
341	116.	119.	117.	177.	186.	196.	247.	262.	321.	372.
351	413.	531.	538.	610.	666.	708.	761.	784.	872.	910.
361	963.	971.	1057.	1046.	1021.	992.	951.	769.	629.	492.
371	357.	207.	98.	66.	28.	9.	5.	1.	1.	0.
381	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
411	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
421	1.	0.	0.	0.	0.	0.	1.	0.	0.	1.
431	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
S94T282-SAM
File ID: 7a7338.CNF

Counted on: 1/11/95 @19:59
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	1012.3	1012.3	361.920	361.920	16.000	8.133	8.000	4.016
2	16.8	16.8	230.313	230.313	20.000	11.201	10.000	7.975

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	Pu236	0.985	5.756	5.764	-.008	0.04	33.87	1.5	294.2	0.133E-03
	Cm243		5.786	5.764	0.022				394.9	0.178E-03
2	Pu239	0.017	5.143	5.146	-.003	0.05	0.58	11.7	4.9	0.223E-05
	Pu240		5.144	5.146	-.002				4.9	0.223E-05
		---					---			
Totals:		1.002	<--valid peaks only-->				34.45			

DETECTOR CALIBRATION
Energy(MEV) = 4.063 + (0.0047)*Channel
Energy range (MeV): 4.063 TO 6.470
Efficiency = 0.1175 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	16513.0	100.000
Smoothed	16513.0	100.000
Composite fit	16538.2	100.153
Residuals	-25.2	-0.153

Analyzed by: _____
EMB

Spectrum 7a7338.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 6657.0


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```

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.	1.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
61	1.	0.	0.	0.	1.	0.	0.	0.	1.	1.
71	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	0.	1.	1.	0.	0.	0.	1.	0.	0.	0.
101	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
111	0.	0.	0.	0.	0.	0.	2.	0.	0.	1.
121	0.	0.	1.	0.	0.	0.	0.	0.	1.	0.
131	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
141	1.	0.	0.	0.	1.	0.	0.	0.	1.	0.
151	1.	1.	1.	0.	0.	0.	0.	1.	0.	1.
161	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
171	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
181	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
191	0.	0.	0.	3.	0.	3.	0.	1.	0.	0.
201	0.	0.	4.	0.	0.	1.	0.	2.	1.	2.
211	0.	1.	1.	1.	0.	3.	3.	4.	2.	7.
221	7.	4.	14.	5.	14.	8.	13.	19.	17.	22.
231	14.	20.	10.	15.	14.	20.	7.	5.	6.	3.
241	4.	1.	0.	2.	1.	0.	1.	1.	0.	0.
251	1.	0.	1.	0.	1.	2.	0.	1.	1.	0.
261	1.	1.	0.	1.	0.	1.	1.	0.	4.	4.
271	4.	1.	3.	2.	1.	0.	4.	4.	3.	3.
281	1.	2.	1.	1.	3.	4.	8.	7.	4.	8.
291	6.	6.	5.	5.	5.	4.	11.	7.	3.	7.
301	5.	10.	6.	12.	7.	8.	8.	2.	5.	4.
311	1.	1.	1.	0.	2.	0.	3.	3.	2.	1.
321	2.	1.	0.	1.	3.	4.	5.	3.	6.	9.
331	5.	7.	6.	9.	8.	23.	9.	18.	19.	25.
341	27.	36.	49.	71.	92.	141.	199.	242.	252.	306.
351	386.	451.	551.	567.	572.	728.	788.	879.	985.	1076.
361	1080.	1101.	1060.	1019.	837.	656.	520.	390.	311.	195.
371	101.	56.	41.	23.	7.	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.	1.
421	0.	0.	0.	0.	0.	1.	2.	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.	1.
471	0.	1.	0.	0.	0.	0.	0.	2.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	6.	0.								

A Johnson 1-12-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
S94T282-DUP
File ID: 8a8510.CNF

Counted on: 1/11/95 @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	1218.6	1218.6	364.573	364.573	12.000	5.978	6.000	3.089
2	17.6	17.6	260.312	260.311	34.000	59.062	17.000	24.317
3?	20.0	20.0	243.262	243.262	14.000	0.000	7.000	6.451
4	20.0	20.0	234.408	233.493	14.000	7.482	7.000	1.582
5	6.0	6.0	217.714	215.022	12.000	3.671	6.000	0.071
6	12.1	12.1	173.138	171.784	24.000	32.840	12.000	14.961
7	10.3	10.3	149.041	149.041	24.000	16.542	12.000	1.417
8?	7.4	7.4	104.619	104.444	28.000	21.659	14.000	14.677
9?	3.2	3.2	94.619	93.662	6.000	0.510	3.000	0.417
10	18.4	18.4	48.902	48.844	30.000	5.969	15.000	15.409
11	17.2	17.2	38.358	37.822	10.000	2.344	5.000	0.124

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	0.845	5.796	5.792	0.004	0.03	36.39	1.5	131.0	0.590E-04
	Cm243		5.786	5.792	-.006				179.5	0.808E-04
2	Am243	0.032	5.276	5.302	-.026	0.28	1.36	7.7	4.9	0.223E-05
	Pu240		5.144	5.302	-.158				4.9	0.220E-05
3		????		5.222			0.00	1000.		
4	Pu239	0.024	5.143	5.176	-.033	0.04	1.02	10.3	3.7	0.165E-05
	Pu240		5.144	5.176	-.032				3.7	0.165E-05
5		0.038		5.090		0.02	1.66	8.0	6.0	0.269E-05
6	Np237	0.016	4.781	4.886	-.105	0.15	0.71	19.3	2.9	0.132E-05
	Pu242		4.878	4.886	-.008				2.6	0.115E-05
7	Np237	0.025	4.640	4.779	-.139	0.08	1.10	13.3	65.9	0.297E-04
	Np237		4.781	4.779	0.002				4.5	0.205E-05
8		????		4.570			0.34	33.9		
9		????		4.519			0.04	202.		
10		0.010		4.308		0.03	0.45	18.3	1.6	0.725E-06
11		0.026		4.257		0.01	1.12	9.9	4.0	0.182E-05
Totals:		1.017	<--valid peaks only-->				43.80			

DETECTOR CALIBRATION

Energy(MEV) = 4.079 + (0.0047)*Channel

Energy range (MeV): 4.079 TO 6.485

Efficiency = 0.2778 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	20681.0	100.000
Smoothed	20681.0	100.000
Composite fit	21210.7	102.561
Residuals	-529.7	-2.561

Analyzed by: _____
EMB

Spectrum 8a8510.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 8726.1

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Raw Data Dump for AEA Spectrum: 8a8510.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	1.	9.	17.	26.	20.
21	13.	19.	16.	17.	17.	26.	17.	14.	19.	18.
31	17.	19.	22.	24.	13.	11.	20.	25.	27.	21.
41	9.	22.	13.	9.	16.	12.	9.	21.	11.	22.
51	11.	14.	9.	4.	13.	12.	10.	7.	13.	9.
61	6.	7.	13.	6.	5.	5.	7.	7.	3.	4.
71	6.	4.	7.	5.	6.	6.	5.	4.	7.	6.
81	6.	6.	13.	7.	6.	7.	6.	4.	9.	10.
91	10.	12.	9.	16.	16.	12.	10.	8.	6.	17.
101	12.	11.	11.	17.	17.	14.	10.	11.	14.	14.
111	12.	12.	13.	12.	14.	12.	12.	8.	17.	11.
121	8.	4.	10.	11.	12.	14.	5.	17.	10.	9.
131	14.	10.	8.	11.	11.	12.	11.	14.	12.	13.
141	14.	15.	21.	10.	17.	11.	13.	11.	19.	12.
151	14.	11.	18.	8.	9.	16.	17.	19.	19.	15.
161	24.	15.	13.	14.	18.	17.	13.	19.	14.	18.
171	20.	16.	16.	18.	21.	13.	14.	15.	10.	11.
181	11.	13.	13.	14.	12.	8.	9.	13.	13.	6.
191	8.	9.	9.	11.	5.	13.	8.	5.	10.	10.
201	6.	11.	8.	13.	9.	6.	8.	10.	12.	11.
211	14.	8.	10.	12.	18.	13.	12.	16.	14.	14.
221	8.	14.	14.	5.	19.	14.	17.	20.	23.	15.
231	22.	27.	21.	25.	28.	19.	26.	17.	19.	8.
241	6.	15.	13.	12.	15.	16.	5.	15.	6.	10.
251	13.	11.	14.	13.	7.	12.	12.	18.	19.	21.
261	18.	18.	16.	10.	10.	15.	12.	12.	7.	15.
271	10.	12.	12.	10.	11.	7.	8.	4.	4.	5.
281	9.	3.	3.	9.	5.	4.	4.	7.	4.	8.
291	6.	4.	6.	2.	9.	2.	2.	4.	3.	4.
301	5.	9.	5.	5.	5.	4.	11.	7.	5.	4.
311	4.	6.	1.	2.	0.	2.	4.	1.	1.	2.
321	5.	5.	2.	1.	4.	2.	2.	2.	4.	5.
331	4.	4.	10.	6.	6.	7.	4.	12.	8.	7.
341	9.	9.	15.	29.	27.	53.	42.	82.	125.	202.
351	235.	321.	384.	465.	492.	580.	621.	656.	790.	861.
361	1038.	1118.	1325.	1407.	1357.	1265.	1126.	874.	612.	404.
371	258.	145.	79.	28.	14.	5.	2.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	1.	1.	1.	0.	0.	0.	0.	1.
431	0.	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	1.	1.	0.	0.	0.	1.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

5/1/03

LABCORE Data Entry Template for Worklist# 389

Analyst: AKL **Instrument:** PU01 _____ **Method:** LA-503-156 D-1

Worklist Comment: Use a 1 mL sample size. --LLF WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test	Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@PU23902 PU23901	SOLID			N/A	uCi/g
1	BLNK-PREP				@PU23902 PU23901T	SOLID			N/A	% Rec
1	BLNK-PREP				@PU23902 PU23901E	SOLID			N/A	% Ct.
1	BLNK-PREP				@PU23902 PU23801	SOLID			N/A	uCi/g
1	BLNK-PREP				@PU23902 PU23801E	SOLID			N/A	% Ct.
2	STD	83843			@PU23902 PU23901	SOLID			N/A	uCi/g
2	STD				@PU23902 PU23901E	SOLID			N/A	% Ct.
2	STD				@PU23902 PU23901T	SOLID			N/A	% Rec
3	SAMPLE	S94T000283	0	R	@PU23902 PU23901	SOLID	N/A			uCi/g
3	SAMPLE	S94T000283	0	R	@PU23902 PU23901T	SOLID	N/A			% Rec
3	SAMPLE	S94T000283	0	R	@PU23902 PU23901E	SOLID	N/A			% Ct.
3	SAMPLE	S94T000283	0	R	@PU23902 PU23801	SOLID	N/A			uCi/g
3	SAMPLE	S94T000283	0	R	@PU23902 PU23801E	SOLID	N/A			% Ct.
4	DUP	S94T000283	0	R	@PU23902 PU23901	SOLID			N/A	uCi/g
4	DUP	S94T000283	0	R	@PU23902 PU23901T	SOLID			N/A	% Rec
4	DUP	S94T000283	0	R	@PU23902 PU23901E	SOLID			N/A	% Ct.
4	DUP	S94T000283	0	R	@PU23902 PU23801	SOLID			N/A	uCi/g
4	DUP	S94T000283	0	R	@PU23902 PU23801E	SOLID			N/A	% Ct.
5	SAMPLE	S94T000284	0	R	@PU23902 PU23901	SOLID	N/A			uCi/g
5	SAMPLE	S94T000284	0	R	@PU23902 PU23901T	SOLID	N/A			% Rec

Data Entry Comments: Rerun (detect/non detect) m

Units shown for QC (SPK) may not reflect the actual units.

LABCORE Data Entry Template for Worklist# 389

Analyst: AKL **Instrument:** PU01 _____ **Method:** LA-503-156 ~~D0~~ 1/9/95 D-1

Worklist Comment: Use a 1 mL sample size. --LLF WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test		Matrix	Actual	Found	DL	Unit
5	SAMPLE	S94T000284	0	R	@PU23902	PU23901E	SOLID	N/A			% Ct.
5	SAMPLE	S94T000284	0	R	@PU23902	PU23801	SOLID	N/A			uCi/g
5	SAMPLE	S94T000284	0	R	@PU23902	PU23801E	SOLID	N/A			% Ct.
6	DUP	S94T000284	0	R	@PU23902	PU23901	SOLID			N/A	uCi/g
6	DUP	S94T000284	0	R	@PU23902	PU23901T	SOLID			N/A	% Rec
6	DUP	S94T000284	0	R	@PU23902	PU23901E	SOLID			N/A	% Ct.
6	DUP	S94T000284	0	R	@PU23902	PU23801	SOLID			N/A	uCi/g
6	DUP	S94T000284	0	R	@PU23902	PU23801E	SOLID			N/A	% Ct.

Final page for worklist # 389

Alita Lewis
Analyst Signature

1-11-95
Date

M G Brown

1-13-95

Data Entry Comments:

Units shown for QC (SPK) may not reflect the actual units.

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

							BLANK
Type	Date Counted		01/12/95	Pu 236 AEA Frac.	(C236)		0.996
BLANK	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)		0
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)		0
389	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts			2443
Test Code	Digest Grams of Solids/L	(Dg/L)	9.9601	AT Count Time (min)	(TC)		30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)		7
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm			30.04
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm			0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2038.70	Pu 239 cpm			0
S94T283	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)		480
Instrument Code				Pu 239/240 µCi/g =		<	3.8262E-04
WC38931	Decay Time = Date Counted - Tracer Preparation Date						
Analyst	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]						
AKL	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV						
Date	Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]						
01/11/95	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)						
Time	Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]						
04:30 PM	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100						

NOTE: Pu 239\240 Result is a LESS THAN Value.

Pu 239/240	µCi/g	=	< 3.83E-04	DETECTION LEVELS in µCi/g
Relative Counting Error		=	100.0%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240 3.83E-04
Pu 238	µCi/g	=	< 3.83E-04	
Relative Counting Error		=	100.0%	Pu 238 3.83E-04
Pu 236 Tracer Recovery		=	72.7%	

Data Entry by:	[illegible]	Date:	01/13/95
Approved by:	[illegible]	Date:	17 Jan 95

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						STANDARD
Type	Date Counted		01/12/95	Pu 236 AEA Frac.	(C236)	0.379
STANDARD	Sample Volume in mL	(SS)	0.100	Pu 238 AEA Frac.	(C238)	0.014
Work List	Sample D.F.	(DF)	101	Pu 239 AEA Frac.	(C239)	0.585
389	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		6465
Test Code	Digest D.F.	(DDF)	1	AT Count Time (min)	(TC)	30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	7
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		30.2
LIQUID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		1.12
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2038.70	Pu 239 cpm		46.65
WORKLIST#389	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/L		1.4317E+02
WC38931						
Analyst						
AKL						
Date						
01/11/95						
Time						
04:30 PM						

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of ((-ln2 * Decay Time) / 1040.95)]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV

Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

				DETECTION LEVELS in µCi/mL
Pu 239/240	µCi/mL	=	1.43E-01	
Relative Counting Error		=	2.1%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240 9.47E-03
Pu 238	µCi/mL	=	< 9.47E-03	
Relative Counting Error		=	8.6%	Pu 238 9.47E-03
Pu 236 Tracer Recovery		=	77.5%	

Data Entry by: [signature] Date: 01/13/95

Approved by: [signature] Date: 17 Jan 95

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						SAMPLE
Type	Date Counted		01/12/95	Pu 236 AEA Frac.	(C236)	0.881
SAMPLE	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)	0
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)	0.049
389	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		2669
Test Code	Digest Grams of Solids/L	(Dg/L)	0.9601	AT Count Time (min)	(TC)	30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	7
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		32.87
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2038.70	Pu 239 cpm		1.84
S94T283	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/g =		5.1281E-04
WC38931						
Analyst						
AKL						
Date						
01/11/95						
Time						
04:30 PM						

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV

Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

				DETECTION LEVELS in µCi/g
Pu 239/240	µCi/g	=	5.13E-04	
Relative Counting Error		=	6.8%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240 4.62E-04
Pu 238	µCi/g	=	< 4.62E-04	
Relative Counting Error		=	100.0%	Pu 238 4.62E-04
Pu 236 Tracer Recovery		=	68.0%	

Data Entry by:	[signature]	Date:	01/13/95
Approved by:	[signature]	Date:	17 Jan 95

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						DUPLICATE
Type	Date Counted		01/12/95	Pu 236 AEA Frac.	(C236)	0.835
DUPLICATE	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)	0.05
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)	0.039
389	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		2824
Test Code	Digest Grams of Solids/L	(Dg/L)	9.962	AT Count Time (min)	(TC)	30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	7
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		33.32
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		1.98
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2038.70	Pu 239 cpm		1.55
S94T283	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/g =	<	4.6402E-04
WC38931						
Analyst						
AKL						
Date						
01/11/95						
Time						
04:30 PM						

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95)]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV

Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

NOTE: Pu 239\240 Result is a LESS THAN Value.

Pu 239/240	µCi/g	=	< 4.64E-04	DETECTION LEVELS in µCi/g
Relative Counting Error		=	7.4%	
				Pu 239/240 4.64E-04
Pu 238	µCi/g	=	5.52E-04	
Relative Counting Error		=	6.5%	Pu 238 4.64E-04
Pu 236 Tracer Recovery		=	71.4%	

Data Entry by: [signature] Date: 01/17/95

Approved by: [signature] Date: 17 Jan 95

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						SAMPLE
Type	Date Counted		01/12/95	Pu 236 AEA Frac.	(C236)	0.857
SAMPLE	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)	0.061
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)	0.066
389	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		2999
Test Code	Digest Grams of Solids/L	(Dg/L)	10.2425	AT Count Time (min)	(TC)	30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	7
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		31.25
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		2.22
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2038.70	Pu 239 cpm		2.41
S94T284	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/g		6.9049E-04
WC38931						
Analyst						
AKL						
Date						
01/11/95						
Time						
04:30 PM						

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV

Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

Pu 239/240	µCi/g	=	6.90E-04	DETECTION LEVELS in µCi/g
Relative Counting Error		=	6.0%	
				Pu 239/240 4.02E-04
Pu 238	µCi/g	=	6.38E-04	
Relative Counting Error		=	6.2%	Pu 238 4.02E-04
Pu 236 Tracer Recovery		=	78.2%	

Data Entry by: [signature] Date: 01/13/95

Approved by: [signature] Date: 17 Jan 95

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						DUPLICATE
Type	Date Counted		01/12/95	Pu 236 AEA Frac.	(C236)	0.937
DUPLICATE	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)	0
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)	0.02
389	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		2776
Test Code	Digest Grams of Solids/L	(Dg/L)	10.1266	AT Count Time (min)	(TC)	30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	7
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		36.09
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2038.70	Pu 239 cpm		0.75
S94T284	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/g =	<	3.6932E-04
WC38931						
Analyst						
AKL						
Date						
01/11/95						
Time						
04:30 PM						

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV

Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

NOTE: Pu 239\240 Result is a LESS THAN Value.

Pu 239/240	µCi/g	=	< 3.69E-04
Relative Counting Error		=	10.4%

NOTE: Pu 238 Result is a LESS THAN Value.

Pu 238	µCi/g	=	< 3.69E-04
Relative Counting Error		=	100.0%
Pu 236 Tracer Recovery		=	78.6%

DETECTION LEVELS in µCi/g
Pu 239/240
3.69E-04
Pu 238
3.69E-04

Data Entry by: [signature] Date: 01/13/95

Approved by: [signature] Date: 17 Jan 95

Form 503156PC Rev. 2.0

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT WHC-SD-WM-DP-074, REV. 0

SAMPLE
S94T000283-BLK
File ID: 8a8511.CNF

Counted on: 1/12/95 @ 7:17
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	721.0	721.0	361.343	361.343	18.000	9.609	9.000	3.145

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	0.995	5.796	5.777	0.019	0.05	30.04	1.6	108.1	0.487E-04
	Cm243		5.786	5.777	0.009				148.1	0.667E-04
Totals:		0.995	<--valid peaks only-->				30.04			

DETECTOR CALIBRATION
Energy(MEV) = 4.079 + (0.0047)*Channel
Energy range (MeV): 4.079 TO 6.485
Efficiency = 0.2778 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	14489.0	100.000
Smoothed	14489.0	100.000
Composite fit	14420.0	99.524
Residuals	69.0	0.476

Analyzed by: ALJ 1-12-95

Spectrum 8a8511.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 4758.1


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Raw Data Dump for AEA Spectrum: 8a8511.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.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
51	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
101	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
111	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
121	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
131	0.	0.	1.	1.	0.	0.	1.	0.	0.	0.
141	2.	0.	0.	0.	0.	0.	0.	0.	0.	1.
151	1.	1.	0.	0.	0.	0.	0.	0.	0.	2.
161	0.	0.	1.	0.	0.	0.	0.	0.	0.	3.
171	1.	0.	0.	0.	1.	1.	0.	0.	0.	1.
181	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
191	0.	0.	0.	1.	1.	0.	0.	0.	1.	1.
201	0.	1.	0.	3.	0.	0.	1.	0.	0.	1.
211	1.	2.	1.	1.	0.	1.	0.	1.	0.	3.
221	0.	3.	0.	0.	0.	1.	2.	4.	0.	3.
231	2.	1.	0.	1.	2.	1.	0.	1.	1.	2.
241	2.	0.	1.	0.	1.	1.	2.	1.	2.	4.
251	0.	0.	2.	3.	2.	2.	4.	2.	5.	0.
261	2.	3.	3.	2.	3.	0.	6.	1.	1.	4.
271	2.	8.	0.	1.	3.	2.	5.	0.	2.	1.
281	5.	9.	1.	1.	6.	2.	7.	4.	1.	6.
291	5.	4.	8.	5.	2.	4.	2.	4.	2.	3.
301	4.	6.	6.	6.	9.	5.	2.	8.	6.	2.
311	6.	6.	6.	8.	4.	4.	7.	12.	12.	7.
321	13.	17.	13.	18.	15.	20.	21.	24.	33.	28.
331	38.	39.	29.	56.	53.	63.	78.	71.	84.	104.
341	114.	137.	140.	164.	193.	224.	231.	282.	327.	362.
351	381.	469.	525.	536.	586.	609.	638.	678.	721.	746.
361	788.	739.	721.	695.	600.	497.	387.	289.	216.	131.
371	86.	41.	19.	15.	5.	2.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	1.	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	1.	0.	0.	0.	0.	0.	1.	0.	0.	0.
481	0.	3.	0.	0.	0.	2.	0.	0.	0.	0.
491	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT WHC-SD-WM-DP-074, REV. 0

SAMPLE
S94T000283-STD
File ID: 7a7340.CNF

Counted on: 1/12/95 @ 7:16
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	736.7	736.7	359.521	359.521	16.000	10.582	8.000	3.806
2	20.9	20.9	302.294	301.826	16.000	11.735	8.000	2.606
3	1271.4	1271.4	230.136	230.135	16.000	9.055	8.000	3.819

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	Cm243	0.379	5.786	5.746	0.040	0.05	30.20	1.6	193.1	0.870E-04
	Pu236		5.756	5.746	0.010				143.8	0.648E-04
2	Am241	0.014	5.480	5.475	0.005	0.06	1.12	10.1	5.6	0.251E-05
	Pu238		5.499	5.475	0.024				7.3	0.327E-05
3	Pu239	0.585	5.143	5.138	0.005	0.04	46.65	1.3	217.7	0.981E-04
	Pu240		5.144	5.138	0.006				217.7	0.981E-04
Totals:		0.978	<--valid peaks only-->				77.97			

DETECTOR CALIBRATION
Energy(MEV) = 4.056 + (0.0047)*Channel
Energy range (MeV): 4.056 TO 6.463
Efficiency = 0.2143 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	38253.0	100.000
Smoothed	38253.0	100.000
Composite fit	37427.7	97.842
Residuals	825.3	2.158

Analyzed by: ALJ 1-12-95

Spectrum 7a7340.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 9201.5


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.....................................1..
.............................1
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Raw Data Dump for AEA Spectrum: 7a7340.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	2.	1.	0.
21	0.	1.	1.	1.	3.	1.	0.	1.	0.	0.
31	1.	0.	0.	2.	2.	0.	0.	2.	1.	1.
41	0.	0.	1.	0.	0.	0.	0.	2.	0.	1.
51	1.	0.	1.	1.	1.	0.	0.	1.	0.	1.
61	1.	0.	2.	1.	0.	4.	1.	0.	3.	3.
71	0.	0.	1.	1.	0.	1.	2.	0.	1.	2.
81	0.	0.	1.	0.	1.	1.	2.	2.	1.	6.
91	4.	3.	1.	1.	4.	0.	4.	2.	2.	0.
101	1.	2.	2.	0.	3.	0.	4.	2.	1.	1.
111	2.	4.	1.	2.	0.	0.	3.	2.	2.	3.
121	3.	4.	4.	5.	3.	1.	3.	4.	1.	4.
131	2.	3.	2.	4.	8.	4.	4.	3.	1.	9.
141	2.	4.	5.	3.	11.	8.	9.	10.	9.	7.
151	3.	7.	12.	6.	7.	10.	2.	7.	6.	11.
161	6.	6.	7.	9.	9.	4.	11.	7.	10.	11.
171	9.	12.	20.	12.	16.	15.	12.	21.	17.	21.
181	18.	21.	22.	18.	21.	28.	21.	20.	20.	43.
191	35.	36.	42.	45.	44.	42.	55.	52.	63.	65.
201	52.	60.	67.	87.	70.	94.	103.	104.	126.	122.
211	178.	179.	202.	218.	264.	338.	356.	423.	496.	587.
221	617.	687.	818.	859.	1058.	1099.	1208.	1251.	1390.	1394.
231	1361.	1206.	1173.	960.	797.	590.	458.	326.	198.	162.
241	96.	44.	37.	18.	10.	7.	1.	2.	3.	3.
251	5.	0.	2.	5.	1.	3.	5.	3.	4.	7.
261	2.	2.	7.	3.	3.	7.	5.	2.	5.	7.
271	5.	5.	7.	6.	2.	6.	8.	3.	3.	3.
281	7.	8.	5.	6.	8.	13.	8.	13.	8.	16.
291	15.	15.	17.	16.	22.	14.	16.	20.	23.	22.
301	21.	28.	27.	20.	19.	21.	22.	24.	9.	14.
311	16.	7.	14.	15.	13.	17.	9.	19.	24.	15.
321	16.	23.	17.	22.	26.	31.	30.	26.	30.	37.
331	40.	33.	36.	55.	54.	60.	64.	72.	87.	106.
341	112.	147.	156.	185.	202.	279.	329.	320.	385.	439.
351	529.	556.	584.	626.	636.	726.	728.	770.	740.	798.
361	745.	697.	629.	524.	478.	364.	243.	189.	102.	61.
371	44.	27.	15.	8.	4.	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.	1.	1.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	2.	0.	0.	0.
471	1.	0.	0.	0.	0.	0.	0.	1.	0.	0.
481	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	7.	0.								

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT WHC-SD-WM-DP-074, REV. 0

SAMPLE
S94000283-SAM
File ID: 9a1268.CNF

Counted on: 1/12/95 @ 7:18
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	538.2	538.2	357.388	357.388	12.000	5.252	6.000	0.811
2	21.0	21.0	263.981	263.563	34.000	153.685	17.000	43.670
3?	13.1	13.1	239.742	239.742	6.000	0.000	3.000	2.765
4	35.2	35.2	223.722	223.416	12.000	4.506	6.000	0.830

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	Pu236	0.881	5.756	5.758	-.002	0.02	32.87	1.6	237.7	0.107E-03
2	Am243	0.070	5.276	5.327	-.051	0.71	2.60	12.7	18.6	0.839E-05
	Pu240		5.144	5.327	-.183				18.4	0.831E-05
3		????		5.217			0.00	1000.		
4	Pu239	0.049	5.143	5.142	0.001	0.02	1.84	7.4	13.1	0.589E-05
	Pu240		5.144	5.142	0.002				13.1	0.589E-05
		---					---			
Totals:		1.001	<--valid peaks only-->				37.32			

DETECTOR CALIBRATION
Energy(MEV) = 4.114 + (0.0046)*Channel
Energy range (MeV): 4.114 TO 6.469
Efficiency = 0.1411 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	17905.0	100.000
Smoothed	17905.0	100.000
Composite fit	17917.3	100.068
Residuals	-12.3	-0.068

Analyzed by: ALJ 1-12-95

Spectrum 9a1268.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 3962.4


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Raw Data Dump for AEA Spectrum: 9a1268.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	1.	1.	1.	1.	2.
21	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
31	1.	0.	1.	1.	0.	1.	1.	1.	0.	2.
41	1.	1.	2.	0.	0.	0.	2.	1.	2.	2.
51	0.	0.	3.	0.	0.	1.	1.	2.	2.	0.
61	2.	3.	2.	1.	0.	1.	3.	2.	3.	2.
71	1.	1.	4.	3.	1.	1.	0.	0.	0.	2.
81	1.	0.	0.	1.	4.	2.	3.	2.	2.	3.
91	1.	1.	1.	1.	0.	2.	3.	1.	2.	1.
101	2.	3.	2.	1.	3.	0.	1.	1.	3.	2.
111	3.	0.	3.	2.	5.	4.	3.	4.	5.	3.
121	7.	3.	4.	5.	3.	2.	4.	2.	3.	4.
131	5.	3.	3.	4.	6.	2.	1.	3.	3.	0.
141	3.	3.	5.	6.	3.	4.	5.	5.	3.	3.
151	2.	5.	6.	5.	8.	8.	3.	6.	7.	7.
161	3.	8.	7.	3.	6.	3.	4.	13.	9.	9.
171	3.	4.	6.	2.	8.	7.	6.	7.	5.	9.
181	5.	6.	10.	7.	11.	8.	5.	8.	7.	9.
191	7.	15.	9.	10.	11.	13.	11.	11.	17.	13.
201	8.	20.	12.	18.	15.	18.	23.	18.	20.	17.
211	24.	25.	22.	29.	30.	21.	33.	44.	33.	43.
221	37.	36.	40.	51.	43.	35.	34.	25.	15.	14.
231	12.	12.	8.	13.	10.	15.	13.	14.	11.	17.
241	16.	12.	12.	8.	15.	11.	9.	23.	17.	13.
251	22.	10.	22.	15.	24.	20.	16.	24.	16.	23.
261	26.	32.	29.	42.	26.	31.	21.	27.	25.	24.
271	31.	17.	40.	25.	33.	31.	32.	32.	32.	34.
281	27.	18.	47.	48.	50.	57.	33.	51.	36.	51.
291	52.	45.	55.	49.	59.	48.	53.	50.	65.	61.
301	82.	72.	69.	50.	66.	73.	73.	68.	63.	72.
311	72.	65.	89.	78.	103.	76.	87.	108.	89.	80.
321	114.	118.	123.	122.	120.	136.	136.	125.	130.	159.
331	170.	157.	184.	188.	200.	210.	236.	255.	231.	270.
341	278.	266.	297.	314.	390.	383.	424.	407.	422.	426.
351	473.	472.	503.	476.	499.	488.	542.	615.	556.	465.
361	365.	240.	153.	64.	23.	3.	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.	1.	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	1.	1.	1.	1.	0.	1.	0.	1.	1.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
481	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
S94T000283-DUP
File ID: 10a2110.CNF

Counted on: 1/12/95 @ 7:18
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	1170.7	1170.7	360.033	360.033	12.000	3.660	6.000	1.595
2	43.2	43.2	326.524	324.353	28.000	17.956	14.000	14.276
3	34.4	34.4	301.356	300.790	32.000	32.250	16.000	16.348
4	13.2	13.2	288.407	288.407	14.000	0.247	7.000	0.023
5?	3.8	3.8	266.331	265.891	6.000	0.550	3.000	3.738
6	60.0	60.0	226.414	226.391	12.000	4.066	6.000	2.262

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	Pu236	0.835	5.756	5.768	-.0120	.02	33.32	1.5	269.6	0.121E-03
	Cm243		5.786	5.768	0.018				362.0	0.163E-03
2	Pu238	0.046	5.499	5.604	-.1050	.08	1.83	13.9	20.2	0.910E-05
	Ra224		5.680	5.604	0.076				15.5	0.697E-05
3	Am241	0.050	5.480	5.495	-.0150	.15	1.98	9.8	16.7	0.752E-05
	Pu238		5.499	5.495	0.004				21.8	0.982E-05
4	Th228	0.028	5.430	5.438	-.0080	.00	1.11	10.2	12.4	0.557E-05
5		????		5.335			0.03	275.		
6	Pu239	0.039	5.143	5.153	-.0100	.02	1.55	7.9	12.3	0.555E-05
	Pu240		5.144	5.153	-.009				12.3	0.555E-05
		---					---			
Totals:		0.997	<--valid peaks only-->				39.79			

DETECTOR CALIBRATION
Energy(MEV) = 4.112 + (0.0046)*Channel
Energy range (MeV): 4.112 TO 6.467
Efficiency = 0.1261 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	19157.0	100.000
Smoothed	19157.0	100.000
Composite fit	19115.6	99.784

Residuals	41.4	0.216

Analyzed by: ALJ 1-12-95

Spectrum 10a2110.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 6774.4


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6
46
4.6
4
4
4
4
5
4
4
43
.3
23.
32.
1.2.
.2.1.
2....... 1
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.................................................................1
.............................................1
1..
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Raw Data Dump for AEA Spectrum: 10a2110.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
21	0.	0.	0.	0.	0.	0.	2.	0.	0.	0.
31	0.	0.	1.	0.	0.	0.	0.	0.	1.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	2.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
71	0.	0.	0.	0.	0.	1.	0.	0.	1.	2.
81	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
91	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.
101	1.	0.	0.	1.	0.	1.	0.	2.	0.	0.
111	1.	0.	0.	1.	1.	0.	2.	0.	0.	1.
121	1.	1.	0.	0.	1.	0.	1.	1.	1.	2.
131	1.	2.	1.	2.	0.	1.	2.	0.	2.	1.
141	2.	4.	2.	3.	0.	1.	3.	4.	0.	4.
151	0.	0.	1.	2.	2.	3.	0.	1.	1.	1.
161	1.	4.	2.	4.	1.	0.	2.	4.	3.	1.
171	1.	3.	2.	4.	5.	5.	3.	2.	4.	3.
181	2.	2.	2.	6.	7.	1.	1.	3.	4.	7.
191	3.	2.	4.	3.	2.	3.	3.	3.	4.	4.
201	6.	12.	3.	9.	0.	8.	3.	8.	5.	7.
211	11.	10.	11.	21.	19.	15.	19.	19.	25.	32.
221	42.	34.	38.	65.	64.	78.	72.	58.	58.	35.
231	22.	12.	4.	3.	5.	6.	3.	4.	3.	3.
241	4.	3.	5.	8.	8.	2.	3.	4.	3.	2.
251	6.	7.	8.	9.	8.	3.	4.	8.	7.	7.
261	9.	4.	8.	9.	12.	16.	15.	9.	8.	10.
271	7.	8.	11.	14.	13.	10.	17.	15.	17.	14.
281	18.	21.	24.	26.	30.	24.	23.	33.	30.	28.
291	20.	20.	31.	31.	23.	23.	29.	28.	42.	35.
301	43.	37.	35.	32.	37.	28.	33.	39.	41.	40.
311	44.	37.	57.	49.	45.	39.	58.	50.	60.	40.
321	39.	60.	44.	54.	58.	67.	61.	54.	52.	61.
331	46.	60.	72.	76.	63.	71.	95.	103.	86.	101.
341	110.	92.	143.	150.	214.	263.	305.	390.	412.	536.
351	503.	559.	572.	672.	679.	738.	969.	1143.	1255.	1376.
361	1345.	1138.	776.	434.	184.	70.	17.	5.	1.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
421	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
431	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
441	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	2.	0.	0.	0.	0.
471	1.	1.	1.	0.	0.	1.	1.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
S94T000284-SAM
File ID: 11a3125.CNF

Counted on: 1/12/95 @ 7:19
Detector: AEA11
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	811.3	811.3	359.434	359.434	14.000	5.455	7.000	1.632
2	31.3	31.3	301.262	300.920	20.000	15.585	10.000	2.416
3	62.5	62.5	226.582	226.545	12.000	5.339	6.000	1.583

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	Pu236	0.857	5.756	5.769	-.013	0.03	31.25	1.6	271.2	0.122E-03
	Cm243		5.786	5.769	0.017				364.0	0.164E-03
2	Am241	0.061	5.480	5.499	-.019	0.07	2.22	7.5	20.0	0.903E-05
	Pu238		5.499	5.499	0.000				26.2	0.118E-04
3	Pu239	0.066	5.143	5.157	-.014	0.02	2.41	5.9	20.5	0.924E-05
	Pu240		5.144	5.157	-.013				20.5	0.924E-05
Totals:		0.984	<--valid peaks only-->				35.88			

DETECTOR CALIBRATION
Energy(MEV) = 4.115 + (0.0046)*Channel
Energy range (MeV): 4.115 TO 6.470
Efficiency = 0.1176 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	17505.0	100.000
Smoothed	17505.0	100.000
Composite fit	17222.8	98.388
Residuals	282.2	1.612

Analyzed by: ALJ 1-12-95

Spectrum 11a3125.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5659.8


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Raw Data Dump for AEA Spectrum: 11a3125.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.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
41	1.	0.	0.	2.	1.	0.	0.	1.	2.	0.
51	0.	0.	1.	1.	0.	0.	0.	1.	0.	0.
61	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
71	1.	1.	0.	1.	0.	0.	1.	1.	1.	1.
81	0.	0.	0.	1.	1.	2.	1.	0.	0.	0.
91	1.	0.	1.	0.	1.	1.	1.	0.	0.	0.
101	1.	1.	1.	1.	1.	1.	2.	1.	1.	0.
111	0.	0.	1.	2.	1.	1.	2.	0.	0.	1.
121	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.
131	1.	1.	1.	1.	1.	1.	2.	1.	1.	2.
141	2.	0.	2.	3.	0.	0.	0.	0.	5.	2.
151	2.	3.	0.	2.	1.	2.	2.	5.	2.	1.
161	5.	2.	4.	5.	4.	1.	5.	2.	3.	3.
171	2.	3.	4.	3.	6.	1.	2.	8.	1.	3.
181	2.	7.	8.	5.	4.	3.	3.	4.	6.	7.
191	6.	2.	1.	5.	2.	7.	10.	5.	8.	15.
201	10.	8.	12.	12.	6.	12.	11.	12.	24.	18.
211	16.	28.	19.	33.	22.	35.	30.	33.	41.	42.
221	64.	44.	71.	64.	60.	60.	75.	61.	64.	44.
231	36.	11.	8.	6.	8.	3.	5.	7.	6.	2.
241	3.	4.	7.	7.	6.	6.	10.	8.	4.	8.
251	7.	10.	6.	10.	11.	8.	8.	4.	10.	12.
261	7.	12.	9.	6.	8.	8.	10.	15.	15.	11.
271	12.	8.	18.	12.	9.	10.	14.	14.	17.	13.
281	15.	11.	23.	19.	16.	22.	15.	23.	24.	18.
291	25.	26.	20.	24.	15.	43.	21.	29.	38.	30.
301	51.	36.	42.	22.	24.	31.	25.	28.	34.	27.
311	25.	28.	42.	26.	30.	36.	28.	36.	40.	33.
321	38.	36.	48.	48.	50.	40.	63.	51.	55.	45.
331	59.	68.	76.	87.	89.	88.	101.	128.	124.	138.
341	154.	183.	193.	236.	268.	316.	400.	410.	451.	516.
351	533.	585.	591.	663.	656.	746.	765.	840.	895.	859.
361	866.	749.	590.	398.	196.	91.	28.	7.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
431	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
441	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
471	0.	1.	0.	1.	1.	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.								

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-074, REV. 0

SAMPLE
S94T000284-DUP
File ID: 12a4924.CNF

Counted on: 1/12/95 @ 7:20
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	1111.9	1111.9	361.399	361.399	12.000	4.717	6.000	1.796
2?	12.4	12.4	311.660	311.660	16.000	0.591	8.000	8.096
3?	12.4	12.4	301.742	301.455	16.000	6.025	8.000	8.239
4	10.5	10.5	292.743	291.221	20.000	1.988	10.000	0.192
5	21.9	21.9	228.111	228.058	14.000	5.678	7.000	2.088

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	Pu236	0.937	5.756	5.775	-.019	0.02	36.09	1.5	307.1	0.138E-03
	Cm243		5.786	5.775	0.011				412.3	0.186E-03
2		????		5.546			0.10	54.5		
3		????		5.499			0.31	23.0		
4	Th228	0.023	5.430	5.452	-.022	0.01	0.90	10.3	10.5	0.474E-05
5	Pu239	0.020	5.143	5.162	-.019	0.03	0.75	11.7	6.3	0.284E-05
	Pu240		5.144	5.162	-.018				6.3	0.284E-05
Totals:		0.979	<--valid peaks only-->				37.74			

DETECTOR CALIBRATION
Energy(MEV) = 4.113 + (0.0046)*Channel
Energy range (MeV): 4.113 TO 6.468
Efficiency = 0.1199 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	18495.0	100.000
Smoothed	18495.0	100.000
Composite fit	18307.9	98.989
Residuals	187.1	1.011

Analyzed by: [signature] ALJ
1-12-95

Spectrum 12a4924.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 6347.0


```
5
5
5
5
4
4
4
4
4
4
4
3
3
2
.1
... 1
........   1
..........................1.
.............................................................1....
...............................................................1
....1.
```

Raw Data Dump for AEA Spectrum: 12a4924.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	2.	0.	2.
21	2.	0.	0.	1.	2.	2.	1.	1.	1.	0.
31	0.	1.	2.	1.	3.	3.	1.	0.	0.	0.
41	0.	0.	0.	0.	1.	1.	1.	1.	0.	0.
51	0.	1.	1.	1.	0.	0.	0.	1.	0.	0.
61	0.	0.	0.	3.	1.	2.	1.	0.	1.	1.
71	1.	1.	1.	3.	1.	0.	4.	0.	1.	2.
81	0.	0.	0.	0.	2.	1.	0.	1.	1.	1.
91	0.	0.	6.	2.	2.	0.	5.	0.	0.	1.
101	1.	2.	5.	0.	1.	1.	2.	1.	1.	2.
111	1.	1.	2.	0.	1.	0.	0.	0.	1.	5.
121	0.	2.	0.	1.	4.	4.	2.	1.	0.	2.
131	2.	3.	1.	7.	1.	3.	2.	1.	7.	1.
141	1.	0.	0.	1.	8.	4.	0.	5.	1.	4.
151	3.	2.	1.	4.	3.	8.	2.	2.	4.	2.
161	4.	5.	2.	4.	2.	5.	2.	4.	2.	2.
171	8.	3.	5.	0.	3.	0.	5.	2.	2.	3.
181	3.	2.	2.	5.	1.	4.	5.	4.	4.	1.
191	8.	8.	6.	5.	2.	5.	4.	2.	5.	4.
201	2.	2.	4.	2.	7.	5.	6.	4.	5.	8.
211	8.	5.	7.	5.	4.	13.	7.	10.	9.	15.
221	13.	18.	16.	19.	20.	22.	18.	34.	21.	21.
231	18.	17.	10.	7.	8.	3.	3.	6.	4.	5.
241	8.	5.	6.	6.	8.	10.	9.	7.	6.	6.
251	10.	6.	14.	1.	10.	3.	5.	3.	8.	3.
261	4.	3.	4.	6.	1.	6.	5.	10.	8.	9.
271	2.	5.	5.	7.	8.	8.	6.	7.	15.	14.
281	5.	9.	7.	13.	8.	16.	9.	7.	9.	6.
291	11.	12.	16.	7.	10.	12.	10.	8.	9.	13.
301	18.	19.	13.	13.	8.	12.	15.	11.	3.	15.
311	12.	12.	14.	9.	13.	8.	9.	13.	15.	13.
321	18.	17.	22.	15.	27.	25.	17.	22.	27.	39.
331	32.	39.	35.	40.	54.	68.	47.	57.	72.	75.
341	94.	135.	123.	166.	192.	211.	299.	309.	357.	470.
351	503.	573.	633.	688.	696.	809.	816.	954.	1122.	1151.
361	1161.	1259.	1178.	959.	728.	414.	181.	64.	21.	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.	0.	0.	0.	0.	0.
411	0.	1.	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.	1.	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.	1.	1.	0.	2.	0.	2.	2.	0.
481	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

SYK3

LABCORE Data Entry Template for Worklist# 417

Analyst: JMV **Instrument:** PU01 _____ **Method:** LA-503-156 D-1

Worklist Comment: Use a 1 mL sample size. --LLF WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test		Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@PU23902	PU23901	SOLID			N/A	uCi/g
1	BLNK-PREP				@PU23902	PU23901T	SOLID			N/A	% Rec
1	BLNK-PREP				@PU23902	PU23901E	SOLID			N/A	% Ct.
1	BLNK-PREP				@PU23902	PU23801	SOLID			N/A	uCi/g
1	BLNK-PREP				@PU23902	PU23801E	SOLID			N/A	% Ct.
2	STD	83843			@PU23902	PU23901	SOLID			N/A	uCi/g
2	STD				@PU23902	PU23901E	SOLID			N/A	% Ct.
2	STD				@PU23902	PU23901T	SOLID			N/A	% Rec
3	SAMPLE	S94T000283	0	R	@PU23902	PU23901	SOLID	N/A			uCi/g
3	SAMPLE	S94T000283	0	R	@PU23902	PU23901T	SOLID	N/A			% Rec
3	SAMPLE	S94T000283	0	R	@PU23902	PU23901E	SOLID	N/A			% Ct.
3	SAMPLE	S94T000283	0	R	@PU23902	PU23801	SOLID	N/A			uCi/g
3	SAMPLE	S94T000283	0	R	@PU23902	PU23801E	SOLID	N/A			% Ct.
4	DUP	S94T000283	0	R	@PU23902	PU23901	SOLID			N/A	uCi/g
4	DUP	S94T000283	0	R	@PU23902	PU23901T	SOLID			N/A	% Rec
4	DUP	S94T000283	0	R	@PU23902	PU23901E	SOLID			N/A	% Ct.
4	DUP	S94T000283	0	R	@PU23902	PU23801	SOLID			N/A	uCi/g
4	DUP	S94T000283	0	R	@PU23902	PU23801E	SOLID			N/A	% Ct.
5	SAMPLE	S94T000284	0	R	@PU23902	PU23901	SOLID	N/A			uCi/g
5	SAMPLE	S94T000284	0	R	@PU23902	PU23901T	SOLID	N/A			% Rec

Data Entry Comments:

Units shown for QC (SPK) may not reflect the actual units.

LABCORE Data Entry Template for Worklist# 417

Analyst: JMV **Instrument:** PU01 _____ **Method:** LA-503-156 D-)

Worklist Comment: Use a 1 mL sample size. --LLF WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test	Matrix	Actual	Found	DL	Unit
5	SAMPLE	S94T000284	0	R	@PU23902 PU23901E	SOLID	N/A			% Ct.
5	SAMPLE	S94T000284	0	R	@PU23902 PU23801	SOLID	N/A			uCi/g
5	SAMPLE	S94T000284	0	R	@PU23902 PU23801E	SOLID	N/A			% Ct.
6	DUP	S94T000284	0	R	@PU23902 PU23901	SOLID			N/A	uCi/g
6	DUP	S94T000284	0	R	@PU23902 PU23901T	SOLID			N/A	% Rec
6	DUP	S94T000284	0	R	@PU23902 PU23901E	SOLID			N/A	% Ct.
6	DUP	S94T000284	0	R	@PU23902 PU23801	SOLID			N/A	uCi/g
6	DUP	S94T000284	0	R	@PU23902 PU23801E	SOLID			N/A	% Ct.

Final page for worklist # 417

[signature]
Analyst Signature

1-18-95
Date

1-20-95

Data Entry Comments:

Units shown for QC (SPK) may not reflect the actual units.

2458

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						BLANK
Type	Date Counted		01/19/95	Pu 236 AEA Frac.	(C236)	0
BLANK	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)	0
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)	0
417	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		212
Test Code	Digest Grams of Solids/L	(Dg/L)	9.9601	AT Count Time (min)	(TC)	30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	6
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		0
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2029.21	Pu 239 cpm		0
S94T283	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/g =	<	ERR
WC38931	Decay Time = Date Counted - Tracer Preparation Date					
Analyst	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]					
JMV	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV					
Date	Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]					
01/18/95	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)					
Time	Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]					
03:00 PM	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100					

NOTE: Pu 239\240 Result is a LESS THAN Value.

				DETECTION LEVELS in µCi/g
Pu 239/240	µCi/g	=	< ERR	Pu 239/240 ERR
Relative Counting Error		=	100.0%	
NOTE: Pu 238 Result is a LESS THAN Value.				
Pu 238	µCi/g	=	< ERR	Pu 238 ERR
Relative Counting Error		=	100.0%	
Pu 236 Tracer Recovery		=	0.0%	

Data Entry by:	[signature]	Date:	01/20/95
Approved by:	[signature]	Date:	23 Jan 95

Form 503156PC Rev. 2.0

2459

No activity above background resulting in an error in calculations [signature] 1-23-95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						STANDARD
Type	Date Counted		01/19/95	Pu 236 AEA Frac.	(C236)	0.347
STANDARD	Sample Volume in mL	(SS)	0.100	Pu 238 AEA Frac.	(C238)	0.027
Work List	Sample D.F.	(DF)	101	Pu 239 AEA Frac.	(C239)	0.58
417	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		4104
Test Code	Digest D.F.	(DDF)	1	AT Count Time (min)	(TC)	30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	7
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		18.44
LIQUID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		1.41
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2029.21	Pu 239 cpm		30.84
WORKLIST#417	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/L		1.5431E+02
WC38931	Decay Time = Date Counted - Tracer Preparation Date					
Analyst	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]					
JMV	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV					
Date	Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]					
01/18/95	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)					
Time	Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]					
03:00 PM	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100					

				DETECTION LEVELS in µCi/mL
Pu 239/240	µCi/mL	=	1.54E-01	
Relative Counting Error		=	2.6%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240 1.80E-02
Pu 238	µCi/mL	=	< 1.80E-02	
Relative Counting Error		=	7.8%	Pu 238 1.80E-02
Pu 236 Tracer Recovery		=	44.4%	

Data Entry by:	[signature]	Date:	01/20/95
Approved by:	[signature]	Date:	23 Jan 95

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						SAMPLE
Type	Date Counted		01/19/95	Pu 236 AEA Frac.	(C236)	0.918
SAMPLE	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)	0.027
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)	0.053
417	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		2564
Test Code	Digest Grams of Solids/L	(Dg/L)	0.9601	AT Count Time (min)	(TC)	30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	4
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		21.83
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0.63
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2029.21	Pu 239 cpm		1.25
S94T283	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/g		5.2984E-04
WC38931	Decay Time = Date Counted - Tracer Preparation Date					
Analyst	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of ((-ln2 * Decay Time) / 1040.95)]					
JMV	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV					
Date	Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]					
01/18/95	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)					
Time	Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]					
03:00 PM	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100					

				DETECTION LEVELS in µCi/g
Pu 239/240	µCi/g	=	5.30E-04	
Relative Counting Error		=	8.2%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240 4.07E-04
Pu 238	µCi/g	=	< 4.07E-04	
Relative Counting Error		=	11.4%	Pu 238 4.07E-04
Pu 236 Tracer Recovery		=	73.7%	

Data Entry by:	M S [illegible]	Date:	01/20/95
Approved by:	[illegible]	Date:	23 Jan 95

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						DUPLICATE
Type	Date Counted		01/19/95	Pu 236 AEA Frac.	(C236)	0.967
DUPLICATE	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)	0
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)	0.018
417	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		2602
Test Code	Digest Grams of Solids/L	(Dg/L)	0.982	AT Count Time (min)	(TC)	30
@PU239-02	Tracer Book No.		92E43	Background in cpm	(Bkg)	6
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		36.86
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2029.21	Pu 239 cpm		0.69
S94T283	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/g =	<	3.6995E-04
WC38931	Decay Time = Date Counted - Tracer Preparation Date					
Analyst	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]					
JMV	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV					
Date	Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]					
01/18/95	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)					
Time	Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]					
03:00 PM	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100					

NOTE: Pu 239\240 Result is a LESS THAN Value.

Pu 239/240	µCi/g	=	< 3.70E-04
Relative Counting Error		=	10.9%

NOTE: Pu 238 Result is a LESS THAN Value.

Pu 238	µCi/g	=	< 3.70E-04
Relative Counting Error		=	100.0%
Pu 236 Tracer Recovery		=	76.9%

DETECTION LEVELS in µCi/g
Pu 239/240
3.70E-04
Pu 238
3.70E-04

Data Entry by:	[signature]	Date:	01/20/95
Approved by:	[signature]	Date:	23 Jan 95

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						SAMPLE
Type	Date Counted		01/19/95	Pu 236 AEA Frac.	(C236)	0.922
SAMPLE	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)	0.018
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)	0.068
417	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		2980
Test Code	Digest Grams of Solids/L	(Dg/L)	10.2425	AT Count Time (min)	(TC)	30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	7
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		37.33
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0.75
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2029.21	Pu 239 cpm		2.76
S94T284	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/g		6.5818E-04
WC38931	Decay Time = Date Counted - Tracer Preparation Date					
Analyst	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]					
JMV	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV					
Date	Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]					
01/18/95	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)					
Time	Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]					
03:00 PM	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100					

				DETECTION LEVELS in µCi/g
Pu 239/240	µCi/g	=	6.58E-04	
Relative Counting Error		=	5.6%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238	µCi/g	=	< 3.46E-04	3.46E-04
Relative Counting Error		=	10.4%	Pu 238
Pu 236 Tracer Recovery		=	83.9%	3.46E-04

Data Entry by:	[signature]	Date:	01/20/95
Approved by:	[signature]	Date:	23 Jan 95

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						DUPLICATE
Type	Date Counted		01/19/95	Pu 236 AEA Frac.	(C236)	0.971
DUPLICATE	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)	0
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)	0.016
417	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		2010
Test Code	Digest Grams of Solids/L	(Dg/L)	10.1286	AT Count Time (min)	(TC)	30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	4
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		23.19
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2029.21	Pu 239 cpm		0.38
S94T284	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/g =	<	4.6259E-04
WC38931						
Analyst						
JMV						
Date						
01/18/95						
Time						
03:00 PM						

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV

Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

NOTE: Pu 239\240 Result is a LESS THAN Value.

Pu 239/240	µCi/g	=	< 4.63E-04
Relative Counting Error		=	14.6%

NOTE: Pu 238 Result is a LESS THAN Value.

Pu 238	µCi/g	=	< 4.63E-04
Relative Counting Error		=	100.0%
Pu 236 Tracer Recovery		=	60.3%

DETECTION LEVELS in µCi/g
Pu 239/240
4.63E-04
Pu 238
4.63E-04

Data Entry by:	[signature]	Date:	01/20/95
Approved by:	[signature]	Date:	23 Jan 95

Form 503156PC Rev. 2.0

Johnson 1-19-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT WHC-SD-WM-DP-074, REV. 0

SAMPLE
S94T283-STD
File ID: 2a2806.CNF

Counted on: 1/19/95 @ 1: 6
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	363.2	363.2	361.069	361.069	18.000	15.408	9.000	4.324
2	16.0	16.0	298.970	298.673	30.000	49.844	15.000	8.402
3	618.9	618.9	227.668	227.661	22.000	16.020	11.000	4.822

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	Cm243	0.347	5.786	5.763	0.023	0.07	18.44	2.1	232.2	0.105E-03
	Pu236		5.756	5.763	-.007				173.0	0.779E-04
2	Am241	0.027	5.480	5.476	0.004	0.23	1.41	12.3	13.8	0.623E-05
	Pu238		5.499	5.476	0.023				18.0	0.813E-05
3	Pu239	0.580	5.143	5.150	-.007	0.07	30.84	1.6	283.4	0.128E-03
	Pu240		5.144	5.150	-.006				283.4	0.128E-03
		---					---			
Totals:		0.954	<--valid peaks only-->				50.69			

DETECTOR CALIBRATION
Energy(MEV) = 4.102 + (0.0046)*Channel
Energy range (MeV): 4.102 TO 6.458
Efficiency = 0.1088 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	25506.0	100.000
Smoothed	25506.0	100.000
Composite fit	24335.4	95.411
Residuals	1170.6	4.589

Analyzed by: _____
EMB

Spectrum 2a2806.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 4802.0


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Raw Data Dump for AEA Spectrum: 2a2806.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.	1.	0.	0.	0.	3.	1.	1.
31	0.	0.	1.	1.	1.	1.	1.	0.	1.	1.
41	1.	1.	1.	1.	2.	1.	1.	0.	2.	3.
51	6.	0.	0.	1.	0.	3.	2.	2.	0.	2.
61	3.	1.	4.	2.	2.	3.	2.	1.	1.	4.
71	3.	0.	3.	1.	1.	2.	4.	3.	1.	3.
81	4.	5.	2.	7.	1.	5.	5.	3.	4.	4.
91	6.	3.	2.	3.	6.	2.	2.	1.	3.	2.
101	0.	1.	3.	8.	5.	5.	1.	0.	1.	1.
111	5.	4.	3.	5.	3.	3.	7.	5.	9.	3.
121	4.	5.	10.	4.	5.	6.	5.	4.	7.	8.
131	13.	9.	8.	6.	15.	10.	14.	6.	11.	8.
141	13.	11.	11.	11.	12.	10.	6.	11.	12.	11.
151	12.	8.	15.	11.	11.	12.	12.	14.	19.	17.
161	18.	19.	19.	18.	21.	13.	29.	28.	16.	28.
171	27.	19.	33.	21.	28.	30.	27.	34.	25.	29.
181	25.	25.	36.	28.	32.	34.	40.	50.	50.	44.
191	53.	49.	52.	59.	57.	61.	52.	52.	77.	67.
201	79.	83.	92.	113.	102.	112.	142.	135.	143.	167.
211	203.	191.	231.	230.	300.	322.	355.	403.	427.	498.
221	510.	572.	597.	643.	638.	636.	651.	621.	625.	627.
231	575.	560.	472.	434.	309.	266.	213.	204.	142.	102.
241	57.	38.	39.	26.	17.	10.	9.	6.	6.	5.
251	1.	3.	3.	4.	3.	3.	8.	8.	4.	5.
261	3.	3.	2.	6.	10.	5.	3.	4.	8.	6.
271	5.	9.	9.	12.	8.	9.	6.	6.	6.	6.
281	9.	10.	12.	8.	10.	9.	6.	8.	12.	9.
291	9.	17.	13.	13.	22.	16.	18.	20.	18.	29.
301	10.	20.	16.	11.	12.	17.	21.	22.	20.	19.
311	18.	19.	20.	20.	19.	13.	28.	30.	27.	33.
321	26.	27.	25.	28.	32.	32.	24.	34.	30.	39.
331	45.	49.	47.	43.	36.	57.	58.	58.	71.	59.
341	92.	86.	112.	114.	140.	118.	167.	192.	199.	223.
351	249.	247.	285.	284.	330.	335.	361.	348.	372.	394.
361	347.	381.	369.	344.	307.	287.	243.	196.	167.	125.
371	113.	95.	62.	47.	40.	19.	20.	9.	9.	7.
381	3.	0.	3.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
411	0.	0.	1.	0.	0.	0.	0.	1.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	1.	0.	0.	0.	0.	0.	1.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
461	0.	1.	0.	1.	0.	0.	0.	0.	1.	2.
471	0.	0.	1.	1.	1.	1.	1.	1.	0.	0.
481	0.	1.	0.	1.	1.	0.	0.	0.	0.	2.
491	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

A J Johnson 1-19-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT WHC-SD-WM-DP-074, REV. 0

SAMPLE
S94T283-BLK
File ID: 3a3537.CNF

Counted on: 1/19/95 @ 1: 6
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

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			

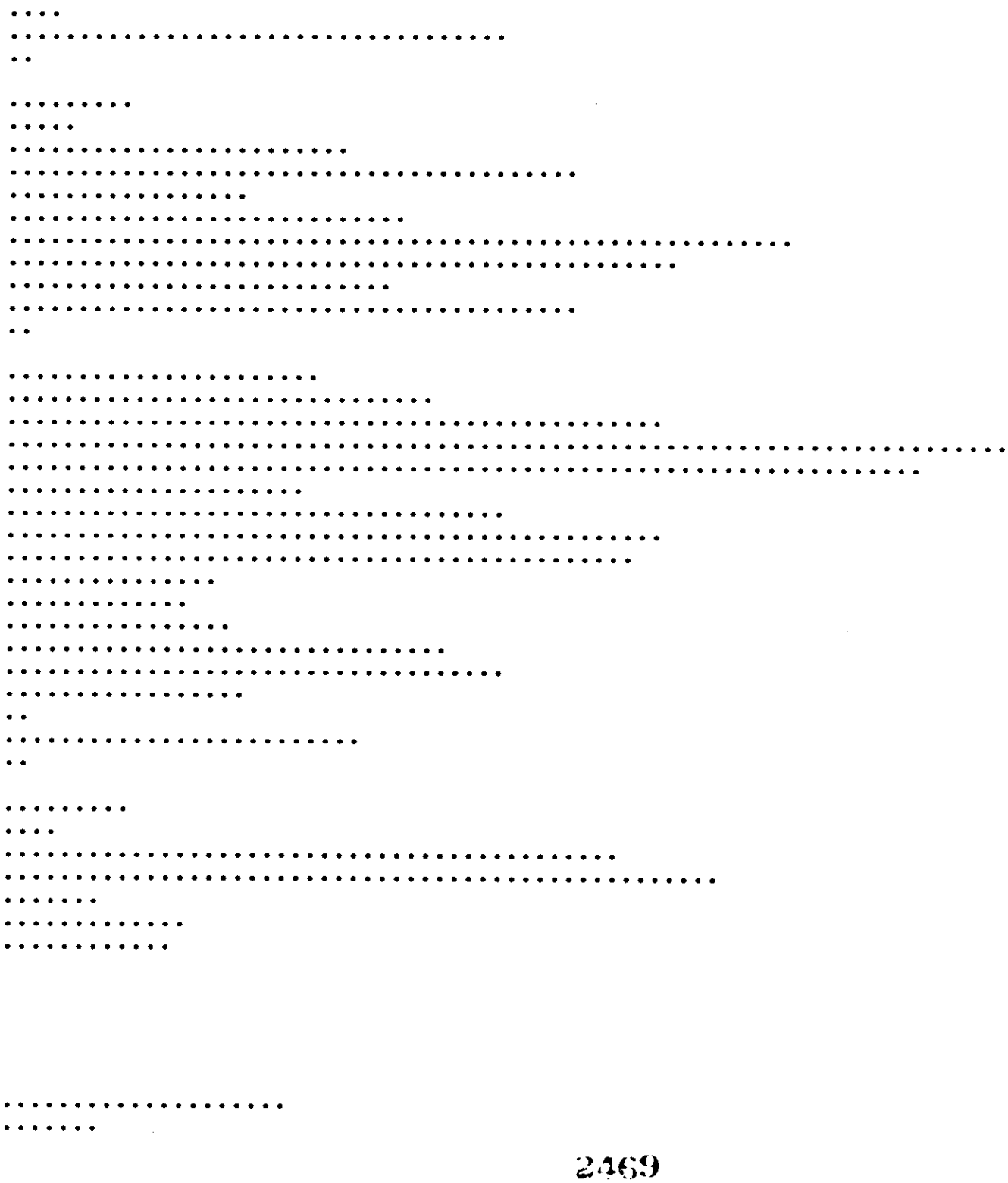
DETECTOR CALIBRATION
Energy(MEV) = 4.100 + (0.0046)*Channel
Energy range (MeV): 4.100 TO 6.455
Efficiency = 0.2586 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	77.0	100.000
Smoothed	77.0	99.977
Composite fit	0.0	0.000
Residuals	77.0	100.000

Analyzed by: _____
EMB

Spectrum 3a3537.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 4.9



Raw Data Dump for AEA Spectrum: 3a3537.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	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
91	0.	0.	0.	1.	0.	0.	0.	0.	2.	0.
101	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
111	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.
121	0.	1.	1.	1.	1.	0.	0.	0.	0.	1.
131	0.	0.	1.	0.	1.	1.	0.	0.	0.	0.
141	1.	0.	0.	0.	0.	2.	1.	0.	0.	0.
151	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
161	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
171	0.	0.	0.	1.	1.	0.	0.	1.	0.	0.
181	0.	1.	0.	0.	0.	0.	1.	1.	0.	0.
191	0.	2.	0.	0.	0.	1.	1.	0.	3.	0.
201	0.	1.	0.	2.	0.	0.	1.	0.	0.	0.
211	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.
221	0.	0.	2.	0.	0.	1.	0.	0.	0.	1.
231	0.	1.	1.	1.	0.	1.	0.	0.	0.	0.
241	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
251	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
261	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.
271	0.	0.	1.	0.	1.	0.	0.	0.	1.	0.
281	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
291	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
301	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
311	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
341	1.	1.	0.	0.	1.	2.	0.	0.	0.	0.
351	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
361	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
431	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	1.	0.	0.	0.	1.	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.								

1-19-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
S94T283-SAM
File ID: 4a4002.CNF

Counted on: 1/19/95 @ 1: 7
Detector: AEA4
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	622.4	622.4	360.766	360.766	12.000	5.579	6.000	1.976
2	11.1	11.1	302.345	301.790	14.000	10.699	7.000	2.089
3	41.8	41.8	229.985	229.980	10.000	4.441	5.000	1.912

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
1	Cm244	0.918	5.796	5.787	0.009	0.03	21.83	1.9	174.8	0.787E-04
	Cm243		5.786	5.787	-.001				239.4	0.108E-03
2	Am241	0.027	5.480	5.510	-.030	0.05	0.63	13.8	5.4	0.243E-05
	Pu238		5.499	5.510	-.011				7.0	0.317E-05
3	Pu239	0.053	5.143	5.173	-.030	0.02	1.25	8.1	10.0	0.452E-05
	Pu240		5.144	5.173	-.029				10.0	0.452E-05
Totals:		0.997	<--valid peaks only-->				23.71			

DETECTOR CALIBRATION
Energy(MEV) = 4.092 + (0.0047)*Channel
Energy range (MeV): 4.092 TO 6.498
Efficiency = 0.1249 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	11414.0	100.000
Smoothed	11414.0	100.000
Composite fit	11383.4	99.732
Residuals	30.6	0.268

Analyzed by: _____
EMB

Spectrum 4a4002.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 3849.9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Raw Data Dump for AEA Spectrum: 4a4002.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.	1.	0.	0.	0.	0.	0.
31	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	1.	0.	0.	0.	0.	0.	1.	0.	0.	0.
71	0.	0.	0.	1.	0.	1.	0.	0.	0.	0.
81	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	1.	0.	0.	1.	0.	0.	1.	0.	0.	0.
111	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
121	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.
131	0.	1.	0.	0.	0.	1.	0.	0.	1.	1.
141	1.	0.	1.	0.	0.	0.	1.	2.	1.	0.
151	0.	1.	1.	0.	1.	0.	2.	0.	0.	1.
161	0.	1.	1.	0.	1.	0.	0.	0.	1.	0.
171	2.	1.	1.	1.	1.	0.	0.	2.	0.	2.
181	1.	1.	2.	2.	1.	0.	0.	2.	1.	2.
191	5.	1.	4.	0.	5.	0.	1.	3.	3.	1.
201	2.	4.	3.	3.	1.	1.	1.	2.	3.	4.
211	0.	6.	4.	4.	3.	9.	11.	15.	11.	14.
221	28.	27.	24.	31.	33.	25.	33.	36.	48.	43.
231	59.	31.	31.	15.	17.	6.	2.	1.	0.	2.
241	1.	0.	1.	1.	1.	1.	0.	0.	1.	1.
251	1.	3.	0.	1.	1.	2.	2.	2.	0.	3.
261	1.	2.	1.	0.	0.	6.	0.	2.	2.	3.
271	2.	6.	4.	2.	1.	5.	3.	5.	3.	3.
281	2.	6.	7.	6.	10.	4.	5.	3.	4.	15.
291	5.	4.	8.	11.	8.	8.	14.	14.	11.	10.
301	15.	15.	13.	13.	12.	13.	5.	6.	9.	10.
311	9.	9.	5.	13.	10.	11.	14.	18.	10.	23.
321	22.	18.	20.	22.	22.	21.	27.	28.	21.	18.
331	28.	36.	25.	25.	29.	29.	43.	42.	49.	48.
341	70.	79.	89.	102.	134.	157.	192.	245.	266.	324.
351	335.	405.	413.	405.	419.	487.	497.	566.	627.	711.
361	678.	670.	583.	498.	356.	198.	114.	49.	18.	5.
371	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	1.	0.	0.	0.	0.	1.	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.	2.	0.	2.	0.	1.	0.	0.	0.
481	1.	2.	0.	2.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
511	0.	0.								

A. Johansen 1-19-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
S94T283-DUP
File ID: 5a5929.CNF

Counted on: 1/19/95 @ 1: 7
Detector: AEA5
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	773.0	773.0	362.641	362.641	24.000	20.017	12.000	8.929
2	14.1	14.1	235.110	235.110	20.000	8.728	10.000	2.056

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	Cm243	0.967	5.786	5.769	0.017	0.09	36.86	1.5	410.9	0.185E-03
	Pu236		5.756	5.769	-.013				306.1	0.138E-03
2	Pu239	0.018	5.143	5.170	-.027	0.04	0.69	10.8	5.6	0.253E-05
	Pu240		5.144	5.170	-.026				5.6	0.253E-05
		---					---			
Totals:		0.986	<--valid peaks only-->				37.55			

DETECTOR CALIBRATION
Energy(MEV) = 4.065 + (0.0047)*Channel
Energy range (MeV): 4.065 TO 6.471
Efficiency = 0.1229 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	18292.0	100.000
Smoothed	18292.0	100.000
Composite fit	18027.2	98.552
Residuals	264.8	1.448

Analyzed by: _____
EMB

Spectrum 5a5929.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5895.7


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2
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1
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Raw Data Dump for AEA Spectrum: 5a5929.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.	0.	0.	1.	0.	0.	0.	1.	0.	0.
31	1.	1.	1.	0.	0.	0.	0.	1.	1.	0.
41	1.	0.	1.	2.	0.	0.	0.	0.	0.	1.
51	0.	0.	1.	1.	1.	1.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
71	1.	1.	1.	0.	1.	0.	1.	0.	1.	0.
81	0.	1.	0.	1.	1.	0.	0.	0.	1.	2.
91	1.	1.	1.	0.	0.	2.	0.	1.	0.	0.
101	1.	0.	1.	0.	1.	1.	0.	1.	0.	0.
111	0.	0.	2.	0.	1.	1.	1.	0.	0.	1.
121	0.	0.	2.	0.	0.	1.	0.	1.	0.	2.
131	1.	1.	2.	0.	0.	1.	1.	2.	1.	0.
141	1.	0.	1.	1.	0.	0.	1.	3.	2.	0.
151	1.	1.	1.	1.	1.	1.	0.	0.	0.	0.
161	1.	1.	2.	1.	1.	2.	1.	1.	2.	2.
171	2.	0.	1.	0.	1.	2.	0.	1.	1.	0.
181	2.	0.	1.	3.	1.	0.	3.	3.	1.	0.
191	1.	1.	1.	1.	1.	2.	1.	4.	0.	2.
201	1.	0.	0.	1.	2.	1.	1.	2.	5.	2.
211	3.	3.	4.	2.	6.	6.	2.	4.	11.	7.
221	9.	6.	7.	6.	7.	10.	15.	4.	10.	14.
231	20.	17.	7.	6.	16.	17.	9.	9.	7.	3.
241	5.	7.	6.	2.	5.	2.	0.	1.	4.	3.
251	1.	3.	2.	4.	3.	4.	1.	2.	3.	1.
261	3.	4.	2.	1.	3.	5.	2.	4.	2.	4.
271	7.	3.	5.	5.	5.	2.	4.	1.	1.	2.
281	5.	4.	2.	4.	2.	2.	4.	6.	3.	4.
291	6.	4.	7.	8.	6.	10.	6.	4.	5.	15.
301	9.	7.	11.	2.	2.	4.	5.	5.	7.	3.
311	6.	5.	7.	4.	4.	7.	6.	5.	6.	8.
321	7.	8.	7.	11.	6.	9.	10.	16.	8.	19.
331	16.	15.	28.	40.	33.	37.	48.	52.	57.	68.
341	77.	108.	134.	133.	182.	222.	215.	255.	278.	367.
351	408.	399.	490.	532.	611.	634.	669.	743.	732.	768.
361	814.	826.	803.	752.	760.	752.	670.	649.	590.	456.
371	403.	362.	256.	238.	201.	158.	119.	78.	66.	40.
381	29.	18.	11.	12.	5.	3.	3.	4.	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.	1.	0.	0.	0.	0.	0.
421	1.	0.	1.	0.	0.	1.	0.	0.	0.	0.
431	1.	0.	0.	0.	0.	1.	1.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
451	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.
471	0.	0.	0.	3.	0.	0.	0.	1.	0.	0.
481	0.	0.	0.	1.	0.	2.	1.	2.	1.	1.
491	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
511	0.	0.								

A G Johnson 1-19-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
S94T284-SAM
File ID: 6a6750.CNF

Counted on: 1/19/95 @ 1: 8
Detector: AEA6
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	858.9	858.9	359.629	359.629	16.000	10.420	8.000	3.264
2?	12.9	12.9	310.064	310.064	12.000	0.000	6.000	5.529
3	12.9	12.9	301.716	301.240	12.000	2.562	6.000	0.390
4	63.7	63.7	227.589	227.576	14.000	7.712	7.000	2.127

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	Cm243	0.922	5.786	5.756	0.030	0.05	37.33	1.5	392.7	0.177E-03
	Pu236		5.756	5.756	0.000				292.5	0.132E-03
2		????		5.528			0.00	1000.		
3	Pu238	0.018	5.499	5.487	0.012	0.01	0.75	12.7	8.0	0.359E-05
	Am241		5.480	5.487	-.007				6.1	0.275E-05
4	Pu239	0.068	5.143	5.148	-.005	0.04	2.76	5.4	21.2	0.955E-05
	Pu240		5.144	5.148	-.004				21.2	0.955E-05
		---					---			
Totals:		1.008	<--valid peaks only-->				40.83			

DETECTOR CALIBRATION
Energy(MEV) = 4.102 + (0.0046)*Channel
Energy range (MeV): 4.102 TO 6.457
Efficiency = 0.1302 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	19439.0	100.000
Smoothed	19440.2	100.006
Composite fit	19600.7	100.832
Residuals	-161.7	-0.832

Analyzed by: _____
EMB

Spectrum 6a6750.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 6266.0


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4
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Raw Data Dump for AEA Spectrum: 6a6750.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
21	1.	1.	1.	0.	0.	0.	0.	1.	1.	1.
31	0.	0.	0.	0.	1.	0.	1.	1.	0.	0.
41	0.	0.	0.	0.	0.	2.	0.	0.	0.	0.
51	0.	0.	0.	2.	0.	0.	0.	0.	1.	0.
61	1.	0.	0.	0.	0.	2.	0.	1.	0.	0.
71	0.	0.	0.	0.	0.	1.	1.	0.	1.	0.
81	1.	0.	0.	1.	0.	0.	0.	1.	0.	1.
91	0.	0.	1.	0.	2.	1.	0.	0.	0.	0.
101	0.	0.	0.	1.	2.	0.	0.	0.	0.	1.
111	0.	0.	0.	1.	1.	1.	0.	1.	0.	0.
121	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.
131	4.	0.	1.	1.	0.	1.	0.	1.	1.	0.
141	0.	2.	0.	1.	2.	1.	1.	1.	1.	0.
151	2.	0.	2.	0.	0.	3.	0.	2.	1.	2.
161	1.	2.	0.	2.	0.	0.	3.	0.	2.	0.
171	0.	0.	0.	1.	0.	0.	0.	1.	0.	1.
181	0.	1.	2.	0.	1.	2.	1.	2.	4.	0.
191	4.	2.	2.	3.	0.	5.	4.	5.	9.	4.
201	4.	8.	15.	7.	14.	7.	16.	13.	10.	14.
211	22.	20.	22.	36.	28.	28.	42.	39.	44.	61.
221	48.	61.	56.	60.	61.	63.	55.	73.	73.	48.
231	51.	50.	33.	21.	14.	9.	5.	1.	3.	1.
241	0.	0.	2.	3.	2.	3.	0.	2.	1.	1.
251	2.	2.	0.	1.	0.	0.	1.	4.	2.	6.
261	4.	2.	4.	2.	2.	4.	2.	3.	3.	7.
271	4.	5.	4.	3.	1.	1.	5.	2.	8.	8.
281	5.	11.	4.	10.	9.	7.	7.	8.	15.	18.
291	6.	17.	13.	14.	20.	9.	20.	18.	13.	18.
301	21.	21.	26.	12.	15.	12.	13.	5.	7.	13.
311	9.	15.	4.	7.	6.	18.	16.	12.	10.	18.
321	16.	20.	16.	25.	22.	24.	50.	31.	37.	40.
331	46.	49.	60.	59.	98.	90.	112.	104.	140.	145.
341	182.	203.	212.	296.	319.	342.	385.	433.	548.	533.
351	609.	664.	689.	757.	828.	847.	801.	930.	894.	892.
361	872.	836.	829.	648.	539.	431.	313.	194.	119.	58.
371	35.	12.	7.	3.	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.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	1.	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.	1.	2.	0.	0.
471	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

1-19-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT WHC-SD-WM-DP-074, REV. 0

SAMPLE
S94T284-DUP
File ID: 7a7354.CNF

Counted on: 1/19/95 @ 1: 9
Detector: AEA7
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	703.8	703.8	363.091	363.091	14.000	6.345	7.000	2.707
2	12.1	12.1	231.647	231.647	16.000	6.149	8.000	2.918

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	0.971	5.796	5.793	0.003	0.03	23.19	1.9	90.8	0.409E-04
	Cm243		5.786	5.793	-.007				124.4	0.560E-04
2	Pu239	0.016	5.143	5.175	-.032	0.03	0.38	14.6	1.5	0.663E-06
	Pu240		5.144	5.175	-.031				1.5	0.663E-06
		---					---			
Totals:		0.986	<--valid peaks only-->				23.57			

DETECTOR CALIBRATION
Energy(MEV) = 4.086 + (0.0047)*Channel
Energy range (MeV): 4.086 TO 6.493
Efficiency = 0.2554 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	11471.0	100.000
Smoothed	11471.0	100.000
Composite fit	11314.6	98.637
Residuals	156.4	1.363

Analyzed by: _____
EMB

Spectrum 7a7354.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 4813.0


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Raw Data Dump for AEA Spectrum: 7a7354.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.	2.	0.	0.	0.
31	1.	0.	1.	0.	0.	1.	0.	0.	0.	1.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
51	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
61	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.
71	0.	0.	1.	0.	0.	0.	0.	1.	1.	0.
81	0.	1.	0.	0.	0.	0.	0.	0.	0.	2.
91	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
101	0.	0.	1.	0.	0.	1.	0.	1.	1.	0.
111	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
121	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
131	0.	1.	1.	0.	0.	1.	0.	1.	1.	1.
141	1.	1.	0.	1.	1.	1.	0.	1.	0.	0.
151	0.	2.	0.	0.	0.	0.	0.	1.	0.	2.
161	0.	2.	0.	0.	0.	0.	0.	2.	0.	0.
171	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
181	0.	1.	2.	0.	1.	0.	0.	0.	0.	0.
191	0.	1.	0.	1.	1.	1.	0.	0.	1.	0.
201	1.	1.	0.	1.	3.	2.	0.	1.	1.	1.
211	0.	2.	1.	6.	2.	1.	1.	0.	1.	5.
221	6.	4.	7.	6.	7.	5.	3.	7.	9.	15.
231	16.	13.	12.	11.	9.	5.	10.	2.	1.	2.
241	0.	0.	0.	2.	0.	0.	0.	1.	0.	0.
251	1.	0.	0.	1.	1.	0.	0.	2.	0.	1.
261	2.	1.	2.	0.	1.	1.	1.	0.	3.	5.
271	0.	2.	0.	6.	0.	3.	3.	1.	4.	0.
281	4.	2.	1.	3.	4.	2.	2.	3.	6.	5.
291	4.	3.	4.	5.	5.	5.	4.	5.	6.	2.
301	7.	8.	7.	7.	13.	7.	3.	8.	3.	5.
311	6.	1.	4.	3.	4.	3.	6.	5.	8.	6.
321	10.	9.	7.	15.	7.	12.	15.	10.	12.	12.
331	13.	9.	20.	21.	21.	22.	22.	24.	27.	32.
341	36.	43.	54.	74.	57.	91.	99.	122.	167.	223.
351	265.	268.	312.	370.	408.	408.	459.	477.	548.	649.
361	692.	755.	809.	737.	706.	557.	461.	300.	214.	150.
371	87.	37.	21.	9.	5.	2.	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.	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.	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.	0.
471	0.	0.	0.	0.	1.	0.	0.	1.	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	3.	0.								

5y103

LABCORE Data Entry Template for Worklist# 444

Analyst: JMV **Instrument:** PU01 _____ **Method:** LA-503-156 D-1

Worklist Comment: Use a 1 mL sample size. --LLF WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test		Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@PU23902	PU23901	SOLID			N/A	uCi/g
1	BLNK-PREP				@PU23902	PU23901T	SOLID			N/A	% Rec
1	BLNK-PREP				@PU23902	PU23901E	SOLID			N/A	% Ct.
1	BLNK-PREP				@PU23902	PU23801	SOLID			N/A	uCi/g
1	BLNK-PREP				@PU23902	PU23801E	SOLID			N/A	% Ct.
2	STD	83843			@PU23902	PU23901	SOLID			N/A	uCi/g
2	STD				@PU23902	PU23901E	SOLID			N/A	% Ct.
2	STD				@PU23902	PU23901T	SOLID			N/A	% Rec
3	SAMPLE	S94T000283	0	R	@PU23902	PU23901	SOLID	N/A			uCi/g
3	SAMPLE	S94T000283	0	R	@PU23902	PU23901T	SOLID	N/A			% Rec
3	SAMPLE	S94T000283	0	R	@PU23902	PU23901E	SOLID	N/A			% Ct.
3	SAMPLE	S94T000283	0	R	@PU23902	PU23801	SOLID	N/A			uCi/g
3	SAMPLE	S94T000283	0	R	@PU23902	PU23801E	SOLID	N/A			% Ct.
4	DUP	S94T000283	0	R	@PU23902	PU23901	SOLID			N/A	uCi/g
4	DUP	S94T000283	0	R	@PU23902	PU23901T	SOLID			N/A	% Rec
4	DUP	S94T000283	0	R	@PU23902	PU23901E	SOLID			N/A	% Ct.
4	DUP	S94T000283	0	R	@PU23902	PU23801	SOLID			N/A	uCi/g
4	DUP	S94T000283	0	R	@PU23902	PU23801E	SOLID			N/A	% Ct.
5	SAMPLE	S94T000284	0	R	@PU23902	PU23901	SOLID	N/A			uCi/g
5	SAMPLE	S94T000284	0	R	@PU23902	PU23901T	SOLID	N/A			% Rec

Data Entry Comments:

Units shown for QC (SPK) may not reflect the actual units.

LABCORE Data Entry Template for Worklist# 444

Analyst: JMV **Instrument:** PU01 _____ **Method:** LA-503-156 D-1

Worklist Comment: Use a 1 mL sample size. --LLF WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test		Matrix	Actual	Found	DL	Unit
5	SAMPLE	S94T000284	0	R	@PU23902	PU23901E	SOLID	N/A			% Ct.
5	SAMPLE	S94T000284	0	R	@PU23902	PU23801	SOLID	N/A			uCi/g
5	SAMPLE	S94T000284	0	R	@PU23902	PU23801E	SOLID	N/A			% Ct.
6	DUP	S94T000284	0	R	@PU23902	PU23901	SOLID			N/A	uCi/g
6	DUP	S94T000284	0	R	@PU23902	PU23901T	SOLID			N/A	% Rec
6	DUP	S94T000284	0	R	@PU23902	PU23901E	SOLID			N/A	% Ct.
6	DUP	S94T000284	0	R	@PU23902	PU23801	SOLID			N/A	uCi/g
6	DUP	S94T000284	0	R	@PU23902	PU23801E	SOLID			N/A	% Ct.

Final page for worklist # 444

Analyst Signature

1-23-95
Date

1-25-95

Data Entry Comments:

Units shown for QC (SPK) may not reflect the actual units.

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						BLANK
Type	Date Counted		01/24/95	Pu 236 AEA Frac.	(C236)	0.897
BLANK	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)	0
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)	0.072
444	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		1513
Test Code	Digest Grams of Solids/L	(Dg/L)	9.9601	AT Count Time (min)	(TC)	30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	7
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		16.74
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2022.47	Pu 239 cpm		1.34
S94T283	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/g	<	7.9402E-04
WC38931	Decay Time = Date Counted - Tracer Preparation Date					
Analyst	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]					
JMV	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV					
Date	Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]					
01/23/95	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)					
Time	Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]					
03:00 PM	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100					

NOTE: Pu 239\240 Result is a LESS THAN Value.

Pu 239/240	µCi/g	=	< 7.94E-04
Relative Counting Error		=	8.0%

NOTE: Pu 238 Result is a LESS THAN Value.

Pu 238	µCi/g	=	< 7.94E-04
Relative Counting Error		=	100.0%
Pu 236 Tracer Recovery		=	38.5%

DETECTION LEVELS in µCi/g
Pu 239/240
7.94E-04
Pu 238
7.94E-04

Data Entry by:	[signature]	Date:	01/27/95
Approved by:	[signature]	Date:	30 Jan 95

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						STANDARD
Type	Date Counted		01/24/95	Pu 236 AEA Frac.	(C236)	0.357
STANDARD	Sample Volume in mL	(SS)	0.100	Pu 238 AEA Frac.	(C238)	0
Work List	Sample D.F.	(DF)	101	Pu 239 AEA Frac.	(C239)	0.626
444	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		1948
Test Code	Digest D.F.	(DDF)	1	AT Count Time (min)	(TC)	30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	7
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		9.86
LIQUID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2022.47	Pu 239 cpm		17.26
WORKLIST#444	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/L		1.6135E+02
WC38931	Decay Time = Date Counted - Tracer Preparation Date					
Analyst	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]					
JMV	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV					
Date	Pu-239/240 µCi/L = (C239 * Pu-236 Decay Corr'd Value * SPKV * DF * DDF * (1000mL/L)) / (C236 * SS * (2220000dpm/µCi))					
01/23/95	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)					
Time	Pu-238 µCi/mL = (Pu238 dpm * DF * DDF) / [(Pu 236 Tracer Recovery / 100) * (2220000dpm/µCi) * SS]					
03:00 PM	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100					

Pu 239/240	µCi/mL	=	1.61E-01	DETECTION LEVELS in µCi/mL
Relative Counting Error		=	3.6%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238	µCi/mL	=	< 3.78E-02	3.78E-02
Relative Counting Error		=	100.0%	Pu 238
Pu 236 Tracer Recovery		=	20.5%	3.78E-02

Data Entry by:	[signature]	Date:	01/27/95
Approved by:	[signature]	Date:	30 Jan 95

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						SAMPLE
Type	Date Counted		01/24/95	Pu 236 AEA Frac.	(C236)	0.888
SAMPLE	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)	0
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)	0.068
444	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		1772
Test Code	Digest Grams of Solids/L	(Dg/L)	9.9601	AT Count Time (min)	(TC)	30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	7
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		12.4
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2022.47	Pu 239 cpm		0.94
S94T283	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/g		7.0042E-04
WC38931	Decay Time = Date Counted - Tracer Preparation Date					
Analyst	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]					
JMV	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV					
Date	Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]					
01/23/95	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)					
Time	Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]					
03:00 PM	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100					

				DETECTION LEVELS in µCi/g
Pu 239/240	µCi/g	=	7.00E-04	
Relative Counting Error		=	9.6%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238	µCi/g	=	< 6.76E-04	6.76E-04
Relative Counting Error		=	100.0%	Pu 238
Pu 236 Tracer Recovery		=	45.7%	6.76E-04

Data Entry by:	[signature]	Date:	01/27/95
Approved by:	[signature]	Date:	30 Jan 95

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

BEST AVAILABLE COPY

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						DUPLICATE
Type	Date Counted		01/24/95	Pu 236 AEA Frac.	(C236)	0.872
DUPLICATE	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)	0
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)	0.045
444	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		2756
Test Code	Digest Grams of Solids/L	(Dg/L)	9.962	AT Count Time (min)	(TC)	30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	7
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		34.35
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2022.47	Pu 239 cpm		0.4
S94T283	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/g =		4.7193E-04
WC38931	Decay Time = Date Counted - Tracer Preparation Date					
Analyst	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]					
JMV	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV					
Date	Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]					
01/23/95	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)					
Time	Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]					
03:00 PM	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100					

Pu 239/240	µCi/g	=	4.72E-04	DETECTION LEVELS in µCi/g
Relative Counting Error		=	14.2%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238	µCi/g	=	< 4.30E-04	4.30E-04
Relative Counting Error		=	100.0%	Pu 238
Pu 236 Tracer Recovery		=	73.2%	4.30E-04

Data Entry by:	[signature]	Date:	01/31/95
Approved by:	[signature]	Date:	31 Jan 95

Form 503156PC Rev. 2.0

AEA fraction was calculated from peak heights due to poor resolution of mount. [signature] 1-31-95

2488

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						SAMPLE
Type	Date Counted		01/24/95	Pu 236 AEA Frac.	(C236)	0.86
SAMPLE	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)	0.049
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)	0.091
444	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		3155
Test Code	Digest Grams of Solids/L	(Dg/L)	10.2425	AT Count Time (min)	(TC)	30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	7
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		39.77
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		1.66
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2022.47	Pu 239 cpm		0
S94T284	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/g		9.4117E-04
WC38931						
Analyst						
JMV						
Date						
01/23/95						
Time						
03:00 PM						

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV

Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

Pu 239/240	µCi/g	=	9.41E-04	DETECTION LEVELS in µCi/g
Relative Counting Error		=	100.0%	
				Pu 239/240
Pu 238	µCi/g	=	5.07E-04	3.72E-04
Relative Counting Error		=	7.1%	Pu 238
Pu 236 Tracer Recovery		=	83.5%	3.72E-04

Data Entry by:	SSFitts	Date:	01/30/95
Approved by:	SSFitts	Date:	30 Jan 95

Form 503156PC Rev. 2.0

Results calculated using AEA fraction generated from peak heights. Software did not identify the Pu 239/40 peak for an AEA fraction. SSFitts 1-30-95 2389

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						DUPLICATE
Type	Date Counted		01/24/95	Pu 236 AEA Frac.	(C236)	0.935
DUPLICATE	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)	0.028
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)	0.031
444	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		2582
Test Code	Digest Grams of Solids/L	(Dg/L)	10.1256	AT Count Time (min)	(TC)	30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	7
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		25.76
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0.78
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2022.47	Pu 239 cpm		0.86
S94T284	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/g =	<	3.9488E-04
WC38931						
Analyst						
JMV						
Date						
01/23/95						
Time						
03:00 PM						

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV

Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

NOTE: Pu 239\240 Result is a LESS THAN Value.

Pu 239/240	µCi/g	=	< 3.95E-04
Relative Counting Error		=	9.8%

NOTE: Pu 238 Result is a LESS THAN Value.

Pu 238	µCi/g	=	< 3.95E-04
Relative Counting Error		=	10.3%
Pu 236 Tracer Recovery		=	73.1%

DETECTION LEVELS in µCi/g
Pu 239/240
3.95E-04
Pu 238
3.95E-04

Data Entry by:	[signature]	Date:	01/27/95
Approved by:	[signature]	Date:	30 Jan 95

Form 503156PC Rev. 2.0

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT WHC-SD-WM-DP-074, REV. 0

SAMPLE
S94T283-BLK
File ID: 2a2818.CNF

Counted on: 1/24/95 @ 0:39
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	245.8	245.8	360.247	360.247	20.000	17.138	10.000	2.904
2	9.5	9.5	231.738	231.660	36.000	149.974	18.000	18.125

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	Cm243	0.897	5.786	5.755	0.031	0.08	16.74	2.2	196.5	0.885E-04
	Pu236		5.756	5.755	0.001				146.4	0.659E-04
2	Pu239	0.072	5.143	5.163	-.020	0.69	1.34	9.8	11.5	0.516E-05
	Pu240		5.144	5.163	-.019				11.5	0.516E-05
Totals:		0.969	<--valid peaks only-->				18.08			

DETECTOR CALIBRATION
Energy(MEV) = 4.098 + (0.0046)*Channel
Energy range (MeV): 4.098 TO 6.453
Efficiency = 0.1167 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	8957.0	100.000
Smoothed	8956.6	99.995
Composite fit	8678.8	96.894
Residuals	278.2	3.106

Analyzed by: [signature]
DM
1-24-95

Spectrum 2a2818.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 1832.1


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Raw Data Dump for AEA Spectrum: 2a2818.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
21	0.	0.	1.	0.	0.	1.	0.	0.	3.	0.
31	0.	0.	0.	1.	2.	1.	0.	0.	1.	1.
41	2.	1.	1.	0.	0.	1.	0.	0.	1.	1.
51	2.	1.	0.	1.	0.	0.	0.	0.	0.	2.
61	1.	1.	0.	1.	2.	1.	2.	0.	2.	1.
71	1.	1.	0.	0.	0.	3.	1.	1.	0.	0.
81	0.	1.	0.	1.	0.	1.	1.	2.	0.	1.
91	1.	0.	0.	0.	1.	3.	0.	2.	3.	3.
101	0.	0.	1.	0.	3.	2.	2.	0.	1.	0.
111	0.	1.	2.	1.	3.	1.	0.	2.	2.	1.
121	2.	0.	1.	1.	1.	2.	2.	4.	2.	2.
131	1.	1.	1.	1.	0.	1.	1.	0.	2.	2.
141	2.	3.	0.	1.	2.	0.	2.	1.	1.	4.
151	4.	2.	2.	1.	2.	2.	2.	2.	3.	5.
161	5.	1.	5.	0.	0.	4.	4.	0.	4.	2.
171	7.	3.	1.	4.	1.	0.	4.	1.	4.	2.
181	2.	1.	5.	3.	0.	3.	3.	4.	2.	4.
191	3.	2.	5.	3.	3.	5.	5.	1.	4.	3.
201	4.	1.	3.	5.	4.	0.	4.	5.	2.	5.
211	6.	8.	4.	10.	4.	10.	9.	8.	6.	8.
221	3.	6.	6.	9.	5.	5.	10.	9.	12.	8.
231	8.	11.	14.	7.	5.	5.	6.	7.	9.	4.
241	5.	6.	6.	4.	9.	8.	11.	8.	5.	2.
251	9.	7.	8.	5.	7.	10.	5.	10.	14.	8.
261	8.	5.	13.	9.	6.	8.	11.	7.	18.	18.
271	9.	16.	19.	14.	13.	11.	12.	16.	15.	10.
281	12.	17.	16.	17.	14.	16.	12.	12.	17.	16.
291	21.	11.	16.	15.	16.	21.	19.	18.	13.	25.
301	21.	18.	19.	36.	25.	19.	19.	26.	27.	36.
311	18.	28.	21.	35.	23.	27.	45.	23.	32.	31.
321	34.	35.	41.	54.	35.	55.	43.	64.	59.	67.
331	65.	65.	70.	70.	66.	101.	82.	88.	98.	112.
341	108.	114.	125.	131.	148.	155.	177.	164.	190.	187.
351	192.	200.	214.	232.	214.	243.	270.	251.	244.	218.
361	263.	250.	239.	198.	190.	152.	167.	113.	113.	97.
371	87.	58.	54.	39.	29.	22.	5.	7.	4.	7.
381	0.	1.	1.	1.	0.	0.	1.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
431	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
451	0.	0.	0.	2.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	1.	0.	0.	0.	0.	0.	1.	1.	1.	1.
481	1.	0.	1.	0.	1.	1.	1.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
S94T283-STD
File ID: 3a3551.CNF

Counted on: 1/24/95 @ 0:39
Detector: AEA3
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	314.0	314.0	363.536	363.536	14.000	6.285	7.000	2.978
2?	10.0	10.0	303.499	303.474	10.000	3.566	5.000	2.293
3	599.3	599.3	230.432	230.432	12.000	6.031	6.000	3.461

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	0.357	5.796	5.779	0.017	0.03	9.86	2.8	80.3	0.362E-04
	Cm243		5.786	5.779	0.007				109.9	0.495E-04
2		????		5.503			0.23	18.9		
3	Pu239	0.626	5.143	5.167	-.024	0.03	17.26	2.2	140.6	0.633E-04
	Pu240		5.144	5.167	-.023				140.6	0.633E-04
		---					---			
Totals:		0.983	<--valid peaks only-->				27.12			

DETECTOR CALIBRATION
Energy(MEV) = 4.107 + (0.0046)*Channel
Energy range (MeV): 4.107 TO 6.462
Efficiency = 0.1228 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	13242.0	100.000
Smoothed	13242.0	100.000
Composite fit	13132.0	99.170
Residuals	110.0	0.830

Analyzed by: DM 1-24-95

Spectrum 3a3551.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 4072.1


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Raw Data Dump for AEA Spectrum: 3a3551.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.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
41	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
51	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
101	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
111	0.	1.	0.	2.	1.	0.	0.	1.	0.	0.
121	0.	0.	0.	0.	0.	1.	4.	0.	0.	0.
131	1.	0.	0.	1.	0.	0.	1.	1.	0.	1.
141	0.	0.	1.	1.	1.	1.	0.	0.	2.	1.
151	2.	2.	2.	1.	0.	1.	0.	0.	0.	0.
161	0.	1.	3.	0.	3.	1.	0.	1.	1.	0.
171	0.	1.	1.	2.	2.	2.	1.	1.	0.	3.
181	1.	1.	2.	10.	4.	2.	4.	5.	2.	3.
191	2.	5.	13.	10.	6.	5.	3.	8.	4.	7.
201	4.	11.	12.	10.	11.	11.	20.	16.	16.	27.
211	34.	23.	47.	56.	76.	88.	101.	124.	124.	166.
221	209.	237.	273.	296.	410.	445.	537.	606.	614.	648.
231	701.	618.	486.	408.	308.	219.	107.	69.	28.	28.
241	7.	5.	3.	1.	3.	0.	1.	1.	1.	2.
251	0.	0.	2.	1.	0.	0.	0.	1.	0.	1.
261	0.	3.	0.	1.	1.	2.	0.	3.	1.	2.
271	2.	1.	0.	0.	0.	1.	2.	0.	0.	0.
281	1.	2.	1.	0.	0.	1.	2.	2.	2.	2.
291	2.	4.	1.	4.	3.	2.	3.	3.	3.	6.
301	10.	8.	11.	16.	9.	4.	6.	5.	2.	1.
311	1.	1.	1.	1.	3.	2.	1.	0.	1.	0.
321	1.	4.	4.	3.	3.	2.	4.	4.	1.	6.
331	4.	3.	5.	6.	4.	6.	13.	6.	11.	19.
341	8.	17.	11.	18.	19.	33.	46.	40.	60.	74.
351	72.	94.	126.	120.	149.	202.	202.	216.	221.	230.
361	291.	330.	353.	371.	312.	268.	233.	170.	124.	73.
371	51.	12.	11.	5.	9.	0.	0.	1.	0.	1.
381	0.	0.	0.	0.	0.	0.	0.	1.	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.	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	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
S94T283-SAM
File ID: 4a4016.CNF

Counted on: 1/24/95 @ 0:40
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	425.7	425.7	362.868	362.868	12.000	3.918	6.000	1.709
2	31.6	31.6	231.682	231.682	12.000	5.364	6.000	2.607

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	0.888	5.796	5.790	0.006	0.02	12.30	2.6	142.4	0.641E-04
	Cm243		5.786	5.790	-.004				195.0	0.878E-04
2	Pu239	0.068	5.143	5.173	-.030	0.03	0.94	9.2	10.8	0.488E-05
	Pu240		5.144	5.173	-.029				10.8	0.488E-05
Totals:		0.956	<--valid peaks only-->				13.24			

DETECTOR CALIBRATION
Energy(MEV) = 4.084 + (0.0047)*Channel
Energy range (MeV): 4.084 TO 6.490
Efficiency = 0.0864 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	6646.0	100.000
Smoothed	6646.0	100.000
Composite fit	6354.1	95.609
Residuals	291.9	4.391

Analyzed by: M Barnes
DM 1-24-95

Spectrum 4a4016.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 2652.7


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Raw Data Dump for AEA Spectrum: 4a4016.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.	1.	0.	0.	0.	1.
31	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	1.	0.	0.	2.	0.	0.	0.	1.	1.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	0.	0.	0.	0.	1.	0.	0.	2.
91	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
111	0.	0.	0.	0.	1.	0.	0.	0.	0.	2.
121	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
131	0.	0.	0.	1.	0.	2.	0.	0.	0.	1.
141	1.	0.	0.	0.	1.	2.	2.	0.	1.	1.
151	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
161	1.	1.	1.	1.	2.	0.	0.	1.	1.	0.
171	0.	0.	1.	2.	0.	0.	0.	0.	0.	0.
181	1.	2.	1.	2.	0.	0.	1.	0.	1.	0.
191	1.	0.	2.	1.	1.	1.	1.	2.	0.	1.
201	1.	0.	1.	4.	1.	5.	3.	2.	1.	2.
211	3.	0.	1.	2.	5.	5.	3.	8.	9.	8.
221	7.	8.	19.	17.	17.	21.	20.	24.	30.	42.
231	25.	37.	33.	29.	28.	11.	8.	6.	4.	1.
241	0.	0.	1.	1.	1.	1.	2.	0.	0.	2.
251	4.	1.	1.	0.	2.	0.	0.	3.	2.	1.
261	2.	3.	1.	2.	2.	2.	0.	0.	0.	3.
271	3.	2.	1.	0.	1.	1.	0.	2.	3.	2.
281	3.	1.	2.	4.	0.	2.	3.	4.	2.	5.
291	4.	3.	3.	6.	7.	2.	5.	10.	6.	5.
301	8.	6.	4.	9.	7.	13.	12.	9.	4.	9.
311	4.	5.	6.	6.	5.	3.	7.	2.	6.	6.
321	6.	4.	8.	4.	8.	14.	7.	10.	12.	7.
331	10.	11.	11.	9.	11.	14.	23.	17.	26.	21.
341	18.	24.	28.	36.	26.	50.	55.	64.	88.	107.
351	162.	182.	205.	234.	229.	228.	220.	267.	277.	294.
361	433.	482.	519.	452.	404.	268.	169.	67.	29.	14.
371	4.	1.	0.	0.	0.	0.	0.	0.	0.	0.
381	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	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.	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.	1.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
S94T283-DUP
File ID: 5a5943.CNF

Counted on: 1/24/95 @ 0:41
Detector: AEA5
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	536.5	536.5	360.974	360.974	26.000	21.643	13.000	4.498
2	19.8	19.8	283.401	282.628	42.000	244.830	21.000	73.037
3?	5.1	5.1	255.370	255.000	6.000	0.000	3.000	2.765
4	18.0	18.0	236.513	236.067	28.000	4.964	14.000	14.165
5	15.1	15.1	228.393	226.770	8.000	2.082	4.000	0.139

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm243	0.872	5.786	5.743	0.043	0.10	34.35	1.5	335.2	0.151E-03
	Pu236		5.756	5.743	0.013				249.7	0.112E-03
2	Th228	0.078	5.430	5.375	0.055	1.15	3.09	17.4	31.0	0.139E-04
	Am243		5.276	5.375	-.099				22.2	0.100E-04
3		????		5.245			0.01	676.		
4	Pu239	0.010	5.143	5.156	-.013	0.02	0.40	20.6	2.8	0.128E-05
	Pu240		5.144	5.156	-.012				2.8	0.128E-05
5		0.045		5.113		0.01	1.78	7.4	12.7	0.573E-05
Totals:		1.006	<--valid peaks only-->				39.62			

DETECTOR CALIBRATION
Energy(MEV) = 4.047 + (0.0047)*Channel
Energy range (MeV): 4.047 TO 6.453
Efficiency = 0.1404 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	18904.0	100.000
Smoothed	18904.0	100.000
Composite fit	19026.0	100.645
Residuals	-122.0	-0.645

2500

Analyzed by: DM 1-24-95

Spectrum 5a5943.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 3892.6


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Raw Data Dump for AEA Spectrum: 5a5943.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	1.	5.	2.
21	1.	3.	1.	1.	0.	1.	3.	3.	0.	1.
31	1.	2.	0.	0.	2.	0.	1.	2.	1.	2.
41	0.	1.	4.	0.	1.	1.	1.	3.	3.	1.
51	1.	1.	1.	0.	3.	5.	2.	3.	0.	3.
61	1.	3.	1.	1.	5.	3.	3.	1.	1.	2.
71	1.	2.	1.	3.	0.	3.	4.	1.	3.	1.
81	1.	1.	3.	4.	1.	2.	1.	3.	2.	3.
91	2.	0.	2.	3.	0.	5.	4.	4.	4.	3.
101	1.	2.	1.	2.	0.	3.	1.	4.	4.	4.
111	4.	1.	5.	3.	5.	1.	4.	1.	3.	5.
121	3.	6.	2.	4.	7.	3.	8.	2.	3.	5.
131	6.	4.	3.	2.	0.	3.	4.	4.	2.	4.
141	6.	3.	2.	1.	2.	4.	2.	4.	7.	3.
151	3.	5.	6.	7.	5.	3.	4.	4.	3.	5.
161	4.	3.	5.	3.	3.	5.	3.	6.	7.	2.
171	10.	9.	5.	2.	4.	5.	4.	7.	6.	7.
181	6.	5.	10.	6.	7.	5.	6.	7.	3.	8.
191	6.	6.	9.	10.	4.	7.	6.	8.	7.	9.
201	10.	14.	7.	12.	12.	17.	12.	8.	16.	15.
211	10.	7.	22.	12.	17.	11.	19.	15.	13.	14.
221	12.	16.	22.	14.	22.	15.	18.	27.	27.	17.
231	19.	10.	23.	15.	25.	18.	19.	27.	15.	18.
241	12.	13.	16.	11.	16.	15.	13.	11.	5.	10.
251	7.	15.	13.	12.	21.	16.	9.	13.	19.	11.
261	13.	8.	17.	20.	16.	14.	12.	17.	21.	26.
271	19.	19.	14.	22.	26.	21.	29.	18.	18.	20.
281	21.	25.	29.	21.	27.	20.	21.	21.	24.	26.
291	26.	39.	36.	30.	30.	38.	42.	32.	41.	36.
301	33.	32.	41.	44.	53.	45.	36.	50.	54.	47.
311	63.	46.	37.	42.	57.	54.	62.	71.	65.	88.
321	64.	78.	93.	95.	65.	79.	87.	81.	107.	100.
331	93.	102.	117.	135.	146.	131.	137.	152.	178.	188.
341	198.	223.	232.	222.	284.	282.	283.	267.	342.	357.
351	358.	432.	434.	437.	472.	519.	515.	569.	532.	563.
361	558.	527.	538.	518.	498.	438.	425.	381.	291.	301.
371	261.	204.	168.	138.	96.	100.	70.	41.	31.	29.
381	15.	8.	9.	5.	5.	3.	0.	3.	0.	0.
391	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.
401	0.	0.	0.	0.	0.	1.	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.	1.	0.	0.	0.	0.	0.	0.
461	1.	2.	0.	0.	0.	0.	1.	0.	1.	0.
471	1.	0.	0.	0.	1.	0.	1.	1.	0.	1.
481	0.	0.	1.	1.	1.	0.	1.	1.	0.	1.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
S94T284-SAM
File ID: 6a6764.CNF

Counted on: 1/24/95 @ 0:41
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	691.0	691.0	355.825	355.825	20.000	14.676	10.000	3.288
2	17.8	17.8	300.333	300.333	24.000	0.647	12.000	0.055

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	Ra224	0.877	5.680	5.730	-.050	0.07	38.77	1.4	335.8	0.151E-03
	Pu236		5.756	5.730	0.026				322.1	0.145E-03
2	Am241	0.038	5.480	5.475	0.005	0.00	1.66	9.0	14.4	0.648E-05
Totals:		0.914	<--valid peaks only-->				40.43			

DETECTOR CALIBRATION
Energy(MEV) = 4.093 + (0.0046)*Channel
Energy range (MeV): 4.093 TO 6.448
Efficiency = 0.1228 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	21228.0	100.000
Smoothed	21229.8	100.008
Composite fit	19405.8	91.416
Residuals	1822.2	8.584

Analyzed by: DM 1-24-95

Spectrum 6a6764.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5280.9


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Raw Data Dump for AEA Spectrum: 6a6764.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
21	0.	0.	0.	0.	1.	1.	1.	0.	0.	0.
31	1.	1.	1.	2.	2.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	1.	1.	1.	1.	0.
51	0.	0.	1.	1.	1.	3.	1.	0.	0.	0.
61	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
71	0.	1.	0.	0.	1.	1.	0.	0.	0.	1.
81	3.	2.	1.	0.	0.	2.	0.	0.	0.	1.
91	3.	0.	1.	4.	1.	2.	0.	1.	0.	0.
101	1.	0.	0.	2.	3.	1.	2.	2.	0.	1.
111	2.	2.	3.	1.	5.	0.	1.	1.	3.	2.
121	2.	2.	0.	1.	0.	2.	3.	1.	0.	1.
131	1.	3.	5.	0.	6.	2.	2.	4.	2.	1.
141	3.	4.	7.	4.	3.	4.	1.	4.	1.	6.
151	4.	4.	2.	3.	6.	1.	4.	1.	1.	0.
161	5.	0.	2.	6.	2.	4.	2.	2.	3.	1.
171	3.	4.	2.	2.	5.	6.	5.	11.	11.	12.
181	6.	3.	8.	3.	13.	12.	8.	2.	8.	11.
191	12.	14.	17.	9.	14.	7.	12.	15.	24.	27.
201	15.	14.	18.	28.	26.	30.	30.	34.	28.	32.
211	41.	58.	37.	57.	51.	38.	48.	74.	59.	54.
221	79.	63.	66.	67.	54.	63.	59.	58.	64.	36.
231	24.	22.	24.	19.	13.	8.	11.	6.	10.	6.
241	4.	5.	3.	3.	9.	3.	4.	7.	7.	5.
251	10.	10.	8.	5.	4.	8.	9.	10.	9.	10.
261	8.	7.	8.	13.	11.	11.	8.	12.	15.	18.
271	13.	8.	15.	17.	15.	19.	17.	22.	14.	24.
281	20.	17.	20.	17.	29.	16.	22.	28.	29.	31.
291	39.	32.	31.	31.	35.	39.	37.	36.	30.	43.
301	42.	34.	34.	29.	40.	33.	30.	42.	33.	26.
311	47.	41.	41.	46.	56.	60.	54.	67.	56.	62.
321	69.	78.	87.	94.	96.	115.	122.	127.	116.	151.
331	113.	155.	165.	182.	199.	226.	241.	267.	308.	317.
341	327.	400.	429.	444.	462.	501.	554.	604.	633.	613.
351	649.	646.	643.	686.	744.	710.	728.	668.	623.	590.
361	528.	468.	375.	332.	240.	170.	150.	73.	62.	32.
371	10.	8.	0.	1.	0.	0.	0.	0.	0.	0.
381	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	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.	1.	0.	0.	0.	0.	0.	0.	0.	0.
471	1.	0.	0.	0.	0.	0.	0.	1.	0.	0.
481	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT WHC-SD-WM-DP-074, REV. 0

SAMPLE
S94T284-DUP
File ID: 7a7368.CNF

Counted on: 1/24/95 @ 0:42
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	752.0	752.0	363.084	363.084	14.000	6.789	7.000	2.771
2	10.2	10.2	306.054	305.775	14.000	5.435	7.000	0.634
3?	1.6	1.6	301.622	300.984	4.000	0.000	2.000	1.843
4	23.8	23.8	230.243	230.216	18.000	8.408	9.000	3.440

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	Pu236	0.935	5.756	5.758	-.002	0.03	25.76	1.8	260.2	0.117E-03
	Cm243		5.786	5.758	0.028				349.4	0.157E-03
2	Pu238	0.028	5.499	5.495	0.004	0.03	0.78	10.9	10.8	0.484E-05
	Am241		5.480	5.495	-.015				8.2	0.371E-05
3		????		5.473			0.00	1000.		
4	Pu239	0.031	5.143	5.147	-.004	0.04	0.86	10.2	8.6	0.385E-05
	Pu240		5.144	5.147	-.003				8.6	0.385E-05
		---					---			
Totals:		0.995	<--valid peaks only-->				27.40			

DETECTOR CALIBRATION
Energy(MEV) = 4.088 + (0.0046)*Channel
Energy range (MeV): 4.088 TO 6.443
Efficiency = 0.1010 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	13218.0	100.000
Smoothed	13218.7	100.005
Composite fit	13154.8	99.522
Residuals	63.2	0.478

Analyzed by: DM 1-24-95

Spectrum 7a7368.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5159.4


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Raw Data Dump for AEA Spectrum: 7a7368.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	2.	0.	0.
21	0.	1.	0.	1.	0.	0.	0.	1.	1.	1.
31	0.	1.	0.	1.	0.	0.	0.	0.	0.	0.
41	1.	0.	0.	0.	1.	1.	0.	0.	0.	1.
51	0.	1.	2.	0.	0.	0.	0.	1.	0.	2.
61	0.	0.	1.	3.	0.	1.	0.	0.	0.	0.
71	1.	1.	1.	2.	0.	0.	0.	0.	1.	0.
81	0.	0.	0.	1.	1.	0.	0.	0.	2.	0.
91	0.	0.	0.	1.	0.	1.	0.	2.	0.	2.
101	1.	1.	0.	1.	1.	0.	0.	1.	0.	0.
111	0.	1.	1.	2.	0.	0.	0.	0.	0.	1.
121	0.	0.	1.	0.	0.	0.	1.	0.	1.	0.
131	2.	0.	0.	1.	0.	0.	0.	1.	0.	1.
141	0.	2.	1.	0.	0.	1.	0.	2.	0.	0.
151	0.	1.	1.	0.	0.	0.	0.	1.	1.	0.
161	0.	2.	0.	4.	0.	0.	1.	0.	0.	3.
171	1.	4.	0.	2.	1.	2.	1.	0.	1.	2.
181	0.	0.	0.	1.	1.	0.	3.	3.	2.	0.
191	3.	1.	2.	2.	1.	1.	3.	3.	2.	2.
201	3.	2.	1.	1.	2.	1.	0.	3.	2.	5.
211	1.	3.	7.	7.	8.	11.	11.	7.	7.	8.
221	11.	10.	14.	17.	23.	14.	20.	22.	33.	25.
231	25.	29.	14.	26.	13.	13.	11.	6.	5.	7.
241	2.	2.	1.	0.	2.	2.	1.	2.	2.	2.
251	2.	4.	3.	2.	3.	1.	0.	1.	1.	6.
261	1.	6.	4.	1.	4.	4.	2.	4.	2.	3.
271	1.	7.	3.	4.	0.	4.	0.	4.	4.	1.
281	5.	4.	2.	5.	9.	5.	7.	10.	7.	7.
291	12.	6.	5.	11.	7.	11.	8.	8.	9.	7.
301	14.	11.	8.	6.	14.	13.	13.	10.	8.	7.
311	8.	3.	8.	5.	2.	5.	7.	4.	4.	11.
321	7.	10.	10.	14.	18.	11.	14.	10.	15.	25.
331	27.	16.	20.	18.	24.	34.	34.	43.	39.	29.
341	61.	58.	66.	68.	80.	136.	128.	165.	179.	226.
351	273.	297.	337.	434.	442.	461.	494.	535.	618.	681.
361	738.	800.	829.	848.	732.	589.	472.	345.	262.	163.
371	129.	68.	38.	25.	11.	2.	3.	0.	0.	0.
381	0.	1.	0.	0.	0.	0.	0.	0.	1.	1.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
461	0.	1.	1.	0.	0.	0.	0.	0.	1.	0.
471	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	1.	0.	0.	1.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
511	24.	0.								

LABCORE Data Entry Template for Worklist# 828

Analyst: JMJ **Instrument:** PU01 **Book #** 104843

Method: LA-503-156 Rev/Mod D-1 WHC-SD-WM-DP-074, REV. 0

Worklist Comment: See chemist for sample size. --LLF ~~[illegible]~~ 11-Apr-95

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				@PU23902 PU23901	LIQUID			N/A	uCi/mL
		1	STD				@PU23902 PU23901E	LIQUID			N/A	% Ct. Error
		1	STD				@PU23902 PU23901T	LIQUID			N/A	% Recovery
		2	BLNK-PREP				@PU23902 PU23901	LIQUID			N/A	uCi/mL
		2	BLNK-PREP				@PU23902 PU23901T	LIQUID			N/A	% Recovery
		2	BLNK-PREP				@PU23902 PU23901E	LIQUID			N/A	% Ct. Error
		2	BLNK-PREP				@PU23902 PU23801	LIQUID			N/A	uCi/mL
		2	BLNK-PREP				@PU23902 PU23801E	LIQUID			N/A	% Ct. Error
94000020	SY-103	3	SAMPLE	S95T000328	0		@PU23902 PU23901	LIQUID	N/A			uCi/mL
94000020	SY-103	3	SAMPLE	S95T000328	0		@PU23902 PU23901T	LIQUID	N/A			% Recovery
94000020	SY-103	3	SAMPLE	S95T000328	0		@PU23902 PU23901E	LIQUID	N/A			% Ct. Error
94000020	SY-103	3	SAMPLE	S95T000328	0		@PU23902 PU23801	LIQUID	N/A			uCi/mL
94000020	SY-103	3	SAMPLE	S95T000328	0		@PU23902 PU23801E	LIQUID	N/A			% Ct. Error
94000020	SY-103	4	DUP	S95T000328	0		@PU23902 PU23901	LIQUID			N/A	uCi/mL
94000020	SY-103	4	DUP	S95T000328	0		@PU23902 PU23901T	LIQUID			N/A	% Recovery
94000020	SY-103	4	DUP	S95T000328	0		@PU23902 PU23901E	LIQUID			N/A	% Ct. Error
94000020	SY-103	4	DUP	S95T000328	0		@PU23902 PU23801	LIQUID			N/A	uCi/mL
94000020	SY-103	4	DUP	S95T000328	0		@PU23902 PU23801E	LIQUID			N/A	% Ct. Error

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Data Entry Template for Worklist# 828

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
94000020	SY-103	5	SAMPLE	S95T000329	0		@PU23902 PU23901	LIQUID	N/A			uCi/mL
94000020	SY-103	5	SAMPLE	S95T000329	0		@PU23902 PU23901T	LIQUID	N/A			% Recovery
94000020	SY-103	5	SAMPLE	S95T000329	0		@PU23902 PU23901E	LIQUID	N/A			% Ct. Error
94000020	SY-103	5	SAMPLE	S95T000329	0		@PU23902 PU23801	LIQUID	N/A			uCi/mL
94000020	SY-103	5	SAMPLE	S95T000329	0		@PU23902 PU23801E	LIQUID	N/A			% Ct. Error
94000020	SY-103	6	DUP	S95T000329	0		@PU23902 PU23901	LIQUID			N/A	uCi/mL
94000020	SY-103	6	DUP	S95T000329	0		@PU23902 PU23901T	LIQUID			N/A	% Recovery
94000020	SY-103	6	DUP	S95T000329	0		@PU23902 PU23901E	LIQUID			N/A	% Ct. Error
94000020	SY-103	6	DUP	S95T000329	0		@PU23902 PU23801	LIQUID			N/A	uCi/mL
94000020	SY-103	6	DUP	S95T000329	0		@PU23902 PU23801E	LIQUID			N/A	% Ct. Error

Final page for worklist # 828

[signature] 3-31-95
Analyst Signature **Date**

[signature] 4/6/95
Analyst Signature **Date**

WHC-SD-WM-DP-074, REV. 0

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

							BLANK
	Date Counted		04/02/95	Pu 236 AEA Frac.	(C236)		0.431
BLANK	Sample Volume in mL	(SS)	0.100	Pu 238 AEA Frac.	(C238)		0
	Sample D.F.	(DF)	101	Pu 239 AEA Frac.	(C239)		0.69
WORKLIST 828	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts			6234
	Digest D.F.	(DDF)	1	AT Count Time (min)	(TC)		30
GPU230-01	Tracer Book No.		92843	Background in cpm	(Bkg)		4
	Tracer Preparation Date		09/02/94	Pu 236 cpm			26.88
LC130	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm			0
	Pu-236 Decay Corr'd value	(dpm/mL)	1932.94	Pu 239 cpm			36.5
WORKLIST 828	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)		490
				Pu 239/240 µCi/L			1.2038E+02
WC35831	Decay Time = Date Counted - Tracer Preparation Date						
	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]						
JMV	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV						
	Pu-239/240 µCi/L = (C239 * Pu-236 Decay Corr'd Value * SPKV * DF * DDF * (1000mL/L)) / (C236 * SS * (2220000dpm/µCi))						
03/31/95	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)						
	Pu-238 µCi/mL = (Pu238 dpm * DF * DDF) / [(Pu 236 Tracer Recovery / 100) * (2220000dpm/µCi) * SS]						
03:00 PM	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100						

STANDARD 4.6.95

STANDARD 4.6.95

Pu 239/240	µCi/mL	=	1.20E-01	DETECTION LEVELS in µCi/mL
Relative Counting Error		=	2.3%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238	µCi/mL	=	< 8.05E-03	8.05E-03
Relative Counting Error		=	100.0%	Pu 238
Pu 236 Tracer Recovery		=	76.0%	8.05E-03

Data Entry by: C. Quinn Date: 04/06/95

Approved by: Date: 6 Apr 95

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						BLANK
Type	Date Counted		04/02/95	Pu 236 AEA Frac.	(C236)	1.077
BLANK	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)	0
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)	0
828	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		2334
Test Code	Digest D.F.	(DDF)	20	AT Count Time (min)	(TC)	30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	4
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		26.98
LIQUID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	1932.94	Pu 239 cpm		0
WORKLIST 828	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/L =	<	5.8981E-02
WC38931						
Analyst						
JMV						
Date						
03/31/96						
Time						
03:00 PM						

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of ((-ln2 * Decay Time) / 1040.95)]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV

Pu-239/240 µCi/L = (C239 * Pu-236 Decay Corr'd Value * SPKV * DF * DDF * (1000mL/L)) / (C236 * SS * (2220000dpm/µCi))

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu-238 µCi/mL = (Pu238 dpm * DF * DDF) / [(Pu 236 Tracer Recovery / 100) * (2220000dpm/µCi) * SS]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

NOTE: Pu 239\240 Result is a LESS THAN Value.

Pu 239/240	µCi/mL	=	< 5.90E-05	DETECTION LEVELS in µCi/mL
Relative Counting Error		=	100.0%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240 5.90E-05
Pu 238	µCi/mL	=	< 5.90E-05	
Relative Counting Error		=	100.0%	Pu 238 5.90E-05
Pu 236 Tracer Recovery		=	82.2%	

Data Entry by:	[signature]	Date:	04/04/95
Approved by:	[signature]	Date:	4 Apr 95

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

							SAMPLE
Type	Date Counted		04/02/95	Pu 236 AEA Frac.	(C236)		0.987
SAMPLE	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)		0
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)		0.02
828	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts			2659
Test Code	Digest D.F.	(DDF)	20	AT Count Time (min)	(TC)		30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)		4
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm			28.29
LIQUID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm			0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	1932.94	Pu 239 cpm			11.9
S95T328	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)		480
Instrument Code				Pu 239/240 µCi/L =		<	6.1239E-02
WC38931							
Analyst							
JMV							
Date							
03/31/95							
Time							
03:00 PM							

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV

Pu-239/240 µCi/L = (C239 * Pu-236 Decay Corr'd Value * SPKV * DF * DDF * (1000mL/L)) / (C236 * SS * (2220000dpm/µCi))

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu-238 µCi/mL = (Pu238 dpm * DF * DDF) / [(Pu 236 Tracer Recovery / 100) * (2220000dpm/µCi) * SS]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

NOTE: Pu 239\240 Result is a LESS THAN Value.

Pu 239/240	µCi/mL	=	< 6.12E-05	DETECTION LEVELS in µCi/mL
Relative Counting Error		=	3.1%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240 6.12E-05
Pu 238	µCi/mL	=	< 6.12E-05	
Relative Counting Error		=	100.0%	Pu 238 6.12E-05
Pu 236 Tracer Recovery		=	86.4%	

Data Entry by:	[signature]	Date:	04/04/95
Approved by:	[signature]	Date:	4 Apr 95

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						DUPLICATE
Type	Date Counted		04/02/95	Pu 236 AEA Frac.	(C236)	1.01
DUPLICATE	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)	0
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)	0.018
828	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		2471
Test Code	Digest D.F.	(DDF)	20	AT Count Time (min)	(TC)	30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	4
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		22.68
LIQUID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	1932.94	Pu 239 cpm		0.41
S95T328	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/L =	<	6.3158E-02
WC38931	Decay Time = Date Counted - Tracer Preparation Date					
Analyst	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]					
JMV	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV					
Date	Pu-239/240 µCi/L = (C239 * Pu-236 Decay Corr'd Value * SPKV * DF * DDF * (1000mL/L)) / (C236 * SS * (2220000dpm/µCi))					
03/31/95	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)					
Time	Pu-238 µCi/mL = (Pu238 dpm * DF * DDF) / [(Pu 236 Tracer Recovery / 100) * (2220000dpm/µCi) * SS]					
03:00 PM	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100					

NOTE: Pu 239\240 Result is a LESS THAN Value.

Pu 239/240	µCi/mL	=	< 6.32E-05	DETECTION LEVELS in µCi/mL
Relative Counting Error		=	14.1%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240 6.32E-05
Pu 238	µCi/mL	=	< 6.32E-05	
Relative Counting Error		=	100.0%	Pu 238 6.32E-05
Pu 236 Tracer Recovery		=	81.9%	

Data Entry by:	[signature]	Date:	04/04/95
Approved by:	[signature]	Date:	4 Apr 95

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						SAMPLE
Type	Date Counted		04/02/95	Pu 236 AEA Frac.	(C236)	0.973
SAMPLE	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)	0.011
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)	0.038
828	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		2615
Test Code	Digest D.F.	(DDF)	20	AT Count Time (min)	(TC)	30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	4
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		28.7
LIQUID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0.33
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	1932.94	Pu 239 cpm		1.11
S95T329	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/L =		6.8009E-02
WC38931						
Analyst						
JMV						
Date						
03/31/95						
Time						
03:00 PM						

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV

Pu-239/240 µCi/L = (C239 * Pu-236 Decay Corr'd Value * SPKV * DF * DDF * (1000mL/L)) / (C236 * SS * (2220000dpm/µCi))

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu-238 µCi/mL = (Pu238 dpm * DF * DDF) / [(Pu 236 Tracer Recovery / 100) * (2220000dpm/µCi) * SS]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

Pu 239/240	µCi/mL	=	6.80E-05	DETECTION LEVELS in µCi/mL
Relative Counting Error		=	8.7%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238	µCi/mL	=	< 6.41E-05	6.41E-05
Relative Counting Error		=	15.7%	Pu 238
Pu 236 Tracer Recovery		=	83.7%	6.41E-05

Data Entry by: [signature] Date: 04/04/95

Approved by: [signature] Date: 4 Apr 95

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						DUPLICATE
Type	Date Counted		04/02/95	Pu 236 AEA Frac.	(C236)	0.957
DUPLICATE	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)	0.017
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)	0.04
828	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		2662
Test Code	Digest D.F.	(DDF)	20	AT Count Time (min)	(TC)	30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	4
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		28.1
LIQUID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0.5
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	1932.94	Pu 239 cpm		1.16
S96T329	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/L =		7.2785E-02
WC38931						
Analyst						
JMV						
Date						
03/31/95						
Time						
03:00 PM						

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV

Pu-239/240 µCi/L = (C239 * Pu-236 Decay Corr'd Value * SPKV * DF * DDF * (1000mL/L)) / (C236 * SS * (2220000dpm/µCi))

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu-238 µCi/mL = (Pu238 dpm * DF * DDF) / [(Pu 236 Tracer Recovery / 100) * (2220000dpm/µCi) * SS]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

				DETECTION LEVELS in µCi/mL
Pu 239/240	µCi/mL	=	7.28E-05	
Relative Counting Error		=	8.5%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238	µCi/mL	=	< 6.51E-05	6.51E-05
Relative Counting Error		=	12.8%	Pu 238
Pu 236 Tracer Recovery		=	83.9%	6.51E-05

Data Entry by: C.J. Chuen Date: 04/04/95

Approved by: [signature] Date: 4 Apr 95

Form 503156PC Rev. 2.0

D. H. [illegible]
4-2-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
WORKLIST#828-STD
File ID: 22a2206.CNF

Counted on: 4/ 2/95 @ 1:19
Detector: AEA22
Geometry number: 1
Count time: 28807. Sec

PEAK ANALYSIS

Peak	Peak height		Peak center		FWHM		Tau	
ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	694.6	694.6	363.137	363.137	10.000	4.072	5.000	1.129
2?	11.2	11.2	304.481	304.063	6.000	0.974	3.000	0.479
3	1127.3	1127.3	231.265	231.265	12.000	4.436	6.000	1.656

PEAK RESULTS
Peak Error Limit: 25%

Peak		AEA	Peak Centroid				Count	%err		Activity
ID	Isotope	Frac	Exp.	Obs.	Diff.	FWHM	Rate c/m	@95	d/m	uCi/ea
1	Pu236	0.431	5.756	5.751	0.005	0.02	26.68	1.7	283.6	0.128E-03
2		????		5.479			0.23	29.5		
3	Pu239	0.590	5.143	5.145	-.002	0.02	36.50	1.5	380.2	0.171E-03
	Pu240		5.144	5.145	-.001				380.2	0.171E-03
		---					---			
Totals:		1.022	<--valid peaks only-->				63.18			

DETECTOR CALIBRATION
Energy(MEV) = 4.081 + (0.0046)*Channel
Energy range (MeV): 4.081 TO 6.436
Efficiency = 0.0960 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	29694.0	100.000
Smoothed	29693.8	99.999
Composite fit	30444.7	102.528
Residuals	-750.7	-2.528

Analyzed by: _____
ALJ

Spectrum 22a2206.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 7568.0


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

Raw Data Dump for AEA Spectrum: 22a2206.CNF

1	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
41	1.	0.	0.	2.	0.	0.	0.	0.	0.	0.
51	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.
61	1.	0.	0.	0.	0.	0.	1.	2.	0.	0.
71	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.
81	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
91	0.	0.	1.	1.	0.	0.	1.	1.	0.	2.
101	0.	1.	0.	2.	0.	1.	1.	1.	2.	0.
111	0.	0.	0.	0.	2.	0.	0.	0.	1.	0.
121	2.	1.	2.	0.	1.	0.	1.	1.	2.	1.
131	2.	0.	1.	0.	0.	0.	0.	1.	0.	1.
141	1.	0.	1.	0.	2.	3.	0.	0.	2.	1.
151	2.	9.	1.	1.	3.	2.	4.	3.	2.	2.
161	4.	4.	3.	2.	5.	3.	2.	1.	3.	4.
171	1.	6.	4.	5.	7.	2.	3.	5.	6.	13.
181	7.	12.	7.	9.	9.	15.	8.	11.	13.	14.
191	23.	13.	13.	9.	22.	26.	28.	32.	23.	34.
201	38.	46.	47.	55.	65.	73.	71.	92.	104.	108.
211	114.	150.	169.	185.	213.	249.	303.	329.	371.	435.
221	509.	564.	582.	659.	733.	811.	929.	1057.	1051.	1172.
231	1270.	1219.	1203.	939.	655.	309.	116.	53.	13.	5.
241	0.	0.	0.	1.	2.	4.	0.	3.	2.	4.
251	3.	7.	2.	8.	6.	7.	7.	4.	5.	4.
261	4.	5.	8.	13.	2.	14.	10.	3.	2.	3.
271	4.	3.	2.	1.	3.	2.	2.	1.	2.	4.
281	3.	2.	4.	3.	0.	5.	6.	2.	3.	6.
291	5.	4.	4.	7.	9.	9.	14.	7.	14.	14.
301	16.	13.	20.	12.	30.	20.	10.	6.	8.	12.
311	7.	1.	6.	10.	2.	6.	3.	6.	5.	5.
321	12.	7.	12.	9.	17.	11.	14.	14.	16.	33.
331	21.	33.	25.	35.	28.	29.	49.	48.	49.	42.
341	77.	84.	103.	121.	135.	160.	201.	205.	253.	282.
351	342.	380.	411.	448.	529.	506.	549.	515.	533.	590.
361	671.	700.	752.	817.	678.	587.	335.	154.	22.	4.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	1.	0.	1.	0.	1.	0.	1.	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
4-2-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
WORKLIST#828-BLK
File ID: 23a2305.CNF

Counted on: 4/ 2/95 @ 1:20
Detector: AEA23
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	677.1	677.1	360.082	360.082	12.000	3.771	6.000	0.975

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	Pu236	1.077	5.756	5.748	0.008	0.02	26.98	1.7	258.5	0.116E-03
Totals:		1.077	<--valid peaks only-->				26.98			

DETECTOR CALIBRATION
Energy(MEV) = 4.091 + (0.0046)*Channel
Energy range (MeV): 4.091 TO 6.447
Efficiency = 0.1065 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	12024.0	100.000
Smoothed	12024.0	100.000
Composite fit	12951.2	107.711
Residuals	-927.2	-7.711

Analyzed by: _____
ALJ

Spectrum 23a2305.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 4559.0


```
1
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Raw Data Dump for AEA Spectrum: 23a2305.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.	1.	0.
31	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
61	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	0.	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	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
131	0.	1.	0.	0.	0.	1.	0.	0.	0.	0.
141	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
151	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
161	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
171	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
181	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
191	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
201	0.	1.	0.	0.	0.	0.	0.	0.	1.	0.
211	0.	1.	1.	0.	0.	0.	1.	0.	0.	0.
221	0.	0.	0.	0.	2.	0.	0.	0.	1.	0.
231	0.	1.	0.	1.	0.	1.	2.	0.	1.	1.
241	0.	2.	1.	1.	1.	2.	4.	7.	3.	1.
251	2.	7.	4.	3.	1.	2.	1.	3.	2.	1.
261	3.	5.	4.	10.	7.	7.	6.	2.	2.	0.
271	2.	0.	0.	0.	1.	2.	2.	1.	4.	3.
281	1.	5.	3.	3.	4.	2.	3.	5.	3.	3.
291	5.	2.	1.	2.	1.	1.	4.	3.	1.	2.
301	1.	5.	4.	3.	2.	3.	2.	2.	2.	3.
311	2.	1.	1.	6.	6.	2.	4.	3.	6.	6.
321	6.	10.	13.	9.	11.	15.	15.	16.	24.	34.
331	30.	41.	39.	53.	57.	56.	81.	97.	103.	123.
341	152.	161.	164.	211.	271.	275.	316.	349.	412.	441.
351	539.	548.	499.	526.	535.	530.	606.	622.	671.	729.
361	789.	708.	479.	279.	94.	18.	7.	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.	1.	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.	1.	1.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
471	0.	1.	1.	1.	1.	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. Wilkins
4-2-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
S95T000328-SAM
File ID: 24a2405.CNF

Counted on: 4/ 2/95 @ 1:21
Detector: AEA24
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	1060.0	1060.0	356.166	356.166	10.000	3.080	5.000	1.407
2?	10.7	10.7	297.589	297.490	8.000	2.419	4.000	1.217
3	12.0	12.0	260.414	260.405	10.000	3.295	5.000	1.529
4	22.0	22.0	225.426	225.404	10.000	3.974	5.000	2.107

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	Pu236	0.987	5.756	5.770	-.014	0.01	28.29	1.7	3564.0	0.161E-02
	Cm243		5.786	5.770	0.016				4784.5	0.216E-02
2		????		5.494			0.26	19.0		
3		0.011		5.320		0.02	0.32	15.9	39.9	0.180E-04
4	Pu239	0.020	5.143	5.155	-.012	0.02	0.58	11.9	71.4	0.322E-04
	Pu240		5.144	5.155	-.011				71.4	0.322E-04
		---					---			
Totals:		1.019	<--valid peaks only-->				29.19			

DETECTOR CALIBRATION
Energy(MEV) = 4.096 + (0.0047)*Channel
Energy range (MeV): 4.096 TO 6.502
Efficiency = 0.0081 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	13756.0	100.000
Smoothed	13756.0	100.000
Composite fit	14138.4	102.780
Residuals	-382.4	-2.780

Analyzed by: ALJ

Spectrum 24a2405.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 6880.7


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Raw Data Dump for AEA Spectrum: 24a2405.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
11	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.
21	0.	1.	0.	1.	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.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
71	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
81	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
91	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
101	0.	0.	0.	0.	0.	3.	0.	0.	0.	0.
111	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
121	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
131	1.	0.	0.	0.	1.	0.	1.	0.	1.	1.
141	0.	1.	2.	0.	0.	2.	1.	0.	1.	0.
151	0.	0.	0.	1.	0.	0.	0.	0.	0.	1.
161	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
171	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
181	0.	0.	1.	0.	0.	0.	1.	0.	0.	0.
191	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
201	1.	0.	0.	0.	0.	0.	3.	3.	1.	1.
211	3.	3.	2.	4.	7.	8.	11.	9.	15.	14.
221	10.	25.	22.	25.	21.	26.	21.	25.	9.	4.
231	4.	0.	0.	0.	0.	1.	0.	0.	1.	0.
241	0.	1.	5.	1.	3.	5.	8.	3.	4.	3.
251	4.	4.	5.	5.	0.	6.	10.	8.	15.	11.
261	17.	13.	6.	5.	2.	2.	3.	1.	0.	0.
271	1.	1.	0.	2.	2.	2.	2.	1.	1.	3.
281	3.	1.	4.	5.	4.	1.	1.	2.	5.	5.
291	3.	7.	6.	8.	7.	12.	11.	17.	10.	10.
301	2.	4.	3.	1.	0.	0.	0.	1.	0.	0.
311	1.	0.	1.	0.	2.	1.	0.	1.	3.	1.
321	2.	3.	3.	5.	6.	3.	7.	5.	11.	8.
331	13.	12.	18.	20.	21.	40.	47.	55.	73.	109.
341	128.	149.	272.	344.	388.	480.	519.	558.	567.	529.
351	521.	621.	780.	996.	1131.	1234.	1309.	1063.	717.	276.
361	77.	8.	0.	0.	0.	0.	0.	0.	0.	1.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.
421	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	2.	0.	0.	0.	0.	0.	0.
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.								

D. H. Mitchell
4-2-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
S95T000328-DUP
File ID: 25a2505.CNF

Counted on: 4/ 2/95 @ 1:22
Detector: AEA25
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	623.2	623.2	363.794	363.794	12.000	3.893	6.000	1.157
2	12.7	12.7	231.308	231.307	12.000	4.323	6.000	1.643

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	Pu236	1.010	5.756	5.761	-.005	0.02	22.68	1.9	1231.2	0.555E-03
2	Pu239	0.018	5.143	5.152	-.009	0.02	0.41	14.1	21.6	0.974E-05
	Pu240		5.144	5.152	-.008				21.6	0.974E-05
Totals:		1.028	<--valid peaks only-->				23.09			

DETECTOR CALIBRATION
Energy(MEV) = 4.088 + (0.0046)*Channel
Energy range (MeV): 4.088 TO 6.443
Efficiency = 0.0188 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	10779.0	100.000
Smoothed	10779.0	100.000
Composite fit	11083.9	102.829
Residuals	-304.9	-2.829

Analyzed by: _____
ALJ

Spectrum 25a2505.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 4203.9


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Raw Data Dump for AEA Spectrum: 25a2505.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.	1.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
71	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
111	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
121	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
131	0.	1.	0.	1.	0.	0.	0.	0.	1.	0.
141	3.	0.	0.	0.	0.	0.	0.	2.	0.	0.
151	1.	1.	1.	0.	0.	1.	2.	1.	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.	0.	0.
191	0.	0.	1.	0.	1.	1.	0.	1.	1.	0.
201	1.	0.	1.	1.	0.	0.	0.	0.	1.	3.
211	2.	0.	1.	2.	3.	3.	5.	7.	2.	7.
221	7.	5.	7.	8.	5.	5.	9.	9.	13.	16.
231	15.	12.	16.	11.	5.	4.	2.	0.	0.	1.
241	1.	0.	0.	1.	0.	2.	2.	1.	0.	4.
251	2.	3.	2.	1.	7.	7.	5.	4.	6.	7.
261	8.	7.	5.	3.	5.	2.	11.	7.	3.	9.
271	0.	3.	0.	0.	0.	0.	2.	1.	1.	3.
281	0.	3.	1.	2.	1.	2.	4.	4.	6.	7.
291	4.	4.	4.	4.	2.	4.	1.	7.	5.	5.
301	8.	7.	8.	9.	7.	5.	7.	5.	4.	3.
311	1.	4.	1.	3.	4.	5.	1.	2.	2.	8.
321	4.	5.	7.	13.	8.	10.	15.	7.	14.	12.
331	16.	23.	24.	22.	19.	32.	34.	40.	47.	47.
341	57.	81.	102.	86.	98.	121.	153.	174.	175.	201.
351	298.	324.	393.	364.	436.	463.	435.	425.	459.	534.
361	524.	597.	660.	698.	684.	616.	407.	211.	80.	7.
371	0.	0.	0.	1.	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.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
461	0.	0.	2.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	1.	0.	0.	0.	2.	0.	0.	0.
481	2.	0.	0.	0.	0.	0.	0.	0.	1.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

D. H. Milicic
4-2-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
S95T000329-SAM
File ID: 26a2605.CNF

Counted on: 4/ 2/95 @ 1:22
Detector: AEA26
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	949.0	949.0	358.225	358.225	12.000	3.375	6.000	1.287
2	12.2	12.2	299.057	298.806	14.000	3.163	7.000	1.383
3	44.3	44.3	227.221	227.221	12.000	3.548	6.000	1.946

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	Pu236	0.973	5.756	5.767	-.011	0.02	28.70	1.7	2107.0	0.949E-03
	Cm243		5.786	5.767	0.019				2828.6	0.127E-02
2	Pu238	0.011	5.499	5.488	0.011	0.01	0.33	18.3	33.4	0.151E-04
	Am241		5.480	5.488	-.008				25.6	0.115E-04
3	Pu239	0.038	5.143	5.151	-.008	0.02	1.11	8.5	80.0	0.360E-04
	Pu240		5.144	5.151	-.007				80.0	0.360E-04
Totals:		1.022	<--valid peaks only-->				30.15			

DETECTOR CALIBRATION
Energy(MEV) = 4.083 + (0.0047)*Channel
Energy range (MeV): 4.083 TO 6.490
Efficiency = 0.0139 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	14157.0	100.000
Smoothed	14157.0	100.000
Composite fit	14472.3	102.227
Residuals	-315.3	-2.227

Analyzed by: ALJ

Spectrum 26a2605.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 6381.4


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Raw Data Dump for AEA Spectrum: 26a2605.CNF

1	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
11	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
21	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	1.	0.	1.	1.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
71	1.	0.	1.	0.	0.	1.	0.	0.	0.	0.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
111	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
121	1.	0.	0.	0.	0.	0.	1.	0.	0.	0.
131	0.	0.	0.	1.	1.	0.	1.	0.	0.	0.
141	0.	0.	0.	0.	0.	3.	4.	2.	2.	1.
151	0.	0.	0.	1.	0.	1.	0.	0.	1.	1.
161	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.
171	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
181	2.	0.	0.	0.	0.	0.	0.	1.	0.	0.
191	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
201	0.	0.	1.	1.	1.	3.	0.	2.	2.	0.
211	0.	7.	7.	9.	13.	11.	22.	16.	20.	11.
221	22.	24.	26.	26.	37.	48.	54.	58.	41.	23.
231	23.	10.	5.	1.	0.	0.	0.	0.	0.	2.
241	2.	0.	2.	1.	2.	4.	3.	1.	2.	1.
251	4.	4.	9.	3.	7.	2.	6.	6.	4.	7.
261	9.	7.	8.	6.	10.	2.	3.	1.	2.	4.
271	2.	0.	0.	0.	2.	0.	2.	6.	4.	2.
281	2.	2.	1.	7.	3.	3.	4.	5.	3.	7.
291	4.	5.	7.	9.	9.	6.	9.	23.	15.	10.
301	16.	8.	9.	10.	4.	1.	2.	4.	1.	1.
311	0.	1.	1.	0.	1.	2.	1.	3.	2.	2.
321	3.	1.	3.	9.	13.	4.	8.	8.	16.	16.
331	16.	18.	23.	26.	41.	52.	45.	64.	77.	96.
341	126.	131.	187.	245.	285.	338.	400.	470.	585.	635.
351	580.	549.	607.	608.	764.	794.	1039.	1097.	1097.	1014.
361	689.	330.	111.	15.	1.	0.	0.	0.	0.	1.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
461	0.	1.	0.	0.	0.	0.	0.	0.	0.	2.
471	1.	0.	0.	0.	1.	1.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

D H Milligan
4-2-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
S95T000329-DUP
File ID: 27a2705.CNF

Counted on: 4/ 2/95 @ 1:23
Detector: AEA27
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	940.8	940.8	360.137	360.137	12.000	3.379	6.000	1.316
2	14.1	14.1	300.990	300.760	8.000	3.255	4.000	0.957
3	42.2	42.2	226.248	226.247	10.000	4.246	5.000	2.112

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.957	5.756	5.768	-.012	0.02	28.10	1.7	1412.5	0.636E-03
	Cm243		5.786	5.768	0.018				1896.3	0.854E-03
2	Pu238	0.017	5.499	5.495	0.004	0.01	0.50	14.0	34.5	0.155E-04
	Am241		5.480	5.495	-.015				26.4	0.119E-04
3	Pu239	0.040	5.143	5.152	-.009	0.02	1.16	8.3	57.3	0.258E-04
	Pu240		5.144	5.152	-.008				57.3	0.258E-04
Totals:		1.014	<--valid peaks only-->				29.77			

DETECTOR CALIBRATION
Energy(MEV) = 4.111 + (0.0046)*Channel
Energy range (MeV): 4.111 TO 6.466
Efficiency = 0.0203 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	14089.0	100.000
Smoothed	14089.0	100.000
Composite fit	14289.6	101.424
Residuals	-200.6	-1.424

Analyzed by: ALJ

Spectrum 27a2705.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5560.8


```
3
.3
..3



2
2
2
2
2

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

Raw Data Dump for AEA Spectrum: 27a2705.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	1.	0.	1.	0.	0.	0.
21	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	1.	0.	1.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
101	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
111	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
121	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
131	0.	0.	0.	0.	1.	0.	1.	0.	0.	0.
141	2.	1.	3.	0.	0.	0.	1.	0.	2.	1.
151	1.	2.	1.	1.	0.	1.	1.	0.	0.	0.
161	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
171	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
181	1.	0.	1.	0.	1.	0.	2.	0.	0.	0.
191	0.	1.	0.	0.	2.	1.	0.	2.	2.	0.
201	0.	2.	3.	1.	4.	1.	1.	4.	4.	10.
211	6.	4.	12.	13.	14.	14.	13.	16.	18.	22.
221	27.	24.	30.	50.	44.	47.	46.	53.	27.	15.
231	14.	8.	3.	1.	1.	0.	1.	2.	1.	2.
241	0.	1.	1.	1.	2.	0.	2.	0.	2.	5.
251	3.	7.	5.	9.	5.	4.	3.	8.	6.	8.
261	2.	16.	11.	10.	3.	4.	0.	3.	0.	1.
271	0.	0.	0.	1.	2.	1.	2.	0.	3.	2.
281	3.	4.	5.	6.	2.	12.	5.	6.	8.	8.
291	7.	11.	3.	8.	10.	10.	9.	11.	18.	22.
301	12.	19.	20.	7.	7.	5.	4.	4.	2.	3.
311	6.	5.	2.	2.	3.	4.	3.	5.	4.	7.
321	4.	7.	10.	6.	6.	10.	9.	6.	14.	16.
331	13.	13.	26.	23.	25.	36.	45.	50.	73.	63.
341	80.	103.	113.	143.	168.	244.	286.	358.	419.	492.
351	535.	567.	529.	507.	556.	640.	754.	845.	1023.	1091.
361	1085.	973.	650.	325.	90.	16.	2.	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.	1.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
421	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
431	0.	0.	0.	1.	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.	0.	4.	0.	2.	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.								

LABCORE Data Entry Template for Worklist# 829

Analyst: JMV **Instrument:** PU01 **Book #** 104843

Method: LA-503-156 Rev/Mod D-1

WHC-SD-WM-DP-074, REV. 0

Worklist Comment: See chemist for sample size. --LLF

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				@PU23902 PU23901	LIQUID			N/A	uCi/mL
		1	STD				@PU23902 PU23901E	LIQUID			N/A	% Ct. Error
		1	STD				@PU23902 PU23901T	LIQUID			N/A	% Recovery
		2	BLNK-PREP				@PU23902 PU23901	LIQUID			N/A	uCi/mL
		2	BLNK-PREP				@PU23902 PU23901T	LIQUID			N/A	% Recovery
		2	BLNK-PREP				@PU23902 PU23901E	LIQUID			N/A	% Ct. Error
		2	BLNK-PREP				@PU23902 PU23801	LIQUID			N/A	uCi/mL
		2	BLNK-PREP				@PU23902 PU23801E	LIQUID			N/A	% Ct. Error
94000020	SY-103	3	SAMPLE	S95T000330	0		@PU23902 PU23901	LIQUID	N/A			uCi/mL
94000020	SY-103	3	SAMPLE	S95T000330	0		@PU23902 PU23901T	LIQUID	N/A			% Recovery
94000020	SY-103	3	SAMPLE	S95T000330	0		@PU23902 PU23901E	LIQUID	N/A			% Ct. Error
94000020	SY-103	3	SAMPLE	S95T000330	0		@PU23902 PU23801	LIQUID	N/A			uCi/mL
94000020	SY-103	3	SAMPLE	S95T000330	0		@PU23902 PU23801E	LIQUID	N/A			% Ct. Error
94000020	SY-103	4	DUP	S95T000330	0		@PU23902 PU23901	LIQUID			N/A	uCi/mL
94000020	SY-103	4	DUP	S95T000330	0		@PU23902 PU23901T	LIQUID			N/A	% Recovery
94000020	SY-103	4	DUP	S95T000330	0		@PU23902 PU23901E	LIQUID			N/A	% Ct. Error
94000020	SY-103	4	DUP	S95T000330	0		@PU23902 PU23801	LIQUID			N/A	uCi/mL
94000020	SY-103	4	DUP	S95T000330	0		@PU23902 PU23801E	LIQUID			N/A	% Ct. Error

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Data Entry Template for Worklist# 829

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
94000020	SY-103	5	SAMPLE	S95T000331	0		@PU23902 PU23901	LIQUID	N/A			uCi/mL
94000020	SY-103	5	SAMPLE	S95T000331	0		@PU23902 PU23901T	LIQUID	N/A			% Recovery
94000020	SY-103	5	SAMPLE	S95T000331	0		@PU23902 PU23901E	LIQUID	N/A			% Ct. Error
94000020	SY-103	5	SAMPLE	S95T000331	0		@PU23902 PU23801	LIQUID	N/A			uCi/mL
94000020	SY-103	5	SAMPLE	S95T000331	0		@PU23902 PU23801E	LIQUID	N/A			% Ct. Error
94000020	SY-103	6	DUP	S95T000331	0		@PU23902 PU23901	LIQUID			N/A	uCi/mL
94000020	SY-103	6	DUP	S95T000331	0		@PU23902 PU23901T	LIQUID			N/A	% Recovery
94000020	SY-103	6	DUP	S95T000331	0		@PU23902 PU23901E	LIQUID			N/A	% Ct. Error
94000020	SY-103	6	DUP	S95T000331	0		@PU23902 PU23801	LIQUID			N/A	uCi/mL
94000020	SY-103	6	DUP	S95T000331	0		@PU23902 PU23801E	LIQUID			N/A	% Ct. Error

Final page for worklist # 829

[signature] 43 ~~4~~-31-95
Analyst Signature **Date**
223 4.19.95

[signature] 4/6/95
Analyst Signature **Date**

WHC-SD-WM-DP-074, REV. 0

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

							STANDARD
	Date Counted		04/02/95	Pu 236 AEA Frac.		(C236)	0.416
STANDARD	Sample Volume in mL	(SS)	0.100	Pu 238 AEA Frac.		(C238)	0
	Sample D.F.	(DF)	101	Pu 239 AEA Frac.		(C239)	0.588
829	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts			6060
	Digest D.F.	(DDF)	1	AT Count Time (min)		(TC)	30
QPU23902	Tracer Book No.		92B43	Background in cpm		(Bkg)	4
	Tracer Preparation Date		09/02/94	Pu 236 cpm			24.85
LIQUID	Pu-238 Preparation Value	(dpm/mL)	2226	Pu 238 cpm			0
	Pu-236 Decay Corr'd value	(dpm/mL)	1932.94	Pu 239 cpm			35.09
WORKLIST 829	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time		(min)	480
				Pu 239/240 µCi/L			1.2430E+02
WC38931	Decay Time = Date Counted - Tracer Preparation Date						
	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]						
JMV	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV						
	Pu-239/240 µCi/L = (C239 * Pu-236 Decay Corr'd Value * SPKV * DF * DDF * (1000mL/L)) / (C236 * SS * (2220000dpm/µCi))						
03/31/95	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)						
	Pu-238 µCi/mL = (Pu238 dpm * DF * DDF) / [(Pu 236 Tracer Recovery / 100) * (2220000dpm/µCi) * SS]						
03:00 PM	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100						

Pu 239/240	µCi/mL	=	1.24E-01	DETECTION LEVELS in µCi/mL
Relative Counting Error		=	2.3%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238	µCi/mL	=	< 8.95E-03	8.95E-03
Relative Counting Error		=	100.0%	Pu 238
Pu 236 Tracer Recovery		=	70.9%	8.95E-03

Data Entry by:	[signature]	Date:	04/06/95
Approved by:	[signature]	Date:	6 Apr 95

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						BLANK
Type	Date Counted		04/02/95	Pu 236 AEA Frac.	(C236)	0.959
BLANK	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)	0
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)	0
829	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		2267
Test Code	Digest D.F.	(DDF)	20	AT Count Time (min)	(TC)	30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	4
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		27.24
LIQUID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	1932.94	Pu 239 cpm		0
WORKLIST 829	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/L =	<	7.6711E-02
WC38931						
Analyst						
JMV						
Date						
03/31/95						
Time						
03:00 PM						

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV

Pu-239/240 µCi/L = (C239 * Pu-236 Decay Corr'd Value * SPKV * DF * DDF * (1000mL/L)) / (C236 * SS * (2220000dpm/µCi))

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu-238 µCi/mL = (Pu238 dpm * DF * DDF) / [(Pu 236 Tracer Recovery / 100) * (2220000dpm/µCi) * SS]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

NOTE: Pu 239\240 Result is a LESS THAN Value.

Pu 239/240	µCi/mL	=	< 7.67E-05	DETECTION LEVELS in µCi/mL
Relative Counting Error		=	100.0%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240 7.67E-05
Pu 238	µCi/mL	=	< 7.67E-05	
Relative Counting Error		=	100.0%	Pu 238 7.67E-05
Pu 236 Tracer Recovery		=	71.0%	

Data Entry by: [signature] Date: 04/04/95

Approved by: [signature] Date: 4 Apr 95

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						SAMPLE
Type	Date Counted		04/02/95	Pu 236 AEA Frac.	(C236)	0.911
SAMPLE	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)	0.023
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)	0.055
829	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		2678
Test Code	Digest D.F.	(DDF)	20	AT Count Time (min)	(TC)	30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	4
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		39.98
LIQUID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0.99
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	1932.94	Pu 239 cpm		2.4
S96T330	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/L		1.0513E-01
WC38931						
Analyst						
JMV						
Date						
03/31/95						
Time						
03:00 PM						

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV

Pu-239/240 µCi/L = (C239 * Pu-236 Decay Corr'd Value * SPKV * DF * DDF * (1000mL/L)) / (C236 * SS * (2220000dpm/µCi))

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu-238 µCi/mL = (Pu238 dpm * DF * DDF) / [(Pu 236 Tracer Recovery / 100) * (2220000dpm/µCi) * SS]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

Pu 239/240	µCi/mL	=	1.05E-04	DETECTION LEVELS in µCi/mL
Relative Counting Error		=	5.9%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238	µCi/mL	=	< 7.13E-05	7.13E-05
Relative Counting Error		=	9.1%	Pu 238
Pu 236 Tracer Recovery		=	80.4%	7.13E-05

Data Entry by: [signature] Date: 04/04/95

Approved by: [signature] Date: 4 Apr 95

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						DUPLICATE
Type	Date Counted		04/02/95	Pu 236 AEA Frac.	(C236)	0.964
DUPLICATE	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)	0
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)	0.047
829	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		2762
Test Code	Digest D.F.	(DDF)	20	AT Count Time (min)	(TC)	30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	4
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		24.18
LIQUID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	1932.94	Pu 239 cpm		1.18
S95T330	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/L =		8.4901E-02
WC38931						
Analyst						
JMV						
Date						
03/31/95						
Time						
03:00 PM						

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV

Pu-239/240 µCi/L = (C239 * Pu-236 Decay Corr'd Value * SPKV * DF * DDF * (1000mL/L)) / (C236 * SS * (2220000dpm/µCi))

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu-238 µCi/mL = (Pu238 dpm * DF * DDF) / [(Pu 236 Tracer Recovery / 100) * (2220000dpm/µCi) * SS]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

				DETECTION LEVELS in µCi/mL
Pu 239/240	µCi/mL	=	8.49E-05	
Relative Counting Error		=	8.4%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238	µCi/mL	=	< 6.17E-05	6.17E-05
Relative Counting Error		=	100.0%	Pu 238
Pu 236 Tracer Recovery		=	87.8%	6.17E-05

Data Entry by: [signature] Date: 04/04/95

Approved by: [signature] Date: 4 Apr 95

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						SAMPLE
Type	Date Counted		04/02/95	Pu 236 AEA Frac.	(C236)	0.958
SAMPLE	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)	0
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)	0
829	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		2571
Test Code	Digest D.F.	(DDF)	20	AT Count Time (min)	(TC)	30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	2
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		36.32
LIQUID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	1932.94	Pu 239 cpm		0
S95T331	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/L =	<	6.5727E-02
WC38931						
Analyst						
JMV						
Date						
03/31/95						
Time						
03:00 PM						

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV

Pu-239/240 µCi/L = (C239 * Pu-236 Decay Corr'd Value * SPKV * DF * DDF * (1000mL/L)) / (C236 * SS * (2220000dpm/µCi))

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu-238 µCi/mL = (Pu238 dpm * DF * DDF) / [(Pu 236 Tracer Recovery / 100) * (2220000dpm/µCi) * SS]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

NOTE: Pu 239\240 Result is a LESS THAN Value.

Pu 239/240	µCi/mL	=	< 6.57E-05	DETECTION LEVELS in µCi/mL
Relative Counting Error		=	100.0%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238	µCi/mL	=	< 6.57E-05	6.57E-05
Relative Counting Error		=	100.0%	Pu 238
Pu 236 Tracer Recovery		=	83.0%	6.57E-05

Data Entry by:	[illegible]	Date:	04/04/95
Approved by:	[illegible]	Date:	4 Apr 95

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

						DUPLICATE
Type	Date Counted		04/02/95	Pu 236 AEA Frac.	(C236)	0.991
DUPLICATE	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)	0
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)	0
829	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		2588
Test Code	Digest D.F.	(DDF)	20	AT Count Time (min)	(TC)	30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)	2
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm		36.62
LIQUID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm		0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	1932.94	Pu 239 cpm		0
S95T331	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)	480
Instrument Code				Pu 239/240 µCi/L =	<	6.1010E-02
WC38931	Decay Time = Date Counted - Tracer Preparation Date					
Analyst	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]					
JMV	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV					
Date	Pu-239/240 µCi/L = (C239 * Pu-236 Decay Corr'd Value * SPKV * DF * DDF * (1000mL/L)) / (C236 * SS * (2220000dpm/µCi))					
03/31/95	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)					
Time	Pu-238 µCi/mL = (Pu238 dpm * DF * DDF) / [(Pu 236 Tracer Recovery / 100) * (2220000dpm/µCi) * SS]					
03:00 PM	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100					

NOTE: Pu 239\240 Result is a LESS THAN Value.

Pu 239/240	µCi/mL	=	< 6.10E-05	DETECTION LEVELS in µCi/mL
Relative Counting Error		=	100.0%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240 6.10E-05
Pu 238	µCi/mL	=	< 6.10E-05	
Relative Counting Error		=	100.0%	Pu 238 6.10E-05
Pu 236 Tracer Recovery		=	86.4%	

Data Entry by:	C. J. Osinen	Date:	04/04/95
Approved by:	[signature]	Date:	4 Apr 95

Form 503156PC Rev. 2.0

2542

D. H. Milicia
4-2-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
WORKLIST#829-STD
File ID: 28a2805.CNF

Counted on: 4/ 2/95 @ 1:24
Detector: AEA28
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	692.3	692.3	361.944	361.944	12.000	3.815	6.000	1.152
2?	9.2	9.2	302.923	302.263	12.000	2.981	6.000	0.940
3	11.2	11.2	257.193	257.145	28.000	39.495	14.000	17.984
4	1084.9	1084.9	229.945	229.941	12.000	4.487	6.000	1.686

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	Pu236	0.416	5.756	5.755	0.001	0.02	24.85	1.8	263.4	0.119E-03
2		????		5.480			0.31	23.0		
3	Am243	0.012	5.276	5.273	0.003	0.18	0.71	11.9	7.5	0.336E-05
	Pu240		5.144	5.273	-.129				7.4	0.333E-05
4	Pu239	0.588	5.143	5.147	-.004	0.02	35.09	1.5	364.3	0.164E-03
	Pu240		5.144	5.147	-.003				364.3	0.164E-03
		---					---			
Totals:		1.016	<--valid peaks only-->				60.65			

DETECTOR CALIBRATION
Energy(MEV) = 4.090 + (0.0046)*Channel
Energy range (MeV): 4.090 TO 6.445
Efficiency = 0.0963 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	28663.0	100.000
Smoothed	28663.0	100.000
Composite fit	29263.6	102.095
Residuals	-600.6	-2.095

Analyzed by: _____
ALJ

Spectrum 28a2805.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 7711.6


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Raw Data Dump for AEA Spectrum: 28a2805.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
41	1.	0.	0.	0.	0.	0.	0.	1.	0.	0.
51	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
61	1.	0.	1.	0.	0.	0.	0.	1.	0.	0.
71	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
81	0.	0.	1.	0.	0.	0.	1.	0.	0.	0.
91	0.	1.	1.	0.	0.	2.	1.	1.	1.	0.
101	1.	1.	0.	0.	1.	1.	0.	3.	2.	0.
111	2.	0.	1.	0.	1.	0.	0.	2.	0.	1.
121	2.	3.	0.	0.	1.	0.	1.	3.	1.	3.
131	2.	2.	3.	0.	1.	4.	1.	3.	3.	2.
141	3.	3.	4.	3.	4.	1.	5.	3.	11.	4.
151	4.	1.	1.	1.	5.	5.	3.	2.	0.	0.
161	2.	2.	2.	1.	0.	3.	3.	4.	4.	2.
171	1.	4.	1.	3.	1.	2.	5.	5.	5.	6.
181	5.	9.	6.	11.	4.	8.	8.	11.	16.	12.
191	13.	18.	14.	19.	23.	25.	20.	27.	36.	45.
201	53.	43.	38.	64.	51.	67.	78.	103.	101.	134.
211	145.	137.	180.	231.	247.	308.	289.	363.	467.	505.
221	577.	591.	676.	728.	861.	898.	1008.	1068.	1147.	1203.
231	1197.	1054.	867.	501.	237.	93.	41.	17.	1.	6.
241	5.	4.	1.	5.	4.	3.	4.	7.	5.	4.
251	8.	4.	6.	14.	6.	17.	11.	9.	13.	9.
261	6.	9.	6.	7.	8.	6.	9.	8.	8.	1.
271	1.	0.	2.	1.	1.	1.	2.	3.	2.	3.
281	1.	0.	1.	4.	4.	3.	6.	4.	3.	10.
291	5.	4.	5.	11.	14.	10.	9.	10.	9.	11.
301	14.	18.	14.	17.	11.	12.	16.	5.	7.	5.
311	3.	2.	5.	7.	4.	5.	5.	6.	3.	13.
321	5.	9.	11.	6.	5.	18.	17.	15.	22.	18.
331	18.	25.	27.	36.	36.	42.	41.	47.	68.	60.
341	86.	80.	123.	138.	134.	192.	208.	254.	288.	321.
351	362.	439.	490.	491.	550.	508.	499.	528.	590.	656.
361	680.	799.	769.	655.	514.	273.	78.	13.	1.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
471	0.	0.	0.	0.	1.	0.	1.	1.	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
4-2-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
WORKLIST#829-BLK
File ID: 2a2019.CNF

Counted on: 4/ 2/95 @ 5:47
Detector: AEA2
Geometry number: 1
Count time: 28807. 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	604.4	604.4	363.762	363.762	20.000	16.258	10.000	6.615
2	17.1	17.1	265.072	265.071	24.000	19.034	12.000	4.572

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	Cm243	0.959	5.786	5.768	0.018	0.07	27.24	1.7	346.9	0.156E-03
	Pu236		5.756	5.768	-.012				258.4	0.116E-03
2	Am243	0.035	5.276	5.314	-.038	0.09	0.99	9.0	9.3	0.418E-05
	Pu240		5.144	5.314	-.170				9.2	0.414E-05
Totals:		0.993	<--valid peaks only-->				28.23			

DETECTOR CALIBRATION
Energy(MEV) = 4.095 + (0.0046)*Channel
Energy range (MeV): 4.095 TO 6.450
Efficiency = 0.1076 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	13646.0	100.000
Smoothed	13646.0	100.000
Composite fit	13555.6	99.338
Residuals	90.4	0.662

Analyzed by: _____
ALJ

Spectrum 2a2019.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 4616.0


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Raw Data Dump for AEA Spectrum: 2a2019.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.	1.	0.	0.	1.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
51	0.	0.	0.	2.	0.	0.	0.	0.	0.	0.
61	0.	0.	1.	0.	1.	0.	1.	0.	0.	0.
71	1.	0.	0.	0.	0.	0.	1.	1.	0.	1.
81	1.	0.	1.	0.	0.	1.	1.	0.	0.	0.
91	0.	0.	1.	0.	0.	0.	1.	0.	2.	1.
101	0.	0.	2.	0.	0.	0.	0.	1.	1.	0.
111	1.	1.	1.	0.	1.	2.	2.	2.	0.	0.
121	0.	0.	0.	0.	0.	0.	1.	3.	2.	0.
131	0.	0.	0.	1.	1.	0.	0.	1.	1.	0.
141	0.	0.	2.	0.	0.	0.	0.	1.	1.	2.
151	3.	1.	0.	3.	0.	0.	0.	1.	2.	1.
161	1.	0.	2.	2.	1.	4.	1.	0.	0.	1.
171	0.	3.	1.	0.	2.	1.	0.	1.	0.	0.
181	0.	2.	0.	4.	0.	2.	0.	1.	1.	0.
191	1.	0.	1.	1.	0.	1.	0.	0.	0.	0.
201	0.	1.	2.	5.	0.	1.	0.	2.	1.	0.
211	1.	1.	0.	1.	0.	2.	0.	0.	3.	2.
221	0.	0.	2.	0.	0.	2.	3.	2.	6.	1.
231	2.	3.	1.	0.	4.	2.	2.	1.	3.	5.
241	3.	1.	3.	2.	6.	5.	5.	12.	5.	9.
251	14.	5.	13.	12.	14.	12.	20.	17.	12.	16.
261	17.	23.	12.	16.	18.	17.	20.	10.	11.	5.
271	12.	12.	5.	9.	4.	2.	5.	3.	3.	3.
281	3.	7.	1.	6.	4.	3.	5.	2.	4.	9.
291	5.	7.	2.	0.	5.	7.	2.	5.	5.	7.
301	3.	4.	5.	2.	7.	5.	2.	6.	8.	3.
311	4.	4.	2.	4.	5.	8.	8.	3.	3.	4.
321	6.	2.	9.	11.	14.	12.	10.	4.	11.	12.
331	15.	7.	17.	26.	22.	12.	32.	34.	35.	38.
341	64.	71.	82.	87.	119.	131.	149.	168.	196.	241.
351	218.	268.	328.	374.	395.	445.	464.	501.	523.	565.
361	594.	632.	643.	653.	595.	585.	554.	539.	474.	383.
371	353.	296.	237.	162.	141.	101.	69.	59.	39.	23.
381	17.	5.	6.	7.	1.	1.	0.	0.	1.	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.	0.	0.
421	0.	1.	1.	0.	0.	0.	0.	0.	0.	1.
431	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.
441	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.
451	0.	0.	1.	0.	0.	0.	0.	0.	1.	0.
461	1.	0.	0.	0.	1.	0.	0.	1.	1.	1.
471	0.	0.	0.	0.	1.	0.	0.	1.	1.	1.
481	1.	0.	2.	0.	0.	2.	1.	0.	0.	1.
491	0.	1.	1.	1.	0.	0.	0.	0.	0.	0.
511	0.	0.								

D. H. Milicia
4-2-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
S95T000330-SAM
File ID: 3a3719.CNF

Counted on: 4/ 2/95 @ 5:48
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	1069.2	1069.2	363.323	363.323	14.000	7.294	7.000	2.580
2	27.7	27.7	305.724	305.370	18.000	3.527	9.000	1.052
3	31.9	31.9	258.354	258.314	18.000	11.897	9.000	6.262
4	68.1	68.1	230.283	230.210	16.000	8.189	8.000	3.545

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	Pu236	0.911	5.756	5.762	-.006	0.03	39.98	1.4	161.2	0.726E-04
	Cm243		5.786	5.762	0.024				216.5	0.975E-04
2	Pu238	0.023	5.499	5.495	0.004	0.02	0.99	10.3	5.4	0.244E-05
	Am241		5.480	5.495	-.015				4.2	0.187E-05
3	Am243	0.027	5.276	5.279	-.003	0.05	1.20	8.5	4.8	0.215E-05
4	Pu239	0.055	5.143	5.150	-.007	0.04	2.40	6.0	9.5	0.427E-05
	Pu240		5.144	5.150	-.006				9.5	0.427E-05
Totals:		1.016	<--valid peaks only-->				44.56			

DETECTOR CALIBRATION
Energy(MEV) = 4.091 + (0.0046)*Channel
Energy range (MeV): 4.091 TO 6.446
Efficiency = 0.2530 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	21053.0	100.000
Smoothed	21053.0	100.000
Composite fit	21390.6	101.603
Residuals	-337.6	-1.603

Analyzed by: _____
ALJ

Spectrum 3a3719.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 7662.4


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Raw Data Dump for AEA Spectrum: 3a3719.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
21	1.	0.	0.	0.	0.	1.	1.	1.	0.	0.
31	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
51	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
61	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	0.	0.	0.	0.	0.	2.	0.	0.	1.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
101	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
111	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
121	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
131	1.	0.	0.	0.	2.	0.	0.	0.	0.	2.
141	1.	0.	0.	1.	3.	2.	0.	2.	1.	2.
151	3.	3.	1.	1.	0.	2.	1.	1.	1.	2.
161	1.	1.	1.	1.	2.	2.	1.	1.	2.	0.
171	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
181	0.	0.	1.	0.	2.	0.	0.	0.	1.	0.
191	4.	1.	4.	0.	1.	1.	0.	0.	1.	2.
201	1.	1.	3.	2.	2.	3.	8.	8.	2.	2.
211	7.	12.	11.	12.	14.	18.	27.	19.	17.	25.
221	39.	39.	39.	48.	64.	56.	59.	66.	79.	76.
231	75.	62.	72.	53.	39.	37.	18.	18.	13.	11.
241	6.	8.	9.	4.	6.	9.	10.	13.	6.	14.
251	24.	13.	29.	30.	23.	31.	28.	42.	33.	31.
261	27.	24.	12.	12.	25.	17.	10.	11.	15.	15.
271	5.	8.	2.	4.	3.	3.	1.	2.	4.	5.
281	2.	4.	4.	0.	3.	6.	7.	9.	13.	8.
291	11.	9.	12.	13.	13.	18.	21.	24.	20.	19.
301	29.	46.	28.	26.	28.	31.	41.	24.	21.	16.
311	13.	8.	5.	4.	3.	5.	6.	5.	4.	10.
321	9.	7.	11.	14.	8.	11.	12.	13.	18.	16.
331	16.	23.	25.	24.	30.	40.	39.	44.	64.	73.
341	78.	83.	99.	155.	163.	202.	208.	248.	312.	398.
351	412.	498.	559.	636.	728.	799.	807.	852.	977.	1017.
361	1075.	1079.	1120.	1176.	1065.	1002.	800.	618.	424.	264.
371	160.	85.	36.	13.	7.	5.	1.	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.	1.	0.	0.	0.	0.	0.
431	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	1.	1.	0.	0.	0.	0.	0.	0.	0.	4.
481	1.	3.	1.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

D. H. Milicia
4-2-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
S95T000330-DUP
File ID: 4a4212.CNF

Counted on: 4/ 2/95 @ 5:49
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	538.4	538.4	358.392	358.392	14.000	6.664	7.000	1.656
2?	3.7	3.7	299.924	299.924	12.000	0.115	6.000	0.023
3	11.8	11.8	256.414	256.269	14.000	9.007	7.000	2.500
4	32.1	32.1	226.596	226.434	14.000	6.703	7.000	2.366

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	Pu236	0.964	5.756	5.745	0.011	0.03	24.18	1.8	300.9	0.136E-03
2		????		5.476			0.15	43.6		
3	Am243	0.021	5.276	5.275	0.001	0.04	0.53	13.4	6.5	0.292E-05
4	Pu239	0.047	5.143	5.138	0.005	0.03	1.18	8.7	14.4	0.647E-05
	Pu240		5.144	5.138	0.006				14.4	0.647E-05
Totals:		1.032	<--valid peaks only-->				25.88			

DETECTOR CALIBRATION
Energy(MEV) = 4.096 + (0.0046)*Channel
Energy range (MeV): 4.096 TO 6.451
Efficiency = 0.0820 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	12041.0	100.000
Smoothed	12041.0	100.000
Composite fit	12498.0	103.795
Residuals	-457.0	-3.795

Analyzed by: _____
ALJ

Spectrum 4a4212.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 4035.4


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Raw Data Dump for AEA Spectrum: 4a4212.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.	1.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
51	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
61	0.	0.	0.	1.	0.	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	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	0.	0.	1.	0.	0.	0.	0.	1.	1.	0.
111	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
121	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
131	1.	0.	2.	2.	0.	2.	0.	2.	1.	3.
141	1.	2.	0.	1.	0.	1.	1.	1.	1.	1.
151	0.	2.	0.	0.	0.	2.	0.	1.	0.	0.
161	0.	0.	1.	0.	1.	1.	1.	0.	0.	0.
171	0.	1.	0.	0.	0.	1.	0.	0.	0.	2.
181	0.	0.	1.	1.	1.	0.	0.	0.	0.	2.
191	1.	2.	0.	1.	1.	2.	4.	4.	1.	3.
201	1.	0.	5.	2.	2.	2.	9.	7.	10.	6.
211	15.	9.	7.	12.	16.	14.	17.	21.	23.	24.
221	22.	24.	32.	34.	34.	28.	45.	26.	33.	28.
231	18.	14.	10.	11.	8.	5.	3.	1.	3.	2.
241	5.	6.	7.	1.	4.	8.	5.	13.	5.	11.
251	14.	11.	7.	13.	14.	14.	13.	13.	14.	8.
261	4.	4.	5.	7.	5.	7.	1.	1.	4.	5.
271	5.	4.	4.	3.	0.	3.	3.	3.	4.	0.
281	4.	5.	10.	4.	1.	8.	10.	8.	7.	7.
291	12.	10.	9.	9.	11.	8.	10.	13.	11.	8.
301	18.	10.	7.	6.	8.	9.	5.	9.	6.	5.
311	4.	3.	10.	9.	7.	12.	9.	10.	12.	11.
321	21.	13.	9.	17.	31.	14.	24.	32.	26.	44.
331	41.	48.	55.	65.	74.	96.	80.	119.	113.	148.
341	156.	176.	239.	211.	266.	316.	349.	384.	413.	428.
351	452.	463.	478.	531.	477.	524.	522.	553.	591.	534.
361	512.	441.	289.	207.	108.	56.	18.	12.	6.	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.	1.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	1.	0.	0.	0.	0.	1.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	1.	0.	1.	0.	0.	1.	1.	0.
471	1.	0.	1.	1.	1.	0.	1.	1.	0.	1.
481	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

D. H. Milicia
4-2-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
S95T000331-SAM
File ID: 5a5138.CNF

Counted on: 4/ 2/95 @ 5:49
Detector: AEA5
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	750.9	750.9	362.786	362.786	24.000	18.858	12.000	7.224
2	13.0	13.0	261.767	261.762	26.000	45.279	13.000	4.911

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	~~Cm242~~ Pu-236	0.958	6.115	6.074	0.041	0.08	36.32	1.5	280.3	0.126E-03
	~~Bi212~~		6.040	6.074	-.034				576.1	0.260E-03
2	?? Ra~~224~~	~~0.037~~	5.680	5.629	0.051	0.20	1.40	7.6	8.5	0.383E-05
	~~Pu238~~	~~224~~ 4.4.95	5.499	5.629	-.130				11.1	0.500E-05
224 4.4.95		-----					---------			
Totals:		0.995	<--valid peaks only-->				37.72			

DETECTOR CALIBRATION
Energy(MEV) = 4.477 + (0.0044)*Channel
Energy range (MeV): 4.477 TO 6.730
Efficiency = 0.1751 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	18201.0	100.000
Smoothed	18200.7	99.998
Composite fit	18105.8	99.477
Residuals	95.2	0.523

Analyzed by: _____
ALJ

Spectrum 5a5138.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5638.9


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Raw Data Dump for AEA Spectrum: 5a5138.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	0.	2.	0.
21	0.	0.	0.	0.	0.	1.	0.	2.	2.	0.
31	1.	0.	2.	0.	0.	1.	0.	0.	1.	1.
41	1.	1.	0.	1.	1.	1.	3.	0.	0.	0.
51	0.	2.	2.	1.	0.	0.	1.	1.	0.	0.
61	3.	0.	3.	0.	0.	0.	0.	1.	0.	1.
71	2.	1.	2.	0.	0.	0.	0.	2.	1.	3.
81	0.	0.	0.	0.	1.	1.	0.	0.	1.	0.
91	0.	1.	0.	1.	0.	0.	0.	1.	0.	1.
101	1.	0.	0.	1.	0.	0.	1.	0.	2.	0.
111	0.	0.	0.	3.	1.	1.	0.	3.	1.	2.
121	1.	2.	0.	0.	1.	0.	1.	0.	1.	0.
131	1.	2.	0.	0.	3.	0.	2.	1.	0.	0.
141	3.	2.	0.	2.	2.	0.	0.	0.	2.	3.
151	2.	2.	1.	4.	2.	4.	2.	4.	1.	1.
161	2.	1.	3.	1.	2.	0.	1.	0.	0.	2.
171	0.	0.	0.	0.	1.	1.	1.	1.	2.	1.
181	2.	0.	1.	1.	1.	1.	0.	1.	1.	1.
191	2.	1.	1.	1.	1.	0.	2.	2.	0.	0.
201	2.	4.	2.	0.	1.	3.	6.	3.	6.	1.
211	4.	2.	2.	4.	2.	2.	2.	6.	3.	5.
221	8.	4.	5.	3.	6.	5.	5.	7.	2.	14.
231	6.	11.	9.	12.	10.	5.	9.	4.	3.	1.
241	8.	10.	5.	5.	2.	6.	7.	5.	9.	10.
251	12.	11.	11.	9.	9.	10.	11.	14.	7.	14.
261	13.	15.	14.	10.	11.	13.	10.	9.	11.	4.
271	5.	9.	13.	5.	2.	2.	2.	6.	6.	3.
281	2.	7.	5.	5.	4.	8.	9.	10.	4.	5.
291	9.	7.	9.	8.	8.	5.	4.	11.	12.	8.
301	6.	12.	10.	7.	9.	8.	6.	10.	11.	9.
311	6.	10.	12.	7.	7.	7.	9.	6.	13.	8.
321	8.	8.	5.	14.	10.	11.	13.	22.	20.	14.
331	22.	38.	29.	37.	44.	42.	57.	58.	64.	86.
341	109.	112.	131.	148.	172.	218.	241.	288.	319.	340.
351	416.	408.	497.	526.	597.	602.	649.	745.	726.	769.
361	728.	814.	773.	728.	775.	673.	613.	619.	491.	485.
371	423.	328.	245.	188.	155.	134.	109.	82.	53.	49.
381	30.	25.	9.	7.	3.	5.	1.	1.	2.	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.	1.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	1.	0.	0.	1.	1.	1.	0.	1.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	1.	1.	0.	3.
471	1.	0.	1.	0.	0.	0.	0.	2.	4.	3.
481	1.	2.	1.	2.	0.	1.	1.	2.	0.	2.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

D. H. Milicia
4-2-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-074, REV. 0

SAMPLE
S95T000331-DUP
File ID: 6a6957.CNF

Counted on: 4/ 2/95 @ 5:50
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	915.7	915.7	362.458	362.458	14.000	8.220	7.000	2.698
2	18.8	18.8	258.012	258.004	16.000	12.682	8.000	3.490

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	Pu236	0.991	5.756	5.760	-.004	0.04	36.62	1.5	156.4	0.705E-04
	Cm243		5.786	5.760	0.026				210.0	0.946E-04
2	Am243	0.025	5.276	5.279	-.003	0.06	0.92	9.4	3.9	0.174E-05
Totals:		1.016	<--valid peaks only-->				37.54			

DETECTOR CALIBRATION
Energy(MEV) = 4.093 + (0.0046)*Channel
Energy range (MeV): 4.093 TO 6.448
Efficiency = 0.2389 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	17745.0	100.000
Smoothed	17746.0	100.006
Composite fit	18021.1	101.556
Residuals	-276.1	-1.556

Analyzed by: _____
ALJ

Spectrum 6a6957.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 6369.2


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Raw Data Dump for AEA Spectrum: 6a6957.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.	0.	0.	0.	1.	1.	0.	0.
41	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
71	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
81	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
91	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
101	1.	0.	0.	0.	0.	1.	0.	0.	2.	0.
111	0.	0.	0.	0.	0.	0.	2.	1.	0.	0.
121	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
131	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
141	0.	0.	0.	1.	2.	1.	1.	1.	0.	3.
151	3.	2.	0.	2.	2.	5.	1.	1.	1.	1.
161	0.	0.	0.	1.	1.	2.	0.	0.	0.	0.
171	0.	2.	0.	0.	1.	0.	0.	0.	0.	1.
181	0.	0.	0.	0.	0.	0.	1.	1.	1.	1.
191	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
201	1.	0.	0.	0.	0.	0.	0.	0.	0.	2.
211	2.	0.	2.	0.	3.	2.	2.	1.	5.	6.
221	3.	7.	7.	6.	6.	8.	8.	9.	6.	8.
231	10.	6.	5.	7.	3.	3.	3.	3.	0.	4.
241	6.	2.	3.	2.	6.	7.	6.	9.	8.	17.
251	11.	14.	16.	18.	14.	21.	17.	20.	23.	19.
261	12.	10.	11.	8.	11.	10.	4.	6.	8.	8.
271	1.	4.	1.	3.	0.	2.	2.	2.	0.	1.
281	3.	2.	3.	6.	7.	5.	7.	6.	3.	5.
291	2.	5.	7.	1.	2.	5.	6.	7.	4.	5.
301	4.	8.	2.	6.	8.	7.	4.	6.	10.	3.
311	3.	7.	1.	2.	4.	6.	3.	5.	3.	8.
321	4.	8.	4.	8.	17.	8.	15.	15.	22.	14.
331	26.	24.	25.	38.	39.	45.	49.	64.	69.	79.
341	98.	120.	125.	162.	188.	220.	230.	300.	335.	426.
351	483.	515.	566.	591.	699.	819.	725.	870.	879.	889.
361	922.	958.	990.	922.	871.	745.	617.	421.	305.	192.
371	125.	54.	25.	16.	6.	2.	0.	1.	0.	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.	1.	0.	0.	0.	1.	0.	0.	0.
421	1.	0.	0.	0.	0.	1.	0.	0.	0.	0.
431	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
471	0.	0.	1.	1.	0.	0.	1.	1.	1.	3.
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.								

THE FOLLOWING ANALYSES ARE INCLUDED IN THE DATA PACKAGE BUT THE RESULTS HAVE NOT BEEN REPORTED IN THE FINAL SUMMARY REPORTS.

LABCORE Data Entry Template for Worklist# 286

Analyst: JMV **Instrument:** PU01 _____ **Method:** LA-503-156 D-1

Worklist Comment: Contact chemist for sample size. --LLF WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test	Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@PU23902 PU23901	SOLID			N/A	uCi/g
1	BLNK-PREP				@PU23902 PU23901T	SOLID			N/A	% Rec
1	BLNK-PREP				@PU23902 PU23901E	SOLID			N/A	% Ct.
1	BLNK-PREP				@PU23902 PU23801	SOLID			N/A	uCi/g
1	BLNK-PREP				@PU23902 PU23801E	SOLID			N/A	% Ct.
2	STD 83643				@PU23902 PU23901	SOLID			N/A	uCi/g
2	STD				@PU23902 PU23901E	SOLID			N/A	% Ct.
2	STD				@PU23902 PU23901T	SOLID			N/A	% Rec
3	SAMPLE	S94T000299	0		@PU23902 PU23901	SOLID	N/A			uCi/g
3	SAMPLE	S94T000299	0		@PU23902 PU23901T	SOLID	N/A			% Rec
3	SAMPLE	S94T000299	0		@PU23902 PU23901E	SOLID	N/A			% Ct.
3	SAMPLE	S94T000299	0		@PU23902 PU23801	SOLID	N/A			uCi/g
3	SAMPLE	S94T000299	0		@PU23902 PU23801E	SOLID	N/A			% Ct.
4	DUP	S94T000299	0		@PU23902 PU23901	SOLID			N/A	uCi/g
4	DUP	S94T000299	0		@PU23902 PU23901T	SOLID			N/A	% Rec
4	DUP	S94T000299	0		@PU23902 PU23901E	SOLID			N/A	% Ct.
4	DUP	S94T000299	0		@PU23902 PU23801	SOLID			N/A	uCi/g
4	DUP	S94T000299	0		@PU23902 PU23801E	SOLID			N/A	% Ct.
5	SAMPLE	S94T000300	0		@PU23902 PU23901	SOLID	N/A			uCi/g
5	SAMPLE	S94T000300	0		@PU23902 PU23901T	SOLID	N/A			% Rec

DATA NOT USED IN PACKAGE

DATA NOT USED IN PACKAGE

Data Entry Comments: QSCA 6849 Second STD RAN

Units shown for QC (SPK) may not reflect the actual units.

LABCORE Data Entry Template for Worklist# 286

Analyst: JMV **Instrument:** PU01 _____ **Method:** LA-503-156 D-1

Worklist Comment: Contact chemist for sample size. --LLF WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test		Matrix	Actual	Found	DL	Unit
5	SAMPLE	S94T000300	0		@PU23902	PU23901E	SOLID	N/A			% Ct.
5	SAMPLE	S94T000300	0		@PU23902	PU23801	SOLID	N/A			uCi/g
5	SAMPLE	S94T000300	0		@PU23902	PU23801E	SOLID	N/A			% Ct.
6	DUP	S94T000300	0		@PU23902	PU23901	SOLID			N/A	uCi/g
6	DUP	S94T000300	0		@PU23902	PU23901T	SOLID			N/A	% Rec
6	DUP	S94T000300	0		@PU23902	PU23901E	SOLID			N/A	% Ct.
6	DUP	S94T000300	0		@PU23902	PU23801	SOLID			N/A	uCi/g
6	DUP	S94T000300	0		@PU23902	PU23801E	SOLID			N/A	% Ct.

Final page for worklist # 286

Analyst Signature

Date 12-19-94

12/21/94

DATA
NOT USED
IN PACKAGE

Data Entry Comments:

Units shown for QC (SPK) may not reflect the actual units.

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

DATA
NOT USED
IN PACKAGE

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

							BLANK
Type	Date Counted		12/19/94	Pu 236 AEA Frac.	(C236)		0.269
BLANK	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)		0
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)		0.781
286	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts			3629
Test Code	Digest Grams of Solids/L	(Dg/L)	1.7448	AT Count Time (min)	(TC)		30
@PU239-01	Tracer Book No.		92B43	Background in cpm	(Bkg)		4
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm			14.9
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm			0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2071.54	Pu 239 cpm			43.24
S94T299,300	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)		480
Instrument Code				Pu 239/240 µCi/g			1.5527E-01
WC38931							
Analyst							
JMV							
Date							
12/19/94							
Time							
03:00 PM							

223
12.22.94

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV

Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

Pu 239/240	µCi/g	=	1.55E-01	DETECTION LEVELS in µCi/g
Relative Counting Error		=	2.7%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238	µCi/g	=	< 1.96E-02	1.96E-02
Relative Counting Error		=	100.0%	Pu 238
Pu 236 Tracer Recovery		=	30.4%	1.96E-02

Data Entry by: [illegible] Date: 12/22/94

Approved by: [illegible] Date: 22 Dec 94

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

DATA NOT USED IN PACKAGE

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

							STANDARD
Type	Date Counted		12/19/94	Pu 236 AEA Frac.	(C236)		0.374
STANDARD	Sample Volume in mL	(SS)	0.100	Pu 238 AEA Frac.	(C238)		0.016
Work List	Sample D.F.	(DF)	101	Pu 239 AEA Frac.	(C239)		0.589
286	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts			3339
Test Code	Digest D.F.	(DDF)	1	AT Count Time (min)	(TC)		30
@PU239-01	Tracer Book No.		92B43	Background in cpm	(Bkg)		5
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm			16.66
LIQUID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm			0.66
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2071.54	Pu 239 cpm			26.25
S94T299,300	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)		480
Instrument Code				Pu 239/240 µCi/L			1.4842E+02
WC38931							
Analyst							
JMV							
Date							
12/19/94							
Time							
03:00 PM							

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV

Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

Pu 239/240	µCi/mL	=	1.48E-01	DETECTION LEVELS in µCi/mL
Relative Counting Error		=	2.8%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240 1.97E-02
Pu 238	µCi/mL	=	< 1.97E-02	
Relative Counting Error		=	11.2%	Pu 238 1.97E-02
Pu 236 Tracer Recovery		=	38.4%	

Data Entry by: [signature] Date: 12/22/94

Approved by: [signature] Date: 22 Dec 94

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

DATA NOT USED IN PACKAGE

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

							SAMPLE
Type	Date Counted		12/19/94	Pu 236 AEA Frac.	(C236)		1.052
SAMPLE	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)		0
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)		0
286	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts			1493
Test Code	Digest Grams of Solids/L	(Dg/L)	1.7448	AT Count Time (min)	(TC)		30
@PU239-02	Tracer Book No.		92B43	Background in cpm	(Bkg)		7
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm			12.2
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm			0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2071.54	Pu 239 cpm			0
S94T299	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)		480
Instrument Code				Pu 239/240 µCi/g =		<	3.5111E-03
WC38931	Decay Time = Date Counted - Tracer Preparation Date						
Analyst	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]						
JMV	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV						
Date	Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]						
12/19/94	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)						
Time	Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]						
03:00 PM	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100						

NOTE: Pu 239\240 Result is a LESS THAN Value.

Pu 239/240	µCi/g	=	< 3.51E-03	DETECTION LEVELS in µCi/g
Relative Counting Error		=	100.0%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240 3.51E-03
Pu 238	µCi/g	=	< 3.51E-03	
Relative Counting Error		=	100.0%	Pu 238 3.51E-03
Pu 236 Tracer Recovery		=	43.4%	

Data Entry by:	[illegible]	Date:	12/22/94
Approved by:	[illegible]	Date:	22 Dec 94

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

DATA NOT USED IN PACKAGE

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

							DUPLICATE
Type	Date Counted		12/19/94	Pu 236 AEA Frac.	(C236)		0.946
DUPLICATE	Sample Volume in mL	(SS)	1.000	Pu 238 AEA Frac.	(C238)		0
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)		0
286	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts			1185
Test Code	Digest Grams of Solids/L	(Dg/L)	1.824	AT Count Time (min)	(TC)		30
@PU239-01	Tracer Book No.		92B43	Background in cpm	(Bkg)		4
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm			14.69
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm			0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2071.64	Pu 239 cpm			0
S94T299	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)		480
Instrument Code				Pu 239/240 µCi/g =		<	5.0037E-03
WC38931							
Analyst							
JMV							
Date							
12/19/94							
Time							
03:00 PM							

12.22.94

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV

Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

NOTE: Pu 239\240 Result is a LESS THAN Value.

Pu 239/240	µCi/g	=	< 5.00E-03	DETECTION LEVELS in µCi/g
Relative Counting Error		=	100.0%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240 5.00E-03
Pu 238	µCi/g	=	< 5.00E-03	
Relative Counting Error		=	100.0%	Pu 238 5.00E-03
Pu 236 Tracer Recovery		=	32.4%	

Data Entry by:	[signature]	Date:	12/22/94
Approved by:	[signature]	Date:	22 Dec 94

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

DATA NOT USED IN PACKAGE

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

							SAMPLE
Type	Date Counted		12/19/94	Pu 236 AEA Frac.	(C236)		0.658
SAMPLE	Sample Volume in mL	(SS)	0.300	Pu 238 AEA Frac.	(C238)		0.087
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)		0.318
286	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts			1499
Test Code	Digest Grams of Solids/L	(Dg/L)	2.5308	AT Count Time (min)	(TC)		30
@PU239-0/2	Tracer Book No.		92B43	Background in cpm	(Bkg)		5
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm			11.15
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm			1.74
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2071.54	Pu 239 cpm			6.35
S94T300	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)		480
Instrument Code				Pu 239/240 µCi/g			7.0041E-02
WC38931							
Analyst							
JMV							
Date							
12/19/94							
Time							
03:00 PM							

AAJ 12-22-94

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV

Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

Pu 239/240	µCi/g	=	7.00E-02	DETECTION LEVELS in µCi/g
Relative Counting Error		=	4.4%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238	µCi/g	=	< 2.73E-02	2.73E-02
Relative Counting Error		=	7.3%	Pu 238
Pu 236 Tracer Recovery		=	24.2%	2.73E-02

Data Entry by:	[signature]	Date:	12/22/94
Approved by:	[signature]	Date:	22 Dec 94

Form 503156PC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-074, REV. 0

DATA NOT USED IN PACKAGE

Pu 238 and 239/240 : LA-503-156 (D-1) LIQUID / SOLID

							DUPLICATE
Type	Date Counted		12/19/94	Pu 236 AEA Frac.	(C236)		0.22
DUPLICATE	Sample Volume in mL	(SS)	0.300	Pu 238 AEA Frac.	(C238)		0
Work List	Sample D.F.	(DF)	1	Pu 239 AEA Frac.	(C239)		0.249
286	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts			2235
Test Code	Digest Grams of Solids/L	(Dg/L)	2.5532	AT Count Time (min)	(TC)		30
@PU239-01	Tracer Book No.		92B43	Background in cpm	(Bkg)		5
Matrix	Tracer Preparation Date		09/02/94	Pu 236 cpm			5.89
SOLID	Pu-236 Preparation Value	(dpm/mL)	2226	Pu 238 cpm			0
Sample #	Pu-236 Decay Corr'd value	(dpm/mL)	2071.54	Pu 239 cpm			6.64
S94T300	Pu-238 Tracer Value	(dpm/mL)	0	AEA Count Time	(min)		480
Instrument Code				Pu 239/240 µCi/g			1.3788E-01
WC38931							
Analyst							
JMV							
Date							
12/19/94							
Time							
03:00 PM							

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time) / 1040.95 }]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 2 * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV

Pu 239/240 µCi/g = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) / [(C236) (SS) (D g/L) (2220000dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 2 * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu 238 µCi/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000dpm/µCi) (D g/L) (SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

Pu 239/240	µCi/g	=	1.38E-01	DETECTION LEVELS in µCi/g
Relative Counting Error		=	5.1%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238	µCi/g	=	< 1.13E-01	1.13E-01
Relative Counting Error		=	100.0%	Pu 238
Pu 236 Tracer Recovery		=	14.8%	1.13E-01

Data Entry by: [signature] Date: 12/22/94

Approved by: [signature] Date: 22 Dec 94

Form 503156PC Rev. 2.0

Em Barela
12-20-94

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01

DATA REDUCTION REPORT WHC-SD-WM-DP-074, REV. 0

SAMPLE
STD
File ID: 2a2733.CNF

Counted on: 12/19/94 @21:44
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
1	350.4	350.4	363.072	363.072	20.000	14.239	10.000	4.417
2	11.3	11.3	299.513	299.268	30.000	18.137	15.000	4.130
3	577.6	577.6	229.091	229.090	20.000	15.990	10.000	6.207

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	Cm243	0.374	5.786	5.767	0.019	0.07	16.66	2.2	379.7	0.171E-03
	Pu236		5.756	5.767	-.011				282.9	0.127E-03
2	Am241	0.015	5.480	5.474	0.006	0.08	0.66	13.8	11.7	0.527E-05
	Pu238		5.499	5.474	0.025				15.3	0.689E-05
3	Pu239	0.589	5.143	5.151	-.008	0.07	26.25	1.7	436.8	0.197E-03
	Pu240		5.144	5.151	-.007				436.8	0.197E-03
Totals:		0.978	<--valid peaks only-->				43.57			

DETECTOR CALIBRATION
Energy(MEV) = 4.097 + (0.0046)*Channel
Energy range (MeV): 4.097 TO 6.452
Efficiency = 0.0601 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	21379.0	100.000
Smoothed	21379.0	100.000
Composite fit	20914.3	97.827
Residuals	464.7	2.173

DATA NOT USED IN PACKAGE

Analyzed by: _____
DM

Spectrum 2a2733.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 4434.5


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Raw Data Dump for AEA Spectrum: 2a2733.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	1.	2.
21	0.	0.	2.	0.	0.	0.	1.	1.	0.	1.
31	0.	0.	1.	1.	0.	1.	1.	0.	0.	1.
41	1.	1.	0.	0.	2.	1.	2.	1.	0.	2.
51	0.	1.	0.	0.	1.	1.	0.	0.	1.	0.
61	0.	1.	0.	2.	0.	2.	0.	1.	1.	2.
71	1.	0.	2.	2.	2.	0.	1.	1.	1.	0.
81	1.	1.	1.	0.	2.	0.	1.	3.	0.	1.
91	0.	2.	1.	0.	2.	3.	1.	3.	2.	0.
101	0.	0.	1.	2.	1.	1.	0.	2.	2.	0.
111	3.	3.	3.	2.	0.	2.	2.	1.	4.	3.
121	4.	2.	4.	3.	0.	0.	1.	3.	3.	4.
131	5.	2.	3.	6.	3.	1.	0.	5.	0.	3.
141	2.	2.	4.	4.	5.	1.	3.	8.	4.	6.
151	4.	6.	3.	2.	4.	5.	5.	6.	4.	4.
161	5.	4.	0.	8.	8.	10.	6.	6.	8.	4.
171	6.	8.	9.	10.	6.	14.	8.	11.	8.	8.
181	12.	9.	17.	13.	12.	15.	18.	10.	14.	21.
191	11.	32.	17.	21.	15.	31.	26.	35.	34.	39.
201	44.	49.	48.	47.	57.	68.	74.	94.	108.	96.
211	119.	124.	140.	164.	169.	218.	265.	265.	333.	365.
221	383.	423.	469.	481.	532.	576.	615.	632.	582.	613.
231	560.	555.	539.	449.	417.	343.	303.	237.	193.	150.
241	103.	76.	55.	31.	35.	20.	12.	8.	3.	6.
251	6.	2.	9.	3.	6.	7.	5.	4.	9.	10.
261	5.	2.	10.	4.	5.	5.	4.	5.	6.	3.
271	4.	1.	3.	2.	5.	2.	3.	2.	3.	2.
281	3.	3.	6.	1.	3.	6.	10.	6.	2.	4.
291	11.	9.	11.	9.	6.	12.	7.	15.	16.	16.
301	10.	11.	11.	12.	10.	14.	8.	5.	13.	11.
311	8.	17.	13.	7.	2.	8.	11.	6.	10.	8.
321	8.	15.	7.	13.	12.	14.	13.	10.	17.	16.
331	17.	29.	28.	29.	26.	35.	34.	43.	39.	35.
341	50.	51.	71.	92.	99.	103.	120.	124.	160.	175.
351	174.	206.	200.	245.	276.	274.	293.	339.	340.	357.
361	336.	362.	370.	359.	352.	321.	276.	256.	214.	186.
371	151.	122.	92.	74.	61.	35.	19.	27.	12.	7.
381	2.	3.	1.	3.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
421	0.	1.	0.	0.	0.	0.	1.	0.	0.	0.
431	0.	1.	0.	1.	0.	1.	1.	0.	0.	2.
441	0.	1.	0.	1.	0.	1.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
471	0.	1.	0.	0.	0.	0.	0.	1.	1.	0.
481	1.	0.	0.	0.	2.	4.	0.	1.	0.	1.
491	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Em Barela
12-20-94

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-074, REV. 0

SAMPLE
BLANK
File ID: 3a3463.CNF

DATA NOT USED IN PACKAGE

Counted on: 12/19/94 @21:45
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	212.4	212.4	366.010	366.010	22.000	16.267	11.000	2.590
2	21.1	21.1	311.727	310.656	28.000	1.953	14.000	0.230
3	616.6	616.6	233.242	233.231	18.000	15.204	9.000	2.376

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	Cm243	0.269	5.786	5.801	-.015	0.08	14.90	2.3	78.0	0.351E-04
	Cm244		5.796	5.801	-.005				56.9	0.256E-04
2		0.027		5.541		0.01	1.50	10.1	5.7	0.258E-05
3	Pu239	0.781	5.143	5.177	-.034	0.07	43.24	1.4	165.2	0.744E-04
	Pu240		5.144	5.177	-.033				165.2	0.744E-04
Totals:		1.078	<--valid peaks only-->				59.64			

DETECTOR CALIBRATION
Energy(MEV) = 4.081 + (0.0047)*Channel
Energy range (MeV): 4.081 TO 6.487
Efficiency = 0.2618 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	26567.0	100.000
Smoothed	26567.0	100.000
Composite fit	28627.4	107.756
Residuals	-2060.4	-7.756

Analyzed by: _____
DM

Spectrum 3a3463.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 4634.2


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Raw Data Dump for AEA Spectrum: 3a3463.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
21	0.	0.	0.	1.	0.	1.	0.	0.	1.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
61	0.	0.	0.	1.	1.	1.	0.	1.	0.	1.
71	1.	1.	0.	1.	0.	0.	2.	1.	0.	0.
81	0.	3.	0.	0.	0.	0.	1.	2.	0.	0.
91	1.	2.	0.	1.	0.	1.	0.	0.	2.	0.
101	0.	1.	0.	1.	0.	0.	1.	0.	1.	1.
111	1.	1.	2.	1.	0.	1.	2.	0.	0.	2.
121	1.	0.	1.	2.	1.	0.	2.	1.	0.	1.
131	2.	3.	1.	0.	0.	5.	3.	4.	0.	0.
141	2.	4.	0.	1.	1.	3.	0.	3.	0.	2.
151	1.	2.	5.	1.	1.	3.	8.	3.	6.	7.
161	3.	1.	7.	3.	3.	10.	7.	7.	5.	14.
171	10.	8.	14.	12.	15.	18.	11.	13.	18.	16.
181	12.	16.	19.	20.	20.	24.	26.	32.	34.	24.
191	40.	39.	40.	46.	53.	55.	67.	61.	71.	73.
201	80.	85.	122.	119.	118.	149.	175.	169.	196.	200.
211	255.	290.	323.	341.	373.	374.	467.	469.	510.	513.
221	563.	567.	522.	566.	513.	571.	604.	605.	573.	568.
231	632.	633.	614.	634.	644.	586.	550.	508.	414.	356.
241	306.	255.	210.	172.	100.	84.	48.	25.	13.	13.
251	9.	5.	7.	5.	4.	3.	3.	4.	5.	2.
261	4.	3.	3.	3.	6.	1.	4.	2.	4.	8.
271	8.	5.	4.	5.	2.	7.	11.	10.	10.	8.
281	16.	12.	11.	12.	15.	14.	26.	7.	23.	21.
291	23.	23.	26.	30.	36.	36.	32.	32.	35.	36.
301	41.	24.	35.	28.	32.	46.	35.	18.	34.	32.
311	39.	40.	35.	35.	28.	28.	28.	17.	9.	17.
321	15.	10.	23.	10.	10.	15.	28.	20.	22.	14.
331	29.	30.	18.	36.	27.	44.	48.	49.	54.	52.
341	72.	76.	99.	107.	113.	91.	130.	144.	139.	156.
351	144.	167.	182.	184.	203.	196.	201.	198.	207.	197.
361	177.	194.	227.	203.	214.	231.	194.	224.	197.	182.
371	169.	147.	126.	96.	99.	69.	47.	46.	29.	19.
381	16.	3.	1.	2.	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.	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.	1.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Em Barber
12-20-94

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-074, REV. 0

SAMPLE
S94T000299SAM
File ID: 4a4934.CNF

DATA NOT USED IN PACKAGE

Counted on: 12/19/94 @21:46
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	201.1	201.1	362.548	362.548	14.000	6.403	7.000	1.028

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	Pu236	1.052	5.756	5.753	0.003	0.03	12.20	2.6	100.6	0.453E-04
Totals:		1.052	<--valid peaks only-->				12.20			

DETECTOR CALIBRATION
Energy(MEV) = 4.085 + (0.0046)*Channel
Energy range (MeV): 4.085 TO 6.440
Efficiency = 0.1238 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	5568.0	100.000
Smoothed	5568.0	100.000
Composite fit	5856.9	105.188
Residuals	-288.9	-5.188

Analyzed by: _____
DM

Spectrum 4a4934.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 1458.4


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Raw Data Dump for AEA Spectrum: 4a4934.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	1.	0.	0.	0.	0.	1.
61	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
71	1.	0.	0.	0.	0.	0.	1.	0.	0.	0.
81	0.	0.	0.	0.	0.	0.	1.	0.	1.	1.
91	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
101	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
111	0.	0.	0.	0.	1.	0.	0.	1.	1.	0.
121	1.	1.	0.	0.	1.	1.	0.	0.	1.	2.
131	0.	0.	0.	1.	0.	0.	0.	0.	0.	1.
141	1.	0.	0.	0.	1.	1.	2.	0.	0.	2.
151	0.	0.	0.	0.	1.	0.	0.	1.	1.	0.
161	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
171	0.	0.	3.	0.	0.	1.	0.	1.	0.	1.
181	1.	0.	1.	0.	1.	1.	3.	1.	0.	0.
191	1.	2.	0.	0.	2.	1.	2.	1.	1.	0.
201	1.	2.	0.	3.	2.	2.	4.	1.	3.	1.
211	1.	0.	0.	3.	2.	3.	6.	3.	0.	4.
221	5.	1.	1.	4.	1.	3.	3.	5.	3.	6.
231	3.	5.	3.	3.	1.	2.	0.	5.	1.	0.
241	1.	1.	1.	0.	2.	2.	2.	0.	2.	4.
251	1.	4.	2.	3.	3.	1.	3.	2.	3.	1.
261	1.	3.	4.	1.	4.	3.	4.	3.	3.	3.
271	2.	2.	3.	5.	3.	4.	3.	4.	2.	2.
281	2.	5.	3.	7.	7.	6.	3.	3.	4.	4.
291	7.	4.	10.	3.	9.	11.	7.	4.	3.	4.
301	7.	7.	3.	3.	8.	7.	8.	12.	7.	12.
311	10.	10.	9.	9.	14.	12.	19.	12.	15.	17.
321	15.	14.	22.	19.	12.	20.	28.	23.	35.	27.
331	35.	30.	48.	46.	43.	50.	57.	49.	67.	63.
341	63.	63.	84.	100.	102.	91.	111.	123.	127.	124.
351	174.	180.	163.	164.	207.	188.	206.	203.	189.	188.
361	187.	200.	212.	209.	201.	157.	125.	65.	45.	31.
371	5.	3.	2.	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.	1.
421	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.
431	1.	0.	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.	3.	0.	0.	0.	1.	1.
481	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Em Barlow
12-20-94

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-074, REV. 0

SAMPLE
S94T000299DUP
File ID: 5a5861.CNF

DATA
NOT USED
IN PACKAGE

Counted on: 12/19/94 @21:47
Detector: AEA5
Geometry number: 1
Count time: 28800. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	259.0	259.0	360.859	360.859	24.000	22.042	12.000	6.216

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	Cm243	0.946	5.786	5.774	0.012	0.10	14.59	2.3	139.8	0.630E-04
	Pu236		5.756	5.774	-.018				104.1	0.469E-04
Totals:		0.946	<--valid peaks only-->				14.59			

DETECTOR CALIBRATION
Energy(MEV) = 4.078 + (0.0047)*Channel
Energy range (MeV): 4.078 TO 6.484
Efficiency = 0.1430 CPM/DPM

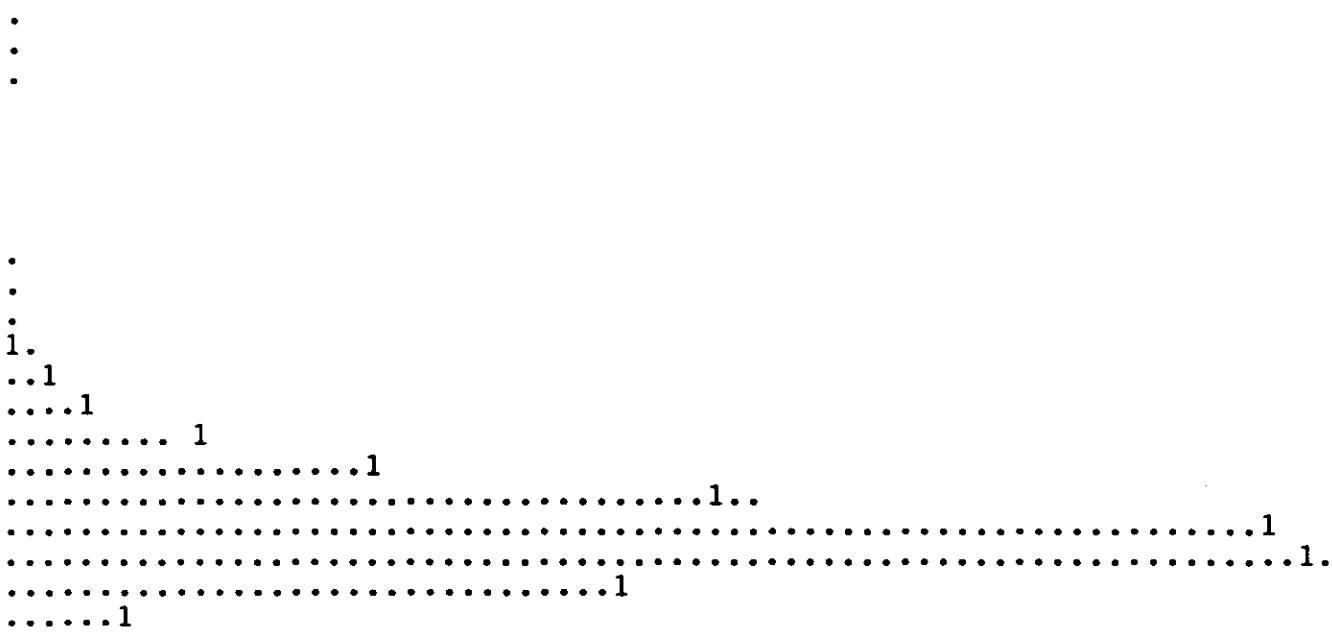
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	7405.0	100.000
Smoothed	7405.0	100.000
Composite fit	7004.0	94.584
Residuals	401.0	5.416

Analyzed by: _____
DM

Spectrum 5a5861.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 1874.5



Raw Data Dump for AEA Spectrum: 5a5861.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
21	2.	1.	0.	0.	1.	0.	0.	0.	1.	0.
31	0.	0.	1.	2.	0.	1.	0.	1.	0.	0.
41	0.	0.	2.	1.	0.	0.	2.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
61	0.	2.	0.	1.	0.	1.	0.	2.	0.	1.
71	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
81	0.	0.	2.	1.	0.	1.	0.	0.	0.	1.
91	0.	0.	1.	0.	1.	0.	1.	1.	0.	1.
101	0.	0.	1.	1.	1.	0.	1.	0.	1.	0.
111	1.	0.	0.	1.	1.	0.	1.	0.	0.	1.
121	0.	0.	0.	2.	0.	2.	0.	2.	1.	1.
131	1.	0.	0.	0.	0.	1.	0.	0.	0.	2.
141	1.	1.	0.	0.	0.	0.	0.	1.	0.	1.
151	1.	0.	0.	2.	0.	0.	2.	0.	0.	1.
161	0.	1.	0.	0.	1.	0.	1.	0.	1.	0.
171	3.	3.	0.	0.	1.	1.	0.	1.	1.	0.
181	0.	0.	0.	0.	2.	1.	0.	1.	1.	0.
191	0.	0.	1.	1.	1.	1.	3.	0.	3.	3.
201	0.	2.	3.	1.	2.	1.	3.	1.	3.	1.
211	2.	1.	5.	7.	2.	4.	3.	1.	10.	1.
221	5.	2.	3.	3.	3.	2.	4.	3.	9.	6.
231	1.	8.	5.	2.	3.	7.	2.	0.	5.	4.
241	1.	4.	1.	1.	2.	2.	1.	2.	1.	3.
251	4.	0.	4.	2.	3.	2.	3.	3.	3.	1.
261	2.	2.	2.	1.	0.	2.	1.	3.	9.	2.
271	1.	2.	7.	7.	2.	4.	1.	2.	1.	3.
281	4.	4.	5.	5.	6.	4.	3.	3.	6.	5.
291	3.	6.	7.	5.	7.	2.	6.	5.	7.	4.
301	2.	6.	10.	4.	10.	4.	12.	9.	10.	5.
311	6.	20.	8.	7.	8.	16.	8.	14.	4.	12.
321	18.	11.	13.	19.	23.	20.	27.	26.	23.	25.
331	25.	30.	35.	55.	40.	39.	47.	60.	75.	63.
341	80.	85.	63.	87.	103.	112.	145.	144.	158.	163.
351	167.	194.	180.	231.	206.	244.	280.	219.	273.	262.
361	273.	273.	241.	241.	231.	229.	196.	193.	164.	143.
371	114.	92.	90.	60.	47.	40.	24.	26.	15.	7.
381	8.	3.	1.	5.	0.	2.	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.	0.
411	0.	0.	0.	1.	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.	2.
441	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
451	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
461	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	1.	3.
481	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
491	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Em Baela
12-20-94

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-074, REV. 0

SAMPLE
S94T000300SAM
File ID: 6a6687.CNF

DATA NOT USED IN PACKAGE

Counted on: 12/19/94 @21:48
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	254.6	254.6	365.208	365.208	12.000	6.855	6.000	1.787
2?	22.5	22.5	320.365	316.286	10.000	0.000	5.000	4.608
3	33.4	33.4	307.062	306.874	12.000	5.126	6.000	0.968
4	157.8	157.8	231.652	231.644	16.000	8.507	8.000	2.800

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	Pu236	0.558	5.756	5.773	-.017	0.03	11.15	2.7	97.7	0.440E-04
	Cm243		5.786	5.773	0.013				131.1	0.591E-04
2		????		5.548			0.00	1000.		
3	Pu238	0.087	5.499	5.505	-.006	0.02	1.74	7.4	20.8	0.936E-05
	Am241		5.480	5.505	-.025				15.9	0.717E-05
4	Pu239	0.318	5.143	5.159	-.016	0.04	6.35	3.6	54.5	0.246E-04
	Pu240		5.144	5.159	-.015				54.5	0.246E-04
		---					---			
Totals:		0.963	<--valid peaks only-->				19.25			

DETECTOR CALIBRATION
Energy(MEV) = 4.093 + (0.0046)*Channel
Energy range (MeV): 4.093 TO 6.449
Efficiency = 0.1165 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	9591.0	100.000
Smoothed	9591.1	100.001
Composite fit	9240.7	96.347
Residuals	350.3	3.653

Analyzed by: _____
DM

Spectrum 6a6687.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 1911.8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Raw Data Dump for AEA Spectrum: 6a6687.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
21	0.	1.	1.	2.	0.	0.	1.	1.	1.	2.
31	0.	1.	0.	1.	0.	1.	0.	0.	0.	1.
41	0.	1.	0.	0.	1.	2.	0.	0.	1.	0.
51	2.	0.	0.	1.	0.	1.	0.	1.	4.	0.
61	1.	1.	2.	0.	2.	0.	0.	1.	0.	0.
71	1.	0.	0.	1.	3.	0.	1.	0.	1.	1.
81	0.	3.	1.	1.	0.	1.	0.	1.	1.	2.
91	1.	1.	0.	0.	3.	2.	0.	0.	0.	1.
101	0.	2.	0.	1.	0.	3.	5.	0.	1.	0.
111	3.	1.	2.	0.	3.	2.	2.	3.	4.	0.
121	0.	3.	2.	1.	6.	2.	3.	2.	2.	1.
131	1.	0.	2.	2.	3.	3.	1.	3.	2.	5.
141	2.	6.	6.	9.	7.	5.	3.	4.	4.	5.
151	6.	3.	3.	3.	4.	6.	7.	3.	4.	2.
161	3.	6.	6.	2.	6.	4.	3.	4.	4.	1.
171	5.	3.	3.	2.	2.	9.	3.	2.	3.	3.
181	5.	7.	5.	9.	6.	8.	3.	6.	9.	8.
191	12.	3.	8.	6.	14.	5.	10.	4.	13.	9.
201	10.	22.	14.	21.	16.	19.	25.	16.	19.	22.
211	34.	25.	33.	45.	33.	51.	34.	64.	52.	66.
221	81.	98.	82.	101.	101.	119.	128.	157.	157.	169.
231	173.	161.	177.	147.	125.	131.	91.	54.	48.	18.
241	14.	15.	4.	3.	7.	3.	3.	8.	3.	9.
251	2.	4.	5.	2.	6.	5.	6.	4.	5.	4.
261	4.	5.	3.	2.	9.	7.	4.	5.	6.	8.
271	2.	2.	4.	7.	7.	4.	7.	8.	9.	4.
281	7.	5.	7.	11.	7.	10.	16.	17.	18.	22.
291	12.	18.	11.	16.	28.	28.	26.	32.	35.	26.
301	26.	29.	35.	33.	27.	33.	48.	38.	35.	25.
311	16.	24.	12.	10.	13.	6.	15.	8.	17.	15.
321	12.	16.	11.	16.	5.	19.	13.	14.	23.	19.
331	17.	28.	20.	17.	27.	23.	25.	38.	28.	32.
341	31.	35.	46.	48.	48.	63.	60.	64.	78.	95.
351	114.	104.	125.	167.	171.	157.	188.	180.	207.	228.
361	230.	266.	260.	239.	261.	275.	271.	220.	169.	135.
371	90.	57.	32.	28.	9.	2.	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.	1.	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.	1.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	1.	0.								

Em Barker
12-20-94

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-074, REV. 0

SAMPLE
S94T000300DUP
File ID: 7a7293.CNF

DATA NOT USED IN PACKAGE

DATA NOT USED IN PACKAGE

Counted on: 12/19/94 @21:49
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	99.9	99.9	352.406	352.406	50.000	35.091	25.000	26.351
2	123.5	123.5	331.802	331.802	34.000	9.923	17.000	0.761
3	39.8	39.8	227.839	227.244	18.000	16.174	9.000	0.796
4?	33.1	33.1	205.374	204.742	28.000	3.942	14.000	14.255
5	31.9	31.9	195.402	194.237	10.000	3.514	5.000	0.482

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	Ra224	0.220	5.680	5.719	-.039	0.16	5.89	3.7	49.8	0.224E-04
	Pu236		5.756	5.719	0.037				47.8	0.215E-04
2		0.530		5.622		0.05	14.18	2.6	112.7	0.508E-04
3	Pu239	0.249	5.143	5.131	0.012	0.08	6.64	4.0	52.8	0.238E-04
	Pu240		5.144	5.131	0.013				52.8	0.238E-04
4		????		5.025			0.65	35.8		
5		0.077		4.976		0.02	2.07	12.0	16.4	0.740E-05
Totals:		1.077	<--valid peaks only-->				28.78			

DETECTOR CALIBRATION
Energy(MEV) = 4.063 + (0.0047)*Channel
Energy range (MeV): 4.063 TO 6.469
Efficiency = 0.1258 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	12831.0	100.000
Smoothed	12831.2	100.002
Composite fit	14126.7	110.098
Residuals	-1295.7	-10.098

Analyzed by: _____
DM

Spectrum 7a7293.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 1007.3


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Raw Data Dump for AEA Spectrum: 7a7293.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
21	0.	2.	0.	4.	0.	1.	1.	0.	0.	1.
31	2.	1.	2.	1.	1.	0.	1.	0.	2.	0.
41	0.	1.	2.	1.	1.	0.	0.	0.	0.	0.
51	0.	2.	1.	1.	0.	2.	1.	4.	0.	2.
61	2.	2.	1.	1.	4.	1.	3.	1.	1.	1.
71	0.	2.	1.	4.	2.	2.	0.	2.	2.	4.
81	1.	1.	2.	0.	0.	2.	4.	4.	1.	1.
91	2.	1.	5.	7.	2.	6.	0.	4.	5.	3.
101	2.	5.	1.	2.	5.	3.	4.	1.	7.	2.
111	5.	7.	2.	1.	3.	3.	4.	14.	4.	8.
121	6.	7.	4.	11.	6.	10.	7.	14.	10.	8.
131	7.	10.	10.	17.	9.	9.	12.	7.	15.	11.
141	12.	3.	11.	16.	7.	14.	18.	11.	11.	16.
151	19.	13.	16.	8.	21.	24.	12.	16.	17.	18.
161	19.	26.	26.	16.	26.	29.	28.	21.	30.	30.
171	45.	31.	25.	31.	40.	40.	42.	50.	34.	49.
181	50.	52.	41.	59.	57.	63.	58.	50.	65.	63.
191	52.	58.	60.	62.	79.	60.	64.	63.	58.	52.
201	62.	64.	46.	52.	66.	62.	59.	54.	49.	42.
211	55.	59.	45.	54.	47.	48.	46.	39.	51.	46.
221	47.	39.	61.	46.	52.	57.	55.	47.	62.	47.
231	53.	57.	43.	45.	46.	33.	27.	33.	25.	25.
241	23.	19.	15.	17.	13.	15.	9.	8.	15.	13.
251	21.	16.	12.	18.	26.	15.	21.	18.	20.	27.
261	22.	28.	29.	19.	38.	24.	20.	28.	32.	17.
271	32.	33.	28.	42.	26.	31.	24.	35.	35.	31.
281	42.	30.	40.	33.	31.	34.	48.	44.	39.	40.
291	48.	35.	55.	48.	50.	61.	55.	65.	58.	75.
301	82.	67.	77.	66.	81.	77.	80.	78.	99.	100.
311	91.	95.	95.	100.	105.	100.	94.	111.	112.	123.
321	125.	122.	128.	134.	133.	131.	133.	100.	118.	129.
331	137.	126.	137.	117.	133.	119.	118.	109.	111.	100.
341	100.	97.	93.	86.	83.	94.	82.	84.	98.	80.
351	90.	113.	91.	106.	83.	72.	88.	90.	88.	80.
361	66.	76.	71.	53.	48.	47.	31.	20.	18.	7.
371	8.	4.	1.	0.	1.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	1.	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.	1.	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.	1.	0.	0.	0.	0.	0.
481	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	1.	0.								

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URANIUM ANALYSES

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54103

LABCORE Data Entry Template for Worklist# 202

Analyst: DCD **Instrument:** U01 **Method:** LA-925-009 A-0

Worklist Comment: SPIKE: 0.1mL before boil. 1mL sample size. Run one standard.

Seg	Type	Sample#	Rep	Al	Test	Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				U-02	SOLID			N/A	ug/g
2	STD				U-02	SOLID			N/A	ug/g
3	SAMPLE	S94T000005	0		U-02	SOLID	N/A			ug/g
4	DUP	S94T000005	0		U-02	SOLID			N/A	ug/g
5	SPK	S94T000005	0		U-02	SOLID			N/A	ug/g
6	BLNK-PREP				U-02	SOLID			N/A	ug/g
7	STD				U-02	SOLID			N/A	ug/g
8	SAMPLE	S94T000067	0		U-02	SOLID	N/A			ug/g
9	DUP	S94T000067	0		U-02	SOLID			N/A	ug/g
10	SPK	S94T000067	0		U-02	SOLID			N/A	ug/g

Final page for worklist # 202

David C. Dunham
Analyst Signature

12-10-94
Date

E.S. Jones

Standard Book Number : 66B52

Spike Book Number : 144B38

WHC-SD-WM-DP-074, REV. 0

Data Entry Comments:

Units shown for QC (SPK) may not reflect the actual units.

2589

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54-3000-101 (9-89)

DON'T SAY IT --- *Write It!*

DATE

TO

FROM

S94T000005

Blnk-Prep 1.37 µg/g
Std 9.15 E-2 µg/mL
Sample 7.83 µg/g
dup 6.77 µg/g
Spike 103.5 %

S94T000067

Blnk-Prep 1.81 µg/g
Std 9.06 E-2 µg/mL
Sample 6.49 E+2 µg/g
dup 6.02 E+2 µg/g
Spike 127.8 %

error is "na"

"TO MAKE LIFE LAST, PUT SAFETY FIRST"

Sy/0?

LABCORE Data Entry Template for Worklist# 318

Analyst: DBB **Instrument:** U01 _____ **Method:** LA-925-009 A-O

Worklist Comment: SPIKE: .1mL before boil. I mL sample size / jls WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test	Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				U-02	SOLID			N/A	ug/g
2	STD	66B52			U-02	SOLID			N/A	ug/g
3	SAMPLE	S94T000005	0		U-02	SOLID	N/A			ug/g
4	DUP	S94T000005	0		U-02	SOLID			N/A	ug/g
5	SPK	S94T000005	0		U-02	SOLID			N/A	ug/g

Final page for worklist # 318

Donald B Griffin
Analyst Signature

1-3-95
Date

Spike # 6B55-A
Spike Val. 7.33 E-4 g/l u
Spike Vol 1.0mL before Boil

Data Entry Comments:

Units shown for QC (SPK) may not reflect the actual units.

Sample ID S94T000005 Date/Time 01/03/95/12:30:47
Description WORKLIST # 318 Cal Y=3.50E+07X-1.67E+02
Ref. Ratio .965 Intensity 331 (t= 39 us)
Laser Pulses 500 Conc 1.67E-05 + 9.27E-07 G/L/L
Lifetime 144 + 2.822 us Dilution Factor 1 mL/mL
R2 .9857
Integrated 3400 FINAL RESULT 1.67E-05 + 9.27E-07 G/L/L
Range: HIGH

Sample

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Sample ID S94T000005 Date/Time 01/03/95/12:31:28
Description WORKLIST # 318 Cal Y=2.43E+09X0
Ref. Ratio .755 Intensity 23678 (t= 39 us)
Laser Pulses 500 Conc 1.43E-05 + 1.78E-07 G/L/L
Lifetime 134 + .288 us Dilution Factor 1 mL/mL
R2 .9998
Integrated 251370 FINAL RESULT 1.43E-05 + 1.78E-07 G/L/L
Range: LOW

Sample

Sample ID S94T000005 Date/Time 01/03/95/12:35:39
Description SAMPLE ~~DUP~~ BDB 1-3-95 Cal Y=3.50E+07X-1.67E+02
Ref. Ratio .974 Spike Intensity 2109 (t= 39 us)
Laser Pulses 500 Conc 8.08E-05 + 2.72E-06 G/L/L
Lifetime 168 + 1.04 us Dilution Factor 1 mL/mL
R2 .9983
Integrated 25552 FINAL RESULT 8.08E-05 + 2.72E-06 G/L/L
Range: HIGH

Spike # 6B55-A
Spike Val. 7.33 E-4 g/l u

Sample ID S94T000005 Date/Time 01/03/95/12:42:11
Description SAMPLE DUP Cal Y=3.50E+07X-1.67E+02
Ref. Ratio .939 Intensity 294 (t= 39 us)
Laser Pulses 500 Conc 1.56E-05 + 5.62E-07 G/L/L
Lifetime 192 + 1.858 us Dilution Factor 1 mL/mL
R2 .996
Integrated 4182 FINAL RESULT 1.56E-05 + 5.62E-07 G/L/L
Range: HIGH

Sample Dup

Sample ID S94T000005 Date/Time 01/03/95/12:42:52
Description SAMPLE DUP Cal Y=2.43E+09X0
Ref. Ratio .945 Intensity 20688 (t= 39 us)
Laser Pulses 500 Conc 1.06E-05 + 1.51E-07 G/L/L
Lifetime 194 + .91 us Dilution Factor 1 mL/mL
R2 .999
Integrated 290805 FINAL RESULT 1.06E-05 + 1.51E-07 G/L/L
Range: LOW

Sample Dup

D B Griffin 1-3-95
work List # 318

Sample ID S94T000005 Date/Time 01/03/95/13:34:35
Description SAMPLE Cal Y=3.50E+07X-1.67E+02
Ref. Ratio 1.019 Intensity 366 (t= 39 us)
Laser Pulses 500 Conc 1.78E-05 + 6.70E-07 G/L/L
Lifetime 200 + 2.305 us Dilution Factor 1 mL/mL
R2 .9943
Integrated 5335 FINAL RESULT 1.78E-05 + 6.70E-07 G/L/L
Range: HIGH

Sample

Sample ID S94T000005 Date/Time 01/03/95/13:35:16
Description SAMPLE Cal Y=2.43E+09X0
Ref. Ratio .988 Intensity 28769 (t= 39 us)
Laser Pulses 500 Conc 1.41E-05 + 2.13E-07 G/L/L
Lifetime 199 + 1.096 us Dilution Factor 1 mL/mL
R2 .9987
Integrated 395875 FINAL RESULT 1.41E-05 + 2.13E-07 G/L/L
Range: LOW

Sample

Sample ID LMCS-STD Date/Time 01/03/95/10:58:59
Description STD Cal Y=3.50E+07X-1.67E+02
Ref. Ratio 1.015 Intensity 2603 (t= 39 us)
Laser Pulses 500 Conc 9.75E-05 + 3.05E-06 G/L/L
Lifetime 237 + .992 us Dilution Factor 1 mL/mL
R2 .9992
Integrated 44507 FINAL RESULT 9.75E-05 + 3.05E-06 G/L/L
Range: HIGH

Std # 66B52

Sample ID BLANK PREP Date/Time 01/03/95/12:15:33
Description WORKLIST # 318 Cal Y=3.50E+07X-1.67E+02
Ref. Ratio .954 Intensity 193 (t= 39 us)
Laser Pulses 500 Conc 1.13E-05 + 4.60E-07 G/L/L
Lifetime 177 + 2.483 us Dilution Factor 1 mL/mL
R2 .9926
Integrated 2279 FINAL RESULT 1.13E-05 + 4.60E-07 G/L/L
Range: HIGH

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Sample ID BLANK PREP Date/Time 01/03/95/12:16:14
Description WORKLIST # 318 Cal Y=2.43E+09X0
Ref. Ratio .942 Intensity 13444 (t= 39 us)
Laser Pulses 500 Conc 6.96E-06 + 9.18E-08 G/L/L
Lifetime 192 + .659 us Dilution Factor 1 mL/mL
R2 .9994
Integrated 177477 FINAL RESULT 6.96E-06 + 9.18E-08 G/L/L
Range: LOW

LABCORE Data Entry Template for Worklist# 319

SY103

Analyst: 088 **Instrument:** U01 _____ **Method:** LA-925-009 A-0

Worklist Comment: SPIKE:.1mL before boil. 1 mL sample size / jls WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test	Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				U-02	SOLID			N/A	ug/g
2	STD	66B52			U-02	SOLID			N/A	ug/g
3	SAMPLE	S94T000299	0		U-02	SOLID	N/A			ug/g
4	DUP	S94T000299	0		U-02	SOLID			N/A	ug/g
5	SPK	S94T000299	0		U-02	SOLID			N/A	ug/g
6	SAMPLE	S94T000300	0		U-02	SOLID	N/A			ug/g
7	DUP	S94T000300	0		U-02	SOLID			N/A	ug/g
8	SPK	S94T000300	0		U-02	SOLID			N/A	ug/g

Final page for worklist # 319

Analyst Signature

1-3-95
Date

Spike # 6B55-A
Spike Val. 7.33 E-4 g/l u
Spike Vol 1.0 ml before Boil

Data Entry Comments:

Units shown for QC (SPK) may not reflect the actual units.

Leslie Diaz 1-27-95

WHC-SD-WM-DP-074, REV. 0

Sample ID BLANK PREP
Description WORKLIST # 319
Ref. Ratio .961
Laser Pulses 500
Lifetime 202 + 3.411 us
R2 .9885
Integrated 1700
Range: HIGH

Date/Time 01/03/95/12:59:21
Cal Y=3.50E+07X-1.67E+02
Intensity 105 (t= 39 us)
Conc 8.96E-06 + 3.86E-07 G/L/L
Dilution Factor 1 mL/mL

FINAL RESULT 8.96E-06 + 3.86E-07 G/L/L

Sample ID BLANK PREP
Description WORKLIST # 319
Ref. Ratio .999
Laser Pulses 500
Lifetime 218 + .726 us
R2 .9995
Integrated 119779
Range: LOW

Date/Time 01/03/95/13:00:02
Cal Y=2.43E+09X0
Intensity 7654 (t= 39 us)
Conc 3.89E-06 + 4.79E-08 G/L/L
Dilution Factor 1 mL/mL

FINAL RESULT 3.89E-06 + 4.79E-08 G/L/L

Blk Prep

Sample ID LMCS STD
Description STD # 66B52
Ref. Ratio .991
Laser Pulses 500
Lifetime 239 + 1.433 us
R2 .9985
Integrated 44367
Range: HIGH

Date/Time 01/03/95/13:02:10
Cal Y=3.50E+07X-1.67E+02
Intensity 2620 (t= 39 us)
Conc 9.59E-05 + 3.07E-06 G/L/L
Dilution Factor 1 mL/mL

FINAL RESULT 9.59E-05 + 3.07E-06 G/L/L

Std # 66B52

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Sample ID S94T000229
Description SAMPLE
Ref. Ratio .97
Laser Pulses 500
Lifetime 173 + 2.882 us
R2 .9882
Integrated 2814
Range: HIGH

Date/Time 01/03/95/13:07:01
Cal Y=3.50E+07X-1.67E+02
Intensity 200 (t= 39 us)
Conc 1.30E-05 + 6.18E-07 G/L/L
Dilution Factor 1 mL/mL

FINAL RESULT 1.30E-05 + 6.18E-07 G/L/L

Sample ID S94T000229
Description SAMPLE
Ref. Ratio .967
Laser Pulses 500
Lifetime 187 + .411 us
R2 .9998
Integrated 197805
Range: LOW

Date/Time 01/03/95/13:07:42
Cal Y=2.43E+09X0
Intensity 14444 (t= 39 us)
Conc 7.55E-06 + 8.86E-08 G/L/L
Dilution Factor 1 mL/mL

FINAL RESULT 7.55E-06 + 8.86E-08 G/L/L

Sample

Sample ID S94T000229
Description SAM-DUP
Ref. Ratio 1.003
Laser Pulses 500
Lifetime 191 + 1.994 us
R2 .9953
Integrated 5227
Range: HIGH

Date/Time 01/03/95/13:11:31
Cal Y=3.50E+07X-1.67E+02
Intensity 401 (t= 39 us)
Conc 1.82E-05 + 6.74E-07 G/L/L
Dilution Factor 1 mL/mL

FINAL RESULT 1.82E-05 + 6.74E-07 G/L/L

1

Sample ID S94T000229 Date/Time 01/03/95/13:12:11
Description SAM-DUP Cal Y=2.43E+09X0
Ref. Ratio .983 Intensity 29538 (t= 39 us)
Laser Pulses 500 Conc 1.46E-05 + 2.33E-07 G/L/L
Lifetime 193 + 1.157 us Dilution Factor 1 mL/mL
R2 .9985
Integrated 396905 FINAL RESULT 1.46E-05 + 2.33E-07 G/L/L
Range: LOW

Sample ID S94T000229 Date/Time 01/03/95/13:16:51
Description SAM+SPIKE Cal Y=3.50E+07X-1.67E+02
Ref. Ratio 1.001 Intensity 2198 (t= 39 us)
Laser Pulses 500 Conc 8.50E-05 + 2.65E-06 G/L/L
Lifetime 196 + .578 us Dilution Factor 1 mL/mL
R2 .9996
Integrated 31744 FINAL RESULT 8.50E-05 + 2.65E-06 G/L/L
Range: HIGH

Sample ID S94T000300 Date/Time 01/03/95/13:55:11
Description SAMPLE Cal Y=2.43E+09X0
Ref. Ratio .996 Intensity 35318 (t= 39 us)
Laser Pulses 500 Conc 1.81E-05 + 2.75E-07 G/L/L
Lifetime 183 + .948 us Dilution Factor 1 mL/mL
R2 .9989
Integrated 466126 FINAL RESULT 1.81E-05 + 2.75E-07 G/L/L
Range: LOW

Sample ID S94T000300 Date/Time 01/03/95/14:00:35
Description SAM-DUP Cal Y=2.43E+09X0
Ref. Ratio 1.009 Intensity 31156 (t= 39 us)
Laser Pulses 500 Conc 1.60E-05 + 2.20E-07 G/L/L
Lifetime 187 + .783 us Dilution Factor 1 mL/mL
R2 .9992
Integrated 420876 FINAL RESULT 1.60E-05 + 2.20E-07 G/L/L
Range: LOW

Sample ID S94T000300 Date/Time 01/03/95/14:04:29
Description SAM-SPIKE Cal Y=2.43E+09X0
Ref. Ratio .996 Intensity 37488 (t= 39 us)
Laser Pulses 500 Conc 1.86E-05 + 3.05E-07 G/L/L
Lifetime 188 + 1.145 us Dilution Factor 1 mL/mL
R2 .9984
Integrated 493302 FINAL RESULT 1.86E-05 + 3.05E-07 G/L/L
Range: LOW

Sample-Dup

WHC-SD-WM-DP-074, REV. 0

sample + spike

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.100 ml - 10 ml Dilution

.100 ml - 10 ml Dilution

.100 ml - 10 ml Dilution

Leslie Dias 1-21-95

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54-3000-101 (9-59)

DON'T SAY IT --- *Write It!*

DATE 1/18

TO

FROM Jennifer D. Lippert

S94T000299

BLK 2.23 µg/g
Std 9.59 E-2 µg/mL (#66B52)
Sample 4.33 µg/g
dup 8.00 µg/g
spike 20.1 %

S94T000300

Sample 722 µg/g
dup 633 µg/g
spike Ø

Samples will be rerun.

"TO MAKE LIFE LAST, PUT SAFETY FIRST"

LABCORE Data Entry Template for Worklist# 395

Analyst: _____ **Instrument:** ~~LSC00~~ U01 _____ **Method:** LA-925-009 A-O

Worklist Comment: data re-entry for #5 - original run 1-11-95 WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep Al	Test	Matrix	Actual	Found	DL	Unit
1	BLNK-PREP			U-02	SOLID			N/A	ug/g
2	STD			U-02	SOLID			N/A	ug/g
3	SAMPLE	S94T000005	0	U-02	SOLID	N/A			ug/g
4	DUP	S94T000005	0	U-02	SOLID			N/A	ug/g
5	SPK	S94T000005	0	U-02	SOLID			N/A	ug/g

Final page for worklist # 395

Analyst Signature _____ **Date** _____

For data see worklist #302. Data from the original analysis was used with chemist and project coordinator approval.

Jennifer L. Skippen 1/11/95

Data Entry Comments:

Units shown for QC (SPK) may not reflect the actual units.

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54-3000-101 (9-59)

DON'T SAY IT --- *Write It!*

DATE

TO

FROM

S94T000005

Blnk-Prep 3.15 µg/g
Std 9.75E-2 µg/mL
Samples 6.38 µg/g
duplicates 4.78 µg/g
Spike 109.9 %

"TO MAKE LIFE LAST, PUT SAFETY FIRST"

Sample ID BLNK-PREP
Description BLANK PREP
Ref. Ratio 1.033
Laser Pulses 500
Lifetime 192 + .513 us
R2 .9997
Integrated 77486
Range: LOW

Date/Time 12/10/94/12:56:36
Cal Y=2.31E+09X+2.44E-04
Intensity 5289 (t= 39 us)
Conc 3.03E-06 + 4.44E-08 G/L
Dilution Factor 1 mL/mL

FINAL RESULT 3.03E-06 + 4.44E-08 G/L

Sample Prep: 10 ml Boildown → 10 ml .5 M HNO_3

Sample Size: 1 ml

Sample ID STD
Description STANDARD
Ref. Ratio 1.048
Laser Pulses 500
Lifetime 163 + .555 us
R2 .9995
Integrated 30362
Range: HIGH

Date/Time 12/10/94/12:53:31
Cal Y=3.36E+07X+241.807
Intensity 2385 (t= 39 us)
Conc 9.15E-05 + 2.87E-06 G/L
Dilution Factor 1 mL/mL

FINAL RESULT 9.15E-05 + 2.87E-06 G/L

Sample Size: 1 ml

STD #66B52

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Sample ID S94T000005
Description SAMPLE
Ref. Ratio 1.036
Laser Pulses 500
Lifetime 162 + .33 us
R2 .9998
Integrated 365913
Range: LOW

Date/Time 12/10/94/13:02:40
Cal Y=2.31E+09X+2.44E-04
Intensity 30079 (t= 39 us)
Conc 1.73E-05 + 2.51E-07 G/L
Dilution Factor 1 mL/mL

FINAL RESULT 1.73E-05 + 2.51E-07 G/L

Sample Prep: 10 ml Boildown → 10 ml .5 M HNO_3

Sample Size: 1 ml

Sample ID S94T000005
Description DUPLICATE
Ref. Ratio 1.034
Laser Pulses 500
Lifetime 165 + .305 us
R2 .9998
Integrated 299938
Range: LOW

Date/Time 12/10/94/13:05:42
Cal Y=2.31E+09X+2.44E-04
Intensity 23561 (t= 39 us)
Conc 1.39E-05 + 1.99E-07 G/L
Dilution Factor 1 mL/mL

FINAL RESULT 1.39E-05 + 1.99E-07 G/L

Sample Prep: 10 ml Boildown → 10 ml .5 M HNO_3

Sample Size: 1 ml

Sample ID S94T000005
Description SPIKE
Ref. Ratio 1.052
Laser Pulses 500
Lifetime 164 + .338 us
R2 .9998
Integrated 132295
Range: HIGH

Date/Time 12/10/94/13:09:06
Cal Y=3.36E+07X+241.807
Intensity 10693 (t= 39 us)
Conc 4.17E-04 + 1.28E-05 G/L
Dilution Factor 1 mL/mL

FINAL RESULT 4.17E-04 + 1.28E-05 G/L

Sample Prep: 10 ml Sample + .1 ml Spike
Boildown → 10 ml .5 M HNO_3
Spike # 144B38

Sample Size: 1 ml

Sample ID BLNK-PREP
Description BLANK PREP
Ref. Ratio 1.046
Laser Pulses 500
Lifetime 180 + .695 us
R2 .9994
Integrated 78584
Range: LOW

Date/Time 12/10/94/13:13:47
Cal Y=2.31E+09X+2.44E-04
Intensity 5944 (t= 39 us)
Conc 3.29E-06 + 5.25E-08 G/L
Dilution Factor 1 mL/mL

FINAL RESULT 3.29E-06 + 5.25E-08 G/L

Sample Prep: 10ml Boildown → 10ml .5 M HNO_3

Sample Size: 1 ml

Sample ID STD
Description STANDARD
Ref. Ratio 1.051
Laser Pulses 500
Lifetime 173 + .874 us
R2 .9989
Integrated 32512
Range: HIGH

Date/Time 12/10/94/13:12:31
Cal Y=3.36E+07X+241.807
Intensity 2509 (t= 39 us)
Conc 9.06E-05 + 2.92E-06 G/L
Dilution Factor 1 mL/mL

FINAL RESULT 9.06E-05 + 2.92E-06 G/L

Sample Size : 1ml

STD #66B52

Sample ID S94T000067
Description SAMPLE
Ref. Ratio 1.076
Laser Pulses 500
Lifetime 206 + .243 us
R2 .9999
Integrated 268446
Range: LOW

Date/Time 12/10/94/14:03:06
Cal Y=2.31E+09X+2.44E-04
Intensity 17087 (t= 39 us)
Conc 9.76E-06 + 1.35E-07 G/L
Dilution Factor 1 mL/mL

FINAL RESULT 9.76E-06 + 1.35E-07 G/L

Sample Prep : 10ml boildown → 10ml .5M HNO_3

Sample Size : 1ml – 10ml → 1ml – 10ml → 1ml

Sample ID S94T000067
Description DUPLICATE
Ref. Ratio 1.077
Laser Pulses 500
Lifetime 147 + .318 us
R2 .9998
Integrated 176180
Range: LOW

Date/Time 12/10/94/13:54:43
Cal Y=2.31E+09X+2.44E-04
Intensity 15245 (t= 39 us)
Conc 9.43E-06 + 1.39E-07 G/L
Dilution Factor 1 mL/mL

FINAL RESULT 9.43E-06 + 1.39E-07 G/L

Sample Prep : 10ml Boildown → 10ml .5M HNO_3

Sample Size : 1ml – 10ml → 1ml – 10ml → 1ml

Sample ID S94T000067
Description SPIKE
Ref. Ratio 1.079
Laser Pulses 500
Lifetime 218 + .431 us
R2 .9998
Integrated 423285
Range: LOW

Date/Time 12/10/94/14:08:22
Cal Y=2.31E+09X+2.44E-04
Intensity 26799 (t= 39 us)
Conc 1.45E-05 + 2.04E-07 G/L
Dilution Factor 1 mL/mL

FINAL RESULT 1.45E-05 + 2.04E-07 G/L

Sample Prep : 10ml Sample + .100ml Spike boildown → 10ml .5M HNO_3

Spike # 144838

Sample Size : 1ml – 10ml → 1ml – 10ml → 1ml

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LABCORE Data Entry Template for Worklist# 431

Analyst: RJM **Instrument:** U01 _____ **Method:** LA-925-009 A-O

Worklist Comment: 1 ML SIZE FOR #299, 0.1-~~100~~ 10 DILUTION FOR #300/0.1 ML SPIKE # 144B38 1/21/95

Seg	Type	Sample#	Rep	Al	Test	Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				U-02	SOLID	~~9.22 E-2~~	~~1.00 E-1~~ <2.12 E-2	N/A	ug/g
2	STD				U-02	SOLID	9.22 E-2	1.00 E-1	N/A	ug/g
3	SAMPLE	S94T000299	0	F	U-02	SOLID	N/A	<2.12 E-2		ug/g
4	DUP	S94T000299	0	F	U-02	SOLID	<2.12 E-2	<2.03 E-2	N/A	ug/g
5	SPK	S94T000299	0	F	U-02	SOLID		107.3%	N/A	ug/g
6	SAMPLE	S94T000300	0	F	U-02	SOLID	N/A	818.1		ug/g
7	DUP	S94T000300	0	F	U-02	SOLID	818.1	735.8	N/A	ug/g
8	SPK	S94T000300	0	F	U-02	SOLID		113.1%	N/A	ug/g

RJM 2-1-95

Final page for worklist # 431

RJM McCown
Analyst Signature

1/30/95
Date

2/1/95

standard book # 66B52 1ML

Sample Size: 594T000299 & DUPLICATE 1ML
SPIKE # 144B38 .100 ML

594T000300 & DUPLICATE .100ML - 10ML - 1ML
SPIKE # 144B38 .100 ML

RJM McCown

WHC-SD-WM-DP-074, REV. 0

Data Entry Comments:

Units shown for QC (SPK) may not reflect the actual units.

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54-3000-101 (9-59)

DON'T SAY IT --- *Write It!*

DATE 2/1/95

TO

FROM [signature]

S94T000299

Standard #66B52 ~~1.00 E-4~~ 3-1-95 1.0 E-1 µg/mL (actual value 9.22 E-2 µg/mL)

Blank < 2.12 E-2 µg/g

Sample < 2.12 E-2 µg/g

duplicate < 2.03 E-2 µg/g

Spike 107.3 %

S94T000300

Sample 818.1 µg/g

duplicate 735.8 µg/g

Spike 113.1 %

"TO MAKE LIFE LAST, PUT SAFETY FIRST"

Standard Report

Standard for LOW Range - 2.48E-06 G/L
Laser Pulses 500 Date/Time 01/30/95/03:19:17

Reference		Standard	
Intensity	12300	Intensity	13352
Lifetime	301.97 + 1.69 us	Lifetime	320.65 + 2.12 us
R2	.99865	R2	.9981
Intercept	13781.83	Intercept	14750.31 + 1.21E+02

WHC-SD-WM-DP-074, REV. 0

RJ McCown

Sample ID 66B52 Date/Time 01/30/95/03:21:57
Description STANDARD Cal Y=8.95E+07X+115.285
Ref. Ratio 1.059 Intensity 7776 (t= 39 us)
Laser Pulses 500 Conc 1.00E-04 + 3.20E-06 G/L
Lifetime 257 + 1.025 us Dilution Factor 1 mL/mL
R2 .9993
Integrated 135262 FINAL RESULT 1.00E-04 + 3.20E-06 G/L
Range: HIGH

Sample ID 299 & 300 Date/Time 01/30/95/03:51:36
Description PREP BLANK Cal Y=8.95E+07X+115.285
Ref. Ratio 1.044 Intensity 118 (t= 39 us)
Laser Pulses 500 Conc 2.96E-07 + 1.34E-08 G/L
Lifetime 181 + 3.516 us Dilution Factor 1 mL/mL
R2 .9876
Integrated 1408 FINAL RESULT 2.96E-07 + 1.34E-08 G/L
Range: HIGH

RJ 2-3-95

Sample ID 299 & 300 Date/Time 01/30/95/03:52:18
Description PREP BLANK Cal Y=0X0
Ref. Ratio 1.07 Intensity 7265 (t= 39 us)
Laser Pulses 500 Conc + G/L
Lifetime 185 + .473 us Dilution Factor 1 mL/mL
R2 .9997
Integrated 100091 FINAL RESULT
Range: LOW
Sample <= Blank

BEST AVAILABLE COPY

Sample ID S94T000299
Description SAMPLE
Ref. Ratio 1.078
Laser Pulses 500
Lifetime 226 + .933 us
R2 .9993
Integrated 770335
Range: LOW
Sample <= Blank

Date/Time 01/30/95/03:55:27
Cal Y=0X0
Intensity 48351 (t= 39 us)
Conc + G/L
Dilution Factor 1 mL/mL

FINAL RESULT

WHC-SD-WM-DP-074, REV. 0

Sample ID S94T000299
Description DUPLICATE
Ref. Ratio 1.103
Laser Pulses 500
Lifetime 260 + .797 us
R2 .9996
Integrated 854723
Range: LOW

Date/Time 01/30/95/03:57:49
Cal Y=0X0
Intensity 47310 (t= 182 us)
Conc + G/L
Dilution Factor 1 mL/mL

FINAL RESULT

BEST AVAILABLE COPY

Sample <= Blank

Sample ID S94T000299
Description SAMPLE + SPIKE
Ref. Ratio 1.095
Laser Pulses 500
Lifetime 224 + .913 us
R2 .9993
Integrated 485241
Range: HIGH

Date/Time 01/30/95/04:01:10
Cal Y=8.95E+07X+115.285
Intensity 31088 (t= 39 us)
Conc 4.14E-04 + 1.33E-05 G/L
Dilution Factor 1 mL/mL

FINAL RESULT 4.14E-04 + 1.33E-05 G/L

Sample ID S94T000300
Description SAMPLE
Ref. Ratio 1.094
Laser Pulses 500
Lifetime 250 + 1.509 us
R2 .9984
Integrated 28153
Range: HIGH

Date/Time 01/30/95/04:07:20
Cal Y=8.95E+07X+115.285
Intensity 1675 (t= 39 us)
Conc 2.05E-05 + 6.67E-07 G/L
Dilution Factor 1 mL/mL

FINAL RESULT 2.05E-05 + 6.67E-07 G/L

Sample ID S94T000300
Description DUPLICATE
Ref. Ratio 1.097
Laser Pulses 500
Lifetime 249 + 1.483 us
R2 .9985
Integrated 25723
Range: HIGH

Date/Time 01/30/95/04:09:42
Cal Y=8.95E+07X+115.285
Intensity 1532 (t= 39 us)
Conc 1.86E-05 + 6.06E-07 G/L
Dilution Factor 1 mL/mL

FINAL RESULT 1.86E-05 + 6.06E-07 G/L

Sample ID [illegible]
Description SAMPLE + SPIKE
Ref. Ratio 1.118
Laser Pulses 500
Lifetime 212 + 1.103 us
R2 .9988
Integrated 507845
Range: HIGH

Date/Time 01/30/95/04:12:12
Cal Y=8.95E+07X+115.285
Intensity 34124 (t= 39 us)
Conc 4.57E-04 + 1.49E-05 G/L
Dilution Factor 1 mL/mL

FINAL RESULT 4.57E-04 + 1.49E-05 G/L

2605

LABCORE Data Entry Template for Worklist# 827

Analyst: DCD **Instrument:** U01 AL10721 **Book #** 106B52 1ml

Method: LA-925-009 Rev/Mod A-0 SPIKE # 146B38 .100 ml

Worklist Comment: 1 ml sample size / 0.1 ml spike before boildown / jls

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				U-02	LIQUID	6.74 E-2	6.27 E-2	N/A	ug/mL
		2	BLNK-PREP				U-02	LIQUID	1	9.88 E-4	N/A	ug/mL
94000020	SY-103	3	SAMPLE	S95T000328	0		U-02	LIQUID	N/A	1.20 E-2		ug/mL
94000020	SY-103	4	DUP	S95T000328	0		U-02	LIQUID	1.20 E-2	1.62 E-2	N/A	ug/mL
94000020	SY-103	5	SPK	S95T000328	0		U-02	LIQUID	100	98.2	N/A	ug/mL
94000020	SY-103	6	SAMPLE	S95T000329	0		U-02	LIQUID	N/A	2.03 E-2		ug/mL
94000020	SY-103	7	DUP	S95T000329	0		U-02	LIQUID	2.03 E-2	1.90 E-2	N/A	ug/mL
94000020	SY-103	8	SPK	S95T000329	0		U-02	LIQUID	100	100.5	N/A	ug/mL
94000020	SY-103	9	SAMPLE	S95T000330	0		U-02	LIQUID	N/A	2.89 E-2		ug/mL
94000020	SY-103	10	DUP	S95T000330	0		U-02	LIQUID	2.89 E-2	2.70 E-2	N/A	ug/mL
94000020	SY-103	11	SPK	S95T000330	0		U-02	LIQUID	100	114.6	N/A	ug/mL
94000020	SY-103	12	SAMPLE	S95T000331	0		U-02	LIQUID	N/A	2.32 E-2		ug/mL
94000020	SY-103	13	DUP	S95T000331	0		U-02	LIQUID	2.32 E-2	2.91 E-2	N/A	ug/mL
94000020	SY-103	14	SPK	S95T000331	0		U-02	LIQUID	100	115.7	N/A	ug/mL

Results for BLNK-PREP, SAMPLE and DUP must be corrected for prep dilution factor of 20. See next page for corrected values. RDC 8/1/95

Final page for worklist # 827

David A Dunham 4-26-95
Analyst Signature **Date**

Analyst Signature **Date**

4-25-95

Data Entry Comments:

SAMPLE PREP ⇒
SAM, DUP : 1.00ml Boildown → 10 ml .5 M HNO_3
SPIKE : 1.00ml + .100ml spike Boildown → 10ml .5M HNO_3

SAMPLE SIZE ⇒ SAM, DUP, SPIKE, BLK
.250 ml + .750 ml .5M HNO_3

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

54-8000-101 (9-89)

DON'T SAY IT --- *Write It!*

DATE 8/1/95

TO Uranium Worklist # 827 FROM Ruth A. Eal

Results corrected for prep dilution factor of 20.

Std	6.27e-2 µg/mL (actual value is 6.74e-2 µg/mL)	
328	2.40 µg/mL	Det. Lim. = 2.96 E-2 µg/mL
328 DUP	3.24 µg/mL spike = 98.2%	
329	4.06 µg/mL	
329 DUP	3.80 µg/mL spike = 100.5%	
330	5.78 µg/mL	
330 DUP	5.40 µg/mL spike = 114.6%	
331	4.64 µg/mL	
331 DUP	5.82 µg/mL spike = 115.7%	
BLANK-PREP	1.98e-1 µg/mL	

"TO MAKE LIFE LAST, PUT SAFETY FIRST"

```
Sample ID  STD                          Date/Time  04/21/95/04:15:22
Description  STANDARD                   Cal Y=8.54E+07X+0.488
Ref. Ratio 1.02                         Intensity 4330      (t=  39     us)
Laser Pulses 500                        Conc 6.27E-05 + 1.99E-06 G/L
Lifetime 253 + .88 us                   Dilution Factor 1 mL/mL
R2 .9995
Integrated 78251            FINAL RESULT  6.27E-05 + 1.99E-06 G/L
Range: HIGH

Sample ID  PREP-BLK                     Date/Time  04/21/95/04:52:40
Description  BLANK                      Cal Y=2.97E+09X0
Ref. Ratio 1.129                        Intensity 405       (t=  39     us)
Laser Pulses 500                        Conc 2.47E-07 + 1.69E-08 G/L
Lifetime 150 + 5.397 us                 Dilution Factor 1 mL/mL
R2 .9626
Integrated 5715             FINAL RESULT  2.47E-07 + 1.69E-08 G/L
Range: LOW

Sample ID  S95T00032[illegible]          Date/Time  04/21/95/04:23:37
Description  SAMPLE   LAD 4-26-95       Cal Y=2.97E+09X0
Ref. Ratio 1.033                        Intensity 6653      (t=  39     us)
Laser Pulses 500                        Conc 2.99E-06 + 4.35E-08 G/L
Lifetime 176 + .707 us                  Dilution Factor 1 mL/mL
R2 .9993
Integrated 89103            FINAL RESULT  2.99E-06 + 4.35E-08 G/L
Range: LOW

Sample ID  S95T00032[illegible]8         Date/Time  04/21/95/04:26:16
Description  DUPLICATE 4-26-95 LAD      Cal Y=2.97E+09X0
Ref. Ratio 1.039                        Intensity 9260      (t=  39     us)
Laser Pulses 500                        Conc 4.04E-06 + 5.65E-08 G/L
Lifetime 174 + .611 us                  Dilution Factor 1 mL/mL
R2 .9995
Integrated 119452           FINAL RESULT  4.04E-06 + 5.65E-08 G/L
Range: LOW

Sample ID  S95T00032[illegible]          Date/Time  04/21/95/04:28:24
Description  SPIKE   LAD 4-26-95        Cal Y=8.54E+07X+0.488
Ref. Ratio 1.062                        Intensity 8582      (t=  39     us)
Laser Pulses 500                        Conc 1.28E-04 + 4.03E-06 G/L
Lifetime 199 + .323 us                  Dilution Factor 1 mL/mL
R2 .9999
Integrated 125594           FINAL RESULT  1.28E-04 + 4.03E-06 G/L
Range: HIGH

Sample ID  S95T00032[illegible]9         Date/Time  04/21/95/04:36:35
Description  SAMPLE   LAD 4-26-95       Cal Y=2.97E+09X0
Ref. Ratio 1.064                        Intensity 12564     (t=  39     us)
Laser Pulses 500                        Conc 5.07E-06 + 6.89E-08 G/L
Lifetime 217 + .864 us                  Dilution Factor 1 mL/mL
R2 .9993
Integrated 189642           FINAL RESULT  5.07E-06 + 6.89E-08 G/L
Range: LOW
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Sample ID S95T000329 Date/Time 04/21/95/04:37:31
Description DUPLICATE Cal Y=2.97E+09X0
Ref. Ratio 1.076 Intensity 11858 (t= 39 us)
Laser Pulses 500 Conc 4.75E-06 + 6.57E-08 G/L
Lifetime 225 + .987 us Dilution Factor 1 mL/mL
R2 .9992
Integrated 184658 FINAL RESULT 4.75E-06 + 6.57E-08 G/L
Range: LOW

Sample ID S95T000329 Date/Time 04/21/95/04:39:38
Description SPIKE Cal Y=8.54E+07X+0.488
Ref. Ratio 1.108 Intensity 7867 (t= 39 us)
Laser Pulses 500 Conc 1.33E-04 + 4.54E-06 G/L
Lifetime 151 + .819 us Dilution Factor 1 mL/mL
R2 .9987
Integrated 93923 FINAL RESULT 1.33E-04 + 4.54E-06 G/L
Range: HIGH

Sample ID S95T000330 Date/Time 04/21/95/04:43:39
Description SAMPLE Cal Y=2.97E+09X0
Ref. Ratio 1.09 Intensity 17283 (t= 39 us)
Laser Pulses 500 Conc 7.23E-06 + 9.44E-08 G/L
Lifetime 215 + .704 us Dilution Factor 1 mL/mL
R2 .9995
Integrated 268904 FINAL RESULT 7.23E-06 + 9.44E-08 G/L
Range: LOW

Sample ID S95T000330 Date/Time 04/21/95/04:44:52
Description DUPLICATE Cal Y=2.97E+09X0
Ref. Ratio 1.096 Intensity 15726 (t= 39 us)
Laser Pulses 500 Conc 6.76E-06 + 8.23E-08 G/L
Lifetime 214 + .421 us Dilution Factor 1 mL/mL
R2 .9998
Integrated 248938 FINAL RESULT 6.76E-06 + 8.23E-08 G/L
Range: LOW

Sample ID S95T000330 Date/Time 04/21/95/04:46:36
Description SPIKE Cal Y=8.54E+07X+0.488
Ref. Ratio 1.125 Intensity 10308 (t= 39 us)
Laser Pulses 500 Conc 1.53E-04 + 4.83E-06 G/L
Lifetime 234 + .54 us Dilution Factor 1 mL/mL
R2 .9998
Integrated 176636 FINAL RESULT 1.53E-04 + 4.83E-06 G/L
Range: HIGH

Sample ID S95T000331 Date/Time 04/21/95/04:48:14
Description SAMPLE Cal Y=2.97E+09X0
Ref. Ratio 1.104 Intensity 13874 (t= 39 us)
Laser Pulses 500 Conc 5.81E-06 + 7.10E-08 G/L
Lifetime 228 + .481 us Dilution Factor 1 mL/mL
R2 .9998
Integrated 227798 FINAL RESULT 5.81E-06 + 7.10E-08 G/L
Range: LOW

Sample ID S95T000331 Date/Time 04/21/95/04:49:06
Description DUPLICATE Cal Y=2.97E+09X0
Ref. Ratio 1.13 Intensity 17197 (t= 39 us)
Laser Pulses 500 Conc 7.28E-06 + 8.90E-08 G/L
Lifetime 238 + .533 us Dilution Factor 1 mL/mL
R2 .9998
Integrated 297911 FINAL RESULT 7.28E-06 + 8.90E-08 G/L
Range: LOW

Sample ID S95T000331 Date/Time 04/21/95/04:50:38
Description SPIKE Cal Y=8.54E+07X+0.488
Ref. Ratio 1.145 Intensity 10598 (t= 39 us)
Laser Pulses 500 Conc 1.53E-04 + 4.84E-06 G/L
Lifetime 232 + .532 us Dilution Factor 1 mL/mL
R2 .9998
Integrated 175496 FINAL RESULT 1.53E-04 + 4.84E-06 G/L
Range: HIGH