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

Document number: SD-WM-DP-183

Section 4 **of** 4

Title: 222S Lab Analytical Report for Tank 241C106 Grab Samples 6C-96-1 Thru 6C-96-16 & 6C-96-17-FB [Pgs 1783 Thru 2-139]

Date: 08/06/1996 **Revision:** A000

Originator: Esch RA
Co: WHC

Recipient:
Co:

References: EDT-614793

WORKBOOK PAGE: SAM4

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

						SAMPLE
	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	87132	GROSS WEIGHT	(W2)	7.2937
	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.2207
8874	BACKGROUND in cpm	(BKG)	11.0	NET WEIGHT	(W3)	0.0730
	SAMPLE VOLUME in mL	(SS)	0.200	DELTA TIME (HOURS)	(DT)	8.58
@SR90-01	DILUTION FACTOR	(DF)	21			
	DIGEST FACTOR (g/L)	(D g/L	2.1028			
SOLID	SAMPLE COUNT RATE	(Rs)	8702.20	SR-90 EFFICIENCY FACTOR	(C1)	0.4051
	CRITICAL LEVEL	(Lc)	2.00	Y-90 EFFICIENCY FACTOR	(C2)	0.4503
96004884	TIME OF SEPARATION	(ST)	15:05	Rmax		N/A
	DATE OF SEPARATION	(SD)	05/18/96	DETECTION LIMIT	(Ld)	4.09
0	TIME OF COUNT	(TOC)	23:40	Sr-89/90 CONC in µCi/g		6.0260E+02
	DATE OF COUNT	(DOC)	05/18/96			

FUSION01

S96T001531

WB26870

VAR

SLF

SMF

05/19/96

05/18/96

08:00 PM

C-106 GRAB

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0

RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

				DETECTION LEVEL
	Sr-89/90 CONCENTRATION	6.03E+02	µCi/g	2.83E-01 µCi/g
	RELATIVE COUNTING ERROR	0.7%		
	PERCENT CARRIER RECOVERY	73.0%		

Analyst:		SMF	Date:	19-May-96
Signature of Chemist:		SLF	Date:	5/22/96

SAMPLE.WB1 REV 1.2 22010NML

WORKBOOK PAGE: DUP5

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							DUP
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)		1.000
DUP	TOTAL COUNTS	(TC)	99805	GROSS WEIGHT	(W2)		7.3260
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.2441
8874	BACKGROUND in cpm	(BKG)	11.0	NET WEIGHT	(W3)		0.0819
Test Code	SAMPLE VOLUME in mL	(SS)	0.200	DELTA TIME (HOURS)	(DT)		8.83
@SR90-01	DILUTION FACTOR	(DF)	21				
Matrix	DIGEST FACTOR (g/L)	(D g/L	2.1916				
SOLID	SAMPLE COUNT RATE	(Rs)	9969.50	SR-90 EFFICIENCY FACTOR	(C1)		0.4051
Batch Number	CRITICAL LEVEL	(Lc)	2.00	Y-90 EFFICIENCY FACTOR	(C2)		0.4503
96004884	TIME OF SEPARATION	(ST)	15:05	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	05/18/96	DETECTION LIMIT	(Ld)		4.09
0	TIME OF COUNT	(TOC)	23:55	Sr-89/90 CONC in µCi/g			5.8894E+02
Sample Prep	DATE OF COUNT	(DOC)	05/18/96				
FUSION01							
Sample #							
S96T001531							
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)						
WB26870	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0						
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)						
VAR	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))						
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)						
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100						
Analyst	NOTE: Expected weight = CVA * 0.1						
SMF	Detection Levels and Less Than Values are determined from Procedure LA-508-002.						
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100						
05/19/96							
Analysis Date							DETECTION LEVEL
05/18/96	Sr-89/90 CONCENTRATION			5.89E+02		µCi/g	
Analysis Time							
08:00 PM	RELATIVE COUNTING ERROR			0.6%			2.41E-01 µCi/g
Sample Point							
C-106 GRAB	PERCENT CARRIER RECOVERY			81.9%			

Analyst:		SMF	Date:	19-May-96
Signature of Chemist:	J. L. Slepper	SLF	Date:	5/22/96

SAMPLE.WB1 REV 1.2 22010NML

WORKBOOK PAGE: SAM6

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

						SAMPLE
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	95248	GROSS WEIGHT	(W2)	7.2892
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.2102
8874	BACKGROUND in cpm	(BKG)	11.0	NET WEIGHT	(W3)	0.0790
Test Code	SAMPLE VOLUME in mL	(SS)	0.200	DELTA TIME (HOURS)	(DT)	9.17
@SR90-01	DILUTION FACTOR	(DF)	21			
Matrix	DIGEST FACTOR (g/L)	(D g/L	1.9148			
SOLID	SAMPLE COUNT RATE	(Rs)	9513.80	SR-90 EFFICIENCY FACTOR	(C1)	0.4051
Batch Number	CRITICAL LEVEL	(Lc)	2.00	Y-90 EFFICIENCY FACTOR	(C2)	0.4503
96004884	TIME OF SEPARATION	(ST)	15:05	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	05/18/96	DETECTION LIMIT	(Ld)	4.09
0	TIME OF COUNT	(TOC)	00:15	Sr-89/90 CONC in µCi/g		6.6469E+02
Sample Prep	DATE OF COUNT	(DOC)	05/19/96			
FUSION01						
Sample #						
S96T001541						
Instrument Code						
WB26870						
Prepared By						
VAR						
Chemist						
SLF						
Analyst						
SMF						
Date Complete						
05/19/96						
Analysis Date						
05/18/96						
Analysis Time						
08:00 PM						
Sample Point						
C-106 GRAB						

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0

RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

Sr-89/90 CONCENTRATION	6.65E+02	µCi/g	DETECTION LEVEL
RELATIVE COUNTING ERROR	0.6%		2.86E-01 µCi/g
PERCENT CARRIER RECOVERY	79.0%		

Analyst:		SMF	Date:	19-May-96
Signature of Chemist:		SLF	Date:	5/22/96

SAMPLE.WB1 REV 1.2 22010NML

WORKBOOK PAGE: DUP7

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

						DUP
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS	(TC)	104792	GROSS WEIGHT	(W2)	7.0968
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.0190
8874	BACKGROUND in cpm	(BKG)	11.0	NET WEIGHT	(W3)	0.0778
Test Code	SAMPLE VOLUME in mL	(SS)	0.200	DELTA TIME (HOURS)	(DT)	9.42
@SR90-01	DILUTION FACTOR	(DF)	21			
Matrix	DIGEST FACTOR (g/L)	(D g/L	1.9684			
SOLID	SAMPLE COUNT RATE	(Rs)	10468.20	SR-90 EFFICIENCY FACTOR	(C1)	0.4051
Batch Number	CRITICAL LEVEL	(Lc)	2.00	Y-90 EFFICIENCY FACTOR	(C2)	0.4503
96004884	TIME OF SEPARATION	(ST)	15:05	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	05/18/96	DETECTION LIMIT	(Ld)	4.09
0	TIME OF COUNT	(TOC)	00:30	Sr-89/90 CONC in µCi/g		7.2065E+02
Sample Prep	DATE OF COUNT	(DOC)	05/19/96			
FUSION01						
Sample #						
S96T001541						

Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
WB26870	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)
VAR	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100
Analyst	NOTE: Expected weight = CVA * 0.1
SMF	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100
05/19/96	
Analysis Date	
05/18/96	
Analysis Time	
08:00 PM	
Sample Point	
C-106 GRAB	

Sr-89/90 CONCENTRATION	7.21E+02	µCi/g	DETECTION LEVEL
RELATIVE COUNTING ERROR	0.6%		2.81E-01 µCi/g
PERCENT CARRIER RECOVERY	77.8%		

Analyst:		SMF	Date:	19-May-96
Signature of Chemist:	J. Slusser	SLF	Date:	5/22/96

SAMPLE.WB1 REV 1.2 22010N

LABCORE Completed RadChem Report for Worklist#: 8876

Analyst: smf **Instrument:** AB10 **Book#** 9856

Method: LA-220-101 Rev/Mod D-1

Worklist Comment: C-106. RUSH! Determine sample size using ludlum. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@SR90-01 SR90-01	SOLID	1.23E-03	1.36E-3	110.569	% Recovery
1	STD		0		@SR90-01 SR90-01C	SOLID	100	8.33E+01	83.300	% Recovery
1	STD		0		@SR90-01 SR90-01E	SOLID	1.00	1.91E+00	1.910	% Ct. Erro
2	BLNK-PREP		0		@SR90-01 SR90-01	SOLID	1	8.13E-1	0.813	uCi/g
2	BLNK-PREP		0		@SR90-01 SR90-01C	SOLID	100	7.97E+01	79.700	% Recovery
2	BLNK-PREP		0		@SR90-01 SR90-01E	SOLID	1.00	6.44E+01	64.400	uCi/g
3	BLNK/BKG		0		@SR90-01 SR90-01	SOLID	1	1.45E+00	1.450	BLNK/BKG
4	SAMPLE	S96T002718	0	F	@SR90-01 SR90-01	SOLID	N/A	5.90E+02	641.0e-003	uCi/g
4	SAMPLE	S96T002718	0	F	@SR90-01 SR90-01C	SOLID	N/A	8.23E+01	0.0e+000	% Recovery
4	SAMPLE	S96T002718	0	F	@SR90-01 SR90-01E	SOLID	N/A	1.01E+00	0.0e+000	% Ct. Error
5	DUP	S96T002718	0	F	@SR90-01 SR90-01	SOLID	5.90E+2	6.39E+2	7.974	RPD
5	DUP	S96T002718	0	F	@SR90-01 SR90-01C	SOLID	100	8.02E+01	80.200	% Recovery
5	DUP	S96T002718	0	F	@SR90-01 SR90-01E	SOLID	1.00	1.00E+00	1.000	% Cnt Err

Final page for worklist# 8876

Analyst Signature Date

Analyst Signature Date

Reviewer Signature 5/20/96 Date

LABCORE Data Entry Template for Worklist# 8876

Analyst: SMF **Instrument:** AB00 #10 **Book#** 9B56

Method: LA-220-101 Rev/Mod _____

Worklist Comment: C-106. RUSH! Determine sample size using ludlum. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@SR90-01	SOLID		
2	BLNK-PREP				@SR90-01	SOLID		
3	BLNK/BKG				@SR90-01	SOLID		
4	SAMPLE	S96T002718	0	F	@SR90-01	SOLID	96000082	C-106 GRAB
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E							
5	DUP	S96T002718	0	F	@SR90-01	SOLID		

Final page for worklist # 8876

S Fulton 5-18-96
Analyst Signature **Date**

CRaymond 5-19-96
Analyst Signature **Date**

MBS 5/20/96

Data Entry Comments: Sr Carrier # 117N16-D

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

WORKBOOK PAGE: STD1

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1) LIQUIDS

						STANDARD
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)	1.000
STD	TOTAL COUNTS	(TC)	10874	GROSS WEIGHT	(W2)	7.2987
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.2154
8876	BACKGROUND in cpm	(BKG)	11.0	NET WEIGHT	(W3)	0.0833
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)	4.92
@SR90-01	DILUTION FACTOR	(DF)	1			
Matrix	DIGEST DILUTION FACTOR	DDF	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	1076.40	SR-90 EFFICIENCY FACTO	(C1)	0.4051
Batch Number	CRITICAL LEVEL	(Lc)	2.00	Y-90 EFFICIENCY FACTOR	(C2)	0.4503
96004887	TIME OF SEPARATION	(ST)	14:25	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	05/18/96	DETECTION LIMIT	(Ld)	4.09
0	TIME OF COUNT	(TOC)	19:20	Sr-89/90 CONC. in µCi/L		1.3588E+00
Sample Prep	DATE OF COUNT	(DOC)	05/18/96			
N/A	STANDARD BOOK #		9B56			
Sample #	STANDARD VALUE in µCi/mL		1.2267E-03			
Instrument Code						
WB26870						
Prepared By						
VAR						
Chemist						
SLF						
Analyst						
SMF						
Date Complete						
05/19/96						
Analysis Date						
05/18/96						
Analysis Time						
03:00 PM						
Sample Point						
C-106 GRAB						

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/mL REPLACE RS WITH RMAX IF RS<=LcAND RS>=0 OR REPLACE RS WITH Lc IF RS<0

RS*DF*DDF*1000/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

Sr-89/90 CONCENTRATION	1.36E-03	µCi/mL	DETECTION LEVEL
RELATIVE COUNTING ERROR	1.9%		5.16E-06 µCi/L
PERCENT CARRIER RECOVERY	83.3%		

Analyst:	SMF	Date:	19-May-96
Signature of Chemist:	SLF	Date:	5/20/96

STANDARD.WB1 REV 1.2 22010NML

WORKBOOK PAGE: BLANK2

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

						BLNK-PREP
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)	1.000
BLNK-PREP	TOTAL COUNTS	(TC)	160	GROSS WEIGHT	(W2)	7.1342
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.0545
8876	BACKGROUND in cpm	(BKG)	11.0	NET WEIGHT	(W3)	0.0797
Test Code	SAMPLE VOLUME in mL	(SS)	0.200	DELTA TIME (HOURS)	(DT)	5.25
@SR90-01	DILUTION FACTOR	(DF)	21			
Matrix	DIGEST FACTOR (g/L)	(D g/L	0.8488			
SOLID	SAMPLE COUNT RATE	(Rs)	5.00	SR-90 EFFICIENCY FACTOR	(C1)	0.4051
Batch Number	CRITICAL LEVEL	(Lc)	2.00	Y-90 EFFICIENCY FACTOR	(C2)	0.4503
96004887	TIME OF SEPARATION	(ST)	14:25	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	05/18/96	DETECTION LIMIT	(Ld)	4.09
0	TIME OF COUNT	(TOC)	19:40	Sr-89/90 CONC in µCi/g		8.1313E-01
Sample Prep	DATE OF COUNT	(DOC)	05/18/96			
N/A						
Sample #						

Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
WB26870	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)
VAR	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100
Analyst	NOTE: Expected weight = CVA * 0.1
SMF	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100
05/19/96	
Analysis Date	
05/18/96	Sr-89/90 CONCENTRATION 8.13E-01 µCi/g
Analysis Time	
03:00 PM	RELATIVE COUNTING ERROR 64.4%
Sample Point	
C-106 GRAB	PERCENT CARRIER RECOVERY 79.7%

DETECTION LEVEL

6.65E-01 µCi/g

Analyst:	SMF	Date:	19-May-96
Signature of Chemist:	SLF	Date:	5/20/96

BLANK.WB1 REV 1.2 22010NML

WORKBOOK PAGE: SAM4

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							SAMPLE
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)		1.000
SAMPLE	TOTAL COUNTS	(TC)	37731	GROSS WEIGHT	(W2)		7.0831
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.0008
8876	BACKGROUND in cpm	(BKG)	11.0	NET WEIGHT	(W3)		0.0823
Test Code	SAMPLE VOLUME in mL	(SS)	0.200	DELTA TIME (HOURS)	(DT)		5.58
@SR90-01	DILUTION FACTOR	(DF)	21				
Matrix	DIGEST FACTOR (g/L)	(D g/L	0.8488				
SOLID	SAMPLE COUNT RATE	(Rs)	3762.10	SR-90 EFFICIENCY FACTOR	(C1)		0.4051
Batch Number	CRITICAL LEVEL	(Lc)	2.00	Y-90 EFFICIENCY FACTOR	(C2)		0.4503
96004887	TIME OF SEPARATION	(ST)	14:25	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	05/18/96	DETECTION LIMIT	(Ld)		4.09
0	TIME OF COUNT	(TOC)	20:00	Sr-89/90 CONC in µCi/g			5.9039E+02
Sample Prep	DATE OF COUNT	(DOC)	05/18/96				
FUSION01							
Sample #							
S96T002718							
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)						
WB26870	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0						
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)						
VAR	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))						
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)						
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100						
Analyst	NOTE: Expected weight = CVA * 0.1						
SMF	Detection Levels and Less Than Values are determined from Procedure LA-508-002.						
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100						
05/19/96							
Analysis Date							DETECTION LEVEL
05/18/96	Sr-89/90 CONCENTRATION		5.90E+02		µCi/g		
Analysis Time							
03:00 PM	RELATIVE COUNTING ERROR		1.0%				6.41E-01 µCi/g
Sample Point							
C-106 GRAB	PERCENT CARRIER RECOVERY		82.3%				

Analyst:		SMF	Date:	19-May-96
Signature of Chemist:	J L Swoper	SLF	Date:	5/20/96

SAMPLE.WB1 REV 1.2 22010NML

WORKBOOK PAGE: DUP5

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

						DUP
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS	(TC)	38459	GROSS WEIGHT	(W2)	7.1042
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.0240
8876	BACKGROUND in cpm	(BKG)	11.0	NET WEIGHT	(W3)	0.0802
Test Code	SAMPLE VOLUME in mL	(SS)	0.200	DELTA TIME (HOURS)	(DT)	5.83
@SR90-01	DILUTION FACTOR	(DF)	21			
Matrix	DIGEST FACTOR (g/L)	(D g/L	0.8184			
SOLID	SAMPLE COUNT RATE	(Rs)	3834.90	SR-90 EFFICIENCY FACTOR	(C1)	0.4051
Batch Number	CRITICAL LEVEL	(Lc)	2.00	Y-90 EFFICIENCY FACTOR	(C2)	0.4503
96004887	TIME OF SEPARATION	(ST)	14:25	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	05/18/96	DETECTION LIMIT	(Ld)	4.09
0	TIME OF COUNT	(TOC)	20:15	Sr-89/90 CONC in µCi/g		6.3882E+02
Sample Prep	DATE OF COUNT	(DOC)	05/18/96			
FUSION01						
Sample #						
S96T002718						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB26870	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)					
VAR	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)					
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
SMF	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
05/19/96						
Analysis Date						DETECTION LEVEL
05/18/96	Sr-89/90 CONCENTRATION		6.39E+02		µCi/g	
Analysis Time						
03:00 PM	RELATIVE COUNTING ERROR		1.0%			6.81E-01 µCi/g
Sample Point						
C-106 GRAB	PERCENT CARRIER RECOVERY		80.2%			

Analyst:		SMF	Date:	19-May-96
Signature of Chemist:		SLF	Date:	5/20/96

SAMPLE.WB1 REV 1.2 22010NML

1792

THE FOLLOWING ANALYSES WERE RERUN AND INCLUDED IN THE DATA PACKAGE, BUT THE RESULTS HAVE NOT BEEN REPORTED IN THE FINAL SUMMARY REPORTS.

LABCORE Data Entry Template for Worklist# 8060

Analyst: DPB **Instrument:** AB00 #12 **Book#** 9B56

Method: LA-220-101 Rev/Mod D-1

Worklist Comment: C-106. Determine sample size using ludlum. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@SR90-01	LIQUID		
2	BLNK				@SR90-01	LIQUID		
3	BLNK/BKG				@SR90-01	LIQUID		
4	SAMPLE	S96T000544	0		@SR90-01	LIQUID	96000082	C-106 GRAB
		Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
5	DUP	S96T000544	0		@SR90-01	LIQUID		

Final page for worklist # 8060

Daniel P. Bromley 4/29/96 0425
Analyst Signature **Date**

Sylvia Z. Chua 4/29/96
Analyst Signature **Date**

Sue E. Hogan 4/30/96

DATA NOT USED IN PACKAGE

Data Entry Comments: BLNK shows significant contamination + RPD is out of control limits. Batch will be reran.

5/3/96

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed RadChem Report for Worklist#: 8060

Analyst: seh **Instrument:** AB12 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: C-106. Determine sample size using ludlum. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@SR90-01 SR90-01	LIQUID	1.23E-03	1.24E-3	100.813	% Recovery
1	STD		0		@SR90-01 SR90-01C	LIQUID	100	8.76E+01	87.600	% Recovery
1	STD		0		@SR90-01 SR90-01E	LIQUID	1.00	1.89E+00	1.890	% Ct. Error
2	BLNK		0		@SR90-01 SR90-01	LIQUID	1	1.23E+0	1.230	uCi/mL
2	BLNK		0		@SR90-01 SR90-01C	LIQUID	100	8.87E+01	88.700	% Recovery
2	BLNK		0		@SR90-01 SR90-01E	LIQUID	1.00	2.69E+00	2.690	% Ct. Error
3	BLNK/BKG		0		@SR90-01 SR90-01	LIQUID	1	9.64E+01	96.400	uCi/mL
4	SAMPLE	S96T000544	0		@SR90-01 SR90-01	LIQUID	N/A	9.96E-01	671.0e-005	uCi/mL
4	SAMPLE	S96T000544	0		@SR90-01 SR90-01C	LIQUID	N/A	8.82E+01	0.0e+000	% Recovery
4	SAMPLE	S96T000544	0		@SR90-01 SR90-01E	LIQUID	N/A	2.99E+00	0.0e+000	% Ct. Error
5	DUP	S96T000544	0		@SR90-01 SR90-01	LIQUID	9.96E-1	2.77E+0	94.211	RPD
5	DUP	S96T000544	0		@SR90-01 SR90-01C	LIQUID	100	8.85E+01	88.500	% Recovery
5	DUP	S96T000544	0		@SR90-01 SR90-01E	LIQUID	1.00	1.77E+00	1.770	% Ct. Error

Final page for worklist# 8060

Analyst Signature **Date** **Analyst Signature** **Date**

5/3/96

Reviewer Signature **Date**

DATA
NOT USED
IN PACKAGE

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1) LIQUIDS

							STANDARD
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
STD	TOTAL COUNTS	(TC)	10895	GROSS WEIGHT	(W2)		7.5040
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.4164
8060	BACKGROUND in cpm	(BKG)	5.7	NET WEIGHT	(W3)		0.0876
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)		6.33
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST DILUTION FACTOR	DDF	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	1083.80	SR-90 EFFICIENCY FACTO	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.44	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
96003920	TIME OF SEPARATION	(ST)	23:15	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	04/28/96	DETECTION LIMIT	(Ld)		2.97
0	TIME OF COUNT	(TOC)	05:35	Sr-89/90 CONC. in µCi/L			1.2418E+00
Sample Prep	DATE OF COUNT	(DOC)	04/29/96				
N/A	STANDARD BOOK #		9B56				
Sample #	STANDARD VALUE in µCi/mL		1.2283E-03				
WL8060							
Instrument Code							
WB27811	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)						
Prepared By	Sr-89/90 CONC in µCi/mL REPLACE RS WITH RMAX IF RS<=LcAND RS>=0 OR REPLACE RS WITH Lc IF RS<0						
SZC	RS*DF*DDF*1000/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)						
Chemist	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))						
SLF	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)						
Analyst	Percent Carrier Recovery = (Net Weight / Expected weight) * 100						
DPB	NOTE: Expected weight = CVA * 0.1						
Date Complete	Detection Levels and Less Than Values are determined from Procedure LA-508-002.						
04/29/96	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100						
Analysis Date							DETECTION LEVEL
04/28/96	Sr-89/90 CONCENTRATION		1.24E-03			µCi/mL	
Analysis Time							
11:21 PM	RELATIVE COUNTING ERROR		1.9%				3.40E-06 µCi/L
Sample Point							
C-106 GRAB	PERCENT CARRIER RECOVERY		87.6%				

Analyst:	DPB	Date:	29-Apr-96
Signature of Chemist:	SLF	Date:	5/3/96

STANDARD.WB1 REV 1.2 22010NML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: BLANK2

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							BLNK
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
BLNK	TOTAL COUNTS	(TC)	5497	GROSS WEIGHT	(W2)		7.1166
Work Unit	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.0279
8060	BACKGROUND in cpm	(BKG)	5.7	NET WEIGHT	(W3)		0.0887
Task Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)		7.25
@SR90-01	DILUTION FACTOR	(DF)	201				
Matrix	DIGEST DILUTION FACTOR	(DDF)	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	544.00	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.44	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
96003920	TIME OF SEPARATION	(ST)	23:15	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	04/28/96	DETECTION LIMIT	(Ld)		2.97
0	TIME OF COUNT	(TOC)	06:30	Sr-89/90 CONC in µCi/L			1.2256E+03
Sample Prep	DATE OF COUNT	(DOC)	04/29/96				

N/A	
Sample #	
WL8060	
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)
SZC	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100
Analyst	NOTE: Expected weight = CVA * 0.1
DPB	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100
04/29/96	
Analysis Date	
04/28/96	Sr-89/90 CONCENTRATION 1.23E+00 µCi/mL
Analysis Time	
11:21 PM	RELATIVE COUNTING ERROR 2.7%
Sample Point	
C-106 GRAB	PERCENT CARRIER RECOVERY 88.7%

DETECTION LEVEL

6.69E-03 µCi/mL

Analyst:	DPB	Date:	29-Apr-96
Signature of Chemist:	SLF	Date:	5/3/96

BLANK.WB1 REV 1.2 22010NML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: SAM4

LA-220-101 / D-1 **Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)**

						SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	4461	GROSS WEIGHT	(W2)	7.1149
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.0267
8060	BACKGROUND in cpm	(BKG)	5.7	NET WEIGHT	(W3)	0.0882
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)	7.42
@SR90-01	DILUTION FACTOR	(DF)	201			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	440.40	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.44	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96003920	TIME OF SEPARATION	(ST)	23:15	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	04/28/96	DETECTION LIMIT	(Ld)	2.97
0	TIME OF COUNT	(TOC)	06:40	Sr-89/90 CONC in µCi/L		9.9609E+02
Sample Prep	DATE OF COUNT	(DOC)	04/29/96			
N/A						
Sample #						
S96T000544						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)					
SZC	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)					
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
DPB	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
04/29/96						
Analysis Date						DETECTION LEVEL
04/28/96	Sr-89/90 CONCENTRATION		9.96E-01		µCi/mL	
Analysis Time						
11:21 PM	RELATIVE COUNTING ERROR		3.0%			6.71E-03 µCi/mL
Sample Point						
C-106 GRAB	PERCENT CARRIER RECOVERY		88.2%			

Analyst:	DPB	Date:	29-Apr-96
Signature of Chemist:	SLF	Date:	5/3/96

SAMPLE.WB1 REV 1.2 22010NML

DATA
NOT USED
IN PACKAGE

WORKBOOK PAGE: DUP5

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							DUP
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
DUP	TOTAL COUNTS	(TC)	12454	GROSS WEIGHT	(W2)		7.2462
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.1577
8060	BACKGROUND in cpm	(BKG)	5.7	NET WEIGHT	(W3)		0.0885
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)		8.17
@SR90-01	DILUTION FACTOR	(DF)	201				
Matrix	DIGEST DILUTION FACTOR	(DDF)	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	1239.70	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.44	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
96003920	TIME OF SEPARATION	(ST)	23:15	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	04/28/96	DETECTION LIMIT	(Ld)		2.97
0	TIME OF COUNT	(TOC)	07:25	Sr-89/90 CONC in µCi/L			2.7732E+03
Sample Prep	DATE OF COUNT	(DOC)	04/29/96				
N/A							
Sample #							
S96T000544							
Instrument Code							
WB27811							
Prepared By							
SZC							
Chemist							
SLF							
Analyst							
DPB							
Date Complete							
04/29/96							
Analysis Date							
04/28/96							
Analysis Time							
11:21 PM							
Sample Point							
C-106 GRAB							

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0

RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

				DETECTION LEVEL
Sr-89/90 CONCENTRATION	2.77E+00	µCi/mL		
RELATIVE COUNTING ERROR	1.8%			6.64E-03 µCi/mL
PERCENT CARRIER RECOVERY	88.5%			

Analyst:	DPB	Date:	29-Apr-96
Signature of Chemist:	SLF	Date:	5/3/96

SAMPLE.WB1 REV 1.2 22010NML

DATA NOT USED IN PACKAGE

LABCORE Data Entry Template for Worklist# 6478

Analyst: CRG **Instrument:** LSC00 6000 **Book#** 131B52

Method: LA-438-101 Rev/Mod D-2

Worklist Comment: 0.1 -10 mL dilution /0.25 mL SS / rerun / jls

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@TC99-01	LIQUID		
2	BLNK-PREP				@TC99-01	LIQUID		
3	SAMPLE	S96T000539	0		@TC99-01	LIQUID	96000082	C-106 GRAB
		Analytes Requested: TC99-01 , TC99-01E, TC99-01T						
4	DUP	S96T000539	0		@TC99-01	LIQUID		
5	SAMPLE	S96T001024	0		@TC99-01	LIQUID	96000174	C-106 GRAB
		Analytes Requested: TC99-01 , TC99-01E, TC99-01T						
6	DUP	S96T001024	0		@TC99-01	LIQUID		

Final page for worklist # 6478

Cynthia R Johnson 3/15/96
Analyst Signature **Date**

M C Bice 3/19/96
Analyst Signature **Date**

C.J. Quinn 3/19/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed Worklist Report for Worklist# 6478

Analyst: crj **Instrument:** LSC02 **Book#** 131852

Method: LA-438-101 Rev/Mod D-2

Worklist Comment: 0.1 -10 mL dilution /0.25 mL SS / rerun / jls

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD			0	@TC99-01 TC99-01	LIQUID	3.80E-03	3.87E-3	101.840	% Recovery
1	STD			0	@TC99-01 TC99-01T	LIQUID	100	5.99E+01	59.900	% Recovery
1	STD			0	@TC99-01 TC99-01E	LIQUID	1	1.53E+00	1.530	% Ct. Error
2	BLNK-PREP			0	@TC99-01 TC99-01	LIQUID	1	<3.54E-3		uCi/mL
2	BLNK-PREP			0	@TC99-01 TC99-01E	LIQUID	1.00	7.16E+00	7.160	% Ct. Error
2	BLNK-PREP			0	@TC99-01 TC99-01T	LIQUID	100	6.13E+01	61.300	% Recovery
3	SAMPLE	S96T000539		0	@TC99-01 TC99-01	LIQUID	N/A	8.52E-02	3.610e-003	uCi/mL
3	SAMPLE	S96T000539		0	@TC99-01 TC99-01T	LIQUID	N/A	6.00E+01	1.000e-004	% Recovery
3	SAMPLE	S96T000539		0	@TC99-01 TC99-01E	LIQUID	N/A	3.03E+00	0.000	% Ct. Error
4	DUP	S96T000539		0	@TC99-01 TC99-01	LIQUID	8.52E-2	9.23E-2	8.000	RPD
4	DUP	S96T000539		0	@TC99-01 TC99-01E	LIQUID	1.00	2.93E+00	2.930	% Ct. Error
4	DUP	S96T000539		0	@TC99-01 TC99-01T	LIQUID	100	5.94E+01	59.400	% Recovery
5	SAMPLE	S96T001024		0	@TC99-01 TC99-01	LIQUID	N/A	6.56E-02	3.480e-003	uCi/mL
5	SAMPLE	S96T001024		0	@TC99-01 TC99-01T	LIQUID	N/A	6.24E+01	1.000e-004	% Recovery
5	SAMPLE	S96T001024		0	@TC99-01 TC99-01E	LIQUID	N/A	3.29E+00	0.000	% Ct. Error
6	DUP	S96T001024		0	@TC99-01 TC99-01	LIQUID	6.56E-2	1.03E-1	44.370	RPD
6	DUP	S96T001024		0	@TC99-01 TC99-01E	LIQUID	1.00	2.78E+00	2.780	% Ct. Error
6	DUP	S96T001024		0	@TC99-01 TC99-01T	LIQUID	100	6.03E+01	60.300	% Recovery

Final page for worklist# 6478

Analyst Signature Date

Analyst Signature Date

Jennifer J. Dupper 3/26/96
Reviewer Signature Date

Sample S96T001024 will be rerun to investigate high RPD between sample and duplicate.

Units shown for QC (BLK/BKG) may not reflect the actual units.

ID: TC 99 15 MAR 1996 19:06
USER: 5 COMMENT:LS 6000
PRESET TIME : 20.00
DATA CALC : SL DPM H# :YES SAMPLE REPEATS: 1 PRINTER : STD
COUNT BLANK : YES IC# : NO REPLICATES : 1 RS232 :EDIT
TWO PHASE : YES AQC : NO CYCLE REPEATS : 1
SCINTILLATOR: LIQUID LUMEX:YES LOW SAMPLE REJ: 0
LOW LEVEL : NO HALF LIFE CORRECTION DATE: none

ISOTOPE 1: TC99 %ERROR: 0.00 FACTOR: 1.000000 BKG. SUB: 0

BACKGROUND QUENCH CURVE: Off COLOR QUENCH CORRECTION: Off

Quench Limits Low:90.823 High:343.63

SAM NO	POS	TIME MIN	H#	TC99 CPM	TC99 %ERROR	TC99 DPM	TC99 EFF-1	LUMEX %	ELAPSED TIME	2P
31	**-1	20.00	136.2	50.20	6.34	52.46	95.68	0.86	21.00	
		Blank Average		DPM for		TC99 :	52.46	COEF. OF VAR:	0.000	
1	**-3	20.00	176.5	861.75	1.53	858.53	94.59	1.19	42.79	
2	**-4	20.00	175.0	3613.75	0.75	3765.72	94.65	0.34	64.62	
3	**-5	20.00	175.6	47.95	7.16	-1.79	94.62	15.90	86.43	
4	**-6	20.00	175.3	2862.40	0.84	2972.23	94.63	0.40	108.25	
5	**-7	20.00	174.3	226.95	3.03	187.26	94.67	3.71	129.98	
6	**-8	20.00	174.6	2981.90	0.82	3097.69	94.66	0.32	151.75	
7	**-9	20.00	175.4	239.65	2.93	200.78	94.63	2.99	173.48	
8	**-10	20.00	175.5	2965.70	0.82	3081.52	94.63	0.45	195.34	
9	**-11	20.00	176.4	191.45	3.29	149.92	94.60	3.36	217.05	
10	**-12	20.00	176.2	3056.80	0.81	3178.66	94.60	0.27	238.79	
11	**-1	20.00	175.1	265.50	2.78	228.07	94.64	2.51	260.61	
12	**-2	20.00	175.5	3034.25	0.81	3154.08	94.63	0.20	282.28	

WORKBOOK PAGE: STD1

Tc-99 : LA-438-101 (D-2) LIQUID

			STANDARD
Type	Tracer Book Number	(Tr BN)	143B52
STD	Activity for 100µl of Spike Added in dpm		7277.3
Work List	Volume of Sample in mL	(SS)	0.25
6478	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	858.53
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3765.72
LIQUID	Background cpm	(BKG cpm)	50.2
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96002143	Instrument Fractional Efficiency	(EFF)	0.9459
Rerun	% Counting Error		1.53
0	Standard Value µCi/mL		3.800E-03
Sample Prep	Standard Book #	(Std BN)	131B52
N/A	Detection Limit	(Ld)	7.95
Sample #	Critical Level	(Lc)	3.69
WL6478	Tc-99 Concentration in µCi/L =		3.8722E+00

Instrument Code: WC16085

Prepared By: MCB

Chemist: JLS

Analyst: CRJ

Date Complete: 03/19/96

Analysis Date: 03/15/96

Analysis Time: 12:00 PM

Sample Point: C-106 GRAB

Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)

Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF

Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))

Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1))

Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3

Tc-99 Concentration in µCi/mL	=	3.87E-03	DETECTION LEVEL
% Counting Error	=	1.53	
Spike (Tracer) Recovery	=	59.9%	3.59E-05 µCi/mL

Analyst:	CRJ	Date:	03/19/96
Signature of Chemist:	JLS	Date:	3/26/96

STANDARD.WB1 REV 1.1 438101ML

1803

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WHC-SD-WM-DP-183, REV. 0

WORKBOOK PAGE: BLANK2

Tc-99 : LA-438-101 (D-2) LIQUID

			BLNK-PREP
Type	Tracer Book Number	(Tr BN)	143852
BLNK-PREP	Activity for 100µl of Spike Added in dpm		7277.3
Work List	Volume of Sample in mL	(SS)	0.25
6478	Dilution Factor	(DF)	101
Test Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	-1.79
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	2972.23
LIQUID	Background cpm	(BKG cpm)	50.2
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96002143	Instrument Fractional Efficiency	(EFF)	0.9462
Rerun	% Counting Error		7.16
0	Detection Limit	(Ld)	7.95
Sample Prep	Critical Level	(Lc)	3.69
N/A	Tc-99 Concentration in µCi/L =	<	3.5385E+00

Sample #
WL6478
Instrument Code
WC16085
Prepared By
MCB
Chemist
JLS
Analyst
CRJ
Date Complete
03/19/96
Analysis Date
03/15/96
Analysis Time
12:00 PM
Sample Point
C-106 GRAB

Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)

Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF

Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))

Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1))

Tc-99 µCi/mL = µCi/L / (1000mL/L)

Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3

NOTE: Reported result is a LESS THAN value calculated from the statistical Detection Limit (Ld).

Tc-99 Concentration in µCi/mL	=	<	3.54E-03	DETECTION LEVEL
% Counting Error	=		7.16	
Spike (Tracer) Recovery	=		61.3%	3.54E-03 µCi/mL

Analyst:	CRJ	Date:	03/19/96
Signature of Chemist:	JLS	Date:	3/26/96

BLANK.WB1 REV 1.1 438101ML

1804

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WORKBOOK PAGE: SAM3

Tc-99 : LA-438-101 (D-2) LIQUID

			SAMPLE
Type	Tracer Book Number	(Tr BN)	143352
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	7277.3
Work List	Volume of Sample in mL	(SS)	0.25
6478	Dilution Factor	(DF)	101
Test Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	187.26
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3097.69
LIQUID	Background cpm	(BKG cpm)	50.2
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96002143	Instrument Fractional Efficiency	(EFF)	0.9467
Rerun	% Counting Error		3.03
0	Detection Limit	(Ld)	7.94
Sample Prep	Critical Level	(Lc)	3.69
N/A	Tc-99 Concentration in µCi/L		8.5209E+01
Sample #			
S96T000539	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
WC16085	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))		
Prepared By	Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1))		
MCB	Tc-99 µCi/mL = µCi/L / (1000mL/L)		
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3		
JLS			
Analyst			
CRJ			
Date Complete			
03/19/96	Tc-99 Concentration in µCi/mL	8.52E-02	DETECTION LEVEL
Analysis Date			
03/15/96	% Counting Error	3.03	
Analysis Time			3.61E-03 µCi/mL
12:00 PM	Spike (Tracer) Recovery	60.0%	
Sample Point			
C-106 GRAB			

Analyst:	CRJ	Date:	03/19/96
Signature of Chemist:	JLS	Date:	3/26/96

SAMPLE.WB1 REV 1.1 438101ML

WORKBOOK PAGE: DUP4

Tc-99 : LA-438-101 (D-2) LIQUID

			DUP
Type	Tracer Book Number	(Tr BN)	143B52
DUP	Activity for 100µl of Spike Added in dpm	(dm3)	7277.3
Work List	Volume of Sample in mL	(SS)	0.25
6478	Dilution Factor	(DF)	101
Test Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	200.78
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3081.52
LIQUID	Background cpm	(BKG cpm)	50.2
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96002143	Instrument Fractional Efficiency	(EFF)	0.9463
Rerun	% Counting Error		2.93
0	Detection Limit	(Ld)	7.95
Sample Prep	Critical Level	(Lc)	3.69
N/A	Tc-99 Concentration in µCi/L		9.2303E+01
Sample #			
S96T000539	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
WC16085	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))		
Prepared By	Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1))		
MCB	Tc-99 µCi/mL = µCi/L / (1000mL/L)		
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3		
JLS			
Analyst			
CRJ			
Date Complete			
03/19/96	Tc-99 Concentration in µCi/mL	9.23E-02	DETECTION LEVEL
Analysis Date			
03/15/96	% Counting Error	2.93	
Analysis Time			3.65E-03 µCi/mL
12:00 PM	Spike (Tracer) Recovery	59.4%	
Sample Point			
C-106 GRAB			

Analyst:	CRJ	Date:	03/19/96
Signature of Chemist:	JLS	Date:	3/26/96

SAMPLE.WB1 REV 1.1 438101ML

1806

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WORKBOOK PAGE: SAM5

Tc-99 : LA-438-101 (D-2) LIQUID

			SAMPLE
Type	Tracer Book Number	(Tr BN)	143B52
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	7277.3
Work List	Volume of Sample in mL	(SS)	0.25
6478	Dilution Factor	(DF)	101
Test Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	149.92
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3178.66
LIQUID	Background cpm	(BKG cpm)	50.2
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96002143	Instrument Fractional Efficiency	(EFF)	0.946
Rerun	% Counting Error		3.29
0	Detection Limit	(Ld)	7.95
Sample Prep	Critical Level	(Lc)	3.69
N/A	Tc-99 Concentration in µCi/L		6.5554E+01

Sample #
S96T001024

Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)

Instrument Code
WC16085

Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF

Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))

Prepared By
MCB

Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1))

Tc-99 µCi/mL = µCi/L / (1000mL/L)

Chemist
JLS

Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3

Analyst
CRJ

Date Complete
03/19/96

Analysis Date
03/15/96

Analysis Time
12:00 PM

Sample Point
C-106 GRAB

		DETECTION LEVEL
Tc-99 Concentration in µCi/mL	6.56E-02	
% Counting Error	3.29	
Spike (Tracer) Recovery	62.4%	3.48E-03 µCi/mL

Analyst:	CRJ	Date:	03/19/96
Signature of Chemist:	JLS	Date:	

SAMPLE.WB1 REV 1.1 438101ML

4037

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WORKBOOK PAGE: DUP6

Tc-99 : LA-438-101 (D-2) LIQUID

			DUP
Type	Tracer Book Number	(Tr BN)	143B52
DUP	Activity for 100µl of Spike Added in dpm	(dm3)	7277.3
Work List	Volume of Sample in mL	(SS)	0.25
6478	Dilution Factor	(DF)	101
Test Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	228.07
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3154.08
LIQUID	Background cpm	(BKG cpm)	50.2
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96002143	Instrument Fractional Efficiency	(EFF)	0.9464
Rerun	% Counting Error		2.78
0	Detection Limit	(Ld)	7.94
Sample Prep	Critical Level	(Lc)	3.69
N/A	Tc-99 Concentration in µCi/L		1.0323E+02

Sample #	
S96T001024	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF
WC16085	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))
Prepared By	Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1))
MCB	Tc-99 µCi/mL = µCi/L / (1000mL/L)
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3
JLS	
Analyst	
CRJ	
Date Complete	
03/19/96	
Analysis Date	
03/15/96	
Analysis Time	
12:00 PM	
Sample Point	
C-106 GRAB	

Tc-99 Concentration in µCi/mL	1.03E-01	DETECTION LEVEL	
% Counting Error	2.78		
Spike (Tracer) Recovery	60.3%	3.60E-03 µCi/mL	

Analyst:	CRJ	Date:	03/19/96
Signature of Chemist:	JLS	Date:	3/26/96

SAMPLE.WB1 REV 1.1 438101ML

1808

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WHC-SD-WM-DP-183, REV. 0

LABCORE Data Entry Template for Worklist# 6893

Analyst: CRJ **Instrument:** LSC00 6000 **Book#** 131B52

Method: LA-438-101 Rev/Mod D-2

Worklist Comment: C106 Field Blank.Sample size=0.25ml.For spike:0.25ml. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@TC99-01	LIQUID		
2	BLNK				@TC99-01	LIQUID		
3	SAMPLE	S96T000855	0		@TC99-01	LIQUID	96000082	C-106 GRAB
		Analytes Requested: TC99-01 , TC99-01E, TC99-01T						
4	DUP	S96T000855	0		@TC99-01	LIQUID		

Final page for worklist # 6893

C. Johnson 3/29/96
Analyst Signature **Date**

Sylvia Cohrs 4/1/96
Analyst Signature **Date**

4/2/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed Worklist Report for Worklist# 6893

Analyst: crj **Instrument:** LSC02 **Book#** 131B52

Method: LA-438-1C\Rev/Mod D-2

Worklist Comment: C106 Field Blank.Sample size=0.25ml.For spike:0.25ml. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@TC99-01 TC99-01	LIQUID	3.80E-03	3.90E-3	102.630	% Recovery
1	STD		0		@TC99-01 TC99-01T	LIQUID	100	5.78E+01	57.800	% Recovery
1	STD		0		@TC99-01 TC99-01E	LIQUID	1	1.56E+00	1.560	% Ct. Error
2	BLNK		0		@TC99-01 TC99-01	LIQUID	1	<3.72E-5		uCi/mL
2	BLNK		0		@TC99-01 TC99-01E	LIQUID	1.00	6.78E+00	6.780	% Ct. Error
2	BLNK		0		@TC99-01 TC99-01T	LIQUID	100	5.58E+01	55.800	% Recovery
3	SAMPLE	S96T000855	0		@TC99-01 TC99-01	LIQUID	N/A <	3.56E-05	3.560e-005	uCi/mL
3	SAMPLE	S96T000855	0		@TC99-01 TC99-01T	LIQUID	N/A	5.83E+01	1.000e-004	% Recovery
3	SAMPLE	S96T000855	0		@TC99-01 TC99-01E	LIQUID	N/A	7.04E+00	0.000	% Ct. Error
4	DUP	S96T000855	0		@TC99-01 TC99-01	LIQUID	<3.56E-5	3.84E-5		RPD
4	DUP	S96T000855	0		@TC99-01 TC99-01E	LIQUID	1.00	6.47E+00	6.470	% Ct. Error
4	DUP	S96T000855	0		@TC99-01 TC99-01T	LIQUID	100	5.80E+01	58.000	% Recovery

Final page for worklist# 6893

Analyst Signature **Date** **Analyst Signature** **Date**

Jennifer L. Stipe 4/3/96
Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

D. Hightower
3-29-96

ID: TC 99 29 MAR 1996 19:48

USER: 5 COMMENT:LS 6000

PRESET TIME : 20.00

DATA CALC :	SL DPM	H# :YES	SAMPLE REPEATS:	1	PRINTER	: STD
COUNT BLANK :	YES	IC# : NO	REPLICATES :	1	RS232	:EDIT
TWO PHASE :	YES	AQC : NO	CYCLE REPEATS :	1		
SCINTILLATOR:	LIQUID	LUMEX:YES	LOW SAMPLE REJ:	0		
LOW LEVEL :	NO	HALF LIFE CORRECTION DATE:			none	

ISOTOPE 1: TC99 %ERROR: 0.00 FACTOR: 1.000000 BKG. SUB: 0

BACKGROUND QUENCH CURVE: Off COLOR QUENCH CORRECTION: Off

Quench Limits Low:90.823 High:343.63

SAM NO	POS	TIME MIN	H#	TC99 CPM	TC99 %ERROR	TC99 DPM	TC99 EFF-1	LUMEX %	ELAPSED TIME	2P
31	**-1	20.00	131.7	46.95	6.53	**49.02**	95.77	0.34	20.93	2P
		Blank Average		DPM for	TC99 :	**49.02**	COEF. OF	VAR:	0.000	
1	**-3	20.00	172.0	836.25	1.56	**833.58**	94.75	1.59	42.80	
2	**-4	20.00	171.0	3494.10	0.76	**3637.53**	94.78	0.33	64.63	
3	**-5	20.00	172.0	51.95	6.78	**5.81**	94.75	13.75	86.39	
4	**-6	20.00	173.6	2614.85	0.88	**2712.38**	94.69	0.38	108.17	
5	**-7	20.00	170.5	49.55	7.04	**3.25**	94.80	16.07	129.98	
6	**-8	20.00	171.9	2731.70	0.86	**2834.05**	94.75	0.33	151.74	
7	**-9	20.00	175.2	54.20	6.47	**8.25**	94.64	10.37	173.44	2P
8	**-10	20.00	171.9	2721.25	0.86	**2822.99**	94.75	0.34	195.20	

WORKBOOK PAGE: STD1

Tc-99 : LA-438-101 (D-2) LIQUID

			STANDARD
Type	Tracer Book Number	(Tr BN)	143B52
STD	Activity for 100µl of Spike Added in dpm		7277.3
Work List	Volume of Sample in mL	(SS)	0.25
6893	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	833.58
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3637.53
LIQUID	Background cpm	(BKG cpm)	46.95
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96002598	Instrument Fractional Efficiency	(EFF)	0.9475
Rerun	% Counting Error		1.56
0	Standard Value µCi/mL		3.800E-03
Sample Prep	Standard Book #	(Std BN)	131B52
N/A	Detection Limit	(Ld)	7.68
Sample #	Critical Level	(Lc)	3.57
WL6893	Tc-99 Concentration in µCi/L =		3.8981E+00
Instrument Code			
WC16085	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Prepared By	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
SZC	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))		
Chemist	Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1))		
JLS			
Analyst	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3		
CRJ			
Date Complete			
04/01/96	Tc-99 Concentration in µCi/mL =	3.90E-03	DETECTION LEVEL
Analysis Date			
03/29/96	% Counting Error =	1.6	
Analysis Time			3.59E-05 µCi/mL
02:45 PM	Spike (Tracer) Recovery =	57.8%	
Sample Point			
C-106 GRAB			

Analyst:	CRJ	Date:	04/01/96
Signature of Chemist:	JLS	Date:	4/3/96

STANDARD.WB1 REV 2.0 438101ML

1812

WORKBOOK PAGE: BLANK2

Tc-99 : LA-438-101 (D-2) LIQUID

			BLNK
Type	Tracer Book Number	(Tr BN)	143B52
BLNK	Activity for 100µl of Spike Added in dpm		7277.3
Work List	Volume of Sample in mL	(SS)	0.25
6893	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	5.81
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	2712.38
LIQUID	Background cpm	(BKG cpm)	46.95
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96002598	Instrument Fractional Efficiency	(EFF)	0.9475
Rerun	% Counting Error		6.78
0	Detection Limit	(Ld)	7.68
Sample Prep	Critical Level	(Lc)	3.57
N/A	Tc-99 Concentration in µCi/L =	<	3.7202E-02
Sample #			

Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)

Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF

Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))

Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1))

Tc-99 µCi/mL = µCi/L / (1000mL/L)

Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3

NOTE: Reported result is a LESS THAN value calculated from the statistical Detection Limit (Ld).

Instrument Code: WC16085				
Prepared By: SZC				
Chemist: JLS				
Analyst: CRJ				
Date Complete: 04/01/96	Tc-99 Concentration in µCi/mL =	<	3.72E-05	DETECTION LEVEL
Analysis Date: 03/29/96	% Counting Error =		6.8	
Analysis Time: 02:45 PM	Spike (Tracer) Recovery =		55.8%	3.72E-05 µCi/mL
Sample Point: C-106 GRAB				

Analyst:	CRJ	Date:	04/01/96
Signature of Chemist:	JLS	Date:	4/3/96

BLANK.WB1 REV 2.0 438101ML

1813

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WORKBOOK PAGE: SAM3

Tc-99 : LA-438-101 (D-2) LIQUID

			SAMPLE
Type	Tracer Book Number	(Tr BN)	143B52
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	7277.3
Work List	Volume of Sample in mL	(SS)	0.25
6893	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	3.25
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	2834.05
LIQUID	Background cpm	(BKG cpm)	46.95
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96002598	Instrument Fractional Efficiency	(EFF)	0.948
Rerun	% Counting Error		7.04
0	Detection Limit	(Ld)	7.67
Sample Prep	Critical Level	(Lc)	3.57
N/A	Tc-99 Concentration in µCi/L	<	3.5550E-02
Sample #			
S96T000855	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
WC16085	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))		
Prepared By	Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1))		
SZC	Tc-99 µCi/mL = µCi/L / (1000mL/L)		
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3		
JLS			
Analyst	NOTE: Reported result is a LESS THAN value calculated		
CRJ	from the statistical Detection Limit (Ld).		
Date Complete			
04/01/96	Tc-99 Concentration in µCi/mL	< 3.56E-05	DETECTION LEVEL
Analysis Date			
03/29/96	% Counting Error	7.0	
Analysis Time			3.56E-05 µCi/mL
02:45 PM	Spike (Tracer) Recovery	58.3%	
Sample Point			
C-106 GRAB			

Analyst:	CRJ	Date:	04/01/96
Signature of Chemist:	JLS	Date:	4/3/96

SAMPLE.WB1 REV 2.0 438101ML

1814

I:\438101\OUT\TC6893.WB1 04/01/96

WORKBOOK PAGE: DUP4

Tc-99 : LA-438-101 (D-2) LIQUID

			DUP
Type	Tracer Book Number	(Tr BN)	143B52
DUP	Activity for 100µl of Spike Added in dpm	(dm3)	7277.3
Work List	Volume of Sample in mL	(SS)	0.25
6893	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	8.25
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	2822.99
LIQUID	Background cpm	(BKG cpm)	46.95
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96002598	Instrument Fractional Efficiency	(EFF)	0.9464
Rerun	% Counting Error		6.47
0	Detection Limit	(Ld)	7.69
Sample Prep	Critical Level	(Lc)	3.57
N/A	Tc-99 Concentration in µCi/L		3.8432E-02
Sample #			
S96T000855			
Instrument Code			
WC16085			
Prepared By			
SZC			
Chemist			
JLS			
Analyst			
CRJ			
Date Complete			
04/01/96			
Analysis Date			
03/29/96			
Analysis Time			
02:45 PM			
Sample Point			
C-106 GRAB			

Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)

Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF

Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))

Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1))

Tc-99 µCi/mL = µCi/L / (1000mL/L)

Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3

		DETECTION LEVEL
Tc-99 Concentration in µCi/mL	3.84E-05	
% Counting Error	6.5	3.58E-05 µCi/mL
Spike (Tracer) Recovery	58.0%	

Analyst:	CRJ	Date:	04/01/96
Signature of Chemist:	JLS	Date:	4/3/96

SAMPLE.WB1 REV 2.0 438101ML

1815

I:\438101\OUT\TC6893.WB1 04/01/96

LABCORE Completed Worklist Report for Worklist# 6979

Analyst: crj **Instrument:** LSC03 **Book#** 131B52

Method: LA-438-101 Rev/Mod D-2

Worklist Comment: RERUN 2 / 1-10 DILUTION / .25 ML SAMPLE SIZE / JLS

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD			0	@TC99-01 TC99-01	LIQUID	3.80E-03	3.95E-3	103.950	% Recovery
1	STD			0	@TC99-01 TC99-01T	LIQUID	100	5.86E+01	58.600	% Recovery
1	STD			0	@TC99-01 TC99-01E	LIQUID	1	1.54E+00	1.540	% Ct. Error
2	BLNK			0	@TC99-01 TC99-01	LIQUID	1	<3.65E-4		uCi/mL
2	BLNK			0	@TC99-01 TC99-01E	LIQUID	1.00	7.53E+00	7.530	% Ct. Error
2	BLNK			0	@TC99-01 TC99-01T	LIQUID	100	5.99E+01	59.900	% Recovery
3	SAMPLE	S96T001024		0	@TC99-01 TC99-01	LIQUID	N/A	1.60E-01	2.570e-004	uCi/mL
3	SAMPLE	S96T001024		0	@TC99-01 TC99-01T	LIQUID	N/A	8.51E+01	1.000e-004	% Recovery
3	SAMPLE	S96T001024		0	@TC99-01 TC99-01E	LIQUID	N/A	6.80E-01	0.000	% Ct. Error
4	DUP	S96T001024		0	@TC99-01 TC99-01	LIQUID	1.60E-1	4.79E-1	99.840	RPD
4	DUP	S96T001024		0	@TC99-01 TC99-01E	LIQUID	1.00	5.60E-01	0.560	% Ct. Error
4	DUP	S96T001024		0	@TC99-01 TC99-01T	LIQUID	100	4.14E+01	41.400	% Recovery

Final page for worklist# 6979

Analyst Signature **Date** **Analyst Signature** **Date**

[signature] 4/3/96
Reviewer Signature **Date**

Results for S96T001024 are inconsistent with original run and first rerun. RPD exceeds control limits. Results reported to project coordinator. ~~and~~ [signature] 4/3/96

Units shown for QC (BLK/BKG) may not reflect the actual units.

03/26/96 10:07
A-0004-1

LABCORE Data Entry Template for Worklist# 6979

Analyst: CRJ **Instrument:** LSC00 6500 **Book#** 131B52

Method: LA-438-101 Rev/Mod 1-2

Worklist Comment: RERUN 2 / 1-10 DILUTION / .25 ML SAMPLE SIZE / JLS

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@TC99-01	LIQUID		
2	BLNK				@TC99-01	LIQUID		
3	SAMPLE	S96T001024	0		@TC99-01	LIQUID	96000174	C-106 GRAB
		Analytes Requested: TC99-01 , TC99-01E, TC99-01T						
4	DUP	S96T001024	0		@TC99-01	LIQUID		

Final page for worklist # 6979

C. Johnson 3/28/96
Analyst Signature Date

Sharon Hilde 4/1/96
Analyst Signature Date

M Brown 4/2/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

3-29-96

ID: 99TC 29 MAR 1996 19:43

USER: 5 COMMENT:LS 6500

PRESET TIME :	20.00						
DATA CALC :	SL DPM	H#	:YES	SAMPLE REPEATS:	1	PRINTER	: STD
COUNT BLANK :	YES	IC#	: NO	REPLICATES :	1	RS232	: OFF
TWO PHASE :	YES	AQC	: NO	CYCLE REPEATS :	1	DISK	: OFF
SCINTILLATOR:	LIQUID	LUMEX	:YES	LOW SAMPLE REJ:	0		
LOW LEVEL :	NO	HALF LIFE CORRECTION DATE:				none	

ISOTOPE 1: 99TC %ERROR: 0.00 FACTOR: 1.000000 BKG. SUB: 0

BACKGROUND QUENCH CURVE: Off COLOR QUENCH CORRECTION: Off

Quench Limits Low:84.574 High:371.02

SAM NO	POS	TIME MIN	H#	99TC CPM	99TC %ERROR	99TC DPM	99TC EFF-1	LUMEX %	ELAPSED TIME	2P
01	**-1	20.00	131.7	43.40	6.82	45.14	96.15	0.81	20.94	
		Blank Average		DPM for	99TC :	45.14	COEF. OF VAR:		0.000	
1	**-3	20.00	171.1	857.90	1.54	856.63	95.14	2.28	42.62	
2	**-4	20.00	173.5	3561.65	0.75	3701.90	95.05	0.65	64.35	
3	**-5	20.00	171.6	46.75	7.53	4.01	95.12	20.91	85.82	
4	**-6	20.00	170.8	2813.55	0.65	2911.97	95.15	0.69	107.54	
5	**-7	20.00	171.1	4403.70	0.68	4583.80	95.13	0.46	129.22	
6	**-8	20.00	171.2	8333.35	0.49	8714.74	95.13	0.23	150.93	
7	**-9	20.00	170.8	6386.85	0.56	6667.60	95.15	0.22	172.52	
8	**-10	20.00	171.5	8295.30	0.49	8675.62	95.12	0.17	194.10	

WORKBOOK PAGE: STD1

Tc-99 : LA-438-101 (D-2) LIQUID

			STANDARD
Type	Tracer Book Number	(Tr BN)	143B52
STD	Activity for 100µl of Spike Added in dpm		7277.3
Work List	Volume of Sample in mL	(SS)	0.25
6979	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	856.63
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3701.9
LIQUID	Background cpm	(BKG cpm)	43.4
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96002682	Instrument Fractional Efficiency	(EFF)	0.9514
Rerun	% Counting Error		1.54
0	Standard Value µCi/mL		3.800E-03
Sample Prep	Standard Book #	(Std BN)	131B52
N/A	Detection Limit	(Ld)	7.36
Sample #	Critical Level	(Lc)	3.43
WL6979	Tc-99 Concentration in µCi/L =		3.9477E+00
Instrument Code			
WC51586	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Prepared By	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
SLH	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))		
Chemist	Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1))		
JLS			
Analyst	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3		
CRJ			
Date Complete			
04/01/96	Tc-99 Concentration in µCi/mL =	3.95E-03	DETECTION LEVEL
Analysis Date			
03/29/96	% Counting Error =	1.5	
Analysis Time			3.39E-05 µCi/mL
02:45 PM	Spike (Tracer) Recovery =	58.6%	
Sample Point			
C-106			

Analyst:	CRJ	Date:	04/01/96
Signature of Chemist:	JLS	Date:	

STANDARD.WB1 REV 2.0 438101ML

1819

I:\438101\OUT\TC99-0.WB1 04/01/96

WHC-SD-WM-DP-183, REV. 0

WORKBOOK PAGE: BLANK2

Tc-99 : LA-438-101 (D-2) LIQUID

			BLNK
Type	Tracer Book Number	(Tr BN)	143B52
BLNK	Activity for 100µl of Spike Added in dpm		7277.3
Work List	Volume of Sample in mL	(SS)	0.25
6979	Dilution Factor	(DF)	11
Test Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	4.01
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	2911.97
LIQUID	Background cpm	(BKG cpm)	43.4
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96002682	Instrument Fractional Efficiency	(EFF)	0.9512
Rerun	% Counting Error		7.53
0	Detection Limit	(Ld)	7.36
Sample Prep	Critical Level	(Lc)	3.43
N/A	Tc-99 Concentration in µCi/L =	<	3.6504E-01

Sample #
WL6979
Instrument Code
WC51586
Prepared By
SLH
Chemist
JLS
Analyst
CRF
Date Complete
04/01/96
Analysis Date
03/29/96
Analysis Time
02:45 PM
Sample Point
C-106

Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)

Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF

Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))

Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1))

Tc-99 µCi/mL = µCi/L / (1000mL/L)

Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3

NOTE: Reported result is a LESS THAN value calculated from the statistical Detection Limit (Ld).

Tc-99 Concentration in µCi/mL	=	<	3.65E-04	DETECTION LEVEL
% Counting Error	=		7.5	
Spike (Tracer) Recovery	=		59.9%	3.65E-04 µCi/mL

Analyst:	CRF	Date:	04/01/96
Signature of Chemist:	JLS	Date:	

BLANK.WB1 REV 2.0 438101ML

1820

I:\438101\OUT\TC99-0.WB1 04/01/96

WHC-SD-WM-DP-183, REV. 0

WORKBOOK PAGE: SAM3

Tc-99 : LA-438-101 (D-2) LIQUID

			SAMPLE
Type	Tracer Book Number	(Tr BN)	143B52
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	7277.3
Work List	Volume of Sample in mL	(SS)	0.25
6979	Dilution Factor	(DF)	11
Test Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	4583.8
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	8714.74
LIQUID	Background cpm	(BKG cpm)	43.4
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96002682	Instrument Fractional Efficiency	(EFF)	0.9513
Rerun	% Counting Error		0.68
0	Detection Limit	(Ld)	7.36
Sample Prep	Critical Level	(Lc)	3.43
N/A	Tc-99 Concentration in µCi/L		1.6005E+02
Sample #			
S96T001024			
Instrument Code			
WC51586			
Prepared By			
SLH			
Chemist			
JLS			
Analyst			
CRF			
Date Complete			
04/01/96			
Analysis Date			
03/29/96			
Analysis Time			
02:45 PM			
Sample Point			
C-106			

Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)

Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF

Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))

Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1))

Tc-99 µCi/mL = µCi/L / (1000mL/L)

Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3

		DETECTION LEVEL
Tc-99 Concentration in µCi/mL	1.60E-01	
% Counting Error	0.7	
Spike (Tracer) Recovery	85.1%	2.57E-04 µCi/mL

Analyst:	CRF	Date:	04/01/96
Signature of Chemist:	JLS	Date:	4/3/96

SAMPLE.WB1 REV 2.0 438101ML

1821

I:\438101\OUT\TC99-0.WB1 04/01/96

WORKBOOK PAGE: DUP4

Tc-99 : LA-438-101 (D-2) LIQUID

			DUP
Type	Tracer Book Number	(Tr BN)	143B52
DUP	Activity for 100µl of Spike Added in dpm	(dm3)	7277.3
Work List	Volume of Sample in mL	(SS)	0.25
6979	Dilution Factor	(DF)	11
Test Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	6667.6
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	8675.62
LIQUID	Background cpm	(BKG cpm)	43.4
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96002682	Instrument Fractional Efficiency	(EFF)	0.9515
Rerun	% Counting Error		0.56
0	Detection Limit	(Ld)	7.36
Sample Prep	Critical Level	(Lc)	3.43
N/A	Tc-99 Concentration in µCi/L		4.7893E+02
Sample #			
S96T001024	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
WC51586	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))		
Prepared By	Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1))		
SLH	Tc-99 µCi/mL = µCi/L / (1000mL/L)		
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3		
JLS			
Analyst			
CRF			
Date Complete			
04/01/96	Tc-99 Concentration in µCi/mL	4.79E-01	DETECTION LEVEL
Analysis Date			
03/29/96	% Counting Error	0.6	
Analysis Time			5.28E-04 µCi/mL
02:45 PM	Spike (Tracer) Recovery	41.4%	
Sample Point			
C-106			

Analyst:	CRF	Date:	04/01/96
Signature of Chemist:	JLS	Date:	4/3/96

SAMPLE.WB1 REV 2.0 438101ML

1822

I:\438101\OUT\TC99-0.WB1 04/01/96

WHC-SD-WM-DP-183, REV. 0

04/24/96 10:25
A-0004-1

LABCORE Data Entry Template for Worklist# 8018

Analyst: KNT **Instrument:** LSC00 6000 **Book#** 131B52

Method: LA-438-101 Rev/Mod D-2

Worklist Comment: 0.25ml sample size.For spike use: ~~0.25ml std.~~ 0.100ml mgL 4/28/96 new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@TC99-01	SOLID		
2	BLNK-PREP				@TC99-01	SOLID		
3	SAMPLE	S96T000546	0	F	@TC99-01	SOLID	96000082	C-106 GRAB
	Analytes Requested: TC99-01 , TC99-01E, TC99-01T							
4	DUP	S96T000546	0	F	@TC99-01	SOLID		
5	SAMPLE	S96T000555	0	F	@TC99-01	SOLID	96000082	C-106 GRAB
	Analytes Requested: TC99-01 , TC99-01E, TC99-01T							
6	DUP	S96T000555	0	F	@TC99-01	SOLID		
7	SAMPLE	S96T000561	0	F	@TC99-01	SOLID	96000082	C-106 GRAB
	Analytes Requested: TC99-01 , TC99-01E, TC99-01T							
8	DUP	S96T000561	0	F	@TC99-01	SOLID		
9	SAMPLE	S96T000571	0	F	@TC99-01	SOLID	96000082	C-106 GRAB
	Analytes Requested: TC99-01 , TC99-01E, TC99-01T							
10	DUP	S96T000571	0	F	@TC99-01	SOLID		

Final page for worklist # 8018

Kim Thomas 4-28-96
Analyst Signature **Date**

Lee E Hogan 5/1/96
Analyst Signature **Date**

C. J. Openen 5/3/96

J S Slippens 5/7/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed RadChem Report for Worklist#: 8018

Analyst: jls **Instrument:** LSC02 **Book#** 131852

Method: LA-438-101 Rev/Mod D-2

Worklist Comment: 0.25ml sample size.For spike use:0.25ml std. new

Seq	Type	Sample#	R	A	Test		Matrix	Actual	Found	DL or Yield	Unit
1	STD			0	aTC99-01	TC99-01	SOLID	3.80E-03	3.78E-3	99.474	% Recovery
1	STD			0	aTC99-01	TC99-01T	SOLID	100	6.37E+01	63.700	% Recovery
1	STD			0	aTC99-01	TC99-01E	SOLID	1	1.49E+00	1.490	% Ct. Error
2	BLNK-PREP			0	aTC99-01	TC99-01	SOLID	1	<3.58E-2		uCi/g
2	BLNK-PREP			0	aTC99-01	TC99-01E	SOLID	1.00	6.53E+00	6.530	% Ct. Error
2	BLNK-PREP			0	aTC99-01	TC99-01T	SOLID	100	6.32E+01	63.200	% Recovery
3	SAMPLE	S96T000546	0	F	aTC99-01	TC99-01	SOLID	N/A	5.51E-02	353.0e-004	uCi/g
3	SAMPLE	S96T000546	0	F	aTC99-01	TC99-01T	SOLID	N/A	6.41E+01	0.0e+000	% Recovery
3	SAMPLE	S96T000546	0	F	aTC99-01	TC99-01E	SOLID	N/A	5.81E+00	0.0e+000	% Ct. Error
4	DUP	S96T000546	0	F	aTC99-01	TC99-01	SOLID	5.51E-2	4.48E-2	20.621	RPD
4	DUP	S96T000546	0	F	aTC99-01	TC99-01E	SOLID	1.00	5.83E+00	5.830	% Ct. Error
4	DUP	S96T000546	0	F	aTC99-01	TC99-01T	SOLID	100	6.41E+01	64.100	% Recovery
5	SAMPLE	S96T000555	0	F	aTC99-01	TC99-01	SOLID	N/A	4.09E-02	369.0e-004	uCi/g
5	SAMPLE	S96T000555	0	F	aTC99-01	TC99-01T	SOLID	N/A	6.55E+01	0.0e+000	% Recovery
5	SAMPLE	S96T000555	0	F	aTC99-01	TC99-01E	SOLID	N/A	6.26E+00	0.0e+000	% Ct. Error
6	DUP	S96T000555	0	F	aTC99-01	TC99-01	SOLID	4.09E-2	<3.53E-2		RPD
6	DUP	S96T000555	0	F	aTC99-01	TC99-01E	SOLID	1.00	6.21E+00	6.210	% Ct. Error
6	DUP	S96T000555	0	F	aTC99-01	TC99-01T	SOLID	100	6.24E+01	62.400	% Recovery
7	SAMPLE	S96T000561	0	F	aTC99-01	TC99-01	SOLID	N/A <	6.43E-02	643.0e-004	uCi/g
7	SAMPLE	S96T000561	0	F	aTC99-01	TC99-01T	SOLID	N/A	6.44E+01	0.0e+000	% Recovery
7	SAMPLE	S96T000561	0	F	aTC99-01	TC99-01E	SOLID	N/A	6.35E+00	0.0e+000	% Ct. Error
8	DUP	S96T000561	0	F	aTC99-01	TC99-01	SOLID	<6.43E-2	<5.53E-2		RPD
8	DUP	S96T000561	0	F	aTC99-01	TC99-01E	SOLID	1.00	6.21E+00	6.210	% Ct. Error
8	DUP	S96T000561	0	F	aTC99-01	TC99-01T	SOLID	100	6.31E+01	63.100	% Recovery
9	SAMPLE	S96T000571	0	F	aTC99-01	TC99-01	SOLID	N/A <	2.26E-02	226.0e-004	uCi/g
9	SAMPLE	S96T000571	0	F	aTC99-01	TC99-01T	SOLID	N/A	6.24E+01	0.0e+000	% Recovery
9	SAMPLE	S96T000571	0	F	aTC99-01	TC99-01E	SOLID	N/A	6.16E+00	0.0e+000	% Ct. Error
10	DUP	S96T000571	0	F	aTC99-01	TC99-01	SOLID	<2.26E-2	<2.74E-2		RPD
10	DUP	S96T000571	0	F	aTC99-01	TC99-01E	SOLID	1.00	6.06E+00	6.060	% Ct. Error
10	DUP	S96T000571	0	F	aTC99-01	TC99-01T	SOLID	100	6.47E+01	64.700	% Recovery

Final page for worklist# 8018

Analyst Signature **Date** **Analyst Signature** **Date**

[signature] 5/7/96
Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

ID: TC 99 29 APR 1996 23:46

USER: 5 COMMENT: LS 6000

PRESET TIME :	20.00						
DATA CALC :	SL DPM	H#	:YES	SAMPLE REPEATS:	1	PRINTER	: STD
COUNT BLANK :	YES	IC#	: NO	REPLICATES :	1	RS232	:EDIT
TWO PHASE :	YES	AQC	: NO	CYCLE REPEATS :	1		
SCINTILLATOR:	LIQUID	LUMEX	:YES	LOW SAMPLE REJ:	0		
LOW LEVEL :	NO	HALF LIFE CORRECTION DATE:				none	

ISOTOPE 1: TC99 %ERROR: 0.00 FACTOR: 1.000000 BKG. SUB: 0

BACKGROUND QUENCH CURVE: Off COLOR QUENCH CORRECTION: Off

Quench Limits Low:90.823 High:343.63

SAM NO	POS	TIME MIN	H#	TC99 CPM	TC99 %ERROR	TC99 DPM	TC99 EFF-1	LUMEX %	ELAPSED TIME	2P
31	**-1	20.00	129.2	50.10	6.32	52.28	95.82	0.18	20.91	
		Blank Average		DPM for		TC99 :	52.28	COEF. OF VAR:	0.000	
1	**-3	20.00	163.1	897.25	1.49	891.95	95.02	0.23	42.42	
2	**-4	20.00	163.0	3835.70	0.72	3984.13	95.03	0.05	63.93	
3	**-5	20.00	162.0	48.55	6.53	-1.21	95.06	2.99	85.39	
4	**-6	20.00	162.4	2964.45	0.82	3066.68	95.05	0.06	106.88	
5	**-7	20.00	162.9	61.40	5.81	12.33	95.03	3.22	128.42	
6	**-8	20.00	161.8	3018.90	0.81	3123.36	95.06	0.10	149.97	
7	**-9	20.00	162.3	60.35	5.83	11.21	95.05	2.25	171.44	
8	**-10	20.00	161.9	3016.70	0.81	3121.22	95.06	0.06	192.94	
9	**-11	20.00	160.6	58.05	6.26	8.76	95.10	10.55	214.66	
10	**-12	20.00	161.8	3077.10	0.81	3184.62	95.06	0.32	236.45	
11	**-1	20.00	162.3	53.25	6.21	3.74	95.05	2.32	258.02	
12	**-2	20.00	161.1	2930.25	0.83	3029.53	95.08	0.06	279.53	
13	**-3	20.00	161.2	50.90	6.35	1.25	95.08	2.29	300.98	
14	**-4	20.00	160.7	3020.35	0.81	3123.91	95.09	0.08	322.52	
15	**-5	20.00	161.5	53.80	6.21	4.30	95.07	3.11	344.02	
16	**-6	20.00	162.1	2961.90	0.82	3063.76	95.05	0.05	365.50	
17	**-7	20.00	160.8	54.05	6.16	4.56	95.09	2.20	386.96	
18	**-8	20.00	162.1	2933.95	0.83	3034.29	95.06	0.05	408.44	
19	**-9	20.00	161.6	55.65	6.06	6.25	95.07	2.02	429.89	
20	**-10	20.00	162.2	3040.35	0.81	3146.31	95.05	0.05	451.35	

WORKBOOK PAGE: STD1

Tc-99 : LA-438-101 (D-2) LIQUID

			STANDARD
Type	Tracer Book Number	(Tr BN)	143B52
STD	Activity for 100µl of Spike Added in dpm		7277.3
Work List	Volume of Sample in mL	(SS)	0.25
8018	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	891.95
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3984.13
LIQUID	Background cpm	(BKG cpm)	50.1
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96003871	Instrument Fractional Efficiency	(EFF)	0.9502
Rerun	% Counting Error		1.49
0	Standard Value µCi/mL		3.800E-03
Sample Prep	Standard Book #	(Std BN)	131B52
N/A	Detection Limit	(Ld)	7.91
Sample #	Critical Level	(Lc)	3.69
WL8018	Tc-99 Concentration in µCi/L =		3.7823E+00

Instrument Code	
WC16085	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)
Prepared By	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF
SEH	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))
Chemist	Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1
JLS	
Analyst	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3
KNT	
Date Complete	
05/01/96	
Analysis Date	
04/28/96	
Analysis Time	
04:10 PM	
Sample Point	
C-106 GRAB	

			DETECTION LEVEL
Tc-99 Concentration in µCi/mL =	3.78E-03		
% Counting Error =	1.5		
Spike (Tracer) Recovery =	63.7%		3.35E-05 µCi/mL

Analyst:	KNT	Date:	05/01/96
Signature of Chemist:	JLS	Date:	5/7/96

STANDARD.WB1 REV 2.0 438101ML

WORKBOOK PAGE: BLANK2

Tc-99 : LA-438-101 (D-2) SOLIDS

			BLNK-PREP
Type	Tracer Book Number	(Tr BN)	143B52
BLNK-PREP	Activity for 100µl of Spike Added in dpm		7277.3
Work List	Volume of Sample in mL	(SS)	0.25
8018	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	0.9436
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	-1.21
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3066.68
SOLID	Background cpm	(BKG cpm)	50.1
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96003871	Instrument Fractional Efficiency	(EFF)	0.9506
Rerun	% Counting Error		6.53
0	Detection Limit	(Ld)	7.90
Sample Prep	Critical Level	(Lc)	3.69
N/A	Tc-99 Concentration in µCi/g =	<	3.5791E-02

Sample #	
WL8018	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF
WC16085	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))
Prepared By	Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm
SEH	
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3
JLS	
Analyst	NOTE: Reported result is a LESS THAN value calculated
KNT	from the statistical Detection Limit (Ld).
Date Complete	
05/01/96	Tc-99 Concentration in µCi/g = < 3.58E-02
Analysis Date	
04/28/96	% Counting Error = 6.5
Analysis Time	
04:10 PM	Spike (Tracer) Recovery = 63.2%
Sample Point	
C-106 GRAB	

DETECTION LEVEL
3.58E-02 µCi/g

Analyst:	KNT	Date:	05/01/96
Signature of Chemist:	JLS	Date:	5/7/96

BLANK.WB1 REV 2.0 438101ML

WORKBOOK PAGE: SAM3

Tc-99 : LA-438-101 (D-2) SOLIDS

			SAMPLE
Type	Tracer Book Number	(Tr BN)	143B52
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	7277.3
Work List	Volume of Sample in mL	(SS)	0.25
8018	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	0.9436
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	12.33
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3123.36
SOLID	Background cpm	(BKG cpm)	50.1
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96003871	Instrument Fractional Efficiency	(EFF)	0.9503
Rerun	% Counting Error		5.81
0	Detection Limit	(Ld)	7.90
Sample Prep	Critical Level	(Lc)	3.69
FUSION01	Tc-99 Concentration in µCi/g		5.5074E-02
Sample #			
S96T000546	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
WC16085	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))		
Prepared By	Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm		
SEH			
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3		
JLS			
Analyst			
KNT			
Date Complete			
05/01/96	Tc-99 Concentration in µCi/g	5.51E-02	DETECTION LEVEL
Analysis Date			
04/28/96	% Counting Error	5.8	
Analysis Time			3.53E-02 µCi/g
04:10 PM	Spike (Tracer) Recovery	64.1%	
Sample Point			
C-106 GRAB			

Analyst:	KNT	Date:	05/01/96
Signature of Chemist:	JLS	Date:	5/7/96

SAMPLE.WB1 REV 2.0 438101ML

WORKBOOK PAGE: DUP4

WHC-SD-WM-DP-183, REV. 0

Tc-99 : LA-438-101 (D-2) SOLIDS

			DUP
Type	Tracer Book Number	(Tr BN)	143B52
DUP	Activity for 100µl of Spike Added in dpm	(dm3)	7277.3
Work List	Volume of Sample in mL	(SS)	0.25
8018	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	1.054
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	11.21
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3121.22
SOLID	Background cpm	(BKG cpm)	50.1
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96003871	Instrument Fractional Efficiency	(EFF)	0.9505
Rerun	% Counting Error		5.83
0	Detection Limit	(Ld)	7.90
Sample Prep	Critical Level	(Lc)	3.69
FUSION01	Tc-99 Concentration in µCi/g		4.4842E-02

Sample #	
S96T000546	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF
WC16085	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))
Prepared By	Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm
SEH	
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3
JLS	
Analyst	
KNT	

Date Complete			
05/01/96	Tc-99 Concentration in µCi/g	4.48E-02	DETECTION LEVEL
Analysis Date			
04/28/96	% Counting Error	5.8	
Analysis Time			3.16E-02 µCi/g
04:10 PM	Spike (Tracer) Recovery	64.1%	
Sample Point			
C-106 GRAB			

Analyst:	KNT	Date:	05/01/96
Signature of Chemist:	JLS	Date:	5/7/96

SAMPLE.WB1 REV 2.0 438101ML

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WORKBOOK PAGE: SAM5

Tc-99 : LA-438-101 (D-2) SOLIDS

			SAMPLE
Type	Tracer Book Number	(Tr BN)	143B52
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	7277.3
Work List	Volume of Sample in mL	(SS)	0.25
8018	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	0.8844
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	8.76
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3184.62
SOLID	Background cpm	(BKG cpm)	50.1
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96003871	Instrument Fractional Efficiency	(EFF)	0.951
Rerun	% Counting Error		6.26
0	Detection Limit	(Ld)	7.90
Sample Prep	Critical Level	(Lc)	3.69
FUSION01	Tc-99 Concentration in µCi/g		4.0895E-02

Sample #	
S96T000555	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF
WC16085	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))
Prepared By	Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm
SEH	
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3
JLS	
Analyst	
KNT	
Date Complete	
05/01/96	
Analysis Date	
04/28/96	
Analysis Time	
04:10 PM	
Sample Point	
C-106 GRAB	

			DETECTION LEVEL
Tc-99 Concentration in µCi/g	4.09E-02		
% Counting Error	6.3		
Spike (Tracer) Recovery	65.5%		3.69E-02 µCi/g

Analyst:	KNT	Date:	05/01/96
Signature of Chemist:	JLS	Date:	5/7/96

SAMPLE.WB1 REV 2.0 438101ML

WORKBOOK PAGE: DUP6

Tc-99 : LA-438-101 (D-2) SOLIDS

			DUP
Type	Tracer Book Number	(Tr BN)	143B52
DUP	Activity for 100µl of Spike Added in dpm	(dm3)	7277.3
Work List	Volume of Sample in mL	(SS)	0.25
8018	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	0.97
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	3.74
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3029.53
SOLID	Background cpm	(BKG cpm)	50.1
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96003871	Instrument Fractional Efficiency	(EFF)	0.9505
Rerun	% Counting Error		6.21
0	Detection Limit	(Ld)	7.90
Sample Prep	Critical Level	(Lc)	3.69
FUSION01	Tc-99 Concentration in µCi/g	<	3.5305E-02

Sample #	
S96T000555	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF
WC16085	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))
Prepared By	Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm
SEH	
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3
JLS	
Analyst	NOTE: Reported result is a LESS THAN value calculated
KNT	from the statistical Detection Limit (Ld).
Date Complete	
05/01/96	
Analysis Date	
04/28/96	
Analysis Time	
04:10 PM	
Sample Point	
C-106 GRAB	

Tc-99 Concentration in µCi/g	<	3.53E-02	DETECTION LEVEL
% Counting Error		6.2	
Spike (Tracer) Recovery		62.4%	3.53E-02 µCi/g

Analyst:	KNT	Date:	05/01/96
Signature of Chemist:	JLS	Date:	5/7/96

SAMPLE.WB1 REV 2.0 438101ML

WORKBOOK PAGE: SAM7

Tc-99 : LA-438-101 (D-2) SOLIDS

			SAMPLE
Type	Tracer Book Number	(Tr BN)	143B52
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	7277.3
Work List	Volume of Sample in mL	(SS)	0.25
8018	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	0.516
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	1.25
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3123.91
SOLID	Background cpm	(BKG cpm)	50.1
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96003871	Instrument Fractional Efficiency	(EFF)	0.9508
# Rerun	% Counting Error		6.35
0	Detection Limit	(Ld)	7.90
Sample Prep	Critical Level	(Lc)	3.69
FUSION01	Tc-99 Concentration in µCi/g	<	6.4289E-02

Sample #: S96T000561

Instrument Code: WC16085

Prepared By: SEH

Chemist: JLS

Analyst: KNT

Date Complete: 05/01/96

Analysis Date: 04/28/96

Analysis Time: 04:10 PM

Sample Point: C-106 GRAB

Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)

Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF

Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))

Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm

Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3

NOTE: Reported result is a LESS THAN value calculated from the statistical Detection Limit (Ld).

			DETECTION LEVEL
Tc-99 Concentration in µCi/g	<	6.43E-02	6.43E-02 µCi/g
% Counting Error		6.4	
Spike (Tracer) Recovery		64.4%	

Analyst:	KNT	Date:	05/01/96
Signature of Chemist:	JLS	Date:	5/7/96

SAMPLE.WB1 REV 2.0 438101ML

WORKBOOK PAGE: DUP8

Tc-99 : LA-438-101 (D-2) SOLIDS

			DUP
Type	Tracer Book Number	(Tr BN)	143B52
DUP	Activity for 100µl of Spike Added in dpm	(dm3)	7277.3
Work List	Volume of Sample in mL	(SS)	0.25
8018	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	0.612
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	4.3
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3063.76
SOLID	Background cpm	(BKG cpm)	50.1
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96003871	Instrument Fractional Efficiency	(EFF)	0.9507
Rerun	% Counting Error		6.21
0	Detection Limit	(Ld)	7.90
Sample Prep	Critical Level	(Lc)	3.69
FUSION01	Tc-99 Concentration in µCi/g	<	5.5330E-02

Sample #
S96T000561
Instrument Code
WC16085
Prepared By
SEH
Chemist
JLS
Analyst
KNT
Date Complete
05/01/96
Analysis Date
04/28/96
Analysis Time
04:10 PM
Sample Point
C-106 GRAB

Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)

Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF

Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))

Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm

Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3

NOTE: Reported result is a LESS THAN value calculated from the statistical Detection Limit (Ld).

Tc-99 Concentration in µCi/g	<	5.53E-02		DETECTION LEVEL
% Counting Error		6.2		
Spike (Tracer) Recovery		63.1%		5.53E-02 µCi/g

Analyst:		KNT	Date:	05/01/96
Signature of Chemist:		JLS	Date:	5/7/96

SAMPLE.WB1 REV 2.0 438101ML

WORKBOOK PAGE: SAM9

Tc-99 : LA-438-101 (D-2) SOLIDS

			SAMPLE
Type	Tracer Book Number	(Tr BN)	143B52
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	7277.3
Work List	Volume of Sample in mL	(SS)	0.25
8018	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	1.5148
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	4.56
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3034.29
SOLID	Background cpm	(BKG cpm)	50.1
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96003871	Instrument Fractional Efficiency	(EFF)	0.9509
Rerun	% Counting Error		6.16
0	Detection Limit	(Ld)	7.90
Sample Prep	Critical Level	(Lc)	3.69
FUSION01	Tc-99 Concentration in µCi/g	<	2.2569E-02

Sample #	
S96T000571	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF
WC16085	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))
Prepared By	Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm
SEH	
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3
JLS	
Analyst	NOTE: Reported result is a LESS THAN value calculated from the statistical Detection Limit (Ld).
KNT	
Date Complete	
05/01/96	
Analysis Date	
04/28/96	
Analysis Time	
04:10 PM	
Sample Point	
C-106 GRAB	

			DETECTION LEVEL
Tc-99 Concentration in µCi/g	<	2.26E-02	2.26E-02 µCi/g
% Counting Error		6.2	
Spike (Tracer) Recovery		62.4%	

Analyst:	KNT	Date:	05/01/96
Signature of Chemist:	JLS	Date:	5/1/96

SAMPLE.WB1 REV 2.0 438101ML

WORKBOOK PAGE: DUP10

Tc-99 : LA-438-101 (D-2) SOLIDS

			DUP
Type	Tracer Book Number	(Tr BN)	143B52
DUP	Activity for 100µl of Spike Added in dpm	(dm3)	7277.3
WorkList	Volume of Sample in mL	(SS)	0.25
8018	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	1.2024
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	6.25
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3146.31
SOLID	Background cpm	(BKG cpm)	50.1
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96003871	Instrument Fractional Efficiency	(EFF)	0.9507
Rerun	% Counting Error		6.06
0	Detection Limit	(Ld)	7.90
Sample Prep	Critical Level	(Lc)	3.69
FUSION01	Tc-99 Concentration in µCi/g	<	2.7439E-02

Sample #: S96T000571

Instrument Code: WC16085

Prepared By: SEH

Chemist: JLS

Analyst: KNT

Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)

Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF

Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))

Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm

Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3

NOTE: Reported result is a LESS THAN value calculated from the statistical Detection Limit (Ld).

Date Complete 05/01/96	Tc-99 Concentration in µCi/g	<	2.74E-02	DETECTION LEVEL
Analysis Date 04/28/96	% Counting Error		6.1	
Analysis Time 04:10 PM	Spike (Tracer) Recovery		64.7%	2.74E-02 µCi/g
Sample Point C-106 GRAB				

Analyst:	KNT	Date:	05/01/96
Signature of Chemist:	JLS	Date:	5/7/96

SAMPLE.WB1 REV 2.0 438101ML

LABCORE Data Entry Template for Worklist# 8884

Analyst: RK **Instrument:** LSC00 6500 **Book#** 13/852

Method: LA-438-101 Rev/Mod 13-3

Worklist Comment: RUSH!0.25ml SS.For spike use: 0.25ml. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@TC99-01	SOLID		
2	BLNK-PREP				@TC99-01	SOLID		
3	SAMPLE	S96T001036	0	F	@TC99-01	SOLID	96000174	C-106 GRAB
	Analytes Requested: TC99-01 , TC99-01E, TC99-01T							
4	DUP	S96T001036	0	F	@TC99-01	SOLID		
5	SAMPLE	S96T001563	0	F	@TC99-01	SOLID	96000174	C-106 GRAB
	Analytes Requested: TC99-01 , TC99-01E, TC99-01T							
6	DUP	S96T001563	0	F	@TC99-01	SOLID		

Final page for worklist # 8884

Rob Kim 5/18/96
Analyst Signature **Date**

[illegible] 5/20/96
Analyst Signature **Date**

Sue E. Hogan 5-21-96

Stamped in error JHW 9/23/96

DATA NOT USED IN PACKAGE

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed RadChem Report for Worklist#: 8884

Analyst: rwk **Instrument:** LSC03 **Book#** 131B52

Method: LA-438-101 Rev/Mod B-3

Worklist Comment: RUSH!0.25ml SS.For spike use: 0.25ml. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@TC99-01 TC99-01	SOLID	3.80E-03	3.91E-3	102.895	% Recovery
1	STD		0		@TC99-01 TC99-01T	SOLID	100	6.65E+01	66.500	% Recovery
1	STD		0		@TC99-01 TC99-01E	SOLID	1	1.45E+00	1.450	% Ct. Erro
2	BLNK-PREP		0		@TC99-01 TC99-01	SOLID	1	<1.62E-2		uCi/g
2	BLNK-PREP		0		@TC99-01 TC99-01E	SOLID	1.00	6.68E+00	6.680	uCi/g
2	BLNK-PREP		0		@TC99-01 TC99-01T	SOLID	100	6.69E+01	66.900	% Recovery
3	SAMPLE	S96T001036	0	F	@TC99-01 TC99-01	SOLID	N/A	3.59E-02	167.0e-004	uCi/g
3	SAMPLE	S96T001036	0	F	@TC99-01 TC99-01T	SOLID	N/A	6.51E+01	0.0e+000	% Recovery
3	SAMPLE	S96T001036	0	F	@TC99-01 TC99-01E	SOLID	N/A	6.45E+00	0.0e+000	% Ct. Error
4	DUP	S96T001036	0	F	@TC99-01 TC99-01	SOLID	3.59E-2	2.41E-2	39.333	RPD
4	DUP	S96T001036	0	F	@TC99-01 TC99-01E	SOLID	1.00	6.26E+00	6.260	% Ct. Erro
4	DUP	S96T001036	0	F	@TC99-01 TC99-01T	SOLID	100	6.44E+01	64.400	% Recovery
5	SAMPLE	S96T001563	0	F	@TC99-01 TC99-01	SOLID	N/A	4.11E-02	154.0e-004	uCi/g
5	SAMPLE	S96T001563	0	F	@TC99-01 TC99-01T	SOLID	N/A	7.10E+01	0.0e+000	% Recovery
5	SAMPLE	S96T001563	0	F	@TC99-01 TC99-01E	SOLID	N/A	4.90E-01	0.0e+000	% Ct. Error
6	DUP	S96T001563	0	F	@TC99-01 TC99-01	SOLID	4.11E-2	3.23E-2	23.978	RPD
6	DUP	S96T001563	0	F	@TC99-01 TC99-01E	SOLID	1.00	6.07E+00	6.070	% Ct. Erro
6	DUP	S96T001563	0	F	@TC99-01 TC99-01T	SOLID	100	6.69E+01	66.900	% Recovery

Final page for worklist# 8884

Analyst Signature **Date** **Analyst Signature** **Date**

5/22/96
Reviewer Signature **Date**

DATA NOT USED IN PACKAGE

9/25/96

Units shown for QC (BLK/BKG) may not reflect the actual units.

Raymond

PAGE: 1

ID: 99TC

19 MAY 1996 03:13

USER: 5 COMMENT:LS 6500

PRESET TIME : 20.00

DATA CALC : SL DPM H# :YES SAMPLE REPEATS: 1 PRINTER : STD

COUNT BLANK : YES IC# : NO REPLICATES : 1 RS232 : OFF

TWO PHASE : YES AQC : NO CYCLE REPEATS : 1 DISK : OFF

SCINTILLATOR: LIQUID LUMEX:YES LOW SAMPLE REJ: 0

LOW LEVEL : NO HALF LIFE CORRECTION DATE: none

ISOTOPE 1: 99TC %ERROR: 0.00 FACTOR: 1.000000 BKG. SUB: 0

BACKGROUND QUENCH CURVE: Off COLOR QUENCH CORRECTION: Off

Quench Limits Low:84.574 High:371.02

SAM NO	POS	TIME MIN	H#	99TC CPM	99TC %ERROR	99TC DPM	99TC EFF-1	LUMEX %	ELAPSED TIME	2P
1	**-1	20.00	125.1	44.00	6.62	47.78	96.27	0.92	20.97	
		Blank Average		DPM for	99TC :	47.78	COEF. OF VAR:		0.000	
1	**-3	20.00	163.6	962.95	1.45	961.90	95.37	0.69	42.32	
2	**-4	20.00	163.6	8658.25	0.48	9030.54	95.37	0.10	63.79	
3	**-5	20.00	163.1	51.25	6.68	5.95	95.39	10.63	85.14	
4	**-6	20.00	165.3	7782.50	0.51	8116.58	95.32	0.09	106.58	
5	**-7	20.00	162.7	61.10	6.45	16.27	95.40	18.67	128.16	
6	**-8	20.00	164.3	7593.60	0.51	7916.09	95.35	0.08	149.53	
7	**-9	20.00	162.4	56.00	6.26	10.91	95.41	7.61	170.84	
8	**-10	20.00	164.6	7506.50	0.52	7825.47	95.34	0.07	192.22	
9	**-11	20.00	164.1	64.80	5.80	20.17	95.36	7.18	213.56	
10	**-12	20.00	165.3	8270.45	0.49	8628.67	95.32	0.09	234.98	
11	**-1	20.00	164.2	59.65	6.07	14.77	95.36	7.73	256.40	
12	**-2	20.00	163.9	7795.70	0.51	8126.99	95.36	0.08	277.78	

Stamped in error
7/23/96

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: STD1

Tc-99 : LA-438-101 (D-2) LIQUID

			STANDARD
Type	Tracer Book Number	(Tr BN)	143B52
STD	Activity for 100µl of Spike Added in dpm		18193.25
Work List	Volume of Sample in mL	(SS)	0.25
8884	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	961.9
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	9030.54
LIQUID	Background cpm	(BKG cpm)	46
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96004893	Instrument Fractional Efficiency	(EFF)	0.9537
Rerun	% Counting Error		1.45
0	Standard Value µCi/mL		3.800E-03
Sample Prep	Standard Book #	(Std BN)	131B52
N/A	Detection Limit	(Ld)	7.55
Sample #	Critical Level	(Lc)	3.53
WL8884	Tc-99 Concentration in µCi/L =		3.9079E+00

Instrument Code: WC51586

Prepared By: MCB

Chemist: JLS

Analyst: RWK

Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)

Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF

Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))

Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1

Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3

Date Complete: 05/20/96	Tc-99 Concentration in µCi/mL =	3.91E-03	DETECTION LEVEL
Analysis Date: 05/18/96	% Counting Error =	1.5	
Analysis Time: 04:40 AM	Spike (Tracer) Recovery =	66.5%	3.07E-05 µCi/mL

Sample Point: C-106 GRAB

DATA NOT USED IN PACKAGE

Analyst:	RWK	Date:	05/20/96
Signature of Chemist:	JLS	Date:	5/22/96

STANDARD.WB1 REV 2.0 438101ML

Spike activity is for 250 µl on all forms.

1839

I:\438101\OUT\TC8884.WB1 05/21/96 07:02:35

WORKBOOK PAGE: BLANK2

Tc-99 : LA-438-101 (D-2) SOLIDS

			BLNK-PREP
Type	Tracer Book Number	(Tr BN)	143B52
BLNK-PREP	Activity for 100µl of Spike Added in dpm		18193.25
Work List	Volume of Sample in mL	(SS)	0.25
8884	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	1.8792
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	5.95
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	8116.58
SOLID	Background cpm	(BKG cpm)	46
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96004893	Instrument Fractional Efficiency	(EFF)	0.9539
Rerun	% Counting Error		6.68
0	Detection Limit	(Ld)	7.55
Sample Prep	Critical Level	(Lc)	3.53
N/A	Tc-99 Concentration in µCi/g =	<	1.6241E-02

Sample #	
WL8884	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF
WC51586	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))
Prepared By	Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm
MCB	
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3
JLS	
Analyst	NOTE: Reported result is a LESS THAN value calculated
RWK	from the statistical Detection Limit (Ld).
Date Complete	
05/20/96	
Analysis Date	
05/18/96	
Analysis Time	
04:40 AM	
Sample Point	
C-106 GRAB	

				DETECTION LEVEL
Tc-99 Concentration in µCi/g =	<	1.62E-02		1.62E-02 µCi/g
% Counting Error =		6.7		
Spike (Tracer) Recovery =		66.9%		

Stamped w/ DATA NOT USED IN PACKAGE 1/23/96 ewr

Analyst:	RWK	Date:	05/20/96
Signature of Chemist:	JLS	Date:	5/22/96

BLANK.WB1 REV 2.0 438101ML

WORKBOOK PAGE: SAM3

Tc-99 : LA-438-101 (D-2) SOLIDS

			SAMPLE
Type	Tracer Book Number	(Tr BN)	143B52
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	18193.25
Work List	Volume of Sample in mL	(SS)	0.25
8884	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	1.8792
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	16.27
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	7916.09
SOLID	Background cpm	(BKG cpm)	46
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96004893	Instrument Fractional Efficiency	(EFF)	0.954
Rerun	% Counting Error		6.445
0	Detection Limit	(Ld)	7.55
Sample Prep	Critical Level	(Lc)	3.53
FUSION01	Tc-99 Concentration in µCi/g		3.5926E-02
Sample #			
S96T001036	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
WC51586	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))		
Prepared By	Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm		
MCB			
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3		
JLS			
Analyst			
RWK			
Date Complete			
05/20/96	Tc-99 Concentration in µCi/g	3.59E-02	DETECTION LEVEL
Analysis Date			
05/18/96	% Counting Error	6.4	
Analysis Time			1.67E-02 µCi/g
04:40 AM	Spike (Tracer) Recovery	65.1%	
Sample Point			
C-106 GRAB			

Stamped over DATA NOT USED IN PACKAGE 7/23/96

Analyst:	RWK	Date:	05/20/96
Signature of Chemist:	JLS	Date:	5/22/96

SAMPLE.WB1 REV 2.0 438101ML

I:\438101\OUT\TC8884.WB1 05/21/96 07:03:08

WORKBOOK PAGE: DUP4

Tc-99 : LA-438-101 (D-2) SOLIDS

			DUP
Type	Tracer Book Number	(Tr BN)	143B52
DUP	Activity for 100µl of Spike Added in dpm	(dm3)	18193.25
Work List	Volume of Sample in mL	(SS)	0.25
8884	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	1.8996
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	10.91
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	7825.47
SOLID	Background cpm	(BKG cpm)	46
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96004893	Instrument Fractional Efficiency	(EFF)	0.9541
Rerun	% Counting Error		6.26
0	Detection Limit	(Ld)	7.55
Sample Prep	Critical Level	(Lc)	3.53
FUSION01	Tc-99 Concentration in µCi/g		2.4092E-02
Sample #			
S96T001036	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
WC51586	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))		
Prepared By	Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm		
MCB			
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3		
JLS			
Analyst			
RWK			
Date Complete			
05/20/96	Tc-99 Concentration in µCi/g	2.41E-02	DETECTION LEVEL
Analysis Date			
05/18/96	% Counting Error	6.3	
Analysis Time			1.67E-02 µCi/g
04:40 AM	Spike (Tracer) Recovery	64.4%	
Sample Point			
C-106 GRAB			

DATA NOT USED IN PACKAGE Stamped in error 7/23/96

Analyst:	RWK	Date:	05/20/96
Signature of Chemist:	JLS	Date:	5/22/96

SAMPLE.WB1 REV 2.0 438101ML

WORKBOOK PAGE: SAM5

Tc-99 : LA-438-101 (D-2) SOLIDS

			SAMPLE
Type	Tracer Book Number	(Tr BN)	143B52
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	18193.25
Work List	Volume of Sample in mL	(SS)	0.25
8884	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	1.8684
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	20.17
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	8628.67
SOLID	Background cpm	(BKG cpm)	46
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96004893	Instrument Fractional Efficiency	(EFF)	0.9532
Rerun	% Counting Error		0.49
0	Detection Limit	(Ld)	7.56
Sample Prep	Critical Level	(Lc)	3.53
FUSION01	Tc-99 Concentration in µCi/g		4.1108E-02

Sample #	
S96T001563	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF
WC51586	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))
Prepared By	Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm
MCB	
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3
JLS	
Analyst	
RWK	
Date Complete	
05/20/96	
Analysis Date	
05/18/96	
Analysis Time	
04:40 AM	
Sample Point	
C-106 GRAB	

			DETECTION LEVEL
Tc-99 Concentration in µCi/g	4.11E-02		
% Counting Error	0.5		
Spike (Tracer) Recovery	71.0%		1.54E-02 µCi/g

Stopped in DATA NOT USED IN PACKAGE 5/23/96

Analyst:	RWK	Date:	05/20/96
Signature of Chemist:	JLS	Date:	5/22/96

SAMPLE.WB1 REV 2.0 438101ML

WORKBOOK PAGE: DUP6

Tc-99 : LA-438-101 (D-2) SOLIDS

			DUP
Type	Tracer Book Number	(Tr BN)	143B52
DUP	Activity for 100µl of Spike Added in dpm	(dm3)	18193.25
Work List	Volume of Sample in mL	(SS)	0.25
8884	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	1.8492
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	14.77
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	8126.99
SOLID	Background cpm	(BKG cpm)	46
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96004893	Instrument Fractional Efficiency	(EFF)	0.9536
Rerun	% Counting Error		6.07
0	Detection Limit	(Ld)	7.55
Sample Prep	Critical Level	(Lc)	3.53
FUSION01	Tc-99 Concentration in µCi/g		3.2276E-02
Sample #			
S96T001563	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
WC51586	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))		
Prepared By	Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm		
MCB			
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3		
JLS			
Analyst			
RWK			
Date Complete			
05/20/96	Tc-99 Concentration in µCi/g	3.23E-02	DETECTION LEVEL
Analysis Date			
05/18/96	% Counting Error	6.1	
Analysis Time			1.65E-02 µCi/g
04:40 AM	Spike (Tracer) Recovery	66.9%	
Sample Point			
C-106 GRAB			

Stamped in error DATA NOT USED IN PACKAGE 7/23/96

Analyst:	RWK	Date:	05/20/96
Signature of Chemist:	JLS	Date:	5/22/96

SAMPLE.WB1 REV 2.0 438101ML

I:\438101\OUT\TC8884.WB1 05/21/96 07:04:05

LABCORE Data Entry Template for Worklist# 8885

Analyst: JDS **Instrument:** LSC00 6500 **Book#** 131352
143 B52 spike

Method: LA-438-101 Rev/Mod ~~B-7~~ D-2
LAD 7/28/96

Worklist Comment: RUSH! 0.25ml Sample size. For spike use: 0.25ml. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@TC99-01	SOLID		
2	BLNK-PREP				@TC99-01	SOLID		
3	SAMPLE	S96T001531	0	F	@TC99-01	SOLID	96000082	C-106 GRAB
	Analytes Requested: TC99-01 , TC99-01E, TC99-01T							
4	DUP	S96T001531	0	F	@TC99-01	SOLID		
5	SAMPLE	S96T001541	0	F	@TC99-01	SOLID	96000082	C-106 GRAB
	Analytes Requested: TC99-01 , TC99-01E, TC99-01T							
6	DUP	S96T001541	0	F	@TC99-01	SOLID		
7	SAMPLE	S96T002718	0	F	@TC99-01	SOLID	96000082	C-106 GRAB
	Analytes Requested: TC99-01 , TC99-01E, TC99-01T							
8	DUP	S96T002718	0	F	@TC99-01	SOLID		

Final page for worklist # 8885

JDS 5-19-96
Analyst Signature **Date**

Lee E Hogan 5-20-96
Analyst Signature **Date**

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

worklistrad Version 0.0 04/18/96
05/22/96 07:43

LABCORE Completed RadChem Report for Worklist#: 8885

Analyst: jds **Instrument:** LSC03 **Book#** 131852

Method: LA-438-101 Rev/Mod B-3

Worklist Comment: RUSH! 0.25ml Sample size. For spike use: 0.25ml. new

Seq	Type	Sample#	R	A	Test		Matrix	Actual		Found	DL or Yield	Unit
1	STD		0		aTC99-01	TC99-01	SOLID	3.80E-03		3.97E-3	104.474	% Recovery
1	STD		0		aTC99-01	TC99-01T	SOLID	100		7.06E+01	70.600	% Recovery
1	STD		0		aTC99-01	TC99-01E	SOLID	1		1.40E+00	1.400	% Ct. Erro
2	BLNK-PREP		0		aTC99-01	TC99-01	SOLID	1		<1.42E-2		uCi/g
2	BLNK-PREP		0		aTC99-01	TC99-01E	SOLID	1.00		7.13E+00	7.130	uCi/g
2	BLNK-PREP		0		aTC99-01	TC99-01T	SOLID	100		6.57E+01	65.700	% Recovery
3	SAMPLE	S96T001531	0	F	aTC99-01	TC99-01	SOLID	N/A	<	1.43E-02	143.0e-004	uCi/g
3	SAMPLE	S96T001531	0	F	aTC99-01	TC99-01T	SOLID	N/A		6.52E+01	0.0e+000	% Recovery
3	SAMPLE	S96T001531	0	F	aTC99-01	TC99-01E	SOLID	N/A		7.09E+00	0.0e+000	% Ct. Error
4	DUP	S96T001531	0	F	aTC99-01	TC99-01	SOLID	<1.43E-2		1.74E-2		RPD
4	DUP	S96T001531	0	F	aTC99-01	TC99-01E	SOLID	1.00		6.74E+00	6.740	% Ct. Erro
4	DUP	S96T001531	0	F	aTC99-01	TC99-01T	SOLID	100		6.49E+01	64.900	% Recovery
5	SAMPLE	S96T001541	0	F	aTC99-01	TC99-01	SOLID	N/A	<	1.54E-02	154.0e-004	uCi/g
5	SAMPLE	S96T001541	0	F	aTC99-01	TC99-01T	SOLID	N/A		6.61E+01	0.0e+000	% Recovery
5	SAMPLE	S96T001541	0	F	aTC99-01	TC99-01E	SOLID	N/A		7.12E+00	0.0e+000	% Ct. Error
6	DUP	S96T001541	0	F	aTC99-01	TC99-01	SOLID	<1.54E-2		1.75E-2		RPD
6	DUP	S96T001541	0	F	aTC99-01	TC99-01E	SOLID	1.00		6.69E+00	6.690	% Ct. Erro
6	DUP	S96T001541	0	F	aTC99-01	TC99-01T	SOLID	100		6.37E+01	63.700	% Recovery
7	SAMPLE	S96T002718	0	F	aTC99-01	TC99-01	SOLID	N/A	<	3.52E-02	352.0e-004	uCi/g
7	SAMPLE	S96T002718	0	F	aTC99-01	TC99-01T	SOLID	N/A		6.56E+01	0.0e+000	% Recovery
7	SAMPLE	S96T002718	0	F	aTC99-01	TC99-01E	SOLID	N/A		6.92E+00	0.0e+000	% Ct. Error
8	DUP	S96T002718	0	F	aTC99-01	TC99-01	SOLID	<3.52E-2		<3.70E-2		RPD
8	DUP	S96T002718	0	F	aTC99-01	TC99-01E	SOLID	1.00		6.97E+00	6.970	% Ct. Erro
8	DUP	S96T002718	0	F	aTC99-01	TC99-01T	SOLID	100		6.46E+01	64.600	% Recovery

Final page for worklist# 8885

Analyst Signature **Date** **Analyst Signature** **Date**

[signature] 5/22/96
Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

PAGE 1

ID: 99TTC 19 MAY 1996 1:54
USER: 5 COMMENT: LS 6500
RESET TIME : 20.00
DATA CALC : SL DPM H# : YES SAMPLE REPEATS: 1 PRINTER : STD
COUNT BLANK : YES IC# : NO REPLICATES : 1 RS232 : OFF
NO PHASE : YES ADC : NO CYCLE REPEATS : 1 DISK : OFF
SCINTILLATOR: LIQUID LUMEX: YES LOW SAMPLE REJ: 0
LOW LEVEL : NO HALF LIFE CORRECTION DATE: none

ISOTOPE 1: 99TC %ERROR: 0.00 FACTOR: 1.000000 BKG. SUB: 0

BACKGROUND QUENCH CURVE: Off COLOR QUENCH CORRECTION: Off

Quench Limits Low: 84.574 High: 371.02

SAM NO	POS	TIME MIN	H#	99TC CPM	99TC %ERROR	99TC DPM	99TC EFF-1	LUMEX %	ELAPSED TIME	2P
1	**-1	20.00	122.1	42.25	6.92	43.86	96.33	1.06	20.96	
		Blank Average DPM for 99TC :				43.86	COEF. OF VAR:		0.000	
1	**-3	20.00	161.0	1031.90	1.40	1037.21	95.48	0.96	42.43	
2	**-4	20.00	162.6	1846.00	1.04	1893.15	95.40	0.57	63.87	
3	**-5	20.00	164.5	48.40	7.13	6.90	95.35	15.65	85.35	
4	**-6	20.00	162.1	808.70	1.56	803.66	95.42	1.05	106.73	
5	**-7	20.00	162.0	46.55	7.09	4.92	95.42	12.30	125.13	
6	**-8	20.00	159.2	801.65	1.59	795.54	95.50	0.53	149.50	
7	**-9	20.00	162.8	50.55	6.74	9.13	95.40	10.73	170.85	
8	**-10	20.00	158.7	802.05	1.59	795.84	95.52	0.85	192.24	
9	**-11	20.00	155.9	46.30	7.12	4.57	95.59	12.14	213.61	
10	**-12	20.00	159.1	812.35	1.58	806.72	95.51	0.91	235.00	
11	**-1	20.00	159.2	49.65	6.69	8.13	95.50	8.35	256.44	
12	**-2	20.00	159.2	787.90	1.60	781.15	95.50	0.60	277.72	
13	**-3	20.00	161.9	46.65	6.92	5.02	95.43	8.84	299.01	
14	**-4	20.00	161.5	805.50	1.58	800.16	95.44	0.65	320.31	
15	**-5	20.00	160.3	46.85	6.97	5.21	95.47	10.12	341.66	
16	**-6	20.00	156.0	795.60	1.59	788.44	95.59	0.76	362.99	

WORKBOOK PAGE: STD1

Tc-99 : LA-438-101 (D-2) LIQUID

			STANDARD
Type	Tracer Book Number	(Tr BN)	143B52
STD	Activity for 100µl of Spike Added in dpm		1819.325
Work List	Volume of Sample in mL	(SS)	0.25
8885	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	1037.21
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	1693.15
LIQUID	Background cpm	(BKG cpm)	42.25
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96004894	Instrument Fractional Efficiency	(EFF)	0.9545
Rerun	% Counting Error		1.4
0	Standard Value µCi/mL		3.800E-03
Sample Prep	Standard Book #	(Std BN)	131B52
N/A	Detection Limit	(Ld)	7.24
Sample #	Critical Level	(Lc)	3.39
WL8885	Tc-99 Concentration in µCi/L =		3.9723E+00
Instrument Code			
WC51586	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Prepared By	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
SEH	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))		
Chemist	Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1		
JLS			
Analyst	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3		
JDS			
Date Complete			
05/20/96	Tc-99 Concentration in µCi/mL =	3.97E-03	DETECTION LEVEL
Analysis Date			
05/19/96	% Counting Error =	1.4	
Analysis Time			2.77E-05 µCi/mL
02:00 AM	Spike (Tracer) Recovery =	70.6%	
Sample Point			
C-106 GRAB			

Analyst:	JDS	Date:	05/20/96
Signature of Chemist:	JLS	Date:	5/22/96

STANDARD.WB1 REV 2.0 438101ML

Spike Activity is for 25 µl on all forms.

5/22/96

WORKBOOK PAGE: BLANK2

Tc-99 : LA-438-101 (D-2) SOLIDS

			BLNK-PREP
Type	Tracer Book Number	(Tr BN)	143B52
BLNK-PREP	Activity for 100µl of Spike Added in dpm		1819.325
Work List	Volume of Sample in mL	(SS)	0.25
8885	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	2.1028
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	6.9
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	803.66
SOLID	Background cpm	(BKG cpm)	42.25
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96004894	Instrument Fractional Efficiency	(EFF)	0.9535
Rerun	% Counting Error		7.13
0	Detection Limit	(Ld)	7.25
Sample Prep	Critical Level	(Lc)	3.39
N/A	Tc-99 Concentration in µCi/g =	<	1.4177E-02

Sample #	
WL8885	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF
WC51586	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))
Prepared By	Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm
SEH	
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3
JLS	
Analyst	NOTE: Reported result is a LESS THAN value calculated
JDS	from the statistical Detection Limit (Ld).
Date Complete	
05/20/96	Tc-99 Concentration in µCi/g = < 1.42E-02
Analysis Date	
05/19/96	% Counting Error = 7.1
Analysis Time	
02:00 AM	Spike (Tracer) Recovery = 65.7%
Sample Point	
C-106 GRAB	

DETECTION LEVEL
1.42E-02 µCi/g

Analyst:	JDS	Date:	05/20/96
Signature of Chemist:	JLS	Date:	5/22/96

BLANK.WB1 REV 2.0 438101ML

WORKBOOK PAGE: SAM3

Tc-99 : LA-438-101 (D-2) SOLIDS

			SAMPLE
Type	Tracer Book Number	(Tr BN)	143B52
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	1819.325
Work List	Volume of Sample in mL	(SS)	0.25
8885	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	2.1028
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	4.92
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	795.54
SOLID	Background cpm	(BKG cpm)	42.25
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96004894	Instrument Fractional Efficiency	(EFF)	0.9542
Rerun	% Counting Error		7.09
0	Detection Limit	(Ld)	7.24
Sample Prep	Critical Level	(Lc)	3.39
FUSION01	Tc-99 Concentration in µCi/g	<	1.4277E-02
Sample #			
S96T001531			
Instrument Code			
WC51586			
Prepared By			
SEH			
Chemist			
JLS			
Analyst			
JDS			
Date Complete			
05/20/96			
Analysis Date			
05/19/96			
Analysis Time			
02:00 AM			
Sample Point			
C-106 GRAB			

Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)

Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF

Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))

Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm

Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3

NOTE: Reported result is a LESS THAN value calculated from the statistical Detection Limit (Ld).

			DETECTION LEVEL
Tc-99 Concentration in µCi/g	<	1.43E-02	1.43E-02 µCi/g
% Counting Error		7.1	
Spike (Tracer) Recovery		65.2%	

Analyst:	JDS	Date:	05/20/96
Signature of Chemist:	JLS	Date:	5/22/96

SAMPLE.WB1 REV 2.0 438101ML

WORKBOOK PAGE: DUP4

Tc-99 : LA-438-101 (D-2) SOLIDS

			DUP
Type	Tracer Book Number	(Tr BN)	143B52
DUP	Activity for 100µl of Spike Added in dpm	(dm3)	1819.325
Work List	Volume of Sample in mL	(SS)	0.25
8885	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	2.1916
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	9.13
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	795.84
SOLID	Background cpm	(BKG cpm)	42.25
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96004894	Instrument Fractional Efficiency	(EFF)	0.954
Rerun	% Counting Error		6.74
0	Detection Limit	(Ld)	7.24
Sample Prep	Critical Level	(Lc)	3.39
FUSION01	Tc-99 Concentration in µCi/g		1.7358E-02
Sample #			
S96T001531	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
WC51586	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))		
Prepared By	Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm		
SEH			
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3		
JLS			
Analyst			
JDS			
Date Complete			
05/20/96	Tc-99 Concentration in µCi/g	1.74E-02	DETECTION LEVEL
Analysis Date			
05/19/96	% Counting Error	6.7	
Analysis Time			1.38E-02 µCi/g
02:00 AM	Spike (Tracer) Recovery	64.9%	
Sample Point			
C-106 GRAB			

Analyst:	JDS	Date:	05/20/96
Signature of Chemist:	JLS	Date:	5/22/96

SAMPLE.WB1 REV 2.0 438101ML

WORKBOOK PAGE: SAM5

Tc-99 : LA-438-101 (D-2) SOLIDS

			SAMPLE
Type	Tracer Book Number	(Tr BN)	143B52
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	1819.325
Work List	Volume of Sample in mL	(SS)	0.25
8885	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	1.9148
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	4.57
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	806.72
SOLID	Background cpm	(BKG cpm)	42.25
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96004894	Instrument Fractional Efficiency	(EFF)	0.9559
Rerun	% Counting Error		7.12
0	Detection Limit	(Ld)	7.23
Sample Prep	Critical Level	(Lc)	3.39
FUSION01	Tc-99 Concentration in µCi/g	<	1.5426E-02
Sample #			
S96T001541	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
WC51586	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))		
Prepared By	Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm		
SEH			
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3		
JLS			
Analyst	NOTE: Reported result is a LESS THAN value calculated		
JDS	from the statistical Detection Limit (Ld).		
Date Complete			
05/20/96	Tc-99 Concentration in µCi/g	< 1.54E-02	DETECTION LEVEL
Analysis Date			
05/19/96	% Counting Error	7.1	
Analysis Time			1.54E-02
02:00 AM	Spike (Tracer) Recovery	66.1%	µCi/g
Sample Point			
C-106 GRAB			

Analyst:	JDS	Date:	05/20/96
Signature of Chemist:	JLS	Date:	5/22/96

SAMPLE.WB1 REV 2.0 438101ML

WORKBOOK PAGE: DUP6

Tc-99 : LA-438-101 (D-2) SOLIDS

			DUP
Type	Tracer Book Number	(Tr BN)	143B52
DUP	Activity for 100µl of Spike Added in dpm	(dm3)	1819.325
Work List	Volume of Sample in mL	(SS)	0.25
8885	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	1.9684
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	8.13
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	781.15
SOLID	Background cpm	(BKG cpm)	42.25
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96004894	Instrument Fractional Efficiency	(EFF)	0.955
Rerun	% Counting Error		6.69
0	Detection Limit	(Ld)	7.23
Sample Prep	Critical Level	(Lc)	3.39
FUSION01	Tc-99 Concentration in µCi/g		1.7515E-02
Sample #			
S96T001541	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
WC51586	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))		
Prepared By	Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm		
SEH			
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3		
JLS			
Analyst			
JDS			
Date Complete			
05/20/96	Tc-99 Concentration in µCi/g	1.75E-02	DETECTION LEVEL
Analysis Date			
05/19/96	% Counting Error	6.7	
Analysis Time			1.56E-02 µCi/g
02:00 AM	Spike (Tracer) Recovery	63.7%	
Sample Point			
C-106 GRAB			

Analyst:	JDS	Date:	05/20/96
Signature of Chemist:	JLS	Date:	5/22/96

SAMPLE.WB1 REV 2.0 438101ML

WORKBOOK PAGE: SAM7

WHC-SD-WM-DP-183, REV. 0

Tc-99 : LA-438-101 (D-2) SOLIDS

			SAMPLE
Type	Tracer Book Number	(Tr BN)	143B52
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	1819.325
Work List	Volume of Sample in mL	(SS)	0.25
8885	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	0.8488
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	5.02
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	800.16
SOLID	Background cpm	(BKG cpm)	42.25
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96004894	Instrument Fractional Efficiency	(EFF)	0.9543
Rerun	% Counting Error		6.92
0	Detection Limit	(Ld)	7.24
Sample Prep	Critical Level	(Lc)	3.39
FUSION01	Tc-99 Concentration in µCi/g	<	3.5164E-02

Sample #	
S96T002718	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF
WC51586	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))
Prepared By	Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm
SEH	
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3
JLS	
Analyst	NOTE: Reported result is a LESS THAN value calculated
JDS	from the statistical Detection Limit (Ld).
Date Complete	

05/20/96	Tc-99 Concentration in µCi/g	<	3.52E-02	DETECTION LEVEL
Analysis Date				
05/19/96	% Counting Error		6.9	
Analysis Time				3.52E-02 µCi/g
02:00 AM	Spike (Tracer) Recovery		65.6%	
Sample Point				
C-106 GRAB				

Analyst:	JDS	Date:	05/20/96
Signature of Chemist:	JLS	Date:	5/22/96

SAMPLE.WB1 REV 2.0 438101ML

WORKBOOK PAGE: DUP8

Tc-99 : LA-438-101 (D-2) SOLIDS

			DUP
Type	Tracer Book Number	(Tr BN)	143B52
DUP	Activity for 100µl of Spike Added in dpm	(dm3)	1819.325
Work List	Volume of Sample in mL	(SS)	0.25
8885	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	0.8184
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	5.21
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	788.44
SOLID	Background cpm	(BKG cpm)	42.25
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96004894	Instrument Fractional Efficiency	(EFF)	0.9547
Rerun	% Counting Error		6.97
0	Detection Limit	(Ld)	7.24
Sample Prep	Critical Level	(Lc)	3.39
FUSION01	Tc-99 Concentration in µCi/g	<	3.7010E-02
Sample #			
S96T002718	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
WC51586	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))		
Prepared By	Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm		
SEH			
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3		
JLS			
Analyst	NOTE: Reported result is a LESS THAN value calculated		
JDS	from the statistical Detection Limit (Ld).		
Date Complete			
05/20/96	Tc-99 Concentration in µCi/g	< 3.70E-02	DETECTION LEVEL
Analysis Date			
05/19/96	% Counting Error	7.0	
Analysis Time			3.70E-02 µCi/g
02:00 AM	Spike (Tracer) Recovery	64.6%	
Sample Point			
C-106 GRAB			

Analyst:	JDS	Date:	05/20/96
Signature of Chemist:	JLS	Date:	5/22/96

SAMPLE.WB1 REV 2.0 438101ML

LABCORE Completed RadChem Report for Worklist#: 9040

Analyst: jlf **Instrument:** LSC02 **Book#** 131852

Method: LA-438-101 Rev/Mod D-2

Worklist Comment: 0.25 mL sample size / rerun / jls

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@TC99-01 TC99-01	SOLID	3.80E-03	3.77E-3	99.211	% Recovery
1	STD		0		@TC99-01 TC99-01T	SOLID	100	6.61E+01	66.100	% Recovery
1	STD		0		@TC99-01 TC99-01E	SOLID	1	1.47E+00	1.470	% Ct. Erro
2	BLNK-PREP		0		@TC99-01 TC99-01	SOLID	1	N/A		uCi/g
2	BLNK-PREP		0		@TC99-01 TC99-01E	SOLID	1.00	N/A		uCi/g
2	BLNK-PREP		0		@TC99-01 TC99-01T	SOLID	100	N/A		% Recovery
3	SAMPLE	S96T001678	0	F	@TC99-01 TC99-01	SOLID	N/A	1.93E-02	182.0e-004	uCi/g
3	SAMPLE	S96T001678	0	F	@TC99-01 TC99-01T	SOLID	N/A	6.16E+01	0.0e+000	% Recovery
3	SAMPLE	S96T001678	0	F	@TC99-01 TC99-01E	SOLID	N/A	6.25E+00	0.0e+000	% Ct. Error
4	DUP	S96T001678	0	F	@TC99-01 TC99-01	SOLID	1.93E-2	2.75E-2	35.043	RPD
4	DUP	S96T001678	0	F	@TC99-01 TC99-01E	SOLID	1.00	5.95E+00	5.950	% Ct. Erro
4	DUP	S96T001678	0	F	@TC99-01 TC99-01T	SOLID	100	6.83E+01	68.300	% Recovery
5	SAMPLE	S96T001689	0	F	@TC99-01 TC99-01	SOLID	N/A	2.97E-02	292.0e-004	uCi/g
5	SAMPLE	S96T001689	0	F	@TC99-01 TC99-01T	SOLID	N/A	7.11E+01	0.0e+000	% Recovery
5	SAMPLE	S96T001689	0	F	@TC99-01 TC99-01E	SOLID	N/A	6.23E+00	0.0e+000	% Ct. Error
6	DUP	S96T001689	0	F	@TC99-01 TC99-01	SOLID	2.97E-2	5.04E-1	177.740	RPD
6	DUP	S96T001689	0	F	@TC99-01 TC99-01E	SOLID	1.00	3.52E+00	3.520	% Ct. Erro
6	DUP	S96T001689	0	F	@TC99-01 TC99-01T	SOLID	100	6.61E+01	66.100	% Recovery

Final page for worklist# 9040

Analyst Signature **Date** **Analyst Signature** **Date**

J L Slippen 5/24/96
Reviewer Signature **Date**

No blnk-prep run due to technologist error. Blnk-prep for original analysis showed no contamination. Sample results near detection limit. No rerun per project coordinator.

Units shown for QC (BLK/BKG) may not reflect the actual units.

SUPER RUSH

WHC-SD-WM-DP-183, REV. 0

LABCORE Data Entry Template for Worklist# 9040

Analyst: JLF/ebl **Instrument:** LSC00 6000 **Book#** 131B52

Method: LA-438-101 Rev/Mod D-2

WHC-SD-WM-DP-183, REV. 0

Worklist Comment: 0.25 mL sample size / rerun / jls

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@TC99-01	SOLID		
2	BLNK-PREP				@TC99-01	SOLID		
3	SAMPLE	S96T001678	0	F	@TC99-01	SOLID	96000174	C-106 GRAB
	Analytes Requested: TC99-01 , TC99-01E, TC99-01T							
4	DUP	S96T001678	0	F	@TC99-01	SOLID		
5	SAMPLE	S96T001689	0	F	@TC99-01	SOLID	96000174	C-106 GRAB
	Analytes Requested: TC99-01 , TC99-01E, TC99-01T							
6	DUP	S96T001689	0	F	@TC99-01	SOLID		

Final page for worklist # 9040

JLFrisby / A Lambert 05-23-96
Analyst Signature **Date**

M G Brown 5/24/96
Analyst Signature **Date**

C.J. Jensen 5/24/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

CKeymond

PAGE: 1

ID: TC 99 23 MAY 1996 15:00

USER: 5 COMMENT:LS 6000

PRESET TIME :	20.00						
DATA CALC :	SL DPM	H#	:YES	SAMPLE REPEATS:	1	PRINTER	: STD
COUNT BLANK :	YES	IC#	: NO	REPLICATES :	1	RS232	:EDIT
TWO PHASE :	YES	AQC	: NO	CYCLE REPEATS :	1		
SCINTILLATOR:	LIQUID	LUMEX	:YES	LOW SAMPLE REJ:	0		
LOW LEVEL :	NO	HALF LIFE CORRECTION DATE:				none	

ISOTOPE 1: TC99 %ERROR: 0.00 FACTOR: 1.000000 BKG. SUB: 0

BACKGROUND QUENCH CURVE: Off COLOR QUENCH CORRECTION: Off

Quench Limits Low:90.823 High:343.63

SAM NO	POS	TIME MIN	H#	TC99 CPM	TC99 %ERROR	TC99 DPM	TC99 EFF-1	LUMEX %	ELAPSED 2P TIME
B1	**-1	20.00	122.9	46.80	6.54	**48.78**	95.94	0.28	20.94
		Blank Average DPM for TC99 :				48.78 COEF. OF VAR:			0.000
~~1~~	~~**-3~~	~~20.00~~	~~158.8~~	~~944.95~~	~~1.46~~	~~**944.37**~~	~~95.15~~	~~0.51~~	~~42.57~~
~~2~~	~~**-4~~	~~20.00~~	~~159.3~~	~~3987.30~~	~~0.71~~	~~**4142.48**~~	~~95.13~~	~~0.10~~	~~64.17~~
~~3~~	~~**-5~~	~~20.00~~	~~159.3~~	~~919.90~~	~~1.48~~	~~**918.19**~~	~~95.13~~	~~0.37~~	~~85.75~~
~~4~~	~~**-6~~	~~20.00~~	~~160.0~~	~~3965.90~~	~~0.71~~	~~**4120.88**~~	~~95.11~~	~~0.07~~	~~107.31~~
5	**-7	20.00	159.2	923.10	1.47	**921.52**	95.14	0.32	128.86
6	**-8	20.00	159.5	3973.40	0.71	**4128.07**	95.13	0.07	150.43
7	**-9	20.00	157.7	54.15	6.25	**8.11**	95.18	4.55	172.00
8	**-10	20.00	159.1	2898.05	0.83	**2997.34**	95.14	0.13	193.58
9	**-11	20.00	157.9	59.40	5.95	**13.63**	95.17	4.31	215.14
10	**-12	20.00	159.7	3210.35	0.79	**3326.22**	95.12	0.08	236.68
11	**-1	20.00	158.1	53.80	6.23	**7.75**	95.17	3.82	258.29
12	**-2	20.00	161.4	3335.45	0.77	**3459.52**	95.07	0.06	279.79
13	**-3	20.00	160.1	163.30	3.52	**122.91**	95.11	1.00	301.28
14	**-4	20.00	162.1	3210.15	0.79	**3328.38**	95.05	0.06	322.78

WORKBOOK PAGE: STD1

Tc-99 : LA-438-101 (D-2) LIQUID

			STANDARD
Sample Type	Tracer Book Number	(Tr BN)	143B52
STD	Activity for 100µl of Spike Added in dpm		7277.3
Sample Volume	Volume of Sample in mL	(SS)	0.25
9040	Dilution Factor	(DF)	1
Digest Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	921.52
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	4128.07
LIQUID	Background cpm	(BKG cpm)	46.8
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96005084	Instrument Fractional Efficiency	(EFF)	0.9514
Reprint	% Counting Error		1.47
0	Standard Value µCi/mL		3.800E-03
Sample Prep	Standard Book #	(Std BN)	131B52
N/A	Detection Limit	(Ld)	7.64
Sample #	Critical Level	(Lc)	3.56
WL9040	Tc-99 Concentration in µCi/L =		3.7683E+00

Instrument Code: WC16085

Prepared By: MCB

Chemist: JLS

Analyst: JLF

Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)

Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF

Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))

Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1

Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3

Date Complete				
05/24/96	Tc-99 Concentration in µCi/mL	=	3.77E-03	DETECTION LEVEL
Analysis Date				
05/23/96	% Counting Error	=	1.5	
Analysis Time				3.12E-05 µCi/mL
07:45 AM	Spike (Tracer) Recovery	=	66.1%	

Sample Point: C-106 GRAB

Analyst:	JLF	Date:	05/24/96
Signature of Chemist:	JLS	Date:	

STANDARD.WB1 REV 2.0 438101ML

WORKBOOK PAGE: BLANK2

Tc-99 : LA-438-101 (D-2) SOLIDS

Type:	Tracer Book Number	(Tr BN)	143B52
BLNK-PREP	Activity for 100µl of Spike Added in dpm		7277.3
Workbook:	Volume of Sample in mL	(SS)	N/A
9040	Dilution Factor	(DF)	N/A
Test Code:	Digest Grams of Solids/Liter	(Dg/L)	1.8392
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	N/A
Matrix:	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	N/A
SOLID	Background cpm	(BKG cpm)	46.8
Batch Number:	Background Time Counted in Minutes	(BKG time)	20
96005084	Instrument Fractional Efficiency	(EFF)	N/A
Report:	% Counting Error		N/A
0	Detection Limit	(Ld)	ERR
Sample Prep:	Critical Level	(Lc)	3.56
N/A	Tc-99 Concentration in µCi/g =	ERR	ERR

Sample #:	
WL9040	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)
Instrument Code:	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF
WC16085	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))
Prepared By:	Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm
MCB	
Chemist:	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3
JLS	
Analyst:	ERR
JLF	ERR

Date Complete:				
05/24/96	Tc-99 Concentration in µCi/g =	ERR	ERR	DETECTION LEVEL
Analysis Date:				
05/23/96	% Counting Error =		N/A	
Analysis Time:				ERR µCi/g
07:45 AM	Spike (Tracer) Recovery =		0.0%	
Sample Point:				
C-106 GRAB				

Analyst:	JLF	Date:	05/24/96
Signature of Chemist:	JLS	Date:	

BLANK.WB1 REV 2.0 438101ML

WORKBOOK PAGE: SAM3

Tc-99 : LA-438-101 (D-2) SOLIDS

			SAMPLE
Type	Tracer Book Number	(Tr BN)	143B52
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	7277.3
Worklist	Volume of Sample in mL	(SS)	0.25
9040	Dilution Factor	(DF)	1
TestCode	Digest Grams of Solids/Liter	(Dg/L)	1.8392
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	8.11
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	2997.34
SOLID	Background cpm	(BKG cpm)	46.8
BatchNumber	Background Time Counted in Minutes	(BKG time)	20
96005084	Instrument Fractional Efficiency	(EFF)	0.9518
Rerun	% Counting Error		6.25
1	Detection Limit	(Ld)	7.63
Sample Prep	Critical Level	(Lc)	3.56
FUSION01	Tc-99 Concentration in µCi/g		1.9342E-02

Sample #
S96T001678

Instrument Code
WC16085

Prepared By
MCB

Chemist
JLS

Analyst
JLF

Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)

Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF

Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))

Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm

Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3

Date Complete			
05/24/96	Tc-99 Concentration in µCi/g	1.93E-02	DETECTION LEVEL
Analysis Date			
05/23/96	% Counting Error	6.3	
Analysis Time			1.82E-02 µCi/g
07:45 AM	Spike (Tracer) Recovery	61.6%	

Sample Point
C-106 GRAB

Analyst:	JLF	Date:	05/24/96
Signature of Chemist:	JLS	Date:	

SAMPLE.WB1 REV 2.0 438101ML

WORKBOOK PAGE: DUP4

Tc-99 : LA-438-101 (D-2) SOLIDS

			DUP
Sample Type	Tracer Book Number	(Tr BN)	143B52
DUP	Activity for 100µl of Spike Added in dpm	(dm3)	7277.3
Workplan	Volume of Sample in mL	(SS)	0.25
9040	Dilution Factor	(DF)	1
Subtask Code	Digest Grams of Solids/Liter	(Dg/L)	1.9588
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	13.63
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3326.22
SOLID	Background cpm	(BKG cpm)	46.8
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96005084	Instrument Fractional Efficiency	(EFF)	0.9517
Rerun	% Counting Error		5.95
1	Detection Limit	(Ld)	7.63
Sample Prep	Critical Level	(Lc)	3.56
FUSION01	Tc-99 Concentration in µCi/g		2.7543E-02

Sample #	
S96T001678	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF
WC16085	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))
Prepared By	Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm
MCB	
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3
JLS	
Analyst	
JLF	
Date Complete	

05/24/96	Tc-99 Concentration in µCi/g	2.75E-02	DETECTION LEVEL
Analysis Date			
05/23/96	% Counting Error	6.0	
Analysis Time			1.54E-02 µCi/g
07:45 AM	Spike (Tracer) Recovery	68.3%	
Sample Point			
C-106 GRAB			

Analyst:	JLF	Date:	05/24/96
Signature of Chemist:	JLS	Date:	

SAMPLE.WB1 REV 2.0 438101ML

WORKBOOK PAGE: SAM5

Tc-99 : LA-438-101 (D-2) SOLIDS

			SAMPLE
Sample Type	Tracer Book Number	(Tr BN)	143B52
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	7277.3
Worklist	Volume of Sample in mL	(SS)	0.25
9040	Dilution Factor	(DF)	1
Tech Code	Digest Grams of Solids/Liter	(Dg/L)	0.9924
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	7.75
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3459.52
SOLID	Background cpm	(BKG cpm)	46.8
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96005084	Instrument Fractional Efficiency	(EFF)	0.9517
Reform	% Counting Error		6.23
1	Detection Limit	(Ld)	7.63
Sample Prep	Critical Level	(Lc)	3.56
FUSION01	Tc-99 Concentration in µCi/g		2.9665E-02

Sample #	
S96T001689	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF
WC16085	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))
Prepared By	Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm
MCB	
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3
JLS	
Analyst	
JLF	

Date Complete			
05/24/96	Tc-99 Concentration in µCi/g	2.97E-02	DETECTION LEVEL
Analysis Date			
05/23/96	% Counting Error	6.2	
Analysis Time			2.92E-02 µCi/g
07:45 AM	Spike (Tracer) Recovery	71.1%	
Sample Point			
C-106 GRAB			

Analyst:	JLF	Date:	05/24/96
Signature of Chemist:	JLS	Date:	

SAMPLE.WB1 REV 2.0 438101ML

WORKBOOK PAGE: DUP6

Tc-99 : LA-438-101 (D-2) SOLIDS

			DUP
Type	Tracer Book Number	(Tr BN)	143B52
DUP	Activity for 100µl of Spike Added in dpm	(dm3)	7277.3
Worklist	Volume of Sample in mL	(SS)	0.25
9040	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	0.9972
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	122.91
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3328.38
SOLID	Background cpm	(BKG cpm)	46.8
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96005084	Instrument Fractional Efficiency	(EFF)	0.9511
Sample Range	% Counting Error		3.52
1	Detection Limit	(Ld)	7.64
Sample Prep	Critical Level	(Lc)	3.56
FUSION01	Tc-99 Concentration in µCi/g		5.0419E-01

Sample No.	
S96T001689	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF
WC16085	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))
Prepared By	Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm
MCB	
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3
JLS	
Analyst	
JLF	
Date Complete	

05/24/96	Tc-99 Concentration in µCi/g	5.04E-01	DETECTION LEVEL
Analysis Date			
05/23/96	% Counting Error	3.5	
Analysis Time			3.13E-02 µCi/g
07:45 AM	Spike (Tracer) Recovery	66.1%	

Sample Point
C-106 GRAB

Analyst:	JLF	Date:	05/24/96
Signature of Chemist:	JLS	Date:	

SAMPLE.WB1 REV 2.0 438101ML

THE FOLLOWING ANALYSES WERE RERUN AND INCLUDED IN THE DATA PACKAGE, BUT THE RESULTS HAVE NOT BEEN REPORTED IN THE FINAL SUMMARY REPORTS.

LABCORE Completed Worklist Report for Worklist# 6286

Analyst: adp **Instrument:** LSC02 **Book#** 131B52

Method: LA-438-101 Rev/Mod D-2

Worklist Comment: 0.25ml Sample Size. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD			0	@TC99-01 TC99-01	LIQUID	3.80E-03	3.95E-3	103.950	% Recovery
1	STD			0	@TC99-01 TC99-01T	LIQUID	100	5.74E+01	57.400	% Recovery
1	STD			0	@TC99-01 TC99-01E	LIQUID	1	1.55E+00	1.550	% Ct. Error
2	BLNK-PREP			0	@TC99-01 TC99-01	LIQUID	1	<3.70E-5		uCi/mL
2	BLNK-PREP			0	@TC99-01 TC99-01E	LIQUID	1.00	6.47E+00	6.470	% Ct. Error
2	BLNK-PREP			0	@TC99-01 TC99-01T	LIQUID	100	5.82E+01	58.200	% Recovery
3	SAMPLE	S96T000539		0	@TC99-01 TC99-01	LIQUID	N/A	4.11E-02	2.390e-006	uCi/mL
3	SAMPLE	S96T000539		0	@TC99-01 TC99-01T	LIQUID	N/A	9.01E+02	1.000e-004	% Recovery
3	SAMPLE	S96T000539		0	@TC99-01 TC99-01E	LIQUID	N/A	1.20E-01	0.000	% Ct. Error
4	DUP	S96T000539		0	@TC99-01 TC99-01	LIQUID	4.11E-2	9.58E-2	79.910	RPD
4	DUP	S96T000539		0	@TC99-01 TC99-01E	LIQUID	1.00	1.10E-01	0.110	% Ct. Error
4	DUP	S96T000539		0	@TC99-01 TC99-01T	LIQUID	100	5.26E+02	526.000	% Recovery
5	SAMPLE	S96T001024		0	@TC99-01 TC99-01	LIQUID	N/A	5.09E-02	3.830e-006	uCi/mL
5	SAMPLE	S96T001024		0	@TC99-01 TC99-01T	LIQUID	N/A	5.63E+02	1.000e-004	% Recovery
5	SAMPLE	S96T001024		0	@TC99-01 TC99-01E	LIQUID	N/A	1.40E-01	0.000	% Ct. Error
6	DUP	S96T001024		0	@TC99-01 TC99-01	LIQUID	5.09E-2	2.17E-2	80.440	RPD
6	DUP	S96T001024		0	@TC99-01 TC99-01E	LIQUID	1.00	1.60E-01	0.160	% Ct. Error
6	DUP	S96T001024		0	@TC99-01 TC99-01T	LIQUID	100	1.09E+03	1.090e+003	% Recovery

Final page for worklist# 6286

Analyst Signature **Date** **Analyst Signature** **Date**

[signature] 3/19/96

Reviewer Signature **Date**

Samples will be rerun with dilution.

DATA NOT USED IN PACKAGE

Units shown for QC (BLK/BKG) may not reflect the actual units.

LABCORE Data Entry Template for Worklist# 6286

Analyst: AMP **Instrument:** LSC00 6000 **Book#** 131B52

Method: LA-438-101 Rev/Mod D-2

Worklist Comment: 0.25ml Sample Size. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@TC99-01	LIQUID		
2	BLNK-PREP				@TC99-01	LIQUID		
3	SAMPLE	S96T000539	0		@TC99-01	LIQUID	96000082	C-106 GRAB
	Analytes Requested: TC99-01 , TC99-01E, TC99-01T							
4	DUP	S96T000539	0		@TC99-01	LIQUID		
5	SAMPLE	S96T001024	0		@TC99-01	LIQUID	96000174	C-106 GRAB
	Analytes Requested: TC99-01 , TC99-01E, TC99-01T							
6	DUP	S96T001024	0		@TC99-01	LIQUID		

Final page for worklist # 6286

Anthony Pirrotto 3-10-96
Analyst Signature **Date**

3/11/96
Analyst Signature **Date**
C.J. Opinen 3/11/96

DATA
NOT USED
IN PACKAGE

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

 D. H. Wilcox 3-10-96

ID: TC 99 10 MAR 1996 09:55

USER: 5 COMMENT: LS 6000

PRESET TIME :	20.00						
DATA CALC :	SL DPM	H#	:YES	SAMPLE REPEATS:	1	PRINTER	: STD
COUNT BLANK :	YES	IC#	: NO	REPLICATES :	1	RS232	:EDIT
TWO PHASE :	YES	AQC	: NO	CYCLE REPEATS :	1		
SCINTILLATOR:	LIQUID	LUMEX	:YES	LOW SAMPLE REJ:	0		
LOW LEVEL :	NO	HALF LIFE CORRECTION DATE:				none	

ISOTOPE 1: TC99 %ERROR: 0.00 FACTOR: 1.000000 BKG. SUB: 0

BACKGROUND QUENCH CURVE: Off COLOR QUENCH CORRECTION: Off

Quench Limits Low:90.823 High:343.63

SAM NO	POS	TIME MIN	H#	TC99 CPM	TC99 %ERROR	TC99 DPM	TC99 EFF-1	LUMEX %	ELAPSED TIME	2P
31	**-1	20.00	147.0	50.65	6.29	53.07	95.45	0.35	20.94	
		Blank Average DPM for TC99 : 53.07 COEF. OF VAR: 0.000								
1	**-3	20.00	171.2	844.00	1.55	837.47	94.77	1.26	42.75	
2	**-4	20.00	173.3	3479.50	0.76	3621.00	94.70	0.29	64.55	
3	**-5	20.00	170.7	55.95	6.47	5.96	94.79	12.45	86.32	
4	**-6	20.00	172.4	2729.20	0.86	2827.85	94.73	0.43	108.14	
5	**-7	20.00	171.4	129811.5	0.12	136924.6	94.77	0.01	131.03	
6	**-8	20.00	173.6	171102.8	0.11	180634.4	94.70	0.01	154.29	
7	**-9	20.00	172.3	176655.3	0.11	186413.7	94.74	0.01	177.60	
8	**-10	20.00	175.9	200558.5	0.10	211923.0	94.61	0.01	201.07	
9	**-11	20.00	171.4	100445.8	0.14	105937.9	94.77	0.02	223.70	
10	**-12	20.00	172.5	126280.6	0.13	133253.1	94.73	0.02	246.61	
11	**-1	20.00	171.9	82983.30	0.16	87527.99	94.75	0.02	269.25	
12	**-2	20.00	174.2	133075.0	0.12	140507.0	94.67	0.02	292.21	

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: STD1

Tc-99 : LA-438-101 (D-2) LIQUID

			STANDARD
Type	Tracer Book Number	(Tr BN)	143B52
STD	Activity for 100µl of Spike Added in dpm		7277.3
Work List	Volume of Sample in mL	(SS)	0.25
6286	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	837.47
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3621
LIQUID	Background cpm	(BKG cpm)	50.65
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96001932	Instrument Fractional Efficiency	(EFF)	0.9477
Rerun	% Counting Error		1.55
0	Standard Value µCi/mL		3.800E-03
Sample Prep	Standard Book #	(Std BN)	131B52
N/A	Detection Limit	(Ld)	7.97
Sample #	Critical Level	(Lc)	3.71
WL6286	Tc-99 Concentration in µCi/L =		3.9450E+00

Instrument Code	
WC16085	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)
Prepared By	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF
MCB	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))
Chemist	Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1))
JLS	
Analyst	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3
ADP	
Date Complete	

			DETECTION LEVEL
03/11/96	Tc-99 Concentration in µCi/mL =	3.95E-03	
Analysis Date			
03/10/96	% Counting Error =	-1.55	
Analysis Time			3.75E-05 µCi/mL
02:40 AM	Spike (Tracer) Recovery =	57.4%	
Sample Point			
C-106 GRAB			

DATA NOT USED IN PACKAGE

Analyst:	ADP	Date:	03/11/96
Signature of Chemist:	JLS	Date:	3/11/96

STANDARD.WB1 REV 1.1 438101ML

1869

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WORKBOOK PAGE: BLANK2

Tc-99 : LA-438-101 (D-2) LIQUID

			BLNK-PREP
Type	Tracer Book Number	(Tr BN)	143B52
BLNK-PREP	Activity for 100µl of Spike Added in dpm		7277.3
Work List	Volume of Sample in mL	(SS)	0.25
6286	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	5.96
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	2827.85
LIQUID	Background cpm	(BKG cpm)	50.65
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96001932	Instrument Fractional Efficiency	(EFF)	0.9479
Rerun	% Counting Error		6.47
0	Detection Limit	(Ld)	7.97
Sample Prep	Critical Level	(Lc)	3.71
N/A	Tc-99 Concentration in µCi/L =	<	3.7019E-02

Sample #
WL6286
Instrument Code
WC16085
Prepared By
MCB
Chemist
JLS
Analyst
ADP
Date Complete
03/11/96
Analysis Date
03/10/96
Analysis Time
02:40 AM
Sample Point
C-106 GRAB

Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)

Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF

Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))

Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1))

Tc-99 µCi/mL = µCi/L / (1000mL/L)

Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3

NOTE: Reported result is a LESS THAN value calculated from the statistical Detection Limit (Ld).

Tc-99 Concentration in µCi/mL	=	<	3.70E-05	DETECTION LEVEL
% Counting Error	=		6.47	
Spike (Tracer) Recovery	=		58.2%	3.70E-05 µCi/mL

DATA NOT USED IN PACKAGE

Analyst:	ADP	Date:	03/11/96
Signature of Chemist:	JLS	Date:	3/14/96

BLANK.WB1 REV 1.1 438101ML

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WORKBOOK PAGE: SAM3

Tc-99 : LA-438-101 (D-2) LIQUID

			SAMPLE
Type	Tracer Book Number	(Tr BN)	143B52
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	7277.3
Work List	Volume of Sample in mL	(SS)	0.25
6286	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	136924.6
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	180634.4
LIQUID	Background cpm	(BKG cpm)	50.65
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96001932	Instrument Fractional Efficiency	(EFF)	0.9477
Rerun	% Counting Error		0.12
0	Detection Limit	(Ld)	7.97
Sample Prep	Critical Level	(Lc)	3.71
N/A	Tc-99 Concentration in µCi/L		4.1075E+01
Sample #			
S96T000539			
Instrument Code			
WC16085			
Prepared By			
MCB			
Chemist			
JLS			
Analyst			
ADP			
Date Complete			
03/11/96			
Analysis Date			
03/10/96			
Analysis Time			
02:40 AM			
Sample Point			
C-106 GRAB			

Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)

Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF

Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))

Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1))

Tc-99 µCi/mL = µCi/L / (1000mL/L)

Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3

		DETECTION LEVEL
Tc-99 Concentration in µCi/mL	4.11E-02	
% Counting Error	0.12	
Spike (Tracer) Recovery	900.9%	2.39E-06 µCi/mL

DATA NOT USED IN PACKAGE

Analyst:	ADP	Date:	03/11/96
Signature of Chemist:	JLS	Date:	3/14/96

SAMPLE.WB1 REV 1.1 438101ML

1871

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WHC-SD-WM-DP-183, REV. 0

WORKBOOK PAGE: DUP4

Tc-99 : LA-438-101 (D-2) LIQUID

			DUP
Type	Tracer Book Number	(Tr BN)	143B52
DUP	Activity for 100µl of Spike Added in dpm	(dm3)	7277.3
Work List	Volume of Sample in mL	(SS)	0.25
6286	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	186413.7
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	211923
LIQUID	Background cpm	(BKG cpm)	50.65
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96001932	Instrument Fractional Efficiency	(EFF)	0.9474
Rerun	% Counting Error		0.11
0	Detection Limit	(Ld)	7.97
Sample Prep	Critical Level	(Lc)	3.71
N/A	Tc-99 Concentration in µCi/L		9.5820E+01

Sample #	
S96T000539	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF
WC16085	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))
Prepared By	Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1))
MCB	Tc-99 µCi/mL = µCi/L / (1000mL/L)
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3
JLS	
Analyst	
ADP	
Date Complete	

03/11/96	Tc-99 Concentration in µCi/mL	9.58E-02	DETECTION LEVEL
Analysis Date			
03/10/96	% Counting Error	0.11	
Analysis Time			4.10E-06 µCi/mL
02:40 AM	Spike (Tracer) Recovery	525.8%	
Sample Point			
C-106 GRAB			

DATA NOT USED IN PACKAGE

Analyst:	ADP	Date:	03/11/96
Signature of Chemist:	JLS	Date:	3/14/96

SAMPLE.WB1 REV 1.1 438101ML

WORKBOOK PAGE: SAM5

Tc-99 : LA-438-101 (D-2) LIQUID

			SAMPLE
Type	Tracer Book Number	(Tr BN)	143B52
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	7277.3
Work List	Volume of Sample in mL	(SS)	0.25
6286	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	105937.9
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	133253.1
LIQUID	Background cpm	(BKG cpm)	50.65
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96001932	Instrument Fractional Efficiency	(EFF)	0.9477
Rerun	% Counting Error		0.14
0	Detection Limit	(Ld)	7.97
Sample Prep	Critical Level	(Lc)	3.71
N/A	Tc-99 Concentration in µCi/L		5.0854E+01

Sample #	
S96T001024	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF
WC16085	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))
Prepared By	Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1))
MCB	Tc-99 µCi/mL = µCi/L / (1000mL/L)
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3
JLS	
Analyst	
ADP	
Date Complete	
03/11/96	
Analysis Date	
03/10/96	
Analysis Time	
02:40 AM	
Sample Point	
C-106 GRAB	

			DETECTION LEVEL
Tc-99 Concentration in µCi/mL	5.09E-02		
% Counting Error	0.14		3.83E-06 µCi/mL
Spike (Tracer) Recovery	563.0%		

DATA NOT USED IN PACKAGE

Analyst:	ADP	Date:	03/11/96
Signature of Chemist:	JLS	Date:	3/14/96

SAMPLE.WB1 REV 1.1 438101ML

1873

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WHC-SD-WM-DP-183, REV. 0

WORKBOOK PAGE: DUP6

Tc-99 : LA-438-101 (D-2) LIQUID

			DUP
Type	Tracer Book Number	(Tr BN)	143B52
DUP	Activity for 100µl of Spike Added in dpm	(dm3)	7277.3
Work List	Volume of Sample in mL	(SS)	0.25
6286	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	87527.99
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	140507
LIQUID	Background cpm	(BKG cpm)	50.65
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96001932	Instrument Fractional Efficiency	(EFF)	0.9475
Rerun	% Counting Error		0.16
0	Detection Limit	(Ld)	7.97
Sample Prep	Critical Level	(Lc)	3.71
N/A	Tc-99 Concentration in µCi/L		2.1663E+01

Sample #	
S96T001024	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF
WC16085	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))
Prepared By	Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1))
MCB	Tc-99 µCi/mL = µCi/L / (1000mL/L)
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3
JLS	
Analyst	
ADP	
Date Complete	
03/11/96	

Analysis Date	Tc-99 Concentration in µCi/mL	2.17E-02	DETECTION LEVEL
03/10/96	% Counting Error	0.16	
Analysis Time			1.97E-06 µCi/mL
02:40 AM	Spike (Tracer) Recovery	1092.0%	
Sample Point			
C-106 GRAB			

DATA NOT USED IN PACKAGE

Analyst:	ADP	Date:	03/11/96
Signature of Chemist:	JLS	Date:	3/14/96

SAMPLE.WB1 REV 1.1 438101ML

1874

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WHC-SD-WM-DP-183, REV. 0

LABCORE Data Entry Template for Worklist# 8886

Analyst: RK **Instrument:** LSC00 6500 **Book#** 13/B52

Method: LA-438-101 Rev/Mod B-3

Worklist Comment: RUSH! 0.25ml sample size. For spike use: 0.25ml. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@TC99-01	SOLID		
2	BLNK-PREP				@TC99-01	SOLID		
3	SAMPLE	S96T001678	0	F	@TC99-01	SOLID	96000174	C-106 GRAB
	Analytes Requested: TC99-01 , TC99-01E, TC99-01T							
4	DUP	S96T001678	0	F	@TC99-01	SOLID		
5	SAMPLE	S96T001689	0	F	@TC99-01	SOLID	96000174	C-106 GRAB
	Analytes Requested: TC99-01 , TC99-01E, TC99-01T							
6	DUP	S96T001689	0	F	@TC99-01	SOLID		

Final page for worklist # 8886

Rob King 5/18/96
Analyst Signature **Date**

[illegible] 5/20/96
Analyst Signature **Date**
Sharon Lilah 5 21 96

DATA NOT USED IN PACKAGE

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed RadChem Report for Worklist#: 8886

Analyst: rwk **Instrument:** LSC03 **Book#** 131852

Method: LA-438-101 Rev/Mod B-3

Worklist Comment: RUSH! 0.25ml sample size. For spike use: 0.25ml. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@TC99-01 TC99-01	SOLID	3.80E-03	4.10E-5	1.079	% Recovery
1	STD		0		@TC99-01 TC99-01T	SOLID	100	6.50E+01	65.000	% Recovery
1	STD		0		@TC99-01 TC99-01E	SOLID	1	6.10E+00	6.100	% Ct. Erro
2	BLNK-PREP		0		@TC99-01 TC99-01	SOLID	1	3.51E-2	35.100e-003	uCi/g
2	BLNK-PREP		0		@TC99-01 TC99-01E	SOLID	1.00	5.83E+00	5.830	uCi/g
2	BLNK-PREP		0		@TC99-01 TC99-01T	SOLID	100	6.46E+01	64.600	% Recovery
3	SAMPLE	S96T001678	0	F	@TC99-01 TC99-01	SOLID	N/A	1.45E-01	175.0e-004	uCi/g
3	SAMPLE	S96T001678	0	F	@TC99-01 TC99-01T	SOLID	N/A	6.52E+01	0.0e+000	% Recovery
3	SAMPLE	S96T001678	0	F	@TC99-01 TC99-01E	SOLID	N/A	4.34E+00	0.0e+000	% Ct. Error
4	DUP	S96T001678	0	F	@TC99-01 TC99-01	SOLID	1.45E-1	1.91E-1	27.381	RPD
4	DUP	S96T001678	0	F	@TC99-01 TC99-01E	SOLID	1.00	3.92E+00	3.920	% Ct. Erro
4	DUP	S96T001678	0	F	@TC99-01 TC99-01T	SOLID	100	6.52E+01	65.200	% Recovery
5	SAMPLE	S96T001689	0	F	@TC99-01 TC99-01	SOLID	N/A	4.63E-02	318.0e-004	uCi/g
5	SAMPLE	S96T001689	0	F	@TC99-01 TC99-01T	SOLID	N/A	6.62E+01	0.0e+000	% Recovery
5	SAMPLE	S96T001689	0	F	@TC99-01 TC99-01E	SOLID	N/A	6.07E+00	0.0e+000	% Ct. Error
6	DUP	S96T001689	0	F	@TC99-01 TC99-01	SOLID	4.63E-2	4.25E-2	8.559	RPD
6	DUP	S96T001689	0	F	@TC99-01 TC99-01E	SOLID	1.00	6.26E+00	6.260	% Ct. Erro
6	DUP	S96T001689	0	F	@TC99-01 TC99-01T	SOLID	100	6.47E+01	64.700	% Recovery

Final page for worklist# 8886

Analyst Signature **Date** **Analyst Signature** **Date**

J. L. Shippers 5/21/96
Reviewer Signature **Date**

Worklist will be reanalyzed due to poor standard recovery.

DATA NOT USED IN PACKAGE

Units shown for QC (BLK/BKG) may not reflect the actual units.

Kaymond PAGE 1

ID: TC 99 19 MAY 1996 02:48

USER: 5 COMMENT:LS 6000

PRESET TIME :	20.00						
DATA CALC :	SL DPM	H#	:YES	SAMPLE REPEATS:	1	PRINTER	: STD
COUNT BLANK :	YES	IC#	: NO	REPLICATES :	1	RS232	:EDIT
TWO PHASE :	YES	AQC	: NO	CYCLE REPEATS :	1		
SCINTILLATOR:	LIQUID	LUMEX	:YES	LOW SAMPLE REJ:	0		
LOW LEVEL :	NO	HALF LIFE CORRECTION DATE:				none	

ISOTOPE 1: TC99 %ERROR: 0.00 FACTOR: 1.000000 BKG. SUB: 0

BACKGROUND QUENCH CURVE: Off COLOR QUENCH CORRECTION: Off

Quench Limits Low:90.823 High:343.63

SAM NO	POS	TIME MIN	H#	TC99 CPM	TC99 %ERROR	TC99 DPM	TC99 EFF-1	LUMEX %	ELAPSED TIME	2P
31	**-1	20.00	125.5	48.00	6.47	50.06	95.89	0.43	20.94	
		Blank Average		DPM for	TC99 :	50.06	COEF. OF	VAR:	0.000	
1	**-3	20.00	162.0	56.95	6.10	9.85	95.06	4.95	42.51	
2	**-4	20.00	162.5	7545.40	0.51	7888.83	95.04	0.04	64.09	
3	**-5	20.00	162.0	62.25	5.83	15.43	95.06	4.99	85.68	
4	**-6	20.00	163.0	7504.45	0.52	7847.04	95.03	0.04	107.28	
5	**-7	20.00	164.3	108.85	4.34	64.54	94.99	2.48	128.81	
6	**-8	20.00	164.7	7619.85	0.51	7972.65	94.98	0.05	150.44	
7	**-9	20.00	163.7	133.10	3.92	90.04	95.01	1.97	171.99	
8	**-10	20.00	164.7	7643.95	0.51	7998.09	94.98	0.04	193.58	
9	**-11	20.00	163.6	58.25	6.07	11.25	95.01	5.77	215.19	
10	**-12	20.00	163.8	7691.25	0.51	8045.48	95.01	0.04	236.77	
11	**-1	20.00	160.1	57.25	6.26	10.14	95.11	9.07	258.56	
12	**-2	20.00	163.7	7515.15	0.52	7860.02	95.01	0.04	280.16	

DATA NOT USED IN PACKAGE

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Tc-99 : LA-438-101 (D-2) LIQUID

Type	Tracer Book Number	(Tr BN)	STANDARD 143B52
STD	Activity for 100µl of Spike Added in dpm		18193.25
Workscan	Volume of Sample in mL	(SS)	0.25
8886	Dilution Factor	(DF)	1
Testcode	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	9.85
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	7888.83
LIQUID	Background cpm	(BKG cpm)	48
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96004895	Instrument Fractional Efficiency	(EFF)	0.9506
Rerun	% Counting Error		6.1
0	Standard Value µCi/mL		3.800E-03
Sample Prep	Standard Book #	(Std BN)	131B52
N/A	Detection Limit	(Ld)	7.74
Sample #	Critical Level	(Lc)	3.61
WL8886	Tc-99 Concentration in µCi/L =		4.0981E-02

Instrument Code	
WC16085	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)
Prepared By	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF
MCB	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))
Chemist	Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1
JLS	
Analyst	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3
RWK	

Date Complete				
05/20/96	Tc-99 Concentration in µCi/mL =	4.10E-05		DETECTION LEVEL
Analysis Date				
05/18/96	% Counting Error =	6.1		
Analysis Time				3.22E-05 µCi/mL
04:40 AM	Spike (Tracer) Recovery =	65.0%		
Sample Point				
C-106 GRAB				

Analyst:	RWK	Date:	05/20/96
Signature of Chemist:	JLS	Date:	5/20/96

STANDARD.WB1 REV 2.0 438101ML

Activity for spike is for 250 µl on all forms.

5/22/96

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: BLANK2

Tc-99 : LA-438-101 (D-2) SOLIDS

Type	Tracer Book Number	(Tr BN)	143B52
BLNK-PREP	Activity for 100µl of Spike Added in dpm		18193.25
Volume	Volume of Sample in mL	(SS)	0.25
8886	Dilution Factor	(DF)	1
Project Code	Digest Grams of Solids/Liter	(Dg/L)	1.8392
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	15.43
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	7847.04
SOLID	Background cpm	(BKG cpm)	48
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96004895	Instrument Fractional Efficiency	(EFF)	0.9506
Report	% Counting Error		5.83
0	Detection Limit	(Ld)	7.74
Sample Prep	Critical Level	(Lc)	3.61
N/A	Tc-99 Concentration in µCi/g =		3.5116E-02

Sample #	
WL8886	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF
WC16085	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))
Prepared By	Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm
MCB	
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3
JLS	
Analyst	
RWK	
Date Complete	

05/20/96	Tc-99 Concentration in µCi/g	=	3.51E-02	DETECTION LEVEL
Analysis Date				
05/18/96	% Counting Error	=	5.8	
Analysis Time				1.76E-02 µCi/g
04:40 AM	Spike (Tracer) Recovery	=	64.6%	
Sample Matrix				
C-106 GRAB				

Analyst:	RWK	Date:	05/20/96
Signature of Chemist:	JLS	Date:	5/20/96

BLANK.WB1 REV 2.0 438101ML

1879

DATA NOT USED IN PACKAGE

WHC-SD-WM-DP-183, REV. 0

WORKBOOK PAGE: SAM3

Tc-99 : LA-438-101 (D-2) SOLIDS

			SAMPLE
Type	Tracer Book Number	(Tr BN)	143B52
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	18193.25
Workbook	Volume of Sample in mL	(SS)	0.25
8886	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	1.8392
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	64.54
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	7972.65
SOLID	Background cpm	(BKG cpm)	48
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96004895	Instrument Fractional Efficiency	(EFF)	0.9499
Reran	% Counting Error		4.34
0	Detection Limit	(Ld)	7.74
Sample Prep	Critical Level	(Lc)	3.61
FUSION01	Tc-99 Concentration in µCi/g		1.4546E-01

Sample #
S96T001678

Instrument Code
WC16085

Prepared By
MCB

Chemist
JLS

Analyst
RWK

Date Chemistry
05/20/96

Analysis Date
05/18/96

Analysis Time
04:40 AM

Sample Point
C-106 GRAB

Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)

Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF

Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))

Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm

Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3

		DETECTION LEVEL
Tc-99 Concentration in µCi/g	1.45E-01	
% Counting Error	4.3	
Spike (Tracer) Recovery	65.2%	1.75E-02 µCi/g

Analyst:	RWK	Date:	05/20/96
Signature of Chemist:	JLS	Date:	5/20/96

SAMPLE.WB1 REV 2.0 438101ML

1880

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: DUP4

Tc-99 : LA-438-101 (D-2) SOLIDS

			DUP
Type	Tracer Book Number	(Tr BN)	143B52
DUP	Activity for 100µl of Spike Added in dpm	(dm3)	18193.25
Work Station	Volume of Sample in mL	(SS)	0.25
8886	Dilution Factor	(DF)	1
Tc-99 Code	Digest Grams of Solids/Liter	(Dg/L)	1.9588
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	90.04
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	7998.09
SOLID	Background cpm	(BKG cpm)	48
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96004895	Instrument Fractional Efficiency	(EFF)	0.9501
Return	% Counting Error		3.92
0	Detection Limit	(Ld)	7.74
Sample Prep	Critical Level	(Lc)	3.61
FUSION01	Tc-99 Concentration in µCi/g		1.9054E-01

Sample	
S96T001678	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF
WC16085	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))
Prepared By	Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm
MCB	
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3
JLS	
Analyst	
RWK	

Date Complete			
05/20/96	Tc-99 Concentration in µCi/g	1.91E-01	DETECTION LEVEL
Analysis Date			
05/18/96	% Counting Error	3.9	
Analysis Time			1.64E-02 µCi/g
04:40 AM	Spike (Tracer) Recovery	65.2%	
Sample Point			
C-106 GRAB			

Analyst:	RWK	Date:	05/20/96
Signature of Chemist:	JLS	Date:	5/20/96

SAMPLE.WB1 REV 2.0 438101ML

1881

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: SAM5

Tc-99 : LA-438-101 (D-2) SOLIDS

			SAMPLE
Type	Tracer Book Number	(Tr BN)	143B52
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	18193.25
Volume of Sample	Volume of Sample in mL	(SS)	0.25
8886	Dilution Factor	(DF)	1
Digest Grams	Digest Grams of Solids/Liter	(Dg/L)	0.9924
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	11.25
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	8045.48
SOLID	Background cpm	(BKG cpm)	48
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96004895	Instrument Fractional Efficiency	(EFF)	0.9501
Recount	% Counting Error		6.07
0	Detection Limit	(Ld)	7.74
Sample Prep	Critical Level	(Lc)	3.61
FUSION01	Tc-99 Concentration in µCi/g		4.6253E-02

Sample #	
S96T001689	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF
WC16085	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))
Prepared By	Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm
MCB	
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3
JLS	
Analyst	
RWK	

Date Complete			
05/20/96	Tc-99 Concentration in µCi/g	4.63E-02	DETECTION LEVEL
Analysis Date			
05/18/96	% Counting Error	6.1	
Analysis Time			3.18E-02 µCi/g
04:40 AM	Spike (Tracer) Recovery	66.2%	
Sample Point			
C-106 GRAB			

Analyst:	RWK	Date:	05/20/96
Signature of Chemist:	JLS	Date:	5/20/96

SAMPLE.WB1 REV 2.0 438101ML

1882

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: DUP6

Tc-99 : LA-438-101 (D-2) SOLIDS

			DUP
Type	Tracer Book Number	(Tr BN)	143B52
DUP	Activity for 100µl of Spike Added in dpm	(dm3)	18193.25
Work List	Volume of Sample in mL	(SS)	0.25
8886	Dilution Factor	(DF)	1
Item Code	Digest Grams of Solids/Liter	(Dg/L)	0.9972
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	10.14
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	7860.02
SOLID	Background cpm	(BKG cpm)	48
Batch Number	Background Time Counted in Minutes	(BKG time)	20
96004895	Instrument Fractional Efficiency	(EFF)	0.9511
Parent	% Counting Error		6.26
0	Detection Limit	(Ld)	7.73
Sample Prep	Critical Level	(Lc)	3.61
FUSION01	Tc-99 Concentration in µCi/g		4.2463E-02

Sample #	
S96T001689	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF
WC16085	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))
Prepared By	Tc-99 µCi/g = (dm1 * (1000mL/L) * dm3 * DF) / ((2220000dpm/µCi) * SS * Dg/L * (dm2 - dm
MCB	
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3
JLS	
Analyst	
RWK	

Date Complete			
05/20/96	Tc-99 Concentration in µCi/g	4.25E-02	DETECTION LEVEL
Analysis Date			
05/18/96	% Counting Error	6.3	
Analysis Time			3.24E-02 µCi/g
04:40 AM	Spike (Tracer) Recovery	64.7%	
Sample Point			
C-106 GRAB			

Analyst:	RWK	Date:	05/20/96
Signature of Chemist:	JLS	Date:	5/20/96

SAMPLE.WB1 REV 2.0 438101ML

DATA NOT USED IN PACKAGE

WHC-SD-WM-DP-183, REV. 0

LABCORE Completed Worklist Report for Worklist# 6284

Analyst: akl **Instrument:** AM01 **Book#** 104B43

Method: LA-953-103 Rev/Mod A-5

Worklist Comment: Determine Sample Size using Ludlum.new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0	@AM24101	AM24101	LIQUID	3.07E-02	2.46E-2	80.130	% Recovery
1	STD		0	@AM24101	AM24101T	LIQUID	100.	7.72E+01	77.200	% Recovery
1	STD		0	@AM24101	AM24101E	LIQUID	1.0	2.13E+00	2.130	% Ct. Error
2	BLNK-PREP		0	@AM24101	AM24101	LIQUID	1	<1.15E-2		uCi/mL
2	BLNK-PREP		0	@AM24101	AM24101T	LIQUID	100.0	7.99E+01	79.900	% Recovery
2	BLNK-PREP		0	@AM24101	AM24101E	LIQUID	1.0	1.00E+02	100.000	% Ct. Error
3	SAMPLE	S96T000539	0	@AM24101	AM24101	LIQUID	N/A	1.50E-02	1.210e-002	uCi/mL
3	SAMPLE	S96T000539	0	@AM24101	AM24101E	LIQUID	N/A	4.65E+00	0.000	% Ct. Error
3	SAMPLE	S96T000539	0	@AM24101	AM24101T	LIQUID	N/A	7.94E+01	1.000e-007	% Recovery
4	DUP	S96T000539	0	@AM24101	AM24101	LIQUID	1.50E-2	1.21E-2	21.400	RPD
4	DUP	S96T000539	0	@AM24101	AM24101T	LIQUID	100.0	7.94E+01	79.400	% Recovery
4	DUP	S96T000539	0	@AM24101	AM24101E	LIQUID	1.0	5.12E+00	5.120	% Ct. Error
5	SAMPLE	S96T001024	0	@AM24101	AM24101	LIQUID	N/A <	1.13E-02	1.130e-002	uCi/mL
5	SAMPLE	S96T001024	0	@AM24101	AM24101E	LIQUID	N/A	5.59E+00	0.000	% Ct. Error
5	SAMPLE	S96T001024	0	@AM24101	AM24101T	LIQUID	N/A	8.20E+01	1.000e-007	% Recovery
6	DUP	S96T001024	0	@AM24101	AM24101	LIQUID	<1.13E-2	<1.28E-2		RPD
6	DUP	S96T001024	0	@AM24101	AM24101T	LIQUID	100.0	7.74E+01	77.400	% Recovery
6	DUP	S96T001024	0	@AM24101	AM24101E	LIQUID	1.0	5.32E+00	5.320	% Ct. Error

Final page for worklist# 6284

Analyst Signature **Date** **Analyst Signature** **Date**

John Relyea 18 Mar 96
Reviewer Signature **Date**

1884

Units shown for QC (BLK/BKG) may not reflect the actual units.

LABCORE Data Entry Template for Worklist# 6284

Analyst: AKL **Instrument:** AM01 13 **Book#** 104B43

Method: LA-953-103 Rev/Mod A-5

Worklist Comment: Determine Sample Size using Ludlum.new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@AM24101	LIQUID		
2	BLNK-PREP				@AM24101	LIQUID		
3	SAMPLE	S96T000539	0		@AM24101	LIQUID	96000082	C-106 GRAB
	Analytes Requested: AM24101 , AM24101E, AM24101T							
4	DUP	S96T000539	0		@AM24101	LIQUID		
5	SAMPLE	S96T001024	0		@AM24101	LIQUID	96000174	C-106 GRAB
	Analytes Requested: AM24101 , AM24101E, AM24101T							
6	DUP	S96T001024	0		@AM24101	LIQUID		

Final page for worklist # 6284

A Huron Lewis 3/12/96
Analyst Signature **Date**

Sue Hogan 3/15/96
Analyst Signature **Date**

M B Brei 3/15/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

WORKBOOK PAGE: STD1

Am 241 and Cm 243/244: LA-953-103 (A-5) LIQUID

						STD
Type	Date Counted		MAR-13-96	Am 241 AEA Frac.	(C241)	0.515
STD	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)	0.36
Work List	Sample D.F.	(DF)	101	Cm 243/244 AEA Frac.	(Cm)	0
6284	Tracer Volume in mL	(SPKV)	0.050	Total AT Counts		7690
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		118B43	Background in cpm	(Bkg)	0.43
Matrix	Am-243 Tracer Value	(dpm/mL)	7550.4	Am 241 cpm		60.35
LIQUID	Detector Number		13	Am 243 cpm		42.22
Batch Number	Detector Efficiency	(DetEff)	0.3163	Cm 243/244 cpm		0
96001931	Standard Book No		104B43	AEA Count Time	(min)	340
Rerun	Standard Value in µCi/mL		0.03067	Am 241 µCi/L =		2.4570E+01
0				Cm 243/244 µCi/L =	<	3.0920E+00
Sample Prep						
N/A						
Sample Number	Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))					
WL#6284	Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))					
Instrument Code						
WB27810	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100					
Prepared By	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV					
SEH						
Chemist						
JFR	Am 241 µCi/mL =		2.46E-02	DETECTION LEVELS in µCi/mL		
Analyst	Relative Counting Error =		2.1%			
AKL						
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241		
03/15/96	Cm 243/244 µCi/mL		< 3.09E-03	3.09E-03		
Analysis Date	Relative Counting Error =		100.0%	Cm 243/244		
03/13/96	Am 243 Tracer Recovery =		77.2%	3.09E-03		
Analysis Time						
02:00 PM						
Sample Point						
C-106						

Analyst:	AKL	Date:	03/15/96
Signature of Chemist: J F Relyea	JFR	Date:	18 Mar 96

STANDARD.WB1 REV 1.2 953103ML

WORKBOOK PAGE: BLANK2

Am 241 and Cm 243/244: LA-953-103 (A-5) LIQUID / SOLID

						BLNK-PREP
	Date Counted		MAR-13-96	Am 241 AEA Frac.	(C241)	0
BLNK-PREP	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	0.934
	Sample D.F.	(DF)	101	Cm 243/244 AEA Frac.	(Cm)	0
6284	Tracer Volume in mL	(SPKV)	0.050	Total AT Counts		3078
	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		118B43	Background in cpm	(Bkg)	0.43
	Am-243 Tracer Value	(dpm/mL)	7550.4	Am 241 cpm		0
LIQUID	Detector Number		13	Am 243 cpm		46.03
	Detector Efficiency	(DetEff)	0.3163	Cm 243/244 cpm		0
96001931				AEA Count Time	(min)	480
				Am 241 µCi/L =	<	1.1505E+01
0				Cm 243/244 µCi/L =	<	1.1505E+01

N/A

WL#6284

WB27810

SEH

JFR

AKL

03/15/96

03/13/96

02:00 PM

C-106

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

NOTE: Am-241 Result is a LESS THAN Value.

Am 241 µCi/mL	=	< 1.15E-02	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	100.0%	

NOTE: Cm-243/244 Result is a LESS THAN Value.

Cm 243/244 µCi/mL		< 1.15E-02	Am 241 1.15E-02
Relative Counting Error	=	100.0%	Cm 243/244 1.15E-02
Am 243 Tracer Recovery	=	79.9%	

Analyst:		AKL	Date:	03/15/96
Signature of Chemist:	John Relyea	JFR	Date:	18 Mar 96

BLANK.WB1 REV 1.2 953103ML

WORKBOOK PAGE: SAM3

Am 241 and Cm 243/244: LA-953-103 (A-5) LIQUID / SOLID

							SAMPLE
	Date Counted		MAR-13-96	Am 241 AEA Frac.	(C241)		0.078
SAMPLE	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)		0.893
	Sample D.F.	(DF)	101	Cm 243/244 AEA Frac.	(Cm)		0
6284	Tracer Volume in mL	(SPKV)	0.050	Total AT Counts			3200
	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)		30
@AM24101	Tracer Book No.		118B43	Background in cpm	(Bkg)		0.43
	Am-243 Tracer Value	(dpm/mL)	7550.4	Am 241 cpm			4.03
LIQUID	Detector Number		13	Am 243 cpm			46.15
	Detector Efficiency	(DetEff)	0.3163	Cm 243/244 cpm			0
96001931				AEA Count Time	(min)		480
				Am 241 µCi/L =			1.5002E+01
0				Cm 243/244 µCi/L =		<	1.2104E+01
N/A							
S96T000539							
WB27810							
SEH							
JFR							
AKL							
03/15/96							
03/13/96							
02:00 PM							
C-106							

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am 241 µCi/mL	=	1.50E-02	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	4.6%	
NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241
Cm 243/244 µCi/mL		< 1.21E-02	1.21E-02
Relative Counting Error	=	100.0%	Cm 243/244
Am 243 Tracer Recovery	=	79.4%	1.21E-02

Analyst:	AKL	Date:	03/15/96
Signature of Chemist: John Relyea	JFR	Date:	18 Mar 96

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: DUP4

Am 241 and Cm 243/244: LA-953-103 (A-5) LIQUID / SOLID

						DUP
	Date Counted		MAR-13-96	Am 241 AEA Frac.	(C241)	0.063
DUP	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	0.894
	Sample D.F.	(DF)	101	Cm 243/244 AEA Frac.	(Cm)	0
6284	Tracer Volume in mL	(SPKV)	0.050	Total AT Counts		3196
	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		118B43	Background in cpm	(Bkg)	0.43
	Am-243 Tracer Value	(dpm/mL)	7550.4	Am 241 cpm		3.27
LIQUID	Detector Number		13	Am 243 cpm		46.37
	Detector Efficiency	(DetEff)	0.3163	Cm 243/244 cpm		0
96001931				AEA Count Time	(min)	480
				Am 241 µCi/L =		1.2104E+01
0				Cm 243/244 µCi/L =	<	1.2092E+01

N/A

S96T000539

WB27810

SEH

JFR

AKL

03/15/96

03/13/96

02:00 PM

C-106

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am 241 µCi/mL =	1.21E-02	
Relative Counting Error =	5.1%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		
Cm 243/244 µCi/mL	< 1.21E-02	
Relative Counting Error =	100.0%	
Am 243 Tracer Recovery =	79.4%	

DETECTION LEVELS in µCi/mL
Am 241
1.21E-02
Cm 243/244
1.21E-02

Analyst:	AKL	Date:	03/15/96
Signature of Chemist: John Relyea	JFR	Date:	18 Mar 96

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: SAM5

Am 241 and Cm 243/244: LA-953-103 (A-5) LIQUID / SOLID

						SAMPLE
	Date Counted		MAR-13-96	Am 241 AEA Frac.	(C241)	0.049
SAMPLE	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	0.925
	Sample D.F.	(DF)	101	Cm 243/244 AEA Frac.	(Cm)	0
6284	Tracer Volume in mL	(SPKV)	0.050	Total AT Counts		3187
	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		118B43	Background in cpm	(Bkg)	0.43
	Am-243 Tracer Value	(dpm/mL)	7550.4	Am 241 cpm		2.7
LIQUID	Detector Number		13	Am 243 cpm		51.36
	Detector Efficiency	(DetEff)	0.3163	Cm 243/244 cpm		0
96001931				AEA Count Time	(min)	480
				Am 241 µCi/L =	<	1.1328E+01
0				Cm 243/244 µCi/L =	<	1.1328E+01

N/A

S96T001024

WB27810

SEH

JFR

AKL

03/15/96

03/13/96

02:00 PM

C-106

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

NOTE: Am-241 Result Is a LESS THAN Value.

Am 241 µCi/mL	=	< 1.13E-02	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	5.6%	
NOTE: Cm-243/244 Result Is a LESS THAN Value.			Am 241
Cm 243/244 µCi/mL		< 1.13E-02	1.13E-02
Relative Counting Error	=	100.0%	Cm 243/244
Am 243 Tracer Recovery	=	82.0%	1.13E-02

Analyst:	AKL	Date:	03/15/96
Signature of Chemist: J F Relyea	JFR	Date:	18 Mar 96

SAMPLE.WB1 REV 1.2 953103ML

1890

WORKBOOK PAGE: DUP6

Am 241 and Cm 243/244: LA-953-103 (A-5) LIQUID / SOLID

Type	Date Counted		MAR-13-96	Am 241 AEA Frac.	(C241)	DUP 0.051
DUP	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	0.87
Work List	Sample D.F.	(DF)	101	Cm 243/244 AEA Frac.	(Cm)	0
6284	Tracer Volume in mL	(SPKV)	0.050	Total AT Counts		3200
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		118B43	Background in cpm	(Bkg)	0.43
Matrix	Am-243 Tracer Value	(dpm/mL)	7550.4	Am 241 cpm		2.99
LIQUID	Detector Number		13	Am 243 cpm		50.97
Batch Number	Detector Efficiency	(DetEff)	0.3163	Cm 243/244 cpm		0
96001931				AEA Count Time	(min)	480
Factor				Am 241 µCi/L =	<	1.2753E+01
0				Cm 243/244 µCi/L =	<	1.2753E+01
Sample Prep						
N/A						
Sample Number						
S96T001024						
Instrument Code						
WB27810						
Prepared By						
SEH						
Chemist						
JFR						
Analyst						
AKL						
Date Complete						
03/15/96						
Analysis Date						
03/13/96						
Analysis Time						
02:00 PM						
Sample Code						
C-106						

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

NOTE: Am-241 Result is a LESS THAN Value.

Am 241 µCi/mL =	< 1.28E-02	DETECTION LEVELS in µCi/mL
Relative Counting Error =	5.3%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241
Cm 243/244 µCi/mL	< 1.28E-02	1.28E-02
Relative Counting Error =	100.0%	Cm 243/244
Am 243 Tracer Recovery =	77.4%	1.28E-02

Analyst:	AKL	Date:	03/15/96
Signature of Chemist: John Relyea	JFR	Date:	18 Mar 96

SAMPLE.WB1 REV 1.2 953103ML

3-14-96

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-183, REV. 0

SAMPLE
WL6284-STD
File ID: 13a1383.CNF

Counted on: 3/13/96 @22:34
Detector: AEA13
Geometry number: 1
Count time: 20402. Sec

PEAK ANALYSIS

Peak	Peak height		Peak center		FWHM		Tau	
ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	680.5	680.5	300.895	300.895	14.000	7.108	7.000	1.108
2	452.2	452.2	255.038	254.714	12.000	6.540	6.000	0.941
3	16.1	16.1	99.402	99.326	260.000	1.000	130.000	0.100
4?	4.2	4.2	79.035	78.637	6.000	0.651	3.000	0.180
5?	5.9	5.9	53.645	53.307	16.000	12.582	8.000	1.067

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am241	0.515	5.479	5.457	0.022	0.03	60.35	1.4	758.9	0.342E-03
	Pu238		5.487	5.457	0.030				990.8	0.446E-03
2	Am243	0.360	5.270	5.249	0.021	0.03	42.22	1.9	504.1	0.227E-03
3		0.015		4.549		0.00	1.71	8.4	20.3	0.912E-05
4		????		4.456			0.19	63.8		
5		????		4.342			0.67	19.7		
Totals:		0.890	<--valid peaks only-->				104.28			

DETECTOR CALIBRATION
Energy(MEV) = 4.102 + (0.0045)*Channel
Energy range (MeV): 4.102 TO 6.406
Efficiency = 0.0846 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	39854.0	100.000
Smoothed	39854.9	100.002
Composite fit	35752.7	89.709
Residuals	4101.3	10.291

Analyzed by: _____
DM

Spectrum 13a1383.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5016.8


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Raw Data Dump for AEA Spectrum: 13a1383.CNF

1	0.	0.	1.	0.	1.	1.	1.	0.	0.	0.
11	0.	0.	1.	0.	1.	0.	1.	0.	1.	0.
21	0.	3.	1.	0.	6.	1.	5.	3.	8.	5.
31	13.	7.	7.	8.	8.	13.	8.	5.	10.	16.
41	3.	8.	6.	8.	8.	6.	12.	7.	10.	5.
51	3.	17.	11.	13.	9.	12.	7.	11.	7.	4.
61	11.	9.	13.	12.	13.	10.	7.	11.	11.	12.
71	6.	12.	10.	11.	8.	11.	12.	12.	17.	17.
81	11.	8.	9.	8.	17.	16.	14.	16.	15.	13.
91	12.	14.	20.	17.	15.	16.	10.	16.	21.	18.
101	15.	13.	18.	13.	14.	11.	15.	18.	15.	17.
111	28.	23.	22.	16.	21.	19.	28.	23.	19.	24.
121	20.	17.	22.	23.	34.	32.	17.	25.	30.	27.
131	32.	27.	34.	25.	36.	28.	18.	37.	36.	24.
141	33.	32.	33.	26.	22.	36.	37.	30.	33.	44.
151	36.	40.	32.	35.	41.	49.	34.	46.	41.	50.
161	60.	50.	54.	52.	42.	39.	67.	53.	50.	51.
171	40.	54.	60.	56.	54.	58.	62.	69.	62.	62.
181	57.	64.	62.	68.	69.	65.	72.	80.	72.	90.
191	87.	95.	78.	72.	87.	89.	101.	97.	109.	123.
201	105.	113.	98.	108.	109.	132.	120.	118.	125.	143.
211	129.	144.	129.	134.	153.	148.	169.	143.	165.	166.
221	163.	162.	182.	210.	193.	194.	228.	200.	185.	203.
231	246.	218.	273.	269.	263.	256.	260.	301.	299.	297.
241	325.	333.	349.	399.	367.	424.	418.	420.	488.	454.
251	536.	476.	549.	584.	583.	551.	604.	465.	353.	257.
261	259.	179.	190.	220.	216.	162.	194.	219.	192.	193.
271	214.	247.	229.	222.	241.	243.	263.	270.	287.	282.
281	310.	318.	310.	352.	344.	368.	368.	387.	443.	470.
291	489.	497.	554.	559.	524.	561.	585.	649.	629.	727.
301	726.	746.	650.	572.	393.	251.	198.	132.	130.	99.
311	72.	62.	52.	45.	31.	26.	21.	16.	10.	19.
321	10.	9.	9.	7.	13.	5.	8.	4.	6.	6.
331	6.	3.	4.	3.	2.	9.	5.	5.	3.	0.
341	6.	4.	4.	2.	5.	1.	3.	0.	3.	3.
351	3.	2.	1.	2.	2.	4.	1.	2.	4.	4.
361	0.	2.	3.	1.	1.	0.	1.	2.	1.	0.
371	0.	0.	1.	2.	1.	2.	1.	2.	1.	3.
381	0.	0.	3.	1.	0.	2.	1.	0.	1.	0.
391	1.	0.	0.	1.	3.	3.	1.	0.	1.	0.
401	0.	0.	1.	1.	0.	1.	0.	1.	1.	0.
411	1.	1.	0.	0.	0.	1.	0.	0.	0.	0.
421	0.	1.	1.	0.	0.	1.	0.	1.	0.	1.
431	1.	2.	2.	0.	1.	0.	0.	1.	0.	1.
441	0.	0.	0.	0.	0.	0.	1.	1.	0.	1.
451	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.
461	1.	0.	1.	1.	0.	1.	0.	1.	0.	0.
471	0.	1.	0.	0.	0.	0.	0.	0.	1.	0.
481	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
491	1.	0.	0.	0.	0.	0.	0.	1.	0.	1.
511	1.	0.								

3-14-96

Westinghouse Hanford Co.

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

Rev. 2.01

WHC-SD-WM-DP-183, REV. 0

DATA REDUCTION REPORT

SAMPLE
WL6284-BLNK
File ID: 14a1487.CNF

Counted on: 3/13/96 @22:34
Detector: AEA14
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	947.9	947.9	255.397	255.397	12.000	7.112	6.000	1.595
2	15.7	15.7	189.674	188.762	14.000	24.348	7.000	2.652

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.934	5.270	5.245	0.025	0.03	46.03	1.3	6458.2	0.291E-02
2	Np237	0.031	4.769	4.945	-.176	0.11	1.51	13.1	241.8	0.109E-03
	Pu242		4.891	4.945	-.054				210.4	0.948E-04
Totals:		0.965	<--valid peaks only-->				47.55			

DETECTOR CALIBRATION

Energy(MEV) = 4.096 + (0.0045)*Channel
Energy range (MeV): 4.096 TO 6.400
Efficiency = 0.0072 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	23656.0	100.000
Smoothed	23655.1	99.996
Composite fit	22824.0	96.483
Residuals	832.0	3.517

Analyzed by: _____
DM

Spectrum 14a1487.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 6800.2


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Raw Data Dump for AEA Spectrum: 14a1487.CNF

1	0.	0.	1.	0.	0.	1.	1.	0.	0.	0.
11	0.	0.	0.	0.	2.	0.	1.	0.	0.	0.
21	0.	0.	0.	0.	0.	2.	3.	2.	2.	2.
31	1.	2.	3.	1.	3.	1.	1.	0.	3.	2.
41	2.	1.	1.	0.	3.	0.	3.	2.	3.	5.
51	4.	4.	5.	4.	6.	2.	3.	4.	0.	2.
61	3.	0.	5.	3.	2.	4.	1.	3.	2.	3.
71	4.	2.	2.	4.	3.	1.	0.	4.	3.	0.
81	1.	3.	1.	3.	0.	1.	3.	2.	1.	3.
91	3.	4.	4.	2.	4.	3.	3.	0.	6.	3.
101	2.	4.	5.	3.	4.	3.	2.	3.	3.	7.
111	5.	4.	4.	1.	5.	4.	3.	1.	3.	7.
121	0.	6.	6.	6.	1.	2.	4.	4.	3.	6.
131	5.	5.	3.	6.	3.	4.	5.	4.	4.	3.
141	11.	3.	6.	8.	6.	8.	10.	10.	11.	7.
151	9.	14.	10.	7.	11.	10.	9.	10.	12.	13.
161	12.	9.	10.	17.	13.	14.	15.	14.	12.	17.
171	13.	15.	20.	22.	27.	17.	16.	10.	12.	25.
181	27.	12.	13.	23.	23.	27.	21.	40.	36.	35.
191	28.	30.	30.	26.	35.	23.	39.	41.	35.	40.
201	39.	48.	46.	68.	64.	49.	64.	50.	49.	57.
211	57.	59.	63.	87.	87.	71.	76.	111.	112.	99.
221	126.	101.	104.	142.	137.	143.	167.	173.	162.	176.
231	200.	247.	239.	250.	257.	264.	336.	365.	353.	397.
241	423.	475.	480.	515.	556.	650.	696.	745.	775.	775.
251	818.	874.	953.	982.	974.	1007.	985.	913.	738.	492.
261	301.	196.	126.	123.	100.	91.	78.	80.	59.	48.
271	47.	32.	42.	39.	28.	10.	14.	16.	15.	11.
281	5.	10.	6.	4.	10.	7.	8.	7.	6.	6.
291	4.	2.	8.	5.	3.	4.	4.	4.	5.	4.
301	6.	5.	2.	6.	9.	3.	3.	5.	4.	0.
311	3.	3.	0.	2.	1.	1.	3.	3.	0.	2.
321	0.	0.	0.	0.	1.	1.	2.	0.	0.	2.
331	2.	1.	1.	1.	0.	1.	0.	2.	1.	1.
341	2.	3.	0.	1.	2.	2.	0.	0.	0.	0.
351	1.	0.	0.	2.	1.	1.	2.	2.	0.	0.
361	0.	0.	1.	2.	2.	0.	1.	0.	1.	2.
371	0.	1.	1.	0.	0.	0.	1.	0.	0.	0.
381	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
391	1.	0.	2.	1.	1.	0.	2.	0.	1.	0.
401	0.	1.	0.	0.	0.	2.	0.	0.	1.	0.
411	1.	0.	0.	0.	0.	0.	0.	1.	0.	0.
421	1.	1.	0.	1.	0.	0.	0.	2.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
441	1.	0.	1.	0.	1.	0.	1.	0.	0.	0.
451	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
471	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
491	3.	0.	0.	0.	2.	1.	0.	1.	0.	0.
511	0.	0.								

3-14-96

Westinghouse Hanford Co.

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

Rev. 2.01

WHC-SD-WM-DP-183, REV. 0

DATA REDUCTION REPORT

SAMPLE
S96T0539-SAM
File ID: 15a1567.CNF

Counted on: 3/13/96 @22:35
Detector: AEA15
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak	Peak height		Peak center		FWHM		Tau	
ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	39.8	39.8	297.195	297.195	20.000	17.959	10.000	1.728
2	706.0	706.0	253.853	253.825	14.000	7.489	7.000	1.117
3?	5.8	5.8	144.375	143.837	8.000	8.882	4.000	6.620
4?	6.5	6.5	132.121	131.000	10.000	2.281	5.000	0.431

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am241	0.078	5.479	5.448	0.031	0.08	4.03	4.5	258.2	0.116E-03
	Pu238		5.487	5.448	0.039				337.1	0.152E-03
2	Am243	0.893	5.270	5.253	0.017	0.03	46.15	1.3	2807.9	0.126E-02
3		????		4.758			0.18	52.4		
4		????		4.700			0.31	25.1		
Totals:		0.971	<--valid peaks only-->				50.17			

DETECTOR CALIBRATION

Energy(MEV) = 4.110 + (0.0045)*Channel
Energy range (MeV): 4.110 TO 6.414
Efficiency = 0.0166 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	24798.0	100.000
Smoothed	24797.2	99.997
Composite fit	24321.2	98.077
Residuals	476.8	1.923

Analyzed by: _____
DM

Spectrum 15a1567.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5493.1

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Raw Data Dump for AEA Spectrum: 15a1567.CNF

1	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
11	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
21	1.	1.	1.	0.	0.	2.	1.	4.	2.	5.
31	0.	2.	1.	3.	5.	2.	5.	2.	3.	0.
41	1.	1.	2.	4.	3.	5.	1.	2.	2.	1.
51	4.	1.	3.	2.	2.	1.	1.	5.	3.	2.
61	2.	1.	8.	2.	2.	1.	2.	0.	2.	5.
71	2.	0.	4.	2.	4.	1.	1.	2.	4.	3.
81	1.	9.	4.	4.	2.	6.	2.	1.	7.	6.
91	6.	4.	0.	6.	3.	6.	2.	6.	2.	8.
101	9.	5.	5.	4.	12.	3.	5.	5.	3.	5.
111	5.	11.	2.	4.	9.	5.	12.	4.	6.	6.
121	7.	11.	7.	11.	7.	4.	6.	11.	16.	7.
131	14.	17.	11.	11.	11.	7.	11.	9.	7.	18.
141	9.	13.	14.	16.	16.	17.	8.	9.	16.	16.
151	18.	11.	17.	10.	17.	30.	17.	23.	17.	17.
161	21.	17.	29.	19.	18.	30.	27.	26.	25.	30.
171	25.	33.	34.	26.	45.	42.	39.	29.	42.	46.
181	49.	42.	33.	51.	57.	55.	49.	48.	62.	58.
191	55.	46.	52.	58.	71.	64.	75.	65.	91.	88.
201	72.	88.	105.	100.	99.	84.	100.	104.	120.	112.
211	114.	130.	126.	156.	151.	131.	154.	163.	159.	174.
221	171.	202.	196.	201.	206.	235.	277.	242.	245.	263.
231	294.	334.	304.	343.	379.	375.	414.	377.	413.	432.
241	442.	478.	489.	505.	585.	571.	596.	613.	659.	717.
251	673.	742.	728.	743.	750.	729.	663.	490.	326.	222.
261	136.	117.	75.	84.	62.	68.	74.	63.	59.	48.
271	50.	25.	30.	27.	20.	22.	18.	31.	25.	21.
281	25.	20.	25.	30.	23.	29.	37.	30.	40.	30.
291	29.	32.	34.	40.	42.	42.	38.	43.	39.	38.
301	35.	30.	34.	34.	22.	22.	10.	9.	5.	6.
311	5.	5.	7.	6.	4.	2.	4.	1.	3.	2.
321	2.	3.	3.	1.	0.	2.	3.	4.	0.	3.
331	2.	2.	0.	2.	2.	0.	0.	1.	2.	0.
341	3.	0.	1.	1.	0.	1.	2.	2.	2.	3.
351	2.	2.	1.	2.	3.	1.	1.	1.	0.	6.
361	1.	2.	3.	1.	3.	2.	0.	2.	2.	4.
371	0.	1.	1.	1.	2.	0.	2.	1.	0.	0.
381	0.	0.	1.	0.	1.	0.	0.	1.	1.	0.
391	0.	0.	0.	1.	1.	0.	1.	0.	0.	0.
401	1.	0.	0.	0.	0.	1.	0.	0.	1.	0.
411	1.	0.	1.	0.	0.	1.	1.	0.	1.	0.
421	0.	0.	0.	2.	1.	0.	0.	0.	1.	1.
431	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
441	0.	1.	1.	0.	1.	0.	1.	0.	0.	1.
451	0.	0.	0.	0.	0.	0.	2.	1.	0.	0.
461	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
471	0.	0.	2.	0.	0.	1.	0.	1.	0.	0.
481	1.	0.	1.	0.	1.	0.	0.	0.	0.	0.
491	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
511	1.	0.								

AHJ 3-14-96

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
S96T0539-DUP
File ID: 16a1649.CNF

Counted on: 3/13/96 @22:36
Detector: AEA16
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak	Peak height		Peak center		FWHM		Tau	
ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	53.9	53.9	302.912	302.912	16.000	8.269	8.000	1.390
2	868.6	868.6	256.601	256.582	14.000	7.898	7.000	1.577

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Th228	0.063	5.400	5.447	-.047	0.04	3.27	4.9	410.7	0.185E-03
	Am241		5.479	5.447	0.032				310.2	0.140E-03
2	Am243	0.894	5.270	5.238	0.032	0.04	46.37	1.3	4182.2	0.188E-02
Totals:		0.957	<--valid peaks only-->				49.64			

DETECTOR CALIBRATION
Energy(MEV) = 4.083 + (0.0045)*Channel
Energy range (MeV): 4.083 TO 6.387
Efficiency = 0.0112 CPM/DPM

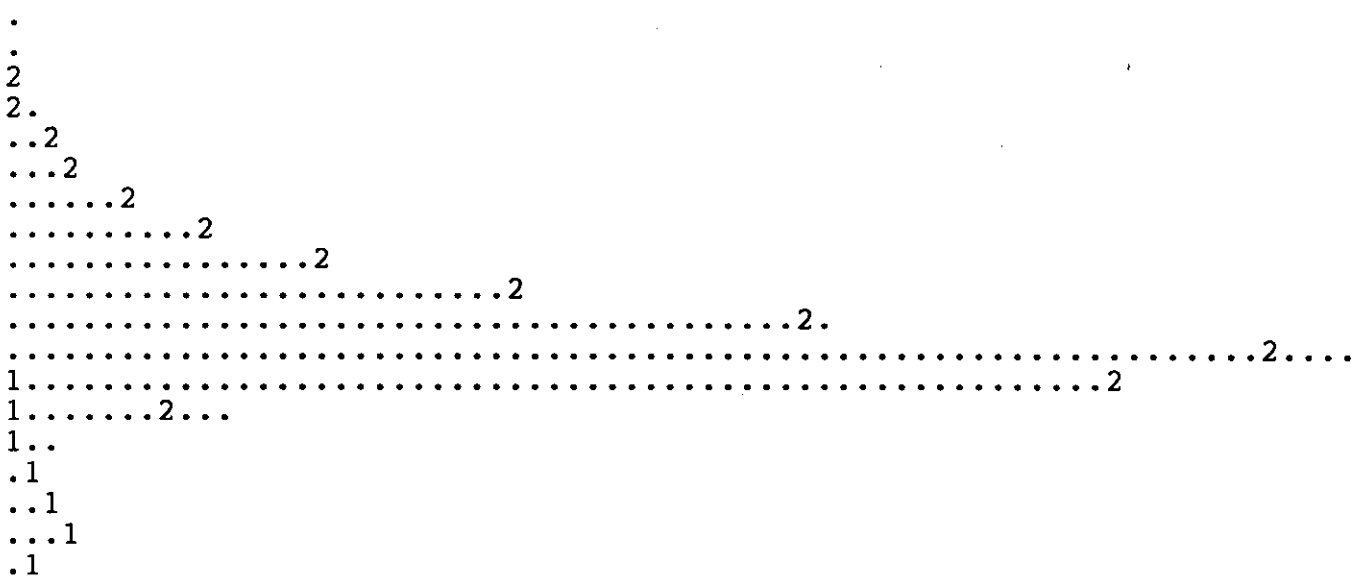
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	24903.0	100.000
Smoothed	24902.6	99.998
Composite fit	23828.2	95.684
Residuals	1074.8	4.316

Analyzed by: _____
DM

Spectrum 16a1649.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,..., etc Display Max.: 6129.7



Raw Data Dump for AEA Spectrum: 16a1649.CNF

1	0.	0.	1.	0.	0.	0.	0.	0.	2.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	1.	0.	4.	6.	3.	2.	5.	1.
31	0.	3.	1.	6.	1.	0.	3.	2.	3.	2.
41	5.	1.	2.	2.	2.	2.	5.	2.	2.	3.
51	1.	2.	3.	0.	0.	2.	2.	5.	4.	1.
61	2.	1.	2.	1.	2.	2.	2.	3.	2.	4.
71	3.	5.	5.	3.	2.	4.	1.	2.	0.	0.
81	1.	4.	2.	4.	4.	1.	5.	2.	2.	6.
91	4.	3.	3.	2.	3.	5.	3.	3.	3.	1.
101	3.	4.	3.	6.	6.	1.	5.	3.	5.	2.
111	8.	5.	5.	5.	3.	3.	3.	2.	5.	1.
121	7.	2.	3.	5.	3.	7.	7.	8.	6.	6.
131	7.	4.	5.	4.	5.	4.	5.	4.	5.	7.
141	5.	9.	3.	7.	15.	5.	2.	6.	5.	4.
151	2.	8.	5.	6.	11.	11.	11.	8.	6.	6.
161	10.	16.	15.	11.	11.	13.	11.	14.	10.	17.
171	4.	9.	19.	14.	13.	19.	17.	29.	22.	13.
181	22.	23.	17.	20.	22.	10.	29.	21.	29.	24.
191	22.	29.	35.	32.	30.	34.	26.	38.	36.	42.
201	39.	52.	50.	48.	51.	61.	55.	66.	69.	64.
211	75.	86.	73.	74.	100.	97.	99.	105.	106.	133.
221	119.	113.	155.	177.	155.	181.	167.	187.	200.	194.
231	201.	260.	262.	262.	273.	291.	347.	305.	360.	388.
241	353.	437.	451.	493.	517.	524.	583.	646.	688.	724.
251	767.	780.	830.	853.	919.	897.	928.	869.	891.	782.
261	568.	384.	210.	162.	130.	108.	96.	85.	85.	69.
271	58.	53.	57.	41.	40.	27.	27.	22.	20.	26.
281	17.	22.	21.	26.	23.	21.	35.	27.	23.	23.
291	22.	31.	40.	44.	36.	36.	44.	38.	49.	43.
301	48.	65.	59.	53.	54.	42.	39.	26.	18.	13.
311	12.	11.	5.	6.	5.	6.	4.	4.	3.	3.
321	1.	6.	2.	0.	2.	2.	1.	0.	3.	3.
331	2.	3.	0.	3.	2.	2.	0.	2.	0.	1.
341	2.	0.	3.	1.	2.	2.	4.	2.	4.	1.
351	2.	2.	2.	2.	3.	2.	2.	4.	3.	0.
361	3.	3.	3.	4.	2.	4.	3.	2.	2.	2.
371	3.	3.	3.	1.	0.	2.	1.	0.	0.	0.
381	0.	2.	1.	0.	1.	1.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
401	1.	0.	0.	0.	0.	0.	0.	2.	0.	0.
411	0.	0.	1.	0.	1.	0.	2.	0.	0.	0.
421	0.	1.	0.	1.	0.	0.	0.	1.	1.	1.
431	0.	0.	1.	0.	1.	0.	0.	0.	2.	0.
441	1.	1.	0.	2.	0.	1.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
461	2.	1.	0.	0.	1.	0.	0.	0.	0.	1.
471	0.	0.	1.	1.	0.	1.	0.	0.	0.	1.
481	0.	0.	0.	0.	0.	2.	0.	1.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

 3-14-96

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
S96T1024-SAM
File ID: 17a1725.CNF

Counted on: 3/13/96 @22:37
Detector: AEA17
Geometry number: 1
Count time: 28801. Sec

PEAK ANALYSIS

Peak	Peak height		Peak center		FWHM		Tau	
ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	50.1	50.1	296.994	296.994	12.000	7.580	6.000	1.481
2	927.3	927.3	252.121	252.112	12.000	5.964	6.000	1.068

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am241	0.049	5.479	5.459	0.020	0.03	2.70	5.4	164.2	0.740E-04
	Pu238		5.487	5.459	0.028				214.3	0.965E-04
2	Am243	0.925	5.270	5.253	0.017	0.03	51.36	1.3	2964.2	0.134E-02
		---					---			
Totals:		0.974	<--valid peaks only-->				54.06			

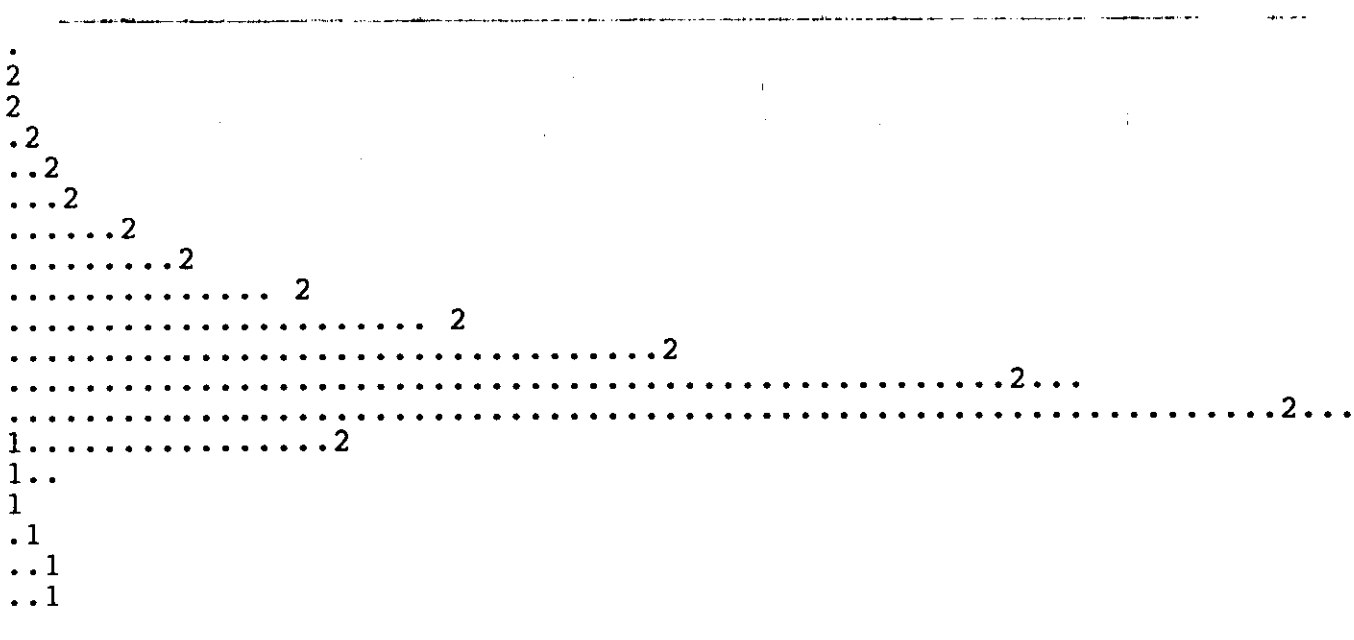
DETECTOR CALIBRATION
Energy(MEV) = 4.093 + (0.0046)*Channel
Energy range (MeV): 4.093 TO 6.448
Efficiency = 0.0175 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	26654.0	100.000
Smoothed	26655.2	100.004
Composite fit	25947.8	97.351
Residuals	706.2	2.649

Analyzed by: _____
DM

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 6924.0



Raw Data Dump for AEA Spectrum: 17a1725.CNF

1	0.	0.	0.	1.	2.	1.	4.	2.	3.	2.
11	2.	3.	1.	0.	3.	6.	3.	3.	3.	2.
21	1.	4.	3.	2.	2.	4.	2.	3.	2.	1.
31	1.	2.	5.	3.	3.	4.	1.	1.	1.	7.
41	8.	0.	3.	3.	5.	3.	2.	2.	2.	1.
51	4.	5.	2.	5.	0.	1.	4.	3.	5.	5.
61	3.	1.	3.	3.	0.	2.	2.	2.	2.	3.
71	3.	7.	4.	6.	4.	7.	2.	3.	4.	3.
81	2.	4.	3.	4.	1.	2.	3.	5.	2.	6.
91	1.	5.	2.	2.	2.	3.	3.	2.	4.	3.
101	6.	2.	9.	1.	6.	6.	4.	5.	3.	1.
111	9.	6.	2.	8.	8.	8.	6.	8.	5.	2.
121	9.	2.	8.	11.	4.	9.	7.	4.	5.	10.
131	5.	4.	13.	6.	10.	6.	10.	10.	9.	6.
141	8.	4.	12.	14.	12.	12.	8.	14.	7.	15.
151	13.	6.	12.	16.	10.	11.	16.	8.	16.	14.
161	14.	15.	22.	21.	22.	13.	18.	25.	23.	21.
171	16.	19.	28.	30.	29.	22.	26.	35.	29.	29.
181	35.	31.	29.	35.	35.	38.	44.	47.	38.	32.
191	47.	38.	51.	56.	59.	59.	49.	66.	72.	70.
201	79.	84.	74.	75.	74.	93.	77.	109.	92.	122.
211	105.	111.	109.	132.	134.	139.	177.	171.	157.	162.
221	196.	191.	203.	209.	229.	268.	269.	300.	302.	293.
231	351.	363.	359.	366.	419.	414.	434.	502.	530.	559.
241	594.	622.	627.	738.	797.	833.	828.	861.	960.	931.
251	961.	938.	947.	1028.	853.	635.	358.	175.	106.	92.
261	66.	63.	52.	46.	48.	45.	48.	32.	29.	20.
271	19.	13.	18.	11.	10.	19.	22.	20.	20.	15.
281	24.	18.	27.	21.	19.	27.	40.	34.	39.	39.
291	38.	61.	48.	43.	44.	57.	49.	57.	45.	49.
301	36.	28.	15.	16.	3.	6.	2.	2.	4.	2.
311	5.	1.	0.	1.	0.	0.	0.	0.	0.	0.
321	1.	0.	0.	0.	1.	1.	0.	0.	0.	0.
331	1.	1.	2.	1.	0.	2.	0.	1.	1.	0.
341	2.	0.	0.	1.	1.	2.	1.	2.	0.	2.
351	2.	0.	3.	1.	2.	3.	4.	3.	0.	0.
361	4.	2.	3.	3.	3.	3.	2.	2.	1.	4.
371	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	1.	0.	1.	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.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

3-14-96

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
S96T1024-DUP
File ID: 18a1803.CNF

Counted on: 3/13/96 @22:37
Detector: AEA18
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak	Peak height		Peak center		FWHM		Tau	
ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	85.2	85.2	300.079	300.079	12.000	4.607	6.000	1.526
2	1564.7	1564.7	254.243	254.242	12.000	4.144	6.000	1.495
3?	16.4	16.4	194.319	193.805	56.000	177.948	28.000	61.350
4?	0.0	0.1	182.830	182.830	0.000	0.100	0.000	0.100
5	8.3	8.3	144.209	143.856	16.000	8.737	8.000	0.704

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu238	0.051	5.487	5.467	0.020	0.02	2.99	5.2	225.3	0.101E-03
	Am241		5.479	5.467	0.012				172.6	0.777E-04
2	Am243	0.870	5.270	5.257	0.013	0.02	50.97	1.3	2798.0	0.126E-02
3		????		4.979			2.17	30.1		
4		????		4.928			0.00	8870.		
5	Np237	0.015	4.769	4.749	0.020	0.04	0.87	10.7	54.6	0.246E-04
		---					---			
Totals:		0.936	<--valid peaks only-->				54.83			

DETECTOR CALIBRATION
Energy(MEV) = 4.087 + (0.0046)*Channel
Energy range (MeV): 4.087 TO 6.442
Efficiency = 0.0184 CPM/DPM

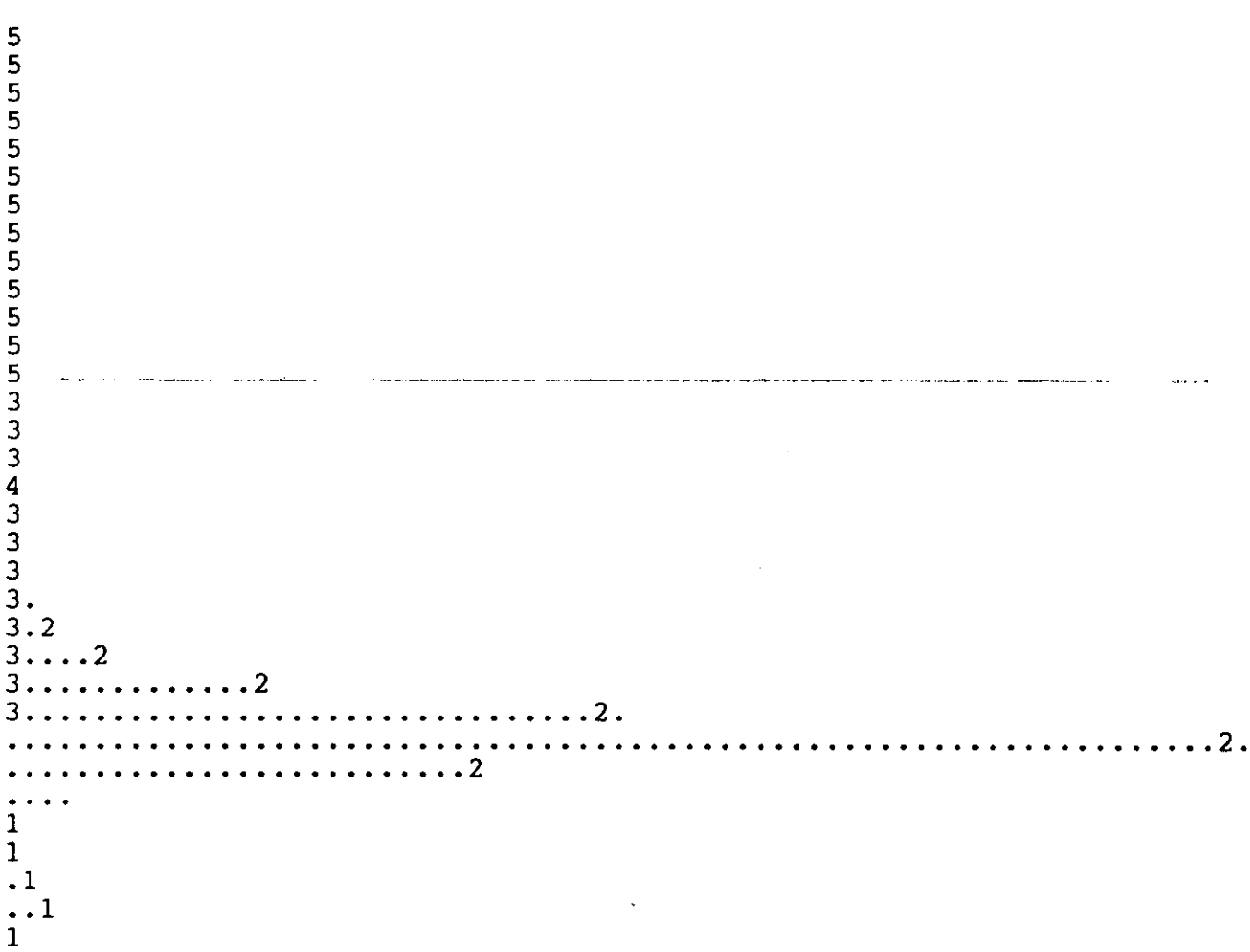
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	28115.0	100.000
Smoothed	28116.1	100.004
Composite fit	27363.8	97.328
Residuals	751.2	2.672

Analyzed by: _____
DM

Spectrum 18a1803.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 10745.3



Raw Data Dump for AEA Spectrum: 18a1803.CNF

1	0.	0.	2.	3.	2.	3.	6.	4.	5.	5.
11	3.	4.	3.	3.	2.	2.	3.	1.	3.	3.
21	2.	2.	4.	7.	4.	4.	4.	5.	3.	6.
31	2.	4.	1.	0.	2.	3.	1.	4.	4.	6.
41	3.	7.	5.	2.	3.	3.	4.	5.	4.	9.
51	3.	2.	2.	9.	5.	2.	2.	5.	9.	3.
61	2.	8.	6.	3.	3.	3.	3.	2.	7.	5.
71	4.	6.	7.	2.	3.	4.	5.	6.	1.	1.
81	8.	4.	5.	12.	4.	4.	7.	7.	5.	5.
91	2.	9.	5.	8.	7.	7.	4.	3.	5.	11.
101	4.	7.	5.	8.	14.	2.	5.	6.	6.	7.
111	7.	4.	5.	4.	5.	4.	5.	9.	7.	4.
121	5.	6.	9.	5.	7.	3.	7.	8.	4.	9.
131	8.	3.	4.	8.	8.	9.	7.	2.	5.	7.
141	9.	7.	13.	13.	14.	6.	9.	11.	6.	10.
151	6.	9.	8.	5.	4.	7.	6.	4.	8.	6.
161	10.	8.	9.	11.	12.	16.	9.	6.	9.	8.
171	13.	6.	5.	11.	13.	8.	8.	8.	15.	16.
181	21.	12.	17.	18.	14.	12.	16.	13.	14.	15.
191	14.	15.	25.	25.	20.	19.	19.	14.	15.	27.
201	22.	22.	32.	27.	32.	34.	25.	28.	31.	25.
211	57.	32.	41.	48.	49.	48.	60.	74.	67.	60.
221	73.	59.	88.	101.	90.	92.	116.	127.	129.	150.
231	145.	183.	214.	200.	260.	254.	312.	359.	376.	428.
241	511.	521.	608.	648.	763.	837.	931.	1014.	1083.	1161.
251	1250.	1486.	1625.	1777.	1782.	1679.	1240.	640.	300.	158.
261	107.	102.	93.	68.	77.	66.	52.	62.	41.	48.
271	24.	20.	16.	10.	7.	9.	7.	12.	8.	12.
281	15.	19.	19.	29.	17.	27.	31.	27.	31.	44.
291	49.	54.	57.	55.	58.	63.	69.	64.	95.	95.
301	111.	74.	54.	37.	15.	21.	12.	5.	13.	0.
311	7.	2.	3.	3.	1.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
331	0.	0.	1.	0.	0.	0.	1.	0.	0.	0.
341	1.	1.	0.	0.	1.	0.	1.	1.	0.	1.
351	0.	1.	0.	1.	0.	0.	2.	2.	3.	1.
361	2.	0.	4.	1.	2.	1.	0.	2.	1.	6.
371	3.	0.	1.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	1.	0.	1.	1.
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.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

LABCORE Completed Worklist Report for Worklist# 6897

Analyst: akl **Instrument:** ~~AB14~~ JARelyea AM01 #14 **Book#** 104B213

Method: LA-953-103 Rev/Mod A-5

Worklist Comment: C106 Field Blank.Determine Sample size using ludlum. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0	@AM24101	AM24101	LIQUID	3.07E-02	2.52E-2	82.080	% Recovery
1	STD		0	@AM24101	AM24101T	LIQUID	100.	8.70E+01	87.000	% Recovery
1	STD		0	@AM24101	AM24101E	LIQUID	1.0	1.68E+00	1.680	% Ct. Error
2	BLNK		0	@AM24101	AM24101	LIQUID	1	<1.16E-5		uCi/mL
2	BLNK		0	@AM24101	AM24101T	LIQUID	100.0	8.40E+01	84.000	% Recovery
2	BLNK		0	@AM24101	AM24101E	LIQUID	1.0	1.00E+02	100.000	% Ct. Error
3	SAMPLE	S96T000855	0	@AM24101	AM24101	LIQUID	N/A <	1.60E-05	1.600e-005	uCi/mL
3	SAMPLE	S96T000855	0	@AM24101	AM24101E	LIQUID	N/A	5.27E+00	5.270	% Ct. Error
3	SAMPLE	S96T000855	0	@AM24101	AM24101T	LIQUID	N/A	6.91E+01	69.100	% Recovery
4	DUP	S96T000855	0	@AM24101	AM24101	LIQUID	<1.60E-5	<1.73E-5		RPD
4	DUP	S96T000855	0	@AM24101	AM24101T	LIQUID	100.0	6.53E+01	65.300	% Recovery
4	DUP	S96T000855	0	@AM24101	AM24101E	LIQUID	1.0	6.10E+00	6.100	% Ct. Error

Final page for worklist# 6897

Analyst Signature **Date** **Analyst Signature** **Date**

John Relyea 2 Apr 96
Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

LABCORE Completed Worklist Report for Worklist# 6897

Analyst: akl **Instrument:** AB14 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: C106 Field Blank.Determine Sample size using ludlum. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0	@AM24101	AM24101	LIQUID	3.07E-02	2.52E-2	82.080	% Recovery
1	STD		0	@AM24101	AM24101T	LIQUID	100.	8.70E+01	87.000	% Recovery
1	STD		0	@AM24101	AM24101E	LIQUID	1.0	1.68E+00	1.680	% Ct. Error
2	BLNK		0	@AM24101	AM24101	LIQUID	1	<1.16E-5		uCi/mL
2	BLNK		0	@AM24101	AM24101T	LIQUID	100.0	8.40E+01	84.000	% Recovery
2	BLNK		0	@AM24101	AM24101E	LIQUID	1.0	1.00E+02	100.000	% Ct. Error
3	SAMPLE	S96T000855	0	@AM24101	AM24101	LIQUID	N/A <	1.60E-05	1.600e-005	uCi/mL
3	SAMPLE	S96T000855	0	@AM24101	AM24101E	LIQUID	N/A	5.27E+00	0.000	% Ct. Error
3	SAMPLE	S96T000855	0	@AM24101	AM24101T	LIQUID	N/A	6.91E+01	1.000e-007	% Recovery
4	DUP	S96T000855	0	@AM24101	AM24101	LIQUID	<1.60E-5	<1.73E-5		RPD
4	DUP	S96T000855	0	@AM24101	AM24101T	LIQUID	100.0	6.53E+01	65.300	% Recovery
4	DUP	S96T000855	0	@AM24101	AM24101E	LIQUID	1.0	6.10E+00	6.100	% Ct. Error

5.27% ct error
69.1% recovery

Final page for worklist# 6897

Analyst Signature **Date** **Analyst Signature** **Date**

Reviewer Signature **Date**

Minor changes. Just wanted it to be consistent.
JTR
2 Apr 96

Units shown for QC (BLK/BKG) may not reflect the actual units.

LABCORE Data Entry Template for Worklist# 6897

Analyst: AKL **Instrument:** AM01 14 **Book#** 109BLB3

Method: LA-953-103 Rev/Mod _____

Worklist Comment: C106 Field Blank.Determine Sample size using ludlum. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Proje
1	STD				@AM24101	LIQUID		
2	BLNK				@AM24101	LIQUID		
3	SAMPLE	S96T000855	0		@AM24101	LIQUID	96000082	C-106 GRAB
	Analytes Requested: AM24101 , AM24101E, AM24101T							
4	DUP	S96T000855	0		@AM24101	LIQUID		

Final page for worklist # 6897

A Lewis 3/29/96
Analyst Signature **Date**

W Raymond 4.1.96
Analyst Signature **Date**

Sue Hogan 4/1/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

WORKBOOK PAGE: STD1

Am 241 and Cm 243/244: LA-953-103 (A-5) LIQUID

						STD
Type	Date Counted		MAR-29-96	Am 241 AEA Frac.	(C241)	0.537
STD	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)	0.366
Worklist	Sample D.F.	(DF)	101	Cm 243/244 AEA Frac.	(Cm)	0
6897	Tracer Volume in mL	(SPKV)	0.050	Total AT Counts		7843
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		118B43	Background in cpm	(Bkg)	0.17
Matrix	Am-243 Tracer Value	(dpm/mL)	7550.4	Am 241 cpm		69.64
LIQUID	Detector Number		14	Am 243 cpm		47.46
Batch Number	Detector Efficiency	(DetEff)	0.2910	Cm 243/244 cpm		0
96002604	Standard Book No		104B43	AEA Count Time	(min)	480
Rerun	Standard Value in µCi/mL		0.03067	Am 241 µCi/L =		2.5200E+01
0				Cm 243/244 µCi/L =	<	2.6957E+00

Sample Prep: N/A

Sample Number: WL6897

Instrument Code: WB27807

Prepared By: var

Chemist: jfr

Analyst: akl

Date Complete: 04/01/96

Analysis Date: 03/29/96

Analysis Time: 12:00 PM

Sample Point: c-106 grab

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am 241 µCi/mL	=	2.52E-02
Relative Counting Error	=	1.7%
NOTE: Cm-243/244 Result is a LESS THAN Value.		
Cm 243/244 µCi/mL		< 2.70E-03
Relative Counting Error	=	100.0%
Am 243 Tracer Recovery	=	87.0%

DETECTION LEVELS in µCi/mL
Am 241
2.70E-03
Cm 243/244
2.70E-03

Analyst:	akl	Date:	04/01/96
Signature of Chemist: John Relyea	jfr	Date:	2 Apr 96

STANDARD.WB1 REV 1.2 953103ML

WORKBOOK PAGE: BLANK2

Am 241 and Cm 243/244: LA-953-103 (A-5) LIQUID / SOLID

Type	Date Counted		MAR-29-96	Am 241 AEA Frac.	(C241)	BLNK	0
BLNK	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)		0.87
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)		0
6897	Tracer Volume in mL	(SPKV)	0.050	Total AT Counts			3186
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)		30
@AM24101	Tracer Book No.		118B43	Background in cpm	(Bkg)		0.17
Matrix	Am-243 Tracer Value	(dpm/mL)	7550.4	Am 241 cpm			0
LIQUID	Detector Number		14	Am 243 cpm			45.8
Batch Number	Detector Efficiency	(DetEff)	0.2910	Cm 243/244 cpm			0
96002604				AEA Count Time	(min)		480
Rerun				Am 241 µCi/L =		<	1.1639E-02
0				Cm 243/244 µCi/L =		<	1.1639E-02
Sample Prep							
N/A							
Sample Number							
WL6897							
Instrument Code							
WB27807							
Prepared By							
var							
Chemist							
jfr							
Analyst							
akl							
Date Complete							
04/01/96							
Analysis Date							
03/29/96							
Analysis Time							
12:00 PM							
Sample Point							
c-106 grab							

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

NOTE: Am-241 Result is a LESS THAN Value.

Am 241 µCi/mL =	< 1.16E-05	DETECTION LEVELS in µCi/mL
Relative Counting Error =	100.0%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241
Cm 243/244 µCi/mL	< 1.16E-05	1.16E-05
Relative Counting Error =	100.0%	Cm 243/244
Am 243 Tracer Recovery =	84.0%	1.16E-05

Analyst:	akl	Date:	04/01/96
Signature of Chemist: John Relyea	jfr	Date:	2 Apr 96

BLANK.WB1 REV 1.2 953103ML

WORKBOOK PAGE: SAM3

Am 241 and Cm 243/244: LA-953-103 (A-5) LIQUID / SOLID

							SAMPLE
Type	Date Counted		MAR-29-96	Am 241 AEA Frac.	(C241)		0.055
SAMPLE	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)		0.768
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)		0
6897	Tracer Volume in mL	(SPKV)	0.050	Total AT Counts			2972
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)		30
@AM24101	Tracer Book No.		118B43	Background in cpm	(Bkg)		0.17
Matrix	Am-243 Tracer Value	(dpm/mL)	7550.4	Am 241 cpm			3.09
LIQUID	Detector Number		14	Am 243 cpm			42.92
Batch Number	Detector Efficiency	(DetEff)	0.2910	Cm 243/244 cpm			0
96002604				AEA Count Time	(min)		480
Rerun				Am 241 µCi/L =		<	1.6013E-02
0				Cm 243/244 µCi/L =		<	1.6013E-02
Sample Prep							
N/A							
Sample Number							
S96T000855							
Instrument Code							
WB27807							
Prepared By							
var							
Chemist							
jfr							
Analyst							
akl							
Date Complete							
04/01/96							
Analysis Date							
03/29/96							
Analysis Time							
12:00 PM							
Sample Point							
c-106 grab							

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

NOTE: Am-241 Result is a LESS THAN Value.

Am 241 µCi/mL	=	< 1.60E-05	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	5.3%	
NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241
Cm 243/244 µCi/mL		< 1.60E-05	1.60E-05
Relative Counting Error	=	100.0%	Cm 243/244
Am 243 Tracer Recovery	=	69.1%	1.60E-05

Analyst:	akl	Date:	04/01/96
Signature of Chemist: John Relyea	jfr	Date:	2 Apr 96

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: DUP4

Am 241 and Cm 243/244: LA-953-103 (A-5) LIQUID / SOLID

							DUP
Type	Date Counted		MAR-29-96	Am 241 AEA Frac.	(C241)		0.044
DUP	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)		0.754
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)		0
6897	Tracer Volume in mL	(SPKV)	0.050	Total AT Counts			2859
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)		30
@AM24101	Tracer Book No.		118B43	Background in cpm	(Bkg)		0.17
Matrix	Am-243 Tracer Value	(dpm/mL)	7550.4	Am 241 cpm			2.28
LIQUID	Detector Number		14	Am 243 cpm			38.99
Batch Number	Detector Efficiency	(DetEff)	0.2910	Cm 243/244 cpm			0
96002604				AEA Count Time	(min)		480
Rerun				Am 241 µCi/L =		<	1.7271E-02
0				Cm 243/244 µCi/L =		<	1.7271E-02
Sample Prep							
N/A							
Sample Number							
S96T000855							
Instrument Code							
WB27807							
Prepared By							
var							
Chemist							
jfr							
Analyst							
akl							
Date Complete							
04/01/96							
Analysis Date							
03/29/96							
Analysis Time							
12:00 PM							
Sample Point							
c-106 grab							

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

NOTE: Am-241 Result is a LESS THAN Value.

Am 241 µCi/mL	=	< 1.73E-05
Relative Counting Error	=	6.1%

NOTE: Cm-243/244 Result is a LESS THAN Value.

Cm 243/244 µCi/mL		< 1.73E-05
Relative Counting Error	=	100.0%
Am 243 Tracer Recovery	=	65.3%

DETECTION LEVELS in µCi/mL	
Am 241	1.73E-05
Cm 243/244	1.73E-05

Analyst:	akl	Date:	04/01/96
Signature of Chemist: John Relyea	jfr	Date:	2 Apr 96

SAMPLE.WB1 REV 1.2 953103ML

D. H. Miller
3-30-96

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
WL6897-STD
File ID: 13a1300.CNF

Counted on: 3/29/96 @19:43
Detector: AEA13
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	1455.0	1455.0	297.730	297.730	14.000	7.097	7.000	1.626
2	970.8	970.8	251.776	251.608	12.000	6.370	6.000	1.377
3	39.7	39.7	173.704	173.319	76.000	363.482	38.000	114.136
4?	0.0	0.1	158.334	158.334	0.000	0.100	0.000	0.100
5?	0.6	0.1	147.840	147.840	6.000	0.100	3.000	0.100
6?	12.4	12.4	107.417	106.497	24.000	28.572	12.000	13.639
7?	11.6	11.6	87.309	86.127	24.000	12.373	12.000	12.746
8?	11.1	11.1	71.915	68.900	32.000	11.269	16.000	16.533
9?	13.1	13.1	57.874	53.172	16.000	10.151	8.000	8.142
10?	3.3	3.3	54.305	54.305	10.000	0.000	5.000	4.079
11?	11.4	11.4	36.700	35.843	30.000	8.818	15.000	0.965

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Th228	0.537	5.400	5.447	-.047	0.03	69.64	1.1	6369.2	0.287E-02
	Am241		5.479	5.447	0.032				4810.8	0.217E-02
2	AM-243	0.366		5.240		0.03	47.46	1.4	3082.0	0.139E-02
3	Np237	0.058	4.769	4.887	-.118	1.64	7.52	10.4	561.5	0.253E-03
	Pu242		4.891	4.887	0.004				488.5	0.220E-03
4		????		4.820			0.00	*****		
5		????		4.773			0.00	*****		
6		????		4.587			0.68	18.6		
7		????		4.495			0.41	22.5		
8		????		4.417			0.37	21.4		
9		????		4.347			0.43	17.9		
10		????		4.352			0.00	1000.		
11		????		4.269			0.67	12.9		
Totals:		0.960	<--valid peaks only-->				124.63			

DETECTOR CALIBRATION
Energy(MEV) = 4.107 + (0.0045)*Channel
Energy range (MeV): 4.107 TO 6.411

Efficiency = 0.0154 CPM/DPM

TOTAL COUNT DATA: WHC-SD-WM-DP-183, REV. 0

Item	Total	% Recovery
Raw spectrum	62299.0	100.000
Smoothed	62303.0	100.006
Composite fit	61048.8	97.993
Residuals	1250.2	2.007

Analyzed by: _____
DM

Spectrum 13a1300.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 9008.0

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3.2...
3....2.
3.......2..
3.............2.
31.......................2..
3.1.....................................2.....
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Raw Data Dump for AEA Spectrum: 13a13

1	0.	0.	7.	11.	8.	11.	9.	7.	8.	8.
11	7.	9.	5.	8.	4.	5.	7.	11.	3.	11.
21	10.	3.	7.	9.	8.	8.	6.	10.	16.	14.
31	8.	9.	10.	12.	10.	11.	13.	12.	10.	9.
41	10.	10.	8.	7.	3.	9.	16.	10.	12.	13.
51	14.	12.	13.	20.	8.	14.	13.	16.	13.	16.
61	10.	9.	10.	9.	9.	15.	10.	10.	15.	9.
71	14.	9.	17.	8.	13.	9.	11.	6.	15.	15.
81	15.	19.	12.	10.	8.	16.	18.	13.	12.	14.
91	13.	15.	10.	9.	24.	16.	18.	13.	12.	20.
101	21.	17.	21.	13.	15.	23.	19.	18.	21.	20.
111	11.	16.	11.	19.	20.	20.	15.	11.	25.	21.
121	28.	16.	25.	13.	23.	23.	17.	15.	18.	32.
131	21.	19.	24.	27.	25.	21.	27.	29.	28.	25.
141	24.	29.	34.	33.	22.	31.	36.	27.	30.	34.
151	28.	24.	20.	34.	40.	30.	41.	42.	33.	41.
161	31.	28.	34.	46.	29.	27.	38.	39.	34.	54.
171	40.	50.	55.	55.	52.	38.	46.	56.	42.	53.
181	53.	52.	48.	62.	58.	54.	52.	56.	75.	57.
191	66.	82.	66.	74.	72.	71.	67.	89.	81.	98.
201	86.	71.	104.	105.	98.	117.	112.	114.	125.	102.
211	100.	135.	132.	143.	156.	126.	192.	185.	179.	167.
221	203.	206.	229.	220.	236.	239.	258.	250.	281.	291.
231	304.	350.	382.	356.	424.	432.	464.	515.	531.	603.
241	677.	662.	713.	732.	807.	858.	870.	991.	953.	1128.
251	1075.	1087.	1187.	1036.	839.	615.	417.	279.	254.	276.
261	247.	273.	281.	265.	252.	257.	266.	279.	254.	309.
271	281.	315.	347.	335.	369.	425.	411.	428.	472.	463.
281	545.	584.	596.	676.	713.	762.	845.	928.	1006.	988.
291	1079.	1128.	1202.	1271.	1332.	1457.	1527.	1559.	1611.	1378.
301	1098.	747.	525.	392.	316.	240.	184.	180.	148.	119.
311	93.	63.	42.	46.	26.	25.	16.	21.	20.	13.
321	17.	9.	9.	16.	14.	10.	8.	8.	9.	9.
331	10.	5.	6.	8.	5.	6.	8.	11.	7.	5.
341	9.	5.	6.	3.	5.	11.	6.	2.	2.	4.
351	8.	12.	6.	3.	5.	5.	5.	2.	8.	3.
361	1.	5.	6.	11.	8.	7.	3.	4.	6.	3.
371	1.	4.	5.	2.	7.	1.	6.	2.	5.	8.
381	3.	2.	1.	5.	2.	4.	3.	4.	5.	4.
391	3.	3.	5.	6.	3.	2.	5.	0.	3.	4.
401	0.	2.	1.	4.	1.	1.	3.	2.	4.	2.
411	6.	5.	6.	3.	6.	3.	3.	3.	4.	4.
421	6.	10.	1.	1.	6.	1.	3.	6.	2.	4.
431	2.	1.	0.	2.	1.	8.	3.	3.	4.	2.
441	3.	2.	1.	1.	3.	5.	3.	4.	3.	3.
451	0.	2.	1.	2.	1.	2.	6.	2.	4.	3.
461	2.	1.	1.	2.	2.	4.	6.	4.	4.	1.
471	5.	7.	2.	3.	3.	3.	3.	2.	2.	2.
481	4.	5.	2.	7.	1.	1.	2.	4.	2.	1.
491	3.	4.	4.	4.	0.	3.	4.	2.	3.	2.
511	4.	0.								

D. H. Mitchell
3-30-96

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
WL6897-BLK
File ID: 14a1404.CNF

Counted on: 3/29/96 @19:44
Detector: AEA14
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	1130.5	1130.5	254.019	254.019	12.000	5.832	6.000	1.641
2	18.9	18.9	170.267	169.928	96.000	1.000	48.000	0.100
3?	2.7	2.7	147.016	146.202	6.000	0.244	3.000	0.385
4?	4.0	4.0	135.271	134.671	10.000	1.506	5.000	0.301

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Peak Centroid Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.870	5.270	5.249	0.021	0.03	45.80	1.3	4205.7	0.189E-02
2		0.029		4.870		0.00	1.51	7.5	136.9	0.617E-04
3		????		4.764			0.02	394.		
4		????		4.712			0.17	46.8		
Totals:		0.899	<--valid peaks only-->				47.31			

DETECTOR CALIBRATION
Energy(MEV) = 4.106 + (0.0045)*Channel
Energy range (MeV): 4.106 TO 6.410
Efficiency = 0.0110 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	25266.0	100.000
Smoothed	25265.0	99.996
Composite fit	22804.6	90.258
Residuals	2461.4	9.742

Analyzed by: _____
DM

Spectrum 14a1404.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 8182.4

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Raw Data Dump for AEA Spectrum: 14a1404.CNF

1	0.	0.	5.	2.	1.	4.	2.	2.	3.	4.
11	8.	2.	5.	4.	1.	3.	3.	4.	7.	0.
21	1.	4.	3.	6.	5.	1.	2.	6.	5.	4.
31	0.	1.	8.	1.	4.	1.	3.	4.	2.	2.
41	7.	6.	1.	4.	3.	5.	3.	2.	3.	1.
51	4.	6.	1.	1.	4.	3.	2.	3.	1.	2.
61	4.	4.	4.	5.	5.	3.	5.	6.	4.	5.
71	1.	6.	6.	6.	4.	4.	8.	0.	3.	6.
81	6.	3.	11.	7.	4.	5.	3.	6.	7.	4.
91	6.	6.	6.	4.	8.	10.	6.	3.	8.	6.
101	6.	7.	6.	11.	6.	9.	11.	6.	7.	9.
111	8.	10.	3.	6.	4.	7.	6.	5.	7.	7.
121	4.	10.	8.	11.	7.	8.	8.	8.	6.	13.
131	10.	8.	6.	14.	14.	8.	12.	9.	10.	7.
141	5.	11.	12.	10.	12.	12.	10.	16.	9.	10.
151	11.	12.	7.	12.	13.	18.	15.	17.	15.	12.
161	10.	16.	15.	23.	12.	17.	15.	17.	19.	22.
171	26.	10.	25.	10.	19.	25.	22.	21.	23.	19.
181	30.	27.	25.	27.	25.	26.	36.	23.	22.	37.
191	31.	31.	35.	43.	33.	34.	36.	42.	44.	49.
201	43.	53.	41.	49.	41.	54.	57.	57.	49.	66.
211	51.	83.	72.	91.	83.	89.	80.	85.	105.	97.
221	117.	125.	122.	136.	155.	160.	156.	162.	195.	183.
231	195.	230.	232.	265.	270.	293.	307.	316.	364.	384.
241	480.	511.	545.	592.	711.	770.	805.	843.	880.	912.
251	1107.	1122.	1165.	1211.	1256.	1145.	893.	617.	370.	234.
261	168.	112.	91.	87.	87.	64.	62.	63.	50.	41.
271	34.	26.	24.	20.	12.	15.	6.	8.	8.	10.
281	7.	7.	4.	8.	9.	4.	3.	9.	5.	6.
291	4.	7.	2.	7.	11.	7.	1.	3.	6.	7.
301	4.	3.	9.	8.	5.	4.	4.	5.	4.	3.
311	0.	3.	3.	4.	4.	2.	3.	2.	1.	2.
321	1.	1.	1.	3.	0.	1.	2.	2.	2.	0.
331	2.	1.	1.	2.	3.	3.	0.	3.	1.	3.
341	3.	2.	2.	2.	0.	1.	0.	1.	4.	1.
351	0.	2.	0.	3.	0.	1.	0.	2.	2.	1.
361	0.	1.	0.	1.	1.	1.	1.	2.	1.	2.
371	2.	0.	2.	1.	0.	1.	0.	1.	2.	1.
381	1.	1.	2.	0.	0.	1.	4.	1.	0.	1.
391	1.	1.	2.	4.	2.	2.	1.	1.	0.	1.
401	3.	2.	1.	1.	3.	1.	1.	1.	0.	1.
411	2.	0.	1.	2.	2.	1.	1.	3.	0.	1.
421	2.	1.	0.	0.	0.	2.	1.	0.	0.	0.
431	1.	3.	1.	1.	3.	1.	2.	0.	1.	1.
441	4.	4.	0.	1.	1.	0.	0.	2.	0.	2.
451	0.	1.	1.	2.	0.	0.	2.	2.	1.	2.
461	3.	1.	0.	1.	3.	1.	4.	1.	0.	3.
471	0.	2.	1.	0.	0.	1.	0.	0.	2.	2.
481	0.	1.	2.	0.	1.	2.	0.	0.	1.	0.
491	2.	1.	0.	2.	1.	1.	0.	1.	2.	2.
511	2.	0.								

3-30-96

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
S96T0855-SAM
File ID: 15a1584.CNF

Counted on: 3/29/96 @19:44
Detector: AEA15
Geometry number: 1
Count time: 28808. Sec

PEAK ANALYSIS

Peak	Peak height		Peak center		FWHM		Tau	
ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	50.6	50.6	300.648	300.648	14.000	8.309	7.000	1.383
2	1026.6	1026.6	253.848	253.841	12.000	5.611	6.000	1.485
3	31.0	31.0	162.436	162.273	130.000	1.000	65.000	0.100
4?	7.4	7.4	127.744	127.439	10.000	2.964	5.000	0.988
5	7.6	7.6	105.536	101.670	18.000	12.507	9.000	0.425

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am241	0.055	5.479	5.472	0.007	0.04	3.09	5.1	37.5	0.169E-04
	Pu238		5.487	5.472	0.015				48.9	0.220E-04
2	Am243	0.768	5.270	5.261	0.009	0.03	42.92	1.4	493.7	0.222E-03
3		0.044		4.849		0.00	2.46	5.8	28.1	0.126E-04
4		????		4.692			0.24	44.8		
5		0.021		4.576		0.06	1.15	11.1	13.1	0.592E-05
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Totals:		0.888	<--valid peaks only-->				49.63			

DETECTOR CALIBRATION
Energy(MEV) = 4.119 + (0.0045)*Channel
Energy range (MeV): 4.119 TO 6.423
Efficiency = 0.0878 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	26847.0	100.000
Smoothed	26851.8	100.018
Composite fit	23942.3	89.181
Residuals	2904.7	10.819

Analyzed by: _____
DM

Spectrum 15a1584.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 7324.6

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Raw Data Dump for AEA Spectrum: 15a1584.CNF

1	0.	0.	4.	8.	6.	7.	4.	3.	3.	5.
11	6.	5.	5.	4.	3.	4.	2.	4.	5.	6.
21	7.	6.	6.	3.	8.	5.	7.	10.	3.	5.
31	1.	3.	7.	6.	9.	7.	10.	10.	4.	8.
41	7.	6.	5.	6.	10.	5.	6.	9.	5.	7.
51	4.	11.	7.	5.	7.	7.	8.	5.	4.	6.
61	5.	5.	5.	7.	13.	9.	11.	12.	9.	9.
71	9.	10.	5.	3.	5.	16.	8.	10.	8.	11.
81	8.	13.	11.	12.	9.	11.	8.	10.	9.	12.
91	8.	21.	13.	10.	13.	12.	15.	11.	12.	14.
101	13.	17.	12.	16.	13.	17.	12.	16.	15.	8.
111	5.	11.	16.	14.	9.	14.	17.	9.	14.	12.
121	18.	16.	11.	15.	12.	20.	24.	19.	24.	15.
131	13.	16.	16.	18.	18.	13.	11.	17.	18.	23.
141	21.	21.	13.	20.	22.	23.	23.	18.	29.	18.
151	22.	21.	22.	22.	24.	17.	34.	23.	25.	33.
161	37.	35.	34.	33.	29.	30.	29.	30.	24.	29.
171	34.	37.	31.	30.	34.	42.	29.	31.	39.	35.
181	35.	44.	38.	43.	44.	34.	33.	65.	36.	46.
191	56.	50.	54.	61.	47.	55.	56.	64.	50.	63.
201	50.	82.	74.	66.	83.	78.	78.	100.	83.	85.
211	88.	97.	112.	96.	100.	100.	118.	135.	135.	130.
221	130.	120.	152.	133.	200.	137.	180.	173.	198.	199.
231	216.	252.	262.	295.	275.	299.	315.	340.	401.	410.
241	434.	463.	552.	571.	638.	659.	667.	791.	804.	838.
251	931.	1003.	1041.	1161.	1164.	931.	765.	544.	297.	200.
261	140.	129.	97.	80.	81.	76.	61.	66.	40.	44.
271	46.	41.	29.	28.	21.	25.	20.	20.	24.	12.
281	18.	15.	15.	22.	32.	25.	21.	18.	38.	34.
291	30.	38.	32.	51.	44.	49.	43.	52.	44.	55.
301	51.	62.	37.	53.	19.	14.	17.	11.	10.	7.
311	12.	13.	8.	6.	4.	6.	1.	6.	2.	2.
321	0.	1.	7.	3.	0.	1.	3.	3.	3.	3.
331	2.	2.	2.	0.	1.	6.	3.	4.	1.	2.
341	1.	1.	2.	1.	1.	1.	2.	3.	1.	2.
351	1.	3.	2.	4.	4.	3.	3.	2.	1.	2.
361	6.	2.	1.	6.	1.	4.	1.	2.	8.	2.
371	2.	1.	0.	0.	2.	0.	2.	2.	0.	2.
381	1.	2.	1.	2.	1.	0.	0.	1.	0.	0.
391	2.	2.	0.	2.	3.	3.	0.	1.	0.	1.
401	2.	3.	0.	1.	0.	1.	3.	0.	0.	0.
411	2.	0.	1.	1.	1.	2.	4.	2.	1.	2.
421	1.	1.	0.	2.	2.	1.	0.	1.	1.	1.
431	2.	5.	2.	0.	4.	4.	0.	1.	1.	3.
441	2.	2.	0.	1.	1.	0.	0.	1.	2.	0.
451	2.	2.	1.	0.	2.	1.	0.	0.	2.	1.
461	5.	1.	0.	0.	1.	0.	2.	3.	1.	4.
471	1.	2.	2.	2.	1.	1.	1.	0.	0.	1.
481	4.	2.	1.	3.	1.	2.	2.	2.	1.	3.
491	2.	0.	1.	1.	2.	0.	1.	1.	1.	2.
511	1.	0.								

D. H. Milbrin
3-30-96

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
S96T0855-DUP
File ID: 16a1666.CNF

Counted on: 3/29/96 @19:45
Detector: AEA16
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	45.4	45.4	296.870	296.870	12.000	6.097	6.000	1.256
2	1009.2	1009.2	250.761	250.757	12.000	4.751	6.000	1.358
3	16.1	16.1	110.538	110.536	228.000	1.000	114.000	0.100
4	10.6	10.6	32.355	32.298	26.000	35.138	13.000	15.571
5?	11.4	11.4	11.872	11.158	4.000	1.584	2.000	1.193

PEAK RESULTS
Peak Error Limit: 30%

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	Pu238	0.044	5.487	5.482	0.005	0.03	2.28	5.9	427.5	0.193E-03
	Am241		5.479	5.482	-.003				327.5	0.148E-03
2	Am243	0.754	5.270	5.270	0.000	0.02	38.99	1.4	5322.3	0.240E-02
3	Np237	0.024	4.640	4.625	0.015	0.00	1.24	8.0	2785.5	0.125E-02
4	U 238	0.012	4.184	4.265	-.081	0.16	0.63	13.8	110.7	0.499E-04
5		????		4.168			0.18	27.5		
Totals:		0.834	<--valid peaks only-->				43.14			

DETECTOR CALIBRATION
Energy(MEV) = 4.117 + (0.0046)*Channel
Energy range (MeV): 4.117 TO 6.472
Efficiency = 0.0074 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	24817.0	100.000
Smoothed	24822.3	100.021
Composite fit	20792.4	83.783
Residuals	4024.6	16.217

Analyzed by: _____
DM

Spectrum 16a1666.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 6375.3

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Raw Data Dump for AEA Spectrum: 16a1666.CNF

1	0.	0.	13.	6.	7.	8.	9.	5.	8.	9.
11	14.	11.	10.	9.	8.	13.	4.	5.	10.	6.
21	11.	10.	3.	15.	8.	10.	4.	7.	4.	9.
31	15.	16.	14.	13.	8.	7.	6.	9.	8.	11.
41	11.	9.	8.	5.	8.	9.	10.	10.	9.	10.
51	5.	10.	11.	12.	3.	10.	12.	9.	9.	17.
61	10.	7.	15.	10.	15.	11.	16.	10.	11.	8.
71	12.	13.	7.	13.	9.	8.	10.	14.	8.	9.
81	9.	13.	12.	10.	8.	11.	13.	10.	14.	16.
91	16.	14.	15.	17.	15.	13.	13.	14.	12.	18.
101	6.	9.	18.	10.	7.	12.	14.	12.	11.	18.
111	16.	15.	10.	13.	7.	13.	11.	15.	19.	22.
121	11.	14.	15.	19.	15.	9.	10.	11.	19.	20.
131	14.	15.	25.	18.	23.	20.	14.	21.	17.	15.
141	25.	19.	20.	22.	24.	25.	25.	26.	30.	21.
151	25.	24.	23.	30.	21.	21.	21.	19.	26.	25.
161	29.	20.	19.	27.	26.	25.	22.	28.	19.	32.
171	32.	28.	36.	28.	25.	31.	23.	28.	35.	32.
181	37.	41.	46.	28.	49.	51.	42.	59.	44.	49.
191	47.	51.	50.	57.	53.	51.	62.	59.	59.	56.
201	62.	54.	74.	69.	63.	80.	57.	74.	84.	95.
211	97.	95.	95.	104.	116.	121.	125.	102.	135.	130.
221	137.	150.	155.	165.	163.	181.	181.	206.	232.	239.
231	244.	256.	282.	292.	334.	316.	394.	371.	450.	487.
241	538.	562.	653.	655.	663.	733.	808.	867.	989.	1080.
251	1147.	1133.	953.	632.	353.	186.	150.	127.	96.	100.
261	79.	68.	82.	55.	57.	73.	48.	29.	37.	16.
271	15.	15.	25.	10.	22.	20.	15.	11.	17.	12.
281	16.	16.	28.	15.	24.	17.	33.	24.	27.	38.
291	32.	30.	29.	41.	43.	45.	49.	60.	38.	23.
301	24.	13.	13.	9.	6.	10.	5.	5.	5.	9.
311	2.	4.	2.	3.	1.	4.	3.	1.	1.	4.
321	0.	2.	4.	0.	5.	2.	0.	3.	2.	0.
331	2.	1.	3.	2.	0.	1.	1.	1.	1.	1.
341	1.	1.	4.	2.	2.	3.	3.	2.	3.	1.
351	0.	2.	1.	0.	1.	1.	1.	3.	5.	2.
361	1.	9.	3.	4.	0.	2.	1.	0.	4.	0.
371	3.	0.	0.	3.	1.	1.	4.	4.	2.	1.
381	0.	3.	0.	1.	1.	1.	1.	1.	0.	1.
391	1.	0.	1.	2.	2.	1.	0.	0.	0.	0.
401	0.	1.	1.	2.	3.	2.	1.	2.	1.	0.
411	2.	0.	1.	2.	1.	0.	0.	2.	1.	4.
421	1.	2.	0.	1.	1.	0.	0.	1.	0.	1.
431	0.	4.	3.	1.	2.	1.	0.	1.	0.	0.
441	0.	2.	1.	1.	2.	1.	0.	0.	1.	1.
451	3.	2.	1.	2.	3.	4.	0.	1.	1.	2.
461	3.	1.	2.	1.	0.	5.	0.	0.	3.	2.
471	1.	1.	3.	0.	0.	2.	0.	0.	0.	2.
481	2.	1.	2.	3.	1.	0.	0.	3.	1.	0.
491	1.	2.	3.	2.	0.	0.	2.	2.	3.	0.
511	0.	0.								

LABCORE Completed Worklist Report for Worklist# 7867

Analyst: ~~jfr~~ AKL **Instrument:** AM01 #18 **Book#** 124B43

Method: LA-953-103 Rev/Mod 4-5

Worklist Comment: C-106 Grab. Determine sample size using ludlum. new

Seq	Type	Sample#	R	A	Test		Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@AM24101	AM24101	SOLID	.03825	.0406	106.144	% Recovery
1	STD		0		@AM24101	AM24101T	SOLID	100.	99.1	99.100	% Recovery
1	STD		0		@AM24101	AM24101E	SOLID	1.0	4.2	4.200	% Ct. Error
2	BLNK-PREP		0		@AM24101	AM24101	SOLID	1	<2.54e-2		uCi/g
2	BLNK-PREP		0		@AM24101	AM24101T	SOLID	100.	91.5	91.500	% Recovery
2	BLNK-PREP		0		@AM24101	AM24101E	SOLID	1.0	100	100.000	% Ct. Error
3	SAMPLE	S96T000546	0	F	@AM24101	AM24101	SOLID	N/A	1.01	0.081	uCi/g
3	SAMPLE	S96T000546	0	F	@AM24101	AM24101E	SOLID	N/A	3.4	0.000	% Ct. Error
3	SAMPLE	S96T000546	0	F	@AM24101	AM24101T	SOLID	N/A	96.4	0.000	% Recovery
4	DUP	S96T000546	0	F	@AM24101	AM24101	SOLID	1.01	1.23	19.643	RPD
4	DUP	S96T000546	0	F	@AM24101	AM24101T	SOLID	100.0	87.9	87.900	% Recovery
4	DUP	S96T000546	0	F	@AM24101	AM24101E	SOLID	1.0	3.4	3.400	% Ct. Error
5	SAMPLE	S96T000555	0	F	@AM24101	AM24101	SOLID	N/A	1.33	0.096	uCi/g
5	SAMPLE	S96T000555	0	F	@AM24101	AM24101E	SOLID	N/A	2.8	0.000	% Ct. Error
5	SAMPLE	S96T000555	0	F	@AM24101	AM24101T	SOLID	N/A	98.2	0.000	% Recovery
6	DUP	S96T000555	0	F	@AM24101	AM24101	SOLID	1.33	1.22	8.627	RPD
6	DUP	S96T000555	0	F	@AM24101	AM24101T	SOLID	100.0	104.4	104.400	% Recovery
6	DUP	S96T000555	0	F	@AM24101	AM24101E	SOLID	1.0	2.6	2.600	% Ct. Error

Final page for worklist# 7867

Analyst Signature **Date** **Analyst Signature** **Date**

John Relyea 8 May 96
Reviewer Signature **Date**
validated

Units shown for QC (BLK/BKG) may not reflect the actual units.

LABCORE Data Entry Template for Worklist# 7867

Analyst: AKL **Instrument:** AM01 #18 **Book#** 124843

Method: LA-953-103 Rev/Mod _____

Worklist Comment: C-106 Grab. Determine sample size using ludlum. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@AM24101	SOLID		
2	BLNK-PREP				@AM24101	SOLID		
3	SAMPLE	S96T000546	0	F	@AM24101	SOLID	96000082	C-106 GRAB
	Analytes Requested: AM24101 , AM24101E, AM24101T							
4	DUP	S96T000546	0	F	@AM24101	SOLID		
5	SAMPLE	S96T000555	0	F	@AM24101	SOLID	96000082	C-106 GRAB
	Analytes Requested: AM24101 , AM24101E, AM24101T							
6	DUP	S96T000555	0	F	@AM24101	SOLID		

Final page for worklist # 7867

C Lewis 4/24/96
Analyst Signature **Date**

Sue E. Hogan 5/1/96
Analyst Signature **Date**
Sharon L Walden 5-2-96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

WORKBOOK PAGE: STD1

Am 241 and Cm 243/244: LA-953-103 (A-5) LIQUID

Type	Date Counted		APR-24-96	Am 241 AEA Frac.	(C241)	STD 0.468
STD	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	0.484
Work List	Sample D.F.	(DF)	101	Cm 243/244 AEA Frac.	(Cm)	0
7867	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		1524
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		115B43	Background in cpm	(Bkg)	0.07
Matrix	Am-243 Tracer Value	(dpm/mL)	922	Am 241 cpm		8.97
LIQUID	Detector Number		18	Am 243 cpm		9.29
Batch Number	Detector Efficiency	(DetEff)	0.2686	Cm 243/244 cpm		0
96003704	Standard Book No		124B43	AEA Count Time	(min)	480
Dilution	Standard Value in µCi/mL		0.03825	Am 241 µCi/L =		4.0560E+01
0				Cm 243/244 µCi/L =	<	4.3707E+00
Sample Prep						
N/A						
Sample Number						
WL7867						
Instrument Code						
WB27609						
Prepared By						
SEH						
Wet Chemistry						
JFR						
Analyst						
AKL						
Date Completed						
05/01/96						
Analysis Date						
04/24/96						
Analysis Time						
10:15 AM						
Sample Point						
C-106 GRAB						

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am 241 µCi/mL	=	4.06E-02	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	4.2%	
NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241 4.37E-03
Cm 243/244 µCi/mL		< 4.37E-03	
Relative Counting Error	=	100.0%	Cm 243/244 4.37E-03
Am 243 Tracer Recovery	=	99.1%	

Analyst:		AKL	Date:	05/01/96
Signature of Chemist:	John Relyea	JFR	Date:	6 May 96

STANDARD.WB1 REV 1.2 953103ML

WORKBOOK PAGE: BLANK2

Am 241 and Cm 243/244: LA-953-103 (A-5) LIQUID / SOLID

Type	Date Counted	APR-24-96	Am 241 AEA Frac.	(C241)	0
BLNK-PREP	Sample Volume in mL	(SS) 0.100	Am 243 AEA Frac.	(C243)	0.948
Work List	Sample D.F.	(DF) 1	Cm 243/244 AEA Frac.	(Cm)	0
7867	Tracer Volume in mL	(SPKV) 0.100	Total AT Counts		719
Test Code	Digest Grams of Solids/L	(Dg/L) 0.944	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.	115B43	Background in cpm	(Bkg)	0.07
Matrix	Am-243 Tracer Value	(dpm/mL) 922	Am 241 cpm		0
SOLID	Detector Number	18	Am 243 cpm		9.81
Batch Number	Detector Efficiency	(DetEff) 0.2686	Cm 243/244 cpm		0
96003704			AEA Count Time	(min)	480
Rerun			Am 241 µCi/g =	<	2.5377E-02
0			Cm 243/244 µCi/g =	<	2.5377E-02
Sample Prep					
N/A					
Sample Number					
WL7867					
Instrument Code					
WB27809					
Prepared By					
SEH					
Chemist					
JFR					
Analyst					
AKL					
Date Complete					
05/01/96					
Analysis Date					
04/24/96					
Analysis Time					
10:15 AM					
Sample Point					
C-106 GRAB					

Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

NOTE: Am-241 Result is a LESS THAN Value.

Am241 µCi/g	=	< 2.54E-02
Relative Counting Error	=	100.0%

NOTE: Cm-243/244 Result is a LESS THAN Value.

Cm 243/244 µCi/g		< 2.54E-02
Relative Counting Error	=	100.0%
Am 243 Tracer Recovery	=	91.5%

DETECTION LEVELS in µCi/g	
Am 241	2.54E-02
Cm 243/244	2.54E-02

Analyst:		AKL	Date:	05/01/96
Signature of Chemist:	John Relyea	JFR	Date:	6 May 96

BLANK.WB1 REV 1.2 953103ML

WORKBOOK PAGE: SAM3

Am 241 and Cm 243/244: LA-953-103 (A-5) LIQUID / SOLID

						SAMPLE
Type	Date Counted		APR-24-96	Am 241 AEA Frac.	(C241)	0.65
SAMPLE	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	0.282
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0.026
7867	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		2543
Test Code	Digest Grams of Solids/L	(Dg/L)	0.944	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		115B43	Background in cpm	(Bkg)	0.07
Matrix	Am-243 Tracer Value	(dpm/mL)	922	Am 241 cpm		22.87
SOLID	Detector Number		18	Am 243 cpm		9.9
Batch Number	Detector Efficiency	(DetEff)	0.2686	Cm 243/244 cpm		0.9
96003704				AEA Count Time	(min)	480
Rerun				Am 241 µCi/g =		1.0145E+00
0				Cm 243/244 µCi/g =	<	8.0916E-02
Sample Prep						
FUSION01						

Sample Number	Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]
S96T000546	Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]
Instrument Code	
WB27809	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100
Prepared By	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV
SEH	
Chemist	
JFR	
Analyst	
AKL	
Date Complete	
05/01/96	
Analysis Date	
04/24/96	
Analysis Time	
10:15 AM	
Sample Point	
C-106 GRAB	

			DETECTION LEVELS in µCi/g
Am241 µCi/g	=	1.01E+00	
Relative Counting Error	=	3.4%	
NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241
Cm 243/244 µCi/g		< 8.09E-02	8.09E-02
Relative Counting Error	=	9.8%	Cm 243/244
Am 243 Tracer Recovery	=	96.4%	8.09E-02

Analyst:	AKL	Date:	05/01/96
Signature of Chemist: John Relyea	JFR	Date:	6 May 96

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: DUP4

Am 241 and Cm 243/244: LA-953-103 (A-5) LIQUID / SOLID

Type						DUP
DUP	Date Counted		APR-24-96	Am 241 AEA Frac.	(C241)	0.715
	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	0.229
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0.024
7867	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		2855
	Digest Grams of Solids/L	(Dg/L)	1.054	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		115B43	Background in cpm	(Bkg)	0.07
Matrix	Am-243 Tracer Value	(dpm/mL)	922	Am 241 cpm		28.37
SOLID	Detector Number		18	Am 243 cpm		9.09
Batch Number	Detector Efficiency	(DetEff)	0.2686	Cm 243/244 cpm		0.96
96003704				AEA Count Time	(min)	480
				Am 241 µCi/g =		1.2303E+00
Rerun				Cm 243/244 µCi/g =	<	9.7838E-02
0						
Sample Prep						
FUSION01						

Sample Number: S96T000546

Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Instrument Code: WB27809

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Prepared By: SEH

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Chemist: JFR

Analyst: AKL

Date Complete: 05/01/96

Analysis Date: 04/24/96

Analysis Time: 10:15 AM

Sample Point: C-106 GRAB

Am241 µCi/g =	1.23E+00	DETECTION LEVELS in µCi/g
Relative Counting Error =	3.4%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241 9.78E-02
Cm 243/244 µCi/g	< 9.78E-02	
Relative Counting Error =	9.6%	Cm 243/244 9.78E-02
Am 243 Tracer Recovery =	87.9%	

Analyst:	AKL	Date:	05/01/96
Signature of Chemist: John Relyea	JFR	Date:	6 May 96

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: SAM5

Am 241 and Cm 243/244: LA-953-103 (A-5) LIQUID / SOLID

						SAMPLE
Type	Date Counted		APR-24-96	Am 241 AEA Frac.	(C241)	0.706
SAMPLE	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	0.25
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0.02
7867	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		2919
Test Code	Digest Grams of Solids/L	(Dg/L)	0.654	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		115B43	Background in cpm	(Bkg)	0.07
Matrix	Am-243 Tracer Value	(dpm/mL)	922	Am 241 cpm		40.23
SOLID	Detector Number		18	Am 243 cpm		14.28
Batch Number	Detector Efficiency	(DetEff)	0.2686	Cm 243/244 cpm		1.14
96003704				AEA Count Time	(min)	480
Rerun				Am 241 µCi/g =		1.3262E+00
0				Cm 243/244 µCi/g =	<	9.5688E-02
Sample Prep						
FUSION01						
Sample Number						
S96T000555						
Instrument Code						
WB27809						
Prepared By						
SEH						
Chemist						
JFR						
Analyst						
AKL						
Date Complete						
05/01/96						
Analysis Date						
04/24/96						
Analysis Time						
10:15 AM						
Sample Point						
C-106 GRAB						

Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am241 µCi/g =	1.33E+00	
Relative Counting Error =	2.8%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		
Cm 243/244 µCi/g	< 9.57E-02	
Relative Counting Error =	8.7%	
Am 243 Tracer Recovery =	98.2%	

DETECTION LEVELS in µCi/g	
Am 241	9.57E-02
Cm 243/244	9.57E-02

Analyst:	AKL	Date:	05/01/96
Signature of Chemist: John Relyea	JFR	Date:	6 May 96

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: DUP6

Am 241 and Cm 243/244: LA-953-103 (A-5) LIQUID / SOLID

						DUP
Type	Date Counted		APR-24-96	Am 241 AEA Frac.	(C241)	0.709
DUP	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	0.248
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0.023
7867	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		3129
Task Code	Digest Grams of Solids/L	(Dg/L)	0.970	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		115B43	Background in cpm	(Bkg)	0.07
Matrix	Am-243 Tracer Value	(dpm/mL)	922	Am 241 cpm		46.92
SOLID	Detector Number		18	Am 243 cpm		16.42
Batch Number	Detector Efficiency	(DetEff)	0.2686	Cm 243/244 cpm		1.54
96003704				AEA Count Time	(min)	480
Rerun				Am 241 µCi/g =		1.2241E+00
0				Cm 243/244 µCi/g =	<	8.6323E-02
Sample Prep						
FUSION01						
Sample Number						
S96T000555						
Instrument Code						
WB27809						
Prepared By						
SEH						
Chemist						
JFR						
Analyst						
AKL						
Date Complete						
05/01/96						
Analysis Date						
04/24/96						
Analysis Time						
10:15 AM						
Sample Point						
C-106 GRAB						

Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am241 µCi/g =	1.22E+00	
Relative Counting Error =	2.6%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		
Cm 243/244 µCi/g	< 8.63E-02	
Relative Counting Error =	7.5%	
Am 243 Tracer Recovery =	104.4%	

DETECTION LEVELS in µCi/g	
Am 241	8.63E-02
Cm 243/244	8.63E-02

Analyst:	AKL	Date:	05/01/96
Signature of Chemist: John Rehyer	JFR	Date:	6 May 96

SAMPLE.WB1 REV 1.2 953103ML

WHC-SD-WM-DP-183, REV. 0

Westinghouse Hanford Company

4/24/96

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

Rev. 2.01

DATA REDUCTION REPORT

SAMPLE
WL7867-STD
File ID: 13a1352.CNF

Counted on: 4/24/96 @16:12
Detector: AEA13
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	262.9	262.9	300.544	300.544	12.000	5.787	6.000	2.192
2	289.5	289.5	254.502	254.487	10.000	4.291	5.000	1.608

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Th228	0.468	5.400	5.449	-.049	0.03	8.97	3.0	1435.7	0.647E-03
2		0.484		5.242		0.02	9.29	3.0	1055.7	0.476E-03
Totals:		0.952	<--valid peaks only-->				18.26			

DETECTOR CALIBRATION

Energy(MEV) = 4.097 + (0.0045)*Channel
Energy range (MeV): 4.097 TO 6.401
Efficiency = 0.0088 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	9208.0	100.000
Smoothed	9208.0	100.000
Composite fit	8767.3	95.214
Residuals	440.7	4.786

Analyzed by: _____
EMB

Spectrum 13a1352.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 1979.0


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Raw Data Dump for AEA Spectrum: 13a1352.CNF

1	0.	0.	0.	1.	1.	2.	2.	0.	2.	1.
11	0.	1.	1.	1.	2.	2.	1.	3.	1.	0.
21	1.	0.	2.	1.	1.	0.	2.	1.	0.	0.
31	0.	0.	0.	1.	3.	0.	0.	0.	1.	0.
41	1.	1.	0.	2.	2.	2.	1.	1.	2.	0.
51	0.	1.	1.	0.	1.	2.	1.	1.	0.	0.
61	1.	1.	0.	2.	2.	0.	1.	0.	1.	0.
71	1.	0.	2.	1.	0.	2.	1.	0.	0.	2.
81	0.	0.	0.	0.	1.	1.	3.	1.	1.	1.
91	0.	2.	1.	2.	0.	1.	3.	1.	1.	0.
101	1.	0.	0.	1.	1.	0.	0.	0.	2.	1.
111	1.	0.	2.	0.	2.	0.	0.	1.	1.	2.
121	2.	1.	2.	2.	0.	0.	1.	0.	0.	1.
131	0.	1.	0.	0.	3.	0.	1.	0.	1.	3.
141	3.	0.	0.	1.	1.	2.	1.	1.	3.	0.
151	0.	0.	2.	0.	1.	2.	3.	2.	2.	1.
161	2.	1.	2.	2.	2.	0.	1.	0.	3.	1.
171	3.	1.	0.	2.	1.	1.	0.	1.	1.	0.
181	1.	1.	1.	2.	0.	1.	4.	1.	0.	1.
191	0.	1.	0.	1.	1.	3.	2.	2.	2.	1.
201	2.	3.	2.	2.	2.	0.	5.	2.	3.	1.
211	1.	2.	3.	4.	3.	2.	4.	5.	0.	5.
221	6.	5.	10.	9.	14.	12.	18.	9.	23.	26.
231	22.	22.	26.	37.	47.	46.	43.	61.	64.	75.
241	78.	88.	110.	112.	159.	142.	166.	173.	179.	245.
251	225.	268.	291.	314.	334.	328.	245.	155.	73.	40.
261	29.	33.	21.	21.	34.	34.	34.	27.	30.	33.
271	36.	37.	24.	20.	21.	32.	36.	28.	35.	57.
281	37.	44.	42.	61.	58.	63.	71.	78.	78.	96.
291	124.	110.	186.	170.	167.	192.	206.	264.	259.	278.
301	299.	294.	220.	159.	107.	76.	45.	37.	37.	35.
311	24.	23.	9.	7.	13.	12.	6.	0.	0.	2.
321	0.	1.	1.	0.	2.	1.	0.	1.	0.	1.
331	2.	1.	0.	0.	0.	1.	0.	2.	2.	0.
341	1.	0.	0.	3.	1.	2.	1.	0.	0.	0.
351	2.	0.	1.	0.	0.	0.	0.	0.	0.	0.
361	1.	0.	4.	0.	1.	1.	0.	0.	0.	0.
371	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	1.	2.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	1.	0.	0.	0.	1.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	1.	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.	1.	0.	1.	0.	0.	0.	1.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	1.	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

SAMPLE
WL7867-BLK
File ID: 14a1455.CNF

Counted on: 4/24/96 @16:13
Detector: AEA14
Geometry number: 1
Count time: 28808. 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	219.8	219.8	255.257	255.257	10.000	5.211	5.000	1.229

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		0.948		5.241		0.02	9.81	2.9	1690.9	0.762E-03
Totals:		0.948	<--valid peaks only-->				9.81			

DETECTOR CALIBRATION
Energy(MEV) = 4.093 + (0.0045)*Channel
Energy range (MeV): 4.093 TO 6.397
Efficiency = 0.0058 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	4967.0	100.000
Smoothed	4966.3	99.986
Composite fit	4708.8	94.801
Residuals	258.2	5.199

Analyzed by: _____
EMB

Spectrum 14a1455.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 1522.6

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Raw Data Dump for AEA Spectrum: 14a1455.CNF

1	0.	0.	1.	0.	0.	1.	2.	0.	0.	0.
11	1.	2.	0.	2.	0.	0.	0.	1.	2.	0.
21	2.	3.	3.	1.	1.	0.	0.	0.	1.	1.
31	0.	0.	3.	1.	1.	0.	0.	0.	0.	0.
41	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.
51	2.	1.	1.	0.	0.	0.	0.	0.	1.	2.
61	1.	0.	0.	0.	0.	1.	1.	1.	0.	0.
71	0.	0.	0.	0.	1.	1.	0.	1.	0.	0.
81	1.	0.	0.	1.	2.	0.	1.	0.	0.	0.
91	1.	4.	0.	1.	2.	0.	0.	0.	0.	1.
101	2.	0.	1.	0.	2.	1.	0.	0.	0.	1.
111	0.	2.	0.	1.	2.	1.	1.	0.	1.	1.
121	0.	2.	0.	1.	2.	1.	4.	0.	2.	0.
131	1.	1.	1.	0.	1.	1.	1.	0.	0.	1.
141	0.	2.	0.	4.	2.	1.	0.	1.	2.	2.
151	2.	0.	1.	1.	1.	1.	1.	0.	0.	0.
161	0.	3.	3.	2.	1.	0.	1.	1.	1.	1.
171	0.	0.	1.	3.	1.	1.	1.	2.	0.	2.
181	3.	1.	2.	3.	2.	1.	2.	5.	3.	3.
191	2.	5.	8.	7.	5.	1.	4.	7.	6.	5.
201	8.	2.	7.	6.	6.	7.	17.	8.	13.	9.
211	15.	11.	12.	15.	16.	15.	19.	15.	19.	18.
221	25.	28.	27.	21.	36.	29.	36.	26.	43.	40.
231	41.	40.	43.	57.	55.	50.	72.	66.	90.	85.
241	103.	98.	105.	106.	144.	147.	154.	173.	178.	165.
251	170.	187.	215.	218.	225.	252.	234.	176.	127.	63.
261	38.	26.	19.	24.	24.	19.	17.	17.	16.	23.
271	16.	13.	14.	10.	6.	6.	10.	4.	8.	6.
281	2.	3.	2.	3.	0.	0.	2.	0.	0.	0.
291	0.	3.	1.	0.	0.	0.	3.	0.	2.	1.
301	4.	1.	1.	0.	0.	0.	2.	1.	0.	0.
311	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
331	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
341	1.	0.	0.	0.	0.	1.	1.	0.	0.	1.
351	0.	0.	1.	1.	0.	0.	1.	0.	0.	0.
361	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
371	0.	1.	0.	0.	1.	0.	0.	0.	1.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	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.	2.	0.	0.	0.	0.	0.	0.	0.	0.
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.								

Raymond 4/24/96

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
S96T546-SAM
File ID: 15a1533.CNF

Counted on: 4/24/96 @16:13
Detector: AEA15
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	20.5	20.5	373.662	373.662	14.000	4.656	7.000	1.101
2	521.2	521.2	303.500	303.499	12.000	6.623	6.000	1.704
3?	173.9	173.9	270.466	270.466	8.000	0.000	4.000	3.686
4	232.0	232.0	257.328	257.221	12.000	4.988	6.000	1.242

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm244	0.026	5.795	5.781	0.014	0.02	0.90	9.4	12.4	0.558E-05
	Cm243		5.779	5.781	-.002				17.0	0.764E-05
2	Pu238	0.650	5.487	5.465	0.022	0.03	22.87	1.9	437.5	0.197E-03
	Am241		5.479	5.465	0.014				335.1	0.151E-03
3		????		5.316			0.00	1000.		
4	Am243	0.282	5.270	5.257	0.013	0.02	9.90	3.1	137.8	0.621E-04
Totals:		0.958	<--valid peaks only-->				33.67			

DETECTOR CALIBRATION
Energy(MEV) = 4.099 + (0.0045)*Channel
Energy range (MeV): 4.099 TO 6.403
Efficiency = 0.0726 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	16878.0	100.000
Smoothed	16879.0	100.006
Composite fit	16164.8	95.775
Residuals	713.2	4.225

Analyzed by: _____
EMB

Spectrum 15a1533.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,... etc Display Max.: 3627.6

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Raw Data Dump for AEA Spectrum: 15a1533.CNF

1	0.	0.	1.	0.	1.	0.	1.	0.	2.	0.
11	4.	3.	3.	2.	2.	2.	5.	2.	2.	1.
21	3.	6.	3.	3.	2.	4.	2.	4.	2.	1.
31	0.	3.	0.	1.	0.	0.	0.	0.	1.	0.
41	1.	0.	1.	0.	0.	2.	1.	1.	0.	0.
51	1.	1.	0.	0.	1.	0.	1.	0.	1.	1.
61	1.	1.	3.	0.	0.	1.	3.	0.	2.	0.
71	1.	1.	1.	3.	0.	0.	0.	0.	1.	2.
81	1.	2.	2.	0.	0.	0.	2.	1.	0.	2.
91	1.	0.	3.	3.	1.	2.	3.	3.	2.	0.
101	0.	2.	0.	0.	1.	1.	0.	2.	0.	0.
111	1.	0.	1.	0.	1.	4.	0.	0.	0.	2.
121	2.	1.	3.	0.	2.	0.	2.	0.	1.	0.
131	1.	0.	3.	6.	2.	1.	2.	4.	2.	0.
141	2.	2.	1.	3.	2.	4.	2.	1.	2.	2.
151	2.	0.	1.	3.	2.	0.	1.	2.	2.	1.
161	1.	2.	2.	0.	1.	2.	1.	3.	3.	3.
171	2.	1.	7.	2.	3.	1.	5.	6.	4.	3.
181	2.	5.	1.	1.	3.	2.	1.	5.	2.	5.
191	4.	3.	3.	6.	5.	4.	6.	4.	9.	6.
201	8.	10.	9.	13.	7.	10.	8.	9.	8.	17.
211	11.	14.	25.	11.	19.	22.	16.	18.	24.	16.
221	24.	23.	23.	17.	22.	22.	38.	32.	29.	35.
231	45.	48.	43.	51.	53.	61.	65.	59.	65.	76.
241	89.	87.	98.	120.	129.	146.	143.	170.	159.	185.
251	201.	207.	214.	222.	211.	232.	290.	282.	266.	197.
261	145.	70.	71.	49.	74.	75.	74.	83.	81.	77.
271	103.	77.	88.	76.	70.	79.	93.	94.	117.	122.
281	112.	135.	128.	127.	129.	162.	161.	182.	210.	220.
291	239.	246.	262.	331.	346.	372.	381.	428.	464.	460.
301	468.	528.	562.	566.	558.	480.	366.	233.	137.	120.
311	110.	65.	71.	55.	38.	26.	31.	17.	14.	9.
321	6.	4.	5.	4.	5.	1.	3.	4.	5.	3.
331	1.	3.	1.	3.	2.	3.	2.	5.	2.	1.
341	3.	1.	2.	3.	0.	6.	1.	6.	5.	4.
351	6.	6.	7.	5.	8.	6.	8.	9.	2.	12.
361	9.	12.	10.	17.	10.	17.	12.	18.	16.	15.
371	19.	19.	25.	21.	21.	22.	13.	7.	3.	3.
381	1.	1.	0.	2.	1.	1.	0.	1.	0.	1.
391	0.	1.	0.	0.	0.	0.	1.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
411	0.	0.	0.	1.	2.	1.	0.	0.	0.	0.
421	0.	3.	1.	0.	0.	3.	0.	2.	2.	1.
431	2.	2.	0.	2.	1.	2.	0.	3.	2.	1.
441	4.	1.	2.	3.	2.	2.	0.	0.	1.	1.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
471	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
481	3.	1.	0.	1.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
511	1.	0.								

CMaymard 4/24/96

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
S96T546-DUP
File ID: 16a1614.CNF

Counted on: 4/24/96 @16:14
Detector: AEA16
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	21.1	21.1	364.580	364.580	18.000	11.320	9.000	3.393
2	605.8	605.8	298.778	298.778	12.000	5.887	6.000	1.330
3	223.2	223.2	252.297	252.124	12.000	4.209	6.000	1.080

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm243	0.024	5.779	5.752	0.027	0.05	0.96	9.1	97.8	0.440E-04
	Pu236		5.755	5.752	0.003				72.8	0.328E-04
2	Am241	0.715	5.479	5.456	0.023	0.03	28.37	1.7	2252.3	0.101E-02
3		0.229		5.246		0.02	9.09	3.3	678.6	0.306E-03
Totals:		0.969	<--valid peaks only-->				38.42			

DETECTOR CALIBRATION
Energy(MEV) = 4.111 + (0.0045)*Channel
Energy range (MeV): 4.111 TO 6.415
Efficiency = 0.0134 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	19035.0	100.000
Smoothed	19036.7	100.009
Composite fit	18442.6	96.888
Residuals	592.4	3.112

Analyzed by: _____
EMB

Spectrum 16a1614.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,..., etc Display Max.: 3927.9

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Raw Data Dump for AEA Spectrum: 16a1614.CNF

1	0.	0.	1.	0.	2.	0.	1.	3.	5.	3.
11	3.	3.	1.	5.	2.	5.	7.	1.	3.	0.
21	3.	5.	2.	6.	1.	2.	2.	5.	1.	2.
31	1.	1.	1.	1.	0.	2.	1.	3.	1.	1.
41	1.	3.	0.	1.	1.	0.	3.	1.	1.	2.
51	0.	0.	1.	0.	4.	2.	3.	0.	2.	1.
61	1.	0.	1.	0.	1.	1.	2.	0.	2.	0.
71	1.	1.	2.	1.	1.	3.	1.	1.	0.	1.
81	0.	3.	2.	0.	2.	0.	3.	1.	0.	0.
91	1.	5.	2.	1.	1.	0.	2.	3.	4.	0.
101	4.	0.	2.	3.	0.	0.	1.	2.	2.	2.
111	3.	1.	1.	1.	1.	1.	1.	3.	0.	1.
121	3.	2.	2.	2.	3.	2.	4.	0.	3.	1.
131	4.	1.	1.	1.	2.	5.	5.	1.	1.	1.
141	0.	2.	1.	2.	3.	1.	1.	1.	3.	2.
151	2.	0.	2.	4.	1.	0.	1.	5.	2.	2.
161	4.	3.	3.	1.	2.	4.	4.	2.	1.	4.
171	9.	0.	2.	5.	5.	4.	4.	3.	4.	7.
181	8.	4.	5.	1.	8.	6.	4.	8.	4.	3.
191	4.	6.	9.	8.	3.	7.	7.	9.	8.	14.
201	8.	7.	12.	13.	7.	11.	13.	9.	14.	17.
211	15.	24.	22.	24.	12.	19.	28.	26.	26.	32.
221	25.	39.	29.	27.	32.	45.	43.	38.	52.	60.
231	77.	66.	81.	88.	77.	77.	104.	111.	110.	104.
241	142.	130.	169.	150.	187.	184.	218.	201.	213.	230.
251	259.	291.	288.	269.	192.	178.	119.	79.	54.	58.
261	58.	46.	67.	70.	79.	91.	108.	98.	93.	126.
271	111.	119.	130.	136.	157.	148.	181.	183.	183.	193.
281	206.	227.	254.	279.	268.	297.	300.	378.	377.	408.
291	413.	443.	483.	432.	514.	550.	591.	596.	697.	640.
301	579.	440.	248.	176.	125.	111.	100.	61.	53.	56.
311	29.	29.	15.	17.	10.	6.	3.	2.	3.	0.
321	3.	2.	3.	6.	3.	2.	3.	3.	3.	4.
331	5.	5.	5.	3.	3.	4.	3.	3.	4.	3.
341	5.	2.	7.	0.	7.	4.	5.	8.	2.	2.
351	12.	6.	9.	14.	9.	15.	11.	14.	15.	30.
361	14.	24.	14.	26.	21.	22.	13.	25.	14.	29.
371	10.	6.	3.	3.	0.	1.	2.	2.	1.	1.
381	1.	0.	1.	2.	0.	0.	3.	0.	1.	0.
391	0.	0.	0.	1.	0.	0.	2.	1.	0.	0.
401	1.	0.	1.	0.	0.	0.	0.	0.	1.	0.
411	0.	0.	0.	1.	0.	1.	0.	1.	0.	0.
421	2.	0.	1.	3.	4.	0.	0.	2.	4.	2.
431	2.	1.	2.	2.	4.	1.	1.	5.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	1.	0.	0.	0.	1.	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	3.	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

SAMPLE
S96T555-SAM
File ID: 17a1706.CNF

Counted on: 4/24/96 @16:15
Detector: AEA17
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	23.3	23.3	365.326	365.326	10.000	4.362	5.000	0.876
2	931.2	931.2	297.296	297.295	12.000	5.722	6.000	1.448
3	358.3	358.3	251.498	251.333	12.000	4.317	6.000	1.149
4?	4.1	4.1	198.498	197.559	6.000	0.741	3.000	0.390

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm244	0.020	5.795	5.778	0.017	0.02	1.14	8.4	63.0	0.284E-04
	Cm243		5.779	5.778	0.001				86.4	0.389E-04
2	Pu238	0.706	5.487	5.465	0.022	0.03	40.23	1.4	3087.4	0.139E-02
	Am241		5.479	5.465	0.014				2364.8	0.107E-02
3	Am243	0.250	5.270	5.254	0.016	0.02	14.28	2.6	797.1	0.359E-03
4		????		5.006			0.08	75.1		
Totals:		0.976	<--valid peaks only-->				55.66			

DETECTOR CALIBRATION
Energy(MEV) = 4.098 + (0.0046)*Channel
Energy range (MeV): 4.098 TO 6.453
Efficiency = 0.0181 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	27376.0	100.000
Smoothed	27375.8	99.999
Composite fit	26757.1	97.739
Residuals	618.9	2.261

Analyzed by: EMB

Spectrum 17a1706.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5823.4

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Raw Data Dump for AEA Spectrum: 17a1706.CNF

1	0.	0.	0.	1.	0.	0.	1.	0.	1.	2.
11	1.	3.	0.	1.	0.	0.	2.	0.	2.	2.
21	2.	1.	1.	2.	0.	0.	0.	2.	1.	0.
31	2.	0.	2.	2.	4.	3.	2.	0.	4.	3.
41	2.	2.	0.	0.	4.	1.	1.	1.	0.	0.
51	3.	1.	1.	1.	0.	1.	2.	3.	1.	3.
61	4.	3.	4.	2.	1.	3.	2.	2.	4.	2.
71	2.	2.	0.	2.	1.	4.	3.	2.	5.	1.
81	4.	3.	4.	2.	0.	2.	1.	0.	3.	2.
91	2.	5.	0.	4.	4.	1.	3.	1.	2.	3.
101	1.	2.	2.	3.	4.	1.	5.	2.	2.	5.
111	3.	1.	1.	4.	3.	2.	1.	2.	2.	2.
121	3.	2.	5.	1.	2.	1.	1.	1.	4.	2.
131	2.	3.	1.	2.	5.	6.	4.	3.	5.	2.
141	6.	2.	3.	2.	7.	6.	5.	1.	1.	1.
151	2.	3.	2.	7.	1.	4.	2.	7.	6.	5.
161	3.	3.	4.	4.	3.	8.	4.	3.	6.	5.
171	6.	1.	3.	2.	9.	5.	6.	5.	8.	7.
181	8.	4.	6.	10.	7.	3.	10.	7.	3.	7.
191	3.	6.	5.	13.	8.	9.	13.	16.	15.	9.
201	13.	8.	5.	12.	14.	16.	10.	21.	15.	24.
211	12.	31.	27.	17.	25.	31.	31.	31.	32.	45.
221	38.	54.	47.	50.	62.	58.	63.	67.	64.	93.
231	89.	111.	105.	105.	125.	147.	132.	167.	180.	190.
241	238.	224.	284.	261.	299.	311.	326.	353.	349.	381.
251	467.	408.	429.	351.	284.	178.	97.	79.	69.	78.
261	75.	76.	70.	87.	100.	105.	79.	101.	108.	114.
271	149.	142.	146.	162.	161.	229.	202.	260.	245.	310.
281	343.	403.	389.	397.	480.	487.	542.	594.	615.	676.
291	703.	660.	774.	847.	946.	914.	1019.	1000.	1026.	799.
301	564.	319.	213.	145.	112.	85.	81.	76.	53.	28.
311	30.	20.	14.	6.	0.	0.	0.	0.	1.	3.
321	0.	1.	3.	2.	0.	1.	1.	5.	1.	0.
331	2.	7.	5.	3.	2.	6.	10.	3.	1.	5.
341	3.	8.	4.	5.	8.	7.	8.	11.	8.	8.
351	13.	12.	12.	13.	14.	20.	16.	23.	18.	18.
361	22.	19.	20.	28.	23.	23.	29.	19.	16.	7.
371	0.	0.	0.	1.	1.	0.	1.	0.	0.	0.
381	0.	0.	0.	0.	1.	1.	1.	1.	0.	0.
391	0.	0.	1.	1.	2.	2.	0.	0.	1.	2.
401	0.	2.	0.	1.	1.	1.	1.	0.	1.	4.
411	2.	3.	2.	2.	3.	3.	1.	0.	3.	3.
421	2.	4.	1.	4.	4.	2.	2.	5.	6.	3.
431	5.	5.	3.	3.	2.	5.	2.	0.	2.	1.
441	0.	0.	1.	1.	0.	0.	0.	0.	0.	1.
451	1.	0.	0.	2.	2.	0.	1.	1.	2.	0.
461	2.	0.	1.	0.	1.	1.	0.	2.	0.	1.
471	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
481	1.	3.	2.	0.	0.	0.	2.	1.	0.	0.
491	1.	0.	3.	1.	2.	1.	1.	0.	1.	0.
511	0.	0.								

UKeymond 4/24/96

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
S96T555-DUP
File ID: 18a1885.CNF

Counted on: 4/24/96 @16:15
Detector: AEA18
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	28.4	28.4	368.451	368.451	10.000	3.440	5.000	0.588
2	1064.8	1064.8	299.710	299.708	12.000	6.307	6.000	1.590
3	379.2	379.2	254.405	254.214	10.000	4.564	5.000	1.091

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm244	0.023	5.795	5.788	0.007	0.02	1.54	7.2	13.6	0.614E-05
	Cm243		5.779	5.788	-.009				18.7	0.841E-05
2	Pu238	0.709	5.487	5.471	0.016	0.03	46.92	1.3	578.8	0.261E-03
	Am241		5.479	5.471	0.008				443.3	0.200E-03
3	Am243	0.248	5.270	5.262	0.008	0.02	16.42	2.4	147.3	0.664E-04
		---					---			
Totals:		0.980	<--valid peaks only-->				64.88			

DETECTOR CALIBRATION
Energy(MEV) = 4.093 + (0.0046)*Channel
Energy range (MeV): 4.093 TO 6.448
Efficiency = 0.1126 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	31772.0	100.000
Smoothed	31773.2	100.004
Composite fit	31141.8	98.016
Residuals	630.2	1.984

Analyzed by: _____
EMB

Spectrum 18a1885.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 7582.9

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3
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Raw Data Dump for AEA Spectrum: 18a1885.CNF

1	0.	0.	1.	0.	2.	1.	0.	0.	0.	0.
11	0.	0.	0.	1.	0.	2.	0.	1.	1.	1.
21	2.	0.	1.	3.	1.	1.	2.	0.	0.	1.
31	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.
41	0.	0.	2.	2.	3.	3.	1.	2.	2.	2.
51	0.	1.	1.	2.	1.	1.	2.	0.	1.	0.
61	0.	0.	0.	1.	1.	4.	4.	0.	3.	3.
71	2.	3.	0.	2.	0.	0.	0.	2.	1.	1.
81	0.	3.	2.	3.	2.	2.	1.	1.	2.	1.
91	3.	0.	2.	0.	3.	1.	1.	7.	4.	1.
101	4.	1.	2.	2.	4.	3.	0.	1.	1.	1.
111	0.	3.	2.	3.	2.	6.	1.	1.	2.	1.
121	2.	1.	1.	3.	1.	3.	3.	3.	3.	1.
131	1.	4.	2.	3.	2.	3.	2.	1.	3.	5.
141	5.	2.	1.	3.	4.	2.	2.	0.	3.	1.
151	2.	3.	4.	5.	3.	4.	1.	1.	3.	0.
161	4.	4.	4.	4.	4.	6.	3.	1.	4.	6.
171	4.	5.	7.	2.	9.	7.	6.	4.	6.	3.
181	5.	4.	2.	8.	3.	8.	3.	5.	6.	14.
191	10.	9.	10.	8.	8.	13.	11.	17.	14.	13.
201	19.	18.	14.	20.	17.	14.	23.	22.	18.	20.
211	26.	24.	25.	27.	30.	33.	32.	32.	43.	37.
221	43.	54.	47.	57.	53.	67.	81.	68.	79.	92.
231	90.	100.	97.	119.	110.	140.	158.	168.	158.	169.
241	194.	225.	208.	241.	251.	258.	304.	310.	370.	332.
251	391.	407.	435.	445.	475.	459.	390.	259.	171.	125.
261	107.	106.	101.	110.	105.	111.	124.	137.	108.	109.
271	140.	178.	125.	191.	164.	196.	229.	236.	264.	294.
281	297.	311.	327.	425.	426.	501.	444.	542.	600.	664.
291	673.	751.	776.	851.	900.	1005.	1015.	1054.	1135.	1140.
301	1109.	1110.	775.	550.	320.	227.	161.	133.	103.	87.
311	85.	61.	40.	35.	12.	5.	5.	3.	2.	0.
321	0.	0.	2.	1.	4.	0.	3.	2.	2.	2.
331	1.	4.	4.	2.	4.	2.	1.	1.	0.	1.
341	7.	6.	0.	9.	7.	7.	9.	5.	9.	13.
351	9.	15.	8.	16.	13.	22.	18.	26.	20.	29.
361	22.	29.	24.	32.	25.	19.	26.	25.	35.	29.
371	25.	14.	5.	0.	0.	0.	0.	0.	0.	1.
381	0.	0.	0.	1.	2.	0.	0.	0.	0.	0.
391	0.	2.	0.	0.	0.	0.	1.	1.	0.	2.
401	0.	2.	2.	2.	1.	1.	1.	0.	2.	0.
411	0.	2.	1.	2.	1.	0.	0.	4.	1.	3.
421	2.	1.	3.	1.	4.	6.	6.	9.	7.	4.
431	4.	3.	8.	5.	2.	7.	3.	3.	1.	0.
441	2.	1.	1.	0.	0.	1.	0.	0.	0.	0.
451	2.	0.	0.	0.	0.	0.	1.	0.	2.	0.
461	0.	1.	1.	2.	1.	2.	0.	1.	2.	3.
471	0.	0.	1.	3.	0.	1.	1.	1.	0.	2.
481	1.	1.	0.	2.	0.	0.	0.	0.	1.	2.
491	0.	1.	1.	1.	0.	1.	0.	0.	2.	0.
511	1.	0.								

LABCORE Data Entry Template for Worklist# 7868

Analyst: AKL **Instrument:** AM01 13 **Book#** 124843

Method: LA-953-103 Rev/Mod A-5

Worklist Comment: C-106 Grab. Determine sample size using ludlum. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@AM24101	SOLID		
2	BLNK-PREP				@AM24101	SOLID		
3	SAMPLE	S96T000561	0	F	@AM24101	SOLID	96000082	C-106 GRAB
	Analytes Requested: AM24101 , AM24101E, AM24101T							
4	DUP	S96T000561	0	F	@AM24101	SOLID		
5	SAMPLE	S96T000571	0	F	@AM24101	SOLID	96000082	C-106 GRAB
	Analytes Requested: AM24101 , AM24101E, AM24101T							
6	DUP	S96T000571	0	F	@AM24101	SOLID		

Final page for worklist # 7868

C J Lewis 4/24/96
Analyst Signature **Date**

Anne E. Hogan 4/25/96
Analyst Signature **Date**

C.J. Carrier 4/26/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed RadChem Report for Worklist#: 7868

Analyst: ~~ejo~~ AKL **Instrument:** AM01 #13 **Book#** 124B43

Method: LA-953-103 Rev/Mod A-5

Worklist Comment: C-106 Grab. Determine sample size using ludlum. new

Seq	Type	Sample#	R	A	Test		Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@AM24101	AM24101	SOLID	3.83E-02	4.04E-2	105.483	% Recovery
1	STD		0		@AM24101	AM24101T	SOLID	100.	9.16E+01	91.600	% Recovery
1	STD		0		@AM24101	AM24101E	SOLID	1.0	3.71E+00	3.710	% Ct. Error
2	BLNK-PREP		0		@AM24101	AM24101	SOLID	1	<4.43E-2		uCi/g
2	BLNK-PREP		0		@AM24101	AM24101T	SOLID	100.	9.18E+01	91.800	% Recovery
2	BLNK-PREP		0		@AM24101	AM24101E	SOLID	1.0	1.00E+02	100.000	% Ct. Error
3	SAMPLE	S96T000561	0	F	@AM24101	AM24101	SOLID	N/A	4.26E-01	682.0e-004	uCi/g
3	SAMPLE	S96T000561	0	F	@AM24101	AM24101E	SOLID	N/A	3.95E+00	0.0e+000	% Ct. Error
3	SAMPLE	S96T000561	0	F	@AM24101	AM24101T	SOLID	N/A	9.29E+01	0.0e+000	% Recovery
4	DUP	S96T000561	0	F	@AM24101	AM24101	SOLID	4.26E-1	3.62E-1	16.244	RPD
4	DUP	S96T000561	0	F	@AM24101	AM24101T	SOLID	100.0	9.76E+01	97.600	% Recovery
4	DUP	S96T000561	0	F	@AM24101	AM24101E	SOLID	1.0	3.90E+00	3.900	% Ct. Error
5	SAMPLE	S96T000571	0	F	@AM24101	AM24101	SOLID	N/A	5.27E-01	439.0e-004	uCi/g
5	SAMPLE	S96T000571	0	F	@AM24101	AM24101E	SOLID	N/A	2.79E+00	0.0e+000	% Ct. Error
5	SAMPLE	S96T000571	0	F	@AM24101	AM24101T	SOLID	N/A	9.43E+01	0.0e+000	% Recovery
6	DUP	S96T000571	0	F	@AM24101	AM24101	SOLID	5.27E-1	1.55E+0	98.507	RPD
6	DUP	S96T000571	0	F	@AM24101	AM24101T	SOLID	100.0	8.66E+01	86.600	% Recovery
6	DUP	S96T000571	0	F	@AM24101	AM24101E	SOLID	1.0	2.52E+00	2.520	% Ct. Error

Final page for worklist# 7868

Analyst Signature Date

Analyst Signature Date

John Relyea 16 May 96
Reviewer Signature Date

Validated sample S96T000561
Rejected S96T000571 - to be rerun on worklist 8787 JTR 16 May 96

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

Am 241 and Cm 243/244: LA-953-103 (A-5) LIQUID

Type	Date Counted	APR-24-96	Am 241 AEA Frac. (C241)		STD 0.483
STD	Sample Volume in mL (SS)	0.100	Am 243 AEA Frac. (C243)		0.501
Work No.	Sample D.F. (DF)	101	Cm 243/244 AEA Frac. (Cm)		0
7868	Tracer Volume in mL (SPKV)	0.100	Total AT Counts		1607
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)		30
@AM24101	Tracer Book No.	115B43	Background in cpm (Bkg)		0.23
Matrix	Am-243 Tracer Value (dpm/mL)	922	Am 241 cpm		11.4
LIQUID	Detector Number	13	Am 243 cpm		11.83
Batch Number	Detector Efficiency (DetEff)	0.3163	Cm 243/244 cpm		0
96003705	Standard Book No	124B43	AEA Count Time (min)		480
Aliquot	Standard Value in µCi/mL	0.03825	Am 241 µCi/L =		4.0440E+01
0			Cm 243/244 µCi/L =	<	4.5688E+00
Sample Prep					
N/A					
Sample Number					
WL7868					
Instrument Code					
WB27810					
Prepared By					
SEH					
Chemist					
JFR					
Analyst					
AKL					
Date Complete					
04/25/96					
Analysis Date					
04/24/96					
Analysis Time					
10:15 AM					
Sample Point					
C-106 GRAB					

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am 241 µCi/mL	=	4.04E-02	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	3.7%	
NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241 4.57E-03
Cm 243/244 µCi/mL		< 4.57E-03	
Relative Counting Error	=	100.0%	Cm 243/244 4.57E-03
Am 243 Tracer Recovery	=	91.6%	

Analyst:	AKL	Date:	04/25/96
Signature of Chemist: John Relyea	JFR	Date:	30 Apr 96

STANDARD.WB1 REV 1.2 953103ML

WORKBOOK PAGE: BLANK2

Am 241 and Cm 243/244: LA-953-103 (A-5) LIQUID / SOLID

Type	Date Counted		APR-24-96	Am 241 AEA Frac.	(C241)	BLNK-PREP 0
BLNK-PREP	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	0.991
Work Mat	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0
7868	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		817
Test Code	Digest Grams of Solids/L	(Dg/L)	0.516	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		115B43	Background in cpm	(Bkg)	0.23
Matrix	Am-243 Tracer Value	(dpm/mL)	922	Am 241 cpm		0
SOLID	Detector Number		13	Am 243 cpm		14.54
Batch Number	Detector Efficiency	(DetEff)	0.3163	Cm 243/244 cpm		0
96003705				AEA Count Time	(min)	480
Rerun				Am 241 µCi/g =	<	4.4255E-02
0				Cm 243/244 µCi/g =	<	4.4255E-02
Sample Prep						
N/A						
Sample Number						
WL7868						
Instrument Code						
WB27810						
Prepared By						
SEH						
Chemist						
JFR						
Analyst						
AKL						
Date Complete						
04/25/96						
Analysis Date						
04/24/96						
Analysis Time						
10:15 AM						
Sample Point						
C-106 GRAB						

Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

NOTE: Am-241 Result is a LESS THAN Value.

Am241 µCi/g	=	< 4.43E-02	DETECTION LEVELS in µCi/g
Relative Counting Error	=	100.0%	
NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241
Cm 243/244 µCi/g		< 4.43E-02	4.43E-02
Relative Counting Error	=	100.0%	Cm 243/244
Am 243 Tracer Recovery	=	91.8%	4.43E-02

Analyst:		AKL	Date:	04/25/96
Signature of Chemist:	John Relyea	JFR	Date:	30 Apr 96

BLANK.WB1 REV 1.2 953103ML

1959

WORKBOOK PAGE: SAM3

Am 241 and Cm 243/244: LA-953-103 (A-5) LIQUID / SOLID

							SAMPLE
Type	Date Counted		APR-24-96	Am 241 AEA Frac.	(C241)		0.336
SAMPLE	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)		0.635
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)		0
7868	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts			1287
Test Code	Digest Grams of Solids/L	(Dg/L)	0.516	AT Count Time (min)	(TC)		30
@AM24101	Tracer Book No.		115B43	Background in cpm	(Bkg)		0.23
Matrix	Am-243 Tracer Value	(dpm/mL)	922	Am 241 cpm			7.85
SOLID	Detector Number		13	Am 243 cpm			14.84
Batch Number	Detector Efficiency	(DetEff)	0.3163	Cm 243/244 cpm			0
96003705				AEA Count Time	(min)		480
Rerun				Am 241 µCi/g =			4.2589E-01
0				Cm 243/244 µCi/g =		<	6.8212E-02
Sample Prep							
FUSION01							
Sample Number							
S96T000561							
Instrument Code							
WB27810							
Prepared By							
SEH							
Chemist							
JFR							
Analyst							
AKL							
Date Complete							
04/25/96							
Analysis Date							
04/24/96							
Analysis Time							
10:15 AM							
Sample Point							
C-106 GRAB							

Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am241 µCi/g =	4.26E-01	
Relative Counting Error =	3.9%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		
Cm 243/244 µCi/g	< 6.82E-02	
Relative Counting Error =	100.0%	
Am 243 Tracer Recovery =	92.9%	

DETECTION LEVELS in µCi/g	
Am 241	6.82E-02
Cm 243/244	6.82E-02

Analyst:		AKL	Date:	04/25/96
Signature of Chemist:	John Relyea	JFR	Date:	30 Apr 96

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: DUP4

Am 241 and Cm 243/244: LA-953-103 (A-5) LIQUID / SOLID

						DUP
Type	Date Counted		APR-24-96	Am 241 AEA Frac.	(C241)	0.339
DUP	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	0.636
Work Unit	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0
7868	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		1349
Test Code	Digest Grams of Solids/L	(Dg/L)	0.612	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		115B43	Background in cpm	(Bkg)	0.23
Matrix	Am-243 Tracer Value	(dpm/mL)	922	Am 241 cpm		8.05
SOLID	Detector Number		13	Am 243 cpm		15.09
Batch Number	Detector Efficiency	(DetEff)	0.3163	Cm 243/244 cpm		0
96003705				AEA Count Time	(min)	480
Replicate				Am 241 µCi/g =		3.6172E-01
0				Cm 243/244 µCi/g =	<	5.4683E-02
Sample Prep						
FUSION01						
Sample Number						
S96T000561						
Instrument Code						
WB27810						
Prepared By						
SEH						
Chemist						
JFR						
Analyst						
AKL						
Date Complete						
04/25/96						
Analysis Date						
04/24/96						
Analysis Time						
10:15 AM						
Sample Point						
C-106 GRAB						

Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am241 µCi/g	=	3.62E-01
Relative Counting Error	=	3.9%
NOTE: Cm-243/244 Result is a LESS THAN Value.		
Cm 243/244 µCi/g		< 5.47E-02
Relative Counting Error	=	100.0%
Am 243 Tracer Recovery	=	97.6%

DETECTION LEVELS in µCi/g
Am 241
5.47E-02
Cm 243/244
5.47E-02

Analyst:	AKL	Date:	04/25/96
Signature of Chemist: John Relyea	JFR	Date:	30 Apr 96

SAMPLE.WB1 REV 1.2 953103ML

CKeymond 4/24/96

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
WL7868-STD
File ID: 19a1935.CNF

Counted on: 4/24/96 @16:16
Detector: AEA19
Geometry number: 1
Count time: 28810. 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	252.4	252.4	299.447	299.447	12.000	5.303	6.000	1.233
2	280.7	280.7	253.773	253.687	12.000	4.859	6.000	1.225

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu238	0.483	5.487	5.463	0.024	0.02	11.40	2.6	1276.6	0.575E-03
	Am241		5.479	5.463	0.016				977.8	0.440E-03
2	Am243	0.501	5.270	5.253	0.017	0.02	11.83	2.7	964.0	0.434E-03
Totals:		0.984	<--valid peaks only-->				23.23			

DETECTOR CALIBRATION
Energy(MEV) = 4.086 + (0.0046)*Channel
Energy range (MeV): 4.086 TO 6.441
Efficiency = 0.0124 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	11338.0	100.000
Smoothed	11337.2	99.993
Composite fit	11155.4	98.390
Residuals	182.6	1.610

Analyzed by: EMB

Spectrum 19a1935.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 2141.0


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2
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1....................2
.1.....................................2.....
..1.......................................................................2.....
....1..................2......
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Raw Data Dump for AEA Spectrum: 19a1935.CNF

1	0.	0.	0.	0.	0.	0.	1.	1.	0.	1.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
21	1.	1.	1.	1.	0.	1.	0.	1.	0.	1.
31	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
41	1.	1.	1.	0.	0.	1.	0.	0.	0.	0.
51	0.	1.	1.	2.	1.	0.	0.	1.	2.	1.
61	0.	1.	1.	0.	0.	0.	0.	0.	2.	1.
71	0.	0.	0.	0.	0.	0.	1.	1.	2.	0.
81	1.	1.	1.	1.	0.	4.	2.	0.	2.	2.
91	1.	0.	2.	0.	0.	3.	0.	1.	0.	2.
101	0.	0.	3.	0.	1.	0.	0.	1.	1.	0.
111	0.	2.	1.	0.	0.	1.	0.	1.	1.	3.
121	1.	1.	2.	2.	2.	0.	1.	2.	1.	0.
131	3.	0.	0.	0.	0.	2.	0.	1.	0.	0.
141	2.	0.	2.	0.	1.	0.	1.	2.	1.	0.
151	1.	0.	2.	1.	2.	1.	0.	0.	3.	1.
161	0.	0.	0.	0.	1.	0.	2.	0.	0.	2.
171	1.	2.	0.	2.	1.	4.	4.	1.	2.	2.
181	0.	1.	4.	3.	2.	2.	5.	4.	3.	1.
191	5.	3.	8.	3.	4.	10.	3.	3.	5.	3.
201	9.	5.	8.	4.	9.	9.	14.	8.	12.	8.
211	16.	15.	10.	12.	18.	22.	26.	23.	24.	40.
221	26.	31.	31.	31.	37.	41.	39.	55.	57.	65.
231	53.	76.	76.	75.	76.	82.	104.	89.	116.	114.
241	149.	163.	171.	167.	192.	188.	206.	236.	256.	267.
251	269.	262.	322.	331.	307.	283.	230.	127.	79.	57.
261	38.	33.	41.	37.	42.	36.	33.	38.	38.	42.
271	37.	52.	33.	48.	53.	46.	75.	62.	74.	73.
281	71.	72.	95.	95.	118.	120.	122.	127.	163.	155.
291	195.	190.	178.	207.	200.	241.	236.	243.	245.	286.
301	274.	223.	143.	102.	34.	38.	28.	30.	29.	15.
311	20.	8.	5.	4.	0.	2.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
331	0.	1.	0.	1.	2.	0.	0.	0.	1.	0.
341	0.	0.	0.	0.	0.	1.	0.	1.	1.	0.
351	0.	1.	0.	0.	0.	0.	0.	0.	1.	1.
361	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
371	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.
381	1.	0.	1.	0.	0.	0.	0.	0.	1.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
421	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	2.	0.	0.
441	0.	1.	0.	0.	1.	1.	0.	1.	0.	0.
451	0.	0.	0.	0.	0.	0.	2.	2.	0.	2.
461	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
471	1.	0.	1.	1.	0.	0.	0.	1.	1.	3.
481	2.	1.	0.	1.	0.	0.	0.	0.	0.	0.
491	1.	0.	0.	2.	2.	2.	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

SAMPLE
WL7868-BLK
File ID: 20a2065.CNF

Counted on: 4/24/96 @16:16
Detector: AEA20
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	323.1	323.1	254.412	254.412	12.000	5.377	6.000	1.261

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.991	5.270	5.258	0.012	0.02	14.54	2.3	1688.1	0.760E-03
Totals:		0.991	<--valid peaks only-->				14.54			

DETECTOR CALIBRATION
Energy(MEV) = 4.088 + (0.0046)*Channel
Energy range (MeV): 4.088 TO 6.443
Efficiency = 0.0087 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	7044.0	100.000
Smoothed	7044.3	100.005
Composite fit	6980.6	99.100
Residuals	63.4	0.900

Analyzed by: _____
EMB

Spectrum 20a2065.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 2384.3


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1
1
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.......................................................................1...
...............................1
1...
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Raw Data Dump for AEA Spectrum: 20a2065.CNF

1	0.	0.	0.	1.	0.	0.	1.	0.	0.	1.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	1.	0.	0.	0.	1.	0.	0.	2.
41	0.	2.	1.	0.	0.	0.	1.	0.	1.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
61	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
71	0.	0.	0.	0.	0.	0.	1.	0.	2.	2.
81	0.	0.	0.	0.	0.	0.	0.	1.	0.	2.
91	0.	0.	0.	0.	1.	0.	0.	0.	1.	1.
101	1.	0.	0.	0.	0.	0.	1.	2.	1.	0.
111	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
121	0.	2.	0.	2.	1.	1.	1.	0.	0.	0.
131	2.	0.	0.	0.	0.	0.	1.	2.	0.	0.
141	0.	1.	1.	1.	0.	0.	0.	2.	1.	1.
151	0.	1.	2.	0.	2.	0.	1.	1.	0.	0.
161	0.	2.	1.	2.	1.	3.	1.	1.	2.	2.
171	1.	2.	3.	1.	0.	1.	1.	3.	2.	2.
181	4.	2.	3.	3.	1.	2.	5.	5.	4.	3.
191	2.	3.	9.	2.	4.	6.	7.	7.	5.	7.
201	13.	4.	4.	17.	7.	13.	10.	10.	16.	13.
211	18.	19.	12.	23.	20.	16.	27.	25.	38.	24.
221	37.	37.	26.	41.	41.	55.	44.	47.	66.	70.
231	69.	75.	78.	98.	88.	87.	105.	97.	114.	144.
241	138.	174.	163.	194.	223.	240.	255.	262.	266.	274.
251	309.	313.	342.	322.	331.	363.	318.	202.	122.	55.
261	34.	21.	23.	22.	21.	21.	19.	15.	14.	7.
271	6.	4.	0.	3.	2.	0.	1.	0.	1.	0.
281	0.	1.	1.	1.	0.	0.	1.	0.	2.	1.
291	0.	0.	0.	3.	1.	2.	1.	0.	0.	1.
301	1.	0.	2.	0.	0.	2.	0.	1.	1.	0.
311	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
351	1.	0.	0.	0.	0.	1.	0.	0.	0.	0.
361	0.	0.	1.	0.	2.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
401	0.	0.	0.	1.	0.	0.	1.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
421	0.	0.	0.	0.	1.	1.	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.	1.	0.	0.	0.	0.
471	0.	0.	0.	0.	1.	1.	0.	0.	1.	0.
481	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

Raymond 4/24/96

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

Rev. 2.01

DATA REDUCTION REPORT

SAMPLE
S96T561-SAM
File ID: 21a2169.CNF

Counted on: 4/24/96 @16:17
Detector: AEA21
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	157.1	157.1	298.184	298.184	18.000	10.571	9.000	2.559
2	308.3	308.3	252.766	252.674	16.000	9.458	8.000	2.344
3?	1.6	1.6	200.384	200.384	8.000	0.000	4.000	7.517

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am241	0.336	5.479	5.460	0.019	0.05	7.85	3.2	82.3	0.371E-04
	Pu238		5.487	5.460	0.027				107.5	0.484E-04
2	Am243	0.635	5.270	5.251	0.019	0.04	14.84	2.4	147.9	0.666E-04
3		????		5.010			0.00	1000.		
Totals:		0.971	<--valid peaks only-->				22.69			

DETECTOR CALIBRATION

Energy(MEV) = 4.088 + (0.0046)*Channel
Energy range (MeV): 4.088 TO 6.444
Efficiency = 0.1014 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	11214.0	100.000
Smoothed	11213.8	99.999
Composite fit	10892.6	97.134
Residuals	321.4	2.866

Analyzed by: _____
EMB

Spectrum 21a2169.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 2385.1

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2
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1.............................................2....
1.....................................................................2...
..1.............................2..
.2..1....
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Raw Data Dump for AEA Spectrum: 21a2169.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	2.	0.
21	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	3.	0.	1.	3.	0.	0.	0.	0.
41	0.	0.	0.	1.	0.	2.	0.	0.	0.	0.
51	2.	0.	1.	1.	0.	1.	0.	0.	0.	1.
61	0.	0.	0.	0.	1.	0.	0.	2.	0.	0.
71	0.	0.	0.	0.	2.	1.	0.	0.	0.	0.
81	0.	0.	2.	2.	1.	1.	1.	1.	0.	0.
91	1.	1.	0.	0.	1.	2.	1.	1.	0.	1.
101	0.	1.	1.	0.	2.	1.	0.	1.	0.	0.
111	0.	0.	0.	0.	0.	1.	0.	0.	2.	0.
121	0.	1.	3.	0.	1.	2.	2.	1.	4.	0.
131	0.	2.	1.	1.	3.	1.	0.	1.	1.	2.
141	2.	4.	0.	4.	3.	0.	0.	3.	3.	0.
151	0.	3.	1.	3.	0.	1.	2.	2.	3.	4.
161	0.	3.	1.	3.	1.	3.	2.	2.	1.	0.
171	2.	2.	2.	2.	3.	3.	3.	4.	2.	4.
181	4.	3.	4.	3.	2.	5.	1.	1.	2.	3.
191	5.	11.	6.	7.	3.	11.	12.	10.	8.	12.
201	12.	10.	7.	9.	7.	10.	18.	13.	12.	17.
211	17.	20.	18.	22.	32.	22.	25.	29.	26.	38.
221	44.	33.	43.	42.	52.	54.	56.	63.	61.	75.
231	66.	91.	101.	79.	116.	89.	127.	143.	156.	158.
241	158.	214.	192.	191.	234.	229.	289.	291.	257.	329.
251	318.	326.	340.	331.	293.	293.	228.	209.	147.	101.
261	78.	65.	42.	35.	41.	32.	29.	31.	29.	39.
271	28.	33.	35.	27.	28.	39.	29.	34.	58.	57.
281	54.	57.	53.	65.	76.	72.	84.	98.	127.	131.
291	118.	136.	144.	134.	138.	145.	174.	166.	170.	156.
301	139.	128.	97.	81.	80.	52.	29.	26.	17.	14.
311	10.	11.	10.	3.	2.	4.	1.	0.	1.	0.
321	0.	0.	0.	0.	1.	0.	0.	0.	1.	1.
331	2.	0.	0.	0.	0.	3.	2.	2.	1.	3.
341	2.	1.	1.	3.	1.	4.	5.	2.	2.	2.
351	1.	1.	1.	1.	3.	0.	1.	5.	3.	4.
361	7.	9.	3.	3.	7.	6.	7.	4.	6.	2.
371	5.	2.	2.	0.	1.	1.	1.	0.	0.	0.
381	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.
391	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
401	0.	0.	2.	0.	0.	1.	0.	1.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
421	1.	1.	2.	2.	0.	2.	0.	1.	0.	0.
431	0.	0.	1.	0.	3.	0.	1.	1.	1.	0.
441	2.	0.	0.	1.	0.	0.	0.	1.	1.	0.
451	1.	2.	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.	0.	0.	1.	0.
481	0.	0.	1.	0.	0.	0.	0.	0.	1.	0.
491	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
511	0.	0.								

UKaymond 4/24/96

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
S96T561-DUP
File ID: 22a2263.CNF

Counted on: 4/24/96 @16:17
Detector: AEA22
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	183.0	183.0	297.772	297.772	12.000	5.420	6.000	1.317
2	334.4	334.4	251.515	251.452	12.000	5.603	6.000	1.321

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu238	0.339	5.487	5.478	0.009	0.02	8.05	3.2	591.5	0.266E-03
	Am241		5.479	5.478	0.001				453.1	0.204E-03
2	Am243	0.636	5.270	5.264	0.006	0.03	15.09	2.4	806.7	0.363E-03
Totals:		0.975	<--valid peaks only-->				23.14			

DETECTOR CALIBRATION
Energy(MEV) = 4.108 + (0.0046)*Channel
Energy range (MeV): 4.108 TO 6.463
Efficiency = 0.0189 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	11395.0	100.000
Smoothed	11394.5	99.996
Composite fit	11109.3	97.492
Residuals	285.7	2.508

Analyzed by: _____
EMB

Spectrum 22a2263.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,..., etc Display Max.: 2452.8

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1.................................................2....
.1.............................................................2....
..1.........2....
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...........................1
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Raw Data Dump for AEA Spectrum: 22a2263.CNF

1	0.	0.	1.	1.	0.	0.	1.	0.	1.	2.
11	2.	0.	1.	0.	1.	0.	0.	0.	0.	1.
21	0.	0.	0.	0.	0.	2.	0.	0.	1.	0.
31	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	1.	0.	0.	0.	1.	1.	0.	1.
51	0.	1.	0.	0.	0.	0.	1.	0.	0.	0.
61	0.	0.	2.	0.	0.	4.	2.	0.	0.	0.
71	1.	1.	1.	1.	0.	3.	0.	0.	0.	0.
81	3.	0.	1.	0.	1.	1.	0.	0.	0.	0.
91	0.	1.	1.	0.	1.	2.	0.	1.	1.	3.
101	0.	1.	1.	1.	0.	1.	0.	0.	2.	2.
111	1.	0.	1.	3.	0.	1.	1.	1.	1.	1.
121	1.	1.	1.	0.	0.	1.	3.	1.	1.	1.
131	1.	1.	1.	3.	1.	0.	2.	1.	2.	0.
141	1.	0.	2.	1.	2.	4.	4.	2.	1.	0.
151	1.	2.	2.	2.	3.	2.	0.	2.	1.	5.
161	3.	1.	0.	1.	1.	4.	4.	2.	1.	0.
171	3.	4.	1.	4.	4.	2.	5.	5.	2.	4.
181	4.	3.	5.	2.	4.	2.	7.	1.	7.	6.
191	1.	10.	10.	8.	8.	10.	10.	6.	11.	11.
201	12.	8.	17.	9.	20.	16.	21.	17.	13.	21.
211	22.	28.	18.	24.	20.	37.	27.	34.	32.	43.
221	40.	41.	50.	56.	53.	49.	70.	59.	73.	79.
231	89.	96.	123.	97.	120.	123.	157.	172.	199.	203.
241	224.	188.	224.	240.	260.	277.	314.	288.	341.	370.
251	358.	358.	362.	345.	272.	163.	83.	47.	34.	29.
261	33.	31.	34.	29.	42.	30.	28.	31.	28.	31.
271	26.	53.	36.	27.	50.	40.	41.	51.	54.	75.
281	53.	75.	71.	83.	106.	88.	95.	109.	117.	123.
291	139.	124.	140.	145.	150.	186.	210.	197.	200.	183.
301	133.	67.	45.	31.	30.	21.	11.	15.	16.	8.
311	5.	3.	7.	4.	0.	0.	0.	0.	1.	0.
321	1.	1.	1.	0.	0.	0.	1.	1.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
341	2.	1.	1.	1.	4.	2.	6.	1.	2.	0.
351	4.	5.	3.	1.	3.	7.	5.	6.	3.	2.
361	5.	4.	6.	1.	6.	6.	8.	7.	7.	1.
371	0.	2.	0.	0.	0.	0.	0.	1.	0.	0.
381	0.	0.	1.	1.	0.	0.	1.	0.	0.	0.
391	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	2.	0.	1.	1.	0.	1.
411	0.	0.	0.	1.	0.	0.	0.	2.	0.	0.
421	1.	2.	1.	1.	0.	0.	0.	1.	0.	0.
431	1.	1.	0.	0.	0.	2.	2.	2.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.
471	0.	0.	1.	0.	0.	1.	2.	0.	0.	0.
481	0.	1.	0.	0.	0.	0.	0.	2.	1.	0.
491	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
511	0.	0.								

worklistrad Version 0.0 04/18/96
05/20/96 11:58

LABCORE Completed RadChem Report for Worklist#: 8787

Analyst: akl **Instrument:** AB18 **Book#** 124B 43

Method: LA-953-103 **Rev/Mod** B-0

Worklist Comment: RPD out of limits/Rerun of WL#7868/SS=0.1 ml/jfr/16May96/

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0	@AM24101	AM24101	SOLID	3.83E-02	3.97E-2	103.655	% Recovery
1	STD		0	@AM24101	AM24101T	SOLID	100.	9.53E+01	95.300	% Recovery
1	STD		0	@AM24101	AM24101E	SOLID	1.0	3.30E+00	3.300	% Ct Error
2	BLNK-PREP		0	@AM24101	AM24101	SOLID	1	<1.58E-2		uCi/g
2	BLNK-PREP		0	@AM24101	AM24101T	SOLID	100.	1.02E+02	102.000	% Recovery
2	BLNK-PREP		0	@AM24101	AM24101E	SOLID	1.0	1.00E+02	100.000	% Ct Error
3	SAMPLE	S96T000571	0 F	@AM24101	AM24101	SOLID	N/A	5.32E-01	433.0e-004	uCi/g
3	SAMPLE	S96T000571	0 F	@AM24101	AM24101E	SOLID	N/A	2.71E+00	0.0e+000	% Ct. Error
3	SAMPLE	S96T000571	0 F	@AM24101	AM24101T	SOLID	N/A	1.04E+02	0.0e+000	% Recovery
4	DUP	S96T000571	0 F	@AM24101	AM24101	SOLID	5.32E-1	1.56E+0	98.279	RPD
4	DUP	S96T000571	0 F	@AM24101	AM24101T	SOLID	100.0	9.86E+01	98.600	% Recovery
4	DUP	S96T000571	0 F	@AM24101	AM24101E	SOLID	1.0	2.52E+00	2.520	% Ct Error

Final page for worklist# 8787

Analyst Signature **Date** **Analyst Signature** **Date**

John Relyea 21 May 96
Reviewer Signature **Date**

Validated 21 May 96
Note RPD is high because sample and Duplicate are 3 times different Sample = 0.53 µCi/g
Duplicate = 1.56 µCi/g
JFR

Units shown for QC (BLK/BKG) may not reflect the actual units.

LABCORE Data Entry Template for Worklist# 8787

Analyst: AKL **Instrument:** AM01 18 **Book#** 124B43

Method: LA-953-103 Rev/Mod _____

Worklist Comment: RPD out of limits/Rerun of WL#7868/SS=0.1 ml/jfr/16May96/

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@AM24101	SOLID		
2	BLNK-PREP				@AM24101	SOLID		
3	SAMPLE	S96T000571	0	F	@AM24101	SOLID	96000082	C-106 GRAB
		Analytes Requested: AM24101 , AM24101E, AM24101T						
4	DUP	S96T000571	0	F	@AM24101	SOLID		

Final page for worklist # 8787

Alita Lewis 5/17/96
Analyst Signature **Date**

T Raymond 5-18-96
Analyst Signature **Date**

[illegible] 5/20/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

WORKBOOK PAGE: STD1

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID

						STD
Type	Date Counted		MAY-17-96	Am 241 AEA Frac.	(C241)	0.433
STD	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	0.51
Work List	Sample D.F.	(DF)	101	Cm 243/244 AEA Frac.	(Cm)	0
8787	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		1553
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)	0.2
Matrix	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm		13.57
LIQUID	Detector Number		18	Am 243 cpm		15.97
Batch Number	Detector Efficiency	(DetEff)	0.2686	Cm 243/244 cpm		0
96004795	Standard Book No		124B43	AEA Count Time	(min)	480
Rerun	Standard Value in µCi/mL		0.03825	Am 241 µCi/L =		3.9669E+01
0				Cm 243/244 µCi/L =	<	4.8048E+00

Sample Prep
N/A
Sample Number
WL8787
Instrument Code
WB27809
Prepared By
VAR
Chemist
JFR
Analyst
AKL
Date Complete
05/08/96
Analysis Date
05/17/96
Analysis Time
05:00 PM
Sample Point
C-106 GRAB

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

			DETECTION LEVELS in µCi/mL
Am 241 µCi/mL	=	3.97E-02	Am 241
Relative Counting Error	=	3.3%	4.80E-03
NOTE: Cm-243/244 Result is a LESS THAN Value.			Cm 243/244
Cm 243/244 µCi/mL		< 4.80E-03	4.80E-03
Relative Counting Error	=	100.0%	
Am 243 Tracer Recovery	=	95.3%	

Analyst:		AKL	Date:	05/08/96
Signature of Chemist:	John Relyea	JFR	Date:	21 May 96

STANDARD.WB1 REV 1.2 953103ML

WORKBOOK PAGE: BLANK2

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID / SOLID

						BLNK-PREP
Type	Date Counted		MAY-17-96	Am 241 AEA Frac.	(C241)	0
BLNK-PREP	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	0.966
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0
8787	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		884
Test Code	Digest Grams of Solids/L	(Dg/L)	1.515	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)	0.2
Matrix	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm		0
SOLID	Detector Number		18	Am 243 cpm		17.94
Batch Number	Detector Efficiency	(DetEff)	0.2686	Cm 243/244 cpm		0
96004795				AEA Count Time	(min)	480
Rerun				Am 241 µCi/g =	<	1.5807E-02
0				Cm 243/244 µCi/g =	<	1.5807E-02
Sample Prep						
N/A						
Sample Number						
WL8787						
Instrument Code						
WB27809						
Prepared By						
VAR						
Chemist						
JFR						
Analyst						
AKL						
Date Complete						
05/08/96						
Analysis Date						
05/17/96						
Analysis Time						
05:00 PM						
Sample Point						
C-106 GRAB						

Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

NOTE: Am-241 Result is a LESS THAN Value.

Am241 µCi/g	=	< 1.58E-02
Relative Counting Error	=	100.0%

NOTE: Cm-243/244 Result is a LESS THAN Value.

Cm 243/244 µCi/g		< 1.58E-02
Relative Counting Error	=	100.0%
Am 243 Tracer Recovery	=	102.5%

DETECTION LEVELS in µCi/g	
Am 241	1.58E-02
Cm 243/244	1.58E-02

Analyst:	AKL	Date:	05/08/96
Signature of Chemist: Jeffrey Relyea	JFR	Date:	21 May 96

BLANK.WB1 REV 1.2 953103ML

WORKBOOK PAGE: SAM3

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID / SOLID

							SAMPLE
Type	Date Counted		MAY-17-96	Am 241 AEA Frac.	(C241)		0.615
SAMPLE	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)		0.353
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)		0.025
8787	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts			2434
Test Code	Digest Grams of Solids/L	(Dg/L)	1.515	AT Count Time (min)	(TC)		30
@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)		0.2
Matrix	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm			29.96
SOLID	Detector Number		18	Am 243 cpm			17.19
Batch Number	Detector Efficiency	(DetEff)	0.2686	Cm 243/244 cpm			1.22
96004795				AEA Count Time	(min)		480
Rerun				Am 241 µCi/g =			5.3206E-01
1				Cm 243/244 µCi/g =		<	4.3257E-02
Sample Prep							
FUSION01							
Sample Number							
S96T000571							
Instrument Code							
WB27609							
Prepared By							
VAR							
Chemist							
JFR							
Analyst							
AKL							
Date Complete							
05/08/96							
Analysis Date							
05/17/96							
Analysis Time							
05:00 PM							
Sample Point							
C-106 GRAB							

Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am241 µCi/g =	5.32E-01	
Relative Counting Error =	2.7%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		
Cm 243/244 µCi/g	< 4.33E-02	
Relative Counting Error =	8.4%	
Am 243 Tracer Recovery =	103.6%	

DETECTION LEVELS in µCi/g
Am 241
4.33E-02
Cm 243/244
4.33E-02

Analyst:		AKL	Date:	05/08/96
Signature of Chemist:	John Relyea	JFR	Date:	21 May 96

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: DUP4

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID / SOLID

						DUP
Type	Date Counted		MAY-17-96	Am 241 AEA Frac.	(C241)	0.757
DUP	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	0.187
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0.028
8787	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		4369
Test Code	Digest Grams of Solids/L	(Dg/L)	1.202	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)	0.2
Matrix	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm		63.62
SOLID	Detector Number		18	Am 243 cpm		15.71
Batch Number	Detector Efficiency	(DetEff)	0.2686	Cm 243/244 cpm		2.35
96004795				AEA Count Time	(min)	480
Rerun				Am 241 µCi/g =		1.5575E+00
1				Cm 243/244 µCi/g =	<	1.0434E-01
Sample Prep						
FUSION01						
Sample Number						
S96T000571						
Instrument Code						
WB27809						
Prepared By						
VAR						
Chemist						
JFR						
Analyst						
AKL						
Date Complete						
05/08/96						
Analysis Date						
05/17/96						
Analysis Time						
05:00 PM						
Sample Point						
C-106 GRAB						

Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am241 µCi/g =	1.56E+00	
Relative Counting Error =	2.5%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		
Cm 243/244 µCi/g	< 1.04E-01	
Relative Counting Error =	6.3%	
Am 243 Tracer Recovery =	98.6%	

DETECTION LEVELS in µCi/g	
Am 241	1.04E-01
Cm 243/244	1.04E-01

Analyst:	AKL	Date:	05/08/96
Signature of Chemist: John Relyea	JFR	Date:	21 May 96

SAMPLE.WB1 REV 1.2 953103ML

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URaymond 5/17/96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
WL8787-STD
File ID: 23a2341.CNF

Counted on: 5/17/96 @23:39
Detector: AEA23
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	289.5	289.5	298.229	298.229	12.000	6.265	6.000	1.434
2	367.1	367.1	252.815	252.736	12.000	4.740	6.000	1.135
3	8.8	8.8	184.393	182.807	34.000	104.559	17.000	8.001

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu238	0.433	5.487	5.469	0.018	0.03	13.57	2.4	889.2	0.401E-03
	Am241		5.479	5.469	0.010				681.1	0.307E-03
2	Am243	0.510	5.270	5.260	0.010	0.02	15.97	2.3	761.1	0.343E-03
3	Np237	0.044	4.769	4.938	-.169	0.48	1.37	18.2	74.1	0.334E-04
	Pu242		4.891	4.938	-.047				64.5	0.291E-04
Totals:		0.986	<--valid peaks only-->				30.91			

DETECTOR CALIBRATION
Energy(MEV) = 4.097 + (0.0046)*Channel
Energy range (MeV): 4.097 TO 6.453
Efficiency = 0.0212 CPM/DPM

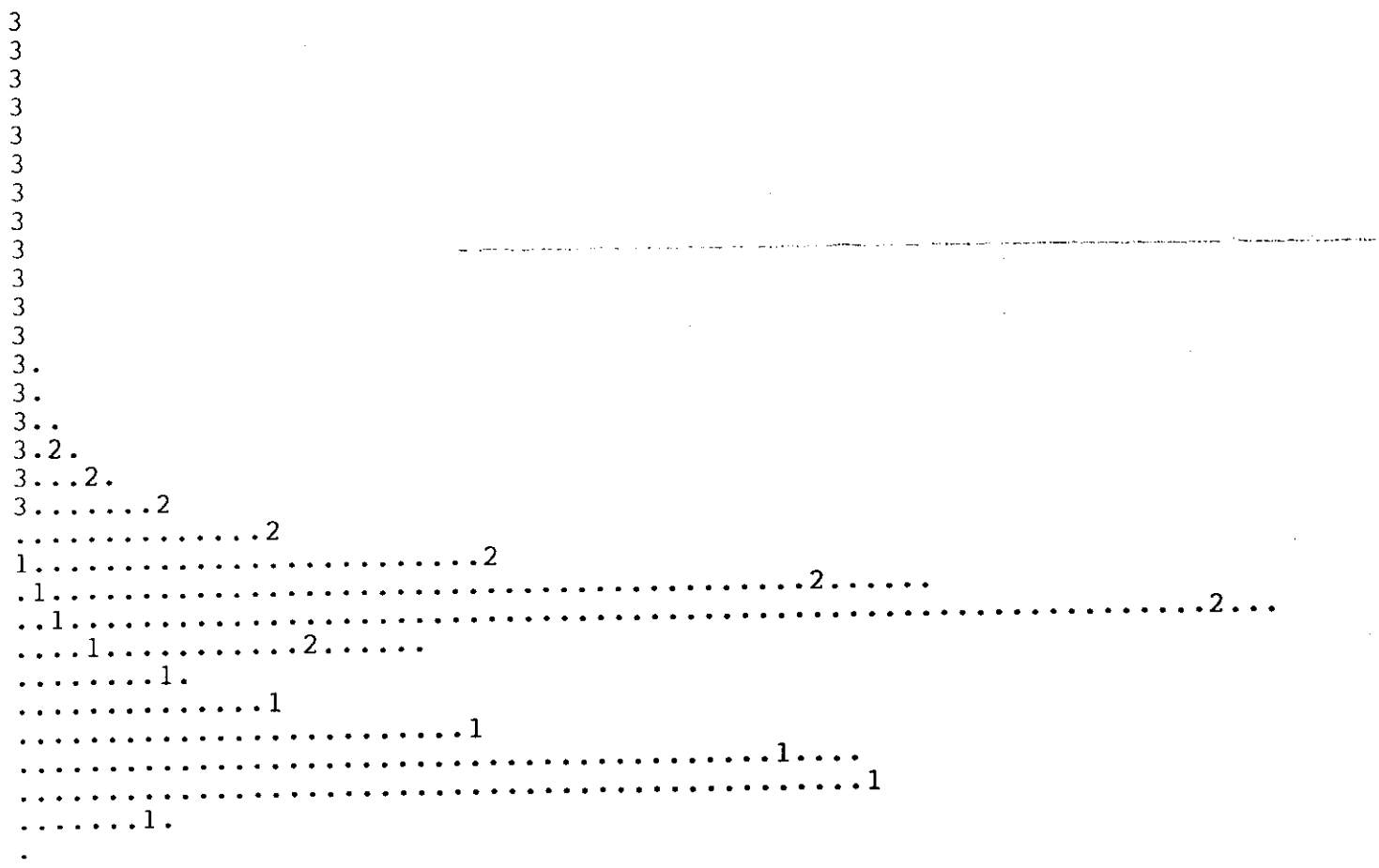
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	15047.0	100.000
Smoothed	15045.3	99.988
Composite fit	14841.1	98.631
Residuals	205.9	1.369

Analyzed by: _____
ALJ

Spectrum 23a2341.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 2733.1



Raw Data Dump for AEA Spectrum: 23a2341.CNF

1	0.	0.	0.	0.	1.	2.	2.	1.	1.	0.
11	0.	0.	1.	0.	1.	3.	0.	1.	1.	0.
21	0.	1.	0.	0.	1.	1.	1.	0.	2.	1.
31	0.	3.	0.	1.	1.	1.	2.	3.	0.	0.
41	0.	4.	0.	3.	0.	2.	1.	1.	1.	2.
51	1.	1.	1.	1.	0.	0.	1.	1.	4.	2.
61	2.	0.	2.	0.	1.	3.	1.	0.	0.	1.
71	2.	3.	0.	1.	2.	0.	0.	0.	0.	2.
81	3.	0.	1.	2.	0.	3.	1.	3.	2.	1.
91	1.	4.	0.	2.	1.	1.	2.	4.	3.	0.
101	2.	3.	1.	3.	5.	2.	3.	5.	2.	3.
111	3.	0.	7.	2.	2.	1.	3.	9.	2.	1.
121	4.	0.	1.	3.	4.	5.	7.	2.	3.	5.
131	6.	5.	5.	4.	8.	0.	1.	5.	3.	5.
141	1.	7.	4.	4.	3.	5.	5.	3.	4.	10.
151	7.	2.	3.	5.	9.	3.	5.	3.	5.	7.
161	10.	7.	2.	8.	9.	9.	5.	11.	9.	13.
171	8.	5.	12.	9.	14.	12.	8.	15.	10.	7.
181	12.	11.	13.	13.	11.	14.	11.	8.	10.	13.
191	10.	8.	11.	8.	19.	11.	21.	15.	24.	18.
201	20.	27.	30.	22.	16.	21.	30.	41.	25.	26.
211	29.	32.	36.	29.	30.	31.	33.	47.	38.	42.
221	47.	53.	54.	58.	62.	63.	77.	61.	80.	91.
231	91.	102.	102.	114.	106.	134.	139.	150.	174.	194.
241	199.	210.	230.	278.	259.	302.	293.	362.	325.	353.
251	324.	386.	449.	406.	355.	271.	190.	113.	60.	53.
261	52.	39.	39.	52.	34.	54.	44.	49.	48.	46.
271	34.	49.	61.	66.	57.	85.	86.	70.	74.	84.
281	100.	95.	127.	126.	123.	160.	168.	166.	208.	214.
291	223.	237.	258.	283.	271.	258.	299.	307.	316.	287.
301	287.	167.	114.	69.	47.	38.	33.	29.	27.	14.
311	9.	8.	5.	6.	2.	0.	0.	0.	0.	0.
321	1.	0.	0.	1.	0.	1.	0.	1.	0.	0.
331	1.	0.	0.	0.	1.	0.	2.	0.	0.	0.
341	0.	1.	0.	2.	1.	0.	0.	0.	1.	1.
351	0.	0.	0.	2.	1.	1.	0.	1.	1.	0.
361	2.	1.	0.	1.	1.	0.	1.	0.	0.	1.
371	1.	0.	1.	1.	1.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
391	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
401	1.	0.	0.	0.	0.	0.	0.	1.	1.	1.
411	0.	0.	0.	0.	1.	3.	0.	0.	0.	0.
421	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
431	0.	0.	0.	1.	0.	0.	1.	2.	1.	1.
441	0.	1.	2.	0.	0.	1.	0.	0.	1.	0.
451	0.	0.	1.	0.	1.	1.	2.	0.	1.	1.
461	1.	1.	0.	1.	0.	0.	0.	0.	0.	1.
471	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
481	1.	1.	0.	1.	0.	0.	0.	0.	0.	0.
491	0.	0.	3.	0.	0.	0.	0.	0.	0.	1.
511	1.	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. 2.02

DATA REDUCTION REPORT

SAMPLE
WL8787-BLK
File ID: 24a2444.CNF

Counted on: 5/17/96 @23:41
Detector: AEA24
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	364.4	364.4	253.445	253.445	12.000	5.738	6.000	1.200
2	4.2	4.2	184.452	183.271	16.000	1.522	8.000	0.151

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Peak Centroid Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.966	5.270	5.251	0.019	0.03	17.94	2.1	575.4	0.259E-03
2	Pu242	0.018	4.891	4.929	-.038	0.01	0.34	22.2	10.9	0.490E-05
Totals:		0.985	<--valid peaks only-->				18.29			

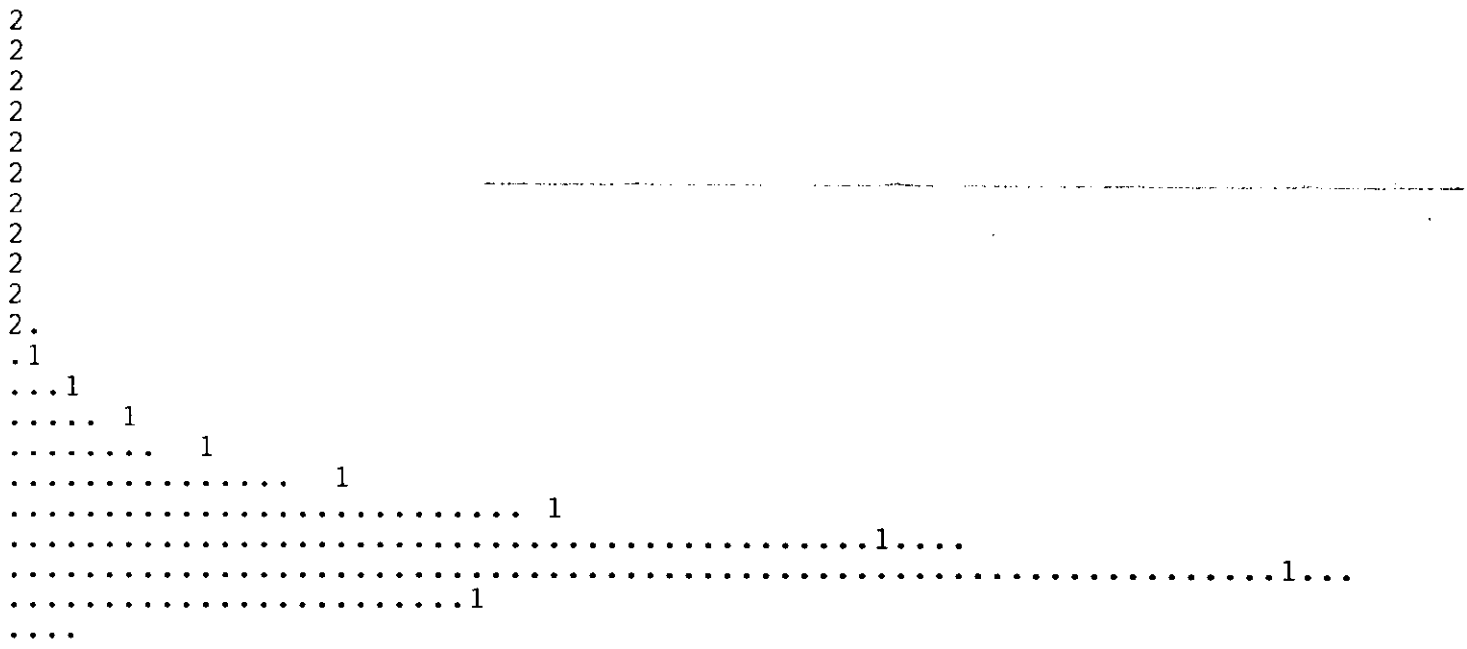
DETECTOR CALIBRATION
Energy(MEV) = 4.086 + (0.0046)*Channel
Energy range (MeV): 4.086 TO 6.441
Efficiency = 0.0315 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	8916.0	100.000
Smoothed	8915.2	99.991
Composite fit	8778.5	98.458
Residuals	137.5	1.542

Analyzed by: ALJ

Spectrum 24a2444.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 2740.2



Raw Data Dump for AEA Spectrum: 24a2444.CNF

1	0.	0.	1.	0.	0.	1.	1.	0.	0.	1.
11	1.	1.	1.	0.	1.	0.	4.	0.	0.	0.
21	0.	0.	1.	0.	1.	0.	0.	0.	1.	0.
31	2.	0.	1.	0.	1.	0.	0.	0.	0.	1.
41	1.	1.	1.	1.	2.	0.	0.	1.	0.	0.
51	1.	0.	0.	0.	1.	1.	1.	1.	0.	0.
61	1.	2.	0.	2.	1.	1.	3.	1.	1.	1.
71	0.	0.	1.	2.	1.	0.	0.	4.	0.	2.
81	0.	2.	1.	1.	2.	1.	1.	0.	2.	2.
91	0.	2.	0.	0.	2.	1.	1.	2.	0.	1.
101	1.	0.	0.	1.	2.	0.	0.	2.	0.	1.
111	1.	2.	0.	1.	2.	0.	1.	0.	3.	4.
121	0.	1.	2.	2.	1.	1.	0.	1.	2.	4.
131	5.	2.	2.	3.	3.	2.	2.	2.	1.	2.
141	0.	2.	4.	4.	4.	1.	3.	8.	3.	1.
151	6.	3.	3.	9.	1.	4.	3.	6.	1.	7.
161	2.	7.	3.	6.	4.	0.	4.	10.	4.	4.
171	4.	11.	4.	9.	7.	3.	14.	4.	11.	12.
181	9.	7.	9.	12.	13.	8.	9.	8.	9.	15.
191	9.	8.	15.	8.	8.	12.	24.	19.	17.	13.
201	18.	21.	25.	23.	21.	22.	32.	26.	21.	36.
211	23.	36.	25.	32.	27.	35.	36.	33.	36.	52.
221	44.	49.	41.	48.	65.	61.	70.	70.	79.	90.
231	96.	105.	96.	123.	125.	143.	143.	141.	184.	180.
241	191.	221.	226.	252.	270.	295.	305.	333.	335.	366.
251	346.	359.	360.	380.	408.	332.	270.	163.	78.	36.
261	29.	24.	28.	28.	32.	10.	18.	17.	18.	8.
271	9.	4.	3.	1.	1.	0.	1.	0.	0.	0.
281	0.	0.	0.	1.	1.	1.	1.	1.	0.	1.
291	0.	0.	2.	0.	1.	0.	1.	1.	0.	0.
301	1.	1.	0.	0.	0.	0.	1.	0.	0.	0.
311	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
321	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	1.	0.	0.	0.	2.	2.	0.	2.	2.
351	0.	1.	0.	1.	0.	1.	0.	2.	0.	0.
361	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	1.	1.	1.	1.	0.
411	0.	0.	0.	2.	0.	0.	1.	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.	1.	1.	0.	1.	0.	0.
451	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
471	0.	0.	0.	0.	1.	1.	0.	1.	0.	2.
481	0.	1.	0.	0.	1.	0.	0.	1.	0.	1.
491	0.	1.	0.	0.	0.	0.	1.	1.	0.	1.
511	0.	0.								

LRaymond 5/17/96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T000571-SAM
File ID: 25a2524.CNF

Counted on: 5/17/96 @23:42
Detector: AEA25
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	29.5	29.5	368.514	368.514	8.000	2.858	4.000	0.668
2	894.9	894.9	298.918	298.918	12.000	5.493	6.000	2.107
3	540.0	540.0	252.960	252.927	12.000	4.569	6.000	1.777

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm243	0.025	5.779	5.795	-.016	0.01	1.22	8.1	55.1	0.248E-04
	Cm244		5.795	5.795	0.000				40.2	0.181E-04
2	Pu238	0.615	5.487	5.475	0.012	0.03	29.96	1.6	1373.3	0.619E-03
	Am241		5.479	5.475	0.004				1051.9	0.474E-03
3	Am243	0.353	5.270	5.264	0.006	0.02	17.19	2.2	573.2	0.258E-03
		---					---			
Totals:		0.993	<--valid peaks only-->				48.37			

DETECTOR CALIBRATION
Energy(MEV) = 4.100 + (0.0046)*Channel
Energy range (MeV): 4.100 TO 6.456
Efficiency = 0.0303 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	23385.0	100.000
Smoothed	23387.1	100.009
Composite fit	23222.1	99.303
Residuals	162.9	0.697

Analyzed by: _____
ALJ

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5856.9

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2...........3..
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1
1
1
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1
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Raw Data Dump for AEA Spectrum: 25a2524.CNF

1	0.	0.	1.	0.	2.	0.	0.	1.	0.	0.
11	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
21	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
31	0.	0.	1.	1.	0.	0.	0.	0.	1.	0.
41	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
51	0.	2.	0.	0.	0.	0.	0.	0.	0.	0.
61	2.	0.	0.	1.	1.	0.	1.	1.	1.	1.
71	0.	0.	0.	1.	0.	1.	0.	0.	1.	1.
81	1.	1.	0.	0.	1.	0.	0.	0.	0.	1.
91	0.	2.	0.	0.	0.	0.	0.	0.	0.	0.
101	0.	0.	1.	0.	0.	1.	0.	3.	0.	0.
111	0.	0.	1.	1.	0.	2.	0.	1.	1.	1.
121	0.	0.	0.	2.	0.	2.	1.	1.	1.	0.
131	1.	2.	0.	1.	0.	3.	0.	0.	1.	0.
141	2.	2.	0.	0.	0.	1.	0.	0.	1.	2.
151	0.	0.	0.	1.	0.	1.	0.	0.	2.	1.
161	0.	1.	2.	0.	1.	0.	2.	1.	0.	0.
171	0.	0.	3.	3.	0.	1.	0.	2.	0.	1.
181	1.	0.	1.	0.	0.	0.	1.	0.	1.	1.
191	2.	2.	1.	0.	1.	1.	3.	1.	2.	2.
201	1.	0.	2.	2.	3.	3.	8.	3.	5.	4.
211	4.	5.	3.	5.	9.	6.	4.	10.	5.	4.
221	11.	10.	16.	20.	25.	18.	21.	34.	32.	28.
231	50.	45.	57.	73.	71.	78.	114.	119.	145.	142.
241	184.	245.	251.	275.	325.	339.	377.	367.	415.	463.
251	549.	604.	613.	609.	534.	409.	282.	108.	59.	44.
261	49.	46.	41.	37.	42.	43.	36.	29.	33.	43.
271	44.	38.	38.	57.	60.	64.	72.	78.	104.	113.
281	141.	119.	193.	176.	240.	275.	326.	382.	435.	496.
291	540.	541.	598.	659.	723.	809.	889.	977.	984.	988.
301	895.	669.	378.	226.	151.	126.	109.	103.	82.	65.
311	42.	37.	18.	14.	8.	4.	0.	1.	0.	0.
321	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
331	0.	0.	0.	1.	1.	0.	0.	0.	0.	3.
341	1.	0.	2.	6.	1.	5.	2.	3.	5.	4.
351	8.	3.	11.	17.	13.	12.	16.	15.	15.	17.
361	27.	27.	29.	25.	28.	23.	23.	29.	36.	30.
371	30.	7.	1.	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.	1.	0.
411	1.	1.	0.	0.	1.	0.	2.	0.	2.	1.
421	1.	1.	2.	2.	0.	1.	3.	3.	0.	1.
431	3.	4.	4.	5.	6.	6.	3.	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.	1.	0.	0.	0.
471	0.	0.	0.	1.	1.	1.	1.	1.	0.	0.
481	2.	0.	0.	1.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Raymond 5/17/96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T000571-DUP
File ID: 26a2625.CNF

Counted on: 5/17/96 @23:43
Detector: AEA26
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	50.4	50.4	364.747	364.747	12.000	5.431	6.000	1.216
2	1363.6	1363.6	296.709	296.708	12.000	6.586	6.000	1.538
3	341.9	341.9	250.911	250.458	14.000	4.738	7.000	1.050
4?	11.5	11.5	172.536	172.078	22.000	33.888	11.000	14.745
5?	2.0	2.0	166.440	165.764	6.000	0.000	3.000	1.868

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm244	0.028	5.795	5.790	0.005	0.02	2.35	5.8	14.6	0.656E-05
	Cm243		5.779	5.790	-.011				20.0	0.899E-05
2	Pu238	0.757	5.487	5.477	0.010	0.03	63.62	1.1	548.4	0.247E-03
	Am241		5.479	5.477	0.002				420.1	0.189E-03
3	Am243	0.187	5.270	5.264	0.006	0.02	15.71	2.6	98.5	0.444E-04
4		????		4.904			0.68	16.7		
5		????		4.875			0.00	1000.		
Totals:		0.972	<--valid peaks only-->				81.67			

DETECTOR CALIBRATION
Energy(MEV) = 4.112 + (0.0046)*Channel
Energy range (MeV): 4.112 TO 6.467
Efficiency = 0.1611 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	40323.0	100.000
Smoothed	40327.0	100.010
Composite fit	39537.5	98.052
Residuals	785.5	1.948

Analyzed by: _____
ALJ

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 9286.8

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Raw Data Dump for AEA Spectrum: 26a2625.CNF

1	0.	0.	2.	2.	3.	0.	1.	5.	0.	2.
11	1.	2.	1.	0.	4.	1.	1.	2.	5.	3.
21	3.	3.	6.	3.	2.	2.	0.	1.	3.	2.
31	4.	3.	4.	4.	4.	5.	2.	3.	3.	1.
41	1.	2.	2.	1.	3.	1.	3.	5.	0.	3.
51	3.	1.	1.	2.	3.	5.	4.	2.	2.	3.
61	4.	3.	3.	2.	2.	4.	7.	7.	3.	0.
71	2.	4.	6.	2.	2.	4.	6.	4.	4.	3.
81	4.	2.	4.	5.	3.	6.	4.	5.	5.	6.
91	2.	1.	7.	5.	3.	8.	2.	2.	2.	6.
101	3.	3.	4.	7.	5.	2.	4.	8.	3.	4.
111	3.	7.	4.	1.	1.	1.	4.	4.	5.	5.
121	2.	3.	3.	7.	7.	4.	7.	5.	6.	6.
131	5.	8.	5.	3.	7.	3.	4.	3.	8.	3.
141	6.	6.	4.	7.	6.	3.	4.	6.	5.	7.
151	4.	14.	5.	3.	7.	5.	7.	8.	6.	13.
161	14.	6.	11.	10.	10.	20.	14.	11.	11.	9.
171	11.	10.	13.	15.	8.	10.	5.	6.	16.	13.
181	11.	8.	17.	10.	14.	16.	12.	12.	10.	20.
191	16.	18.	17.	22.	22.	10.	19.	21.	19.	17.
201	27.	23.	24.	35.	25.	20.	34.	31.	29.	37.
211	33.	49.	42.	33.	45.	45.	48.	45.	65.	57.
221	62.	73.	71.	86.	93.	100.	96.	105.	91.	125.
231	130.	138.	151.	150.	159.	180.	208.	221.	218.	231.
241	271.	291.	316.	313.	338.	341.	402.	383.	423.	448.
251	429.	456.	389.	417.	257.	165.	122.	120.	98.	115.
261	143.	118.	128.	142.	159.	169.	182.	182.	202.	216.
271	234.	240.	253.	278.	349.	324.	330.	432.	430.	515.
281	508.	625.	629.	713.	727.	800.	870.	984.	1093.	1108.
291	1115.	1216.	1226.	1261.	1312.	1489.	1446.	1451.	1337.	1109.
301	700.	413.	293.	211.	202.	157.	128.	113.	75.	62.
311	47.	29.	12.	7.	3.	1.	1.	1.	0.	2.
321	0.	3.	3.	5.	2.	2.	4.	4.	2.	5.
331	8.	3.	1.	4.	4.	6.	5.	5.	14.	6.
341	6.	7.	7.	7.	17.	15.	16.	14.	22.	22.
351	33.	24.	27.	39.	32.	40.	43.	50.	42.	52.
361	46.	40.	44.	56.	53.	57.	48.	31.	38.	19.
371	5.	0.	0.	0.	0.	1.	0.	0.	0.	0.
381	0.	1.	0.	0.	1.	0.	0.	1.	0.	1.
391	0.	1.	0.	0.	1.	0.	1.	1.	0.	0.
401	0.	3.	0.	1.	0.	0.	1.	0.	1.	2.
411	1.	2.	1.	2.	3.	2.	2.	7.	3.	5.
421	5.	5.	4.	5.	4.	6.	3.	4.	3.	6.
431	3.	6.	3.	7.	3.	4.	3.	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.	1.	1.	0.	0.	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.								

LABCORE Completed RadChem Report for Worklist#: 8862

Analyst: akl **Instrument:** AB15 **Book#** 124 B43

Method: LA-953-103 Rev/Mod B-0

Worklist Comment: C-106. RUSH. Determine sample size using ludlum. new

Seq	Type	Sample#	R	A	Test		Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@AM24101	AM24101	SOLID	3.83E-02	3.87E-2	101.044	% Recovery
1	STD		0		@AM24101	AM24101T	SOLID	100.	9.68E+01	96.800	% Recovery
1	STD		0		@AM24101	AM24101E	SOLID	1.0	3.25E+00	3.250	% Ct Error
2	BLNK-PREP		0		@AM24101	AM24101	SOLID	1	<1.28E-2		uCi/g
2	BLNK-PREP		0		@AM24101	AM24101T	SOLID	100.	9.40E+01	94.000	% Recovery
2	BLNK-PREP		0		@AM24101	AM24101E	SOLID	1.0	1.00E+02	100.000	% Ct Error
3	SAMPLE	S96T001036	0	F	@AM24101	AM24101	SOLID	N/A	1.46E+00	120.0e-003	uCi/g
3	SAMPLE	S96T001036	0	F	@AM24101	AM24101E	SOLID	N/A	2.62E+00	0.0e+000	% Ct. Error
3	SAMPLE	S96T001036	0	F	@AM24101	AM24101T	SOLID	N/A	7.37E+01	0.0e+000	% Recovery
4	DUP	S96T001036	0	F	@AM24101	AM24101	SOLID	1.46E+0	1.21E+0	18.727	RPD
4	DUP	S96T001036	0	F	@AM24101	AM24101T	SOLID	100.0	7.43E+01	74.300	% Recovery
4	DUP	S96T001036	0	F	@AM24101	AM24101E	SOLID	1.0	2.57E+00	2.570	% Ct Error
5	SAMPLE	S96T001563	0	F	@AM24101	AM24101	SOLID	N/A	1.59E+00	132.0e-003	uCi/g
5	SAMPLE	S96T001563	0	F	@AM24101	AM24101E	SOLID	N/A	2.54E+00	0.0e+000	% Ct. Error
5	SAMPLE	S96T001563	0	F	@AM24101	AM24101T	SOLID	N/A	7.33E+01	0.0e+000	% Recovery
6	DUP	S96T001563	0	F	@AM24101	AM24101	SOLID	1.59E+0	1.63E+0	2.484	RPD
6	DUP	S96T001563	0	F	@AM24101	AM24101T	SOLID	100.0	7.80E+01	78.000	% Recovery
6	DUP	S96T001563	0	F	@AM24101	AM24101E	SOLID	1.0	2.55E+00	2.550	% Ct Error

Final page for worklist# 8862

Analyst Signature **Date**

Analyst Signature **Date**

John Relyea 22 May 96
Reviewer Signature **Date**

Validated. RPD for S96T001036 was high, but similar to that for the Pu Test on WL# 8858

Units shown for QC (BLK/BKG) may not reflect the actual units.

RUSH

LABCORE Data Entry Template for Worklist# 8862

Analyst: AKL **Instrument:** AM01 #15 **Book#** 124843

Method: LA-953-103 Rev/Mod _____

Worklist Comment: C-106. RUSH. Determine sample size using ludlum. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@AM24101	SOLID		
2	BLNK-PREP				@AM24101	SOLID		
3	SAMPLE	S96T001036	0	F	@AM24101	SOLID	96000174	C-106 GRAB
	Analytes Requested: AM24101 , AM24101E, AM24101T							
4	DUP	S96T001036	0	F	@AM24101	SOLID		
5	SAMPLE	S96T001563	0	F	@AM24101	SOLID	96000174	C-106 GRAB
	Analytes Requested: AM24101 , AM24101E, AM24101T							
6	DUP	S96T001563	0	F	@AM24101	SOLID		

Final page for worklist # 8862

A Lewis 5/17/96
Analyst Signature **Date**

Ann E. Hogan 5-20-96
Analyst Signature **Date**
Sharon Lilak 5-21-96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

WORKBOOK PAGE: STD1

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID

						STD
	Date Counted		MAY-19-96	Am 241 AEA Frac.	(C241)	0.461
STD	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	0.556
	Sample D.F.	(DF)	101	Cm 243/244 AEA Frac.	(Cm)	0
8862	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		1631
	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)	0.13
	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm		13.84
LIQUID	Detector Number		15	Am 243 cpm		16.69
	Detector Efficiency	(DetEff)	0.3032	Cm 243/244 cpm		0
96004873	Standard Book No		124B43	AEA Count Time	(min)	480
	Standard Value in µCi/mL		0.03825	Am 241 µCi/L =		3.8740E+01
0				Cm 243/244 µCi/L =	<	4.3388E+00

Sample Date: N/A

Sample Number: WL8862

Instrument Code: WB26872

Prepared By: SEH

Chemist: JFR

Analyst: AKL

Date Completed: 05/20/96

Analysis Date: 05/17/96

Analysis Time: 12:00 PM

Sample Point: C-106 GRAB

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am 241 µCi/mL	=	3.87E-02	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	3.3%	
NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241
Cm 243/244 µCi/mL		< 4.34E-03	4.34E-03
Relative Counting Error	=	100.0%	Cm 243/244
Am 243 Tracer Recovery	=	96.8%	4.34E-03

Analyst:		AKL	Date:	05/20/96
Signature of Chemist:	John Relyea	JFR	Date:	22 May 96

STANDARD.WB1 REV 1.2 953103ML

WORKBOOK PAGE: BLANK2

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID / SOLID

	Date Counted		MAY-19-96	Am 241 AEA Frac.	(C241)	0
BLNK-PREP	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	1.02
	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0
8862	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		865
	Digest Grams of Solids/L	(Dg/L)	1.879	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)	0.13
	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm		0
SOLID	Detector Number		15	Am 243 cpm		16.94
	Detector Efficiency	(DetEff)	0.3032	Cm 243/244 cpm		0
96004873				AEA Count Time	(min)	480
				Am 241 µCi/g =	<	1.2835E-02
0				Cm 243/244 µCi/g =	<	1.2835E-02

Sample Prep
N/A

Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]
Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100
Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Sample Number: WL8862
Instrument: WB25872
Prepared By: SEH
Chemist: JFR
Analyst: AKL
Date Completed: 05/20/96
Analysis Date: 05/17/96
Analyst Time: 12:00 PM
Sample Point: C-106 GRAB

NOTE: Am-241 Result is a LESS THAN Value.

Am241 µCi/g	=	< 1.28E-02
Relative Counting Error	=	100.0%

NOTE: Cm-243/244 Result is a LESS THAN Value.

Cm 243/244 µCi/g		< 1.28E-02
Relative Counting Error	=	100.0%
Am 243 Tracer Recovery	=	94.0%

DETECTION LEVELS in µCi/g	
Am 241	1.28E-02
Cm 243/244	1.28E-02

Analyst:		AKL	Date:	05/20/96
Signature of Chemist:	John Rolyea	JFR	Date:	22 May 96

BLANK.WB1 REV 1.2 953103ML

WORKBOOK PAGE: SAM3

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID / SOLID

							SAMPLE
	Date Counted		MAY-19-96	Am 241 AEA Frac.	(C241)		0.827
SAMPLE	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)		0.139
	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)		0.02
8862	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts			4956
	Digest Grams of Solids/L	(Dg/L)	1.579	AT Count Time (min)	(TC)		30
@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)		0.13
	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm			81
SOLID	Detector Number		15	Am 243 cpm			13.59
	Detector Efficiency	(DetEff)	0.3032	Cm 243/244 cpm			1.99
96004873				AEA Count Time	(min)		480
				Am 241 µCi/g =			1.4647E+00
0				Cm 243/244 µCi/g =		<	1.2018E-01

Sample Prep
FUSION01

Sample Number
S96T001036

Instrument Code
WB26872

Prepared By
SEH

Chemist
JFR

Analyst
AKL

Date Complete
05/20/96

Analysis Date
05/17/96

Analysis Time
12:00 PM

Sample Point
C-106 GRAB

Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am241 µCi/g	=	1.46E+00	
Relative Counting Error	=	2.6%	
NOTE: Cm-243/244 Result is a LESS THAN Value.			
Cm 243/244 µCi/g		< 1.20E-01	
Relative Counting Error	=	6.8%	
Am 243 Tracer Recovery	=	73.7%	

DETECTION LEVELS In µCi/g	
Am 241	1.20E-01
Cm 243/244	1.20E-01

Analyst:		AKL	Date:	05/20/96
Signature of Chemist:	John Rebyes	JFR	Date:	22 May 96

SAMPLE.WB1 REV 1.2 953103ML

1996

WORKBOOK PAGE: DUP4

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID / SOLID

						DUP
Type	Date Counted		MAY-19-96	Am 241 AEA Frac.	(C241)	0.808
DUP	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	0.163
Code	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0.021
8862	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		4260
Code	Digest Grams of Solids/L	(Dg/L)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)	0.13
Type	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm		72.06
SOLID	Detector Number		15	Am 243 cpm		14.55
Number	Detector Efficiency	(DetEff)	0.3032	Cm 243/244 cpm		1.87
96004873				AEA Count Time	(min)	480
Run				Am 241 µCi/g =		1.2072E+00
0				Cm 243/244 µCi/g =	<	1.0059E-01
Sample Prep						
FUSION01						

Sample Number	Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]
S96T001036	Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]
Instrument Code	
WB26872	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100
Prepared By	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV
SEH	
Chemist	
JFR	
Analyst	
AKL	
Date Complete	
05/20/96	
Analysis Date	
05/17/96	
Analysis Time	
12:00 PM	
Sample Point	
C-106 GRAB	

Am241 µCi/g	=	1.21E+00
Relative Counting Error	=	2.6%
NOTE: Cm-243/244 Result is a LESS THAN Value.		
Cm 243/244 µCi/g		< 1.01E-01
Relative Counting Error	=	6.9%
Am 243 Tracer Recovery	=	74.3%

DETECTION LEVELS in µCi/g	
Am 241	1.01E-01
Cm 243/244	1.01E-01

Analyst:	AKL	Date:	05/20/96
Signature of Chemist: John Reluzea	JFR	Date:	22 May 96

SAMPLE.WB1 REV 1.2 953103ML

1997

WORKBOOK PAGE: SAM5

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID / SOLID

Type	Date Counted		MAY-19-96	Am 241 AEA Frac.	(C241)	SAMPLE	0.824
SAMPLE	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)		0.128
Wrk List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)		0.021
8862	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts			5354
Test Code	Digest Grams of Solids/L	(Dg/L)	1.868	AT Count Time (min)	(TC)		30
AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)		0.13
Matrix	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm			92.26
SOLID	Detector Number		15	Am 243 cpm			14.38
Sample Number	Detector Efficiency	(DetEff)	0.3032	Cm 243/244 cpm			2.39
96004873				AEA Count Time	(min)		480
Rerun				Am 241 µCi/g =			1.5939E+00
0				Cm 243/244 µCi/g =		<	1.3193E-01
Sample Prep							
FUSION							
Sample Number							
S96T[illegible]33							
Instrument Code							
WB[illegible]2							
Prep[illegible]y							
SE[illegible]							
Ch[illegible]t							
J[illegible]							
A[illegible]							
A[illegible]							
Date C[illegible]ete							
05[illegible]							
Anal[illegible]							
0[illegible]							
Anal[illegible]							
12[illegible]							
Sam[illegible]							
C-1[illegible]							

Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am241 µCi/g =	1.59E+00	
Relative Counting Error =	2.5%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		
Cm 243/244 µCi/g	< 1.32E-01	
Relative Counting Error =	6.2%	
Am 243 Tracer Recovery =	73.3%	

DETECTION LEVELS in µCi/g	
Am 241	1.32E-01
Cm 243/244	1.32E-01

Analyst:	AKL	Date:	05/20/96
Signature:	JFR	Date:	22 May 96

SAMPLE: REV 1.2 953103ML

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1998

WORKBOOK PAGE: DUP6

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID / SOLID

							DUP
Type	Date Counted		MAY 19 96	Am 241 AEA Frac.	(C241)		0.836
DUP	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)		0.128
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)		0.023
8862	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts			5698
Test Code	Digest Grams of Solids/L	(Dg/L)	1.849	AT Count Time (min)	(TC)		30
AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)		0.13
Matrix	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm			92.59
SOLID	Detector Number		15	Am 243 cpm			14.21
Batch Number	Detector Efficiency	(DetEff)	0.3032	Cm 243/244 cpm			2.51
96004873				AEA Count Time	(min)		480
Rerun				Am 241 µCi/g =			1.6339E+00
0				Cm 243/244 µCi/g =		<	1.2525E-01

Sample [illegible]
FUSION 1
Sample [illegible]
S9[illegible]
[illegible]
W[illegible]
Prepared By
[illegible]
C[illegible]
[illegible]
A[illegible]
[illegible]
Date [illegible]
0 [illegible]
An[illegible]
0 [illegible]
An[illegible]
1 [illegible]
Sa[illegible]
C-1[illegible]

Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]
Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100
Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

			DETECTION LEVELS in µCi/g
Am241 µCi/g	=	1.63E+00	
Relative Counting Error	=	2.5%	
NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241
Cm 243/244 µCi/g		< 1.25E-01	1.25E-01
Relative Counting Error	=	6.1%	Cm 243/244
Am 243 Tracer Recovery	=	78.0%	1.25E-01

Analyst:		AKL	Date:	05/20/96
Signature	John Relyea	JFR	Date:	22 May 96

SAMPLE [illegible] 1.2 953103ML

BEST AVAILABLE COPY

1999

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. 2.02

DATA REDUCTION REPORT

SAMPLE
WL8862-STD
File ID: 17a.CNF

Counted on: 5/19/96 @ 2:33
Detector: AEA17
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	279.4	279.4	296.344	296.344	12.000	6.623	6.000	1.417
2	328.9	328.9	251.195	251.106	12.000	4.997	6.000	0.977

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu238	0.461	5.487	5.462	0.025	0.03	13.84	2.4	1467.3	0.661E-03
	Am241		5.479	5.462	0.017				1123.9	0.506E-03
2	Am243	0.556	5.270	5.254	0.016	0.02	16.69	2.3	1286.9	0.580E-03
Totals:		1.017	<--valid peaks only-->				30.53			

DETECTOR CALIBRATION
Energy(MEV) = 4.099 + (0.0046)*Channel
Energy range (MeV): 4.099 TO 6.454
Efficiency = 0.0131 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	14417.0	100.000
Smoothed	14416.3	99.995
Composite fit	14655.2	101.652
Residuals	-238.2	-1.652

Analyzed by: _____
ALJ

Spectrum 17a.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 2428.6

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2
2
.2
.  2
...  2
......  2
.........    2
1...................  2
1...............................2...
..1.................................................2........
....1.............................................................2.......
.......1.2........
............1
....................1
..............................1
.............................................1...
.......................................1
...1...
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Raw Data Dump for AEA Spectrum: 17a.CNF

1	0.	0.	1.	0.	0.	1.	1.	2.	1.	0.
11	1.	0.	0.	0.	1.	2.	1.	0.	1.	2.
21	0.	0.	0.	1.	0.	1.	0.	1.	1.	0.
31	0.	0.	0.	1.	0.	1.	1.	0.	3.	0.
41	1.	0.	0.	0.	0.	1.	1.	2.	0.	0.
51	0.	1.	1.	0.	2.	0.	0.	0.	0.	0.
61	0.	0.	0.	1.	3.	2.	2.	0.	1.	1.
71	1.	0.	0.	1.	0.	1.	0.	2.	0.	1.
81	1.	2.	0.	0.	1.	1.	2.	0.	1.	0.
91	3.	2.	1.	1.	0.	0.	0.	1.	1.	0.
101	0.	0.	2.	1.	1.	3.	2.	0.	1.	1.
111	2.	0.	0.	1.	1.	1.	0.	1.	1.	0.
121	1.	1.	4.	0.	2.	0.	0.	3.	3.	1.
131	1.	1.	1.	3.	2.	1.	1.	4.	1.	0.
141	4.	2.	2.	2.	3.	5.	2.	3.	3.	1.
151	4.	2.	6.	4.	1.	0.	0.	5.	2.	0.
161	3.	3.	2.	2.	2.	4.	4.	7.	4.	6.
171	1.	2.	2.	4.	2.	5.	5.	2.	5.	6.
181	5.	3.	8.	4.	7.	4.	8.	7.	7.	5.
191	5.	13.	10.	8.	8.	11.	8.	8.	8.	7.
201	9.	16.	10.	22.	10.	21.	14.	21.	25.	21.
211	24.	32.	19.	36.	29.	42.	41.	42.	39.	44.
221	48.	58.	57.	63.	81.	62.	83.	84.	89.	116.
231	115.	102.	140.	134.	171.	165.	167.	212.	216.	226.
241	224.	255.	276.	279.	274.	323.	293.	321.	333.	374.
251	378.	342.	396.	311.	221.	124.	85.	41.	42.	41.
261	49.	40.	47.	53.	40.	55.	67.	56.	52.	55.
271	57.	62.	61.	79.	74.	89.	97.	109.	116.	117.
281	120.	121.	139.	130.	159.	154.	189.	218.	208.	236.
291	263.	236.	270.	258.	282.	289.	306.	287.	251.	214.
301	141.	60.	52.	40.	40.	27.	19.	18.	17.	8.
311	6.	6.	0.	0.	1.	0.	0.	0.	0.	0.
321	0.	1.	0.	0.	1.	2.	0.	0.	1.	1.
331	0.	0.	0.	1.	0.	1.	0.	2.	1.	0.
341	0.	0.	2.	4.	3.	0.	0.	1.	0.	1.
351	0.	0.	0.	0.	0.	0.	0.	0.	3.	0.
361	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
401	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.
411	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.
421	0.	0.	0.	1.	1.	0.	0.	0.	1.	2.
431	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
441	0.	0.	1.	0.	0.	0.	1.	0.	0.	0.
451	0.	2.	0.	1.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
471	0.	0.	1.	0.	1.	0.	0.	1.	1.	0.
481	0.	0.	0.	0.	2.	0.	0.	0.	0.	0.
491	1.	0.	0.	2.	0.	0.	1.	0.	0.	0.
511	0.	0.								

C A Raymond 5/19/96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
WL8862-BLK
File ID: 18a1829.CNF

Counted on: 5/19/96 @ 2:34
Detector: AEA18
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	319.4	319.4	253.257	253.257	12.000	6.295	6.000	1.208

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	1.020	5.270	5.252	0.018	0.03	16.94	2.2	842.8	0.380E-03
Totals:		1.020	<--valid peaks only-->				16.94			

DETECTOR CALIBRATION
Energy(MEV) = 4.088 + (0.0046)*Channel
Energy range (MeV): 4.088 TO 6.443
Efficiency = 0.0203 CPM/DPM

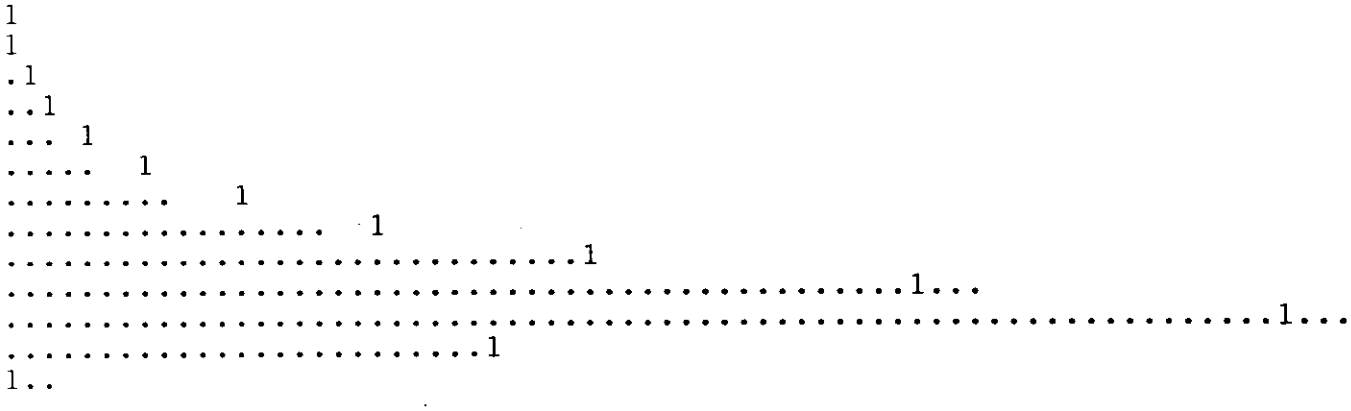
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	7972.0	100.000
Smoothed	7971.8	99.997
Composite fit	8132.1	102.008
Residuals	-160.1	-2.008

Analyzed by: ALJ

Spectrum 18a1829.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,..., etc Display Max.: 2429.1



Raw Data Dump for AEA Spectrum: 18a1829.CNF

1	0.	0.	0.	0.	1.	0.	0.	0.	1.	0.
11	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
21	1.	0.	0.	0.	0.	1.	0.	1.	1.	0.
31	0.	0.	0.	1.	1.	0.	1.	1.	0.	0.
41	0.	1.	1.	0.	1.	0.	0.	0.	0.	2.
51	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
61	0.	0.	0.	0.	0.	0.	0.	2.	1.	2.
71	2.	2.	1.	0.	0.	0.	0.	1.	0.	1.
81	1.	0.	1.	0.	0.	1.	2.	0.	0.	0.
91	0.	0.	1.	0.	0.	1.	0.	0.	1.	1.
101	1.	2.	0.	0.	4.	0.	0.	0.	1.	0.
111	1.	2.	1.	1.	0.	1.	0.	0.	2.	2.
121	0.	3.	2.	1.	2.	0.	3.	3.	4.	4.
131	1.	3.	1.	2.	2.	2.	5.	2.	2.	2.
141	1.	2.	1.	0.	0.	1.	2.	1.	2.	3.
151	2.	3.	4.	3.	0.	1.	4.	2.	2.	2.
161	2.	1.	1.	3.	2.	2.	6.	2.	3.	3.
171	3.	3.	6.	8.	4.	4.	8.	5.	5.	5.
181	4.	6.	6.	3.	9.	9.	10.	6.	8.	9.
191	5.	6.	5.	8.	13.	13.	11.	10.	12.	11.
201	16.	11.	11.	18.	13.	16.	17.	18.	16.	31.
211	27.	26.	24.	23.	30.	26.	37.	29.	38.	39.
221	45.	52.	50.	49.	58.	67.	61.	75.	81.	73.
231	107.	109.	121.	95.	121.	140.	142.	164.	150.	181.
241	185.	192.	218.	232.	242.	264.	284.	257.	284.	332.
251	312.	343.	307.	337.	327.	318.	247.	150.	77.	39.
261	22.	24.	20.	18.	12.	12.	12.	8.	12.	12.
271	6.	4.	2.	1.	1.	0.	0.	0.	0.	2.
281	0.	1.	0.	0.	0.	0.	1.	0.	0.	4.
291	0.	1.	0.	0.	2.	1.	0.	1.	3.	2.
301	0.	1.	3.	0.	0.	0.	0.	0.	0.	1.
311	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
331	1.	0.	0.	0.	1.	0.	0.	1.	2.	1.
341	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
351	1.	0.	0.	0.	3.	0.	0.	0.	0.	1.
361	2.	1.	0.	1.	1.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	1.	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.	1.	0.	0.	0.
421	0.	1.	1.	0.	0.	0.	1.	0.	0.	0.
431	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.
441	1.	1.	0.	1.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
471	0.	0.	0.	0.	0.	2.	1.	1.	1.	0.
481	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	1.	0.	1.	1.	0.	0.	2.	1.	0.	0.
511	0.	0.								

CA Raymond 5/19/96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T001036-SAM
File ID: 19a1981.CNF

Counted on: 5/19/96 @ 2:35
Detector: AEA19
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	38.8	38.8	365.453	365.453	14.000	8.422	7.000	1.823
2	1492.9	1492.9	298.908	298.907	14.000	6.329	7.000	1.178
3	250.3	250.3	254.047	253.235	12.000	3.465	6.000	0.588
4?	5.0	5.0	172.399	171.739	10.000	2.631	5.000	0.321

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.020	5.755	5.772	-.017	0.04	1.99	6.3	12.7	0.572E-05
	Cm243		5.779	5.772	0.007				17.1	0.768E-05
2	Pu238	0.827	5.487	5.466	0.021	0.03	81.00	1.0	704.9	0.318E-03
	Am241		5.479	5.466	0.013				539.9	0.243E-03
3	Am243	0.139	5.270	5.256	0.014	0.02	13.59	3.2	86.0	0.388E-04
4		????		4.881			0.35	24.7		
Totals:		0.986	<--valid peaks only-->				96.58			

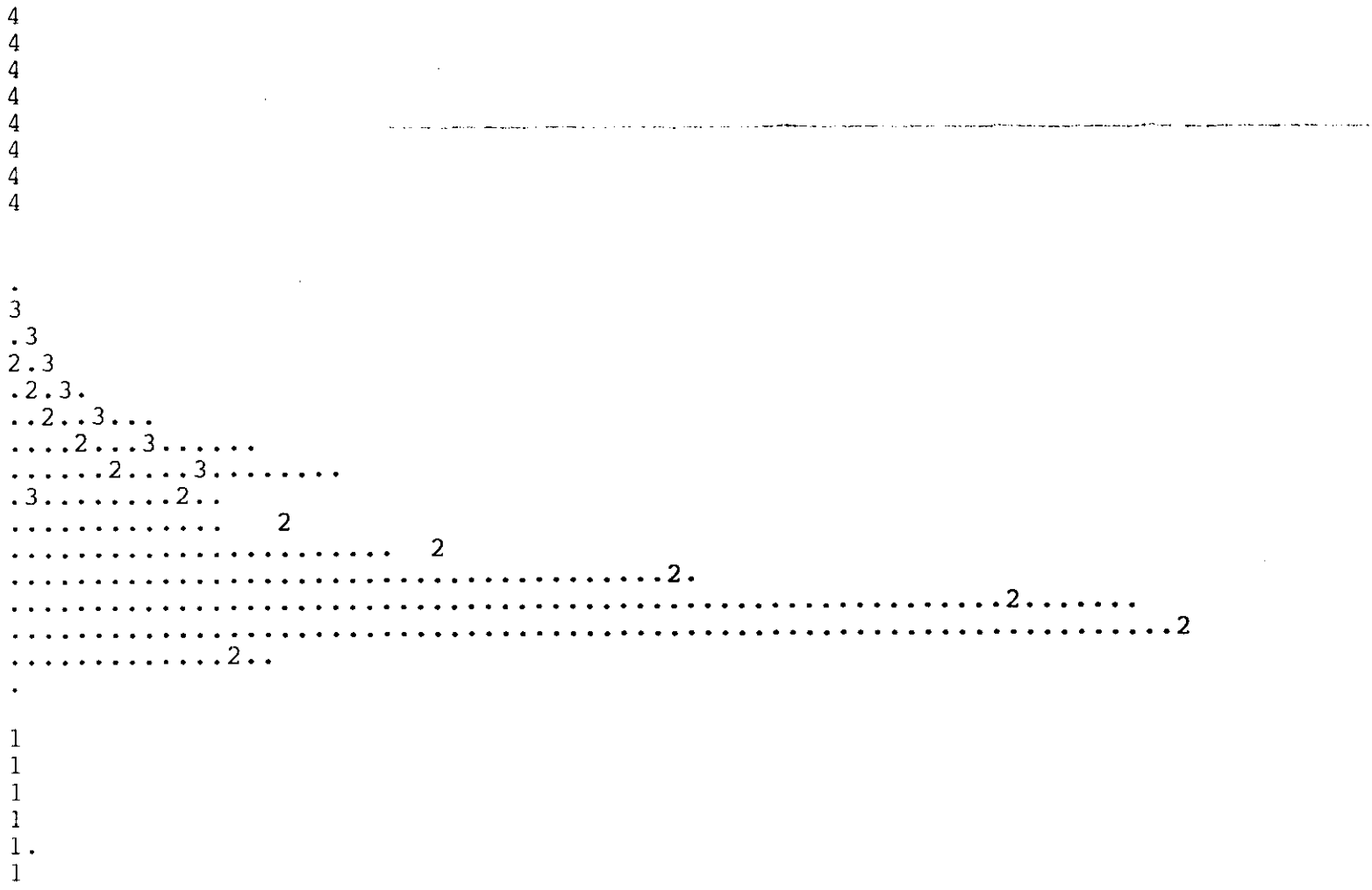
DETECTOR CALIBRATION
Energy(MEV) = 4.091 + (0.0046)*Channel
Energy range (MeV): 4.091 TO 6.446
Efficiency = 0.1596 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	47013.0	100.000
Smoothed	47013.8	100.002
Composite fit	46534.6	98.982
Residuals	478.4	1.018

Analyzed by: ALJ

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 10248.2



Raw Data Dump for AEA Spectrum: 19a1981.CNF

1	0.	0.	2.	2.	3.	3.	7.	1.	1.	1.
11	2.	1.	0.	0.	0.	2.	0.	1.	2.	3.
21	1.	4.	2.	2.	6.	3.	3.	2.	2.	2.
31	5.	1.	2.	6.	3.	1.	4.	1.	2.	3.
41	1.	2.	2.	2.	2.	1.	0.	5.	3.	4.
51	5.	2.	11.	3.	0.	5.	3.	6.	5.	3.
61	3.	3.	2.	4.	3.	5.	2.	5.	5.	7.
71	4.	4.	2.	7.	5.	4.	1.	7.	7.	5.
81	3.	3.	3.	4.	4.	5.	4.	5.	4.	3.
91	6.	1.	7.	3.	1.	0.	5.	4.	3.	6.
101	5.	5.	2.	6.	9.	4.	5.	3.	5.	5.
111	4.	6.	2.	3.	1.	6.	4.	1.	3.	4.
121	3.	4.	5.	1.	3.	6.	6.	2.	4.	5.
131	3.	5.	4.	6.	5.	4.	9.	2.	3.	7.
141	5.	4.	5.	11.	8.	3.	1.	5.	8.	3.
151	4.	8.	7.	5.	7.	8.	10.	7.	11.	6.
161	4.	11.	13.	11.	6.	5.	7.	7.	10.	11.
171	16.	14.	14.	14.	8.	13.	6.	14.	13.	12.
181	16.	19.	15.	12.	12.	20.	11.	12.	14.	16.
191	15.	22.	21.	19.	22.	27.	18.	18.	18.	20.
201	19.	26.	28.	34.	24.	29.	23.	40.	37.	40.
211	35.	46.	45.	42.	56.	51.	49.	50.	57.	69.
221	68.	54.	75.	76.	71.	93.	87.	110.	129.	107.
231	127.	132.	150.	174.	156.	149.	174.	196.	213.	231.
241	250.	266.	282.	280.	322.	306.	331.	350.	336.	384.
251	379.	389.	425.	395.	465.	393.	363.	259.	187.	172.
261	162.	167.	178.	180.	192.	219.	210.	232.	256.	296.
271	306.	301.	359.	368.	406.	435.	457.	510.	529.	587.
281	607.	632.	713.	740.	866.	917.	992.	1030.	1068.	1157.
291	1290.	1306.	1259.	1372.	1426.	1477.	1427.	1539.	1527.	1611.
301	1519.	1345.	811.	493.	298.	203.	169.	168.	138.	110.
311	77.	54.	34.	23.	17.	3.	3.	2.	0.	3.
321	1.	0.	3.	2.	1.	1.	0.	3.	4.	5.
331	6.	1.	8.	5.	6.	10.	8.	10.	8.	4.
341	8.	11.	6.	10.	15.	12.	9.	17.	14.	17.
351	13.	25.	18.	25.	19.	31.	29.	37.	37.	38.
361	32.	46.	35.	35.	40.	43.	39.	33.	32.	38.
371	31.	9.	5.	0.	0.	1.	1.	0.	0.	1.
381	1.	2.	3.	0.	1.	2.	0.	0.	1.	1.
391	4.	0.	1.	0.	2.	0.	1.	2.	0.	5.
401	1.	1.	1.	1.	1.	2.	4.	1.	1.	4.
411	1.	2.	4.	2.	1.	3.	7.	5.	2.	6.
421	6.	8.	8.	4.	10.	3.	10.	8.	4.	3.
431	3.	4.	6.	5.	7.	6.	3.	3.	0.	1.
441	0.	3.	0.	2.	1.	1.	2.	1.	2.	2.
451	0.	1.	2.	0.	0.	1.	3.	2.	1.	1.
461	1.	1.	1.	1.	1.	1.	0.	1.	1.	0.
471	1.	1.	2.	4.	1.	2.	0.	2.	4.	0.
481	2.	1.	1.	1.	2.	0.	1.	0.	0.	0.
491	0.	1.	2.	1.	2.	0.	1.	2.	1.	4.
511	3.	0.								

Raymond 5/19/96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T001036-DUP
File ID: 20a2012.CNF

Counted on: 5/19/96 @ 2:36
Detector: AEA20
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	33.8	33.8	365.238	365.238	16.000	10.734	8.000	2.203
2	1326.3	1326.3	299.628	299.626	14.000	7.012	7.000	1.330
3	284.8	284.8	254.540	254.034	12.000	3.559	6.000	0.655
4?	3.2	3.2	177.279	175.240	8.000	1.771	4.000	0.337

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm243	0.021	5.779	5.772	0.007	0.05	1.87	6.5	79.4	0.357E-04
	Pu236		5.755	5.772	-.017				59.1	0.266E-04
2	Pu238	0.808	5.487	5.470	0.017	0.03	72.06	1.1	3098.3	0.140E-02
	Am241		5.479	5.470	0.009				2373.2	0.107E-02
3	Am243	0.163	5.270	5.260	0.010	0.02	14.55	3.0	454.9	0.205E-03
4		????		4.898			0.15	47.3		
Totals:		0.992	<--valid peaks only-->				88.47			

DETECTOR CALIBRATION
Energy(MEV) = 4.091 + (0.0046)*Channel
Energy range (MeV): 4.091 TO 6.447
Efficiency = 0.0323 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	42797.0	100.000
Smoothed	42795.3	99.996
Composite fit	42540.6	99.401
Residuals	256.4	0.599

Analyzed by: _____
ALJ

1 Legend: Raw = ... Modeled Peaks = 1,2,... etc Display Max.: 9601.6

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Raw Data Dump for AEA Spectrum: 20a2012.CNF

1	0.	0.	1.	2.	0.	1.	3.	0.	2.	0.
11	1.	2.	1.	3.	2.	2.	2.	1.	4.	0.
21	1.	1.	0.	1.	2.	4.	3.	2.	4.	1.
31	2.	1.	3.	3.	0.	0.	6.	2.	2.	1.
41	0.	3.	4.	0.	4.	3.	1.	1.	3.	1.
51	3.	2.	5.	1.	3.	2.	4.	0.	2.	2.
61	2.	3.	3.	0.	2.	3.	4.	2.	1.	5.
71	4.	5.	5.	0.	1.	2.	4.	2.	6.	2.
81	3.	3.	2.	3.	4.	1.	2.	1.	3.	4.
91	6.	4.	2.	1.	2.	1.	5.	1.	6.	5.
101	5.	2.	5.	2.	3.	3.	0.	4.	5.	2.
111	0.	5.	2.	5.	0.	5.	3.	5.	3.	2.
121	3.	2.	1.	0.	2.	2.	1.	1.	4.	6.
131	2.	1.	3.	3.	4.	4.	1.	3.	2.	5.
141	3.	6.	6.	4.	2.	4.	2.	3.	5.	5.
151	2.	6.	5.	7.	4.	5.	8.	5.	5.	2.
161	8.	8.	6.	11.	5.	4.	8.	5.	6.	5.
171	5.	10.	10.	13.	7.	13.	12.	10.	10.	12.
181	6.	7.	7.	15.	3.	6.	16.	10.	17.	11.
191	13.	15.	20.	21.	10.	14.	17.	14.	27.	20.
201	15.	21.	23.	24.	28.	22.	22.	32.	24.	28.
211	29.	31.	40.	43.	33.	37.	57.	46.	67.	61.
221	62.	60.	76.	69.	73.	88.	81.	101.	91.	105.
231	109.	158.	124.	158.	150.	171.	169.	197.	227.	189.
241	219.	238.	276.	253.	306.	315.	320.	323.	374.	367.
251	363.	383.	409.	444.	435.	450.	376.	322.	238.	173.
261	144.	148.	155.	152.	181.	174.	198.	233.	228.	226.
271	272.	295.	318.	339.	335.	378.	356.	448.	447.	494.
281	526.	593.	589.	662.	662.	755.	765.	822.	918.	950.
291	1024.	1084.	1095.	1128.	1141.	1217.	1350.	1335.	1326.	1389.
301	1412.	1331.	1048.	766.	473.	313.	212.	171.	133.	144.
311	96.	65.	30.	25.	17.	19.	5.	2.	0.	0.
321	0.	5.	1.	0.	1.	5.	3.	1.	5.	4.
331	8.	6.	6.	2.	9.	4.	2.	8.	10.	4.
341	8.	7.	9.	15.	12.	11.	13.	13.	13.	15.
351	29.	15.	31.	19.	19.	29.	22.	21.	32.	33.
361	32.	31.	30.	36.	27.	41.	35.	22.	29.	26.
371	28.	21.	13.	4.	2.	2.	0.	0.	0.	2.
381	2.	0.	0.	0.	0.	3.	1.	1.	0.	2.
391	2.	1.	2.	1.	1.	1.	3.	3.	0.	1.
401	0.	0.	1.	2.	3.	2.	2.	3.	2.	5.
411	3.	3.	3.	2.	5.	4.	5.	4.	6.	2.
421	3.	1.	3.	3.	4.	3.	6.	6.	10.	8.
431	5.	6.	4.	6.	4.	4.	3.	1.	4.	2.
441	2.	0.	1.	0.	2.	1.	3.	2.	1.	1.
451	1.	0.	2.	1.	0.	0.	3.	1.	3.	1.
461	0.	2.	0.	1.	3.	3.	1.	0.	0.	1.
471	2.	3.	2.	2.	2.	2.	2.	6.	1.	3.
481	0.	0.	2.	2.	0.	1.	3.	0.	1.	1.
491	0.	0.	1.	1.	2.	3.	1.	2.	1.	1.
511	1.	0.								

CRaymond 5/19/96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T001563-SAM
File ID: 21a2118.CNF

Counted on: 5/19/96 @ 2:36
Detector: AEA21
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	44.4	44.4	361.225	361.225	22.000	16.349	11.000	4.194
2	1633.2	1633.2	296.115	296.113	18.000	12.575	9.000	2.624
3	280.6	280.6	251.333	250.403	14.000	7.459	7.000	1.560

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm243	0.021	5.779	5.747	0.032	0.08	2.39	5.8	20.1	0.906E-05
	Pu236		5.755	5.747	0.008				15.0	0.675E-05
2	Am241	0.824	5.479	5.448	0.031	0.06	92.26	0.9	603.6	0.272E-03
	Pu238		5.487	5.448	0.039				788.0	0.355E-03
3	Am243	0.128	5.270	5.237	0.033	0.03	14.38	3.2	89.4	0.403E-04
Totals:		0.974	<--valid peaks only-->				109.03			

DETECTOR CALIBRATION
Energy(MEV) = 4.085 + (0.0046)*Channel
Energy range (MeV): 4.085 TO 6.441
Efficiency = 0.1626 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	53750.0	100.000
Smoothed	53745.3	99.991
Composite fit	52344.2	97.384
Residuals	1405.8	2.616

Analyzed by: _____
ALJ

Spectrum 21a2118.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 11772.4

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Raw Data Dump for AEA Spectrum: 21a2118.CN

1	0.	0.	0.	1.	0.	4.	3.	0.	1.	2.
11	3.	1.	1.	2.	2.	3.	2.	0.	2.	2.
21	2.	2.	5.	2.	3.	5.	6.	4.	5.	2.
31	2.	3.	4.	0.	2.	3.	2.	5.	4.	7.
41	2.	4.	3.	3.	3.	4.	1.	[illegible]	4.	4.
51	3.	3.	3.	1.	3.	2.	2.	[illegible]	1.	3.
61	1.	1.	6.	1.	3.	4.	4.	4.	6.	7.
71	3.	1.	2.	3.	1.	3.	4.	3.	5.	1.
81	2.	4.	2.	2.	2.	5.	1.	3.	3.	3.
91	4.	2.	4.	3.	6.	2.	4.	5.	5.	3.
101	2.	1.	2.	8.	1.	3.	1.	8.	0.	4.
111	3.	5.	7.	2.	3.	2.	3.	4.	2.	11.
121	2.	3.	7.	6.	2.	4.	1.	9.	3.	8.
131	2.	5.	9.	10.	3.	8.	8.	2.	5.	5.
141	10.	8.	9.	10.	5.	4.	8.	4.	11.	5.
151	7.	10.	9.	5.	4.	4.	5.	14.	9.	7.
161	12.	9.	7.	8.	6.	7.	12.	10.	11.	8.
171	6.	10.	11.	6.	17.	4.	13.	8.	14.	11.
181	20.	13.	18.	13.	8.	16.	14.	14.	21.	18.
191	13.	18.	26.	17.	23.	17.	25.	26.	26.	34.
201	36.	29.	36.	36.	31.	29.	27.	39.	53.	49.
211	46.	44.	58.	51.	62.	54.	59.	70.	69.	71.
221	79.	59.	83.	107.	93.	104.	106.	119.	131.	120.
231	138.	157.	148.	192.	159.	197.	197.	231.	239.	244.
241	278.	273.	300.	324.	303.	365.	368.	376.	405.	406.
251	463.	419.	402.	377.	356.	337.	288.	279.	228.	258.
261	258.	230.	235.	227.	260.	289.	288.	308.	329.	358.
271	380.	438.	438.	506.	498.	541.	619.	600.	687.	733.
281	783.	803.	1024.	1016.	998.	1139.	1222.	1287.	1378.	1417.
291	1452.	1503.	1503.	1680.	1673.	1724.	1711.	1589.	1552.	1405.
301	1224.	976.	855.	640.	465.	354.	249.	165.	137.	113.
311	78.	69.	50.	30.	22.	13.	5.	5.	2.	4.
321	7.	6.	4.	5.	4.	6.	6.	4.	8.	7.
331	1.	5.	6.	3.	9.	15.	10.	11.	3.	11.
341	10.	10.	15.	16.	21.	14.	30.	22.	21.	24.
351	37.	25.	48.	26.	36.	32.	29.	40.	40.	47.
361	51.	49.	39.	35.	43.	39.	36.	39.	26.	17.
371	16.	12.	6.	7.	0.	2.	2.	2.	1.	0.
381	3.	0.	3.	3.	2.	0.	1.	0.	3.	1.
391	2.	2.	3.	1.	2.	3.	0.	1.	0.	2.
401	1.	2.	1.	0.	1.	1.	1.	1.	5.	5.
411	0.	4.	2.	5.	9.	3.	5.	6.	6.	5.
421	2.	5.	5.	7.	9.	8.	4.	6.	7.	5.
431	9.	6.	3.	8.	0.	5.	2.	6.	0.	1.
441	1.	0.	0.	0.	4.	1.	1.	0.	3.	2.
451	1.	0.	2.	0.	0.	2.	2.	3.	1.	0.
461	1.	2.	0.	0.	0.	1.	0.	1.	0.	1.
471	1.	2.	1.	1.	1.	4.	3.	3.	1.	4.
481	0.	1.	1.	1.	0.	4.	0.	1.	1.	2.
491	0.	0.	0.	1.	2.	3.	3.	1.	2.	1.
511	2.	0.								

CMRaymond 5/19/96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T001563-DUP
File ID: 22a2212.CNF

Counted on: 5/19/96 @ 2:37
Detector: AEA22
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	44.4	44.4	363.834	363.834	14.000	8.116	7.000	1.497
2	1678.2	1678.2	296.813	296.811	14.000	6.387	7.000	1.164
3	234.8	234.8	251.677	250.499	12.000	3.905	6.000	0.589
4?	4.3	4.3	170.670	169.518	6.000	0.440	3.000	0.162
5?	4.8	4.8	158.845	158.211	18.000	0.502	9.000	0.022

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Peak Centroid Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm244	0.023	5.795	5.785	0.010	0.04	2.51	5.6	13.6	0.613E-05
	Cm243		5.779	5.785	-.006				18.7	0.840E-05
2	Pu238	0.836	5.487	5.477	0.010	0.03	92.59	0.9	697.0	0.314E-03
	Am241		5.479	5.477	0.002				533.9	0.240E-03
3	Am243	0.128	5.270	5.263	0.007	0.02	14.21	3.3	77.8	0.350E-04
4		????		4.891			0.10	76.3		
5		????		4.839			0.73	13.3		
Totals:		0.987	<--valid peaks only-->				109.31			

DETECTOR CALIBRATION
Energy(MEV) = 4.111 + (0.0046)*Channel
Energy range (MeV): 4.111 TO 6.466
Efficiency = 0.1845 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	53184.0	100.000
Smoothed	53183.6	99.999
Composite fit	52879.5	99.427
Residuals	304.5	0.573

Analyzed by: ALJ

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1 Legend:  Raw = ....  Modeled Peaks = 1,2,.., etc     Display Max.:   11699.3

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Raw Data Dump for AEA Spectrum: 22a2212.CNF

1	0.	0.	4.	5.	0.	2.	2.	2.	1.	3.
11	2.	4.	4.	2.	2.	1.	0.	3.	3.	2.
21	2.	1.	4.	0.	3.	3.	3.	4.	2.	1.
31	2.	0.	3.	5.	0.	0.	3.	1.	1.	5.
41	2.	3.	3.	6.	2.	2.	0.	2.	5.	2.
51	3.	4.	3.	0.	3.	3.	2.	2.	3.	3.
61	4.	3.	3.	2.	4.	6.	4.	2.	3.	2.
71	5.	8.	4.	8.	2.	4.	1.	1.	3.	1.
81	6.	6.	1.	1.	3.	2.	2.	5.	2.	6.
91	2.	3.	4.	2.	3.	4.	1.	3.	4.	3.
101	7.	3.	5.	4.	4.	5.	5.	6.	3.	10.
111	7.	4.	5.	6.	3.	5.	4.	9.	5.	1.
121	5.	8.	6.	6.	5.	7.	2.	8.	7.	0.
131	4.	6.	5.	5.	5.	4.	8.	6.	10.	10.
141	10.	5.	8.	10.	9.	7.	11.	12.	8.	8.
151	10.	10.	11.	10.	11.	10.	5.	15.	13.	16.
161	7.	6.	10.	16.	17.	9.	13.	8.	14.	17.
171	18.	9.	16.	11.	12.	17.	13.	19.	18.	13.
181	13.	16.	10.	27.	29.	23.	21.	23.	28.	20.
191	28.	33.	30.	25.	25.	30.	40.	32.	27.	34.
201	34.	44.	37.	44.	52.	57.	42.	54.	54.	54.
211	67.	53.	60.	64.	60.	92.	71.	86.	79.	77.
221	98.	100.	130.	104.	115.	129.	139.	161.	151.	166.
231	159.	184.	175.	185.	214.	216.	239.	262.	234.	267.
241	273.	328.	350.	318.	360.	334.	369.	363.	401.	370.
251	457.	422.	408.	400.	360.	246.	221.	222.	194.	224.
261	246.	263.	276.	244.	297.	284.	319.	356.	361.	424.
271	451.	458.	431.	506.	559.	627.	655.	658.	731.	778.
281	802.	895.	933.	1023.	1062.	1127.	1259.	1274.	1358.	1407.
291	1515.	1475.	1467.	1588.	1639.	1700.	1791.	1783.	1682.	1397.
301	898.	570.	334.	252.	217.	181.	152.	116.	82.	68.
311	51.	35.	17.	12.	3.	1.	4.	1.	4.	3.
321	7.	1.	6.	4.	5.	5.	14.	10.	9.	7.
331	6.	6.	9.	6.	13.	12.	10.	9.	5.	12.
341	9.	16.	14.	19.	13.	25.	24.	18.	20.	33.
351	16.	32.	35.	47.	24.	40.	42.	36.	40.	40.
361	44.	38.	39.	52.	48.	35.	34.	42.	40.	11.
371	11.	1.	2.	2.	1.	1.	2.	2.	1.	1.
381	1.	0.	3.	2.	1.	0.	0.	0.	1.	0.
391	2.	3.	2.	2.	0.	5.	0.	1.	1.	1.
401	1.	2.	3.	0.	4.	2.	3.	3.	1.	3.
411	2.	4.	3.	4.	3.	0.	1.	3.	1.	4.
421	1.	5.	10.	8.	5.	9.	4.	2.	6.	5.
431	9.	6.	8.	7.	6.	5.	4.	3.	1.	1.
441	1.	1.	1.	1.	1.	1.	0.	1.	1.	0.
451	1.	1.	1.	0.	0.	2.	0.	1.	1.	0.
461	1.	0.	3.	0.	1.	1.	2.	0.	3.	1.
471	1.	2.	1.	0.	1.	0.	4.	6.	4.	0.
481	0.	0.	2.	2.	4.	3.	3.	3.	1.	0.
491	1.	2.	1.	2.	2.	0.	3.	3.	2.	1.
511	4.	0.								

LABCORE Completed RadChem Report for Worklist#: 8863

Analyst: akl **Instrument:** AB15 **Book#** 124 B43

Method: LA-953-103 Rev/Mod B-0

Worklist Comment: C-106. RUSH. Determine sample size using ludlum. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@AM24101 AM24101	SOLID	3.83E-02	3.47E-2	90.601	% Recovery
1	STD		0		@AM24101 AM24101T	SOLID	100.	9.46E+01	94.600	% Recovery
1	STD		0		@AM24101 AM24101E	SOLID	1.0	3.33E+00	3.330	% Ct Error
2	BLNK-PREP		0		@AM24101 AM24101	SOLID	1	<1.73E-2		uCi/g
2	BLNK-PREP		0		@AM24101 AM24101T	SOLID	100.	7.26E+01	72.600	% Recovery
2	BLNK-PREP		0		@AM24101 AM24101E	SOLID	1.0	1.00E+02	100.000	% Ct Error
3	SAMPLE	S96T001531	0	F	@AM24101 AM24101	SOLID	N/A	8.84E-01	608.0e-004	uCi/g
3	SAMPLE	S96T001531	0	F	@AM24101 AM24101E	SOLID	N/A	2.24E+00	0.0e+000	% Ct. Error
3	SAMPLE	S96T001531	0	F	@AM24101 AM24101T	SOLID	N/A	1.04E+02	0.0e+000	% Recovery
4	DUP	S96T001531	0	F	@AM24101 AM24101	SOLID	8.84E-1	1.10E+0	21.774	RPD
4	DUP	S96T001531	0	F	@AM24101 AM24101T	SOLID	100.0	9.73E+01	97.300	% Recovery
4	DUP	S96T001531	0	F	@AM24101 AM24101E	SOLID	1.0	2.28E+00	2.280	% Ct Error
5	SAMPLE	S96T001541	0	F	@AM24101 AM24101	SOLID	N/A	1.15E+00	737.0e-004	uCi/g
5	SAMPLE	S96T001541	0	F	@AM24101 AM24101E	SOLID	N/A	1.69E+00	0.0e+000	% Ct. Error
5	SAMPLE	S96T001541	0	F	@AM24101 AM24101T	SOLID	N/A	1.06E+02	0.0e+000	% Recovery
6	DUP	S96T001541	0	F	@AM24101 AM24101	SOLID	1.15E+0	1.56E+0	30.258	RPD
6	DUP	S96T001541	0	F	@AM24101 AM24101T	SOLID	100.0	9.62E+01	96.200	% Recovery
6	DUP	S96T001541	0	F	@AM24101 AM24101E	SOLID	1.0	2.28E+00	2.280	% Ct Error

Final page for worklist# 8863

Analyst Signature Date

Analyst Signature Date

John Relyea 20 May 96
Reviewer Signature Date

Validated 20 May 96

Units shown for QC (BLK/BKG) may not reflect the actual units.

LABCORE Data Entry Template for Worklist# 8863

Analyst: AKL **Instrument:** AM01 #15 **Book#** 124B43

Method: LA-953-103 Rev/Mod _____

Worklist Comment: C-106. RUSH. Determine sample size using ludlum. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@AM24101	SOLID		
2	BLNK-PREP				@AM24101	SOLID		
3	SAMPLE	S96T001531	0	F	@AM24101	SOLID	96000082	C-106 GRAB
	Analytes Requested: AM24101 , AM24101E, AM24101T							
4	DUP	S96T001531	0	F	@AM24101	SOLID		
5	SAMPLE	S96T001541	0	F	@AM24101	SOLID	96000082	C-106 GRAB
	Analytes Requested: AM24101 , AM24101E, AM24101T							
6	DUP	S96T001541	0	F	@AM24101	SOLID		

Final page for worklist # 8863

C Lewis 5/17/96
Analyst Signature **Date**

Sue E. Hogan 5/20/96
Analyst Signature **Date**

M R Brown 5/20/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

WORKBOOK PAGE: STD1

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID

Type	Date Counted		MAY-19-96	Am 241 AEA Frac.	(C241)	0.403
STD	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	0.542
Work	Sample D.F.	(DF)	101	Cm 243/244 AEA Frac.	(Cm)	0
8863	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		1635
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)	0.13
Matrix	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm		12.57
LIQUID	Detector Number		15	Am 243 cpm		16.91
Batch Number	Detector Efficiency	(DetEff)	0.3032	Cm 243/244 cpm		0
96004874	Standard Book No		124B43	AEA Count Time	(min)	480
Dilution	Standard Value in µCi/mL		0.03825	Am 241 µCi/L =		3.4741E+01
0				Cm 243/244 µCi/L =	<	4.5546E+00

Sample Prep
N/A
Sample Number
WL8863
Instrument Code
WB26872
Prepared By
SEH
Chemist
JFR
Analyst
AKL
Date Completed
05/20/96
Analysis Date
05/17/96
Analysis Time
12:00 PM
Sample Form
C-106 GRAB

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am 241 µCi/mL	=	3.47E-02	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	3.3%	
NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241 4.55E-03
Cm 243/244 µCi/mL		< 4.55E-03	
Relative Counting Error	=	100.0%	Cm 243/244 4.55E-03
Am 243 Tracer Recovery	=	94.6%	

Analyst:	AKL	Date:	05/20/96
Signature of Chemist: John Relyea	JFR	Date:	20 May 96

STANDARD.WB1 REV 1.2 953103ML

2020

WORKBOOK PAGE: BLANK2

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID / SOLID

							BLNK-PREP
	Date Counted		MAY-19-96	Am 241 AEA Frac.	(C241)		0
BLNK-PREP	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)		0.874
	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)		0
8863	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts			780
	Digest Grams of Solids/L	(Dg/L)	2.103	AT Count Time (min)	(TC)		30
@AM24101	Tracer Book No.		126B43	Background in cpm	(Bkg)		0.13
	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm			0
SOLID	Detector Number		15	Am 243 cpm			15.18
	Detector Efficiency	(DetEff)	0.3032	Cm 243/244 cpm			0
96004874				AEA Count Time	(min)		480
				Am 241 µCi/g =		<	1.7333E-02
0				Cm 243/244 µCi/g =		<	1.7333E-02

Sample Point: N/A

Sample Number: WL8863

Instrument Code: WB26872

Prepared By: SEH

Chemist: JFR

Analyst: AKL

Date Completed: 05/20/96

Analysis Date: 05/17/96

Analysis Time: 12:00 PM

Sample Point: C-106 GRAB

Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

NOTE: Am-241 Result is a LESS THAN Value.

Am241 µCi/g	=	< 1.73E-02	DETECTION LEVELS In µCi/g
Relative Counting Error	=	100.0%	
NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241
Cm 243/244 µCi/g		< 1.73E-02	1.73E-02
Relative Counting Error	=	100.0%	Cm 243/244
Am 243 Tracer Recovery	=	72.6%	1.73E-02

Analyst:	AKL	Date:	05/20/96
Signature of Chemist: John Relyea	JFR	Date:	20 May 96

BLANK.WB1 REV 1.2 953103ML

2021

WORKBOOK PAGE: SAM3

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID / SOLID

							SAMPLE
	Date Counted		MAY-19-96	Am 241 AEA Frac.	(C241)		0.727
SAMPLE	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)		0.181
	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)		0.018
8863	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts			5394
	Digest Grams of Solids/L	(Dg/L)	2.103	AT Count Time (min)	(TC)		30
@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)		0.13
	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm			79.68
SOLID	Detector Number		15	Am 243 cpm			19.85
	Detector Efficiency	(DetEff)	0.3032	Cm 243/244 cpm			2.02
96004874				AEA Count Time	(min)		480
				Am 241 µCi/g =			8.8364E-01
0				Cm 243/244 µCi/g =		<	6.0773E-02

Sample Prep
FUSION01

Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]
Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

S96T001531

Instrument
WB26872

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100
Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Prepared By
SEH

Chemist
JFR

Am241 µCi/g	=	8.84E-01	
Relative Counting Error	=	2.2%	
NOTE: Cm-243/244 Result is a LESS THAN Value.			
Cm 243/244 µCi/g		< 6.08E-02	
Relative Counting Error	=	6.6%	
Am 243 Tracer Recovery	=	104.4%	

DETECTION LEVELS in µCi/g
Am 241
6.08E-02
Cm 243/244
6.08E-02

Analyst
AKL

Date Completed
05/20/96

Analysis Date
05/17/96

Analysis Time
12:00 PM

Sample Point
C-106 GRAB

Analyst:	AKL	Date:	05/20/96
Signature of Chemist: John Relyea	JFR	Date:	20 May 96

SAMPLE.WB1 REV 1.2 953103ML

2022

WORKBOOK PAGE: DUP4

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID / SOLID

							DUP
	Date Counted		MAY-19-96	Am 241 AEA Frac.	(C241)		0.791
DUP	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)		0.152
	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)		0.022
8863	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts			6981
	Digest Grams of Solids/L	(Dg/L)	2.192	AT Count Time (min)	(TC)		30
@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)		0.13
	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm			95.32
SOLID	Detector Number		15	Am 243 cpm			18.32
	Detector Efficiency	(DetEff)	0.3032	Cm 243/244 cpm			2.67
96004874				AEA Count Time	(min)		480
				Am 241 µCi/g =			1.0985E+00
0				Cm 243/244 µCi/g =		<	7.1395E-02

Sample Point: FUSION01

Sample Number: S96T001531

Instrument: WB26872

Prepared By: SEH

Chemist: JFR

Analyst: AKL

Date Analyzed: 05/20/96

Analysis Time: 12:00 PM

Sample Point: C-106 GRAB

Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am241 µCi/g	=	1.10E+00	
Relative Counting Error	=	2.3%	
NOTE: Cm-243/244 Result is a LESS THAN Value.			
Cm 243/244 µCi/g		< 7.14E-02	
Relative Counting Error	=	5.9%	
Am 243 Tracer Recovery	=	97.3%	

DETECTION LEVELS in µCi/g	
Am 241	7.14E-02
Cm 243/244	7.14E-02

Analyst:	AKL	Date:	05/20/96
Signature of Chemist: John Relyea	JFR	Date:	20 May 96

SAMPLE.WB1 REV 1.2 953103ML

2023

WORKBOOK PAGE: SAM5

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID / SOLID

							SAMPLE
	Date Counted		MAY-19-96	Am 241 AEA Frac.	(C241)		0.78
SAMPLE	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)		0.164
	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)		0.02
8863	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts			6028
	Digest Grams of Solids/L	(Dg/L)	1.915	AT Count Time (min)	(TC)		30
@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)		0.13
	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm			181.65
SOLID	Detector Number		15	Am 243 cpm			33.94
	Detector Efficiency	(DetEff)	0.3032	Cm 243/244 cpm			4.2
96004874				AEA Count Time	(min)		480
				Am 241 µCi/g =			1.1491E+00
0				Cm 243/244 µCi/g =		<	7.3658E-02
Sample Prep							
FUSION01							
Sample Number							
S96T001541							
Instrument							
WB26872							
Analyst							
SEH							
Checked							
JFR							
Analyst							
AKL							
Date Completed							
05/20/96							
Analysis Date							
05/17/96							
Analysis Time							
12:00 PM							
Sample Type							
C-106 GRAB							

Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am241 µCi/g	=	1.15E+00	DETECTION LEVELS in µCi/g
Relative Counting Error	=	1.7%	
NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241 7.37E-02
Cm 243/244 µCi/g		< 7.37E-02	
Relative Counting Error	=	4.6%	Cm 243/244 7.37E-02
Am 243 Tracer Recovery	=	105.8%	

Analyst:	AKL	Date:	05/20/96
Signature of Chemist: John Relyea	JFR	Date:	20 May 96

SAMPLE.WB1 REV 1.2 953103ML

2024

WORKBOOK PAGE: DUP6

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID / SOLID

							DUP
	Date Counted		MAY-19-96	Am 241 AEA Frac.	(C241)		0.934
DUP	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)		0.126
	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)		0.023
8863	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts			7137
	Digest Grams of Solids/L	(Dg/L)	1.988	AT Count Time (min)	(TC)		30
@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)		0.13
	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm			116.91
SOLID	Detector Number		15	Am 243 cpm			17.69
	Detector Efficiency	(DetEff)	0.3032	Cm 243/244 cpm			3.16
96004874				AEA Count Time	(min)		480
				Am 241 µCi/g =			1.5556E+00
0				Cm 243/244 µCi/g =		<	9.6934E-02

Sample Prep:
FUSION01
Sample ID:
S96T001541
Instrument:
WB26872
Prepared By:
SEH
Chemist:
JFR
Analyst:
AKL
Date:
05/20/96
Analysis Start:
12:00 PM
Sample Point:
C-106 GRAB

Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]
Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100
Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am241 µCi/g =	1.56E+00	
Relative Counting Error =	2.3%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		
Cm 243/244 µCi/g	< 9.69E-02	
Relative Counting Error =	5.4%	
Am 243 Tracer Recovery =	96.2%	

DETECTION LEVELS in µCi/g	
Am 241	9.69E-02
Cm 243/244	9.69E-02

Analyst:	AKL	Date:	05/20/96
Signature of Chemist: John Relyea	JFR	Date:	20 May 96

SAMPLE.WB1 REV 1.2 953103ML

2025

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. 2.02

DATA REDUCTION REPORT

SAMPLE
WL8863-STD
File ID: 23a2346.CNF

Counted on: 5/19/96 @11: 7
Detector: AEA23
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	279.5	279.5	298.589	298.589	14.000	5.957	7.000	1.434
2	352.7	352.7	253.090	253.033	12.000	4.993	6.000	1.055

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu238	0.403	5.487	5.471	0.016	0.03	12.57	2.5	1312.4	0.591E-03
	Am241		5.479	5.471	0.008				1005.2	0.453E-03
2	Am243	0.542	5.270	5.261	0.009	0.02	16.91	2.2	1283.9	0.578E-03
Totals:		0.945	<--valid peaks only-->				29.47			

DETECTOR CALIBRATION
Energy(MEV) = 4.097 + (0.0046)*Channel
Energy range (MeV): 4.097 TO 6.453
Efficiency = 0.0133 CPM/DPM

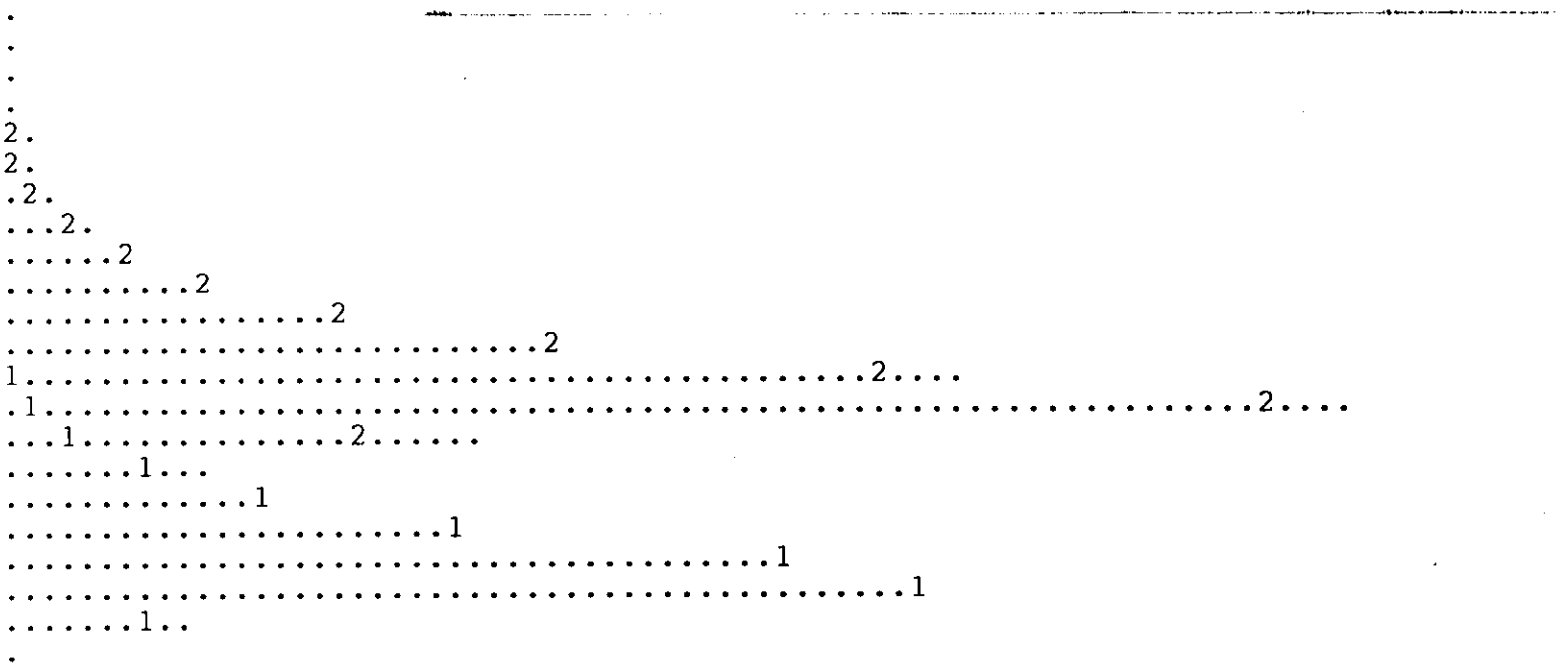
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	14975.0	100.000
Smoothed	14976.6	100.011
Composite fit	14147.4	94.474
Residuals	827.6	5.526

Analyzed by: _____
VR

Spectrum 23a2346.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,... etc Display Max.: 2681.1



Raw Data Dump for AEA Spectrum: 23a2346.CNF

1	0.	0.	0.	0.	2.	1.	0.	0.	0.	1.
11	0.	0.	3.	0.	1.	1.	1.	0.	0.	1.
21	0.	1.	0.	1.	1.	3.	0.	1.	2.	0.
31	1.	0.	0.	1.	0.	2.	1.	0.	1.	1.
41	0.	1.	0.	2.	4.	3.	0.	4.	3.	0.
51	3.	1.	1.	1.	2.	0.	2.	2.	0.	1.
61	1.	1.	2.	2.	1.	1.	1.	0.	1.	0.
71	1.	1.	1.	3.	0.	1.	1.	2.	3.	2.
81	0.	1.	2.	2.	1.	2.	2.	3.	1.	0.
91	3.	0.	4.	1.	1.	0.	2.	4.	2.	1.
101	3.	1.	2.	2.	7.	4.	2.	1.	3.	1.
111	1.	1.	0.	5.	4.	4.	4.	3.	0.	5.
121	1.	3.	3.	4.	5.	3.	1.	4.	3.	4.
131	7.	5.	1.	7.	7.	3.	3.	2.	3.	5.
141	5.	4.	4.	5.	9.	6.	6.	5.	7.	7.
151	2.	5.	3.	6.	7.	7.	5.	9.	10.	8.
161	6.	6.	8.	5.	10.	3.	13.	8.	6.	5.
171	7.	11.	4.	7.	22.	9.	10.	13.	7.	14.
181	10.	10.	14.	18.	16.	13.	16.	9.	12.	20.
191	20.	10.	11.	21.	18.	19.	19.	17.	28.	21.
201	26.	23.	24.	27.	23.	23.	28.	34.	25.	35.
211	33.	39.	43.	35.	39.	45.	54.	52.	59.	50.
221	57.	62.	54.	68.	62.	66.	72.	81.	92.	118.
231	90.	100.	113.	123.	123.	119.	150.	163.	183.	197.
241	201.	211.	242.	250.	293.	289.	254.	296.	338.	363.
251	341.	347.	407.	393.	374.	300.	199.	108.	64.	58.
261	54.	50.	53.	41.	59.	50.	48.	72.	50.	52.
271	48.	55.	48.	43.	85.	64.	59.	81.	90.	88.
281	85.	89.	115.	126.	133.	113.	148.	146.	171.	179.
291	198.	221.	222.	211.	239.	261.	261.	324.	304.	281.
301	269.	210.	124.	73.	50.	38.	32.	25.	23.	14.
311	13.	12.	8.	2.	3.	2.	0.	0.	0.	0.
321	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	1.	0.	1.	1.	0.
341	1.	0.	0.	0.	5.	0.	2.	1.	0.	0.
351	1.	0.	1.	1.	0.	1.	1.	0.	0.	1.
361	0.	0.	1.	1.	0.	0.	0.	0.	1.	0.
371	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	1.	0.	0.	0.	0.	0.	0.	0.	1.	1.
401	0.	3.	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.	1.
431	0.	0.	1.	0.	0.	0.	1.	0.	0.	0.
441	0.	1.	0.	1.	0.	1.	0.	0.	0.	0.
451	2.	1.	0.	1.	1.	0.	1.	0.	0.	0.
461	1.	0.	0.	1.	1.	0.	0.	1.	1.	0.
471	0.	0.	0.	0.	1.	0.	1.	1.	0.	1.
481	1.	0.	0.	0.	0.	0.	1.	0.	1.	0.
491	1.	0.	1.	1.	2.	0.	1.	0.	1.	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. 2.02

DATA REDUCTION REPORT WHC-SD-WM-DP-183, REV. 0

SAMPLE
WL8863-BLK
File ID: 24a2449.CNF

Counted on: 5/19/96 @11: 9
Detector: AEA24
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	328.0	328.0	253.467	253.467	12.000	5.866	6.000	1.348
2	12.4	12.4	181.432	181.171	62.000	152.733	31.000	17.527

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.874	5.270	5.256	0.014	0.03	15.18	2.3	716.5	0.323E-03
2	Np237	0.103	4.769	4.923	-.154	0.70	1.78	18.1	95.8	0.432E-04
	Pu242		4.891	4.923	-.032				83.4	0.376E-04
Totals:		0.977	<--valid peaks only-->				16.96			

DETECTOR CALIBRATION
Energy(MEV) = 4.090 + (0.0046)*Channel
Energy range (MeV): 4.090 TO 6.445
Efficiency = 0.0214 CPM/DPM

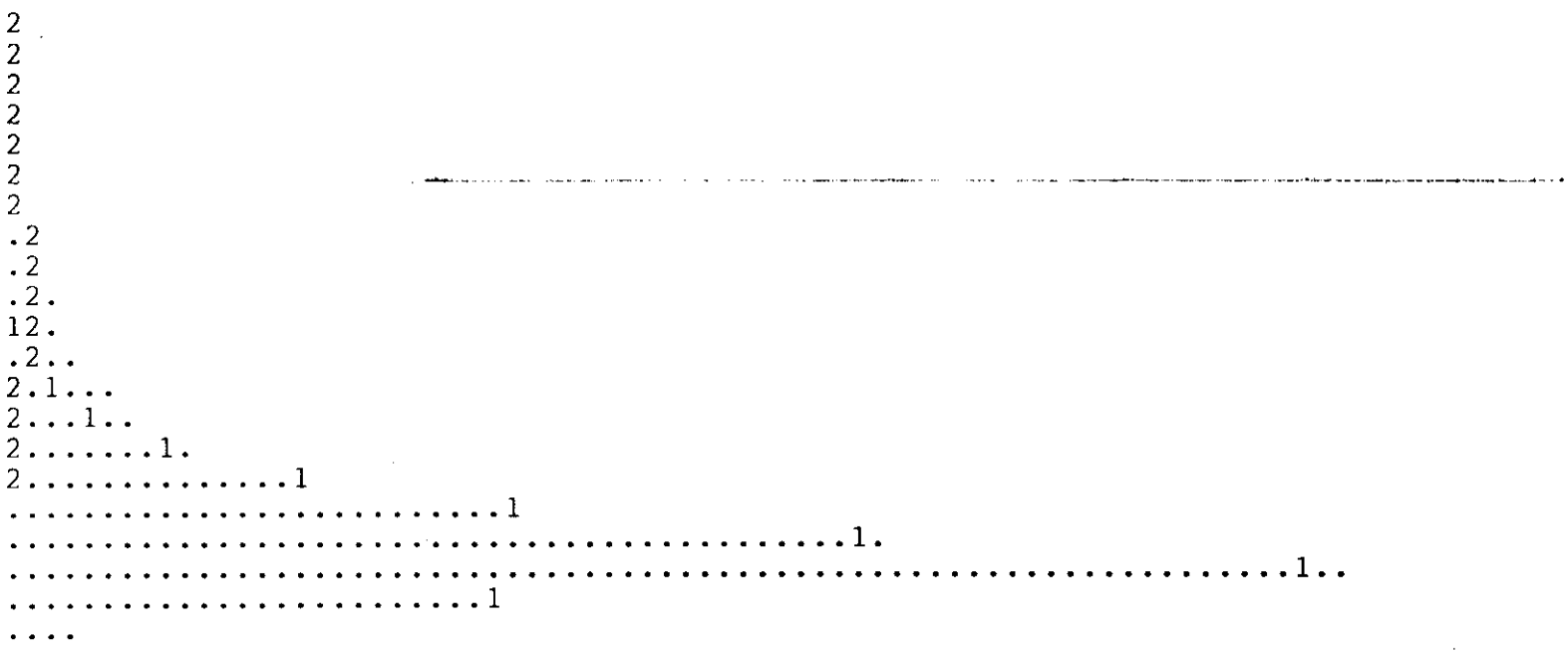
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	8334.0	100.000
Smoothed	8333.6	99.995
Composite fit	8143.2	97.711
Residuals	190.8	2.289

Analyzed by: _____
VR

Spectrum 24a2449.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 2425.9



Raw Data Dump for AEA Spectrum: 24a2449.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
11	0.	1.	0.	1.	0.	3.	0.	1.	0.	0.
21	1.	1.	1.	1.	1.	0.	1.	0.	1.	2.
31	0.	2.	3.	0.	1.	2.	0.	1.	0.	0.
41	1.	1.	0.	2.	0.	1.	1.	1.	0.	1.
51	0.	0.	2.	0.	1.	1.	2.	2.	0.	2.
61	0.	3.	1.	1.	1.	1.	3.	1.	2.	2.
71	0.	1.	0.	0.	0.	0.	2.	2.	3.	0.
81	0.	2.	1.	0.	3.	2.	3.	0.	1.	3.
91	3.	2.	3.	1.	1.	2.	1.	2.	4.	5.
101	1.	3.	0.	4.	2.	3.	0.	3.	3.	3.
111	1.	0.	2.	4.	3.	3.	3.	5.	4.	3.
121	1.	3.	0.	4.	3.	4.	8.	3.	4.	5.
131	2.	4.	1.	3.	2.	5.	9.	8.	4.	3.
141	4.	5.	3.	6.	3.	4.	6.	2.	6.	5.
151	7.	1.	4.	9.	5.	4.	6.	8.	7.	4.
161	6.	6.	6.	8.	5.	6.	6.	11.	7.	9.
171	10.	10.	14.	11.	10.	13.	18.	10.	9.	19.
181	17.	20.	16.	8.	18.	13.	9.	17.	12.	18.
191	19.	13.	17.	17.	16.	14.	28.	21.	21.	23.
201	24.	26.	21.	26.	31.	30.	26.	37.	28.	32.
211	26.	28.	35.	36.	37.	44.	33.	51.	37.	49.
221	62.	52.	44.	61.	46.	64.	72.	50.	75.	74.
231	99.	93.	96.	123.	104.	118.	115.	108.	128.	159.
241	161.	176.	185.	201.	235.	226.	269.	260.	257.	303.
251	335.	322.	348.	362.	327.	314.	266.	155.	72.	43.
261	24.	19.	31.	13.	19.	25.	20.	15.	10.	10.
271	2.	3.	0.	1.	0.	0.	0.	0.	0.	0.
281	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
291	0.	1.	3.	0.	0.	3.	0.	0.	0.	0.
301	1.	1.	2.	0.	0.	0.	0.	0.	0.	0.
311	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
321	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
331	0.	0.	1.	1.	0.	0.	0.	0.	1.	0.
341	0.	0.	1.	1.	2.	0.	1.	0.	2.	2.
351	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
361	1.	0.	0.	0.	0.	1.	0.	1.	0.	1.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	2.	0.
391	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
401	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	1.	0.	0.	1.	0.	0.	1.	0.	0.	0.
461	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
471	0.	0.	0.	1.	2.	2.	0.	0.	0.	0.
481	0.	0.	2.	0.	0.	0.	0.	1.	0.	1.
491	1.	0.	0.	1.	0.	1.	0.	0.	0.	1.
511	0.	0.								

5-11-96

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. 2.02

WHC-SD-WM-DP-183, REV. 0

DATA REDUCTION REPORT

SAMPLE
S96T1531-SAM-AM
File ID: 25a2529.CNF

Counted on: 5/19/96 @11: 9
Detector: AEA25
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	42.5	42.5	365.334	365.334	14.000	7.728	7.000	1.830
2	1646.8	1646.8	298.158	298.157	12.000	6.384	6.000	1.401
3	363.2	363.2	252.846	252.276	12.000	6.683	6.000	1.245
4?	12.9	12.9	108.886	108.847	242.000	1.000	121.000	0.100
5?	9.6	9.6	105.787	104.416	234.000	1.000	117.000	0.100

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Peak Centroid Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm244	0.018	5.795	5.777	0.018	0.04	2.02	6.3	69.0	0.311E-04
	Cm243		5.779	5.777	0.002				94.5	0.426E-04
2	Pu238	0.727	5.487	5.468	0.019	0.03	79.68	1.0	3776.9	0.170E-02
	Am241		5.479	5.468	0.011				2892.9	0.130E-02
3	Am243	0.181	5.270	5.257	0.013	0.03	19.85	2.5	684.5	0.308E-03
4		????		4.597			0.99	9.1		
5		????		4.577			0.73	16.0		
Totals:		0.927	<--valid peaks only-->				101.55			

DETECTOR CALIBRATION
Energy(MEV) = 4.097 + (0.0046)*Channel
Energy range (MeV): 4.097 TO 6.452
Efficiency = 0.0293 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	52615.0	100.000
Smoothed	52619.1	100.008
Composite fit	49582.1	94.236
Residuals	3032.9	5.764

Analyzed by: _____
VR

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 10592.1

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Raw Data Dump for AEA Spectrum: 25a2529.CNF

1	0.	0.	1.	4.	5.	4.	5.	2.	7.	2.
11	6.	2.	3.	2.	3.	3.	4.	3.	5.	5.
21	7.	3.	3.	3.	2.	8.	2.	1.	1.	7.
31	5.	3.	2.	6.	7.	8.	6.	8.	6.	5.
41	4.	8.	6.	2.	3.	5.	5.	6.	5.	2.
51	7.	5.	8.	10.	2.	3.	10.	4.	5.	8.
61	13.	2.	7.	10.	3.	8.	12.	3.	9.	6.
71	12.	8.	5.	5.	8.	7.	5.	5.	11.	8.
81	5.	13.	2.	6.	8.	5.	3.	10.	13.	6.
91	3.	4.	4.	7.	9.	7.	7.	6.	12.	6.
101	8.	7.	10.	16.	17.	11.	10.	12.	16.	13.
111	12.	8.	14.	7.	10.	5.	7.	15.	11.	14.
121	10.	12.	16.	18.	16.	9.	9.	12.	12.	10.
131	14.	15.	9.	15.	13.	19.	23.	16.	17.	13.
141	20.	22.	18.	16.	14.	27.	16.	18.	18.	25.
151	19.	14.	15.	20.	26.	22.	25.	26.	30.	20.
161	15.	24.	22.	22.	25.	32.	30.	26.	31.	29.
171	29.	28.	38.	45.	29.	33.	31.	29.	32.	37.
181	26.	41.	26.	38.	41.	35.	48.	46.	44.	51.
191	45.	52.	58.	50.	48.	49.	45.	57.	50.	56.
201	50.	55.	55.	60.	69.	67.	85.	85.	71.	74.
211	90.	79.	94.	91.	92.	100.	93.	117.	97.	91.
221	125.	115.	120.	131.	141.	145.	126.	152.	140.	142.
231	143.	161.	203.	210.	188.	230.	211.	241.	220.	282.
241	255.	276.	289.	335.	351.	369.	367.	396.	465.	447.
251	493.	476.	497.	518.	461.	410.	298.	247.	239.	238.
261	228.	244.	250.	246.	275.	278.	304.	302.	344.	338.
271	318.	389.	408.	383.	439.	463.	511.	489.	555.	588.
281	622.	642.	666.	760.	803.	864.	934.	995.	1038.	1198.
291	1208.	1335.	1378.	1430.	1423.	1598.	1786.	1746.	1776.	1710.
301	1496.	1002.	644.	390.	286.	249.	209.	144.	128.	98.
311	68.	55.	32.	17.	8.	6.	5.	2.	2.	3.
321	7.	4.	3.	5.	5.	4.	3.	6.	9.	3.
331	5.	8.	5.	8.	10.	3.	9.	5.	12.	4.
341	11.	6.	9.	7.	18.	13.	16.	17.	19.	14.
351	21.	19.	30.	22.	26.	22.	29.	25.	31.	32.
361	37.	28.	51.	50.	44.	44.	42.	43.	42.	31.
371	22.	11.	4.	0.	1.	0.	1.	1.	0.	0.
381	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.
391	0.	0.	1.	0.	0.	1.	0.	1.	1.	0.
401	0.	1.	2.	3.	2.	5.	2.	0.	2.	0.
411	3.	3.	2.	1.	2.	1.	5.	0.	1.	5.
421	3.	2.	3.	3.	5.	4.	2.	7.	4.	1.
431	7.	4.	5.	2.	9.	8.	2.	2.	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.	1.
471	0.	0.	0.	0.	0.	0.	2.	0.	0.	0.
481	1.	0.	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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T1531-DUP/AM
File ID: 26a2630.CNF

Counted on: 5/19/96 @11:10
Detector: AEA26
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	48.4	48.4	365.676	365.676	10.000	4.632	5.000	0.802
2?	8.5	8.5	360.862	359.029	6.000	1.065	3.000	6.946
3	2039.3	2039.3	297.088	297.087	14.000	6.033	7.000	1.375
4	360.0	360.0	251.456	250.805	12.000	5.191	6.000	1.017
5	12.2	12.2	158.388	157.410	74.000	488.736	37.000	147.051
6?	0.0	0.1	144.460	144.460	0.000	0.100	0.000	0.100
7?	0.0	0.1	140.849	140.849	0.000	0.100	0.000	0.100

PEAK RESULTS
Peak Error Limit: 30%

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	Cm244	0.022	5.795	5.792	0.003	0.02	2.67	5.5	88.3	0.398E-04
	Cm243		5.779	5.792	-.013				121.0	0.545E-04
2		????		5.762			0.09	154.		
3	Pu238	0.791	5.487	5.477	0.010	0.03	95.32	0.9	4383.5	0.197E-02
	Am241		5.479	5.477	0.002				3357.6	0.151E-02
4	Am243	0.152	5.270	5.264	0.006	0.02	18.32	2.6	612.7	0.276E-03
5	Pu242	0.022	4.891	4.834	0.057	2.25	2.67	25.3	88.5	0.399E-04
	Np237		4.769	4.834	-.065				101.7	0.458E-04
6		????		4.775			0.00	*****		
7		????		4.758			0.00	9821.		
Totals:		0.987	<--valid peaks only-->				118.98			

DETECTOR CALIBRATION
Energy(MEV) = 4.110 + (0.0046)*Channel
Energy range (MeV): 4.110 TO 6.465
Efficiency = 0.0302 CPM/DPM

TOTAL COUNT DATA:

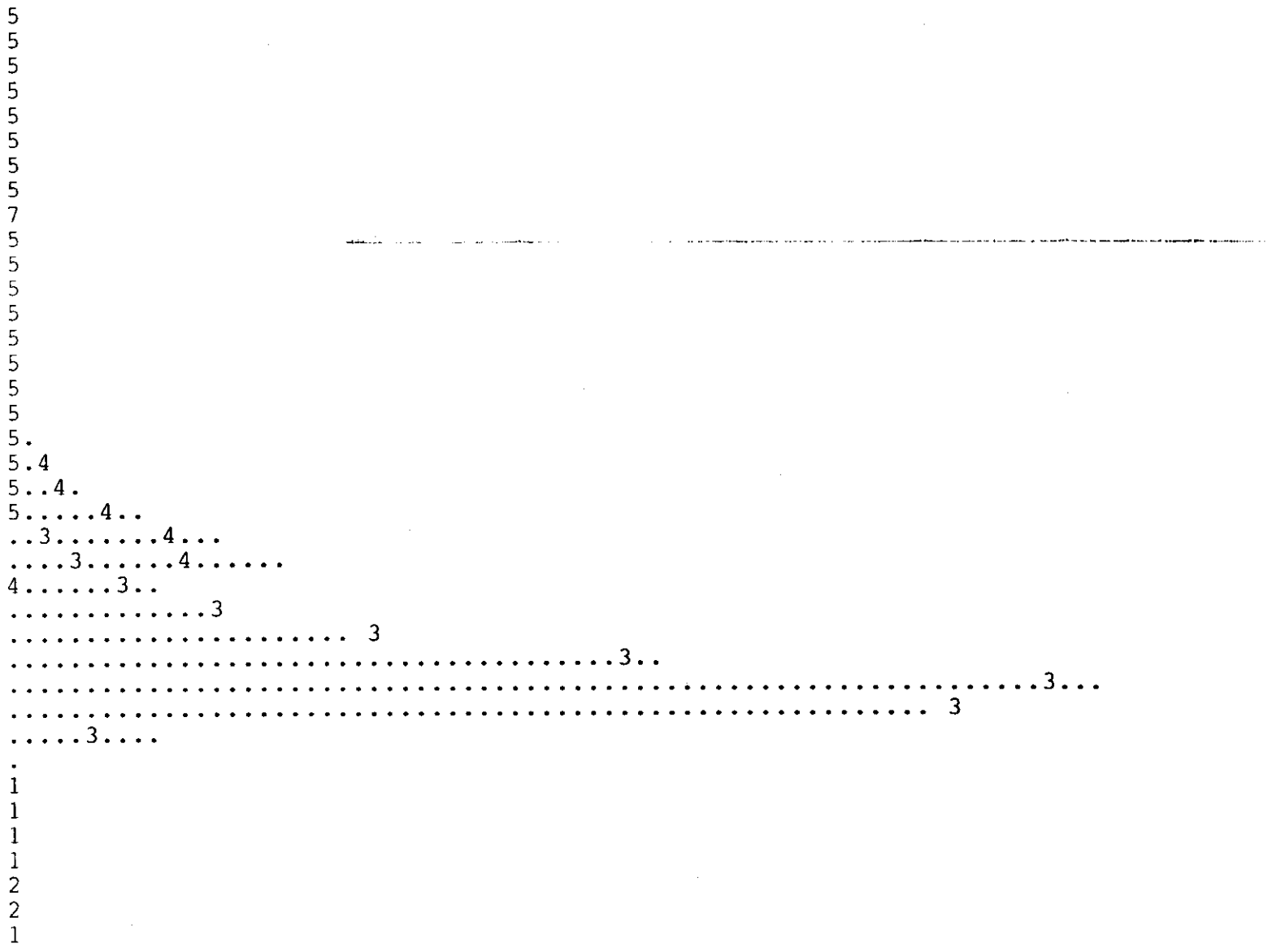
Item	Total	% Recovery
Raw spectrum	57855.0	100.000
Smoothed	57857.1	100.004
Composite fit	57156.8	98.793

Residuals	698.2	1.207

Analyzed by: VR

Spectrum 26a2630.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 13404.2



Raw Data Dump for AEA Spectrum: 26a2630.CNF

1	0.	0.	3.	5.	1.	3.	2.	3.	5.	2.
11	1.	3.	2.	1.	1.	4.	2.	2.	1.	4.
21	2.	2.	1.	4.	2.	2.	4.	2.	0.	5.
31	0.	2.	2.	3.	0.	3.	3.	0.	1.	1.
41	4.	5.	2.	4.	0.	4.	6.	0.	4.	4.
51	3.	2.	4.	3.	2.	3.	4.	3.	5.	1.
61	2.	2.	2.	3.	4.	2.	2.	5.	3.	3.
71	4.	6.	3.	1.	2.	8.	4.	3.	2.	5.
81	4.	5.	2.	6.	1.	3.	5.	3.	1.	2.
91	4.	4.	5.	4.	5.	6.	5.	8.	2.	6.
101	6.	3.	6.	8.	4.	2.	4.	2.	0.	7.
111	9.	3.	5.	3.	4.	4.	6.	6.	2.	8.
121	9.	5.	6.	5.	5.	4.	4.	9.	9.	6.
131	5.	13.	8.	9.	6.	7.	6.	8.	10.	16.
141	13.	10.	6.	16.	13.	9.	10.	11.	9.	11.
151	9.	13.	20.	7.	13.	13.	19.	11.	16.	14.
161	11.	18.	15.	22.	10.	13.	8.	16.	10.	16.
171	20.	26.	24.	23.	22.	18.	28.	13.	23.	20.
181	20.	23.	19.	24.	30.	26.	31.	34.	22.	28.
191	39.	45.	27.	31.	30.	36.	35.	28.	23.	34.
201	39.	51.	48.	57.	40.	50.	59.	52.	50.	69.
211	63.	58.	48.	60.	72.	76.	81.	79.	84.	105.
221	94.	97.	106.	110.	102.	120.	130.	133.	149.	141.
231	188.	182.	192.	208.	201.	203.	241.	257.	256.	276.
241	307.	271.	330.	380.	372.	380.	431.	466.	493.	470.
251	504.	500.	526.	452.	345.	273.	200.	219.	215.	243.
261	247.	242.	250.	263.	245.	282.	298.	317.	331.	344.
271	402.	398.	454.	458.	493.	561.	548.	676.	705.	711.
281	763.	824.	973.	988.	1156.	1145.	1272.	1433.	1509.	1574.
291	1656.	1667.	1800.	1809.	1980.	2082.	2177.	2254.	2132.	1630.
301	1185.	656.	436.	341.	285.	233.	187.	170.	115.	79.
311	63.	28.	20.	8.	5.	2.	2.	7.	2.	6.
321	5.	7.	4.	2.	2.	9.	6.	4.	5.	5.
331	6.	3.	6.	9.	7.	9.	7.	9.	9.	10.
341	13.	9.	12.	17.	14.	22.	23.	15.	25.	22.
351	28.	16.	23.	33.	22.	35.	41.	55.	42.	54.
361	48.	47.	35.	51.	45.	48.	59.	43.	40.	21.
371	6.	4.	0.	1.	0.	1.	0.	1.	0.	1.
381	1.	0.	0.	0.	0.	1.	1.	0.	0.	1.
391	0.	0.	0.	2.	0.	1.	1.	1.	0.	0.
401	0.	2.	4.	0.	0.	1.	1.	0.	3.	2.
411	1.	3.	2.	8.	3.	4.	6.	3.	4.	1.
421	8.	4.	1.	3.	6.	10.	5.	7.	7.	5.
431	6.	6.	6.	4.	6.	7.	3.	2.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	1.	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.								

 5-1-16

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T1541-SAM/AM
File ID: 27a2716.CNF

Counted on: 5/19/96 @11:11
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?	10.9	10.9	432.106	432.106	10.000	3.196	5.000	0.498
2	68.9	68.9	363.978	363.961	14.000	6.591	7.000	1.056
3	2656.5	2656.5	296.414	296.411	14.000	8.991	7.000	1.530
4	453.0	453.0	252.192	251.269	10.000	4.561	5.000	0.540
5	26.7	26.7	140.484	139.827	106.000	398.653	53.000	131.163
6?	8.6	8.6	98.764	98.284	18.000	1.274	9.000	8.567
7?	11.1	11.1	77.425	77.425	18.000	29.994	9.000	12.608
8?	11.4	11.4	63.316	62.002	10.000	0.956	5.000	5.092
9?	11.4	11.4	53.720	53.273	22.000	2.486	11.000	0.195
10?	5.8	5.8	18.994	18.523	34.000	8.457	17.000	17.777

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		6.080			0.63	11.2		
2	Pu236	0.020	5.755	5.767	-.012	0.03	4.20	4.4	158.1	0.712E-04
	Cm243		5.779	5.767	0.012				212.2	0.956E-04
3	Am241	0.780	5.479	5.456	0.023	0.04	161.65	0.7	6345.6	0.286E-02
	Pu238		5.487	5.456	0.031				8284.5	0.373E-02
4		0.164		5.248		0.02	33.94	2.1	1252.3	0.564E-03
5	Np237	0.026	4.640	4.736	-.096	1.83	5.30	12.7	3260.5	0.147E-02
	Np237		4.769	4.736	0.033				224.9	0.101E-03
6		????		4.545			0.10	107.		
7		????		4.449			0.63	20.9		
8		????		4.378			0.11	56.4		
9		????		4.338			0.82	11.7		
10		????		4.178			0.17	41.5		
Totals:		0.989	<--valid peaks only-->				205.08			

DETECTOR CALIBRATION
Energy(MEV) = 4.093 + (0.0046)*Channel
Energy range (MeV): 4.093 TO 6.448
Efficiency = 0.0271 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	99509.0	100.000
Smoothed	99517.5	100.009
Composite fit	99630.5	100.122
Residuals	-121.5	-0.122

Analyzed by: _____
VR

Spectrum 27a2716.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 18913.2

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Raw Data Dump for AEA Spectrum: 27a2716.CNF

1	0.	0.	10.	11.	8.	10.	7.	12.	13.	8.
11	7.	7.	9.	10.	8.	6.	12.	14.	10.	10.
21	12.	9.	12.	8.	5.	7.	7.	10.	10.	8.
31	7.	9.	12.	8.	4.	13.	6.	12.	9.	11.
41	6.	13.	11.	14.	17.	12.	17.	11.	17.	12.
51	12.	14.	10.	20.	19.	10.	9.	9.	12.	7.
61	16.	14.	22.	11.	15.	17.	7.	14.	10.	24.
71	16.	23.	14.	14.	13.	10.	21.	11.	18.	13.
81	12.	12.	15.	21.	30.	13.	19.	23.	26.	23.
91	15.	21.	21.	20.	24.	20.	17.	29.	23.	32.
101	17.	17.	16.	21.	18.	18.	27.	23.	16.	27.
111	22.	22.	16.	16.	34.	24.	30.	19.	23.	23.
121	28.	18.	25.	20.	31.	16.	25.	33.	26.	32.
131	33.	29.	30.	38.	49.	36.	39.	30.	41.	36.
141	47.	36.	35.	36.	34.	31.	32.	42.	37.	35.
151	35.	52.	46.	51.	41.	40.	45.	46.	46.	52.
161	51.	44.	49.	59.	66.	68.	52.	58.	62.	78.
171	67.	67.	57.	65.	81.	78.	68.	69.	87.	95.
181	94.	90.	94.	86.	86.	77.	85.	80.	91.	79.
191	93.	104.	91.	106.	119.	127.	108.	102.	112.	125.
201	122.	140.	134.	154.	116.	136.	165.	169.	156.	163.
211	174.	174.	169.	188.	194.	198.	190.	201.	189.	224.
221	247.	235.	223.	265.	263.	274.	303.	333.	315.	368.
231	344.	384.	389.	439.	428.	491.	475.	481.	468.	520.
241	559.	604.	623.	629.	643.	677.	634.	746.	758.	744.
251	812.	845.	853.	810.	691.	592.	501.	465.	530.	489.
261	575.	539.	595.	516.	611.	610.	661.	673.	715.	758.
271	805.	846.	912.	947.	1024.	1063.	1171.	1196.	1242.	1320.
281	1467.	1494.	1522.	1651.	1794.	1867.	1951.	2047.	2074.	2245.
291	2351.	2413.	2468.	2624.	2762.	2773.	2748.	2805.	2522.	2267.
301	1649.	1108.	811.	663.	544.	476.	356.	308.	233.	156.
311	99.	75.	38.	15.	14.	6.	6.	8.	4.	6.
321	9.	14.	6.	7.	6.	12.	7.	16.	16.	13.
331	12.	11.	18.	16.	19.	15.	14.	22.	24.	23.
341	27.	30.	31.	28.	35.	39.	38.	48.	38.	31.
351	44.	45.	53.	57.	38.	58.	55.	60.	50.	55.
361	65.	73.	71.	78.	69.	65.	68.	59.	36.	22.
371	7.	2.	2.	3.	1.	3.	0.	1.	1.	0.
381	3.	3.	4.	3.	2.	2.	1.	0.	1.	1.
391	1.	4.	0.	1.	0.	2.	1.	3.	3.	3.
401	4.	4.	3.	3.	6.	6.	3.	4.	4.	4.
411	4.	1.	5.	3.	5.	7.	8.	5.	4.	12.
421	8.	10.	7.	6.	11.	13.	7.	7.	9.	8.
431	10.	13.	13.	10.	8.	2.	2.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
471	0.	1.	1.	0.	0.	2.	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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T1541-DUP/AM
File ID: 28a2817.CNF

Counted on: 5/19/96 @11:12
Detector: AEA28
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	64.3	64.3	366.298	366.298	12.000	5.253	6.000	1.071
2	2511.6	2511.6	298.018	298.018	14.000	6.188	7.000	1.428
3	365.8	365.8	252.615	252.012	12.000	4.323	6.000	0.880

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm244	0.023	5.795	5.791	0.004	0.02	3.18	5.0	97.0	0.437E-04
	Cm243		5.779	5.791	-.012				132.9	0.599E-04
2	Pu238	0.834	5.487	5.477	0.010	0.03	116.91	0.8	4950.6	0.223E-02
	Am241		5.479	5.477	0.002				3791.9	0.171E-02
3	Am243	0.126	5.270	5.266	0.004	0.02	17.69	2.7	544.6	0.245E-03
Totals:		0.983	<--valid peaks only-->				137.78			

DETECTOR CALIBRATION
Energy(MEV) = 4.107 + (0.0046)*Channel
Energy range (MeV): 4.107 TO 6.462
Efficiency = 0.0328 CPM/DPM

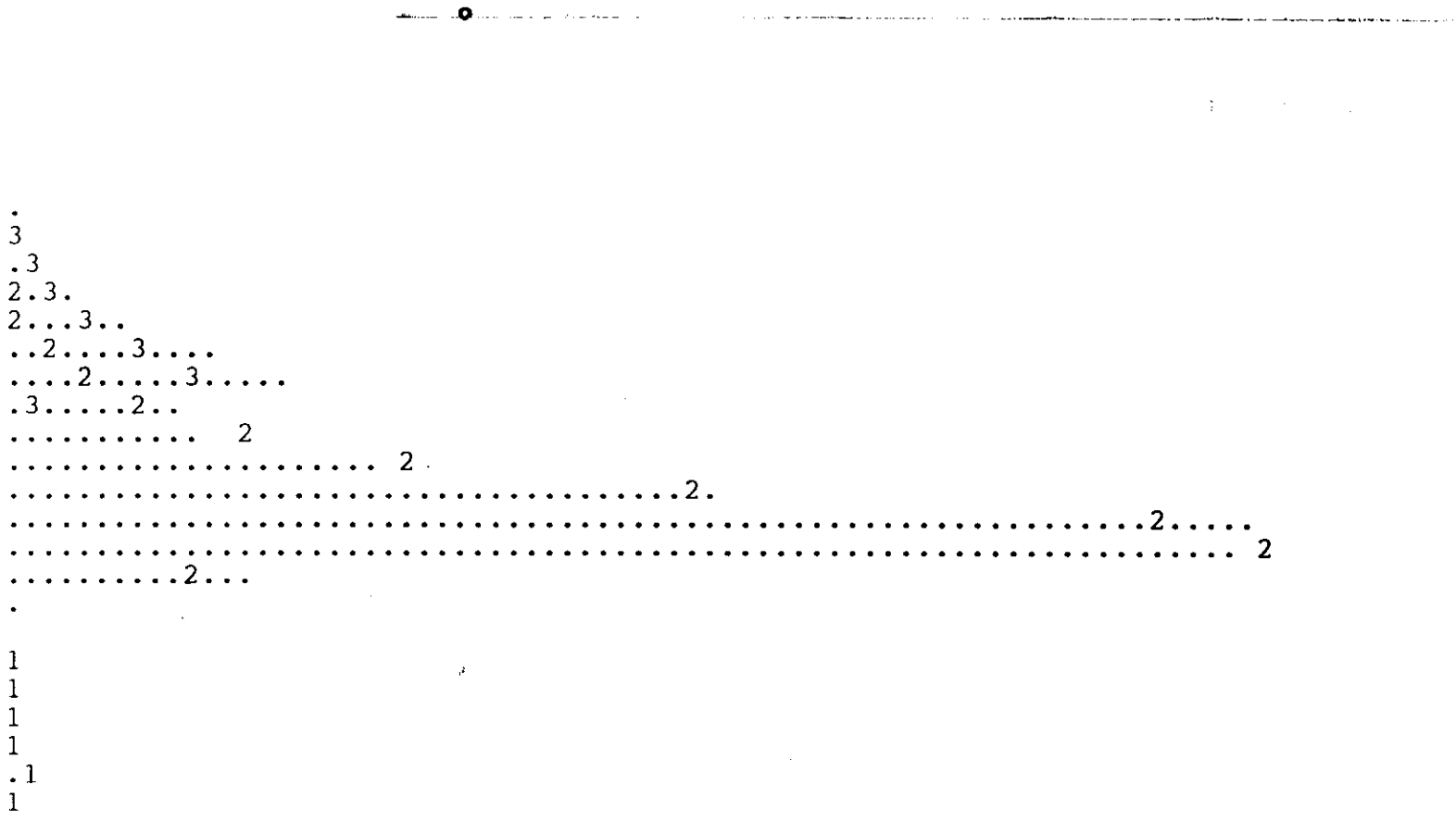
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	67278.0	100.000
Smoothed	67281.2	100.005
Composite fit	66146.2	98.318
Residuals	1131.8	1.682

Analyzed by: _____
VR

Spectrum 28a2817.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 15862.3



Raw Data Dump for AEA Spectrum: 28a2817.CNF

1	0.	0.	1.	0.	3.	0.	0.	1.	1.	2.
11	0.	2.	1.	1.	1.	1.	2.	0.	1.	3.
21	1.	3.	0.	2.	0.	3.	3.	1.	1.	1.
31	1.	0.	0.	1.	2.	4.	1.	2.	3.	1.
41	3.	0.	2.	1.	2.	0.	2.	2.	0.	0.
51	3.	1.	1.	4.	1.	1.	0.	2.	7.	1.
61	0.	1.	1.	1.	1.	0.	3.	2.	3.	3.
71	2.	5.	1.	2.	4.	4.	1.	2.	1.	4.
81	0.	1.	3.	1.	1.	4.	1.	2.	4.	3.
91	4.	1.	4.	2.	3.	1.	2.	4.	2.	6.
101	1.	3.	5.	2.	0.	1.	2.	5.	2.	5.
111	2.	3.	0.	4.	1.	0.	1.	1.	5.	1.
121	5.	5.	4.	4.	6.	5.	3.	3.	4.	4.
131	6.	4.	5.	6.	2.	5.	1.	6.	2.	7.
141	5.	4.	7.	3.	4.	5.	8.	11.	0.	8.
151	6.	4.	9.	6.	4.	7.	9.	7.	10.	6.
161	7.	5.	8.	14.	8.	7.	10.	11.	13.	12.
171	11.	14.	4.	13.	6.	11.	13.	8.	18.	23.
181	13.	16.	18.	14.	18.	17.	17.	11.	24.	17.
191	15.	17.	21.	14.	26.	18.	26.	19.	27.	34.
201	15.	31.	28.	30.	35.	45.	37.	49.	38.	41.
211	53.	50.	45.	53.	45.	78.	60.	60.	70.	87.
221	59.	98.	72.	82.	82.	98.	114.	118.	138.	137.
231	137.	138.	172.	202.	188.	208.	252.	256.	253.	265.
241	282.	320.	327.	359.	398.	404.	417.	451.	474.	482.
251	519.	529.	555.	547.	483.	407.	306.	212.	239.	244.
261	230.	258.	252.	290.	270.	282.	286.	350.	352.	380.
271	411.	417.	462.	537.	587.	602.	637.	741.	787.	856.
281	1014.	969.	1038.	1140.	1218.	1305.	1441.	1568.	1740.	1809.
291	2009.	2122.	2067.	2257.	2338.	2425.	2529.	2688.	2757.	2538.
301	2062.	1390.	807.	584.	400.	338.	300.	262.	192.	146.
311	99.	80.	44.	26.	13.	4.	1.	2.	2.	5.
321	3.	4.	2.	5.	1.	5.	4.	7.	4.	2.
331	4.	6.	10.	1.	12.	4.	7.	5.	10.	8.
341	16.	14.	11.	18.	25.	13.	22.	28.	15.	35.
351	31.	26.	37.	32.	39.	43.	36.	56.	55.	57.
361	62.	51.	76.	63.	58.	58.	73.	66.	56.	47.
371	33.	11.	3.	0.	0.	2.	0.	0.	0.	0.
381	0.	2.	0.	1.	1.	1.	0.	0.	0.	0.
391	0.	1.	2.	1.	0.	0.	0.	1.	0.	2.
401	1.	2.	1.	1.	2.	1.	0.	2.	0.	5.
411	3.	0.	5.	2.	2.	3.	3.	5.	5.	5.
421	2.	6.	7.	12.	5.	8.	8.	9.	6.	9.
431	5.	9.	2.	6.	9.	9.	8.	5.	0.	1.
441	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	1.	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	0.	0.								

LABCORE Completed RadChem Report for Worklist#: 8864

Analyst: akl **Instrument:** AB15 **Book#** 124B43

Method: LA-953-103 Rev/Mod B-0

Worklist Comment: C-106. RUSH. Determine sample size using ludlum. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@AM24101 AM24101	SOLID	3.83E-02	3.72E-2	97.128	% Recovery
1	STD		0		@AM24101 AM24101T	SOLID	100.	9.08E+01	90.800	% Recovery
1	STD		0		@AM24101 AM24101E	SOLID	1.0	3.30E+00	3.300	% Ct Error
2	BLNK-PREP		0		@AM24101 AM24101	SOLID	1	<1.31E-2		uCi/g
2	BLNK-PREP		0		@AM24101 AM24101T	SOLID	100.	9.14E+01	91.400	% Recovery
2	BLNK-PREP		0		@AM24101 AM24101E	SOLID	1.0	1.00E+02	100.000	% Ct Error
3	SAMPLE	S96T001678	0	F	@AM24101 AM24101	SOLID	N/A	7.03E-01	611.0e-004	uCi/g
3	SAMPLE	S96T001678	0	F	@AM24101 AM24101E	SOLID	N/A	2.64E+00	0.0e+000	% Ct. Error
3	SAMPLE	S96T001678	0	F	@AM24101 AM24101T	SOLID	N/A	8.27E+01	0.0e+000	% Recovery
4	DUP	S96T001678	0	F	@AM24101 AM24101	SOLID	7.03E-1	7.15E-1	1.693	RPD
4	DUP	S96T001678	0	F	@AM24101 AM24101T	SOLID	100.0	8.42E+01	84.200	% Recovery
4	DUP	S96T001678	0	F	@AM24101 AM24101E	SOLID	1.0	2.75E+00	2.750	% Ct Error
5	SAMPLE	S96T001689	0	F	@AM24101 AM24101	SOLID	N/A	1.03E+00	983.0e-004	uCi/g
5	SAMPLE	S96T001689	0	F	@AM24101 AM24101E	SOLID	N/A	2.85E+00	0.0e+000	% Ct. Error
5	SAMPLE	S96T001689	0	F	@AM24101 AM24101T	SOLID	N/A	7.80E+01	0.0e+000	% Recovery
6	DUP	S96T001689	0	F	@AM24101 AM24101	SOLID	1.03E+0	9.80E-1	4.975	RPD
6	DUP	S96T001689	0	F	@AM24101 AM24101T	SOLID	100.0	9.28E+01	92.800	% Recovery
6	DUP	S96T001689	0	F	@AM24101 AM24101E	SOLID	1.0	2.62E+00	2.620	% Ct Error

Final page for worklist# 8864

Analyst Signature Date

Analyst Signature Date

John Relyea 20 May 96
Reviewer Signature Date

Validated 20 May 96

Units shown for QC (BLK/BKG) may not reflect the actual units.

LABCORE Data Entry Template for Worklist# 8864

Analyst: AKL **Instrument:** AM01 #15 **Book#** 124843

Method: LA-953-103 Rev/Mod _____

Worklist Comment: C-106. RUSH. Determine sample size using ludlum. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@AM24101	SOLID		
2	BLNK-PREP				@AM24101	SOLID		
3	SAMPLE	S96T001678	0	F	@AM24101	SOLID	96000174	C-106 GRAB
	Analytes Requested: AM24101 , AM24101E, AM24101T							
4	DUP	S96T001678	0	F	@AM24101	SOLID		
5	SAMPLE	S96T001689	0	F	@AM24101	SOLID	96000174	C-106 GRAB
	Analytes Requested: AM24101 , AM24101E, AM24101T							
6	DUP	S96T001689	0	F	@AM24101	SOLID		

Final page for worklist # 8864

A Lewis 5/17/96
Analyst Signature **Date**

Sue E. Hogan 5/20/96
Analyst Signature **Date**

M S Bi... 5/20/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

WORKBOOK PAGE: STD1

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID

						STD
	Date Counted		MAY-19-96	Am 241 AEA Frac.	(C241)	0.445
STD	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	0.559
	Sample D.F.	(DF)	101	Cm 243/244 AEA Frac.	(Cm)	0
8864	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		1521
	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)	0.13
	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm		13.21
LIQUID	Detector Number		15	Am 243 cpm		16.6
	Detector Efficiency	(DetEff)	0.3032	Cm 243/244 cpm		0
96004875	Standard Book No		124B43	AEA Count Time	(min)	480
	Standard Value in µCi/mL		0.03825	Am 241 µCi/L =		3.7195E+01
0				Cm 243/244 µCi/L =	<	4.6035E+00

Sample Prep
N/A
Sample Number
WL8864
Instrument
WB26572
Prepared By
SEH
Analyst
JFR
Analyst
AKL
Date Completed
05/20/96
Analysis Date
05/17/96
Analysis Time
12:00 PM
Sample Point
C-106 GRAB

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))
Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100
Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am 241 µCi/mL	=	3.72E-02	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	3.3%	
NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241 4.60E-03
Cm 243/244 µCi/mL		< 4.60E-03	
Relative Counting Error	=	100.0%	Cm 243/244 4.60E-03
Am 243 Tracer Recovery	=	90.8%	

Analyst:		AKL	Date:	05/20/96
Signature of Chemist:	John Robyson	JFR	Date:	20 May 96

STANDARD.WB1 REV 1.2 953103ML

WORKBOOK PAGE: BLANK2

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID / SOLID

						BLNK-PREP
	Date Counted		MAY-19-96	Am 241 AEA Frac.	(C241)	0
BLNK-PREP	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	1.054
	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0
8864	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		814
	Digest Grams of Solids/L	(Dg/L)	1.839	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)	0.13
	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm		0
SOLID	Detector Number		15	Am 243 cpm		17.84
	Detector Efficiency	(DetEff)	0.3032	Cm 243/244 cpm		0
96004875				AEA Count Time	(min)	480
				Am 241 µCi/g =	<	1.3054E-02
0				Cm 243/244 µCi/g =	<	1.3054E-02

N/A

Sample Name: WL8864

Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Instrument: WB26872

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Prepared By: SEH

Chemist: JFR

Analyst: AKL

Date Analyzed: 05/20/96

Analysis Time: 12:00 PM

Sample Point: C-106 GRAB

NOTE: Am-241 Result is a LESS THAN Value.

Am241 µCi/g	=	< 1.31E-02
Relative Counting Error	=	100.0%

NOTE: Cm-243/244 Result is a LESS THAN Value.

Cm 243/244 µCi/g		< 1.31E-02
Relative Counting Error	=	100.0%
Am 243 Tracer Recovery	=	91.4%

DETECTION LEVELS in µCi/g	
Am 241	1.31E-02
Cm 243/244	1.31E-02

Analyst:	AKL	Date:	05/20/96
Signature of Chemist: John Relyea	JFR	Date:	20 May 96

BLANK.WB1 REV 1.2 953103ML

2049

WORKBOOK PAGE: SAM3

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID / SOLID

							SAMPLE
	Date Counted		MAY-19-96	Am 241 AEA Frac.	(C241)		0.696
SAMPLE	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)		0.249
	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)		0.023
8864	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts			3106
	Digest Grams of Solids/L	(Dg/L)	1.839	AT Count Time (min)	(TC)		30
@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)		0.13
	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm			43.42
SOLID	Detector Number		15	Am 243 cpm			15.55
	Detector Efficiency	(DetEff)	0.3032	Cm 243/244 cpm			1.41
96004875				AEA Count Time	(min)		480
				Am 241 µCi/g =			7.0307E-01
0				Cm 243/244 µCi/g =		<	6.1084E-02

Sample Date: FUSION01

Sample Number: S96T001678

Instrument: WB26872

Analyst: SEH

Chemist: JFR

Analyst: AKL

Date Completed: 05/20/96

Analysis Date: 05/17/96

Analysis Time: 12:00 PM

Sample Source: C-106 GRAB

Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am241 µCi/g	=	7.03E-01
Relative Counting Error	=	2.6%
NOTE: Cm-243/244 Result is a LESS THAN Value.		
Cm 243/244 µCi/g		< 6.11E-02
Relative Counting Error	=	7.9%
Am 243 Tracer Recovery	=	82.7%

DETECTION LEVELS in µCi/g
Am 241
6.11E-02
Cm 243/244
6.11E-02

Analyst:	AKL	Date:	05/20/96
Signature of Chemist: John Relyea	JFR	Date:	20 may 96

SAMPLE.WB1 REV 1.2 953103ML

2050

WORKBOOK PAGE: DUP4

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID / SOLID

						DUP
	Date Counted		MAY-19-96	Am 241 AEA Frac.	(C241)	0.751
DUP	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	0.248
	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0.019
8864	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		3174
	Digest Grams of Solids/L	(Dg/L)	1.959	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)	0.13
	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm		42.56
SOLID	Detector Number		15	Am 243 cpm		14.08
	Detector Efficiency	(DetEff)	0.3032	Cm 243/244 cpm		1.06
96004875				AEA Count Time	(min)	480
				Am 241 µCi/g =		7.1518E-01
0				Cm 243/244 µCi/g =	<	5.6577E-02

FUSION01

S96T001678

WB26572

SEH

JFR

AKL

05/20/96

05/17/96

12:00 PM

C-106 GRAB

Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

				DETECTION LEVELS in µCi/g
Am241 µCi/g	=	7.15E-01		
Relative Counting Error	=	2.8%		
NOTE: Cm-243/244 Result is a LESS THAN Value.				Am 241
Cm 243/244 µCi/g		< 5.66E-02		5.66E-02
Relative Counting Error	=	9.0%		Cm 243/244
Am 243 Tracer Recovery	=	84.2%		5.66E-02

Analyst:		AKL	Date:	05/20/96
Signature of Chemist:	John Relyea	JFR	Date:	20 May 96

SAMPLE.WB1 REV 1.2 953103ML

2051

WORKBOOK PAGE: SAM5

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID / SOLID

						SAMPLE
	Date Counted		MAY-19-96	Am 241 AEA Frac.	(C241)	0.673
SAMPLE	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	0.304
	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0.017
8864	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		2400
	Digest Grams of Solids/L	(Dg/L)	0.992	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)	0.13
	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm		31.58
SOLID	Detector Number		15	Am 243 cpm		14.27
	Detector Efficiency	(DetEff)	0.3032	Cm 243/244 cpm		0.52
96004875				AEA Count Time	(min)	480
				Am 241 µCi/g =		1.0320E+00
0				Cm 243/244 µCi/g =	<	9.8326E-02

FUSION01

S96T001689

WB26872

SEH

JFR

AKL

05/20/96

05/17/96

12:00 PM

C-106 GRAB

Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am241 µCi/g	=	1.03E+00	DETECTION LEVELS In µCi/g
Relative Counting Error	=	2.9%	
NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241 9.83E-02
Cm 243/244 µCi/g		< 9.83E-02	
Relative Counting Error	=	10.2%	Cm 243/244 9.83E-02
Am 243 Tracer Recovery	=	78.0%	

Analyst:	AKL	Date:	05/20/96
Signature of Chemist: John Relyea	JFR	Date:	20 May 96

SAMPLE.WB1 REV 1.2 953103ML

2052

WORKBOOK PAGE: DUP6

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID / SOLID

						DUP
	Date Counted		MAY-19-96	Am 241 AEA Frac.	(C241)	0.68
DUP	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	0.322
	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0.02
8864	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		2696
	Digest Grams of Solids/L	(Dg/L)	0.997	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)	0.13
	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm		36.24
SOLID	Detector Number		15	Am 243 cpm		17.15
	Detector Efficiency	(DetEff)	0.3032	Cm 243/244 cpm		1.05
96004875				AEA Count Time	(min)	480
				Am 241 µCi/g =		9.7969E-01
0				Cm 243/244 µCi/g =	<	7.7658E-02

FUSION01

S96T001689

WB26872

SEH

JFR

AKL

05/20/96

05/17/96

12:00 PM

C-106 GRAB

Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am241 µCi/g	=	9.80E-01
Relative Counting Error	=	2.6%
NOTE: Cm-243/244 Result is a LESS THAN Value.		
Cm 243/244 µCi/g		< 7.77E-02
Relative Counting Error	=	9.0%
Am 243 Tracer Recovery	=	92.8%

DETECTION LEVELS in µCi/g	
Am 241	7.77E-02
Cm 243/244	7.77E-02

Analyst:	AKL	Date:	05/20/96
Signature of Chemist: John Relyea	JFR	Date:	20 May 96

SAMPLE.WB1 REV 1.2 953103ML

2053

VKaymond 5/19/96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
WL8864-STD
File ID: 23a2345.CNF

Counted on: 5/19/96 @ 2:41
Detector: AEA23
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	246.3	246.3	297.895	297.895	16.000	6.477	8.000	1.231
2	273.7	273.7	252.579	252.393	12.000	6.015	6.000	0.956

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu238	0.445	5.487	5.468	0.019	0.03	13.21	2.5	1379.8	0.622E-03
	Am241		5.479	5.468	0.011				1056.9	0.476E-03
2	Am243	0.559	5.270	5.258	0.012	0.03	16.60	2.3	1260.9	0.568E-03
Totals:		1.004	<--valid peaks only-->				29.82			

DETECTOR CALIBRATION
Energy(MEV) = 4.097 + (0.0046)*Channel
Energy range (MeV): 4.097 TO 6.453
Efficiency = 0.0133 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	14252.0	100.000
Smoothed	14251.7	99.998
Composite fit	14312.0	100.421
Residuals	-60.0	-0.421

Analyzed by: _____
ALJ

Spectrum 23a2345.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 2260.7


```
2
2
.2
.2
...2
....2
...... 2
.........  2
1............  2
1..................... 2
.1...............................2.
..1.........................................2..........
....1.......................................................2.........
.......1.........2........
............1.
...................1
.............................1.
.........................................1
.........................................1
......1..
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Raw Data Dump for AEA Spectrum: 23a2345.CNF

1	0.	0.	0.	0.	0.	0.	2.	0.	0.	0.
11	0.	0.	1.	0.	0.	0.	0.	1.	2.	4.
21	0.	1.	0.	0.	0.	1.	0.	1.	0.	1.
31	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	1.	0.	2.	1.	0.
51	0.	2.	0.	1.	0.	0.	3.	1.	0.	4.
61	0.	0.	1.	1.	1.	0.	0.	1.	1.	0.
71	0.	1.	1.	2.	0.	3.	1.	1.	0.	0.
81	1.	1.	1.	0.	1.	1.	1.	2.	0.	1.
91	1.	1.	2.	2.	1.	1.	2.	2.	1.	1.
101	0.	0.	1.	1.	0.	3.	2.	3.	7.	1.
111	2.	1.	2.	1.	3.	0.	3.	1.	4.	3.
121	2.	2.	3.	2.	1.	4.	2.	1.	2.	1.
131	1.	2.	1.	1.	2.	2.	3.	2.	5.	5.
141	4.	3.	4.	4.	5.	3.	4.	4.	0.	5.
151	6.	3.	4.	6.	6.	7.	2.	3.	6.	9.
161	6.	8.	5.	5.	7.	9.	8.	8.	6.	7.
171	4.	5.	6.	10.	9.	14.	3.	4.	14.	9.
181	11.	8.	20.	11.	19.	11.	16.	15.	21.	17.
191	22.	14.	21.	19.	20.	17.	23.	16.	19.	28.
201	17.	14.	26.	20.	24.	28.	32.	35.	41.	39.
211	36.	35.	44.	51.	32.	42.	52.	62.	55.	66.
221	42.	60.	77.	63.	90.	95.	91.	97.	90.	99.
231	110.	108.	123.	132.	137.	137.	134.	163.	201.	169.
241	191.	251.	250.	253.	242.	282.	282.	292.	266.	280.
251	304.	311.	296.	330.	285.	266.	174.	108.	45.	60.
261	49.	58.	42.	56.	55.	47.	54.	57.	51.	55.
271	56.	67.	66.	72.	79.	81.	75.	93.	101.	107.
281	108.	111.	114.	131.	161.	143.	153.	176.	187.	187.
291	180.	185.	197.	204.	216.	226.	291.	256.	273.	225.
301	217.	162.	98.	50.	39.	28.	18.	18.	14.	15.
311	7.	6.	6.	1.	1.	0.	0.	0.	0.	0.
321	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.
331	1.	0.	0.	0.	3.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	1.	2.	1.	0.	0.	0.
351	0.	0.	0.	1.	0.	1.	0.	1.	3.	1.
361	1.	2.	0.	1.	3.	1.	0.	0.	1.	0.
371	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	1.	0.	1.	0.	1.	2.	0.	1.
431	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	2.	1.
461	0.	1.	1.	0.	0.	1.	0.	0.	0.	0.
471	1.	0.	0.	0.	0.	2.	0.	0.	1.	1.
481	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
491	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Raymond 5/9/96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
WL8864-BLK
File ID: 24a2448.CNF

Counted on: 5/19/96 @ 2:42
Detector: AEA24
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	329.1	329.1	253.431	253.431	12.000	5.939	6.000	1.095

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	1.054	5.270	5.256	0.014	0.03	17.84	2.1	841.9	0.379E-03
Totals:		1.054	<--valid peaks only-->				17.84			

DETECTOR CALIBRATION
Energy(MEV) = 4.090 + (0.0046)*Channel
Energy range (MeV): 4.090 TO 6.445
Efficiency = 0.0214 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	8119.0	100.000
Smoothed	8121.0	100.024
Composite fit	8561.4	105.449
Residuals	-442.4	-5.449

Analyzed by: _____
ALJ

Spectrum 24a2448.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,... etc Display Max.: 2473.5

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Raw Data Dump for AEA Spectrum: 24a2448.CNF

1	0.	0.	0.	0.	2.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
31	1.	0.	0.	0.	1.	1.	0.	0.	0.	0.
41	0.	0.	0.	0.	1.	0.	0.	0.	1.	0.
51	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.
61	0.	1.	0.	1.	1.	0.	2.	1.	0.	0.
71	0.	0.	1.	0.	1.	2.	1.	1.	0.	0.
81	1.	0.	0.	0.	0.	0.	0.	1.	0.	0.
91	1.	1.	0.	0.	0.	0.	0.	0.	0.	1.
101	0.	0.	1.	0.	0.	2.	0.	0.	0.	0.
111	0.	0.	1.	1.	1.	0.	0.	0.	0.	1.
121	0.	0.	0.	0.	0.	3.	0.	1.	4.	0.
131	1.	0.	1.	3.	1.	0.	2.	0.	1.	3.
141	2.	1.	3.	1.	0.	1.	2.	0.	1.	0.
151	5.	1.	0.	3.	0.	1.	1.	5.	1.	1.
161	1.	4.	1.	2.	1.	1.	0.	0.	1.	3.
171	1.	1.	1.	2.	2.	3.	4.	5.	4.	1.
181	2.	2.	6.	6.	3.	10.	6.	2.	3.	8.
191	10.	8.	5.	7.	18.	10.	7.	13.	6.	13.
201	11.	18.	10.	14.	19.	15.	18.	20.	13.	28.
211	17.	31.	27.	29.	32.	34.	27.	41.	39.	51.
221	36.	44.	67.	52.	51.	65.	92.	70.	95.	98.
231	101.	102.	97.	135.	155.	129.	160.	158.	192.	182.
241	185.	212.	216.	226.	248.	266.	265.	278.	288.	327.
251	321.	319.	342.	356.	333.	321.	253.	169.	73.	37.
261	29.	21.	20.	21.	15.	15.	17.	9.	7.	10.
271	9.	7.	1.	2.	1.	0.	1.	1.	0.	0.
281	0.	0.	0.	0.	0.	0.	2.	2.	1.	1.
291	1.	0.	1.	1.	0.	0.	1.	4.	2.	1.
301	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.
311	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
331	0.	0.	0.	0.	1.	0.	0.	0.	1.	0.
341	0.	0.	0.	0.	2.	2.	0.	1.	0.	1.
351	0.	0.	0.	0.	0.	0.	0.	0.	3.	0.
361	1.	1.	1.	0.	0.	0.	0.	0.	1.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	1.	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.	0.	0.	0.	1.	1.	0.
431	0.	0.	0.	0.	1.	0.	1.	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	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.
471	0.	0.	1.	0.	1.	1.	0.	0.	0.	0.
481	2.	0.	0.	0.	0.	0.	1.	0.	0.	0.
491	0.	1.	0.	0.	1.	1.	0.	0.	1.	0.
511	0.	0.								

C Raymond 5/19/96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S967001678-SAM
File ID: 25a2528.CNF

Counted on: 5/19/96 @ 2:43
Detector: AEA25
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	20.4	20.4	367.560	367.560	8.000	2.628	4.000	0.327
2	739.4	739.4	297.670	297.666	14.000	6.867	7.000	1.165
3	281.3	281.3	252.909	252.580	10.000	3.996	5.000	0.676
4	10.0	10.0	167.547	166.817	24.000	96.432	12.000	13.492

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm244	0.023	5.795	5.787	0.008	0.01	1.41	7.5	48.1	0.217E-04
	Cm243		5.779	5.787	-.008				65.9	0.297E-04
2	Pu238	0.696	5.487	5.466	0.021	0.03	43.42	1.4	2058.4	0.927E-03
	Am241		5.479	5.466	0.013				1576.7	0.710E-03
3	Am243	0.249	5.270	5.259	0.011	0.02	15.55	2.8	536.0	0.241E-03
4	Np237	0.019	4.769	4.864	-.095	0.44	1.16	18.4	45.7	0.206E-04
	Pu242		4.891	4.864	0.027				39.7	0.179E-04
		---					---			
Totals:		0.987	<--valid peaks only-->				61.55			

DETECTOR CALIBRATION
Energy(MEV) = 4.097 + (0.0046)*Channel
Energy range (MeV): 4.097 TO 6.452
Efficiency = 0.0293 CPM/DPM

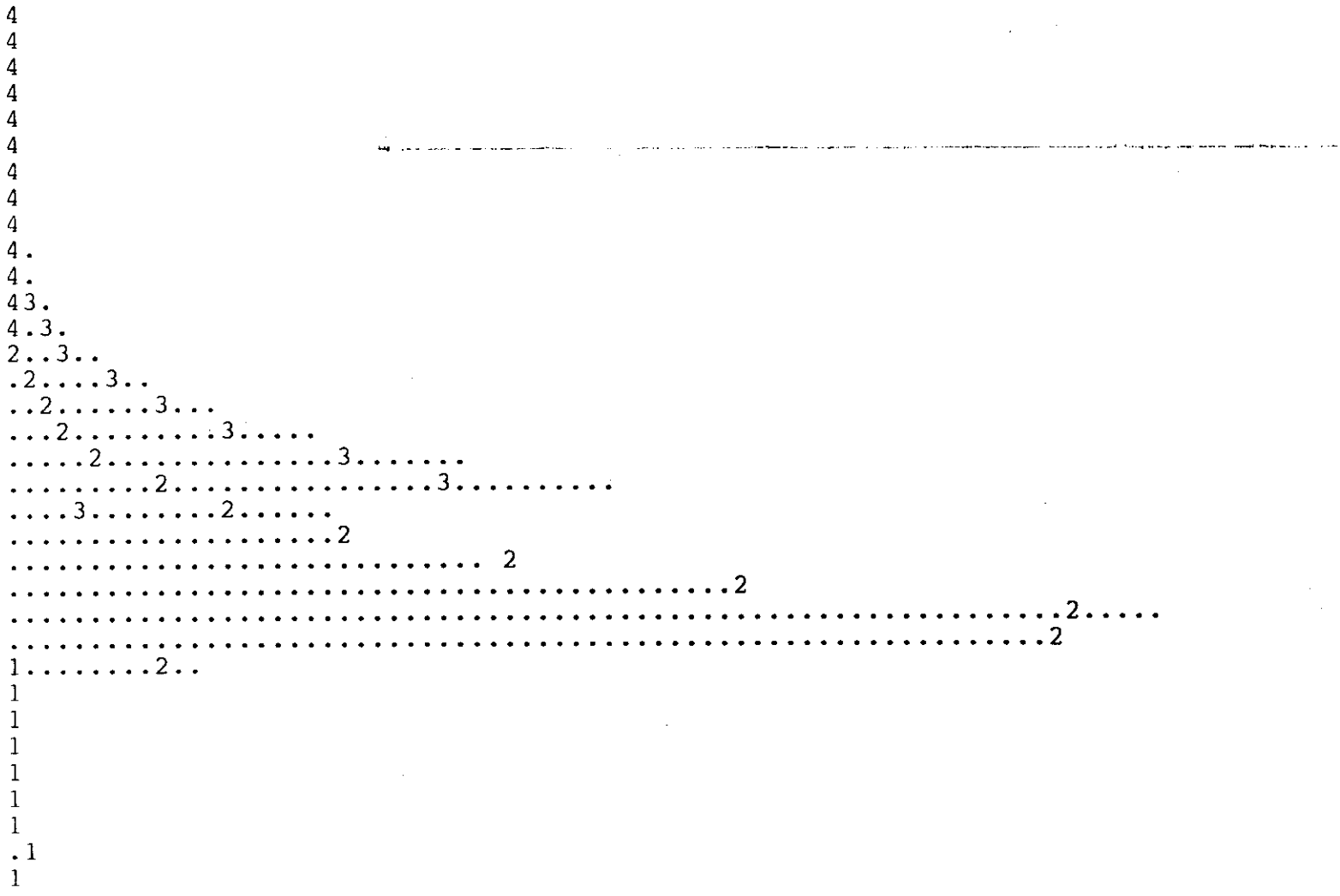
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	29939.0	100.000
Smoothed	29940.0	100.003
Composite fit	29544.7	98.683
Residuals	394.3	1.317

Analyzed by: _____
ALJ

Spectrum 25a2528.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5094.6



Raw Data Dump for AEA Spectrum: 25a2528.CNF

1	0.	0.	0.	0.	1.	0.	0.	0.	1.	0.
11	1.	1.	0.	1.	1.	1.	0.	1.	1.	1.
21	2.	0.	0.	0.	0.	0.	0.	1.	1.	2.
31	2.	0.	1.	1.	2.	0.	1.	1.	1.	1.
41	3.	0.	1.	1.	1.	1.	5.	1.	1.	1.
51	1.	1.	1.	3.	0.	3.	0.	2.	2.	1.
61	2.	0.	4.	1.	1.	0.	0.	1.	2.	0.
71	3.	2.	2.	1.	1.	1.	0.	5.	1.	2.
81	2.	2.	1.	3.	0.	4.	0.	1.	1.	2.
91	5.	2.	0.	1.	3.	0.	6.	3.	2.	1.
101	1.	6.	5.	2.	7.	0.	4.	3.	1.	3.
111	2.	5.	2.	4.	4.	3.	3.	3.	2.	6.
121	9.	6.	2.	3.	3.	4.	5.	5.	3.	5.
131	1.	8.	2.	6.	5.	6.	8.	5.	10.	8.
141	8.	6.	7.	4.	8.	4.	10.	9.	3.	3.
151	10.	8.	9.	6.	12.	10.	17.	9.	10.	24.
161	14.	7.	11.	15.	11.	15.	18.	16.	14.	15.
171	9.	17.	10.	14.	14.	10.	14.	21.	20.	17.
181	22.	25.	29.	23.	26.	23.	22.	32.	18.	31.
191	31.	40.	31.	32.	36.	30.	31.	38.	40.	28.
201	43.	38.	33.	51.	49.	40.	41.	53.	52.	64.
211	60.	47.	61.	56.	73.	83.	87.	78.	84.	80.
221	83.	92.	91.	88.	110.	114.	122.	127.	124.	144.
231	162.	147.	172.	169.	174.	169.	181.	191.	206.	250.
241	210.	252.	268.	255.	268.	274.	314.	306.	324.	321.
251	351.	408.	407.	411.	365.	301.	195.	137.	142.	151.
261	133.	158.	170.	164.	168.	171.	159.	200.	212.	193.
271	196.	231.	239.	254.	280.	243.	294.	294.	304.	357.
281	347.	391.	398.	409.	452.	480.	462.	515.	617.	609.
291	638.	640.	697.	738.	703.	710.	748.	794.	761.	732.
301	634.	433.	236.	169.	121.	114.	74.	65.	50.	39.
311	21.	15.	17.	11.	7.	1.	3.	6.	2.	2.
321	2.	5.	2.	2.	3.	4.	3.	4.	5.	2.
331	5.	8.	4.	5.	3.	11.	5.	4.	3.	2.
341	9.	7.	6.	8.	7.	10.	7.	9.	9.	9.
351	13.	15.	15.	20.	15.	16.	16.	12.	10.	11.
361	19.	14.	14.	22.	16.	15.	16.	26.	26.	13.
371	4.	3.	1.	0.	0.	0.	0.	0.	0.	0.
381	1.	1.	0.	0.	1.	1.	1.	0.	0.	0.
391	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.
401	0.	2.	0.	0.	0.	0.	2.	0.	0.	0.
411	2.	0.	0.	3.	0.	0.	3.	1.	1.	2.
421	0.	0.	2.	3.	3.	3.	4.	2.	2.	7.
431	4.	3.	3.	5.	2.	1.	2.	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.	0.	1.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	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.	1.	0.
511	0.	0.								

Raymond 5/19/96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T001678-DUP
File ID: 26a2629.CNF

Counted on: 5/19/96 @ 2:43
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	21.4	21.4	365.430	365.430	14.000	4.374	7.000	0.857
2	750.8	750.8	296.963	296.961	12.000	5.779	6.000	0.998
3	233.7	233.7	251.549	251.190	10.000	3.533	5.000	0.530

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm244	0.019	5.795	5.791	0.004	0.02	1.06	8.7	35.2	0.159E-04
	Cm243		5.779	5.791	-.012				48.3	0.217E-04
2	Pu238	0.751	5.487	5.476	0.011	0.03	42.56	1.4	1957.3	0.882E-03
	Am241		5.479	5.476	0.003				1499.2	0.675E-03
3	Am243	0.248	5.270	5.265	0.005	0.02	14.08	2.9	470.8	0.212E-03
		---					---			
Totals:		1.018	<--valid peaks only-->				57.70			

DETECTOR CALIBRATION
Energy(MEV) = 4.110 + (0.0046)*Channel
Energy range (MeV): 4.110 TO 6.465
Efficiency = 0.0302 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	27203.0	100.000
Smoothed	27202.8	99.999
Composite fit	27697.7	101.819
Residuals	-494.7	-1.819

Analyzed by: _____
ALJ

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Raw Data Dump for AEA Spectrum: 26a2629.CNF

1	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
11	1.	0.	0.	0.	1.	0.	0.	2.	0.	0.
21	0.	0.	0.	0.	1.	2.	0.	1.	1.	0.
31	3.	1.	2.	0.	0.	0.	0.	1.	1.	0.
41	0.	1.	2.	0.	0.	1.	1.	4.	0.	0.
51	2.	0.	1.	1.	1.	1.	1.	0.	0.	1.
61	1.	1.	0.	1.	0.	1.	1.	0.	0.	4.
71	0.	0.	1.	1.	0.	3.	1.	1.	0.	3.
81	2.	3.	1.	1.	2.	0.	1.	0.	1.	1.
91	1.	0.	1.	1.	3.	4.	2.	1.	0.	0.
101	2.	0.	4.	1.	1.	4.	0.	1.	0.	1.
111	1.	2.	2.	3.	0.	1.	1.	2.	1.	2.
121	2.	2.	3.	3.	2.	3.	1.	5.	5.	2.
131	3.	1.	5.	2.	1.	4.	4.	5.	3.	1.
141	2.	7.	4.	4.	5.	4.	3.	7.	2.	4.
151	4.	10.	8.	6.	4.	8.	3.	5.	6.	6.
161	3.	4.	5.	4.	5.	2.	10.	10.	8.	8.
171	9.	10.	7.	15.	8.	7.	7.	11.	11.	4.
181	16.	17.	12.	15.	16.	13.	14.	18.	20.	20.
191	20.	22.	15.	17.	21.	18.	20.	26.	25.	18.
201	22.	29.	33.	26.	35.	32.	39.	35.	43.	39.
211	64.	34.	42.	52.	52.	42.	61.	61.	77.	87.
221	72.	77.	77.	87.	97.	94.	106.	105.	110.	124.
231	133.	135.	134.	151.	176.	152.	195.	209.	193.	203.
241	217.	261.	271.	261.	273.	260.	270.	320.	291.	305.
251	324.	355.	357.	281.	239.	150.	126.	98.	116.	124.
261	131.	125.	115.	150.	145.	140.	128.	183.	185.	178.
271	217.	250.	242.	240.	255.	274.	268.	287.	363.	367.
281	382.	415.	433.	442.	450.	476.	550.	575.	555.	631.
291	649.	639.	653.	665.	723.	717.	834.	807.	744.	604.
301	382.	237.	156.	123.	84.	80.	60.	37.	38.	20.
311	17.	13.	8.	0.	1.	1.	1.	1.	0.	1.
321	4.	5.	2.	3.	1.	2.	2.	3.	3.	0.
331	1.	4.	2.	5.	3.	4.	8.	4.	5.	3.
341	5.	7.	7.	10.	4.	10.	13.	14.	7.	7.
351	12.	9.	13.	15.	10.	12.	11.	20.	16.	16.
361	16.	16.	21.	18.	25.	25.	20.	19.	14.	9.
371	2.	1.	0.	0.	0.	0.	0.	0.	0.	1.
381	0.	0.	0.	0.	0.	2.	2.	0.	1.	0.
391	1.	0.	0.	0.	0.	0.	1.	0.	0.	0.
401	0.	0.	0.	0.	0.	1.	1.	1.	3.	1.
411	0.	0.	2.	1.	3.	1.	1.	2.	1.	2.
421	2.	3.	4.	5.	0.	3.	3.	4.	4.	3.
431	1.	2.	1.	1.	2.	2.	1.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
471	0.	1.	1.	1.	1.	0.	0.	2.	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.								

C Raymond 5/19/96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T001689-SAM
File ID: 27a2715.CNF

Counted on: 5/19/96 @ 2:44
Detector: AEA27
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	17.7	17.7	363.972	363.972	14.000	6.088	7.000	1.423
2	579.7	579.7	297.042	297.041	12.000	5.762	6.000	1.049
3	288.4	288.4	251.188	250.814	14.000	5.107	7.000	1.037

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.017	5.755	5.767	-.0120	.03	0.82	9.9	30.7	0.138E-04
	Cm243		5.779	5.767	0.012				41.2	0.186E-04
2	Am241	0.673	5.479	5.459	0.0200	.03	31.58	1.6	1239.7	0.558E-03
3	Am243	0.304		5.246		0.02	14.27	2.7	526.5	0.237E-03
Totals:		0.994	<--valid peaks only-->				46.66			

DETECTOR CALIBRATION
Energy(MEV) = 4.093 + (0.0046)*Channel
Energy range (MeV): 4.093 TO 6.448
Efficiency = 0.0271 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	22523.0	100.000
Smoothed	22523.0	100.000
Composite fit	22399.1	99.450
Residuals	123.9	0.550

Analyzed by: _____
ALJ

Spectrum 27a2715.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 3937.8


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1
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Raw Data Dump for AEA Spectrum: 27a2715.CNF

1	0.	0.	0.	1.	0.	1.	0.	1.	0.	0.
11	0.	1.	1.	0.	0.	2.	0.	2.	1.	0.
21	3.	4.	0.	2.	0.	1.	2.	1.	1.	1.
31	0.	4.	1.	0.	0.	3.	0.	2.	1.	1.
41	0.	3.	2.	1.	0.	3.	2.	2.	1.	1.
51	0.	4.	2.	1.	0.	3.	1.	1.	2.	0.
61	0.	0.	1.	1.	2.	0.	1.	0.	0.	2.
71	2.	3.	4.	3.	1.	0.	2.	1.	0.	2.
81	1.	5.	4.	1.	1.	0.	0.	2.	0.	0.
91	2.	1.	0.	2.	1.	0.	1.	1.	0.	2.
101	1.	2.	4.	0.	0.	2.	0.	2.	1.	1.
111	2.	0.	0.	2.	3.	1.	2.	3.	1.	2.
121	4.	1.	2.	0.	4.	2.	2.	0.	5.	2.
131	4.	1.	1.	7.	4.	3.	4.	3.	2.	4.
141	3.	1.	1.	5.	5.	6.	5.	4.	3.	4.
151	4.	3.	5.	2.	2.	3.	2.	2.	3.	6.
161	6.	5.	5.	4.	5.	6.	6.	7.	6.	7.
171	4.	6.	2.	9.	9.	7.	2.	4.	6.	10.
181	8.	8.	8.	8.	11.	17.	13.	12.	10.	12.
191	15.	13.	9.	14.	13.	17.	17.	20.	10.	15.
201	23.	20.	17.	22.	18.	25.	25.	23.	44.	31.
211	30.	39.	36.	33.	38.	50.	40.	42.	43.	60.
221	54.	64.	75.	70.	91.	86.	72.	106.	111.	103.
231	104.	127.	149.	151.	168.	157.	173.	211.	209.	231.
241	248.	237.	251.	231.	273.	297.	318.	319.	344.	391.
251	348.	360.	359.	349.	238.	170.	127.	89.	87.	83.
261	84.	81.	80.	88.	87.	91.	127.	117.	137.	125.
271	147.	150.	173.	172.	203.	203.	209.	234.	236.	236.
281	273.	311.	309.	346.	345.	367.	411.	415.	421.	467.
291	493.	499.	541.	524.	579.	572.	611.	627.	622.	468.
301	311.	164.	111.	84.	83.	67.	46.	34.	28.	21.
311	14.	4.	3.	2.	2.	0.	2.	1.	0.	1.
321	1.	3.	1.	1.	2.	2.	0.	4.	3.	3.
331	1.	3.	1.	1.	1.	3.	4.	1.	3.	2.
341	6.	2.	4.	4.	5.	3.	6.	12.	4.	12.
351	11.	13.	8.	15.	9.	13.	12.	13.	19.	19.
361	12.	18.	14.	21.	20.	13.	18.	12.	8.	6.
371	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	2.	0.	0.	2.	0.
391	0.	0.	0.	0.	1.	0.	1.	0.	0.	2.
401	1.	0.	1.	2.	0.	0.	1.	0.	1.	1.
411	0.	2.	3.	2.	1.	2.	1.	0.	2.	1.
421	0.	1.	1.	2.	2.	1.	2.	1.	1.	3.
431	1.	5.	3.	2.	5.	2.	1.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
471	1.	0.	0.	0.	0.	0.	0.	2.	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.								

L Raymond 5/19/96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T001689-DUP
File ID: 28a2816.CNF

Counted on: 5/19/96 @ 2:45
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	18.8	18.8	367.088	367.088	10.000	3.256	5.000	0.528
2	812.4	812.4	297.484	297.483	12.000	6.111	6.000	1.498
3	416.5	416.5	251.933	251.760	12.000	3.859	6.000	0.958

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm243	0.020	5.779	5.795	-.016	0.01	1.05	8.7	43.9	0.198E-04
	Cm244		5.795	5.795	0.000				32.0	0.144E-04
2	Pu238	0.680	5.487	5.475	0.012	0.03	36.24	1.5	1534.7	0.691E-03
	Am241		5.479	5.475	0.004				1175.5	0.530E-03
3	Am243	0.322	5.270	5.265	0.005	0.02	17.15	2.3	528.1	0.238E-03
Totals:		1.022	<--valid peaks only-->				54.44			

DETECTOR CALIBRATION
Energy(MEV) = 4.107 + (0.0046)*Channel
Energy range (MeV): 4.107 TO 6.462
Efficiency = 0.0328 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	25581.0	100.000
Smoothed	25581.3	100.001
Composite fit	26134.8	102.165
Residuals	-553.8	-2.165

Analyzed by: _____
ALJ

Spectrum 28a2816.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,..., etc Display Max.: 5210.0

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Raw Data Dump for AEA Spectrum: 28a2816.CNF

1	0.	0.	1.	1.	0.	0.	2.	1.	1.	0.
11	1.	2.	0.	0.	1.	0.	2.	0.	0.	1.
21	1.	1.	0.	2.	0.	1.	1.	0.	1.	0.
31	1.	1.	3.	1.	2.	1.	1.	1.	0.	1.
41	0.	1.	1.	0.	2.	2.	1.	1.	0.	1.
51	0.	2.	0.	0.	0.	0.	0.	2.	0.	4.
61	0.	2.	2.	1.	1.	2.	2.	0.	0.	0.
71	1.	0.	2.	0.	1.	1.	0.	2.	2.	1.
81	3.	0.	1.	0.	1.	0.	1.	1.	0.	1.
91	1.	1.	0.	1.	0.	0.	1.	1.	0.	0.
101	0.	3.	1.	2.	1.	1.	0.	0.	0.	0.
111	0.	2.	1.	0.	1.	0.	1.	0.	0.	0.
121	0.	1.	0.	0.	0.	0.	2.	0.	1.	1.
131	0.	1.	1.	0.	0.	0.	1.	0.	2.	0.
141	0.	0.	2.	1.	2.	2.	2.	0.	0.	2.
151	0.	0.	1.	2.	2.	1.	1.	0.	2.	0.
161	1.	2.	0.	3.	1.	0.	1.	2.	0.	4.
171	0.	2.	2.	0.	1.	3.	1.	0.	2.	1.
181	2.	1.	3.	3.	2.	7.	2.	3.	1.	3.
191	3.	7.	4.	2.	1.	5.	6.	3.	2.	5.
201	3.	4.	5.	7.	7.	6.	5.	4.	10.	3.
211	10.	13.	11.	14.	19.	10.	23.	24.	22.	22.
221	33.	27.	53.	40.	59.	66.	72.	70.	79.	93.
231	96.	113.	127.	144.	147.	171.	195.	193.	209.	223.
241	273.	279.	291.	306.	378.	362.	395.	360.	413.	451.
251	466.	485.	514.	465.	339.	207.	98.	81.	53.	52.
261	57.	59.	58.	59.	79.	88.	74.	71.	79.	105.
271	77.	115.	141.	146.	152.	180.	187.	199.	243.	249.
281	275.	306.	365.	360.	420.	437.	504.	545.	565.	618.
291	651.	680.	683.	728.	770.	771.	854.	900.	858.	761.
301	524.	334.	220.	157.	134.	95.	96.	57.	47.	35.
311	24.	14.	11.	4.	2.	0.	0.	0.	1.	0.
321	0.	1.	1.	0.	0.	0.	0.	0.	2.	1.
331	1.	3.	2.	1.	0.	1.	2.	0.	2.	4.
341	2.	4.	5.	5.	4.	7.	3.	8.	13.	9.
351	11.	13.	6.	11.	13.	14.	11.	11.	13.	23.
361	11.	15.	17.	19.	17.	20.	20.	18.	24.	15.
371	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
411	0.	0.	0.	0.	3.	3.	0.	1.	4.	2.
421	0.	3.	1.	1.	3.	2.	2.	0.	1.	3.
431	4.	3.	2.	2.	3.	3.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	1.	2.	1.	2.	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.								

LABCORE Completed RadChem Report for Worklist#: 8865

Analyst: akl **Instrument:** AB14 **Book#** 124 B 43

Method: LA-953-103 **Rev/Mod** B-0

Worklist Comment: C-106. RUSH. Determine sample size using ludlum. new

Seq	Type	Sample#	R	A	Test		Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@AM24101	AM24101	SOLID	3.83E-02	3.88E-2	101.305	% Recovery
1	STD		0		@AM24101	AM24101T	SOLID	100.	8.53E+01	85.300	% Recovery
1	STD		0		@AM24101	AM24101E	SOLID	1.0	3.33E+00	3.330	% Ct Error
2	BLNK-PREP		0		@AM24101	AM24101	SOLID	1	<2.76E-2		uCi/g
2	BLNK-PREP		0		@AM24101	AM24101T	SOLID	100.	9.74E+01	97.400	% Recovery
2	BLNK-PREP		0		@AM24101	AM24101E	SOLID	1.0	1.00E+02	100.000	% Ct Error
3	SAMPLE	S96T002718	0	F	@AM24101	AM24101	SOLID	N/A	1.87E+00	145.0e-003	uCi/g
3	SAMPLE	S96T002718	0	F	@AM24101	AM24101E	SOLID	N/A	2.69E+00	0.0e+000	% Ct. Error
3	SAMPLE	S96T002718	0	F	@AM24101	AM24101T	SOLID	N/A	8.68E+01	0.0e+000	% Recovery
4	DUP	S96T002718	0	F	@AM24101	AM24101	SOLID	1.87E+0	1.69E+0	10.112	RPD
4	DUP	S96T002718	0	F	@AM24101	AM24101T	SOLID	100.0	9.34E+01	93.400	% Recovery
4	DUP	S96T002718	0	F	@AM24101	AM24101E	SOLID	1.0	2.47E+00	2.470	% Ct Error

Final page for worklist# 8865

Analyst Signature Date

Analyst Signature Date

John Relyea 21 May 96
Reviewer Signature Date

Validated 21 May 96

Units shown for QC (BLK/BKG) may not reflect the actual units.

LABCORE Data Entry Template for Worklist# 8865

Analyst: AKL **Instrument:** AM01 #14 **Book#** 124643

Method: LA-953-103 Rev/Mod _____

Worklist Comment: C-106. RUSH. Determine sample size using ludlum. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@AM24101	SOLID		
2	BLNK-PREP				@AM24101	SOLID		
3	SAMPLE	S96T002718	0	F	@AM24101	SOLID	96000082	C-106 GRAB
		Analytes Requested: AM24101 , AM24101E, AM24101T						
4	DUP	S96T002718	0	F	@AM24101	SOLID		

Final page for worklist # 8865

G Luis 5/17/96
Analyst Signature **Date**

L Raymond 5.19.96
Analyst Signature **Date**

M G Bielan 5/20/90

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

STD1	A	B	C	D	E	F	G
1	WORKBOOK PAGE: STD1						
2	**Am 241 and Cm 243/244: LA-953-103 (B-0)**			**LIQUID**			STD
3	Type	Date Counted		MAY-18-96	Am 241 AEA Frac.	(C241)	0.426
4	STD	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	0.513
5	Work List	Sample D.F.	(DF)	101	Cm 243/244 AEA Frac.	(Cm)	0
6	8865	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		1502
7	Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
8	@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)	0.37
9	Matrix	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm		13.22
10	LIQUID	Detector Number		14	Am 243 cpm		15.9
11	Batch Number	Detector Efficiency	(DetEff)	0.2910	Cm 243/244 cpm		0
12	96004876	Standard Book No		124B43	AEA Count Time	(min)	480
13	Rerun	Standard Value in µCi/mL		0.03825	Am 241 µCi/L =		3.8800E+01
14	0				Cm 243/244 µCi/L =	<	5.3384E+00
15	Sample Prep						
16	N/A						
17	Sample Number	Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))					
18		Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))					
19	Instrument Code						
20	WB27807	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100					
21	Prepared By	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV					
22	VAR						
23	Chemist						
24	JFR	Am 241 µCi/mL	=	3.88E-02	DETECTION		
25	Analyst	Relative Counting Error	=	3.3%	LEVELS		
26	AKL				in µCi/mL		
27	Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241		
28	05/18/96	Cm 243/244 µCi/mL		< 5.34E-03	5.34E-03		
29	Analysis Date	Relative Counting Error	=	100.0%	Cm 243/244		
30	05/17/96	Am 243 Tracer Recovery	=	85.3%	5.34E-03		
31	Analysis Time						
32	12:00 PM						
33	Sample Point						
34	C-106 GRAB						
35							
36							
37	Analyst:				AKL	Date:	05/18/96
38	Signature of Chemist:	John Relyea			JFR	Date:	21 May 96
39	STANDARD.WB1 REV 1.2	953103ML					

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BLANK2	A	B	C	D	E	F	G
1	WORKBOOK PAGE: BLANK2						
2	**Am 241 and Cm 243/244: LA-953-103 (B-0)**			**LIQUID / SOLID**			**BLNK-PREP**
3	Type	Date Counted		MAY-18-96	Am 241 AEA Frac.	(C241)	0
4	BLNK-PREP	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	1.013
5	Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0
6	8865	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		873
7	Test Code	Digest Grams of Solids/L	(Dg/L)	0.849	AT Count Time (min)	(TC)	30
8	@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)	0.37
9	Matrix	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm		18.6
10	SOLID	Detector Number		14	Am 243 cpm		0
11	Batch Number	Detector Efficiency	(DetEff)	0.2910	Cm 243/244 cpm		0
12	96004876				AEA Count Time	(min)	480
13	Rerun				Am 241 µCi/g =	<	2.7624E-02
14	0				Cm 243/244 µCi/g =	<	2.7624E-02
15	Sample Prep						
16	N/A						
17	Sample Number	Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]					
18		Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]					
19	Instrument Code						
20	WB27807	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100					
21	Prepared By	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV					
22	VAR						
23	Chemist	NOTE: Am-241 Result is a LESS THAN Value.					
24	JFR	Am241 µCi/g =		< 2.76E-02	DETECTION		
25	Analyst	Relative Counting Error =		100.0%	LEVELS		
26	AKL				in µCi/g		
27	Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241		
28	05/18/96	Cm 243/244 µCi/g		< 2.76E-02	2.76E-02		
29	Analysis Date	Relative Counting Error =		100.0%	Cm 243/244		
30	05/17/96	Am 243 Tracer Recovery =		97.4%	2.76E-02		
31	Analysis Time						
32	12:00 PM						
33	Sample Point						
34	C-106 GRAB						
35							
36							
37	Analyst:			AKL	Date:	05/18/96	
38	Signature of Chemist:	John Rebyea		JFR	Date:	21 May 96	
39	BLANK.WB1 REV 1.2	953103ML					

2075

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SAM3	A	B	C	D	E	F	G
1	WORKBOOK PAGE: SAM3						
2	**Am 241 and Cm 243/244: LA-953-103 (B-0)**			**LIQUID / SOLID**			**SAMPLE**
3	Type	Date Counted		MAY-18-96	Am 241 AEA Frac.	(C241)	0.744
4	SAMPLE	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	0.217
5	Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0.026
6	8865	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		3597
7	Test Code	Digest Grams of Solids/L	(Dg/L)	0.849	AT Count Time (min)	(TC)	30
8	@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)	0.37
9	Matrix	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm		49.07
10	SOLID	Detector Number		14	Am 243 cpm		14.3
11	Batch Number	Detector Efficiency	(DetEff)	0.2910	Cm 243/244 cpm		1.69
12	96004876				AEA Count Time	(min)	480
13	Rerun				Am 241 µCi/g =		1.8686E+00
14	0				Cm 243/244 µCi/g =	<	1.4469E-01
15	Sample Prep						
16	FUSION01						
17	Sample Number	Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]					
18	S96T002718	Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]					
19	Instrument Code						
20	WB27807	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100					
21	Prepared By	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV					
22	VAR						
23	Chemist						
24	JFR	Am241 µCi/g =		1.87E+00	DETECTION		
25	Analyst	Relative Counting Error =		2.7%	LEVELS		
26	AKL				in µCi/g		
27	Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241		
28	05/18/96	Cm 243/244 µCi/g		< 1.45E-01	1.45E-01		
29	Analysis Date	Relative Counting Error =		7.3%	Cm 243/244		
30	05/17/96	Am 243 Tracer Recovery =		86.8%	1.45E-01		
31	Analysis Time						
32	12:00 PM						
33	Sample Point						
34	C-106 GRAB						
35							
36							
37	Analyst:				AKL	Date:	05/18/96
38	Signature of Chemist:	John Relyea			JFR	Date:	21 May 96
39	SAMPLE.WB1 REV 1.2	953103ML					

2076

I:\953103\OUT\AM8865.WB1 19-May-96 03:59:40 PM

DUP4	A	B	C	D	E	F	G
1	WORKBOOK PAGE: DUP4						
2	**Am 241 and Cm 243/244: LA-953-103 (B-0)**			**LIQUID / SOLID**			**DUP**
3	Type	Date Counted		MAY-18-96	Am 241 AEA Frac.	(C241)	0.733
4	DUP	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	0.245
5	Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0.025
6	8865	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		3428
7	Test Code	Digest Grams of Solids/L	(Dg/L)	0.818	AT Count Time (min)	(TC)	30
8	@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)	0.37
9	Matrix	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm		52.39
10	SOLID	Detector Number		14	Am 243 cpm		17.47
11	Batch Number	Detector Efficiency	(DetEff)	0.2910	Cm 243/244 cpm		1.78
12	96004876				AEA Count Time	(min)	480
13	Rerun				Am 241 µCi/g =		1.6912E+00
14	0				Cm 243/244 µCi/g =	<	1.2355E-01
15	Sample Prep						
16	FUSION01						
17	Sample Number	Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]					
18	S96T002718	Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]					
19	Instrument Code						
20	WB27807	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100					
21	Prepared By	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV					
22	VAR						
23	Chemist						
24	JFR	Am241 µCi/g =		1.69E+00	DETECTION		
25	Analyst	Relative Counting Error =		2.5%	LEVELS		
26	AKL				in µCi/g		
27	Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241		
28	05/18/96	Cm 243/244 µCi/g		< 1.24E-01	1.24E-01		
29	Analysis Date	Relative Counting Error =		7.0%	Cm 243/244		
30	05/17/96	Am 243 Tracer Recovery =		93.4%	1.24E-01		
31	Analysis Time						
32	12:00 PM						
33	Sample Point						
34	C-106 GRAB						
35							
36							
37	Analyst:			AKL	Date:	05/18/96	
38	Signature of Chemist:			JFR	Date:	21 May 96	
39	SAMPLE.WB1 REV 1.2	953103MC					

2677

5-18-96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
WL8865-STD
File ID: 23a2343.CNF

Counted on: 5/18/96 @16: 5
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	227.4	227.4	298.383	298.383	12.000	6.614	6.000	1.130
2	272.0	272.0	252.489	252.314	14.000	6.416	7.000	1.082

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu238	0.426	5.487	5.470	0.017	0.03	13.22	2.5	865.9	0.390E-03
	Am241		5.479	5.470	0.009				663.3	0.299E-03
2	Am243	0.513	5.270	5.258	0.012	0.03	15.90	2.4	757.8	0.341E-03
Totals:		0.940	<--valid peaks only-->				29.12			

DETECTOR CALIBRATION
Energy(MEV) = 4.097 + (0.0046)*Channel
Energy range (MeV): 4.097 TO 6.453
Efficiency = 0.0212 CPM/DPM

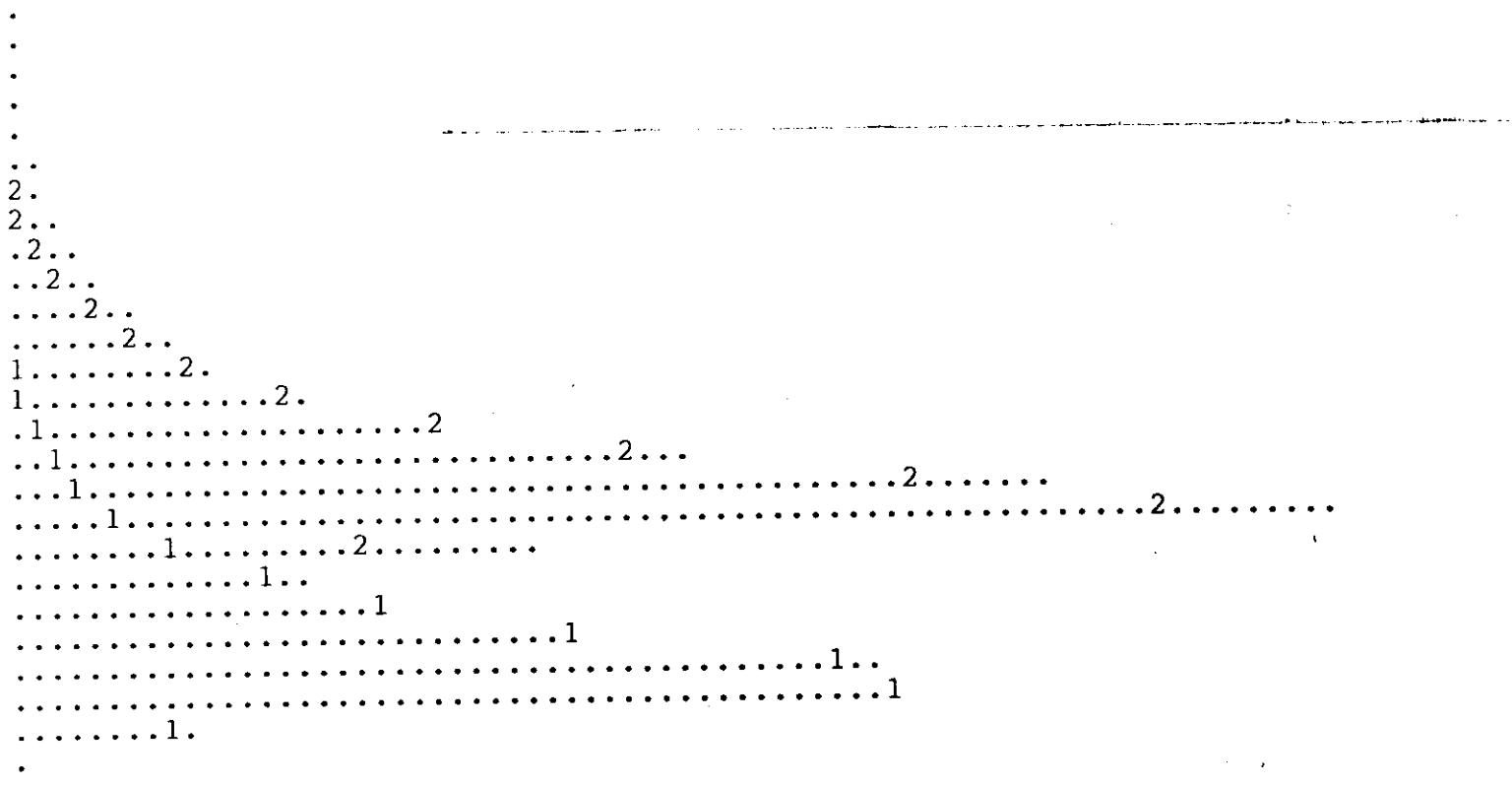
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	14880.0	100.000
Smoothed	14879.7	99.998
Composite fit	13980.2	93.953
Residuals	899.8	6.047

Analyzed by: _____
VR

Spectrum 23a2343.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 2241.3



Raw Data Dump for AEA Spectrum: 23a2343.CNF

1	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
11	1.	1.	1.	0.	2.	1.	1.	0.	2.	0.
21	1.	1.	0.	0.	1.	3.	2.	0.	2.	2.
31	2.	3.	2.	4.	1.	1.	0.	2.	2.	4.
41	1.	0.	2.	1.	0.	3.	0.	2.	2.	2.
51	0.	2.	0.	0.	0.	0.	3.	0.	1.	0.
61	2.	2.	2.	1.	1.	0.	2.	4.	2.	2.
71	2.	2.	2.	2.	4.	8.	1.	3.	2.	3.
81	2.	1.	0.	0.	2.	4.	2.	1.	7.	4.
91	0.	5.	2.	2.	1.	4.	3.	3.	3.	3.
101	4.	0.	2.	6.	3.	0.	5.	2.	4.	7.
111	3.	2.	4.	4.	2.	3.	3.	5.	10.	4.
121	4.	12.	1.	4.	7.	2.	4.	4.	3.	1.
131	6.	8.	10.	11.	5.	2.	3.	11.	3.	5.
141	5.	7.	7.	4.	9.	10.	10.	9.	7.	4.
151	8.	8.	6.	6.	9.	7.	13.	10.	6.	7.
161	11.	5.	11.	13.	4.	12.	8.	15.	13.	11.
171	10.	16.	13.	15.	23.	10.	12.	19.	14.	10.
181	27.	26.	22.	14.	29.	20.	14.	19.	29.	21.
191	25.	28.	29.	25.	32.	29.	35.	21.	38.	23.
201	25.	29.	40.	44.	37.	38.	56.	34.	38.	38.
211	45.	42.	53.	69.	46.	55.	75.	64.	77.	54.
221	60.	57.	66.	90.	85.	95.	86.	103.	101.	112.
231	104.	102.	135.	143.	127.	142.	155.	175.	190.	178.
241	191.	209.	241.	217.	215.	259.	278.	247.	281.	290.
251	300.	330.	290.	322.	291.	242.	182.	100.	85.	50.
261	56.	67.	74.	80.	46.	61.	60.	61.	59.	69.
271	59.	78.	66.	67.	88.	89.	72.	109.	87.	97.
281	93.	98.	105.	137.	119.	138.	145.	157.	171.	203.
291	179.	191.	176.	185.	210.	225.	239.	219.	245.	242.
301	215.	161.	110.	56.	51.	33.	28.	28.	18.	10.
311	18.	5.	7.	3.	2.	1.	0.	0.	1.	0.
321	0.	0.	0.	2.	1.	1.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.
341	0.	0.	0.	0.	3.	1.	0.	0.	0.	0.
351	0.	1.	1.	1.	0.	1.	0.	0.	0.	1.
361	0.	1.	0.	1.	0.	0.	0.	1.	0.	1.
371	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
381	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
391	0.	0.	0.	0.	1.	0.	0.	0.	0.	1.
401	1.	0.	0.	0.	2.	1.	0.	0.	0.	0.
411	1.	0.	1.	0.	0.	0.	2.	0.	0.	0.
421	0.	0.	1.	1.	0.	0.	0.	0.	0.	1.
431	0.	2.	0.	0.	1.	0.	0.	0.	0.	1.
441	0.	0.	0.	1.	0.	0.	2.	0.	0.	0.
451	0.	0.	1.	1.	0.	2.	0.	0.	1.	3.
461	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
471	2.	0.	0.	0.	1.	1.	0.	1.	1.	1.
481	0.	0.	1.	0.	2.	0.	1.	0.	1.	1.
491	0.	2.	1.	0.	2.	2.	2.	0.	1.	1.
511	1.	0.								

5-18-96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
WL8865-BLK
File ID: 24a2446.CNF

Counted on: 5/18/96 @16: 5
Detector: AEA24
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	366.1	366.1	253.534	253.534	12.000	5.889	6.000	1.185

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	1.013	5.270	5.252	0.018	0.03	18.60	2.1	596.3	0.269E-03
Totals:		1.013	<--valid peaks only-->				18.60			

DETECTOR CALIBRATION
Energy(MEV) = 4.086 + (0.0046)*Channel
Energy range (MeV): 4.086 TO 6.441
Efficiency = 0.0315 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	8813.0	100.000
Smoothed	8812.0	99.989
Composite fit	8926.8	101.291
Residuals	-113.8	-1.291

Analyzed by: _____
VR

Spectrum 24a2446.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 2693.2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Raw Data Dump for AEA Spectrum: 24a2446.CNF

1	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
11	0.	0.	2.	0.	2.	0.	2.	0.	0.	0.
21	0.	0.	0.	2.	1.	0.	0.	1.	1.	0.
31	0.	0.	0.	1.	1.	1.	0.	0.	0.	1.
41	0.	0.	2.	0.	1.	0.	0.	0.	0.	0.
51	1.	0.	1.	2.	0.	0.	2.	1.	1.	0.
61	0.	1.	0.	2.	1.	0.	0.	0.	0.	2.
71	0.	1.	0.	1.	2.	0.	0.	0.	1.	2.
81	0.	0.	0.	1.	0.	1.	1.	2.	0.	1.
91	0.	1.	0.	1.	1.	0.	0.	2.	0.	0.
101	3.	0.	1.	1.	1.	0.	1.	1.	0.	0.
111	1.	0.	1.	3.	0.	2.	1.	0.	3.	1.
121	1.	2.	0.	0.	2.	0.	1.	3.	2.	1.
131	2.	1.	0.	1.	0.	0.	2.	2.	0.	2.
141	0.	0.	2.	1.	4.	2.	1.	4.	3.	1.
151	1.	2.	2.	1.	0.	0.	1.	3.	3.	3.
161	3.	2.	2.	2.	2.	6.	4.	4.	2.	2.
171	2.	0.	4.	7.	6.	5.	2.	7.	8.	9.
181	4.	6.	5.	3.	3.	6.	4.	5.	5.	9.
191	14.	14.	11.	12.	6.	13.	11.	10.	11.	15.
201	12.	13.	23.	13.	11.	24.	16.	20.	13.	21.
211	28.	37.	25.	34.	31.	43.	37.	43.	38.	36.
221	44.	52.	72.	52.	66.	61.	79.	77.	83.	91.
231	99.	117.	122.	128.	144.	141.	150.	173.	180.	211.
241	197.	217.	236.	247.	243.	301.	315.	273.	300.	321.
251	353.	364.	379.	401.	387.	334.	283.	198.	82.	55.
261	35.	28.	22.	28.	17.	24.	7.	12.	19.	9.
271	3.	3.	2.	1.	0.	0.	0.	0.	0.	1.
281	1.	0.	0.	0.	0.	0.	0.	1.	0.	1.
291	0.	0.	2.	3.	1.	0.	0.	1.	2.	0.
301	1.	2.	0.	2.	1.	0.	1.	1.	0.	0.
311	0.	1.	1.	0.	1.	0.	0.	0.	0.	0.
321	1.	1.	0.	0.	0.	0.	1.	0.	1.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	1.	1.	0.	1.	2.	0.	1.	0.	0.	1.
351	1.	1.	1.	0.	0.	2.	0.	1.	0.	1.
361	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
381	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	2.	0.	0.	0.	1.
401	0.	0.	0.	1.	1.	0.	0.	0.	1.	0.
411	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
421	2.	0.	0.	0.	0.	0.	0.	0.	0.	2.
431	0.	0.	0.	2.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
451	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
461	0.	1.	1.	2.	0.	1.	0.	0.	0.	0.
471	0.	0.	0.	0.	1.	0.	2.	0.	1.	0.
481	1.	1.	0.	0.	0.	0.	0.	2.	0.	0.
491	0.	0.	0.	0.	0.	2.	0.	0.	1.	2.
511	1.	0.								

AKJ 5-18-96

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. 2.02

DATA REDUCTION REPORT

WHC-SD-WM-DP-183, REV. 0

SAMPLE
S96T2718-SAM
File ID: 25a2526.CNF

Counted on: 5/18/96 @16: 6
Detector: AEA25
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	26.9	26.9	365.661	365.661	14.000	7.115	7.000	1.111
2	807.8	807.8	298.236	298.233	12.000	6.543	6.000	1.052
3	241.5	241.5	253.074	252.533	12.000	4.066	6.000	0.632

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm244	0.026	5.795	5.782	0.013	0.03	1.69	6.9	55.7	0.251E-04
	Cm243		5.779	5.782	-.003				76.3	0.344E-04
2	Pu238	0.744	5.487	5.472	0.015	0.03	49.07	1.3	2249.4	0.101E-02
	Am241		5.479	5.472	0.007				1722.9	0.776E-03
3	Am243	0.217	5.270	5.262	0.008	0.02	14.30	3.0	476.7	0.215E-03
Totals:		0.986	<--valid peaks only-->				65.06			

DETECTOR CALIBRATION
Energy(MEV) = 4.100 + (0.0046)*Channel
Energy range (MeV): 4.100 TO 6.456
Efficiency = 0.0303 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	31675.0	100.000
Smoothed	31675.3	100.001
Composite fit	31231.4	98.599
Residuals	443.6	1.401

Analyzed by: _____
VR

Spectrum 25a2526.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5472.7


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Raw Data Dump for AEA Spectrum: 25a2526.CNF

1	0.	0.	0.	1.	0.	0.	1.	0.	1.	0.
11	2.	0.	1.	1.	1.	2.	0.	2.	0.	1.
21	0.	4.	0.	0.	0.	1.	0.	0.	2.	0.
31	0.	0.	1.	1.	3.	0.	3.	0.	0.	1.
41	2.	1.	0.	1.	1.	2.	1.	1.	0.	2.
51	1.	2.	0.	0.	3.	0.	1.	1.	0.	1.
61	1.	1.	2.	0.	2.	2.	2.	0.	0.	4.
71	0.	1.	2.	0.	1.	2.	1.	1.	3.	3.
81	1.	3.	1.	0.	3.	2.	1.	3.	1.	1.
91	1.	1.	3.	0.	3.	3.	6.	5.	2.	1.
101	5.	4.	4.	5.	1.	3.	2.	1.	1.	4.
111	1.	3.	3.	1.	6.	2.	3.	3.	2.	3.
121	4.	3.	2.	10.	3.	7.	2.	5.	4.	3.
131	1.	5.	5.	3.	4.	7.	6.	5.	11.	4.
141	5.	7.	6.	5.	4.	6.	6.	4.	8.	6.
151	6.	7.	15.	4.	5.	9.	7.	9.	16.	10.
161	12.	12.	6.	9.	7.	12.	16.	14.	8.	12.
171	11.	8.	19.	11.	21.	10.	16.	16.	16.	17.
181	14.	21.	25.	18.	18.	17.	28.	21.	23.	22.
191	28.	31.	21.	34.	33.	29.	26.	52.	34.	39.
201	39.	27.	51.	41.	39.	42.	48.	45.	49.	38.
211	35.	51.	78.	62.	60.	64.	65.	73.	76.	71.
221	84.	84.	92.	112.	104.	111.	119.	124.	115.	131.
231	138.	127.	157.	138.	164.	173.	171.	213.	219.	219.
241	240.	229.	250.	317.	285.	286.	310.	292.	341.	317.
251	319.	366.	379.	373.	365.	292.	224.	172.	147.	160.
261	158.	148.	160.	174.	190.	213.	201.	224.	204.	210.
271	224.	218.	268.	279.	279.	267.	324.	310.	345.	382.
281	385.	431.	384.	483.	485.	508.	567.	596.	623.	624.
291	688.	737.	746.	748.	749.	790.	790.	825.	860.	873.
301	718.	558.	338.	213.	137.	115.	102.	88.	82.	53.
311	30.	27.	19.	16.	5.	5.	1.	4.	4.	2.
321	6.	5.	1.	3.	3.	2.	5.	5.	3.	5.
331	4.	5.	5.	11.	2.	7.	5.	8.	7.	8.
341	10.	8.	8.	12.	9.	14.	15.	13.	16.	17.
351	19.	20.	8.	22.	14.	22.	24.	25.	17.	27.
361	24.	29.	25.	24.	21.	34.	26.	19.	23.	37.
371	10.	2.	4.	0.	2.	0.	0.	0.	0.	0.
381	0.	1.	0.	0.	0.	0.	0.	0.	0.	2.
391	0.	0.	0.	1.	2.	1.	0.	0.	1.	1.
401	0.	0.	0.	0.	2.	1.	2.	1.	2.	1.
411	3.	3.	0.	1.	2.	1.	2.	2.	3.	1.
421	1.	0.	2.	1.	1.	1.	3.	1.	1.	0.
431	3.	1.	5.	4.	4.	1.	3.	2.	1.	0.
441	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
451	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

 5-18-96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T2718-DUP
File ID: 26a2627.CNF

Counted on: 5/18/96 @16: 6
Detector: AEA26
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	35.1	35.1	363.601	363.601	16.000	9.202	8.000	2.080
2	1075.8	1075.8	296.967	296.966	14.000	6.251	7.000	1.353
3	331.3	331.3	251.635	251.263	10.000	4.384	5.000	0.797

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm244	0.025	5.795	5.785	0.010	0.04	1.78	6.7	11.0	0.497E-05
	Cm243		5.779	5.785	-.006				15.1	0.680E-05
2	Pu238	0.733	5.487	5.478	0.009	0.03	52.39	1.2	451.7	0.203E-03
	Am241		5.479	5.478	0.001				346.0	0.156E-03
3	Am243	0.245	5.270	5.268	0.002	0.02	17.47	2.5	109.6	0.494E-04
Totals:		1.003	<--valid peaks only-->				71.64			

DETECTOR CALIBRATION
Energy(MEV) = 4.112 + (0.0046)*Channel
Energy range (MeV): 4.112 TO 6.467
Efficiency = 0.1611 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	34300.0	100.000
Smoothed	34300.7	100.002
Composite fit	34393.2	100.272
Residuals	-93.2	-0.272

Analyzed by: _____
VR

Spectrum 26a2627.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 7271.9


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1
1
1
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1
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Raw Data Dump for AEA Spectrum: 26a2627.CNF

1	0.	0.	0.	0.	1.	0.	1.	3.	1.	0.
11	1.	1.	1.	0.	0.	1.	0.	0.	0.	2.
21	1.	2.	0.	0.	1.	0.	1.	2.	0.	0.
31	0.	2.	0.	1.	0.	1.	1.	0.	0.	1.
41	0.	2.	1.	3.	0.	1.	0.	3.	0.	1.
51	2.	1.	0.	1.	0.	1.	1.	0.	0.	1.
61	1.	1.	2.	0.	2.	2.	0.	3.	1.	1.
71	0.	0.	2.	2.	1.	0.	1.	3.	1.	0.
81	2.	1.	3.	0.	1.	3.	0.	1.	6.	1.
91	1.	1.	0.	3.	0.	0.	0.	1.	1.	1.
101	3.	2.	0.	2.	0.	1.	1.	2.	5.	0.
111	3.	4.	2.	0.	2.	2.	1.	3.	0.	1.
121	1.	2.	2.	2.	0.	0.	2.	4.	1.	1.
131	3.	0.	2.	2.	0.	1.	1.	6.	6.	0.
141	4.	2.	5.	4.	3.	2.	6.	4.	4.	1.
151	2.	9.	5.	7.	5.	5.	2.	2.	4.	6.
161	1.	5.	7.	6.	6.	2.	6.	4.	6.	3.
171	8.	7.	8.	9.	14.	5.	7.	13.	7.	9.
181	9.	10.	8.	6.	7.	15.	15.	13.	11.	13.
191	15.	15.	12.	12.	15.	16.	21.	22.	24.	30.
201	29.	18.	24.	24.	24.	26.	29.	20.	39.	38.
211	34.	41.	36.	45.	42.	44.	41.	48.	45.	53.
221	80.	59.	59.	80.	85.	90.	83.	114.	117.	127.
231	143.	122.	153.	159.	187.	215.	189.	200.	217.	252.
241	286.	320.	310.	318.	300.	348.	340.	389.	367.	409.
251	415.	448.	412.	415.	312.	180.	142.	116.	135.	139.
261	112.	115.	117.	140.	148.	160.	161.	187.	180.	193.
271	215.	234.	239.	259.	307.	342.	339.	358.	391.	427.
281	434.	531.	496.	522.	607.	627.	678.	767.	815.	903.
291	883.	938.	939.	1011.	1078.	1090.	1129.	1176.	1106.	880.
301	618.	332.	245.	184.	119.	123.	113.	76.	65.	32.
311	29.	17.	14.	4.	5.	1.	3.	0.	2.	3.
321	1.	3.	2.	2.	1.	3.	3.	2.	5.	5.
331	6.	3.	3.	8.	4.	9.	3.	11.	8.	8.
341	6.	10.	13.	7.	11.	14.	8.	11.	20.	15.
351	20.	26.	19.	27.	30.	25.	36.	29.	30.	30.
361	29.	38.	35.	40.	36.	27.	32.	39.	38.	7.
371	8.	0.	1.	0.	0.	1.	0.	1.	1.	0.
381	1.	0.	0.	0.	0.	2.	0.	0.	0.	1.
391	0.	0.	1.	0.	1.	0.	1.	1.	0.	1.
401	1.	1.	0.	0.	0.	0.	1.	1.	0.	0.
411	1.	0.	2.	1.	3.	0.	2.	1.	2.	3.
421	2.	3.	2.	3.	2.	4.	4.	3.	2.	6.
431	2.	2.	3.	3.	2.	1.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

THE FOLLOWING ANALYSES WERE RERUN AND INCLUDED IN THE DATA PACKAGE, BUT THE RESULTS HAVE NOT BEEN REPORTED IN THE FINAL SUMMARY REPORTS.

WORKBOOK PAGE: SAM5

Am 241 and Cm 243/244: LA-953-103 (A-5) LIQUID / SOLID

Type	Date Counted		APR-24-96	Am 241 AEA Frac.	(C241)	0.636
SAMPLE	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	0.331
Work Bk	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0.027
7868	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		2499
Task Code	Digest Grams of Solids/L	(Dg/L)	1.515	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		115B43	Background in cpm	(Bkg)	0.23
Matrix	Am-243 Tracer Value	(dpm/mL)	922	Am 241 cpm		30.02
SOLID	Detector Number		13	Am 243 cpm		15.64
Sample Number	Detector Efficiency	(DetEff)	0.3163	Cm 243/244 cpm		1.29
96003705				AEA Count Time	(min)	480
Rerun				Am 241 µCi/g =		5.2681E-01
0				Cm 243/244 µCi/g =	<	4.3926E-02
Sample Prep						
FUSION01						

SAMPLE

Sample Number
S96T000571

Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Instrument Code
WB27810

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Prepared By
SEH

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Chemist
JFR

Am241 µCi/g	=	5.27E-01
Relative Counting Error	=	2.8%
NOTE: Cm-243/244 Result is a LESS THAN Value.		
Cm 243/244 µCi/g		< 4.39E-02
Relative Counting Error	=	8.2%
Am 243 Tracer Recovery	=	94.3%

DETECTION LEVELS in µCi/g	
Am 241	4.39E-02
Cm 243/244	4.39E-02

Analyst
AKL

Date Completed
04/25/96

Analysis Date
04/24/96

Analysis Time
10:15 AM

Sample Point
C-106 GRAB

Analyst:	AKL	Date:	04/25/96
Signature of Chemist: John Relyea	JFR	Date:	30 Apr 96

SAMPLE.WB1 REV 1.2 953103ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: DUP6

Am 241 and Cm 243/244: LA-953-103 (A-5) LIQUID / SOLID

Type	Date Counted		APR-24-96	Am 241 AEA Frac.	(C241)	0.776
DUP	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	0.173
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0.03
7868	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		4384
Test Code	Digest Grams of Solids/L	(Dg/L)	1.202	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		115B43	Background in cpm	(Bkg)	0.23
Matrix	Am-243 Tracer Value	(dpm/mL)	922	Am 241 cpm		69.28
SOLID	Detector Number		13	Am 243 cpm		15.46
Sample Number	Detector Efficiency	(DetEff)	0.3163	Cm 243/244 cpm		2.71
96003705				AEA Count Time	(min)	480
				Am 241 µCi/g =		1.5493E+00
Rerun				Cm 243/244 µCi/g =	<	1.1534E-01
0						
Sample Prep						
FUSION01						

Sample Number: S96T000571

Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]

Increment Code: WB27810

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Prepared By: SEH

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Analyst: JFR

Am241 µCi/g	=	1.55E+00	DETECTION LEVELS in µCi/g
Relative Counting Error	=	2.5%	
NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241 1.15E-01
Cm 243/244 µCi/g		< 1.15E-01	
Relative Counting Error	=	5.9%	Cm 243/244 1.15E-01
Am 243 Tracer Recovery	=	86.6%	

Reviewer: AKL

Date Complete: 04/25/96

Analysis Date: 04/24/96

Analysis Time: 10:15 AM

Sample Point: C-106 GRAB

Analyst:	AKL	Date:	04/25/96
Signature of Chemist: John Relyea	JFR	Date:	30 Apr 96

SAMPLE.WB1 REV 1.2 953103ML

DATA NOT USED IN PACKAGE

Westinghouse Hanford Co.

4/24/96

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

Rev. 2.01

DATA REDUCTION REPORT

SAMPLE
S96T571-SAM
File ID: 23a2398.CNF

Counted on: 4/24/96 @16:18
Detector: AEA23
Geometry number: 1
Count time: 28808. 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	24.4	24.4	368.511	368.511	10.000	3.463	5.000	0.607
2	637.4	637.4	299.029	299.027	14.000	6.362	7.000	1.452
3	348.6	348.6	253.335	253.153	10.000	4.708	5.000	1.077

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm244	0.027	5.795	5.787	0.008	0.02	1.29	7.9	71.5	0.322E-04
	Cm243		5.779	5.787	-.008				97.9	0.441E-04
2	Pu238	0.636	5.487	5.467	0.020	0.03	30.02	1.6	2303.3	0.104E-02
	Am241		5.479	5.467	0.012				1764.2	0.795E-03
3	Am243	0.331	5.270	5.256	0.014	0.02	15.64	2.5	872.9	0.393E-03
		---					---			
Totals:		0.995	<--valid peaks only-->				46.95			

DETECTOR CALIBRATION

Energy(MEV) = 4.092 + (0.0046)*Channel
Energy range (MeV): 4.092 TO 6.447
Efficiency = 0.0181 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	22656.0	100.000
Smoothed	22655.5	99.998
Composite fit	22543.2	99.502
Residuals	112.8	0.498

Analyzed by: _____
EMB

DATA NOT USED IN PACKAGE

Spectrum 23a2398.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,..., etc Display Max.: 4387.1

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1
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DATA
NOT USED
IN PACKAGE

Raw Data Dump for AEA Spectrum: 23a2398.CNF

1	0.	0.	1.	1.	0.	2.	1.	1.	2.	2.
11	0.	0.	0.	2.	1.	0.	0.	0.	0.	0.
21	1.	0.	1.	0.	1.	2.	0.	1.	1.	0.
31	2.	0.	0.	1.	0.	1.	0.	0.	0.	1.
41	1.	0.	2.	0.	0.	1.	0.	1.	3.	1.
51	1.	1.	2.	0.	1.	0.	0.	0.	3.	2.
61	1.	0.	1.	0.	1.	1.	0.	0.	2.	0.
71	0.	1.	3.	0.	1.	2.	0.	1.	1.	0.
81	0.	0.	1.	0.	0.	0.	0.	2.	2.	0.
91	1.	1.	1.	1.	0.	0.	0.	3.	1.	0.
101	0.	0.	0.	1.	0.	3.	1.	0.	1.	0.
111	1.	1.	0.	0.	2.	2.	1.	1.	2.	2.
121	4.	2.	2.	2.	1.	1.	2.	0.	0.	2.
131	2.	0.	4.	2.	3.	2.	1.	0.	1.	2.
141	4.	3.	1.	1.	2.	0.	2.	1.	4.	0.
151	1.	1.	4.	2.	0.	4.	4.	4.	1.	3.
161	2.	1.	0.	4.	2.	4.	2.	3.	1.	3.
171	2.	4.	3.	5.	2.	3.	6.	3.	5.	8.
181	2.	2.	5.	8.	6.	3.	8.	4.	6.	8.
191	10.	8.	10.	12.	8.	7.	12.	17.	10.	10.
201	15.	11.	12.	22.	12.	17.	13.	14.	15.	18.
211	17.	19.	21.	30.	27.	32.	26.	32.	52.	42.
221	34.	43.	42.	46.	45.	62.	84.	78.	89.	71.
231	105.	93.	84.	114.	124.	116.	145.	144.	157.	211.
241	219.	224.	225.	232.	281.	296.	274.	326.	318.	364.
251	381.	400.	372.	436.	403.	343.	279.	156.	96.	74.
261	76.	62.	62.	84.	70.	70.	71.	88.	81.	93.
271	91.	98.	110.	118.	131.	145.	148.	160.	186.	207.
281	227.	227.	221.	299.	290.	326.	389.	362.	392.	442.
291	471.	522.	530.	575.	525.	583.	630.	683.	667.	691.
301	662.	553.	359.	228.	153.	89.	87.	85.	59.	46.
311	33.	30.	19.	13.	9.	1.	3.	0.	3.	1.
321	3.	1.	1.	2.	1.	1.	2.	1.	1.	0.
331	0.	3.	1.	1.	2.	4.	2.	4.	6.	0.
341	6.	7.	4.	5.	1.	6.	7.	14.	12.	6.
351	7.	13.	14.	11.	13.	20.	10.	14.	15.	26.
361	20.	17.	26.	20.	25.	16.	23.	24.	27.	29.
371	23.	5.	8.	1.	0.	0.	2.	0.	0.	0.
381	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	1.	1.	2.	0.	0.	0.
401	0.	0.	1.	1.	0.	0.	1.	0.	1.	0.
411	2.	3.	0.	0.	1.	1.	2.	1.	1.	1.
421	2.	1.	5.	2.	4.	2.	0.	0.	2.	2.
431	4.	2.	4.	1.	3.	1.	2.	1.	0.	1.
441	1.	0.	0.	2.	0.	0.	1.	2.	0.	0.
451	0.	1.	1.	1.	0.	0.	0.	0.	0.	2.
461	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	1.	0.	0.	1.	0.	1.	1.	0.
481	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	1.	0.	0.	2.
511	0.	0.								

DATA NOT USED IN PACKAGE

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
S96T571-DUP
File ID: 24a2401.CNF

Counted on: 4/24/96 @16:18
Detector: AEA24
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak	Peak height		Peak center		FWHM		Tau	
ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	55.0	55.0	366.900	366.900	12.000	5.898	6.000	1.237
2	1447.6	1447.6	299.202	299.200	14.000	6.785	7.000	1.537
3	332.9	332.9	254.074	253.598	12.000	4.065	6.000	0.864

PEAK RESULTS
Peak Error Limit: 30%

Peak		AEA	Peak Centroid				Count	%err		Activity
ID	Isotope	Frac	Exp.	Obs.	Diff.	FWHM	Rate c/m	@95	d/m	uCi/ea
1	Cm244	0.030	5.795	5.779	0.016	0.03	2.71	5.4	196.5	0.885E-04
	Cm243		5.779	5.779	0.000				269.2	0.121E-03
2	Pu238	0.776	5.487	5.467	0.020	0.03	69.28	1.1	6972.9	0.314E-02
	Am241		5.479	5.467	0.012				5341.0	0.241E-02
3	Am243	0.173	5.270	5.257	0.013	0.02	15.46	2.7	1131.4	0.510E-03
		---					---			
Totals:		0.980	<--valid peaks only-->				87.45			

DETECTOR CALIBRATION
Energy(MEV) = 4.091 + (0.0046)*Channel
Energy range (MeV): 4.091 TO 6.446
Efficiency = 0.0138 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	42845.0	100.000
Smoothed	42843.3	99.996
Composite fit	41982.8	97.988
Residuals	862.2	2.012

Analyzed by: _____
EMB

2096

DATA NOT USED IN PACKAGE

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 10120.0

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

1
1
1
1
.1
1
```

DATA NOT USED IN PACKAGE

Raw Data Dump for AEA Spectrum: 24a2401.CNF

1	0.	0.	2.	0.	0.	1.	0.	1.	1.	3.
11	2.	4.	0.	2.	1.	2.	4.	4.	3.	1.
21	1.	0.	0.	3.	2.	4.	2.	2.	2.	4.
31	1.	3.	2.	1.	1.	2.	3.	1.	2.	1.
41	0.	4.	1.	0.	2.	3.	2.	4.	2.	0.
51	3.	3.	4.	3.	2.	2.	3.	0.	2.	5.
61	0.	0.	4.	2.	4.	7.	2.	5.	2.	2.
71	5.	4.	1.	2.	0.	3.	0.	3.	3.	4.
81	5.	2.	4.	0.	3.	0.	1.	2.	2.	3.
91	3.	2.	1.	0.	3.	0.	3.	0.	4.	3.
101	4.	3.	1.	2.	0.	2.	3.	4.	2.	3.
111	6.	3.	4.	4.	3.	2.	5.	2.	4.	4.
121	4.	0.	5.	2.	3.	4.	3.	6.	5.	3.
131	3.	5.	3.	3.	5.	6.	3.	2.	6.	8.
141	4.	3.	5.	4.	3.	5.	2.	5.	4.	5.
151	0.	5.	8.	6.	5.	2.	2.	5.	3.	5.
161	5.	9.	7.	8.	9.	4.	6.	4.	5.	8.
171	4.	4.	10.	8.	2.	9.	10.	8.	6.	7.
181	2.	10.	11.	9.	7.	10.	9.	11.	7.	14.
191	15.	17.	9.	15.	14.	15.	13.	14.	13.	20.
201	16.	23.	16.	16.	13.	21.	20.	28.	20.	29.
211	20.	28.	29.	29.	33.	33.	44.	38.	50.	73.
221	44.	53.	51.	79.	82.	66.	100.	84.	100.	97.
231	92.	105.	125.	152.	158.	132.	187.	161.	176.	217.
241	232.	225.	229.	268.	284.	303.	312.	337.	351.	407.
251	422.	392.	419.	438.	492.	418.	341.	240.	189.	143.
261	134.	141.	127.	162.	155.	142.	177.	185.	213.	222.
271	243.	235.	234.	297.	310.	311.	343.	371.	427.	460.
281	531.	513.	596.	654.	610.	734.	774.	831.	882.	981.
291	1073.	1199.	1169.	1216.	1299.	1400.	1405.	1439.	1551.	1551.
301	1487.	1320.	974.	606.	381.	297.	215.	203.	142.	114.
311	92.	64.	50.	26.	17.	10.	6.	3.	2.	1.
321	1.	2.	3.	5.	3.	5.	2.	3.	6.	3.
331	6.	5.	7.	3.	4.	5.	4.	7.	2.	7.
341	12.	9.	6.	11.	9.	14.	27.	20.	23.	20.
351	19.	22.	26.	30.	34.	34.	35.	55.	42.	46.
361	47.	56.	49.	57.	50.	57.	53.	63.	53.	45.
371	38.	27.	12.	1.	0.	1.	0.	0.	0.	1.
381	1.	3.	2.	2.	0.	2.	1.	2.	1.	2.
391	3.	2.	0.	2.	1.	2.	0.	1.	2.	1.
401	3.	1.	0.	2.	3.	2.	2.	2.	2.	2.
411	2.	5.	3.	0.	5.	2.	4.	5.	4.	4.
421	3.	5.	5.	3.	8.	8.	5.	7.	10.	7.
431	7.	11.	8.	3.	10.	1.	3.	2.	2.	1.
441	0.	1.	0.	2.	2.	0.	2.	0.	3.	2.
451	1.	1.	0.	3.	2.	1.	0.	2.	0.	1.
461	0.	0.	0.	2.	0.	1.	1.	0.	3.	1.
471	1.	1.	2.	1.	0.	0.	1.	1.	0.	1.
481	1.	1.	0.	0.	1.	0.	2.	1.	0.	0.
491	1.	1.	0.	1.	1.	5.	4.	1.	2.	0.
511	1.	0.								

DATA NOT USED IN PACKAGE

43

LABCORE Data Entry Template for Worklist# 6288

Analyst: JMV **Instrument:** PU01 _____ **Book#** 184843

Method: LA-943-128 Rev/Mod D-1 3-13-96

Worklist Comment: Determine Sample Size using Ludlum. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@PU23901	LIQUID		
2	BLNK-PREP				@PU23901	LIQUID		
3	SAMPLE	S96T000539	0		@PU23901	LIQUID	96000082	C-106 GRAB
	Analytes Requested: PU23901 , PU23901E, PU23901T							
4	DUP	S96T000539	0		@PU23901	LIQUID		
5	SAMPLE	S96T001024	0		@PU23901	LIQUID	96000174	C-106 GRAB
	Analytes Requested: PU23901 , PU23901E, PU23901T							
6	DUP	S96T001024	0		@PU23901	LIQUID		

Final page for worklist # 6288

Joseph Sanchez 3-13-96
Analyst Signature **Date**

Lee Hogan 3/15/96
Analyst Signature **Date**

C.J. Quinn 3/15/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed Worklist Report for Worklist# 6288

Analyst: jmv **Instrument:** PU01 **Book#** 104 B43

Method: LA-943-128 Rev/Mod A-1

Worklist Comment: Determine Sample Size using Ludlum. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0	@PU23901	PU23901	LIQUID	1.28E-01	1.13E-1	88.280	% Recovery
1	STD		0	@PU23901	PU23901E	LIQUID	1.00	2.20E+00	2.200	% Ct. Error
1	STD		0	@PU23901	PU23901T	LIQUID	100	9.53E+01	95.300	% Recovery
2	BLNK-PREP		0	@PU23901	PU23901	LIQUID	1	<3.12E-3		uCi/mL
2	BLNK-PREP		0	@PU23901	PU23901T	LIQUID	100	1.06E+02	106.000	% Recovery
2	BLNK-PREP		0	@PU23901	PU23901E	LIQUID	1.00	1.41E+01	14.100	% Ct. Error
3	SAMPLE	S96T000539	0	<@PU23901	PU23901	LIQUID	N/A	7.40E-01	3.130e-002	uCi/mL
3	SAMPLE	S96T000539	0	@PU23901	PU23901T	LIQUID	N/A	9.78E+01	1.000e-007	% Recovery
3	SAMPLE	S96T000539	0	@PU23901	PU23901E	LIQUID	N/A	1.65E+00	0.000	% Ct. Error
4	DUP	S96T000539	0	@PU23901	PU23901	LIQUID	7.40E-1	6.92E-1	6.700	RPD
4	DUP	S96T000539	0	@PU23901	PU23901T	LIQUID	100	9.42E+01	94.200	% Recovery
4	DUP	S96T000539	0	@PU23901	PU23901E	LIQUID	1.00	1.72E+00	1.720	% Ct. Error
5	SAMPLE	S96T001024	0	@PU23901	PU23901	LIQUID	N/A	7.38E-01	3.350e-002	uCi/mL
5	SAMPLE	S96T001024	0	@PU23901	PU23901T	LIQUID	N/A	8.64E+01	1.000e-007	% Recovery
5	SAMPLE	S96T001024	0	@PU23901	PU23901E	LIQUID	N/A	1.67E+00	0.000	% Ct. Error
6	DUP	S96T001024	0	@PU23901	PU23901	LIQUID	7.38E-1	8.14E-1	9.790	RPD
6	DUP	S96T001024	0	@PU23901	PU23901T	LIQUID	100	9.53E+01	95.300	% Recovery
6	DUP	S96T001024	0	@PU23901	PU23901E	LIQUID	1.00	1.56E+00	1.560	% Ct. Error

Final page for worklist# 6288

Analyst Signature **Date** **Analyst Signature** **Date**

John Rehyra / 18 Mar 96

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID

						STD
Type	DATE COUNTED		MAR-14-96	PU 236 AEA FRAC	(C236)	0.442
STD	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.000
Tracer Lot	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)	0.484
6288	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		3948
Digest Dil	DIGEST DILUTION FACTOR	DDF	1.000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)	0.170
Detector	DETECTOR NUMBER		18	PU 236 cpm		31.550
LIQUID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm		0.000
Tracer Prep	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		34.530
96001933	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME		480
Tracer Value	PU-236 DECAY CORR'D VALUE (dpm/mL)		2269.035	Pu 239/240 µCi/L		1.1304E+02
0	PU-238 TRACER VALUE (dpm/mL		0.000			
Standard Prep	STANDARD BOOK NO		104B43			
N/A	STANDARD VALUE in µCi/mL		0.128			

Standard	
WLIN6288	
Decay Time Calc	Decay Time = Date Counted - Tracer Preparation Date
WB27809	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95}]
Prepared By	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)* 1/EFF *C236*100/Pu-236 Decay Corr'd Value * SPKV
SEH	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(2220000 dpm/µCi)]
Chemist	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
JFR	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Analyst	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
JMV	
Date Counted	
03/16/96	
Analysis Date	
03/13/96	
Analysis Time	
03:00 PM	
Sample Point	
C-106 GRAB	

Pu 239/240 µCi/mL		1.13E-01	DETECTION LEVELS in µCi/mL	
Relative Counting Error	=	2.2%		
			Pu 239/240	
			7.35E-03	
Pu 236 Tracer Recovery	=	95.3%		

Analyst:	JMV	Date:	15-Mar-96
Signature of Chemist: J F Relyea	JFR	Date:	18 Mar 96

STANDARD.WB1 REV 1.0 943128ML

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

	DATE COUNTED		MAR-14-96	PU 236 AEA FRAC	(C236)	0.994
BLNK-PREP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.000
	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)	0.012
6288	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		1955
	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm (Bkg)		0.170
	DETECTOR NUMBER		18	PU 236 cpm		32.930
LIQUID	EFFICIENCY FACTOR	EFF	0.2686	PU 238 cpm		0.000
	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		0.410
96001933	TRACER PREPARATION VALUE (dpm/mL)		2390.00	AEA COUNT TIME		480
	PU-236 DECAY CORR'D VALUE (dpm/mL)		2269.04	Pu 239/240 µCi/L =	<	3.116E+00
0	PU-238 TRACER VALUE (dpm/mL)		0.00			
N/A						

Decay Time = Date Counted - Tracer Preparation Date

WL#6288

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)*C236*100/(Pu-236 Decay Corr'd Value * SPKV*EFF)

WB27809

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

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)

SEH

Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(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

JFR

JMV

03/15/96

03/13/96

03:00 PM

C-106 GRAB

Pu 239/240 µCi/mL		< 3.12E-03	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	14.1%	
NOTE: Pu 238 Result is a LESS THAN Value.			Pu 239/240
Pu 238 µCimL		< 3.12E-03	3.12E-03
Relative Counting Error	=	100.0%	Pu 238
Pu 236 Tracer Recovery	=	106.0%	3.12E-03

Analyst:	JMV	Date:	15-Mar-96
Signature of Chemist:	JFR	Date:	3/18/96

BLANK.WB1 REV 1.0 943128ML

WORKBOOK PAGE: SAM3

WHC-SD-WM-DP-183, REV. 0

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

						SAMPLE
Type	DATE COUNTED		MAR-14-96	PU 236 AEA FRAC	(C236)	0.101
SAMPLE	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.105
[illegible]	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)	0.724
6288	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		17716
[illegible]	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)	0.170
[illegible]	DETECTOR NUMBER		18	PU 236 cpm		33.300
LIQUID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm		34.670
[illegible]	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		239.460
96001933	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME		480
[illegible]	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2269.035	Pu 239/240 µCi/L		7.3999E+02
0	PU-238 TRACER VALUE	(dpm/mL)	0.000			
[illegible]						
N/A						
[illegible]	Decay Time = Date Counted - Tracer Preparation Date					
S96T000539	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]					
[illegible]	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)					
W927609	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]					
[illegible]	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)					
SEH	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]					
[illegible]	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100					
JFR						
[illegible]						
JMV						
[illegible]						
03/15/96	Pu 239/240 µCi/mL		7.40E-01	DETECTION LEVELS in µCi/mL		
[illegible]	Relative Counting Error	=	1.7%			
03/13/96				Pu 239/240		
[illegible]				3.13E-02		
03:00 PM	Pu 238 µCimL		1.07E-01			
[illegible]	Relative Counting Error	=	2.2%	Pu 238		
C-106 GRAB	Pu 236 Tracer Recovery	=	97.8%	3.13E-02		

Analyst:	JMV	Date:	15-Mar-96
Signature of Chemist: J F Relyea	JFR	Date:	18 Mar 96

SAMPLE.WB1 REV 1.0 943128ML

2103

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

							DUP
	DATE COUNTED		MAR-14-96	PU 236 AEA FRAC		(C236)	0.100
DUP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC		(C238)	0.100
	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC		(C239)	0.670
6288	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			17233
	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120843	BACKGROUND in cpm		(Bkg)	0.170
	DETECTOR NUMBER		18	PU 236 cpm			31.050
LIQUID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm			31.130
	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			208.470
96001933	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
	PU-236 DECAY CORR'D VALUE (dpm/mL)		2269.035	Pu 239/240 µCi/L			6.9165E+02
0	PU-238 TRACER VALUE (dpm/mL)		0.000				

N/A

Decay Time = Date Counted - Tracer Preparation Date

S96T000539 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) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)

WB27809 Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)

SEH Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(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

JFR

JMV

03/15/96	Pu 239/240 µCi/mL		6.92E-01	DETECTION LEVELS in µCi/mL
	Relative Counting Error	=	1.7%	
03/13/96				Pu 239/240
03:00 PM	Pu 238 µCimL		1.03E-01	3.29E-02
	Relative Counting Error	=	2.3%	Pu 238
C-106 GRAB	Pu 236 Tracer Recovery	=	94.2%	3.29E-02

Analyst:	JMV	Date:	15-Mar-96
Signature of Chemist: J F Relyea	JFR	Date:	18 Mar 96

SAMPLE.WB1 REV 1.0 943128ML

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WORKBOOK PAGE: SAM5

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

							SAMPLE
	DATE COUNTED		MAR-14-96	PU 236 AEA FRAC	(C236)		0.107
SAMPLE	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)		0.121
	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)		0.765
6288	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			14764
	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)		0.170
	DETECTOR NUMBER		18	PU 236 cpm			32.560
LIQUID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm			36.890
	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			233.450
96001933	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
	PU-236 DECAY CORR'D VALUE (dpm/mL)		2269.035	Pu 239/240 µCi/L			7.3805E+02
0	PU-238 TRACER VALUE (dpm/mL)		0.000				

N/A

S96T001024

WBZ7809

SEH

JFR

JMV

03/15/96

03/13/96

03:00 PM

C-106 GRAB

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) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)

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

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)

Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(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

				DETECTION LEVELS in µCi/mL
	Pu 239/240 µCi/mL		7.38E-01	
	Relative Counting Error	=	1.7%	
				Pu 239/240
				3.35E-02
	Pu 238 µCimL		1.17E-01	
	Relative Counting Error	=	2.2%	Pu 238
	Pu 236 Tracer Recovery	=	86.4%	3.35E-02

Analyst:		JMV	Date:	15-Mar-96
Signature of Chemist:	J F Relyea	JFR	Date:	18 Mar 96

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: DUP6

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

							DUP
	DATE COUNTED		MAR-14-96	PU 236 AEA FRAC	(C236)		0.102
DUP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)		0.112
	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)		0.804
6288	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			17080
	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120E43	BACKGROUND in cpm	(Bkg)		0.170
	DETECTOR NUMBER		18	PU 236 cpm			37.060
LIQUID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm			40.670
	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			291.110
96001933	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2269.035	Pu 239/240 µCi/L			8.1370E+02
0	PU-238 TRACER VALUE	(dpm/mL)	0.000				
N/A							

Decay Time = Date Counted - Tracer Preparation Date

S96T001024 — 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) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)

WB27809 — Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)

SEH — Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(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

JFR

JMV

03/15/96	Pu 239/240 µCi/mL		8.14E-01	DETECTION LEVELS in µCi/mL
	Relative Counting Error	=	1.6%	
03/13/96				Pu 239/240
				3.19E-02
03:00 PM	Pu 238 µCimL		1.13E-01	Pu 238
	Relative Counting Error	=	2.0%	3.19E-02
C-106 GRAB	Pu 236 Tracer Recovery	=	95.3%	

Analyst:	JMV	Date:	15-Mar-96
Signature of Chemist: J F Relyea	JFR	Date:	18 Mar 96

SAMPLE.WB1 REV 1.0 943128ML

 D. H. Milner 3/14/96

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
WL6288-STD
File ID: 13a1384.CNF

Counted on: 3/14/96 @10:54
Detector: AEA13
Geometry number: 1
Count time: 28806. Sec

PEAK ANALYSIS

Peak	Peak height		Peak center		FWHM		Tau	
ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	510.8	510.8	360.461	360.461	12.000	5.662	6.000	0.871
2	14.4	14.4	286.668	285.770	10.000	3.218	5.000	0.434
3	674.4	674.4	226.626	226.619	12.000	6.264	6.000	1.262
4	15.0	15.0	122.732	122.497	128.000	1.000	64.000	0.100

PEAK RESULTS
Peak Error Limit: 30%

Peak		AEA	Peak Centroid				Count	%err		Activity
ID	Isotope	Frac	Exp.	Obs.	Diff.	FWHM	Rate c/m	@95	d/m	uCi/ea
1	Ra224 Pu-236	0.442	5.686	5.725	-.039	0.03	31.55	1.6	396.8	0.179E-03
2	Th228	0.013	5.400	5.388	0.012	0.01	0.94	15.7	15.6	0.704E-05
3	Pu239	0.484	5.147	5.122	0.025	0.03	34.53	1.5	408.2	0.184E-03
	Pu240		5.144	5.122	0.022				408.2	0.184E-03
4	Np237	0.016	4.640	4.654	-.014	0.00	1.16	8.7	229.2	0.103E-03
		---					---			
Totals:		0.956	<--valid peaks only-->				68.19			

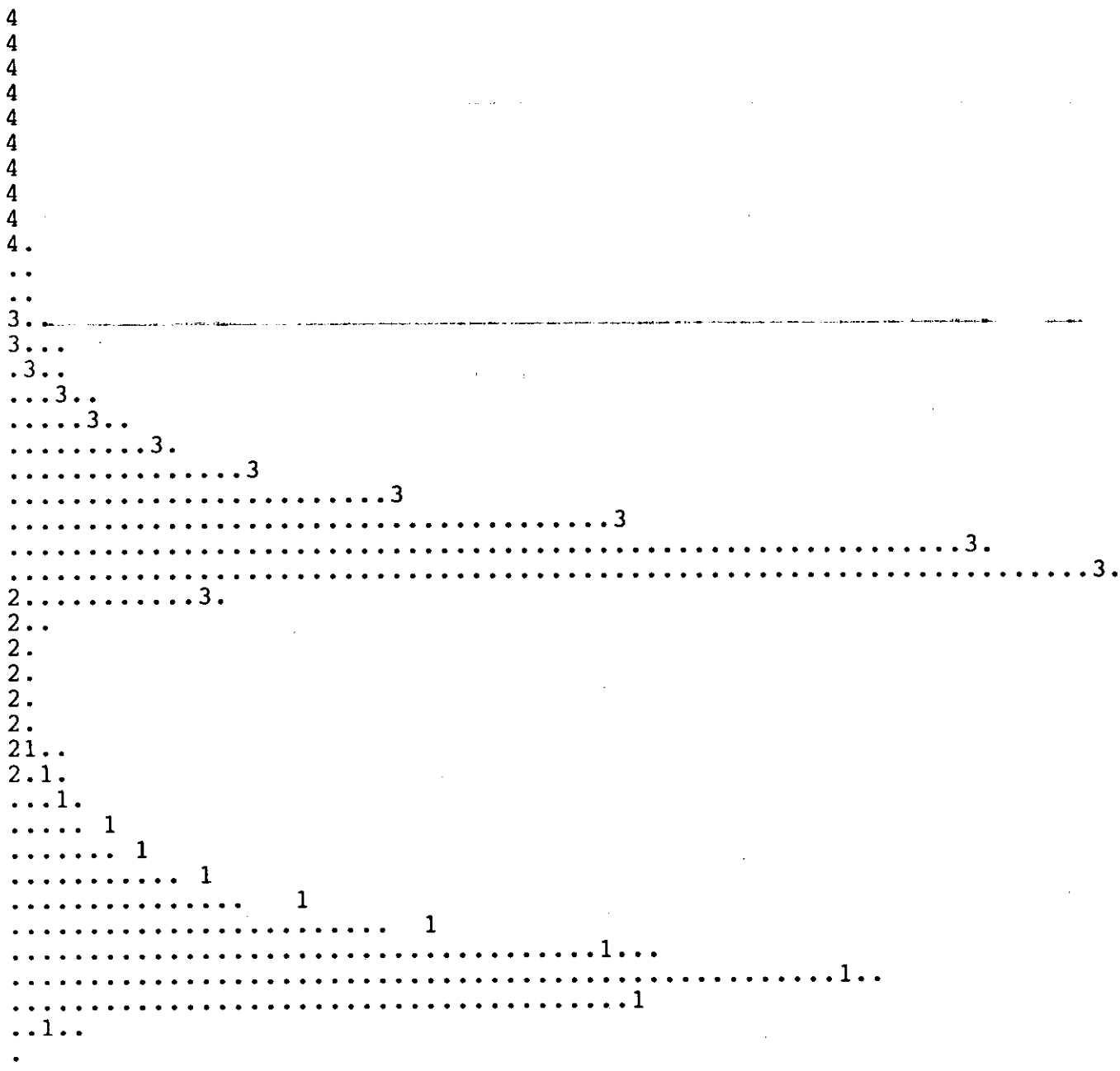
DETECTOR CALIBRATION
Energy(MEV) = 4.102 + (0.0045)*Channel
Energy range (MeV): 4.102 TO 6.406
Efficiency = 0.0846 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	34259.0	100.000
Smoothed	34259.4	100.001
Composite fit	32737.6	95.559
Residuals	1521.4	4.441

Analyzed by: _____
ALJ

Spectrum 13a1384.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 4587.5



Raw Data Dump for AEA Spectrum: 13a1384.CNF

1	0.	0.	0.	1.	0.	0.	0.	1.	1.	0.
11	1.	0.	0.	0.	0.	1.	1.	0.	0.	0.
21	0.	0.	1.	5.	3.	7.	7.	7.	3.	4.
31	4.	1.	1.	3.	2.	3.	3.	6.	3.	4.
41	4.	2.	3.	9.	5.	2.	5.	8.	5.	6.
51	5.	7.	4.	3.	4.	6.	9.	6.	7.	5.
61	6.	6.	7.	6.	5.	8.	10.	6.	10.	7.
71	7.	6.	4.	7.	6.	14.	7.	8.	6.	6.
81	6.	5.	9.	5.	10.	4.	12.	8.	9.	8.
91	9.	7.	11.	13.	8.	11.	10.	8.	12.	9.
101	13.	8.	15.	8.	9.	9.	12.	12.	17.	14.
111	9.	19.	11.	12.	11.	12.	15.	11.	8.	13.
121	21.	19.	16.	19.	11.	19.	19.	19.	19.	17.
131	12.	16.	21.	18.	20.	24.	16.	16.	19.	19.
141	19.	18.	23.	25.	28.	26.	20.	29.	35.	31.
151	25.	37.	41.	31.	28.	32.	26.	40.	31.	46.
161	37.	29.	40.	35.	34.	50.	42.	56.	55.	56.
171	60.	54.	54.	60.	54.	50.	55.	59.	76.	64.
181	91.	78.	77.	79.	89.	84.	88.	92.	106.	100.
191	88.	96.	140.	107.	122.	145.	136.	146.	199.	189.
201	198.	188.	184.	217.	244.	237.	215.	227.	267.	265.
211	322.	310.	336.	340.	423.	402.	453.	451.	530.	520.
221	535.	605.	580.	661.	674.	736.	710.	734.	643.	549.
231	378.	229.	125.	81.	69.	57.	43.	32.	20.	26.
241	31.	38.	25.	22.	16.	15.	18.	10.	19.	16.
251	20.	12.	15.	18.	12.	16.	17.	12.	17.	16.
261	14.	13.	18.	25.	25.	23.	28.	16.	13.	20.
271	16.	26.	17.	18.	26.	25.	27.	23.	31.	26.
281	24.	29.	34.	36.	36.	38.	42.	39.	34.	25.
291	29.	24.	37.	33.	42.	37.	43.	30.	43.	54.
301	42.	43.	44.	42.	55.	47.	51.	49.	40.	43.
311	57.	55.	44.	60.	64.	79.	77.	60.	56.	82.
321	79.	73.	93.	106.	92.	114.	89.	109.	106.	131.
331	123.	134.	126.	156.	155.	155.	173.	185.	196.	196.
341	228.	242.	238.	228.	259.	305.	314.	374.	364.	395.
351	424.	444.	436.	443.	483.	439.	459.	461.	489.	543.
361	547.	545.	465.	395.	228.	113.	68.	49.	31.	24.
371	18.	20.	20.	11.	13.	10.	12.	5.	6.	3.
381	7.	4.	3.	6.	1.	2.	5.	4.	5.	1.
391	2.	1.	3.	2.	2.	3.	2.	4.	1.	3.
401	3.	2.	4.	3.	0.	2.	2.	2.	2.	0.
411	1.	2.	2.	0.	2.	1.	2.	2.	1.	1.
421	3.	0.	1.	2.	1.	1.	1.	1.	0.	0.
431	0.	0.	0.	1.	1.	2.	1.	1.	0.	3.
441	0.	1.	0.	2.	1.	0.	2.	2.	1.	0.
451	0.	1.	1.	0.	0.	0.	0.	2.	1.	0.
461	0.	1.	1.	1.	0.	0.	2.	0.	2.	1.
471	1.	1.	2.	1.	1.	0.	3.	1.	1.	0.
481	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
491	0.	1.	0.	0.	2.	0.	0.	0.	1.	0.
511	0.	0.								

D. H. Milicia
3-15-96

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-183, REV. 0

SAMPLE
WL6288-BLNK
File ID: 14a1488.CNF

Counted on: 3/14/96 @18:13
Detector: AEA14
Geometry number: 1
Count time: 28810. Sec

PEAK ANALYSIS

Peak	Peak height		Peak center		FWHM		Tau	
ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	583.6	583.6	362.543	362.543	12.000	5.252	6.000	0.898
2?	4.0	4.0	298.231	297.617	6.000	0.061	3.000	0.013
3	6.6	6.6	256.853	256.466	12.000	16.305	6.000	3.188

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Ra224 Pu-236	0.994	5.686	5.727	-.041	0.02	32.93	1.6	4865.9	0.219E-02
2	|	????		5.435			0.15	75.6		
3	Pu239	0.012	5.147	5.250	-.103	0.07	0.41	22.0	56.6	0.255E-04
	Am243		5.270	5.250	0.020				57.2	0.258E-04
Totals:		1.006	<--valid peaks only-->				33.34			

DETECTOR CALIBRATION
Energy(MEV) = 4.096 + (0.0045)*Channel
Energy range (MeV): 4.096 TO 6.400
Efficiency = 0.0072 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	15916.0	100.000
Smoothed	15915.9	99.999
Composite fit	16079.6	101.028
Residuals	-163.6	-1.028

Analyzed by: _____
DM

Spectrum 14a1488.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 3847.7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3
3
3
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3
3
3
2
21
2.1
2..1
.....1
....... 1
..........   1
...............     1
.......................    1
...........................................1...
.......................................................................1.....
.........................................................................1
........1..
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Raw Data Dump for AEA Spectrum: 14a1488.CNF

1	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	1.	0.	0.	1.	1.	0.
31	2.	1.	0.	0.	0.	1.	0.	0.	0.	0.
41	2.	2.	0.	1.	1.	0.	1.	0.	0.	0.
51	1.	0.	1.	0.	1.	0.	1.	0.	2.	1.
61	0.	2.	1.	0.	0.	0.	2.	1.	0.	0.
71	1.	1.	0.	2.	1.	0.	1.	0.	2.	0.
81	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
91	0.	0.	0.	0.	0.	0.	1.	1.	3.	0.
101	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
111	2.	0.	0.	0.	2.	0.	1.	0.	1.	1.
121	0.	1.	1.	0.	1.	0.	0.	0.	1.	1.
131	0.	1.	2.	0.	1.	0.	2.	2.	0.	1.
141	2.	1.	0.	0.	1.	0.	0.	0.	4.	2.
151	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.
161	2.	1.	2.	0.	2.	2.	2.	2.	0.	2.
171	2.	3.	2.	0.	0.	0.	1.	1.	0.	2.
181	3.	5.	1.	2.	1.	0.	2.	2.	4.	1.
191	0.	2.	1.	3.	0.	5.	4.	1.	1.	3.
201	2.	4.	2.	2.	0.	3.	1.	2.	3.	5.
211	3.	2.	4.	4.	7.	2.	5.	1.	4.	3.
221	3.	3.	3.	5.	7.	3.	3.	2.	3.	3.
231	5.	8.	4.	3.	4.	4.	4.	3.	8.	7.
241	4.	6.	5.	7.	5.	4.	8.	10.	4.	4.
251	7.	11.	7.	10.	8.	10.	15.	12.	7.	6.
261	11.	7.	5.	4.	14.	7.	13.	13.	16.	14.
271	16.	16.	12.	13.	10.	15.	16.	16.	10.	11.
281	23.	19.	18.	13.	23.	19.	18.	23.	26.	20.
291	20.	31.	26.	27.	20.	25.	28.	37.	38.	25.
301	24.	21.	19.	29.	37.	35.	43.	34.	39.	36.
311	27.	41.	55.	46.	52.	58.	60.	58.	72.	61.
321	62.	72.	60.	85.	74.	75.	71.	96.	98.	95.
331	100.	114.	108.	104.	110.	145.	161.	160.	175.	185.
341	177.	167.	215.	239.	245.	255.	296.	335.	374.	381.
351	423.	463.	515.	458.	518.	467.	474.	473.	543.	535.
361	548.	609.	637.	623.	541.	429.	241.	122.	72.	48.
371	28.	26.	17.	21.	18.	14.	6.	8.	9.	5.
381	4.	8.	9.	11.	6.	7.	5.	2.	6.	2.
391	2.	2.	6.	1.	2.	6.	1.	4.	5.	1.
401	2.	3.	2.	2.	2.	3.	1.	2.	4.	5.
411	2.	0.	3.	0.	0.	2.	1.	1.	1.	3.
421	0.	0.	1.	0.	1.	3.	0.	1.	3.	0.
431	0.	3.	0.	0.	1.	1.	0.	0.	2.	0.
441	0.	1.	1.	2.	1.	2.	0.	0.	2.	0.
451	0.	1.	1.	0.	0.	0.	0.	1.	0.	2.
461	2.	1.	1.	2.	1.	0.	2.	1.	0.	0.
471	1.	0.	1.	1.	1.	1.	0.	2.	2.	1.
481	1.	3.	0.	0.	0.	1.	1.	0.	0.	0.
491	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
511	0.	0.								

D. H. Gustilia
3-15-96

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
S96T0539-SAM
File ID: 15a1568.CNF

Counted on: 3/14/96 @18:14
Detector: AEA15
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak	Peak height		Peak center		FWHM		Tau	
ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	409.2	409.2	359.568	361.206	18.000	6.824	9.000	0.762
2	422.1	422.1	301.928	301.189	26.000	8.280	13.000	0.935
3	3429.9	3429.9	226.264	226.244	16.000	8.194	8.000	1.137

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Ra224	0.101	5.686	5.736	-.050	0.03	33.30	1.6	2134.1	0.961E-03
	Pu236		5.755	5.736	0.019				2047.0	0.922E-03
2	Am241	0.105	5.479	5.466	0.013	0.04	34.67	1.7	2222.1	0.100E-02
	Pu238		5.487	5.466	0.021				2901.1	0.131E-02
3	Pu239	0.724	5.147	5.128	0.019	0.04	239.46	0.6	14425.4	0.650E-02
	Pu240		5.144	5.128	0.016				14425.4	0.650E-02
		---					---			
Totals:		0.929	<--valid peaks only-->				307.44			

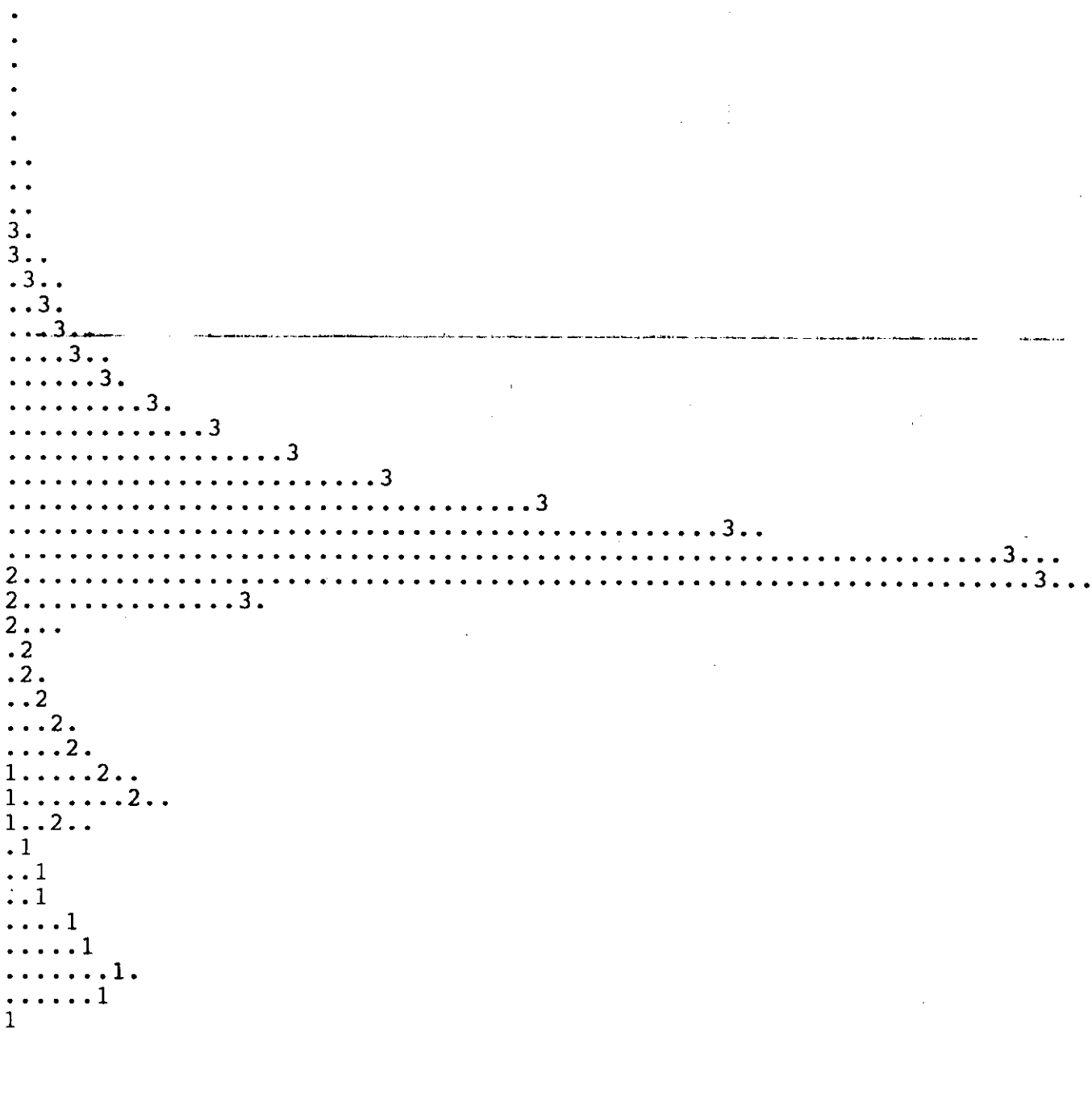
DETECTOR CALIBRATION
Energy(MEV) = 4.110 + (0.0045)*Channel
Energy range (MeV): 4.110 TO 6.414
Efficiency = 0.0166 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	158873.0	100.000
Smoothed	158873.1	100.000
Composite fit	147579.1	92.891
Residuals	11293.9	7.109

Analyzed by: _____
DM

Spectrum 15a1568.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 24274.7



Raw Data Dump for AEA Spectrum: 15a1568.CNF

1	0.	0.	2.	1.	1.	1.	1.	1.	1.	0.
11	1.	0.	2.	2.	3.	1.	2.	1.	4.	0.
21	4.	4.	0.	17.	26.	39.	40.	31.	29.	29.
31	45.	37.	44.	38.	38.	42.	52.	41.	34.	35.
41	50.	45.	40.	36.	53.	44.	44.	51.	52.	50.
51	53.	41.	61.	45.	40.	48.	53.	46.	69.	51.
61	53.	59.	53.	52.	60.	57.	65.	63.	62.	60.
71	64.	60.	79.	66.	55.	67.	72.	74.	59.	66.
81	69.	83.	82.	78.	100.	71.	67.	80.	103.	104.
91	82.	105.	99.	74.	107.	92.	90.	96.	105.	77.
101	111.	107.	106.	135.	80.	105.	110.	118.	126.	131.
111	118.	129.	117.	121.	115.	134.	129.	134.	146.	147.
121	163.	151.	142.	158.	155.	155.	164.	180.	161.	197.
131	163.	172.	183.	185.	207.	188.	190.	211.	197.	226.
141	216.	237.	220.	235.	244.	254.	278.	238.	295.	280.
151	313.	291.	278.	309.	354.	294.	302.	340.	344.	352.
161	374.	367.	359.	386.	378.	402.	424.	445.	448.	462.
171	499.	513.	520.	545.	558.	598.	580.	593.	613.	610.
181	673.	680.	751.	681.	790.	793.	817.	842.	851.	852.
191	895.	1026.	1002.	1058.	1060.	1149.	1166.	1204.	1230.	1353.
201	1360.	1355.	1479.	1563.	1554.	1659.	1681.	1797.	1919.	1985.
211	2090.	2167.	2341.	2362.	2533.	2511.	2762.	2803.	2972.	2980.
221	3113.	3121.	3195.	3473.	3527.	3665.	3637.	3584.	3200.	2870.
231	2349.	1694.	1060.	645.	455.	308.	215.	202.	175.	156.
241	163.	147.	154.	149.	140.	125.	109.	123.	130.	118.
251	112.	149.	134.	121.	91.	118.	131.	124.	149.	135.
261	143.	158.	142.	135.	155.	163.	157.	156.	188.	188.
271	180.	186.	176.	194.	221.	230.	213.	204.	292.	278.
281	274.	259.	304.	305.	293.	325.	312.	354.	378.	416.
291	392.	425.	465.	493.	494.	503.	487.	498.	461.	481.
301	447.	509.	484.	495.	457.	401.	303.	205.	152.	100.
311	109.	98.	100.	98.	81.	89.	106.	97.	90.	113.
321	97.	105.	126.	109.	116.	134.	132.	160.	139.	152.
331	160.	148.	168.	186.	172.	177.	212.	203.	222.	220.
341	233.	208.	243.	263.	230.	289.	276.	324.	323.	336.
351	338.	365.	411.	419.	396.	371.	398.	429.	441.	384.
361	409.	427.	394.	365.	309.	225.	117.	79.	43.	42.
371	21.	22.	19.	11.	11.	18.	10.	7.	12.	10.
381	11.	5.	11.	4.	8.	7.	6.	4.	3.	5.
391	6.	6.	5.	1.	4.	4.	2.	1.	3.	2.
401	6.	5.	3.	3.	4.	2.	3.	3.	1.	4.
411	3.	3.	3.	7.	2.	3.	2.	3.	2.	5.
421	4.	1.	3.	2.	4.	3.	0.	0.	3.	4.
431	3.	1.	2.	1.	4.	4.	4.	1.	3.	5.
441	2.	1.	3.	1.	2.	1.	0.	3.	2.	5.
451	2.	4.	2.	2.	0.	1.	1.	2.	4.	3.
461	2.	2.	4.	5.	1.	0.	0.	1.	2.	3.
471	3.	3.	2.	1.	1.	3.	2.	3.	3.	2.
481	2.	0.	2.	2.	4.	1.	3.	1.	0.	2.
491	1.	2.	2.	1.	0.	0.	1.	2.	1.	2.
511	0.	0.								

D. H. Milicia
3-15-96

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
S96T0539-DUP
File ID: 16a1650.CNF

Counted on: 3/14/96 @18:15
Detector: AEA16
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak	Peak height		Peak center		FWHM		Tau	
ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	398.3	398.3	363.404	363.404	14.000	6.379	7.000	0.745
2	412.8	412.8	304.763	304.525	14.000	6.263	7.000	0.760
3	3282.5	3282.5	230.009	229.993	14.000	6.965	7.000	1.067

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Ra224 Pu236	0.100	5.686	5.719	-.033	0.03	31.05	1.6	2949.2	0.133E-02
2	Th228	0.100	5.400	5.454	-.054	0.03	31.13	1.8	3914.5	0.176E-02
	Am241		5.479	5.454	0.025				2956.7	0.133E-02
3	Pu239	0.670	5.147	5.118	0.029	0.03	208.47	0.6	18613.5	0.838E-02
	Pu240		5.144	5.118	0.026				18613.5	0.838E-02
Totals:		0.869	<--valid peaks only-->				270.65			

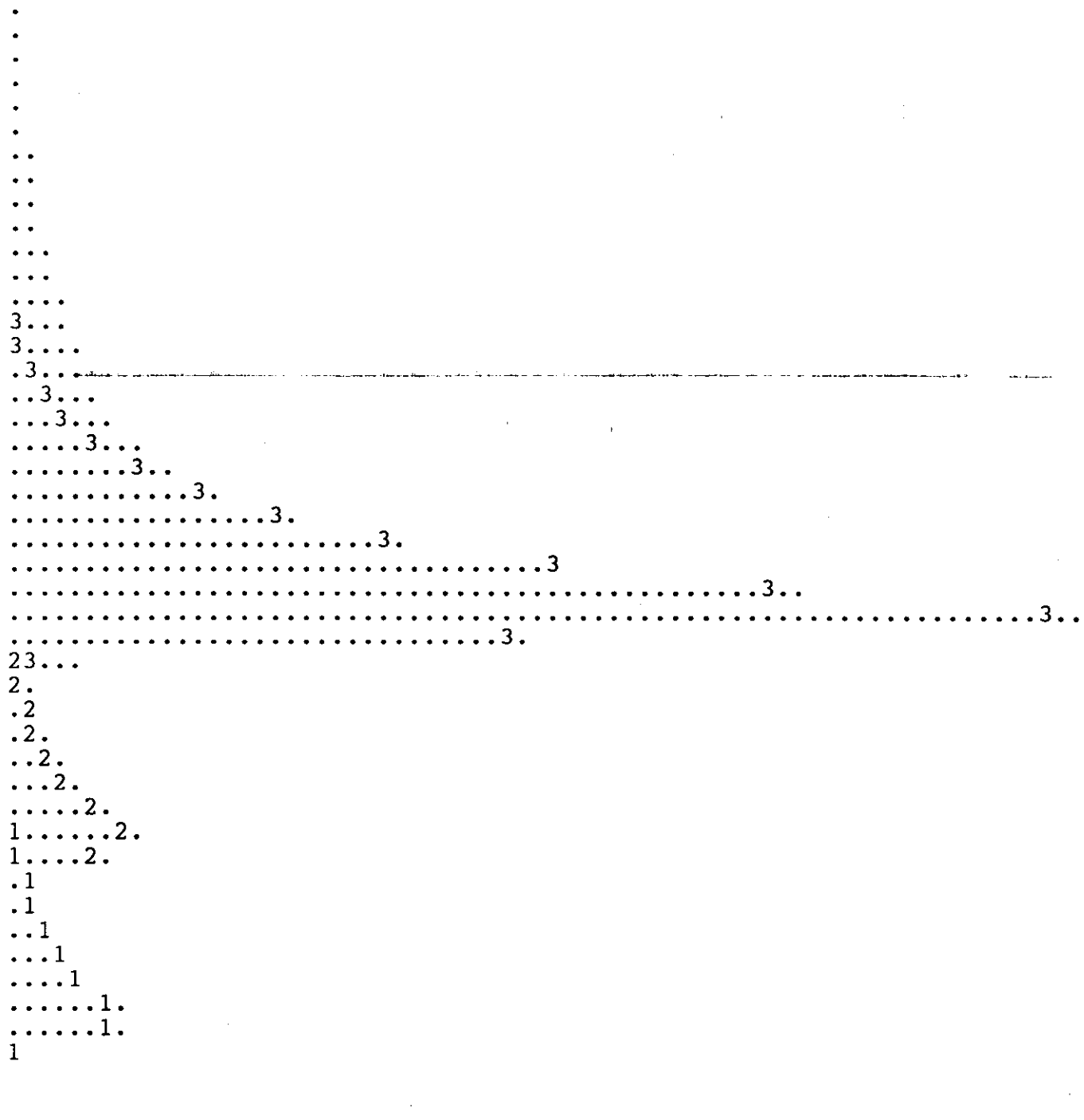
DETECTOR CALIBRATION
Energy(MEV) = 4.083 + (0.0045)*Channel
Energy range (MeV): 4.083 TO 6.387
Efficiency = 0.0112 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	149437.0	100.000
Smoothed	149435.7	99.999
Composite fit	129924.4	86.943
Residuals	19512.6	13.057

Analyzed by: _____
DM

Spectrum 16a1650.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 24849.4



Raw Data Dump for AEA Spectrum: 16a1650.CNF

1	0.	0.	1.	1.	1.	2.	1.	1.	3.	1.
11	0.	2.	0.	1.	1.	1.	2.	0.	2.	4.
21	1.	0.	1.	23.	50.	51.	54.	66.	69.	57.
31	65.	53.	70.	63.	57.	73.	75.	72.	68.	71.
41	81.	70.	75.	63.	87.	66.	66.	86.	86.	77.
51	75.	74.	89.	65.	79.	81.	79.	72.	75.	70.
61	84.	79.	89.	82.	78.	93.	90.	84.	85.	90.
71	90.	84.	102.	100.	97.	105.	99.	96.	101.	104.
81	80.	105.	110.	105.	120.	114.	132.	104.	113.	94.
91	119.	105.	114.	115.	112.	117.	130.	122.	117.	140.
101	124.	112.	131.	125.	145.	135.	137.	144.	136.	126.
111	132.	122.	155.	175.	150.	140.	138.	190.	148.	176.
121	164.	181.	182.	189.	172.	190.	179.	183.	206.	210.
131	209.	169.	201.	225.	203.	204.	198.	216.	237.	248.
141	226.	255.	250.	216.	256.	256.	260.	233.	263.	234.
151	296.	269.	295.	328.	286.	302.	325.	316.	289.	331.
161	326.	303.	338.	352.	367.	387.	366.	356.	407.	391.
171	408.	411.	458.	490.	466.	466.	450.	484.	532.	551.
181	526.	548.	558.	605.	604.	621.	654.	664.	674.	700.
191	718.	749.	810.	817.	785.	812.	884.	901.	945.	1018.
201	1031.	1075.	1124.	1186.	1199.	1311.	1297.	1349.	1452.	1510.
211	1470.	1563.	1737.	1718.	1945.	1882.	2090.	2151.	2320.	2418.
221	2484.	2602.	2609.	2847.	2770.	3058.	3057.	3297.	3425.	3558.
231	3450.	3368.	2895.	2404.	1645.	1092.	665.	469.	276.	202.
241	198.	173.	149.	146.	135.	136.	126.	139.	126.	113.
251	129.	105.	113.	122.	126.	99.	117.	113.	132.	113.
261	114.	131.	117.	116.	150.	143.	131.	167.	144.	133.
271	142.	161.	199.	172.	182.	172.	171.	196.	194.	198.
281	208.	194.	268.	252.	247.	250.	283.	253.	307.	335.
291	318.	317.	369.	366.	378.	416.	420.	448.	428.	464.
301	455.	423.	445.	471.	533.	450.	467.	432.	341.	229.
311	127.	106.	97.	100.	91.	111.	103.	87.	88.	88.
321	108.	91.	87.	102.	98.	96.	97.	128.	131.	110.
331	135.	130.	137.	151.	147.	133.	161.	152.	178.	194.
341	178.	193.	205.	229.	211.	251.	254.	188.	303.	275.
351	295.	308.	359.	352.	397.	390.	427.	356.	361.	368.
361	350.	362.	434.	430.	373.	401.	317.	211.	124.	60.
371	30.	37.	22.	17.	14.	16.	15.	17.	7.	7.
381	13.	12.	4.	7.	8.	10.	6.	5.	3.	1.
391	8.	7.	1.	2.	2.	6.	4.	6.	5.	3.
401	2.	5.	2.	4.	2.	4.	3.	3.	4.	3.
411	4.	3.	2.	3.	1.	4.	1.	2.	0.	4.
421	0.	3.	4.	6.	1.	3.	2.	4.	1.	3.
431	3.	3.	3.	1.	0.	1.	3.	4.	3.	4.
441	0.	3.	1.	0.	0.	3.	2.	2.	5.	1.
451	2.	2.	3.	2.	1.	5.	5.	1.	1.	2.
461	0.	2.	2.	1.	2.	2.	2.	1.	2.	1.
471	1.	1.	4.	1.	2.	1.	3.	2.	1.	1.
481	1.	1.	1.	1.	3.	2.	1.	1.	2.	3.
491	4.	1.	0.	0.	2.	2.	2.	0.	2.	4.
511	1.	0.								

 DMR Filicia 3-14-96

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
S96T001024-SAM
File ID: 17a1726.CNF

Counted on: 3/14/96 @11:52
Detector: AEA17
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	507.5	507.5	358.102	358.102	10.000	5.287	5.000	5.220
2	365.1	365.1	350.965	348.308	12.000	4.197	6.000	0.704
3	494.6	494.6	300.060	299.938	12.000	4.763	6.000	0.569
4	3969.1	3969.1	225.674	225.660	12.000	5.740	6.000	0.943
5?	25.0	25.0	76.094	75.835	150.000	1.000	75.000	0.100
6?	6.6	6.6	35.999	35.478	12.000	1.384	6.000	0.046

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.040	5.755	5.740	0.015	0.02	12.15	2.6	708.5	0.319E-03
2	Ra224	0.067	5.686	5.695	-.009	0.02	20.41	2.4	1240.9	0.559E-03
3	Pu238	0.121	5.487	5.473	0.014	0.03	36.89	1.5	2928.0	0.132E-02
	Am241		5.479	5.473	0.006				2242.7	0.101E-02
4	Pu239	0.765	5.147	5.131	0.016	0.03	233.45	0.6	13339.9	0.601E-02
	Pu240		5.144	5.131	0.013				13339.9	0.601E-02
5		????		4.442			1.77	7.3		
6		????		4.256			0.43	20.8		
Totals:		0.992	<--valid peaks only-->				302.91			

DETECTOR CALIBRATION
Energy(MEV) = 4.093 + (0.0046)*Channel
Energy range (MeV): 4.093 TO 6.448
Efficiency = 0.0175 CPM/DPM

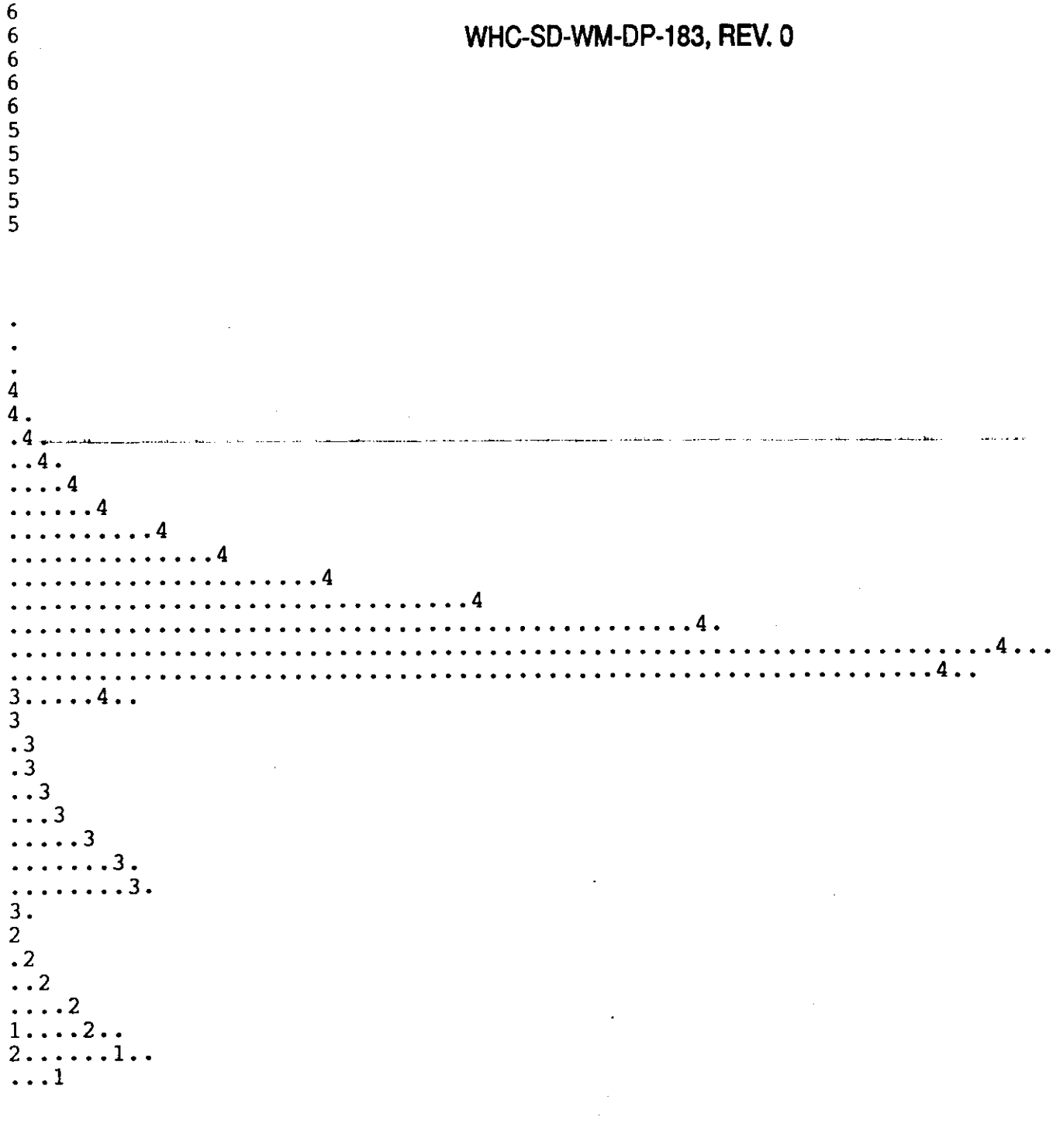
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	146561.0	100.000
Smoothed	146572.3	100.008
Composite fit	146483.8	99.947
Residuals	77.2	0.053

Analyzed by: _____
ALJ

Spectrum 17a1726.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 26713.8



Raw Data Dump for AEA Spectrum: 17a1726.CNF

1	0.	0.	9.	11.	10.	8.	6.	9.	10.	13.
11	3.	10.	5.	12.	9.	12.	10.	11.	17.	9.
21	13.	9.	16.	18.	10.	14.	13.	15.	11.	14.
31	9.	11.	6.	15.	16.	13.	14.	15.	10.	11.
41	12.	10.	13.	13.	17.	12.	14.	21.	15.	16.
51	22.	11.	19.	25.	16.	14.	13.	13.	26.	20.
61	23.	23.	24.	24.	16.	23.	19.	24.	33.	9.
71	21.	20.	34.	20.	32.	34.	30.	25.	24.	22.
81	18.	31.	28.	36.	38.	30.	34.	33.	30.	36.
91	36.	39.	39.	34.	48.	42.	35.	38.	51.	48.
101	29.	51.	42.	34.	41.	57.	51.	45.	49.	48.
111	54.	52.	65.	56.	69.	59.	55.	51.	58.	75.
121	82.	65.	68.	67.	68.	82.	65.	100.	81.	78.
131	100.	78.	81.	119.	105.	114.	108.	108.	100.	109.
141	156.	134.	128.	123.	146.	144.	138.	162.	142.	166.
151	160.	182.	164.	171.	200.	190.	233.	222.	211.	219.
161	226.	271.	262.	252.	272.	283.	258.	320.	314.	392.
171	332.	374.	407.	407.	394.	404.	438.	484.	439.	532.
181	536.	593.	606.	618.	601.	642.	697.	711.	746.	759.
191	834.	870.	880.	931.	974.	1059.	1056.	1089.	1199.	1288.
201	1332.	1393.	1472.	1476.	1597.	1701.	1819.	1854.	1941.	2090.
211	2203.	2314.	2530.	2494.	2791.	3046.	3022.	3143.	3242.	3342.
221	3491.	3647.	3799.	4007.	4121.	4287.	4243.	3854.	3377.	2311.
231	1479.	755.	366.	135.	65.	43.	43.	40.	35.	48.
241	48.	46.	40.	49.	47.	57.	56.	55.	59.	67.
251	93.	61.	69.	78.	69.	90.	98.	80.	86.	81.
261	108.	101.	122.	104.	113.	135.	135.	138.	162.	168.
271	147.	183.	184.	186.	184.	214.	260.	239.	262.	272.
281	261.	280.	304.	313.	337.	329.	397.	421.	389.	429.
291	484.	490.	505.	499.	501.	498.	459.	516.	513.	559.
301	584.	545.	465.	328.	199.	109.	59.	54.	60.	47.
311	62.	74.	60.	70.	72.	82.	74.	100.	71.	93.
321	109.	121.	104.	134.	125.	123.	142.	139.	155.	183.
331	158.	175.	170.	225.	211.	200.	250.	241.	282.	278.
341	261.	310.	330.	412.	363.	402.	433.	396.	482.	546.
351	452.	496.	443.	439.	430.	484.	519.	495.	555.	539.
361	438.	306.	145.	44.	6.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
411	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
421	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.
461	0.	1.	1.	0.	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.								

Westinghouse Hanford Co. D H Mulicia 3-14-96

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

Rev. 2.01

DATA REDUCTION REPORT

SAMPLE
S96T001024-DUP
File ID: 18a1804.CNF

Counted on: 3/14/96 @11:52
Detector: AEA18
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	483.2	483.2	358.716	358.716	28.000	6.313	14.000	14.758
2	390.0	390.0	351.185	348.227	12.000	4.750	6.000	0.682
3	484.4	484.4	300.758	300.379	26.000	5.800	13.000	0.613
4	3913.0	3913.0	226.461	226.441	14.000	6.237	7.000	0.769
5?	26.4	26.4	77.481	76.531	58.000	200.570	29.000	58.483
6?	15.8	15.8	16.674	16.259	46.000	28.414	23.000	23.620

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Ra224	0.033	5.686	5.737	-.051	0.03	12.07	2.6	697.6	0.314E-03
	Pu236	.102	5.755	5.737	0.018		37.06		669.1	0.301E-03
2	Ra224	0.069	5.686	5.689	-.003	0.02	24.99	2.1	1444.7	0.651E-03
3	Pu238	0.112	5.487	5.469	0.018	0.03	40.67	1.5	3069.6	0.138E-02
	Am241		5.479	5.469	0.010				2351.2	0.106E-02
4	Pu239	0.804	5.147	5.129	0.018	0.03	291.11	0.5	15821.4	0.713E-02
	Pu240		5.144	5.129	0.015				15821.4	0.713E-02
5	U 235	0.010	4.386	4.439	-.053	0.92	3.71	13.0	353.4	0.159E-03
6		????		4.162			0.76	15.6		
Totals:		1.029	<--valid peaks only-->				372.54			

DETECTOR CALIBRATION

Energy(MEV) = 4.087 + (0.0046)*Channel
Energy range (MeV): 4.087 TO 6.442
Efficiency = 0.0184 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	173790.0	100.000
Smoothed	173802.2	100.007
Composite fit	179229.5	103.130
Residuals	-5439.5	-3.130

Analyzed by: _____
ALJ

WHC-SD-WM-DP-183, REV. 0

Spectrum 18a1804.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 27372.8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Raw Data Dump for AEA Spectrum: 18a1804.CNF

1	0.	0.	19.	15.	13.	15.	19.	16.	15.	20.
11	11.	16.	15.	20.	23.	19.	26.	22.	18.	15.
21	17.	18.	26.	21.	23.	21.	20.	21.	22.	28.
31	24.	26.	16.	19.	32.	33.	28.	25.	14.	32.
41	28.	21.	31.	30.	21.	30.	34.	22.	29.	35.
51	30.	37.	31.	38.	31.	27.	25.	33.	42.	34.
61	38.	38.	28.	34.	42.	31.	38.	45.	30.	58.
71	46.	39.	31.	43.	58.	45.	63.	46.	56.	46.
81	42.	37.	57.	58.	53.	62.	49.	52.	57.	54.
91	62.	48.	80.	64.	81.	68.	83.	69.	73.	79.
101	65.	79.	74.	81.	72.	89.	84.	97.	85.	90.
111	96.	103.	92.	97.	88.	105.	120.	125.	112.	119.
121	97.	116.	106.	117.	132.	155.	137.	126.	140.	136.
131	163.	151.	134.	169.	180.	169.	184.	181.	174.	206.
141	228.	226.	203.	221.	247.	258.	229.	241.	268.	248.
151	262.	274.	277.	333.	311.	303.	354.	351.	334.	362.
161	351.	386.	371.	372.	429.	438.	417.	500.	476.	523.
171	503.	540.	561.	545.	605.	618.	659.	632.	631.	727.
181	740.	817.	839.	852.	792.	907.	914.	937.	1042.	1063.
191	1044.	1123.	1168.	1231.	1320.	1335.	1381.	1427.	1568.	1569.
201	1639.	1629.	1852.	1930.	2001.	2013.	2146.	2235.	2312.	2383.
211	2413.	2567.	2760.	2855.	2959.	3060.	3238.	3315.	3523.	3419.
221	3604.	3513.	3745.	3899.	3849.	4072.	4212.	4129.	3786.	3263.
231	2356.	1511.	790.	433.	186.	76.	58.	56.	47.	72.
241	69.	81.	71.	73.	65.	81.	88.	103.	91.	102.
251	84.	115.	96.	102.	109.	133.	124.	145.	130.	133.
261	132.	129.	146.	175.	163.	150.	192.	170.	191.	192.
271	203.	230.	225.	231.	270.	277.	282.	274.	315.	302.
281	314.	321.	351.	354.	346.	439.	435.	422.	438.	462.
291	496.	520.	518.	591.	534.	538.	532.	508.	496.	542.
301	552.	550.	541.	507.	377.	202.	124.	88.	77.	78.
311	88.	96.	78.	84.	105.	108.	89.	117.	128.	145.
321	130.	134.	120.	156.	130.	165.	187.	181.	211.	188.
331	209.	239.	224.	209.	233.	253.	237.	279.	290.	308.
341	296.	328.	357.	335.	372.	421.	442.	433.	475.	490.
351	532.	512.	460.	418.	414.	443.	472.	467.	492.	502.
361	482.	426.	289.	131.	46.	8.	1.	0.	0.	0.
371	0.	0.	0.	0.	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.	1.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
451	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.
461	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
471	1.	1.	0.	0.	2.	0.	0.	0.	0.	0.
481	1.	0.	0.	0.	0.	1.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

LABCORE Data Entry Template for Worklist# 6894

Analyst: JmV **Instrument:** PU01 #13 **Book#** 104843

Method: LA-943-128 Rev/Mod _____

Worklist Comment: C106 Field Blank.Determine sample size using ludlum. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@PU23901	LIQUID		
2	BLNK				@PU23901	LIQUID		
3	SAMPLE	S96T000855	0		@PU23901	LIQUID	96000082	C-106 GRAB
		Analytes Requested: PU23901 , PU23901E, PU23901T						
4	DUP	S96T000855	0		@PU23901	LIQUID		

Final page for worklist # 6894

3-28-96
Analyst Signature **Date**

3/29/96
Analyst Signature **Date**

C.J. Opinen 3/29/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed Worklist Report for Worklist# 6894

Analyst: jmv **Instrument:** PU01 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: C106 Field Blank.Determine sample size using ludlum. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD			0	@PU23901 PU23901	LIQUID	0.128	1.40e-1	109.380	% Recovery
1	STD			0	@PU23901 PU23901E	LIQUID	1.00	2.1	2.100	% Ct Error
1	STD			0	@PU23901 PU23901T	LIQUID	100	87.6	87.600	% Recovery
2	BLNK			0	@PU23901 PU23901	LIQUID	1	<3.66e-5		uCi/mL
2	BLNK			0	@PU23901 PU23901T	LIQUID	100	88.1	88.100	% Recovery
2	BLNK			0	@PU23901 PU23901E	LIQUID	1.00	100.0	100.000	uCi/mL
3	SAMPLE	S96T000855		0	@PU23901 PU23901	LIQUID	N/A	1.64e-5	3.66e-006	uCi/mL
3	SAMPLE	S96T000855		0	@PU23901 PU23901T	LIQUID	N/A	97.4	1.00e-007	% Recovery
3	SAMPLE	S96T000855		0	@PU23901 PU23901E	LIQUID	N/A	4.0		% Ct. Error
4	DUP	S96T000855		0	@PU23901 PU23901	LIQUID	1.64e-5	1.63e-5	0.612	RPD
4	DUP	S96T000855		0	@PU23901 PU23901T	LIQUID	100	91.7	91.700	% Recovery
4	DUP	S96T000855		0	@PU23901 PU23901E	LIQUID	1.00	4.9	4.900	% Ct Error

Final page for worklist# 6894

Analyst Signature **Date** **Analyst Signature** **Date**

Reviewer Signature **Date**

See attached for signature verification only.

LA-549-141, Rev F-0

Units shown for QC (BLK/BKG) may not reflect the actual units.

LABCORE Completed Worklist Report for Worklist# 6894

Analyst: jmv **Instrument:** PU01 #13 **Book#** 104B43

Method: LA-943-128 Rev/Mod A-1

Worklist Comment: C106 Field Blank.Determine sample size using ludlum. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0	@PU23901	PU23901	LIQUID	0.132	1.40e-1	106.060	% Recovery
1	STD		0	@PU23901	PU23901E	LIQUID	1.00	2.1	2.100	% Ct. Error
1	STD		0	@PU23901	PU23901T	LIQUID	100	87.6	87.600	% Recovery
2	BLNK		0	@PU23901	PU23901	LIQUID	1	<3.66e-5		uCi/mL
2	BLNK		0	@PU23901	PU23901T	LIQUID	100	88.1	88.100	% Recovery
2	BLNK		0	@PU23901	PU23901E	LIQUID	1.00	100.0	100.000	% Ct. Error
3	SAMPLE	S96T000855	0	@PU23901	PU23901	LIQUID	N/A	1.64e-5	3.660e-006	uCi/mL
3	SAMPLE	S96T000855	0	@PU23901	PU23901T	LIQUID	N/A	97.4	1.000e-007	% Recovery
3	SAMPLE	S96T000855	0	@PU23901	PU23901E	LIQUID	N/A	4.0	0.000	% Ct. Error
4	DUP	S96T000855	0	@PU23901	PU23901	LIQUID	1.64e-5	1.63e-5	0.610	RPD
4	DUP	S96T000855	0	@PU23901	PU23901T	LIQUID	100	91.7	91.700	% Recovery
4	DUP	S96T000855	0	@PU23901	PU23901E	LIQUID	1.00	4.9	4.900	% Ct. Error

Final page for worklist# 6894

Analyst Signature **Date** **Analyst Signature** **Date**

John Rolyea 1 Apr 96
Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID

						STD
Type	DATE COUNTED		MAR-28-96	PU 236 AEA FRAC	(C236)	0.426
STD	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)	0.583
6894	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		4389
Test Code	DIGEST DILUTION FACTOR	DDF	1.000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)	0.170
Matrix	DETECTOR NUMBER		13	PU 236 cpm		32.840
LIQUID	EFFICIENCY FACTOR	EFF	0.316	PU 238 cpm		0.000
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		44.940
96002602	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME		480
Rerun	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2247.981	Pu 239/240 µCi/L		1.3997E+02
0	PU-238 TRACER VALUE	(dpm/mL	0.000			
Sample Prep	STANDARD BOOK NO		104B43			
N/A	STANDARD VALUE in µCi/mL		0.128			
Sample #						
WL6894						
Instrument Code	Decay Time = Date Counted - Tracer Preparation Date					
WB27810	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]					
Prepared By	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)* 1/EFF *C236*100/Pu-236 Decay Corr'd Value * SPKV					
MCB	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(2220000 dpm/µCi)]					
Chemist	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)					
JFR	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]					
Analyst	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100					
JMV						
Date Complete						
03/29/96	Pu 239/240 µCi/mL		1.40E-01			
Analysis Date	Relative Counting Error	=	2.1%			
03/28/96						
Analysis Time						
12:00 PM						
Sample Point						
C-106 GRAB	Pu 236 Tracer Recovery	=	87.6%			

DETECTION LEVELS in µCi/mL
Pu 239/240
8.23E-03

Analyst:		JMV	Date:	29-Mar-96
Signature of Chemist:	John Rilyea	JFR	Date:	1 Apr 96

STANDARD.WB1 REV 1.0 943128ML

2139

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

						BLNK
Type	DATE COUNTED		MAR-28-96	PU 236 AEA FRAC	(C236)	0.942
BLNK	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC	(C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.000
6894	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		2000
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm (Bkg)		0.170
Matrix	DETECTOR NUMBER		13	PU 236 cpm		32.210
LIQUID	EFFICIENCY FACTOR	EFF	0.3163	PU 238 cpm		0.000
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		0.000
96002602	TRACER PREPARATION VALUE (dpm/mL)		2390.00	AEA COUNT TIME		480
Rerun	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2247.98	Pu 239/240 µCi/L =	<	3.661E-03
0	PU-238 TRACER VALUE	(dpm/mL)	0.00			
Sample Prep						
N/A						

Sample #	Decay Time = Date Counted - Tracer Preparation Date
WL6894	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)*C236*100/(Pu-236 Decay Corr'd Value * SPKV*EFF)
WB27810	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
MCB	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
JFR	
Analyst	
JMV	
Date Complete	
03/29/96	
Analysis Date	
03/28/96	
Analysis Time	
12:00 PM	
Sample Point	
C-106 GRAB	

Pu 239/240 µCi/mL		< 3.66E-06	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	100.0%	
NOTE: Pu 238 Result is a LESS THAN Value.			Pu 239/240
Pu 238 µCimL		< 3.66E-06	3.66E-06
Relative Counting Error	=	100.0%	Pu 238
Pu 236 Tracer Recovery	=	88.1%	3.66E-06

Analyst:	JMV	Date:	29-Mar-96
Signature of Chemist: John Relyea	JFR	Date:	1 Apr 96

BLANK.WB1 REV 1.0 943128ML

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

							SAMPLE
Type	DATE COUNTED		MAR-29-96	PU 236 AEA FRAC	(C236)		0.853
SAMPLE	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC	(C238)		0.000
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)		0.138
6894	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			2441
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)		0.170
Matrix	DETECTOR NUMBER		13	PU 236 cpm			36.880
LIQUID	EFFICIENCY FACTOR	EFF	0.316	PU 238 cpm			0.000
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			5.920
96002602	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2247.981	Pu 239/240 µCi/L			1.6382E-02
0	PU-238 TRACER VALUE (dpm/mL)		0.000				

Sample Prep
N/A
Sample #
S96T000855
Instrument Code
WB27810
Prepared By
MCB
Chemist
JFR
Analyst
JMV
Date Complete
03/29/96
Analysis Date
03/28/96
Analysis Time
12:00 PM
Sample Point
C-106 GRAB

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) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)

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

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)

Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(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

Pu 239/240 µCi/mL		1.64E-05	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	4.0%	
NOTE: Pu 238 Result is a LESS THAN Value.			Pu 239/240
Pu 238 µCimL		< 3.66E-06	3.66E-06
Relative Counting Error	=	100.0%	Pu 238
Pu 236 Tracer Recovery	=	97.4%	3.66E-06

Analyst:	JMV	Date:	29-Mar-96
Signature of Chemist: John Relyea	JFR	Date:	1 Apr 96

SAMPLE.WB1 REV 1.0 943128ML

2132

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

							DUP
Type	DATE COUNTED		MAR-28-96	PU 236 AEA FRAC		(C236)	0.813
DUP	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC		(C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC		(C239)	0.131
6894	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			2410
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm		(Bkg)	0.170
Matrix	DETECTOR NUMBER		13	PU 236 cpm			24.290
LIQUID	EFFICIENCY FACTOR	EFF	0.316	PU 238 cpm			0.000
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			3.930
96002602	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2247.981	Pu 239/240 µCi/L			1.6316E-02
0	PU-238 TRACER VALUE (dpm/mL)		0.000				
Sample Prep							
N/A							
Sample #	Decay Time = Date Counted - Tracer Preparation Date						
S96T000855	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]						
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)						
WB27810	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]						
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)						
MCB	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]						
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100						
JFR							
Analyst							
JMV							
Date Complete							
03/29/96	Pu 239/240 µCi/mL		1.63E-05				
Analysis Date	Relative Counting Error	=	4.9%				
03/28/96							
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.						
12:00 PM	Pu 238 µCimL		< 4.08E-06				
Sample Point	Relative Counting Error	=	100.0%				
C-106 GRAB	Pu 236 Tracer Recovery	=	91.7%				

DETECTION LEVELS in µCi/mL
Pu 239/240
4.08E-06
Pu 238
4.08E-06

Analyst:		JMV	Date:	29-Mar-96
Signature of Chemist:	John Relyea	JFR	Date:	1 Apr 96

SAMPLE.WB1 REV 1.0 943128ML

C Raymond 3/24/96

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
WL6894-STD
File ID: 17a1754.CNF

Counted on: 3/28/96 @15:31
Detector: AEA17
Geometry number: 1
Count time: 28809. Sec

PEAK ANALYSIS

Peak	Peak height		Peak center		FWHM		Tau	
ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	388.4	388.4	360.648	360.648	10.000	5.174	5.000	5.202
2	314.3	314.3	352.854	350.722	12.000	4.241	6.000	0.496
3	564.5	564.5	228.133	228.121	12.000	5.142	6.000	0.572
4	8.4	8.4	89.136	88.673	34.000	75.386	17.000	4.509

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	4/26 0.119	5.755	5.747	0.008	0.02	32.84 9.19	3.0	1171.8	0.528E-03
2	Ra224	0.307	5.686	5.702	-.016	0.02	23.65	2.1	3145.2	0.142E-02
3	Pu239	0.583	5.147	5.138	0.009	0.02	44.94	1.3	5617.5	0.253E-02
	Pu240		5.144	5.138	0.006				5617.5	0.253E-02
4	U 235	0.016	4.386	4.496	-.110	0.35	1.20	14.4	263.2	0.119E-03
Totals:		1.025	<--valid peaks only-->				78.98			

DETECTOR CALIBRATION
Energy(MEV) = 4.089 + (0.0046)*Channel
Energy range (MeV): 4.089 TO 6.444
Efficiency = 0.0080 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	36981.0	100.000
Smoothed	36985.1	100.011
Composite fit	37921.7	102.544
Residuals	-940.7	-2.544

Analyzed by: _____
EMB

Spectrum 17a1754.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 4204.0


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Raw Data Dump for AEA Spectrum: 17a1754.CNF

1	0.	0.	5.	5.	4.	4.	8.	4.	5.	8.
11	6.	3.	9.	4.	5.	1.	9.	7.	4.	8.
21	4.	5.	6.	6.	8.	9.	4.	6.	12.	6.
31	3.	6.	3.	6.	6.	4.	10.	11.	0.	6.
41	5.	8.	9.	10.	4.	7.	10.	10.	7.	13.
51	6.	10.	12.	5.	5.	8.	7.	11.	10.	8.
61	9.	10.	13.	7.	11.	7.	3.	3.	7.	13.
71	7.	8.	11.	12.	12.	17.	10.	7.	17.	18.
81	17.	9.	5.	17.	11.	14.	11.	14.	17.	20.
91	9.	13.	12.	16.	13.	12.	9.	15.	17.	12.
101	12.	28.	19.	20.	16.	20.	17.	18.	25.	11.
111	22.	14.	28.	18.	22.	23.	15.	24.	21.	38.
121	21.	25.	25.	25.	25.	31.	43.	32.	29.	34.
131	33.	26.	37.	36.	33.	37.	39.	47.	31.	44.
141	41.	43.	35.	44.	45.	49.	45.	48.	46.	52.
151	56.	54.	46.	51.	68.	64.	58.	61.	50.	67.
161	72.	56.	78.	77.	68.	61.	73.	72.	68.	90.
171	93.	93.	97.	89.	105.	105.	113.	122.	108.	109.
181	129.	131.	145.	123.	134.	134.	157.	127.	141.	161.
191	169.	168.	172.	212.	198.	191.	207.	213.	207.	235.
201	269.	251.	252.	256.	257.	264.	320.	327.	312.	314.
211	348.	387.	379.	365.	430.	444.	475.	464.	456.	430.
221	553.	455.	498.	518.	532.	561.	590.	587.	598.	590.
231	562.	371.	183.	87.	44.	22.	15.	13.	12.	16.
241	15.	12.	10.	12.	9.	17.	16.	12.	15.	11.
251	20.	13.	24.	21.	17.	18.	22.	16.	21.	29.
261	17.	25.	27.	26.	27.	27.	22.	23.	22.	26.
271	26.	35.	24.	35.	37.	30.	27.	30.	26.	32.
281	39.	36.	54.	44.	44.	36.	42.	52.	48.	41.
291	43.	40.	53.	55.	50.	50.	55.	67.	55.	56.
301	60.	58.	84.	68.	67.	69.	63.	72.	74.	87.
311	69.	84.	70.	73.	114.	102.	101.	104.	109.	93.
321	107.	108.	115.	128.	127.	130.	139.	129.	157.	181.
331	175.	179.	181.	189.	204.	238.	209.	213.	207.	239.
341	260.	261.	278.	251.	271.	301.	311.	314.	348.	354.
351	400.	402.	424.	378.	376.	334.	327.	356.	338.	382.
361	411.	435.	385.	261.	121.	32.	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.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	1.	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.	1.	0.	0.	1.	1.
481	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	1.	0.								

L Raymond

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
WL6894-BLK
File ID: 18a1833.CNF

Counted on: 3/28/96 @15:31
Detector: AEA18
Geometry number: 1
Count time: 28810. Sec

PEAK ANALYSIS

Peak	Peak height		Peak center		FWHM		Tau	
ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	458.8	458.8	362.088	362.088	10.000	4.576	5.000	5.178
2	364.1	364.1	354.448	352.471	12.000	4.145	6.000	0.627
3	10.0	10.0	245.167	244.838	112.000	1.000	56.000	0.100

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236, 942.8	0.296	5.755	5.751	0.004	0.02	10.12	2.8	833.2	0.375E-03
2	Ra224	0.646	5.686	5.706	-.020	0.02	32.21 22.09	2.2	1895.2	0.854E-03
3		0.024		5.211		0.00	0.81	11.5	65.1	0.293E-04
Totals:		0.966	<--valid peaks only-->				33.02			

DETECTOR CALIBRATION
Energy(MEV) = 4.085 + (0.0046)*Channel
Energy range (MeV): 4.085 TO 6.440
Efficiency = 0.0124 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	16419.0	100.000
Smoothed	16420.2	100.007
Composite fit	15856.2	96.572
Residuals	562.8	3.428

Analyzed by: _____
EMB

Spectrum 18a1833.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 3383.0


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Raw Data Dump for AEA Spectrum: 18a1833.CNT

1	0.	0.	1.	0.	1.	0.	0.	0.	1.	1.
11	1.	1.	0.	0.	1.	1.	1.	0.	0.	2.
21	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
31	0.	0.	2.	1.	0.	0.	2.	0.	0.	2.
41	0.	0.	0.	0.	0.	1.	1.	1.	1.	2.
51	0.	1.	0.	0.	1.	0.	0.	0.	1.	2.
61	4.	0.	0.	2.	1.	0.	2.	0.	1.	0.
71	0.	1.	0.	2.	0.	0.	2.	0.	3.	1.
81	0.	3.	0.	2.	1.	2.	2.	0.	1.	0.
91	0.	1.	2.	0.	1.	1.	4.	4.	1.	1.
101	1.	4.	2.	0.	0.	4.	3.	0.	0.	1.
111	1.	4.	3.	0.	0.	0.	1.	1.	2.	2.
121	4.	0.	3.	2.	4.	1.	1.	2.	2.	3.
131	2.	5.	2.	2.	1.	3.	1.	1.	0.	1.
141	0.	1.	3.	1.	2.	1.	0.	1.	3.	3.
151	3.	3.	0.	2.	1.	2.	4.	4.	5.	2.
161	1.	0.	3.	1.	1.	2.	4.	4.	4.	2.
171	0.	6.	3.	4.	2.	4.	1.	6.	3.	1.
181	4.	1.	2.	3.	5.	5.	6.	5.	4.	4.
191	5.	3.	3.	6.	3.	2.	5.	3.	5.	5.
201	6.	6.	2.	4.	6.	5.	5.	5.	2.	7.
211	5.	8.	4.	8.	9.	10.	7.	8.	8.	2.
221	11.	10.	11.	11.	11.	7.	5.	8.	10.	9.
231	12.	9.	6.	10.	14.	6.	12.	12.	14.	13.
241	12.	11.	12.	15.	15.	17.	14.	8.	15.	9.
251	9.	15.	15.	13.	17.	11.	15.	15.	12.	14.
261	19.	13.	17.	18.	15.	30.	15.	28.	15.	28.
271	20.	20.	20.	21.	27.	24.	24.	34.	35.	25.
281	33.	33.	25.	33.	39.	37.	33.	50.	48.	40.
291	35.	42.	35.	44.	38.	42.	63.	39.	47.	45.
301	45.	47.	57.	58.	48.	54.	58.	65.	65.	70.
311	65.	66.	79.	80.	73.	79.	81.	67.	90.	97.
321	115.	120.	105.	111.	155.	134.	126.	122.	133.	144.
331	141.	158.	167.	163.	213.	188.	218.	220.	236.	230.
341	236.	246.	228.	263.	286.	315.	329.	319.	383.	338.
351	392.	430.	457.	481.	457.	399.	413.	401.	424.	427.
361	426.	462.	501.	518.	365.	169.	45.	8.	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.	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.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
451	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
471	0.	0.	0.	0.	2.	1.	0.	0.	0.	0.
481	0.	1.	0.	0.	0.	1.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Raymond

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
S96T855-SAM
File ID: 19a1984.CNF

Counted on: 3/28/96 @15:32
Detector: AEA19
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak	Peak height		Peak center		FWHM		Tau	
ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	528.9	528.9	361.033	361.033	10.000	4.660	5.000	5.208
2	398.4	398.4	352.798	351.011	10.000	4.081	5.000	0.594
3	90.8	90.8	229.207	229.175	10.000	4.752	5.000	0.667

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236,8538	0.274	5.755	5.740	0.015	0.02	11.79	2.6	687.2	0.310E-03
2	Ra224	0.579	5.686	5.694	-.008	0.02	24.89	2.1	1513.3	0.682E-03
3	Pu239	0.138	5.147	5.133	0.014	0.02	5.92	3.8	338.5	0.152E-03
	Pu240		5.144	5.133	0.011				338.5	0.152E-03
Totals:		0.991	<--valid peaks only-->				42.60			

DETECTOR CALIBRATION
Energy(MEV) = 4.079 + (0.0046)*Channel
Energy range (MeV): 4.079 TO 6.434
Efficiency = 0.0175 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	20637.0	100.000
Smoothed	20637.4	100.002
Composite fit	20451.4	99.101
Residuals	185.6	0.899

Analyzed by: _____
EMB

Spectrum 19a1984.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 3684.1


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Raw Data Dump for AEA Spectrum: 19a1984.CNF

1	0.	0.	0.	0.	1.	1.	0.	0.	1.	2.
11	0.	1.	0.	0.	0.	2.	1.	0.	1.	2.
21	1.	2.	1.	1.	0.	0.	2.	0.	0.	1.
31	0.	2.	1.	0.	0.	0.	1.	1.	1.	0.
41	1.	1.	1.	0.	1.	2.	1.	2.	0.	1.
51	1.	0.	1.	1.	1.	0.	2.	2.	1.	0.
61	0.	2.	1.	2.	0.	0.	0.	0.	0.	2.
71	3.	2.	1.	2.	1.	0.	3.	4.	0.	2.
81	4.	0.	2.	1.	1.	4.	1.	4.	2.	2.
91	1.	3.	2.	1.	5.	0.	1.	1.	6.	3.
101	0.	3.	4.	1.	0.	1.	3.	2.	1.	5.
111	4.	3.	1.	4.	2.	1.	1.	2.	3.	3.
121	2.	4.	2.	0.	6.	1.	2.	8.	3.	4.
131	3.	3.	7.	4.	4.	4.	7.	1.	4.	8.
141	5.	3.	5.	4.	3.	5.	6.	5.	9.	10.
151	9.	6.	10.	1.	3.	6.	8.	6.	7.	3.
161	10.	5.	6.	12.	5.	8.	7.	11.	12.	12.
171	6.	12.	8.	15.	11.	9.	12.	12.	9.	11.
181	16.	17.	14.	17.	12.	24.	24.	18.	23.	28.
191	25.	24.	23.	18.	23.	26.	24.	29.	37.	38.
201	26.	37.	33.	26.	41.	40.	37.	58.	51.	46.
211	39.	60.	58.	53.	48.	54.	56.	71.	61.	65.
221	79.	80.	78.	67.	93.	86.	91.	86.	90.	110.
231	95.	83.	45.	25.	24.	6.	11.	10.	8.	14.
241	18.	9.	11.	13.	12.	12.	5.	19.	12.	16.
251	20.	16.	9.	13.	11.	23.	12.	28.	19.	17.
261	15.	22.	19.	25.	23.	15.	30.	23.	20.	24.
271	26.	27.	25.	24.	24.	28.	29.	25.	34.	26.
281	37.	36.	40.	44.	39.	54.	35.	50.	36.	45.
291	37.	44.	46.	54.	57.	65.	57.	55.	66.	55.
301	53.	53.	78.	70.	78.	54.	79.	61.	64.	74.
311	85.	85.	75.	86.	101.	86.	107.	105.	110.	111.
321	110.	111.	122.	129.	147.	152.	135.	146.	171.	177.
331	177.	215.	194.	192.	220.	202.	253.	242.	246.	288.
341	303.	293.	330.	315.	346.	395.	352.	384.	423.	442.
351	470.	528.	498.	489.	427.	419.	443.	420.	456.	518.
361	561.	629.	573.	319.	145.	26.	6.	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	1.	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.	1.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	1.	0.	1.	0.	1.
481	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
S96T855-DUP
File ID: 20a2014.CNF

Counted on: 3/28/96 @15:33
Detector: AEA20
Geometry number: 1
Count time: 28808. Sec

PEAK ANALYSIS

Peak	Peak height		Peak center		FWHM		Tau	
ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	350.3	350.3	362.434	362.434	10.000	4.298	5.000	5.135
2	274.5	274.5	354.171	352.692	12.000	3.757	6.000	0.555
3	66.7	66.7	229.564	229.535	12.000	4.887	6.000	0.783
4?	5.7	5.7	176.551	175.981	8.000	1.567	4.000	1.451
5?	4.8	4.8	167.919	167.129	6.000	1.331	3.000	0.436

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.250	5.755	5.753	0.002	0.02	7.47	3.3	564.5	0.254E-03
2	Ra224	0.563	5.686	5.708	-.022	0.02	16.82	2.5	1325.4	0.597E-03
3	Pu239	0.131	5.147	5.141	0.006	0.02	3.93	4.6	290.8	0.131E-03
	Pu240		5.144	5.141	0.003				290.8	0.131E-03
4		????		4.895			0.09	73.3		
5		????		4.854			0.14	43.8		
Totals:		0.944	<--valid peaks only-->				28.21			

DETECTOR CALIBRATION
Energy(MEV) = 4.085 + (0.0046)*Channel
Energy range (MeV): 4.085 TO 6.441
Efficiency = 0.0135 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	14354.0	100.000
Smoothed	14353.4	99.996
Composite fit	13656.3	95.139
Residuals	697.7	4.861

Analyzed by: _____
EMB

Spectrum 20a2014.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 2422.9


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Raw Data Dump for AEA Spectrum: 20a2014.CNF

1	0.	0.	0.	0.	1.	3.	0.	1.	0.	1.
11	2.	0.	2.	1.	0.	0.	0.	0.	0.	0.
21	1.	0.	2.	1.	2.	1.	0.	3.	0.	1.
31	1.	0.	1.	1.	0.	1.	0.	0.	1.	1.
41	1.	0.	0.	2.	2.	2.	2.	0.	1.	0.
51	2.	0.	0.	2.	1.	2.	0.	1.	2.	2.
61	0.	1.	0.	1.	2.	2.	1.	5.	0.	1.
71	1.	3.	3.	1.	4.	0.	1.	1.	0.	0.
81	2.	1.	2.	1.	1.	1.	1.	3.	2.	3.
91	3.	0.	1.	3.	2.	2.	4.	3.	2.	3.
101	4.	5.	0.	2.	1.	2.	2.	2.	3.	0.
111	4.	1.	0.	5.	2.	1.	1.	2.	3.	2.
121	5.	4.	1.	2.	3.	3.	2.	6.	2.	5.
131	2.	0.	2.	3.	3.	2.	5.	4.	1.	2.
141	1.	4.	4.	3.	8.	4.	6.	6.	4.	2.
151	5.	5.	4.	7.	6.	6.	3.	2.	7.	6.
161	6.	10.	5.	10.	6.	13.	6.	13.	12.	8.
171	7.	7.	6.	9.	12.	14.	13.	10.	13.	4.
181	6.	15.	10.	11.	16.	16.	5.	7.	12.	11.
191	27.	18.	12.	14.	17.	20.	27.	21.	23.	21.
201	25.	32.	24.	18.	35.	23.	26.	27.	39.	26.
211	29.	27.	51.	32.	36.	43.	46.	45.	42.	45.
221	37.	50.	52.	49.	59.	57.	60.	72.	54.	86.
231	67.	65.	38.	29.	17.	12.	7.	5.	10.	5.
241	10.	8.	3.	7.	15.	13.	9.	15.	11.	11.
251	15.	13.	10.	16.	10.	13.	17.	11.	11.	18.
261	12.	12.	13.	8.	19.	8.	21.	17.	20.	16.
271	18.	21.	27.	15.	18.	22.	24.	19.	21.	31.
281	26.	19.	24.	35.	33.	28.	24.	38.	40.	53.
291	37.	38.	31.	33.	35.	51.	29.	40.	39.	38.
301	47.	45.	57.	51.	45.	50.	47.	56.	52.	38.
311	52.	56.	55.	50.	66.	71.	66.	64.	69.	69.
321	72.	86.	103.	101.	94.	97.	99.	105.	110.	113.
331	125.	121.	129.	128.	132.	149.	146.	146.	151.	199.
341	192.	206.	197.	206.	215.	192.	242.	256.	237.	258.
351	282.	326.	331.	356.	337.	309.	272.	268.	270.	300.
361	336.	355.	383.	403.	326.	138.	45.	4.	0.	1.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	1.	0.	1.	1.	0.	0.	1.	0.
481	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

LABCORE Data Entry Template for Worklist# 7549

Analyst: AKL **Instrument:** PU01 14 **Book#** 124B43

Method: LA-943-128 Rev/Mod B-0

Worklist Comment: C-106 Grab. Determine sample size using ludlum. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@PU23901	LIQUID		
2	BLNK				@PU23901	LIQUID		
3	SAMPLE	S96T001681	0		@PU23901	LIQUID	96000174	C-106 GRAB
		Analytes Requested:			PU23901 , PU23901E, PU23901T			
4	DUP	S96T001681	0		@PU23901	LIQUID		

Final page for worklist # 7549

A Lewis 5/1/96
Analyst Signature **Date**

Sue E. Hogan 5/3/96
Analyst Signature **Date**

C.J. Opinen 5/6/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

WHC-SD-WM-DP-183, REV. 0

LABCORE Completed RadChem Report for Worklist#: 7549

Analyst: ~~cjo~~ AKL **Instrument:** PU01 #14 **Book#** 124843

Method: LA-943-128 Rev/Mod B-0

Worklist Comment: C-106 Grab. Determine sample size using ludlum. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0	@PU23901	PU23901	LIQUID	3.81E-02	3.76E-2	98.688	% Recovery
1	STD		0	@PU23901	PU23901E	LIQUID	1.00	2.94E+00	2.940	% Ct. Error
1	STD		0	@PU23901	PU23901T	LIQUID	100	9.78E+01	97.800	% Recovery
2	BLNK		0	@PU23901	PU23901	LIQUID	1	<1.67E-2		uCi/mL
2	BLNK		0	@PU23901	PU23901T	LIQUID	100	1.02E+02	102.000	% Recovery
2	BLNK		0	@PU23901	PU23901E	LIQUID	1.00	1.00E+02	100.000	% Ct. Error
3	SAMPLE	S96T001681	0	@PU23901	PU23901	LIQUID	N/A	8.40E-01	489.0e-004	uCi/mL
3	SAMPLE	S96T001681	0	@PU23901	PU23901T	LIQUID	N/A	9.50E+01	0.0e+000	% Recovery
3	SAMPLE	S96T001681	0	@PU23901	PU23901E	LIQUID	N/A	1.88E+00	0.0e+000	% Ct. Error
4	DUP	S96T001681	0	@PU23901	PU23901	LIQUID	8.40E-1	8.34E-1	0.717	RPD
4	DUP	S96T001681	0	@PU23901	PU23901T	LIQUID	100	8.83E+01	88.300	% Recovery
4	DUP	S96T001681	0	@PU23901	PU23901E	LIQUID	1.00	1.91E+00	1.910	% Ct. Error

Final page for worklist# 7549

Analyst Signature **Date** **Analyst Signature** **Date**

John Relyea 7 May 96
Reviewer Signature **Date**

Validated 7 May 96

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID

Type	DATE COUNTED		MAY-02-96	PU 236 AEA FRAC	(C236)	0.701
STD	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.014
Work Order	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)	0.264
7549	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		2686
Test Code	DIGEST DILUTION FACTOR	DDF	1.000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)	0.330
Matrix	DETECTOR NUMBER		14	PU 236 cpm		33.860
LIQUID	EFFICIENCY FACTOR	EFF	0.291	PU 238 cpm		0.690
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		12.740
96003355	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME		480
Sample Count	PU-236 DECAY CORR'D VALUE (dpm/mL)		2196.196	Pu 239/240 µCi/L		3.7629E+01
0	PU-238 TRACER VALUE (dpm/mL		0.000			
Sample Place	STANDARD BOOK NO		124B43			
N/A	STANDARD VALUE in µCi/mL		0.038			

Sample #	
WL7549	
Instrument Code	Decay Time = Date Counted - Tracer Preparation Date
WB27807	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]
Analyst	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)* 1/EFF *C236*100/Pu-236 Decay Corr'd Value * SPKV
SEH	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(2220000 dpm/µCi)]
Chemist	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
JFR	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Analyze	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
AKL	
Date Counted	
05/03/96	
Date Analyze Started	
05/01/96	
Analyze Time	
01:00 PM	
Sample Point	
C-106 GRAB	

Pu 239/240 µCi/L		3.76E-02	DETECTION LEVELS in µCi/mL	
Relative Counting Error	=	2.9%		
			Pu 239/240	
			4.37E-03	
Pu 236 Tracer Recovery	=	97.8%		

Analyst:		AKL	Date:	03-May-96
Signature of Chemist:	John Relyea	JFR	Date:	7 May 96

STANDARD.WB1 REV 1.0 943128ML

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

Type	DATE COUNTED		MAY-01-96	PU 236 AEA FRAC	(C236)	0.985
BLNK	SAMPLE VOLUME in mL	SS	0.200	PU 238 AEA FRAC	(C238)	0.000
Work Unit	SAMPLE DILUTION FACTOR	DF	1111.000	PU 239 AEA FRAC	(C239)	0.000
7549	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		2005
Tracer Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm (Bkg)		0.330
Sample Mix	DETECTOR NUMBER		14	PU 236 cpm		37.000
LIQUID	EFFICIENCY FACTOR	EFF	0.2910	PU 238 cpm		0.000
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		0.000
96003355	TRACER PREPARATION VALUE (dpm/mL)		2390.00	AEA COUNT TIME		480
Form	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2197.66	Pu 239/240 µCi/L =	<	1.675E+01
0	PU-238 TRACER VALUE	(dpm/mL)	0.00			

Sample Prep
N/A

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)*C236*100/(Pu-236 Decay Corr'd Value * SPKV*EFF)
Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(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

Sample ID: WL7549
Instrument ID: WB27607
Prepared By: SEH
Chemist: JFR
Analyst: AKL
Date Complete: 05/03/96
Analysis Date: 05/01/96
Analysis Time: 01:00 PM
Sample Point: C-106 GRAB

Pu 239/240 µCi/mL		< 1.67E-02	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	100.0%	
NOTE: Pu 238 Result is a LESS THAN Value.			Pu 239/240 1.67E-02
Pu 238 µCimL		< 1.67E-02	
Relative Counting Error	=	100.0%	Pu 238 1.67E-02
Pu 236 Tracer Recovery	=	102.4%	

Analyst:	AKL	Date:	03-May-96
Signature of Chemist: John Relyea	JFR	Date:	7 May 96

BLANK.WB1 REV 1.0 943128ML

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

							SAMPLE
Type	DATE COUNTED		MAY-01-96	PU 236 AEA FRAC	(C236)		0.355
SAMPLE	SAMPLE VOLUME in mL	SS	0.200	PU 238 AEA FRAC	(C238)		0.081
Sample Id	SAMPLE DILUTION FACTOR	DF	1111.000	PU 239 AEA FRAC	(C239)		0.542
7549	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			5145
Sample Id	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)		0.330
Det.	DETECTOR NUMBER		14	PU 236 cpm			37.400
LIQUID	EFFICIENCY FACTOR	EFF	0.291	PU 238 cpm			8.580
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			67.100
96003355	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
Factor	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2197.659	Pu 239/240 µCi/L			8.3958E+02
0	PU-238 TRACER VALUE	(dpm/mL)	0.000				
Sample Date							
N/A							
Sample							
S96T001681							
Matrix/Method							
WB27807							
Entered By							
SEH							
Chemist							
JFR							
Analyst							
AKL							
Date Completed							
05/03/96							
Analysis Date							
05/01/96							
Analysis Time							
01:00 PM							
Sample Point							
C-106 GRAB							

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) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)

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

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)

Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(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

				DETECTION LEVELS in µCi/mL
Pu 239/240 µCi/mL		8.40E-01		Pu 239/240
Relative Counting Error	=	1.9%		4.89E-02
Pu 238 µCimL		1.25E-01		Pu 238
Relative Counting Error	=	3.4%		4.89E-02
Pu 236 Tracer Recovery	=	95.0%		

Analyst:	AKL	Date:	03-May-96
Signature of Chemist: John Rolyea	JFR	Date:	7 May 96

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

							DUP
DUP	DATE COUNTED		MAY-01-96	PU 236 AEA FRAC	(C236)		0.348
7549	SAMPLE VOLUME in mL	SS	0.200	PU 238 AEA FRAC	(C238)		0.083
@PU23901	SAMPLE DILUTION FACTOR	DF	1111.000	PU 239 AEA FRAC	(C239)		0.528
LIQUID	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			4879
96003355	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)			30
0	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)		0.330
N/A	DETECTOR NUMBER		14	PU 236 cpm			36.270
S96T001681	EFFICIENCY FACTOR	EFF	0.291	PU 238 cpm			8.700
WB27807	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			55.040
SEH	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
JFR	PU-236 DECAY CORR'D VALUE (dpm/mL)		2197.659	Pu 239/240 µCi/L			8.3435E+02
AKL	PU-238 TRACER VALUE (dpm/mL)		0.000				
05/03/96							
05/01/96							
01:00 PM							
C-106 GRAB							

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) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)
Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(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

Pu 239/240 µCi/mL		8.34E-01	DETECTION LEVELS in µCi/mL	
Relative Counting Error	=	1.9%		
			Pu 239/240	
Pu 238 µCimL		1.31E-01	5.37E-02	
Relative Counting Error	=	3.4%	Pu 238	
Pu 236 Tracer Recovery	=	88.3%	5.37E-02	

Analyst:	AKL	Date:	03-May-96
Signature of Chemist: John Relyea	JFR	Date:	7 may 96

SAMPLE.WB1 REV 1.0 943128ML

Raymond 5/2/96

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
WL7549-STD
File ID: 19a1950.CNF

Counted on: 5/ 2/96 @ 2:21
Detector: AEA19
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	1114.6	1114.6	360.730	360.730	10.000	2.840	5.000	1.023
2	18.0	18.0	303.200	302.974	10.000	6.120	5.000	1.933
3?	13.2	13.2	286.857	286.352	8.000	2.335	4.000	1.122
4	465.9	465.9	229.004	229.004	10.000	3.356	5.000	1.517

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.701	5.755	5.741	0.014	0.01	33.86	1.5	2764.5	0.125E-02
2	Pu238	0.014	5.487	5.475	0.012	0.03	0.69	13.4	76.6	0.345E-04
	Am241		5.479	5.475	0.004				58.6	0.264E-04
3		????		5.399			0.32	22.0		
4	Pu239	0.264	5.147	5.135	0.012	0.02	12.74	2.5	1019.6	0.459E-03
	Pu240		5.144	5.135	0.009				1019.6	0.459E-03
		---					---			
Totals:		0.979	<--valid peaks only-->				47.30			

DETECTOR CALIBRATION
Energy(MEV) = 4.082 + (0.0046)*Channel
Energy range (MeV): 4.082 TO 6.437
Efficiency = 0.0125 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	23189.0	100.000
Smoothed	23190.1	100.005
Composite fit	22860.2	98.582
Residuals	328.8	1.418

Analyzed by: _____
MB

Spectrum 19a1950.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5975.1


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.....4
..................4
.......................................4
......4.



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

Raw Data Dump for AEA Spectrum: 19a1950.CNF

1	0.	0.	1.	2.	0.	0.	0.	0.	1.	0.
11	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
21	0.	1.	1.	0.	1.	0.	1.	0.	1.	0.
31	0.	0.	2.	1.	0.	0.	1.	0.	1.	0.
41	1.	0.	0.	0.	0.	0.	1.	0.	0.	1.
51	0.	0.	0.	0.	1.	0.	2.	0.	0.	0.
61	0.	0.	1.	1.	0.	0.	1.	0.	0.	1.
71	0.	2.	0.	0.	0.	0.	0.	0.	1.	1.
81	2.	0.	1.	1.	1.	1.	0.	0.	0.	0.
91	0.	1.	0.	0.	1.	0.	2.	0.	1.	0.
101	1.	1.	1.	1.	0.	0.	1.	0.	0.	3.
111	1.	0.	0.	0.	1.	0.	0.	2.	2.	2.
121	0.	1.	1.	2.	0.	1.	2.	2.	1.	1.
131	1.	1.	0.	4.	1.	2.	4.	2.	1.	0.
141	2.	0.	1.	0.	1.	2.	2.	2.	2.	3.
151	0.	3.	0.	0.	3.	1.	3.	1.	0.	2.
161	1.	1.	4.	2.	6.	2.	3.	2.	3.	5.
171	0.	5.	0.	3.	1.	4.	5.	6.	10.	4.
181	5.	7.	9.	9.	8.	11.	5.	19.	8.	7.
191	9.	13.	17.	7.	20.	15.	17.	18.	10.	27.
201	22.	31.	25.	27.	31.	27.	43.	36.	59.	45.
211	65.	56.	70.	102.	103.	143.	127.	123.	160.	190.
221	208.	184.	239.	287.	322.	427.	441.	472.	565.	514.
231	466.	278.	129.	59.	20.	6.	3.	0.	0.	0.
241	0.	0.	0.	1.	3.	2.	1.	3.	1.	2.
251	1.	3.	3.	1.	2.	2.	1.	2.	3.	3.
261	5.	6.	2.	3.	3.	6.	3.	5.	7.	8.
271	6.	3.	8.	2.	5.	9.	7.	4.	7.	5.
281	9.	10.	15.	21.	17.	21.	21.	23.	17.	10.
291	8.	5.	12.	13.	10.	13.	13.	13.	10.	14.
301	19.	24.	27.	24.	25.	11.	7.	9.	15.	11.
311	16.	16.	21.	12.	20.	19.	19.	30.	26.	21.
321	28.	25.	30.	28.	24.	22.	30.	42.	48.	45.
331	51.	59.	78.	57.	68.	91.	84.	92.	100.	119.
341	111.	160.	198.	205.	202.	274.	328.	398.	469.	525.
351	668.	696.	651.	602.	552.	588.	725.	860.	1044.	1206.
361	1365.	1288.	971.	455.	146.	18.	2.	0.	0.	1.
371	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	1.	1.	1.	0.	0.	0.	0.
401	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
421	1.	0.	0.	0.	0.	0.	0.	1.	2.	0.
431	0.	0.	0.	1.	2.	0.	0.	1.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
451	0.	1.	0.	0.	0.	0.	1.	0.	0.	0.
461	0.	0.	0.	0.	1.	0.	1.	2.	0.	3.
471	1.	1.	3.	2.	2.	3.	1.	2.	0.	1.
481	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
491	0.	1.	0.	0.	2.	1.	0.	0.	0.	0.
511	0.	0.								

CRaymond 5/2/96

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
WL7549-BLNK
File ID: 20a2080.CNF

Counted on: 5/ 2/96 @ 2:23
Detector: AEA20
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	1191.0	1191.0	362.090	362.090	10.000	2.921	5.000	1.025
2	18.4	18.4	288.405	288.300	14.000	8.262	7.000	3.663

PEAK RESULTS
Peak Error Limit: 30%

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	5.755	5.757	-.0020	.01	37.00	1.5	1897.4	0.855E-03
2	Th228	0.017	5.400	5.417	-.0170	.04	0.65	12.1	45.7	0.206E-04
Totals:		1.002	<--valid peaks only-->				37.65			

DETECTOR CALIBRATION
Energy(MEV) = 4.091 + (0.0046)*Channel
Energy range (MeV): 4.091 TO 6.446
Efficiency = 0.0199 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	18038.0	100.000
Smoothed	18039.0	100.006
Composite fit	18071.5	100.186
Residuals	-33.5	-0.186

Analyzed by: _____
MB

Spectrum 20a2080.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 6387.8


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Raw Data Dump for AEA Spectrum: 20a2080.CNF

1	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
11	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	2.	1.	0.	0.	0.	0.	1.
31	0.	0.	0.	0.	1.	0.	1.	0.	2.	1.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
71	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
81	0.	0.	1.	0.	0.	0.	1.	1.	0.	0.
91	1.	0.	0.	0.	0.	0.	1.	1.	2.	0.
101	0.	0.	2.	0.	0.	1.	2.	1.	0.	0.
111	1.	0.	0.	0.	0.	0.	0.	1.	1.	0.
121	0.	1.	0.	0.	0.	1.	0.	1.	1.	0.
131	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
141	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
151	0.	1.	2.	0.	0.	0.	0.	2.	0.	0.
161	1.	2.	0.	2.	2.	0.	0.	0.	0.	0.
171	1.	0.	1.	2.	0.	0.	0.	0.	0.	0.
181	0.	0.	1.	1.	0.	0.	1.	1.	0.	0.
191	0.	0.	0.	0.	0.	0.	0.	1.	2.	0.
201	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
211	1.	1.	0.	0.	3.	0.	0.	0.	1.	0.
221	0.	2.	0.	0.	2.	1.	1.	0.	0.	2.
231	2.	0.	0.	2.	0.	0.	2.	0.	1.	1.
241	2.	1.	1.	2.	1.	3.	3.	1.	1.	2.
251	1.	2.	1.	2.	0.	2.	2.	0.	4.	3.
261	0.	2.	2.	2.	5.	6.	3.	6.	2.	5.
271	5.	6.	6.	7.	2.	4.	5.	4.	4.	7.
281	7.	10.	8.	14.	15.	19.	18.	25.	22.	17.
291	16.	14.	9.	4.	5.	12.	13.	8.	5.	8.
301	5.	9.	10.	7.	9.	11.	13.	7.	9.	9.
311	10.	9.	13.	17.	19.	11.	19.	17.	19.	16.
321	28.	24.	32.	36.	32.	35.	37.	44.	32.	57.
331	43.	56.	67.	58.	72.	79.	88.	96.	105.	114.
341	128.	131.	142.	180.	211.	233.	274.	317.	402.	500.
351	529.	659.	781.	705.	659.	640.	673.	752.	887.	1084.
361	1232.	1411.	1411.	1218.	718.	236.	51.	6.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	1.	0.	0.	0.	0.	0.	1.	1.
411	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
421	1.	0.	0.	0.	1.	2.	0.	0.	0.	0.
431	0.	1.	2.	0.	0.	0.	1.	0.	1.	0.
441	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
451	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	2.	0.	1.	0.	0.	1.
471	2.	2.	1.	2.	1.	2.	4.	1.	1.	1.
481	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

Raymond 5/2/96

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

DATA REDUCTION REPORT

SAMPLE
S96T1681-SAM
File ID: 21a2185.CNF

Counted on: 5/ 2/96 @ 2:23
Detector: AEA21
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	951.3	951.3	359.480	359.480	16.000	6.570	8.000	2.025
2	213.7	213.7	302.218	302.146	12.000	5.367	6.000	1.496
3	1657.6	1657.6	228.391	228.390	16.000	6.645	8.000	2.647

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Ra224	0.355	5.686	5.739	-.053	0.03	37.40	1.5	2105.0	0.948E-03
	Pu236		5.755	5.739	0.016				2019.0	0.909E-03
2	Pu238	0.081	5.487	5.475	0.012	0.02	8.58	3.2	630.3	0.284E-03
	Am241		5.479	5.475	0.004				482.8	0.217E-03
3	Pu239	0.542	5.147	5.136	0.011	0.03	57.10	1.2	3021.4	0.136E-02
	Pu240		5.144	5.136	0.008				3021.4	0.136E-02
		---					---			
Totals:		0.979	<--valid peaks only-->				103.08			

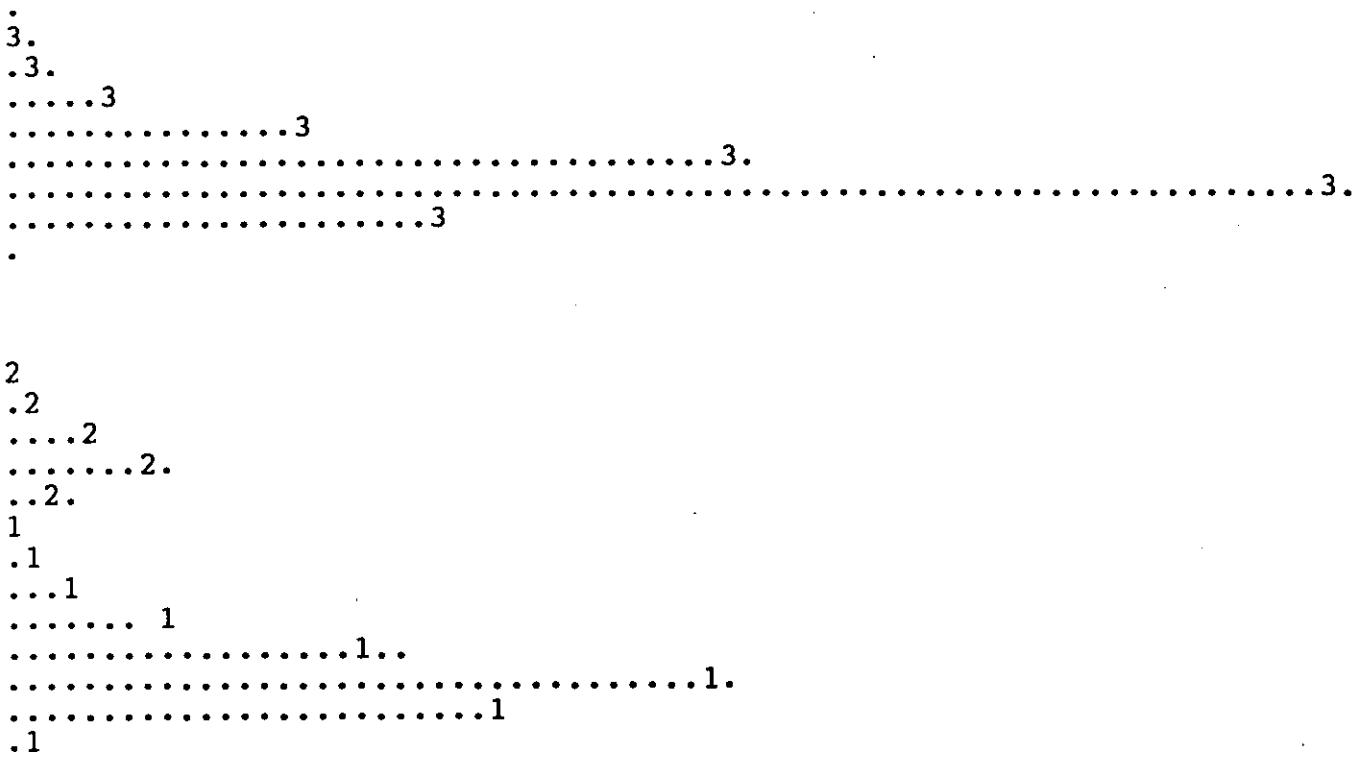
DETECTOR CALIBRATION
Energy(MEV) = 4.085 + (0.0046)*Channel
Energy range (MeV): 4.085 TO 6.440
Efficiency = 0.0189 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	50545.0	100.000
Smoothed	50546.0	100.002
Composite fit	49479.2	97.891
Residuals	1065.8	2.109

Analyzed by: _____
MB

Spectrum 21a2185.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 11989.5



Raw Data Dump for AEA Spectrum: 21a2185.CNF

1	0.	0.	2.	1.	0.	0.	0.	1.	0.	0.
11	3.	1.	1.	2.	1.	0.	0.	2.	0.	1.
21	1.	1.	2.	0.	3.	3.	0.	0.	1.	3.
31	1.	0.	0.	1.	0.	1.	0.	0.	1.	1.
41	0.	0.	0.	2.	0.	0.	0.	3.	0.	1.
51	0.	2.	2.	0.	0.	1.	1.	2.	1.	0.
61	1.	0.	0.	2.	3.	2.	0.	0.	0.	1.
71	0.	3.	1.	1.	2.	0.	4.	2.	0.	1.
81	2.	1.	0.	0.	2.	0.	0.	1.	1.	0.
91	0.	1.	0.	1.	2.	1.	1.	2.	1.	2.
101	1.	0.	3.	4.	1.	1.	0.	3.	2.	1.
111	4.	0.	0.	1.	2.	3.	0.	4.	3.	1.
121	4.	3.	4.	4.	3.	2.	5.	5.	3.	0.
131	3.	4.	5.	7.	5.	3.	2.	6.	5.	5.
141	6.	6.	4.	6.	7.	8.	4.	9.	7.	6.
151	10.	9.	5.	11.	6.	11.	4.	14.	9.	9.
161	13.	8.	7.	8.	14.	15.	10.	14.	12.	21.
171	11.	18.	13.	16.	24.	20.	27.	23.	36.	24.
181	24.	31.	33.	39.	36.	49.	36.	50.	51.	42.
191	44.	51.	64.	56.	64.	76.	92.	94.	83.	74.
201	114.	122.	128.	131.	163.	155.	180.	221.	223.	245.
211	299.	299.	365.	412.	486.	537.	555.	655.	738.	874.
221	925.	1001.	1190.	1350.	1515.	1624.	1716.	1860.	1824.	1720.
231	1435.	1159.	910.	628.	422.	276.	115.	72.	37.	22.
241	14.	3.	5.	2.	2.	7.	0.	3.	4.	0.
251	5.	5.	5.	1.	2.	7.	9.	9.	12.	10.
261	13.	9.	7.	9.	11.	14.	12.	14.	15.	17.
271	18.	14.	26.	17.	22.	23.	29.	31.	41.	30.
281	41.	44.	58.	42.	58.	81.	81.	65.	97.	101.
291	106.	118.	131.	145.	169.	169.	206.	179.	183.	210.
301	249.	210.	250.	239.	185.	125.	94.	65.	46.	28.
311	31.	23.	11.	27.	16.	19.	21.	36.	23.	31.
321	37.	40.	30.	53.	50.	55.	45.	41.	50.	58.
331	78.	69.	86.	71.	92.	98.	114.	129.	149.	152.
341	184.	225.	225.	286.	318.	386.	425.	491.	529.	635.
351	655.	691.	695.	708.	800.	862.	919.	970.	1076.	962.
361	1024.	888.	727.	514.	350.	225.	121.	53.	38.	13.
371	2.	3.	1.	0.	0.	1.	0.	0.	0.	0.
381	0.	1.	0.	1.	0.	1.	1.	0.	0.	0.
391	0.	1.	0.	0.	0.	0.	1.	0.	0.	0.
401	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
411	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
421	2.	0.	1.	0.	1.	0.	3.	1.	2.	0.
431	0.	2.	1.	1.	0.	0.	0.	2.	0.	0.
441	0.	0.	1.	0.	0.	0.	1.	0.	0.	0.
451	1.	0.	0.	0.	0.	2.	0.	0.	0.	0.
461	2.	0.	1.	0.	1.	1.	1.	2.	2.	1.
471	1.	2.	6.	4.	4.	1.	2.	2.	0.	0.
481	1.	0.	0.	1.	0.	3.	0.	0.	0.	2.
491	0.	0.	1.	0.	0.	0.	1.	0.	1.	0.
511	2.	0.								

Raymond 5/29/96

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
S96T1681-DUP
File ID: 22a2279.CNF

Counted on: 5/ 2/96 @ 2:24
Detector: AEA22
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	1113.9	1113.9	359.390	359.390	10.000	3.112	5.000	1.033
2	256.7	256.7	301.223	301.194	8.000	3.224	4.000	1.018
3	1857.5	1857.5	226.354	226.354	12.000	4.094	6.000	1.736

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.348	5.755	5.758	-.0030	01	36.27	1.5	4459.1	0.201E-02
2	Pu238	0.083	5.487	5.490	-.0030	01	8.70	3.1	1455.0	0.655E-03
	Am241		5.479	5.490	-.011				1114.5	0.502E-03
3	Pu239	0.528	5.147	5.146	0.0010	02	55.04	1.2	6631.9	0.299E-02
	Pu240		5.144	5.146	-.002				6631.9	0.299E-02
		---					---			
Totals:		0.959	<--valid peaks only-->				100.01			

DETECTOR CALIBRATION
Energy(MEV) = 4.105 + (0.0046)*Channel
Energy range (MeV): 4.105 TO 6.460
Efficiency = 0.0083 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	50049.0	100.000
Smoothed	50048.9	100.000
Composite fit	48008.3	95.923
Residuals	2040.7	4.077

Analyzed by: _____
MB

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Raw Data Dump for AEA Spectrum: 22a2279.CNF

1	0.	0.	1.	1.	2.	2.	1.	3.	0.	0.
11	0.	1.	1.	0.	0.	1.	1.	1.	1.	0.
21	0.	2.	2.	0.	2.	0.	0.	1.	1.	2.
31	0.	2.	1.	0.	2.	0.	3.	1.	1.	1.
41	1.	0.	1.	2.	1.	1.	0.	1.	1.	3.
51	1.	3.	1.	2.	2.	1.	2.	0.	0.	3.
61	0.	2.	0.	0.	1.	1.	1.	1.	4.	1.
71	2.	2.	0.	2.	2.	1.	0.	3.	1.	1.
81	3.	5.	1.	4.	3.	2.	1.	3.	6.	3.
91	1.	4.	2.	1.	2.	1.	4.	0.	0.	1.
101	2.	3.	2.	4.	2.	4.	3.	4.	5.	0.
111	1.	3.	4.	4.	4.	2.	2.	4.	3.	2.
121	4.	1.	4.	3.	8.	6.	4.	3.	4.	2.
131	7.	6.	3.	4.	4.	10.	6.	4.	9.	7.
141	4.	8.	6.	12.	13.	12.	9.	13.	16.	6.
151	16.	5.	15.	12.	14.	9.	10.	12.	18.	11.
161	14.	18.	13.	15.	15.	17.	12.	19.	26.	32.
171	23.	27.	21.	33.	33.	33.	36.	29.	35.	41.
181	36.	44.	57.	42.	46.	45.	59.	66.	63.	54.
191	79.	77.	87.	91.	109.	103.	88.	90.	134.	145.
201	136.	134.	170.	192.	182.	203.	253.	256.	275.	316.
211	357.	402.	491.	534.	599.	753.	770.	766.	902.	941.
221	1138.	1310.	1492.	1699.	1941.	2150.	2208.	1908.	1481.	946.
231	533.	263.	94.	24.	8.	6.	6.	5.	0.	3.
241	2.	8.	4.	2.	6.	3.	7.	5.	5.	2.
251	6.	8.	5.	13.	9.	4.	13.	9.	9.	7.
261	11.	10.	13.	18.	17.	17.	16.	26.	20.	24.
271	15.	21.	14.	25.	21.	26.	27.	36.	32.	41.
281	45.	55.	71.	58.	71.	59.	88.	90.	104.	102.
291	133.	153.	160.	168.	150.	172.	182.	202.	260.	249.
301	293.	318.	282.	185.	82.	21.	20.	8.	26.	27.
311	27.	19.	22.	25.	28.	32.	27.	24.	26.	33.
321	46.	33.	54.	57.	40.	47.	60.	62.	55.	82.
331	81.	100.	93.	96.	94.	95.	116.	149.	156.	165.
341	179.	227.	217.	286.	302.	392.	448.	520.	604.	718.
351	716.	654.	625.	600.	649.	776.	936.	1132.	1320.	1345.
361	1186.	880.	396.	107.	19.	3.	0.	0.	0.	0.
371	0.	0.	0.	0.	1.	0.	1.	0.	0.	0.
381	0.	1.	0.	0.	0.	0.	1.	1.	0.	0.
391	0.	1.	1.	0.	0.	0.	1.	0.	1.	0.
401	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.
411	1.	2.	0.	1.	2.	0.	1.	1.	1.	1.
421	2.	1.	1.	0.	2.	2.	0.	1.	2.	0.
431	1.	1.	1.	0.	1.	1.	2.	1.	0.	1.
441	0.	0.	0.	1.	0.	1.	0.	0.	0.	3.
451	0.	0.	1.	0.	0.	0.	0.	1.	3.	1.
461	0.	0.	1.	0.	0.	2.	1.	2.	2.	1.
471	0.	2.	5.	6.	1.	2.	2.	1.	1.	0.
481	2.	1.	0.	1.	1.	3.	1.	2.	0.	0.
491	1.	2.	0.	0.	0.	3.	0.	2.	0.	1.
511	0.	0.								

LABCORE Data Entry Template for Worklist# 7870

Analyst: DMV **Instrum.** : PU01 #18 **Book#** 124343

Method: LA-943-128 Rev/Mod _____

Worklist Comment: C-106 Grab. Determine sample size using ludlum. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@PU23901	SOLID		
2	BLNK-PREP				@PU23901	SOLID		
3	SAMPLE	S96T000561	0	F	@PU23901	SOLID	96000082	C-106 GRAB
	Analytes Requested: PU23901 , PU23901E, PU23901T							
4	DUP	S96T000561	0	F	@PU23901	SOLID		
5	SAMPLE	S96T000571	0	F	@PU23901	SOLID	96000082	C-106 GRAB
	Analytes Requested: PU23901 , PU23901E, PU23901T							
6	DUP	S96T000571	0	F	@PU23901	SOLID		

Final page for worklist # 7870

Joseph VaSut 4/24/96
Analyst Signature **Date**

Sue E. Hogan 4/30/96
Analyst Signature **Date**

C.J. Opinen 5/1/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

C-106

LABCORE Completed Worklist Report for Worklist# 7870

Analyst: ~~ejo~~ JMV **Instrument:** PU01 #18 **Book#** 124B43

Method: LA-943-128 Rev/Mod A1

Worklist Comment: C-106 Grab. Determine sample size using ludlum. new

Seq	Type	Sample#	R	A	Test		Matrix	Actual		Found	DL or Yield	Unit
1	STD		0		@PU23901	PU23901	SOLID	3.81E-02		3.60E-2	94.488	% Recovery
1	STD		0		@PU23901	PU23901T	SOLID	100		9.14E+01	91.400	% Recovery
1	STD		0		@PU23901	PU23901E	SOLID	1		3.63E+00	3.630	% Ct. Error
2	BLNK-PREP		0		@PU23901	PU23901	SOLID	1		<5.30e-01		uCi/g
2	BLNK-PREP		0		@PU23901	PU23901T	SOLID	100		1.16E+01	11.600	% Recovery
2	BLNK-PREP		0		@PU23901	PU23901E	SOLID	1		1.00E+02	100.000	% Ct. Error
3	SAMPLE	S96T000561	0	F	@PU23901	PU23901	SOLID	N/A	<	6.20E-02	0.062	uCi/g
3	SAMPLE	S96T000561	0	F	@PU23901	PU23901T	SOLID	N/A		9.67E+01	0.000	% Recovery
3	SAMPLE	S96T000561	0	F	@PU23901	PU23901E	SOLID	N/A		1.00E+02	0.000	% Ct. Error
4	DUP	S96T000561	0	F	@PU23901	PU23901	SOLID	<6.20E-2		<4.67E-2		RPD
4	DUP	S96T000561	0	F	@PU23901	PU23901T	SOLID	100		1.08E+02	108.000	% Recovery
4	DUP	S96T000561	0	F	@PU23901	PU23901E	SOLID	1.00		1.00E+02	100.000	% Ct. Error
5	SAMPLE	S96T000571	0	F	@PU23901	PU23901	SOLID	N/A	<	2.17E-02	0.022	uCi/g
5	SAMPLE	S96T000571	0	F	@PU23901	PU23901T	SOLID	N/A		9.18E+01	0.000	% Recovery
5	SAMPLE	S96T000571	0	F	@PU23901	PU23901E	SOLID	N/A		1.00E+02	0.000	% Ct. Error
6	DUP	S96T000571	0	F	@PU23901	PU23901	SOLID	<2.17E-2		<2.79E-2		RPD
6	DUP	S96T000571	0	F	@PU23901	PU23901T	SOLID	100		9.00E+01	90.000	% Recovery
6	DUP	S96T000571	0	F	@PU23901	PU23901E	SOLID	1.00		1.00E+02	100.000	% Ct. Error

Final page for worklist# 7870

Analyst Signature **Date** **Analyst Signature** **Date**

John Relyea 9 May 96
Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

LABCORE Completed RadChem Report for Worklist#: 7870

Analyst: ~~cjo~~ JMV **Instrument:** PU01 #18 **Book#** 124B43

Method: LA-943-128 Rev/Mod A-1

Worklist Comment: C-106 Grab. Determine sample size using ludlum. new

Seq	Type	Sample#	R	A	Test		Matrix	Actual		Found	DL or Yield	Unit
1	STD		0		@PU23901	PU23901	SOLID	3.81E-02		3.60E-2	94.488	% Recovery
1	STD		0		@PU23901	PU23901T	SOLID	100		9.14E+01	91.400	% Recovery
1	STD		0		@PU23901	PU23901E	SOLID	1		3.63E+00	3.630	% Ct. Error
2	BLNK-PREP		0		@PU23901	PU23901	SOLID	1		~~3.71E+0~~	~~3.710~~	uCi/g < 5.30E-01
2	BLNK-PREP		0		@PU23901	PU23901T	SOLID	100		~~3.98E+00~~ 11.6%	11.6 ~~3.980~~	% Recovery 11.6% Tr. Recovery
2	BLNK-PREP		0		@PU23901	PU23901E	SOLID	1		~~4.14E+01~~ 100	100 ~~11.400~~	% Ct. Error 100% ct error
3	SAMPLE	S96T000561	0	F	@PU23901	PU23901	SOLID	N/A	<	6.20E-02	620.0e-004	uCi/g
3	SAMPLE	S96T000561	0	F	@PU23901	PU23901T	SOLID	N/A		9.67E+01	0.0e+000	% Recovery
3	SAMPLE	S96T000561	0	F	@PU23901	PU23901E	SOLID	N/A		1.00E+02	0.0e+000	% Ct. Error
4	DUP	S96T000561	0	F	@PU23901	PU23901	SOLID	<6.20E-2		<4.67E-2		RPD
4	DUP	S96T000561	0	F	@PU23901	PU23901T	SOLID	100		1.08E+02	108.000	% Recovery
4	DUP	S96T000561	0	F	@PU23901	PU23901E	SOLID	1.00		1.00E+02	100.000	% Ct. Error
5	SAMPLE	S96T000571	0	F	@PU23901	PU23901	SOLID	N/A	<	2.17E-02	217.0e-004	uCi/g
5	SAMPLE	S96T000571	0	F	@PU23901	PU23901T	SOLID	N/A		9.18E+01	0.0e+000	% Recovery
5	SAMPLE	S96T000571	0	F	@PU23901	PU23901E	SOLID	N/A		1.00E+02	0.0e+000	% Ct. Error
6	DUP	S96T000571	0	F	@PU23901	PU23901	SOLID	<2.17E-2		<2.79E-2		RPD
6	DUP	S96T000571	0	F	@PU23901	PU23901T	SOLID	100		9.00E+01	90.000	% Recovery
6	DUP	S96T000571	0	F	@PU23901	PU23901E	SOLID	1.00		1.00E+02	100.000	% Ct. Error

Final page for worklist# 7870

Analyst Signature Date

Analyst Signature Date

Reviewer Signature Date

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID

						STD
Type	DATE COUNTED		APR-25-96	PU 236 AEA FRAC	(C236)	0.694
STD	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.000
Work Unit	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)	0.249
7870	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		2347
Test Code	DIGEST DILUTION FACTOR	DDF	1.000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)	0.160
Matrix	DETECTOR NUMBER		18	PU 236 cpm		23.010
LIQUID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm		0.000
Tracer Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		8.270
96003707	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME		480
Fraction	PU-236 DECAY CORR'D VALUE (dpm/mL)		2206.457	Pu 239/240 µCi/L		3.6017E+01
0	PU-238 TRACER VALUE (dpm/mL		0.000			
Standard Book	STANDARD BOOK NO		124B43			
N/A	STANDARD VALUE in µCi/mL		0.038			

Sample #	
WL7870	
Date Counted	Decay Time = Date Counted - Tracer Preparation Date
WB27809	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]
Prepared By	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)* 1/EFF *C236*100/Pu-236 Decay Corr'd Value * SPKV
SEH	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(2220000 dpm/µCi)]
Checked By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
JFR	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Analyst	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
JMV	
Date Analyzed	
04/30/96	Pu 239/240 µCi/mL 3.60E-02
Analysis Date	Relative Counting Error = 3.6%
04/24/96	
Analysis Time	
12:00 PM	
Sample Point	
C-106 GRAB	Pu 236 Tracer Recovery = 91.4%

DETECTION LEVELS in µCi/mL
Pu 239/240
4.75E-03

Analyst:	JMV	Date:	30-Apr-96
Signature of Chemist: John Relyea	JFR	Date:	2 May 96

STANDARD.WB1 REV 1.0 943128ML

2167

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

Type	DATE COUNTED		APR-25-96	PU 236 AEA FRAC	(C236)	0.936
BLNK-PREP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.000
7870	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		226
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	0.5160	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm (Bkg)		0.160
Matrix	DETECTOR NUMBER		18	PU 236 cpm		2.710
SOLID	EFFICIENCY FACTOR	EFF	0.2686	PU 238 cpm		0.000
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		0.000
96003707	TRACER PREPARATION VALUE (dpm/mL)		2390.00	AEA COUNT TIME		480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2206.46	Pu 239/240 µCi/g =	<	5.302E-01
0	PU-238 TRACER VALUE (dpm/mL)		0.00			

BLNK-PREP

Sample Prep	
N/A	
Sample #	Decay Time = Date Counted - Tracer Preparation Date
WL7870	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95}]
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)*C236*100/(Pu-236 Decay Corr'd Value * SPKV*EFF)
WB27809	Pu 239/240 µCi/g = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
SEH	Pu 238 µCi/g = [(Pu 238 dpm)(DF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
JFR	
Analyst	
JMV	
Date Complete	
04/30/96	
Analysis Date	
04/24/96	
Analysis Time	
12:00 PM	
Sample Point	
C-106 GRAB	

Pu 239/240 µCi/g		< 5.30E-01	DETECTION LEVELS in µCi/g
Relative Counting Error	=	100.0%	
NOTE: Pu 238 Result is a LESS THAN Value.			Pu 239/240 5.30E-01
Pu 238 µCi/g		< 5.30E-01	
Relative Counting Error	=	100.0%	Pu 238 5.30E-01
Pu 236 Tracer Recovery	=	11.6%	

Analyst:	JMV	Date:	30-Apr-96
Signature of Chemist: John Relyea	JFR	Date:	8 May 96

BLANK.WB1 REV 1.0 943128ML

2168

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

Type	DATE COUNTED		APR-25-96	PU 236 AEA FRAC	(C236)	BLNK-PREP
BLNK-PREP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	~~0.320~~ .936
Work Unit	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.000
7870	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		0.616
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	0.5160	AT COUNT TIME (MIN)		226
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm (Bkg)		30
Matrix	DETECTOR NUMBER		18	PU 236 cpm		0.160
SOLID	EFFICIENCY FACTOR	EFF	0.2686	PU 238 cpm		~~0.930~~ 2.71
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		0.000
96003707	TRACER PREPARATION VALUE (dpm/mL)		2390.00	AEA COUNT TIME		1.780
Replicate	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2206.46	Pu 239/240 µCi/g		480
0	PU-238 TRACER VALUE	(dpm/mL)	0.00			3.708E+00

Sample Prep
N/A

Sample ID
WL7870

Instrument Code
WB27809

Prepared By
SEH

Chemist
JFR

Analyst
JMV

Date Complete
04/30/96

Analysis Date
04/24/96

Analysis Time
12:00 PM

Sample Point
C-106 GRAB

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)*C236*100/(Pu-236 Decay Corr'd Value * SPKV*EFF)
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 * 1/EFF * 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

Pu 239/240 µCi/g		3.71E+00	DETECTION LEVELS in µCi/g	
Relative Counting Error	=	11.4%		
NOTE: Pu 238 Result is a LESS THAN Value.			Pu 239/240	
Pu 238 µCi/g		< 1.81E+00	1.81E+00	
Relative Counting Error	=	100.0%	Pu 238	
Pu 236 Tracer Recovery	=	4.0%	1.81E+00	

Analyst:	JMV	Date:	30-Apr-96
Signature of Chemist:	JFR	Date:	5/8/96

BLANK.WB1 REV 1.0 943128ML

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

							SAMPLE
Type	DATE COUNTED		APR-25-96	PU 236 AEA FRAC	(C236)		0.964
SAMPLE	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)		0.000
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)		0.000
7870	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			1789
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	0.5160	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)		0.160
Matrix	DETECTOR NUMBER		18	PU 236 cpm			22.660
SOLID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm			0.000
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			0.000
96003707	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2206.457	Pu 239/240 µCi/g =		<	6.1964E-02
0	PU-238 TRACER VALUE (dpm/mL)		0.000				
Sample Prep							
FUSION01							
Sample #							
S96T000561							
Instrument Code							
WB27809							
Prepared By							
SEH							
Chemist							
JFR							
Analyst							
JMV							
Date Complete							
04/30/96							
Analysis Date							
04/24/96							
Analysis Time							
12:00 PM							
Sample Point							
C-106 GRAB							

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) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)

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 * 1/EFF * 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

Pu 239/240 µCi/g		< 6.20E-02	DETECTION LEVELS in µCi/g
Relative Counting Error	=	100.0%	
NOTE: Pu 238 Result is a LESS THAN Value.			Pu 239/240 6.20E-02
Pu 238 µCi/g		< 6.20E-02	
Relative Counting Error	=	100.0%	Pu 238 6.20E-02
Pu 236 Tracer Recovery	=	96.7%	

Analyst:	JMV	Date:	30-Apr-96
Signature of Chemist: John Rodgers	JFR	Date:	2 May 96

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

							DUP
Type	DATE COUNTED		APR-25-96	PU 236 AEA FRAC		(C236)	1.043
DUP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC		(C238)	0.000
Worklist	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC		(C239)	0.000
7870	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			1852
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	0.6120	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm		(Bkg)	0.160
Matrix	DETECTOR NUMBER		18	PU 236 cpm			26.020
SOLID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm			0.000
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			0.000
96003707	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2206.457	Pu 239/240 µCi/g =		<	4.6712E-02
0	PU-238 TRACER VALUE (dpm/mL)		0.000				

Sample Prep
FUSION01

Sample #
S96T000561

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) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)
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 * 1/EFF * 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

Instrument Code
WB27809
Prepared By
SEH
Chemist
JFR
Analyst
JMV
Date Completed
04/30/96
Analysis Date
04/24/96
Analysis Time
12:00 PM
Sample Point
C-106 GRAB

Pu 239/240 µCi/g		< 4.67E-02	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		< 4.67E-02	4.67E-02
Relative Counting Error	=	100.0%	Pu 238
Pu 236 Tracer Recovery	=	108.4%	4.67E-02

Analyst:		JMV	Date:	30-Apr-96
Signature of Chemist:	John Relyea	JFR	Date:	2 May 96

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: SAM5

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

							SAMPLE
Type	DATE COUNTED		APR-25-96	PU 236 AEA FRAC		(C236)	0.987
SAMPLE	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC		(C238)	0.000
Work Unit	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC		(C239)	0.000
7870	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			1658
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	1.5148	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm		(Bkg)	0.160
Method	DETECTOR NUMBER		18	PU 236 cpm			33.580
SOLID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm			0.000
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			0.000
96003707	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
Aliquot	PU-236 DECAY CORR'D VALUE (dpm/mL)		2206.457	Pu 239/240 µCi/g =		<	2.1731E-02
0	PU-238 TRACER VALUE (dpm/mL)		0.000				

Sample Prep
FUSION01

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) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)
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 * 1/EFF * 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

Sample ID: S96T000571
Instrument Code: WB27809
Prepared By: SEH
Chemist: JFR
Analyst: JMV
Date Completed: 04/30/96
Analysis Date: 04/24/96
Analysis Time: 12:00 PM
Sample Source: C-106 GRAB

Pu 239/240 µCi/g		< 2.17E-02	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		< 2.17E-02	2.17E-02
Relative Counting Error	=	100.0%	Pu 238
Pu 236 Tracer Recovery	=	91.8%	2.17E-02

Analyst:		JMV	Date:	30-Apr-96
Signature of Chemist:	John Relyea	JFR	Date:	2 May 96

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: DUP6

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

							DUP
Type	DATE COUNTED		APR-25-96	PU 236 AEA FRAC		(C236)	0.986
DUP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC		(C238)	0.000
Workbook	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC		(C239)	0.000
7870	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			1628
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	1.2024	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm		(Bkg)	0.160
Matrix	DETECTOR NUMBER		18	PU 236 cpm			33.170
SOLID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm			0.000
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			0.000
96003707	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
Replicate	PU-236 DECAY CORR'D VALUE (dpm/mL)		2206.457	Pu 239/240 µCi/g =		<	2.7939E-02
0	PU-238 TRACER VALUE (dpm/mL)		0.000				
Instrument Code							
FUSION01							
Analyst	Decay Time = Date Counted - Tracer Preparation Date						
S96T000571	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]						
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)						
WB27809	Pu 239/240 µCi/g = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]						
Batch Code	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)						
SEH	Pu 238 µCi/g = [(Pu 238 dpm)(DF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]						
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100						
JFR							
Analyst							
JMV							
Date Completed							
04/30/96	Pu 239/240 µCi/g		< 2.79E-02				DETECTION LEVELS in µCi/g
Analysis Date	Relative Counting Error	=	100.0%				
04/24/96							
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.						Pu 239/240
12:00 PM	Pu 238 µCi/g		< 2.79E-02				2.79E-02
Sample Point	Relative Counting Error	=	100.0%				Pu 238
C-106 GRAB	Pu 236 Tracer Recovery	=	90.0%				2.79E-02

Analyst:		JMV	Date:	30-Apr-96
Signature of Chemist:	John Relyea	JFR	Date:	2 May 96

SAMPLE.WB1 REV 1.0 943128ML

Westinghouse Hanford Co.

C Raymond 4/25/96

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

DATA REDUCTION REPORT

SAMPLE
WL7870-STD
File ID: 13a1355.CNF

Counted on: 4/25/96 @10:40
Detector: AEA13
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	501.1	501.1	362.129	362.129	12.000	3.647	6.000	0.773
2	26.3	26.3	278.082	277.916	28.000	6.489	14.000	14.649
3	19.2	19.2	270.611	269.048	8.000	1.696	4.000	0.991
4	215.0	215.0	227.937	227.935	12.000	4.142	6.000	1.151

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		0.694		5.728	0.02		23.01	1.9	2772.0	0.125E-02
2		0.020		5.349	0.03		0.67	13.4	80.2	0.361E-04
3	Am243	0.012	5.270	5.309	-.039	0.01	0.39	20.8	47.7	0.215E-04
4	Pu240	0.249	5.144	5.124	0.020	0.02	8.27	3.1	996.5	0.449E-03
Totals:		0.975	<--valid peaks only-->				32.34			

DETECTOR CALIBRATION
Energy(MEV) = 4.099 + (0.0045)*Channel
Energy range (MeV): 4.099 TO 6.403
Efficiency = 0.0083 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	15925.0	100.000
Smoothed	15924.8	99.999
Composite fit	15522.2	97.471
Residuals	402.8	2.529

Analyzed by: _____
MB

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Raw Data Dump for AEA Spectrum: 13a1355.CNF

1	0.	0.	2.	0.	0.	0.	1.	0.	0.	1.
11	3.	0.	1.	1.	2.	2.	2.	3.	1.	2.
21	4.	4.	5.	2.	4.	2.	4.	1.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
41	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
51	0.	0.	1.	2.	1.	0.	1.	1.	0.	0.
61	1.	0.	2.	1.	1.	0.	1.	2.	1.	3.
71	3.	2.	1.	0.	0.	2.	1.	2.	0.	0.
81	2.	1.	1.	0.	1.	1.	0.	0.	1.	0.
91	0.	0.	0.	0.	2.	0.	1.	1.	1.	1.
101	0.	2.	1.	1.	0.	0.	2.	0.	1.	0.
111	1.	2.	1.	1.	0.	3.	0.	2.	2.	0.
121	0.	4.	1.	2.	2.	3.	1.	1.	3.	0.
131	3.	0.	0.	0.	2.	2.	1.	2.	1.	1.
141	0.	1.	3.	2.	1.	2.	5.	0.	3.	3.
151	3.	2.	1.	3.	3.	3.	4.	5.	2.	8.
161	4.	6.	6.	4.	0.	8.	9.	10.	3.	5.
171	12.	6.	10.	7.	9.	9.	9.	6.	9.	16.
181	15.	5.	12.	10.	23.	12.	16.	23.	18.	25.
191	22.	14.	27.	19.	37.	21.	32.	37.	34.	40.
201	43.	37.	46.	55.	56.	42.	43.	56.	53.	71.
211	71.	72.	77.	63.	92.	82.	119.	117.	91.	125.
221	121.	155.	145.	171.	181.	206.	224.	244.	251.	195.
231	159.	82.	42.	20.	13.	4.	7.	6.	2.	7.
241	4.	6.	3.	7.	3.	5.	2.	3.	5.	4.
251	8.	3.	3.	6.	3.	5.	7.	9.	2.	2.
261	8.	1.	7.	4.	26.	23.	32.	20.	24.	34.
271	34.	36.	15.	18.	14.	13.	28.	26.	32.	19.
281	17.	12.	24.	11.	19.	13.	10.	14.	14.	12.
291	11.	10.	15.	15.	13.	13.	15.	10.	21.	13.
301	21.	17.	14.	20.	20.	21.	20.	15.	17.	17.
311	24.	24.	26.	23.	26.	30.	32.	28.	38.	39.
321	45.	39.	48.	42.	46.	61.	58.	63.	60.	60.
331	88.	86.	82.	77.	97.	93.	109.	129.	122.	133.
341	153.	142.	153.	172.	185.	203.	219.	232.	273.	278.
351	313.	350.	377.	400.	381.	350.	328.	396.	399.	431.
361	525.	564.	568.	532.	363.	164.	60.	30.	25.	11.
371	11.	3.	3.	1.	9.	2.	4.	2.	2.	4.
381	0.	3.	3.	2.	3.	1.	0.	2.	4.	1.
391	2.	2.	0.	0.	0.	2.	0.	1.	0.	2.
401	0.	1.	1.	1.	1.	2.	0.	0.	1.	1.
411	1.	1.	1.	0.	0.	0.	0.	1.	2.	3.
421	2.	0.	0.	1.	0.	0.	1.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	2.	0.	0.	1.
441	0.	2.	0.	0.	0.	0.	1.	1.	2.	0.
451	0.	0.	2.	0.	0.	0.	0.	1.	0.	0.
461	0.	1.	2.	0.	0.	1.	0.	1.	0.	1.
471	1.	0.	0.	0.	1.	0.	1.	0.	1.	1.
481	3.	1.	0.	0.	0.	0.	0.	0.	0.	1.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	2.	0.								

UKaymond 4/25/96

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
WL7870-BLNK
File ID: 14a1458.CNF

Counted on: 4/25/96 @10:42
Detector: AEA14
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	34.6	34.6	362.451	362.451	32.000	7.252	16.000	16.883
2	31.0	31.0	353.197	351.394	12.000	4.076	6.000	0.660

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Ra224	0.320	5.686	5.725	-.039	0.03	0.93	9.3	79.5	0.358E-04
	Pu236		5.755	5.725	0.030				76.3	0.344E-04
2	Ra224	0.616	5.686	5.675	0.011	0.02	1.78	7.8	152.8	0.688E-04
Totals:		0.936	<--valid peaks only-->				2.71			

DETECTOR CALIBRATION
Energy(MEV) = 4.094 + (0.0045)*Channel
Energy range (MeV): 4.094 TO 6.398
Efficiency = 0.0124 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	1389.0	100.000
Smoothed	1389.0	100.000
Composite fit	1300.0	93.590
Residuals	89.0	6.410

Analyzed by: _____
MB

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 258.0


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Raw Data Dump for AEA Spectrum: 14a1458.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
11	0.	1.	0.	0.	0.	0.	1.	0.	1.	0.
21	0.	4.	0.	0.	0.	0.	1.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	1.	0.	0.	0.	1.	0.	0.	0.
91	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
101	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
111	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
121	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
131	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
141	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.
151	0.	1.	0.	0.	1.	0.	0.	0.	0.	1.
161	0.	0.	0.	1.	0.	1.	0.	0.	0.	0.
171	0.	0.	0.	0.	1.	0.	0.	1.	0.	1.
181	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
191	0.	0.	1.	0.	0.	1.	0.	1.	0.	1.
201	0.	0.	0.	0.	0.	2.	0.	0.	0.	1.
211	0.	0.	0.	0.	0.	1.	0.	3.	3.	1.
221	1.	1.	2.	1.	0.	1.	0.	2.	0.	0.
231	0.	2.	0.	0.	1.	0.	0.	1.	0.	1.
241	0.	2.	1.	1.	0.	0.	2.	0.	1.	1.
251	2.	2.	2.	0.	0.	0.	1.	0.	2.	0.
261	1.	2.	0.	0.	6.	3.	5.	4.	5.	4.
271	5.	3.	4.	3.	4.	4.	4.	5.	5.	8.
281	2.	2.	2.	0.	1.	2.	2.	5.	2.	5.
291	5.	4.	2.	3.	3.	4.	4.	2.	2.	5.
301	8.	4.	5.	5.	3.	5.	6.	7.	3.	5.
311	4.	8.	6.	7.	12.	3.	10.	6.	5.	11.
321	10.	6.	8.	7.	8.	11.	10.	10.	7.	14.
331	9.	16.	13.	13.	19.	18.	16.	21.	18.	21.
341	23.	28.	21.	26.	23.	27.	24.	22.	31.	21.
351	48.	29.	41.	31.	41.	25.	31.	29.	33.	30.
361	32.	32.	31.	38.	33.	23.	11.	8.	1.	1.
371	1.	0.	0.	1.	0.	0.	1.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	2.	0.	1.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	1.	0.	1.	0.	0.	0.	0.	2.	0.
441	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	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.								

URaymond 4/27/96

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
S96T561-SAM
File ID: 15a1536.CNF

Counted on: 4/25/96 @10:42
Detector: AEA15
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	518.2	518.2	366.176	366.176	12.000	3.537	6.000	0.796
2?	7.2	7.2	296.420	295.072	16.000	0.531	8.000	0.796
3	19.8	19.8	271.496	271.417	28.000	14.422	14.000	11.660

PEAK RESULTS
Peak Error Limit: 30%

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	5.755	5.750	0.005	0.02	22.66	1.9	356.2	0.160E-03
2		????		5.430			0.07	79.8		
3	Am243	0.032	5.270	5.324	-.054	0.06	0.76	11.8	11.8	0.530E-05
Totals:		0.996	<--valid peaks only-->				23.41			

DETECTOR CALIBRATION
Energy(MEV) = 4.102 + (0.0045)*Channel
Energy range (MeV): 4.102 TO 6.406
Efficiency = 0.0649 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	11279.0	100.000
Smoothed	11279.5	100.005
Composite fit	11272.1	99.939
Residuals	6.9	0.061

Analyzed by: _____
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Raw Data Dump for AEA Spectrum: 15a1536.CNF

1	0.	0.	2.	1.	0.	0.	1.	2.	1.	0.
11	4.	2.	0.	1.	1.	1.	2.	1.	2.	2.
21	3.	2.	0.	1.	1.	0.	4.	3.	1.	1.
31	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	2.	0.	0.	1.	0.	0.	1.	1.	0.	0.
71	0.	0.	1.	0.	2.	1.	2.	1.	0.	4.
81	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
91	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	0.	1.	1.	1.	1.	0.	0.	0.	1.	0.
111	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
121	0.	0.	0.	0.	1.	0.	0.	0.	1.	0.
131	1.	0.	2.	0.	0.	0.	0.	0.	0.	1.
141	0.	0.	0.	1.	1.	1.	1.	0.	0.	0.
151	0.	0.	0.	1.	0.	0.	2.	0.	0.	0.
161	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
171	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.
181	0.	1.	0.	0.	2.	0.	1.	1.	1.	0.
191	1.	0.	1.	1.	0.	3.	0.	1.	1.	0.
201	0.	1.	0.	0.	0.	0.	2.	1.	1.	0.
211	2.	3.	0.	0.	0.	1.	2.	0.	1.	1.
221	2.	0.	1.	1.	0.	0.	2.	1.	3.	0.
231	0.	0.	3.	1.	0.	1.	2.	1.	0.	1.
241	4.	1.	1.	4.	4.	2.	1.	2.	0.	1.
251	0.	0.	2.	1.	5.	5.	0.	4.	0.	1.
261	3.	6.	4.	2.	23.	16.	24.	14.	15.	15.
271	30.	22.	20.	14.	15.	14.	14.	18.	14.	12.
281	18.	11.	15.	11.	12.	9.	11.	7.	9.	4.
291	12.	17.	7.	6.	8.	14.	10.	11.	7.	9.
301	8.	11.	11.	14.	19.	15.	20.	11.	17.	19.
311	15.	20.	16.	17.	15.	28.	19.	21.	29.	21.
321	24.	39.	34.	40.	41.	37.	42.	48.	38.	44.
331	50.	62.	59.	63.	49.	76.	71.	84.	98.	70.
341	105.	97.	121.	139.	119.	140.	147.	147.	178.	195.
351	224.	279.	247.	291.	360.	390.	408.	355.	331.	323.
361	342.	360.	406.	408.	576.	590.	606.	535.	376.	173.
371	65.	36.	10.	11.	8.	5.	6.	7.	9.	6.
381	3.	0.	3.	0.	3.	1.	1.	1.	2.	1.
391	1.	1.	1.	5.	1.	0.	0.	0.	0.	2.
401	1.	0.	0.	0.	1.	0.	1.	0.	1.	1.
411	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.
421	1.	0.	0.	1.	0.	0.	0.	0.	0.	2.
431	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
441	1.	0.	0.	0.	1.	0.	0.	0.	0.	0.
451	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
461	0.	0.	1.	0.	0.	0.	0.	1.	0.	1.
471	0.	1.	1.	0.	1.	2.	1.	1.	1.	0.
481	0.	1.	0.	0.	1.	2.	1.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

CRaymond 4/25/96

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
S96T561-DUP
File ID: 16a1617.CNF

Counted on: 4/25/96 @10:43
Detector: AEA16
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	395.8	395.8	359.743	359.743	12.000	4.534	6.000	0.628
2?	8.3	8.3	283.958	283.958	14.000	0.000	7.000	6.451
3	14.4	14.4	276.602	276.602	16.000	0.302	8.000	0.103

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Peak Centroid Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		1.043		5.727	0.02		26.02	1.8	2859.5	0.129E-02
2		????		5.386			0.00	1000.		
3		0.014		5.353	0.00		0.36	29.6	39.5	0.178E-04
Totals:		1.058	<--valid peaks only-->				26.38			

DETECTOR CALIBRATION
Energy(MEV) = 4.109 + (0.0045)*Channel
Energy range (MeV): 4.109 TO 6.412
Efficiency = 0.0091 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	11972.0	100.000
Smoothed	11973.6	100.013
Composite fit	12664.8	105.787
Residuals	-692.8	-5.787

Analyzed by: _____
MB

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 2813.3


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1
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31..
3.1.
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1..
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Raw Data Dump for AEA Spectrum: 16a1617.CNF

1	0.	0.	2.	2.	1.	0.	0.	0.	0.	2.
11	2.	0.	4.	2.	1.	1.	0.	1.	3.	2.
21	1.	1.	1.	0.	1.	1.	1.	1.	0.	2.
31	3.	0.	1.	0.	0.	2.	2.	0.	1.	0.
41	1.	0.	0.	0.	0.	0.	0.	0.	1.	1.
51	1.	0.	0.	1.	0.	0.	1.	0.	0.	0.
61	0.	1.	0.	2.	2.	1.	0.	1.	0.	1.
71	0.	1.	0.	0.	2.	0.	1.	2.	0.	0.
81	0.	0.	0.	1.	0.	0.	0.	0.	0.	1.
91	0.	0.	1.	0.	0.	1.	0.	1.	0.	0.
101	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.
111	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
121	1.	0.	1.	0.	1.	0.	0.	0.	0.	0.
131	0.	2.	1.	0.	1.	0.	0.	0.	0.	1.
141	0.	0.	0.	1.	0.	1.	0.	0.	1.	0.
151	2.	0.	1.	2.	0.	0.	1.	0.	1.	0.
161	0.	2.	0.	0.	0.	2.	0.	0.	2.	0.
171	1.	0.	1.	1.	0.	0.	2.	2.	1.	1.
181	0.	1.	0.	0.	1.	1.	1.	0.	0.	0.
191	2.	1.	1.	1.	2.	1.	0.	0.	0.	0.
201	0.	0.	0.	0.	1.	1.	3.	2.	1.	1.
211	0.	3.	3.	1.	0.	2.	2.	0.	3.	2.
221	0.	1.	3.	3.	2.	2.	2.	4.	4.	2.
231	1.	0.	1.	4.	3.	1.	2.	2.	1.	2.
241	3.	5.	4.	1.	9.	2.	2.	7.	6.	8.
251	3.	5.	7.	7.	6.	5.	5.	6.	3.	9.
261	4.	10.	10.	7.	27.	28.	33.	19.	32.	29.
271	31.	22.	21.	19.	23.	22.	24.	26.	20.	24.
281	15.	22.	28.	18.	29.	21.	22.	19.	18.	18.
291	23.	17.	18.	19.	12.	23.	25.	28.	21.	27.
301	30.	30.	24.	35.	34.	42.	40.	46.	44.	42.
311	39.	53.	44.	47.	53.	43.	56.	59.	64.	71.
321	70.	61.	69.	77.	72.	86.	95.	91.	115.	123.
331	114.	119.	132.	127.	136.	160.	161.	176.	184.	176.
341	186.	194.	226.	199.	262.	238.	262.	298.	297.	356.
351	357.	340.	363.	326.	285.	328.	338.	389.	430.	408.
361	452.	396.	273.	175.	72.	20.	11.	13.	6.	11.
371	3.	2.	4.	3.	2.	0.	5.	1.	3.	3.
381	3.	3.	1.	0.	1.	1.	0.	0.	1.	1.
391	0.	1.	2.	0.	0.	1.	0.	1.	1.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
411	0.	1.	0.	0.	0.	1.	0.	0.	0.	0.
421	2.	0.	1.	0.	0.	0.	1.	0.	0.	1.
431	2.	0.	0.	0.	1.	1.	0.	0.	3.	1.
441	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
451	0.	0.	0.	0.	0.	1.	2.	0.	1.	0.
461	1.	0.	1.	0.	0.	0.	1.	0.	1.	2.
471	0.	0.	1.	0.	0.	1.	0.	3.	0.	0.
481	2.	0.	1.	0.	1.	0.	0.	0.	0.	0.
491	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
511	1.	0.								

CKaymond 4/25/96

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
S96T571-SAM
File ID: 17a1709.CNF

Counted on: 4/25/96 @10:43
Detector: AEA17
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	864.5	864.5	358.664	358.664	10.000	3.084	5.000	0.795

PEAK RESULTS
Peak Error Limit: 30%

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	5.755	5.748	0.007	0.01	33.58	1.5	4336.9	0.195E-02
Totals:		0.987	<--valid peaks only-->				33.58			

DETECTOR CALIBRATION
Energy(MEV) = 4.098 + (0.0046)*Channel
Energy range (MeV): 4.098 TO 6.453
Efficiency = 0.0079 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	16328.0	100.000
Smoothed	16328.0	100.000
Composite fit	16118.3	98.715
Residuals	209.7	1.285

Analyzed by: _____
MB

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5710.3


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Raw Data Dump for AEA Spectrum: 17a1709.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	1.	0.	1.	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	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	1.	2.	0.	0.	1.	0.	0.	0.
61	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.
71	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	1.	0.	0.	2.	0.	1.	0.	0.	1.
91	2.	0.	1.	0.	0.	0.	0.	0.	0.	0.
101	0.	0.	1.	1.	1.	0.	0.	0.	1.	1.
111	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
121	0.	0.	2.	1.	0.	0.	0.	0.	1.	0.
131	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
141	2.	3.	0.	1.	1.	0.	0.	0.	0.	0.
151	2.	1.	0.	0.	0.	1.	0.	0.	0.	0.
161	0.	0.	0.	2.	1.	0.	1.	0.	2.	0.
171	0.	1.	1.	2.	0.	1.	0.	0.	0.	0.
181	1.	1.	1.	0.	0.	1.	0.	0.	0.	0.
191	1.	0.	1.	0.	0.	1.	0.	0.	0.	1.
201	2.	0.	1.	1.	0.	0.	0.	0.	0.	1.
211	0.	0.	0.	1.	0.	0.	2.	0.	1.	1.
221	0.	1.	2.	2.	4.	0.	2.	2.	4.	1.
231	0.	1.	1.	2.	0.	2.	0.	1.	2.	4.
241	0.	3.	5.	4.	3.	3.	1.	3.	2.	5.
251	3.	1.	2.	3.	3.	2.	4.	5.	3.	3.
261	6.	7.	4.	4.	9.	5.	6.	11.	6.	6.
271	6.	6.	5.	5.	10.	12.	14.	5.	10.	16.
281	8.	23.	13.	15.	16.	19.	9.	10.	16.	9.
291	14.	16.	19.	11.	13.	15.	24.	13.	19.	23.
301	21.	21.	21.	18.	24.	18.	26.	24.	26.	31.
311	29.	43.	35.	45.	39.	36.	35.	61.	50.	38.
321	47.	56.	52.	67.	86.	107.	107.	90.	97.	100.
331	91.	115.	138.	143.	155.	135.	148.	172.	199.	199.
341	272.	241.	286.	294.	373.	427.	463.	570.	648.	601.
351	587.	517.	493.	579.	601.	721.	819.	912.	1003.	1014.
361	765.	389.	126.	20.	2.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
381	1.	0.	0.	0.	0.	1.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	1.	0.	0.	0.	0.	0.	0.	1.	0.
411	0.	0.	0.	0.	0.	0.	0.	2.	0.	0.
421	2.	1.	0.	0.	1.	1.	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.	1.
451	1.	0.	1.	1.	1.	0.	0.	0.	0.	1.
461	1.	0.	1.	0.	1.	0.	0.	1.	0.	4.
471	4.	1.	0.	3.	2.	2.	1.	0.	1.	0.
481	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

VRaymond 4/25/96

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

Rev. 2.01

DATA REDUCTION REPORT

SAMPLE
S96T571-DUP
File ID: 18a1888.CNF

Counted on: 4/25/96 @10:44
Detector: AEA18
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	923.9	923.9	361.364	361.364	8.000	2.878	4.000	0.816
2	14.9	14.9	286.759	286.504	10.000	6.885	5.000	2.134

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.986	5.755	5.760	-.005	0.01	33.17	1.6	1839.7	0.829E-03
	Cm243		5.779	5.760	0.019				2469.7	0.111E-02
2	Th228	0.017	5.400	5.416	-.016	0.03	0.59	14.0	45.0	0.203E-04
Totals:		1.004	<--valid peaks only-->				33.76			

DETECTOR CALIBRATION

Energy(MEV) = 4.098 + (0.0046)*Channel
Energy range (MeV): 4.098 TO 6.453
Efficiency = 0.0184 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	16145.0	100.000
Smoothed	16143.9	99.993
Composite fit	16209.1	100.397
Residuals	-64.1	-0.397

Analyzed by: _____
MB

Spectrum 18a1888.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 4977.8


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Raw Data Dump for AEA Spectrum: 18a1888.CNF

1	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.
11	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	1.	0.	0.	0.	1.	0.
61	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
81	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
91	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
111	1.	0.	0.	0.	0.	0.	1.	1.	0.	1.
121	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
131	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
141	0.	0.	1.	1.	0.	0.	1.	0.	0.	0.
151	0.	0.	0.	0.	0.	0.	2.	0.	1.	0.
161	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
171	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
181	1.	0.	0.	0.	1.	0.	0.	0.	0.	0.
191	1.	0.	0.	1.	1.	0.	1.	0.	0.	1.
201	0.	1.	0.	1.	0.	0.	0.	0.	0.	0.
211	1.	0.	0.	0.	1.	1.	0.	0.	2.	1.
221	1.	1.	1.	2.	1.	0.	4.	3.	0.	1.
231	1.	1.	0.	1.	0.	1.	0.	1.	2.	1.
241	2.	4.	2.	3.	2.	0.	2.	2.	0.	4.
251	4.	1.	3.	3.	1.	3.	4.	5.	5.	4.
261	3.	2.	7.	7.	6.	8.	5.	9.	6.	8.
271	9.	6.	12.	4.	0.	7.	6.	6.	5.	7.
281	14.	9.	12.	15.	20.	19.	22.	16.	20.	9.
291	6.	8.	9.	18.	6.	12.	7.	13.	8.	6.
301	12.	16.	19.	15.	20.	15.	22.	26.	20.	19.
311	19.	24.	24.	27.	23.	29.	44.	38.	39.	44.
321	52.	46.	49.	47.	63.	54.	53.	63.	89.	80.
331	91.	97.	89.	85.	104.	125.	129.	137.	150.	153.
341	144.	203.	218.	221.	273.	285.	297.	380.	388.	503.
351	540.	595.	620.	588.	532.	508.	567.	633.	774.	904.
361	1039.	1148.	1004.	667.	256.	63.	11.	0.	0.	0.
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.	1.	0.	0.	0.	0.	0.	0.
411	0.	0.	1.	0.	1.	0.	0.	0.	0.	1.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
431	0.	1.	1.	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.	1.	0.	0.	0.
461	1.	0.	0.	1.	1.	1.	1.	2.	2.	3.
471	2.	2.	0.	0.	4.	1.	4.	1.	3.	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.								

LABCORE Data Entry Template for Worklist# 8056

Analyst: JNS **Instrument:** PU01 #15 **Book#** 124843

Method: LA-943-128 Rev/Mod _____

Worklist Comment: C-106. Determine Sample Size using ludlum. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@PU23901	LIQUID		
2	BLNK				@PU23901	LIQUID		
3	SAMPLE	S96T002025	0		@PU23901	LIQUID	96000174	C-106 GRAB
		Analytes Requested: PU23901 , PU23901E, PU23901T						
4	DUP	S96T002025	0		@PU23901	LIQUID		

Final page for worklist # 8056

Joann Vanderbeek 4/30/96
Analyst Signature **Date**

Lee E. Hagan 5/2/96
Analyst Signature **Date**

C.J. Opinen 5/7/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed Worklist Report for C-106 Worklist# 8056

Analyst: ~~cjo~~ JVS **Instrument:** PU01 #15 **Book#** 1241B43

Method: LA-943-128 Rev/Mod A-1

Worklist Comment: C-106. Determine Sample Size using ludlum. new

Seq	Type	Sample#	R	A	Test		Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@PU23901	PU23901	LIQUID	3.81E-02	3.67E-2	96.325	% Recovery
1	STD		0		@PU23901	PU23901E	LIQUID	1.00	3.18E+00	3.180	% Ct. Error
1	STD		0		@PU23901	PU23901T	LIQUID	100	9.12E+01	91.200	% Recovery
2	BLNK		0		@PU23901	PU23901	LIQUID	1	<3.33E-3		uCi/mL
2	BLNK		0		@PU23901	PU23901T	LIQUID	100	9.34E+01	93.400	% Recovery
2	BLNK		0		@PU23901	PU23901E	LIQUID	1.00	1.00E+02	100.000	% Ct. Error
3	SAMPLE	S96T002025	0		@PU23901	PU23901	LIQUID	N/A	7.73E-01	0.038	uCi/mL
3	SAMPLE	S96T002025	0		@PU23901	PU23901T	LIQUID	N/A	8.38E+01	0.000	% Recovery
3	SAMPLE	S96T002025	0		@PU23901	PU23901E	LIQUID	N/A	1.66E+00	0.000	% Ct. Error
4	DUP	S96T002025	0		@PU23901	PU23901	LIQUID	7.73E-1	7.66E-1	0.910	RPD
4	DUP	S96T002025	0		@PU23901	PU23901T	LIQUID	100	8.49E+01	84.900	% Recovery
4	DUP	S96T002025	0		@PU23901	PU23901E	LIQUID	1.00	1.89E+00	1.890	% Ct. Error

Final page for worklist# 8056

Analyst Signature **Date**

Analyst Signature **Date**

John Relyea 8 May 96
Reviewer Signature **Date**
validated

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID

Type	DATE COUNTED		MAY-01-96	PU 236 AEA FRAC	(C236)	0.682
STD	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.058
Work List	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)	0.250
8056	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		2681
Test Code	DIGEST DILUTION FACTOR	DDF	1.000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)	0.300
Matrix	DETECTOR NUMBER		15	PU 236 cpm		29.500
LIQUID	EFFICIENCY FACTOR	EFF	0.303	PU 238 cpm		2.490
Tracer Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		10.790
96003916	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME		480
Batch	PU-236 DECAY CORR'D VALUE (dpm/mL)		2197.659	Pu 239/240 µCi/L		3.6651E+01
0	PU-238 TRACER VALUE (dpm/mL		0.000			
Sample Prep	STANDARD BOOK NO		124B43			
N/A	STANDARD VALUE in µCi/mL		0.038			

Sample #	
WL8056	
Instrument Code	Decay Time = Date Counted - Tracer Preparation Date
WB26872	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95}]
Prepared By	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)* 1/EFF *C236*100/Pu-236 Decay Corr'd Value * SPKV
SEH	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(2220000 dpm/µCi)]
Chemist	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
JFR	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Analyst	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
JMV	
Date Complete	
05/02/96	
Analysis Date	
05/01/96	
Analysis Time	
10:45 AM	
Sample Point	
C-106 GRAB	

Pu 239/240 µCi/mL		3.67E-02	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	3.2%	
			Pu 239/240
			4.82E-03
Pu 236 Tracer Recovery	=	91.2%	

Analyst:		JMV	Date:	02-May-96
Signature of Chemist:	John Relyea	JFR	Date:	8 may 96

STANDARD.WB1 REV 1.0 943128ML

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

Type	DATE COUNTED		MAY-01-96	PU 236 AEA FRAC	(C236)	BLNK 0.966
BLNK	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)	0.000
8056	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		1941
Treat Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm (Bkg)		0.300
Matrix	DETECTOR NUMBER		15	PU 236 cpm		34.300
LIQUID	EFFICIENCY FACTOR	EFF	0.3032	PU 238 cpm		0.000
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		0.000
96003916	TRACER PREPARATION VALUE (dpm/mL)		2390.00	AEA COUNT TIME		480
Rerun	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2197.66	Pu 239/240 µCi/L =	<	3.326E+00
0	PU-238 TRACER VALUE	(dpm/mL)	0.00			

Sample Prep.
N/A

Sample #
WL8056

Instrument Code
WB26872

Prepared By
SEH

Chemist
JFR

Analyst
JMV

Date Complete
05/02/96

Analysis Date
05/01/96

Analysis Time
10:45 AM

Sample Point
C-106 GRAB

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)*C236*100/(Pu-236 Decay Corr'd Value * SPKV*EFF)
Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(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

			DETECTION LEVELS in µCi/mL
Pu 239/240 µCi/mL		< 3.33E-03	Pu 239/240
Relative Counting Error	=	100.0%	3.33E-03
NOTE: Pu 238 Result is a LESS THAN Value.			Pu 238
Pu 238 µCimL		< 3.33E-03	3.33E-03
Relative Counting Error	=	100.0%	
Pu 236 Tracer Recovery	=	93.4%	

Analyst:	JMV	Date:	02-May-96
Signature of Chemist: John Relyea	JFR	Date:	8 May 96

BLANK.WB1 REV 1.0 943128ML

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

Type							SAMPLE
SAMPLE	DATE COUNTED		MAY-01-96	PU 236 AEA FRAC	(C236)		0.094
	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)		0.113
Test Code	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)		0.727
8056	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			17830
Test Comm	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)		0.300
Matrix	DETECTOR NUMBER		15	PU 236 cpm			32.910
LIQUID	EFFICIENCY FACTOR	EFF	0.303	PU 238 cpm			39.420
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			254.600
96003916	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
Parent	PU-236 DECAY CORR'D VALUE (dpm/mL)		2197.659	Pu 239/240 µCi/L			7.7328E+02
0	PU-238 TRACER VALUE (dpm/mL)		0.000				

Sample Prep
N/A

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) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)
Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C236] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(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

Sample #: S96T002025
Instrument Code: WB26872
Preparer: SEH
Chemist: JFR
Analyst: JMV
Date Complete: 05/02/96
Analysis Date: 05/01/96
Analysis Time: 10:45 AM
Sample Point: C-106 GRAB

Pu 239/240 µCi/mL		7.73E-01	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	1.7%	
			Pu 239/240
Pu 238 µCimL		1.20E-01	3.81E-02
Relative Counting Error	=	2.1%	Pu 238
Pu 236 Tracer Recovery	=	83.8%	3.81E-02

Analyst:	JMV	Date:	02-May-96
Signature of Chemist: John Relyea	JFR	Date:	8 may 96

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

							DUP
Type	DATE COUNTED		MAY-01-96	PU 236 AEA FRAC	(C236)		0.094
DUP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)		0.106
Dilution	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)		0.720
8056	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			18068
Digest Dilution	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)		0.300
Detector	DETECTOR NUMBER		15	PU 236 cpm			25.400
LIQUID	EFFICIENCY FACTOR	EFF	0.303	PU 238 cpm			28.800
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			194.950
96003916	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
Replicate	PU-236 DECAY CORR'D VALUE (dpm/mL)		2197.659	Pu 239/240 µCi/L			7.6583E+02
0	PU-238 TRACER VALUE (dpm/mL)		0.000				
Sample Group							
N/A							
Sample #	Decay Time = Date Counted - Tracer Preparation Date						
S96T002025	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]						
Instrument	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)						
WB26872	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]						
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)						
SEH	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]						
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100						
JFR							
Analyst							
JMV							
Date Complete							
05/02/96	Pu 239/240 µCi/mL		7.66E-01				DETECTION
Analysis Date	Relative Counting Error	=	1.9%				LEVELS
05/01/96							in µCi/mL
Analysis Time							Pu 239/240
10:45 AM	Pu 238 µCimL		1.13E-01				3.76E-02
Sample Point	Relative Counting Error	=	2.4%				Pu 238
C-106 GRAB	Pu 236 Tracer Recovery	=	84.9%				3.76E-02

Analyst:		JMV	Date:	02-May-96
Signature of Chemist:	John Relyea	JFR	Date:	8 may 96

SAMPLE.WB1 REV 1.0 943128ML

2197

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
WL8056-STD
File ID: 17a1721.CNF

Counted on: 5/ 1/96 @17:13
Detector: AEA17
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	867.7	867.7	358.578	358.578	10.000	3.267	5.000	1.030
2	71.6	71.6	298.132	298.049	12.000	4.937	6.000	1.697
3?	5.7	5.7	267.761	266.638	12.000	2.762	6.000	0.679
4	361.8	361.8	226.199	226.197	12.000	3.871	6.000	1.585

PEAK RESULTS
Peak Error Limit: 30%

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	0.682	5.755	5.747	0.008	0.02	29.50	1.6	3909.4	0.176E-02
2	Pu238	0.058	5.487	5.468	0.019	0.02	2.49	6.1	449.0	0.202E-03
	Am241		5.479	5.468	0.011				343.9	0.155E-03
3		????		5.324			0.23	27.5		
4	Pu239	0.250	5.147	5.138	0.009	0.02	10.79	2.7	1401.9	0.631E-03
	Pu240		5.144	5.138	0.006				1401.9	0.631E-03
		---					---			
Totals:		0.989	<--valid peaks only-->				42.78			

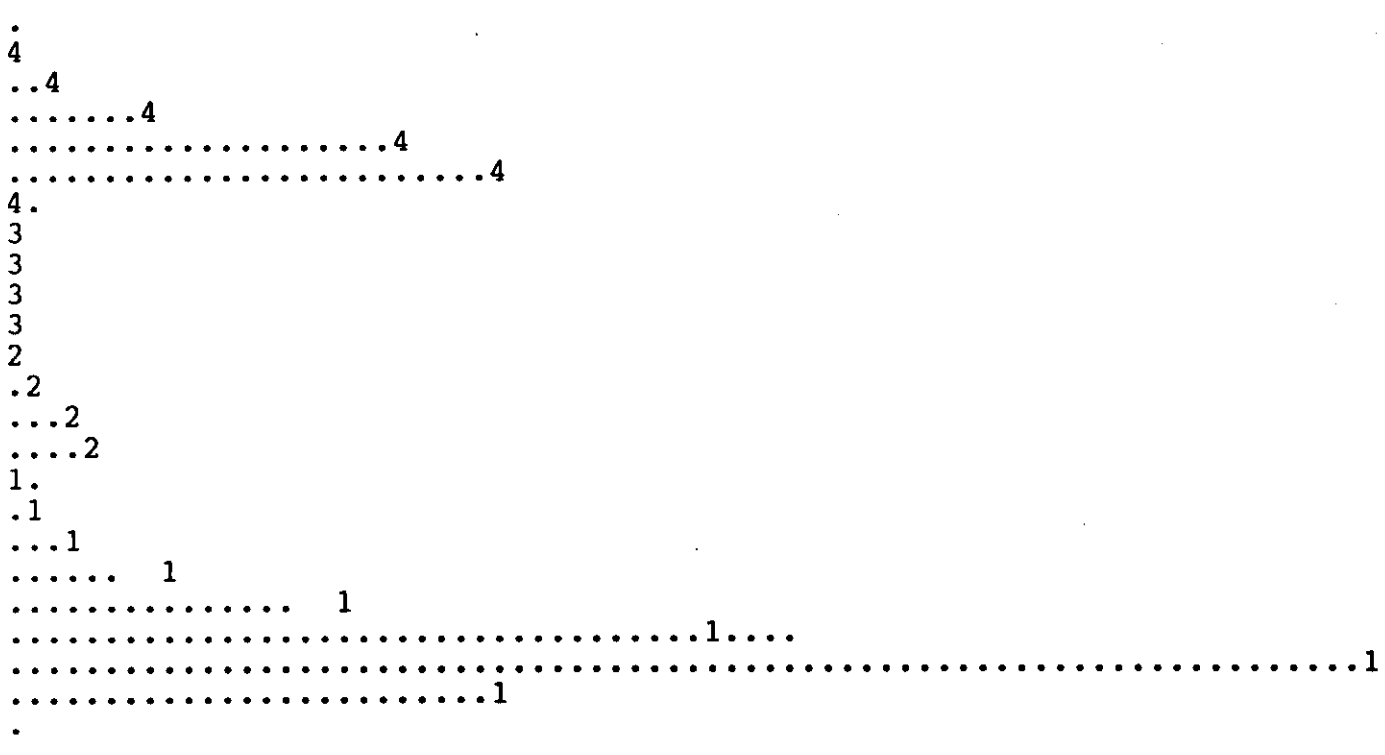
DETECTOR CALIBRATION
Energy(MEV) = 4.097 + (0.0046)*Channel
Energy range (MeV): 4.097 TO 6.452
Efficiency = 0.0077 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	20761.0	100.000
Smoothed	20761.9	100.004
Composite fit	20646.8	99.450
Residuals	114.2	0.550

Analyzed by: VR 5/1/96

Spectrum 17a1721.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5707.9



Raw Data Dump for AEA Spectrum: 17a1721.CNF

1	0.	0.	0.	2.	0.	0.	2.	0.	2.	1.
11	0.	0.	1.	1.	0.	0.	0.	1.	0.	1.
21	0.	0.	0.	1.	0.	0.	2.	1.	1.	0.
31	1.	1.	0.	1.	0.	1.	2.	0.	0.	1.
41	1.	0.	0.	0.	1.	0.	1.	0.	0.	0.
51	1.	0.	0.	0.	0.	1.	1.	0.	1.	0.
61	0.	0.	0.	0.	3.	1.	0.	0.	0.	1.
71	1.	0.	0.	0.	1.	3.	1.	0.	0.	0.
81	0.	0.	0.	0.	0.	1.	1.	2.	0.	0.
91	1.	1.	0.	0.	1.	1.	0.	0.	4.	0.
101	1.	0.	0.	1.	3.	0.	0.	0.	0.	0.
111	2.	1.	1.	1.	1.	2.	0.	0.	1.	0.
121	1.	3.	1.	0.	1.	3.	1.	0.	1.	1.
131	1.	3.	1.	1.	0.	1.	0.	1.	3.	1.
141	1.	0.	3.	0.	2.	3.	3.	2.	1.	1.
151	2.	8.	0.	3.	2.	8.	1.	1.	3.	4.
161	4.	5.	3.	3.	1.	3.	5.	2.	2.	4.
171	3.	6.	1.	11.	9.	8.	4.	9.	6.	8.
181	5.	8.	9.	10.	12.	11.	4.	14.	13.	11.
191	19.	12.	15.	10.	17.	16.	19.	22.	29.	30.
201	30.	36.	32.	34.	28.	33.	59.	46.	58.	58.
211	75.	92.	106.	126.	122.	132.	160.	171.	164.	196.
221	246.	262.	295.	346.	384.	433.	382.	388.	287.	144.
231	77.	38.	7.	2.	0.	2.	1.	4.	2.	3.
241	1.	1.	0.	2.	3.	4.	4.	1.	4.	3.
251	2.	6.	4.	3.	3.	3.	6.	5.	8.	5.
261	5.	4.	4.	10.	9.	12.	12.	10.	11.	10.
271	9.	3.	8.	8.	14.	16.	7.	19.	16.	17.
281	16.	27.	23.	33.	30.	39.	25.	23.	32.	34.
291	38.	41.	52.	55.	58.	67.	94.	84.	91.	77.
301	55.	32.	26.	24.	30.	17.	12.	10.	26.	16.
311	19.	17.	30.	13.	23.	26.	29.	21.	32.	20.
321	27.	17.	33.	37.	38.	56.	38.	45.	50.	47.
331	57.	63.	79.	80.	67.	100.	88.	113.	132.	129.
341	172.	222.	228.	261.	308.	339.	427.	415.	572.	576.
351	577.	507.	535.	550.	614.	680.	862.	973.	1026.	962.
361	742.	424.	132.	33.	4.	0.	1.	0.	0.	1.
371	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
391	0.	0.	0.	0.	0.	1.	0.	0.	1.	1.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.
421	0.	0.	1.	0.	0.	1.	0.	2.	1.	0.
431	0.	1.	0.	0.	1.	0.	1.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
451	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
461	2.	1.	0.	1.	0.	1.	0.	1.	1.	3.
471	3.	2.	1.	0.	1.	1.	0.	0.	0.	1.
481	0.	0.	1.	1.	0.	0.	0.	0.	1.	0.
491	0.	1.	2.	0.	1.	0.	0.	1.	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

SAMPLE
WL8056-BLK
File ID: 18a1899.CNF

Counted on: 5/ 1/96 @17:13
Detector: AEA18
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	1036.1	1036.1	361.449	361.449	10.000	2.995	5.000	0.961
2	17.0	17.0	287.594	287.470	16.000	14.800	8.000	3.858

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.966	5.755	5.746	0.009	0.01	34.30	1.5	4268.9	0.192E-02
2	Th228	0.025	5.400	5.406	-.006	0.07	0.88	10.9	151.9	0.684E-04
	Am243		5.270	5.406	-.136				108.9	0.491E-04
Totals:		0.991	<--valid peaks only-->				35.19			

DETECTOR CALIBRATION
Energy(MEV) = 4.083 + (0.0046)*Channel
Energy range (MeV): 4.083 TO 6.439
Efficiency = 0.0082 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	17040.0	100.000
Smoothed	17039.6	99.998
Composite fit	16893.0	99.137
Residuals	147.0	0.863

Analyzed by: VR 5/1/96

Spectrum 18a1899.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5481.0


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

Raw Data Dump for AEA Spectrum: 18a1899.CNF

1	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
11	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	1.	1.	0.	0.	0.	0.	1.	0.
41	0.	2.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	2.	1.	1.	0.	0.	0.	0.	0.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	1.	1.	1.	0.	0.	0.	1.	0.	0.
91	1.	0.	0.	0.	1.	0.	0.	0.	0.	0.
101	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
111	1.	1.	1.	0.	0.	0.	1.	0.	0.	0.
121	1.	0.	1.	0.	1.	0.	0.	0.	0.	0.
131	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
141	1.	0.	0.	1.	1.	0.	0.	1.	0.	1.
151	0.	1.	1.	0.	0.	1.	0.	0.	1.	2.
161	0.	1.	0.	1.	0.	0.	0.	0.	1.	0.
171	0.	1.	0.	0.	0.	1.	0.	2.	0.	0.
181	0.	0.	2.	0.	1.	1.	0.	2.	0.	0.
191	0.	2.	0.	3.	0.	1.	0.	0.	0.	1.
201	2.	0.	2.	1.	0.	4.	0.	0.	0.	0.
211	2.	0.	0.	1.	2.	2.	1.	1.	1.	0.
221	0.	4.	3.	3.	2.	0.	1.	1.	1.	1.
231	5.	2.	5.	1.	2.	2.	1.	2.	2.	2.
241	1.	0.	4.	1.	1.	3.	4.	2.	2.	5.
251	1.	1.	1.	3.	0.	0.	2.	4.	3.	5.
261	4.	6.	7.	4.	6.	8.	4.	6.	8.	7.
271	10.	7.	9.	5.	8.	6.	11.	5.	7.	10.
281	7.	7.	18.	13.	14.	18.	23.	22.	18.	17.
291	8.	11.	12.	7.	5.	11.	6.	13.	16.	7.
301	10.	19.	17.	10.	14.	18.	14.	15.	15.	20.
311	27.	13.	18.	27.	34.	29.	34.	26.	28.	33.
321	25.	48.	46.	50.	47.	50.	56.	47.	67.	62.
331	78.	85.	63.	102.	111.	104.	93.	114.	134.	117.
341	132.	178.	184.	200.	238.	243.	317.	354.	432.	476.
351	621.	661.	655.	634.	558.	565.	647.	761.	867.	979.
361	1133.	1294.	1127.	770.	390.	94.	23.	3.	0.	0.
371	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
421	0.	1.	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.	1.	0.	0.	0.
451	1.	0.	0.	0.	1.	0.	1.	0.	1.	0.
461	0.	0.	1.	2.	0.	0.	1.	0.	0.	0.
471	0.	1.	3.	1.	2.	2.	3.	1.	0.	0.
481	0.	0.	1.	0.	0.	0.	1.	0.	0.	0.
491	0.	0.	0.	0.	1.	0.	0.	1.	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

SAMPLE
S96T2025-SAM
File ID: 19a1948.CNF

Counted on: 5/ 1/96 @17:14
Detector: AEA19
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	920.1	920.1	360.802	360.802	10.000	2.957	5.000	0.847
2	1120.6	1120.6	302.755	302.743	10.000	3.318	5.000	0.998
3	7992.2	7992.2	229.062	229.062	12.000	3.836	6.000	1.400

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.094	5.755	5.738	0.017	0.01	32.91	1.6	1897.3	0.855E-03
2	Pu238	0.113	5.487	5.471	0.016	0.02	39.42	1.4	3093.6	0.139E-02
	Am241		5.479	5.471	0.008				2369.5	0.107E-02
3	Pu239	0.727	5.147	5.132	0.015	0.02	254.60	0.6	14384.3	0.648E-02
	Pu240		5.144	5.132	0.012				14384.3	0.648E-02
		---					---			
Totals:		0.934	<--valid peaks only-->				326.94			

DETECTOR CALIBRATION
Energy(MEV) = 4.078 + (0.0046)*Channel
Energy range (MeV): 4.078 TO 6.433
Efficiency = 0.0177 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	168074.0	100.000
Smoothed	168073.4	100.000
Composite fit	156935.7	93.373
Residuals	11138.3	6.627

Analyzed by: VR 5/1/96

Spectrum 19a1948.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 54781.4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Raw Data Dump for AEA Spectrum: 19a1948.CNF

1	0.	0.	3.	3.	1.	5.	1.	2.	5.	4.
11	3.	5.	8.	2.	5.	4.	2.	2.	3.	2.
21	2.	4.	2.	2.	3.	8.	4.	6.	6.	2.
31	3.	2.	3.	4.	4.	4.	3.	5.	9.	2.
41	11.	5.	4.	8.	7.	4.	7.	6.	5.	3.
51	3.	6.	4.	10.	5.	6.	7.	6.	9.	6.
61	8.	6.	11.	7.	3.	8.	4.	6.	3.	5.
71	3.	10.	5.	11.	8.	10.	7.	11.	4.	6.
81	8.	9.	10.	10.	7.	9.	13.	9.	14.	3.
91	11.	6.	15.	15.	7.	10.	6.	11.	14.	15.
101	15.	6.	16.	12.	12.	14.	15.	10.	23.	17.
111	15.	16.	13.	10.	22.	18.	23.	12.	20.	21.
121	23.	23.	18.	15.	32.	16.	18.	22.	24.	30.
131	28.	21.	26.	29.	28.	26.	34.	31.	34.	36.
141	33.	48.	45.	54.	36.	49.	48.	39.	44.	62.
151	65.	56.	61.	67.	68.	68.	81.	75.	63.	87.
161	103.	87.	85.	107.	107.	85.	116.	144.	128.	120.
171	140.	132.	151.	146.	163.	171.	193.	205.	190.	215.
181	217.	242.	260.	270.	287.	319.	335.	360.	351.	433.
191	426.	420.	454.	466.	501.	489.	570.	564.	643.	684.
201	738.	860.	819.	897.	954.	1088.	1062.	1144.	1313.	1424.
211	1479.	1684.	1815.	1999.	2085.	2491.	2915.	3133.	3452.	3748.
221	3954.	4298.	4528.	5128.	5709.	6594.	7641.	8519.	9186.	9305.
231	7806.	5576.	3076.	1653.	660.	228.	43.	15.	12.	16.
241	23.	25.	18.	19.	21.	29.	25.	25.	27.	30.
251	29.	32.	30.	36.	31.	37.	54.	39.	51.	51.
261	69.	50.	63.	47.	60.	66.	88.	88.	113.	90.
271	102.	91.	100.	114.	118.	113.	155.	163.	159.	174.
281	197.	195.	230.	252.	253.	264.	314.	351.	373.	425.
291	464.	564.	629.	702.	776.	815.	762.	712.	804.	955.
301	1055.	1174.	1322.	1295.	1031.	606.	253.	74.	33.	27.
311	30.	37.	33.	37.	36.	31.	36.	36.	31.	47.
321	42.	49.	52.	44.	59.	61.	61.	80.	67.	85.
331	77.	81.	99.	112.	121.	133.	136.	132.	133.	151.
341	169.	215.	220.	234.	254.	296.	334.	415.	454.	555.
351	567.	644.	588.	562.	504.	582.	650.	679.	872.	956.
361	1080.	1095.	850.	429.	129.	26.	6.	4.	5.	5.
371	5.	3.	2.	1.	1.	2.	3.	1.	1.	3.
381	0.	3.	0.	1.	2.	0.	2.	2.	3.	3.
391	1.	3.	2.	2.	1.	2.	2.	0.	4.	2.
401	0.	1.	2.	1.	0.	1.	1.	1.	2.	2.
411	4.	3.	1.	3.	1.	2.	0.	2.	2.	2.
421	1.	2.	1.	1.	1.	7.	1.	4.	4.	0.
431	0.	1.	2.	3.	2.	3.	0.	3.	2.	0.
441	2.	5.	3.	1.	2.	0.	3.	2.	1.	2.
451	4.	0.	1.	2.	0.	1.	2.	2.	4.	1.
461	2.	0.	2.	3.	2.	3.	1.	2.	6.	2.
471	6.	2.	3.	6.	6.	4.	4.	5.	0.	3.
481	4.	7.	4.	1.	1.	5.	1.	0.	4.	4.
491	4.	0.	0.	6.	1.	1.	6.	4.	4.	2.
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

SAMPLE
S96T2025-DUP
File ID: 20a2078.CNF

Counted on: 5/ 1/96 @17:15
Detector: AEA20
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	675.4	675.4	361.963	361.963	10.000	3.066	5.000	0.825
2	765.8	765.8	303.763	303.747	10.000	3.278	5.000	0.894
3	5745.5	5745.5	229.498	229.497	10.000	4.009	5.000	1.339

PEAK RESULTS
Peak Error Limit: 30%

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	0.094	5.755	5.757	-.0020	.01	25.40	1.8	249.0	0.112E-03
2	Pu238	0.106	5.487	5.489	-.0020	.02	28.80	1.7	384.3	0.173E-03
	Am241		5.479	5.489	-.010				294.4	0.133E-03
3	Pu239	0.720	5.147	5.147	0.0000	.02	194.95	0.6	1872.7	0.844E-03
	Pu240		5.144	5.147	-.003				1872.7	0.844E-03
		---					---			
Totals:		0.920	<--valid peaks only-->				249.16			

DETECTOR CALIBRATION
Energy(MEV) = 4.092 + (0.0046)*Channel
Energy range (MeV): 4.092 TO 6.447
Efficiency = 0.1041 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	129970.0	100.000
Smoothed	129974.3	100.003
Composite fit	119603.5	92.024
Residuals	10366.5	7.976

Analyzed by: VR 5/1/96

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 39773.6


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Raw Data Dump for AEA Spectrum: 20a2078.CNF

1	0.	0.	5.	2.	5.	0.	2.	1.	0.	2.
11	1.	1.	1.	4.	5.	3.	6.	2.	3.	1.
21	2.	7.	4.	3.	1.	2.	5.	3.	4.	5.
31	4.	4.	4.	4.	4.	4.	6.	4.	5.	4.
41	4.	5.	4.	7.	4.	2.	6.	3.	3.	4.
51	6.	9.	2.	5.	7.	5.	3.	7.	3.	8.
61	5.	7.	6.	9.	2.	6.	4.	2.	5.	6.
71	6.	5.	7.	4.	6.	5.	4.	8.	13.	6.
81	5.	8.	7.	10.	10.	9.	7.	6.	8.	4.
91	11.	7.	10.	13.	8.	11.	10.	6.	10.	9.
101	8.	15.	16.	10.	14.	11.	11.	18.	19.	16.
111	13.	22.	16.	18.	18.	20.	19.	21.	16.	18.
121	23.	18.	18.	22.	27.	21.	27.	24.	21.	27.
131	32.	26.	23.	28.	31.	39.	27.	37.	31.	46.
141	29.	28.	48.	41.	45.	54.	42.	54.	58.	53.
151	56.	60.	80.	68.	55.	80.	82.	75.	73.	96.
161	84.	96.	103.	110.	114.	104.	101.	122.	120.	123.
171	121.	127.	162.	164.	163.	160.	152.	194.	230.	199.
181	220.	222.	262.	272.	262.	255.	286.	324.	314.	338.
191	379.	390.	398.	442.	447.	461.	490.	547.	561.	627.
201	623.	690.	720.	751.	825.	928.	888.	1009.	1102.	1117.
211	1186.	1347.	1369.	1561.	1743.	1882.	2203.	2289.	2601.	2854.
221	2974.	3065.	3356.	3582.	4079.	4466.	5304.	5911.	6270.	6591.
231	6350.	4876.	3126.	1656.	819.	326.	79.	28.	20.	16.
241	14.	15.	27.	18.	23.	23.	14.	27.	15.	16.
251	18.	31.	28.	20.	34.	25.	34.	33.	54.	37.
261	53.	49.	45.	41.	66.	64.	50.	78.	68.	81.
271	88.	99.	86.	97.	94.	88.	123.	135.	102.	120.
281	146.	147.	146.	176.	202.	183.	232.	260.	252.	276.
291	332.	376.	433.	453.	536.	544.	550.	509.	502.	526.
301	635.	766.	804.	879.	912.	733.	397.	167.	45.	18.
311	35.	25.	30.	29.	26.	32.	38.	40.	52.	41.
321	44.	37.	36.	44.	46.	73.	37.	67.	64.	61.
331	80.	68.	80.	92.	88.	99.	104.	106.	136.	106.
341	120.	160.	150.	184.	171.	213.	224.	259.	325.	351.
351	369.	445.	464.	484.	404.	402.	419.	442.	543.	588.
361	725.	804.	760.	660.	415.	141.	18.	4.	3.	2.
371	0.	0.	2.	1.	0.	2.	1.	3.	0.	2.
381	2.	1.	1.	0.	1.	2.	3.	0.	2.	2.
391	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
401	3.	0.	1.	2.	1.	0.	3.	3.	0.	0.
411	4.	2.	0.	2.	1.	1.	1.	1.	3.	3.
421	1.	3.	3.	0.	1.	1.	2.	3.	0.	1.
431	1.	3.	3.	2.	4.	3.	5.	3.	1.	1.
441	2.	1.	0.	0.	1.	2.	1.	0.	1.	3.
451	3.	2.	0.	2.	1.	2.	3.	2.	5.	3.
461	3.	3.	2.	2.	0.	2.	2.	0.	1.	5.
471	4.	2.	2.	3.	7.	4.	3.	2.	6.	1.
481	2.	1.	2.	0.	1.	3.	0.	0.	1.	6.
491	3.	3.	2.	1.	2.	3.	1.	2.	2.	1.
511	5.	0.								

LABCORE Data Entry Template for Worklist# 8057

Analyst: JWS **Instrument:** PU01 #16 **Book#** 124843

Method: LA-943-128 Rev/Mod _____

Worklist Comment: C-106. Determine sample size using ludlum. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@PU23901	LIQUID		
2	BLNK				@PU23901	LIQUID		
3	SAMPLE	S96T000544	0		@PU23901	LIQUID	96000082	C-106 GRAB
		Analytes Requested: PU23901 , PU23901E, PU23901T						
4	DUP	S96T000544	0		@PU23901	LIQUID		

Final page for worklist # 8057

Joel M. Lonsdale 4/30/96
Analyst Signature **Date**

Sue E. Hogan 5/2/96
Analyst Signature **Date**

C.J. Quinn 5/8/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed RadChem Report for Worklist#: 8057

Analyst: jmv **Instrument:** PU01 **Book#** 124843

Method: LA-943-128 Rev/Mod A-1

Worklist Comment: C-106. Determine sample size using ludlum. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0	@PU23901	PU23901	LIQUID	3.81E-02	3.52E-2	92.388	% Recovery
1	STD		0	@PU23901	PU23901E	LIQUID	1.00	3.67E+00	3.670	% Ct Error
1	STD		0	@PU23901	PU23901T	LIQUID	100	8.63E+01	86.300	% Recovery
2	BLNK		0	@PU23901	PU23901	LIQUID	1	<3.82E-3		uCi/mL
2	BLNK		0	@PU23901	PU23901T	LIQUID	100	8.58E+01	85.800	% Recovery
2	BLNK		0	@PU23901	PU23901E	LIQUID	1.00	1.00E+02	100.000	uCi/mL
3	SAMPLE	S96T000544	0	@PU23901	PU23901	LIQUID	N/A	7.69E-01	361.0e-004	uCi/mL
3	SAMPLE	S96T000544	0	@PU23901	PU23901T	LIQUID	N/A	8.83E+01	0.0e+000	% Recovery
3	SAMPLE	S96T000544	0	@PU23901	PU23901E	LIQUID	N/A	1.96E+00	0.0e+000	% Ct. Error
4	DUP	S96T000544	0	@PU23901	PU23901	LIQUID	7.69E-1	7.56E-1	1.705	RPD
4	DUP	S96T000544	0	@PU23901	PU23901T	LIQUID	100	7.58E+01	75.800	% Recovery
4	DUP	S96T000544	0	@PU23901	PU23901E	LIQUID	1.00	2.14E+00	2.140	% Ct Error

Final page for worklist# 8057

Analyst Signature Date

Analyst Signature Date

John Relyea 13 May 96
Reviewer Signature Date
Validated

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID

Type	DATE COUNTED		MAY-01-96	PU 236 AEA FRAC	(C236)	0.577
STD	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.157
Work Unit	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)	0.203
8057	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		2689
Test Code	DIGEST DILUTION FACTOR	DDF	1.000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)	0.300
Matrix	DETECTOR NUMBER		16	PU 236 cpm		22.840
LIQUID	EFFICIENCY FACTOR	EFF	0.272	PU 238 cpm		6.210
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		8.060
96003917	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME		480
Reqn	PU-236 DECAY CORR'D VALUE (dpm/mL)		2197.659	Pu 239/240 µCi/L		3.5176E+01
0	PU-238 TRACER VALUE (dpm/mL		0.000			
Sample Prep	STANDARD BOOK NO		124B43			
N/A	STANDARD VALUE in µCi/mL		0.038			

Sample #	
WL8057	
Instrument Code	Decay Time = Date Counted - Tracer Preparation Date
WB27806	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95}]
Prepared By	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)* 1/EFF *C236*100/Pu-236 Decay Corr'd Value * SPKV
SEH	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(2220000 dpm/µCi)]
Chemist	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
JFR	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Analyst	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
JMV	
Date Complete	
05/02/96	
Analysis Date	
05/01/96	
Analysis Time	
12:00 PM	
Sample Point	
C-106 GRAB	

Pu 239/240 µCi/mL		3.52E-02	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	3.7%	Pu 239/240 6.02E-03
Pu 236 Tracer Recovery	=	86.3%	

Analyst:	JMV	Date:	02-May-96
Signature of Chemist: John Relyea	JFR	Date:	13 May 96

STANDARD.WB1 REV 1.0 943128ML

2212

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

Type	DATE COUNTED		MAY-01-96	PU 236 AEA FRAC	(C236)	0.915
BLNK	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)	0.000
8057	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		1688
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm (Bkg)		0.300
Matrix	DETECTOR NUMBER		16	PU 236 cpm		21.830
LIQUID	EFFICIENCY FACTOR	EFF	0.2717	PU 238 cpm		0.000
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		0.000
96003917	TRACER PREPARATION VALUE (dpm/mL)		2390.00	AEA COUNT TIME		480
Rerun	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2197.66	Pu 239/240 µCi/L =	<	3.822E+00
0	PU-238 TRACER VALUE	(dpm/mL)	0.00			

Sample Prep
N/A
Sample #
WL8057
Instrument Code
WB27806
Prepared By
SEH
Chemist
JFR
Analyst
JMV
Date Complete
05/02/96
Analysis Date
05/01/96
Analysis Time
12:00 PM
Sample Point
C-106 GRAB

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)*C236*100/(Pu-236 Decay Corr'd Value * SPKV*EFF)

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

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)

Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(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

Pu 239/240 µCi/mL		< 3.82E-03	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	100.0%	
NOTE: Pu 238 Result is a LESS THAN Value.			Pu 239/240
Pu 238 µCimL		< 3.82E-03	3.82E-03
Relative Counting Error	=	100.0%	Pu 238
Pu 236 Tracer Recovery	=	85.8%	3.82E-03

Analyst:		JMV	Date:	02-May-96
Signature of Chemist:	John Relyea	JFR	Date:	13 May 96

BLANK.WB1 REV 1.0 943128ML

2213

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

							SAMPLE
Type	DATE COUNTED		MAY-01-96	PU 236 AEA FRAC		(C236)	0.094
SAMPLE	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC		(C238)	0.127
Work List	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC		(C239)	0.723
8057	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			18843
Lab Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm		(Bkg)	0.300
Matrix	DETECTOR NUMBER		16	PU 236 cpm			23.810
LIQUID	EFFICIENCY FACTOR	EFF	0.272	PU 238 cpm			31.710
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			180.220
96003917	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2197.659	Pu 239/240 µCi/L			7.6902E+02
0	PU-238 TRACER VALUE (dpm/mL)		0.000				

Sample Prep	
N/A	
Sample #	Decay Time = Date Counted - Tracer Preparation Date
S96T000544	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)}]
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)
WB27806	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
SEH	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
JFR	
Analyst	
JMV	
Date Complete	

05/02/96	Pu 239/240 µCi/mL		7.69E-01	DETECTION LEVELS in µCi/mL
Analysis Date	Relative Counting Error	=	2.0%	
05/01/96				Pu 239/240
Analysis Time				
12:00 PM	Pu 238 µCimL		1.35E-01	3.61E-02
Sample Point	Relative Counting Error	=	2.4%	Pu 238
C-106 GRAB	Pu 236 Tracer Recovery	=	88.3%	3.61E-02

Analyst:		JMV	Date:	02-May-96
Signature of Chemist:	John Rahyer	JFR	Date:	13 May 96

SAMPLE.WB1 REV 1.0 943128ML

2214

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

							DUP
Analyst	DATE COUNTED		MAY-01-96	PU 236 AEA FRAC	(C236)		0.095
DUP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)		0.126
Work Order	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)		0.718
8057	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			14297
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)		0.300
Matrix	DETECTOR NUMBER		16	PU 236 cpm			19.860
LIQUID	EFFICIENCY FACTOR	EFF	0.272	PU 238 cpm			26.160
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			150.660
96003917	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
Aliquot	PU-236 DECAY CORR'D VALUE (dpm/mL)		2197.659	Pu 239/240 µCi/L			7.5567E+02
0	PU-238 TRACER VALUE (dpm/mL)		0.000				

Sample Prep
N/A

Sample #
S96T000544

Instrument Code
WB27806

Prepared By
SEH

Chemist
JFR

Analyst
JMV

Date Complete
05/02/96

Analysis Date
05/01/96

Analysis Time
12:00 PM

Sample Point
C-106 GRAB

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) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)
Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(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

Pu 239/240 µCi/mL		7.56E-01	DETECTION LEVELS in µCi/mL	
Relative Counting Error	=	2.1%		
			Pu 239/240	
Pu 238 µCimL		1.32E-01	4.17E-02	
Relative Counting Error	=	2.7%	Pu 238	
Pu 236 Tracer Recovery	=	75.8%	4.17E-02	

Analyst:	JMV	Date:	02-May-96
Signature of Chemist: John Relyea	JFR	Date:	13 May 96

SAMPLE.WB1 REV 1.0 943128ML

2215

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
WL8057-STD
File ID: 13a1366.CNF

Counted on: 5/ 1/96 @17:11
Detector: AEA13
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	686.0	686.0	362.228	362.228	12.000	3.324	6.000	1.085
2	187.1	187.1	301.201	301.182	12.000	4.827	6.000	1.782
3	23.3	23.3	257.006	256.927	32.000	79.187	16.000	28.226
4	285.8	285.8	227.942	227.907	12.000	3.724	6.000	1.662

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu-236	0.577		5.735	0.01		22.84	1.9	4007.8	0.181E-02
2	Am241	0.157	5.479	5.460	0.019	0.02	6.21	3.7	1158.6	0.522E-03
3	Pu239	0.053	5.147	5.261	-.114	0.36	2.09	12.4	366.1	0.165E-03
	Am243		5.270	5.261	0.009				369.8	0.167E-03
4	Pu239	0.203	5.147	5.130	0.017	0.02	8.06	3.2	1414.1	0.637E-03
	Pu240		5.144	5.130	0.014				1414.1	0.637E-03
		---					---			
Totals:		0.989	<--valid peaks only-->				39.20			

DETECTOR CALIBRATION
Energy(MEV) = 4.104 + (0.0045)*Channel
Energy range (MeV): 4.104 TO 6.408
Efficiency = 0.0057 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	19024.0	100.000
Smoothed	19024.1	100.000
Composite fit	18819.6	98.925
Residuals	204.4	1.074

Analyzed by: VR 5/1/96

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 3841.4


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Raw Data Dump for AEA Spectrum: 13a1366.CNF

1	0.	0.	4.	0.	0.	0.	0.	0.	1.	1.
11	0.	2.	2.	3.	3.	4.	7.	2.	1.	2.
21	5.	0.	1.	3.	1.	5.	0.	2.	0.	0.
31	0.	2.	1.	0.	0.	1.	0.	0.	0.	0.
41	1.	0.	1.	0.	0.	1.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	2.	1.	0.	0.
61	0.	1.	1.	0.	0.	1.	1.	3.	2.	0.
71	0.	1.	0.	0.	0.	2.	0.	1.	1.	0.
81	0.	0.	1.	1.	0.	1.	0.	1.	0.	1.
91	0.	2.	1.	1.	1.	1.	1.	1.	1.	0.
101	0.	0.	1.	2.	0.	0.	0.	0.	0.	0.
111	1.	0.	0.	0.	0.	0.	1.	2.	0.	1.
121	1.	4.	1.	0.	3.	0.	2.	4.	0.	1.
131	0.	2.	3.	0.	1.	1.	0.	2.	0.	0.
141	3.	2.	4.	0.	0.	1.	1.	1.	3.	1.
151	2.	1.	2.	1.	1.	4.	4.	2.	0.	5.
161	2.	7.	2.	2.	2.	1.	2.	5.	4.	3.
171	3.	10.	4.	9.	2.	5.	5.	3.	3.	6.
181	7.	2.	6.	9.	6.	11.	7.	11.	11.	7.
191	5.	15.	12.	18.	12.	17.	16.	13.	17.	24.
201	14.	18.	28.	27.	27.	34.	31.	34.	42.	32.
211	40.	61.	59.	55.	82.	85.	104.	110.	111.	109.
221	120.	163.	177.	194.	259.	267.	330.	352.	319.	262.
231	211.	108.	65.	28.	15.	5.	7.	3.	5.	7.
241	4.	11.	3.	6.	2.	5.	6.	2.	5.	2.
251	4.	2.	2.	8.	6.	6.	69.	9.	7.	5.
261	4.	10.	10.	9.	34.	37.	33.	35.	41.	41.
271	38.	38.	39.	25.	39.	39.	30.	38.	45.	37.
281	37.	43.	39.	46.	41.	38.	60.	59.	51.	63.
291	71.	82.	94.	94.	88.	112.	127.	152.	161.	194.
301	230.	225.	193.	114.	69.	59.	56.	48.	29.	30.
311	32.	23.	13.	14.	27.	17.	18.	14.	22.	25.
321	21.	30.	28.	33.	28.	32.	26.	35.	25.	38.
331	41.	41.	52.	54.	48.	50.	68.	86.	79.	88.
341	89.	81.	129.	111.	149.	158.	178.	195.	236.	271.
351	363.	417.	452.	445.	388.	390.	394.	438.	497.	579.
361	694.	805.	842.	724.	415.	220.	91.	48.	28.	15.
371	12.	13.	5.	8.	5.	3.	6.	2.	1.	3.
381	2.	0.	3.	1.	3.	3.	3.	0.	0.	5.
391	1.	1.	1.	1.	2.	0.	0.	0.	0.	4.
401	0.	1.	1.	0.	0.	1.	1.	0.	0.	0.
411	0.	0.	1.	2.	1.	0.	1.	0.	0.	1.
421	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
451	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
471	1.	0.	1.	0.	0.	1.	1.	0.	0.	0.
481	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
491	1.	0.	0.	1.	0.	0.	0.	2.	0.	0.
511	1.	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

SAMPLE
WL8057-BLK
File ID: 14a1468.CNF

Counted on: 5/ 1/96 @17:11
Detector: AEA14
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	672.0	672.0	363.319	363.319	12.000	3.316	6.000	1.123
2	16.1	16.1	287.205	287.078	34.000	14.368	17.000	17.512
3?	21.4	21.4	277.669	277.669	12.000	0.439	6.000	6.062
4	21.4	21.4	269.614	269.264	12.000	4.462	6.000	4.939
5?	9.9	9.9	256.967	256.722	4.000	0.345	2.000	0.848

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu-236	0.915		5.734	0.01		21.83	1.9	390.6	0.176E-03
2	Th228	0.026	5.400	5.391	0.009	0.06	0.61	12.4	15.3	0.691E-05
	Am243		5.270	5.391	-.121				11.0	0.495E-05
3		????		5.349			0.14	35.3		
4		0.020		5.311	0.02		0.47	16.8	8.4	0.378E-05
5		????		5.254			0.07	41.5		
Totals:		0.961	<--valid peaks only-->				22.91			

DETECTOR CALIBRATION
Energy(MEV) = 4.099 + (0.0045)*Channel
Energy range (MeV): 4.099 TO 6.403
Efficiency = 0.0559 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	11450.0	100.000
Smoothed	11451.0	100.009
Composite fit	11099.1	96.935
Residuals	350.9	3.065

Analyzed by: M C Bu[illegible]
VR
5/1/96

Spectrum 14a1468.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 4180.7


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Raw Data Dump for AEA Spectrum: 14a1468.CNF

1	0.	0.	0.	0.	1.	0.	0.	0.	0.	2.
11	0.	3.	1.	1.	0.	0.	0.	1.	0.	1.
21	0.	1.	2.	1.	2.	1.	1.	0.	1.	1.
31	1.	0.	0.	0.	1.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
51	2.	0.	0.	0.	1.	0.	0.	0.	0.	0.
61	0.	1.	0.	0.	0.	1.	0.	0.	0.	1.
71	1.	0.	0.	1.	0.	1.	0.	1.	1.	0.
81	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
91	0.	1.	1.	0.	0.	1.	0.	0.	1.	0.
101	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
111	0.	0.	0.	0.	0.	0.	0.	1.	3.	1.
121	0.	0.	1.	0.	0.	0.	1.	0.	0.	1.
131	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
141	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
151	0.	0.	0.	1.	1.	0.	1.	0.	0.	0.
161	1.	0.	1.	0.	1.	1.	0.	0.	0.	0.
171	0.	1.	0.	0.	1.	0.	1.	0.	0.	1.
181	0.	0.	1.	0.	1.	0.	1.	0.	2.	0.
191	0.	0.	0.	0.	1.	0.	1.	0.	0.	0.
201	0.	0.	0.	0.	2.	1.	0.	1.	0.	2.
211	2.	0.	2.	2.	2.	0.	0.	1.	1.	1.
221	2.	1.	0.	0.	0.	0.	1.	1.	1.	0.
231	1.	0.	1.	1.	1.	0.	0.	0.	2.	2.
241	4.	0.	1.	0.	2.	2.	1.	1.	1.	1.
251	1.	1.	0.	1.	5.	2.	31.	2.	3.	3.
261	3.	5.	2.	4.	30.	17.	28.	21.	24.	25.
271	26.	18.	14.	18.	9.	12.	16.	17.	21.	11.
281	13.	10.	9.	11.	7.	13.	12.	12.	12.	10.
291	7.	11.	10.	8.	4.	7.	3.	9.	7.	4.
301	8.	6.	12.	10.	11.	8.	7.	12.	8.	9.
311	14.	7.	11.	18.	10.	8.	26.	17.	17.	20.
321	18.	21.	19.	23.	32.	26.	38.	27.	25.	45.
331	42.	48.	67.	53.	51.	57.	56.	71.	70.	79.
341	71.	76.	91.	91.	112.	120.	140.	193.	208.	199.
351	299.	317.	362.	432.	417.	370.	361.	382.	418.	462.
361	579.	674.	805.	800.	730.	464.	233.	87.	39.	26.
371	10.	16.	9.	10.	4.	6.	8.	3.	4.	4.
381	1.	2.	3.	1.	3.	3.	0.	4.	1.	0.
391	0.	1.	0.	1.	1.	1.	1.	1.	0.	0.
401	0.	0.	0.	0.	1.	0.	0.	0.	1.	1.
411	0.	0.	1.	0.	1.	0.	0.	1.	1.	0.
421	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
431	0.	1.	0.	0.	1.	0.	0.	0.	1.	0.
441	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	1.	0.	1.	2.	1.	1.	1.	0.	1.	2.
481	1.	0.	0.	0.	0.	0.	0.	1.	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

SAMPLE
S96T544-SAM
File ID: 15a1546.CNF

Counted on: 5/ 1/96 @17:12
Detector: AEA15
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	661.0	661.0	357.833	357.833	10.000	3.840	5.000	1.178
2	819.5	819.5	299.095	299.086	12.000	4.359	6.000	1.216
3	5750.4	5750.4	224.619	224.618	12.000	4.782	6.000	1.954
4?	17.3	17.3	22.677	22.677	20.000	11.974	10.000	4.290

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Ra224	0.094	5.686	5.726	-.040	0.02	23.51	1.8	3847.2	0.173E-02
2	Am241	0.127	5.479	5.461	0.018	0.02	31.71	1.6	5189.9	0.234E-02
3	Pu239	0.723	5.147	5.126	0.021	0.02	180.22	0.7	27725.4	0.125E-01
	Pu240		5.144	5.126	0.018				27725.4	0.125E-01
4		????		4.217			0.68	10.9		
Totals:		0.944	<--valid peaks only-->				235.43			

DETECTOR CALIBRATION

Energy(MEV) = 4.115 + (0.0045)*Channel
Energy range (MeV): 4.115 TO 6.419
Efficiency = 0.0065 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	119737.0	100.000
Smoothed	119740.4	100.003
Composite fit	113351.1	94.667
Residuals	6385.9	5.333

Analyzed by: VR 5/1/96

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 33250.6


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Raw Data Dump for AEA Spectrum: 15a1546.CNF

1	0.	0.	6.	2.	2.	1.	2.	0.	7.	4.
11	6.	5.	18.	8.	16.	12.	13.	6.	14.	10.
21	12.	23.	23.	16.	9.	13.	16.	18.	8.	8.
31	3.	5.	1.	1.	4.	3.	2.	5.	2.	2.
41	2.	6.	4.	5.	4.	1.	3.	7.	2.	1.
51	7.	5.	4.	3.	3.	7.	6.	4.	9.	3.
61	7.	5.	7.	2.	10.	5.	8.	6.	2.	6.
71	6.	5.	6.	3.	4.	6.	8.	8.	4.	2.
81	3.	7.	5.	6.	8.	5.	3.	7.	6.	4.
91	2.	6.	13.	8.	10.	6.	10.	17.	5.	6.
101	6.	11.	11.	8.	9.	4.	9.	7.	11.	6.
111	6.	9.	17.	8.	13.	6.	7.	15.	13.	6.
121	12.	8.	27.	9.	22.	18.	18.	14.	14.	18.
131	24.	16.	15.	23.	22.	20.	11.	18.	24.	25.
141	24.	25.	30.	18.	28.	27.	31.	42.	36.	29.
151	37.	33.	42.	46.	41.	37.	48.	40.	53.	52.
161	43.	62.	59.	52.	62.	66.	66.	66.	77.	60.
171	79.	87.	83.	78.	99.	112.	126.	102.	130.	99.
181	119.	121.	168.	141.	183.	167.	180.	198.	185.	242.
191	237.	219.	292.	318.	307.	304.	333.	376.	423.	449.
201	474.	518.	590.	650.	689.	757.	883.	997.	1066.	1294.
211	1422.	1728.	1992.	2144.	2425.	2674.	3003.	3197.	3677.	4107.
221	4724.	5216.	5925.	6379.	6557.	6184.	5191.	3718.	2311.	1318.
231	702.	353.	204.	127.	105.	82.	65.	78.	68.	44.
241	32.	48.	41.	33.	39.	32.	45.	33.	31.	36.
251	42.	36.	28.	28.	28.	34.	63.	43.	37.	40.
261	46.	48.	51.	34.	159.	176.	183.	176.	201.	196.
271	204.	191.	156.	141.	192.	162.	240.	240.	245.	243.
281	206.	200.	215.	229.	241.	284.	328.	362.	428.	479.
291	530.	586.	573.	567.	608.	688.	777.	894.	929.	911.
301	847.	620.	410.	193.	106.	45.	39.	32.	32.	29.
311	23.	31.	24.	24.	23.	21.	29.	28.	28.	25.
321	25.	34.	27.	35.	41.	39.	38.	54.	43.	66.
331	50.	62.	59.	57.	80.	75.	81.	100.	104.	120.
341	152.	182.	214.	215.	286.	318.	337.	431.	443.	444.
351	362.	379.	453.	506.	582.	604.	726.	764.	723.	640.
361	421.	190.	85.	38.	25.	19.	16.	16.	15.	6.
371	8.	6.	1.	3.	2.	2.	3.	2.	6.	3.
381	6.	4.	2.	4.	4.	2.	5.	3.	2.	0.
391	3.	2.	0.	1.	1.	1.	1.	1.	1.	1.
401	1.	0.	1.	0.	1.	0.	0.	1.	0.	0.
411	3.	1.	1.	0.	3.	0.	2.	2.	0.	1.
421	0.	2.	0.	0.	0.	0.	1.	1.	0.	1.
431	2.	0.	0.	0.	1.	0.	2.	1.	1.	1.
441	2.	1.	2.	1.	1.	0.	0.	0.	2.	1.
451	0.	0.	3.	1.	2.	1.	0.	0.	2.	1.
461	0.	1.	0.	0.	0.	1.	1.	1.	5.	2.
471	1.	0.	1.	0.	2.	1.	1.	1.	1.	0.
481	1.	0.	1.	2.	0.	0.	0.	1.	1.	0.
491	1.	0.	0.	0.	0.	0.	1.	0.	0.	0.
511	3.	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

SAMPLE
S96T544-DUP
File ID: 16a1627.CNF

Counted on: 5/ 1/96 @17:12
Detector: AEA16
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	541.1	541.1	360.040	360.040	12.000	3.849	6.000	1.127
2	628.2	628.2	301.261	301.250	12.000	4.119	6.000	1.019
3	4631.2	4631.2	226.227	226.226	12.000	4.780	6.000	1.825
4?	11.0	11.0	25.093	25.093	10.000	6.279	5.000	1.002

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		0.095		5.730	0.02		19.86	2.0	4052.4	0.183E-02
2	Am241	0.125	5.479	5.465	0.014	0.02	26.16	1.8	5679.6	0.256E-02
3	Pu239	0.718	5.147	5.128	0.019	0.02	150.56	0.7	30725.9	0.138E-01
	Pu240		5.144	5.128	0.016				30725.9	0.138E-01
4		????		4.223			0.47	13.0		
Totals:		0.937	<--valid peaks only-->				196.57			

DETECTOR CALIBRATION
Energy(MEV) = 4.110 + (0.0045)*Channel
Energy range (MeV): 4.110 TO 6.414
Efficiency = 0.0049 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	100723.0	100.000
Smoothed	100723.9	100.001
Composite fit	94591.9	93.913
Residuals	6131.1	6.087

Analyzed by: M B Brown
VR
5/1/96

Spectrum 16a1627.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 28504.8


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Raw Data Dump for AEA Spectrum: 16a1627.CNF

1	0.	0.	5.	3.	1.	0.	1.	0.	5.	4.
11	6.	5.	11.	12.	9.	11.	4.	8.	6.	10.
21	9.	12.	12.	10.	8.	14.	10.	11.	4.	3.
31	1.	3.	5.	1.	2.	1.	0.	0.	2.	3.
41	3.	0.	2.	0.	2.	2.	3.	4.	2.	3.
51	0.	1.	2.	0.	3.	2.	4.	1.	6.	2.
61	1.	0.	4.	2.	2.	3.	4.	0.	5.	2.
71	8.	4.	2.	6.	4.	4.	4.	2.	3.	1.
81	1.	2.	6.	2.	3.	4.	7.	2.	3.	5.
91	7.	3.	3.	4.	4.	2.	1.	2.	8.	7.
101	1.	10.	3.	3.	6.	3.	2.	4.	5.	7.
111	4.	4.	9.	7.	6.	13.	13.	10.	5.	9.
121	5.	6.	12.	10.	14.	15.	15.	10.	17.	8.
131	19.	18.	13.	15.	14.	20.	22.	22.	13.	23.
141	25.	25.	20.	22.	28.	24.	29.	27.	36.	34.
151	32.	24.	25.	29.	38.	50.	33.	51.	50.	37.
161	52.	52.	40.	57.	52.	62.	46.	70.	64.	71.
171	63.	96.	93.	80.	133.	74.	112.	94.	116.	116.
181	130.	147.	138.	121.	154.	180.	190.	180.	201.	205.
191	245.	230.	236.	273.	310.	302.	333.	334.	367.	411.
201	460.	450.	493.	568.	586.	621.	760.	782.	828.	960.
211	1078.	1184.	1317.	1476.	1746.	1927.	2145.	2258.	2567.	2768.
221	3192.	3316.	4026.	4430.	4937.	5285.	5203.	4724.	3762.	2453.
231	1600.	855.	421.	229.	127.	83.	68.	58.	48.	57.
241	47.	38.	25.	37.	32.	29.	33.	33.	37.	38.
251	23.	31.	31.	36.	28.	29.	55.	33.	25.	32.
261	34.	28.	36.	39.	150.	169.	157.	150.	189.	174.
271	149.	169.	138.	139.	147.	145.	183.	153.	207.	197.
281	160.	174.	180.	193.	173.	198.	211.	260.	280.	312.
291	342.	415.	450.	459.	423.	481.	496.	529.	549.	661.
301	715.	706.	660.	542.	298.	126.	70.	42.	40.	27.
311	31.	15.	27.	26.	26.	23.	23.	25.	26.	35.
321	31.	29.	35.	35.	31.	31.	39.	30.	35.	44.
331	47.	52.	57.	61.	62.	53.	77.	73.	81.	87.
341	113.	124.	127.	161.	147.	198.	241.	258.	316.	334.
351	377.	360.	348.	346.	318.	383.	437.	505.	562.	641.
361	593.	533.	397.	184.	88.	42.	25.	14.	10.	5.
371	4.	4.	10.	3.	6.	5.	4.	4.	4.	4.
381	5.	1.	2.	2.	1.	0.	1.	2.	2.	1.
391	3.	2.	1.	3.	3.	0.	0.	0.	0.	1.
401	1.	0.	0.	1.	1.	1.	3.	1.	1.	0.
411	2.	0.	2.	1.	0.	0.	2.	0.	2.	1.
421	1.	0.	0.	0.	0.	0.	1.	0.	0.	1.
431	0.	1.	0.	0.	0.	0.	1.	0.	2.	0.
441	2.	0.	2.	1.	0.	1.	0.	0.	1.	0.
451	2.	4.	3.	1.	1.	0.	0.	0.	1.	1.
461	0.	1.	1.	0.	0.	0.	1.	1.	0.	3.
471	1.	0.	1.	1.	1.	5.	1.	1.	3.	1.
481	0.	0.	0.	1.	0.	0.	0.	0.	0.	1.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	2.	0.								

LABCORE Data Entry Template for Worklist# 8058

Analyst: [illegible] **Instrument:** PU01 #15 **Book#** 124843

Method: LA-943-128 Rev/Mod _____

Worklist Comment: C-106. Determine sample size using ludlum. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@PU23901	LIQUID		
2	BLNK				@PU23901	LIQUID		
3	SAMPLE	S96T000563	0		@PU23901	LIQUID	96000082	C-106 GRAB
		Analytes Requested: PU23901 , PU23901E, PU23901T						
4	DUP	S96T000563	0		@PU23901	LIQUID		

Final page for worklist # 8058

[illegible] 4/30/96
Analyst Signature **Date**

Sue E. Hogan 5/2/96
Analyst Signature **Date**

C.J. Opinen 5/8/96

Data Entry Comments: 4mL Sample

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed Worklist Report for Worklist# 8058

Analyst: ~~cjo~~ JMV **Instrument:** PU01 #15 **Book#** 124B43

Method: LA-943-128 Rev/Mod A-1

Worklist Comment: C-106. Determine sample size using ludlum. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0	@PU23901	PU23901	LIQUID	3.81E-02	3.56E-2	93.438	% Recovery
1	STD		0	@PU23901	PU23901E	LIQUID	1.00	3.13E+00	3.130	% Ct. Error
1	STD		0	@PU23901	PU23901T	LIQUID	100	7.63E+01	76.300	% Recovery
2	BLNK		0	@PU23901	PU23901	LIQUID	1	<3.56E-3		uCi/mL
2	BLNK		0	@PU23901	PU23901T	LIQUID	100	8.51E+01	85.100	% Recovery
2	BLNK		0	@PU23901	PU23901E	LIQUID	1.00	1.00E+02	100.000	% Ct. Error
3	SAMPLE	S96T000563	0	@PU23901	PU23901	LIQUID	N/A	8.12E-01	0.038	uCi/mL
3	SAMPLE	S96T000563	0	@PU23901	PU23901T	LIQUID	N/A	8.83E+01	0.000	% Recovery
3	SAMPLE	S96T000563	0	@PU23901	PU23901E	LIQUID	N/A	1.59E+00	0.000	% Ct. Error
4	DUP	S96T000563	0	@PU23901	PU23901	LIQUID	8.12E-1	8.33E-1	2.553	RPD
4	DUP	S96T000563	0	@PU23901	PU23901T	LIQUID	100	8.95E+01	89.500	% Recovery
4	DUP	S96T000563	0	@PU23901	PU23901E	LIQUID	1.00	1.62E+00	1.620	% Ct. Error

Final page for worklist# 8058

Analyst Signature **Date** **Analyst Signature** **Date**

John Relyea 9 May 96
Reviewer Signature **Date**

Validated

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID

							STD
Type	DATE COUNTED		MAY-01-96	PU 236 AEA FRAC	(C236)		0.696
STD	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)		0.041
Work List	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)		0.248
8058	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			2199
Test Code	DIGEST DILUTION FACTOR	DDF	1.000	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)		0.300
Matrix	DETECTOR NUMBER		15	PU 236 cpm			31.020
LIQUID	EFFICIENCY FACTOR	EFF	0.303	PU 238 cpm			1.830
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			11.060
96003918	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
Rerun	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2197.659	Pu 239/240 µCi/L			3.5626E+01
0	PU-238 TRACER VALUE	(dpm/mL	0.000				
Sample Prep	STANDARD BOOK NO		124B43				
N/A	STANDARD VALUE in µCi/mL		0.038				
Sample #							
WL8058							
Instrument Code	Decay Time = Date Counted - Tracer Preparation Date						
WB26872	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95}]						
Prepared By	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)* 1/EFF *C236*100/Pu-236 Decay Corr'd Value * SPKV						
SEH	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(2220000 dpm/µCi)]						
Chemist	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)						
JFR	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]						
Analyst	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100						
JMV							
Date Complete							
05/02/96	Pu 239/240 µCi/mL		3.56E-02				
Analysis Date	Relative Counting Error	=	3.1%				
05/02/96							
Analysis Time							
10:30 AM							
Sample Point							
C-106 GRAB	Pu 236 Tracer Recovery	=	76.3%				

DETECTION LEVELS in µCi/mL
Pu 239/240
5.65E-03

Analyst:		JMV	Date:	02-May-96
Signature of Chemist:	John Rehyer	JFR	Date:	9 May 96

STANDARD.WB1 REV 1.0 943128ML

2230

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

						BLNK
Matrix	DATE COUNTED		MAY-01-96	PU 236 AEA FRAC	(C236)	0.991
BLNK	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.000
Workpoint	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)	0.000
8058	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		1726
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm (Bkg)		0.300
Matrix	DETECTOR NUMBER		15	PU 236 cpm		32.910
LIQUID	EFFICIENCY FACTOR	EFF	0.3032	PU 238 cpm		0.000
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		0.000
96003918	TRACER PREPARATION VALUE (dpm/mL)		2390.00	AEA COUNT TIME		480
Return	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2197.66	Pu 239/240 µCi/L =	<	3.556E+00
0	PU-238 TRACER VALUE	(dpm/mL)	0.00			
Sample Prep						
N/A						

Sample #	Decay Time = Date Counted - Tracer Preparation Date
WL8058	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)*C236*100/(Pu-236 Decay Corr'd Value * SPKV*EFF)
WB26872	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
SEH	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
JFR	
Analyst	
JMV	
Date Complete	
05/02/96	
Analysis Date	
05/02/96	
Analysis Time	
10:30 AM	
Sampling Point	
C-106 GRAB	

				DETECTION LEVELS in µCi/mL
Pu 239/240 µCi/mL		<	3.56E-03	Pu 239/240
Relative Counting Error	=		100.0%	3.56E-03
NOTE: Pu 238 Result is a LESS THAN Value.				
Pu 238 µCimL		<	3.56E-03	Pu 238
Relative Counting Error	=		100.0%	3.56E-03
Pu 236 Tracer Recovery	=		85.1%	

Analyst:	JMV	Date:	02-May-96
Signature of Chemist: John Relyea	JFR	Date:	9 May 96

BLANK.WB1 REV 1.0 943128ML

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

						SAMPLE
Type	DATE COUNTED		MAY-01-96	PU 236 AEA FRAC	(C236)	0.090
SAMPLE	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.104
Sample Number	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)	0.731
8058	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		19614
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)	0.300
Matrix	DETECTOR NUMBER		16	PU 236 cpm		35.410
LIQUID	EFFICIENCY FACTOR	EFF	0.303	PU 238 cpm		41.240
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		289.320
96003918	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME		480
Workcode	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2197.659	Pu 239/240 µCi/L		8.1209E+02
0	PU-238 TRACER VALUE	(dpm/mL)	0.000			
Sample Prep						
N/A						
Sample #	Decay Time = Date Counted - Tracer Preparation Date					
S96T000563	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)}]					
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)					
WB26872	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]					
Preparedby	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)					
SEH	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]					
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100					
JFR						
Analyst						
JMV						
Date Completed						
05/02/96	Pu 239/240 µCi/mL		8.12E-01	DETECTION		
Analysis Date	Relative Counting Error	=	1.6%	LEVELS		
05/02/96				in µCi/mL		
Analysis Time				Pu 239/240		
10:30 AM	Pu 238 µCimL		1.16E-01	3.78E-02		
Sample Point	Relative Counting Error	=	2.0%	Pu 238		
C-106 GRAB	Pu 236 Tracer Recovery	=	88.3%	3.78E-02		

Analyst:		JMV	Date:	02-May-96
Signature of Chemist:	John Relyea	JFR	Date:	9 May 96

SAMPLE.WB1 REV 1.0 943128ML

2232

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

Type						DUP
DUP	DATE COUNTED		MAY-01-96	PU 236 AEA FRAC	(C236)	0.090
	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.106
Work Unit	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)	0.750
8058	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		19896
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)	0.300
Matrix	DETECTOR NUMBER		15	PU 236 cpm		34.220
LIQUID	EFFICIENCY FACTOR	EFF	0.303	PU 238 cpm		40.350
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		284.670
96003918	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME		480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2197.659	Pu 239/240 µCi/L		8.3320E+02
0	PU-238 TRACER VALUE (dpm/mL)		0.000			

Sample Train
N/A

Sample #
S96T000563

Instrument Code
WB26872

Prepared By
SEH

Checked
JFR

Analyst
JMV

Date Completed
05/02/96

Analysis Date
05/02/96

Analysis Time
10:30 AM

Sample Point
C-106 GRAB

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) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)
Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(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

Pu 239/240 µCi/mL		8.33E-01	
Relative Counting Error	=	1.6%	
Pu 238 µCimL		1.18E-01	
Relative Counting Error	=	2.1%	
Pu 236 Tracer Recovery	=	89.5%	

DETECTION LEVELS in µCi/mL	
Pu 239/240	3.72E-02
Pu 238	3.72E-02

Analyst:		JMV	Date:	02-May-96
Signature of Chemist:	John Relyea	JFR	Date:	9 May 96

SAMPLE.WB1 REV 1.0 943128ML

2233

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
WL8058-STD
File ID: 21a2183.CNF

Counted on: 5/ 1/96 @14:20
Detector: AEA21
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	673.7	673.7	359.042	359.042	14.000	7.143	7.000	1.741
2	34.1	34.1	300.179	299.057	16.000	7.309	8.000	1.429
3	273.9	273.9	227.222	227.216	16.000	7.877	8.000	2.489

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Ra224	0.696	5.686	5.729	-.043	0.03	31.02	1.6	2462.4	0.111E-02
	Pu236		5.755	5.729	0.026				2361.9	0.106E-02
2	Th228	0.041	5.400	5.453	-.053	0.03	1.83	8.5	191.8	0.864E-04
	Am241		5.479	5.453	0.026				144.9	0.653E-04
3	Pu239	0.248	5.147	5.122	0.025	0.04	11.06	2.7	825.3	0.372E-03
	Pu240		5.144	5.122	0.022				825.3	0.372E-03
		---					---			
Totals:		0.985	<--valid peaks only-->				43.90			

DETECTOR CALIBRATION
Energy(MEV) = 4.077 + (0.0046)*Channel
Energy range (MeV): 4.077 TO 6.432
Efficiency = 0.0134 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	21387.0	100.000
Smoothed	21386.6	99.998
Composite fit	21075.3	98.542
Residuals	311.7	1.458

Analyzed by: VR 5/1/96

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Raw Data Dump for AEA Spectrum: 21a2183.CNF

1	0.	0.	2.	0.	0.	0.	0.	0.	0.	1.
11	0.	1.	0.	0.	0.	0.	0.	0.	1.	0.
21	0.	1.	0.	1.	0.	0.	0.	0.	0.	0.
31	0.	1.	0.	0.	0.	0.	0.	2.	1.	0.
41	0.	0.	1.	0.	2.	1.	1.	0.	1.	1.
51	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	1.	0.	1.	1.	0.	1.	1.	0.
71	0.	1.	1.	2.	0.	2.	0.	1.	0.	0.
81	1.	1.	1.	0.	1.	0.	1.	0.	3.	1.
91	1.	2.	2.	1.	2.	0.	0.	0.	0.	1.
101	1.	0.	2.	1.	0.	0.	0.	0.	2.	1.
111	0.	2.	2.	1.	1.	1.	0.	1.	0.	2.
121	0.	1.	0.	0.	1.	2.	1.	1.	0.	2.
131	2.	1.	1.	2.	4.	3.	4.	2.	0.	2.
141	1.	4.	1.	2.	1.	3.	0.	2.	5.	2.
151	4.	5.	6.	5.	5.	4.	7.	4.	5.	10.
161	5.	5.	6.	3.	3.	4.	7.	4.	5.	8.
171	5.	3.	3.	9.	7.	10.	5.	16.	8.	11.
181	11.	9.	16.	12.	13.	16.	12.	18.	16.	16.
191	23.	23.	32.	19.	23.	21.	30.	28.	33.	36.
201	36.	39.	34.	45.	53.	72.	67.	77.	56.	67.
211	86.	90.	98.	100.	89.	115.	134.	125.	153.	163.
221	181.	198.	221.	250.	277.	286.	324.	275.	261.	251.
231	219.	196.	134.	79.	51.	28.	24.	5.	4.	1.
241	5.	3.	6.	1.	3.	3.	2.	3.	3.	1.
251	1.	5.	4.	2.	7.	4.	3.	5.	5.	5.
261	5.	5.	7.	6.	9.	8.	14.	12.	12.	10.
271	7.	13.	10.	9.	9.	16.	15.	19.	21.	13.
281	11.	19.	18.	25.	26.	27.	30.	34.	31.	27.
291	15.	30.	30.	33.	46.	28.	44.	46.	60.	45.
301	38.	63.	29.	38.	41.	36.	27.	26.	29.	25.
311	24.	29.	36.	32.	22.	38.	55.	42.	46.	46.
321	47.	52.	50.	58.	61.	69.	83.	69.	87.	96.
331	93.	99.	104.	110.	102.	128.	162.	129.	174.	178.
341	216.	234.	249.	249.	276.	371.	369.	424.	449.	482.
351	489.	548.	549.	539.	544.	615.	683.	716.	724.	718.
361	654.	620.	489.	316.	267.	160.	84.	39.	21.	7.
371	3.	0.	0.	1.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	1.	0.	1.	0.	0.	0.	1.
391	0.	0.	0.	0.	2.	0.	0.	0.	0.	0.
401	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	1.	0.	0.	0.	0.	1.	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.	1.	0.	0.	0.
461	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.
471	1.	0.	1.	0.	1.	0.	2.	0.	0.	1.
481	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	1.	1.	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

SAMPLE
WL8058-BLK
File ID: 22a2277.CNF

Counted on: 5/ 1/96 @14:21
Detector: AEA22
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	838.8	838.8	359.188	359.188	10.000	3.268	5.000	0.839
2	12.6	12.6	285.365	284.972	14.000	17.050	7.000	3.357

PEAK RESULTS
Peak Error Limit: 30%

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	5.755	5.762	-.007	0.02	32.91	1.6	1805.6	0.813E-03
	Cm243		5.779	5.762	0.017				2424.0	0.109E-02
2	Th228	0.024	5.400	5.421	-.021	0.08	0.78	14.1	59.3	0.267E-04
	Am241		5.479	5.421	0.058				44.8	0.202E-04
Totals:		1.015	<--valid peaks only-->				33.70			

DETECTOR CALIBRATION
Energy(MEV) = 4.110 + (0.0046)*Channel
Energy range (MeV): 4.110 TO 6.465
Efficiency = 0.0186 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	15939.0	100.000
Smoothed	15938.9	99.999
Composite fit	16176.3	101.489
Residuals	-237.3	-1.489

Analyzed by: VR 5/1/96

Spectrum 22a2277.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5461.6


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Raw Data Dump for AEA Spectrum: 22a2277.CNT

1	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
11	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
21	0.	0.	2.	0.	0.	0.	1.	0.	1.	0.
31	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
41	0.	1.	1.	0.	0.	0.	0.	0.	0.	1.
51	0.	1.	0.	0.	0.	0.	0.	0.	1.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	0.	0.	0.	1.	1.	0.	2.	0.	0.
81	1.	0.	1.	0.	1.	2.	0.	0.	0.	1.
91	0.	0.	0.	0.	0.	1.	1.	0.	0.	2.
101	1.	2.	1.	1.	0.	0.	0.	1.	0.	0.
111	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
121	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
131	0.	0.	1.	0.	1.	0.	0.	0.	1.	0.
141	0.	1.	1.	0.	2.	1.	0.	6.	0.	0.
151	0.	0.	1.	0.	0.	0.	0.	2.	1.	0.
161	2.	0.	0.	1.	1.	1.	0.	0.	0.	1.
171	1.	2.	0.	0.	0.	0.	0.	0.	0.	0.
181	1.	0.	2.	1.	0.	1.	0.	0.	0.	1.
191	0.	1.	1.	0.	0.	2.	0.	0.	0.	1.
201	1.	0.	3.	2.	0.	0.	0.	1.	0.	1.
211	2.	0.	1.	1.	1.	0.	0.	1.	3.	2.
221	1.	1.	1.	8.	3.	2.	2.	2.	1.	0.
231	1.	0.	1.	4.	0.	4.	0.	4.	0.	1.
241	1.	0.	3.	0.	4.	5.	5.	3.	3.	5.
251	2.	1.	3.	4.	2.	5.	5.	4.	7.	1.
261	5.	3.	4.	5.	5.	11.	10.	8.	14.	8.
271	9.	10.	9.	5.	10.	4.	12.	12.	9.	13.
281	7.	14.	15.	20.	19.	21.	16.	14.	10.	16.
291	9.	8.	13.	13.	19.	21.	16.	20.	17.	21.
301	10.	22.	20.	24.	26.	24.	25.	22.	28.	22.
311	18.	31.	33.	40.	31.	36.	28.	32.	37.	55.
321	56.	44.	51.	65.	64.	74.	81.	90.	91.	85.
331	91.	106.	139.	114.	125.	136.	134.	153.	184.	204.
341	202.	215.	295.	281.	341.	393.	456.	486.	511.	596.
351	600.	615.	469.	510.	562.	633.	759.	881.	937.	1007.
361	890.	588.	277.	67.	18.	3.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	1.	0.	1.	0.	0.	1.	0.
441	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
451	1.	0.	1.	0.	1.	0.	0.	0.	0.	0.
461	0.	1.	0.	1.	1.	0.	0.	0.	1.	0.
471	2.	0.	0.	1.	2.	2.	0.	0.	1.	0.
481	2.	0.	0.	0.	0.	1.	0.	1.	0.	0.
491	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
511	0.	0.								

5/1/96

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
S96T563-SAM
File ID: 23a2311.CNF

Counted on: 5/ 1/96 @14:21
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	845.0	845.0	360.712	360.712	10.000	3.454	5.000	0.820
2	1049.9	1049.9	302.492	302.471	10.000	3.465	5.000	0.899
3	8029.4	8029.4	228.095	228.094	12.000	4.313	6.000	1.338
4?	41.3	41.3	120.529	120.391	162.000	1.000	81.000	0.100
5?	0.0	0.1	99.221	99.221	0.000	0.100	0.000	0.100
6?	2.3	2.3	77.934	77.370	4.000	0.000	2.000	3.758
7?	3.5	3.5	66.175	65.758	6.000	0.429	3.000	3.983

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.090	5.755	5.755	0.000	0.02	35.41	1.5	2867.4	0.129E-02
2	Pu238	0.104	5.487	5.487	0.000	0.02	41.24	1.4	4545.5	0.205E-02
	Am241		5.479	5.487	-.008				3481.7	0.157E-02
3	Pu239	0.731	5.147	5.145	0.002	0.02	289.32	0.5	22962.1	0.103E-01
	Pu240		5.144	5.145	-.001				22962.1	0.103E-01
4		????		4.649			3.21	5.0		
5		????		4.552			0.00	*****		
6		????		4.451			0.00	1000.		
7		????		4.398			0.02	323.		
Totals:		0.925	<--valid peaks only-->				365.97			

DETECTOR CALIBRATION
Energy(MEV) = 4.095 + (0.0046)*Channel
Energy range (MeV): 4.095 TO 6.451
Efficiency = 0.0126 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	189881.0	100.000
Smoothed	189878.9	99.999
Composite fit	177234.2	93.340

Residuals	12646.8	6.660

Analyzed by: VR

Spectrum 23a2311.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 55630.7


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Raw Data Dump for AEA Spectrum: 23a2311.CNF

1	0.	0.	6.	3.	4.	7.	7.	6.	5.	9.
11	5.	2.	7.	8.	8.	5.	10.	6.	4.	11.
21	8.	4.	4.	10.	8.	6.	8.	3.	5.	4.
31	10.	7.	6.	5.	8.	8.	9.	5.	9.	7.
41	6.	11.	10.	8.	10.	9.	6.	7.	11.	7.
51	6.	9.	10.	6.	5.	9.	6.	10.	9.	8.
61	9.	4.	4.	17.	7.	18.	15.	9.	9.	8.
71	13.	9.	11.	10.	8.	17.	12.	18.	15.	13.
81	10.	10.	13.	18.	15.	16.	13.	11.	19.	12.
91	16.	13.	14.	19.	20.	23.	21.	14.	23.	23.
101	22.	10.	20.	17.	22.	19.	30.	20.	24.	28.
111	29.	30.	14.	32.	30.	38.	27.	31.	33.	40.
121	41.	27.	33.	38.	23.	46.	35.	39.	42.	45.
131	48.	48.	65.	55.	42.	55.	52.	68.	50.	56.
141	62.	86.	59.	86.	85.	86.	103.	112.	90.	92.
151	107.	109.	109.	112.	121.	104.	123.	131.	135.	124.
161	139.	169.	171.	180.	175.	198.	169.	208.	215.	202.
171	228.	248.	280.	229.	278.	258.	304.	318.	358.	321.
181	355.	414.	402.	441.	438.	478.	523.	496.	571.	619.
191	642.	702.	676.	655.	799.	745.	841.	904.	965.	1006.
201	1091.	1161.	1201.	1275.	1347.	1446.	1547.	1652.	1765.	1891.
211	2028.	2211.	2492.	2628.	2949.	3207.	3582.	3858.	4165.	4463.
221	4867.	5124.	5599.	6172.	6978.	7797.	8625.	8918.	9093.	8151.
231	6206.	3768.	2022.	1008.	379.	95.	37.	25.	27.	29.
241	24.	29.	27.	33.	31.	34.	32.	49.	43.	50.
251	48.	46.	58.	40.	59.	59.	57.	73.	66.	72.
261	63.	87.	83.	79.	98.	91.	105.	116.	92.	142.
271	122.	162.	135.	149.	161.	155.	162.	159.	208.	201.
281	231.	254.	248.	288.	285.	376.	366.	377.	440.	499.
291	539.	564.	692.	715.	767.	801.	739.	746.	830.	917.
301	1059.	1125.	1247.	1168.	934.	519.	200.	71.	42.	40.
311	45.	39.	38.	45.	49.	45.	52.	45.	56.	53.
321	51.	80.	70.	81.	74.	84.	84.	101.	73.	104.
331	97.	98.	116.	123.	148.	149.	151.	167.	202.	210.
341	224.	227.	272.	260.	291.	320.	387.	445.	441.	549.
351	608.	634.	596.	608.	573.	524.	618.	710.	782.	928.
361	976.	937.	777.	510.	180.	45.	8.	3.	3.	3.
371	4.	3.	1.	5.	2.	5.	0.	2.	2.	1.
381	0.	2.	1.	3.	4.	3.	3.	2.	2.	0.
391	4.	3.	3.	2.	6.	3.	4.	2.	2.	3.
401	3.	4.	2.	1.	3.	6.	0.	3.	6.	3.
411	1.	5.	3.	3.	2.	3.	6.	4.	5.	3.
421	5.	3.	1.	7.	3.	2.	4.	0.	0.	3.
431	2.	5.	2.	3.	6.	2.	3.	5.	3.	5.
441	3.	4.	0.	1.	5.	5.	1.	1.	4.	4.
451	1.	2.	0.	3.	5.	1.	2.	4.	9.	6.
461	4.	4.	3.	6.	6.	4.	3.	5.	2.	4.
471	4.	2.	4.	8.	3.	4.	2.	8.	3.	7.
481	4.	3.	3.	2.	4.	6.	3.	4.	6.	5.
491	4.	7.	4.	7.	8.	6.	7.	6.	5.	1.
511	5.	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

SAMPLE
S96T563-DUP
File ID: 24a2413.CNF

Counted on: 5/ 1/96 @14:22
Detector: AEA24
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	772.5	772.5	360.855	360.855	10.000	3.544	5.000	0.784
2	934.5	934.5	302.726	302.694	10.000	3.557	5.000	0.814
3	7376.0	7376.0	228.390	228.388	12.000	4.602	6.000	1.307
4?	16.8	16.8	70.852	70.850	274.000	1.000	137.000	0.100

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.090	5.755	5.757	-.002	0.02	34.22	1.5	1754.7	0.790E-03
2	Pu238	0.106	5.487	5.490	-.003	0.02	40.35	1.4	2816.5	0.127E-02
	Am241		5.479	5.490	-.011				2157.3	0.972E-03
3	Pu239	0.750	5.147	5.148	-.001	0.02	284.67	0.5	14304.9	0.644E-02
	Pu240		5.144	5.148	-.004				14304.9	0.644E-02
4		????		4.423			1.16	8.3		
Totals:		0.946	<--valid peaks only-->				359.24			

DETECTOR CALIBRATION
Energy(MEV) = 4.097 + (0.0046)*Channel
Energy range (MeV): 4.097 TO 6.453
Efficiency = 0.0199 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	182291.0	100.000
Smoothed	182291.5	100.000
Composite fit	173004.8	94.906
Residuals	9286.2	5.094

Analyzed by: VR 5/1/96

Spectrum 24a2413.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 52229.1


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Raw Data Dump for AEA Spectrum: 24a2413.CNF

1	0.	0.	3.	7.	7.	8.	4.	6.	7.	3.
11	5.	7.	8.	3.	12.	5.	9.	11.	8.	5.
21	2.	5.	2.	9.	5.	7.	10.	7.	8.	10.
31	9.	7.	7.	11.	13.	7.	7.	7.	10.	8.
41	8.	13.	5.	9.	7.	7.	8.	9.	11.	11.
51	10.	9.	9.	7.	15.	18.	8.	13.	9.	10.
61	12.	10.	9.	8.	9.	12.	10.	12.	11.	18.
71	22.	21.	10.	9.	5.	8.	14.	8.	15.	14.
81	11.	12.	16.	8.	15.	13.	16.	14.	16.	16.
91	14.	18.	14.	12.	14.	22.	20.	17.	21.	24.
101	23.	20.	21.	20.	21.	25.	29.	18.	22.	21.
111	26.	26.	35.	17.	32.	19.	23.	30.	35.	40.
121	26.	39.	26.	47.	38.	26.	38.	53.	36.	40.
131	36.	37.	42.	39.	54.	46.	45.	52.	46.	54.
141	60.	61.	65.	84.	63.	73.	67.	82.	80.	80.
151	94.	114.	95.	94.	93.	101.	103.	123.	130.	114.
161	140.	135.	156.	152.	132.	174.	165.	191.	199.	205.
171	201.	192.	223.	244.	250.	261.	235.	304.	303.	323.
181	329.	367.	386.	401.	428.	455.	487.	505.	513.	529.
191	581.	588.	658.	702.	767.	766.	841.	865.	963.	959.
201	1056.	1095.	1206.	1347.	1325.	1488.	1495.	1639.	1754.	1876.
211	2013.	2134.	2468.	2664.	2904.	3201.	3540.	3767.	4123.	4350.
221	4572.	4705.	5060.	5771.	6286.	7063.	7525.	8162.	8316.	7755.
231	6465.	4530.	2568.	1318.	616.	177.	52.	22.	15.	23.
241	28.	25.	24.	36.	28.	31.	44.	34.	35.	38.
251	43.	39.	47.	49.	40.	60.	55.	69.	53.	75.
261	85.	62.	87.	84.	90.	71.	102.	94.	114.	127.
271	126.	130.	134.	161.	140.	154.	169.	190.	210.	187.
281	246.	243.	245.	304.	269.	310.	354.	373.	427.	479.
291	522.	590.	663.	731.	710.	743.	721.	732.	723.	855.
301	859.	1019.	1094.	1031.	934.	591.	251.	94.	38.	40.
311	38.	28.	34.	33.	39.	53.	56.	41.	48.	60.
321	56.	64.	63.	54.	86.	73.	99.	91.	99.	102.
331	99.	111.	123.	146.	154.	135.	146.	181.	196.	183.
341	206.	204.	238.	282.	310.	335.	391.	426.	447.	481.
351	557.	570.	561.	544.	532.	536.	576.	632.	743.	798.
361	879.	863.	760.	500.	221.	67.	6.	3.	1.	1.
371	2.	3.	6.	5.	4.	5.	1.	2.	3.	2.
381	3.	1.	2.	3.	3.	3.	3.	4.	1.	5.
391	2.	3.	5.	2.	4.	1.	5.	4.	3.	0.
401	0.	3.	4.	5.	1.	4.	6.	2.	9.	4.
411	4.	1.	5.	2.	4.	3.	1.	2.	1.	6.
421	4.	5.	2.	2.	2.	3.	3.	7.	5.	3.
431	3.	6.	7.	3.	4.	3.	2.	5.	2.	2.
441	2.	4.	3.	1.	4.	2.	4.	5.	4.	5.
451	3.	1.	7.	7.	4.	5.	5.	2.	3.	1.
461	1.	6.	4.	5.	4.	4.	2.	5.	5.	4.
471	5.	6.	4.	2.	7.	12.	3.	6.	3.	4.
481	8.	3.	1.	7.	3.	8.	2.	1.	2.	2.
491	6.	2.	3.	6.	6.	9.	5.	4.	5.	1.
511	6.	0.								

LABCORE Data Entry Template for Worklist# 8100

Analyst: DMV **Instrument:** PU01 _____ **Book#** 124B43

Method: LA-943-128 Rev/Mod _____

Worklist Comment: C-106.Determine sample size using ludlum. TAKE CARE. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@PU23901	LIQUID		
2	BLNK				@PU23901	LIQUID		
3	SAMPLE	S96T001544	0		@PU23901	LIQUID	96000082	C-106 GRAB
		Analytes Requested: PU23901 , PU23901E, PU23901T						
4	DUP	S96T001544	0		@PU23901	LIQUID		

Final page for worklist # 8100

Joel M Houston 5-3-96
Analyst Signature **Date**

Sue E. Hogan 5/7/96
Analyst Signature **Date**
C.J. Opinen 5/8/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed Worklist Report for Worklist# 8100

Analyst: ~~cjo~~ JMV **Instrument:** PU01 #13 **Book#** 124B43

Method: LA-943-128 Rev/Mod A-1

Worklist Comment: C-106.Determine sample size using ludlum. TAKE CARE. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0	@PU23901	PU23901	LIQUID	3.81E-02	3.79E-2	99.475	% Recovery
1	STD		0	@PU23901	PU23901E	LIQUID	1.00	3.04E+00	3.040	% Ct. Error
1	STD		0	@PU23901	PU23901T	LIQUID	100	8.70E+01	87.000	% Recovery
2	BLNK		0	@PU23901	PU23901	LIQUID	1	<2.61E-2		uCi/mL
2	BLNK		0	@PU23901	PU23901T	LIQUID	100	2.41E+01	24.100	% Recovery
2	BLNK		0	@PU23901	PU23901E	LIQUID	1.00	1.00E+02	100.000	% Ct. Error
3	SAMPLE	S96T001544	0	@PU23901	PU23901	LIQUID	N/A	8.67E-01	0.065	uCi/mL
3	SAMPLE	S96T001544	0	@PU23901	PU23901T	LIQUID	N/A	5.72E+01	0.000	% Recovery
3	SAMPLE	S96T001544	0	@PU23901	PU23901E	LIQUID	N/A	2.18E+00	0.000	% Ct. Error
4	DUP	S96T001544	0	@PU23901	PU23901	LIQUID	8.67E-1	8.39E-1	3.283	RPD
4	DUP	S96T001544	0	@PU23901	PU23901T	LIQUID	100	7.63E+01	76.300	% Recovery
4	DUP	S96T001544	0	@PU23901	PU23901E	LIQUID	1.00	1.69E+00	1.690	% Ct. Error

Final page for worklist# 8100

Analyst Signature **Date**

Analyst Signature **Date**

John Relyea 9 May 96
Reviewer Signature **Date**

validated

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID

						STD
Type	DATE COUNTED		MAY-03-96	PU 236 AEA FRAC	(C236)	0.720
STD	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.000
Work Leaf	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)	0.273
8100	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		2526
Test Code	DIGEST DILUTION FACTOR	DDF	1.000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)	0.330
Matrix	DETECTOR NUMBER		13	PU 236 cpm		31.440
LIQUID	EFFICIENCY FACTOR	EFF	0.316	PU 238 cpm		0.000
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		11.930
96003958	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME		480
Batch	PU-236 DECAY CORR'D VALUE (dpm/mL)		2194.734	Pu 239/240 µCi/L		3.7860E+01
0	PU-238 TRACER VALUE (dpm/mL		0.000			
Sample Prep	STANDARD BOOK NO		124B43			
N/A	STANDARD VALUE in µCi/mL		0.038			

Sample #:
WL8100

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)* 1/EFF *C236*100/Pu-236 Decay Corr'd Value * SPKV
Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(2220000 dpm/µCi)]
Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(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

Instrument Code: WB27810
Prepared By: SEH
Chemist: JFR
Analyst: JMV
Date Complete: 05/07/96
Analysis Date: 05/03/96
Analysis Time: 12:00 PM
Sample Point: C-106 GRAB

Pu 239/240 µCi/mL		3.79E-02	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	3.0%	Pu 239/240 4.78E-03
Pu 236 Tracer Recovery	=	87.0%	

Analyst:	JMV	Date:	07-May-96
Signature of Chemist: Jeffrey Relyea	JFR	Date:	9 May 96

STANDARD.WB1 REV 1.0 943128ML

2249

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

Type	DATE COUNTED		MAY-03-96	PU 236 AEA FRAC	(C236)	0.947
BLNK	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.000
Worksheet	SAMPLE DILUTION FACTOR	DF	201.000	PU 239 AEA FRAC	(C239)	0.000
8100	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		546
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm (Bkg)		0.330
Matrix	DETECTOR NUMBER		13	PU 236 cpm		8.390
LIQUID	EFFICIENCY FACTOR	EFF	0.3163	PU 238 cpm		0.000
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		0.000
96003958	TRACER PREPARATION VALUE (dpm/mL)		2390.00	AEA COUNT TIME		480
Result	PU-236 DECAY CORR'D VALUE (dpm/mL)		2194.73	Pu 239/240 µCi/L =	<	2.611E+01
0	PU-238 TRACER VALUE (dpm/mL)		0.00			

Sample Prep
N/A

Comments
WL8100

Instrument Code
WB27810

Performed By
SEH

Checked
JFR

Analyst
JMV

Date Complete
05/07/96

Analysis Date
05/03/96

Analysis Time
12:00 PM

Sample Point
C-106 GRAB

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)*C236*100/(Pu-236 Decay Corr'd Value * SPKV*EFF)
Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(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

Pu 239/240 µCi/mL		< 2.61E-02	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	100.0%	
NOTE: Pu 238 Result is a LESS THAN Value.			Pu 239/240
Pu 238 µCimL		< 2.61E-02	2.61E-02
Relative Counting Error	=	100.0%	Pu 238
Pu 236 Tracer Recovery	=	24.1%	2.61E-02

Analyst:	JMV	Date:	07-May-96
Signature of Chemist: John Rolyea	JFR	Date:	9 May 96

BLANK.WB1 REV 1.0 943128ML

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

						SAMPLE
Type	DATE COUNTED		MAY-03-96	PU 236 AEA FRAC	(C236)	0.160
SAMPLE	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.102
Worklist	SAMPLE DILUTION FACTOR	DF	201.000	PU 239 AEA FRAC	(C239)	0.698
8100	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		7454
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)	0.330
Matrix	DETECTOR NUMBER		13	PU 236 cpm		20.750
LIQUID	EFFICIENCY FACTOR	EFF	0.316	PU 238 cpm		13.240
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		90.300
96003958	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME		480
Replic	PU-236 DECAY CORR'D VALUE (dpm/mL)		2194.734	Pu 239/240 µCi/L		8.6688E+02
0	PU-238 TRACER VALUE (dpm/mL)		0.000			
Sample Point						
N/A						
Sample #	Decay Time = Date Counted - Tracer Preparation Date					
S96T001544	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]					
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)					
WB27810	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]					
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)					
SEH	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]					
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100					
JFR						
Analyst						
JMV						
Date Complete						
05/07/96	Pu 239/240 µCi/mL		8.67E-01	DETECTION		
Analysis Date	Relative Counting Error	=	2.2%	LEVELS		
05/03/96				in µCi/mL		
Analysis Time				Pu 239/240		
12:00 PM	Pu 238 µCimL		1.27E-01	6.51E-02		
Sample Point	Relative Counting Error	=	3.1%	Pu 238		
C-106 GRAB	Pu 236 Tracer Recovery	=	57.2%	6.51E-02		

Analyst:		JMV	Date:	07-May-96
Signature of Chemist:	John Rolyea	JFR	Date:	9 May 96

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

							DUP
Type	DATE COUNTED		MAY-03-96	PU 236 AEA FRAC	(C236)		0.163
DUP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)		0.101
Work Unit	SAMPLE DILUTION FACTOR	DF	201.000	PU 239 AEA FRAC	(C239)		0.688
8100	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			9754
Digest Date	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)		0.330
Matrix	DETECTOR NUMBER		13	PU 236 cpm			34.560
LIQUID	EFFICIENCY FACTOR	EFF	0.316	PU 238 cpm			21.340
Tracer Date	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			145.960
96003958	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
Tracer	PU-236 DECAY CORR'D VALUE (dpm/mL)		2194.734	Pu 239/240 µCi/L			8.3874E+02
0	PU-238 TRACER VALUE (dpm/mL)		0.000				
Tracer Date							
N/A							
Sample #	Decay Time = Date Counted - Tracer Preparation Date						
S96T001544	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]						
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)						
WB27810	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]						
Analyst	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)						
SEH	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]						
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100						
JFR							
Analyst							
JMV							
Date Completed							
05/07/96	Pu 239/240 µCi/mL		8.39E-01	DETECTION			
Analysis Date	Relative Counting Error	=	1.7%	LEVELS			
05/03/96				in µCi/mL			
Analysis Time				Pu 239/240			
12:00 PM	Pu 238 µCimL		1.23E-01	4.80E-02			
Sample Point	Relative Counting Error	=	2.5%	Pu 238			
C-106 GRAB	Pu 236 Tracer Recovery	=	76.3%	4.80E-02			

Analyst:		JMV	Date:	07-May-96
Signature of Chemist:	John Reluga	JFR	Date:	9 may 96

SAMPLE.WB1 REV 1.0 943128ML

2252

Em Barlow 5/3/96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
WL8100-STD
File ID: 25a2595.CNF

Counted on: 5/ 3/96 @13:19
Detector: AEA25
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	1267.0	1267.0	361.595	361.595	10.000	2.635	5.000	1.289
2?	16.3	16.3	287.312	287.307	12.000	4.783	6.000	3.459
3	550.9	550.9	228.536	228.536	10.000	3.158	5.000	2.257

PEAK RESULTS
Peak Error Limit: 30%

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	0.720	5.755	5.765	-.010	0.01	31.44	1.6	327.7	0.148E-03
	Cm243		5.779	5.765	0.014				440.0	0.198E-03
2		????		5.423			0.40	14.2		
3	Pu239	0.273	5.147	5.153	-.006	0.01	11.93	2.6	121.9	0.549E-04
	Pu240		5.144	5.153	-.009				121.9	0.549E-04
		---					---			
Totals:		0.993	<--valid peaks only-->				43.38			

DETECTOR CALIBRATION
Energy(MEV) = 4.101 + (0.0046)*Channel
Energy range (MeV): 4.101 TO 6.457
Efficiency = 0.0979 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	20972.0	100.000
Smoothed	20972.1	100.000
Composite fit	21016.2	100.211
Residuals	-44.2	-0.211

Analyzed by: _____
DM

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Raw Data Dump for AEA Spectrum: 25a2595.CNF

1	0.	0.	0.	1.	0.	0.	1.	0.	0.	0.
11	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
41	0.	0.	0.	0.	0.	0.	0.	1.	2.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	1.	0.	0.	0.	0.	1.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
91	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
101	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
111	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
121	0.	0.	1.	0.	1.	1.	0.	1.	0.	1.
131	2.	0.	0.	1.	0.	1.	2.	0.	1.	0.
141	0.	0.	1.	0.	1.	0.	0.	0.	0.	1.
151	0.	0.	2.	0.	0.	0.	0.	0.	0.	1.
161	1.	1.	0.	0.	1.	1.	0.	1.	1.	0.
171	1.	0.	0.	1.	3.	1.	1.	3.	0.	3.
181	0.	3.	0.	0.	1.	1.	0.	1.	1.	2.
191	0.	1.	2.	1.	1.	1.	2.	1.	5.	1.
201	6.	3.	4.	3.	1.	4.	5.	7.	15.	15.
211	20.	31.	50.	43.	58.	92.	94.	124.	141.	157.
221	133.	173.	203.	277.	374.	467.	606.	636.	668.	642.
231	403.	213.	104.	34.	11.	5.	0.	1.	0.	2.
241	1.	1.	0.	0.	0.	0.	1.	0.	0.	0.
251	0.	0.	0.	0.	1.	1.	0.	1.	0.	2.
261	1.	4.	2.	1.	3.	4.	5.	6.	8.	6.
271	3.	3.	1.	0.	4.	1.	1.	0.	5.	5.
281	2.	6.	2.	9.	14.	15.	23.	23.	12.	9.
291	6.	4.	4.	7.	7.	2.	7.	6.	5.	9.
301	10.	12.	6.	4.	11.	8.	0.	1.	1.	1.
311	4.	0.	1.	1.	2.	5.	2.	1.	3.	2.
321	3.	2.	1.	1.	6.	6.	4.	4.	8.	6.
331	2.	10.	11.	7.	18.	4.	17.	13.	27.	27.
341	27.	39.	50.	76.	103.	140.	165.	232.	345.	456.
351	542.	689.	640.	544.	504.	537.	544.	773.	905.	1264.
361	1438.	1619.	1480.	888.	415.	115.	15.	1.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	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.	1.	0.	0.	0.	0.
441	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.
451	0.	0.	0.	2.	2.	0.	0.	0.	0.	0.
461	0.	2.	0.	0.	0.	0.	0.	1.	1.	0.
471	0.	2.	0.	3.	2.	0.	0.	3.	1.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	2.	0.	0.	0.	0.	0.	0.	0.	0.	2.
511	0.	0.								

Eric Bucla 5/3/96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
WL8100-BLK
File ID: 26a2696.CNF

Counted on: 5/ 3/96 @13:20
Detector: AEA26
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	234.3	234.3	365.260	365.260	10.000	3.062	5.000	0.882
2	11.0	11.0	290.601	290.529	10.000	3.976	5.000	1.205

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.947	5.755	5.758	-.0030	.01	8.39	3.1	679.1	0.306E-03
2	Th228	0.045	5.400	5.415	-.0150	.02	0.40	15.0	44.2	0.199E-04
Totals:		0.992	<--valid peaks only-->				8.78			

DETECTOR CALIBRATION
Energy(MEV) = 4.078 + (0.0046)*Channel
Energy range (MeV): 4.078 TO 6.433
Efficiency = 0.0126 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	4251.0	100.000
Smoothed	4251.0	100.000
Composite fit	4215.6	99.168
Residuals	35.4	0.832

Analyzed by: _____
DM

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 1576.7


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Raw Data Dump for AEA Spectrum: 26a2696.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.	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.	1.	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.	1.	0.	0.	0.	0.	0.
101	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
111	0.	0.	1.	0.	0.	0.	1.	0.	0.	0.
121	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
131	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
141	0.	1.	0.	0.	0.	0.	1.	0.	1.	1.
151	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
161	0.	1.	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.	1.	0.	1.
191	0.	0.	0.	0.	2.	0.	0.	0.	0.	1.
201	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
211	2.	0.	0.	1.	0.	1.	0.	1.	0.	0.
221	1.	0.	0.	1.	1.	0.	1.	0.	0.	0.
231	1.	1.	1.	2.	0.	0.	0.	0.	1.	0.
241	0.	0.	3.	1.	1.	1.	1.	2.	2.	1.
251	0.	0.	1.	0.	2.	3.	2.	1.	2.	0.
261	2.	2.	1.	2.	2.	3.	2.	2.	4.	4.
271	7.	4.	9.	4.	8.	5.	1.	4.	3.	7.
281	1.	3.	3.	8.	0.	8.	6.	13.	12.	14.
291	13.	14.	9.	7.	3.	3.	2.	1.	2.	3.
301	5.	3.	3.	2.	3.	2.	1.	5.	3.	3.
311	6.	5.	5.	4.	3.	5.	5.	8.	5.	1.
321	3.	9.	14.	3.	7.	9.	10.	14.	18.	19.
331	14.	21.	15.	17.	19.	23.	24.	30.	25.	34.
341	24.	40.	32.	40.	36.	53.	41.	55.	60.	73.
351	73.	90.	103.	123.	153.	167.	186.	153.	131.	124.
361	135.	184.	190.	253.	274.	269.	271.	148.	73.	16.
371	3.	0.	1.	0.	0.	1.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
471	0.	1.	0.	0.	1.	3.	3.	1.	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.								

Em Dowler 5/3/96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T1544-SAM
File ID: 27a2784.CNF

Counted on: 5/ 3/96 @13:20
Detector: AEA27
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	644.7	644.7	358.730	358.730	10.000	3.041	5.000	1.022
2	420.8	420.8	300.664	300.653	10.000	3.198	5.000	1.128
3	3147.8	3147.8	226.708	226.708	10.000	3.959	5.000	1.758

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Peak Centroid Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.160	5.755	5.747	0.008	0.01	20.75	2.0	1245.4	0.561E-03
2	Pu238	0.102	5.487	5.479	0.008	0.01	13.24	2.5	1081.6	0.487E-03
	Am241		5.479	5.479	0.000				828.4	0.373E-03
3	Pu239	0.698	5.147	5.139	0.008	0.02	90.30	0.9	5311.7	0.239E-02
	Pu240		5.144	5.139	0.005				5311.7	0.239E-02
		---					---			
Totals:		0.961	<--valid peaks only-->				124.29			

DETECTOR CALIBRATION
Energy(MEV) = 4.096 + (0.0046)*Channel
Energy range (MeV): 4.096 TO 6.452
Efficiency = 0.0170 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	62110.0	100.000
Smoothed	62109.4	99.999
Composite fit	59657.6	96.052
Residuals	2452.4	3.948

Analyzed by: _____
DM

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Raw Data Dump for AEA Spectrum: 27a2784.CNF

1	0.	0.	1.	0.	0.	1.	1.	3.	0.	0.
11	3.	2.	2.	3.	0.	2.	0.	1.	1.	1.
21	1.	0.	1.	1.	0.	2.	1.	3.	1.	0.
31	0.	0.	0.	0.	1.	0.	2.	1.	0.	1.
41	2.	4.	0.	0.	0.	1.	1.	3.	0.	0.
51	0.	1.	3.	0.	1.	2.	0.	3.	2.	1.
61	3.	1.	2.	1.	0.	0.	0.	1.	0.	1.
71	0.	0.	2.	2.	1.	1.	2.	0.	1.	1.
81	1.	1.	2.	1.	5.	0.	0.	2.	0.	1.
91	3.	2.	1.	4.	3.	2.	2.	4.	3.	2.
101	2.	3.	1.	2.	1.	0.	0.	4.	5.	4.
111	0.	2.	1.	0.	2.	1.	2.	6.	5.	3.
121	5.	4.	2.	2.	6.	4.	5.	7.	8.	3.
131	4.	6.	5.	4.	8.	6.	10.	2.	6.	5.
141	9.	7.	7.	8.	12.	9.	13.	12.	14.	6.
151	17.	17.	9.	14.	12.	15.	13.	18.	16.	22.
161	10.	20.	16.	16.	20.	20.	18.	23.	29.	24.
171	25.	28.	34.	31.	43.	37.	40.	38.	48.	59.
181	36.	63.	59.	57.	66.	66.	63.	59.	85.	93.
191	98.	112.	100.	118.	131.	126.	144.	175.	190.	197.
201	202.	200.	218.	253.	292.	322.	357.	339.	414.	519.
211	517.	620.	686.	870.	947.	1109.	1217.	1274.	1472.	1501.
221	1780.	2055.	2321.	2832.	3177.	3512.	3652.	3488.	2845.	1881.
231	1009.	543.	202.	62.	8.	4.	2.	5.	3.	2.
241	1.	4.	7.	4.	3.	1.	3.	4.	8.	8.
251	7.	5.	10.	6.	6.	10.	9.	10.	14.	9.
261	14.	11.	17.	15.	13.	21.	22.	33.	20.	33.
271	23.	28.	26.	27.	30.	33.	38.	35.	38.	54.
281	66.	73.	75.	79.	88.	103.	131.	125.	163.	211.
291	227.	266.	257.	258.	244.	251.	273.	381.	388.	474.
301	512.	461.	378.	213.	76.	16.	14.	5.	5.	12.
311	8.	9.	8.	14.	13.	11.	8.	21.	16.	20.
321	15.	26.	28.	23.	29.	33.	31.	29.	48.	31.
331	57.	35.	53.	62.	61.	60.	62.	77.	100.	99.
341	100.	127.	170.	166.	206.	230.	281.	368.	382.	386.
351	379.	372.	333.	401.	430.	526.	615.	701.	763.	740.
361	583.	315.	93.	15.	0.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
441	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	1.	0.	0.	1.	0.	1.
471	2.	1.	0.	1.	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.								

Em Bowler 5/3/96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T1544-DUP
File ID: 28a2887.CNF

Counted on: 5/ 3/96 @13:21
Detector: AEA28
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	969.1	969.1	360.094	360.094	10.000	3.104	5.000	0.902
2	623.8	623.8	301.766	301.747	10.000	3.174	5.000	0.984
3	4641.3	4641.3	227.147	227.147	12.000	4.091	6.000	1.560

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.163	5.755	5.759	-.004	0.01	34.56	1.5	1780.9	0.802E-03
2	Pu238	0.101	5.487	5.490	-.003	0.01	21.34	2.0	1496.8	0.674E-03
	Am241		5.479	5.490	-.011				1146.5	0.516E-03
3	Pu239	0.688	5.147	5.147	0.000	0.02	145.96	0.7	7371.6	0.332E-02
	Pu240		5.144	5.147	-.003				7371.6	0.332E-02
		---					---			
Totals:		0.952	<--valid peaks only-->				201.85			

DETECTOR CALIBRATION
Energy(MEV) = 4.102 + (0.0046)*Channel
Energy range (MeV): 4.102 TO 6.457
Efficiency = 0.0198 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	101767.0	100.000
Smoothed	101766.0	99.999
Composite fit	96896.5	95.214
Residuals	4870.5	4.786

Analyzed by: _____
DM

Spectrum 28a2887.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 29978.5


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..
3..
..3..
.......3.
....................3
.................................................3
.......................................................................3
.......3..
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2
.2
....2
..........2
.2

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

Raw Data Dump for AEA Spectrum: 28a2887.CNF

1	0.	0.	1.	0.	0.	2.	1.	0.	2.	1.
11	0.	0.	1.	2.	1.	4.	1.	2.	2.	1.
21	3.	1.	2.	2.	0.	5.	2.	0.	1.	4.
31	0.	2.	2.	1.	1.	0.	2.	1.	2.	1.
41	0.	2.	1.	2.	3.	2.	1.	0.	0.	2.
51	2.	3.	4.	1.	6.	1.	1.	3.	0.	4.
61	4.	4.	2.	5.	1.	3.	0.	0.	3.	3.
71	2.	2.	3.	4.	3.	4.	2.	2.	4.	4.
81	2.	7.	6.	3.	3.	4.	4.	5.	6.	7.
91	8.	3.	3.	4.	5.	6.	4.	4.	2.	7.
101	1.	3.	8.	2.	9.	4.	6.	8.	3.	5.
111	7.	10.	4.	9.	5.	7.	7.	5.	8.	11.
121	8.	8.	11.	10.	10.	12.	14.	14.	9.	9.
131	12.	12.	11.	12.	9.	13.	13.	17.	12.	25.
141	13.	15.	27.	18.	23.	26.	23.	22.	23.	32.
151	34.	27.	21.	39.	30.	43.	46.	35.	45.	47.
161	43.	46.	36.	41.	55.	50.	60.	56.	57.	83.
171	81.	74.	77.	75.	94.	90.	102.	116.	123.	119.
181	119.	120.	121.	136.	174.	157.	158.	180.	182.	205.
191	224.	242.	228.	251.	281.	300.	356.	330.	355.	382.
201	427.	464.	461.	538.	582.	629.	660.	672.	799.	882.
211	992.	1079.	1219.	1264.	1501.	1758.	1961.	2043.	2300.	2497.
221	2664.	3078.	3392.	3854.	4298.	5008.	5388.	5227.	4668.	3502.
231	2080.	1128.	542.	202.	47.	12.	3.	7.	7.	10.
241	13.	9.	10.	10.	12.	14.	4.	13.	11.	10.
251	13.	13.	21.	20.	19.	22.	25.	17.	25.	37.
261	25.	19.	26.	39.	39.	40.	35.	45.	42.	36.
271	43.	55.	46.	56.	79.	79.	71.	75.	82.	104.
281	97.	121.	120.	125.	154.	169.	202.	240.	258.	260.
291	297.	358.	393.	423.	383.	392.	401.	442.	503.	596.
301	710.	722.	748.	570.	349.	127.	33.	20.	13.	13.
311	24.	19.	30.	26.	23.	42.	35.	47.	55.	38.
321	46.	45.	44.	62.	37.	49.	65.	66.	67.	77.
331	92.	94.	108.	110.	93.	109.	143.	138.	157.	166.
341	177.	195.	234.	265.	266.	330.	368.	470.	550.	603.
351	643.	679.	600.	572.	616.	665.	745.	867.	1007.	1118.
361	1140.	994.	636.	240.	50.	7.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	1.	0.	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.	1.	0.	0.
461	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
471	1.	0.	0.	3.	1.	1.	1.	0.	0.	0.
481	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

LABCORE Data Entry Template for Worklist# 8255

Analyst: AKL **Instrument:** PU01 _____ **Book#** 124843

Method: LA-943-128 Rev/Mod _____

Worklist Comment: Re-run of WL#7869. Use 0.100 mL Sample Size. jfr 2May96.

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@PU23901	SOLID		
2	BLNK-PREP				@PU23901	SOLID		
3	SAMPLE	S96T000555	0	F	@PU23901	SOLID	96000082	C-106 GRAB
		Analytes Requested: PU23901 , PU23901E, PU23901T						
4	DUP	S96T000555	0	F	@PU23901	SOLID		

Final page for worklist # 8255

G Lewis 5/3/96
Analyst Signature **Date**

Sharon L Ulich 5-6-96
Analyst Signature **Date**

Sue E. Hogan 5/6/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed RadChem Report for Worklist#: 8255

Analyst: ~~sek~~ AKL **Instrument:** AB18 **Book#** 124843

Method: LA-943-128 Rev/Mod A-1

Worklist Comment: Re-run of WL#7869. Use 0.100 mL Sample Size. jfr 2May96.

Seq	Type	Sample#	R	A	Test		Matrix	Actual	Found	DL or Yield	Unit
1	STD			0	@PU23901	PU23901	SOLID	3.81E-02	3.76E-2	98.688	% Recovery
1	STD			0	@PU23901	PU23901T	SOLID	100	1.02E+02	102.000	% Recovery
1	STD			0	@PU23901	PU23901E	SOLID	1	2.85E+00	2.850	% Ct. Error
2	BLNK-PREP			0	@PU23901	PU23901	SOLID	1	<3.56E-2		uCi/g
2	BLNK-PREP			0	@PU23901	PU23901T	SOLID	100	9.80E+01	98.000	% Recovery
2	BLNK-PREP			0	@PU23901	PU23901E	SOLID	1	1.00E+02	100.000	% Ct. Error
3	SAMPLE	S96T000555	0	F	@PU23901	PU23901	SOLID	N/A	1.32E+00	887.0e-004	uCi/g
3	SAMPLE	S96T000555	0	F	@PU23901	PU23901T	SOLID	N/A	9.71E+01	0.0e+000	% Recovery
3	SAMPLE	S96T000555	0	F	@PU23901	PU23901E	SOLID	N/A	2.09E+00	0.0e+000	% Ct. Error
4	DUP	S96T000555	0	F	@PU23901	PU23901	SOLID	1.32E+0	1.28E+0	3.077	RPD
4	DUP	S96T000555	0	F	@PU23901	PU23901T	SOLID	100	9.63E+01	96.300	% Recovery
4	DUP	S96T000555	0	F	@PU23901	PU23901E	SOLID	1.00	1.93E+00	1.930	% Ct. Error

Final page for worklist# 8255

Analyst Signature Date

Analyst Signature Date

John Relyea 8 May 96
Reviewer Signature Date

Validated

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID

						STD
Type	DATE COUNTED		MAY-04-96	PU 236 AEA FRAC	(C236)	0.690
STD	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.013
Work List	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)	0.260
8255	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		2603
Test Code	DIGEST DILUTION FACTOR	DDF	1.000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)	0.100
Matrix	DETECTOR NUMBER		18	PU 236 cpm		36.020
LIQUID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm		0.700
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		13.590
96004168	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME		480
Reran	PU-236 DECAY CORR'D VALUE (dpm/mL)		2193.273	Pu 239/240 µCi/L		3.7600E+01
0	PU-238 TRACER VALUE (dpm/mL		0.000			
Sample Prep	STANDARD BOOK NO		124B43			
N/A	STANDARD VALUE in µCi/mL		0.038			
Sample #						
WL8255						

Instrument Code	Decay Time = Date Counted - Tracer Preparation Date
WB27809	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]
Prepared By	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)* 1/EFF *C236*100/Pu-236 Decay Corr'd Value * SPKV
SLH2	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(2220000 dpm/µCi)]
Chemist	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
JFR	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Analyst	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
AKL	
Date Complete	
05/06/96	
Analysis Date	
05/03/96	
Analysis Time	
03:00 PM	
Sample Point	
C-105 GRAB	

Pu 239/240 µCi/mL		3.76E-02	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	2.8%	
			Pu 239/240
			4.34E-03
Pu 236 Tracer Recovery	=	101.5%	

Analyst:	AKL	Date:	06-May-96
Signature of Chemist: John Rolyea	JFR	Date:	8 May 96

STANDARD.WB1 REV 1.0 943128ML

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

Type	DATE COUNTED		MAY-04-96	PU 236 AEA FRAC	(C236)	0.961
BLNK-PREP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.043
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.000
8255	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		1806
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	0.8844	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm (Bkg)		0.100
Matrix	DETECTOR NUMBER		18	PU 236 cpm		35.300
SOLID	EFFICIENCY FACTOR	EFF	0.2686	PU 238 cpm		1.580
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		0.000
96004168	TRACER PREPARATION VALUE (dpm/mL)		2390.00	AEA COUNT TIME		480
Rerun	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2193.27	Pu 239/240 µCi/g =	<	3.557E-02
0	PU-238 TRACER VALUE	(dpm/mL)	0.00			

BLNK-PREP

Sample Prep
N/A
Sample #
WL8255
Instrument Code
WB27809
Prepared By
SLH2
Chemist
JFR
Analyst
AKL
Date Complete
05/06/96
Analysis Date
05/03/96
Analysis Time
03:00 PM
Sample Point
C-106 GRAB

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)*C236*100/(Pu-236 Decay Corr'd Value * SPKV*EFF)

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 * 1/EFF * 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

Pu 239/240 µCi/g		< 3.56E-02	DETECTION LEVELS in µCi/g
Relative Counting Error	=	100.0%	
			Pu 239/240
Pu 238 µCi/g		5.00E-02	3.56E-02
Relative Counting Error	=	7.3%	Pu 238
Pu 236 Tracer Recovery	=	98.0%	3.56E-02

Analyst:	AKL	Date:	06-May-96
Signature of Chemist: John Relyea	JFR	Date:	8 May 96

BLANK.WB1 REV 1.0 943128ML

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

							SAMPLE
Type	DATE COUNTED		MAY-04-96	PU 236 AEA FRAC	(C236)		0.389
SAMPLE	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)		0.104
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)		0.460
8255	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			4414
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	0.8844	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)		0.100
Matrix	DETECTOR NUMBER		18	PU 236 cpm			33.730
SOLID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm			8.990
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			39.900
96004168	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2193.273	Pu 239/240 µCi/g			1.3210E+00
1	PU-238 TRACER VALUE (dpm/mL)		0.000				
Sample Prep							
FUSION01							
Sample #							
S96T000555							
Instrument Code							
WB27809							
Prepared By							
SLH2							
Chemist							
JFR							
Analyst							
AKL							
Date Complete							
05/06/96							
Analysis Date							
05/03/96							
Analysis Time							
03:00 PM							
Sample Point							
C-106 GRAB							

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) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)

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 * 1/EFF * 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

Pu 239/240 µCi/g		1.32E+00		DETECTION LEVELS in µCi/g
Relative Counting Error	=	2.1%		
				Pu 239/240
Pu 238 µCi/g		2.99E-01		8.87E-02
Relative Counting Error	=	3.4%		Pu 238
Pu 236 Tracer Recovery	=	97.1%		8.87E-02

Analyst:		AKL	Date:	06-May-96
Signature of Chemist:	John Relyea	JFR	Date:	8 May 96

SAMPLE.WB1 REV 1.0 943128ML

2269

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

							DUP
Type	DATE COUNTED		MAY-04-96	PU 236 AEA FRAC	(C236)		0.374
DUP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)		0.105
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)		0.470
8255	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			4553
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	0.9700	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)		0.100
Matrix	DETECTOR NUMBER		18	PU 236 cpm			38.640
SOLID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm			10.890
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			48.610
96004168	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2193.273	Pu 239/240 µCi/g			1.2800E+00
1	PU-238 TRACER VALUE (dpm/mL)		0.000				

Sample Prep
FUSION01
Sample #
S96T000555
Instrument Code
WB27809
Prepared By
SLH2
Chemist
JFR
Analyst
AKL
Date Complete
05/06/96
Analysis Date
05/03/96
Analysis Time
03:00 PM
Sample Point
C-106 GRAB

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) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)

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 * 1/EFF * 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

Pu 239/240 µCi/g		1.28E+00	DETECTION LEVELS in µCi/g
Relative Counting Error	=	1.9%	
			Pu 239/240
Pu 238 µCi/g		2.86E-01	8.49E-02
Relative Counting Error	=	3.1%	Pu 238
Pu 236 Tracer Recovery	=	96.3%	8.49E-02

Analyst:		AKL	Date:	06-May-96
Signature of Chemist:	Jatin Relyea	JFR	Date:	8 May 96

SAMPLE.WB1 REV 1.0 943128ML

Entered 5/4/96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
WL8255-STD
File ID: 25a2598.CNF

Counted on: 5/ 4/96 @12: 5
Detector: AEA25
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	1210.4	1210.4	361.366	361.366	8.000	2.703	4.000	0.992
2	15.3	15.3	302.685	302.264	18.000	19.275	9.000	9.634
3?	14.7	14.7	287.377	287.001	10.000	2.534	5.000	0.843
4	513.9	513.9	228.318	228.318	10.000	3.507	5.000	1.721

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.690	5.755	5.763	-.008	0.01	36.02	1.5	228.2	0.103E-03
	Cm243		5.779	5.763	0.016				306.3	0.138E-03
2	Am241	0.013	5.479	5.491	-.012	0.09	0.70	16.3	4.6	0.209E-05
	Pu238		5.487	5.491	-.004				6.1	0.273E-05
3		????		5.421			0.46	16.5		
4	Pu239	0.260	5.147	5.151	-.004	0.02	13.59	2.4	84.4	0.380E-04
	Pu240		5.144	5.151	-.007				84.4	0.380E-04
		---					---			
Totals:		0.963	<--valid peaks only-->				50.31			

DETECTOR CALIBRATION
Energy(MEV) = 4.101 + (0.0046)*Channel
Energy range (MeV): 4.101 TO 6.456
Efficiency = 0.1611 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	25069.0	100.000
Smoothed	25069.1	100.000
Composite fit	24374.0	97.228
Residuals	695.0	2.772

Analyzed by: _____
DM

Spectrum 25a2598.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5873.4


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Raw Data Dump for AEA Spectrum: 25a2598.CNF

1	0.	0.	1.	1.	0.	1.	0.	0.	0.	1.
11	1.	0.	1.	1.	0.	0.	0.	0.	2.	0.
21	0.	0.	1.	0.	1.	0.	2.	0.	0.	0.
31	0.	0.	2.	1.	1.	0.	1.	0.	0.	1.
41	0.	0.	0.	0.	0.	1.	0.	2.	0.	1.
51	0.	0.	0.	0.	0.	2.	2.	2.	0.	0.
61	1.	1.	0.	0.	0.	1.	0.	1.	0.	1.
71	1.	0.	2.	0.	0.	0.	1.	0.	0.	1.
81	0.	1.	0.	1.	0.	1.	1.	0.	0.	1.
91	2.	0.	1.	0.	1.	1.	1.	0.	1.	1.
101	1.	0.	1.	2.	2.	0.	1.	1.	0.	2.
111	2.	0.	2.	1.	1.	1.	2.	1.	3.	1.
121	1.	0.	1.	2.	0.	2.	2.	0.	3.	2.
131	2.	0.	1.	3.	1.	3.	3.	2.	0.	3.
141	3.	1.	1.	1.	2.	2.	7.	3.	2.	2.
151	3.	0.	3.	2.	2.	2.	1.	1.	6.	1.
161	4.	0.	8.	2.	6.	6.	3.	4.	11.	7.
171	4.	2.	5.	10.	3.	8.	9.	8.	9.	10.
181	9.	8.	12.	11.	3.	18.	15.	15.	16.	18.
191	19.	15.	22.	22.	22.	27.	24.	21.	23.	40.
201	27.	34.	40.	23.	42.	24.	41.	39.	59.	63.
211	58.	81.	85.	94.	111.	130.	165.	173.	167.	202.
221	209.	214.	259.	328.	381.	507.	554.	583.	616.	551.
231	379.	225.	93.	23.	9.	2.	1.	2.	0.	1.
241	0.	2.	1.	3.	2.	1.	0.	0.	4.	1.
251	1.	2.	1.	1.	3.	3.	4.	3.	2.	4.
261	2.	10.	6.	1.	8.	7.	8.	5.	9.	3.
271	11.	3.	8.	9.	5.	3.	3.	4.	5.	7.
281	9.	13.	13.	12.	12.	23.	24.	21.	22.	9.
291	10.	17.	10.	8.	10.	12.	9.	13.	16.	16.
301	21.	21.	19.	21.	18.	12.	11.	14.	21.	12.
311	11.	19.	15.	18.	19.	23.	11.	24.	25.	28.
321	24.	23.	32.	21.	32.	38.	37.	42.	57.	52.
331	54.	57.	69.	84.	78.	97.	97.	132.	114.	141.
341	155.	154.	168.	198.	232.	277.	313.	357.	449.	547.
351	629.	701.	674.	653.	547.	568.	660.	738.	985.	1224.
361	1451.	1537.	1303.	817.	297.	49.	12.	2.	0.	0.
371	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
411	0.	0.	1.	1.	0.	0.	0.	1.	0.	0.
421	1.	0.	1.	0.	1.	0.	0.	0.	1.	2.
431	0.	0.	1.	0.	0.	0.	0.	1.	0.	0.
441	0.	0.	0.	1.	0.	0.	0.	1.	1.	0.
451	2.	1.	1.	1.	1.	1.	1.	0.	0.	1.
461	1.	1.	2.	0.	1.	0.	1.	0.	2.	4.
471	1.	2.	2.	3.	0.	1.	2.	1.	2.	2.
481	0.	1.	1.	2.	0.	0.	0.	0.	0.	1.
491	0.	1.	1.	1.	2.	0.	1.	1.	1.	1.
511	0.	0.								

Tm Brooks 5/4/96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
WL8255-BLK
File ID: 26a2699.CNF

Counted on: 5/ 4/96 @12: 6
Detector: AEA26
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	1106.9	1106.9	366.554	366.554	10.000	2.721	5.000	0.902
2	15.3	15.3	310.750	310.004	40.000	44.803	20.000	5.247

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.961	5.755	5.764	-.009	0.01	35.30	1.5	1683.1	0.758E-03
	Cm243		5.779	5.764	0.015				2259.5	0.102E-02
2	Am241	0.043	5.479	5.504	-.025	0.21	1.58	15.1	78.7	0.354E-04
	Pu238		5.487	5.504	-.017				102.7	0.463E-04
		---					---			
Totals:		1.004	<--valid peaks only-->				36.88			

DETECTOR CALIBRATION
Energy(MEV) = 4.077 + (0.0046)*Channel
Energy range (MeV): 4.077 TO 6.433
Efficiency = 0.0214 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	17634.0	100.000
Smoothed	17634.6	100.003
Composite fit	17704.4	100.399
Residuals	-70.4	-0.399

Analyzed by: _____
DM

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 6910.6


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Raw Data Dump for AEA Spectrum: 26a2699.CNF

1	0.	0.	0.	1.	0.	0.	0.	1.	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.	1.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
91	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	0.	0.	0.	0.	0.	2.	0.	0.	0.	0.
111	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.
121	0.	0.	1.	0.	1.	0.	0.	0.	1.	1.
131	0.	0.	1.	0.	1.	0.	0.	1.	0.	0.
141	0.	1.	0.	0.	0.	0.	0.	1.	1.	2.
151	0.	0.	2.	1.	0.	0.	0.	2.	0.	0.
161	1.	0.	0.	0.	2.	0.	0.	0.	0.	2.
171	0.	1.	0.	1.	1.	0.	0.	0.	2.	0.
181	0.	0.	3.	0.	2.	1.	0.	0.	0.	0.
191	1.	0.	0.	3.	0.	2.	1.	2.	0.	0.
201	0.	1.	2.	1.	0.	1.	0.	1.	0.	1.
211	1.	1.	0.	0.	1.	0.	1.	1.	1.	0.
221	0.	1.	1.	1.	2.	1.	4.	1.	0.	2.
231	2.	0.	1.	1.	3.	1.	1.	0.	0.	2.
241	1.	0.	0.	4.	1.	2.	2.	4.	1.	0.
251	2.	0.	1.	0.	4.	1.	3.	2.	3.	0.
261	5.	3.	5.	1.	6.	1.	2.	4.	5.	3.
271	7.	4.	6.	8.	8.	6.	5.	6.	3.	8.
281	2.	8.	6.	8.	7.	13.	13.	13.	15.	15.
291	23.	21.	28.	17.	9.	6.	17.	7.	4.	11.
301	12.	15.	9.	11.	18.	17.	22.	17.	28.	17.
311	27.	24.	19.	18.	14.	18.	21.	23.	28.	29.
321	27.	30.	38.	40.	33.	47.	41.	43.	61.	43.
331	45.	46.	59.	53.	60.	67.	86.	82.	74.	81.
341	116.	128.	124.	135.	158.	163.	185.	200.	228.	259.
351	269.	292.	336.	442.	553.	618.	696.	695.	614.	573.
361	565.	624.	665.	830.	1053.	1242.	1384.	1285.	805.	346.
371	107.	8.	1.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
431	0.	0.	0.	1.	1.	0.	0.	0.	2.	0.
441	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
471	0.	0.	1.	1.	3.	1.	1.	2.	6.	2.
481	0.	1.	0.	1.	1.	1.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

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

Rev. 2.02

Entered 5/4/96

DATA REDUCTION REPORT

SAMPLE
S96T0555-SAM
File ID: 27a2787.CNF

Counted on: 5/ 4/96 @12: 7
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	1059.2	1059.2	359.027	359.027	10.000	2.687	5.000	0.890
2	279.8	279.8	301.199	301.177	10.000	2.923	5.000	0.975
3	1405.7	1405.7	227.172	227.171	12.000	3.573	6.000	1.550

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.389	5.755	5.752	0.003	0.01	33.73	1.5	1229.1	0.554E-03
2	Pu238	0.104	5.487	5.486	0.001	0.01	8.99	3.0	446.0	0.201E-03
	Am241		5.479	5.486	-.007				341.6	0.154E-03
3	Pu239	0.460	5.147	5.145	0.002	0.02	39.90	1.4	1424.9	0.642E-03
	Pu240		5.144	5.145	-.001				1424.9	0.642E-03
		---					---			
Totals:		0.952	<--valid peaks only-->				82.62			

DETECTOR CALIBRATION
Energy(MEV) = 4.100 + (0.0046)*Channel
Energy range (MeV): 4.100 TO 6.456
Efficiency = 0.0280 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	41671.0	100.000
Smoothed	41671.0	100.000
Composite fit	39658.8	95.171
Residuals	2012.2	4.829

Analyzed by: _____
DM

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Raw Data Dump for AEA Spectrum: 27a2787.CNF

1	0.	0.	0.	1.	0.	1.	0.	0.	0.	1.
11	0.	0.	1.	0.	0.	1.	0.	0.	0.	1.
21	1.	1.	2.	0.	0.	4.	0.	2.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	2.	1.	2.
41	1.	0.	0.	1.	0.	3.	1.	1.	0.	0.
51	0.	1.	1.	0.	1.	0.	0.	2.	3.	0.
61	1.	0.	1.	1.	0.	0.	0.	0.	1.	1.
71	1.	3.	0.	2.	2.	2.	2.	0.	2.	2.
81	1.	4.	2.	1.	1.	6.	0.	3.	1.	1.
91	1.	1.	2.	0.	2.	5.	2.	3.	4.	2.
101	2.	2.	0.	3.	4.	2.	4.	4.	2.	2.
111	3.	3.	5.	4.	2.	2.	2.	2.	1.	6.
121	2.	6.	2.	2.	3.	2.	3.	2.	5.	4.
131	5.	8.	4.	4.	4.	4.	4.	4.	1.	9.
141	3.	5.	8.	9.	5.	8.	7.	8.	7.	2.
151	7.	12.	8.	5.	10.	8.	18.	9.	8.	11.
161	15.	10.	10.	14.	14.	16.	16.	10.	16.	18.
171	22.	24.	20.	17.	28.	23.	23.	20.	21.	29.
181	30.	39.	42.	34.	34.	50.	42.	53.	44.	58.
191	62.	56.	76.	66.	74.	83.	77.	106.	103.	93.
201	96.	124.	126.	133.	135.	160.	179.	208.	211.	226.
211	256.	273.	285.	347.	403.	495.	493.	560.	619.	589.
221	708.	803.	993.	1082.	1249.	1505.	1686.	1649.	1370.	994.
231	528.	269.	110.	31.	5.	2.	4.	7.	4.	7.
241	2.	4.	4.	3.	6.	7.	5.	13.	5.	3.
251	11.	12.	12.	12.	12.	5.	16.	9.	14.	10.
261	9.	11.	16.	17.	18.	22.	22.	21.	23.	26.
271	24.	24.	20.	33.	27.	44.	26.	47.	45.	53.
281	55.	48.	41.	52.	74.	79.	93.	86.	105.	138.
291	154.	161.	185.	172.	146.	147.	184.	199.	247.	293.
301	334.	359.	285.	190.	63.	25.	13.	14.	18.	22.
311	21.	21.	24.	20.	32.	36.	27.	48.	35.	44.
321	38.	33.	46.	64.	34.	54.	75.	82.	71.	69.
331	79.	81.	101.	126.	112.	123.	124.	150.	152.	184.
341	194.	234.	253.	290.	328.	375.	457.	546.	644.	696.
351	617.	558.	519.	527.	624.	742.	920.	1131.	1270.	1316.
361	1004.	545.	144.	31.	1.	0.	0.	1.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
421	1.	0.	0.	0.	0.	1.	1.	1.	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.	1.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	1.	0.	3.	0.	1.	0.
471	3.	1.	1.	2.	0.	0.	0.	0.	1.	1.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Em Burke 5/14/96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T0555-DUP
File ID: 28a2890.CNF

Counted on: 5/ 4/96 @12: 7
Detector: AEA28
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	1284.6	1284.6	360.647	360.647	10.000	2.610	5.000	0.935
2	345.2	345.2	302.328	302.314	8.000	2.852	4.000	0.972
3	1729.6	1729.6	227.770	227.770	10.000	3.583	5.000	1.590
4?	10.0	10.0	146.490	146.476	148.000	1.000	74.000	0.100

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.374	5.755	5.764	-.009	0.01	38.64	1.4	201.6	0.908E-04
	Cm243		5.779	5.764	0.015				270.6	0.122E-03
2	Pu238	0.105	5.487	5.496	-.009	0.01	10.89	2.7	77.3	0.348E-04
	Am241		5.479	5.496	-.017				59.2	0.267E-04
3	Pu239	0.470	5.147	5.153	-.006	0.02	48.51	1.3	248.0	0.112E-03
	Pu240		5.144	5.153	-.009				248.0	0.112E-03
4		????		4.779			0.79	10.1		
Totals:		0.949	<--valid peaks only-->				98.03			

DETECTOR CALIBRATION
Energy(MEV) = 4.105 + (0.0046)*Channel
Energy range (MeV): 4.105 TO 6.460
Efficiency = 0.1956 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	49576.0	100.000
Smoothed	49577.3	100.003
Composite fit	47440.6	95.693
Residuals	2135.4	4.307

Analyzed by: _____
DM

Spectrum 28a2890.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 11200.3


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Raw Data Dump for AEA Spectrum: 28a2890.CNF

1	0.	0.	0.	1.	1.	0.	1.	1.	1.	0.
11	1.	0.	0.	0.	2.	0.	0.	1.	0.	0.
21	1.	1.	0.	0.	0.	0.	2.	1.	0.	0.
31	2.	1.	0.	0.	1.	1.	0.	0.	1.	1.
41	1.	0.	0.	2.	0.	0.	0.	0.	1.	1.
51	0.	0.	0.	0.	1.	3.	1.	0.	1.	1.
61	0.	0.	0.	2.	1.	1.	1.	1.	0.	1.
71	0.	2.	1.	2.	0.	2.	1.	2.	0.	3.
81	1.	0.	0.	2.	2.	0.	0.	3.	1.	0.
91	1.	1.	1.	1.	3.	1.	3.	2.	1.	2.
101	1.	1.	0.	0.	0.	2.	0.	1.	5.	2.
111	2.	4.	1.	0.	3.	0.	2.	2.	1.	2.
121	6.	3.	2.	4.	2.	1.	4.	5.	3.	7.
131	1.	3.	3.	6.	5.	2.	1.	6.	5.	3.
141	4.	9.	4.	5.	10.	16.	9.	11.	5.	6.
151	9.	13.	8.	9.	8.	6.	12.	12.	9.	13.
161	11.	15.	12.	15.	15.	13.	18.	20.	23.	10.
171	28.	21.	21.	20.	30.	29.	28.	37.	21.	25.
181	38.	38.	41.	50.	39.	54.	48.	64.	66.	49.
191	76.	53.	79.	78.	89.	90.	98.	104.	117.	104.
201	121.	127.	130.	133.	169.	185.	192.	197.	230.	263.
211	266.	295.	355.	376.	473.	511.	611.	661.	683.	737.
221	897.	904.	1053.	1157.	1395.	1688.	1949.	2082.	1941.	1522.
231	957.	499.	256.	93.	25.	5.	2.	5.	4.	4.
241	3.	4.	2.	10.	2.	5.	8.	7.	6.	8.
251	9.	2.	10.	5.	9.	11.	13.	7.	11.	9.
261	12.	17.	9.	12.	17.	23.	30.	14.	16.	24.
271	27.	22.	26.	32.	41.	39.	44.	46.	49.	52.
281	59.	47.	58.	67.	81.	87.	80.	89.	103.	131.
291	136.	176.	191.	205.	212.	199.	209.	231.	256.	264.
301	330.	411.	457.	351.	239.	89.	23.	16.	12.	22.
311	18.	30.	23.	31.	30.	27.	29.	26.	38.	31.
321	37.	43.	53.	53.	53.	49.	80.	67.	60.	89.
331	86.	91.	91.	110.	124.	108.	133.	151.	148.	182.
341	162.	217.	218.	254.	311.	333.	371.	461.	594.	655.
351	738.	722.	674.	631.	656.	677.	820.	878.	1200.	1425.
361	1629.	1485.	1000.	424.	90.	9.	1.	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.	1.	0.	0.	0.	0.
421	0.	0.	0.	1.	0.	1.	0.	0.	0.	0.
431	1.	0.	2.	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.	2.	0.	2.	0.	1.	2.	0.	1.
471	1.	1.	2.	1.	1.	0.	4.	0.	1.	1.
481	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

LABCORE Data Entry Template for Worklist# 8513

Analyst: AKL **Instrument:** PU01 16 **Book#** 124B43

Method: LA-943-128 Rev/Mod _____

Worklist Comment: C-106.POTENTIAL ORGANIC LAYER.Determine SS using ludlum. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@PU23901	LIQUID		
2	BLNK				@PU23901	LIQUID		
3	SAMPLE	S96T001545	0		@PU23901	LIQUID	96000082	C-106 GRAB
		Analytes Requested: PU23901 , PU23901E, PU23901T						
4	DUP	S96T001545	0		@PU23901	LIQUID		

Final page for worklist # 8513

A Lewis 5/10/96
Analyst Signature **Date**

Sue E. Hogan 5/13/96
Analyst Signature **Date**

Sharon L Hale 5-14-96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed RadChem Report for Worklist#: 8513

Analyst: akl **Instrument:** AB16 **Book#** 124B43

Method: LA-943-128 **Rev/Mod** B-0

Worklist Comment: C-106.POTENTIAL ORGANIC LAYER.Determine SS using ludlum. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0	@PU23901	PU23901	LIQUID	3.81E-02	3.67E-2	96.325	% Recovery
1	STD		0	@PU23901	PU23901E	LIQUID	1.00	2.98E+00	2.980	% Ct Error
1	STD		0	@PU23901	PU23901T	LIQUID	100	1.06E+02	106.000	% Recovery
2	BLNK		0	@PU23901	PU23901	LIQUID	1	<3.03E-5		uCi/mL
2	BLNK		0	@PU23901	PU23901T	LIQUID	100	1.09E+02	109.000	% Recovery
2	BLNK		0	@PU23901	PU23901E	LIQUID	1.00	1.00E+02	100.000	uCi/mL
3	SAMPLE	S96T001545	0	@PU23901	PU23901	LIQUID	N/A	4.26E-03	306.0e-006	uCi/mL
3	SAMPLE	S96T001545	0	@PU23901	PU23901T	LIQUID	N/A	5.98E+01	0.0e+000	% Recovery
3	SAMPLE	S96T001545	0	@PU23901	PU23901E	LIQUID	N/A	2.23E+00	0.0e+000	% Ct. Error
4	DUP	S96T001545	0	@PU23901	PU23901	LIQUID	4.26E-3	4.21E-3	1.181	RPD
4	DUP	S96T001545	0	@PU23901	PU23901T	LIQUID	100	5.96E+01	59.600	% Recovery
4	DUP	S96T001545	0	@PU23901	PU23901E	LIQUID	1.00	2.41E+00	2.410	% Ct Error

Final page for worklist# 8513

Analyst Signature **Date** **Analyst Signature** **Date**

John Relyea 15 May 96
Reviewer Signature **Date**
Validated

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID

						STD
	DATE COUNTED		MAY-11-96	PU 236 AEA FRAC	(C236)	0.700
STD	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.011
	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)	0.259
8513	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		2688
	DIGEST DILUTION FACTOR	DDF	1.000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)	0.100
	DETECTOR NUMBER		16	PU 236 cpm		33.320
LIQUID	EFFICIENCY FACTOR	EFF	0.272	PU 238 cpm		0.500
	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		12.320
96004459	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME		480
	PU-236 DECAY CORR'D VALUE (dpm/mL)		2183.074	Pu 239/240 µCi/L		3.6748E+01
0	PU-238 TRACER VALUE (dpm/mL		0.000			
Sample Prep	STANDARD BOOK NO		124B43			
N/A	STANDARD VALUE in µCi/mL		0.038			

Sample #	
WL8513	
Instrument Code	Decay Time = Date Counted - Tracer Preparation Date
WB27806	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]
Prepared By	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)* 1/EFF *C236*100/Pu-236 Decay Corr'd Value * SPKV
SEH	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(2220000 dpm/µCi)]
Chemist	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
JFR	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Analyst	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
AKL	
Date Complete	

05/13/96	Pu 239/240 µCi/mL		3.67E-02	DETECTION LEVELS in µCi/mL
Analysis Date	Relative Counting Error	=	3.0%	
05/10/96				Pu 239/240
Analysis Time				4.26E-03
04:00 PM				
Sample Point				
C-106 GRAB	Pu 236 Tracer Recovery	=	105.5%	

Analyst:		AKL	Date:	13-May-96
Signature of Chemist:	John Relyea	JFR	Date:	15 May 96

STANDARD.WB1 REV 1.0 943128ML

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

Matrix	DATE COUNTED		MAY-11-96	PU 236 AEA FRAC (C236)	0.974
BLNK	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC (C238)	0.000
Work Order	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC (C239)	0.000
8513	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	1999
Tracer Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm (Bkg)	0.100
Matrix	DETECTOR NUMBER		16	PU 236 cpm	34.540
LIQUID	EFFICIENCY FACTOR	EFF	0.2717	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm	0.000
96004459	TRACER PREPARATION VALUE (dpm/mL)		2390.00	AEA COUNT TIME	480
Batch	PU-236 DECAY CORR'D VALUE (dpm/mL)		2183.07	Pu 239/240 µCi/L =	< 3.029E-02
0	PU-238 TRACER VALUE (dpm/mL)		0.00		

Sample Date
N/A

Sample #
WL8513

Instrument Code
WB27806

Prepared By
SEH

Chemist
JFR

Analyst
AKL

Date Complete
05/13/96

Analysis Date
05/10/96

Analysis Time
04:00 PM

Sample Point
C-106 GRAB

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)*C236*100/(Pu-236 Decay Corr'd Value * SPKV*EFF)
Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(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

Pu 239/240 µCi/mL		< 3.03E-05	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	100.0%	
NOTE: Pu 238 Result is a LESS THAN Value.			Pu 239/240 3.03E-05
Pu 238 µCimL		< 3.03E-05	
Relative Counting Error	=	100.0%	Pu 238 3.03E-05
Pu 236 Tracer Recovery	=	109.3%	

Analyst:		AKL	Date:	13-May-96
Signature of Chemist:	John Relyea	JFR	Date:	15 May 96

BLANK.WB1 REV 1.0 943128ML

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

							SAMPLE
	DATE COUNTED		MAY-11-96	PU 236 AEA FRAC		(C236)	0.161
SAMPLE	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC		(C238)	0.100
	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC		(C239)	0.698
8513	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			8513
	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm		(Bkg)	0.100
	DETECTOR NUMBER		18	PU 236 cpm			19.930
LIQUID	EFFICIENCY FACTOR	EFF	0.272	PU 238 cpm			12.360
	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			86.140
96004459	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2183.074	Pu 239/240 µCi/L			4.2633E+00
0	PU-238 TRACER VALUE	(dpm/mL)	0.000				

Sample Prep
N/A

Sample ID
S96T001545

Instrument Book
WB27806

Preparedby
SEH

Chemist
JFR

Analyst
AKL

Date Completed
05/13/96

Analysis Date
05/10/96

Analysis Time
04:00 PM

Sample Point
C-106 GRAB

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) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)
Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(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

Pu 239/240 µCi/mL		4.26E-03	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	2.2%	
			Pu 239/240
Pu 238 µCimL		6.11E-04	3.06E-04
Relative Counting Error	=	3.2%	Pu 238
Pu 236 Tracer Recovery	=	59.8%	3.06E-04

Analyst:		AKL	Date:	13-May-96
Signature of Chemist:	John Relyea	JFR	Date:	15 May 96

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-128 (A-1) LIQUID / SOLID

							DUP
Sample	DATE COUNTED		MAY-11-96	PU 236 AEA FRAC	(C236)		0.161
DUP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)		0.101
Vial Type	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)		0.690
8513	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			8588
Tot. Count	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)		0.100
Vial Type	DETECTOR NUMBER		16	PU 236 cpm			15.970
LIQUID	EFFICIENCY FACTOR	EFF	0.272	PU 238 cpm			10.610
Batch Name	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			72.700
96004459	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
Count Date	PU-236 DECAY CORR'D VALUE (dpm/mL)		2183.074	Pu 239/240 µCi/L			4.2144E+00
0	PU-238 TRACER VALUE (dpm/mL)		0.000				
Sample Prep							
N/A							

Sample	Decay Time = Date Counted - Tracer Preparation Date
S96T001545	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)
WB27806	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
SEH	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
JFR	
Analyst	
AKL	
Date Completed	

05/13/96	Pu 239/240 µCi/mL		4.21E-03	DETECTION LEVELS in µCi/mL
Analysis Date	Relative Counting Error	=	2.4%	
05/10/96				
Analysis Time				Pu 239/240
04:00 PM	Pu 238 µCimL		6.17E-04	3.08E-04
Sample Point	Relative Counting Error	=	3.5%	Pu 238
C-106 GRAB	Pu 236 Tracer Recovery	=	59.6%	3.08E-04

Analyst:		AKL	Date:	13-May-96
Signature of Chemist:	John Relyea	JFR	Date:	15 May 96

SAMPLE.WB1 REV 1.0 943128ML

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. 2.02

DATA REDUCTION REPORT

SAMPLE
EWL8513-STD
File ID: 25a2512.CNF

Counted on: 5/11/96 @ 9:54
Detector: AEA25
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	1166.3	1166.3	361.260	361.260	10.000	2.651	5.000	1.031
2	13.3	13.3	303.966	303.693	10.000	6.404	5.000	2.105
3?	11.6	11.6	286.239	285.851	10.000	3.968	5.000	1.258
4	492.1	492.1	228.197	228.197	10.000	3.193	5.000	1.669

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.700	5.755	5.759	-.004	0.01	33.32	1.5	1552.5	0.699E-03
2	Pu238	0.011	5.487	5.494	-.007	0.03	0.50	15.7	31.9	0.144E-04
	Am241		5.479	5.494	-.015				24.4	0.110E-04
3		????		5.412			0.40	17.7		
4	Pu239	0.259	5.147	5.147	0.000	0.01	12.32	2.5	562.4	0.253E-03
	Pu240		5.144	5.147	-.003				562.4	0.253E-03
		---					---			
Totals:		0.969	<--valid peaks only-->				46.14			

DETECTOR CALIBRATION
Energy(MEV) = 4.097 + (0.0046)*Channel
Energy range (MeV): 4.097 TO 6.452
Efficiency = 0.0219 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	22860.0	100.000
Smoothed	22860.7	100.003
Composite fit	22342.4	97.736
Residuals	517.6	2.264

Analyzed by: EMB 5/11/96

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5683.3


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Raw Data Dump for AEA Spectrum: 25a2512.CNF

1	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
11	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
21	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
31	0.	0.	1.	0.	0.	0.	0.	1.	1.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	1.	0.	0.	0.	0.	0.	1.
61	0.	1.	0.	0.	1.	1.	0.	0.	0.	0.
71	0.	0.	0.	0.	2.	0.	0.	0.	0.	0.
81	0.	0.	1.	1.	0.	3.	1.	0.	1.	1.
91	0.	0.	0.	0.	1.	2.	0.	1.	0.	0.
101	1.	0.	0.	0.	0.	0.	2.	0.	0.	0.
111	2.	1.	0.	0.	0.	1.	1.	1.	1.	0.
121	1.	1.	0.	1.	0.	0.	0.	1.	1.	1.
131	1.	0.	0.	1.	2.	2.	2.	1.	1.	2.
141	1.	1.	3.	2.	0.	0.	1.	3.	1.	2.
151	2.	3.	0.	1.	3.	2.	0.	2.	0.	3.
161	1.	0.	2.	2.	0.	2.	4.	4.	0.	2.
171	1.	4.	2.	2.	0.	1.	2.	5.	2.	6.
181	2.	6.	12.	5.	11.	15.	13.	5.	8.	13.
191	6.	9.	15.	15.	17.	13.	15.	25.	24.	17.
201	25.	17.	29.	13.	29.	42.	34.	38.	40.	51.
211	54.	55.	75.	89.	93.	94.	134.	179.	182.	177.
221	163.	223.	241.	324.	374.	454.	524.	583.	605.	490.
231	336.	140.	55.	27.	2.	3.	3.	1.	1.	2.
241	1.	2.	0.	2.	0.	2.	2.	1.	0.	2.
251	1.	1.	2.	0.	2.	1.	1.	0.	3.	3.
261	1.	2.	5.	3.	6.	9.	2.	5.	9.	2.
271	6.	4.	4.	8.	7.	5.	6.	2.	5.	10.
281	12.	7.	12.	13.	19.	14.	21.	12.	12.	10.
291	6.	11.	7.	6.	11.	8.	6.	13.	6.	12.
301	8.	21.	10.	20.	20.	14.	8.	5.	12.	9.
311	8.	13.	8.	13.	15.	17.	19.	20.	15.	22.
321	21.	28.	24.	32.	23.	21.	38.	38.	49.	48.
331	54.	47.	58.	45.	65.	73.	67.	97.	95.	95.
341	118.	140.	164.	182.	193.	240.	257.	333.	422.	553.
351	567.	690.	653.	534.	563.	549.	683.	783.	899.	1196.
361	1422.	1486.	1204.	676.	254.	37.	6.	1.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
431	0.	1.	0.	0.	0.	0.	1.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
451	1.	1.	0.	1.	0.	1.	1.	0.	0.	0.
461	0.	0.	0.	0.	2.	1.	0.	0.	0.	0.
471	2.	4.	3.	1.	2.	2.	4.	1.	2.	0.
481	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
491	0.	0.	0.	0.	0.	1.	0.	0.	1.	1.
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. 2.02

DATA REDUCTION REPORT

SAMPLE
WL8513-BLK
File ID: 26a2613.CNF

Counted on: 5/11/96 @ 9:54
Detector: AEA26
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	1288.2	1288.2	359.547	359.547	8.000	2.628	4.000	1.127
2	18.2	18.2	285.008	284.991	12.000	6.415	6.000	2.753

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.974	5.755	5.758	-.003	0.01	34.54	1.5	2629.9	0.118E-02
2	Th228	0.017	5.400	5.415	-.015	0.03	0.60	11.8	63.1	0.284E-04
Totals:		0.991	<--valid peaks only-->				35.14			

DETECTOR CALIBRATION
Energy(MEV) = 4.104 + (0.0046)*Channel
Energy range (MeV): 4.104 TO 6.459
Efficiency = 0.0134 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	17020.0	100.000
Smoothed	17020.0	100.000
Composite fit	16867.1	99.102
Residuals	152.9	0.898

Analyzed by: EMB 5/11/96

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1 Legend:  Raw = ....  Modeled Peaks = 1,2,.., etc     Display Max.:    7169.7

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Raw Data Dump for AEA Spectrum: 26a2613.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.	1.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	2.	0.
41	0.	0.	2.	0.	0.	0.	0.	0.	1.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
61	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
71	0.	0.	0.	1.	0.	0.	0.	0.	1.	1.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
101	0.	0.	0.	0.	1.	0.	1.	0.	0.	0.
111	0.	1.	0.	0.	0.	1.	2.	0.	0.	0.
121	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
131	0.	1.	0.	1.	0.	0.	0.	0.	0.	0.
141	0.	0.	0.	1.	1.	1.	1.	0.	1.	0.
151	0.	1.	0.	0.	0.	0.	0.	0.	2.	0.
161	0.	1.	0.	0.	0.	0.	1.	0.	1.	0.
171	0.	1.	0.	2.	1.	1.	0.	0.	0.	0.
181	0.	0.	0.	1.	0.	2.	0.	0.	0.	0.
191	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
201	0.	1.	0.	0.	1.	2.	0.	2.	0.	1.
211	0.	1.	0.	0.	1.	0.	0.	1.	0.	0.
221	0.	1.	0.	1.	2.	2.	0.	0.	3.	1.
231	1.	0.	1.	0.	0.	1.	0.	0.	0.	0.
241	1.	1.	2.	0.	0.	3.	2.	0.	1.	0.
251	1.	2.	1.	0.	2.	4.	1.	2.	2.	3.
261	2.	4.	7.	2.	4.	7.	8.	12.	5.	5.
271	3.	2.	4.	1.	10.	4.	3.	7.	6.	8.
281	10.	9.	15.	31.	15.	23.	18.	12.	2.	5.
291	4.	7.	9.	4.	10.	5.	4.	9.	6.	7.
301	7.	11.	10.	10.	7.	5.	2.	5.	12.	8.
311	11.	12.	13.	13.	6.	14.	13.	16.	14.	15.
321	25.	18.	29.	18.	18.	33.	42.	39.	40.	46.
331	38.	54.	56.	52.	62.	77.	58.	77.	96.	120.
341	137.	150.	173.	228.	262.	283.	406.	473.	631.	684.
351	649.	600.	526.	520.	650.	742.	986.	1279.	1487.	1633.
361	1476.	928.	382.	94.	13.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	1.	0.	0.	0.	1.	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.	1.	0.	0.
461	0.	0.	0.	0.	0.	0.	2.	0.	1.	0.
471	2.	2.	2.	1.	1.	1.	0.	2.	2.	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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T1545-SAM
File ID: 27a2700.CNF

Counted on: 5/11/96 @ 9:55
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	734.5	734.5	359.307	359.307	8.000	2.601	4.000	1.099
2	468.3	468.3	301.399	301.396	8.000	2.672	4.000	1.183
3	3448.5	3448.5	227.480	227.480	10.000	3.468	5.000	1.898
4?	15.5	15.5	147.787	147.782	22.000	42.413	11.000	13.304

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.161	5.755	5.754	0.00	10.01	19.83	2.0	712.7	0.321E-03
2	Pu238	0.100	5.487	5.488	-.00	10.01	12.36	2.5	604.5	0.272E-03
	Am241		5.479	5.488	-.009				463.0	0.209E-03
3	Pu239	0.698	5.147	5.148	-.00	10.02	86.14	1.0	3032.9	0.137E-02
	Pu240		5.144	5.148	-.004				3032.9	0.137E-02
4		????		4.781			1.07	9.1		
Totals:		0.959	<--valid peaks only-->				118.33			

DETECTOR CALIBRATION
Energy(MEV) = 4.102 + (0.0046)*Channel
Energy range (MeV): 4.102 TO 6.457
Efficiency = 0.0284 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	59244.0	100.000
Smoothed	59243.5	99.999
Composite fit	57318.4	96.750
Residuals	1925.6	3.250

Analyzed by: EMB 5/11/96

Spectrum 27a2700.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 21950.5

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Raw Data Dump for AEA Spectrum: 27a2700.CNF

1	0.	0.	0.	0.	0.	1.	0.	1.	0.	2.
11	1.	3.	1.	0.	0.	1.	1.	2.	0.	1.
21	2.	0.	1.	2.	0.	0.	0.	0.	1.	1.
31	0.	0.	1.	3.	0.	0.	2.	0.	1.	0.
41	0.	0.	1.	0.	1.	0.	3.	0.	0.	1.
51	0.	0.	0.	0.	0.	0.	0.	1.	2.	1.
61	1.	0.	0.	2.	1.	2.	1.	0.	0.	0.
71	2.	4.	0.	1.	4.	1.	1.	0.	0.	2.
81	0.	1.	3.	5.	0.	2.	0.	0.	1.	0.
91	1.	1.	3.	1.	0.	0.	1.	1.	0.	2.
101	0.	0.	1.	1.	1.	0.	2.	1.	4.	0.
111	4.	3.	4.	1.	3.	4.	3.	3.	4.	3.
121	2.	3.	7.	1.	5.	3.	0.	4.	2.	5.
131	4.	4.	6.	3.	4.	10.	4.	5.	7.	10.
141	9.	11.	10.	16.	16.	11.	20.	14.	22.	6.
151	19.	9.	8.	13.	10.	8.	5.	5.	6.	11.
161	8.	13.	12.	7.	10.	9.	11.	11.	13.	15.
171	10.	12.	15.	20.	17.	19.	34.	21.	13.	26.
181	40.	27.	40.	29.	44.	33.	48.	49.	42.	61.
191	53.	57.	54.	68.	75.	84.	80.	102.	101.	118.
201	140.	134.	162.	160.	195.	178.	227.	246.	281.	311.
211	334.	424.	492.	591.	748.	916.	1011.	1112.	1194.	1307.
221	1420.	1703.	2016.	2462.	3018.	3627.	4082.	4155.	3750.	2717.
231	1487.	725.	343.	91.	17.	2.	4.	1.	0.	2.
241	1.	1.	2.	1.	4.	5.	5.	4.	0.	1.
251	3.	1.	5.	4.	8.	0.	3.	11.	3.	11.
261	6.	8.	5.	6.	12.	17.	17.	20.	13.	6.
271	13.	12.	15.	15.	19.	20.	25.	32.	28.	31.
281	41.	35.	49.	53.	61.	77.	95.	83.	128.	159.
291	183.	238.	266.	230.	238.	210.	225.	280.	376.	482.
301	580.	575.	549.	290.	116.	30.	5.	0.	2.	4.
311	3.	4.	8.	7.	6.	11.	10.	8.	12.	9.
321	11.	11.	16.	21.	17.	25.	21.	16.	12.	22.
331	19.	36.	33.	28.	32.	39.	38.	55.	58.	54.
341	72.	100.	103.	115.	144.	170.	216.	282.	405.	398.
351	409.	311.	288.	333.	410.	459.	629.	761.	820.	968.
361	777.	456.	135.	29.	4.	1.	0.	0.	0.	0.
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	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.
461	0.	1.	0.	0.	0.	1.	1.	2.	2.	1.
471	0.	2.	0.	3.	1.	3.	1.	1.	1.	1.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T1545-DUP
File ID: 28a2801.CNF

Counted on: 5/11/96 @ 9:55
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	618.9	618.9	360.528	360.528	8.000	2.628	4.000	1.088
2	387.6	387.6	302.352	302.349	8.000	2.645	4.000	1.100
3	2946.3	2946.3	227.738	227.738	10.000	3.427	5.000	1.912
4	16.7	16.7	153.212	153.184	144.000	1.000	72.000	0.100
5?	8.1	8.1	147.525	147.123	126.000	1.000	63.000	0.100

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.161	5.755	5.765	-.010	0.01	16.97	2.2	98.7	0.445E-04
	Cm243		5.779	5.765	0.014				132.5	0.597E-04
2	Pu238	0.101	5.487	5.497	-.010	0.01	10.61	2.8	84.0	0.378E-04
	Am241		5.479	5.497	-.018				64.3	0.290E-04
3	Pu239	0.690	5.147	5.154	-.007	0.02	72.70	1.0	414.5	0.187E-03
	Pu240		5.144	5.154	-.010				414.5	0.187E-03
4		0.013		4.811		0.00	1.33	7.8	7.6	0.341E-05
5		????		4.783			0.64	19.3		
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Totals:		0.965	<--valid peaks only-->				101.60			

DETECTOR CALIBRATION
Energy(MEV) = 4.106 + (0.0046)*Channel
Energy range (MeV): 4.106 TO 6.461
Efficiency = 0.1754 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	50560.0	100.000
Smoothed	50560.0	100.000
Composite fit	49081.1	97.075
Residuals	1478.9	2.925

Analyzed by: [signature] 5/11/96

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 18824.9


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Raw Data Dump for AEA Spectrum: 28a2801.CNF

1	0.	0.	2.	0.	0.	0.	2.	1.	1.	1.
11	0.	0.	1.	1.	1.	2.	0.	1.	0.	0.
21	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
31	1.	1.	0.	2.	2.	1.	1.	0.	1.	0.
41	0.	2.	2.	0.	1.	1.	0.	2.	1.	0.
51	1.	0.	0.	0.	1.	0.	0.	0.	0.	1.
61	1.	0.	1.	0.	0.	0.	1.	0.	0.	1.
71	0.	1.	2.	2.	0.	0.	3.	2.	4.	1.
81	2.	2.	0.	1.	2.	0.	1.	1.	4.	0.
91	3.	3.	2.	1.	0.	2.	0.	3.	2.	1.
101	2.	3.	3.	6.	4.	0.	5.	5.	1.	2.
111	4.	1.	2.	2.	1.	3.	3.	6.	10.	3.
121	6.	6.	5.	4.	1.	4.	11.	4.	3.	2.
131	5.	6.	6.	3.	7.	4.	7.	5.	4.	4.
141	11.	15.	9.	14.	17.	18.	17.	18.	21.	13.
151	8.	7.	16.	12.	11.	14.	9.	8.	9.	11.
161	11.	14.	10.	5.	8.	12.	12.	13.	7.	12.
171	20.	10.	26.	10.	25.	19.	14.	16.	17.	25.
181	26.	25.	27.	32.	34.	35.	44.	45.	49.	61.
191	62.	55.	55.	81.	70.	80.	87.	90.	110.	104.
201	108.	141.	152.	151.	171.	154.	202.	181.	211.	269.
211	264.	355.	416.	492.	560.	699.	860.	910.	971.	990.
221	1165.	1357.	1665.	1996.	2402.	2970.	3308.	3562.	3387.	2503.
231	1461.	780.	393.	131.	25.	3.	0.	1.	1.	2.
241	3.	0.	0.	3.	2.	2.	2.	1.	5.	3.
251	2.	5.	8.	2.	7.	5.	3.	3.	4.	6.
261	4.	6.	6.	9.	9.	4.	12.	12.	12.	8.
271	17.	17.	11.	14.	12.	21.	19.	24.	25.	27.
281	28.	28.	43.	43.	45.	68.	65.	91.	98.	114.
291	124.	157.	190.	217.	212.	204.	195.	199.	249.	323.
301	378.	468.	495.	425.	249.	75.	21.	7.	0.	5.
311	3.	4.	7.	8.	7.	7.	11.	7.	9.	12.
321	7.	6.	10.	10.	10.	17.	6.	20.	15.	24.
331	15.	21.	27.	28.	30.	37.	27.	40.	44.	54.
341	70.	61.	49.	93.	98.	126.	160.	207.	253.	298.
351	360.	299.	297.	265.	271.	312.	350.	478.	607.	718.
361	793.	692.	447.	183.	43.	2.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
431	0.	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.	1.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	1.	0.	0.	0.	2.	2.
471	1.	1.	0.	2.	2.	0.	1.	1.	2.	0.
481	1.	0.	2.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
511	0.	0.								

LABCORE Data Entry Template for Worklist# 8620

Analyst: JMV **Instrument:** PU01 15 **Book#** 124B43

Method: LA-943-128 Rev/Mod _____

Worklist Comment: C-106.See S. Catlow. Sample Size is on traveler. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@PU23902	SOLID		
2	BLNK-PREP				@PU23902	SOLID		
3	SAMPLE	S96T002634	0		@PU23902	SOLID	96000082	C-106 GRAB
	Analytes Requested: PU23801 , PU23801E, PU23901 , PU23901E, PU23901T							
4	DUP	S96T002634	0		@PU23902	SOLID		
5	SAMPLE	S96T002635	0		@PU23902	SOLID	96000174	C-106 GRAB
	Analytes Requested: PU23801 , PU23801E, PU23901 , PU23901E, PU23901T							
6	DUP	S96T002635	0		@PU23902	SOLID		

Final page for worklist # 8620

Analyst Signature **Date** 5-14-96

Analyst Signature **Date** 5/16/96

C.J. Opinion 5/16/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed RadChem Report for Worklist#: 8620

Analyst: jmv **Instrument:** PU01 #13 **Book#** 124 B 213

Method: 2A-943-128 Rev/Mod B-0

Worklist Comment: C-106.See S. Catlow. Sample Size is on traveler. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0	@PU23902	PU23901	SOLID	3.81E-02	3.78E-2	99.213	% Recovery
1	STD		0	@PU23902	PU23901T	SOLID	100.	8.85E+01	88.500	% Recovery
1	STD		0	@PU23902	PU23901E	SOLID	1.0	2.94E+00	2.940	% Ct Error
2	BLNK-PREP		0	@PU23902	PU23901	SOLID	1	<3.10E-2		uCi/g
2	BLNK-PREP		0	@PU23902	PU23901T	SOLID	100	9.40E+01	94.000	% Recovery
2	BLNK-PREP		0	@PU23902	PU23901E	SOLID	1.00	1.00E+02	100.000	uCi/g
2	BLNK-PREP		0	@PU23902	PU23801	SOLID	1	<3.10E-2		uCi/g
2	BLNK-PREP		0	@PU23902	PU23801E	SOLID	1	1.00E+02	100.000	uCi/g
3	SAMPLE	S96T002634	0	@PU23902	PU23901	SOLID	N/A	6.41E-01	461.0e-004	uCi/g
3	SAMPLE	S96T002634	0	@PU23902	PU23901T	SOLID	N/A	8.68E+01	0.0e+000	% Recovery
3	SAMPLE	S96T002634	0	@PU23902	PU23901E	SOLID	N/A	2.00E+00	0.0e+000	% Ct. Error
3	SAMPLE	S96T002634	0	@PU23902	PU23801	SOLID	N/A	2.00E-01	461.0e-004	uCi/g
3	SAMPLE	S96T002634	0	@PU23902	PU23801E	SOLID	N/A	2.78E+00	0.0e+000	% Ct. Error
4	DUP	S96T002634	0	@PU23902	PU23901	SOLID	6.41E-1	6.31E-1	1.572	RPD
4	DUP	S96T002634	0	@PU23902	PU23901T	SOLID	100	5.20E+01	52.000	% Recovery
4	DUP	S96T002634	0	@PU23902	PU23901E	SOLID	1.00	2.61E+00	2.610	% Ct Error
4	DUP	S96T002634	0	@PU23902	PU23801	SOLID	2.00E-1	2.01E-1	0.499	RPD
4	DUP	S96T002634	0	@PU23902	PU23801E	SOLID	1.00	3.62E+00	3.620	% Ct. Erro
5	SAMPLE	S96T002635	0	@PU23902	PU23901	SOLID	N/A	3.63E-01	283.0e-004	uCi/g
5	SAMPLE	S96T002635	0	@PU23902	PU23901T	SOLID	N/A	9.21E+01	0.0e+000	% Recovery
5	SAMPLE	S96T002635	0	@PU23902	PU23901E	SOLID	N/A	2.19E+00	0.0e+000	% Ct. Error
5	SAMPLE	S96T002635	0	@PU23902	PU23801	SOLID	N/A	1.12E-01	283.0e-004	uCi/g
5	SAMPLE	S96T002635	0	@PU23902	PU23801E	SOLID	N/A	3.22E+00	0.0e+000	% Ct. Error
6	DUP	S96T002635	0	@PU23902	PU23901	SOLID	3.63E-1	3.57E-1	1.667	RPD
6	DUP	S96T002635	0	@PU23902	PU23901T	SOLID	100	9.68E+01	96.800	% Recovery
6	DUP	S96T002635	0	@PU23902	PU23901E	SOLID	1.00	2.11E+00	2.110	% Ct Error
6	DUP	S96T002635	0	@PU23902	PU23801	SOLID	1.12E-1	1.00E-1	11.321	RPD
6	DUP	S96T002635	0	@PU23902	PU23801E	SOLID	1.00	3.23E+00	3.230	% Ct. Erro

Final page for worklist# 8620

Analyst Signature **Date** **Analyst Signature** **Date**

John Relyea 17 May 96
Reviewer Signature **Date**
+ Validated

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID

						STD
Type	DATE COUNTED		MAY-15-96	PU 236 AEA FRAC	(C236)	0.710
STD	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)	0.271
8620	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		2586
Test Code	DIGEST DILUTION FACTOR	DDF	1.000	AT COUNT TIME (MIN)		30
@PU23902	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)	0.370
Matrix	DETECTOR NUMBER		13	PU 236 cpm		33.580
LIQUID	EFFICIENCY FACTOR	EFF	0.316	PU 238 cpm		0.000
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		12.820
96004581	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME		480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2177.267	Pu 239/240 µCi/L		3.7809E+01
0	PU-238 TRACER VALUE (dpm/mL		0.000			
Sample Prep	STANDARD BOOK NO		124B43			
N/A	STANDARD VALUE in µCi/mL		0.038			

Sample #	
WL8620-STD	
Instrument Code	Decay Time = Date Counted - Tracer Preparation Date
WB27810	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]
Prepared By	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)* 1/EFF *C236*100/Pu-236 Decay Corr'd Value * SPKV
MCB	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(2220000 dpm/µCi)]
Chemist	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
JFR	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Analyst	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
JMV	
Date Complete	
05/16/96	
Analysis Date	
05/14/96	
Analysis Time	
12:00 PM	
Sample Point	
C-106 GRAB	

Pu 239/240 µCi/mL		3.78E-02
Relative Counting Error	=	2.9%
Pu 236 Tracer Recovery	=	88.5%

DETECTION LEVELS in µCi/mL
Pu 239/240
4.73E-03

Analyst:	JMV	Date:	16-May-96
Signature of Chemist: John Relyea	JFR	Date:	17 May 96

STANDARD.WB1 REV 1.0 943128ML

2303

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID / SOLID

Type	DATE COUNTED		MAY-15-96	PU 236 AEA FRAC	(C236)	1.009
BLNK-PREP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.000
8620	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		1935
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	1.0000	AT COUNT TIME (MIN)		30
@PU23902	TRACER BOOK NO		120B43	BACKGROUND in cpm (Bkg)		0.370
Matrix	DETECTOR NUMBER		13	PU 236 cpm		35.880
SOLID	EFFICIENCY FACTOR	EFF	0.3163	PU 238 cpm		0.000
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		0.000
96004581	TRACER PREPARATION VALUE (dpm/mL)		2390.00	AEA COUNT TIME		480
Rerun	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2177.27	Pu 239/240 µCi/g =	<	3.103E-02
0	PU-238 TRACER VALUE	(dpm/mL)	0.00			

BLNK-PREP

Sample Prep	
N/A	
Sample #	Decay Time = Date Counted - Tracer Preparation Date
WL8620	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)}]
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)*C236*100/(Pu-236 Decay Corr'd Value * SPKV*EFF)
WB27810	Pu 239/240 µCi/g = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
MCB	Pu 238 µCi/g = [(Pu 238 dpm)(DF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
JFR	
Analyst	
JMV	
Date Complete	
05/16/96	
Analysis Date	
05/14/96	
Analysis Time	
12:00 PM	
Sample Point	
C-106 GRAB	

Pu 239/240 µCi/g		< 3.10E-02		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		< 3.10E-02		3.10E-02
Relative Counting Error	=	100.0%		Pu 238
Pu 236 Tracer Recovery	=	94.0%		3.10E-02

Analyst:		JMV	Date:	16-May-96
Signature of Chemist:	John Relyea	JFR	Date:	17 May 96

BLANK.WB1 REV 1.0 943128ML

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID / SOLID

							SAMPLE
Type	DATE COUNTED		MAY-15-96	PU 236 AEA FRAC	(C236)		0.353
SAMPLE	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)		0.150
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)		0.481
8620	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			5090
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	2.0840	AT COUNT TIME (MIN)			30
@PU23902	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)		0.370
Matrix	DETECTOR NUMBER		13	PU 236 cpm			34.660
SOLID	EFFICIENCY FACTOR	EFF	0.316	PU 238 cpm			14.760
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			47.200
96004581	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2177.267	Pu 239/240 µCi/g			6.4126E-01
0	PU-238 TRACER VALUE (dpm/mL)		0.000				
Sample Prep							
N/A							
Sample #							
S96T002634							
Instrument Code							
WB27810							
Prepared By							
MCB							
Chemist							
JFR							
Analyst							
JMV							
Date Complete							
05/16/96							
Analysis Date							
05/14/96							
Analysis Time							
12:00 PM							
Sample Point							
C-106 GRAB							

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) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)

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 * 1/EFF * 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

Pu 239/240 µCi/g		6.41E-01	DETECTION LEVELS in µCi/g	
Relative Counting Error	=	2.0%		
			Pu 239/240	
Pu 238 µCi/g		2.00E-01	4.61E-02	
Relative Counting Error	=	2.8%	Pu 238	
Pu 236 Tracer Recovery	=	86.8%	4.61E-02	

Analyst:	JMV	Date:	16-May-96
Signature of Chemist: John Relyea	JFR	Date:	17 May 96

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID / SOLID

							DUP
Type	DATE COUNTED		MAY-15-96	PU 236 AEA FRAC	(C236)		0.352
DUP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)		0.150
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)		0.472
8620	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			3066
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	2.0840	AT COUNT TIME (MIN)			30
@PU23902	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)		0.370
Matrix	DETECTOR NUMBER		13	PU 236 cpm			20.470
SOLID	EFFICIENCY FACTOR	EFF	0.316	PU 238 cpm			8.720
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			27.450
96004581	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2177.267	Pu 239/240 µCi/g			6.3104E-01
0	PU-238 TRACER VALUE (dpm/mL)		0.000				
Sample Prep							
N/A							

Sample #	Decay Time = Date Counted - Tracer Preparation Date
S96T002634	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95}]
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)
WB27810	Pu 239/240 µCi/g = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
MCB	Pu 238 µCi/g = [(Pu 238 dpm)(DF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
JFR	
Analyst	
JMV	
Date Complete	

05/16/96	Pu 239/240 µCi/g		6.31E-01	DETECTION LEVELS in µCi/g
Analysis Date	Relative Counting Error	=	2.6%	
05/14/96				Pu 239/240
Analysis Time				7.71E-02
12:00 PM	Pu 238 µCi/g		2.01E-01	
Sample Point	Relative Counting Error	=	3.6%	Pu 238
C-106 GRAB	Pu 236 Tracer Recovery	=	52.0%	7.71E-02

Analyst:	JMV	Date:	16-May-96
Signature of Chemist: John Relyea	JFR	Date:	17 May 96

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: SAM5

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID / SOLID

							SAMPLE
Type	DATE COUNTED		MAY-15-96	PU 236 AEA FRAC		(C236)	0.449
SAMPLE	SAMPLE VOLUME in mL	SS	0.050	PU 238 AEA FRAC		(C238)	0.129
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC		(C239)	0.418
8620	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			4250
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	5.8320	AT COUNT TIME (MIN)			30
@PU23902	TRACER BOOK NO		120B43	BACKGROUND in cpm		(Bkg)	0.370
Matrix	DETECTOR NUMBER		13	PU 236 cpm			34.510
SOLID	EFFICIENCY FACTOR	EFF	0.316	PU 238 cpm			9.920
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			32.060
96004581	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2177.267	Pu 239/240 µCi/g			3.6289E-01
0	PU-238 TRACER VALUE (dpm/mL)		0.000				

Sample Prep	
N/A	
Sample #	Decay Time = Date Counted - Tracer Preparation Date
S96T002635	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95}]
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)
WB27810	Pu 239/240 µCi/g = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
MCB	Pu 238 µCi/g = [(Pu 238 dpm)(DF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
JFR	
Analyst	
JMV	
Date Complete	
05/16/96	
Analysis Date	
05/14/96	
Analysis Time	
12:00 PM	
Sample Point	
C-106 GRAB	

Pu 239/240 µCi/g		3.63E-01		DETECTION LEVELS In µCi/g
Relative Counting Error	=	2.2%		
				Pu 239/240
Pu 238 µCi/g		1.12E-01		2.83E-02
Relative Counting Error	=	3.2%		Pu 238
Pu 236 Tracer Recovery	=	92.1%		2.83E-02

Analyst:		JMV	Date:	16-May-96
Signature of Chemist:	John Rehyer	JFR	Date:	17 May 96

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: DUP6

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID / SOLID

						DUP
Type	DATE COUNTED		MAY-15-96	PU 236 AEA FRAC	(C236)	0.471
DUP	SAMPLE VOLUME in mL	SS	0.050	PU 238 AEA FRAC	(C238)	0.121
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.431
8620	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		4258
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	5.0320	AT COUNT TIME (MIN)		30
@PU23902	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)	0.370
Matrix	DETECTOR NUMBER		13	PU 236 cpm		37.540
SOLID	EFFICIENCY FACTOR	EFF	0.316	PU 238 cpm		9.620
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		34.350
96004581	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME		480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2177.267	Pu 239/240 µCi/g		3.5670E-01
0	PU-238 TRACER VALUE (dpm/mL)		0.000			
Sample Prep						
N/A						
Sample #	Decay Time = Date Counted - Tracer Preparation Date					
S96T002635	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]					
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)					
WB27810	Pu 239/240 µCi/g = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]					
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)					
MCB	Pu 238 µCi/g = [(Pu 238 dpm)(DF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]					
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100					
JFR						
Analyst						
JMV						
Date Complete						
05/16/96	Pu 239/240 µCi/g		3.57E-01	DETECTION		
Analysis Date	Relative Counting Error	=	2.1%	LEVELS		
05/14/96				In µCi/g		
Analysis Time				Pu 239/240		
12:00 PM	Pu 238 µCi/g		1.00E-01	2.56E-02		
Sample Point	Relative Counting Error	=	3.2%	Pu 238		
C-106 GRAB	Pu 236 Tracer Recovery	=	96.8%	2.56E-02		

Analyst:		JMV	Date:	16-May-96
Signature of Chemist:	John Relyea	JFR	Date:	17 May 96

SAMPLE.WB1 REV 1.0 943128ML

 D. H. Milburn 5-15-96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
WL8620-STD
File ID: 19a1972.CNF

Counted on: 5/15/96 @ 6:38
Detector: AEA19
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	1060.8	1060.8	359.948	359.948	10.000	3.099	5.000	1.073
2?	8.4	8.4	303.260	302.386	8.000	2.861	4.000	0.480
3?	12.8	12.8	286.007	285.832	12.000	2.183	6.000	1.212
4	457.6	457.6	228.262	228.262	12.000	3.815	6.000	1.741

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.710	5.755	5.738	0.017	0.01	33.58	1.5	1687.9	0.760E-03
2		????		5.473			0.45	17.0		
3		????		5.397			0.28	24.7		
4	Pu239	0.271	5.147	5.132	0.015	0.02	12.82	2.5	631.7	0.285E-03
	Pu240		5.144	5.132	0.012				631.7	0.285E-03
		---					---			
Totals:		0.981	<--valid peaks only-->				46.40			

DETECTOR CALIBRATION
Energy(MEV) = 4.082 + (0.0046)*Channel
Energy range (MeV): 4.082 TO 6.437
Efficiency = 0.0203 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	22700.0	100.000
Smoothed	22700.4	100.002
Composite fit	22630.6	99.694
Residuals	69.4	0.306

Analyzed by: _____
DM

Spectrum 19a1972.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 6335.9


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Raw Data Dump for AEA Spectrum: 19a1972.CNF

1	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
11	0.	0.	0.	1.	1.	0.	0.	1.	1.	1.
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.	1.	0.	0.	0.	0.	0.
51	1.	1.	0.	2.	1.	0.	1.	0.	1.	1.
61	2.	2.	1.	1.	0.	3.	3.	1.	2.	2.
71	0.	0.	0.	2.	0.	0.	0.	1.	1.	0.
81	1.	1.	0.	0.	2.	2.	2.	0.	0.	0.
91	1.	0.	0.	0.	1.	0.	1.	0.	0.	1.
101	1.	0.	2.	0.	0.	1.	0.	0.	1.	0.
111	0.	0.	0.	1.	1.	1.	1.	1.	0.	0.
121	1.	1.	2.	0.	0.	1.	0.	1.	0.	0.
131	0.	1.	1.	1.	1.	0.	2.	3.	1.	1.
141	1.	0.	1.	1.	0.	1.	3.	1.	1.	4.
151	0.	1.	1.	0.	1.	3.	1.	3.	0.	3.
161	3.	0.	2.	2.	1.	1.	0.	3.	4.	5.
171	5.	2.	7.	5.	8.	2.	5.	7.	5.	7.
181	10.	3.	2.	8.	6.	7.	4.	12.	6.	10.
191	11.	9.	15.	15.	11.	17.	15.	21.	14.	15.
201	22.	19.	25.	18.	24.	35.	26.	45.	47.	49.
211	49.	74.	74.	104.	105.	107.	153.	167.	185.	223.
221	197.	223.	288.	302.	369.	444.	485.	528.	540.	462.
231	362.	220.	98.	23.	10.	2.	1.	1.	1.	1.
241	0.	1.	1.	1.	1.	3.	0.	0.	0.	0.
251	2.	2.	2.	3.	1.	1.	2.	3.	3.	2.
261	1.	2.	5.	2.	7.	6.	7.	6.	6.	4.
271	7.	6.	4.	4.	2.	6.	6.	5.	8.	8.
281	10.	13.	5.	16.	24.	22.	20.	17.	8.	12.
291	6.	5.	5.	10.	6.	8.	11.	12.	6.	17.
301	8.	15.	11.	21.	9.	9.	12.	7.	8.	8.
311	8.	17.	17.	16.	8.	10.	17.	18.	19.	16.
321	23.	22.	27.	15.	23.	29.	47.	49.	56.	42.
331	42.	45.	50.	62.	82.	88.	80.	99.	100.	109.
341	135.	166.	187.	234.	294.	299.	370.	424.	513.	566.
351	685.	664.	663.	570.	603.	719.	811.	973.	1169.	1228.
361	1253.	1037.	592.	233.	55.	6.	0.	1.	0.	0.
371	0.	1.	0.	0.	0.	1.	0.	0.	0.	0.
381	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	1.	0.	1.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.
421	0.	1.	0.	0.	0.	1.	0.	0.	1.	0.
431	0.	0.	0.	1.	0.	1.	0.	0.	1.	1.
441	0.	0.	0.	0.	0.	0.	1.	1.	0.	1.
451	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
461	0.	0.	0.	0.	0.	1.	1.	2.	0.	2.
471	0.	2.	6.	3.	1.	1.	0.	0.	0.	0.
481	1.	0.	0.	0.	0.	1.	0.	0.	0.	0.
491	0.	0.	1.	1.	0.	1.	1.	0.	0.	0.
511	0.	0.								

D. H. Milburn
5-15-96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
WL8620-BLK
File ID: 20a2003.CNF

Counted on: 5/15/96 @ 6:39
Detector: AEA20
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	1018.7	1018.7	361.150	361.150	10.000	3.251	5.000	0.972
2?	6.9	6.9	304.385	303.612	8.000	1.103	4.000	0.477
3	11.2	11.2	287.618	287.186	8.000	3.657	4.000	0.647

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Peak Centroid Diff.	Peak Centroid FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	1.009	5.755	5.755	0.000	0.01	35.86	1.5	233.8	0.105E-03
2		????		5.491			0.16	42.0		
3	Th228	0.017	5.400	5.415	-.015	0.02	0.59	13.8	5.3	0.240E-05
		---					---			
Totals:		1.025	<--valid peaks only-->				36.46			

DETECTOR CALIBRATION
Energy(MEV) = 4.094 + (0.0046)*Channel
Energy range (MeV): 4.094 TO 6.449
Efficiency = 0.1565 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	17066.0	100.000
Smoothed	17065.8	99.999
Composite fit	17576.7	102.993
Residuals	-510.7	-2.993

Analyzed by: _____
DM

```
-                Spectrum 20a2003.CNF
1 Legend:  Raw = ....  Modeled Peaks = 1,2,.., etc     Display Max.:    5918.1

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Raw Data Dump for AEA Spectrum: 20a2003.CNF

1	0.	0.	0.	0.	0.	0.	0.	2.	0.	0.
11	0.	1.	0.	0.	1.	0.	0.	1.	1.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
31	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
41	0.	1.	1.	0.	0.	2.	1.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	2.	0.	1.	2.	0.	1.	0.	4.	3.	1.
71	4.	1.	0.	1.	0.	1.	0.	2.	1.	1.
81	0.	0.	0.	0.	1.	0.	1.	0.	0.	0.
91	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.
101	0.	1.	0.	0.	0.	0.	0.	0.	1.	1.
111	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
121	2.	0.	2.	0.	0.	0.	0.	1.	1.	0.
131	0.	1.	1.	0.	1.	1.	0.	0.	1.	0.
141	0.	0.	0.	0.	0.	1.	0.	1.	2.	0.
151	1.	1.	0.	1.	0.	0.	0.	0.	0.	0.
161	1.	3.	0.	0.	0.	0.	0.	0.	0.	0.
171	1.	0.	1.	1.	2.	1.	0.	1.	1.	0.
181	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
191	1.	1.	0.	1.	1.	1.	1.	0.	1.	1.
201	0.	0.	2.	0.	0.	0.	1.	0.	0.	1.
211	0.	2.	1.	0.	0.	1.	1.	2.	0.	0.
221	3.	1.	1.	1.	0.	1.	2.	1.	0.	0.
231	0.	1.	1.	1.	0.	1.	0.	2.	1.	1.
241	0.	0.	3.	1.	1.	0.	0.	0.	0.	0.
251	2.	1.	3.	0.	2.	3.	3.	2.	0.	0.
261	3.	5.	5.	6.	6.	8.	8.	5.	7.	6.
271	12.	7.	5.	6.	9.	7.	7.	6.	10.	12.
281	8.	8.	16.	17.	11.	17.	12.	15.	20.	13.
291	5.	9.	9.	8.	6.	10.	4.	13.	10.	14.
301	6.	12.	19.	22.	16.	18.	10.	11.	14.	21.
311	15.	13.	16.	22.	15.	19.	17.	20.	21.	18.
321	24.	37.	26.	34.	14.	38.	47.	45.	44.	51.
331	52.	57.	76.	78.	67.	79.	113.	105.	110.	134.
341	142.	169.	202.	214.	244.	297.	341.	374.	487.	535.
351	587.	657.	673.	716.	621.	665.	700.	859.	957.	1003.
361	1137.	1224.	1070.	703.	306.	83.	6.	1.	0.	1.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	1.	0.	1.	1.	0.
421	0.	0.	0.	1.	0.	1.	0.	0.	1.	1.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
451	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.
461	1.	0.	0.	1.	0.	2.	0.	0.	1.	1.
471	0.	2.	3.	1.	1.	1.	1.	4.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
511	0.	0.								

D. H. Wilkins
5-15-96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T2634-SAM
File ID: 21a2109.CNF

Counted on: 5/15/96 @ 6:39
Detector: AEA21
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	838.9	838.9	358.480	358.480	14.000	7.148	7.000	2.084
2	370.3	370.3	300.779	300.701	14.000	7.294	7.000	2.285
3	1281.8	1281.8	227.446	227.444	14.000	7.542	7.000	2.801

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.353	5.755	5.756	-.001	0.03	34.66	1.5	5526.3	0.249E-02
	Cm243		5.779	5.756	0.023				7418.9	0.334E-02
2	Pu238	0.150	5.487	5.484	0.003	0.03	14.76	2.4	3203.1	0.144E-02
	Am241		5.479	5.484	-.005				2453.4	0.111E-02
3	Pu239	0.481	5.147	5.140	0.007	0.04	47.20	1.3	7374.9	0.332E-02
	Pu240		5.144	5.140	0.004				7374.9	0.332E-02
		---					---			
Totals:		0.984	<--valid peaks only-->				96.62			

DETECTOR CALIBRATION
Energy(MEV) = 4.071 + (0.0047)*Channel
Energy range (MeV): 4.071 TO 6.478
Efficiency = 0.0064 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	47126.0	100.000
Smoothed	47126.5	100.001
Composite fit	46377.8	98.412
Residuals	748.2	1.588

Analyzed by: _____
DM

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Raw Data Dump for AEA Spectrum: 21a2109.CNF

1	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
11	2.	0.	1.	1.	0.	1.	0.	2.	1.	0.
21	1.	0.	0.	0.	1.	0.	1.	1.	0.	1.
31	0.	0.	0.	0.	0.	0.	2.	1.	1.	0.
41	1.	0.	1.	1.	3.	0.	0.	0.	0.	1.
51	3.	0.	2.	0.	0.	0.	1.	0.	3.	2.
61	2.	3.	2.	2.	3.	1.	1.	1.	2.	0.
71	5.	0.	1.	0.	2.	1.	0.	0.	1.	2.
81	0.	0.	2.	1.	0.	0.	1.	1.	1.	0.
91	1.	0.	0.	1.	1.	3.	1.	3.	0.	0.
101	1.	1.	1.	0.	0.	0.	0.	1.	1.	2.
111	2.	3.	0.	1.	1.	1.	2.	2.	3.	0.
121	2.	4.	1.	1.	3.	3.	0.	1.	4.	2.
131	0.	3.	4.	3.	4.	4.	1.	2.	7.	2.
141	5.	6.	4.	6.	3.	2.	4.	6.	5.	5.
151	5.	4.	11.	6.	9.	8.	6.	8.	5.	6.
161	10.	6.	10.	5.	12.	7.	11.	11.	14.	14.
171	12.	11.	17.	14.	18.	27.	21.	28.	25.	29.
181	32.	32.	40.	45.	40.	31.	42.	47.	39.	48.
191	46.	44.	43.	53.	71.	70.	71.	86.	100.	75.
201	114.	119.	106.	126.	147.	159.	148.	183.	224.	224.
211	282.	317.	338.	408.	445.	476.	564.	633.	727.	810.
221	849.	944.	1099.	1163.	1321.	1390.	1370.	1349.	1377.	1173.
231	1010.	786.	573.	401.	225.	154.	81.	36.	20.	7.
241	4.	6.	4.	6.	8.	4.	9.	8.	5.	5.
251	4.	8.	9.	14.	11.	7.	10.	7.	11.	14.
261	13.	16.	22.	10.	20.	20.	21.	19.	16.	26.
271	27.	33.	34.	43.	46.	24.	35.	58.	39.	47.
281	63.	66.	90.	93.	92.	136.	129.	143.	170.	222.
291	242.	246.	271.	245.	320.	336.	356.	357.	396.	395.
301	406.	394.	365.	342.	258.	204.	138.	77.	53.	34.
311	24.	18.	19.	19.	23.	18.	29.	24.	28.	29.
321	23.	27.	48.	37.	49.	57.	42.	49.	60.	73.
331	80.	61.	82.	106.	112.	100.	119.	149.	152.	163.
341	188.	203.	265.	293.	341.	402.	461.	528.	566.	623.
351	602.	658.	706.	689.	736.	821.	799.	916.	932.	860.
361	743.	646.	518.	362.	234.	126.	86.	44.	18.	4.
371	1.	1.	0.	0.	1.	0.	0.	0.	0.	0.
381	2.	0.	0.	0.	1.	1.	1.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
401	1.	0.	0.	1.	1.	0.	1.	0.	0.	0.
411	1.	0.	0.	0.	1.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
431	0.	2.	1.	0.	0.	1.	0.	0.	1.	1.
441	0.	2.	2.	0.	0.	0.	1.	0.	0.	1.
451	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
461	1.	0.	2.	0.	2.	3.	1.	0.	5.	3.
471	2.	2.	3.	1.	1.	1.	0.	0.	0.	0.
481	0.	1.	0.	0.	0.	0.	2.	0.	0.	1.
491	1.	2.	0.	2.	1.	0.	0.	0.	2.	0.
511	1.	0.								

D. H. Rittera
5-15-96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T2634-DUP
File ID: 22a2203.CNF

Counted on: 5/15/96 @ 6:40
Detector: AEA22
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	522.8	522.8	358.902	358.902	10.000	2.972	5.000	0.753
2	226.4	226.4	300.675	300.638	10.000	2.824	5.000	0.725
3	792.6	792.6	226.057	226.056	12.000	3.770	6.000	1.199

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.352	5.755	5.762	-.007	0.01	20.47	2.0	663.1	0.299E-03
	Cm243		5.779	5.762	0.017				890.2	0.401E-03
2	Pu238	0.150	5.487	5.494	-.007	0.01	8.72	3.1	384.3	0.173E-03
	Am241		5.479	5.494	-.015				294.4	0.133E-03
3	Pu239	0.472	5.147	5.151	-.004	0.02	27.45	1.7	871.3	0.392E-03
	Pu240		5.144	5.151	-.007				871.3	0.392E-03
		---					---			
Totals:		0.975	<--valid peaks only-->				56.63			

DETECTOR CALIBRATION
Energy(MEV) = 4.111 + (0.0046)*Channel
Energy range (MeV): 4.111 TO 6.467
Efficiency = 0.0315 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	27894.0	100.000
Smoothed	27894.1	100.000
Composite fit	27185.3	97.459
Residuals	708.7	2.541

Analyzed by: _____
DM

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 4539.1


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Raw Data Dump for AEA Spectrum: 22a2203.CNF

1	0.	0.	0.	1.	0.	0.				0.
11	4.	1.	0.	0.	0.	1.	0.	2.	1.	2.
21	0.	0.	2.	0.	1.	1.	1.	2.	0.	0.
31	0.	0.	0.	0.	1.	1.	2.	0.	1.	1.
41	0.	1.	2.	2.	1.	2.	0.	2.	0.	1.
51	1.	1.	1.	3.	1.	0.	0.	2.	2.	0.
61	3.	2.	2.	1.	1.	1.	1.	0.	0.	0.
71	0.	1.	1.	1.	3.	2.	1.	0.	0.	2.
81	0.	2.	3.	0.	0.	2.	1.	0.	4.	1.
91	2.	1.	2.	2.	2.	0.	3.	2.	0.	2.
101	1.	1.	2.	0.	2.	0.	0.	3.	0.	1.
111	3.	0.	3.	4.	4.	2.	2.	5.	2.	0.
121	4.	7.	1.	5.	3.	5.	1.	4.	3.	5.
131	5.	6.	7.	6.	10.	1.	3.	3.	5.	3.
141	3.	6.	4.	4.	7.	4.	9.	7.	6.	7.
151	8.	6.	8.	10.	8.	6.	8.	5.	12.	9.
161	7.	12.	15.	16.	11.	10.	16.	11.	16.	13.
171	19.	18.	31.	20.	18.	29.	28.	29.	31.	24.
181	32.	34.	28.	26.	37.	42.	56.	40.	43.	66.
191	50.	59.	58.	56.	73.	73.	68.	93.	97.	90.
201	105.	117.	127.	133.	145.	146.	165.	189.	202.	237.
211	239.	265.	278.	314.	365.	394.	409.	413.	455.	508.
221	525.	594.	630.	702.	865.	914.	924.	776.	528.	304.
231	154.	69.	20.	9.	3.	4.	4.	8.	4.	4.
241	8.	6.	5.	7.	8.	6.	7.	3.	3.	5.
251	10.	8.	17.	6.	9.	14.	14.	13.	14.	20.
261	10.	16.	16.	26.	10.	23.	31.	30.	31.	25.
271	27.	29.	36.	30.	47.	35.	39.	52.	50.	51.
281	62.	84.	58.	77.	70.	86.	109.	104.	118.	158.
291	128.	163.	149.	162.	182.	141.	158.	165.	211.	269.
301	273.	291.	187.	100.	39.	19.	10.	11.	14.	16.
311	25.	18.	19.	11.	22.	26.	16.	17.	37.	29.
321	35.	32.	44.	44.	41.	60.	61.	37.	54.	62.
331	61.	76.	64.	80.	94.	99.	88.	136.	127.	120.
341	123.	167.	154.	181.	223.	256.	302.	313.	370.	422.
351	367.	300.	302.	330.	367.	360.	484.	578.	586.	640.
361	522.	242.	102.	12.	1.	0.	0.	1.	0.	0.
371	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
401	0.	0.	0.	0.	0.	1.	0.	1.	0.	1.
411	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.
421	1.	2.	0.	1.	0.	0.	0.	0.	0.	0.
431	0.	0.	2.	0.	0.	0.	0.	0.	1.	0.
441	1.	0.	0.	1.	1.	1.	1.	1.	1.	0.
451	1.	2.	1.	0.	0.	0.	1.	0.	0.	0.
461	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
471	1.	1.	0.	1.	2.	0.	0.	1.	0.	3.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	1.	0.	0.	0.	0.	0.	0.	1.	1.
511	1.	0.								

D. H. Milburn 5-15-96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T2635-SAM
File ID: 23a2336.CNF

Counted on: 5/15/96 @ 6:41
Detector: AEA23
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	987.3	987.3	359.806	359.806	10.000	3.277	5.000	0.992
2	268.7	268.7	301.495	301.452	10.000	3.729	5.000	1.074
3	1031.7	1031.7	227.226	227.225	12.000	4.357	6.000	1.738

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Peak Centroid Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.449	5.755	5.746	0.009	0.02	34.51	1.5	1170.0	0.527E-03
2	Pu238	0.129	5.487	5.478	0.009	0.02	9.92	2.9	457.7	0.206E-03
	Am241		5.479	5.478	0.001				350.6	0.158E-03
3	Pu239	0.418	5.147	5.136	0.011	0.02	32.06	1.6	1065.1	0.480E-03
	Pu240		5.144	5.136	0.008				1065.1	0.480E-03
		---					---			
Totals:		0.996	<--valid peaks only-->				76.49			

DETECTOR CALIBRATION
Energy(MEV) = 4.091 + (0.0046)*Channel
Energy range (MeV): 4.091 TO 6.446
Efficiency = 0.0301 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	36855.0	100.000
Smoothed	36856.2	100.003
Composite fit	36716.0	99.623
Residuals	139.0	0.377

Analyzed by: _____
DM

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Raw Data Dump for AEA Spectrum: 23a2336.CNF

1	0.	0.	1.	0.	2.	1.	1.	0.	0.	0.
11	0.	0.	0.	0.	1.	0.	1.	0.	3.	1.
21	0.	1.	0.	2.	0.	0.	0.	1.	1.	1.
31	0.	1.	0.	2.	0.	0.	0.	0.	1.	1.
41	2.	1.	1.	0.	2.	0.	0.	0.	1.	1.
51	0.	0.	1.	0.	0.	0.	2.	2.	2.	1.
61	0.	1.	2.	3.	4.	2.	2.	1.	3.	0.
71	3.	3.	1.	2.	1.	1.	1.	1.	2.	0.
81	0.	1.	0.	3.	1.	1.	1.	0.	0.	0.
91	4.	0.	2.	1.	1.	1.	0.	1.	0.	1.
101	2.	1.	0.	3.	2.	1.	0.	1.	0.	2.
111	2.	0.	0.	3.	0.	1.	3.	2.	2.	2.
121	0.	3.	1.	1.	3.	2.	2.	4.	1.	0.
131	4.	1.	1.	3.	6.	1.	1.	3.	0.	2.
141	2.	0.	6.	1.	5.	3.	3.	7.	8.	7.
151	5.	3.	3.	3.	7.	4.	3.	6.	1.	4.
161	3.	3.	5.	8.	8.	6.	3.	10.	8.	14.
171	8.	12.	9.	15.	13.	13.	15.	14.	13.	13.
181	13.	25.	16.	19.	19.	21.	21.	21.	27.	26.
191	26.	39.	38.	35.	41.	50.	52.	48.	57.	62.
201	59.	67.	90.	95.	77.	112.	116.	149.	133.	158.
211	177.	215.	253.	305.	348.	344.	411.	450.	509.	526.
221	642.	688.	822.	934.	970.	1046.	1198.	1140.	1049.	840.
231	537.	277.	157.	51.	14.	2.	2.	3.	4.	2.
241	5.	4.	2.	2.	3.	3.	5.	7.	5.	6.
251	2.	5.	10.	1.	10.	6.	11.	5.	5.	12.
261	12.	10.	10.	10.	20.	16.	17.	18.	19.	17.
271	25.	21.	21.	19.	23.	24.	35.	39.	37.	39.
281	45.	51.	48.	72.	95.	74.	95.	106.	112.	115.
291	160.	151.	184.	203.	209.	192.	194.	227.	240.	275.
301	283.	323.	311.	212.	173.	78.	26.	15.	16.	18.
311	16.	22.	19.	20.	19.	28.	18.	21.	27.	32.
321	39.	33.	30.	42.	42.	36.	63.	54.	49.	68.
331	73.	57.	70.	96.	91.	110.	96.	109.	111.	159.
341	171.	210.	211.	256.	309.	352.	376.	503.	569.	567.
351	664.	632.	633.	633.	641.	716.	833.	899.	1045.	1153.
361	1122.	925.	557.	216.	47.	13.	1.	1.	0.	0.
371	2.	0.	0.	0.	0.	0.	0.	1.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
391	0.	0.	0.	1.	1.	1.	0.	1.	1.	1.
401	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	1.	0.	1.	0.	1.	0.	0.	1.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.
461	0.	0.	1.	1.	1.	1.	1.	0.	0.	2.
471	1.	2.	1.	1.	3.	1.	0.	4.	1.	1.
481	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	1.	1.	0.	0.	0.	0.	0.	0.	2.	0.
511	0.	0.								

D. H. Milicia
5-15-96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T2635-DUP
File ID: 24a2439.CNF

Counted on: 5/15/96 @ 6:42
Detector: AEA24
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	938.5	938.5	359.971	359.971	10.000	4.017	5.000	1.047
2	245.4	245.4	301.718	301.601	12.000	3.957	6.000	1.058
3	992.0	992.0	227.542	227.540	14.000	5.139	7.000	1.803

PEAK RESULTS
Peak Error Limit: 30%

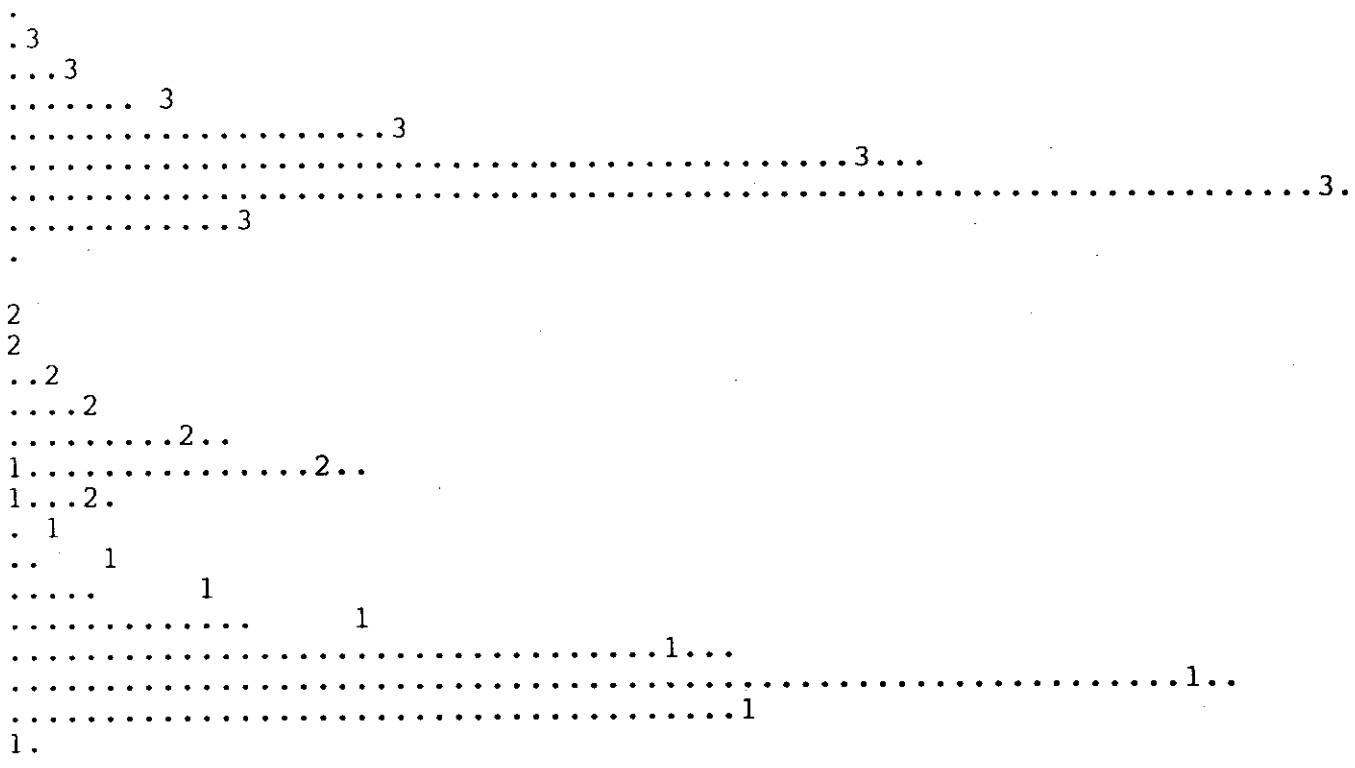
Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Peak Centroid Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.471	5.755	5.749	0.006	0.02	37.54	1.5	203.3	0.916E-04
2	Pu238	0.121	5.487	5.481	0.006	0.02	9.62	3.0	71.0	0.320E-04
	Am241		5.479	5.481	-.002				54.3	0.245E-04
3	Pu239	0.431	5.147	5.140	0.007	0.02	34.35	1.5	182.3	0.821E-04
	Pu240		5.144	5.140	0.004				182.3	0.821E-04
		---					---			
Totals:		1.022	<--valid peaks only-->				81.51			

DETECTOR CALIBRATION
Energy(MEV) = 4.093 + (0.0046)*Channel
Energy range (MeV): 4.093 TO 6.449
Efficiency = 0.1884 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	38292.0	100.000
Smoothed	38290.8	99.997
Composite fit	39129.5	102.187
Residuals	-837.5	-2.187

Analyzed by: _____
DM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Raw Data Dump for AEA Spectrum: 24a2439.CNF

1	0.	0.	1.	0.	0.	0.	0.	1.	0.	1.
11	1.	1.	0.	1.	0.	2.	1.	0.	0.	1.
21	1.	0.	2.	0.	0.	1.	1.	2.	0.	1.
31	0.	1.	0.	1.	1.	1.	0.	0.	1.	2.
41	1.	2.	3.	0.	1.	0.	0.	0.	0.	0.
51	1.	0.	3.	1.	0.	0.	0.	0.	2.	1.
61	2.	1.	3.	3.	5.	0.	3.	1.	0.	1.
71	0.	2.	4.	2.	0.	1.	0.	0.	0.	0.
81	0.	1.	0.	0.	2.	2.	1.	2.	1.	0.
91	0.	1.	0.	1.	1.	1.	1.	0.	1.	0.
101	0.	2.	1.	1.	1.	1.	2.	0.	1.	1.
111	3.	3.	0.	2.	0.	1.	1.	1.	0.	2.
121	1.	2.	1.	3.	0.	2.	1.	2.	1.	2.
131	4.	0.	3.	6.	1.	3.	2.	1.	3.	3.
141	2.	0.	4.	7.	2.	1.	4.	4.	3.	0.
151	5.	3.	2.	6.	2.	3.	5.	3.	5.	5.
161	6.	6.	4.	3.	3.	7.	5.	7.	3.	4.
171	4.	11.	5.	12.	8.	14.	15.	10.	11.	10.
181	19.	15.	22.	15.	21.	20.	29.	22.	26.	31.
191	34.	40.	31.	40.	44.	39.	42.	53.	60.	49.
201	62.	71.	84.	74.	101.	109.	132.	156.	162.	205.
211	198.	240.	261.	321.	372.	402.	465.	501.	555.	599.
221	661.	709.	823.	897.	910.	991.	1133.	1062.	1105.	895.
231	648.	462.	256.	124.	59.	9.	4.	1.	1.	5.
241	4.	2.	0.	8.	6.	3.	5.	7.	2.	3.
251	4.	2.	3.	5.	5.	5.	5.	11.	8.	8.
261	12.	8.	8.	13.	11.	13.	8.	19.	11.	16.
271	12.	20.	15.	19.	23.	26.	31.	25.	23.	52.
281	48.	55.	51.	76.	82.	79.	101.	118.	98.	135.
291	144.	175.	174.	206.	209.	198.	226.	236.	231.	261.
301	265.	280.	283.	269.	166.	121.	57.	20.	12.	13.
311	6.	10.	13.	15.	11.	22.	11.	17.	25.	18.
321	30.	27.	30.	36.	31.	35.	41.	40.	51.	52.
331	57.	62.	62.	91.	76.	111.	107.	134.	139.	175.
341	160.	215.	255.	293.	324.	352.	442.	497.	552.	574.
351	674.	722.	728.	693.	743.	750.	836.	909.	980.	963.
361	1118.	932.	690.	400.	152.	33.	6.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
391	1.	0.	1.	0.	0.	1.	0.	0.	0.	0.
401	0.	0.	1.	0.	0.	0.	1.	0.	0.	0.
411	1.	1.	0.	1.	0.	0.	0.	1.	0.	0.
421	0.	1.	1.	0.	1.	3.	0.	0.	0.	0.
431	1.	0.	0.	0.	0.	0.	1.	0.	1.	0.
441	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	1.	0.	0.	1.	2.	2.
461	2.	0.	1.	0.	1.	1.	1.	1.	2.	4.
471	1.	2.	2.	4.	1.	3.	2.	1.	1.	0.
481	2.	0.	0.	2.	0.	0.	0.	0.	0.	1.
491	0.	0.	1.	0.	2.	0.	1.	1.	1.	2.
511	1.	0.								

LABCORE Data Entry Template for Worklist# 8858

Analyst: DMV **Instrument:** PU01 #18 **Book#** 124343

Method: LA-943-128 Rev/Mod _____

Worklist Comment: C-106. RUSH. Determine sample size using ludlum. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@PU23901	SOLID		
2	BLNK-PREP				@PU23901	SOLID		
3	SAMPLE	S96T001036	0	F	@PU23901	SOLID	96000174	C-106 GRAB
	Analytes Requested: PU23901 , PU23901E, PU23901T							
4	DUP	S96T001036	0	F	@PU23901	SOLID		
5	SAMPLE	S96T001563	0	F	@PU23901	SOLID	96000174	C-106 GRAB
	Analytes Requested: PU23901 , PU23901E, PU23901T							
6	DUP	S96T001563	0	F	@PU23901	SOLID		

Final page for worklist # 8858

[signature] 5-17-96
Analyst Signature **Date**

[signature] 5-20-96
Analyst Signature **Date**

C.J. Opsion 5/21/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed RadChem Report for Worklist#: 8858

Analyst: jmv **Instrument:** PU01#18 **Book#** 124B43

Method: LA-943-128 Rev/Mod B-0

Worklist Comment: C-106. RUSH. Determine sample size using ludlum. new

Seq	Type	Sample#	R	A	Test		Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@PU23901	PU23901	SOLID	3.81E-02	3.73E-2	97.900	% Recovery
1	STD		0		@PU23901	PU23901T	SOLID	100	8.84E+01	88.400	% Recovery
1	STD		0		@PU23901	PU23901E	SOLID	1	2.99E+00	2.990	% Ct Error
2	BLNK-PREP		0		@PU23901	PU23901	SOLID	1	<1.60E-2		uCi/g
2	BLNK-PREP		0		@PU23901	PU23901T	SOLID	100	1.03E+02	103.000	% Recovery
2	BLNK-PREP		0		@PU23901	PU23901E	SOLID	1	1.00E+02	100.000	uCi/g
3	SAMPLE	S96T001036	0	F	@PU23901	PU23901	SOLID	N/A	1.20E+00	575.0e-004	uCi/g
3	SAMPLE	S96T001036	0	F	@PU23901	PU23901T	SOLID	N/A	9.19E+01	0.0e+000	% Recovery
3	SAMPLE	S96T001036	0	F	@PU23901	PU23901E	SOLID	N/A	1.82E+00	0.0e+000	% Ct. Error
4	DUP	S96T001036	0	F	@PU23901	PU23901	SOLID	1.20E+0	8.95E-1	29.117	RPD
4	DUP	S96T001036	0	F	@PU23901	PU23901T	SOLID	100	9.38E+01	93.800	% Recovery
4	DUP	S96T001036	0	F	@PU23901	PU23901E	SOLID	1.00	1.89E+00	1.890	% Ct Error
5	SAMPLE	S96T001563	0	F	@PU23901	PU23901	SOLID	N/A	1.65E+00	851.0e-004	uCi/g
5	SAMPLE	S96T001563	0	F	@PU23901	PU23901T	SOLID	N/A	9.14E+01	0.0e+000	% Recovery
5	SAMPLE	S96T001563	0	F	@PU23901	PU23901E	SOLID	N/A	1.76E+00	0.0e+000	% Ct. Error
6	DUP	S96T001563	0	F	@PU23901	PU23901	SOLID	1.65E+0	1.54E+0	6.897	RPD
6	DUP	S96T001563	0	F	@PU23901	PU23901T	SOLID	100	9.16E+01	91.600	% Recovery
6	DUP	S96T001563	0	F	@PU23901	PU23901E	SOLID	1.00	2.20E+00	2.200	% Ct Error

Final page for worklist# 8858

Analyst Signature **Date** **Analyst Signature** **Date**

John Relyea 22 May 96
Reviewer Signature **Date**

Validated. RPD for S96T001036 was high, but similar to that for the Amtest on W.L. 8862.

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID

						STD
	DATE COUNTED		MAY-18-96	PU 236 AEA FRAC	(C236)	0.700
STD	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.000
	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)	0.264
8858	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		2216
	DIGEST DILUTION FACTOR	DDF	1.000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)	0.200
	DETECTOR NUMBER		18	PU 236 cpm		32.800
LIQUID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm		0.000
	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		12.360
96004869	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME		480
	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2172.922	Pu 239/240 µCi/L		3.7284E+01
0	PU-238 TRACER VALUE	(dpm/mL)	0.000			
	STANDARD BOOK NO		124B43			
N/A	STANDARD VALUE in µCi/mL		0.038			

WL8858

Decay Time = Date Counted - Tracer Preparation Date

WB27809 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)* 1/EFF *C236*100/Pu-236 Decay Corr'd Value * SPKV

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

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)

JFR Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(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

JMV

05/20/96

Pu 239/240 µCi/mL		3.73E-02	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	3.0%	
			Pu 239/240
			4.80E-03
Pu 236 Tracer Recovery	=	88.4%	

05/17/96

12:00 AM

C-106 GRAB

Analyst:	JMV	Date:	20-May-96
Signature of Chemist: John Relyea	JFR	Date:	22 May 96

STANDARD.WB1 REV 1.0 943128ML

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID / SOLID

	DATE COUNTED		MAY-18-96	PU 236 AEA FRAC	(C236)	0.976
BLNK-PREP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.000
	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.000
8858	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		1861
	DIGEST GRAMS of SOLIDS/L	Dg/L	1.5792	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm (Bkg)		0.200
	DETECTOR NUMBER		18	PU 236 cpm		34.850
SOLID	EFFICIENCY FACTOR	EFF	0.2686	PU 238 cpm		0.000
	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		0.000
96004869	TRACER PREPARATION VALUE (dpm/mL)		2390.00	AEA COUNT TIME		480
	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2172.92	Pu 239/240 µCi/g =	<	1.601E-02
0	PU-238 TRACER VALUE	(dpm/mL)	0.00			

Sample Prep	
N/A	
Sample	Decay Time = Date Counted - Tracer Preparation Date
WL8858	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)*C236*100/(Pu-236 Decay Corr'd Value * SPKV*EFF)
WB27809	Pu 239/240 µCi/g = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
SEH	Pu 238 µCi/g = [(Pu 238 dpm)(DF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
JFR	
Analyst	
JMV	
Date Completed	
05/20/96	
Analysis Date	
05/17/96	
Analysis Time	
Sample Point	
C-106 GRAB	

Pu 239/240 µCi/g		< 1.60E-02	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		< 1.60E-02	1.60E-02
Relative Counting Error	=	100.0%	Pu 238
Pu 236 Tracer Recovery	=	103.4%	1.60E-02

Analyst:		JMV	Date:	20-May-96
Signature of Chemist:	John Relyea	JFR	Date:	22 May 96

BLANK.WB1 REV 1.0 943128ML

2330

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID / SOLID

						SAMPLE
	DATE COUNTED		MAY-19-96	PU 236 AEA FRAC	(C236)	0.252
SAMPLE	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.121
	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.581
8858	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		5392
	DIGEST GRAMS of SOLIDS/L	Dg/L	1.5792	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)	0.200
	DETECTOR NUMBER		18	PU 236 cpm		34.620
SOLID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm		16.570
	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		79.840
96004869	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME		480
	PU-236 DECAY CORR'D VALUE (dpm/mL)		2172.922	Pu 239/240 µCi/g		1.2009E+00
0	PU-238 TRACER VALUE (dpm/mL)		0.000			

Sample Point
FUSION01

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) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)
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 * 1/EFF * 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

Sample
S96T001036
Instrument
WB27808
Chemist
SEH
Chemist
JFR
Analyst
JMV
Date Completed
06/20/96
Analysis Date
06/17/96
Analysis Time

Pu 239/240 µCi/g		1.20E+00	DETECTION LEVELS In µCi/g
Relative Counting Error	=	1.8%	
			Pu 239/240
Pu 238 µCi/g		2.50E-01	6.75E-02
Relative Counting Error	=	2.7%	Pu 238
Pu 236 Tracer Recovery	=	91.9%	6.75E-02

Sample Point
C-106 GRAB

Analyst:	JMV	Date:	20-May-96
Signature of Chemist: John Relyea	JFR	Date:	22 May 96

SAMPLE.WB1 REV 1.0 943128ML

2331

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID / SOLID

							DUP
	DATE COUNTED		MAY-18-96	PU 236 AEA FRAC	(C236)		0.308
DUP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)		0.114
	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)		0.535
8858	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			5339
	DIGEST GRAMS of SOLIDS/L	Dg/L	1.0998	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)		0.200
	DETECTOR NUMBER		18	PU 236 cpm			35.260
SOLID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm			13.090
	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			61.200
96004869	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
	PU-236 DECAY CORR'D VALUE (dpm/mL)		2172.922	Pu 239/240 µCi/g			8.9502E-01
0	PU-238 TRACER VALUE (dpm/mL)		0.000				

Sample Type: FUSION01

Sample #: S96T001036

Instrument Used: WB27809

Prepared By: SEH

Chemist: JFR

Analyst: JMV

Date Composited: 05/20/96

Analysis Date: 05/17/96

Analysis Time:

Sample Form: C-106 GRAB

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) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)

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 * 1/EFF * 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

Pu 239/240 µCi/g		8.95E-01	DETECTION LEVELS in µCi/g
Relative Counting Error	=	1.9%	
			Pu 239/240
Pu 238 µCi/g		1.91E-01	5.35E-02
Relative Counting Error	=	2.9%	Pu 238
Pu 236 Tracer Recovery	=	93.8%	5.35E-02

Analyst:		JMV	Date:	20-May-96
Signature of Chemist:	John Relyea	JFR	Date:	22 May 96

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: SAM5

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID / SOLID

							SAMPLE
	DATE COUNTED		MAY-18-96	PU 236 AEA FRAC		(C236)	0.202
SAMPLE	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC		(C238)	0.128
	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC		(C239)	0.636
8858	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			7927
	DIGEST GRAMS of SOLIDS/L	Dg/L	1.6694	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm		(Bkg)	0.200
	DETECTOR NUMBER		18	PU 236 cpm			34.060
SOLID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm			21.550
	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			107.440
96004869	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
	PU-236 DECAY CORR'D VALUE (dpm/mL)		2172.922	Pu 239/240 µCi/g			1.6494E+00
0	PU-238 TRACER VALUE (dpm/mL)		0.000				

Sample Prep
FUSION01

Sample
S96T001563

Instrument
WB27809

Analyst
SEH

Calculation
JFR

Reviewed
JMV

Date Completed
05/20/96

Analyst Comments
05/17/96

Additional Info
C-106 GRAB

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) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)
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 * 1/EFF * 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

Pu 239/240 µCi/g		1.65E+00	DETECTION LEVELS in µCi/g
Relative Counting Error	=	1.8%	
			Pu 239/240
Pu 238 µCi/g		3.32E-01	8.51E-02
Relative Counting Error	=	2.5%	Pu 238
Pu 236 Tracer Recovery	=	91.4%	8.51E-02

Analyst:		JMV	Date:	20-May-96
Signature of Chemist:	John Relyea	JFR	Date:	22 May 96

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: DUP6

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID / SOLID

							DUP
	DATE COUNTED		MAY-18-96	PU 236 AEA FRAC	(C236)		0.209
DUP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)		0.132
	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)		0.510
8858	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			7678
	DIGEST GRAMS of SOLIDS/L	Dg/L	1.8492	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)		0.200
	DETECTOR NUMBER		18	PU 236 cpm			22.200
SOLID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm			14.040
	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			64.900
96004869	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
	PU-236 DECAY CORR'D VALUE (dpm/mL)		2172.922	Pu 239/240 µCi/g			1.5449E+00
0	PU-238 TRACER VALUE (dpm/mL)		0.000				

FUSION01

S96T001563

WB27809

SEH

JFR

JMV

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) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)

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 * 1/EFF * 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

05/20/96

06/17/96

C-106 GRAB

Pu 239/240 µCi/g		1.54E+00	DETECTION LEVELS In µCi/g
Relative Counting Error	=	2.2%	
			Pu 239/240
Pu 238 µCi/g		3.34E-01	8.30E-02
Relative Counting Error	=	3.1%	Pu 238
Pu 236 Tracer Recovery	=	91.6%	8.30E-02

Analyst:	JMV	Date:	20-May-96
Signature of Chemist: John Relyea	JFR	Date:	22 May 96

SAMPLE.WB1 REV 1.0 943128ML

2334

Raymond 5/18/96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
WL8858-STD
File ID: 17a1748.CNF

Counted on: 5/18/96 @ 6:59
Detector: AEA17
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	962.1	962.1	357.848	357.848	10.000	3.178	5.000	0.991
2	16.4	16.4	284.085	283.943	12.000	16.538	6.000	4.622
3	412.5	412.5	225.503	225.502	10.000	3.857	5.000	1.565

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.700	5.755	5.747	0.008	0.01	32.80	1.6	2656.2	0.120E-02
2	Th228	0.018	5.400	5.407	-.007	0.08	0.85	11.5	95.0	0.428E-04
	Am241		5.479	5.407	0.072				71.8	0.323E-04
3	Pu239	0.264	5.147	5.138	0.009	0.02	12.36	2.5	981.1	0.442E-03
	Pu240		5.144	5.138	0.006				981.1	0.442E-03
		---					---			
Totals:		0.982	<--valid peaks only-->				46.01			

DETECTOR CALIBRATION
Energy(MEV) = 4.101 + (0.0046)*Channel
Energy range (MeV): 4.101 TO 6.456
Efficiency = 0.0126 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	22501.0	100.000
Smoothed	22500.3	99.997
Composite fit	22087.9	98.164
Residuals	413.1	1.836

Analyzed by: _____
VR

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 6436.1


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Raw Data Dump for AEA Spectrum: 17a1748.CNF

1	0.	0.	0.	0.	1.	0.	1.	0.	0.	0.
11	0.	0.	1.	1.	2.	0.	0.	0.	1.	0.
21	0.	0.	1.	0.	2.	0.	1.	1.	0.	0.
31	0.	1.	0.	2.	1.	3.	0.	0.	1.	1.
41	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	1.	0.	1.	0.	0.	2.	0.
61	0.	0.	2.	0.	0.	0.	0.	0.	1.	0.
71	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
81	0.	1.	0.	0.	1.	1.	1.	0.	0.	1.
91	0.	1.	1.	0.	0.	1.	0.	0.	1.	0.
101	1.	0.	2.	1.	1.	1.	0.	1.	2.	2.
111	0.	2.	2.	0.	0.	1.	1.	1.	1.	0.
121	0.	1.	0.	1.	2.	2.	1.	1.	0.	1.
131	1.	2.	0.	2.	0.	1.	0.	1.	2.	1.
141	0.	1.	1.	4.	3.	4.	1.	3.	2.	5.
151	5.	2.	4.	0.	4.	2.	5.	2.	5.	5.
161	4.	5.	5.	3.	1.	5.	4.	9.	0.	10.
171	4.	8.	7.	5.	9.	8.	10.	7.	8.	11.
181	10.	16.	12.	8.	7.	13.	20.	15.	23.	20.
191	18.	29.	18.	25.	21.	23.	38.	29.	30.	35.
201	29.	55.	32.	56.	50.	51.	52.	94.	61.	93.
211	110.	99.	128.	141.	148.	165.	196.	204.	203.	251.
221	282.	307.	388.	427.	459.	492.	421.	367.	241.	102.
231	34.	18.	6.	2.	2.	2.	0.	2.	2.	0.
241	2.	3.	1.	3.	6.	0.	1.	6.	3.	3.
251	5.	2.	4.	1.	3.	4.	0.	6.	4.	2.
261	5.	1.	9.	7.	8.	17.	4.	4.	10.	3.
271	8.	6.	8.	4.	9.	11.	6.	12.	10.	14.
281	15.	16.	17.	23.	20.	17.	11.	8.	6.	7.
291	13.	11.	15.	12.	16.	11.	13.	19.	17.	25.
301	21.	18.	19.	18.	13.	20.	18.	21.	14.	22.
311	17.	20.	21.	31.	25.	24.	29.	49.	29.	32.
321	40.	44.	35.	57.	48.	80.	58.	57.	67.	78.
331	87.	82.	109.	97.	107.	129.	130.	154.	181.	188.
341	194.	259.	274.	303.	368.	471.	544.	591.	604.	624.
351	544.	576.	596.	659.	771.	885.	1016.	1154.	1080.	901.
361	548.	203.	52.	7.	0.	0.	0.	0.	0.	1.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	1.	1.	0.	0.	1.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
401	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
441	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	1.	0.	1.	0.	0.	0.
461	1.	1.	0.	0.	0.	1.	0.	0.	2.	0.
471	1.	0.	2.	2.	0.	2.	2.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
491	1.	0.	0.	1.	1.	0.	1.	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. 2.02

DATA REDUCTION REPORT

SAMPLE
WL8857-BLK
File ID: 18a1826.CNF

Counted on: 5/18/96 @ 7: 0
Detector: AEA18
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	1056.4	1056.4	360.911	360.911	10.000	3.002	5.000	0.969

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.976	5.755	5.748	0.007	0.01	34.85	1.5	1685.4	0.759E-03
Totals:		0.976	<--valid peaks only-->				34.85			

DETECTOR CALIBRATION
Energy(MEV) = 4.088 + (0.0046)*Channel
Energy range (MeV): 4.088 TO 6.443
Efficiency = 0.0211 CPM/DPM

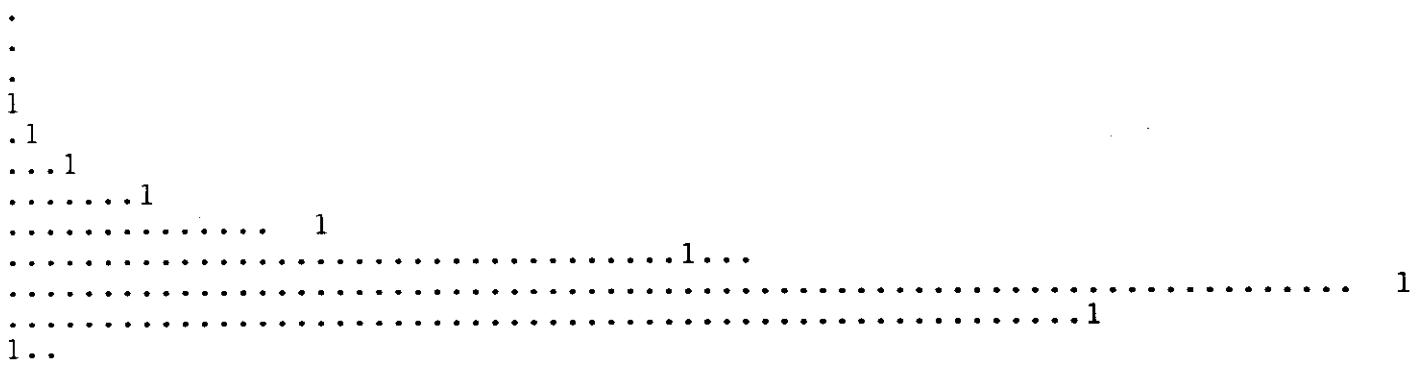
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	17134.0	100.000
Smoothed	17133.9	99.999
Composite fit	16730.9	97.647
Residuals	403.1	2.353

Analyzed by: _____
VR

Spectrum 18a1826.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5780.3



Raw Data Dump for AEA Spectrum: 18a1826.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	2.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
61	1.	0.	2.	2.	1.	0.	1.	1.	3.	0.
71	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
81	0.	1.	0.	0.	0.	1.	0.	0.	0.	0.
91	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	0.	0.	0.	0.	1.	1.	0.	0.	0.	2.
111	0.	0.	1.	0.	2.	0.	1.	0.	1.	1.
121	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
131	0.	0.	1.	0.	1.	2.	0.	0.	0.	1.
141	0.	1.	2.	0.	0.	0.	0.	0.	0.	0.
151	0.	0.	1.	1.	0.	0.	1.	2.	1.	1.
161	1.	0.	0.	0.	0.	0.	1.	0.	0.	1.
171	1.	0.	0.	1.	0.	0.	0.	0.	2.	0.
181	1.	0.	1.	0.	0.	1.	0.	0.	0.	0.
191	0.	1.	0.	0.	0.	0.	3.	0.	0.	0.
201	0.	2.	0.	1.	0.	2.	0.	0.	1.	0.
211	1.	1.	1.	0.	1.	0.	2.	1.	2.	2.
221	0.	0.	2.	2.	4.	2.	0.	2.	1.	2.
231	3.	3.	0.	2.	1.	0.	2.	0.	2.	0.
241	3.	4.	2.	2.	1.	2.	3.	1.	1.	3.
251	2.	3.	1.	1.	2.	3.	2.	2.	5.	4.
261	5.	2.	4.	4.	3.	8.	6.	5.	11.	7.
271	5.	1.	4.	5.	4.	6.	6.	7.	6.	5.
281	12.	16.	8.	13.	13.	16.	18.	27.	11.	10.
291	11.	9.	10.	11.	13.	9.	11.	12.	12.	16.
301	12.	14.	23.	12.	20.	12.	17.	16.	17.	11.
311	14.	22.	25.	22.	31.	21.	21.	27.	35.	30.
321	28.	36.	46.	33.	34.	52.	47.	63.	52.	78.
331	71.	84.	79.	84.	100.	113.	100.	108.	124.	130.
341	175.	170.	183.	231.	256.	289.	334.	423.	486.	552.
351	636.	709.	619.	621.	540.	610.	702.	809.	988.	1069.
361	1283.	1226.	970.	597.	220.	33.	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.	1.	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.	1.
431	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
441	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	1.	0.	2.	0.	0.	1.
471	1.	1.	2.	1.	0.	0.	2.	0.	1.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
511	1.	0.								

Raymond 5/18/96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T1036-SAM
File ID: 19a1978.CNF

Counted on: 5/18/96 @ 7: 0
Detector: AEA19
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	948.8	948.8	360.315	360.315	10.000	3.014	5.000	0.843
2	451.2	451.2	302.537	302.507	10.000	3.104	5.000	0.865
3	2484.6	2484.6	228.643	228.642	10.000	3.916	5.000	1.418

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.252	5.755	5.739	0.016	0.01	34.62	1.5	1230.8	0.554E-03
2	Pu238	0.121	5.487	5.473	0.014	0.01	16.57	2.2	802.1	0.361E-03
	Am241		5.479	5.473	0.006				614.4	0.277E-03
3	Pu239	0.581	5.147	5.133	0.014	0.02	79.84	1.0	2782.0	0.125E-02
	Pu240		5.144	5.133	0.011				2782.0	0.125E-02
Totals:		0.953	<--valid peaks only-->				131.04			

DETECTOR CALIBRATION
Energy(MEV) = 4.081 + (0.0046)*Channel
Energy range (MeV): 4.081 TO 6.436
Efficiency = 0.0287 CPM/DPM

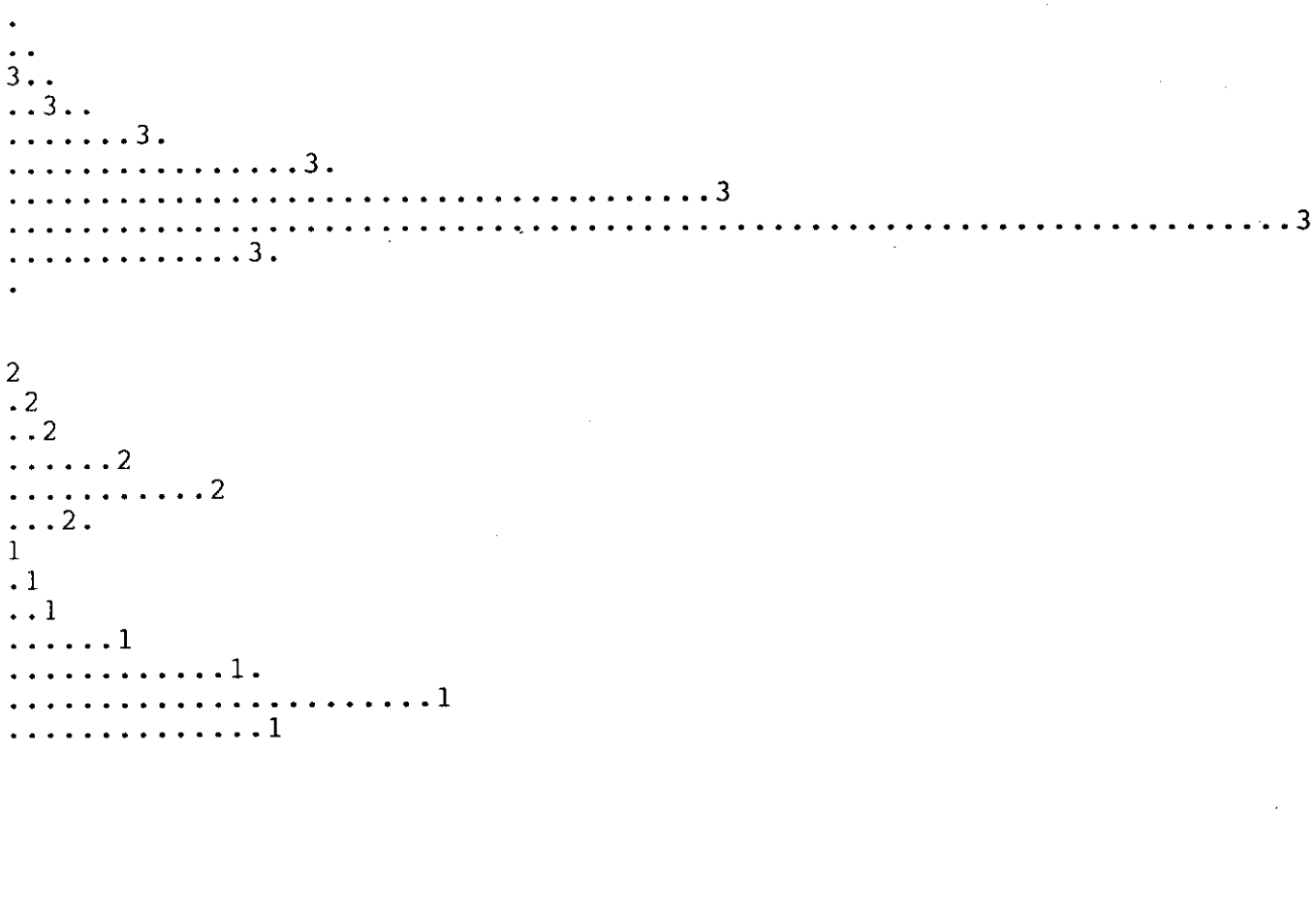
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	65980.0	100.000
Smoothed	65979.2	99.999
Composite fit	62906.8	95.342
Residuals	3073.2	4.658

Analyzed by: _____
VR

Spectrum 19a1978.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 17043.8



Raw Data Dump for AEA Spectrum: 19a1978.CNF

1	0.	0.	1.	1.	0.	1.	1.	0.	1.	2.
11	0.	2.	2.	0.	2.	0.	2.	0.	2.	3.
21	3.	0.	4.	1.	1.	0.	2.	4.	1.	0.
31	1.	1.	3.	1.	2.	0.	2.	0.	3.	2.
41	3.	2.	0.	2.	2.	2.	1.	2.	0.	1.
51	0.	2.	2.	2.	4.	1.	1.	2.	1.	4.
61	1.	3.	4.	2.	3.	3.	4.	2.	2.	1.
71	1.	0.	1.	0.	3.	0.	3.	4.	2.	1.
81	2.	1.	2.	3.	3.	3.	4.	3.	3.	1.
91	1.	2.	4.	2.	3.	2.	4.	5.	1.	4.
101	7.	5.	2.	2.	3.	1.	1.	5.	3.	10.
111	0.	8.	5.	7.	5.	3.	6.	3.	9.	6.
121	7.	5.	10.	9.	8.	7.	6.	8.	8.	10.
131	6.	5.	7.	3.	10.	10.	4.	10.	10.	13.
141	5.	10.	8.	12.	13.	16.	10.	13.	14.	15.
151	24.	17.	16.	18.	18.	17.	19.	26.	22.	31.
161	21.	22.	26.	33.	29.	25.	27.	35.	39.	40.
171	43.	44.	37.	51.	38.	56.	60.	48.	54.	62.
181	62.	73.	95.	86.	73.	96.	92.	107.	113.	103.
191	133.	134.	141.	152.	179.	153.	178.	220.	212.	235.
201	265.	255.	228.	303.	324.	304.	367.	371.	447.	462.
211	476.	544.	640.	685.	716.	789.	918.	1114.	1108.	1166.
221	1285.	1383.	1521.	1667.	1927.	2178.	2460.	2794.	2875.	2735.
231	2210.	1448.	747.	390.	135.	44.	7.	5.	5.	5.
241	6.	13.	11.	9.	5.	5.	6.	13.	12.	16.
251	6.	20.	11.	16.	16.	15.	19.	21.	25.	25.
261	26.	20.	28.	22.	26.	38.	36.	30.	44.	35.
271	47.	34.	36.	51.	59.	63.	48.	73.	70.	82.
281	90.	82.	111.	115.	122.	144.	180.	157.	173.	193.
291	215.	246.	270.	296.	318.	311.	289.	308.	331.	409.
301	429.	523.	535.	525.	399.	199.	50.	30.	22.	21.
311	22.	33.	20.	36.	31.	39.	37.	41.	39.	41.
321	44.	46.	56.	69.	56.	67.	78.	76.	83.	97.
331	72.	107.	99.	118.	118.	144.	147.	145.	161.	183.
341	203.	212.	248.	258.	284.	329.	400.	447.	487.	591.
351	644.	651.	666.	563.	537.	601.	690.	806.	906.	1136.
361	1117.	1035.	680.	282.	77.	6.	0.	3.	2.	0.
371	0.	1.	0.	1.	0.	0.	1.	0.	0.	1.
381	1.	1.	1.	0.	0.	0.	0.	0.	0.	1.
391	1.	0.	1.	0.	0.	0.	0.	0.	1.	1.
401	1.	0.	0.	1.	0.	2.	0.	0.	1.	1.
411	0.	0.	3.	1.	0.	2.	0.	0.	1.	0.
421	0.	1.	2.	0.	0.	2.	0.	0.	0.	0.
431	1.	1.	0.	1.	1.	0.	0.	1.	0.	0.
441	0.	0.	0.	0.	0.	2.	0.	1.	2.	1.
451	0.	1.	1.	0.	0.	1.	2.	1.	1.	1.
461	0.	0.	0.	1.	0.	1.	0.	2.	2.	0.
471	2.	3.	0.	2.	3.	1.	0.	2.	3.	2.
481	1.	3.	0.	1.	0.	1.	1.	0.	0.	1.
491	1.	2.	3.	0.	0.	0.	0.	4.	1.	1.
511	1.	0.								

Raymond 5/18/96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T1036-DUP
File ID: 20a2009.CNF

Counted on: 5/18/96 @ 7: 1
Detector: AEA20
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	942.3	942.3	361.423	361.423	10.000	3.186	5.000	0.870
2	343.8	343.8	303.386	303.346	10.000	3.241	5.000	0.866
3?	88.7	88.7	250.783	250.783	8.000	0.000	4.000	2.491
4	1834.2	1834.2	228.984	228.983	12.000	4.146	6.000	1.438
5	15.3	15.3	148.175	147.980	108.000	1.000	54.000	0.100

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.308	5.755	5.758	-.003	0.01	35.26	1.5	1097.1	0.494E-03
2	Pu238	0.114	5.487	5.491	-.004	0.01	13.09	2.5	554.4	0.250E-03
	Am241		5.479	5.491	-.012				424.6	0.191E-03
3		????		5.249			0.00	1000.		
4	Pu239	0.535	5.147	5.149	-.002	0.02	61.20	1.1	1865.9	0.841E-03
	Pu240		5.144	5.149	-.005				1865.9	0.841E-03
5	Np237	0.011	4.769	4.776	-.007	0.00	1.21	8.2	42.6	0.192E-04
Totals:		0.968	<--valid peaks only-->				110.77			

DETECTOR CALIBRATION
Energy(MEV) = 4.095 + (0.0046)*Channel
Energy range (MeV): 4.095 TO 6.451
Efficiency = 0.0328 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	54915.0	100.000
Smoothed	54919.6	100.008
Composite fit	53173.4	96.829
Residuals	1741.6	3.171

Analyzed by: _____
VR

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 12769.6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Raw Data Dump for AEA Spectrum: 20a2009.CNF

1	0.	0.	0.	2.	4.	0.	1.	1.	2.	1.
11	0.	0.	1.	0.	0.	1.	1.	0.	0.	0.
21	0.	2.	1.	1.	0.	2.	0.	2.	1.	0.
31	1.	3.	0.	1.	0.	0.	0.	2.	3.	2.
41	0.	1.	0.	3.	1.	1.	1.	1.	1.	0.
51	1.	1.	2.	1.	0.	2.	1.	2.	2.	3.
61	5.	1.	2.	2.	1.	3.	3.	0.	3.	2.
71	2.	2.	1.	0.	1.	2.	2.	4.	7.	2.
81	1.	3.	1.	0.	2.	1.	4.	0.	2.	2.
91	0.	4.	3.	3.	5.	1.	1.	4.	2.	3.
101	3.	5.	3.	4.	6.	6.	2.	3.	2.	5.
111	5.	3.	3.	3.	6.	6.	6.	2.	6.	5.
121	3.	2.	7.	6.	6.	7.	6.	6.	7.	9.
131	7.	6.	8.	6.	4.	10.	12.	7.	3.	12.
141	8.	10.	11.	11.	12.	13.	18.	17.	13.	14.
151	16.	9.	6.	13.	20.	16.	21.	16.	21.	17.
161	24.	20.	22.	21.	21.	28.	27.	34.	26.	33.
171	36.	23.	44.	46.	47.	62.	62.	42.	49.	50.
181	48.	70.	62.	54.	77.	92.	74.	86.	80.	91.
191	100.	101.	118.	96.	129.	139.	154.	143.	150.	173.
201	168.	209.	216.	219.	253.	268.	299.	309.	304.	323.
211	388.	395.	456.	468.	528.	603.	663.	760.	820.	832.
221	982.	1035.	1165.	1251.	1452.	1577.	1763.	1939.	2076.	2126.
231	1734.	1298.	790.	414.	192.	66.	13.	11.	4.	10.
241	7.	9.	10.	12.	7.	7.	15.	4.	14.	8.
251	15.	17.	12.	11.	15.	9.	19.	13.	15.	13.
261	24.	18.	26.	17.	19.	19.	34.	28.	35.	37.
271	46.	44.	42.	40.	47.	38.	51.	50.	67.	55.
281	51.	72.	76.	81.	95.	88.	109.	151.	120.	148.
291	154.	167.	204.	232.	242.	257.	259.	220.	238.	268.
301	316.	341.	392.	427.	388.	272.	157.	52.	22.	27.
311	25.	17.	39.	33.	33.	45.	33.	40.	30.	46.
321	47.	51.	43.	67.	65.	63.	69.	58.	88.	80.
331	94.	106.	123.	102.	120.	122.	126.	142.	139.	195.
341	192.	198.	217.	236.	252.	304.	327.	372.	455.	542.
351	607.	656.	656.	607.	556.	559.	605.	644.	827.	923.
361	1082.	1124.	1001.	798.	369.	94.	15.	0.	0.	0.
371	0.	2.	1.	1.	2.	1.	1.	0.	0.	0.
381	1.	1.	0.	0.	1.	0.	0.	0.	0.	1.
391	0.	0.	0.	0.	0.	0.	1.	2.	1.	1.
401	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
411	1.	1.	0.	0.	2.	0.	1.	0.	2.	0.
421	1.	0.	1.	1.	0.	0.	1.	1.	0.	0.
431	2.	0.	1.	0.	0.	0.	2.	1.	1.	0.
441	1.	0.	1.	2.	0.	0.	1.	2.	1.	0.
451	0.	0.	0.	0.	1.	1.	1.	0.	4.	0.
461	1.	0.	1.	2.	0.	1.	1.	0.	1.	0.
471	1.	0.	0.	0.	4.	2.	0.	0.	0.	0.
481	3.	1.	0.	0.	0.	0.	0.	0.	1.	0.
491	2.	1.	0.	0.	1.	0.	1.	0.	0.	2.
511	1.	0.								

Wraymond 5/18/96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T1563-SAM
File ID: 21a2115.CNF

Counted on: 5/18/96 @ 7: 1
Detector: AEA21
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	724.5	724.5	358.221	358.221	16.000	7.439	8.000	1.775
2	468.5	468.5	300.490	300.403	16.000	7.380	8.000	1.817
3	2552.8	2552.8	227.175	227.171	16.000	7.697	8.000	2.233

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Ra224	0.202	5.686	5.737	-.051	0.03	34.06	1.5	219.2	0.987E-04
	Pu236		5.755	5.737	0.018				210.2	0.947E-04
2	Pu238	0.128	5.487	5.471	0.016	0.03	21.56	2.0	181.2	0.816E-04
	Am241		5.479	5.471	0.008				138.8	0.625E-04
3	Pu239	0.636	5.147	5.134	0.013	0.04	107.44	0.9	649.9	0.293E-03
	Pu240		5.144	5.134	0.010				649.9	0.293E-03
		---					---			
Totals:		0.965	<--valid peaks only-->				163.06			

DETECTOR CALIBRATION
Energy(MEV) = 4.089 + (0.0046)*Channel
Energy range (MeV): 4.089 TO 6.445
Efficiency = 0.1653 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	81082.0	100.000
Smoothed	81081.2	99.999
Composite fit	78283.8	96.549
Residuals	2798.2	3.451

Analyzed by: _____
VR

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 18314.9


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Raw Data Dump for AEA Spectrum: 21a2115.CNF

1	0.	0.	1.	1.	0.	1.	0.	0.	1.	2.
11	0.	1.	0.	0.	0.	1.	0.	1.	1.	3.
21	1.	1.	0.	1.	1.	1.	2.	0.	2.	0.
31	2.	2.	1.	0.	2.	1.	2.	0.	1.	4.
41	5.	2.	2.	2.	2.	2.	1.	3.	1.	0.
51	1.	5.	3.	1.	5.	3.	4.	2.	6.	4.
61	4.	4.	3.	0.	4.	4.	2.	0.	6.	3.
71	2.	2.	0.	3.	4.	1.	4.	3.	7.	2.
81	3.	5.	3.	3.	2.	4.	3.	1.	6.	4.
91	4.	2.	5.	5.	6.	5.	6.	2.	6.	1.
101	6.	5.	6.	5.	4.	7.	9.	6.	7.	2.
111	6.	8.	1.	7.	6.	4.	4.	8.	12.	6.
121	8.	6.	6.	9.	8.	8.	17.	14.	14.	15.
131	12.	12.	11.	15.	13.	17.	13.	10.	19.	20.
141	15.	17.	17.	19.	20.	17.	22.	35.	22.	22.
151	36.	32.	36.	27.	35.	27.	37.	33.	43.	31.
161	32.	56.	43.	51.	52.	48.	48.	56.	65.	48.
171	64.	78.	94.	91.	73.	91.	95.	77.	103.	97.
181	121.	134.	126.	126.	143.	131.	149.	154.	169.	203.
191	243.	235.	218.	235.	282.	279.	279.	317.	319.	331.
201	348.	390.	444.	444.	521.	478.	522.	591.	652.	711.
211	741.	806.	953.	957.	1161.	1210.	1354.	1469.	1575.	1830.
221	1899.	2033.	2214.	2376.	2623.	2674.	2744.	2758.	2567.	2297.
231	1829.	1518.	1084.	764.	474.	266.	165.	78.	41.	31.
241	14.	21.	15.	13.	15.	14.	20.	13.	18.	26.
251	16.	24.	14.	23.	19.	29.	24.	19.	33.	31.
261	32.	25.	44.	52.	39.	45.	53.	55.	65.	60.
271	84.	67.	81.	74.	78.	96.	91.	112.	121.	131.
281	126.	113.	153.	168.	198.	192.	254.	241.	249.	284.
291	322.	328.	372.	436.	407.	405.	470.	468.	481.	521.
301	524.	499.	452.	387.	337.	234.	157.	97.	88.	59.
311	49.	29.	37.	37.	36.	36.	52.	56.	46.	52.
321	56.	60.	75.	64.	95.	77.	77.	108.	102.	106.
331	104.	102.	107.	135.	147.	163.	171.	200.	206.	243.
341	227.	260.	293.	314.	422.	360.	415.	463.	541.	569.
351	572.	596.	619.	646.	636.	737.	738.	772.	771.	745.
361	663.	525.	432.	322.	179.	111.	61.	28.	7.	9.
371	2.	0.	0.	1.	0.	1.	0.	0.	0.	0.
381	1.	0.	0.	1.	0.	1.	2.	1.	2.	0.
391	1.	1.	0.	0.	0.	0.	0.	0.	0.	1.
401	0.	0.	0.	0.	0.	0.	1.	0.	1.	1.
411	0.	1.	0.	0.	0.	1.	0.	0.	1.	0.
421	1.	0.	1.	0.	1.	0.	0.	1.	0.	0.
431	0.	1.	2.	2.	0.	1.	0.	2.	2.	2.
441	1.	0.	1.	0.	0.	0.	1.	1.	0.	2.
451	1.	0.	0.	0.	1.	1.	1.	2.	2.	1.
461	0.	1.	1.	0.	1.	2.	0.	1.	2.	0.
471	2.	2.	2.	1.	2.	2.	2.	4.	1.	1.
481	2.	3.	3.	0.	1.	1.	0.	2.	1.	0.
491	2.	2.	0.	2.	0.	0.	0.	0.	0.	3.
511	1.	0.								

VRaymond 5/18/96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T1563-DUP
File ID: 22a2209.CNF

Counted on: 5/18/96 @ 7: 2
Detector: AEA22
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	588.2	588.2	359.091	359.091	10.000	3.084	5.000	0.827
2	365.3	365.3	300.487	300.461	10.000	3.548	5.000	0.953
3	1899.4	1899.4	225.864	225.863	12.000	4.277	6.000	1.440
4	31.4	31.4	156.567	156.339	78.000	331.703	39.000	93.705

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.209	5.755	5.762	-.007	0.01	22.20	1.9	1690.4	0.761E-03
	Cm243		5.779	5.762	0.017				2269.3	0.102E-02
2	Pu238	0.132	5.487	5.493	-.006	0.02	14.04	2.4	1455.3	0.656E-03
	Am241		5.479	5.493	-.014				1114.7	0.502E-03
3	Pu239	0.610	5.147	5.149	-.002	0.02	64.90	1.1	4843.2	0.218E-02
	Pu240		5.144	5.149	-.005				4843.2	0.218E-02
4	Pu242	0.053	4.891	4.830	0.061	1.53	5.68	13.3	424.2	0.191E-03
	Np237		4.769	4.830	-.061				487.5	0.220E-03
		---					---			
Totals:		1.003	<--valid peaks only-->				106.82			

DETECTOR CALIBRATION
Energy(MEV) = 4.110 + (0.0046)*Channel
Energy range (MeV): 4.110 TO 6.466
Efficiency = 0.0134 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	51106.0	100.000
Smoothed	51104.9	99.998
Composite fit	51279.6	100.340
Residuals	-173.6	-0.340

Analyzed by: _____
VR

Spectrum 22a2209.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 10980.8


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Raw Data Dump for AEA Spectrum: 22a2209.CNF

1	0.	0.	0.	0.	0.	0.	3.	0.	0.	3.
11	1.	1.	1.	2.	1.	0.	0.	1.	0.	1.
21	0.	1.	1.	2.	1.	1.	0.	2.	2.	2.
31	2.	2.	1.	2.	2.	4.	1.	2.	0.	4.
41	2.	0.	1.	2.	3.	3.	3.	2.	1.	0.
51	1.	3.	2.	2.	2.	4.	1.	1.	3.	2.
61	2.	1.	2.	0.	3.	3.	3.	3.	3.	4.
71	2.	4.	3.	5.	2.	8.	3.	1.	4.	2.
81	2.	0.	6.	3.	2.	4.	4.	2.	2.	1.
91	3.	7.	2.	3.	2.	0.	3.	3.	3.	4.
101	4.	2.	6.	5.	5.	5.	4.	14.	7.	7.
111	4.	6.	7.	9.	5.	9.	7.	8.	6.	4.
121	9.	7.	8.	7.	8.	9.	1.	11.	8.	12.
131	11.	10.	5.	8.	11.	15.	9.	16.	10.	13.
141	10.	14.	13.	17.	24.	22.	14.	18.	23.	20.
151	17.	17.	20.	21.	27.	32.	26.	31.	20.	17.
161	20.	26.	18.	34.	30.	47.	53.	41.	47.	42.
171	46.	54.	52.	46.	46.	65.	55.	53.	67.	72.
181	57.	79.	96.	101.	86.	78.	106.	109.	114.	123.
191	129.	138.	145.	145.	165.	177.	192.	206.	198.	228.
201	224.	248.	287.	295.	300.	332.	373.	391.	461.	481.
211	531.	596.	677.	770.	811.	868.	947.	1037.	1111.	1188.
221	1362.	1456.	1687.	1796.	2089.	2184.	2093.	1775.	1342.	787.
231	411.	207.	73.	9.	12.	5.	5.	8.	9.	9.
241	12.	13.	8.	8.	12.	10.	11.	12.	10.	10.
251	13.	12.	14.	10.	13.	15.	15.	11.	16.	31.
261	18.	28.	28.	35.	34.	32.	33.	35.	41.	45.
271	39.	52.	46.	46.	50.	55.	51.	61.	85.	90.
281	96.	81.	99.	114.	108.	146.	127.	160.	188.	192.
291	233.	302.	262.	263.	266.	258.	270.	315.	378.	414.
301	424.	418.	322.	183.	75.	32.	19.	15.	22.	18.
311	18.	28.	22.	24.	24.	26.	27.	30.	31.	27.
321	38.	33.	42.	45.	44.	59.	58.	64.	43.	73.
331	79.	79.	74.	72.	91.	94.	107.	117.	128.	135.
341	139.	175.	171.	198.	209.	214.	281.	394.	399.	400.
351	419.	372.	330.	345.	411.	484.	501.	598.	693.	684.
361	591.	378.	154.	35.	1.	0.	1.	2.	0.	0.
371	0.	1.	0.	1.	1.	1.	1.	0.	0.	0.
381	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.
391	0.	1.	0.	1.	1.	0.	0.	0.	0.	0.
401	0.	3.	0.	0.	2.	0.	0.	0.	0.	0.
411	1.	0.	0.	0.	1.	0.	1.	0.	1.	2.
421	0.	0.	1.	2.	2.	0.	0.	1.	0.	1.
431	0.	0.	0.	0.	1.	1.	0.	1.	0.	1.
441	0.	1.	1.	0.	0.	0.	1.	0.	0.	0.
451	0.	0.	1.	1.	0.	0.	1.	1.	0.	1.
461	1.	1.	0.	1.	2.	3.	2.	0.	1.	2.
471	2.	2.	0.	0.	1.	2.	1.	1.	1.	1.
481	1.	3.	0.	0.	0.	0.	0.	2.	0.	2.
491	1.	1.	1.	3.	0.	0.	1.	2.	2.	1.
511	0.	0.								

LABCORE Data Entry Template for Worklist# 8859

Analyst: JMV **Instrument:** PU01 #13 **Book#** 124343

Method: LA-943-128 Rev/Mod _____

Worklist Comment: C-106. RUSH. Determine sample size using ludlum. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@PU23901	SOLID		
2	BLNK-PREP				@PU23901	SOLID		
3	SAMPLE	S96T001531	0	F	@PU23901	SOLID	96000082	C-106 GRAB
	Analytes Requested: PU23901 , PU23901E, PU23901T							
4	DUP	S96T001531	0	F	@PU23901	SOLID		
5	SAMPLE	S96T001541	0	F	@PU23901	SOLID	96000082	C-106 GRAB
	Analytes Requested: PU23901 , PU23901E, PU23901T							
6	DUP	S96T001541	0	F	@PU23901	SOLID		

Final page for worklist # 8859

Joel M Lanshat 5-17-96
Analyst Signature **Date**

Sue E. Hogan 5/20/96
Analyst Signature **Date**

MS... 5/20/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

worklistrad Version 0.0 04/18/96
05/20/96 12:24

LABCORE Completed RadChem Report for Worklist#: 8859

Analyst: jmv **Instrument:** AB13 **Book#** 124B43

Method: LA-943-128 Rev/Mod B-Ø

Worklist Comment: C-106. RUSH. Determine sample size using ludlum. new

Seq	Type	Sample#	R	A	Test		Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@PU23901	PU23901	SOLID	3.81E-02	3.95E-2	103.675	% Recovery
1	STD		0		@PU23901	PU23901T	SOLID	100	8.24E+01	82.400	% Recovery
1	STD		0		@PU23901	PU23901E	SOLID	1	3.04E+00	3.040	% Ct Error
2	BLNK-PREP		0		@PU23901	PU23901	SOLID	1	<1.55E-2		uCi/g
2	BLNK-PREP		0		@PU23901	PU23901T	SOLID	100	9.26E+01	92.600	% Recovery
2	BLNK-PREP		0		@PU23901	PU23901E	SOLID	1	1.00E+02	100.000	uCi/g
3	SAMPLE	S96T001531	0	F	@PU23901	PU23901	SOLID	N/A	1.27E+00	756.0e-004	uCi/g
3	SAMPLE	S96T001531	0	F	@PU23901	PU23901T	SOLID	N/A	8.25E+01	0.0e+000	% Recovery
3	SAMPLE	S96T001531	0	F	@PU23901	PU23901E	SOLID	N/A	1.37E+00	0.0e+000	% Ct. Error
4	DUP	S96T001531	0	F	@PU23901	PU23901	SOLID	1.27E+0	1.21E+0	4.839	RPD
4	DUP	S96T001531	0	F	@PU23901	PU23901T	SOLID	100	8.54E+01	85.400	% Recovery
4	DUP	S96T001531	0	F	@PU23901	PU23901E	SOLID	1.00	1.38E+00	1.380	% Ct Error
5	SAMPLE	S96T001541	0	F	@PU23901	PU23901	SOLID	N/A	1.42E+00	814.0e-004	uCi/g
5	SAMPLE	S96T001541	0	F	@PU23901	PU23901T	SOLID	N/A	8.60E+01	0.0e+000	% Recovery
5	SAMPLE	S96T001541	0	F	@PU23901	PU23901E	SOLID	N/A	1.42E+00	0.0e+000	% Ct. Error
6	DUP	S96T001541	0	F	@PU23901	PU23901	SOLID	1.42E+0	1.48E+0	4.138	RPD
6	DUP	S96T001541	0	F	@PU23901	PU23901T	SOLID	100	9.11E+01	91.100	% Recovery
6	DUP	S96T001541	0	F	@PU23901	PU23901E	SOLID	1.00	1.35E+00	1.350	% Ct Error

Final page for worklist# 8859

Analyst Signature **Date** **Analyst Signature** **Date**

John Relyea 20 May 96
Reviewer Signature **Date**

Validated 20 May 96

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID

						STD
	DATE COUNTED		MAY-18-96	PU 236 AEA FRAC	(C236)	0.699
STD	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.000
	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)	0.279
8859	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		2443
	DIGEST DILUTION FACTOR	DDF	1.000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)	0.400
	DETECTOR NUMBER		13	PU 236 cpm		30.470
LIQUID	EFFICIENCY FACTOR	EFF	0.316	PU 238 cpm		0.000
	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		12.140
96004870	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME		480
	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2172.922	Pu 239/240 µCi/L		3.9458E+01
0	PU-238 TRACER VALUE	(dpm/mL	0.000			
Sample Prep	STANDARD BOOK NO		124B43			
N/A	STANDARD VALUE in µCi/mL		0.038			
Sample #						
WL8859						
Instrument Code	Decay Time = Date Counted - Tracer Preparation Date					
WB27810	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)}]					
Prepared By	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)* 1/EFF *C236*100/Pu-236 Decay Corr'd Value * SPKV					
SEH	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(2220000 dpm/µCi)]					
Chemist	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)					
JFR	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]					
Analyst	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100					
JMV						
Date Counted						
05/20/96	Pu 239/240 µCi/mL		3.95E-02	DETECTION LEVELS in µCi/mL		
Analysis Date	Relative Counting Error	=	3.0%			
05/17/96				Pu 239/240		
Analysis Time				5.15E-03		
12:00 AM						
Sample Point						
C-106 GRAB	Pu 236 Tracer Recovery	=	82.4%			

Analyst:		JMV	Date:	20-May-96
Signature of Chemist:	John Relyea	JFR	Date:	20 May 96

STANDARD.WB1 REV 1.0 943128ML

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID / SOLID

	DATE COUNTED		MAY-15-96	PU 236 AEA FRAC	(C236)	0.974
BLNK-PREP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.000
	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.000
8859	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		1972
	DIGEST GRAMS of SOLIDS/L	Dg/L	2.1028	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm (Bkg)		0.400
	DETECTOR NUMBER		13	PU 236 cpm		36.720
SOLID	EFFICIENCY FACTOR	EFF	0.3163	PU 238 cpm		0.000
	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		0.000
96004870	TRACER PREPARATION VALUE (dpm/mL)		2390.00	AEA COUNT TIME		480
	PU-236 DECAY CORR'D VALUE (dpm/mL)		2172.92	Pu 239/240 µCi/g =	<	1.548E-02
0	PU-238 TRACER VALUE (dpm/mL)		0.00			

BLNK-PREP

Sample Type
N/A

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)*C236*100/(Pu-236 Decay Corr'd Value * SPKV*EFF)
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 * 1/EFF * 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

Instrument Code: WB27810
Prepared By: SEH
Chemist: JFR
Analyst: JMV
Date Completed: 05/20/96
Analysis Date: 05/17/96
Analysis Time:
Sample Point: C-106 GRAB

Pu 239/240 µCi/g		< 1.55E-02	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		< 1.55E-02	1.55E-02
Relative Counting Error	=	100.0%	Pu 238
Pu 236 Tracer Recovery	=	92.6%	1.55E-02

Analyst:		JMV	Date:	20-May-96
Signature of Chemist:	John Relyea	JFR	Date:	20 May 96

BLANK.WB1 REV 1.0 943128ML

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID / SOLID

							SAMPLE
	DATE COUNTED		MAY-18-96	PU 236 AEA FRAC	(C236)		0.224
SAMPLE	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)		0.000
	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)		0.511
8859	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			7604
	DIGEST GRAMS of SOLIDS/L	Dg/L	2.1028	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)		0.400
	DETECTOR NUMBER		13	PU 236 cpm			58.880
SOLID	EFFICIENCY FACTOR	EFF	0.316	PU 238 cpm			0.000
	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			169.710
96004870	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
	PU-236 DECAY CORR'D VALUE (dpm/mL)		2172.922	Pu 239/240 µCi/g			1.2697E+00
0	PU-238 TRACER VALUE (dpm/mL)		0.000				

Sample Prep:
FUSION01

Sample:
S96T001531

Instrument Used:
WB27810

Prepared by:
SEH

Counted:
JFR

Analyst:
JMV

Date Completed:
05/20/96

Analyst Date:
05/17/96

Analysis Time:

Sample Point:
C-106 GRAB

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) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)
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 * 1/EFF * 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

Pu 239/240 µCi/g		1.27E+00	DETECTION LEVELS in µCi/g
Relative Counting Error	=	1.4%	
NOTE: Pu 238 Result is a LESS THAN Value.			Pu 239/240
Pu 238 µCi/g		< 7.56E-02	7.56E-02
Relative Counting Error	=	100.0%	Pu 238
Pu 236 Tracer Recovery	=	82.5%	7.56E-02

Analyst:	JMV	Date:	20-May-96
Signature of Chemist: John Rolyea	JFR	Date:	20 May 96

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID / SOLID

							DUP
	DATE COUNTED		MAY-19-96	PU 236 AEA FRAC		(C236)	0.223
DUP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC		(C238)	0.119
	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC		(C239)	0.804
8859	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			7908
	DIGEST GRAMS of SOLIDS/L	Dg/L	2.1919	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120E43	BACKGROUND in cpm		(Bkg)	0.400
	DETECTOR NUMBER		13	PU 236 cpm			57.840
SOLID	EFFICIENCY FACTOR	EFF	0.316	PU 238 cpm			30.780
	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			166.260
96004870	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
	PU-236 DECAY CORR'D VALUE (dpm/mL)		2172.922	Pu 239/240 µCi/g			1.2097E+00
0	PU-238 TRACER VALUE (dpm/mL)		0.000				
Sample Type							
FUSION01							

Sample	Decay Time = Date Counted - Tracer Preparation Date
S96T001531	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]
Instrument Number	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)
WB27810	Pu 239/240 µCi/g = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Prepared by	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
SEH	Pu 238 µCi/g = [(Pu 238 dpm)(DF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Analyzed by	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
JFR	
Analyst	
JMV	
Date Counted	
05/20/96	

05/20/96	Pu 239/240 µCi/g		1.21E+00	DETECTION LEVELS in µCi/g
Analysis Date	Relative Counting Error	=	1.4%	
05/17/96				Pu 239/240
Analysis Time				7.04E-02
	Pu 238 µCi/g		2.38E-01	
Sample Code	Relative Counting Error	=	2.0%	Pu 238
C-106 GRAB	Pu 236 Tracer Recovery	=	85.4%	7.04E-02

Analyst:		JMV	Date:	20-May-96
Signature of Chemist:	John Relyea	JFR	Date:	20 May 96

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: SAM5

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID / SOLID

							SAMPLE
	DATE COUNTED		MAY-19-96	PU 236 AEA FRAC	(C236)		0.219
SAMPLE	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)		0.123
	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)		0.608
8859	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			8108
	DIGEST GRAMS of SOLIDS/L	Dg/L	1.9148	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120843	BACKGROUND in cpm	(Bkg)		0.400
	DETECTOR NUMBER		15	PU 236 cpm			63.990
SOLID	EFFICIENCY FACTOR	EFF	0.316	PU 238 cpm			30.300
	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			149.880
96004870	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2172.922	Pu 239/240 µCi/g			1.4191E+00
0	PU-238 TRACER VALUE	(dpm/mL)	0.000				

FUSION01

S96T001541

WB27810

SEH

JFR

JMV

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) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)

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 * 1/EFF * 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

05/20/96	Pu 239/240 µCi/g		1.42E+00	DETECTION LEVELS In µCi/g
	Relative Counting Error	=	1.4%	
05/17/96				Pu 239/240
	Pu 238 µCi/g		2.87E-01	8.14E-02
	Relative Counting Error	=	2.0%	Pu 238
C-106 GRAB	Pu 236 Tracer Recovery	=	86.0%	8.14E-02

Analyst:	JMV	Date:	20-May-96
Signature of Chemist: John Relyea	JFR	Date:	20 May 96

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: DUP6

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID / SOLID

							DUP
	DATE COUNTED		MAY-18-96	PU 236 AEA FRAC		(C236)	0.206
DUP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC		(C238)	0.131
	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC		(C239)	0.619
8859	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			9039
	DIGEST GRAMS of SOLIDS/L	Dg/L	1.000	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm		(Bkg)	0.400
	DETECTOR NUMBER		15	PU 236 cpm			59.050
SOLID	EFFICIENCY FACTOR	EFF	0.316	PU 238 cpm			37.140
	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			176.100
96004870	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
	PU-236 DECAY CORR'D VALUE (dpm/mL)		2172.922	Pu 239/240 µCi/g			1.4798E+00
0	PU-238 TRACER VALUE (dpm/mL)		0.000				
FUSION01							

	Decay Time = Date Counted - Tracer Preparation Date
S96T001541	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) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)
WB27810	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 * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
SEH	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
JFR	
JMV	
05/20/96	Pu 239/240 µCi/g 1.48E+00
	Relative Counting Error = 1.3%
05/17/96	
	Pu 238 µCi/g 3.13E-01
	Relative Counting Error = 1.9%
C-106 GRAB	Pu 236 Tracer Recovery = 91.1%

DETECTION LEVELS in µCi/g
Pu 239/240
7.88E-02
Pu 238
7.88E-02

Analyst:	JMV	Date:	20-May-96
Signature of Chemist:	JFR	Date:	20 May 96

SAMPLE.WB1 REV 1.0 943128ML

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. 2.02

DATA REDUCTION REPORT WHC-SD-WM-DP-183, REV. 0

SAMPLE
WL8859-STD
File ID: 27a2713.CNF

Counted on: 5/18/96 @10:13
Detector: AEA27
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	877.8	877.8	358.203	358.203	10.000	3.180	5.000	0.966
2	16.2	16.2	284.432	284.346	10.000	6.447	5.000	2.760
3	408.4	408.4	226.214	226.214	12.000	3.548	6.000	1.417

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.699	5.755	5.745	0.010	0.01	30.47	1.6	2527.5	0.114E-02
2	Th228	0.012	5.400	5.405	-.005	0.03	0.53	14.1	61.2	0.276E-04
3	Pu239	0.279	5.147	5.138	0.009	0.02	12.14	2.6	986.8	0.445E-03
	Pu240		5.144	5.138	0.006				986.8	0.445E-03
Totals:		0.990	<--valid peaks only-->				43.14			

DETECTOR CALIBRATION
Energy(MEV) = 4.097 + (0.0046)*Channel
Energy range (MeV): 4.097 TO 6.452
Efficiency = 0.0123 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	20909.0	100.000
Smoothed	20909.2	100.001
Composite fit	20706.8	99.033
Residuals	202.2	0.967

Analyzed by: _____
VR

Spectrum 27a2713.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5868.6


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Raw Data Dump for AEA Spectrum: 27a2713.CNF

1	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
11	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	1.	0.	0.	0.	1.	1.	0.	0.
31	0.	1.	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.	1.	0.	1.
61	0.	0.	0.	1.	0.	0.	1.	1.	0.	1.
71	1.	1.	1.	1.	0.	1.	0.	0.	0.	0.
81	0.	0.	2.	2.	0.	0.	0.	0.	0.	0.
91	0.	1.	0.	1.	0.	0.	0.	0.	1.	2.
101	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
111	0.	0.	3.	0.	0.	0.	2.	0.	0.	0.
121	1.	0.	1.	3.	1.	5.	2.	2.	2.	0.
131	1.	0.	0.	0.	3.	1.	3.	1.	2.	1.
141	2.	0.	1.	2.	3.	2.	4.	1.	2.	3.
151	1.	0.	0.	0.	4.	1.	2.	3.	0.	1.
161	2.	2.	4.	3.	4.	1.	3.	3.	5.	3.
171	4.	3.	5.	4.	1.	10.	11.	8.	5.	10.
181	11.	7.	9.	14.	8.	18.	12.	7.	14.	21.
191	18.	17.	17.	21.	21.	31.	27.	24.	27.	24.
201	32.	39.	43.	53.	52.	58.	49.	73.	73.	89.
211	89.	90.	128.	143.	134.	149.	177.	201.	200.	205.
221	221.	272.	349.	373.	423.	485.	471.	416.	296.	166.
231	66.	27.	6.	2.	1.	1.	1.	2.	2.	0.
241	0.	1.	2.	1.	2.	3.	2.	2.	3.	0.
251	3.	2.	2.	5.	5.	1.	5.	4.	4.	5.
261	10.	5.	5.	6.	6.	9.	4.	5.	6.	2.
271	5.	3.	8.	7.	7.	5.	4.	2.	11.	12.
281	11.	8.	19.	23.	26.	16.	10.	5.	11.	5.
291	8.	9.	13.	13.	10.	11.	17.	10.	10.	20.
301	13.	19.	12.	16.	18.	11.	22.	9.	16.	19.
311	12.	24.	25.	19.	14.	24.	26.	29.	26.	33.
321	29.	38.	48.	54.	50.	54.	46.	54.	74.	69.
331	85.	64.	82.	102.	91.	108.	100.	136.	162.	167.
341	208.	228.	249.	294.	335.	397.	450.	537.	562.	595.
351	537.	484.	540.	526.	659.	780.	951.	1001.	1043.	951.
361	594.	278.	62.	16.	1.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	1.	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.	1.	2.
461	0.	0.	0.	1.	1.	0.	1.	0.	1.	1.
471	0.	1.	1.	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.								

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. 2.02

DATA REDUCTION REPORT

SAMPLE
WL8859--BLK
File ID: 28a2814.CNF

Counted on: 5/18/96 @10:14
Detector: AEA28
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	1088.4	1088.4	358.990	358.990	10.000	3.057	5.000	0.959
2	16.9	16.9	284.123	283.969	14.000	11.173	7.000	3.906

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.974	5.755	5.754	0.001	0.01	36.72	1.5	1688.0	0.760E-03
2	Th228	0.019	5.400	5.409	-.009	0.05	0.71	12.3	45.2	0.203E-04
Totals:		0.993	<--valid peaks only-->				37.44			

DETECTOR CALIBRATION
Energy(MEV) = 4.102 + (0.0046)*Channel
Energy range (MeV): 4.102 TO 6.458
Efficiency = 0.0222 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	18093.0	100.000
Smoothed	18094.0	100.005
Composite fit	17972.8	99.336
Residuals	120.2	0.664

Analyzed by: _____
VR

Spectrum 28a2814.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 6958.9


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Raw Data Dump for AEA Spectrum: 28a2814.CNF

1	0.	0.	0.	0.	1.	0.	0.	0.	1.	0.
11	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
21	0.	0.	0.	0.	1.	0.	0.	0.	1.	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.	1.	0.	1.	0.	0.	0.	0.	0.
61	1.	1.	0.	0.	0.	0.	0.	0.	0.	1.
71	1.	0.	1.	0.	0.	0.	0.	0.	1.	0.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.
91	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
101	0.	1.	0.	0.	0.	1.	0.	0.	0.	0.
111	1.	0.	0.	0.	0.	0.	1.	1.	0.	0.
121	1.	1.	0.	0.	0.	1.	0.	1.	0.	0.
131	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
141	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
151	1.	1.	1.	0.	0.	0.	0.	1.	0.	0.
161	0.	0.	2.	0.	1.	1.	0.	0.	0.	0.
171	3.	0.	0.	0.	1.	0.	1.	0.	1.	0.
181	1.	1.	0.	1.	1.	0.	1.	0.	0.	0.
191	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
201	0.	2.	1.	0.	0.	1.	1.	0.	3.	1.
211	1.	1.	3.	1.	0.	2.	1.	0.	1.	1.
221	0.	3.	0.	6.	4.	0.	1.	1.	0.	2.
231	0.	5.	0.	1.	1.	3.	0.	1.	1.	2.
241	0.	1.	2.	3.	3.	1.	4.	4.	0.	2.
251	2.	3.	2.	5.	3.	4.	2.	5.	1.	6.
261	5.	4.	3.	13.	7.	3.	6.	3.	3.	9.
271	6.	2.	8.	4.	4.	11.	7.	11.	5.	13.
281	15.	9.	27.	25.	13.	17.	14.	16.	8.	8.
291	4.	10.	14.	10.	11.	12.	11.	15.	11.	15.
301	20.	16.	19.	15.	22.	13.	17.	16.	11.	21.
311	24.	28.	27.	40.	24.	29.	37.	32.	38.	33.
321	49.	41.	58.	57.	48.	68.	64.	79.	78.	87.
331	92.	94.	112.	120.	134.	146.	155.	156.	159.	178.
341	216.	254.	295.	346.	383.	367.	492.	572.	636.	667.
351	668.	613.	628.	677.	726.	886.	974.	1096.	1312.	1252.
361	1042.	643.	259.	55.	11.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	1.	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.	1.	0.
461	1.	0.	0.	0.	1.	1.	0.	1.	2.	0.
471	0.	3.	2.	2.	0.	1.	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.								

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T1531-SAM
File ID: 5a5333.CNF

Counted on: 5/18/96 @10:14
Detector: AEA5
Geometry number: 1
Count time: 306. 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	16.2	16.2	362.069	362.069	14.000	4.675	7.000	1.334
2	42.6	42.6	229.716	229.716	14.000	6.306	7.000	1.875

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.224	5.755	5.753	0.002	0.02	58.68	11.3	158.1	0.712E-04
2	Pu239	0.611	5.147	5.144	0.003	0.03	159.71	6.9	421.7	0.190E-03
	Pu240		5.144	5.144	0.000				421.7	0.190E-03
Totals:		0.835	<--valid peaks only-->				218.39			

DETECTOR CALIBRATION
Energy(MEV) = 4.087 + (0.0046)*Channel
Energy range (MeV): 4.087 TO 6.443
Efficiency = 0.3787 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	1334.0	100.000
Smoothed	1334.0	100.000
Composite fit	1113.8	83.492
Residuals	220.2	16.508

Analyzed by: _____
VR

Spectrum 5a5333.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 300.9


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Raw Data Dump for AEA Spectrum: 5a5333.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.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
91	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
111	0.	0.	0.	1.	0.	0.	1.	0.	0.	1.
121	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
131	0.	0.	1.	0.	0.	0.	0.	0.	0.	2.
141	0.	0.	0.	0.	0.	0.	1.	1.	1.	1.
151	0.	1.	0.	1.	0.	0.	0.	0.	1.	1.
161	0.	1.	1.	0.	3.	0.	0.	1.	1.	1.
171	1.	1.	1.	2.	0.	1.	3.	0.	3.	1.
181	1.	3.	0.	1.	1.	2.	2.	3.	3.	0.
191	5.	3.	1.	4.	7.	7.	4.	5.	4.	6.
201	8.	5.	7.	6.	10.	9.	10.	11.	11.	4.
211	12.	12.	8.	15.	17.	11.	10.	24.	17.	23.
221	20.	29.	25.	33.	32.	36.	34.	45.	44.	55.
231	34.	42.	37.	25.	22.	11.	5.	2.	1.	1.
241	0.	0.	0.	0.	0.	1.	0.	2.	1.	0.
251	1.	0.	1.	0.	0.	1.	1.	0.	1.	0.
261	0.	2.	0.	1.	1.	0.	0.	1.	2.	0.
271	0.	1.	0.	0.	0.	1.	0.	1.	1.	0.
281	2.	3.	1.	2.	5.	3.	2.	3.	3.	4.
291	3.	3.	6.	4.	7.	8.	6.	3.	6.	5.
301	9.	6.	10.	11.	9.	7.	4.	4.	3.	2.
311	1.	0.	1.	0.	1.	1.	2.	1.	1.	2.
321	0.	1.	1.	1.	1.	3.	2.	2.	1.	1.
331	2.	4.	2.	2.	2.	2.	2.	3.	2.	2.
341	0.	6.	5.	3.	2.	8.	9.	3.	4.	11.
351	9.	6.	8.	15.	10.	5.	13.	19.	13.	14.
361	12.	22.	15.	15.	12.	7.	10.	2.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T1531-DUP
File ID: 6a6538.CNF

Counted on: 5/18/96 @10:15
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	1160.5	1160.5	360.510	360.510	16.000	9.235	8.000	2.155
2	608.4	608.4	302.179	302.058	16.000	9.724	8.000	2.238
3	3383.4	3383.4	228.764	228.759	16.000	8.625	8.000	2.221
4?	13.4	13.4	96.563	96.523	228.000	1.000	114.000	0.100
5?	9.2	9.2	90.833	90.290	210.000	1.000	105.000	0.100

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm243	0.223	5.779	5.751	0.028	0.04	57.64	1.2	203.2	0.915E-04
	Pu236		5.755	5.751	0.004				151.4	0.682E-04
2	Am241	0.119	5.479	5.482	-.003	0.04	30.78	1.7	84.3	0.380E-04
	Pu238		5.487	5.482	0.005				110.0	0.496E-04
3	Pu239	0.604	5.147	5.145	0.002	0.04	156.26	0.7	402.1	0.181E-03
	Pu240		5.144	5.145	-.001				402.1	0.181E-03
4		????		4.537			1.01	9.0		
5		????		4.508			0.68	17.0		
Totals:		0.946	<--valid peaks only-->				244.69			

DETECTOR CALIBRATION
Energy(MEV) = 4.093 + (0.0046)*Channel
Energy range (MeV): 4.093 TO 6.448
Efficiency = 0.3886 CPM/DPM

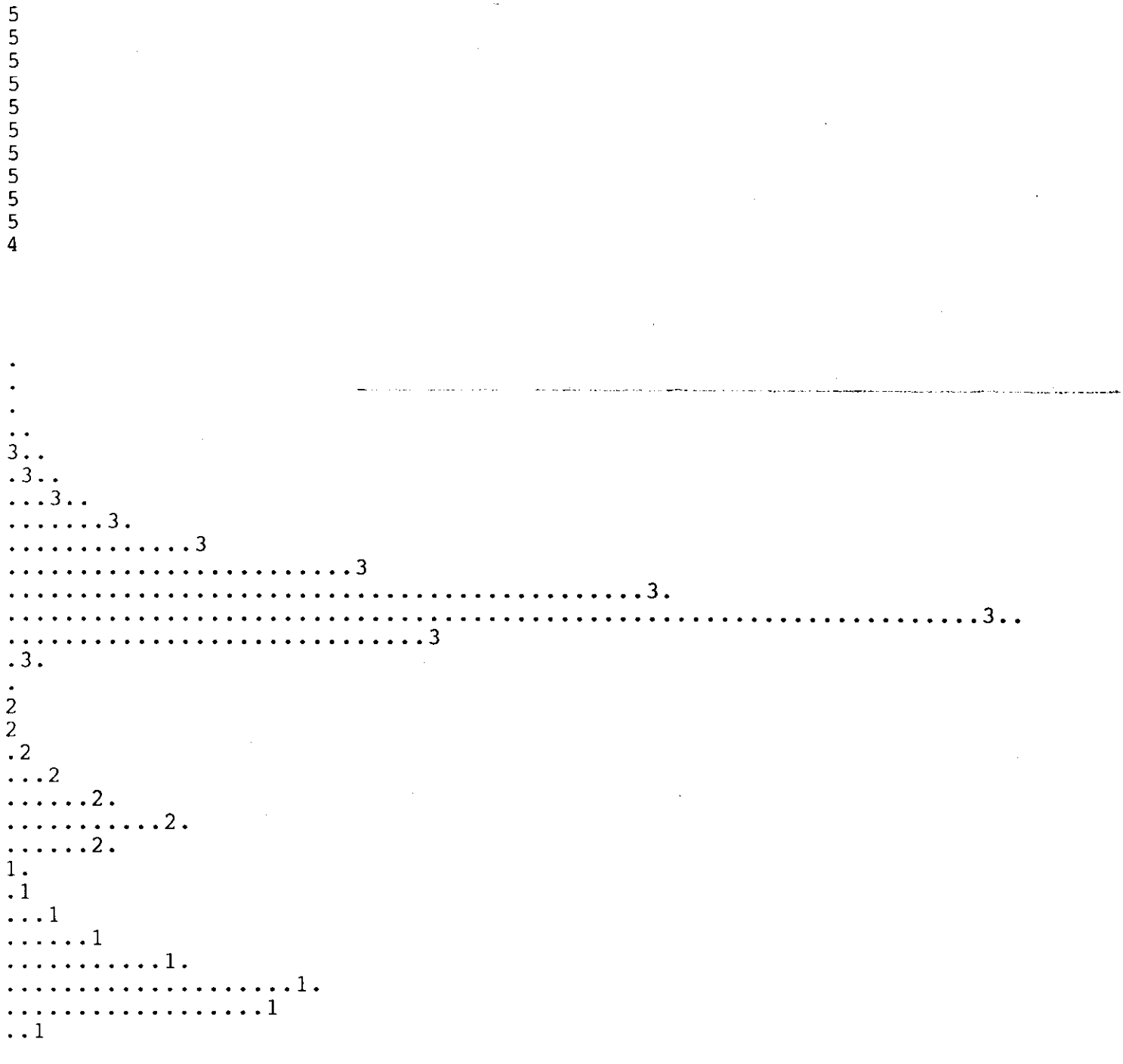
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	124177.0	100.000
Smoothed	124171.6	99.996
Composite fit	118269.8	95.243
Residuals	5907.2	4.757

Analyzed by: _____

Spectrum 6a6538.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 25443.4



Raw Data Dump for AEA Spectrum: 6a6538.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	2.	7.	0.	1.	4.	9.	2.
21	4.	1.	4.	3.	5.	1.	2.	2.	9.	4.
31	3.	4.	4.	4.	2.	4.	4.	4.	3.	3.
41	9.	7.	7.	3.	5.	6.	1.	9.	5.	5.
51	4.	6.	6.	4.	3.	13.	6.	5.	3.	7.
61	3.	11.	4.	12.	4.	3.	5.	9.	8.	7.
71	5.	6.	3.	5.	8.	8.	4.	8.	9.	8.
81	5.	10.	8.	12.	9.	6.	10.	10.	12.	21.
91	9.	16.	13.	8.	11.	15.	16.	13.	10.	11.
101	11.	17.	12.	9.	11.	11.	12.	23.	19.	22.
111	23.	11.	22.	20.	19.	20.	16.	26.	21.	19.
121	23.	35.	21.	36.	27.	24.	31.	28.	38.	32.
131	28.	29.	37.	55.	46.	49.	47.	40.	48.	36.
141	46.	51.	49.	53.	51.	68.	66.	62.	62.	69.
151	75.	79.	81.	71.	68.	72.	83.	88.	92.	107.
161	98.	95.	90.	115.	113.	105.	131.	117.	114.	145.
171	132.	154.	153.	161.	178.	182.	165.	208.	194.	193.
181	222.	243.	289.	282.	271.	259.	271.	276.	332.	361.
191	346.	357.	370.	438.	390.	452.	452.	484.	486.	569.
201	529.	572.	618.	648.	719.	751.	752.	852.	897.	941.
211	1031.	1111.	1178.	1248.	1365.	1531.	1732.	1798.	2046.	2165.
221	2352.	2560.	2609.	2872.	3157.	3302.	3488.	3577.	3633.	3506.
231	3282.	2934.	2458.	1949.	1440.	987.	654.	370.	268.	181.
241	97.	58.	48.	46.	25.	35.	41.	37.	34.	35.
251	53.	44.	38.	39.	51.	51.	41.	50.	67.	58.
261	63.	81.	86.	58.	90.	103.	78.	88.	90.	91.
271	105.	102.	127.	89.	141.	148.	143.	150.	158.	149.
281	176.	192.	183.	248.	224.	243.	280.	286.	321.	356.
291	361.	367.	403.	473.	483.	515.	567.	560.	608.	656.
301	637.	666.	702.	632.	562.	505.	442.	366.	284.	202.
311	169.	150.	120.	77.	102.	83.	92.	100.	98.	118.
321	101.	120.	102.	106.	147.	154.	139.	156.	141.	191.
331	187.	175.	198.	223.	230.	235.	247.	249.	290.	331.
341	334.	388.	389.	430.	481.	525.	562.	607.	650.	729.
351	759.	823.	924.	971.	1024.	1077.	1112.	1178.	1153.	1176.
361	1245.	1169.	1132.	967.	812.	665.	496.	358.	211.	138.
371	95.	31.	10.	7.	6.	1.	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.	1.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
421	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	2.	0.	1.	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.	1.	0.	0.	1.	0.	0.	0.	0.	0.
471	0.	2.	0.	2.	4.	0.	1.	3.	1.	3.
481	2.	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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T1541-SAM
File ID: 7a7206.CNF

Counted on: 5/18/96 @10:15
Detector: AEA7
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1130.5	1130.5	358.904	358.904	14.000	8.659	7.000	2.111
2	643.8	643.8	300.457	300.353	16.000	9.292	8.000	2.380
3	3427.3	3427.3	226.350	226.347	16.000	9.230	8.000	2.702

PEAK RESULTS

Peak Error Limit: 30%

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	0.219	5.779	5.758	0.021	0.04	53.99	1.2	174.9	0.788E-04
	Pu236		5.755	5.758	-.003				130.2	0.587E-04
2	Pu238	0.123	5.487	5.489	-.002	0.04	30.30	1.7	99.5	0.448E-04
	Am241		5.479	5.489	-.010				76.2	0.343E-04
3	Pu239	0.608	5.147	5.148	-.001	0.04	149.58	0.7	353.6	0.159E-03
	Pu240		5.144	5.148	-.004				353.6	0.159E-03
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Totals:		0.951	<--valid peaks only-->				233.87			

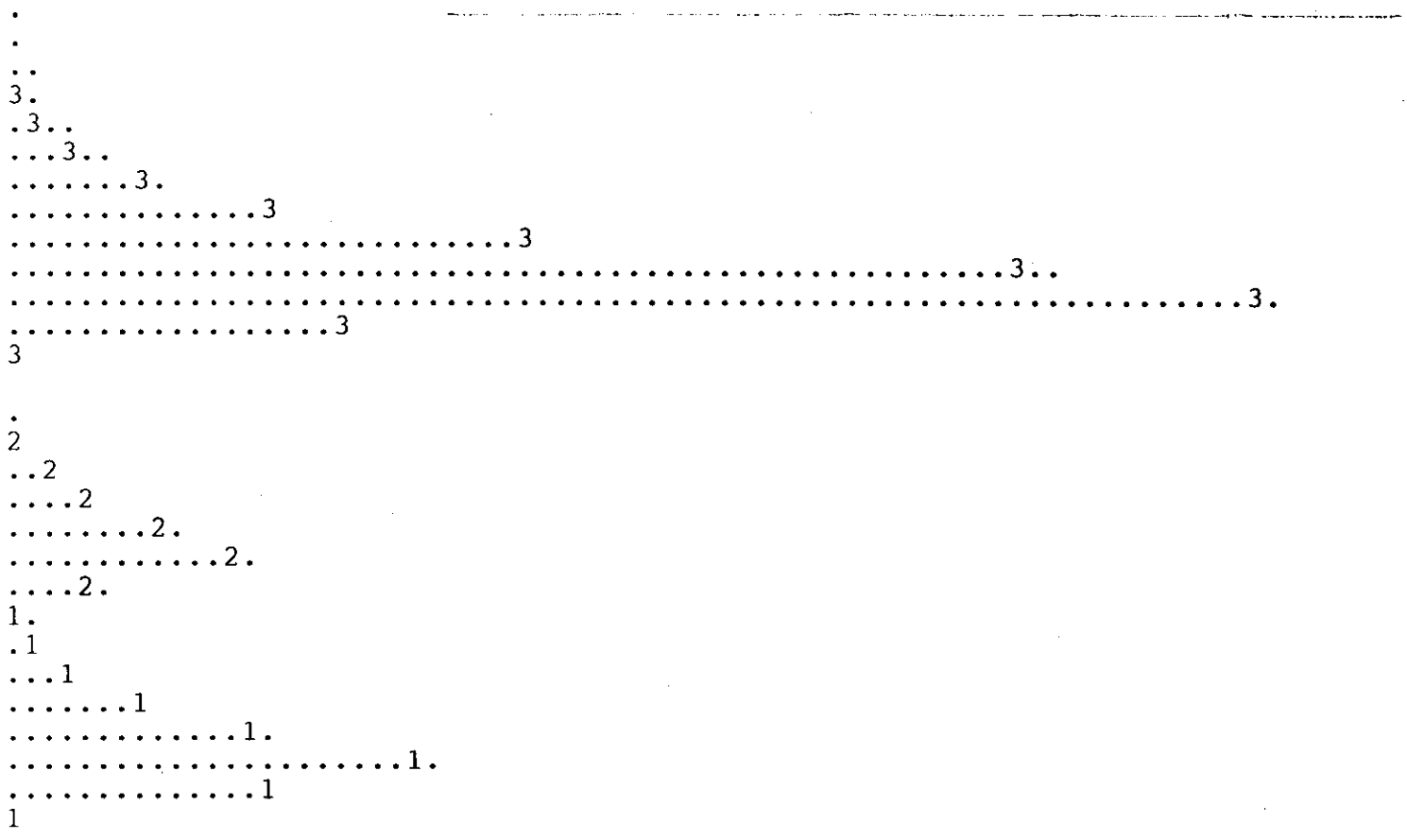
DETECTOR CALIBRATION

Energy(MEV) = 4.107 + (0.0046)*Channel
Energy range (MeV): 4.107 TO 6.463
Efficiency = 0.4230 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	118108.0	100.000
Smoothed	118107.9	100.000
Composite fit	112276.7	95.063
Residuals	5831.3	4.937

Analyzed by: _____
VR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Raw Data Dump for AEA Spectrum: 7a7206.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	3.	7.	3.	2.	1.	4.
21	3.	2.	2.	3.	4.	3.	2.	2.	2.	2.
31	1.	3.	3.	2.	2.	2.	3.	6.	3.	3.
41	3.	5.	5.	2.	2.	6.	1.	3.	1.	8.
51	3.	4.	6.	9.	4.	5.	4.	2.	7.	5.
61	5.	4.	2.	9.	1.	6.	4.	2.	4.	9.
71	6.	7.	5.	3.	7.	5.	6.	7.	8.	8.
81	3.	8.	10.	4.	10.	8.	6.	6.	6.	6.
91	3.	6.	8.	7.	9.	12.	9.	4.	9.	10.
101	8.	8.	4.	8.	11.	13.	12.	7.	17.	10.
111	13.	13.	10.	14.	11.	26.	17.	8.	20.	18.
121	23.	19.	19.	16.	21.	16.	18.	25.	19.	31.
131	23.	30.	28.	22.	30.	33.	36.	35.	34.	33.
141	41.	31.	45.	39.	46.	46.	50.	51.	48.	54.
151	61.	60.	59.	62.	59.	69.	59.	74.	67.	74.
161	85.	93.	90.	97.	93.	99.	107.	109.	100.	127.
171	126.	122.	132.	138.	131.	149.	154.	157.	163.	175.
181	189.	180.	226.	198.	216.	235.	278.	283.	293.	254.
191	315.	311.	344.	368.	384.	402.	421.	433.	498.	539.
201	536.	567.	595.	596.	673.	752.	829.	836.	918.	1025.
211	1127.	1222.	1366.	1428.	1587.	1754.	1873.	2199.	2275.	2519.
221	2795.	3152.	3378.	3498.	3596.	3616.	3620.	3563.	3152.	2820.
231	2338.	1781.	1397.	944.	667.	426.	266.	150.	96.	45.
241	44.	37.	21.	30.	30.	24.	33.	46.	35.	32.
251	31.	37.	33.	47.	54.	47.	50.	60.	54.	71.
261	54.	61.	77.	66.	51.	70.	84.	90.	91.	86.
271	90.	106.	87.	108.	114.	129.	139.	138.	149.	161.
281	156.	195.	210.	230.	252.	256.	310.	351.	348.	383.
291	430.	462.	557.	524.	516.	645.	650.	645.	687.	698.
301	716.	676.	637.	554.	461.	380.	330.	227.	158.	113.
311	80.	87.	84.	64.	63.	67.	75.	90.	75.	82.
321	79.	99.	105.	133.	125.	132.	133.	147.	143.	158.
331	165.	158.	172.	199.	222.	235.	274.	284.	303.	311.
341	346.	367.	391.	432.	536.	559.	618.	719.	773.	756.
351	918.	884.	954.	976.	1101.	1082.	1163.	1223.	1142.	1187.
361	1166.	1008.	840.	632.	484.	314.	228.	152.	95.	58.
371	22.	14.	6.	2.	0.	0.	2.	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.	2.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
451	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
461	0.	0.	0.	1.	0.	0.	2.	1.	0.	1.
471	0.	0.	0.	0.	1.	1.	0.	1.	0.	1.
481	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	5.	0.								

 5-12-96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T1541-DUP
File ID: 8a8337.CNF

Counted on: 5/18/96 @10:16
Detector: AEA8
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1160.8	1160.8	355.829	355.829	18.000	11.952	9.000	2.940
2	721.8	721.8	298.029	297.906	18.000	11.386	9.000	2.692
3	3718.9	3718.9	224.325	224.319	18.000	11.531	9.000	3.198
4?	19.2	19.2	110.592	110.542	168.000	1.000	84.000	0.100
5?	0.2	0.1	98.483	98.000	4.000	0.100	2.000	0.100
6?	2.9	2.9	85.441	84.965	4.000	0.000	2.000	1.843

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm243	0.208	5.779	5.735	0.044	0.05	59.05	1.2	194.5	0.876E-04
	Pu236		5.755	5.735	0.020				144.9	0.653E-04
2	Am241	0.131	5.479	5.469	0.010	0.05	37.14	1.5	95.0	0.428E-04
	Pu238		5.487	5.469	0.018				124.0	0.559E-04
3	Pu239	0.619	5.147	5.130	0.017	0.05	176.10	0.7	423.4	0.191E-03
	Pu240		5.144	5.130	0.014				423.4	0.191E-03
4		????		4.607			1.48	7.4		
5		????		4.549			0.00	9845.		
6		????		4.489			0.00	1000.		
Totals:		0.957	<--valid peaks only-->				272.29			

DETECTOR CALIBRATION
Energy(MEV) = 4.099 + (0.0046)*Channel
Energy range (MeV): 4.099 TO 6.454
Efficiency = 0.4159 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	136579.0	100.000
Smoothed	136579.0	100.000
Composite fit	131432.2	96.232
Residuals	5146.8	3.768

Analyzed by: VR

WHC-SD-WM-DP-183, REV. 0

Spectrum 8a8337.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 25523.0


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Raw Data Dump for AEA Spectrum: 8a8337.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	2.	5.	3.	1.	2.	6.
21	5.	9.	3.	4.	3.	3.	6.	1.	4.	4.
31	8.	5.	7.	2.	1.	4.	10.	5.	5.	2.
41	1.	4.	5.	6.	6.	4.	4.	5.	2.	5.
51	12.	8.	6.	10.	6.	1.	4.	3.	5.	4.
61	4.	11.	8.	8.	7.	6.	10.	9.	7.	9.
71	4.	10.	6.	9.	4.	7.	6.	9.	18.	11.
81	5.	8.	7.	7.	17.	7.	9.	9.	10.	8.
91	8.	7.	8.	12.	8.	7.	15.	19.	16.	13.
101	9.	11.	12.	6.	13.	14.	22.	12.	16.	27.
111	17.	22.	13.	14.	14.	24.	26.	17.	20.	13.
121	22.	19.	28.	28.	27.	35.	38.	36.	31.	38.
131	31.	40.	42.	40.	39.	44.	44.	55.	37.	50.
141	56.	56.	48.	51.	48.	58.	65.	64.	70.	79.
151	74.	75.	80.	80.	63.	79.	93.	83.	92.	101.
161	87.	124.	103.	103.	142.	116.	134.	175.	150.	140.
171	151.	141.	178.	181.	182.	202.	253.	223.	215.	255.
181	265.	236.	254.	278.	339.	298.	342.	348.	371.	394.
191	404.	432.	465.	475.	525.	531.	564.	603.	627.	686.
201	741.	799.	811.	939.	964.	1030.	1131.	1153.	1321.	1456.
211	1507.	1661.	1794.	2068.	2167.	2450.	2653.	2862.	3197.	3416.
221	3589.	3715.	3912.	3993.	3918.	3698.	3481.	3203.	2890.	2352.
231	1847.	1448.	1073.	758.	544.	370.	231.	150.	100.	69.
241	59.	47.	43.	40.	36.	53.	39.	45.	36.	39.
251	54.	66.	39.	52.	60.	61.	71.	75.	64.	76.
261	76.	80.	92.	97.	110.	104.	101.	117.	126.	125.
271	138.	141.	156.	157.	180.	208.	212.	213.	215.	292.
281	239.	331.	294.	338.	348.	411.	414.	450.	572.	537.
291	628.	663.	671.	713.	738.	732.	776.	773.	798.	747.
301	649.	606.	500.	436.	394.	289.	230.	177.	131.	129.
311	102.	70.	81.	85.	89.	112.	142.	120.	105.	118.
321	119.	140.	142.	133.	143.	191.	168.	182.	186.	201.
331	190.	251.	260.	284.	258.	316.	321.	368.	438.	472.
341	514.	555.	579.	667.	723.	769.	798.	898.	932.	1023.
351	1000.	1151.	1107.	1134.	1211.	1227.	1233.	1096.	1000.	942.
361	835.	701.	548.	399.	306.	201.	144.	69.	50.	28.
371	13.	11.	2.	6.	0.	1.	0.	0.	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.	2.	0.	0.	0.	0.	0.	0.	0.	1.
421	0.	0.	1.	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.	1.	0.	0.	0.	1.	0.
461	1.	0.	0.	0.	1.	2.	2.	0.	1.	0.
471	0.	0.	0.	2.	0.	0.	2.	1.	0.	0.
481	1.	0.	0.	0.	0.	1.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

LABCORE Data Entry Template for Worklist# 8860

Analyst: JMV **Instrument:** PU01 #14 **Book#** 124843

Method: LA-943-128 Rev/Mod _____

Worklist Comment: C-106. RUSH. Determine sample size using ludlum. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@PU23901	SOLID		
2	BLNK-PREP				@PU23901	SOLID		
3	SAMPLE	S96T001678	0	F	@PU23901	SOLID	96000174	C-106 GRAB
	Analytes Requested: PU23901 , PU23901E, PU23901T							
4	DUP	S96T001678	0	F	@PU23901	SOLID		
5	SAMPLE	S96T001689	0	F	@PU23901	SOLID	96000174	C-106 GRAB
	Analytes Requested: PU23901 , PU23901E, PU23901T							
6	DUP	S96T001689	0	F	@PU23901	SOLID		

Final page for worklist # 8860

Joseph VanSant 5-17-96
Analyst Signature **Date**

LRaymond 5.19.96
Analyst Signature **Date**

M Brown 5/20/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed RadChem Report for Worklist#: 8860

Analyst: jmv **Instrument:** AB14 **Book#** 124B43

Method: LA-943-128 **Rev/Mod** B-Ø

Worklist Comment: C-106. RUSH. Determine sample size using ludlum. new

Seq	Type	Sample#	R	A	Test		Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@PU23901	PU23901	SOLID	3.81E-02	3.82E-2	100.262	% Recovery
1	STD		0		@PU23901	PU23901T	SOLID	100	9.44E+01	94.400	% Recovery
1	STD		0		@PU23901	PU23901E	SOLID	1	2.90E+00	2.900	% Ct Error
2	BLNK-PREP		0		@PU23901	PU23901	SOLID	1	<1.71E-2		uCi/g
2	BLNK-PREP		0		@PU23901	PU23901T	SOLID	100	9.55E+01	95.500	% Recovery
2	BLNK-PREP		0		@PU23901	PU23901E	SOLID	1	1.00E+02	100.000	uCi/g
3	SAMPLE	S96T001678	0	F	@PU23901	PU23901	SOLID	N/A	7.75E-01	490.0e-004	uCi/g
3	SAMPLE	S96T001678	0	F	@PU23901	PU23901T	SOLID	N/A	8.96E+01	0.0e+000	% Recovery
3	SAMPLE	S96T001678	0	F	@PU23901	PU23901E	SOLID	N/A	2.01E+00	0.0e+000	% Ct. Error
4	DUP	S96T001678	0	F	@PU23901	PU23901	SOLID	7.75E-1	7.65E-1	1.299	RPD
4	DUP	S96T001678	0	F	@PU23901	PU23901T	SOLID	100	8.60E+01	86.000	% Recovery
4	DUP	S96T001678	0	F	@PU23901	PU23901E	SOLID	1.00	1.93E+00	1.930	% Ct Error
5	SAMPLE	S96T001689	0	F	@PU23901	PU23901	SOLID	N/A	9.01E-01	737.0e-004	uCi/g
5	SAMPLE	S96T001689	0	F	@PU23901	PU23901T	SOLID	N/A	8.65E+01	0.0e+000	% Recovery
5	SAMPLE	S96T001689	0	F	@PU23901	PU23901E	SOLID	N/A	2.18E+00	0.0e+000	% Ct. Error
6	DUP	S96T001689	0	F	@PU23901	PU23901	SOLID	9.01E-1	9.26E-1	2.737	RPD
6	DUP	S96T001689	0	F	@PU23901	PU23901T	SOLID	100	9.33E+01	93.300	% Recovery
6	DUP	S96T001689	0	F	@PU23901	PU23901E	SOLID	1.00	2.16E+00	2.160	% Ct Error

Final page for worklist# 8860

Analyst Signature **Date**

Analyst Signature **Date**

John Relyea 20 May 96
Reviewer Signature **Date**

Validated 20 May 96

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID

						STD
Type	DATE COUNTED		MAY-18-96	PU 236 AEA FRAC	(C236)	0.719
STD	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)	0.278
8860	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		2501
Test Code	DIGEST DILUTION FACTOR	DDF	1.000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)	0.370
Matrix	DETECTOR NUMBER		14	PU 236 cpm		34.130
LIQUID	EFFICIENCY FACTOR	EFF	0.291	PU 238 cpm		0.000
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		13.180
96004871	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME		480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2172.922	Pu 239/240 µCi/L		3.8223E+01
0	PU-238 TRACER VALUE (dpm/mL		0.000			
Sample Prep	STANDARD BOOK NO		124B43			
N/A	STANDARD VALUE in µCi/mL		0.038			
Sample #						

Instrument Code	Decay Time = Date Counted - Tracer Preparation Date
WB27807	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]
Prepared By	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)* 1/EFF *C236*100/Pu-236 Decay Corr'd Value * SPKV
VAR	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(2220000 dpm/µCi)]
Chemist	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
JFR	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Analyst	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
JMV	
Date Complete	
05/18/96	
Analysis Date	
05/17/96	
Analysis Time	
12:00 AM	
Sample Point	
C-106 GRAB	

Pu 239/240 µCi/mL		3.82E-02	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	2.9%	
			Pu 239/240
			4.37E-03
Pu 236 Tracer Recovery	=	94.4%	

Analyst:		JMV	Date:	18-May-96
Signature of Chemist:	Jeffrey Rolyea	JFR	Date:	20 May 96

STANDARD.WB1 REV 1.0 943128ML

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID / SOLID

Type	DATE COUNTED		MAY-18-96	PU 236 AEA FRAC	(C236)	0.977
BLNK-PREP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.000
8860	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		1866
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	1.8392	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm (Bkg)		0.370
Matrix	DETECTOR NUMBER		14	PU 236 cpm		33.370
SOLID	EFFICIENCY FACTOR	EFF	0.2910	PU 238 cpm		0.000
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		0.000
96004871	TRACER PREPARATION VALUE (dpm/mL)		2390.00	AEA COUNT TIME		480
Rerun	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2172.92	Pu 239/240 µCi/g =	<	1.711E-02
0	PU-238 TRACER VALUE	(dpm/mL)	0.00			

BLNK-PREP

Sample Prep
N/A

Sample #

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)*C236*100/(Pu-236 Decay Corr'd Value * SPKV*EFF)
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 * 1/EFF * 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

Instrument Code: WB27807
Prepared By: VAR
Chemist: JFR
Analyst: JMV
Date Complete: 05/18/96
Analysis Date: 05/17/96
Analysis Time:
Sample Point: C-106 GRAB

Pu 239/240 µCi/g		< 1.71E-02	DETECTION LEVELS in µCi/g
Relative Counting Error	=	100.0%	
NOTE: Pu 238 Result is a LESS THAN Value.			Pu 239/240 1.71E-02
Pu 238 µCi/g		< 1.71E-02	
Relative Counting Error	=	100.0%	Pu 238 1.71E-02
Pu 236 Tracer Recovery	=	95.5%	

Analyst:	JMV	Date:	18-May-96
Signature of Chemist: Jolin Relyea	JFR	Date:	20 May 96

BLANK.WB1 REV 1.0 943128ML

2384

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID / SOLID

						SAMPLE
Type	DATE COUNTED		MAY-18-96	PU 236 AEA FRAC	(C236)	0.364
SAMPLE	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.095
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.630
8860	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		4680
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	1.8392	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)	0.370
Matrix	DETECTOR NUMBER		14	PU 236 cpm		33.320
SOLID	EFFICIENCY FACTOR	EFF	0.291	PU 238 cpm		8.720
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		48.590
96004871	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME		480
Retest	PU-236 DECAY CORR'D VALUE (dpm/mL)		2172.922	Pu 239/240 µCi/g		7.7488E-01
0	PU-238 TRACER VALUE (dpm/mL)		0.000			
Sample Prep						
FUSION01						

Sample #	Decay Time = Date Counted - Tracer Preparation Date
S96T001678	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)
WB27807	Pu 239/240 µCi/g = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
VAR	Pu 238 µCi/g = [(Pu 238 dpm)(DF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
JFR	
Analyst	
JMV	
Date Complete	
06/18/96	
Analysis Date	
06/17/96	
Analysis Time	
Sample Point	
C-106 GRAB	

			DETECTION LEVELS in µCi/g
Pu 239/240 µCi/g		7.75E-01	Pu 239/240
Relative Counting Error	=	2.0%	4.90E-02
Pu 238 µCi/g		1.39E-01	Pu 238
Relative Counting Error	=	3.4%	4.90E-02
Pu 236 Tracer Recovery	=	89.6%	

Analyst:		JMV	Date:	18-May-96
Signature of Chemist:	John Relyea	JFR	Date:	20 May 96

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID / SOLID

							DUP
Type	DATE COUNTED		MAY-18-96	PU 236 AEA FRAC	(C236)		0.345
DUP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)		0.101
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)		0.528
8860	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			4741
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	1.9588	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)		0.370
Matrix	DETECTOR NUMBER		14	PU 236 cpm			35.550
SOLID	EFFICIENCY FACTOR	EFF	0.291	PU 238 cpm			10.390
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			54.380
96004871	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2172.922	Pu 239/240 µCi/g			7.6474E-01
0	PU-238 TRACER VALUE (dpm/mL)		0.000				

Sample Prep: FUSION01

Sample #: S96T001678

Instrument Code: WB27807

Prepared By: VAR

Chemist: JFR

Analyst: JMV

Date Complete: 05/18/96

Analysis Date: 05/17/96

Analysis Time:

Sample Point: C-106 GRAB

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) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)

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 * 1/EFF * 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

Pu 239/240 µCi/g		7.65E-01	DETECTION LEVELS in µCi/g
Relative Counting Error	=	1.9%	
			Pu 239/240
Pu 238 µCi/g		1.46E-01	5.05E-02
Relative Counting Error	=	3.2%	Pu 238
Pu 236 Tracer Recovery	=	86.0%	5.05E-02

Analyst:		JMV	Date:	18-May-96
Signature of Chemist:	John Rolyea	JFR	Date:	20 May 96

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: SAM5

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID / SOLID

							SAMPLE
Type	DATE COUNTED		MAY-18-96	PU 236 AEA FRAC		(C236)	0.464
SAMPLE	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC		(C238)	0.089
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC		(C239)	0.424
8860	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			3547
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	0.9924	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm		(Bkg)	0.370
Matrix	DETECTOR NUMBER		14	PU 236 cpm			35.150
SOLID	EFFICIENCY FACTOR	EFF	0.291	PU 238 cpm			6.740
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			32.160
96004871	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2172.922	Pu 239/240 µCi/g			9.0126E-01
0	PU-238 TRACER VALUE (dpm/mL)		0.000				

Sample Prep
FUSION01
Sample #
S96T001689
Instrument Code
WB27607
Prepared By
VAR
Chemist
JFR
Analyst
JMV
Date Complete
06/18/96
Analysis Date
06/17/96
Analysis Time
Sample Point
C-106 GRAB

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) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)

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 * 1/EFF * 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

Pu 239/240 µCi/g		9.01E-01	DETECTION LEVELS in µCi/g
Relative Counting Error	=	2.2%	
			Pu 239/240
Pu 238 µCi/g		1.89E-01	7.37E-02
Relative Counting Error	=	3.8%	Pu 238
Pu 236 Tracer Recovery	=	86.5%	7.37E-02

Analyst:		JMV	Date:	18-May-96
Signature of Chemist:	John Relyea	JFR	Date:	20 May 96

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: DUP6

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID / SOLID

							DUP
Type	DATE COUNTED		MAY-18-96	PU 236 AEA FRAC	(C236)		0.460
DUP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)		0.088
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)		0.434
8860	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			3858
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	0.9972	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)		0.370
Matrix	DETECTOR NUMBER		14	PU 236 cpm			35.360
SOLID	EFFICIENCY FACTOR	EFF	0.291	PU 238 cpm			6.740
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			33.420
96004871	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2172.922	Pu 239/240 µCi/g			9.2606E-01
0	PU-238 TRACER VALUE (dpm/mL)		0.000				

Sample Prep: FUSION01

Sample #: S96T001689

Instrument Code: WB27507

Prepared By: VAR

Chemist: JFR

Analyst: JMV

Date Complete: 05/18/96

Analysis Date: 05/17/96

Analysis Time:

Sample Point: C-106 GRAB

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) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)

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 * 1/EFF * 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

				DETECTION LEVELS in µCi/g
Pu 239/240 µCi/g		9.26E-01		Pu 239/240
Relative Counting Error	=	2.2%		6.86E-02
Pu 238 µCi/g		1.88E-01		Pu 238
Relative Counting Error	=	3.8%		6.86E-02
Pu 236 Tracer Recovery	=	93.3%		

Analyst:	JMV	Date:	18-May-96
Signature of Chemist: John Relyea	JFR	Date:	20 May 96

SAMPLE.WB1 REV 1.0 943128ML

AG 5-18-96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
WL8860-STD
File ID: 17a1749.CNF

Counted on: 5/18/96 @15:51
Detector: AEA17
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	942.6	942.6	357.416	357.416	10.000	3.809	5.000	1.135
2?	8.3	8.3	300.871	299.546	26.000	3.245	13.000	13.116
3?	14.1	14.1	285.393	281.587	20.000	10.944	10.000	10.452
4?	2.7	2.7	282.960	282.960	6.000	0.000	3.000	6.180
5	426.7	426.7	225.172	225.172	12.000	4.159	6.000	1.648

PEAK RESULTS
Peak Error Limit: 30%

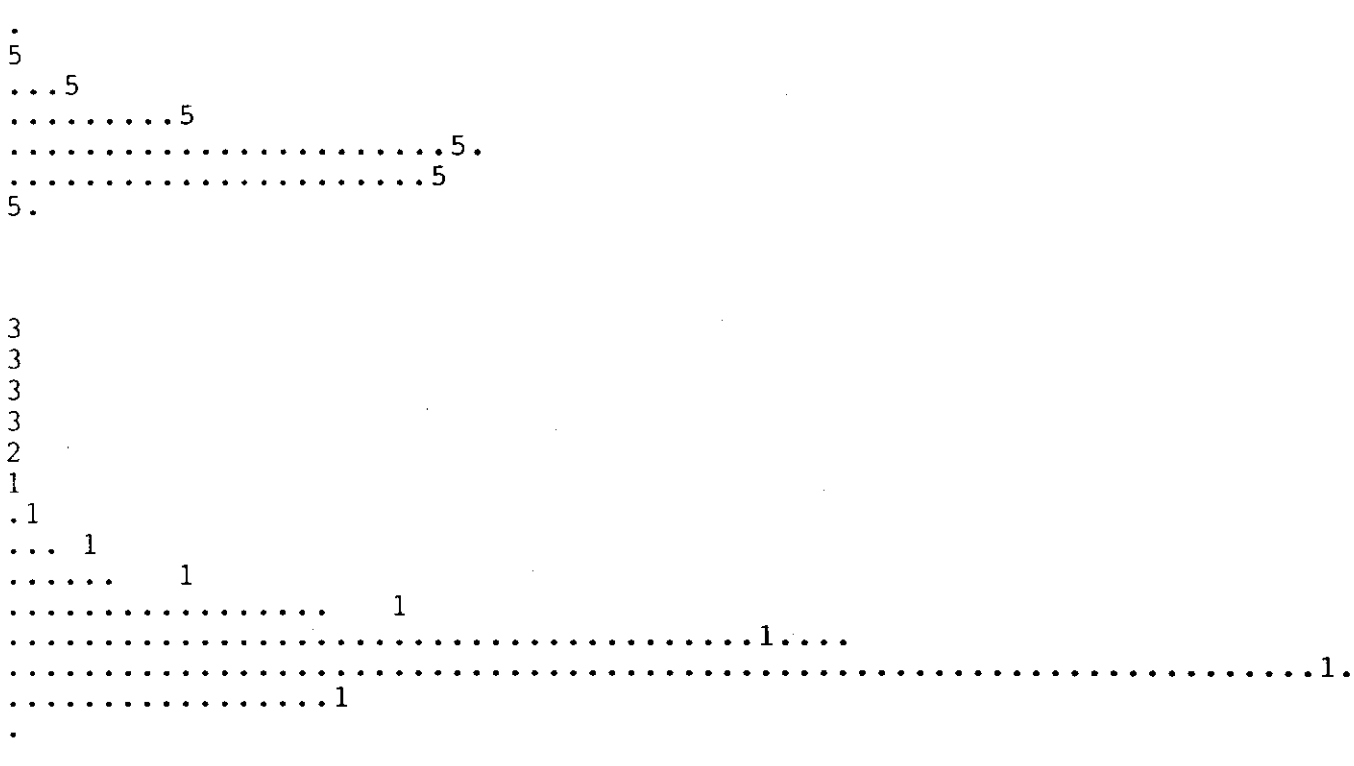
Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.719	5.755	5.745	0.010	0.02	34.13	1.5	2763.9	0.125E-02
2		????		5.479			0.15	49.4		
3		????		5.396			0.47	17.4		
4		????		5.403			0.00	1000.		
5	Pu239	0.278	5.147	5.137	0.010	0.02	13.18	2.5	1045.7	0.471E-03
	Pu240		5.144	5.137	0.007				1045.7	0.471E-03
		---					---			
Totals:		0.996	<--valid peaks only-->				47.31			

DETECTOR CALIBRATION
Energy(MEV) = 4.101 + (0.0046)*Channel
Energy range (MeV): 4.101 TO 6.456
Efficiency = 0.0126 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	22789.0	100.000
Smoothed	22789.4	100.002
Composite fit	23003.5	100.941
Residuals	-214.5	-0.941

Analyzed by: _____
VR


5
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Raw Data Dump for AEA Spectrum: 17a1749.CNF

1	0.	0.	1.	0.	0.	0.	0.	1.	1.	1.
11	1.	0.	2.	0.	1.	0.	0.	0.	0.	0.
21	1.	1.	1.	1.	0.	0.	1.	3.	0.	0.
31	1.	1.	0.	2.	0.	0.	0.	0.	0.	1.
41	2.	1.	1.	0.	1.	2.	0.	1.	1.	0.
51	1.	0.	1.	0.	2.	2.	0.	0.	0.	0.
61	0.	0.	1.	0.	1.	2.	0.	1.	0.	1.
71	0.	1.	0.	1.	0.	1.	1.	2.	0.	0.
81	0.	0.	3.	0.	1.	0.	0.	1.	2.	0.
91	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
101	0.	2.	0.	0.	1.	0.	1.	2.	1.	1.
111	0.	2.	0.	0.	2.	1.	0.	3.	0.	1.
121	2.	1.	2.	1.	0.	1.	0.	1.	1.	1.
131	1.	2.	0.	2.	2.	1.	0.	2.	3.	1.
141	0.	2.	1.	1.	1.	2.	2.	1.	2.	1.
151	3.	3.	1.	2.	1.	4.	2.	2.	1.	4.
161	2.	1.	5.	3.	1.	3.	7.	1.	3.	4.
171	6.	1.	5.	4.	5.	6.	7.	9.	5.	8.
181	4.	8.	4.	13.	9.	9.	11.	14.	12.	17.
191	18.	14.	18.	14.	24.	16.	19.	24.	24.	34.
201	40.	37.	48.	39.	60.	56.	53.	69.	79.	65.
211	95.	106.	154.	158.	161.	205.	218.	226.	266.	295.
221	341.	370.	404.	457.	484.	471.	445.	343.	199.	87.
231	42.	21.	4.	0.	3.	2.	1.	2.	0.	1.
241	0.	1.	2.	1.	2.	2.	0.	3.	0.	1.
251	0.	2.	2.	1.	1.	2.	4.	2.	6.	2.
261	7.	6.	3.	3.	7.	13.	7.	9.	6.	3.
271	6.	4.	6.	2.	6.	7.	5.	11.	9.	16.
281	19.	22.	15.	14.	15.	18.	17.	18.	2.	13.
291	10.	11.	12.	7.	13.	16.	9.	12.	11.	19.
301	15.	17.	12.	11.	13.	8.	9.	11.	8.	17.
311	15.	12.	11.	14.	21.	31.	18.	26.	34.	25.
321	24.	25.	42.	33.	34.	46.	58.	51.	58.	69.
331	72.	72.	96.	86.	89.	119.	144.	158.	148.	207.
341	236.	269.	307.	365.	413.	465.	506.	579.	686.	648.
351	642.	606.	639.	726.	868.	1028.	1037.	1044.	1007.	894.
361	499.	180.	43.	8.	0.	0.	0.	1.	1.	0.
371	1.	0.	0.	1.	0.	1.	0.	0.	1.	0.
381	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
401	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
421	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	3.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.
451	1.	0.	0.	0.	0.	1.	0.	2.	2.	2.
461	1.	1.	0.	0.	4.	0.	3.	3.	2.	0.
471	2.	4.	4.	1.	2.	0.	0.	0.	0.	0.
481	0.	0.	1.	0.	0.	1.	0.	0.	0.	1.
491	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
511	1.	0.								

5-18-96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
WL8860-BLK
File ID: 18a1827.CNF

Counted on: 5/18/96 @15:52
Detector: AEA18
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	1004.5	1004.5	360.945	360.945	10.000	2.993	5.000	0.956
2	13.1	13.1	294.108	294.108	20.000	27.902	10.000	12.802
3?	3.3	3.3	287.422	286.300	8.000	0.676	4.000	0.148

PEAK RESULTS
Peak Error Limit: 30%

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	0.977	5.755	5.748	0.007	0.01	33.37	1.5	1613.6	0.727E-03
2	Th228	0.021	5.400	5.440	-.040	0.13	0.72	16.8	47.8	0.215E-04
	Am241		5.479	5.440	0.039				36.1	0.162E-04
3		????		5.404			0.13	49.4		
Totals:		0.998	<--valid peaks only-->				34.08			

DETECTOR CALIBRATION
Energy(MEV) = 4.088 + (0.0046)*Channel
Energy range (MeV): 4.088 TO 6.443
Efficiency = 0.0211 CPM/DPM

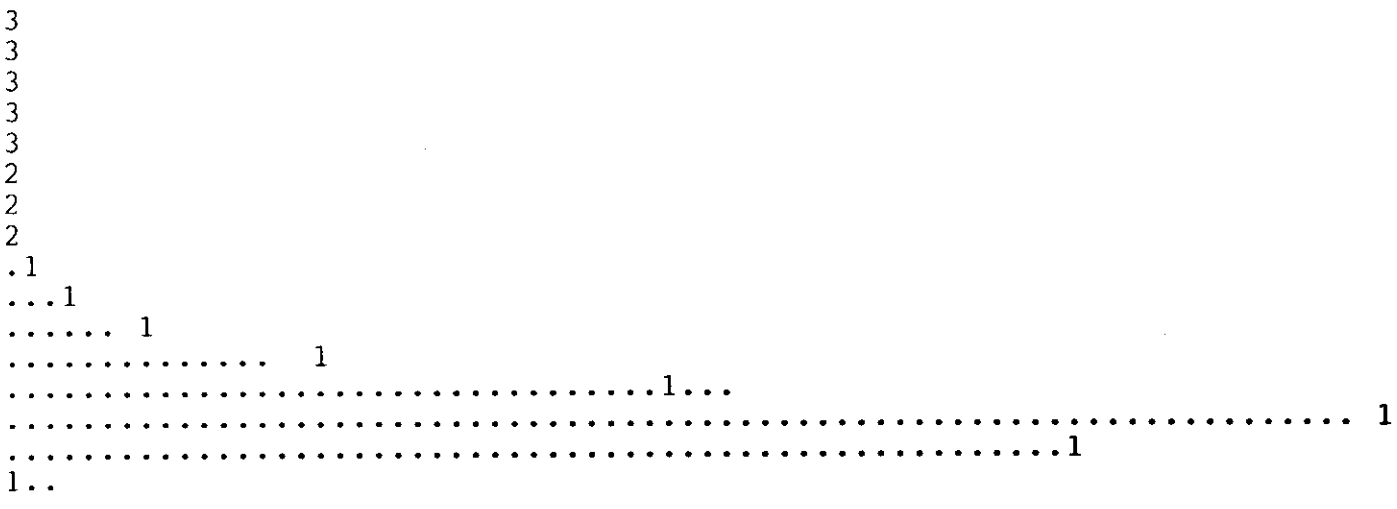
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	16395.0	100.000
Smoothed	16394.2	99.995
Composite fit	16423.1	100.172
Residuals	-28.1	-0.172

Analyzed by: _____
VR

Spectrum 18a1827.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5579.5



Raw Data Dump for AEA Spectrum: 18a1827.CNF

1	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
11	0.	0.	0.	0.	2.	0.	0.	0.	0.	0.
21	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.
31	0.	0.	0.	1.	0.	0.	1.	0.	1.	0.
41	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
51	1.	0.	0.	0.	0.	1.	0.	1.	2.	1.
61	0.	0.	0.	1.	1.	5.	1.	2.	2.	1.
71	0.	2.	2.	1.	0.	0.	0.	1.	0.	0.
81	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
91	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.
101	0.	1.	0.	0.	0.	0.	1.	0.	0.	0.
111	0.	0.	0.	1.	0.	0.	0.	1.	1.	2.
121	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
131	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
141	0.	0.	0.	1.	0.	2.	0.	1.	0.	1.
151	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
161	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
171	1.	0.	0.	0.	0.	2.	0.	0.	1.	1.
181	0.	0.	0.	1.	2.	1.	0.	0.	0.	0.
191	0.	0.	0.	1.	0.	1.	0.	0.	1.	0.
201	0.	1.	0.	1.	0.	1.	1.	1.	0.	1.
211	1.	0.	0.	0.	0.	0.	1.	0.	1.	0.
221	1.	3.	3.	1.	1.	0.	1.	2.	1.	1.
231	2.	2.	0.	0.	3.	0.	1.	0.	3.	0.
241	2.	0.	3.	4.	1.	2.	0.	1.	0.	3.
251	1.	4.	1.	4.	3.	2.	5.	4.	2.	4.
261	2.	1.	5.	5.	9.	7.	6.	6.	5.	8.
271	6.	4.	1.	6.	7.	6.	9.	3.	4.	9.
281	5.	9.	15.	6.	15.	18.	16.	17.	16.	10.
291	15.	5.	10.	13.	15.	10.	9.	6.	12.	5.
301	7.	20.	16.	18.	24.	13.	16.	19.	17.	17.
311	17.	17.	16.	16.	17.	25.	28.	24.	22.	36.
321	40.	39.	43.	33.	37.	43.	67.	55.	66.	64.
331	63.	68.	68.	71.	84.	103.	93.	125.	117.	138.
341	161.	173.	207.	217.	268.	272.	295.	383.	419.	506.
351	607.	648.	621.	598.	598.	608.	659.	779.	885.	1042.
361	1194.	1202.	934.	536.	216.	50.	4.	1.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	1.	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.	1.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
461	0.	0.	0.	0.	1.	0.	3.	0.	0.	1.
471	0.	0.	3.	3.	0.	2.	3.	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	1.	0.								

AKJ 5-18-96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T1678-SAM
File ID: 19a1979.CNF

Counted on: 5/18/96 @15:52
Detector: AEA19
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	989.2	989.2	360.119	360.119	10.000	3.038	5.000	0.954
2	271.1	271.1	302.116	302.086	10.000	3.190	5.000	1.087
3	1598.1	1598.1	228.212	228.212	12.000	4.453	6.000	1.866

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.364	5.755	5.738	0.017	0.01	33.32	1.5	1184.8	0.534E-03
2	Pu238	0.095	5.487	5.471	0.016	0.01	8.72	3.1	421.8	0.190E-03
	Am241		5.479	5.471	0.008				323.1	0.146E-03
3	Pu239	0.530	5.147	5.131	0.016	0.02	48.59	1.3	1693.1	0.763E-03
	Pu240		5.144	5.131	0.013				1693.1	0.763E-03
Totals:		0.989	<--valid peaks only-->				90.63			

DETECTOR CALIBRATION
Energy(MEV) = 4.081 + (0.0046)*Channel
Energy range (MeV): 4.081 TO 6.436
Efficiency = 0.0287 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	43995.0	100.000
Smoothed	43993.4	99.996
Composite fit	43508.1	98.893
Residuals	486.9	1.107

Analyzed by: _____
VR

Spectrum 19a1979.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 11090.4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Raw Data Dump for AEA Spectrum: 19a1979.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	1.	0.	0.	0.	1.	1.	0.	0.
21	1.	0.	0.	0.	3.	0.	2.	0.	1.	1.
31	1.	0.	0.	0.	0.	0.	0.	0.	3.	0.
41	0.	1.	1.	0.	1.	1.	0.	0.	0.	0.
51	1.	3.	0.	4.	0.	2.	1.	1.	1.	3.
61	1.	0.	1.	1.	2.	3.	1.	3.	2.	3.
71	0.	1.	1.	3.	1.	1.	0.	1.	0.	1.
81	0.	0.	0.	0.	0.	1.	1.	0.	1.	1.
91	1.	3.	1.	0.	0.	1.	4.	0.	2.	1.
101	1.	1.	0.	0.	1.	3.	2.	1.	2.	3.
111	1.	1.	1.	4.	1.	2.	4.	1.	5.	2.
121	0.	0.	1.	3.	4.	2.	2.	4.	0.	1.
131	3.	1.	0.	2.	4.	1.	4.	5.	5.	3.
141	7.	4.	4.	3.	4.	5.	2.	5.	3.	10.
151	4.	2.	5.	5.	3.	8.	1.	2.	5.	10.
161	6.	3.	4.	5.	11.	7.	5.	7.	8.	8.
171	9.	10.	12.	12.	16.	14.	16.	19.	9.	16.
181	19.	24.	31.	36.	24.	25.	33.	28.	36.	47.
191	41.	32.	51.	41.	50.	67.	73.	61.	70.	87.
201	93.	108.	88.	101.	112.	155.	161.	165.	190.	207.
211	241.	280.	290.	378.	395.	449.	554.	599.	700.	775.
221	856.	925.	1041.	1230.	1374.	1555.	1682.	1842.	1768.	1624.
231	1310.	854.	451.	241.	83.	18.	6.	1.	2.	1.
241	2.	5.	2.	2.	4.	3.	2.	5.	10.	6.
251	1.	3.	7.	3.	7.	4.	2.	6.	3.	9.
261	14.	4.	15.	6.	10.	10.	16.	10.	17.	22.
271	17.	20.	13.	13.	21.	17.	36.	30.	29.	29.
281	36.	31.	48.	68.	52.	57.	64.	81.	97.	118.
291	121.	144.	148.	162.	164.	160.	190.	185.	208.	232.
301	292.	335.	326.	257.	199.	95.	38.	13.	15.	9.
311	8.	8.	13.	17.	15.	24.	19.	26.	19.	20.
321	30.	26.	30.	28.	24.	46.	56.	44.	45.	53.
331	55.	74.	46.	67.	73.	93.	102.	107.	104.	133.
341	146.	178.	196.	230.	274.	338.	388.	410.	537.	553.
351	669.	685.	573.	550.	568.	692.	739.	892.	1028.	1165.
361	1130.	1056.	637.	225.	54.	5.	1.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
391	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	1.	1.	1.	1.
411	0.	0.	0.	1.	0.	0.	0.	0.	0.	1.
421	2.	1.	0.	1.	0.	0.	0.	0.	0.	0.
431	1.	0.	0.	0.	1.	1.	0.	0.	0.	1.
441	1.	1.	0.	0.	0.	1.	0.	0.	0.	0.
451	0.	1.	0.	1.	1.	0.	0.	0.	0.	2.
461	0.	0.	0.	0.	1.	0.	1.	0.	0.	1.
471	2.	3.	2.	1.	1.	2.	0.	2.	1.	2.
481	0.	0.	0.	0.	1.	0.	1.	0.	1.	0.
491	1.	1.	2.	1.	1.	0.	1.	2.	1.	0.
511	0.	0.								

5-18-96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T1678-DUP
File ID: 20a2010.CNF

Counted on: 5/18/96 @15:53
Detector: AEA20
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	1014.7	1014.7	361.228	361.228	12.000	3.328	6.000	1.008
2	276.9	276.9	303.384	303.344	10.000	3.309	5.000	0.906
3	1694.3	1694.3	228.902	228.901	12.000	4.298	6.000	1.611

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.345	5.755	5.757	-.002	0.02	35.55	1.5	1106.0	0.498E-03
2	Pu238	0.101	5.487	5.491	-.004	0.02	10.39	2.8	440.0	0.198E-03
	Am241		5.479	5.491	-.012				337.0	0.152E-03
3	Pu239	0.528	5.147	5.148	-.001	0.02	54.38	1.2	1657.8	0.747E-03
	Pu240		5.144	5.148	-.004				1657.8	0.747E-03
		---					---			
Totals:		0.973	<--valid peaks only-->				100.32			

DETECTOR CALIBRATION
Energy(MEV) = 4.095 + (0.0046)*Channel
Energy range (MeV): 4.095 TO 6.451
Efficiency = 0.0328 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	49480.0	100.000
Smoothed	49480.5	100.001
Composite fit	48160.1	97.333
Residuals	1319.9	2.667

Analyzed by: _____
VR

Spectrum 20a2010.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 11871.5


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Raw Data Dump for AEA Spectrum: 20a2010.CNF

1	0.	0.	2.	1.	1.	1.	0.	0.	2.	0.
11	2.	1.	0.	2.	1.	1.	1.	0.	2.	1.
21	0.	0.	1.	0.	0.	0.	1.	0.	2.	0.
31	0.	0.	1.	0.	3.	1.	0.	0.	2.	0.
41	0.	2.	0.	3.	2.	0.	3.	0.	0.	0.
51	3.	1.	2.	1.	0.	1.	0.	0.	0.	1.
61	1.	0.	2.	2.	2.	4.	2.	4.	2.	1.
71	3.	1.	3.	0.	2.	0.	2.	1.	7.	1.
81	0.	1.	2.	1.	1.	0.	2.	1.	1.	2.
91	0.	3.	3.	1.	2.	2.	0.	1.	0.	2.
101	0.	1.	3.	1.	2.	1.	2.	1.	2.	1.
111	6.	4.	0.	2.	3.	6.	1.	2.	2.	3.
121	2.	5.	3.	6.	1.	1.	3.	6.	4.	7.
131	3.	10.	1.	5.	5.	3.	4.	3.	0.	4.
141	2.	7.	3.	1.	8.	6.	4.	5.	9.	7.
151	11.	9.	9.	10.	6.	8.	10.	7.	10.	17.
161	11.	11.	17.	16.	15.	14.	23.	18.	10.	18.
171	15.	18.	21.	28.	28.	25.	21.	30.	34.	30.
181	40.	33.	34.	37.	45.	53.	47.	53.	57.	65.
191	68.	77.	70.	92.	83.	73.	102.	113.	99.	112.
201	140.	123.	135.	148.	176.	197.	190.	220.	222.	243.
211	268.	316.	373.	435.	459.	525.	601.	695.	748.	832.
221	845.	931.	1091.	1173.	1296.	1488.	1694.	1862.	1898.	1902.
231	1646.	1197.	701.	394.	176.	51.	9.	3.	7.	1.
241	7.	6.	2.	4.	3.	5.	6.	7.	6.	3.
251	13.	6.	7.	4.	11.	11.	15.	8.	10.	14.
261	16.	13.	17.	15.	15.	15.	19.	19.	18.	22.
271	16.	21.	25.	25.	38.	27.	33.	42.	55.	42.
281	50.	47.	49.	63.	62.	70.	76.	94.	89.	115.
291	101.	126.	184.	194.	203.	201.	210.	208.	220.	231.
301	255.	271.	316.	319.	332.	228.	117.	43.	18.	15.
311	19.	9.	23.	24.	19.	27.	26.	30.	30.	37.
321	29.	32.	50.	48.	50.	48.	43.	59.	63.	51.
331	69.	71.	77.	83.	88.	109.	106.	124.	141.	146.
341	162.	176.	213.	211.	249.	311.	345.	399.	426.	548.
351	604.	640.	684.	705.	617.	634.	689.	776.	931.	989.
361	1186.	1183.	1051.	761.	366.	107.	15.	1.	0.	2.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	1.	0.	0.	2.	0.	0.	0.	0.
391	1.	0.	0.	0.	0.	0.	1.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
411	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
421	0.	0.	1.	1.	1.	1.	0.	0.	0.	1.
431	1.	0.	1.	0.	0.	3.	4.	0.	0.	0.
441	0.	0.	1.	1.	2.	0.	0.	0.	0.	0.
451	1.	0.	0.	1.	0.	1.	0.	0.	2.	1.
461	0.	0.	0.	0.	0.	1.	0.	2.	0.	2.
471	1.	2.	2.	2.	3.	1.	3.	3.	1.	4.
481	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.
491	1.	0.	0.	1.	1.	2.	0.	0.	0.	0.
511	0.	0.								

AEJ 5-18-96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T1689-SAM
File ID: 21a2116.CNF

Counted on: 5/18/96 @15:54
Detector: AEA21
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	839.6	839.6	357.910	357.910	14.000	7.300	7.000	2.096
2	150.3	150.3	300.235	300.054	16.000	7.922	8.000	2.083
3	881.9	881.9	227.179	227.177	14.000	6.723	7.000	2.402

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Ra224	0.464	5.686	5.736	-.050	0.03	35.15	1.5	226.2	0.102E-03
	Pu236		5.755	5.736	0.019				217.0	0.977E-04
2	Am241	0.089	5.479	5.470	0.009	0.04	6.74	3.7	43.4	0.195E-04
	Pu238		5.487	5.470	0.017				56.6	0.255E-04
3	Pu239	0.424	5.147	5.134	0.013	0.03	32.16	1.6	194.5	0.876E-04
	Pu240		5.144	5.134	0.010				194.5	0.876E-04
		---					---			
Totals:		0.977	<--valid peaks only-->				74.05			

DETECTOR CALIBRATION
Energy(MEV) = 4.089 + (0.0046)*Channel
Energy range (MeV): 4.089 TO 6.445
Efficiency = 0.1653 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	36400.0	100.000
Smoothed	36400.3	100.001
Composite fit	35549.1	97.662
Residuals	850.9	2.338

Analyzed by: _____
VR

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 6262.8


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Raw Data Dump for AEA Spectrum: 21a2116.CNF

1	0.	0.	1.	0.	1.	0.	1.	0.	0.	1.
11	1.	0.	1.	1.	2.	0.	0.	0.	0.	0.
21	0.	1.	0.	0.	1.	0.	0.	0.	1.	1.
31	0.	0.	1.	1.	0.	1.	2.	1.	0.	0.
41	1.	1.	1.	0.	0.	0.	0.	1.	2.	0.
51	1.	0.	0.	1.	0.	1.	1.	1.	1.	2.
61	0.	1.	1.	1.	5.	1.	0.	1.	3.	0.
71	3.	1.	1.	0.	3.	0.	2.	1.	3.	0.
81	2.	0.	0.	0.	1.	0.	1.	2.	0.	0.
91	3.	2.	3.	0.	0.	0.	1.	1.	1.	0.
101	1.	2.	2.	2.	1.	1.	1.	1.	2.	0.
111	3.	1.	3.	3.	0.	1.	2.	1.	1.	6.
121	1.	2.	1.	2.	3.	1.	1.	0.	2.	1.
131	2.	3.	6.	0.	1.	4.	3.	4.	2.	3.
141	2.	4.	6.	7.	6.	0.	4.	4.	5.	3.
151	6.	6.	6.	5.	7.	1.	6.	9.	5.	10.
161	5.	2.	10.	8.	7.	10.	11.	8.	7.	18.
171	10.	9.	14.	17.	12.	11.	18.	20.	18.	22.
181	18.	31.	29.	34.	35.	34.	33.	49.	46.	45.
191	41.	58.	48.	58.	66.	70.	64.	67.	84.	84.
201	88.	88.	85.	102.	119.	119.	132.	164.	166.	179.
211	200.	229.	247.	278.	303.	369.	384.	427.	510.	539.
221	605.	683.	745.	807.	854.	904.	991.	969.	864.	748.
231	557.	454.	326.	214.	136.	63.	48.	24.	7.	5.
241	12.	5.	4.	3.	3.	4.	0.	0.	6.	10.
251	3.	3.	6.	3.	9.	5.	6.	2.	15.	11.
261	9.	13.	15.	11.	14.	9.	15.	14.	22.	12.
271	19.	20.	19.	24.	14.	25.	32.	25.	23.	28.
281	52.	41.	44.	56.	49.	60.	79.	87.	103.	119.
291	103.	112.	125.	137.	129.	161.	149.	143.	169.	174.
301	166.	154.	152.	131.	97.	75.	74.	51.	31.	16.
311	26.	26.	25.	20.	30.	28.	39.	34.	41.	44.
321	49.	40.	49.	52.	49.	69.	50.	71.	74.	67.
331	75.	87.	91.	126.	105.	131.	154.	169.	179.	213.
341	245.	249.	279.	312.	381.	439.	468.	524.	539.	602.
351	606.	680.	748.	746.	800.	840.	921.	877.	892.	839.
361	722.	623.	365.	324.	180.	96.	43.	27.	9.	7.
371	1.	1.	0.	0.	0.	1.	0.	0.	0.	1.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
391	0.	0.	0.	0.	1.	1.	0.	0.	1.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
421	0.	2.	0.	2.	1.	2.	1.	0.	0.	1.
431	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.
441	0.	1.	0.	0.	1.	2.	0.	0.	0.	0.
451	0.	1.	1.	0.	0.	0.	1.	0.	0.	2.
461	1.	0.	0.	1.	3.	1.	4.	3.	1.	1.
471	1.	3.	2.	2.	3.	1.	0.	0.	0.	1.
481	0.	0.	1.	1.	0.	0.	0.	1.	1.	0.
491	2.	1.	0.	1.	2.	0.	1.	1.	1.	0.
511	0.	0.								

VFT 5-18-96

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. 2.02

DATA REDUCTION REPORT **WHC-SD-WM-DP-183, REV. 0**

SAMPLE
S96T1689-DUP
File ID: 22a2210.CNF

Counted on: 5/18/96 @15:54
Detector: AEA22
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	998.0	998.0	359.014	359.014	10.000	3.052	5.000	0.892
2	188.8	188.8	300.688	300.620	10.000	3.200	5.000	0.935
3	1078.5	1078.5	225.889	225.888	12.000	4.158	6.000	1.637

PEAK RESULTS
Peak Error Limit: 30%

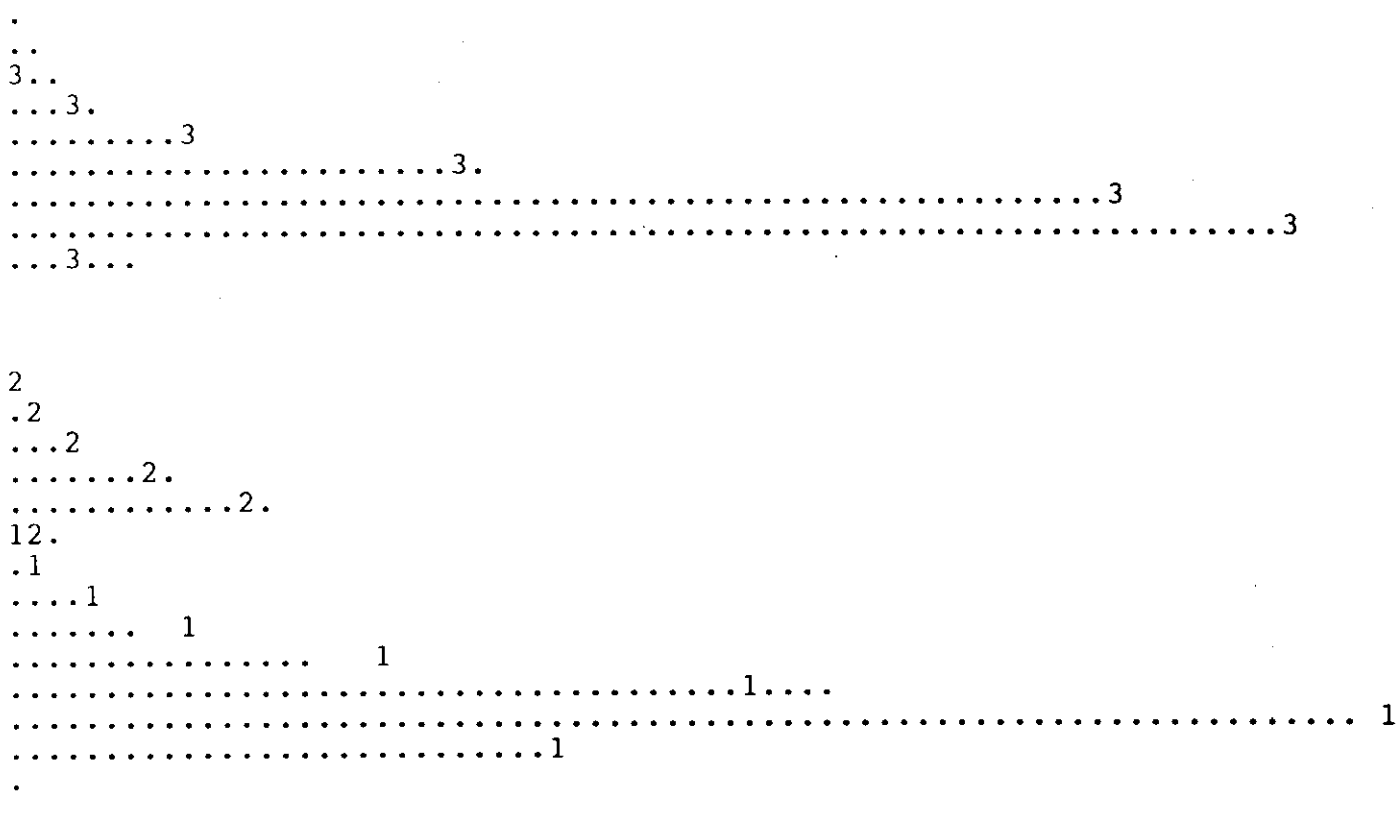
Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.460	5.755	5.762	-.007	0.01	35.36	1.5	2692.5	0.121E-02
	Cm243		5.779	5.762	0.017				3614.5	0.163E-02
2	Pu238	0.088	5.487	5.493	-.006	0.01	6.74	3.6	698.4	0.315E-03
	Am241		5.479	5.493	-.014				534.9	0.241E-03
3	Pu239	0.434	5.147	5.149	-.002	0.02	33.42	1.5	2494.0	0.112E-02
	Pu240		5.144	5.149	-.005				2494.0	0.112E-02
Totals:		0.982	<--valid peaks only-->				75.51			

DETECTOR CALIBRATION
Energy(MEV) = 4.110 + (0.0046)*Channel
Energy range (MeV): 4.110 TO 6.466
Efficiency = 0.0134 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	36926.0	100.000
Smoothed	36926.2	100.000
Composite fit	36247.0	98.161
Residuals	679.0	1.839

Analyzed by: _____
VR



Raw Data Dump for AEA Spectrum: 22a2210.CNF

1	0.	0.	0.	0.	1.	0.	1.	0.	0.	1.
11	0.	1.	0.	0.	0.	1.	0.	2.	0.	1.
21	0.	0.	2.	0.	2.	2.	2.	3.	0.	0.
31	0.	0.	0.	1.	0.	3.	0.	1.	1.	1.
41	0.	1.	1.	0.	1.	0.	0.	2.	0.	0.
51	2.	0.	0.	1.	2.	2.	0.	1.	0.	2.
61	1.	0.	1.	1.	1.	2.	2.	1.	2.	0.
71	1.	1.	3.	2.	1.	3.	1.	0.	0.	0.
81	0.	0.	1.	3.	0.	2.	1.	0.	1.	1.
91	1.	3.	1.	1.	1.	0.	2.	1.	1.	4.
101	4.	0.	0.	1.	1.	2.	3.	1.	1.	2.
111	0.	0.	3.	2.	2.	1.	5.	2.	1.	0.
121	0.	2.	4.	1.	5.	4.	2.	4.	5.	5.
131	5.	5.	4.	2.	8.	5.	4.	1.	7.	4.
141	4.	5.	6.	5.	3.	6.	5.	4.	2.	8.
151	9.	3.	13.	8.	6.	7.	4.	11.	12.	10.
161	5.	8.	11.	9.	12.	7.	19.	16.	9.	9.
171	23.	20.	12.	17.	18.	15.	17.	20.	20.	29.
181	34.	34.	30.	25.	39.	35.	27.	33.	50.	46.
191	44.	43.	43.	51.	58.	56.	63.	70.	82.	86.
201	83.	97.	132.	133.	125.	139.	145.	176.	212.	205.
211	251.	297.	359.	389.	381.	397.	477.	523.	551.	675.
221	747.	788.	920.	1057.	1206.	1247.	1179.	1042.	730.	454.
231	200.	105.	46.	4.	4.	5.	4.	3.	4.	4.
241	3.	3.	5.	2.	3.	3.	8.	9.	7.	7.
251	6.	10.	8.	6.	8.	6.	7.	6.	11.	8.
261	13.	7.	11.	10.	17.	11.	9.	18.	27.	23.
271	26.	19.	21.	20.	15.	26.	30.	31.	34.	46.
281	45.	50.	60.	64.	55.	51.	77.	84.	77.	91.
291	116.	121.	117.	136.	125.	149.	146.	163.	177.	217.
301	244.	200.	192.	101.	43.	23.	22.	14.	17.	18.
311	21.	22.	20.	34.	28.	30.	31.	33.	44.	36.
321	46.	37.	43.	49.	46.	51.	64.	67.	60.	79.
331	77.	95.	82.	94.	121.	118.	142.	145.	156.	193.
341	200.	245.	262.	259.	366.	392.	483.	575.	635.	666.
351	679.	614.	582.	633.	695.	814.	845.	1036.	1180.	1158.
361	983.	576.	236.	57.	4.	0.	0.	0.	0.	0.
371	1.	1.	1.	1.	1.	0.	0.	1.	0.	0.
381	1.	0.	0.	1.	1.	1.	0.	0.	1.	2.
391	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
401	1.	0.	0.	0.	1.	0.	1.	0.	1.	0.
411	0.	1.	0.	2.	1.	0.	0.	1.	0.	0.
421	1.	1.	1.	0.	0.	0.	3.	1.	1.	0.
431	0.	2.	1.	1.	0.	0.	0.	0.	1.	0.
441	0.	0.	2.	0.	3.	0.	2.	0.	0.	1.
451	1.	0.	0.	1.	0.	0.	2.	1.	1.	0.
461	0.	0.	1.	0.	2.	0.	0.	0.	1.	3.
471	2.	1.	1.	1.	3.	3.	3.	0.	2.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	2.	1.	1.	0.	1.	0.	1.	1.
511	0.	0.								

LABCORE Data Entry Template for Worklist# 8861

Analyst: JMV **Instrument:** PU01 #15 **Book#** 124843

Method: LA-943-128 Rev/Mod _____

Worklist Comment: C-106. RUSH. Determine sample size using ludlum. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@PU23901	SOLID		
2	BLNK-PREP				@PU23901	SOLID		
3	SAMPLE	S96T002718	0	F	@PU23901	SOLID	96000082	C-106 GRAB
		Analytes Requested: PU23901 , PU23901E, PU23901T						
4	DUP	S96T002718	0	F	@PU23901	SOLID		

Final page for worklist # 8861

JMV 5-17-96
Analyst Signature **Date**

CRaymond 5-19-96
Analyst Signature **Date**

MCBrown 5/20/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed RadChem Report for Worklist#: 8861

Analyst: jmv **Instrument:** AB15 **Book#** 124B43

Method: LA943-128 **Rev/Mod** B-0

Worklist Comment: C-106. RUSH. Determine sample size using ludlum. new

Seq	Type	Sample#	R	A	Test		Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@PU23901	PU23901	SOLID	3.81E-02	3.70E-2	97.113	% Recovery
1	STD		0		@PU23901	PU23901T	SOLID	100	8.85E+01	88.500	% Recovery
1	STD		0		@PU23901	PU23901E	SOLID	1	2.95E+00	2.950	% Ct Error
2	BLNK-PREP		0		@PU23901	PU23901	SOLID	1	<3.90E-2		uCi/g
2	BLNK-PREP		0		@PU23901	PU23901T	SOLID	100	8.89E+01	88.900	% Recovery
2	BLNK-PREP		0		@PU23901	PU23901E	SOLID	1	1.00E+02	100.000	uCi/g
3	SAMPLE	S96T002718	0	F	@PU23901	PU23901	SOLID	N/A	1.52E+00	102.0e-003	uCi/g
3	SAMPLE	S96T002718	0	F	@PU23901	PU23901T	SOLID	N/A	9.12E+01	0.0e+000	% Recovery
3	SAMPLE	S96T002718	0	F	@PU23901	PU23901E	SOLID	N/A	2.08E+00	0.0e+000	% Ct. Error
4	DUP	S96T002718	0	F	@PU23901	PU23901	SOLID	1.52E+0	1.53E+0	0.656	RPD
4	DUP	S96T002718	0	F	@PU23901	PU23901T	SOLID	100	8.59E+01	85.900	% Recovery
4	DUP	S96T002718	0	F	@PU23901	PU23901E	SOLID	1.00	2.29E+00	2.290	% Ct Error

Final page for worklist# 8861

Analyst Signature **Date** **Analyst Signature** **Date**

John Relyea 20MAY96
Reviewer Signature **Date**

Validated 20may96

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID / SOLID

							DUP
Type	DATE COUNTED		MAY-18-96	PU 236 AEA FRAC	(C236)		0.379
DUP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)		0.122
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)		0.484
8861	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			4481
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	0.8184	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)		0.130
Matrix	DETECTOR NUMBER		15	PU 236 cpm			27.160
SOLID	EFFICIENCY FACTOR	EFF	0.303	PU 238 cpm			8.730
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			34.740
96004872	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2172.922	Pu 239/240 µCi/g			1.5273E+00
0	PU-238 TRACER VALUE (dpm/mL)		0.000				

Sample Prep
FUSION01
Sample #
S96T002718
Instrument Code
WB26872
Prepared By
VAR
Chemist
JFR
Analyst
JMV
Date Complete
05/18/96
Analysis Date
05/17/96
Analysis Time
Sample Point
C-106 GRAB

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) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)

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 * 1/EFF * 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

Pu 239/240 µCi/g		1.53E+00	DETECTION LEVELS in µCi/g
Relative Counting Error	=	2.3%	
			Pu 239/240
Pu 238 µCi/g		3.85E-01	1.10E-01
Relative Counting Error	=	3.5%	Pu 238
Pu 236 Tracer Recovery	=	85.9%	1.10E-01

Analyst:		JMV	Date:	18-May-96
Signature of Chemist:	John Relyea	JFR	Date:	20 May 96

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID

						STD
Type	DATE COUNTED		MAY-18-96	PU 236 AEA FRAC	(C236)	0.703
STD	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.013
Work List	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)	0.263
8861	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		2492
Test Code	DIGEST DILUTION FACTOR	DDF	1.000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)	0.130
Matrix	DETECTOR NUMBER		15	PU 236 cpm		33.680
LIQUID	EFFICIENCY FACTOR	EFF	0.303	PU 238 cpm		0.620
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		12.620
96004872	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME		480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2172.922	Pu 239/240 µCi/L		3.6984E+01
0	PU-238 TRACER VALUE (dpm/mL		0.000			
Sample Prep	STANDARD BOOK NO		124B43			
N/A	STANDARD VALUE in µCi/mL		0.038			

Sample #	
WL8861	
Instrument Code	Decay Time = Date Counted - Tracer Preparation Date
WB26872	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)}]
Prepared By	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)* 1/EFF *C236*100/Pu-236 Decay Corr'd Value * SPKV
VAR	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(2220000 dpm/µCi)]
Chemist	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
JFR	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Analyst	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
JMV	
Date Complete	
05/18/96	
Analysis Date	
05/17/96	
Analysis Time	
12:00 AM	
Sample Point	
C-106 GRAB	

Pu 239/240 µCi/mL		3.70E-02
Relative Counting Error	=	3.0%
Pu 236 Tracer Recovery	=	88.5%

DETECTION LEVELS in µCi/mL
Pu 239/240
4.77E-03

Analyst:	JMV	Date:	18-May-96
Signature of Chemist: John Relyea	JFR	Date:	20 May 96

STANDARD.WB1 REV 1.0 943128ML

2410

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID / SOLID

Type	DATE COUNTED		MAY-18-96	PU 236 AEA FRAC	(C236)	0.997
BLNK-PREP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.000
8861	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		1767
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	0.8488	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm (Bkg)		0.130
Matrix	DETECTOR NUMBER		15	PU 236 cpm		25.940
SOLID	EFFICIENCY FACTOR	EFF	0.3032	PU 238 cpm		0.000
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		0.000
96004872	TRACER PREPARATION VALUE (dpm/mL)		2390.00	AEA COUNT TIME		480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2172.92	Pu 239/240 µCi/g =	<	3.902E-02
0	PU-238 TRACER VALUE (dpm/mL)		0.00			

Sample Prep
N/A
Sample #
WL8861
Instrument Code
WB26872
Prepared By
VAR
Chemist
JFR
Analyst
JMV
Date Complete
05/18/96
Analysis Date
05/17/96
Analysis Time
Sample Point
C-106 GRAB

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)*C236*100/(Pu-236 Decay Corr'd Value * SPKV*EFF)
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 * 1/EFF * 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

Pu 239/240 µCi/g		< 3.90E-02	DETECTION LEVELS in µCi/g
Relative Counting Error	=	100.0%	
NOTE: Pu 238 Result is a LESS THAN Value.			Pu 239/240 3.90E-02
Pu 238 µCi/g		< 3.90E-02	
Relative Counting Error	=	100.0%	Pu 238 3.90E-02
Pu 236 Tracer Recovery	=	88.9%	

Analyst:	JMV	Date:	18-May-96
Signature of Chemist: John Relyea	JFR	Date:	20 May 96

BLANK.WB1 REV 1.0 943128ML

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID / SOLID

							SAMPLE
Type	DATE COUNTED		MAY-18-96	PU 236 AEA FRAC	(C236)		0.373
SAMPLE	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)		0.119
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)		0.492
8861	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			4839
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	0.8488	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)		0.130
Matrix	DETECTOR NUMBER		15	PU 236 cpm			32.640
SOLID	EFFICIENCY FACTOR	EFF	0.303	PU 238 cpm			10.370
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			42.950
96004872	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2172.922	Pu 239/240 µCi/g			1.5210E+00
0	PU-238 TRACER VALUE (dpm/mL)		0.000				
Sample Prep							
FUSION01							
Sample #							
S96T002718							
Instrument Code							
WB25872							
Prepared By							
VAR							
Chemist							
JFR							
Analyst							
JMV							
Date Complete							
05/18/96							
Analysis Date							
05/17/96							
Analysis Time							
Sample Point							
C-106 GRAB							

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) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)

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 * 1/EFF * 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

Pu 239/240 µCi/g		1.52E+00	DETECTION LEVELS in µCi/g
Relative Counting Error	=	2.1%	
			Pu 239/240
Pu 238 µCi/g		3.68E-01	1.02E-01
Relative Counting Error	=	3.2%	Pu 238
Pu 236 Tracer Recovery	=	91.2%	1.02E-01

Analyst:	JMV	Date:	18-May-96	
Signature of Chemist: John Relyea	JFR	Date:	20 May 96	

SAMPLE.WB1 REV 1.0 943128ML

2412

Reymond 5/18/96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T2718-DUP
File ID: 26a2626.CNF

Counted on: 5/18/96 @ 7:55
Detector: AEA26
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	800.7	800.7	358.521	358.521	10.000	3.151	5.000	0.988
2	244.5	244.5	300.136	300.107	10.000	3.396	5.000	1.005
3	1128.3	1128.3	225.725	225.725	12.000	4.040	6.000	1.591

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.379	5.755	5.761	-.006	0.01	27.16	1.7	172.1	0.775E-04
	Cm243		5.779	5.761	0.018				231.0	0.104E-03
2	Pu238	0.122	5.487	5.492	-.005	0.02	8.73	3.1	75.2	0.339E-04
	Am241		5.479	5.492	-.013				57.6	0.260E-04
3	Pu239	0.484	5.147	5.150	-.003	0.02	34.74	1.5	215.6	0.971E-04
	Pu240		5.144	5.150	-.006				215.6	0.971E-04
		---					---			
Totals:		0.985	<--valid peaks only-->				70.63			

DETECTOR CALIBRATION
Energy(MEV) = 4.112 + (0.0046)*Channel
Energy range (MeV): 4.112 TO 6.467
Efficiency = 0.1611 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	34421.0	100.000
Smoothed	34421.0	100.000
Composite fit	33907.3	98.508
Residuals	513.7	1.492

Analyzed by: _____
VR

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 6292.1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3..
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Raw Data Dump for AEA Spectrum: 26a2626.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
11	0.	0.	1.	0.	0.	2.	0.	2.	0.	0.
21	0.	1.	0.	0.	0.	0.	0.	0.	2.	0.
31	0.	1.	1.	0.	0.	2.	1.	0.	0.	1.
41	0.	0.	1.	0.	0.	0.	2.	0.	0.	0.
51	0.	0.	1.	2.	0.	0.	1.	1.	1.	0.
61	1.	1.	1.	1.	0.	1.	1.	1.	1.	1.
71	0.	2.	0.	0.	0.	1.	1.	1.	0.	0.
81	0.	2.	2.	0.	0.	0.	1.	1.	2.	0.
91	4.	1.	1.	3.	1.	3.	1.	1.	2.	0.
101	0.	3.	3.	2.	2.	1.	1.	0.	2.	1.
111	1.	3.	3.	0.	1.	4.	2.	1.	1.	1.
121	5.	1.	0.	4.	0.	1.	1.	6.	2.	2.
131	0.	3.	0.	2.	2.	1.	2.	1.	4.	6.
141	5.	2.	5.	5.	3.	3.	5.	5.	11.	3.
151	3.	3.	3.	2.	5.	6.	5.	2.	6.	6.
161	6.	4.	8.	8.	11.	12.	13.	10.	10.	10.
171	10.	20.	14.	16.	13.	23.	23.	19.	20.	26.
181	26.	19.	26.	16.	26.	33.	38.	32.	50.	44.
191	48.	46.	60.	65.	56.	75.	58.	64.	78.	97.
201	100.	102.	114.	128.	137.	120.	153.	211.	192.	241.
211	272.	318.	359.	388.	466.	443.	523.	541.	605.	673.
221	757.	847.	1044.	1146.	1188.	1300.	1275.	1008.	700.	395.
231	209.	72.	22.	0.	4.	3.	3.	3.	1.	3.
241	1.	3.	0.	8.	4.	3.	9.	8.	6.	1.
251	6.	6.	3.	5.	5.	8.	15.	5.	8.	7.
261	10.	12.	7.	12.	26.	21.	9.	24.	12.	22.
271	27.	14.	22.	24.	33.	27.	28.	24.	39.	51.
281	43.	60.	61.	62.	80.	83.	81.	100.	116.	154.
291	158.	164.	176.	187.	162.	172.	186.	219.	278.	299.
301	255.	271.	197.	78.	33.	15.	11.	8.	10.	7.
311	13.	10.	17.	23.	19.	29.	21.	25.	27.	26.
321	21.	32.	29.	30.	34.	41.	46.	51.	41.	49.
331	58.	65.	69.	92.	84.	93.	90.	111.	125.	157.
341	169.	184.	181.	254.	275.	331.	360.	470.	560.	513.
351	494.	469.	439.	516.	554.	677.	767.	869.	978.	880.
361	646.	334.	123.	20.	5.	0.	1.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
451	0.	1.	0.	0.	0.	1.	0.	0.	0.	0.
461	1.	0.	0.	1.	0.	0.	1.	0.	1.	1.
471	0.	0.	2.	2.	2.	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.								

Raymond 5/18/96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
WL8861-STD
File ID: 23a2342.CNF

Counted on: 5/18/96 @ 7:53
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	974.5	974.5	360.109	360.109	10.000	3.117	5.000	0.949
2	12.5	12.5	302.840	302.276	8.000	3.630	4.000	0.693
3?	9.6	9.6	285.627	284.807	10.000	2.960	5.000	1.002
4	417.2	417.2	227.244	227.243	10.000	3.949	5.000	1.591

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Peak Centroid Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.703	5.755	5.754	0.0010	01	33.68	1.5	1620.9	0.730E-03
2	Pu238	0.013	5.487	5.488	-.0010	02	0.62	15.6	40.6	0.183E-04
	Am241		5.479	5.488	-.009				31.1	0.140E-04
3		????		5.408			0.31	25.5		
4	Pu239	0.263	5.147	5.143	0.0040	02	12.62	2.5	595.2	0.268E-03
	Pu240		5.144	5.143	0.001				595.2	0.268E-03
		---					---			
Totals:		0.979	<--valid peaks only-->				46.91			

DETECTOR CALIBRATION
Energy(MEV) = 4.097 + (0.0046)*Channel
Energy range (MeV): 4.097 TO 6.453
Efficiency = 0.0212 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	23009.0	100.000
Smoothed	23008.9	100.000
Composite fit	22667.9	98.517
Residuals	341.1	1.483

Analyzed by: _____
VR

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5828.3


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Raw Data Dump for AEA Spectrum: 23a2342.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
11	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
21	0.	0.	0.	0.	0.	2.	0.	0.	0.	0.
31	0.	0.	1.	0.	0.	1.	0.	1.	1.	2.
41	0.	0.	1.	0.	1.	1.	0.	0.	0.	1.
51	1.	1.	3.	1.	0.	0.	0.	1.	0.	0.
61	2.	1.	1.	2.	1.	5.	0.	1.	1.	2.
71	0.	1.	1.	0.	1.	0.	0.	1.	0.	0.
81	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
91	1.	0.	1.	0.	0.	0.	1.	0.	0.	0.
101	1.	1.	0.	0.	1.	2.	0.	1.	0.	1.
111	1.	0.	1.	1.	1.	0.	0.	1.	0.	0.
121	3.	2.	3.	0.	0.	0.	3.	0.	2.	2.
131	3.	1.	3.	1.	2.	0.	2.	1.	1.	0.
141	2.	1.	1.	3.	4.	5.	2.	1.	5.	0.
151	4.	6.	1.	3.	3.	5.	2.	3.	4.	5.
161	4.	3.	2.	3.	4.	5.	6.	4.	6.	3.
171	8.	4.	10.	13.	9.	11.	8.	7.	12.	7.
181	10.	10.	12.	13.	12.	20.	15.	14.	18.	16.
191	17.	22.	19.	27.	24.	22.	18.	37.	26.	29.
201	26.	37.	42.	38.	44.	48.	54.	56.	63.	75.
211	89.	89.	102.	110.	154.	129.	160.	188.	201.	203.
221	223.	269.	268.	334.	412.	444.	458.	510.	412.	323.
231	216.	92.	38.	11.	4.	3.	1.	2.	1.	0.
241	1.	1.	2.	5.	3.	0.	3.	1.	0.	5.
251	5.	3.	0.	6.	2.	6.	4.	5.	7.	4.
261	4.	6.	6.	7.	6.	5.	7.	5.	7.	5.
271	8.	4.	4.	8.	8.	5.	11.	9.	8.	14.
281	12.	15.	16.	17.	22.	11.	22.	15.	12.	9.
291	8.	13.	11.	12.	12.	16.	12.	16.	23.	17.
301	16.	20.	23.	29.	13.	11.	16.	13.	19.	18.
311	28.	17.	12.	16.	27.	25.	22.	30.	29.	31.
321	32.	36.	46.	48.	52.	35.	58.	73.	60.	55.
331	84.	83.	83.	91.	93.	102.	135.	119.	155.	164.
341	166.	193.	215.	245.	275.	325.	380.	428.	530.	574.
351	662.	669.	564.	536.	538.	684.	755.	862.	1031.	1116.
361	1176.	990.	625.	260.	62.	12.	1.	1.	0.	0.
371	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.
421	1.	1.	0.	0.	0.	1.	0.	1.	2.	0.
431	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
441	0.	0.	0.	2.	0.	0.	1.	0.	0.	0.
451	1.	0.	0.	0.	0.	0.	2.	0.	0.	0.
461	0.	0.	1.	0.	0.	2.	0.	0.	0.	1.
471	1.	1.	1.	1.	1.	2.	0.	1.	1.	0.
481	0.	1.	0.	1.	0.	0.	0.	0.	0.	0.
491	0.	2.	0.	0.	0.	0.	1.	0.	0.	1.
511	0.	0.								

Waymore 5/18/96

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. 2.02

DATA REDUCTION REPORT

SAMPLE
WL8861-BLK
File ID: 24a2445.CNF

Counted on: 5/18/96 @ 7:53
Detector: AEA24
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	705.3	705.3	360.804	360.804	10.000	3.294	5.000	0.928
2?	5.1	5.1	302.265	300.619	10.000	1.197	5.000	0.564
3	9.4	9.4	287.933	287.143	12.000	3.315	6.000	0.849

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.997	5.755	5.745	0.010	0.02	25.94	1.8	840.3	0.379E-03
2		????		5.468			0.11	51.6		
3	Th228	0.014	5.400	5.406	-.006	0.02	0.37	18.5	16.6	0.747E-05
Totals:		1.012	<--valid peaks only-->				26.31			

DETECTOR CALIBRATION
Energy(MEV) = 4.086 + (0.0046)*Channel
Energy range (MeV): 4.086 TO 6.441
Efficiency = 0.0315 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	12485.0	100.000
Smoothed	12485.0	100.000
Composite fit	12684.6	101.598
Residuals	-199.6	-1.598

Analyzed by: _____
VR

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 4168.8


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Raw Data Dump for AEA Spectrum: 24a2445.CNF

1	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.
31	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
51	0.	0.	0.	0.	0.	0.	0.	0.	1.	2.
61	1.	0.	0.	1.	2.	0.	0.	1.	0.	2.
71	1.	0.	1.	0.	1.	0.	2.	0.	0.	0.
81	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
91	0.	0.	1.	0.	0.	0.	1.	0.	0.	0.
101	0.	1.	0.	1.	2.	0.	0.	0.	0.	0.
111	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.
121	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
131	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
141	1.	2.	1.	0.	0.	1.	1.	0.	0.	1.
151	0.	0.	0.	0.	1.	0.	0.	0.	1.	0.
161	0.	0.	0.	1.	1.	1.	0.	0.	0.	0.
171	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
181	2.	0.	0.	0.	0.	1.	0.	0.	0.	0.
191	1.	0.	1.	0.	0.	1.	1.	1.	0.	0.
201	0.	1.	0.	0.	0.	0.	1.	0.	2.	0.
211	1.	0.	2.	0.	0.	0.	2.	3.	1.	0.
221	2.	0.	2.	1.	0.	2.	1.	1.	0.	0.
231	2.	0.	2.	2.	0.	1.	3.	2.	3.	0.
241	1.	3.	3.	1.	3.	0.	1.	0.	2.	4.
251	1.	2.	3.	3.	1.	1.	5.	3.	0.	2.
261	0.	2.	6.	5.	7.	7.	1.	6.	3.	7.
271	6.	1.	5.	5.	4.	3.	1.	6.	1.	7.
281	7.	15.	6.	14.	13.	9.	14.	17.	11.	11.
291	13.	5.	8.	5.	7.	5.	8.	12.	5.	14.
301	11.	13.	10.	14.	6.	12.	11.	9.	7.	11.
311	19.	18.	14.	15.	18.	18.	18.	31.	24.	27.
321	30.	33.	32.	32.	38.	31.	33.	42.	44.	62.
331	58.	57.	54.	61.	73.	84.	85.	110.	109.	117.
341	125.	158.	171.	166.	186.	241.	273.	285.	389.	398.
351	448.	489.	490.	463.	423.	453.	483.	609.	658.	771.
361	788.	838.	661.	399.	152.	37.	2.	0.	0.	0.
371	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
411	1.	0.	0.	0.	1.	0.	0.	0.	0.	0.
421	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
431	2.	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.	1.	0.	0.	1.	0.
461	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
471	0.	1.	0.	2.	0.	2.	0.	1.	0.	0.
481	0.	0.	2.	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. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T2718-SAM
File ID: 25a2525.CNF

Counted on: 5/18/96 @ 7:54
Detector: AEA25
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	966.2	966.2	360.050	360.050	10.000	3.105	5.000	0.980
2	322.5	322.5	301.753	301.724	10.000	3.025	5.000	1.015
3	1424.6	1424.6	227.307	227.307	10.000	3.971	5.000	1.612

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.373	5.755	5.757	-.002	0.01	32.54	1.6	1095.9	0.494E-03
2	Pu238	0.119	5.487	5.488	-.001	0.01	10.37	2.8	475.6	0.214E-03
	Am241		5.479	5.488	-.009				364.3	0.164E-03
3	Pu239	0.492	5.147	5.146	0.001	0.02	42.95	1.4	1417.4	0.638E-03
	Pu240		5.144	5.146	-.002				1417.4	0.638E-03
Totals:		0.984	<--valid peaks only-->				85.86			

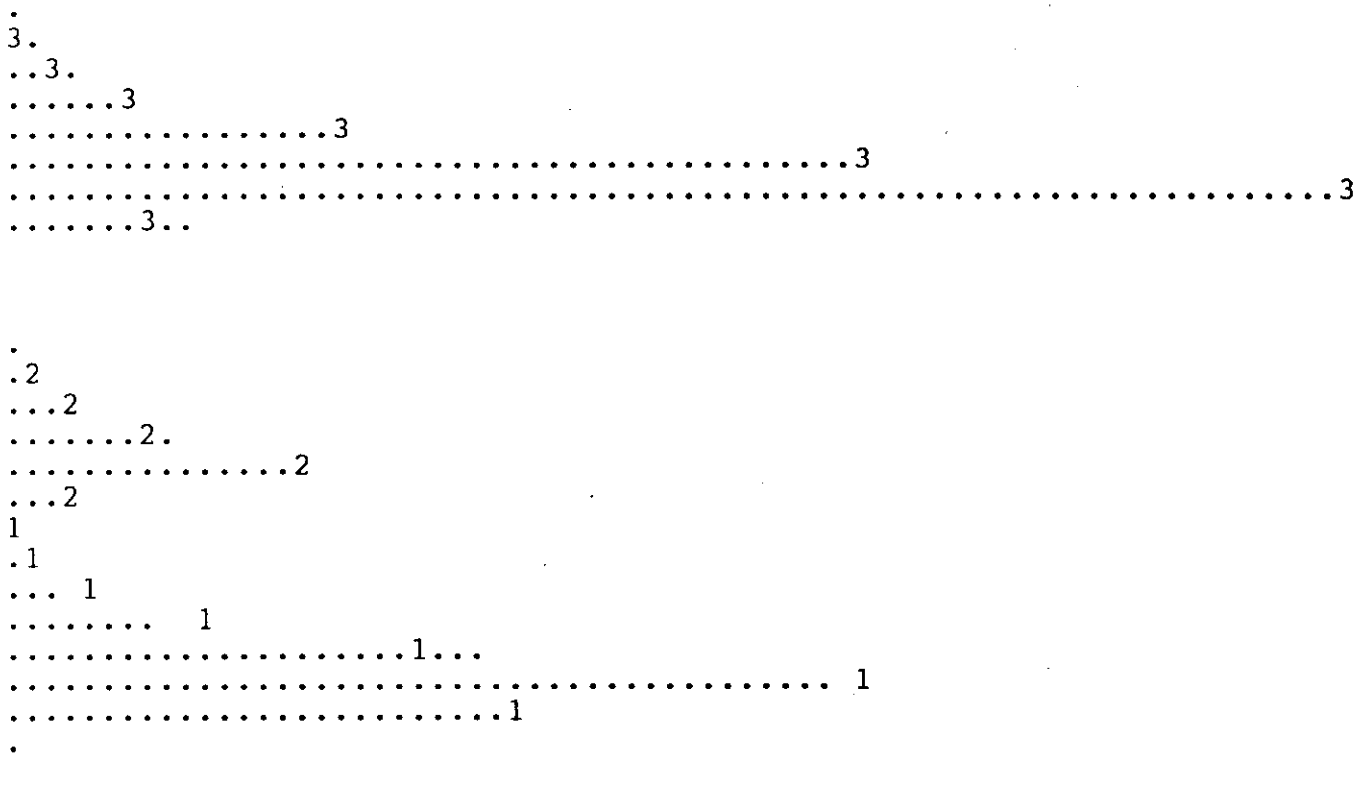
DETECTOR CALIBRATION
Energy(MEV) = 4.100 + (0.0046)*Channel
Energy range (MeV): 4.100 TO 6.456
Efficiency = 0.0303 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	41878.0	100.000
Smoothed	41877.4	99.999
Composite fit	41221.3	98.432
Residuals	656.7	1.568

Analyzed by: _____
VR

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 9274.3



Raw Data Dump for AEA Spectrum: 25a2525.CNF

1	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
11	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
21	1.	0.	1.	0.	0.	0.	1.	0.	1.	0.
31	2.	0.	2.	0.	0.	0.	1.	0.	0.	0.
41	0.	1.	0.	2.	0.	1.	0.	0.	1.	0.
51	1.	0.	2.	0.	3.	0.	2.	0.	0.	2.
61	0.	1.	1.	2.	0.	2.	0.	1.	0.	0.
71	0.	0.	1.	0.	0.	1.	2.	0.	2.	0.
81	0.	1.	2.	2.	1.	0.	1.	2.	0.	1.
91	2.	0.	0.	2.	0.	1.	1.	2.	1.	0.
101	0.	2.	0.	2.	0.	4.	2.	1.	0.	1.
111	1.	1.	0.	2.	1.	1.	1.	3.	1.	2.
121	2.	3.	1.	2.	1.	1.	1.	3.	2.	6.
131	3.	0.	1.	1.	5.	4.	0.	2.	4.	7.
141	2.	5.	4.	5.	6.	6.	6.	9.	7.	3.
151	9.	3.	8.	7.	8.	11.	9.	7.	4.	9.
161	6.	5.	8.	13.	11.	10.	8.	6.	9.	6.
171	14.	12.	14.	14.	9.	9.	26.	17.	16.	15.
181	13.	31.	21.	29.	26.	31.	38.	43.	44.	41.
191	45.	43.	53.	62.	69.	70.	65.	88.	79.	83.
201	80.	110.	109.	127.	135.	160.	172.	192.	187.	239.
211	259.	313.	356.	372.	455.	495.	540.	599.	663.	696.
221	818.	879.	1024.	1171.	1304.	1512.	1616.	1674.	1501.	1117.
231	643.	379.	171.	48.	16.	4.	3.	4.	6.	2.
241	4.	1.	3.	2.	7.	4.	2.	5.	3.	2.
251	6.	6.	5.	1.	11.	8.	6.	9.	15.	11.
261	18.	16.	15.	11.	16.	25.	16.	27.	18.	21.
271	20.	15.	19.	25.	30.	31.	38.	38.	45.	37.
281	45.	43.	53.	64.	66.	89.	87.	102.	101.	134.
291	162.	162.	190.	240.	193.	202.	197.	236.	287.	285.
301	353.	401.	359.	300.	172.	57.	16.	8.	12.	13.
311	13.	14.	15.	21.	16.	20.	20.	16.	20.	21.
321	28.	32.	31.	35.	43.	54.	30.	53.	35.	49.
331	59.	66.	62.	73.	85.	75.	93.	100.	108.	139.
341	159.	184.	198.	246.	263.	289.	367.	444.	539.	557.
351	603.	646.	574.	553.	563.	600.	758.	866.	1072.	1124.
361	1106.	1000.	609.	224.	50.	6.	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.	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.	1.	0.	0.	0.	0.
431	0.	0.	1.	0.	0.	0.	1.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
461	0.	0.	0.	0.	0.	2.	0.	0.	0.	0.
471	0.	0.	2.	0.	0.	0.	0.	0.	1.	1.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
511	0.	0.								

ORGANIC ANALYSES

NPH/TBP Analysis

with Mass Spectroscopy Confirmation

and tentatively Identified Compounds (TIC)

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PAL - ORGANIC

INITIAL CALIBRATION DATA

Start Cal Date : ~~02-FEB-96~~ 09-05 16:28
End Cal Date : ~~02-FEB~~-96 16:28
Quant Method : ESTD
Target Version : 3.10
Integrator : HP Genie
Method file : /chem/gc3.i/05299600.b/nphtbp.m
Cal Date : 30-May-1996 12:00
Curve Type : Average

Calibration File Names:
Level 1: /chem/gc3.i/05099600.b/002f0601.d
Level 2: /chem/gc3.i/05099600.b/003f0501.d
Level 3: /chem/gc3.i/05099600.b/004f0401.d
Level 4: /chem/gc3.i/05099600.b/005f0301.d
Level 5: /chem/gc3.i/05099600.b/006f0201.d

Compound	50 Level 1	100 Level 2	200 Level 3	300 Level 4	600 Level 5	$\overline{RRF}$	% RSD
1 n-Nonane	9206	9990	9696	9775	8888	9511	4.744
2 2-Butoxyethanol	+++++	+++++	+++++	+++++	+++++	+++++	+++++
3 n-Decane	9276	10015	9695	9709	8934	9526	4.436
4 n-Undecane	9324	10142	9791	9794	9119	9634	4.248
5 n-Dodecane	9197	10021	9690	9701	9105	9543	4.013
6 n-Tridecane	8974	9891	9613	9556	9069	9421	4.109
7 n-Tetradecane	8958	9771	9486	9431	9142	9358	3.373
8 n-Pentadecane	8891	9721	9451	9329	9255	9329	3.241
10 Tributyl Phosphate (TBP)	4947	5607	5529	5446	5521	5410	4.902
$ 9 n-Hexadecane	8669	9579	9345	9145	9293	9206	3.675

WHC-SD-WM-DP-183, REV. 0

PAL - ORGANIC

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: gc3.i
Lab File ID: 004f0201.d
Analysis Type:
Lab Sample ID:
Quant Type: ESTD

Injection Date: ~~05-FEB~~ 29-05-96 16:11
Init. Calibration Date(s): ~~02/02/96~~ 05/09/96 ~~02/02/96~~ 05/09/96
Init. Calibration Times: 16:28 16:28
Method File: /chem/gc3.i/05299600.b/nphtbp.m

COMPOUND	RRF	RF200	MIN RRF	%D	MAX %D
1 n-Nonane	9510.984	9309.562	0.000	2.1	15.0
3 n-Decane	9525.779	9344.240	0.000	1.9	15.0
4 n-Undecane	9634.010	9476.500	0.000	1.6	15.0
5 n-Dodecane	9542.874	9453.683	0.000	0.9	15.0
6 n-Tridecane	9420.519	9457.867	0.000	0.4	15.0
7 n-Tetradecane	9357.703	9450.610	0.000	1.0	15.0
8 n-Pentadecane	9329.412	9504.025	0.000	1.9	15.0
$ 9 n-Hexadecane	9206.305	9464.635	0.000	2.8	15.0
10 Tributyl Phosphate (TBP)	5410.061	5674.317	0.000	4.9	15.0

WHC-SD-WM-DP-183, REV. 0

PAL - ORGANIC

Data file : /chem/gc3.i/05299600.b/004f0201.d
Lab Smp Id:
Inj Date : 05-FEB-96 16:11
Operator : Robert Ray Inst ID: gc3.i
Smp Info : CAL3 (200 PPM)
Misc Info :
Comment :
Method : /chem/gc3.i/05299600.b/nphtbp.m
Meth Date : 30-May-1996 11:30 Quant Type: ESTD
Cal Date : ~~02-FEB~~-96 16:28 Cal File: 002f0601.d
Als bottle: 1 09-05 Continuing Calibration Sample
Dil Factor: 1.000
Integrator: HP Genie Compound Sublist: nphtbp.sub
Target Version: 3.10

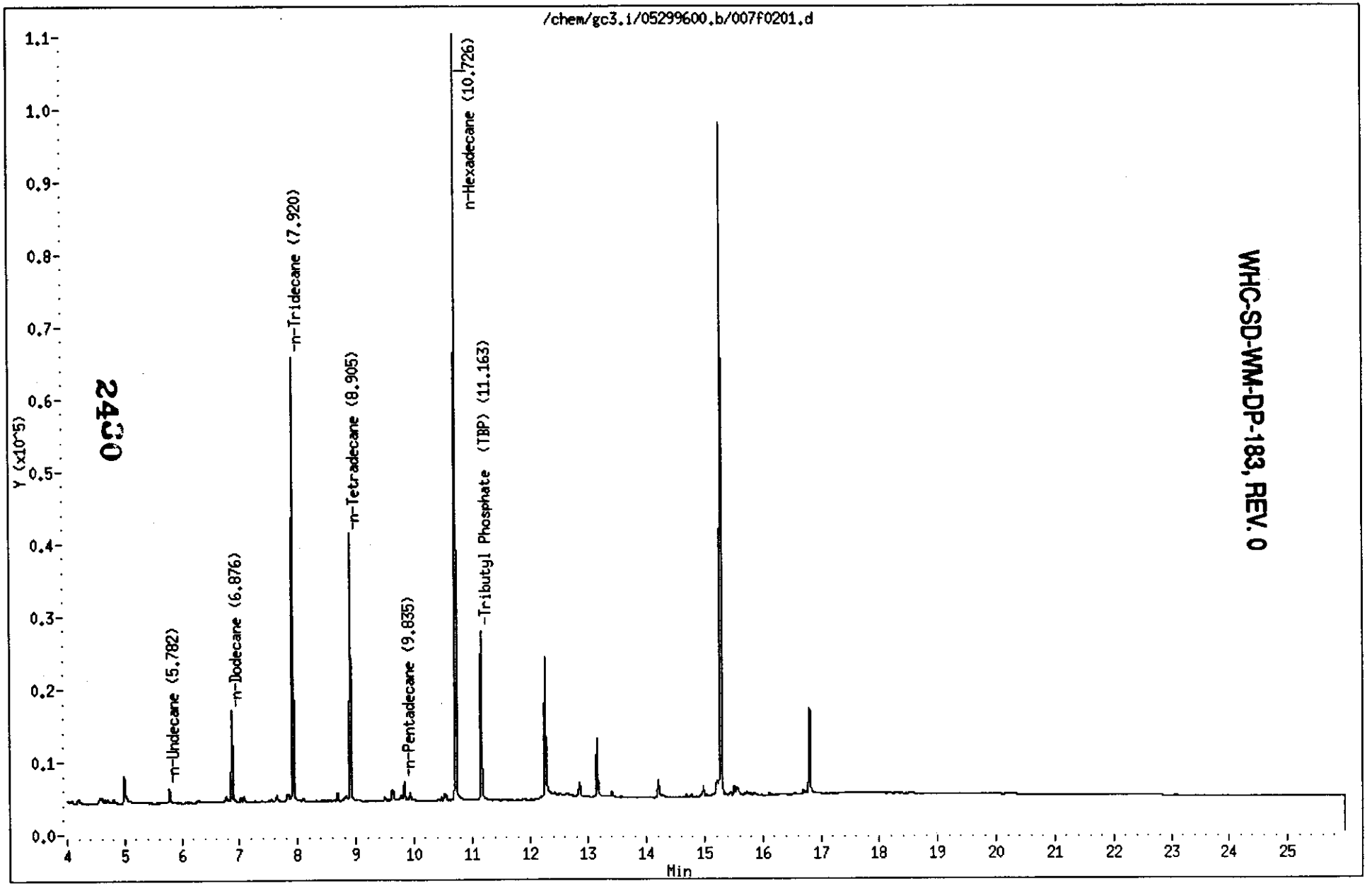
	Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ng)	AMOUNTS ON-COL (ng)
	1 n-Nonane	3.569	3.577	-0.008	1861912	200	196
	3 n-Decane	4.668	4.683	-0.015	1868848	200	196
	4 n-Undecane	5.794	5.813	-0.019	1895300	200	197
	5 n-Dodecane	6.891	6.910	-0.019	1890736	200	198
	6 n-Tridecane	7.934	7.955	-0.021	1891573	200	201
	7 n-Tetradecane	8.922	8.943	-0.021	1890122	200	202
	8 n-Pentadecane	9.855	9.878	-0.023	1900805	200	204
$	9 n-Hexadecane	10.738	10.762	-0.024	1892927	200	206
	10 Tributyl Phosphate (TBP)	11.178	11.199	-0.021	1134863	200	210

Data File: /chem/gc3.i/05299600.b/007f0201.d
Date : 29-MAY-1996 17:48
Client ID: S96T003134
Sample Info: S96T003134A

Column phase:

Instrument: gc3.i

Operator: Robert Ray
Column diameter: 0.32



WHC-SD-WM-DP-183, REV. 0

PAL - ORGANIC

RECOVERY REPORT

Client Name: ESCH
Sample Matrix: LIQUID
Lab Smp Id: S96T003134
Level: LOW
Data Type: GC DATA
SpikeList File: nphtbp.spk
Method File: /chem/gc3.i/05299600.b/nphtbp.m
Misc Info:

Client SDG: S96T003134A
Fraction: OTHER
Client Smp ID: S96T003134
Operator: Robert Ray
SampleType: SAMPLE
Quant Type: ESTD

SURROGATE COMPOUND	CONC ADDED ug/mL	CONC RECOVERED ug/mL	% RECOVERED	LIMITS
$ 9 n-Hexadecane	100	83.5	83.48	50-130

WHC-SD-WM-DP-183, REV. 0

PAL - ORGANIC

TARGET COMPOUNDS

Client Name: ESCH
Lab Smp Id: S96T003134
Sample Location:
Sample Date:
Sample Matrix: WATER
Analysis Type: OTHER
Data Type: GC DATA
Misc Info:

Client SDG: S96T003134A
Client Smp ID: S96T003134
Sample Point: C-106
Date Received:
Quant Type: ESTD
Level: LOW
Operator: Robert Ray

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/KG) ug/mL	Q
111-84-2	n-Nonane	50.0	U
124-18-5	n-Decane	50.0	U
1120-21-4	n-Undecane	1.59	J
112-40-3	n-Dodecane	10.1	J
629-50-5	n-Tridecane	45.6	J
629-59-4	n-Tetradecane	27.6	J
629-62-9	n-Pentadecane	2.37	J
126-73-8	Tributyl Phosphate (TBP)	31.9	J
544-76-3	n-Hexadecane	83.5	

WHC-SD-WM-DP-183, REV. 0

PAL - ORGANIC

Data file : /chem/gc3.i/05299600.b/007f0201.d
Lab Smp Id: S96T003134 Client Smp ID: S96T003134
Inj Date : 29-MAY-1996 17:48
Operator : Robert Ray Inst ID: gc3.i
Smp Info : S96T003134A
Misc Info :
Comment :
Method : /chem/gc3.i/05299600.b/nphtbp.m
Meth Date : 30-May-1996 12:00 Quant Type: ESTD
Cal Date : ~~02-FEB~~-96 16:28 Cal File: 002f0601.d
Als bottle: 1 09-05 (RR)
Dil Factor: 1.000
Integrator: HP Genie Compound Sublist: nphtbp.sub
Target Version: 3.10

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ng)	FINAL (ug/mL)
4 n-Undecane	5.782	5.813	-0.031	15339	1.59	1.59(a)
5 n-Dodecane	6.876	6.910	-0.034	96805	10.1	10.1(a)
6 n-Tridecane	7.920	7.955	-0.035	429587	45.6	45.6(a)
7 n-Tetradecane	8.905	8.943	-0.038	257962	27.6	27.6(a)
8 n-Pentadecane	9.835	9.878	-0.043	22099	2.37	2.37(a)
$ 9 n-Hexadecane	10.726	10.762	-0.036	768554	83.5	83.5
10 Tributyl Phosphate (TBP)	11.163	11.199	-0.036	172517	31.9	31.9(a)

QC Flag Legend

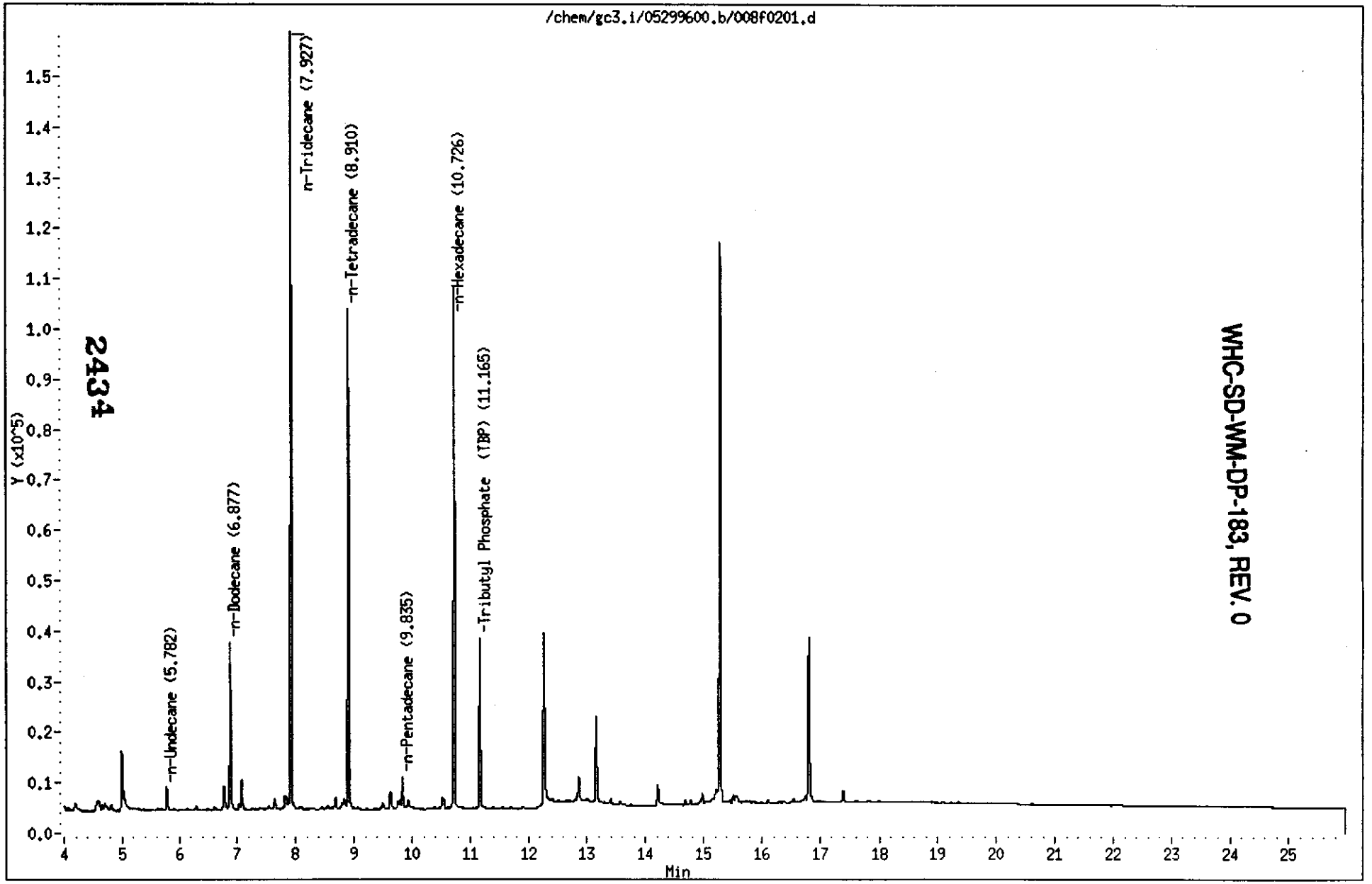
a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).

Data File: /chem/gc3.i/05299600.b/008f0201.d
Date : 29-MAY-1996 18:21
Client ID: S96T003230
Sample Info: S96T003230

Column phase:

Instrument: gc3.i

Operator: Robert Ray
Column diameter: 0.32



PAL - ORGANIC

RECOVERY REPORT

Client Name: ESCH
Sample Matrix: LIQUID
Lab Smp Id: S96T003230
Level: LOW
Data Type: GC DATA
SpikeList File: nphtbp.spk
Method File: /chem/gc3.i/05299600.b/nphtbp.m
Misc Info:

Client SDG: S96T003134A
Fraction: OTHER
Client Smp ID: S96T003230
Operator: Robert Ray
SampleType: SAMPLE
Quant Type: ESTD

SURROGATE COMPOUND	CONC ADDED ug/mL	CONC RECOVERED ug/mL	% RECOVERED	LIMITS
$ 9 n-Hexadecane	100	83.9	83.90	50-130

WHC-SD-WM-DP-183, REV. 0

PAL - ORGANIC

TARGET COMPOUNDS

Client Name: ESCH
Lab Smp Id: S96T003230
Sample Location:
Sample Date:
Sample Matrix: WATER
Analysis Type: OTHER
Data Type: GC DATA
Misc Info:

Client SDG: S96T003134A
Client Smp ID: S96T003230
Sample Point: C-106
Date Received:
Quant Type: ESTD
Level: LOW
Operator: Robert Ray

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/KG) ug/mL	Q
111-84-2	n-Nonane	50.0	U
124-18-5	n-Decane	50.0	U
1120-21-4	n-Undecane	4.07	J
112-40-3	n-Dodecane	27.0	J
629-50-5	n-Tridecane	119	
629-59-4	n-Tetradecane	77.0	
629-62-9	n-Pentadecane	6.27	J
126-[illegible]-8	Tributyl Phosphate (TBP)	48.8	J
544-76-3	n-Hexadecane	83.9	

WHC-SD-WM-DP-183, REV. 0

PAL - ORGANIC

Data file : /chem/gc3.i/05299600.b/008f0201.d
Lab Smp Id: S96T003230 Client Smp ID: S96T003230
Inj Date : 29-MAY-1996 18:21
Operator : Robert Ray Inst ID: gc3.i
Smp Info : S96T003230
Misc Info :
Comment :
Method : /chem/gc3.i/05299600.b/nphtbp.m
Meth Date : 30-May-1996 12:00 Quant Type: ESTD
Cal Date : ~~02-FEB~~-96 16:28 Cal File: 002f0601.d
Als bottle: 1 09-05 (ISR)
Dil Factor: 1.000
Integrator: HP Genie Compound Sublist: nphtbp.sub
Target Version: 3.10

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ng)	FINAL (ug/mL)
4 n-Undecane	5.782	5.813	-0.031	39207	4.07	4.07(a)
5 n-Dodecane	6.877	6.910	-0.033	258188	27.0	27.0(a)
6 n-Tridecane	7.927	7.955	-0.028	1123305	119	119(M)
7 n-Tetradecane	8.910	8.943	-0.033	720839	77.0	77.0
8 n-Pentadecane	9.835	9.878	-0.043	58505	6.27	6.27(aM)
$ 9 n-Hexadecane	10.726	10.762	-0.036	772390	83.9	83.9
10 Tributyl Phosphate (TBP)	11.165	11.199	-0.034	263845	48.8	48.8(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

WHC-SD-WM-DP-183, REV. 0

PAL - ORGANIC

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: gc3.i
Lab File ID: 004f0301.d
Analysis Type:
Lab Sample ID:
Quant Type: ESTD

Injection Date: 05-FEB-96 18:53
Init. Calibration Date(s): ~~02/02/96~~ ~~02/02/96~~ 05/09/96 05/09/96
Init. Calibration Times: 16:28 16:28
Method File: /chem/gc3.i/05299600.b/nphtbp.m

	COMPOUND	RRF	RF200	MIN RRF	%D	MAX %D
	1 n-Nonane	9510.984	10122.547	0.000	6.4	15.0
	3 n-Decane	9525.779	10183.788	0.000	6.9	15.0
	4 n-Undecane	9634.010	10344.628	0.000	7.4	15.0
	5 n-Dodecane	9542.874	10298.967	0.000	7.9	15.0
	6 n-Tridecane	9420.519	10254.739	0.000	8.9	15.0
	7 n-Tetradecane	9357.703	10206.916	0.000	9.1	15.0
	8 n-Pentadecane	9329.412	10224.116	0.000	9.6	15.0
$	9 n-Hexadecane	9206.305	10158.160	0.000	10.3	15.0
	10 Tributyl Phosphate (TBP)	5410.061	6113.187	0.000	13.0	15.0

WHC-SD-WM-DP-183, REV. 0

PAL - ORGANIC

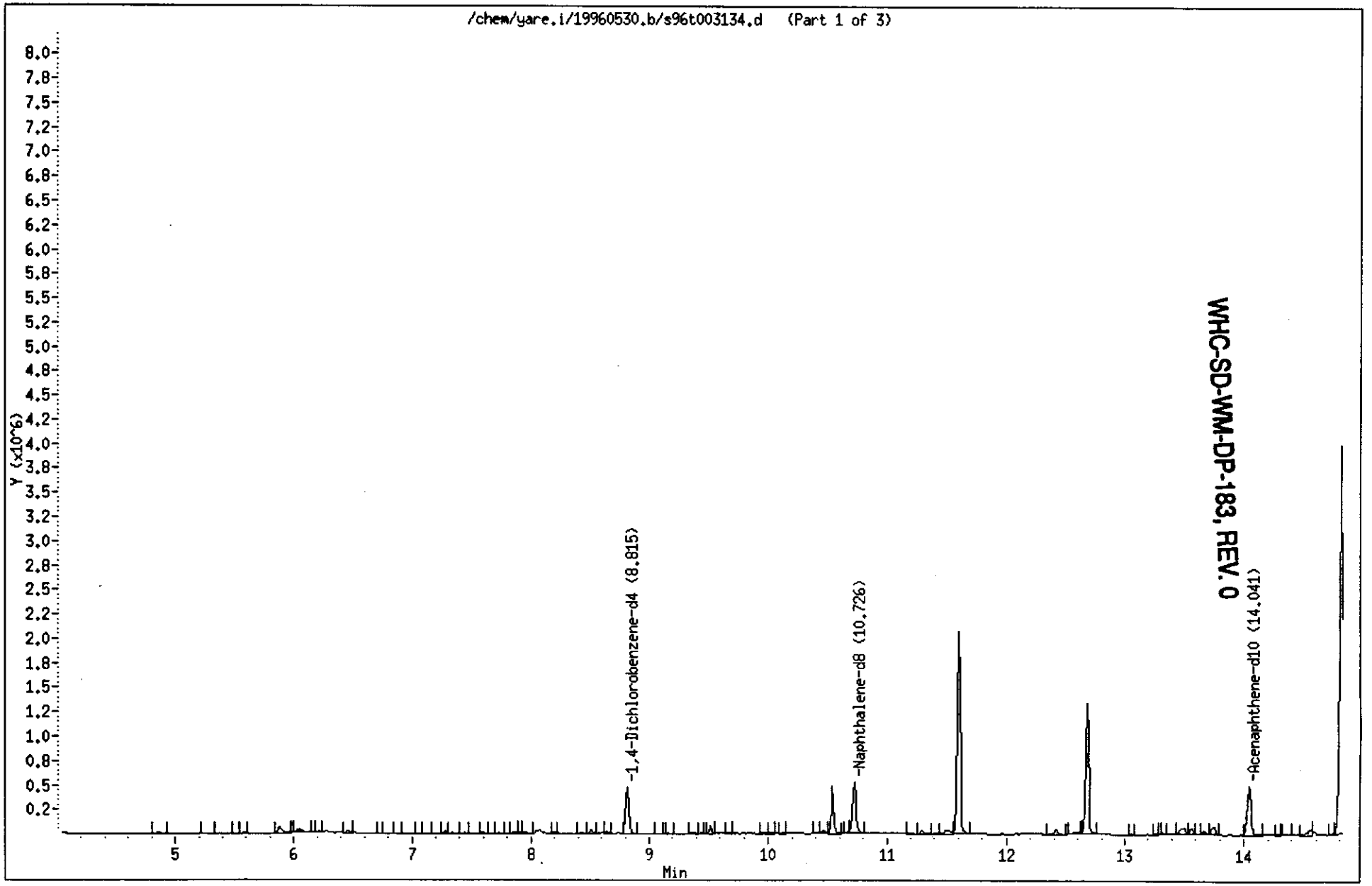
Data file : /chem/gc3.i/05299600.b/004f0301.d
Lab Smp Id:
Inj Date : 05-FEB-96 18:53
Operator : Robert Ray Inst ID: gc3.i
Smp Info : CAL3 (200 PPM)
Misc Info :
Comment :
Method : /chem/gc3.i/05299600.b/nphtbp.m
Meth Date : 30-May-1996 12:00 Quant Type: ESTD
Cal Date : ~~02-FEB-~~96 16:28 Cal File: 002f0601.d
Als bottle: 1 09-05-96 RJR Continuing Calibration Sample
Dil Factor: 1.000
Integrator: HP Genie Compound Sublist: nphtbp.sub
Target Version: 3.10

Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ng)	AMOUNTS ON-COL (ng)
1 n-Nonane	3.571	3.577	-0.006	2024509	200	213
3 n-Decane	4.670	4.683	-0.013	2036757	200	214
4 n-Undecane	5.797	5.813	-0.016	2068925	200	215
5 n-Dodecane	6.893	6.910	-0.017	2059793	200	216
6 n-Tridecane	7.936	7.955	-0.019	2050947	200	218
7 n-Tetradecane	8.924	8.943	-0.019	2041383	200	218
8 n-Pentadecane	9.857	9.878	-0.021	2044823	200	219
$ 9 n-Hexadecane	10.741	10.762	-0.021	2031632	200	221
10 Tributyl Phosphate (TBP)	11.181	11.199	-0.018	1222637	200	226

Data File: /chem/yare.i/19960530.b/s96t003134.d
Date : 30-MAY-1996 12:53
Client ID:
Sample Info: S96T003134
Volume Injected (uL): 2.0
Column phase: XTI-5 30m 0.25u

Instrument: yare.i

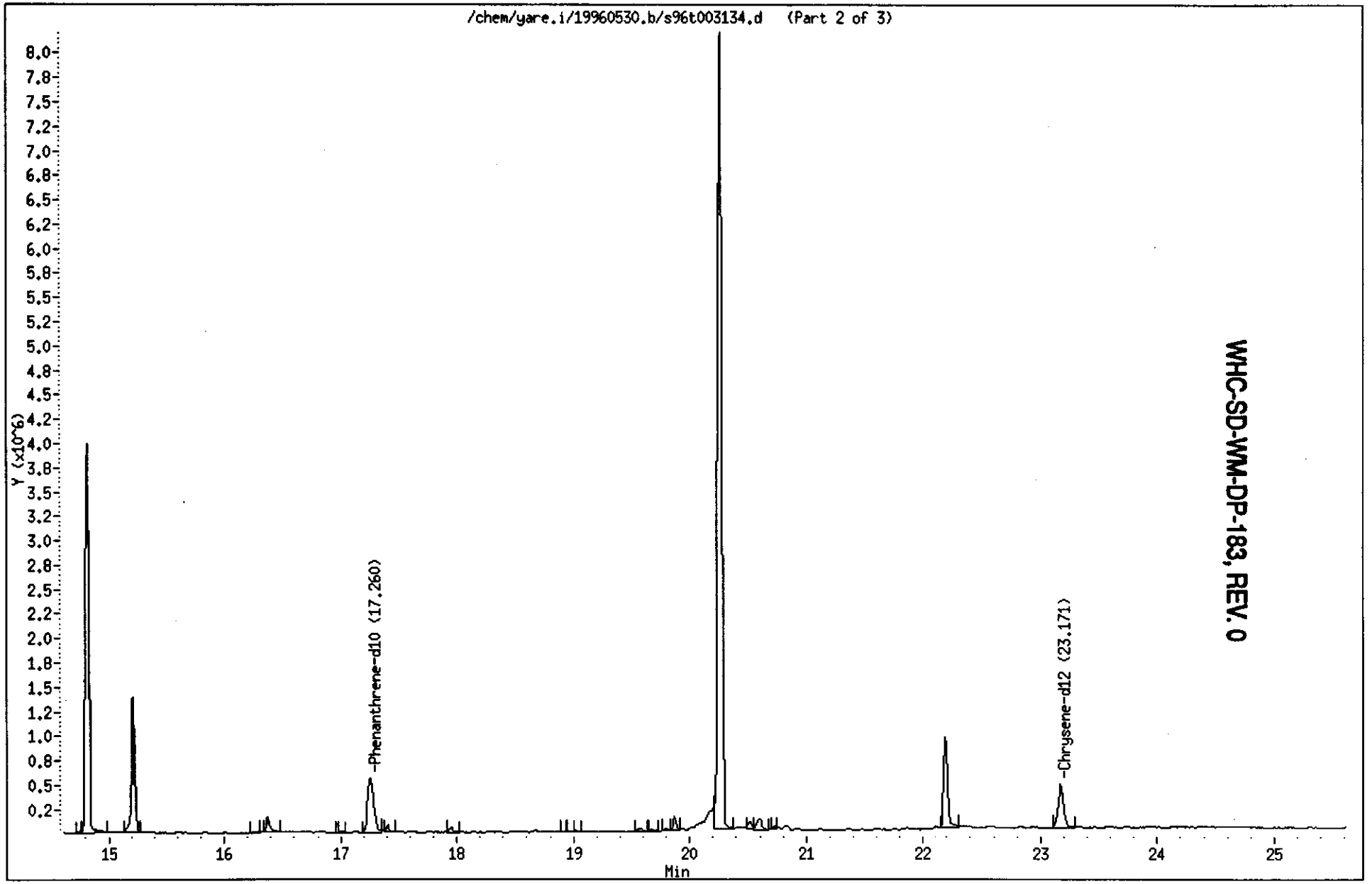
Operator: rjr
Column diameter: 0.25



WHC-SD-WM-DP-183, REV. 0

Data File: /chem/yare.i/19960530.b/s96t003134.d
Date : 30-MAY-1996 12:53
Client ID:
Sample Info: S96T003134
Volume Injected (uL): 2.0
Column phase: XTI-5 30m 0.25u

Instrument: yare.i
Operator: rjr
Column diameter: 0.25

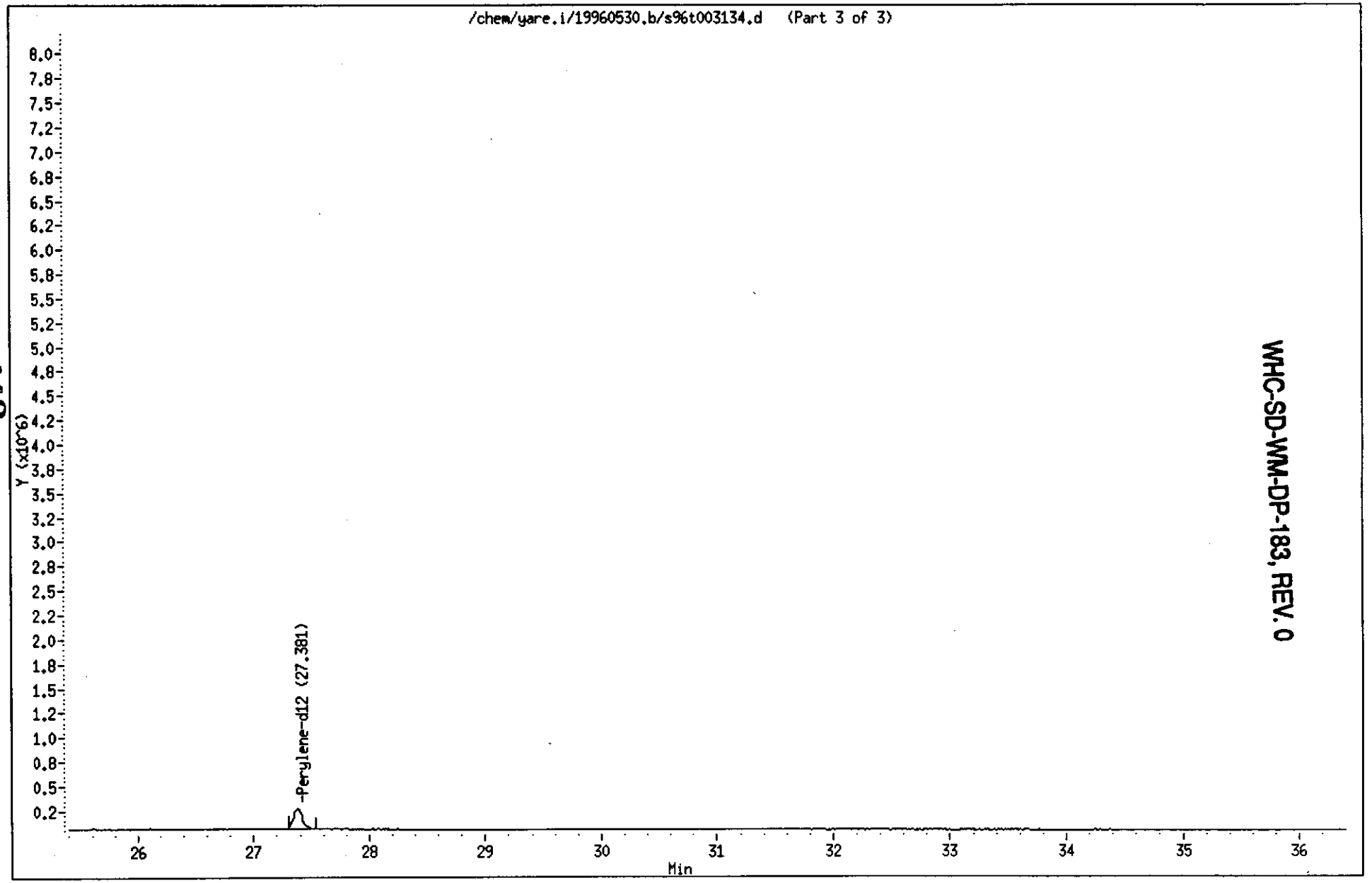


WHC-SD-WM-DP-183, REV. 0

2441

Data File: /chem/yare.i/19960530.b/s96t003134.d
Date : 30-MAY-1996 12:53
Client ID:
Sample Info: S96T003134
Volume Injected (uL): 2.0
Column phase: XTI-5 30m 0.25u

Instrument: yare.i
Operator: rjr
Column diameter: 0.25



WHC-SD-WM-DP-183, REV. 0

WHC-SD-WM-DP-183, REV. 0

PAL - ORGANIC

Unknown Compounds Quantitation Report

Data file : /chem/yare.i/19960530.b/s96t003134.d
Lab Smp Id:
Inj Date : 30-MAY-1996 12:53 Autotune Date: 27-Feb-96 14:10:1
Operator : rjr Inst ID: yare.i
Smp Info : S96T003134
Misc Info :
Comment :
Method : /chem/yare.i/19960530.b/svevap.m
Meth Date : 31-May-1996 14:26 rjr
Cal Date : 30-MAY-1996 12:53 Cal File: 0201001.d
Als bottle: 2
Dil Factor: 1.000 Target Version: 3.10
Integrator: HP RTE Compound Sublist: all.sub
Sample Matrix: WATER
Quantitative Mode : Use RF of Nearest Std

ISTD	RT	AREA	AMOUNT
* 8 1,4-Dichlorobenzene-d4	8.815	818804	40.000
* 25 Naphthalene-d8	10.726	1112899	40.000
* 40 Acenaphthene-d10	14.041	1192688	40.000
* 57 Phenanthrene-d10	17.250	2049136	40.000
* 67 Chrysene-d12	23.171	1413584	40.000

		CONCENTRATIONS			QUANT		
RT	AREA	ON-COL(ng)	FINAL(ug/L)	QUAL	LIBRARY	LIB ENTRY	CPND #
Unknown				CAS #:			
16.376	379170	7	3700	30	NBS75K.l	40444	57(L)
Unknown Phosphoric acid ester				CAS #:			
17.948	109446	2	1100	78	NBS75K.l	71864	57
Unknown Phosphoric acid ester				CAS #:			
19.872	268627	5	2600	38	NBS75K.l	71863	57
Unknown Phosphoric Acid Ester				CAS #:			
20.266	18429759	520	260000	27	NBS75K.l	56195	67(L)

RT	AREA	CONCENTRATIONS ON-COL(ng)	FINAL(ug/L)	QUANT QUAL	LIBRARY	LIB ENTRY	CPND #
Phosphoric acid, tris(2-ethylhexyl) este				CAS #: 78-42-2			
22.186	2039989	58	29000	91	NBS75K.l	56195	67

QC Flag Legend

L - Operator selected an alternate library search match.

Data File: /chem/yare.i/19960530.b/s96t003134.d

Date : 30-MAY-1996 12:53

Client ID:

Sample Info: S96T003134

Volume Injected (uL): 2.0

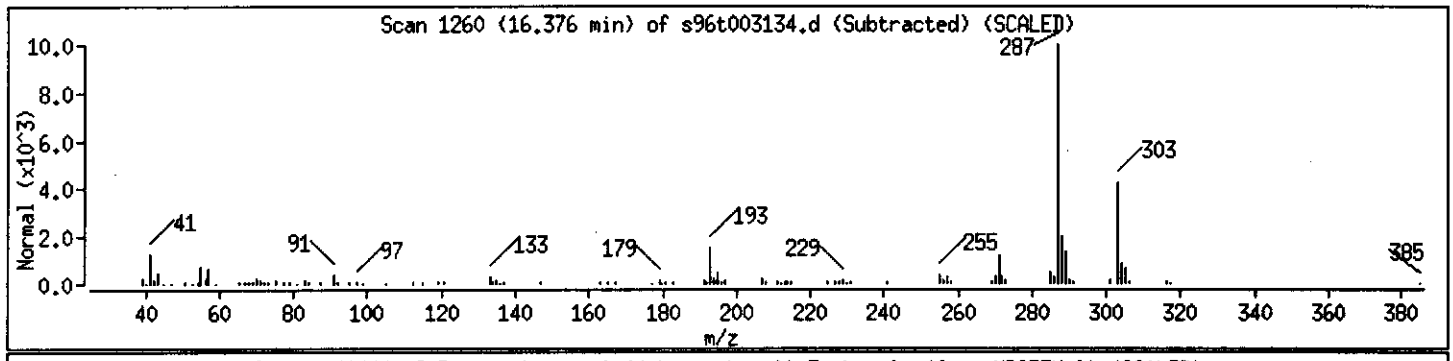
Column phase: XTI-5 30m 0.25u

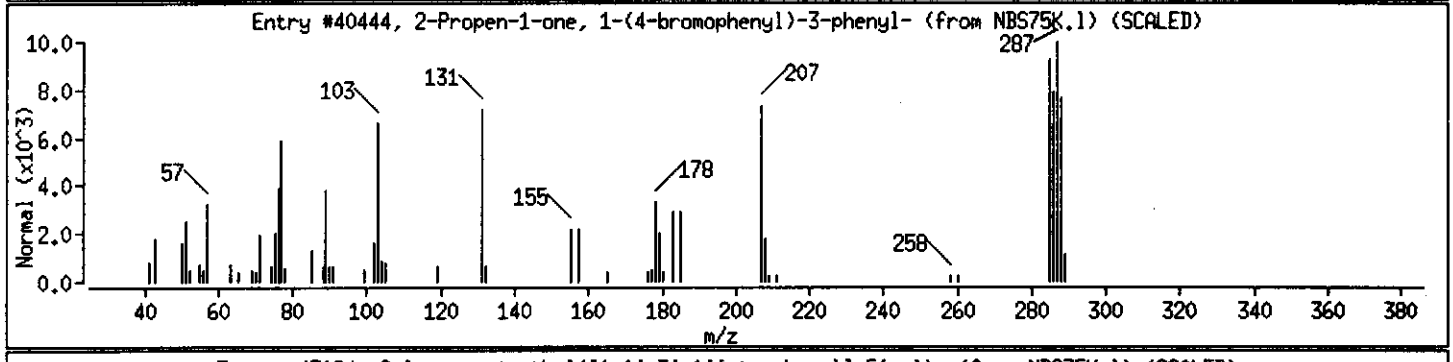
Instrument: yare.i

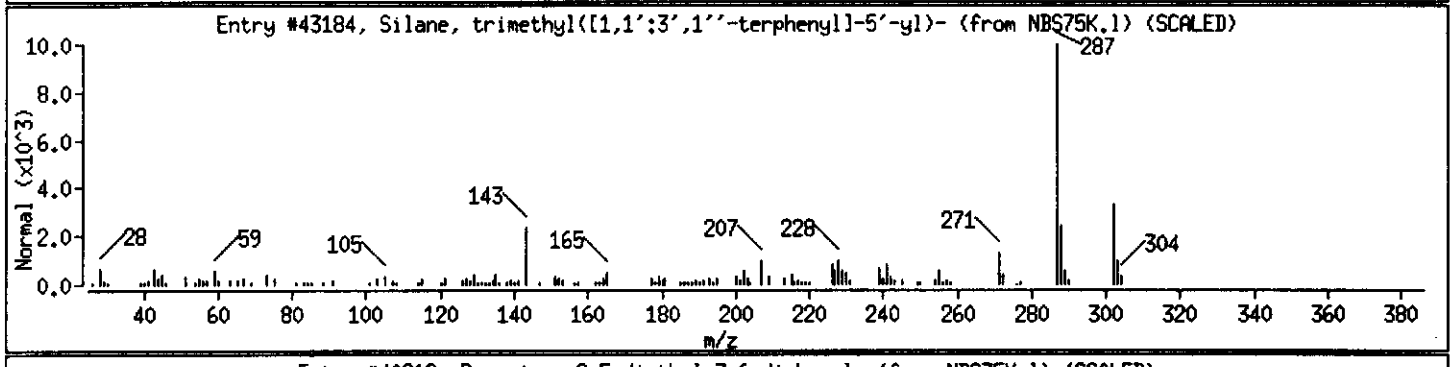
Operator: rjr

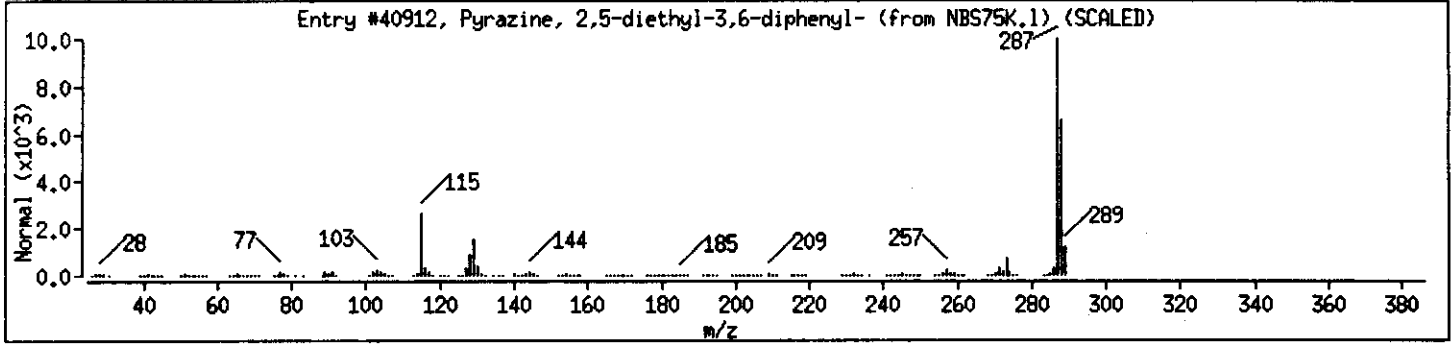
Column diameter: 0.25

Library Search Compound Match	CAS Number	Library	Entry	Quality	Formula	Weight
Unknown KB 8/2/96		NBS75K.l	40444	30		286
Silane, trimethyl([1,1':3',1''-terphenyl	0-00-0	NBS75K.l	43184	28	C21H22Si	302
Pyrazine, 2,5-diethyl-3,6-diphenyl-	21798-29-8	NBS75K.l	40912	23	C20H20N2	288









Data File: /chem/yare.i/19960530.b/s96t003134.d

Date : 30-MAY-1996 12:53

Client ID:

Sample Info: S96T003134

Volume Injected (uL): 2.0

Column phase: XTI-5 30m 0.25u

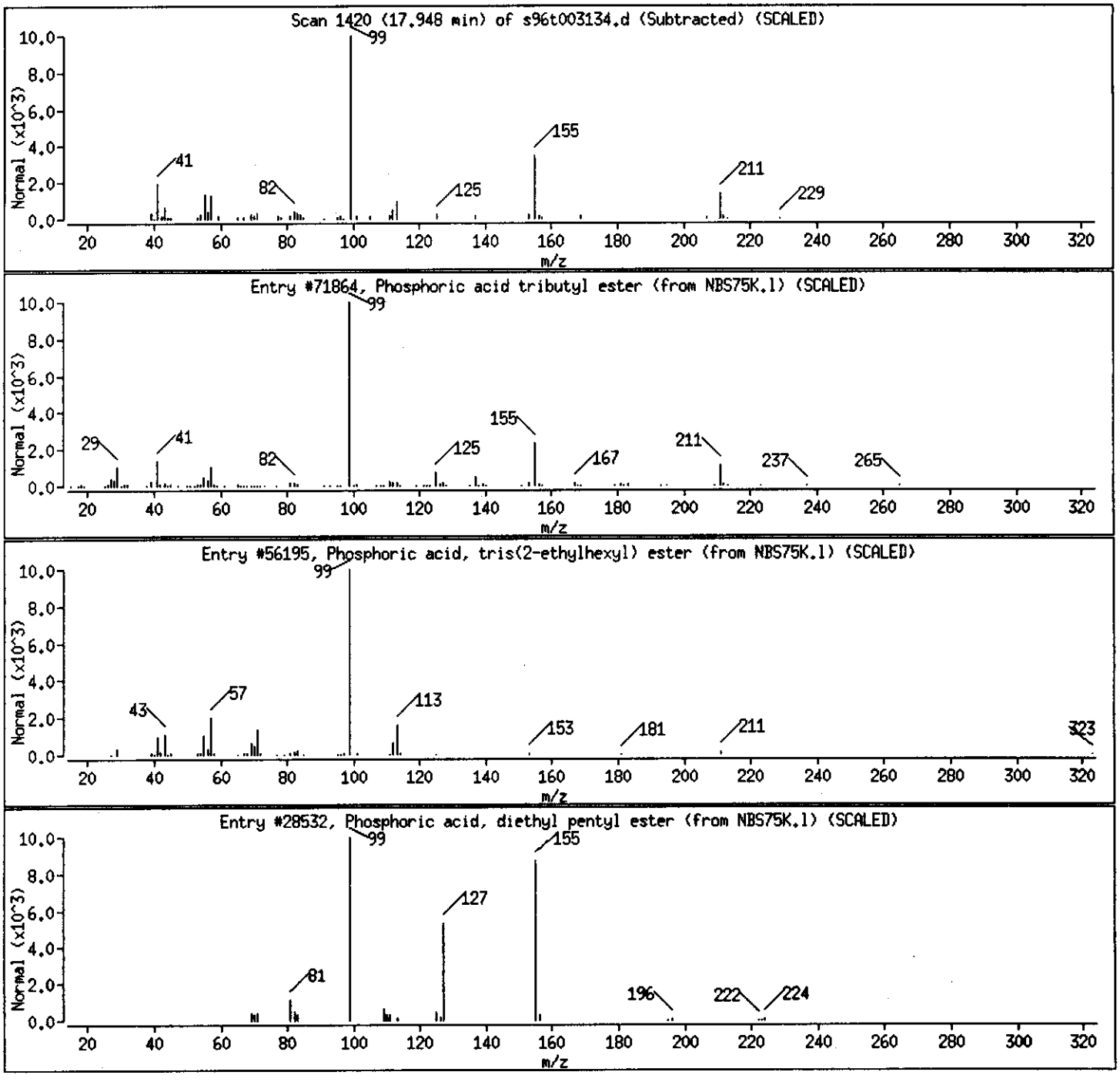
WHC-SD-WM-DP-183, REV. 0

Instrument: yare.i

Operator: rjr

Column diameter: 0.25

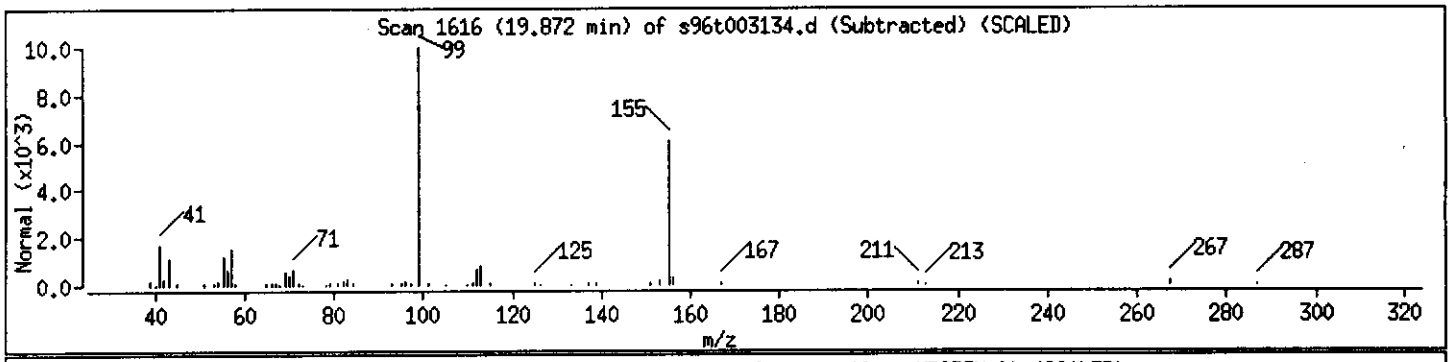
Library Search Compound Match	CAS Number	Library	Entry	Quality	Formula	Weight
Unknown Phosphoric acid ester (RJR) 8/2/96		NBS75K.l	71864	78		266
Phosphoric acid, tris(2-ethylhexyl) este	78-42-2	NBS75K.l	56195	33	C24H5104P	434
Phosphoric acid, diethyl pentyl ester	20195-08-8	NBS75K.l	28532	17	C9H2104P	224

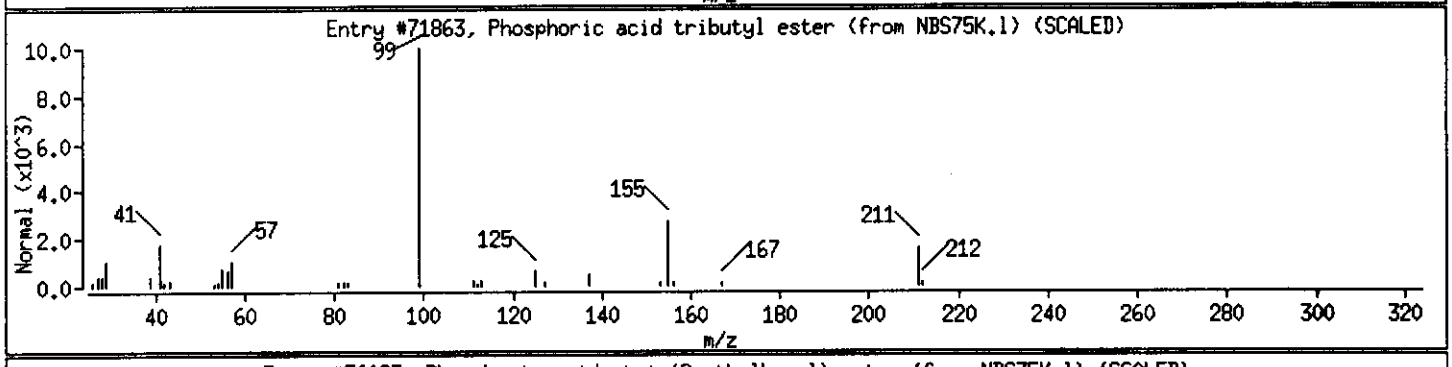


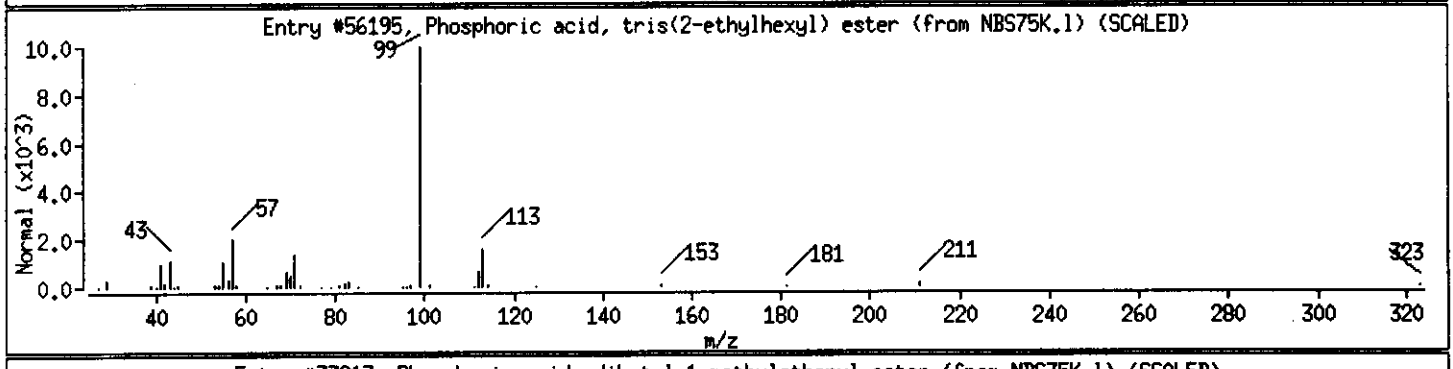
Data File: /chem/yare.i/19960530.b/s96t003134.d
Date : 30-MAY-1996 12:53
Client ID:
Sample Info: S96T003134
Volume Injected (uL): 2.0
Column phase: XTI-5 30m 0.25u

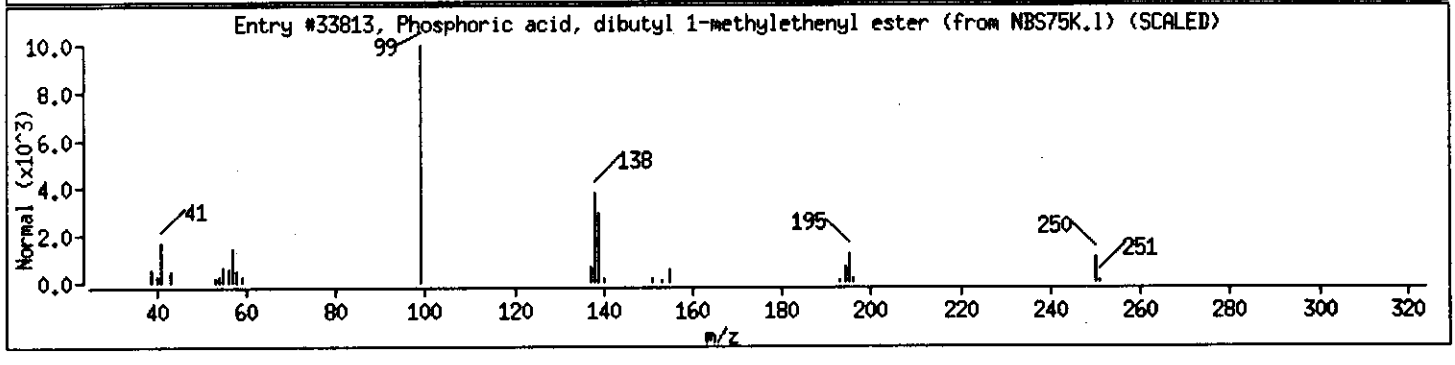
Instrument: yare.i
Operator: rjr
Column diameter: 0.25

Library Search Compound Match	CAS Number	Library	Entry	Quality	Formula	Weight
Unknown Phosphoric acid ester KL 8/2/96		NBS75K.l	71863	38		266
Phosphoric acid, tris(2-ethylhexyl) este	78-42-2	NBS75K.l	56195	38	C24H5104P	434
Phosphoric acid, dibutyl 1-methylethenyl	5954-40-5	NBS75K.l	33813	28	C11H2304P	250







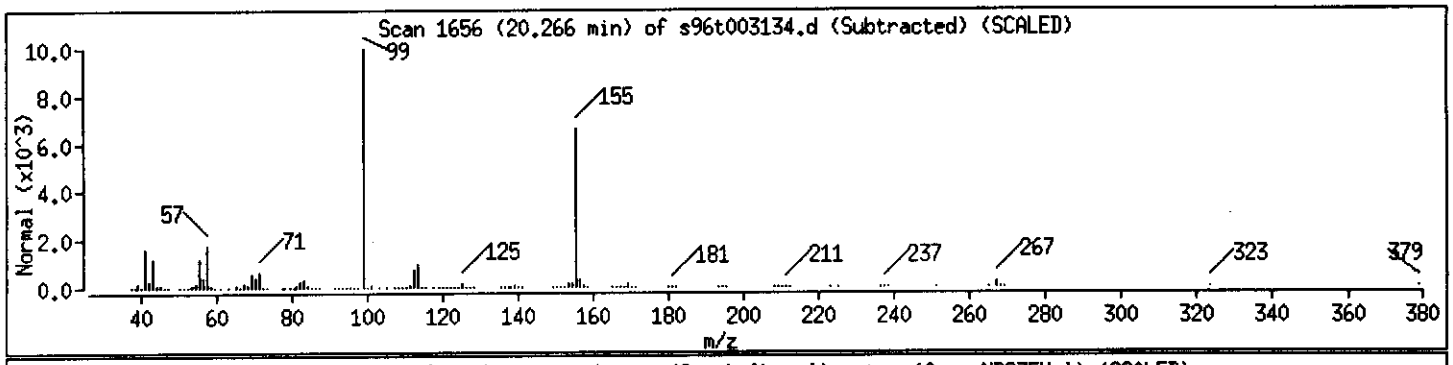


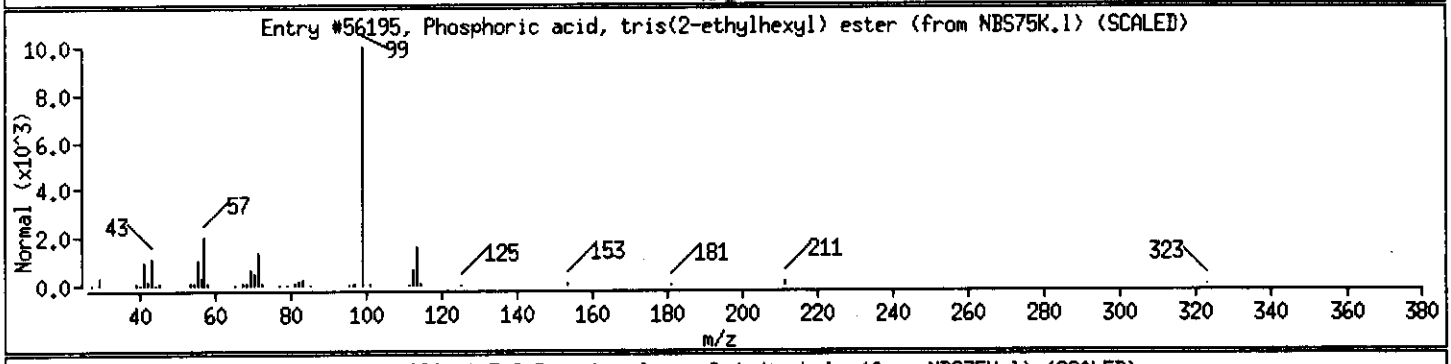
WHC-SD-WM-DP-183, REV. 0

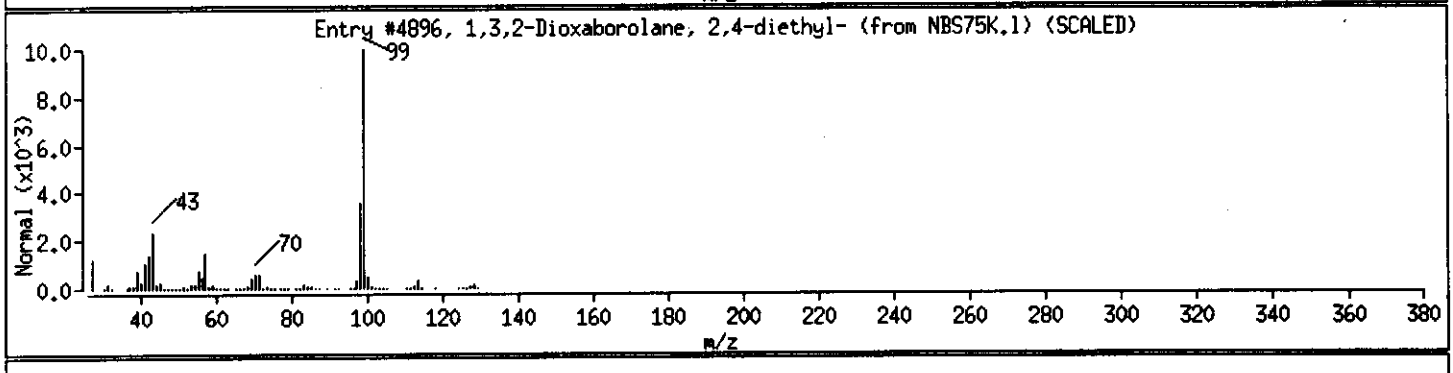
Data File: /chem/yare.i/19960530.b/s96t003134.d
Date : 30-MAY-1996 12:53
Client ID:
Sample Info: S96T003134
Volume Injected (uL): 2.0
Column phase: XTI-5 30m 0.25u

Instrument: yare.i
Operator: rjr
Column diameter: 0.25

Library Search Compound Match	CAS Number	Library	Entry	Quality	Formula	Weight
Unknown Phosphoric Acid Ester RSC 8/2/96		NBS75K.1	56195	27		434
1,3,2-Dioxaborolane, 2,4-diethyl-	57633-63-3	NBS75K.1	4896	37	C6H13BO2	128







Data File: /chem/yare.i/19960530.b/s96t003134.d

Date : 30-MAY-1996 12:53

Client ID:

Sample Info: S96T003134

Volume Injected (uL): 2.0

Column phase: XTI-5 30m 0.25u

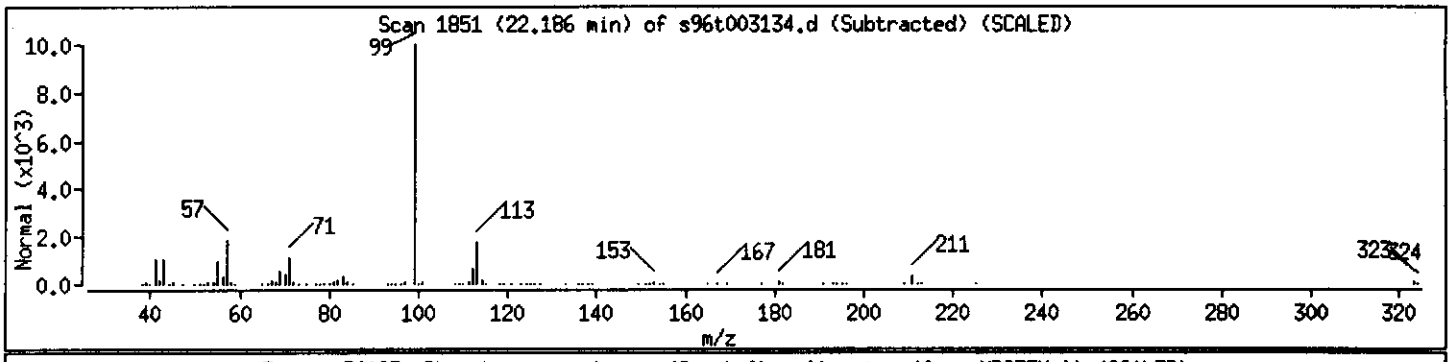
Instrument: yare.i

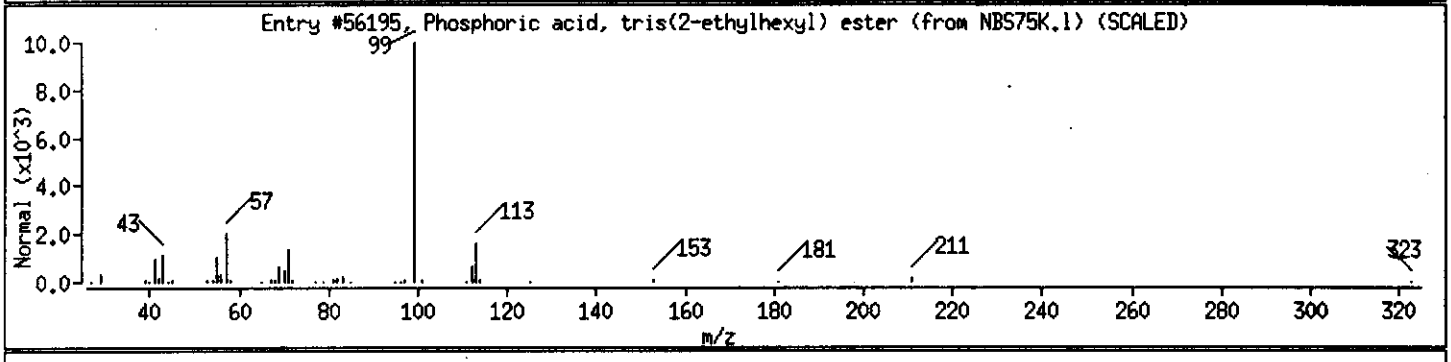
Operator: rjr

Column diameter: 0.25

Library Search Compound Match	CAS Number	Library	Entry	Quality	Formula	Weight
Phosphoric acid, tris(2-ethylhexyl) este	78-42-2	NBS75K.l	56195	91	C24H5104P	434

RJR 8/2/96

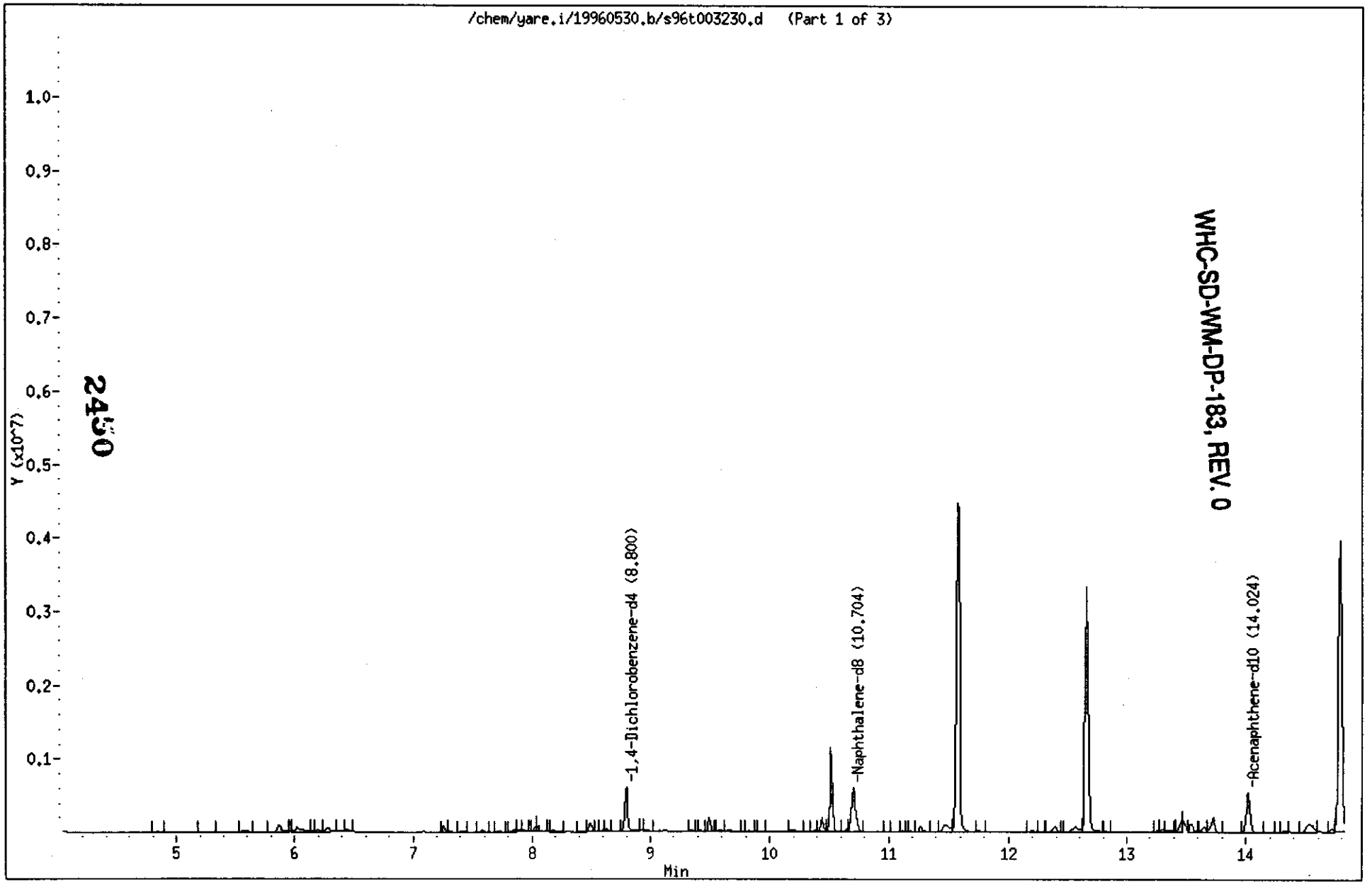




Data File: /chem/yare.i/19960530.b/s96t003230.d
Date : 30-MAY-1996 13:37
Client ID:
Sample Info: S96T003230
Volume Injected (uL): 2.0
Column phase: XTI-5 30m 0.25u

Instrument: yare.i

Operator: rjr
Column diameter: 0.25

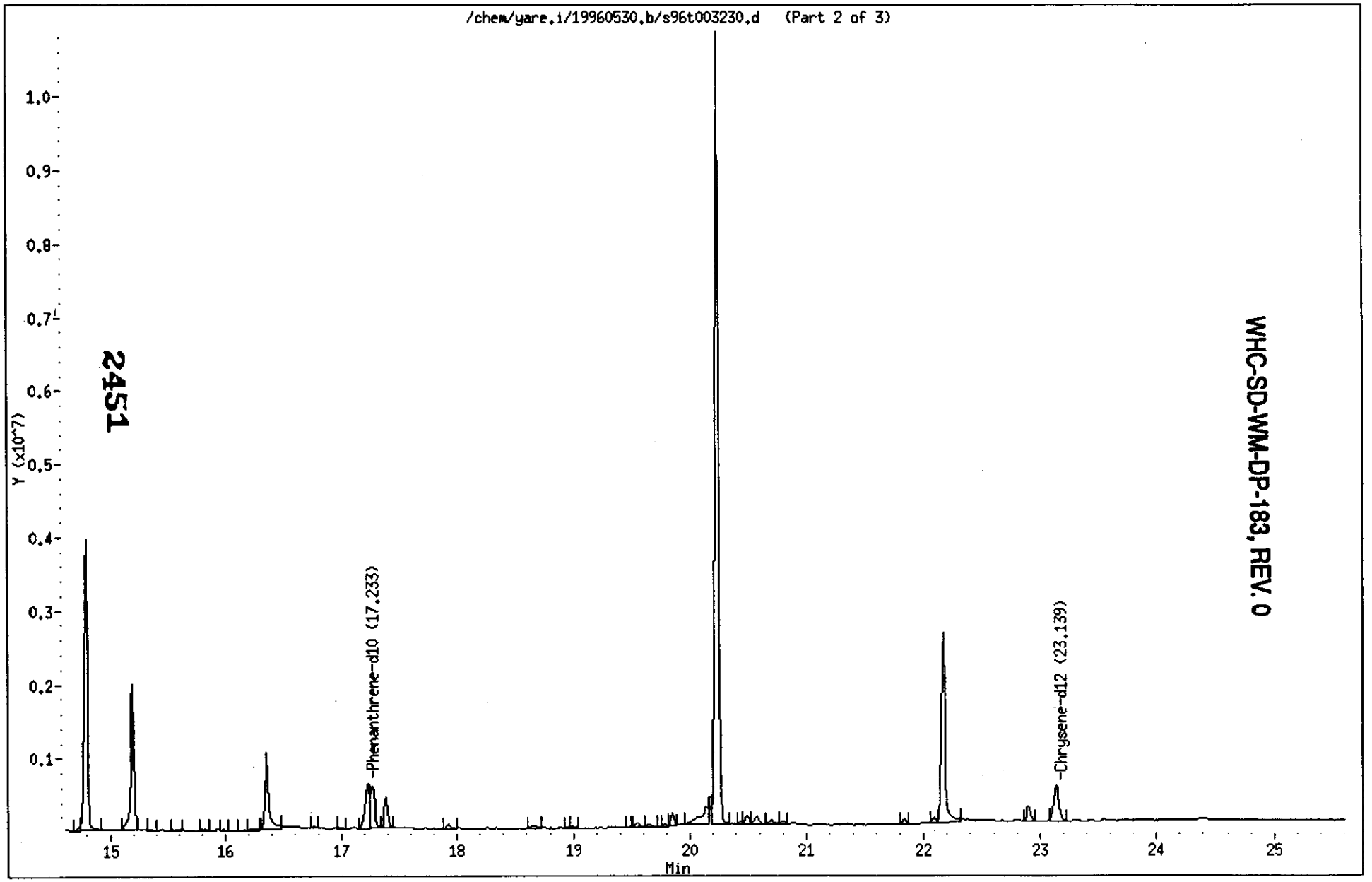


WHC-SD-WM-DP-183, REV. 0

Data File: /chem/yare.i/19960530.b/s96t003230.d
Date : 30-MAY-1996 13:37
Client ID:
Sample Info: S96T003230
Volume Injected (uL): 2.0
Column phase: XTI-5 30m 0.25u

Instrument: yare.i

Operator: rjr
Column diameter: 0.25

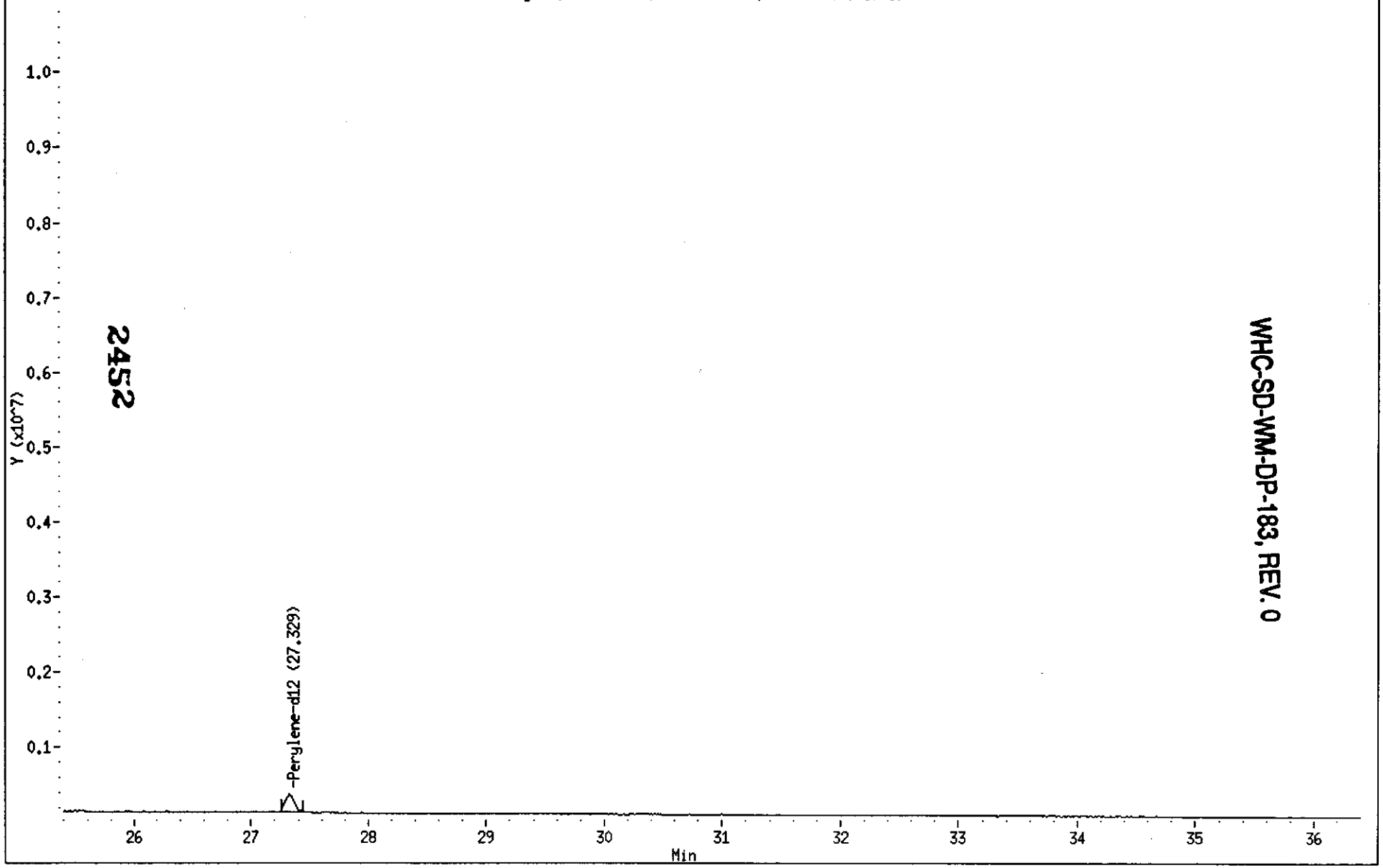


Data File: /chem/yare.i/19960530.b/s96t003230.d
Date : 30-MAY-1996 13:37
Client ID:
Sample Info: S96T003230
Volume Injected (uL): 2.0
Column phase: XTI-5 30m 0.25u

Instrument: yare.i

Operator: rjr
Column diameter: 0.25

/chem/yare.i/19960530.b/s96t003230.d (Part 3 of 3)



2452

WHC-SD-WM-DP-183, REV. 0

WHC-SD-WM-DP-183, REV. 0

PAL - ORGANIC

Unknown Compounds Quantitation Report

Data file : /chem/yare.i/19960530.b/s96t003230.d
Lab Smp Id:
Inj Date : 30-MAY-1996 13:37 Autotune Date: 27-Feb-96 14:10:1
Operator : rjr Inst ID: yare.i
Smp Info : S96T003230
Misc Info :
Comment :
Method : /chem/yare.i/19960530.b/svevap.m
Meth Date : 31-May-1996 14:26 rjr
Cal Date : 30-MAY-1996 12:53 Cal File: 0201001.d
Als bottle: 3
Dil Factor: 1.000 Target Version: 3.10
Integrator: HP RTE Compound Sublist: all.sub
Sample Matrix: WATER
Quantitative Mode : Use RF of Nearest Std

ISTD	RT	AREA	AMOUNT
* 8 1,4-Dichlorobenzene-d4	8.790	1172214	40.000
* 25 Naphthalene-d8	10.704	1533854	40.000
* 40 Acenaphthene-d10	14.024	1322008	40.000
* 57 Phenanthrene-d10	17.233	1775973	40.000
* 67 Chrysene-d12	23.139	1552937	40.000

		CONCENTRATIONS			QUANT		
RT	AREA	ON-COL(ng)	FINAL(ug/L)	QUAL	LIBRARY	LIB ENTRY	CPND #
Unknown				CAS #:			
16.355	2522903	57	28000	30	NBS75K.l	40444	57
Unknown				CAS #:			
17.272	1485034	33	17000	80	NBS75K.l	653	57
Unknown				CAS #:			
17.391	831258	19	9400	0		0	57
Unknown Phosphoric Acid Ester				CAS #:			
19.845	337089	8	3800	38	NBS75K.l	56195	57

RT	AREA	CONCENTRATIONS ON-COL(ng)	FINAL(ug/L)	QUANT QUAL	LIBRARY	LIB ENTRY	CPND #
Unknown Phosphoric Acid Ester					CAS #:		
20.142	1255568	28	14000	64	NBS75K.l	28532	57
Unknown Phosphoric Acid Ester					CAS #:		
20.241	22627420	580	290000	38	NBS75K.l	56195	67
Unknown					CAS #:		
20.488	253985	6	3300	0		0	67(L)
Phosphoric acid, tris(2-ethylhexyl) este					CAS #: 78-42-2		
22.169	5757442	150	74000	91	NBS75K.l	56195	67

QC Flag Legend

L - Operator selected an alternate library search match.

Data File: /chem/yare.i/19960530.b/s96t003230.d

Date : 30-MAY-1996 13:37

Client ID:

Sample Info: S96T003230

Volume Injected (uL): 2.0

Column phase: XTI-5 30m 0.25u

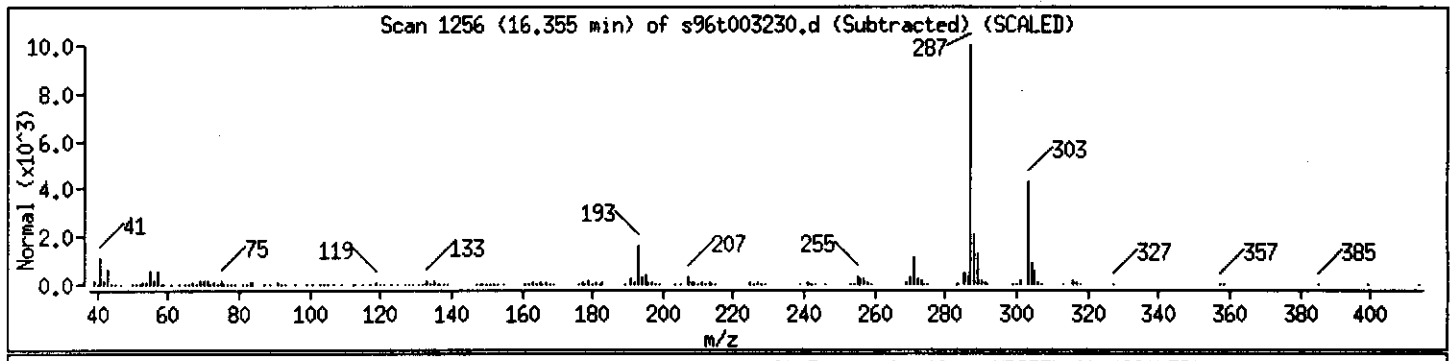
WHC-SD-WM-DP-183, REV. 0

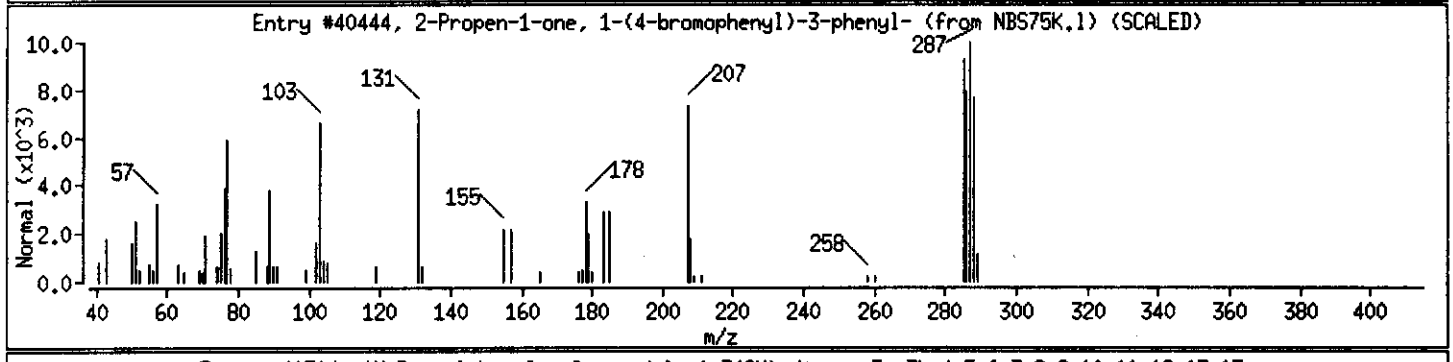
Instrument: yare.i

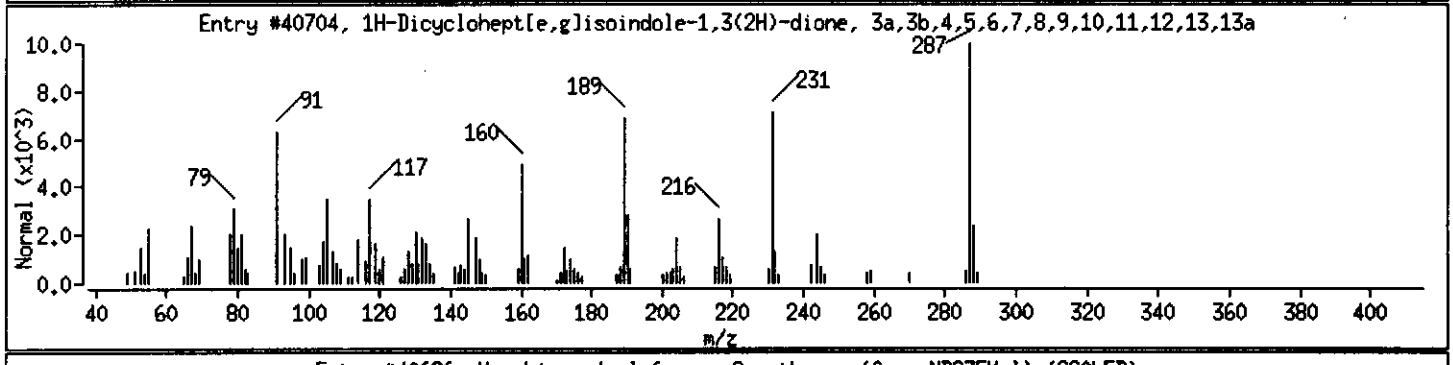
Operator: rjr

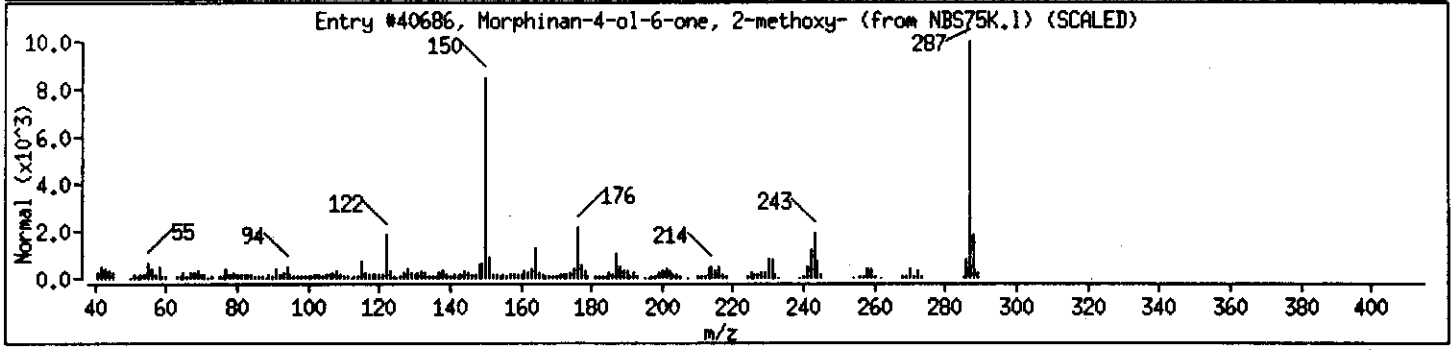
Column diameter: 0.25

Library Search Compound Match	CAS Number	Library	Entry	Quality	Formula	Weight
Unknown (RSP) 8/2/96		NBS75K.l	40444	30		286
1H-Dicyclohept[e,g]isoindole-1,3(2H)-dio	51624-46-5	NBS75K.l	40704	27	C18H25NO2	287
Morphinan-4-ol-6-one, 2-methoxy-	0-00-0	NBS75K.l	40686	23	C17H21NO3	287









Data File: /chem/yare.i/19960530.b/s96t003230.d

Date : 30-MAY-1996 13:37

Client ID:

Sample Info: S96T003230

Volume Injected (uL): 2.0

Column phase: XTI-5 30m 0.25u

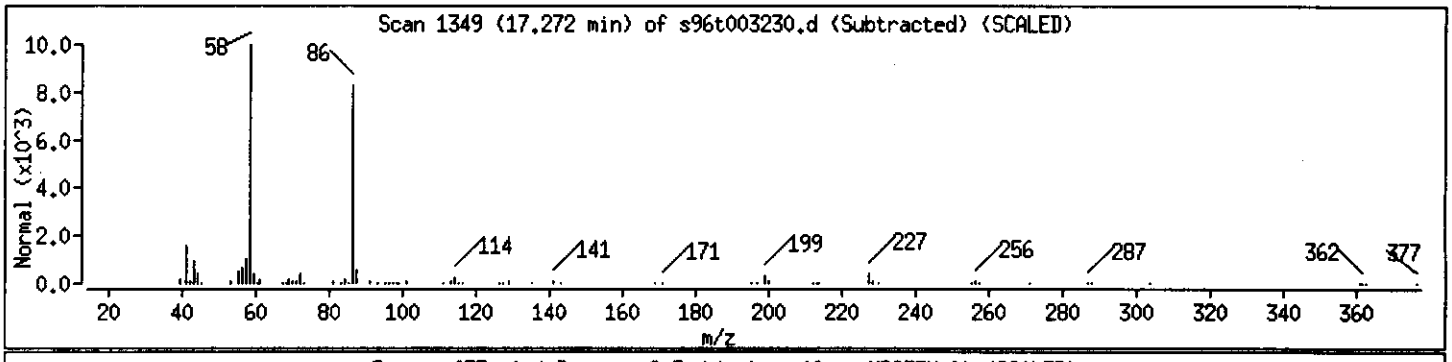
WHC-SD-WM-DP-183, REV. 0

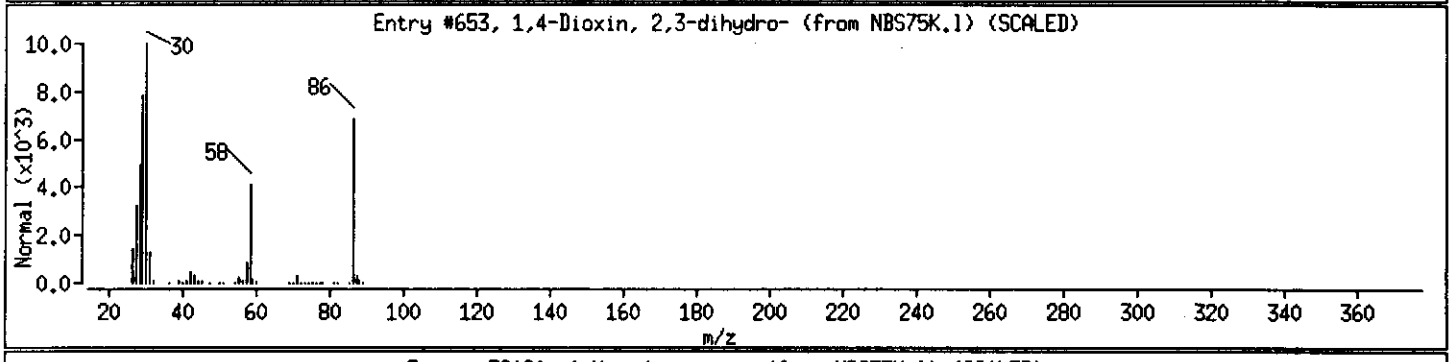
Instrument: yare.i

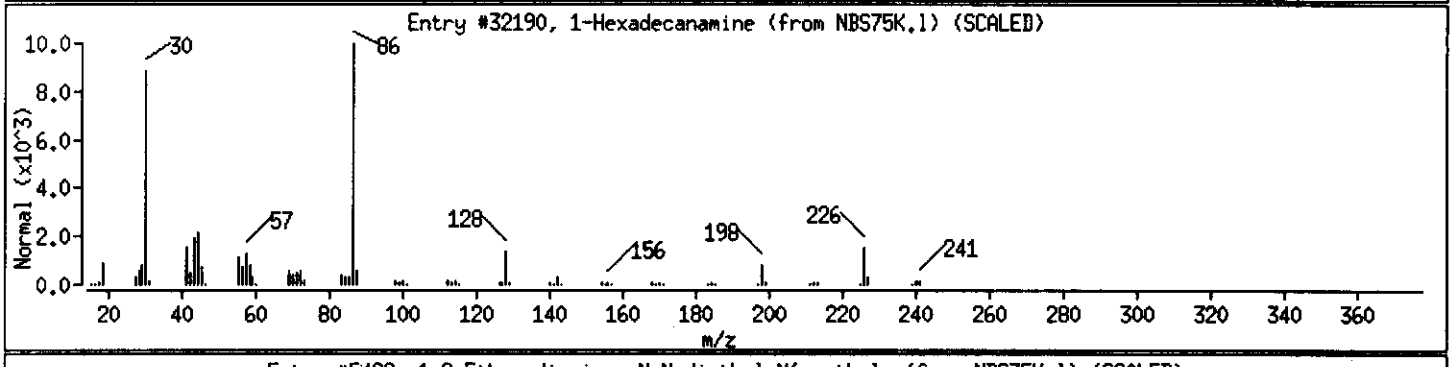
Operator: rjr

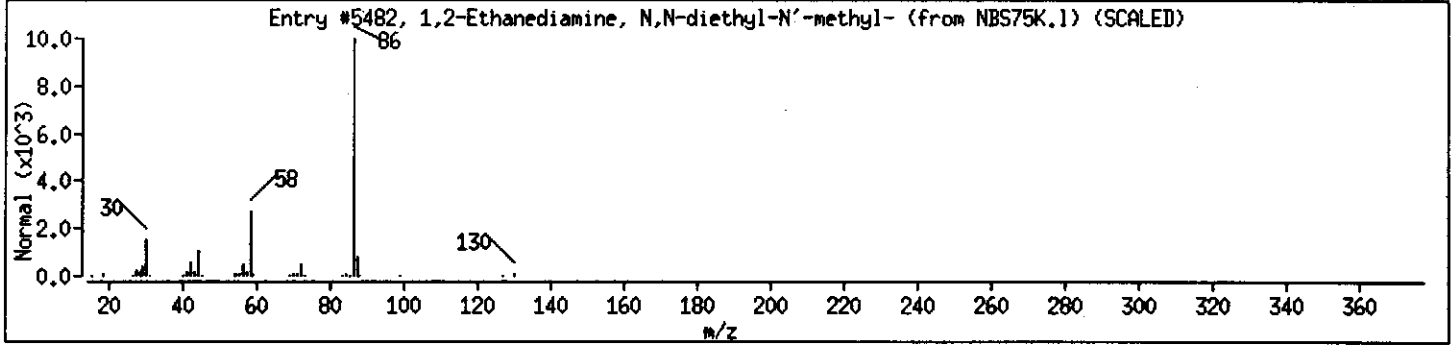
Column diameter: 0.25

Library Search Compound Match	CAS Number	Library	Entry	Quality	Formula	Weight
Unknown KSR 8/2/96		NBS75K.l	653	80		86
1-Hexadecanamine	143-27-1	NBS75K.l	32190	32	C16H35N	241
1,2-Ethanediamine, N,N-diethyl-N'-methyl	104-79-0	NBS75K.l	5482	25	C7H18N2	130









Data File: /chem/yare.i/19960530.b/s96t003230.d

Date : 30-MAY-1996 13:37

Client ID:

Sample Info: S96T003230

Volume Injected (uL): 2.0

Column phase: XTI-5 30m 0.25u

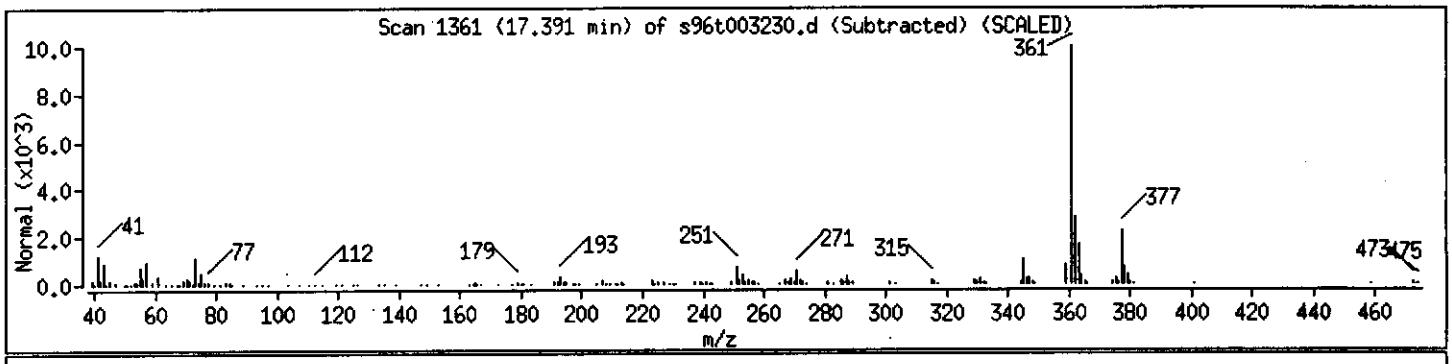
WHC-SD-WM-DP-183, REV. 0

Instrument: yare.i

Operator: rjr

Column diameter: 0.25

Library Search Compound Match	CAS Number	Library	Entry	Quality	Formula	Weight
Unknown RJR 8/2/96			0	0		0



Data File: /chem/yare.i/19960530.b/s96t003230.d

Date : 30-MAY-1996 13:37

Client ID:

Sample Info: S96T003230

Volume Injected (uL): 2.0

Column phase: XTI-5 30m 0.25u

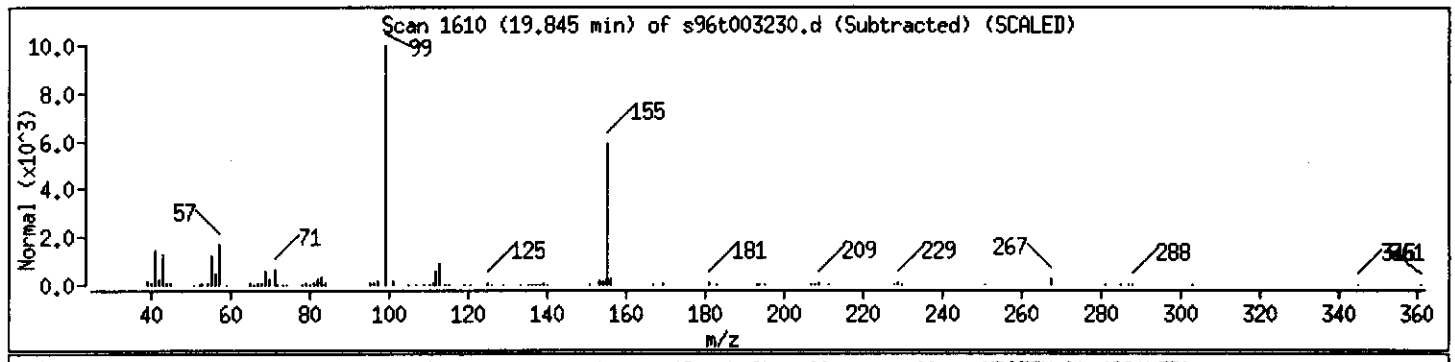
WHC-SD-WM-DP-183, REV. 0

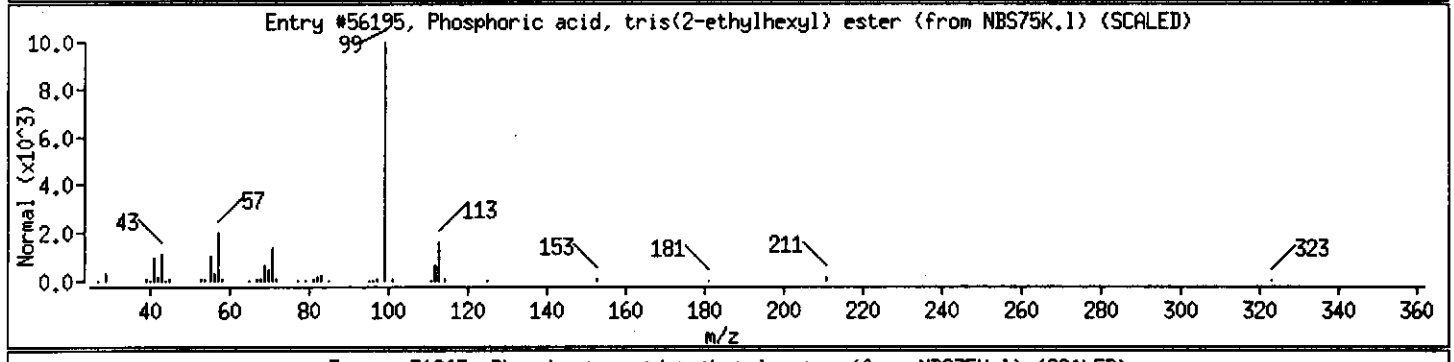
Instrument: yare.i

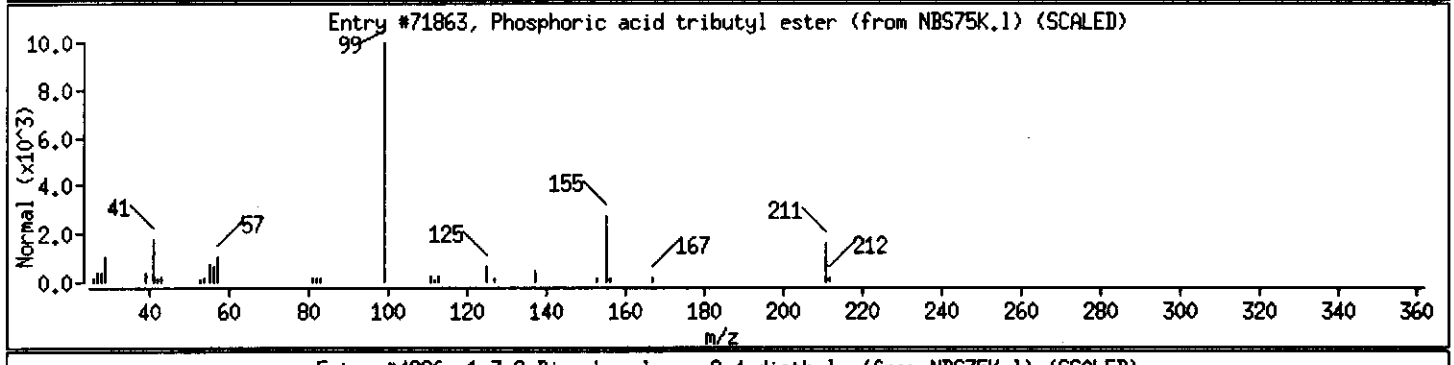
Operator: rjr

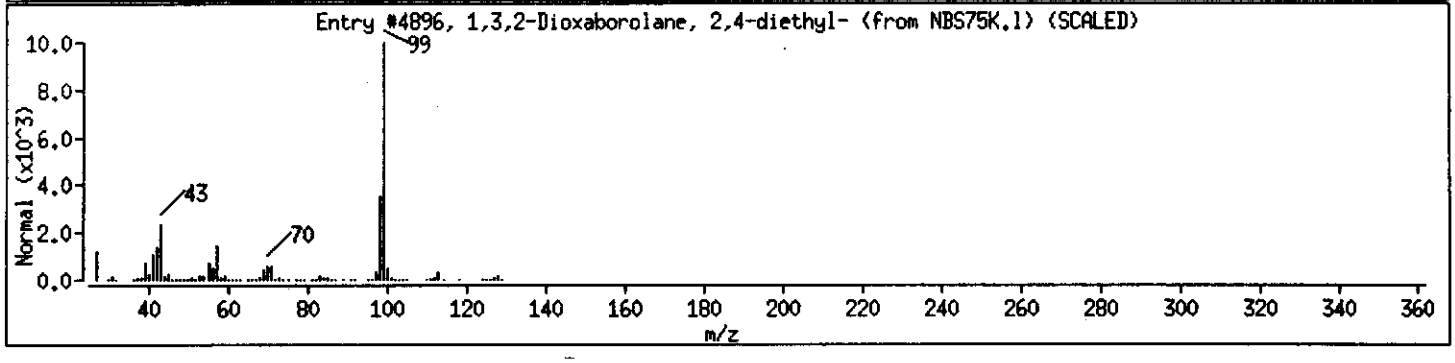
Column diameter: 0.25

Library Search Compound Match	CAS Number	Library	Entry	Quality	Formula	Weight
Unknown Phosphoric Acid Ester (BR) 8/2/96		NBS75K.l	56195	38		434
Phosphoric acid tributyl ester	126-73-8	NBS75K.l	71863	38	C12H27O4P	266
1,3,2-Dioxaborolane, 2,4-diethyl-	57633-63-3	NBS75K.l	4896	28	C6H13BO2	128







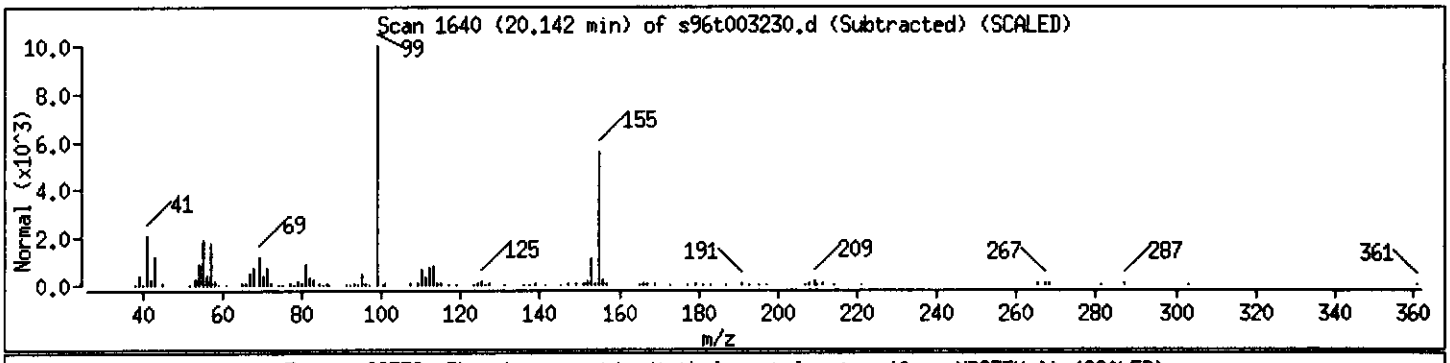


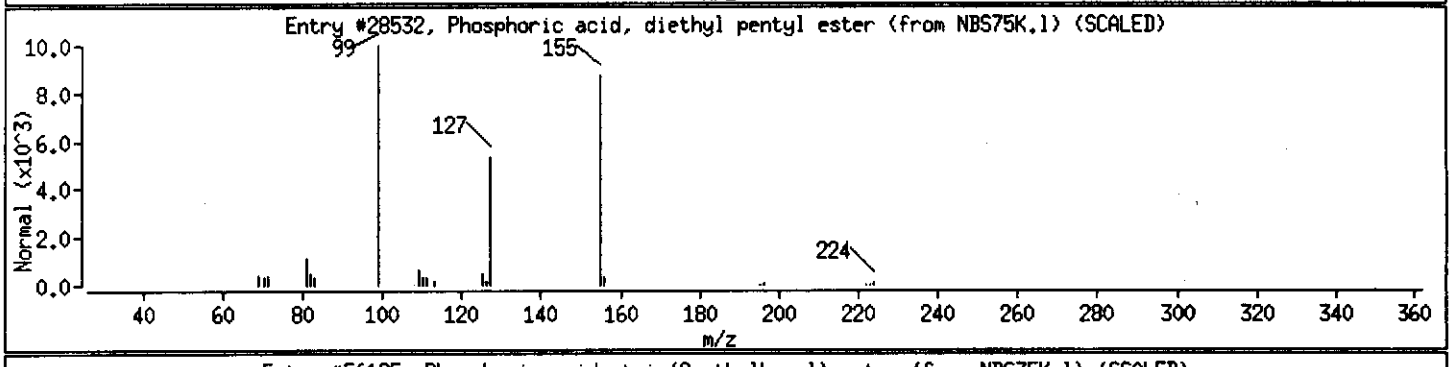
WHC-SD-WM-DP-183, REV. 0

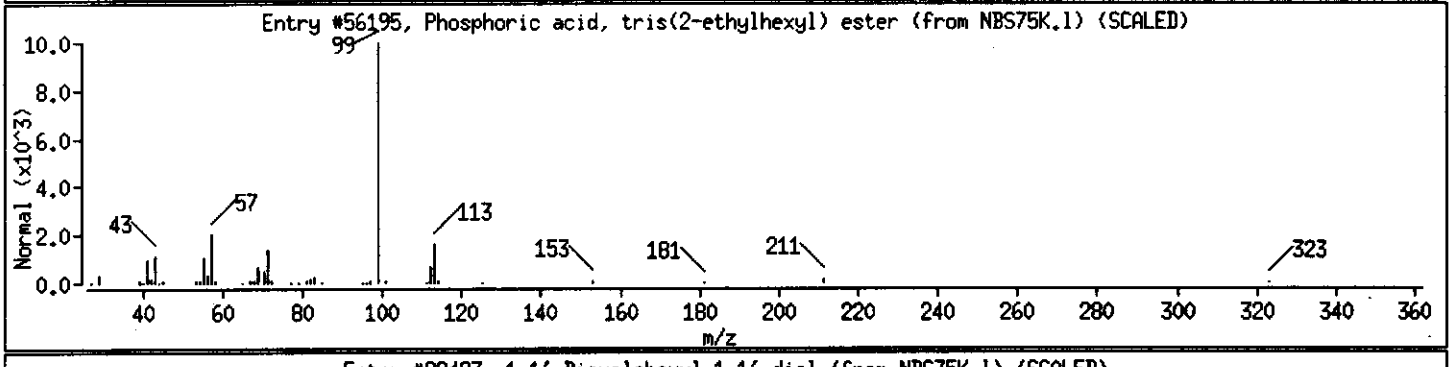
Data File: /chem/yare.i/19960530.b/s96t003230.d
Date : 30-MAY-1996 13:37
Client ID:
Sample Info: S96T003230
Volume Injected (uL): 2.0
Column phase: XTI-5 30m 0.25u

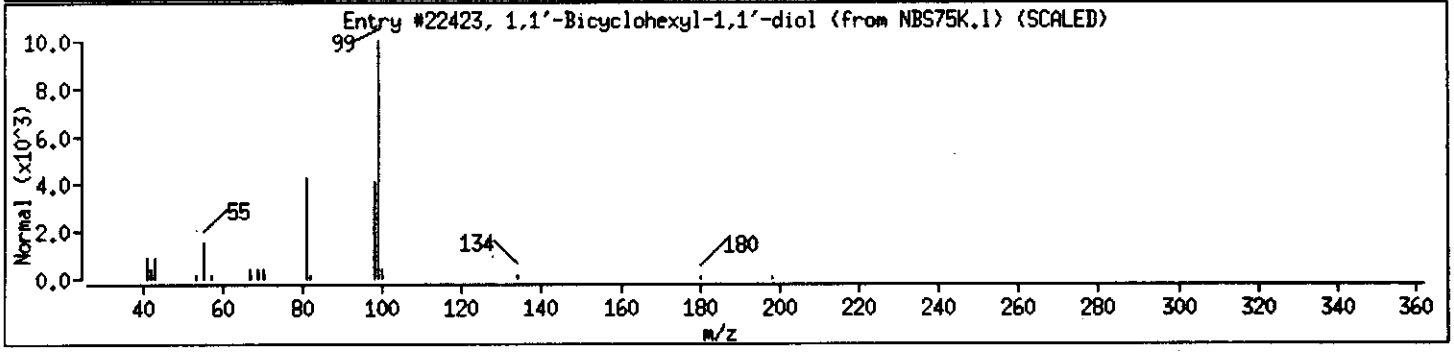
Instrument: yare.i
Operator: rjr
Column diameter: 0.25

Library Search Compound Match	CAS Number	Library	Entry	Quality	Formula	Weight
Unknown Phosphoric Acid Ester RSR 8/2/96		NBS75K.l	28532	64		224
Phosphoric acid, tris(2-ethylhexyl) este	78-42-2	NBS75K.l	56195	43	C24H5104P	434
1,1'-Bicyclohexyl-1,1'-diol	2888-11-1	NBS75K.l	22423	23	C12H2202	198









Data File: /chem/yare.i/19960530.b/s96t003230.d

Date : 30-MAY-1996 13:37

Client ID:

Sample Info: S96T003230

Volume Injected (uL): 2.0

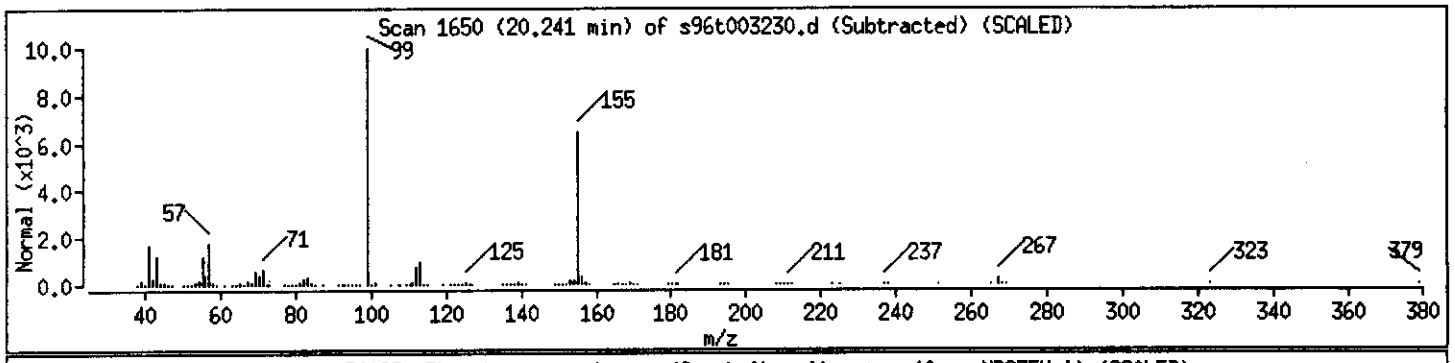
Column phase: XTI-5 30m 0.25u

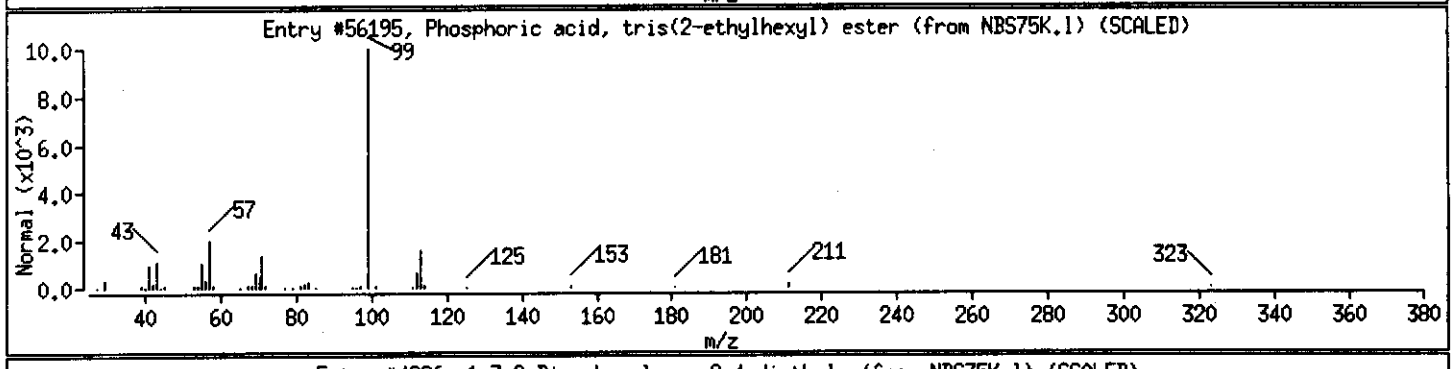
Instrument: yare.i

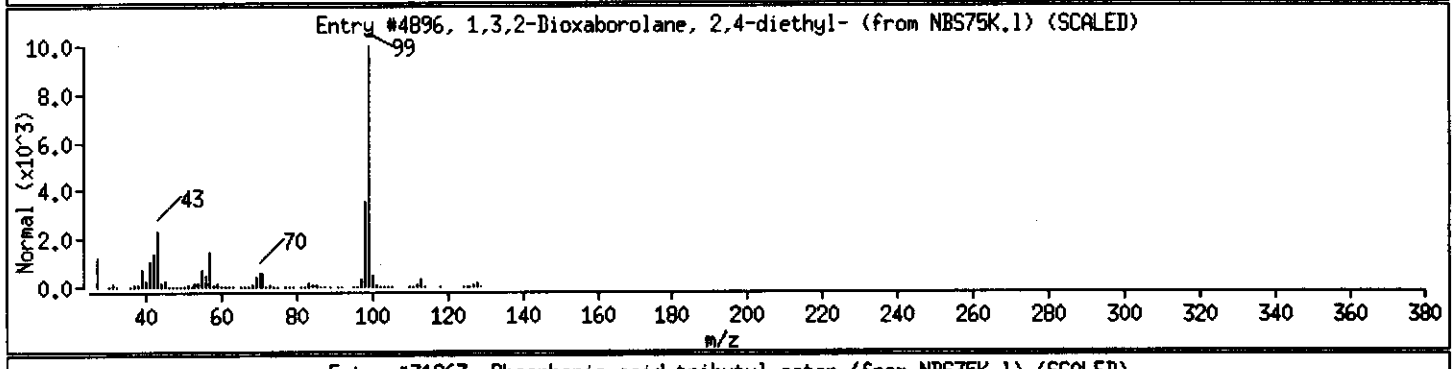
Operator: rjr

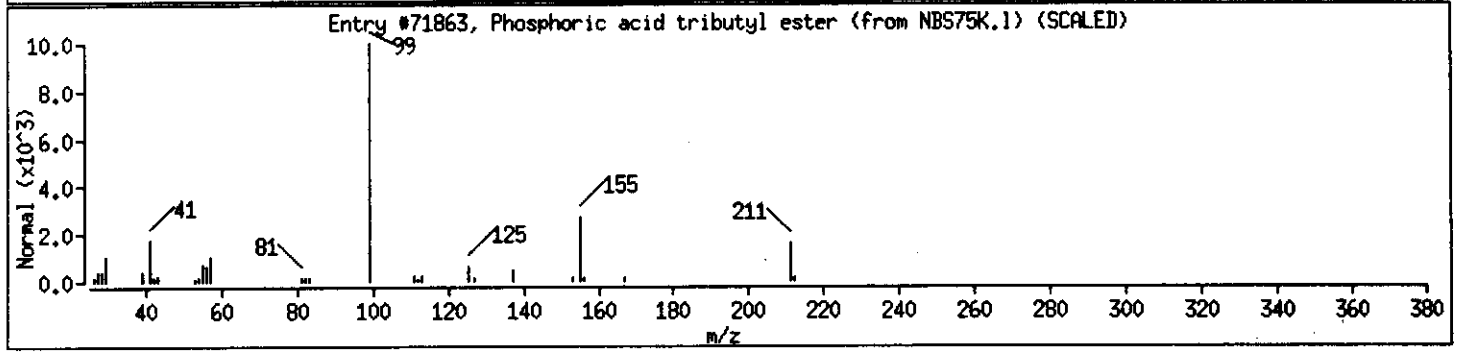
Column diameter: 0.25

Library Search Compound Match	CAS Number	Library	Entry	Quality	Formula	Weight
Unknown Phosphoric Acid Ester (RJ) 8/2/96		NBS75K.l	56195	38		434
1,3,2-Dioxaborolane, 2,4-diethyl-	57633-63-3	NBS75K.l	4896	37	C6H13BO2	128
Phosphoric acid tributyl ester	126-73-8	NBS75K.l	71863	36	C12H27O4P	266









Data File: /chem/yare.i/19960530.b/s96t003230.d

Date : 30-MAY-1996 13:37

Client ID:

Instrument: yare.i

Sample Info: S96T003230

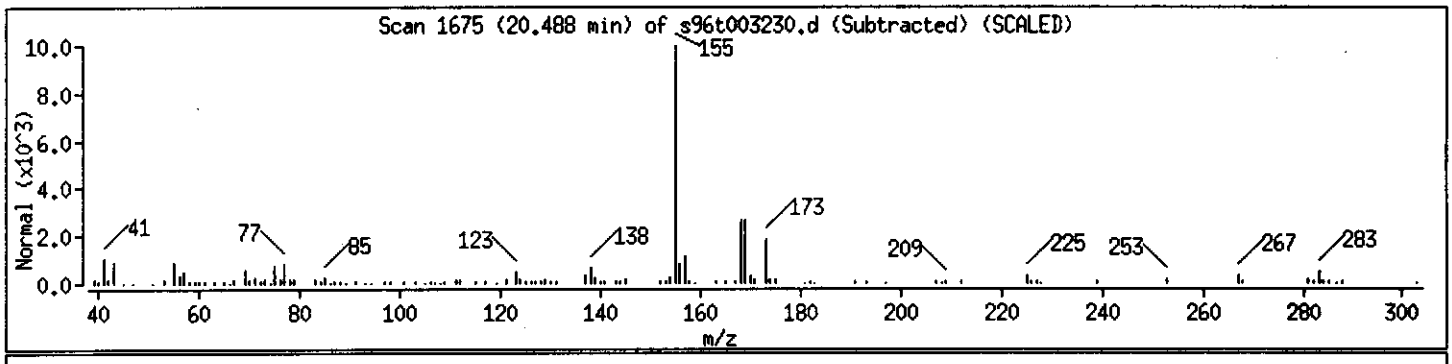
Volume Injected (uL): 2.0

Operator: rjr

Column phase: XTI-5 30m 0.25u

Column diameter: 0.25

Library Search Compound Match	CAS Number	Library	Entry	Quality	Formula	Weight
Unknown BR 8/2/96			0	0		0



Data File: /chem/yare.i/19960530.b/s96t003230.d

Date : 30-MAY-1996 13:37

Client ID:

Instrument: yare.i

Sample Info: S96T003230

Volume Injected (uL): 2.0

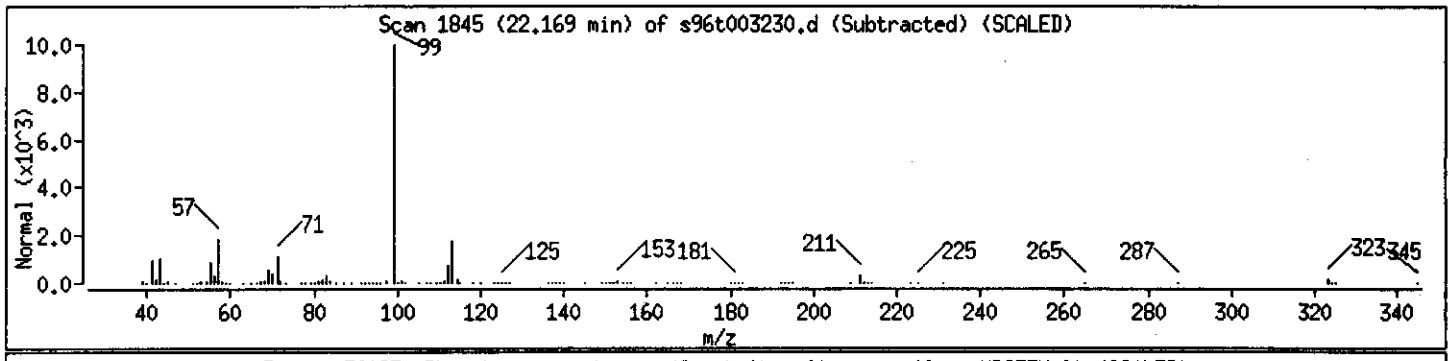
Operator: rjr

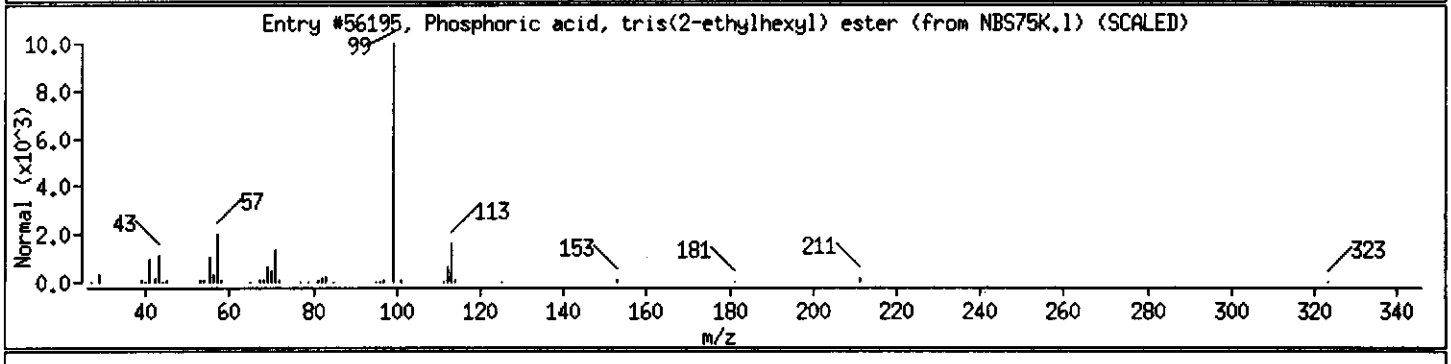
Column phase: XTI-5 30m 0.25u

Column diameter: 0.25

Library Search Compound Match	CAS Number	Library	Entry	Quality	Formula	Weight
Phosphoric acid, tris(2-ethylhexyl) este	78-42-2	NBS75K.l	56195	91	C24H5104P	434

BSL 8/2/96





PART II

INTERIM REPORT FOR TANK 241-C-106, GRAB SAMPLES

Westinghouse Hanford Company | **Internal Memo**

From: Production Planning and Control 75725-96-026
Phone: 373-4314 T6-06
Date: May 24, 1996
Subject: INTERIM REPORT FOR TANK 241-C-106 GRAB SAMPLES

To: G. T. Dukelow S7-14
H. Babad S7-14
R. D. Schreiber R2-12

cc: R. A. Esch T6-06
ADR-File/LB

Attached are the interim analytical results that have been obtained as of May 24, 1996 for all samples submitted. A narrative describing the sample appearance and breakdown and analytical procedures used for the analyses is provided.

Two analytical tests are incomplete: a replicate DSC analysis for sample 6C-96-14, and the ^{99}Tc analysis for the solid control sample and the filtered centrifuged solids from sample 6C-96-11.

Also, there are several of the special analyses that are incomplete. The final report for the caustic demand analysis for the sludge from samples 6C-96-8 and 6C-96-14 is being prepared. Preliminary data is provided in an appendix. Due to dose rate and contamination potential, the viscosity for the solids for samples 6C-96-8 and 6C-96-14 have not yet been completed. Also, the solvent extraction for sample 6C-96-4 oil is still in progress. The samples will be shipped to PNNL on 5/24/96 to complete the evaporation of solvent and perform speciation analyses on the resultant oil material. The chemist report for the foaming and settling studies is still in draft form and is included as an appendix to this report.

If there are any questions regarding this interim report, please feel free to reach me at 373-4314.

Sincerely,

Ruth A. Esch

Ruth A. Esch
Production Planning and Control

Attachments 1) Interim Report

Hanford Operations and Engineering Contractor for the US Department of Energy

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C-106 Grab Sample Breakdown (Attachment 1) 2-13

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241-C-106 Grab Samples (Appendix 1) 2-81

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Distribution Results (Appendix 3) 2-103

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Caustic Demand Data for Sample 6c-96-14 2-133

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222-S ANALYTICAL SERVICES

INTERIM RESULTS FOR TANK 241-C-106 SAMPLES 6C-96-1 THROUGH 6C-96-16 AND 6C-96-17 (FB)

This report presents interim analytical results for grab samples taken from tank 241-C-106 risers 1 and 7 between February 8, 1996 and March 1, 1996. Samples were received and subsampled at the 222-S Laboratory. Analyses were performed in accordance with the Tank Sampling and Analysis Plan (TSAP) for this tank (Schreiber, 1996), the Safety Screening Data Quality Objective (DQO) (Dukelow, et al. 1995), and the Data Quality Objectives for Tank Farms Waste Compatibility Program (Fowler, 1995).

As required for Format II reporting, all data has been reviewed and approved by the cognizant chemists or shift managers. Final validation is not complete. No raw data from routine analyses are provided in this report.

In addition to the safety screening and waste compatibility analyses, a number of additional, non-routine tests were requested on sludge material from this tank. The results of these tests are included as Appendices.

Appearance and Sample Handling

Grab samples were taken from tank 241-C-106 during two separate sampling events. The first sampling was on 2/8/96; four samples were collected. The samples were received at the 222-S Laboratory on 2/8/96. Upon loading the samples into the hotcell for breakdown and subsampling, the four sample bottles were placed into a waterbath to bring the samples to tank temperature. Due to a miscommunication of instructions the waterbath heated to dryness resulting in the loss of the two supernate samples (6C-96-1 and 6C-96-2), and drying out of sludge sample 6C-96-3. The second sludge (6C-96-4) was overheated to ~200° C, but the jar remained intact with no apparent drying of the sample. A description of this occurrence may be found in the memo dated February 20, 1996, from R. A. Esch to J. L. Deichman included in the correspondence section of this document.

The tank was resampled on 2/24/96 (riser 1) and 3/1/96 (riser 7) to collect sufficient samples for the analyses. The samples were received at the 222-S Laboratory the same days that they were collected.

The information presented in Table 1 represents the appearance of the samples at the time that they were loaded into the hotcell at 222-S Laboratory. Changes in sample appearance that occurred after the samples were in the hotcell are described below.

Attachments 1 and 2 are provided as references for depicting the sample breakdown in the hotcell as well as relating the tank farm customer identification numbers with the 222-S Laboratory sample numbers. The subsamples generated in the laboratory for analysis are identified in these diagrams with their sources shown.

Appearance

As stated above, after the first set of samples was overheated, samples 6C-96-1 and 6C-96-2 were lost because the sample jars broke. Although sample 6C-96-3 was overheated to dryness, a decision was made to homogenize the sample with a mortar and pestle and perform a limited number of analyses. Since sample 6C-96-4 appeared to be relatively unaffected by the overheating, a decision was made to proceed with the planned breakdown of this sample.

When samples 6C-96-15 and 6C-96-16 were loaded into the hotcell, they both had approximately 10% settled solids. The laboratory was asked to attempt to collect the crystalline material from sample 6C-96-15 to determine if oxalate was present. However, after standing at ambient hotcell temperature for about a week, most of the solids had dissolved, leaving only a trace of solids on the bottom of the sample bottles. No crystalline material remained in sample 6C-96-15. Since there were insufficient solids to collect for analysis, a decision was made to perform a limited set of analyses on the supernate of sample 6C96-15. Sample 6C-96-16 is being held for possible future analysis.

Table 1: Appearance Information for Tank 241-C-106 Grab Samples

6C-96-1	1	2/8/96	2/8/96	404	~90	Trace	Clear yellow liquid; no organic layer; trace of yellow/brown solids and rust colored pieces of material
6C-96-2	1	2/8/96	2/8/96	404	~90	Trace	Clear yellow liquid; no organic layer; trace of rust colored flakes
6C-96-3	1	2/8/96	2/8/96	432	~62	100%	Brown/black solids with no apparent supernate or organic layer
6C-96-4	1	2/8/96	2/8/96	434	~60	100%	Brown/black solids with no apparent supernate or organic layer
6C-96-5	1	2/23/96	2/24/96	420	~74	20%	Slightly cloudy yellow liquid; no organic layer; red/brown solids
6C-96-6	1	2/23/96	2/24/96	420	~74	80%	Slightly cloudy yellow liquid; no organic layer; red/brown solids
6C-96-7	1	2/23/96	2/24/96	434	~60	100%	Brown solids with no apparent supernate or organic layer - sludge contained large pieces of very hard solid material
6C-96-8	1	2/23/96	2/24/96	434	~60	100%	Brown solids with no apparent supernate or organic layer - no chunks of harder material were noted
6C-96-10	1	2/23/96	2/24/96	463	~31	100%	Brown solids with no apparent supernate or organic layer
6C-96-11	7	3/1/96	3/1/96	421	~53	82.3%	Cloudy yellow liquid; no organic layer; red/brown solids
6C-96-12	7	3/1/96	3/1/96	409	~65	1.2%	Clear yellow liquid; no organic layer; red/brown solids
6C-96-13	7	3/1/96	3/1/96	426	~48	~100%	Red/brown solids with a trace of supernate on top - no apparent organic layer
6C-96-14	7	3/1/96	3/1/96	426	~48	~100%	Red/brown solids with a trace of supernate on top - no apparent organic layer
6C-96-15	7	3/1/96	3/1/96	426	~48	14%	Clear yellow liquid; no organic layer; red/brown solids - solids appeared to have white crystalline material on the surface at the time the sample was loaded into the hotcell
6C-96-16	7	3/1/96	3/1/96	428	~46	9%	Slightly cloudy yellow liquid; no organic layer; red/brown solids - no visible crystalline material
6C-96-17 FB	1	2/23/96	2/24/96	240	N/A	None	Clear colorless liquid; no organic layer; no solids

* Sample depth is measured from the top of the riser to the mouth of the sample bottle

** Sample elevation is measured from tank bottom to mouth of the sample bottle

Breakdown

After the initial observation of the appearance of the samples a decision was made as to which samples would be analyzed and the sample type for several of the samples was changed due to the presence or absence of solids in the sample. Table 2 presents this information.

The supernate samples were ultrafiltered in a centrifuge cone prior to subsampling for analysis. They are indicated as "Supernate" for the segment portion in the results summary table (Table 3).

The TSAP requested that the sludge samples be ultrafiltered for maximum separation of solids and liquids. For comparison of this method to the standard practice of centrifugation and decantation of the supernate, a control sample of unfiltered solids was analyzed. These solid portions are identified as "Control Sample" for the segment portion. A small portion of sludge was centrifuged in tapered cones to obtain bulk density and dry particle density information. These segment portions are identified as "Centrifuged Solids". Any analyses performed on the "raw" uncentrifuged sludge are identified as "Sludge" for the segment portion.

Upon centrifugation of the first sludge sample, a separable organic layer was observed (identified on the table as "Potential Organic Layer"). Notification was made to East Tank Farms Shift Operations manager and to the program contact. A change was made to the TSAP to insert a step to precentrifuge the sludge to remove any separable organic material prior to filtration. The ultrafiltered solids are identified as "Filtered Centrifuged Solids" as the segment portion. The liquid obtained from the filtered solids is identified as "Interstitial Liquid". Liquid removed from the precentrifugation step is identified as "Decanted Supernate".

Since the precentrifugation step separated most of the liquid from the sludge, there was insufficient filtered interstitial liquid remaining to perform all of the requested liquid analyses on this sample portion. For some of the sludges, there was enough decanted supernate from the precentrifugation step to perform some of the liquid analyses. For sample 6C-96-10, all of the decanted supernate was lost during the precentrifugation. In either case, analyses were assigned to the "Interstitial Liquid" and the "Decanted Supernate", according to the priority given from the Safety Program, to the extent that sample was available.

The potential organic layer (oil) that was separated after the centrifugation of samples 6C-96-7, 6C-96-10, 6C-96-11 and 6C-96-13 were analyzed for energetics by differential scanning calorimetry (DSC) and percent moisture by thermogravimetric analysis (TGA). The material from samples 6C-96-7 and 6C-96-13 was then shipped to the Pacific Northwest National Laboratory (PNNL) for further identification by gas chromatography/mass spectroscopy (GC/MS) and total organic carbon (TOC) analyses. The remaining two samples, 6C-96-10 and 6C-96-11, were analyzed for TOC and $^{238/239/240}Pu$ at 222-S Laboratory.

Table 2: Breakdown Information for Tank 241-C-106 Grab Samples

6C-96-1	Supernate	Sample lost by overheating, no analysis performed.
6C-96-2	Supernate	Sample lost by overheating, no analysis performed.
6C-96-3	Sludge	Sample dried due to overheating, special analysis performed.
6C-96-4	Sludge	Overheated, ultrafilter to separate solids and liquids, then subsample each phase.
6C-96-5	Supernate	Ultrafilter supernate in centrifuge at tank temperature, then subsample.
6C-96-6	Sludge	Archive for possible future analysis.
6C-96-7	Sludge	Ultrafilter to separate solids and liquids, then subsample each phase.
6C-96-8	Sludge	Remove separable supernate and subsample sludge for caustic demand, viscosity, particle size and compatibility mixing studies with AY-102.
6C-96-10	Sludge	Ultrafilter to separate solids and liquids, then subsample each phase.
6C-96-11	Sludge	Ultrafilter to separate solids and liquids, then subsample each phase.
6C-96-12	Supernate	Ultrafilter supernate in centrifuge at tank temperature, then subsample.
6C-96-13	Sludge	Ultrafilter to separate solids and liquids, then subsample each phase.
6C-96-14	Sludge	Remove separable supernate and subsample sludge for caustic demand, viscosity, particle size and compatibility mixing studies with AY-102.
6C-96-15	Supernate	Subsample supernate for metals (ICP) and anions (IC) analysis.
6C-96-16	Supernate	Archive for possible future analysis.
6C-96-17 FB	Field Blank	Subsample for liquid analyses.

The DSC and TGA results obtained for the oils gave very inconsistent results. It was believed that one cause of the inconsistency may have been the presence of supernate or sludge particles trapped in the oily material. Therefore, when the oil was separated from sample 6C-96-4 an attempt was made to "rinse" the oil to remove any sludge material. It was suggested by the Safety Program contact (H. Babad) that a solution of sodium nitrate (0.024 M solution) be used to perform the rinsing. The concentration of sodium nitrate to use for the solution was determined by taking the average nitrate concentration measured in the two supernate samples.

The sodium nitrate was added in a ratio of 17.26 g solution to 1 g of oily material. After the addition, foaming was observed that took approximately 30 minutes to "break up" leaving a clear red/brown (root beer colored) solution with a small amount of settled solids. The solution was centrifuged in an attempt to recover the oil. Only a very slight ring of material separated. The program contact was informed of the situation and a decision was made to only analyze the sample for $^{239/240}Pu$. The results reported in the data summary table are not corrected for the dilution factor of 17.26.

Analytical Results

The data summary table (Table 3) included in this report compiles all of the results for each subsample from the samples received. The results for several analyses (listed below) were not available at the time this interim report was generated. These results will be provided as soon as they become available. The incomplete tests are: replicate DSC analysis for sample 6C-96-14; ^{99}Tc results for sample 6C-96-11 control sample and filtered solids; and bulk density results for the compatibility mixing test samples from samples 6C-96-8 and 6C-96-14 (these bulk density results are included in the draft chemist compatibility testing report).

Appendix 1 is the chemist's draft summary of the Processing and sampling results from the breakdown of the tank 241-C-106 grab samples. Appendix 2 is the chemist's draft compatibility testing report.

Appendix 3 is internal memo number 75764-PCS96-050, "C-106 Viscosity and Particle Size Distribution Results". This memo presents the results and discussion for the viscosity analysis for the supernate and the particle size distribution analysis for the sludge from samples 6C-96-8 and 6C-96-14. The viscosity determination for the sludge from these two samples was not completed at the time of this report generation. The 222-S Laboratory is making arrangements with PNNL laboratory to perform this analysis.

Appendix 4 has preliminary data from the caustic demand analysis for the sludge from samples 6C-96-8 and 6C-96-14. A complete report will be provided when it becomes available.

Procedures

Table 4 lists the analytical procedures used for performing the safety screening analyses. Abbreviations for analyses are defined in the table notes.

Table 4: Analytical Procedures

DSC	Liquid/Solid	N/A	LA-514-114 Rev. C-1
TGA	Liquid/Solid	N/A	LA-514-114 Rev. C-1
Sp.G.	Liquid	N/A	LA-510-112 Rev. C-3

Table 4: Analytical Procedures

% Water	Liquid Solid	N/A	LA-564-101 Rev. F-1
pH	Liquid Solid	N/A	LA-212-106 Rev. A-0 LA-212-105 Rev. A-0
NH_3	Liquid	N/A	LA-631-001 Rev. B-2
OH (Caustic Demand)	Sludge	N/A	Herting Lab Instruction*
IC: Cl^-, F^-, PO_4^{3-}, SO_4^{2-}, NO_3^-, NO_2^-	Liquid Solid	N/A + LA-504-101 Rev. E-0	LA-533-105 Rev. D-1
ICP: Al, Fe, Na	Liquid Solid	N/A ++ LA-505-159 Rev. D-0	LA-505-151 Rev. D-3
TOC	Liquid (furnace) Liquid/Solid (persulfate)	N/A	LA-344-105 Rev. C-0 LA-342-100 Rev. C-0
TIC	Liquid (furnace) Solid (persulfate)	N/A	LA-622-102 Rev. C-0 LA-342-100 Rev. C-0
AT	Liquid Solid	N/A +++ LA-549-141 Rev. F-0	LA-508-101 Rev. D-2
GEA: ^{137}Cs	Liquid Solid	N/A +++ LA-549-141 Rev. F-0	LA-548-121 Rev. E-0

Table 4: Analytical Procedures

^{90}Sr	Liquid Solid	N/A +++ LA-549-141 Rev. F-0	LA-220-101 Rev. D-1
^{241}Am	Liquid Solid	N/A +++ LA-549-141 Rev. F-0	LA-953-103 Rev. B-0
$^{239/240}Pu$	Liquid Solid	N/A +++ LA-549-141 Rev. F-0	LA-943-128 Rev. A-1 & LA-943-128 Rev. B-1
^{99}Tc	Liquid Solid	N/A +++ LA-549-141 Rev. F-0	LA-438-101 Rev. B-3

Notes:
* Herting Laboratory Instructions titled "Tank C-106 Caustic Demand" included in Appendix 4
+ Water digest procedure
++ Acid digest procedure
+++ Fusion digest procedure

Abbreviations:
N/A = not applicable (these are direct samples)
DSC = differential scanning calorimetry
TGA = thermogravimetric analysis
Sp.G. = specific gravity
% Water = percent water by gravimetric analysis
NH_3 = ammonia (by ion selective electrode (ISE)
OH = hydroxide
IC = ion chromatography
ICP = inductively coupled plasma
TOC = total organic carbon
TIC = total inorganic carbon
AT = total alpha
GEA = gamma energy analysis
^{137}Cs = cesium 137
^{90}Sr = strontium 90
^{241}Am = americium 241
$^{239/240}Pu$ = plutonium 239/240
^{99}Tc = technecium 99

References

Dukelow, G. T., J. W. Hunt, H. Babad, and J. E. Meacham, 1995, *Tank Safety Screening Data Quality Objective*, WHC-SD-WM-SP-004, Rev. 2, Westinghouse Hanford Company, Richland, WA 99352.

Fowler, K. D., 1995, *Data Quality Objectives for the Waste Compatibility Program,* WHC-SD-WM-DQO-001, Rev. 1, Westinghouse Hanford Company, Richland, Washington.

Schreiber, 1996, *Tank 241-C-106 Grab Sampling and Analysis Plan*, WHC-SD-WM-TSAP-080, Rev. 1, Westinghouse Hanford Company, Richland, WA 99352.

ATTACHMENT 1

C-106 GRAB SAMPLE BREAKDOWN

Attachment 1 (1 of 9)
C-106 GRAB SAMPLE BREAKDOWN
Riser 1

432 in.

6C-96-3

S96T000530

This sample was inadvertantly overheated, the sample jar broke, and the solids dried out.

Homogenize dried solid by grinding

S96T002822

S96T001526

DSC, TGA, and TOC

Water Digest

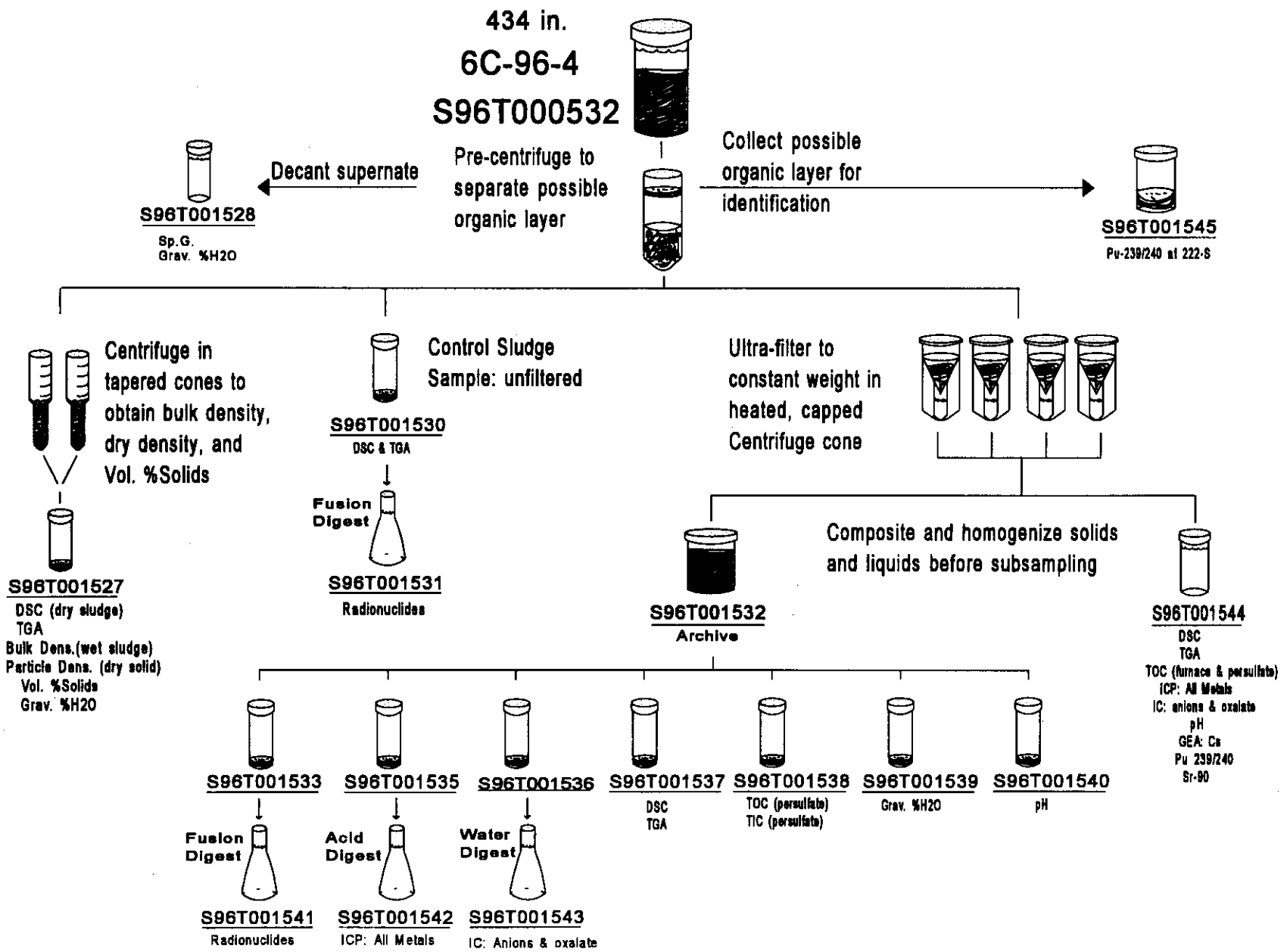
S96T002821

IC: anions & oxalate

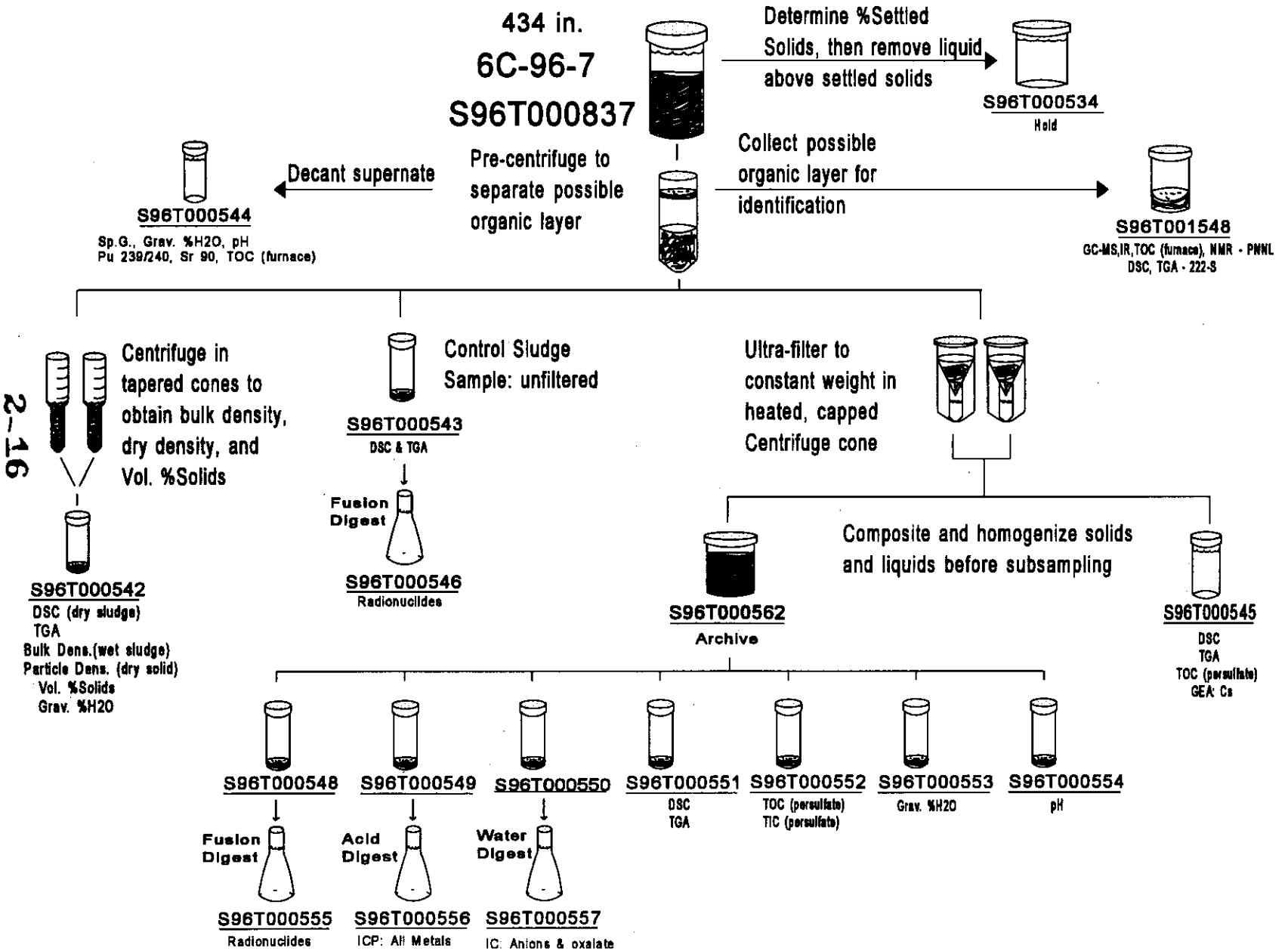
Attachment 1 (2 of 9)

C-106 GRAB SAMPLE BREAKDOWN

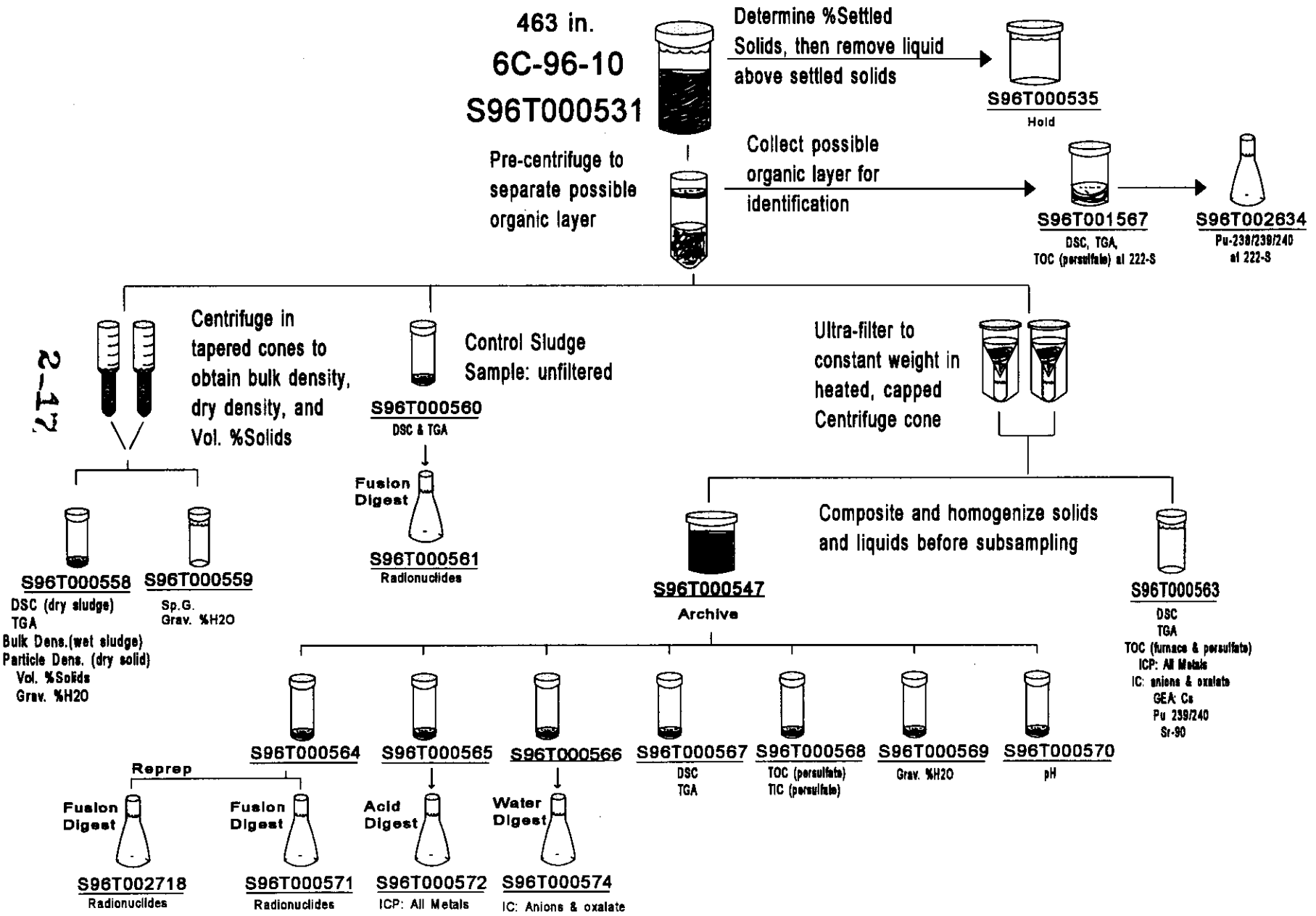
Riser 1



Attachment 1 (3 of 9)
C-106 GRAB SAMPLE BREAKDOWN
Riser 1



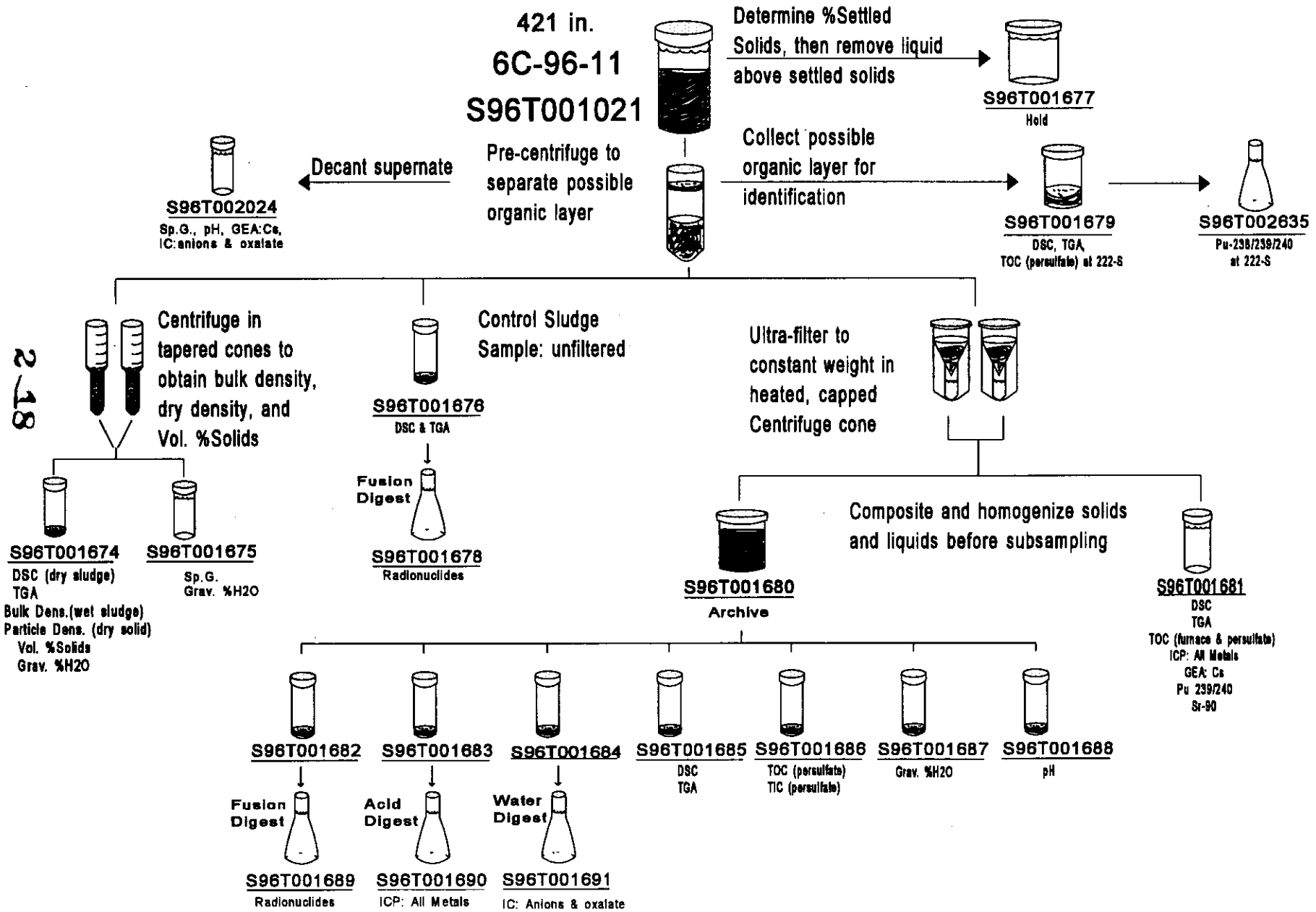
Attachment 1 (4 of 9)
C-106 GRAB SAMPLE BREAKDOWN
Riser 1



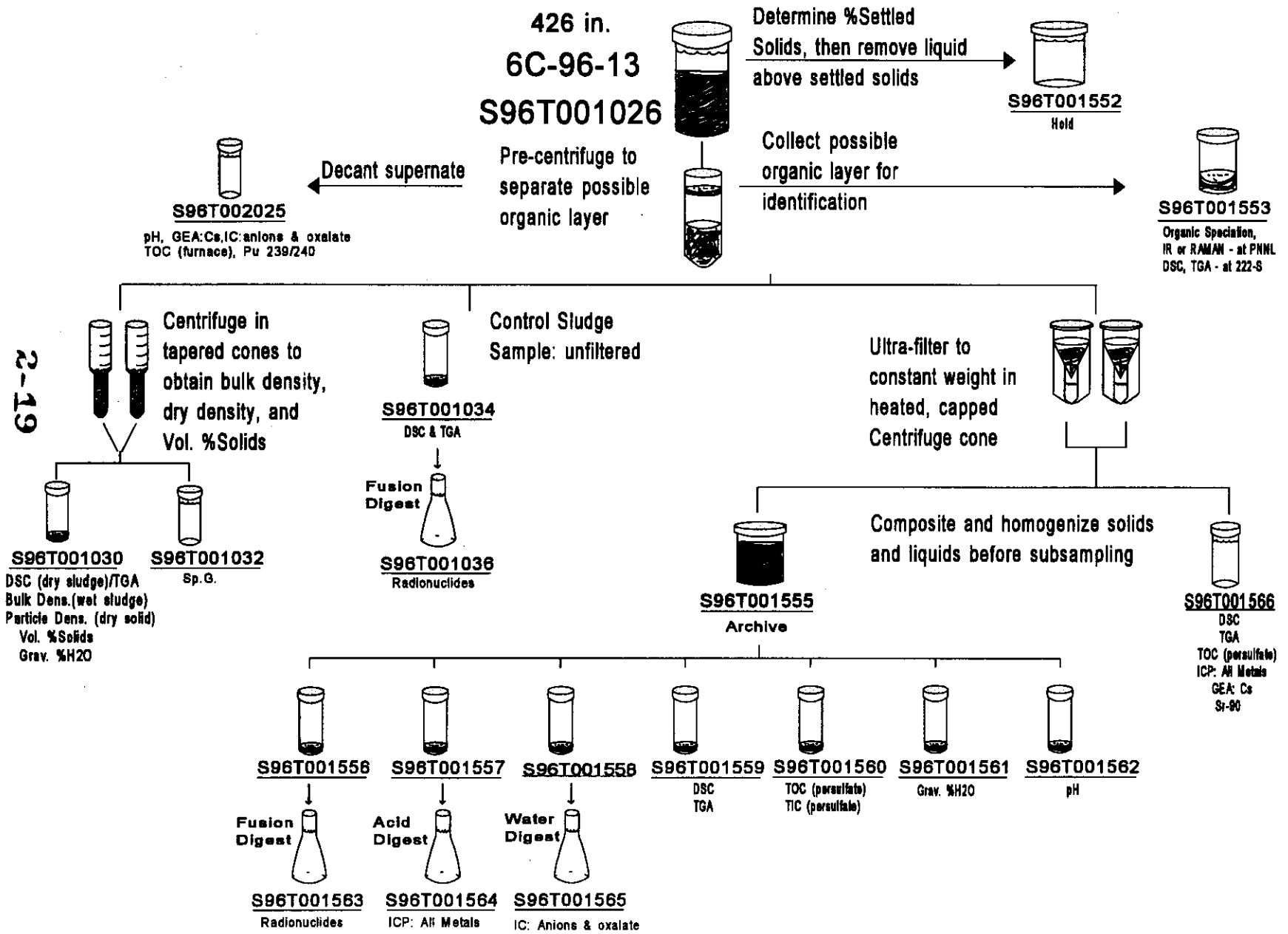
Attachment 1 (5 of 9)

C-106 GRAB SAMPLE BREAKDOWN

Riser 7



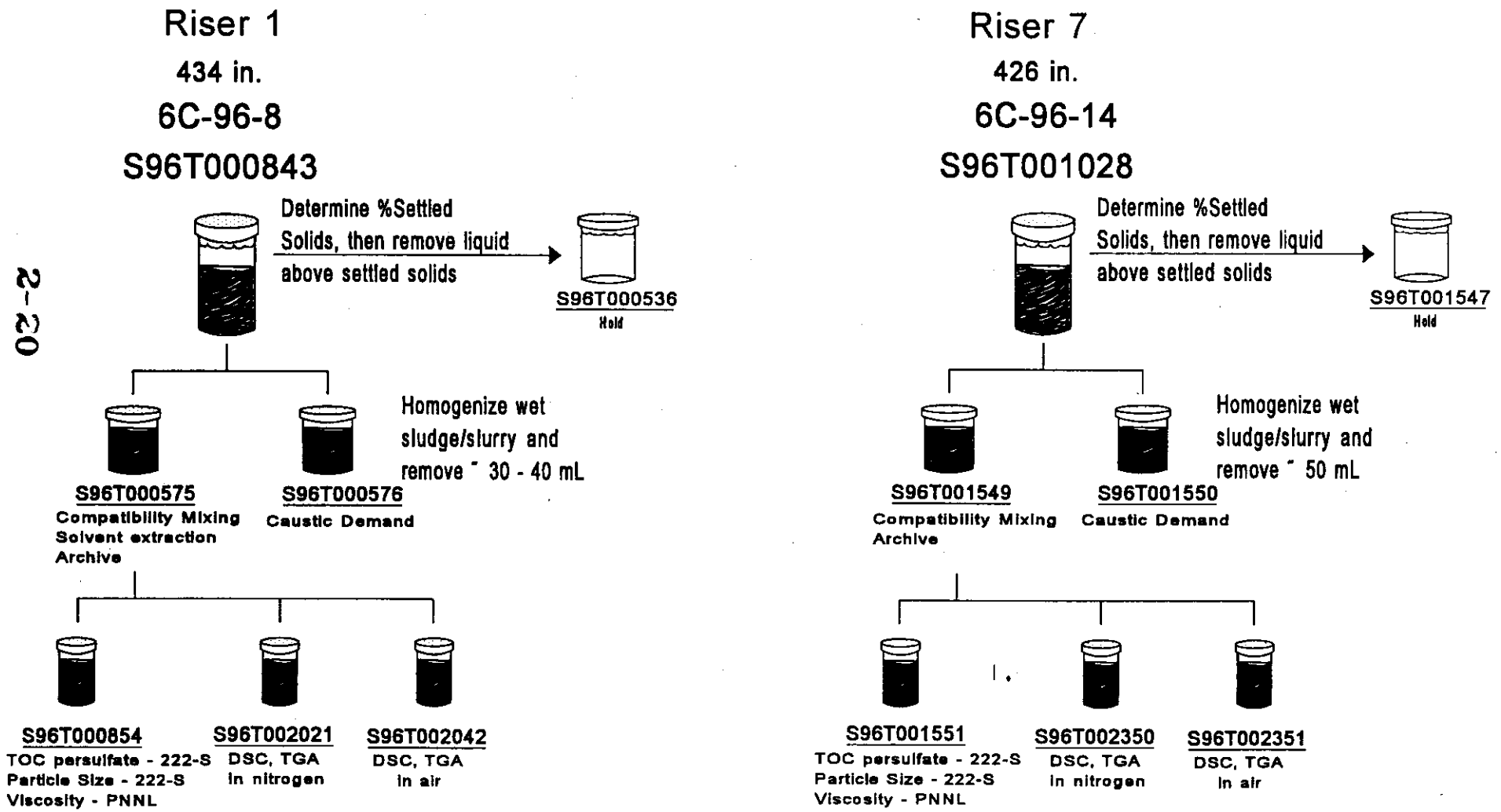
Attachment 1 (6 of 9)
C-106 GRAB SAMPLE BREAKDOWN
Riser 7



Attachment 1 (7 of 9)

C-106 GRAB SAMPLE BREAKDOWN

For Caustic Demand, Particle Size, Viscosity, and Compatibility Mixing Studies on Sludge Samples

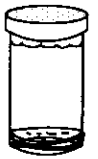


Attachment 1 (8 of 9)
C-106 GRAB SAMPLE BREAKDOWN
Riser 7

426 in.

6C-96-15

S96T001027

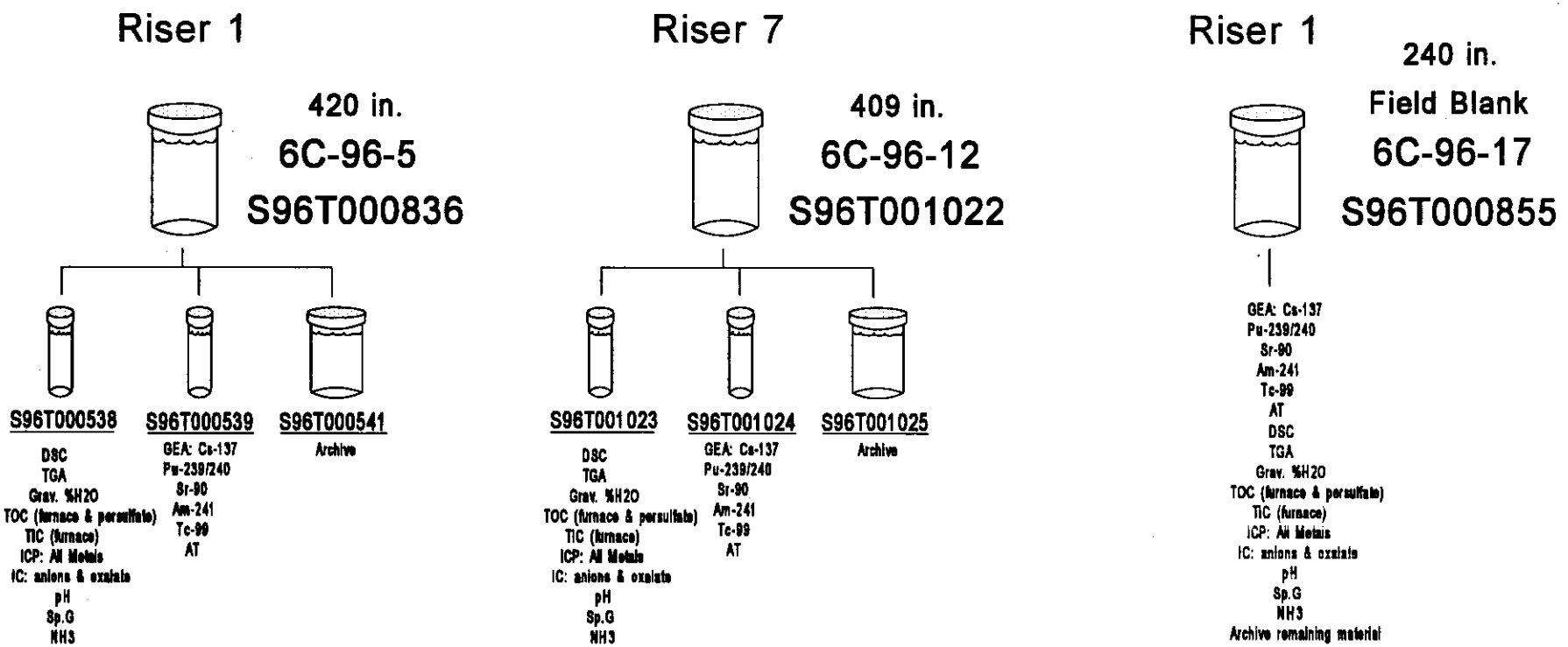


Determine %Settled Solids, then carefully remove liquid above settled solids

S96T001546

ICP: All Metals
IC: anions + oxalate

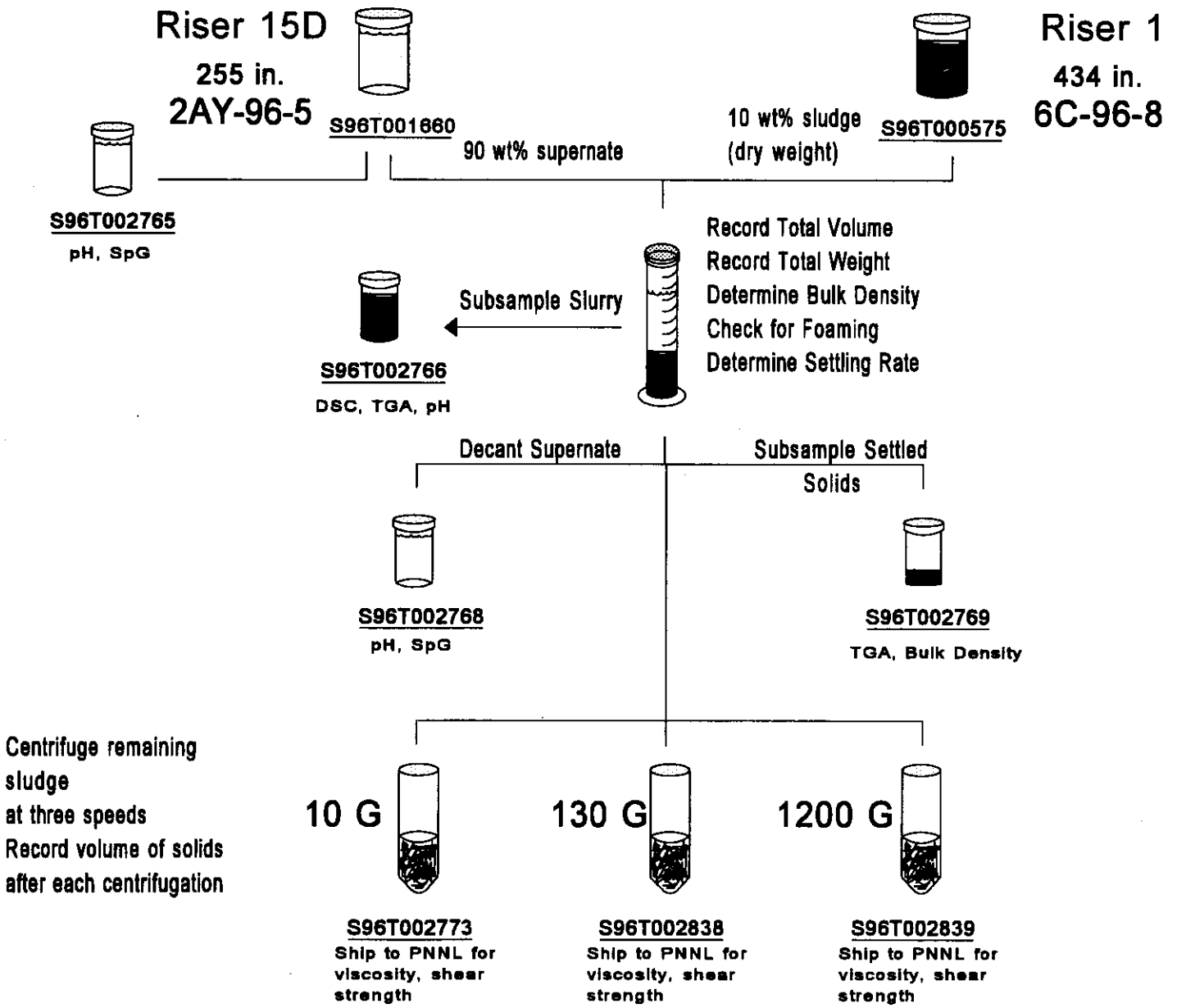
Attachment 1 (9 of 9)
C-106 GRAB SAMPLE BREAKDOWN



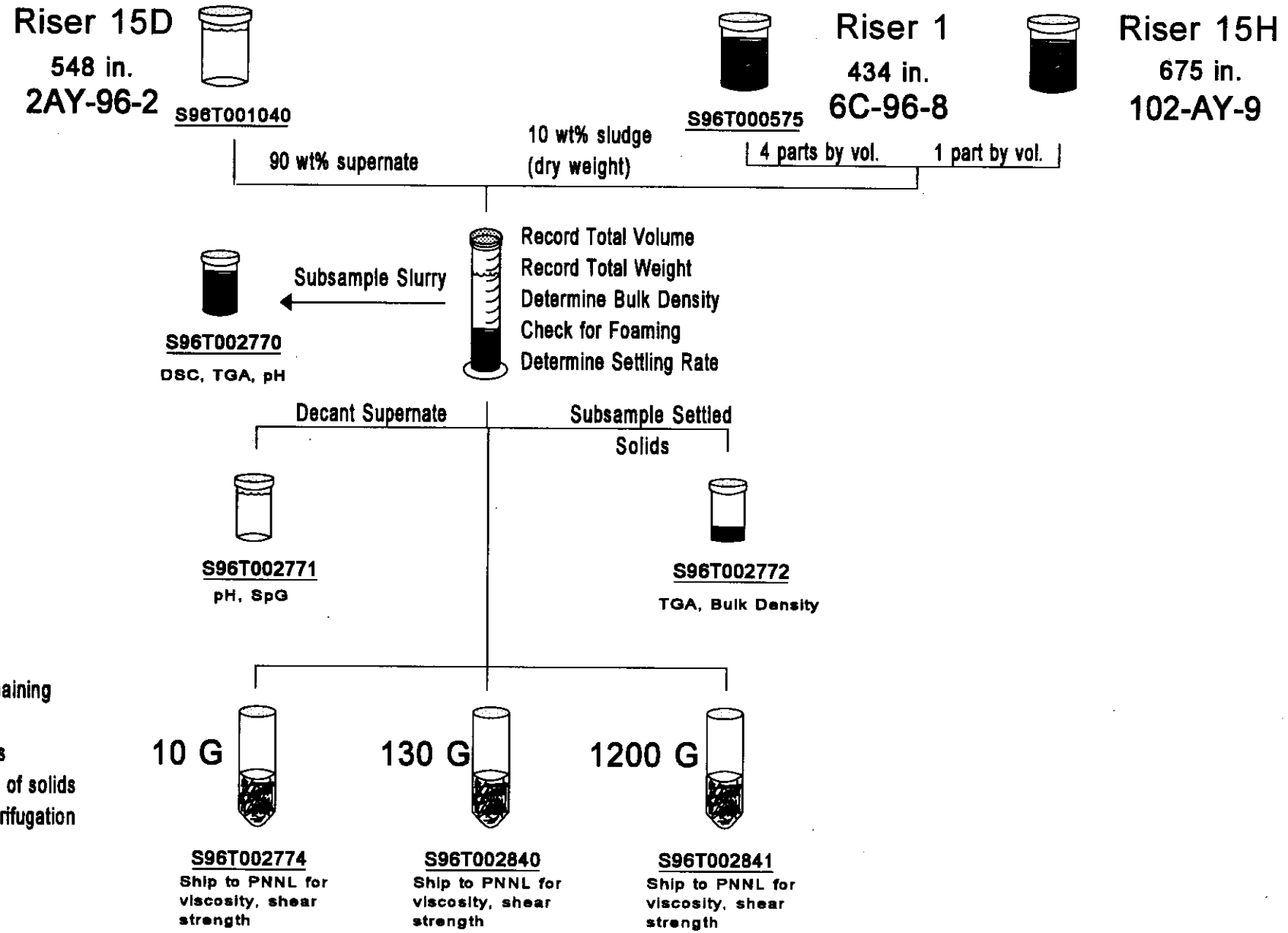
ATTACHMENT 2

AY-102/C-106 COMPATIBILITY STUDIES

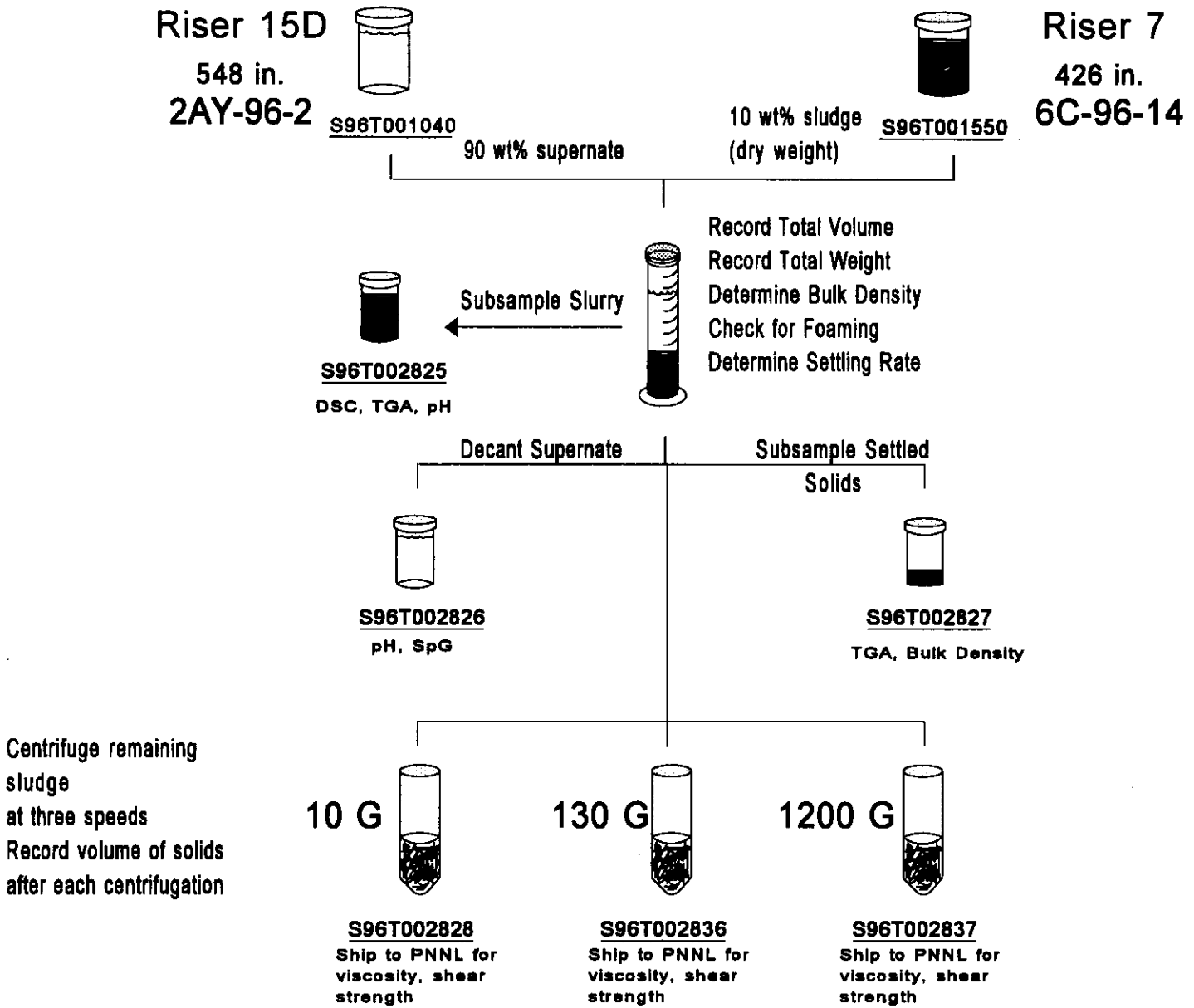
Attachment 2 (1 of 5)
AY-102/C-106 COMPATIBILITY STUDIES



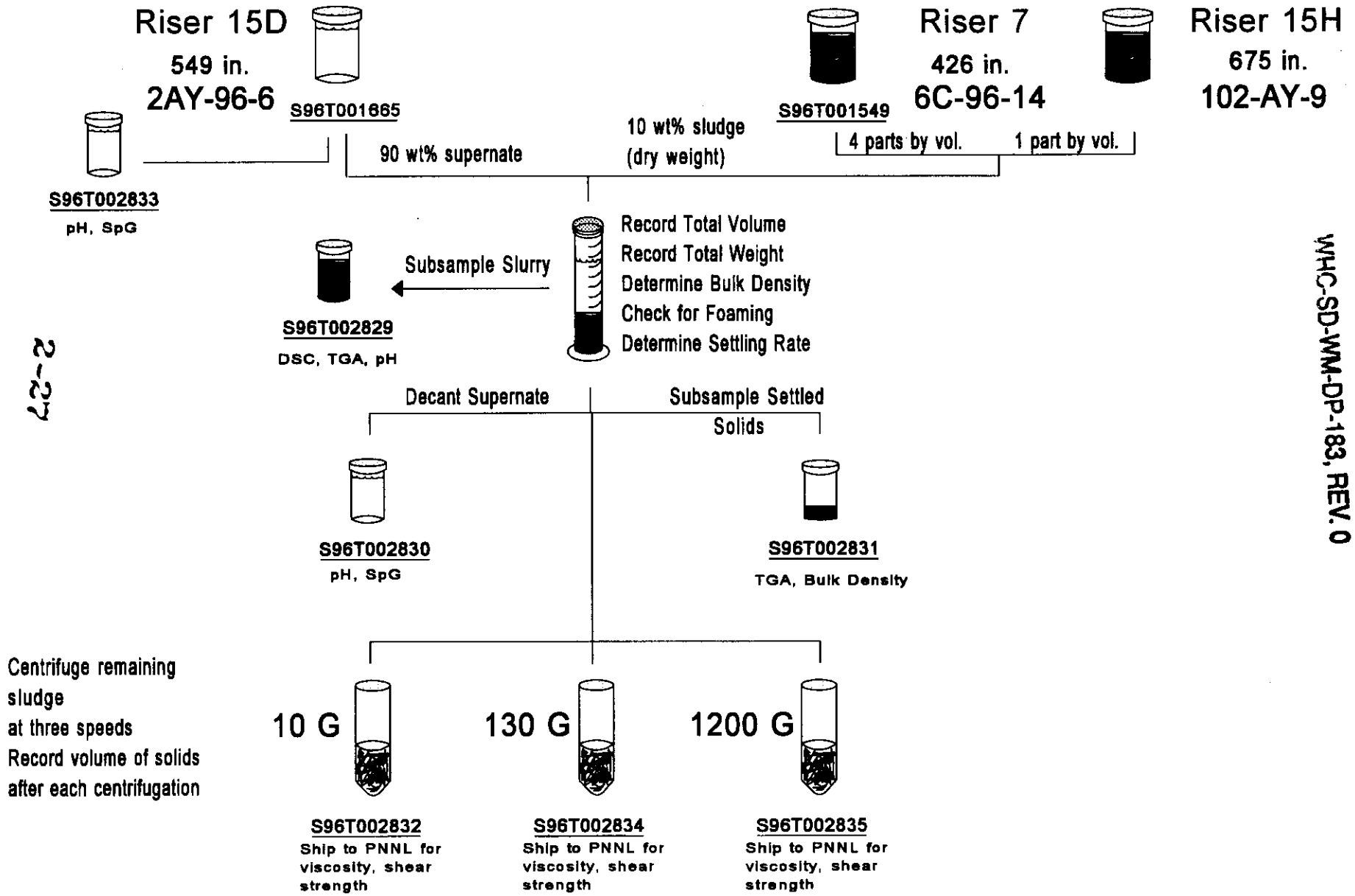
Attachment 2 (2 of 5)
AY-102/C-106+AY-102
COMPATIBILITY STUDIES



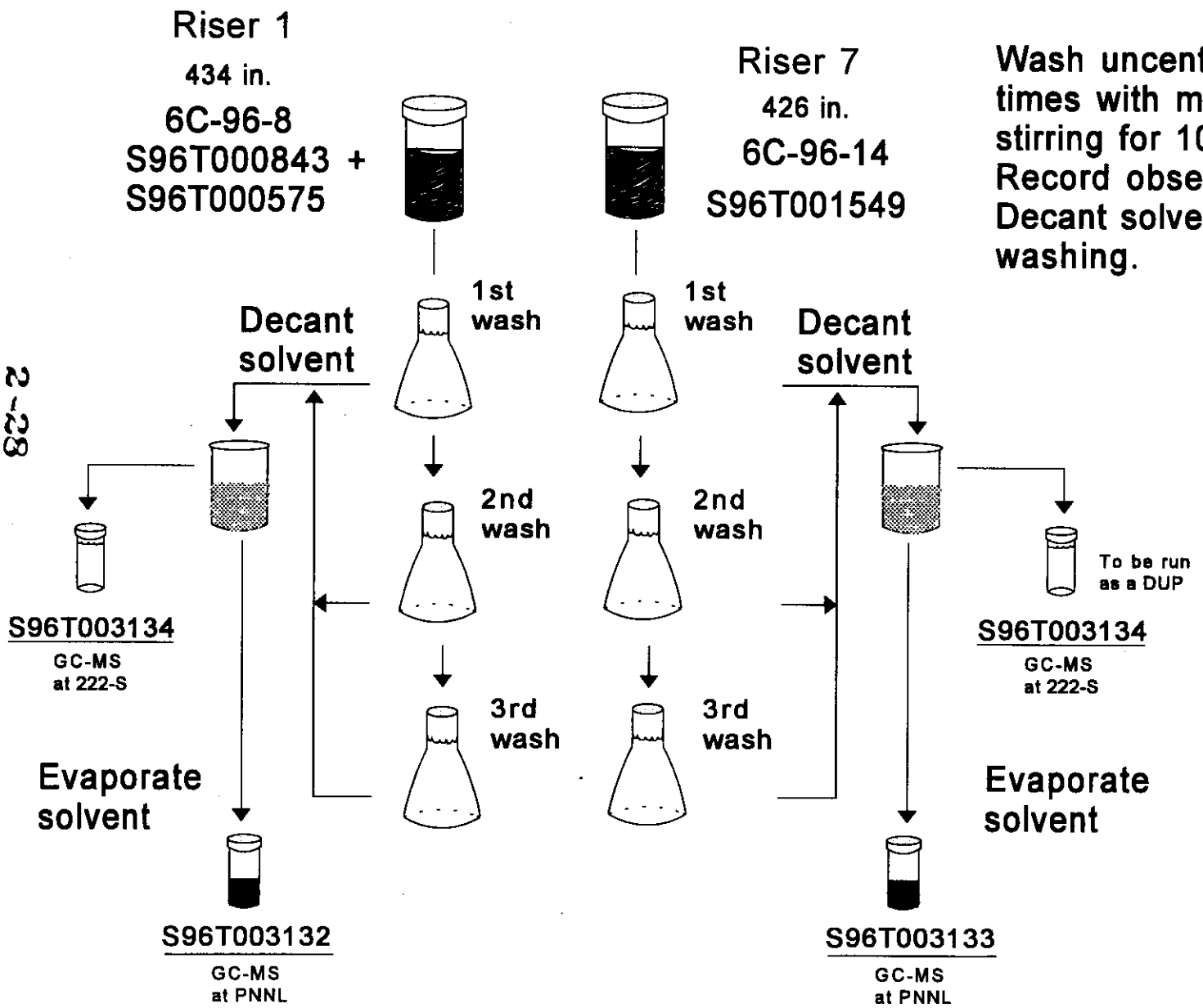
Attachment 2 (3 of 5)
AY-102/C-106 COMPATIBILITY STUDIES



Attachment 2 (4 of 5)
AY-102/C-106+AY-102
COMPATIBILITY STUDIES



Attachment 2 (5 of 5)
C-106 ORGANIC EXTRACTION



Wash uncentrifuged sludge 3 times with methylene chloride, stirring for 10 minutes each time. Record observations. Decant solvent after each washing.

SAMPLE DATA SUMMARY

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INTERIM

Table 3: Interim Results for Tank 241-C-106 Grab Samples
C-106 GRAB

RISER: 1
SEGMENT #: 6C-96-3

SEGMENT PORTION: Sludge (from Liquid Grab Sample)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001526			TOC by Persulfate/Coulometry	ug/g	n/a	n/a	6.05e+04	5.030e4	5.540e4	18.4	n/a	40.00	n/a
S96T001526			% Water by TGA using Mettler	%	99.11	n/a	3.540	2.820e0	3.180e0	22.6	n/a	n/a	n/a
S96T001526			DSC Exotherm on Perkin Elmer	Joules/g	99.12	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T001526			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T002821		W	Chloride-IC-Dionex 4000i/4500	ug/g	90.89	<1.700e-2	<1.36e+04	<1.37e4	n/a	n/a	86.71	1.360e4	n/a
S96T002821		W	Fluoride-IC-Dionex 4000i/4500	ug/g	94.75	<1.300e-2	<1.04e+04	<1.05e4	n/a	n/a	92.03	1.040e4	n/a
S96T002821		W	Nitrite-IC - Dionex 4000i/4500	ug/g	94.71	<1.070e-1	<8.57e+04	<8.63e4	n/a	n/a	90.88	8.570e4	n/a
S96T002821		W	Nitrate by IC-Dionex4000i/4500	ug/g	93.48	<1.400e-1	1.71e+07	2.780e7	2.250e7	47.7	99.84	1.120e5	n/a
S96T002821		W	Oxalate by IC - Dionex 4000i	ug/g	98.06	<1.050e-1	3.40e+05	3.680e5	3.540e5	7.91	92.82	8.410e4	n/a
S96T002821		W	Phosphate-IC-Dionex 4000i/4500	ug/g	98.72	<1.190e-1	<9.52e+04	<9.59e4	n/a	n/a	93.41	9.520e4	n/a
S96T002821		W	Sulfate by IC-Dionex4000i/4500	ug/g	96.20	<1.360e-1	<1.09e+05	<1.10e5	n/a	n/a	92.23	1.090e5	n/a

INTERIM

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INTERIM

Table 3: Interim Results for Tank 241-C-106 Grab Samples
C-106 GRAB

RISER: 1
SEGMENT #: 6C-96-4

SEGMENT PORTION: Centrifuged Solids (Grab Sample)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001527			% Water by Gravimetric	%	98.99	n/a	5.900	5.600e0	5.750e0	5.22	n/a	1.000e-1	n/a
S96T001527			Volume % Solids	%	n/a	n/a	59.30	n/a	n/a	n/a	n/a	n/a	n/a
S96T001527			% Water by TGA using Mettler	%	99.31	n/a	3.630	3.540e0	3.585e0	2.51	n/a	n/a	n/a
S96T001527 1			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	14.00	2.645e1	2.023e1	61.6	n/a	n/a	n/a
S96T001527			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	0.00e+00	1.040e3	5.200e2	200	n/a	n/a	n/a
S96T001527 1			DSC Exotherm using Mettler	Joules/g	112.8	n/a	13.50	2.550e1	1.950e1	61.5	n/a	n/a	n/a
S96T001527			DSC Exotherm using Mettler	Joules/g	111.4	n/a	0.00e+00	1.000e3	5.000e2	200	n/a	n/a	n/a
S96T001527			Bulk Density of Sample	g/mL	n/a	n/a	1.500	n/a	n/a	n/a	n/a	5.000e-1	n/a

Control Sample: Control Sample

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001530			% Water by TGA on Perkin Elmer	%	99.24	n/a	32.71	3.432e1	3.352e1	4.80	n/a	n/a	n/a
S96T001530			DSC Exotherm on Perkin Elmer	Joules/g	101.6	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T001530			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T001531	F		Alpha of Digested Solid	uCi/g	102.3	<4.910e-2	2.630	2.570e0	2.600e0	2.31	93.59	4.300e-2	9.54E+00
S96T001531	F		Am-241 by Extraction	uCi/g	90.60	<1.730e-2	8.84e-01	1.100e0	9.920e-1	21.8	n/a	6.100e-2	2.24E+00
S96T001531	F		Cobalt-60 by GEA	uCi/g	101.4	<2.870e-1	<4.96e-01	<4.35e-1	n/a	n/a	n/a	4.960e-1	n/a
S96T001531	F		Cesium-137 by GEA	uCi/g	99.11	<8.640e-1	6.61e+02	6.250e2	6.430e2	5.60	n/a	n/a	0.940
S96T001531	F		Pu-239/240 by TRU-SPEC Resin	uCi/g	103.7	<1.550e-2	1.270	1.210e0	1.240e0	4.84	n/a	7.600e-2	1.37E+00
S96T001531	F		Strontium-89/90 High Level	uCi/g	104.1	<1.200e-1	6.03e+02	5.890e2	5.960e2	2.35	n/a	2.830e-1	6.65E-01
S96T001531	F		Technetium-99 Liq. Scint.	uCi/g	104.5	<1.420e-2	<1.43e-02	1.740e-2	n/a	n/a	n/a	1.400e-2	7.09E+00

Decanted Supernate (Liquid Grab Sludge): Decanted Supernate (Liquid Grab Sludge)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001528			% Water by Gravimetric	%	98.14	n/a	76.70	7.680e1	7.675e1	0.13	n/a	1.000e-1	n/a
S96T001528			Specific Gravity	Sp.G.	97.74	n/a	1.230	1.246e0	1.238e0	1.29	n/a	1.000e-3	n/a

Filtered Centrifuged Solids: Filtered Centrifuged Solids

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001537			% Water by TGA on Perkin Elmer	%	99.24	n/a	22.14	2.607e1	2.411e1	16.3	n/a	n/a	n/a
S96T001537			DSC Exotherm on Perkin Elmer	Joules/g	101.6	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T001537			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T001538			TOC by Persulfate/Coulometry	ug/g	92.36	1.600	1.48e+04	1.640e4	1.560e4	10.3	84.80	40.00	n/a
S96T001538			TIC by Acid/Coulometry	ug/g	99.83	5.00e-01	2.54e+04	2.530e4	2.540e4	0.39	102.1	5.000	n/a
S96T001539			% Water by Gravimetric	%	99.32	n/a	27.10	2.310e1	2.510e1	15.9	n/a	1.000e-2	n/a
S96T001540			pH on SST Samples	pH	n/a	n/a	10.21	1.018e1	1.020e1	0.29	n/a	1.000e-2	n/a
S96T001541	F		Alpha of Digested Solid	uCi/g	102.3	<4.910e-2	3.120	3.310e0	3.215e0	5.91	94.43	4.800e-2	9.29E+00
S96T001541	F		Am-241 by Extraction	uCi/g	90.60	<1.730e-2	1.150	1.560e0	1.355e0	30.3	n/a	7.400e-2	1.69E+00
S96T001541	F		Cobalt-60 by GEA	uCi/g	101.4	<2.870e-1	<5.48e-01	<5.72e-1	n/a	n/a	n/a	5.480e-1	n/a
S96T001541	F		Cesium-137 by GEA	uCi/g	99.11	<8.640e-1	6.16e+02	6.710e2	6.436e2	8.55	n/a	n/a	1.02

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INTERIM

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001541		F	Pu-239/240 by TRU-SPEC Resin	uCi/g	103.7	<1.550e-2	1.420	1.480e0	1.450e0	4.14	n/a	8.100e-2	1.42E+00
S96T001541		F	Strontium-89/90 High Level	uCi/g	104.1	<1.200e-1	6.65e+02	7.210e2	6.930e2	8.08	n/a	2.860e-1	6.36E-01
S96T001541		F	Technetium-99 Liq. Scint.	uCi/g	104.5	<1.420e-2	<1.54e-02	1.750e-2	n/a	n/a	n/a	1.500e-2	7.12E+00
S96T001542		A	Silver -ICP-Acid Digest	ug/g	89.40	<1.000e-2	2.50e+03	1.510e3	2.000e3	49.4	n/a	6.140	n/a
S96T001542		A	Aluminium -ICP-Acid Digest	ug/g	91.00	1.17e-01	6.20e+04	5.440e4	5.820e4	13.1	n/a	30.70	n/a
S96T001542		A	Arsenic -ICP-Acid Digest	ug/g	94.00	<1.000e-1	< 61.40	<5.91e1	n/a	n/a	84.70	61.40	n/a
S96T001542		A	Boron -ICP-Acid Digest	ug/g	97.40	5.88e-01	59.20	7.210e1	6.565e1	19.6	87.82	30.70	n/a
S96T001542		A	Barium -ICP-Acid Digest	ug/g	94.00	<5.000e-2	3.79e+02	3.300e2	3.545e2	13.8	85.52	30.70	n/a
S96T001542		A	Beryllium -ICP-Acid Digest	ug/g	103.6	<5.000e-3	< 3.070	<2.95e0	n/a	n/a	91.70	3.070	n/a
S96T001542		A	Bismuth -ICP-Acid Digest	ug/g	89.60	<1.000e-1	< 61.40	<5.91e1	n/a	n/a	86.10	61.40	n/a
S96T001542		A	Calcium -ICP-Acid Digest	ug/g	91.20	<1.000e-1	1.17e+03	1.180e3	1.180e3	0.85	80.76	61.40	n/a
S96T001542		A	Cadmium -ICP-Acid Digest	ug/g	89.20	<5.000e-3	37.90	3.300e1	3.545e1	13.8	86.06	3.070	n/a
S96T001542		A	Cerium -ICP-Acid Digest	ug/g	96.60	<1.000e-1	2.42e+02	2.330e2	2.375e2	3.79	91.20	61.40	n/a
S96T001542		A	Cobalt -ICP-Acid Digest	ug/g	91.80	<2.000e-2	12.30	<1.18e1	n/a	n/a	88.10	12.30	n/a
S96T001542		A	Chromium -ICP-Acid Digest	ug/g	90.80	<1.000e-2	7.30e+02	6.600e2	6.950e2	10.1	84.36	6.140	n/a
S96T001542		A	Copper -ICP-Acid Digest	ug/g	91.60	1.10e-02	93.70	8.040e1	8.705e1	15.3	84.82	6.140	n/a
S96T001542		A	Iron -ICP-Acid Digest	ug/g	91.60	<5.000e-2	8.31e+04	7.150e4	7.730e4	15.0	n/a	30.70	n/a
S96T001542		A	Potassium -ICP-Acid Digest	ug/g	94.00	<5.000e-1	9.05e+02	6.440e2	7.745e2	33.7	77.82	307.0	n/a
S96T001542		A	Lanthanum -ICP-Acid Digest	ug/g	93.80	<5.000e-2	80.30	7.200e1	7.615e1	10.9	88.08	30.70	n/a
S96T001542		A	Lithium -ICP-Acid Digest	ug/g	94.20	<1.000e-2	< 6.140	<5.91e0	n/a	n/a	86.90	6.140	n/a
S96T001542		A	Magnesium -ICP-Acid Digest	ug/g	86.00	<1.000e-1	3.21e+02	2.830e2	3.020e2	12.6	79.10	61.40	n/a
S96T001542		A	Manganese -ICP-Acid Digest	ug/g	90.20	<1.000e-2	2.28e+03	2.000e3	2.140e3	13.1	78.58	6.140	n/a
S96T001542		A	Molybdenum -ICP-Acid Digest	ug/g	90.80	<5.000e-2	< 30.70	<2.95e1	n/a	n/a	86.80	30.70	n/a
S96T001542		A	Sodium -ICP-Acid Digest	ug/g	103.2	8.79e-01	1.40e+05	1.290e5	1.340e5	8.18	n/a	61.40	n/a
S96T001542		A	Neodymium -ICP-Acid Digest	ug/g	93.40	<1.000e-1	1.92e+02	1.760e2	1.840e2	8.70	87.22	61.40	n/a
S96T001542		A	Nickel -ICP-Acid Digest	ug/g	92.00	<2.000e-2	7.70e+02	6.940e2	7.320e2	10.4	86.38	12.30	n/a
S96T001542		A	Phosphorus -ICP-Acid Digest	ug/g	94.00	<2.000e-1	2.75e+03	2.500e3	2.620e3	9.52	57.92	123.0	n/a
S96T001542		A	Lead -ICP-Acid Digest	ug/g	86.20	<1.000e-1	2.90e+03	2.540e3	2.720e3	13.2	74.32	61.40	n/a
S96T001542		A	Sulfur -ICP-Acid Digest	ug/g	89.20	<1.000e-1	1.40e+03	1.140e3	1.270e3	20.5	74.82	61.40	n/a
S96T001542		A	Antimony -ICP-Acid Digest	ug/g	93.00	<6.000e-2	< 36.90	<3.54e1	n/a	n/a	89.70	36.90	n/a
S96T001542		A	Selenium -ICP-Acid Digest	ug/g	88.00	<1.000e-1	< 61.40	<5.91e1	n/a	n/a	84.70	61.40	n/a
S96T001542		A	Silicon -ICP-Acid Digest	ug/g	129.4	8.36e-01	3.81e+04	2.190e4	3.000e4	54.0	n/a	30.70	n/a
S96T001542		A	Samarium -ICP-Acid Digest	ug/g	91.80	<1.000e-1	< 61.40	<5.91e1	n/a	n/a	87.90	61.40	n/a
S96T001542		A	Strontium -ICP-Acid Digest	ug/g	92.20	<1.000e-2	25.60	2.290e1	2.425e1	11.1	86.16	6.140	n/a
S96T001542		A	Titanium-ICP-Acid Digest	ug/g	86.00	<1.000e-2	1.39e+02	1.220e2	1.305e2	13.0	80.10	6.140	n/a
S96T001542		A	Thallium -ICP-Acid Digest	ug/g	86.60	<2.000e-1	<1.23e+02	<1.18e2	n/a	n/a	82.10	123.0	n/a
S96T001542		A	Uranium -ICP-Acid Digest	ug/g	90.50	<5.000e-1	8.56e+02	1.140e3	9.980e2	28.5	80.09	307.0	n/a
S96T001542		A	Vanadium -ICP-Acid Digest	ug/g	90.60	<5.000e-2	< 30.70	<2.95e1	n/a	n/a	86.50	30.70	n/a
S96T001542		A	Zinc -ICP-Acid Digest	ug/g	87.00	1.20e-02	60.60	4.980e1	5.520e1	19.6	84.44	6.140	n/a
S96T001542		A	Zirconium -ICP-Acid Digest	ug/g	98.80	<1.000e-2	9.42e+02	1.380e3	1.160e3	37.7	76.00	6.140	n/a
S96T001543		W	Chloride-IC-Dionex 4000i/4500	ug/g	92.41	<1.700e-2	2.89e+05	<1.42e4	n/a	n/a	99.37	1.420e4	n/a
S96T001543		W	Fluoride-IC-Dionex 4000i/4500	ug/g	100.7	<1.300e-2	1.98e+04	<1.09e4	n/a	n/a	89.32	1.090e4	n/a
S96T001543		W	Nitrite-IC - Dionex 4000i/4500	ug/g	93.43	<1.070e-1	<8.96e+04	<8.96e4	n/a	n/a	94.71	8.960e4	n/a
S96T001543		W	Nitrate by IC-Dionex4000i/4500	ug/g	93.48	1.630e-1	2.90e+07	2.760e7	2.830e7	4.95	88.76	1.170e5	n/a
S96T001543		W	Oxalate by IC - Dionex 4000i	ug/g	97.09	<1.050e-1	5.36e+04	5.210e4	5.290e4	2.84	99.03	4.500e4	n/a
S96T001543		W	Phosphate-IC-Dionex 4000i/4500	ug/g	95.24	<1.190e-1	<9.96e+04	<9.96e4	n/a	n/a	98.17	9.960e4	n/a
S96T001543		W	Sulfate by IC-Dionex4000i/4500	ug/g	96.20	<1.360e-1	1.38e+05	<1.14e5	n/a	n/a	95.88	1.140e5	n/a

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INTERIM

Interstitial Liquid: Interstitial Liquid

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001544			TOC by Persulfate/Coulometry	ug/mL	92.36	1.600	1.87e+03	1.500e3	1.680e3	22.0	n/a	40.00	n/a
S96T001544			Tot. Organic Carbon by Coul.	ug/mL	100.0	1.00e-01	2.32e+03	2.310e3	2.320e3	0.43	95.10	55.00	n/a
S96T001544			% Water by TGA using Mettler	%	100.1	n/a	58.94	5.709e1	5.802e1	3.19	n/a	n/a	n/a
S96T001544			pH Direct	pH	n/a	n/a	10.10	n/a	n/a	n/a	n/a	1.000e-2	n/a
S96T001544			DSC Exotherm on Perkin Elmer	Joules/g	99.12	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T001544			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T001544			Strontium-89/90 High Level	uCi/mL	97.56	1.20e-02	8.40e-01	7.820e-1	8.110e-1	7.15	n/a	1.700e-2	5.37E+00
S96T001544			Pu-239/240 by TRU-SPEC Resin	uCi/mL	99.47	<2.610e-2	8.67e-01	8.390e-1	8.530e-1	3.28	n/a	6.500e-2	2.18E+00
S96T001544		D	Silver-ICP-Acid Dil.	ug/mL	97.80	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	90.30	4.010	n/a
S96T001544		D	Aluminium-ICP-Acid Dil.	ug/mL	100.0	<5.000e-2	< 20.10	<2.01e1	n/a	n/a	95.30	20.10	n/a
S96T001544		D	Arsenic-ICP-Acid Dil.	ug/mL	103.0	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	104.2	40.10	n/a
S96T001544		D	Boron-ICP-Acid Dil.	ug/mL	103.2	<5.000e-2	< 20.10	<2.01e1	n/a	n/a	100.3	20.10	n/a
S96T001544		D	Barium-ICP-Acid Dil.	ug/mL	104.0	<5.000e-2	< 20.10	<2.01e1	n/a	n/a	102.0	20.10	n/a
S96T001544		D	Beryllium-ICP-Acid Dil.	ug/mL	105.6	<5.000e-3	< 2.000	<2.00e0	n/a	n/a	102.0	2.000	n/a
S96T001544		D	Bismuth-ICP-Acid Dil.	ug/mL	101.4	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	89.00	40.10	n/a
S96T001544		D	Calcium-ICP-Acid Dil.	ug/mL	103.2	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	107.5	40.10	n/a
S96T001544		D	Cadmium-ICP-Acid Dil.	ug/mL	99.60	<5.000e-3	< 2.000	<2.00e0	n/a	n/a	94.00	2.000	n/a
S96T001544		D	Cerium-ICP-Acid Dil.	ug/mL	105.0	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	102.0	40.10	n/a
S96T001544		D	Cobalt-ICP-Acid Dil.	ug/mL	100.0	<2.000e-2	< 8.020	<8.02e0	n/a	n/a	93.30	8.020	n/a
S96T001544		D	Chromium-ICP-Acid Dil.	ug/mL	98.80	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	93.50	4.010	n/a
S96T001544		D	Copper-ICP-Acid Dil.	ug/mL	105.0	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	102.3	4.010	n/a
S96T001544		D	Iron-ICP-Acid Dil.	ug/mL	102.0	<5.000e-2	< 20.10	<2.01e1	n/a	n/a	103.3	20.10	n/a
S96T001544		D	Potassium-ICP-Acid Dil.	ug/mL	101.4	<5.000e-1	5.92e+02	5.660e2	5.790e2	4.49	89.90	200.0	n/a
S96T001544		D	Lanthanum-ICP-Acid Dil.	ug/mL	102.6	<5.000e-2	< 20.10	<2.01e1	n/a	n/a	100.5	20.10	n/a
S96T001544		D	Lithium-ICP-Acid Dil.	ug/mL	106.4	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	98.50	4.010	n/a
S96T001544		D	Magnesium-ICP-Acid Dil.	ug/mL	97.00	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	91.30	40.10	n/a
S96T001544		D	Manganese-ICP-Acid Dil.	ug/mL	99.40	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	95.80	4.010	n/a
S96T001544		D	Molybdenum-ICP-Acid Dil.	ug/mL	100.2	<5.000e-2	22.30	2.160e1	2.195e1	3.19	94.00	20.10	n/a
S96T001544		D	Sodium-ICP-Acid Dil.	ug/mL	105.0	<1.000e-1	1.10e+05	1.100e5	1.100e5	0.00	130.9	40.10	n/a
S96T001544		D	Neodymium-ICP-Acid Dil.	ug/mL	108.4	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	112.5	40.10	n/a
S96T001544		D	Nickel-ICP-Acid Dil.	ug/mL	99.40	<2.000e-2	14.80	1.560e1	1.520e1	5.26	93.30	8.020	n/a
S96T001544		D	Phosphorus-ICP-Acid Dil.	ug/mL	102.0	<2.000e-1	3.52e+02	3.720e2	3.620e2	5.52	102.0	80.20	n/a
S96T001544		D	Lead-ICP-Acid Dil.	ug/mL	99.40	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	96.50	40.10	n/a
S96T001544		D	Sulfer-ICP-Acid Dil.	ug/mL	99.40	<1.000e-1	2.37e+03	2.280e3	2.320e3	3.87	70.50	40.10	n/a
S96T001544		D	Antimony-ICP-Acid Dil.	ug/mL	96.80	<6.000e-2	< 24.10	<2.41e1	n/a	n/a	91.80	24.10	n/a
S96T001544		D	Selenium-ICP-Acid Dil.	ug/mL	106.0	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	113.7	40.10	n/a
S96T001544		D	Silicon-ICP-Acid Dil.	ug/mL	95.60	<5.000e-2	< 20.10	<2.01e1	n/a	n/a	94.00	20.10	n/a
S96T001544		D	Samarium-ICP-Acid Dil.	ug/mL	105.8	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	107.5	40.10	n/a
S96T001544		D	Strontium-ICP-Acid Dil.	ug/mL	103.4	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	101.3	4.010	n/a
S96T001544		D	Titanium-ICP-Acid Dil.	ug/mL	99.00	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	95.50	4.010	n/a
S96T001544		D	Thallium-ICP-Acid Dil.	ug/mL	97.20	<2.000e-1	< 80.20	<8.02e1	n/a	n/a	89.80	80.20	n/a
S96T001544		D	Uranium-ICP-Acid Dil.	ug/mL	100.0	<5.000e-1	1.54e+03	1.640e3	1.590e3	6.29	108.4	200.0	n/a
S96T001544		D	Vanadium-ICP-Acid Dil.	ug/mL	102.0	<5.000e-2	< 20.10	<2.01e1	n/a	n/a	97.50	20.10	n/a
S96T001544		D	Zinc-ICP-Acid Dil.	ug/mL	100.0	<1.000e-2	5.250	5.980e0	5.615e0	13.0	92.70	4.010	n/a
S96T001544		D	Zirconium-ICP-Acid Dil.	ug/mL	101.4	<1.000e-2	3.72e+02	3.780e2	3.750e2	1.60	101.1	4.010	n/a
S96T001544			Sulfate by IC-Dionex4000i/4500	ug/mL	99.53	<1.360e-1	6.83e+03	6.860e3	6.850e3	0.44	n/a	151.0	n/a
S96T001544			Phosphate-IC-Dionex 4000i/4500	ug/mL	100.7	<1.190e-1	5.85e+02	5.470e2	5.659e2	6.71	n/a	132.1	n/a
S96T001544			Oxalate by IC - Dionex 4000i	ug/mL	100.2	<1.050e-1	2.19e+03	2.230e3	2.210e3	1.81	n/a	116.7	n/a

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Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001544			Nitrate-IC - Dionex 4000i/4500	ug/mL	99.67	2.38e-01	9.43e+02	9.540e2	9.485e2	1.16	n/a	155.5	n/a
S96T001544			Nitrite-IC - Dionex 4000i/4500	ug/mL	98.61	<1.070e-1	2.59e+04	2.620e4	2.600e4	1.15	n/a	118.9	n/a
S96T001544			Fluoride-IC-Dionex 4000i/4500	ug/mL	98.81	<1.300e-2	1.97e+02	1.990e2	1.982e2	1.01	n/a	14.44	n/a
S96T001544			Chloride-IC-Dionex 4000i/4500	ug/mL	93.17	<1.700e-2	5.84e+02	5.880e2	5.861e2	0.68	n/a	18.89	n/a
S96T001544			Cesium-137 by GEA	uCi/mL	100.4	<6.060e-2	1.59e+02	1.570e2	1.580e2	1.27	n/a	n/a	0.550
S96T001544			Cobalt-60 by GEA	uCi/mL	98.94	<2.160e-2	<3.38e-02	<2.27e-2	n/a	n/a	n/a	3.400e-2	n/a

Potential Organic Layer: Potential Organic Layer

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001545			Pu-239/240 by TRU-SPEC Resin	uCi/mL	96.33	<3.030e-5	4.26e-03	4.210e-3	4.240e-3	1.18	n/a	3.060e-4	2.23E+00

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Table 3: Interim Results for Tank 241-C-106 Grab Samples
C-106 GRAB

RISER: 1
SEGMENT #: 6C-96-5

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000538			% Water by Gravimetric	%	102.0	n/a	81.40	8.140e1	8.140e1	0.00	n/a	1.000e-2	n/a
S96T000538			TOC by Persulfate/Coulometry	ug/mL	96.70	9.900	2.30e+03	2.180e3	2.240e3	5.36	n/a	40.00	n/a
S96T000538			Tot. Organic Carbon by Coul.	ug/mL	97.03	<5.000	3.36e+03	3.240e3	3.300e3	3.64	95.40	55.00	n/a
S96T000538			Tot. Inorg. Carbon by Coul.	ug/mL	103.0	<5.000	2.00e+04	2.020e4	2.010e4	1.00	81.90	105.0	n/a
S96T000538			% Water by TGA using Mettler	%	103.0	n/a	80.91	8.084e1	8.088e1	0.09	n/a	n/a	n/a
S96T000538			Specific Gravity	Sp.G.	98.88	n/a	1.155	1.155e0	1.155e0	0.00	n/a	1.000e-2	n/a
S96T000538			pH Direct	pH	n/a	n/a	10.10	1.008e1	1.009e1	6.94	n/a	1.000e-2	n/a
S96T000538			Ammonia by ISE-Std Additions	ug/mL	96.84	3.100	< 5.000	<5	n/a	n/a	n/a	5.000	n/a
S96T000538			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T000538			DSC Exotherm using Mettler	Joules/g	96.66	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T000538		D	Silver-ICP-Acid Dil.	ug/mL	100.8	<1.000e-2	11.20	9.690e0	1.045e1	14.5	80.10	4.010	n/a
S96T000538		D	Aluminium-ICP-Acid Dil.	ug/mL	98.40	<5.000e-2	< 20.00	<2.00e1	n/a	n/a	97.40	20.10	n/a
S96T000538		D	Arsenic-ICP-Acid Dil.	ug/mL	103.8	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	100.8	40.10	n/a
S96T000538		D	Boron-ICP-Acid Dil.	ug/mL	100.4	<5.000e-2	< 20.00	<2.00e1	n/a	n/a	101.6	20.10	n/a
S96T000538		D	Barium-ICP-Acid Dil.	ug/mL	102.6	<5.000e-2	< 20.00	<2.00e1	n/a	n/a	98.60	20.10	n/a
S96T000538		D	Beryllium-ICP-Acid Dil.	ug/mL	104.0	<5.000e-3	< 2.000	<2.00e0	n/a	n/a	101.6	2.000	n/a
S96T000538		D	Bismuth-ICP-Acid Dil.	ug/mL	101.8	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	100.8	40.10	n/a
S96T000538		D	Calcium-ICP-Acid Dil.	ug/mL	104.2	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	105.3	40.10	n/a
S96T000538		D	Cadmium-ICP-Acid Dil.	ug/mL	102.8	<5.000e-3	< 2.000	<2.00e0	n/a	n/a	101.8	2.000	n/a
S96T000538		D	Cerium-ICP-Acid Dil.	ug/mL	105.6	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	105.1	40.10	n/a
S96T000538		D	Cobalt-ICP-Acid Dil.	ug/mL	103.4	<2.000e-2	< 8.020	<8.02e0	n/a	n/a	101.8	8.020	n/a
S96T000538		D	Chromium-ICP-Acid Dil.	ug/mL	104.0	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	102.8	4.010	n/a
S96T000538		D	Copper-ICP-Acid Dil.	ug/mL	104.2	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	99.60	4.010	n/a
S96T000538		D	Iron-ICP-Acid Dil.	ug/mL	103.2	<5.000e-2	< 20.00	<2.00e1	n/a	n/a	102.3	20.10	n/a
S96T000538		D	Potassium-ICP-Acid Dil.	ug/mL	103.4	<5.000e-1	8.01e+02	6.580e2	7.295e2	19.6	67.30	200.0	n/a
S96T000538		D	Lanthanum-ICP-Acid Dil.	ug/mL	103.6	<5.000e-2	< 20.00	<2.00e1	n/a	n/a	101.1	20.10	n/a
S96T000538		D	Lithium-ICP-Acid Dil.	ug/mL	99.60	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	97.90	4.010	n/a
S96T000538		D	Magnesium-ICP-Acid Dil.	ug/mL	97.60	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	94.60	40.10	n/a
S96T000538		D	Manganese-ICP-Acid Dil.	ug/mL	100.6	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	98.10	4.010	n/a
S96T000538		D	Molybdenum-ICP-Acid Dil.	ug/mL	103.8	<5.000e-2	29.30	2.500e1	2.715e1	15.8	101.5	20.10	n/a
S96T000538		D	Sodium-ICP-Acid Dil.	ug/mL	98.20	<1.000e-1	1.07e+05	9.680e4	1.020e5	10.0	n/a	40.10	n/a
S96T000538		D	Neodymium-ICP-Acid Dil.	ug/mL	105.2	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	103.3	40.10	n/a
S96T000538		D	Nickel-ICP-Acid Dil.	ug/mL	101.6	<2.000e-2	18.40	1.570e1	1.705e1	15.8	100.0	8.020	n/a
S96T000538		D	Phosphorus-ICP-Acid Dil.	ug/mL	102.2	<2.000e-1	3.24e+02	3.000e2	3.120e2	7.69	90.20	80.20	n/a
S96T000538		D	Lead-ICP-Acid Dil.	ug/mL	102.0	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	105.1	40.10	n/a
S96T000538		D	Sulfer-ICP-Acid Dil.	ug/mL	98.80	<1.000e-1	3.06e+03	2.710e3	2.880e3	12.1	n/a	40.10	n/a
S96T000538		D	Antimony-ICP-Acid Dil.	ug/mL	96.20	<6.000e-2	< 24.10	<2.41e1	n/a	n/a	98.10	24.10	n/a
S96T000538		D	Selenium-ICP-Acid Dil.	ug/mL	98.40	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	101.6	40.10	n/a
S96T000538		D	Silicon-ICP-Acid Dil.	ug/mL	99.00	<5.000e-2	26.20	2.300e1	2.460e1	13.0	98.30	20.10	n/a
S96T000538		D	Samarium-ICP-Acid Dil.	ug/mL	100.4	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	98.60	40.10	n/a
S96T000538		D	Strontium-ICP-Acid Dil.	ug/mL	101.8	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	99.10	4.010	n/a
S96T000538		D	Titanium-ICP-Acid Dil.	ug/mL	100.4	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	98.60	4.010	n/a
S96T000538		D	Thallium-ICP-Acid Dil.	ug/mL	99.00	<2.000e-1	< 80.20	<8.02e1	n/a	n/a	97.60	80.20	n/a

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Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000538		D	Uranium-ICP-Acid Dil.	ug/mL	99.20	<5.000e-1	1.87e+03	1.770e3	1.820e3	5.49	56.65	200.0	n/a
S96T000538		D	Vanadium-ICP-Acid Dil.	ug/mL	103.4	<5.000e-2	< 20.00	<2.00e1	n/a	n/a	102.3	20.10	n/a
S96T000538		D	Zinc-ICP-Acid Dil.	ug/mL	101.6	<1.000e-2	5.090	4.050e0	4.570e0	22.8	101.8	4.010	n/a
S96T000538		D	Zirconium-ICP-Acid Dil.	ug/mL	102.0	<1.000e-2	4.45e+02	4.040e2	4.245e2	9.66	82.70	4.010	n/a
S96T000538			Sulfate by IC-Dionex4000i/4500	ug/mL	99.53	<1.360e-1	7.46e+03	7.860e3	7.660e3	5.22	101.0	1.390e3	n/a
S96T000538			Phosphate-IC-Dionex 4000i/4500	ug/mL	103.1	<1.190e-1	<1.21e+03	<1.21e3	n/a	n/a	103.7	1.210e3	n/a
S96T000538			Oxalate by IC - Dionex 4000i	ug/mL	105.3	<1.050e-1	3.65e+03	3.700e3	3.680e3	1.36	108.4	1.070e3	n/a
S96T000538			Nitrate-IC - Dionex 4000i/4500	ug/mL	102.1	<1.400e-1	2.04e+03	1.580e3	1.810e3	25.4	103.1	1.430e3	n/a
S96T000538			Nitrite-IC - Dionex 4000i/4500	ug/mL	103.5	<1.070e-1	2.91e+04	2.870e4	2.890e4	1.38	106.3	1.090e3	n/a
S96T000538			Fluoride-IC-Dionex 4000i/4500	ug/mL	100.7	<1.300e-2	3.17e+02	3.470e2	3.320e2	9.04	96.61	132.6	n/a
S96T000538			Chloride-IC-Dionex 4000i/4500	ug/mL	102.5	5.00e-02	2.48e+02	4.280e2	3.379e2	53.3	102.0	173.4	n/a
S96T000539			Technetium-99 Liq. Scint.	uCi/mL	101.8	<3.540e-3	8.52e-02	9.230e-2	8.870e-2	8.00	n/a	4.000e-3	3.03E+00
S96T000539			Strontium-89/90 High Level	uCi/mL	95.12	8.00e-03	3.69e-01	3.620e-1	3.650e-1	1.92	n/a	2.000e-3	3.46E+00
S96T000539			Pu-239/240 by TRU-SPEC Resin	uCi/mL	88.28	<3.120e-3	7.40e-01	6.920e-1	7.160e-1	6.70	n/a	3.100e-2	1.65E+00
S96T000539			Cesium-137 by GEA	uCi/mL	101.5	<5.810e-5	1.08e+02	1.070e2	1.075e2	0.93	n/a	n/a	0.210
S96T000539			Cobalt-60 by GEA	uCi/mL	99.23	<1.990e-5	<5.71e-03	<6.13e-3	n/a	n/a	n/a	6.000e-3	n/a
S96T000539			Am-241 by Extraction	uCi/mL	80.13	<1.150e-2	1.50e-02	1.210e-2	1.350e-2	21.4	n/a	1.200e-2	4.65E+00
S96T000539			Alpha in Liquid Samples	uCi/mL	102.6	<3.840e-3	1.150	1.140e0	1.145e0	0.87	108.9	1.000e-2	5.03E+00

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Table 3: Interim Results for Tank 241-C-106 Grab Samples
C-106 GRAB

RISER: 1
SEGMENT #: 6C-96-7

SEGMENT PORTION: Centrifuged Solids (Grab Sample)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000542			% Water by Gravimetric	%	98.14	n/a	9.800	1.000e1	9.900e0	0.22	n/a	1.000e-2	n/a
S96T000542			Volume % Solids	%	n/a	n/a	69.50	n/a	n/a	n/a	n/a	n/a	n/a
S96T000542			% Water by TGA on Perkin Elmer	%	98.68	n/a	8.040	8.510e0	8.275e0	5.68	n/a	n/a	n/a
S96T000542			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	1.22e+02	9.714e1	1.096e2	22.8	n/a	n/a	n/a
S96T000542			DSC Exotherm using Mettler	Joules/g	113.5	n/a	1.12e+02	8.910e1	1.005e2	22.8	n/a	n/a	n/a
S96T000542			Bulk Density of Sample	g/mL	n/a	n/a	1.710	n/a	n/a	n/a	n/a	5.000e-1	n/a

Control Sample: Control Sample

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000543			% Water by TGA on Perkin Elmer	%	99.41	n/a	29.76	3.247e1	3.112e1	8.71	n/a	n/a	n/a
S96T000543			DSC Exotherm on Perkin Elmer	Joules/g	95.82	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T000543			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T000546	F		Alpha of Digested Solid	uCi/g	118.0	<5.570e-2	2.880	2.570e0	2.725e0	11.4	106.4	7.200e-2	1.03E+01
S96T000546	F		Am-241 by Extraction	uCi/g	106.1	<2.540e-2	1.010	1.230e0	1.120e0	19.6	n/a	8.100e-2	3.4
S96T000546	F		Cobalt-60 by GEA	uCi/g	96.66	<1.520e-1	<2.33e-01	<2.27e-1	n/a	n/a	n/a	2.330e-1	n/a
S96T000546	F		Cesium-137 by GEA	uCi/g	96.08	<2.040e-1	4.03e+02	4.170e2	4.099e2	3.41	n/a	n/a	0.580
S96T000546	F		Pu-239/240 by TRU-SPEC Resin	uCi/g	92.13	<3.430e-2	1.520	1.390e0	1.455e0	8.93	n/a	1.130e-1	2.03E+00
S96T000546	F		Strontium-89/90 High Level	uCi/g	92.68	6.20e-02	3.32e+02	3.420e2	3.370e2	2.97	n/a	5.300e-2	5.19E-01
S96T000546	F		Technetium-99 Liq. Scint.	uCi/g	99.47	<3.580e-2	5.51e-02	4.480e-2	5.000e-2	20.6	n/a	3.500e-2	5.81E+00

Decanted Supernate (Liquid Grab Sludge): Decanted Supernate (Liquid Grab Sludge)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000544			% Water by Gravimetric	%	98.65	n/a	78.80	7.880e1	7.880e1	0.00	n/a	1.000e-2	n/a
S96T000544			Tot. Organic Carbon by Coul.	ug/mL	100.0	1.00e-01	2.07e+03	2.020e3	2.040e3	2.44	100.0	55.00	n/a
S96T000544			Specific Gravity	Sp.G.	101.1	n/a	1.200	1.194e0	1.197e0	0.50	n/a	1.000e-3	n/a
S96T000544			pH Direct	pH	n/a	n/a	10.09	n/a	n/a	n/a	n/a	1.000e-2	n/a
S96T000544			Strontium-89/90 High Level	uCi/mL	101.6	<2.060e-3	9.68e-01	8.930e-1	9.300e-1	8.06	n/a	4.000e-3	2.08E+00
S96T000544			Pu-239/240 by TRU-SPEC Resin	uCi/mL	92.39	<3.820e-3	7.69e-01	7.560e-1	7.620e-1	1.70	n/a	3.600e-2	1.96E+00

Filtered Centrifuged Solids: Filtered Centrifuged Solids

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000551			% Water by TGA using Mettler	%	102.2	n/a	9.440	1.611e1	1.277e1	52.2	n/a	n/a	n/a
S96T000551			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	3.29e+02	3.209e2	3.249e2	2.46	n/a	n/a	n/a
S96T000551			DSC Exotherm using Mettler	Joules/g	113.5	n/a	2.87e+02	2.799e2	2.834e2	2.47	n/a	n/a	n/a
S96T000552			TOC by Persulfate/Coulometry	ug/g	92.03	3.100	2.47e+04	2.920e4	2.700e4	16.7	n/a	40.00	n/a
S96T000552			TIC by Acid/Coulometry	ug/g	97.84	8.00e-01	2.56e+04	2.760e4	2.660e4	7.52	n/a	5.000	n/a
S96T000553			% Water by Gravimetric	%	98.14	n/a	18.90	1.920e1	1.905e1	0.38	n/a	1.000e-2	n/a
S96T000554			pH on SST Samples	pH	n/a	n/a	10.40	1.050e1	1.045e1	0.96	n/a	1.000e-2	n/a
S96T000555	F		Alpha of Digested Solid	uCi/g	118.0	<5.570e-2	3.330	3.060e0	3.195e0	8.45	109.7	7.700e-2	9.94E+00
S96T000555	F		Am-241 by Extraction	uCi/g	106.1	<2.540e-2	1.330	1.220e0	1.275e0	8.63	n/a	9.600e-2	2.8

INTERIM

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000555		F	Cobalt-60 by GEA	uCi/g	98.05	<4.730e-1	0.00e+00	<5.71e-1	n/a	n/a	n/a	n/a	n/a
S96T000555		F	Cesium-137 by GEA	uCi/g	98.56	<9.170e-1	5.96e+02	6.220e2	6.090e2	4.27	n/a	n/a	17.0
S96T000555		F	Pu-239/240 by TRU-SPEC Resin	uCi/g	98.69	<3.560e-2	1.320	1.280e0	1.300e0	3.08	n/a	8.900e-2	2.09E+00
S96T000555		F	Strontium-89/90 High Level	uCi/g	92.68	6.20e-02	5.19e+02	5.230e2	5.210e2	0.77	n/a	1.140e-1	6.08E-01
S96T000555		F	Technetium-99 Liq. Scint.	uCi/g	99.47	<3.580e-2	4.09e-02	<3.53E-2	n/a	n/a	n/a	3.700e-2	6.26E+00
S96T000556		A	Silver -ICP-Acid Digest	ug/g	91.90	<1.000e-2	2.77e+03	2.020e3	2.400e3	31.3	n/a	11.00	n/a
S96T000556		A	Aluminium -ICP-Acid Digest	ug/g	96.60	1.18e-01	5.17e+04	4.420e4	4.800e4	15.6	1.38e+03	54.80	n/a
S96T000556		A	Arsenic -ICP-Acid Digest	ug/g	97.20	<1.000e-1	<1.10e+02	<9.43e1	n/a	n/a	95.60	110.0	n/a
S96T000556		A	Boron -ICP-Acid Digest	ug/g	108.8	5.40e-01	< 54.80	<4.72e1	n/a	n/a	99.40	54.80	n/a
S96T000556		A	Barium -ICP-Acid Digest	ug/g	97.60	<5.000e-2	3.04e+02	2.600e2	2.820e2	15.6	102.2	54.80	n/a
S96T000556		A	Beryllium -ICP-Acid Digest	ug/g	103.0	<5.000e-3	< 5.480	<4.72e0	n/a	n/a	98.40	5.480	n/a
S96T000556		A	Bismuth -ICP-Acid Digest	ug/g	92.40	<1.000e-1	<1.10e+02	<9.43e1	n/a	n/a	89.80	110.0	n/a
S96T000556		A	Calcium -ICP-Acid Digest	ug/g	100.2	4.59e-01	1.33e+03	1.120e3	1.220e3	17.1	91.02	110.0	n/a
S96T000556		A	Cadmium -ICP-Acid Digest	ug/g	94.60	<5.000e-3	33.30	2.710e1	3.020e1	20.5	94.16	5.480	n/a
S96T000556		A	Cerium -ICP-Acid Digest	ug/g	100.0	<1.000e-1	1.78e+02	1.740e2	1.760e2	2.27	106.1	110.0	n/a
S96T000556		A	Cobalt -ICP-Acid Digest	ug/g	98.40	<2.000e-2	< 21.90	<1.89e1	n/a	n/a	97.20	21.90	n/a
S96T000556		A	Chromium -ICP-Acid Digest	ug/g	97.00	1.70e-02	6.45e+02	5.520e2	5.985e2	15.5	107.3	11.00	n/a
S96T000556		A	Copper -ICP-Acid Digest	ug/g	92.80	2.60e-02	89.70	7.670e1	8.320e1	15.6	94.02	11.00	n/a
S96T000556		A	Iron -ICP-Acid Digest	ug/g	97.60	7.00e-02	6.87e+04	5.860e4	6.360e4	15.9	1.65e+03	54.80	n/a
S96T000556		A	Potassium -ICP-Acid Digest	ug/g	98.80	<5.000e-1	6.43e+02	5.880e2	6.155e2	8.94	118.1	548.0	n/a
S96T000556		A	Lanthanum -ICP-Acid Digest	ug/g	98.20	<5.000e-2	74.80	6.050e1	6.765e1	21.1	97.36	54.80	n/a
S96T000556		A	Lithium -ICP-Acid Digest	ug/g	95.80	<1.000e-2	< 11.00	<9.43e0	n/a	n/a	93.80	11.00	n/a
S96T000556		A	Magnesium -ICP-Acid Digest	ug/g	94.60	<1.000e-1	2.19e+02	1.870e2	2.030e2	15.8	95.58	110.0	n/a
S96T000556		A	Manganese -ICP-Acid Digest	ug/g	96.60	<1.000e-2	1.86e+03	1.590e3	1.720e3	15.7	136.5	11.00	n/a
S96T000556		A	Molybdenum -ICP-Acid Digest	ug/g	97.60	<5.000e-2	< 54.80	<4.72e1	n/a	n/a	96.00	54.80	n/a
S96T000556		A	Sodium -ICP-Acid Digest	ug/g	109.0	7.70e-01	1.61e+05	1.370e5	1.490e5	16.1	1.69e+03	110.0	n/a
S96T000556		A	Neodymium -ICP-Acid Digest	ug/g	98.00	<1.000e-1	1.39e+02	1.270e2	1.330e2	9.02	102.7	110.0	n/a
S96T000556		A	Nickel -ICP-Acid Digest	ug/g	97.20	<2.000e-2	6.45e+02	5.500e2	5.975e2	15.9	109.8	21.90	n/a
S96T000556		A	Phosphorus -ICP-Acid Digest	ug/g	99.80	<2.000e-1	2.58e+03	2.200e3	2.390e3	15.9	148.5	219.0	n/a
S96T000556		A	Lead -ICP-Acid Digest	ug/g	91.60	<1.000e-1	2.49e+03	2.150e3	2.320e3	14.7	148.3	110.0	n/a
S96T000556		A	Sulfur -ICP-Acid Digest	ug/g	95.60	<1.000e-1	1.39e+03	1.190e3	1.290e3	15.5	121.2	110.0	n/a
S96T000556		A	Antimony -ICP-Acid Digest	ug/g	96.60	<6.000e-2	< 65.70	<5.66e1	n/a	n/a	97.80	65.70	n/a
S96T000556		A	Selenium -ICP-Acid Digest	ug/g	97.80	<1.000e-1	<1.10e+02	<9.43e1	n/a	n/a	100.0	110.0	n/a
S96T000556		A	Silicon -ICP-Acid Digest	ug/g	135.2	2.27e-01	2.87e+04	2.470e4	2.670e4	15.0	736.3	54.80	n/a
S96T000556		A	Samarium -ICP-Acid Digest	ug/g	99.80	<1.000e-1	<1.10e+02	<9.43e1	n/a	n/a	101.4	110.0	n/a
S96T000556		A	Strontium -ICP-Acid Digest	ug/g	97.00	<1.000e-2	21.10	1.790e1	1.950e1	16.4	95.68	11.00	n/a
S96T000556		A	Titanium-ICP-Acid Digest	ug/g	91.60	<1.000e-2	1.20e+02	1.020e2	1.110e2	16.2	92.06	11.00	n/a
S96T000556		A	Thallium -ICP-Acid Digest	ug/g	88.60	<2.000e-1	<2.19e+02	<1.89e2	n/a	n/a	88.60	219.0	n/a
S96T000556		A	Uranium -ICP-Acid Digest	ug/g	94.40	<5.000e-1	8.30e+02	6.860e2	7.580e2	19.0	94.13	548.0	n/a
S96T000556		A	Vanadium -ICP-Acid Digest	ug/g	96.40	<5.000e-2	< 54.80	<4.72e1	n/a	n/a	95.80	54.80	n/a
S96T000556		A	Zinc -ICP-Acid Digest	ug/g	92.60	2.50e-02	39.60	3.520e1	3.740e1	11.8	93.38	11.00	n/a
S96T000556		A	Zirconium -ICP-Acid Digest	ug/g	104.2	<1.000e-2	49.30	3.940e1	4.435e1	22.3	151.7	11.00	n/a
S96T000557		W	Chloride-IC-Dionex 4000i/4500	ug/g	99.11	3.30e-02	1.72e+02	1.690e2	1.704e2	1.76	99.37	66.28	n/a
S96T000557		W	Fluoride-IC-Dionex 4000i/4500	ug/g	96.10	<1.300e-2	2.09e+02	1.980e2	2.036e2	5.41	109.0	50.69	n/a
S96T000557		W	Nitrite-IC - Dionex 4000i/4500	ug/g	97.74	<1.070e-1	1.35e+04	1.340e4	1.350e4	0.74	114.6	417.3	n/a
S96T000557		W	Nitrate by IC-Dionex4000i/4500	ug/g	97.72	1.440e-1	1.27e+03	1.250e3	1.260e3	1.59	103.3	545.4	n/a
S96T000557		W	Oxalate by IC - Dionex 4000i	ug/g	99.07	<1.050e-1	7.80e+04	7.700e4	7.750e4	1.29	110.4	409.3	n/a
S96T000557		W	Phosphate-IC-Dionex 4000i/4500	ug/g	100.2	<1.190e-1	9.29e+02	9.850e2	9.570e2	5.85	109.7	463.7	n/a
S96T000557		W	Sulfate by IC-Dionex4000i/4500	ug/g	97.94	<1.360e-1	4.12e+03	4.110e3	4.110e3	0.24	105.1	529.8	n/a

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INTERIM

Interstitial Liquid: Interstitial Liquid

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000545			TOC by Persulfate/Coulometry	ug/mL	96.00	5.000	2.42e+03	2.430e3	2.420e3	0.41	n/a	40.00	n/a
S96T000545			% Water by TGA on Perkin Elmer	%	102.0	n/a	34.27	3.653e1	3.540e1	6.38	n/a	n/a	n/a
S96T000545			DSC Exotherm on Perkin Elmer	Joules/g	95.82	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T000545			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T000545			Cesium-137 by GEA	uCi/mL	95.94	<4.940e-4	76.50	1.000e2	8.825e1	26.6	n/a	n/a	0.290
S96T000545			Cobalt-60 by GEA	uCi/mL	96.11	<6.530e-4	<7.50e-03	1.080e-2	n/a	n/a	n/a	8.000e-3	n/a

Potential Organic Layer: Potential Organic Layer

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001548			% Water by TGA using Mettler	%	103.9	n/a	34.16	3.578e1	3.497e1	4.63	n/a	n/a	n/a
S96T001548			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T001548			DSC Exotherm using Mettler	Joules/g	112.5	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a

INTERIM

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INTERIM

Table 3: Interim Results for Tank 241-C-106 Grab Samples
C-106 GRAB

RISER: 1
SEGMENT #: 6C-96-8

SEGMENT PORTION: Compatibility Study Mixture

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T002765			Specific Gravity	Sp.G.	101.2	n/a	9.80e-01	9.770e-1	9.780e-1	0.31	n/a	1.000e-2	n/a
S96T002765			pH Direct	pH	n/a	n/a	11.16	n/a	n/a	n/a	n/a	1.000e-2	n/a
S96T002766			% Water by TGA on Perkin Elmer	%	97.87	n/a	96.24	9.616e1	9.620e1	0.08	n/a	n/a	n/a
S96T002766			pH Direct	pH	n/a	n/a	11.22	n/a	n/a	n/a	n/a	1.000e-2	n/a
S96T002766			DSC Exotherm on Perkin Elmer	Joules/g	100.6	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T002769			% Water by TGA using Mettler	%	99.54	n/a	73.78	7.628e1	7.503e1	3.33	n/a	n/a	n/a
S96T002769			Bulk Density of Sample	g/mL	n/a	n/a		n/a	n/a	n/a	n/a	5.000e-1	n/a
S96T002770			% Water by TGA using Mettler	%	99.54	n/a	96.86	9.703e1	9.694e1	0.18	n/a	n/a	n/a
S96T002770			pH Direct	pH	n/a	n/a	11.71	1.169e1	1.170e1	0.17	n/a	1.000e-2	n/a
S96T002770			DSC Exotherm using Mettler	Joules/g	111.8	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T002772			% Water by TGA using Mettler	%	99.54	n/a	79.49	7.863e1	7.906e1	1.09	n/a	n/a	n/a
S96T002772			Bulk Density of Sample	g/mL	n/a	n/a		n/a	n/a	n/a	n/a	5.000e-1	n/a

Decanted Supernate (Liquid Grab Sludge): Decanted Supernate (Liquid Grab Sludge)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T002768			Specific Gravity	Sp.G.	101.2	n/a	1.005	9.970e-1	1.001e0	0.80	n/a	1.000e-2	n/a
S96T002768			pH Direct	pH	n/a	n/a	11.10	n/a	n/a	n/a	n/a	1.000e-2	n/a
S96T002771			Specific Gravity	Sp.G.	97.43	n/a	1.002	9.910e-1	9.960e-1	1.10	n/a	1.000e-2	n/a
S96T002771			pH Direct	pH	n/a	n/a	11.81	1.179e1	1.180e1	0.17	n/a	1.000e-2	n/a

Sludge (from Liquid Grab Sample): Sludge (from Liquid Grab Sample)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000854			TOC by Persulfate/Coulometry	ug/g	95.36	8.300	1.34e+04	9.320e3	1.140e4	35.9	n/a	40.00	n/a
S96T002021			% Water by TGA using Mettler	%	99.93	n/a	59.60	4.616e1	5.288e1	25.4	n/a	n/a	n/a
S96T002021			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	71.10	2.135e2	1.423e2	100	n/a	n/a	n/a
S96T002021			DSC Exotherm using Mettler	Joules/g	97.72	n/a	33.50	1.006e2	6.705e1	100	n/a	n/a	n/a
S96T002042 1			% Water by TGA using Mettler	%	99.83	n/a	56.10	5.450e1	5.530e1	2.89	n/a	n/a	n/a
S96T002042			% Water by TGA using Mettler	%	99.16	n/a	60.45	6.055e1	6.050e1	0.17	n/a	n/a	n/a
S96T002042			DSC Exotherm on Perkin Elmer	Joules/g	92.02	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T002042			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a

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INTERIM

Table 3: Interim Results for Tank 241-C-106 Grab Samples
C-106 GRAB

RISER: 1
SEGMENT #: 6C-96-10

SEGMENT PORTION: Centrifuged Solids (Grab Sample)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000558			% Water by Gravimetric	%	98.14	n/a	17.00	1.720e1	1.710e1	0.24	n/a	1.000e-2	n/a
S96T000558			Volume % Solids	%	n/a	n/a	85.20	n/a	n/a	n/a	n/a	n/a	n/a
S96T000558			% Water by TGA on Perkin Elmer	%	98.68	n/a	11.71	1.400e1	1.286e1	17.8	n/a	n/a	n/a
S96T000558			DSC Exotherm on Perkin Elmer	Joules/g	98.45	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T000558			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T000558			Bulk Density of Sample	g/mL	n/a	n/a	1.760	n/a	n/a	n/a	n/a	5.000e-1	n/a

Control Sample: Control Sample

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000560			% Water by TGA using Mettler	%	102.2	n/a	13.39	1.359e1	1.349e1	1.48	n/a	n/a	n/a
S96T000560			DSC Exotherm on Perkin Elmer	Joules/g	98.45	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T000560			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T000561	F		Alpha of Digested Solid	uCi/g	118.0	<5.570e-2	1.560	1.150e0	1.355e0	30.3	107.8	1.320e-1	2.00E+01
S96T000561	F		Am-241 by Extraction	uCi/g	105.5	<4.430e-2	4.26e-01	3.620e-1	3.940e-1	16.2	n/a	6.800e-2	3.95E+00
S96T000561	F		Cobalt-60 by GEA	uCi/g	98.05	<4.730e-1	<2.05e-01	<1.88e-1	n/a	n/a	n/a	2.050e-1	n/a
S96T000561	F		Cesium-137 by GEA	uCi/g	98.56	<9.170e-1	1.98e+02	1.700e2	1.838e2	15.2	n/a	n/a	1.01
S96T000561	F		Pu-239/240 by TRU-SPEC Resin	uCi/g	94.49	<5.300	<6.20e-02	<4.67E-2	n/a	n/a	n/a	6.200e-2	1.00E+02
S96T000561	F		Strontium-89/90 High Level	uCi/g	92.68	6.20e-02	1.74e+02	1.520e2	1.630e2	13.5	n/a	4.800e-2	6.80E-01
S96T000561	F		Technetium-99 Liq. Scint.	uCi/g	99.47	<3.580e-2	<6.43e-02	<5.53E-2	n/a	n/a	n/a	6.400e-2	6.35E+00

Decanted Supernate (Liquid Grab Sludge): Decanted Supernate (Liquid Grab Sludge)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000559			% Water by Gravimetric	%	98.65	n/a	79.30	7.930e1	7.930e1	0.00	n/a	1.000e-2	n/a
S96T000559			Specific Gravity	Sp.G.	101.1	n/a	1.156	1.150e0	1.153e0	0.52	n/a	1.000e-3	n/a

Filtered Centrifuged Solids: Filtered Centrifuged Solids

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000567			% Water by TGA using Mettler	%	101.7	n/a	26.22	2.527e1	2.574e1	3.69	n/a	n/a	n/a
S96T000567			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	93.87	1.275e2	1.107e2	30.4	n/a	n/a	n/a
S96T000567			DSC Exotherm using Mettler	Joules/g	99.82	n/a	69.70	9.470e1	8.220e1	30.4	n/a	n/a	n/a
S96T000568			TOC by Persulfate/Coulometry	ug/g	92.03	3.100	2.04e+04	2.490e4	2.260e4	19.9	87.90	40.00	n/a
S96T000568			TIC by Acid/Coulometry	ug/g	97.84	8.00e-01	2.93e+04	2.560e4	2.740e4	13.5	100.0	5.000	n/a
S96T000569			% Water by Gravimetric	%	98.14	n/a	26.30	2.730e1	2.680e1	1.37	n/a	1.000e-2	n/a
S96T000570			pH on SST Samples	pH	n/a	n/a	10.56	1.054e1	1.055e1	0.19	n/a	1.000e-2	n/a
S96T000571	F		Alpha of Digested Solid	uCi/g	118.0	<5.570e-2	1.320	3.570e0	2.445e0	92.0	107.2	4.500e-2	1.22E+01
S96T000571	F		Am-241 by Extraction	uCi/g	103.7	<1.580e-2	5.32e-01	1.560e0	1.046e0	98.3	n/a	4.300e-2	2.71E+00
S96T000571	F		Cobalt-60 by GEA	uCi/g	96.66	<1.520e-1	<1.28e-01	3.510e-1	n/a	n/a	n/a	1.280e-1	n/a
S96T000571	F		Cesium-137 by GEA	uCi/g	96.08	<2.040e-1	2.05e+02	5.310e2	3.678e2	88.6	n/a	n/a	0.640
S96T000571	F		Pu-239/240 by TRU-SPEC Resin	uCi/g	94.49	<5.300	<2.17e-02	<2.79E-2	n/a	n/a	n/a	2.200e-2	1.00E+02
S96T000571	F		Strontium-89/90 High Level	uCi/g	101.6	1.17e-01	1.86e+02	5.170e2	3.515e2	94.2	n/a	4.400e-2	5.50E-01

INTERIM

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000571		F	Technetium-99 Liq. Scint.	uCi/g	99.47	<3.580e-2	<2.26e-02	<2.74E-2	n/a	n/a	n/a	2.300e-2	6.16E+00
S96T000572		A	Silver -ICP-Acid Digest	ug/g	91.90	<1.000e-2	1.42e+03	1.660e3	1.540e3	15.6	72.20	8.430	n/a
S96T000572		A	Aluminium -ICP-Acid Digest	ug/g	96.60	1.18e-01	5.18e+04	6.080e4	5.630e4	16.0	232.4	42.20	n/a
S96T000572		A	Arsenic -ICP-Acid Digest	ug/g	97.20	<1.000e-1	< 84.30	<9.86e1	n/a	n/a	96.00	84.30	n/a
S96T000572		A	Boron -ICP-Acid Digest	ug/g	108.8	5.40e-01	71.30	8.300e1	7.715e1	15.2	95.54	42.20	n/a
S96T000572		A	Barium -ICP-Acid Digest	ug/g	97.60	<5.000e-2	2.88e+02	3.400e2	3.140e2	16.6	97.20	42.20	n/a
S96T000572		A	Beryllium -ICP-Acid Digest	ug/g	103.0	<5.000e-3	< 4.220	<4.93e0	n/a	n/a	97.80	4.210	n/a
S96T000572		A	Bismuth -ICP-Acid Digest	ug/g	92.40	<1.000e-1	< 84.30	<9.86e1	n/a	n/a	89.00	84.30	n/a
S96T000572		A	Calcium -ICP-Acid Digest	ug/g	100.2	4.59e-01	8.82e+02	1.040e3	9.610e2	16.4	101.4	84.30	n/a
S96T000572		A	Cadmium -ICP-Acid Digest	ug/g	94.60	<5.000e-3	39.90	4.450e1	4.220e1	10.9	92.26	4.210	n/a
S96T000572		A	Cerium -ICP-Acid Digest	ug/g	100.0	<1.000e-1	2.06e+02	1.990e2	2.025e2	3.46	98.92	84.30	n/a
S96T000572		A	Cobalt -ICP-Acid Digest	ug/g	98.40	<2.000e-2	< 16.90	<1.97e1	n/a	n/a	96.00	16.90	n/a
S96T000572		A	Chromium -ICP-Acid Digest	ug/g	97.00	1.70e-02	7.69e+02	8.840e2	8.265e2	13.9	92.22	8.430	n/a
S96T000572		A	Copper -ICP-Acid Digest	ug/g	92.80	2.60e-02	84.40	9.640e1	9.040e1	13.3	92.18	8.430	n/a
S96T000572		A	Iron -ICP-Acid Digest	ug/g	97.60	7.00e-02	7.03e+04	8.250e4	7.640e4	16.0	18.42	42.20	n/a
S96T000572		A	Potassium -ICP-Acid Digest	ug/g	98.80	<5.000e-1	6.12e+02	6.460e2	6.290e2	5.41	84.88	422.0	n/a
S96T000572		A	Lanthanum -ICP-Acid Digest	ug/g	98.20	<5.000e-2	59.10	7.230e1	6.570e1	20.1	96.20	42.20	n/a
S96T000572		A	Lithium -ICP-Acid Digest	ug/g	95.80	<1.000e-2	< 8.430	<9.86e0	n/a	n/a	94.60	8.430	n/a
S96T000572		A	Magnesium -ICP-Acid Digest	ug/g	94.60	<1.000e-1	2.25e+02	2.630e2	2.440e2	15.6	91.28	84.30	n/a
S96T000572		A	Manganese -ICP-Acid Digest	ug/g	96.60	<1.000e-2	1.75e+03	2.050e3	1.900e3	15.8	94.48	8.430	n/a
S96T000572		A	Molybdenum -ICP-Acid Digest	ug/g	97.60	<5.000e-2	< 42.20	<4.93e1	n/a	n/a	94.80	42.20	n/a
S96T000572		A	Sodium -ICP-Acid Digest	ug/g	109.0	7.70e-01	1.19e+05	1.410e5	1.300e5	16.9	1.84e+03	84.30	n/a
S96T000572		A	Neodymium -ICP-Acid Digest	ug/g	98.00	<1.000e-1	1.53e+02	1.700e2	1.615e2	10.5	96.66	84.30	n/a
S96T000572		A	Nickel -ICP-Acid Digest	ug/g	97.20	<2.000e-2	6.53e+02	7.550e2	7.040e2	14.5	88.94	16.90	n/a
S96T000572		A	Phosphorus -ICP-Acid Digest	ug/g	99.80	<2.000e-1	2.22e+03	2.600e3	2.410e3	15.8	122.7	169.0	n/a
S96T000572		A	Lead -ICP-Acid Digest	ug/g	91.60	<1.000e-1	2.55e+03	2.970e3	2.760e3	15.2	82.02	84.30	n/a
S96T000572		A	Sulfur -ICP-Acid Digest	ug/g	95.60	<1.000e-1	1.13e+03	1.320e3	1.220e3	15.5	93.96	84.30	n/a
S96T000572		A	Antimony -ICP-Acid Digest	ug/g	96.60	<6.000e-2	95.40	<5.91e1	n/a	n/a	83.88	50.60	n/a
S96T000572		A	Selenium -ICP-Acid Digest	ug/g	97.80	<1.000e-1	< 84.30	<9.86e1	n/a	n/a	98.80	84.30	n/a
S96T000572		A	Silicon -ICP-Acid Digest	ug/g	135.2	2.27e-01	2.27e+04	2.660e4	2.460e4	15.8	n/a	42.20	n/a
S96T000572		A	Samarium -ICP-Acid Digest	ug/g	99.80	<1.000e-1	< 84.30	<9.86e1	n/a	n/a	99.00	84.30	n/a
S96T000572		A	Strontium -ICP-Acid Digest	ug/g	97.00	<1.000e-2	17.70	2.040e1	1.905e1	14.2	95.70	8.430	n/a
S96T000572		A	Titanium-ICP-Acid Digest	ug/g	91.60	<1.000e-2	1.25e+02	1.470e2	1.360e2	16.2	89.62	8.430	n/a
S96T000572		A	Thallium -ICP-Acid Digest	ug/g	88.60	<2.000e-1	<1.69e+02	<1.97e2	n/a	n/a	87.60	169.0	n/a
S96T000572		A	Uranium -ICP-Acid Digest	ug/g	94.40	<5.000e-1	7.07e+02	8.900e2	7.985e2	22.9	104.1	422.0	n/a
S96T000572		A	Vanadium -ICP-Acid Digest	ug/g	96.40	<5.000e-2	< 42.20	<4.93e1	n/a	n/a	95.40	42.20	n/a
S96T000572		A	Zinc -ICP-Acid Digest	ug/g	92.60	2.50e-02	40.30	4.460e1	4.245e1	10.1	91.22	8.430	n/a
S96T000572		A	Zirconium -ICP-Acid Digest	ug/g	104.2	<1.000e-2	7.55e+02	8.900e2	8.225e2	16.4	180.4	8.430	n/a
S96T000574		W	Chloride-IC-Dionex 4000i/4500	ug/g	99.11	3.30e-02	1.47e+02	1.330e2	1.400e2	10.0	95.06	72.07	n/a
S96T000574		W	Fluoride-IC-Dionex 4000i/4500	ug/g	96.10	<1.300e-2	1.94e+02	1.950e2	1.947e2	0.51	100.8	55.12	n/a
S96T000574		W	Nitrite-IC - Dionex 4000i/4500	ug/g	97.74	<1.070e-1	1.04e+04	1.030e4	1.030e4	0.97	107.5	453.6	n/a
S96T000574		W	Nitrate by IC-Dionex4000i/4500	ug/g	97.72	1.440e-1	1.83e+03	9.780e2	1.410e3	60.7	93.81	593.2	n/a
S96T000574		W	Oxalate by IC - Dionex 4000i	ug/g	99.07	<1.050e-1	6.90e+04	6.830e4	6.860e4	1.02	116.0	445.2	n/a
S96T000574		W	Phosphate-IC-Dionex 4000i/4500	ug/g	100.2	<1.190e-1	3.52e+03	1.010e3	2.270e3	111	89.19	504.2	n/a
S96T000574		W	Sulfate by IC-Dionex4000i/4500	ug/g	97.94	<1.360e-1	3.32e+03	3.310e3	3.320e3	0.30	98.26	576.2	n/a
S96T002718		F	Alpha of Digested Solid	uCi/g	114.1	<5.690e-2	3.500	3.640e0	3.570e0	3.92	89.14	9.200e-2	9.86E+00
S96T002718		F	Am-241 by Extraction	uCi/g	101.3	<2.760e-2	1.870	1.690e0	1.780e0	10.1	n/a	1.450e-1	2.69E+00
S96T002718		F	Cobalt-60 by GEA	uCi/g	98.94	<3.010e-1	<5.33e-01	<4.23e-1	n/a	n/a	n/a	5.330e-1	n/a
S96T002718		F	Cesium-137 by GEA	uCi/g	97.97	<4.490e-1	5.80e+02	6.330e2	6.063e2	8.74	n/a	n/a	1.10
S96T002718		F	Pu-239/240 by TRU-SPEC Resin	uCi/g	97.11	<3.900e-2	1.520	1.530e0	1.525e0	0.66	n/a	1.020e-1	2.08E+00

INTERIM

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T002718		F	Strontium-89/90 High Level	uCi/g	110.6	8.13e-01	5.90e+02	6.390e2	6.145e2	7.97	n/a	6.410e-1	1.01E+00
S96T002718		F	Technetium-99 Liq. Scint.	uCi/g	104.5	<1.420e-2	<3.52e-02	<3.70E-2	n/a	n/a	n/a	3.500e-2	6.92E+00

Interstitial Liquid: Interstitial Liquid

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000563			TOC by Persulfate/Coulometry	ug/mL	96.00	5.000	2.35e+03	2.280e3	2.320e3	3.02	n/a	40.00	n/a
S96T000563			Tot. Organic Carbon by Coul.	ug/mL	103.4	2.00e-01	2.44e+03	2.440e3	2.440e3	0.00	95.50	55.00	n/a
S96T000563			% Water by TGA using Mettler	%	100.2	n/a	61.32	5.937e1	6.034e1	3.23	n/a	n/a	n/a
S96T000563			DSC Exotherm on Perkin Elmer	Joules/g	95.82	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T000563			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T000563			Strontium-89/90 High Level	uCi/mL	99.19	4.00e-03	1.230	6.350e-1	9.320e-1	63.8	n/a	8.000e-3	2.76E+00
S96T000563			Pu-239/240 by TRU-SPEC Resin	uCi/mL	93.44	<3.560e-3	8.12e-01	8.330e-1	8.230e-1	2.55	n/a	3.800e-2	1.59E+00
S96T000563		D	Silver-ICP-Acid Dil.	ug/mL	97.60	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	92.80	4.010	n/a
S96T000563		D	Aluminium-ICP-Acid Dil.	ug/mL	96.60	<5.000e-2	< 20.10	<2.01e1	n/a	n/a	92.80	20.10	n/a
S96T000563		D	Arsenic-ICP-Acid Dil.	ug/mL	101.0	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	103.8	40.10	n/a
S96T000563		D	Boron-ICP-Acid Dil.	ug/mL	101.8	<5.000e-2	< 20.10	<2.01e1	n/a	n/a	102.5	20.10	n/a
S96T000563		D	Barium-ICP-Acid Dil.	ug/mL	99.40	<5.000e-2	< 20.10	<2.01e1	n/a	n/a	99.00	20.10	n/a
S96T000563		D	Beryllium-ICP-Acid Dil.	ug/mL	103.8	<5.000e-3	< 2.000	<2.00e0	n/a	n/a	101.8	2.000	n/a
S96T000563		D	Bismuth-ICP-Acid Dil.	ug/mL	99.80	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	95.50	40.10	n/a
S96T000563		D	Calcium-ICP-Acid Dil.	ug/mL	99.60	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	99.00	40.10	n/a
S96T000563		D	Cadmium-ICP-Acid Dil.	ug/mL	100.8	<5.000e-3	< 2.000	<2.00e0	n/a	n/a	98.00	2.000	n/a
S96T000563		D	Cerium-ICP-Acid Dil.	ug/mL	100.4	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	96.50	40.10	n/a
S96T000563		D	Cobalt-ICP-Acid Dil.	ug/mL	100.2	<2.000e-2	< 8.020	<8.02e0	n/a	n/a	97.00	8.020	n/a
S96T000563		D	Chromium-ICP-Acid Dil.	ug/mL	100.2	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	98.50	4.010	n/a
S96T000563		D	Copper-ICP-Acid Dil.	ug/mL	100.6	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	99.80	4.010	n/a
S96T000563		D	Iron-ICP-Acid Dil.	ug/mL	103.4	<5.000e-2	< 20.10	<2.01e1	n/a	n/a	105.2	20.10	n/a
S96T000563		D	Potassium-ICP-Acid Dil.	ug/mL	97.20	<5.000e-1	5.48e+02	5.640e2	5.560e2	2.88	96.40	200.0	n/a
S96T000563		D	Lanthanum-ICP-Acid Dil.	ug/mL	100.8	<5.000e-2	< 20.10	<2.01e1	n/a	n/a	101.0	20.10	n/a
S96T000563		D	Lithium-ICP-Acid Dil.	ug/mL	97.00	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	92.00	4.010	n/a
S96T000563		D	Magnesium-ICP-Acid Dil.	ug/mL	96.80	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	93.80	40.10	n/a
S96T000563		D	Manganese-ICP-Acid Dil.	ug/mL	100.2	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	99.30	4.010	n/a
S96T000563		D	Molybdenum-ICP-Acid Dil.	ug/mL	99.20	<5.000e-2	21.30	<2.01e1	n/a	n/a	96.70	20.10	n/a
S96T000563		D	Sodium-ICP-Acid Dil.	ug/mL	96.60	<1.000e-1	1.03e+05	1.010e5	1.020e5	1.96	n/a	40.10	n/a
S96T000563		D	Neodymium-ICP-Acid Dil.	ug/mL	105.8	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	105.5	40.10	n/a
S96T000563		D	Nickel-ICP-Acid Dil.	ug/mL	100.4	<2.000e-2	13.70	1.350e1	1.360e1	1.47	98.60	8.020	n/a
S96T000563		D	Phosphorus-ICP-Acid Dil.	ug/mL	108.8	<2.000e-1	3.71e+02	3.750e2	3.730e2	1.07	115.0	80.20	n/a
S96T000563		D	Lead-ICP-Acid Dil.	ug/mL	100.6	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	99.50	40.10	n/a
S96T000563		D	Sulfer-ICP-Acid Dil.	ug/mL	98.20	<1.000e-1	2.48e+03	2.500e3	2.490e3	0.80	82.70	40.10	n/a
S96T000563		D	Antimony-ICP-Acid Dil.	ug/mL	94.60	<6.000e-2	< 24.10	<2.41e1	n/a	n/a	90.80	24.10	n/a
S96T000563		D	Selenium-ICP-Acid Dil.	ug/mL	102.6	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	110.0	40.10	n/a
S96T000563		D	Silicon-ICP-Acid Dil.	ug/mL	95.20	<5.000e-2	25.80	2.690e1	2.635e1	4.17	95.10	20.10	n/a
S96T000563		D	Samarium-ICP-Acid Dil.	ug/mL	101.0	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	102.0	40.10	n/a
S96T000563		D	Strontium-ICP-Acid Dil.	ug/mL	99.40	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	99.30	4.010	n/a
S96T000563		D	Titanium-ICP-Acid Dil.	ug/mL	96.60	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	96.00	4.010	n/a
S96T000563		D	Thallium-ICP-Acid Dil.	ug/mL	95.00	<2.000e-1	< 80.20	<8.02e1	n/a	n/a	85.80	80.20	n/a
S96T000563		D	Uranium-ICP-Acid Dil.	ug/mL	98.50	<5.000e-1	1.56e+03	1.570e3	1.560e3	0.64	102.3	200.0	n/a
S96T000563		D	Vanadium-ICP-Acid Dil.	ug/mL	102.0	<5.000e-2	< 20.10	<2.01e1	n/a	n/a	100.0	20.10	n/a
S96T000563		D	Zinc-ICP-Acid Dil.	ug/mL	100.6	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	97.50	4.010	n/a
S96T000563		D	Zirconium-ICP-Acid Dil.	ug/mL	99.80	<1.000e-2	3.36e+02	3.360e2	3.360e2	0.00	100.6	4.010	n/a

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Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000563			Sulfate by IC-Dionex4000i/4500	ug/mL	95.56	<1.360e-1	7.76e+03	7.610e3	7.690e3	1.95	98.89	288.2	n/a
S96T000563			Phosphate-IC-Dionex 4000i/4500	ug/mL	96.89	<1.190e-1	6.49e+02	6.090e2	6.290e2	6.36	97.80	252.2	n/a
S96T000563			Oxalate by IC - Dionex 4000i	ug/mL	95.09	<1.050e-1	3.08e+03	3.090e3	3.090e3	0.32	98.43	222.7	n/a
S96T000563			Nitrate-IC - Dionex 4000i/4500	ug/mL	93.97	2.05e-01	1.17e+03	1.140e3	1.150e3	2.60	94.46	296.9	n/a
S96T000563			Nitrite-IC - Dionex 4000i/4500	ug/mL	97.95	<1.070e-1	2.91e+04	2.830e4	2.870e4	2.79	102.6	226.9	n/a
S96T000563			Fluoride-IC-Dionex 4000i/4500	ug/mL	95.42	<1.300e-2	2.36e+02	2.300e2	2.328e2	2.58	108.5	27.57	n/a
S96T000563			Chloride-IC-Dionex 4000i/4500	ug/mL	90.38	5.55e-01	3.04e+02	3.260e2	3.151e2	6.98	91.65	36.06	n/a
S96T000563			Cesium-137 by GEA	uCi/mL	95.94	<4.940e-4	1.54e+02	1.530e2	1.535e2	0.65	n/a	n/a	0.200
S96T000563			Cobalt-60 by GEA	uCi/mL	96.11	<6.530e-4	<8.45e-03	1.240e-2	n/a	n/a	n/a	8.000e-3	n/a

Potential Organic Layer: Potential Organic Layer

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001567			TOC by Persulfate/Coulometry	ug/mL	94.03	3.000	3.08e+04	3.480e4	3.280e4	12.2	n/a	40.00	n/a
S96T001567			% Water by TGA using Mettler	%	103.7	n/a	71.58	6.752e1	6.955e1	5.84	n/a	n/a	n/a
S96T001567			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	7.06e+02	4.677e2	5.870e2	40.7	n/a	n/a	n/a
S96T001567			DSC Exotherm using Mettler	Joules/g	113.9	n/a	2.15e+02	1.424e2	1.788e2	40.7	n/a	n/a	n/a
S96T002634			Pu-239/240 by TRU-SPEC Resin	uCi/g	99.21	<3.100e-2	6.41e-01	6.310e-1	6.360e-1	1.57	n/a	4.600e-2	2.00E+00
S96T002634			Pu-238 by Ion Exchange	uCi/g	n/a	<3.100e-2	2.00e-01	2.010e-1	2.010e-1	0.50	n/a	4.600e-2	2.78E+00

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Table 3: Interim Results for Tank 241-C-106 Grab Samples
C-106 GRAB

RISER: 7
SEGMENT #: 6C-96-11

SEGMENT PORTION: Centrifuged Solids (Grab Sample)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001674			% Water by Gravimetric	%	100.8	n/a	12.40	1.090e1	1.165e1	12.9	n/a	1.000e-2	n/a
S96T001674			Volume % Solids	%	n/a	n/a	59.50	n/a	n/a	n/a	n/a	n/a	n/a
S96T001674			% Water by TGA using Mettler	%	99.93	n/a	9.630	8.430e0	9.030e0	13.3	n/a	n/a	n/a
S96T001674			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	21.66	1.205e2	7.108e1	139	n/a	n/a	n/a
S96T001674			DSC Exotherm using Mettler	Joules/g	97.72	n/a	19.70	1.096e2	6.465e1	139	n/a	n/a	n/a
S96T001674			Bulk Density of Sample	g/mL	n/a	n/a	1.450	n/a	n/a	n/a	n/a	5.000e-1	n/a

Control Sample: Control Sample

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001676			% Water by TGA using Mettler	%	102.3	n/a	40.05	3.947e1	3.976e1	1.46	n/a	n/a	n/a
S96T001676			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	2.42e+02	2.278e2	2.351e2	6.21	n/a	n/a	n/a
S96T001676			DSC Exotherm using Mettler	Joules/g	112.1	n/a	1.46e+02	1.372e2	1.416e2	6.21	n/a	n/a	n/a
S96T001678	F		Alpha of Digested Solid	uCi/g	102.3	<4.100e-2	1.500	1.620e0	1.560e0	7.69	91.09	6.100e-2	9.65E+00
S96T001678	F		Am-241 by Extraction	uCi/g	97.13	<1.310e-2	7.03e-01	7.150e-1	7.090e-1	1.69	n/a	6.100e-2	2.64E+00
S96T001678	F		Cobalt-60 by GEA	uCi/g	99.72	<2.200e-2	2.936	3.200e0	3.068e0	8.47	n/a	n/a	23.9
S96T001678	F		Cesium-137 by GEA	uCi/g	100.9	<5.540e-1	9.35e+03	8.370e3	8.860e3	11.1	n/a	n/a	0.340
S96T001678	F		Pu-239/240 by TRU-SPEC Resin	uCi/g	100.3	<1.710e-2	7.75e-01	7.650e-1	7.700e-1	1.30	n/a	4.900e-2	2.01E+00
S96T001678	F		Strontium-89/90 High Level	uCi/g	102.4	7.55e-01	3.83e+02	3.810e2	3.820e2	0.52	n/a	2.360e-1	7.89E-01
S96T001678	F		Technetium-99 Liq. Scint.	uCi/g	n/a	n/a		n/a	n/a	n/a	n/a	1.800e-2	

Decanted Supernate (Liquid Grab Sludge): Decanted Supernate (Liquid Grab Sludge)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001675			% Water by Gravimetric	%	98.82	n/a	78.20	7.830e1	7.825e1	0.13	n/a	1.000e-2	n/a
S96T001675			Specific Gravity	Sp.G.	102.1	n/a	1.153	1.138e0	1.145e0	1.31	n/a	1.000e-3	n/a
S96T002024			Specific Gravity	Sp.G.	97.74	n/a	1.195	1.195e0	1.195e0	0.00	n/a	1.000e-3	n/a
S96T002024			pH Direct	pH	n/a	n/a	10.15	n/a	n/a	n/a	n/a	1.000e-2	n/a
S96T002024			Sulfate by IC-Dionex4000i/4500	ug/mL	101.6	<1.360e-1	6.69e+03	7.200e3	6.940e3	7.34	112.2	151.0	n/a
S96T002024			Phosphate-IC-Dionex 4000i/4500	ug/mL	103.5	<1.190e-1	4.42e+02	4.800e2	4.609e2	8.24	101.3	132.1	n/a
S96T002024			Oxalate by IC - Dionex 4000i	ug/mL	103.2	<1.050e-1	3.18e+03	3.450e3	3.310e3	8.14	106.3	116.7	n/a
S96T002024			Nitrate-IC - Dionex 4000i/4500	ug/mL	103.1	<1.400e-1	9.81e+02	1.010e3	9.955e2	2.91	97.23	155.5	n/a
S96T002024			Nitrite-IC - Dionex 4000i/4500	ug/mL	103.5	<1.070e-1	2.59e+04	2.790e4	2.690e4	7.43	134.9	118.9	n/a
S96T002024			Fluoride-IC-Dionex 4000i/4500	ug/mL	98.98	<1.300e-2	2.01e+02	2.090e2	2.051e2	3.90	127.5	14.44	n/a
S96T002024			Chloride-IC-Dionex 4000i/4500	ug/mL	99.75	<1.700e-2	2.58e+02	2.660e2	2.619e2	3.05	97.85	18.89	n/a
S96T002024			Cesium-137 by GEA	uCi/mL	90.88	<2.680e-3	1.28e+02	1.270e2	1.275e2	0.78	n/a	n/a	0.140
S96T002024			Cobalt-60 by GEA	uCi/mL	93.30	<8.670e-4	<4.63e-03	<4.49e-3	n/a	n/a	n/a	5.000e-3	n/a

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Filtered Centrifuged Solids: Filtered Centrifuged Solids

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001685			% Water by TGA on Perkin Elmer	%	99.39	n/a	32.54	3.129e1	3.191e1	3.92	n/a	n/a	n/a
S96T001685			DSC Exotherm on Perkin Elmer	Joules/g	100.3	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T001685			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T001686			TOC by Persulfate/Coulometry	ug/g	94.03	3.000	2.00e+04	1.730e4	1.860e4	14.5	n/a	40.00	n/a
S96T001686			TIC by Acid/Coulometry	ug/g	93.68	3.00e-01	2.32e+04	2.280e4	2.300e4	1.74	n/a	5.000	n/a
S96T001687			% Water by Gravimetric	%	98.99	n/a	34.10	3.410e1	3.410e1	0.00	n/a	1.000e-2	n/a
S96T001688			pH on SST Samples	pH	n/a	n/a	10.42	n/a	n/a	n/a	n/a	1.000e-2	n/a
S96T001689		F	Alpha of Digested Solid	uCi/g	102.3	<4.100e-2	1.680	1.840e0	1.760e0	9.09	93.31	1.130e-1	1.23E+01
S96T001689		F	Am-241 by Extraction	uCi/g	97.13	<1.310e-2	1.030	9.800e-1	1.005e0	4.98	n/a	9.800e-2	2.85E+00
S96T001689		F	Cobalt-60 by GEA	uCi/g	99.72	<2.200e-2	<3.03e-01	<4.13e-1	n/a	n/a	n/a	3.030e-1	n/a
S96T001689		F	Cesium-137 by GEA	uCi/g	100.9	<5.540e-1	4.83e+02	5.090e2	4.959e2	5.24	n/a	n/a	0.990
S96T001689		F	Pu-239/240 by TRU-SPEC Resin	uCi/g	100.3	<1.710e-2	9.01e-01	9.260e-1	9.130e-1	2.74	n/a	7.400e-2	2.18E+00
S96T001689		F	Strontium-89/90 High Level	uCi/g	102.4	7.55e-01	4.87e+02	5.230e2	5.050e2	7.13	n/a	4.360e-1	9.54E-01
S96T001689		F	Technetium-99 Liq. Scint.	uCi/g	n/a	n/a		n/a	n/a	n/a	n/a	3.200e-2	
S96T001690		A	Silver -ICP-Acid Digest	ug/g	90.20	<1.000e-2	1.96e+03	1.250e3	1.600e3	44.2	139.0	3.830	n/a
S96T001690		A	Aluminium -ICP-Acid Digest	ug/g	91.40	1.09e+01	3.81e+04	3.770e4	3.790e4	1.06	130.2	19.10	n/a
S96T001690		A	Arsenic -ICP-Acid Digest	ug/g	93.80	<1.000e-1	< 38.30	<3.93e1	n/a	n/a	90.50	38.30	n/a
S96T001690		A	Boron -ICP-Acid Digest	ug/g	97.60	6.50e-01	25.80	3.070e1	2.825e1	17.3	90.36	19.10	n/a
S96T001690		A	Barium -ICP-Acid Digest	ug/g	94.00	<5.000e-2	2.22e+02	2.190e2	2.205e2	1.36	90.42	19.10	n/a
S96T001690		A	Beryllium -ICP-Acid Digest	ug/g	102.6	<5.000e-3	< 1.910	<1.97e0	n/a	n/a	97.50	1.910	n/a
S96T001690		A	Bismuth -ICP-Acid Digest	ug/g	91.20	<1.000e-1	< 38.30	<3.93e1	n/a	n/a	91.10	38.30	n/a
S96T001690		A	Calcium -ICP-Acid Digest	ug/g	91.60	1.28e-01	2.65e+03	2.500e3	2.580e3	5.83	84.64	38.30	n/a
S96T001690		A	Cadmium -ICP-Acid Digest	ug/g	89.60	<5.000e-3	23.90	2.480e1	2.435e1	3.70	88.24	1.910	n/a
S96T001690		A	Cerium -ICP-Acid Digest	ug/g	97.00	<1.000e-1	1.41e+02	1.520e2	1.465e2	7.51	94.62	38.30	n/a
S96T001690		A	Cobalt -ICP-Acid Digest	ug/g	92.40	<2.000e-2	< 7.660	8.350e0	n/a	n/a	90.60	7.660	n/a
S96T001690		A	Chromium -ICP-Acid Digest	ug/g	91.00	<1.000e-2	5.28e+02	5.380e2	5.330e2	1.88	90.42	3.830	n/a
S96T001690		A	Copper -ICP-Acid Digest	ug/g	92.00	1.10e-02	95.60	9.420e1	9.490e1	1.48	89.50	3.830	n/a
S96T001690		A	Iron -ICP-Acid Digest	ug/g	90.80	5.00e-02	4.59e+04	5.740e4	5.160e4	22.3	81.64	19.10	n/a
S96T001690		A	Potassium -ICP-Acid Digest	ug/g	93.00	<5.000e-1	5.53e+02	5.140e2	5.335e2	7.31	96.10	191.0	n/a
S96T001690		A	Lanthanum -ICP-Acid Digest	ug/g	94.40	<5.000e-2	49.60	4.780e1	4.870e1	3.70	91.60	19.10	n/a
S96T001690		A	Lithium -ICP-Acid Digest	ug/g	95.20	<1.000e-2	< 3.830	<3.93e0	n/a	n/a	92.00	3.830	n/a
S96T001690		A	Magnesium -ICP-Acid Digest	ug/g	86.40	<1.000e-1	2.50e+02	2.640e2	2.570e2	5.45	85.64	38.30	n/a
S96T001690		A	Manganese -ICP-Acid Digest	ug/g	90.80	<1.000e-2	3.21e+03	3.270e3	3.240e3	1.85	102.1	3.830	n/a
S96T001690		A	Molybdenum -ICP-Acid Digest	ug/g	91.40	<5.000e-2	< 19.10	<1.97e1	n/a	n/a	89.50	19.10	n/a
S96T001690		A	Sodium -ICP-Acid Digest	ug/g	103.6	8.77e-01	1.08e+05	1.080e5	1.080e5	0.00	n/a	38.30	n/a
S96T001690		A	Neodymium -ICP-Acid Digest	ug/g	93.80	<1.000e-1	1.28e+02	1.250e2	1.265e2	2.37	91.22	38.30	n/a
S96T001690		A	Nickel -ICP-Acid Digest	ug/g	91.80	<2.000e-2	5.15e+02	5.180e2	5.165e2	0.58	91.10	7.660	n/a
S96T001690		A	Phosphorus -ICP-Acid Digest	ug/g	96.80	<2.000e-1	1.76e+03	1.810e3	1.780e3	2.80	110.1	76.60	n/a
S96T001690		A	Lead -ICP-Acid Digest	ug/g	86.80	<1.000e-1	1.90e+03	1.950e3	1.920e3	2.60	89.66	38.30	n/a
S96T001690		A	Sulfur -ICP-Acid Digest	ug/g	90.20	<1.000e-1	9.18e+02	9.380e2	9.280e2	2.16	93.06	38.30	n/a
S96T001690		A	Antimony -ICP-Acid Digest	ug/g	93.40	<6.000e-2	< 23.00	<2.36e1	n/a	n/a	92.50	23.00	n/a
S96T001690		A	Selenium -ICP-Acid Digest	ug/g	88.60	<1.000e-1	< 38.30	<3.93e1	n/a	n/a	89.50	38.30	n/a
S96T001690		A	Silicon -ICP-Acid Digest	ug/g	125.0	7.70e-01	2.16e+04	2.050e4	2.100e4	5.23	72.84	19.10	n/a
S96T001690		A	Samarium -ICP-Acid Digest	ug/g	92.60	<1.000e-1	< 38.30	<3.93e1	n/a	n/a	91.10	38.30	n/a
S96T001690		A	Strontium -ICP-Acid Digest	ug/g	92.40	<1.000e-2	20.10	2.000e1	2.005e1	0.50	89.04	3.830	n/a
S96T001690		A	Titanium-ICP-Acid Digest	ug/g	86.20	<1.000e-2	87.40	8.750e1	8.745e1	0.11	83.24	3.830	n/a
S96T001690		A	Thallium -ICP-Acid Digest	ug/g	86.00	<2.000e-1	< 76.60	<7.87e1	n/a	n/a	85.00	76.60	n/a
S96T001690		A	Uranium -ICP-Acid Digest	ug/g	91.20	<5.000e-1	5.78e+02	5.880e2	5.830e2	1.72	87.90	191.0	n/a

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Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001690		A	Vanadium -ICP-Acid Digest	ug/g	111.0	<5.000e-2	< 19.10	<1.97e1	n/a	n/a	89.10	19.10	n/a
S96T001690		A	Zinc -ICP-Acid Digest	ug/g	87.40	1.10e-02	62.30	8.740e1	7.485e1	33.5	87.56	3.830	n/a
S96T001690		A	Zirconium -ICP-Acid Digest	ug/g	99.20	<1.000e-2	1.62e+02	4.310e2	2.965e2	90.7	119.5	3.830	n/a
S96T001691		W	Chloride-IC-Dionex 4000i/4500	ug/g	91.39	<1.700e-2	<1.24e+04	<1.22e4	n/a	n/a	n/a	1.240e4	n/a
S96T001691		W	fluoride-IC-Dionex 4000i/4500	ug/g	95.42	<1.300e-2	<9.51e+03	<9.34e3	n/a	n/a	n/a	9.510e3	n/a
S96T001691		W	Nitrite-IC - Dionex 4000i/4500	ug/g	93.80	<1.070e-1	<7.83e+04	<7.69e4	n/a	n/a	n/a	7.830e4	n/a
S96T001691		W	Nitrate by IC-Dionex4000i/4500	ug/g	93.81	<1.400e-1	2.18e+07	2.430e7	2.300e7	10.8	n/a	1.020e5	n/a
S96T001691		W	Oxalate by IC - Dionex 4000i	ug/g	96.12	1.560e-1	1.40e+05	1.190e5	1.290e5	16.2	n/a	7.680e4	n/a
S96T001691		W	Phosphate-IC-Dionex 4000i/4500	ug/g	95.79	<1.190e-1	<8.70e+04	<8.54e4	n/a	n/a	n/a	8.700e4	n/a
S96T001691		W	Sulfate by IC-Dionex4000i/4500	ug/g	95.09	<1.360e-1	<9.94e+04	<9.76e4	n/a	n/a	n/a	9.940e4	n/a

Interstitial Liquid: Interstitial Liquid

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001681			TOC by Persulfate/Coulometry	ug/mL	93.36	6.500	1.64e+03	1.620e3	1.630e3	1.23	n/a	40.00	n/a
S96T001681			Tot. Organic Carbon by Coul.	ug/mL	93.36	1.300	2.06e+03	2.080e3	2.070e3	0.97	96.30	55.00	n/a
S96T001681			% Water by TGA on Perkin Elmer	%	99.27	n/a	48.47	4.437e1	4.642e1	8.83	n/a	n/a	n/a
S96T001681			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	10.27	1.027e1	1.027e1	0.00	n/a	n/a	n/a
S96T001681			DSC Exotherm using Mettler	Joules/g	101.6	n/a	5.500	5.500e0	5.500e0	0.00	n/a	n/a	n/a
S96T001681			Strontium-89/90 High Level	uCi/mL	n/a	n/a	6.71e-01	6.680e-1	6.690e-1	0.45	n/a	8.000e-3	3.75E+00
S96T001681			Pu-239/240 by TRU-SPEC Resin	uCi/mL	98.69	<1.670e-2	8.40e-01	8.340e-1	8.370e-1	0.72	n/a	4.900e-2	1.88E+00
S96T001681		D	Silver-ICP-Acid Dil.	ug/mL	98.20	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	93.80	4.010	n/a
S96T001681		D	Aluminium-ICP-Acid Dil.	ug/mL	98.20	<5.000e-2	< 20.10	<2.01e1	n/a	n/a	96.00	20.10	n/a
S96T001681		D	Arsenic-ICP-Acid Dil.	ug/mL	102.2	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	105.7	40.10	n/a
S96T001681		D	Boron-ICP-Acid Dil.	ug/mL	101.0	<5.000e-2	< 20.10	<2.01e1	n/a	n/a	101.3	20.10	n/a
S96T001681		D	Barium-ICP-Acid Dil.	ug/mL	99.20	<5.000e-2	< 20.10	<2.01e1	n/a	n/a	99.80	20.10	n/a
S96T001681		D	Beryllium-ICP-Acid Dil.	ug/mL	102.8	<5.000e-3	< 2.000	<2.00e0	n/a	n/a	101.5	2.000	n/a
S96T001681		D	Bismuth-ICP-Acid Dil.	ug/mL	99.60	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	90.80	40.10	n/a
S96T001681		D	Calcium-ICP-Acid Dil.	ug/mL	97.60	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	97.30	40.10	n/a
S96T001681		D	Cadmium-ICP-Acid Dil.	ug/mL	99.80	<5.000e-3	< 2.000	<2.00e0	n/a	n/a	96.00	2.000	n/a
S96T001681		D	Cerium-ICP-Acid Dil.	ug/mL	101.6	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	99.30	40.10	n/a
S96T001681		D	Cobalt-ICP-Acid Dil.	ug/mL	101.8	<2.000e-2	< 8.020	<8.02e0	n/a	n/a	98.00	8.020	n/a
S96T001681		D	Chromium-ICP-Acid Dil.	ug/mL	100.6	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	98.30	4.010	n/a
S96T001681		D	Copper-ICP-Acid Dil.	ug/mL	100.6	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	99.80	4.010	n/a
S96T001681		D	Iron-ICP-Acid Dil.	ug/mL	100.0	<5.000e-2	< 20.10	<2.01e1	n/a	n/a	101.8	20.10	n/a
S96T001681		D	Potassium-ICP-Acid Dil.	ug/mL	101.2	<5.000e-1	5.41e+02	5.330e2	5.370e2	1.49	98.30	200.0	n/a
S96T001681		D	Lanthanum-ICP-Acid Dil.	ug/mL	98.60	<5.000e-2	< 20.10	<2.01e1	n/a	n/a	98.50	20.10	n/a
S96T001681		D	Lithium-ICP-Acid Dil.	ug/mL	100.4	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	95.50	4.010	n/a
S96T001681		D	Magnesium-ICP-Acid Dil.	ug/mL	98.20	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	94.80	40.10	n/a
S96T001681		D	Manganese-ICP-Acid Dil.	ug/mL	100.0	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	98.00	4.010	n/a
S96T001681		D	Molybdenum-ICP-Acid Dil.	ug/mL	101.8	<5.000e-2	< 20.10	<2.01e1	n/a	n/a	104.0	20.10	n/a
S96T001681		D	Sodium-ICP-Acid Dil.	ug/mL	99.40	<1.000e-1	9.91e+04	9.560e4	9.740e4	3.60	n/a	40.10	n/a
S96T001681		D	Neodymium-ICP-Acid Dil.	ug/mL	99.80	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	104.7	40.10	n/a
S96T001681		D	Nickel-ICP-Acid Dil.	ug/mL	99.80	<2.000e-2	11.50	1.130e1	1.140e1	1.75	96.60	8.020	n/a
S96T001681		D	Phosphorus-ICP-Acid Dil.	ug/mL	102.0	<2.000e-1	2.66e+02	2.750e2	2.705e2	3.33	103.1	80.20	n/a
S96T001681		D	Lead-ICP-Acid Dil.	ug/mL	99.20	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	98.30	40.10	n/a
S96T001681		D	Sulfer-ICP-Acid Dil.	ug/mL	100.2	<1.000e-1	2.24e+03	2.150e3	2.200e3	4.10	79.60	40.10	n/a
S96T001681		D	Antimony-ICP-Acid Dil.	ug/mL	95.40	<6.000e-2	< 24.10	<2.41e1	n/a	n/a	91.00	24.10	n/a
S96T001681		D	Selenium-ICP-Acid Dil.	ug/mL	103.6	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	118.7	40.10	n/a
S96T001681		D	Silicon-ICP-Acid Dil.	ug/mL	95.40	<5.000e-2	27.50	2.040e1	2.395e1	29.6	92.90	20.10	n/a

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Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001681		D	Samarium-ICP-Acid Dil.	ug/mL	99.60	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	102.5	40.10	n/a
S96T001681		D	Strontium-ICP-Acid Dil.	ug/mL	99.20	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	99.50	4.010	n/a
S96T001681		D	Titanium-ICP-Acid Dil.	ug/mL	98.20	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	97.50	4.010	n/a
S96T001681		D	Thallium-ICP-Acid Dil.	ug/mL	96.00	<2.000e-1	< 80.20	<8.02e1	n/a	n/a	92.00	80.20	n/a
S96T001681		D	Uranium-ICP-Acid Dil.	ug/mL	96.60	<5.000e-1	1.60e+03	1.500e3	1.550e3	6.45	98.85	200.0	n/a
S96T001681		D	Vanadium-ICP-Acid Dil.	ug/mL	101.2	<5.000e-2	< 20.10	<2.01e1	n/a	n/a	99.30	20.10	n/a
S96T001681		D	Zinc-ICP-Acid Dil.	ug/mL	102.2	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	97.50	4.010	n/a
S96T001681		D	Zirconium-ICP-Acid Dil.	ug/mL	98.60	<1.000e-2	3.30e+02	3.190e2	3.245e2	3.39	98.70	4.010	n/a
S96T001681			Cesium-137 by GEA	uCi/mL	97.05	1.00e-03	1.21e+02	1.210e2	1.210e2	0.00	n/a	n/a	0.140
S96T001681			Cobalt-60 by GEA	uCi/mL	97.28	<3.260e-4	<5.05e-03	<4.80e-3	n/a	n/a	n/a	5.000e-3	n/a

Potential Organic Layer: Potential Organic Layer

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001679			TOC by Persulfate/Coulometry	ug/mL	94.03	3.000	2.48e+04	2.200e4	2.340e4	12.0	n/a	40.00	n/a
S96T001679			% Water by TGA using Mettler	%	101.2	n/a	28.37	3.134e1	2.986e1	9.95	n/a	n/a	n/a
S96T001679			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T001679			DSC Exotherm using Mettler	Joules/g	93.85	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T002635			Pu-239/240 by TRU-SPEC Resin	uCi/g	99.21	<3.100e-2	3.63e-01	3.570e-1	3.600e-1	1.67	n/a	2.800e-2	2.19E+00
S96T002635			Pu-238 by Ion Exchange	uCi/g	n/a	<3.100e-2	1.12e-01	1.000e-1	1.060e-1	11.3	n/a	2.800e-2	3.22E+00

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Table 3: Interim Results for Tank 241-C-106 Grab Samples
C-106 GRAB

RISER: 7
SEGMENT #: 6C-96-12

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001023			% Water by Gravimetric	%	102.2	n/a	79.00	7.900e1	7.900e1	0.00	n/a	1.000e-2	n/a
S96T001023			TOC by Persulfate/Coulometry	ug/mL	91.36	2.800	1.97e+03	2.090e3	2.030e3	5.91	n/a	40.00	n/a
S96T001023			Tot. Organic Carbon by Coul.	ug/mL	99.70	<5.000	2.49e+03	2.540e3	2.520e3	1.99	97.30	55.00	n/a
S96T001023			Tot. Inorg. Carbon by Coul.	ug/mL	103.2	<5.000	2.43e+04	2.460e4	2.440e4	1.23	99.00	105.0	n/a
S96T001023			% Water by TGA using Mettler	%	102.2	n/a	79.05	7.949e1	7.927e1	0.52	n/a	n/a	n/a
S96T001023			Specific Gravity	Sp.G.	98.45	n/a	1.173	1.193e0	1.183e0	1.69	n/a	1.000e-3	n/a
S96T001023			pH Direct	pH	n/a	n/a	10.24	1.024e1	1.024e1	0.06	n/a	1.000e-2	n/a
S96T001023			Ammonia by ISE-Std Additions	ug/mL	96.84	3.100	< 5.000	<5	n/a	n/a	99.00	5.000	n/a
S96T001023			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T001023			DSC Exotherm using Mettler	Joules/g	108.3	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T001023		D	Silver-ICP-Acid Dil.	ug/mL	100.8	<1.000e-2	9.210	9.930e0	9.570e0	7.52	87.10	6.010	n/a
S96T001023		D	Aluminium-ICP-Acid Dil.	ug/mL	98.40	<5.000e-2	< 30.00	<3.00e1	n/a	n/a	95.90	30.10	n/a
S96T001023		D	Arsenic-ICP-Acid Dil.	ug/mL	103.8	<1.000e-1	< 60.10	<6.01e1	n/a	n/a	100.4	60.10	n/a
S96T001023		D	Boron-ICP-Acid Dil.	ug/mL	100.4	<5.000e-2	< 30.00	<3.00e1	n/a	n/a	98.30	30.10	n/a
S96T001023		D	Barium-ICP-Acid Dil.	ug/mL	102.6	<5.000e-2	< 30.00	<3.00e1	n/a	n/a	95.80	30.10	n/a
S96T001023		D	Beryllium-ICP-Acid Dil.	ug/mL	104.0	<5.000e-3	< 3.000	<3.00e0	n/a	n/a	99.40	3.000	n/a
S96T001023		D	Bismuth-ICP-Acid Dil.	ug/mL	101.8	<1.000e-1	< 60.10	<6.01e1	n/a	n/a	102.6	60.10	n/a
S96T001023		D	Calcium-ICP-Acid Dil.	ug/mL	104.2	<1.000e-1	< 60.10	<6.01e1	n/a	n/a	102.1	60.10	n/a
S96T001023		D	Cadmium-ICP-Acid Dil.	ug/mL	102.8	<5.000e-3	< 3.000	<3.00e0	n/a	n/a	98.80	3.000	n/a
S96T001023		D	Cerium-ICP-Acid Dil.	ug/mL	105.6	<1.000e-1	< 60.10	<6.01e1	n/a	n/a	101.9	60.10	n/a
S96T001023		D	Cobalt-ICP-Acid Dil.	ug/mL	103.4	<2.000e-2	< 12.00	<1.20e1	n/a	n/a	99.80	12.00	n/a
S96T001023		D	Chromium-ICP-Acid Dil.	ug/mL	104.0	<1.000e-2	< 6.010	<6.01e0	n/a	n/a	100.1	6.010	n/a
S96T001023		D	Copper-ICP-Acid Dil.	ug/mL	104.2	<1.000e-2	< 6.010	<6.01e0	n/a	n/a	96.30	6.010	n/a
S96T001023		D	Iron-ICP-Acid Dil.	ug/mL	103.2	<5.000e-2	< 30.00	<3.00e1	n/a	n/a	99.30	30.10	n/a
S96T001023		D	Potassium-ICP-Acid Dil.	ug/mL	103.4	<5.000e-1	6.94e+02	7.880e2	7.410e2	12.7	107.3	300.0	n/a
S96T001023		D	Lanthanum-ICP-Acid Dil.	ug/mL	103.6	<5.000e-2	< 30.00	<3.00e1	n/a	n/a	97.80	30.10	n/a
S96T001023		D	Lithium-ICP-Acid Dil.	ug/mL	99.60	<1.000e-2	< 6.010	<6.01e0	n/a	n/a	96.80	6.010	n/a
S96T001023		D	Magnesium-ICP-Acid Dil.	ug/mL	97.60	<1.000e-1	< 60.10	<6.01e1	n/a	n/a	95.00	60.10	n/a
S96T001023		D	Manganese-ICP-Acid Dil.	ug/mL	100.6	<1.000e-2	< 6.010	<6.01e0	n/a	n/a	94.60	6.010	n/a
S96T001023		D	Molybdenum-ICP-Acid Dil.	ug/mL	103.8	<5.000e-2	< 30.00	<3.00e1	n/a	n/a	103.8	30.10	n/a
S96T001023		D	Sodium-ICP-Acid Dil.	ug/mL	98.20	<1.000e-1	1.08e+05	1.040e5	1.060e5	3.77	n/a	60.10	n/a
S96T001023		D	Neodymium-ICP-Acid Dil.	ug/mL	105.2	<1.000e-1	< 60.10	<6.01e1	n/a	n/a	100.1	60.10	n/a
S96T001023		D	Nickel-ICP-Acid Dil.	ug/mL	101.6	<2.000e-2	14.00	1.470e1	1.435e1	4.88	98.80	12.00	n/a
S96T001023		D	Phosphorus-ICP-Acid Dil.	ug/mL	102.2	<2.000e-1	2.53e+02	2.470e2	2.500e2	2.40	97.30	120.0	n/a
S96T001023		D	Lead-ICP-Acid Dil.	ug/mL	102.0	<1.000e-1	< 60.10	<6.01e1	n/a	n/a	102.4	60.10	n/a
S96T001023		D	Sulfer-ICP-Acid Dil.	ug/mL	98.80	<1.000e-1	2.49e+03	2.450e3	2.470e3	1.62	69.70	60.10	n/a
S96T001023		D	Antimony-ICP-Acid Dil.	ug/mL	96.20	<6.000e-2	< 36.10	<3.61e1	n/a	n/a	96.90	36.10	n/a
S96T001023		D	Selenium-ICP-Acid Dil.	ug/mL	98.40	<1.000e-1	< 60.10	<6.01e1	n/a	n/a	99.40	60.10	n/a
S96T001023		D	Silicon-ICP-Acid Dil.	ug/mL	99.00	<5.000e-2	< 30.00	<3.00e1	n/a	n/a	99.90	30.10	n/a
S96T001023		D	Samarium-ICP-Acid Dil.	ug/mL	100.4	<1.000e-1	< 60.10	<6.01e1	n/a	n/a	95.90	60.10	n/a
S96T001023		D	Strontium-ICP-Acid Dil.	ug/mL	101.8	<1.000e-2	< 6.010	<6.01e0	n/a	n/a	96.30	6.010	n/a
S96T001023		D	Titanium-ICP-Acid Dil.	ug/mL	100.4	<1.000e-2	< 6.010	<6.01e0	n/a	n/a	96.10	6.010	n/a
S96T001023		D	Thallium-ICP-Acid Dil.	ug/mL	99.00	<2.000e-1	<1.20e+02	<1.20e2	n/a	n/a	96.40	120.0	n/a

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INTERIM

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001023		D	Uranium-ICP-Acid Dil.	ug/mL	99.20	<5.000e-1	1.48e+03	1.410e3	1.440e3	4.84	76.80	300.0	n/a
S96T001023		D	Vanadium-ICP-Acid Dil.	ug/mL	103.4	<5.000e-2	< 30.00	<3.00e1	n/a	n/a	99.40	30.10	n/a
S96T001023		D	Zinc-ICP-Acid Dil.	ug/mL	101.6	<1.000e-2	< 6.010	<6.01e0	n/a	n/a	100.6	6.010	n/a
S96T001023		D	Zirconium-ICP-Acid Dil.	ug/mL	102.0	<1.000e-2	3.44e+02	3.330e2	3.385e2	3.25	92.80	6.010	n/a
S96T001023			Sulfate by IC-Dionex4000i/4500	ug/mL	92.08	<1.360e-1	6.54e+03	6.530e3	6.540e3	0.15	93.03	151.0	n/a
S96T001023			Phosphate-IC-Dionex 4000i/4500	ug/mL	89.74	<1.190e-1	8.63e+02	8.450e2	8.540e2	2.11	81.68	132.1	n/a
S96T001023			Oxalate by IC - Dionex 4000i	ug/mL	97.25	<1.050e-1	2.98e+03	2.980e3	2.980e3	0.00	97.25	116.7	n/a
S96T001023			Nitrate-IC - Dionex 4000i/4500	ug/mL	93.16	4.44e-01	1.11e+03	1.120e3	1.110e3	0.90	88.27	155.5	n/a
S96T001023			Nitrite-IC - Dionex 4000i/4500	ug/mL	92.18	<1.070e-1	2.42e+04	2.400e4	2.410e4	0.83	100.9	118.9	n/a
S96T001023			Fluoride-IC-Dionex 4000i/4500	ug/mL	91.69	<1.300e-2	1.83e+02	1.840e2	1.834e2	0.54	105.1	14.44	n/a
S96T001023			Chloride-IC-Dionex 4000i/4500	ug/mL	99.49	<1.700e-2	3.20e+02	3.170e2	3.187e2	0.94	92.15	36.06	n/a
S96T001024			Technetium-99 Liq. Scint.	uCi/mL	103.9	<3.650e-4	1.60e-01	4.790e-1	3.200e-1	99.8	n/a	2.570e-4	6.80E-01
S96T001024			Strontium-89/90 High Level	uCi/mL	95.12	8.00e-03	4.84e-01	4.820e-1	4.830e-1	0.41	n/a	2.000e-3	3.01E+00
S96T001024			Pu-239/240 by TRU-SPEC Resin	uCi/mL	88.28	<3.120e-3	7.38e-01	8.140e-1	7.760e-1	9.79	n/a	3.400e-2	1.67E+00
S96T001024			Cesium-137 by GEA	uCi/mL	101.5	<5.810e-5	1.08e+02	1.100e2	1.090e2	1.83	n/a	n/a	0.210
S96T001024			Cobalt-60 by GEA	uCi/mL	99.23	<1.990e-5	<6.19e-03	<5.55e-3	n/a	n/a	n/a	6.000e-3	n/a
S96T001024			Am-241 by Extraction	uCi/mL	80.13	<1.150e-2	<1.13e-02	<1.28E-2	n/a	n/a	n/a	1.100e-2	5.59E+00
S96T001024			Alpha in Liquid Samples	uCi/mL	88.23	<4.980e-3	9.28e-01	8.800e-1	9.040e-1	5.31	92.86	1.200e-2	5.11E+00

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Table 3: Interim Results for Tank 241-C-106 Grab Samples
C-106 GRAB

RISER: 7
SEGMENT #: 6C-96-13

SEGMENT PORTION: Centrifuged Solids (Grab Sample)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001030			% Water by Gravimetric	%	98.99	n/a	19.30	2.240e1	2.085e1	14.9	n/a	1.000e-2	n/a
S96T001030			Volume % Solids	%	n/a	n/a	67.30	n/a	n/a	n/a	n/a	n/a	n/a
S96T001030			% Water by TGA on Perkin Elmer	%	99.16	n/a	9.240	9.480e0	9.360e0	2.56	n/a	n/a	n/a
S96T001030			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	2.00e+02	2.856e2	2.426e2	35.4	n/a	n/a	n/a
S96T001030			DSC Exotherm using Mettler	Joules/g	112.1	n/a	1.81e+02	2.589e2	2.199e2	35.5	n/a	n/a	n/a
S96T001030			Bulk Density of Sample	g/mL	n/a	n/a	1.520	n/a	n/a	n/a	n/a	5.000e-1	n/a

Control Sample: Control Sample

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001034			% Water by TGA using Mettler	%	99.43	n/a	31.29	3.091e1	3.110e1	1.22	n/a	n/a	n/a
S96T001034			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	1.27e+02	9.681e1	1.119e2	26.9	n/a	n/a	n/a
S96T001034			DSC Exotherm using Mettler	Joules/g	100.9	n/a	87.40	6.670e1	7.705e1	26.9	n/a	n/a	n/a
S96T001036	F		Alpha of Digested Solid	uCi/g	114.8	<6.300e-2	6.330	2.420e0	4.375e0	89.4	96.66	1.090e-1	6.97E+00
S96T001036	F		Am-241 by Extraction	uCi/g	101.0	<1.280e-2	1.460	1.210e0	1.335e0	18.7	n/a	1.200e-1	2.62E+00
S96T001036	F		Cobalt-60 by GEA	uCi/g	101.4	<4.120e-1	<5.75e-01	<5.58e-1	n/a	n/a	n/a	5.750e-1	n/a
S96T001036	F		Cesium-137 by GEA	uCi/g	103.2	<4.460e-1	8.99e+02	7.160e2	8.076e2	22.7	n/a	n/a	0.810
S96T001036	F		Pu-239/240 by TRU-SPEC Resin	uCi/g	97.90	<1.600e-2	1.200	8.950e-1	1.047e0	29.1	n/a	6.800e-2	1.82E+00
S96T001036	F		Strontium-89/90 High Level	uCi/g	99.19	6.97e-01	1.24e+03	4.830e2	8.615e2	87.9	n/a	1.870e-1	4.24E-01
S96T001036	F		Technetium-99 Liq. Scint.	uCi/g	102.9	<1.620e-2	3.59e-02	2.410e-2	3.000e-2	39.3	n/a	1.700e-2	6.45E+00

Decanted Supernate (Liquid Grab Sludge): Decanted Supernate (Liquid Grab Sludge)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001032			Specific Gravity	Sp.G.	n/a	n/a	I.S.	I.S.	n/a	n/a	n/a	1.000e-3	n/a
S96T002025			Tot. Organic Carbon by Coul.	ug/mL	100.0	1.00e-01	1.95e+03	1.950e3	1.950e3	0.00	103.0	55.00	n/a
S96T002025			pH Direct	pH	n/a	n/a	10.09	n/a	n/a	n/a	n/a	1.000e-2	n/a
S96T002025			Pu-239/240 by TRU-SPEC Resin	uCi/mL	96.33	<3.330e-3	7.73e-01	7.660e-1	7.700e-1	0.91	n/a	3.800e-2	1.66E+00
S96T002025			Sulfate by IC-Dionex4000i/4500	ug/mL	101.6	<1.360e-1	7.19e+03	7.980e3	7.580e3	10.4	n/a	151.0	n/a
S96T002025			Phosphate-IC-Dionex 4000i/4500	ug/mL	103.5	<1.190e-1	4.88e+02	5.580e2	5.228e2	13.4	n/a	132.1	n/a
S96T002025			Oxalate by IC - Dionex 4000i	ug/mL	103.2	<1.050e-1	3.11e+03	3.470e3	3.290e3	10.9	n/a	116.7	n/a
S96T002025			Nitrate-IC - Dionex 4000i/4500	ug/mL	103.1	<1.400e-1	9.69e+02	1.100e3	1.030e3	12.7	n/a	155.5	n/a
S96T002025			Nitrite-IC - Dionex 4000i/4500	ug/mL	103.5	<1.070e-1	2.74e+04	3.050e4	2.900e4	10.7	n/a	118.9	n/a
S96T002025			Fluoride-IC-Dionex 4000i/4500	ug/mL	98.98	<1.300e-2	1.91e+02	2.090e2	2.002e2	9.00	n/a	14.44	n/a
S96T002025			Chloride-IC-Dionex 4000i/4500	ug/mL	99.75	<1.700e-2	2.82e+02	2.930e2	2.872e2	3.83	n/a	18.89	n/a
S96T002025			Cesium-137 by GEA	uCi/mL	90.88	<2.680e-3	1.04e+02	1.050e2	1.045e2	0.96	n/a	n/a	0.160
S96T002025			Cobalt-60 by GEA	uCi/mL	93.30	<8.670e-4	<4.03e-03	<4.34e-3	n/a	n/a	n/a	4.000e-3	n/a

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Filtered Centrifuged Solids: Filtered Centrifuged Solids

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001559			% Water by TGA on Perkin Elmer	%	99.39	n/a	21.28	2.612e1	2.370e1	20.4	n/a	n/a	n/a
S96T001559			DSC Exotherm on Perkin Elmer	Joules/g	100.3	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T001559			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T001560			TOC by Persulfate/Coulometry	ug/g	94.03	3.000	1.60e+04	1.350e4	1.480e4	16.9	77.00	40.00	n/a
S96T001560			TIC by Acid/Coulometry	ug/g	93.68	3.00e-01	2.64e+04	2.660e4	2.650e4	0.75	103.0	5.000	n/a
S96T001561			% Water by Gravimetric	%	98.65	n/a	25.90	2.670e1	2.630e1	3.04	n/a	1.000e-2	n/a
S96T001562			pH on SST Samples	pH	n/a	n/a	10.67	1.062e1	1.064e1	0.47	n/a	1.000e-2	n/a
S96T001563		F	Alpha of Digested Solid	uCi/g	114.8	<6.300e-2	3.610	3.670e0	3.640e0	1.65	108.4	1.100e-1	9.56E+00
S96T001563		F	Am-241 by Extraction	uCi/g	101.0	<1.280e-2	1.590	1.630e0	1.610e0	2.48	n/a	1.320e-1	2.54E+00
S96T001563		F	Cobalt-60 by GEA	uCi/g	101.4	<4.120e-1	<6.24e-01	<5.83e-1	n/a	n/a	n/a	6.240e-1	n/a
S96T001563		F	Cesium-137 by GEA	uCi/g	103.2	<4.460e-1	8.88e+02	8.920e2	8.902e2	0.45	n/a	n/a	0.810
S96T001563		F	Pu-239/240 by TRU-SPEC Resin	uCi/g	97.90	<1.600e-2	1.650	1.540e0	1.595e0	6.90	n/a	8.500e-2	1.76E+00
S96T001563		F	Strontium-89/90 High Level	uCi/g	99.19	6.97e-01	6.38e+02	6.830e2	6.605e2	6.81	n/a	1.860e-1	5.91E-01
S96T001563		F	Technetium-99 Liq. Scint.	uCi/g	102.9	<1.620e-2	4.11e-02	3.230e-2	3.670e-2	24.0	n/a	1.500e-2	4.90E-01
S96T001564		A	Silver -ICP-Acid Digest	ug/g	90.20	<1.000e-2	1.81e+03	3.330e3	2.570e3	59.1	n/a	4.220	n/a
S96T001564		A	Aluminium -ICP-Acid Digest	ug/g	91.40	1.09e+01	6.21e+04	6.450e4	6.330e4	3.79	n/a	21.10	n/a
S96T001564		A	Arsenic -ICP-Acid Digest	ug/g	93.80	<1.000e-1	< 42.20	<4.18e1	n/a	n/a	n/a	42.20	n/a
S96T001564		A	Boron -ICP-Acid Digest	ug/g	97.60	6.50e-01	79.30	6.130e1	7.030e1	25.6	n/a	21.10	n/a
S96T001564		A	Barium -ICP-Acid Digest	ug/g	94.00	<5.000e-2	3.67e+02	3.750e2	3.710e2	2.16	n/a	21.10	n/a
S96T001564		A	Beryllium -ICP-Acid Digest	ug/g	102.6	<5.000e-3	< 2.110	<2.09e0	n/a	n/a	n/a	2.110	n/a
S96T001564		A	Bismuth -ICP-Acid Digest	ug/g	91.20	<1.000e-1	< 42.20	<4.18e1	n/a	n/a	n/a	42.20	n/a
S96T001564		A	Calcium -ICP-Acid Digest	ug/g	91.60	1.28e+01	1.20e+03	1.270e3	1.240e3	5.67	n/a	42.20	n/a
S96T001564		A	Cadmium -ICP-Acid Digest	ug/g	89.60	<5.000e-3	36.50	3.890e1	3.770e1	6.37	n/a	2.110	n/a
S96T001564		A	Cerium -ICP-Acid Digest	ug/g	97.00	<1.000e-1	2.13e+02	2.510e2	2.320e2	16.4	n/a	42.20	n/a
S96T001564		A	Cobalt -ICP-Acid Digest	ug/g	92.40	<2.000e-2	10.30	1.110e1	1.070e1	7.48	n/a	8.450	n/a
S96T001564		A	Chromium -ICP-Acid Digest	ug/g	91.00	<1.000e-2	6.55e+02	6.820e2	6.685e2	4.04	n/a	4.220	n/a
S96T001564		A	Copper -ICP-Acid Digest	ug/g	92.00	1.10e-02	1.04e+02	1.080e2	1.060e2	3.77	n/a	4.220	n/a
S96T001564		A	Iron -ICP-Acid Digest	ug/g	90.80	5.00e-02	7.00e+04	7.290e4	7.140e4	4.06	n/a	21.10	n/a
S96T001564		A	Potassium -ICP-Acid Digest	ug/g	93.00	<5.000e-1	9.42e+02	9.320e2	9.370e2	1.07	n/a	211.0	n/a
S96T001564		A	Lanthanum -ICP-Acid Digest	ug/g	94.40	<5.000e-2	70.50	7.350e1	7.200e1	4.17	n/a	21.10	n/a
S96T001564		A	Lithium -ICP-Acid Digest	ug/g	95.20	<1.000e-2	4.900	5.090e0	4.995e0	3.80	n/a	4.220	n/a
S96T001564		A	Magnesium -ICP-Acid Digest	ug/g	86.40	<1.000e-1	2.79e+02	3.030e2	2.910e2	8.25	n/a	42.20	n/a
S96T001564		A	Manganese -ICP-Acid Digest	ug/g	90.80	<1.000e-2	3.01e+03	3.120e3	3.060e3	3.59	n/a	4.220	n/a
S96T001564		A	Molybdenum -ICP-Acid Digest	ug/g	91.40	<5.000e-2	< 21.10	<2.09e1	n/a	n/a	n/a	21.10	n/a
S96T001564		A	Sodium -ICP-Acid Digest	ug/g	103.6	8.77e-01	1.41e+05	1.350e5	1.380e5	4.35	n/a	42.20	n/a
S96T001564		A	Neodymium -ICP-Acid Digest	ug/g	93.80	<1.000e-1	1.74e+02	1.870e2	1.805e2	7.20	n/a	42.20	n/a
S96T001564		A	Nickel -ICP-Acid Digest	ug/g	91.80	<2.000e-2	7.08e+02	7.400e2	7.240e2	4.42	n/a	8.450	n/a
S96T001564		A	Phosphorus -ICP-Acid Digest	ug/g	96.80	<2.000e-1	2.71e+03	2.740e3	2.720e3	1.10	n/a	84.50	n/a
S96T001564		A	Lead -ICP-Acid Digest	ug/g	86.80	<1.000e-1	2.81e+03	2.850e3	2.830e3	1.41	n/a	42.20	n/a
S96T001564		A	Sulfur -ICP-Acid Digest	ug/g	90.20	<1.000e-1	1.67e+03	1.510e3	1.590e3	10.1	n/a	42.20	n/a
S96T001564		A	Antimony -ICP-Acid Digest	ug/g	93.40	<6.000e-2	< 25.30	<2.51e1	n/a	n/a	n/a	25.30	n/a
S96T001564		A	Selenium -ICP-Acid Digest	ug/g	88.60	<1.000e-1	< 42.20	<4.18e1	n/a	n/a	n/a	42.20	n/a
S96T001564		A	Silicon -ICP-Acid Digest	ug/g	125.0	7.70e-01	3.55e+04	2.950e4	3.250e4	18.5	n/a	21.10	n/a
S96T001564		A	Samarium -ICP-Acid Digest	ug/g	92.60	<1.000e-1	< 42.20	<4.18e1	n/a	n/a	n/a	42.20	n/a
S96T001564		A	Strontium -ICP-Acid Digest	ug/g	92.40	<1.000e-2	23.50	2.460e1	2.405e1	4.57	n/a	4.220	n/a
S96T001564		A	Titanium-ICP-Acid Digest	ug/g	86.20	<1.000e-2	1.15e+02	1.210e2	1.180e2	5.08	n/a	4.220	n/a
S96T001564		A	Thallium -ICP-Acid Digest	ug/g	86.00	<2.000e-1	< 84.50	<8.36e1	n/a	n/a	n/a	84.50	n/a
S96T001564		A	Uranium -ICP-Acid Digest	ug/g	91.20	<5.000e-1	1.06e+03	9.270e2	9.935e2	13.4	n/a	211.0	n/a

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Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001564		A	Vanadium -ICP-Acid Digest	ug/g	111.0	<5.000e-2	< 21.10	<2.09e1	n/a	n/a	n/a	21.10	n/a
S96T001564		A	Zinc -ICP-Acid Digest	ug/g	87.40	1.10e-02	53.50	5.800e1	5.575e1	8.07	n/a	4.220	n/a
S96T001564		A	Zirconium -ICP-Acid Digest	ug/g	99.20	<1.000e-2	4.52e+02	1.100e3	7.760e2	83.5	n/a	4.220	n/a
S96T001565		W	Chloride-IC-Dionex 4000i/4500	ug/g	91.39	<1.700e-2	<1.38e+04	<1.43e4	n/a	n/a	93.80	1.380e4	n/a
S96T001565		W	Fluoride-IC-Dionex 4000i/4500	ug/g	95.42	<1.300e-2	<1.06e+04	<1.09e4	n/a	n/a	96.44	1.060e4	n/a
S96T001565		W	Nitrite-IC - Dionex 4000i/4500	ug/g	93.80	<1.070e-1	<8.71e+04	<9.00e4	n/a	n/a	97.26	8.710e4	n/a
S96T001565		W	Nitrate by IC-Dionex4000i/4500	ug/g	93.81	<1.400e-1	2.90e+07	1.800e7	2.350e7	46.8	97.07	1.140e5	n/a
S96T001565		W	Oxalate by IC - Dionex 4000i	ug/g	97.09	<1.050e-1	<4.38e+04	9.230e4	n/a	n/a	98.64	4.380e4	n/a
S96T001565		W	Phosphate-IC-Dionex 4000i/4500	ug/g	95.79	<1.190e-1	<9.68e+04	<1.00e5	n/a	n/a	97.99	9.680e4	n/a
S96T001565		W	Sulfate by IC-Dionex4000i/4500	ug/g	95.09	<1.360e-1	<1.11e+05	<1.14e5	n/a	n/a	97.62	1.110e5	n/a

Interstitial Liquid: Interstitial Liquid

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001566			TOC by Persulfate/Coulometry	ug/mL	93.36	6.500	1.86e+03	1.830e3	1.840e3	1.63	n/a	40.00	n/a
S96T001566			% Water by TGA using Mettler	%	101.2	n/a	74.92	7.660e1	7.576e1	2.22	n/a	n/a	n/a
S96T001566			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	4.90e+02	3.993e2	4.449e2	20.5	n/a	n/a	n/a
S96T001566			DSC Exotherm using Mettler	Joules/g	93.85	n/a	1.19e+02	9.680e1	1.078e2	20.5	n/a	n/a	n/a
S96T001566			Strontium-89/90 High Level	uCi/mL	n/a	n/a	6.39e-02	8.860e-2	7.620e-2	32.4	n/a	2.400e-2	3.65E+01
S96T001566		D	Silver-ICP-Acid Dil.	ug/mL	97.40	<1.000e-2	8.510	9.270e0	8.890e0	8.55	92.20	4.010	n/a
S96T001566		D	Aluminium-ICP-Acid Dil.	ug/mL	96.20	<5.000e-2	48.10	6.690e1	5.750e1	32.7	90.00	20.10	n/a
S96T001566		D	Arsenic-ICP-Acid Dil.	ug/mL	100.4	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	106.2	40.10	n/a
S96T001566		D	Boron-ICP-Acid Dil.	ug/mL	101.0	<5.000e-2	32.10	3.240e1	3.225e1	0.93	98.20	20.10	n/a
S96T001566		D	Barium-ICP-Acid Dil.	ug/mL	97.60	<5.000e-2	< 20.10	<2.01e1	n/a	n/a	100.0	20.10	n/a
S96T001566		D	Beryllium-ICP-Acid Dil.	ug/mL	102.6	<5.000e-3	< 2.000	<2.00e0	n/a	n/a	102.5	2.000	n/a
S96T001566		D	Bismuth-ICP-Acid Dil.	ug/mL	98.60	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	90.00	40.10	n/a
S96T001566		D	Calcium-ICP-Acid Dil.	ug/mL	98.20	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	100.8	40.10	n/a
S96T001566		D	Cadmium-ICP-Acid Dil.	ug/mL	100.2	<5.000e-3	< 2.000	<2.00e0	n/a	n/a	96.80	2.000	n/a
S96T001566		D	Cerium-ICP-Acid Dil.	ug/mL	98.60	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	96.80	40.10	n/a
S96T001566		D	Cobalt-ICP-Acid Dil.	ug/mL	99.60	<2.000e-2	< 8.020	<8.02e0	n/a	n/a	97.00	8.020	n/a
S96T001566		D	Chromium-ICP-Acid Dil.	ug/mL	100.0	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	98.30	4.010	n/a
S96T001566		D	Copper-ICP-Acid Dil.	ug/mL	99.00	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	99.30	4.010	n/a
S96T001566		D	Iron-ICP-Acid Dil.	ug/mL	103.2	<5.000e-2	52.80	6.470e1	5.875e1	20.3	98.80	20.10	n/a
S96T001566		D	Potassium-ICP-Acid Dil.	ug/mL	97.80	<5.000e-1	6.71e+02	6.340e2	6.525e2	5.67	82.10	200.0	n/a
S96T001566		D	Lanthanum-ICP-Acid Dil.	ug/mL	99.60	<5.000e-2	< 20.10	<2.01e1	n/a	n/a	100.5	20.10	n/a
S96T001566		D	Lithium-ICP-Acid Dil.	ug/mL	95.00	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	91.00	4.010	n/a
S96T001566		D	Magnesium-ICP-Acid Dil.	ug/mL	96.60	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	94.30	40.10	n/a
S96T001566		D	Manganese-ICP-Acid Dil.	ug/mL	100.0	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	99.00	4.010	n/a
S96T001566		D	Molybdenum-ICP-Acid Dil.	ug/mL	98.20	<5.000e-2	22.40	2.270e1	2.255e1	1.33	98.20	20.10	n/a
S96T001566		D	Sodium-ICP-Acid Dil.	ug/mL	95.80	<1.000e-1	1.13e+05	1.100e5	1.120e5	2.69	n/a	40.10	n/a
S96T001566		D	Neodymium-ICP-Acid Dil.	ug/mL	104.6	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	105.2	40.10	n/a
S96T001566		D	Nickel-ICP-Acid Dil.	ug/mL	99.80	<2.000e-2	15.20	1.500e1	1.510e1	1.32	97.70	8.020	n/a
S96T001566		D	Phosphorus-ICP-Acid Dil.	ug/mL	112.2	<2.000e-1	3.68e+02	3.930e2	3.805e2	6.57	121.9	80.20	n/a
S96T001566		D	Lead-ICP-Acid Dil.	ug/mL	100.6	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	102.8	40.10	n/a
S96T001566		D	Sulfer-ICP-Acid Dil.	ug/mL	99.60	<1.000e-1	2.73e+03	2.710e3	2.720e3	0.74	85.10	40.10	n/a
S96T001566		D	Antimony-ICP-Acid Dil.	ug/mL	105.6	<6.000e-2	< 24.10	<2.41e1	n/a	n/a	84.30	24.10	n/a
S96T001566		D	Selenium-ICP-Acid Dil.	ug/mL	100.6	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	117.0	40.10	n/a
S96T001566		D	Silicon-ICP-Acid Dil.	ug/mL	94.40	<5.000e-2	1.18e+02	1.240e2	1.210e2	4.96	90.80	20.10	n/a
S96T001566		D	Samarium-ICP-Acid Dil.	ug/mL	98.80	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	102.8	40.10	n/a
S96T001566		D	Strontium-ICP-Acid Dil.	ug/mL	97.80	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	100.3	4.010	n/a

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Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001566		D	Titanium-ICP-Acid Dil.	ug/mL	95.60	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	96.80	4.010	n/a
S96T001566		D	Thallium-ICP-Acid Dil.	ug/mL	94.60	<2.000e-1	< 80.20	<8.02e1	n/a	n/a	86.50	80.20	n/a
S96T001566		D	Uranium-ICP-Acid Dil.	ug/mL	95.60	<5.000e-1	1.87e+03	1.830e3	1.850e3	2.16	99.85	200.0	n/a
S96T001566		D	Vanadium-ICP-Acid Dil.	ug/mL	101.4	<5.000e-2	< 20.10	<2.01e1	n/a	n/a	100.0	20.10	n/a
S96T001566		D	Zinc-ICP-Acid Dil.	ug/mL	100.8	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	96.80	4.010	n/a
S96T001566		D	Zirconium-ICP-Acid Dil.	ug/mL	98.80	<1.000e-2	3.79e+02	3.750e2	3.770e2	1.06	99.90	4.010	n/a
S96T001566			Cesium-137 by GEA	uCi/mL	96.31	<8.700e-3	1.35e+02	1.700e2	1.525e2	23.0	n/a	n/a	0.210
S96T001566			Cobalt-60 by GEA	uCi/mL	98.44	<2.890e-3	<6.19e-03	<7.13e-3	n/a	n/a	n/a	6.000e-3	n/a

Potential Organic Layer: Potential Organic Layer

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001553			% Water by TGA using Mettler	%	103.7	n/a	72.40	3.011e1	5.126e1	82.5	n/a	n/a	n/a
S96T001553			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	7.54e+02	6.083e2	6.811e2	21.4	n/a	n/a	n/a
S96T001553			DSC Exotherm using Mettler	Joules/g	113.9	n/a	2.08e+02	1.679e2	1.880e2	21.4	n/a	n/a	n/a

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Table 3: Interim Results for Tank 241-C-106 Grab Samples
C-106 GRAB

RISER: 7
SEGMENT #: 6C-96-14

SEGMENT PORTION: Compatibility Study Mixture

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T002825			% Water by TGA on Perkin Elmer	%	97.87	n/a	95.78	9.016e1	9.297e1	6.04	n/a	n/a	n/a
S96T002825			pH Direct	pH	n/a	n/a	11.12	n/a	n/a	n/a	n/a	1.000e-2	n/a
S96T002825			DSC Exotherm on Perkin Elmer	Joules/g	100.6	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T002827			% Water by TGA using Mettler	%	103.7	n/a	95.08	9.340e1	9.424e1	1.78	n/a	n/a	n/a
S96T002827			Bulk Density of Sample	g/mL	n/a	n/a		n/a	n/a	n/a	n/a	5.000e-1	n/a
S96T002829			% Water by TGA using Mettler	%	99.54	n/a	95.69	9.602e1	9.585e1	0.34	n/a	n/a	n/a
S96T002829			pH Direct	pH	n/a	n/a	11.80	1.179e1	1.179e1	0.08	n/a	1.000e-2	n/a
S96T002829	1		DSC Exotherm using Mettler	Joules/g	n/a	n/a		n/a	n/a	n/a	n/a	n/a	n/a
S96T002829			DSC Exotherm using Mettler	Joules/g	111.8	n/a	0.00e+00	5.802e2	2.901e2	200	n/a	n/a	n/a
S96T002831			% Water by TGA on Perkin Elmer	%	99.61	n/a	83.85	8.553e1	8.469e1	1.98	n/a	n/a	n/a
S96T002831			Bulk Density of Sample	g/mL	n/a	n/a		n/a	n/a	n/a	n/a	5.000e-1	n/a

Decanted Supernate (Liquid Grab Sludge): Decanted Supernate (Liquid Grab Sludge)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T002826			Specific Gravity	Sp.G.	101.2	n/a	9.88e-01	9.720e-1	9.800e-1	1.63	n/a	1.000e-2	n/a
S96T002826			pH Direct	pH	n/a	n/a	11.50	n/a	n/a	n/a	n/a	1.000e-2	n/a
S96T002830			Specific Gravity	Sp.G.	97.43	n/a	9.96e-01	9.990e-1	9.980e-1	0.30	n/a	1.000e-2	n/a
S96T002830			pH Direct	pH	n/a	n/a	11.91	1.190e1	1.191e1	0.08	n/a	1.000e-2	n/a

Sludge (from Liquid Grab Sample): Sludge (from Liquid Grab Sample)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001551			TOC by Persulfate/Coulometry	ug/g	95.36	8.300	2.97e+04	2.850e4	2.910e4	4.12	82.00	40.00	n/a
S96T002350			% Water by TGA using Mettler	%	99.31	n/a	65.05	6.326e1	6.416e1	2.79	n/a	n/a	n/a
S96T002350			DSC Exotherm Dry, Calculated	Joules/g Dry	n/a	n/a	83.15	1.705e2	1.268e2	68.9	n/a	n/a	n/a
S96T002350			DSC Exotherm using Mettler	Joules/g	111.4	n/a	29.80	6.110e1	4.545e1	68.9	n/a	n/a	n/a
S96T002351			% Water by TGA on Perkin Elmer	%	97.43	n/a	56.03	5.456e1	5.530e1	2.66	n/a	n/a	n/a
S96T002351			DSC Exotherm Dry, Calculated	Joules/g Dry	n/a	n/a	4.04e+02	4.879e2	4.459e2	18.8	n/a	n/a	n/a
S96T002351			DSC Exotherm using Mettler	Joules/g	112.8	n/a	1.81e+02	2.181e2	1.993e2	18.8	n/a	n/a	n/a

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Table 3: Interim Results for Tank 241-C-106 Grab Samples
C-106 GRAB

RISER: 7
SEGMENT #: 6C-96-15

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001546		D	Silver-ICP-Acid Dil.	ug/mL	97.80	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	90.00	4.010	n/a
S96T001546		D	Aluminium-ICP-Acid Dil.	ug/mL	100.0	<5.000e-2	< 20.10	<2.01e1	n/a	n/a	96.30	20.10	n/a
S96T001546		D	Arsenic-ICP-Acid Dil.	ug/mL	103.0	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	103.3	40.10	n/a
S96T001546		D	Boron-ICP-Acid Dil.	ug/mL	103.2	<5.000e-2	< 20.10	<2.01e1	n/a	n/a	101.0	20.10	n/a
S96T001546		D	Barium-ICP-Acid Dil.	ug/mL	104.0	<5.000e-2	< 20.10	<2.01e1	n/a	n/a	102.8	20.10	n/a
S96T001546		D	Beryllium-ICP-Acid Dil.	ug/mL	105.6	<5.000e-3	< 2.000	<2.00e0	n/a	n/a	102.5	2.000	n/a
S96T001546		D	Bismuth-ICP-Acid Dil.	ug/mL	101.4	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	89.50	40.10	n/a
S96T001546		D	Calcium-ICP-Acid Dil.	ug/mL	103.2	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	104.2	40.10	n/a
S96T001546		D	Cadmium-ICP-Acid Dil.	ug/mL	99.60	<5.000e-3	< 2.000	<2.00e0	n/a	n/a	94.80	2.000	n/a
S96T001546		D	Cerium-ICP-Acid Dil.	ug/mL	105.0	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	100.8	40.10	n/a
S96T001546		D	Cobalt-ICP-Acid Dil.	ug/mL	100.0	<2.000e-2	< 8.020	<8.02e0	n/a	n/a	95.00	8.020	n/a
S96T001546		D	Chromium-ICP-Acid Dil.	ug/mL	98.80	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	94.80	4.010	n/a
S96T001546		D	Copper-ICP-Acid Dil.	ug/mL	105.0	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	102.3	4.010	n/a
S96T001546		D	Iron-ICP-Acid Dil.	ug/mL	102.0	<5.000e-2	< 20.10	<2.01e1	n/a	n/a	100.0	20.10	n/a
S96T001546		D	Potassium-ICP-Acid Dil.	ug/mL	101.4	<5.000e-1	5.08e+02	4.960e2	5.020e2	2.39	81.20	200.0	n/a
S96T001546		D	Lanthanum-ICP-Acid Dil.	ug/mL	102.6	<5.000e-2	< 20.10	<2.01e1	n/a	n/a	101.5	20.10	n/a
S96T001546		D	Lithium-ICP-Acid Dil.	ug/mL	106.4	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	100.0	4.010	n/a
S96T001546		D	Magnesium-ICP-Acid Dil.	ug/mL	97.00	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	92.00	40.10	n/a
S96T001546		D	Manganese-ICP-Acid Dil.	ug/mL	99.40	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	96.00	4.010	n/a
S96T001546		D	Molybdenum-ICP-Acid Dil.	ug/mL	100.2	<5.000e-2	21.80	2.180e1	2.180e1	0.00	95.60	20.10	n/a
S96T001546		D	Sodium-ICP-Acid Dil.	ug/mL	105.0	<1.000e-1	1.10e+05	1.060e5	1.080e5	3.70	n/a	40.10	n/a
S96T001546		D	Neodymium-ICP-Acid Dil.	ug/mL	108.4	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	109.5	40.10	n/a
S96T001546		D	Nickel-ICP-Acid Dil.	ug/mL	99.40	<2.000e-2	16.40	1.710e1	1.675e1	4.18	94.40	8.020	n/a
S96T001546		D	Phosphorus-ICP-Acid Dil.	ug/mL	102.0	<2.000e-1	2.92e+02	2.990e2	2.955e2	2.37	98.10	80.20	n/a
S96T001546		D	Lead-ICP-Acid Dil.	ug/mL	99.40	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	96.30	40.10	n/a
S96T001546		D	Sulfer-ICP-Acid Dil.	ug/mL	99.40	<1.000e-1	2.42e+03	2.350e3	2.380e3	2.94	26.40	40.10	n/a
S96T001546		D	Antimony-ICP-Acid Dil.	ug/mL	96.80	<6.000e-2	< 24.10	<2.41e1	n/a	n/a	91.50	24.10	n/a
S96T001546		D	Selenium-ICP-Acid Dil.	ug/mL	106.0	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	112.2	40.10	n/a
S96T001546		D	Silicon-ICP-Acid Dil.	ug/mL	95.60	<5.000e-2	< 20.10	<2.01e1	n/a	n/a	95.00	20.10	n/a
S96T001546		D	Samarium-ICP-Acid Dil.	ug/mL	105.8	<1.000e-1	< 40.10	<4.01e1	n/a	n/a	109.0	40.10	n/a
S96T001546		D	Strontium-ICP-Acid Dil.	ug/mL	103.4	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	102.3	4.010	n/a
S96T001546		D	Titanium-ICP-Acid Dil.	ug/mL	99.00	<1.000e-2	< 4.010	<4.01e0	n/a	n/a	96.50	4.010	n/a
S96T001546		D	Thallium-ICP-Acid Dil.	ug/mL	97.20	<2.000e-1	< 80.20	<8.02e1	n/a	n/a	90.80	80.20	n/a
S96T001546		D	Uranium-ICP-Acid Dil.	ug/mL	100.0	<5.000e-1	1.76e+03	1.790e3	1.780e3	1.69	88.70	200.0	n/a
S96T001546		D	Vanadium-ICP-Acid Dil.	ug/mL	102.0	<5.000e-2	< 20.10	<2.01e1	n/a	n/a	98.30	20.10	n/a
S96T001546		D	Zinc-ICP-Acid Dil.	ug/mL	100.0	<1.000e-2	4.320	<4.01e0	n/a	n/a	93.20	4.010	n/a
S96T001546		D	Zirconium-ICP-Acid Dil.	ug/mL	101.4	<1.000e-2	3.81e+02	3.770e2	3.790e2	1.06	93.50	4.010	n/a
S96T001546			Sulfate by IC-Dionex4000i/4500	ug/mL	99.53	<1.360e-1	7.88e+03	7.900e3	7.890e3	0.25	103.8	151.0	n/a
S96T001546			Phosphate-IC-Dionex 4000i/4500	ug/mL	100.7	<1.190e-1	5.13e+02	5.300e2	5.216e2	3.26	101.5	132.1	n/a
S96T001546			Oxalate by IC - Dionex 4000i	ug/mL	100.2	<1.050e-1	3.53e+03	3.500e3	3.520e3	0.85	101.1	116.7	n/a
S96T001546			Nitrate-IC - Dionex 4000i/4500	ug/mL	99.67	2.38e-01	1.00e+03	1.090e3	1.050e3	8.61	96.91	155.5	n/a
S96T001546			Nitrite-IC - Dionex 4000i/4500	ug/mL	98.61	<1.070e-1	3.02e+04	3.040e4	3.030e4	0.66	96.88	118.9	n/a
S96T001546			Fluoride-IC-Dionex 4000i/4500	ug/mL	98.81	<1.300e-2	2.23e+02	2.120e2	2.173e2	5.06	125.6	14.44	n/a

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INTERIM

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001546			Chloride-IC-Dionex 4000i/4500	ug/mL	93.17	<1.700e-2	2.97e+02	2.950e2	2.958e2	0.68	99.75	18.89	n/a

INTERIM

23-may-1996 10:34:58
A-0002-1

INTERIM

Table 3: Interim Results for Tank 241-C-106 Grab Samples
C-106 GRAB

RISER: 1
SEGMENT #: 6C-96-17

SEGMENT PORTION: Field Blank

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000855			% Water by Gravimetric	%	98.82	n/a	1.00e+02	1.000e2	1.000e2	0.00	n/a	1.000e-2	n/a
S96T000855			TOC by Persulfate/Coulometry	ug/mL	93.03	1.600	< 40.00	<40	n/a	n/a	n/a	40.00	n/a
S96T000855			Tot. Organic Carbon by Coul.	ug/mL	103.0	9.00e-01	17.10	1.430e1	1.570e1	17.8	96.70	5.500	n/a
S96T000855			Tot. Inorg. Carbon by Coul.	ug/mL	97.17	<5.000	8.000	9.500e0	8.750e0	17.1	n/a	5.000	n/a
S96T000855			% Water by TGA using Mettler	%	101.9	n/a	1.00e+02	9.985e1	1.002e2	0.65	n/a	n/a	n/a
S96T000855			Specific Gravity	Sp.G.	102.1	n/a	9.75e-01	9.740e-1	9.740e-1	0.10	n/a	1.000e-3	n/a
S96T000855			pH Direct	pH	n/a	n/a	8.282	8.239e0	8.261e0	0.52	n/a	1.000e-2	n/a
S96T000855			Ammonia by ISE-Std Additions	ug/mL	106.8	5.80e-02	< 5.000	<5.00	n/a	n/a	104.0	5.000	n/a
S96T000855			DSC Exotherm using Mettler	Joules/g	94.55	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T000855			Technetium-99 Liq. Scint.	uCi/mL	102.6	<3.720e-5	<3.56e-05	3.840e-5	n/a	n/a	n/a	3.560e-5	7.04E+00
S96T000855			Strontium-89/90 High Level	uCi/mL	104.1	8.78e-07	1.79e-02	1.790e-2	1.790e-2	0.00	n/a	9.320e-7	2.26E-01
S96T000855			Pu-239/240 by TRU-SPEC Resin	uCi/mL	109.4	<3.660e-5	1.64e-05	1.630e-5	1.630e-5	0.61	n/a	3.660e-6	4.0
S96T000855		D	Silver-ICP-Acid Dil.	ug/mL	99.20	<1.000e-2	<1.00e-02	<1.00e-2	n/a	n/a	81.50	1.000e-2	n/a
S96T000855		D	Aluminium-ICP-Acid Dil.	ug/mL	97.80	<5.000e-2	2.82e-01	2.620e-1	2.720e-1	7.35	98.30	5.000e-2	n/a
S96T000855		D	Arsenic-ICP-Acid Dil.	ug/mL	101.6	<1.000e-1	<1.00e-01	<1.00e-1	n/a	n/a	100.0	1.000e-1	n/a
S96T000855		D	Boron-ICP-Acid Dil.	ug/mL	101.4	<5.000e-2	<5.00e-02	<5.00e-2	n/a	n/a	99.20	5.000e-2	n/a
S96T000855		D	Barium-ICP-Acid Dil.	ug/mL	98.40	<5.000e-2	<5.00e-02	<5.00e-2	n/a	n/a	96.90	5.000e-2	n/a
S96T000855		D	Beryllium-ICP-Acid Dil.	ug/mL	102.4	<5.000e-3	<5.00e-03	<5.00e-3	n/a	n/a	101.5	5.000e-3	n/a
S96T000855		D	Bismuth-ICP-Acid Dil.	ug/mL	98.80	<1.000e-1	<1.00e-01	<1.00e-1	n/a	n/a	96.20	1.000e-1	n/a
S96T000855		D	Calcium-ICP-Acid Dil.	ug/mL	98.80	<1.000e-1	6.870	6.740e0	6.805e0	1.91	98.90	1.000e-1	n/a
S96T000855		D	Cadmium-ICP-Acid Dil.	ug/mL	100.4	<5.000e-3	<5.00e-03	<5.00e-3	n/a	n/a	98.50	5.000e-3	n/a
S96T000855		D	Cerium-ICP-Acid Dil.	ug/mL	99.20	<1.000e-1	<1.00e-01	<1.00e-1	n/a	n/a	94.60	1.000e-1	n/a
S96T000855		D	Cobalt-ICP-Acid Dil.	ug/mL	101.2	<2.000e-2	<2.00e-02	<2.00e-2	n/a	n/a	99.20	2.000e-2	n/a
S96T000855		D	Chromium-ICP-Acid Dil.	ug/mL	101.4	<1.000e-2	<1.00e-02	<1.00e-2	n/a	n/a	98.50	1.000e-2	n/a
S96T000855		D	Copper-ICP-Acid Dil.	ug/mL	99.60	<1.000e-2	<1.00e-02	<1.00e-2	n/a	n/a	99.20	1.000e-2	n/a
S96T000855		D	Iron-ICP-Acid Dil.	ug/mL	101.0	<5.000e-2	5.20e-02	<5.00e-2	n/a	n/a	98.30	5.000e-2	n/a
S96T000855		D	Potassium-ICP-Acid Dil.	ug/mL	101.4	<5.000e-1	<5.00e-01	<5.00e-1	n/a	n/a	123.8	5.000e-1	n/a
S96T000855		D	Lanthanum-ICP-Acid Dil.	ug/mL	99.20	<5.000e-2	<5.00e-02	<5.00e-2	n/a	n/a	97.70	5.000e-2	n/a
S96T000855		D	Lithium-ICP-Acid Dil.	ug/mL	98.40	<1.000e-2	<1.00e-02	<1.00e-2	n/a	n/a	96.90	1.000e-2	n/a
S96T000855		D	Magnesium-ICP-Acid Dil.	ug/mL	97.80	<1.000e-1	1.37e-01	1.200e-1	1.290e-1	13.2	94.10	1.000e-1	n/a
S96T000855		D	Manganese-ICP-Acid Dil.	ug/mL	100.8	<1.000e-2	1.04e-02	1.050e-2	1.050e-2	0.96	98.50	1.000e-2	n/a
S96T000855		D	Molybdenum-ICP-Acid Dil.	ug/mL	101.2	<5.000e-2	<5.00e-02	<5.00e-2	n/a	n/a	98.50	5.000e-2	n/a
S96T000855		D	Sodium-ICP-Acid Dil.	ug/mL	97.40	<1.000e-1	18.50	1.830e1	1.840e1	1.09	104.2	1.000e-1	n/a
S96T000855		D	Neodymium-ICP-Acid Dil.	ug/mL	100.0	<1.000e-1	<1.00e-01	<1.00e-1	n/a	n/a	96.90	1.000e-1	n/a
S96T000855		D	Nickel-ICP-Acid Dil.	ug/mL	100.4	<2.000e-2	<2.00e-02	<2.00e-2	n/a	n/a	98.50	2.000e-2	n/a
S96T000855		D	Phosphorus-ICP-Acid Dil.	ug/mL	100.4	<2.000e-1	2.280	2.190e0	2.235e0	4.03	101.7	2.000e-1	n/a
S96T000855		D	Lead-ICP-Acid Dil.	ug/mL	101.0	<1.000e-1	<1.00e-01	<1.00e-1	n/a	n/a	101.5	1.000e-1	n/a
S96T000855		D	Sulfer-ICP-Acid Dil.	ug/mL	99.00	<1.000e-1	3.32e-01	3.200e-1	3.260e-1	3.68	95.20	1.000e-1	n/a
S96T000855		D	Antimony-ICP-Acid Dil.	ug/mL	94.20	<6.000e-2	<6.00e-02	<6.00e-2	n/a	n/a	90.80	6.000e-2	n/a
S96T000855		D	Selenium-ICP-Acid Dil.	ug/mL	98.20	<1.000e-1	<1.00e-01	<1.00e-1	n/a	n/a	97.70	1.000e-1	n/a
S96T000855		D	Silicon-ICP-Acid Dil.	ug/mL	95.00	<5.000e-2	7.36e-01	7.170e-1	7.260e-1	2.62	95.70	5.000e-2	n/a
S96T000855		D	Samarium-ICP-Acid Dil.	ug/mL	99.00	<1.000e-1	<1.00e-01	<1.00e-1	n/a	n/a	95.40	1.000e-1	n/a
S96T000855		D	Strontium-ICP-Acid Dil.	ug/mL	98.20	<1.000e-2	<1.00e-02	<1.00e-2	n/a	n/a	96.90	1.000e-2	n/a

23-may-1996 10:37:13
A-0002-1

INTERIM

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000855		D	Titanium-ICP-Acid Dil.	ug/mL	98.20	<1.000e-2	<1.00e-02	<1.00e-2	n/a	n/a	96.20	1.000e-2	n/a
S96T000855		D	Thallium-ICP-Acid Dil.	ug/mL	97.00	<2.000e-1	<2.00e-01	<2.00e-1	n/a	n/a	86.90	2.000e-1	n/a
S96T000855		D	Uranium-ICP-Acid Dil.	ug/mL	96.70	<5.000e-1	<5.00e-01	<5.00e-1	n/a	n/a	89.60	5.000e-1	n/a
S96T000855		D	Vanadium-ICP-Acid Dil.	ug/mL	101.4	<5.000e-2	<5.00e-02	<5.00e-2	n/a	n/a	98.50	5.000e-2	n/a
S96T000855		D	Zinc-ICP-Acid Dil.	ug/mL	101.8	<1.000e-2	<1.00e-02	<1.00e-2	n/a	n/a	100.8	1.000e-2	n/a
S96T000855		D	Zirconium-ICP-Acid Dil.	ug/mL	98.60	<1.000e-2	<1.00e-02	<1.00e-2	n/a	n/a	95.40	1.000e-2	n/a
S96T000855			Sulfate by IC-Dionex4000i/4500	ug/mL	101.1	<1.360e-1	1.342	1.280e0	1.311e0	4.58	n/a	1.360e-1	n/a
S96T000855			Phosphate-IC-Dionex 4000i/4500	ug/mL	98.53	<1.190e-1	4.59e-01	4.180e-1	4.390e-1	9.35	n/a	1.200e-1	n/a
S96T000855			Oxalate by IC - Dionex 4000i	ug/mL	104.2	<1.050e-1	<1.05e-01	<1.05e-1	n/a	n/a	n/a	1.050e-1	n/a
S96T000855			Nitrate-IC - Dionex 4000i/4500	ug/mL	102.8	3.61e-01	1.567	1.600e0	1.583e0	1.89	n/a	1.400e-1	n/a
S96T000855			Nitrite-IC - Dionex 4000i/4500	ug/mL	103.0	<1.070e-1	6.32e-01	6.220e-1	6.270e-1	1.59	n/a	1.070e-1	n/a
S96T000855			Fluoride-IC-Dionex 4000i/4500	ug/mL	101.0	<1.300e-2	9.60e-02	1.080e-1	1.020e-1	11.8	n/a	1.300e-2	n/a
S96T000855			Chloride-IC-Dionex 4000i/4500	ug/mL	97.72	<1.700e-2	14.98	1.500e1	1.499e1	0.00	n/a	1.700e-2	n/a
S96T000855			Cesium-137 by GEA	uCi/mL	100.0	<7.020e-5	4.41e-02	4.370e-2	4.390e-2	0.91	n/a	n/a	1.15
S96T000855			Cobalt-60 by GEA	uCi/mL	100.4	<2.620e-5	<3.21e-05	<1.75e-5	n/a	n/a	n/a	3.210e-5	n/a
S96T000855			Am-241 by Extraction	uCi/mL	82.08	<1.160e-5	<1.60e-05	<1.73E-5	n/a	n/a	n/a	1.600e-5	5.27E+00
S96T000855			Alpha in Liquid Samples	uCi/mL	105.9	<1.440e-6	3.34e-05	2.050e-5	2.690e-5	47.9	113.6	3.850e-6	2.10E+01

INTERIM

CHAIN OF CUSTODY FORMS

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No. NA Page 1 of 1

Collector: R.J. Renzwik	Contact/Requestor: N/A	Telephone No.: 3-7751 MSIN: S7-03 FAX: 373-9196
SAF No.: NA	Sample Origin: 106C - RISK #1	Purchase Order/Charge Code: NA
Project Title: NA	Logbook No.: NA	Ice Chest No.: NA Temp.:
Shipped To (Lab): 222-S	Method of Shipment: TRUCK CPO Transportation	Bill of Lading/Air Bill No.: NA
Protocol: NA	Data Turnaround: NA	Offsite Property No.: NA

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
6E-96-1	222-S	L	2-8-96	1041	1/125ml glass	Dose @ contact 700 mR/hr Seal #1913	N/A
6E-96-2	222-S	L	2-8-96	1109	1/125ml glass	Dose @ contact 600 mR/hr Seal # 1914	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes): RADIOACTIVE

MSDS ☐ Yes ☒ No

SPECIAL INSTRUCTIONS: NA

Hold Time

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
James Sickels / for R. Renzwik	1345 2-8-96	Chase Byrd / C E Byrd	2-8-96 13:45
Chase E Byrd / C E Byrd	2-8-96 14:45	E E Dubes	2-8-96 1445

Matrix*

S = Soil		DS = Drum Solids	
SE = Sediment		DL = Drum Liquids	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wipe	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

DISTRIBUTION: White - Remain with Samples Color - Customer

BC-6000-828 (09/95)

WHC-SD-WM-DF-183, REV. 0

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001 222 ANALYTICAL LAB 10:12 02/09/96

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. No. M

Page 1 of 1

Collector	R.J. PRAZNIK	Contact/Requestor	N/A	Telephone No. 3-7751	MSIN 57-03 FAX 376-4191
SAF No.	NA	Sample Origin	106-C risen #1	Purchase Order/Charge Code	NA
Project Title	NA	Logbook No.	NA	Ice Chest No. NA	Temp.
Shipped To (Lab)	222-S	Method of Shipment	TRUCK CPO TRANSPORTATION	Bill of Lading/Air Bill No.	NA
Protocol	NA	Date Turnaround	NA	Offsite Property No.	NA

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
6C-96-3	222-S	L	2-8-96	1123	1/125ml Glass	Dose @ contact 2.5 R/hr Seal # 1915 *	N/A
6C-96-4	222-S	L	2-8-96	1132	1/125ml Glass	Dose @ Contact 3.5 R/hr Seal # 1916 *	N/A
						* SLUDGE samples; sample medium THICK. @ 2-8-96	

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ☐ Yes ☒ No

RADIOACTIVE

SPECIAL INSTRUCTIONS: NA

Hold Time

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	JAMES SICKELS	James Sickels For R. Praznik	2-8-96 1540			C.E. Byrd	2-8-96 1540
C.E. Byrd		C.E. Byrd	2-8-96 17:00				2/8/96 1700
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time

Matrix*

S = Soil		DS = Drum Solids	
SE = Sediment		DL = Drum Liquids	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wipe	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

DISTRIBUTION: White - Remain with Samples Color - Customer

BC-6000-828 (09/95)

WHC-SD-WM-DP-188, REV. 0

002 222 ANALYTICAL LAB 2-62 02/09/96

CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

(1) Shipment Number 200E-07-TF (2) Sample Number 6C-96-5 (3) Supervisor JAMES SICKELS

(4) Tank 241-C-106 (5) Riser 1 (6) Cask/PIG Shipping Container Serial Number 6003D

Radiation Survey Data For Cask/PIG:	(7) FIELD	(31) LABORATORY
Over Top Dose Rate	<.5	<0.5 mr/hr
Side Dose Rate	.8	.8 mr/hr
Bottom Dose Rate	<.5	<0.5 mr/hr
Smearable Contamination	<20 dpm/100cm² (Alpha)	<20 dpm/100cm² (Alpha)
	<1000 dpm/100cm² (Beta-Gamma)	<1000 dpm/100cm² (Beta-Gamma)
RCT*	(Signature)	RCT* W Bishop (Signature)

(8) Shipment Description

A. Work Package Number	ES-96-0012
B. Cask/PIG Seal Number	1933
C. Date and Time Sample Removed from Tank	2-23-96 203
D. Expected Liquid Content	100%
E. Expected Solid Content	Ø%
F. Dose Rate Through Drill String (Auger)/On Contact (GRAB)	1 R/hr
G. Expected Sample Length (Auger)/ Volume (GRAB)	120 mL

(9) INFORMATION (Include statement of laboratory tests to be performed.)

Field Comments

(32) Laboratory Comments

(11) Point of Origin	(12) Destination	(13) Sender Name (Sign and PRINT)	(14) Date/Time	(15) Sender Comments
241-C-106	222-S	James Sickels JAMES SICKELS	0840 2-24-96	
(17) Relinquished By (Sign and PRINT)		(18) Received By (Sign and PRINT)	(19) Date/Time	(20) Receiver Comments
James Sickels JAMES SICKELS		Daniel Gonzo Daniel Gonzo	0925 2-24-96	
(21) Relinquished By (Sign and PRINT)		(22) Received By (Sign and PRINT)	(23) Date/Time	(24) Receiver Comments
Daniel Gonzo Daniel Gonzo		G. Walley G. Walley	1600 2-24-96	
(25) Relinquished By (Sign and PRINT)		(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments

(16) Seal Intact Upon Release?	(29) Seal Intact Upon Receipt?	(30) Seal Data Consistent with this Record?		
☒ Yes ☐ No	☒ Yes ☐ No	Shipment No. ☒ Yes ☐ No	Seal No. ☒ Yes ☐ No	Sample No. ☒ Yes ☐ No

DISTRIBUTION: White - Office of Sample Management Yellow - Recipient of Sample Pink - Waste Tank Sampling Goldenrod - Tank Farm Operations.

001 222 ANALYTICAL LAB 02/26/96 1: 2-53

WHC-SD-WM-CS-183, REV. 0

CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

(1) Shipment Number 200E-07-TF (2) Sample Number 6C-96-6 (3) Supervisor JAMES Sickels

(4) Tank 241-C-106 (5) Riser 1 (6) Cask/PIG Shipping Container Serial Number WT-SHP-6003A

Radiation Survey Data For Cask/PIG:	(7) FIELD	(31) LABORATORY
Over Top Dose Rate	<.5	<0.5
Side Dose Rate	1.3	2.0
Bottom Dose Rate	1.2	1.2
Smearable Contamination	<20dpm/100cm² (Alpha)	<20dpm/100cm² (Alpha)
	<1000dpm/100cm² (Beta-Gamma)	<1000dpm/100cm² (Beta-Gamma)
RCT*	(Signature)	RCT* W Bishop (Signature)

(8) Shipment Description	
A. Work Package Number	ES-96-00125
B. Cask/PIG Seal Number	1934
C. Date and Time Sample Removed from Tank	2-23-96 2021
D. Expected Liquid Content	100%
E. Expected Solid Content	0%
F. Dose Rate Through Drill String (Auger)/On Contact (GRAB)	1.6 R/hr
G. Expected Sample Length (Auger)/ Volume (GRAB)	120 mL

(9) INFORMATION (Include statement of laboratory tests to be performed.)

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(10) Field Comments

(32) Laboratory Comments

(11) Point of Origin	(12) Destination	(13) Sender Name (Sign and PRINT)	(14) Date/Time	(15) Sender Comments
241-C-106	2225	James Sickels JAMES SICKELS	0830 2-23-96	
(17) Relinquished By (Sign and PRINT)		(18) Received By (Sign and PRINT)	(19) Date/Time	(20) Receiver Comments
James Sickels JAMES SICKELS		M McDonnaugh	0905 2-24-96	
(21) Relinquished By (Sign and PRINT)		(22) Received By (Sign and PRINT)	(23) Date/Time	(24) Receiver Comments
M McDonnaugh		G Wallace G. Wallace	0945 2/24/96	
(25) Relinquished By (Sign and PRINT)		(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments

(16) Seal Intact Upon Release?	(29) Seal Intact Upon Receipt?	(30) Seal Data Consistent with this Record?		
		Shipment No.	Seal No.	Sample No.
☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No

DISTRIBUTION: White - Office of Sample Management Yellow - Recipient of Sample Pink - Waste Tank Sampling Goldenrod - Tank Farm Operations.

BC-8001-326 (01/96)

WHC-SD-WM-DP-183, REV. 0

001 222 ANALYTICAL LAB 11:46 02/26/96

CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

(1) Shipment Number 200E-07-TF (2) Sample Number 6C-96-7 (3) Supervisor JAMES SICKELS

(4) Tank 241-C-106 (5) Riser 1 (6) Cask/PIG Shipping Container Serial Number 6003B

Radiation Survey Data For Cask/PIG:	(7) FIELD	(31) LABORATORY
Over Top Dose Rate	<.5	<0.5 mr/hr
Side Dose Rate	1.5	1.5 mr/hr
Bottom Dose Rate	.6	.8 mr/hr
Smearable Contamination	<20 dpm/100cm² (Alpha)	<20 dpm/100cm² (Alpha)
	<1000 dpm/100cm² (Beta-Gamma)	<1000 dpm/100cm² (Beta-Gamma)
RCT*	(Signature)	RCT* (Signature)

(8) Shipment Description	
A. Work Package Number	ES-96-00125
B. Cask/PIG Seal Number	1935
C. Date and Time Sample Removed from Tank	2-23-96 2009
D. Expected Liquid Content	50%
E. Expected Solid Content	50%
F. Dose Rate Through Drill String (Auger)/On Contact (GRAB)	3 R/hr
G. Expected Sample Length (Auger)/ Volume (GRAB)	120 mL

ANALYTICAL LAB

222

2-65

11:48

02/26/96

[illegible] INFORMATION (Include statement of laboratory tests to be performed.)

[illegible] Comments: Sludge Sample

(32) Laboratory Comments

BEST AVAILABLE COPY

WHC-SD-WM-DP-183, REV.0

[illegible]nt of Origin	(12) Destination	(13) Sender Name (Sign and PRINT)	(14) Date/Time	(15) Sender Comments
[illegible]1-C-106	2225	James Sickels JAMES SICKELS	0845 2-24-96	
[illegible]quished By (Sign and PRINT)		(17) Received By (Sign and PRINT)	(18) Date/Time	(20) Receiver Comments
[illegible]mes Sickels JAMES SICKELS		Daniel Gano Daniel Gano	0925 2/24/96	
[illegible]quished By (Sign and PRINT)		(22) Received By (Sign and PRINT)	(23) Date/Time	(24) Receiver Comments
[illegible] Daniel Gano		G. Walley G. Walley	1000 2/24/96	
[illegible]uished By (Sign and PRINT)		(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments

[illegible]al Intact Upon Release?	(29) Seal Intact Upon Receipt?	(30) Seal Data Consistent with this Record?
		Shipment No.

CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

(1) Shipment Number: 200E-07-TF (2-23-96) (2) Sample Number: 6C-96-8 (3) Supervisor: JAMES SICKELS

(4) Tank: 241-AX-C-106 (5) Riser: 1 (6) Cask/PIG Shipping Container Serial Number: INT-SHP-6002A (PIG 0-25)

Radiation Survey Data For Cask/PIG:	(7) FIELD	(31) LABORATORY
Over Top Dose Rate	<.5	1.5 mr/hr
Side Dose Rate	2.2	9 mr/hr
Bottom Dose Rate	1	3 mr/hr
Smearable Contamination	<200 DPM/100cm² (Alpha)	<200 DPM/100cm² (Alpha)
	<1000 DPM/100cm² (Beta-Gamma)	<1000 DPM/100cm² (Beta-Gamma)
RCT*	(Signature)	RCT* (Signature)

(8) Shipment Description

A. Work Package Number	ES-96-00125
B. Cask/PIG Seal Number	1936
C. Date and Time Sample Removed from Tank	2-23-96 ~~2-24-96~~ 2000
D. Expected Liquid Content	50%
E. Expected Solid Content	50%
F. Dose Rate Through Drill String (Auger)/On Contact (GRAB)	2.5 R/hr
G. Expected Sample Length (Auger)/ Volume (GRAB)	120 mL

(9) INFORMATION (Include statement of laboratory tests to be performed.)

2-66

Sludge Sample

(32) Laboratory Comments

(11) Point of Origin	(12) Destination	(13) Sender Name (Sign and PRINT)	(14) Date/Time	(15) Sender Comments
241-C-106	222S	James Sickels JAMES SICKELS	0945 2-24-96	
(17) Relinquished By (Sign and PRINT)		**(18) Received By (Sign and PRINT)**	**(19) Date/Time**	**(20) Receiver Comments**
James Sickels JAMES SICKELS		M L Dunnington	1045 2-24-96	
(21) Relinquished By (Sign and PRINT)		**(22) Received By (Sign and PRINT)**	**(23) Date/Time**	**(24) Receiver Comments**
M L Dunnington		G. Walley	1140 2-24-96	
(25) Relinquished By (Sign and PRINT)		**(26) Received By (Sign and PRINT)**	**(27) Date/Time**	**(28) Receiver Comments**

(16) Seal Intact Upon Release?	(29) Seal Intact Upon Receipt?	(30) Seal Data Consistent with this Record?		
☒ Yes ☐ No	☒ Yes ☐ No	Shipment No. ☒ Yes ☐ No	Seal No. ☒ Yes ☐ No	Sample No. ☒ Yes ☐ No

DISTRIBUTION: White - Office of Sample Management Yellow - Recipient of Sample Pink - Waste Tank Sampling Goldenrod - Tank Farm Operations.

02/26/96 11:55 222 ANALYTICAL LAB 001

CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

(1) Shipment Number 200E-07-TF (2) Sample Number 6C-96-10 (3) Supervisor JAMES SICKELS

(4) Tank 241-C-106 (5) Riser 1 (6) Cask/PIG Shipping Container Serial Number 6003 B

Radiation Survey Data For Cask/PIG:	(7) FIELD	(31) LABORATORY
Over Top Dose Rate	2.5	<0.5 mR/hr
Side Dose Rate	2.2	3.0 mR/hr
Bottom Dose Rate	1	1 mR/hr
Smearable Contamination	<20 DPM/100cm² (Alpha)	<20 DPM/100cm² (Alpha)
	<1000 DPM/100cm² (Beta-Gamma)	<1000 DPM/100cm² (Beta-Gamma)
RCT*	(Signature)	RCT* (Signature)

(8) Shipment Description	
A. Work Package Number	ES-96-00125
B. Cask/PIG Seal Number	1938
C. Date and Time Sample Removed from Tank	2-23-96 ~~2-24-96~~ 1929
D. Expected Liquid Content	50%
E. Expected Solid Content	50%
F. Dose Rate Through Drill String (Auger)/On Contact (GRAB)	2.1 R/hr
G. Expected Sample Length (Auger)/ Volume (GRAB)	120 mL

(9) INFORMATION (Include statement of laboratory tests to be performed.)

2-67

(10) Comments

Sludge Sample

(32) Laboratory Comments

(11) Point of Origin	(12) Destination	(13) Sender Name (Sign and PRINT)	(14) Date/Time	(15) Sender Comments
RF#1 241-C-106	222S	James Sickels JAMES SICKELS	0945 2/24/96	

(16) Relinquished By (Sign and PRINT)	(17) Received By (Sign and PRINT)	(18) Date/Time	(19) Receiver Comments
PRAZNIK	Daniel Garza Daniel Garza	1115 2/24/96	

(20) Relinquished By (Sign and PRINT)	(21) Received By (Sign and PRINT)	(22) Date/Time	(23) Receiver Comments
Daniel Garza Daniel Garza	G. Walley G. Walley	1145 2-24-96	

(24) Relinquished By (Sign and PRINT)	(25) Received By (Sign and PRINT)	(26) Date/Time	(27) Receiver Comments

(28) Seal Intact Upon Release?	(29) Seal Intact Upon Receipt?	(30) Seal Data Consistent with this Record? Shipment No.	Seal No.	Sample No.
☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No

DISTRIBUTION: White - Office of Sample Management Yellow - Recipient of Sample Pink - Waste Tank Sampling Goldenrod - Tank Farm Operations.

BC-6001-326 (01/96)

WHC-SD-WM-DP-183, REV 0

002 ANALYTICAL LAB 222 11:56 02/26/96

CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

(1) Shipment Number 200E-07-TF (2) Sample Number GC-96-11 (3) Supervisor R.J. PRAZNIK

(4) Tank C106 (5) Riser 7 (6) Cask/PIG Shipping Container Serial Number ~~B-10~~ 3-1-96 6003A

Radiation Survey Data For Cask/PIG:	(7) FIELD	(31) LABORATORY
Over Top Dose Rate	1.7 mR/hr	2
Side Dose Rate	7.0 mR/hr	7
Bottom Dose Rate	2.5 mR/hr	2.5
Smearable Contamination (Alpha)	< PAM	< 20
(Beta-Gamma)	< 1000 dpm/100cm2	< 1K
RCT* (Signature)	[signature]	RCT* (Signature) [signature]

(8) Shipment Description

A. Work Package Number	J3 ES-96-00098
B. Cask/PIG Seal Number	1942
C. Date and Time Sample Removed from Tank	3-1-96 / 1326
D. Expected Liquid Content	25%
E. Expected Solid Content	* 75%
F. Dose Rate Through Drill String (Auger)/On Contact (GRAB)	1R/hr
G. Expected Sample Length (Auger)/ Volume (GRAB)	125ml

(9) INFORMATION (Include statement of laboratory tests to be performed.)

2-68

(1 ...ments

* THICK MUDDY SAMPLE MEDIUM. [signature] 3-1-96

(32) Laboratory Comments

(11) Point of Origin	(12) Destination	(13) Sender Name (Sign and PRINT)	(14) Date/Time	(15) Sender Comments
C106 riser 7	222-S	[signature]	3-1-96/1650hr	
(17) Relinquished By (Sign and PRINT)		(18) Received By (Sign and PRINT)	(19) Date/Time	(20) Receiver Comments
[signature] R.J. Praznik		[signature]	3-1-96/1650hr	
(21) Relinquished By (Sign and PRINT)		(22) Received By (Sign and PRINT)	(23) Date/Time	(24) Receiver Comments
[signature] KE HAMILTON		[signature] David C Dunham	3-1-96 1810	
(25) Relinquished By (Sign and PRINT)		(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments

(16) Seal Intact Upon Release?	(29) Seal Intact Upon Receipt?	(30) Seal Data Consistent with this Record?		
		Shipment No.	Seal No.	Sample No.
☒ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No

DISTRIBUTION: White - Office of Sample Management Yellow - Recipient of Sample Pink - Waste Tank Sampling Goldenrod - Tank Farm Operations.

BC-6001-326 (01/95)

WHC-SD-WM-DP-183, REV. 0

001 ANALYTICAL LAB 222 13:20 03/04/96

CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

(1) Shipment Number 200E-07-TF (2) Sample Number 6C-96-12 (3) Supervisor R.J. PRAZNIK

(4) Tank C106 (5) Riser 7 (6) Cask/PIG Shipping Container Serial Number 6003B

Radiation Survey Data For Cask/PIG:	(7) FIELD	(31) LABORATORY
Over Top Dose Rate	0.5 mR/hr	<0.5
Side Dose Rate	1.1 mR/hr	2.0
Bottom Dose Rate	0.5 mR/hr	.5
Smearable Contamination	<20m (Alpha)	<20 (Alpha)
	<1000 dpm/100cm² (Beta-Gamma)	<1K (Beta-Gamma)
RCT* (Signature)		RCT* (Signature)

(8) Shipment Description

A. Work Package Number	ES-96-00098
B. Cask/PIG Seal Number	1943
C. Date and Time Sample Removed from Tank	3-1-96/1334 hrs
D. Expected Liquid Content	90%
E. Expected Solid Content	10%
F. Dose Rate Through Drill String (Auger)/On Contact (GRAB)	1R/hr
G. Expected Sample Length (Auger)/ Volume (GRAB)	125 ml.

(9) INFORMATION (Include statement of laboratory tests to be performed.)

2-69

(10) Field Comments

(32) Laboratory Comments

(11) Point of Origin	(12) Destination	(13) Sender Name (Sign and PRINT)	(14) Date/Time	(15) Sender Comments
C106 riser 7	222-S	R.J. Praznik	3-1-96	

(17) Relinquished By (Sign and PRINT)	(18) Received By (Sign and PRINT)	(19) Date/Time	(20) Receiver Comments
R.J. Praznik		3-1-96 17:15	

(21) Relinquished By (Sign and PRINT)	(22) Received By (Sign and PRINT)	(23) Date/Time	(24) Receiver Comments
	David C Dunka	3-1-96 1810	

(25) Relinquished By (Sign and PRINT)	(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments

(16) Seal Intact Upon Release?	(29) Seal Intact Upon Receipt?	(30) Seal Data Consistent with this Record?		
		Shipment No.	Seal No.	Sample No.
☒ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No

DISTRIBUTION: White - Office of Sample Management Yellow - Recipient of Sample Pink - Waste Tank Sampling Goldenrod - Tank Farm Operations.

BC-6001-326 (01/96)

WHC-SD-WM-DP-183, REV. 0

002 ANALYTICAL LAB 222 13:20 03/04/96

CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

(1) Shipment Number 200E-07-TF (2) Sample Number 6C-96-13 (3) Supervisor R.J. Praznik

(4) Tank C106 (5) Riser 7 (6) Cask/PIG Shipping Container Serial Number 6003E

Radiation Survey Data For Cask/PIG:	(7) FIELD	(31) LABORATORY
Over Top Dose Rate	0.5	<0.5
Side Dose Rate	2.8	2.0
Bottom Dose Rate	2.0	2.0
Smearable Contamination	<DAM (Alpha)	<HK20 (Alpha)
	<1000 dpm/100cm (Beta-Gamma)	<1K (Beta-Gamma)
RCT*	(Signature)	RCT* (Signature)

(8) Shipment Description	
A. Work Package Number	ES-96-00098
B. Cask/PIG Seal Number	1944
C. Date and Time Sample Removed from Tank	3-1-96 / 1344hrs
D. Expected Liquid Content	3-1-96 90% 10%
E. Expected Solid Content	* 90%
F. Dose Rate Through Drill String (Auger)/On Contact (GRAB)	2.5R/hr
G. Expected Sample Length (Auger)/ Volume (GRAB)	125ml.

(9) INFORMATION (Include statement of laboratory tests to be performed.)

2-70

(10) Field Comments

* SLUDGE

(32) Laboratory Comments

(11) Point of Origin	(12) Destination	(13) Sender Name (Sign and PRINT)	(14) Date/Time	(15) Sender Comments
C106 R/7	222-S	R.J. Praznik	3-1-96/1725	
(17) Relinquished By (Sign and PRINT)		(18) Received By (Sign and PRINT)	(19) Date/Time	(20) Receiver Comments
R.J. Praznik		C.E. Byrd	3-1-96 17:15	
(21) Relinquished By (Sign and PRINT)		(22) Received By (Sign and PRINT)	(23) Date/Time	(24) Receiver Comments
C.E. Byrd		David C. Dunham	3-1-96 1810	
(25) Relinquished By (Sign and PRINT)		(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments

(16) Seal Intact Upon Release?	(29) Seal Intact Upon Receipt?	(30) Seal Data Consistent with this Record?		
☒ Yes ☐ No	☐ Yes ☐ No	Shipment No. ☐ Yes ☐ No	Seal No. ☐ Yes ☐ No	Sample No. ☐ Yes ☐ No

DISTRIBUTION: White - Office of Sample Management Yellow - Recipient of Sample Pink - Waste Tank Sampling Goldenrod - Tank Farm Operations.

BC-5001-326 (01/96)

WHC-SD-WM-DP-183, REV. 0

003 ANALYTICAL LAB 222 13:21 03/04/96

CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

(1) Shipment Number 200E-07-TF (2) Sample Number 6C-96-14 (3) Supervisor R.J. Praznik

(4) Tank C106 (5) Riser 7 (6) Cask/PIG Shipping Container Serial Number 6003E

Radiation Survey Data For Cask/PIG:	(7) FIELD	(31) LABORATORY
Over Top Dose Rate	1.0 mR/hr	1
Side Dose Rate	3.0 mR/hr	2
Bottom Dose Rate	4.5 mR/hr	2
Smearable Contamination	<PAM (Alpha) 3-1-96	<20 (Alpha)
	<1000 dpm/100cm2 (Beta-Gamma)	<1K (Beta-Gamma)
RCT*	(Signature)	RCT* (Signature)

(8) Shipment Description	
A. Work Package Number	ES-96-00098
B. Cask/PIG Seal Number	1945
C. Date and Time Sample Removed from Tank	3-1-96 / 1356hrs
D. Expected Liquid Content	10%
E. Expected Solid Content	* 90%
F. Dose Rate Through Drill String (Auger)/On Contact (GRAB)	1.5R/hr
G. Expected Sample Length (Auger)/ Volume (GRAB)	125ml.

(9) INFORMATION (Include statement of laboratory tests to be performed.)

2-74

(10) Field Comments

* SLUDGE - Sample medium THICKEND CHUNKY. 3-1-96

(32) Laboratory Comments

(11) Point of Origin	(12) Destination	(13) Sender Name (Sign and PRINT)	(14) Date/Time	(15) Sender Comments
C106 R/7	222-S	R.J. Praznik	3-1-96/1900	
(17) Relinquished By (Sign and PRINT)		**(18) Received By (Sign and PRINT)**	**(19) Date/Time**	**(20) Receiver Comments**
R.J. Praznik		KEVIN E HAMILTON	3/1/96 / 1940	
(21) Relinquished By (Sign and PRINT)		**(22) Received By (Sign and PRINT)**	**(23) Date/Time**	**(24) Receiver Comments**
KEVIN E HAMILTON		David C Drake	3/1/96 2010	
(25) Relinquished By (Sign and PRINT)		**(26) Received By (Sign and PRINT)**	**(27) Date/Time**	**(28) Receiver Comments**

(16) Seal Intact Upon Release?	(29) Seal Intact Upon Receipt?	(30) Seal Data Consistent with this Record?		
☒ Yes ☐ No	☐ Yes ☐ No	Shipment No. ☐ Yes ☐ No	Seal No. ☐ Yes ☐ No	Sample No. ☐ Yes ☐ No

DISTRIBUTION: White - Office of Sample Management Yellow - Recipient of Sample Pink - Waste Tank Sampling Goldenrod - Tank Farm Operations.

BC-6001-326 (01/96)

WHC-SD-WM-DP-183, REV. 0

004 ANALYTICAL LAB 222 13:21 03/04/96

CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

(1) Shipment Number 200E-07-TF (2) Sample Number 6C-96-15 (3) Supervisor R.J Pekznik

(4) Tank C106 (5) Riser 7 (6) Cask/PIG Shipping Container Serial Number 6003 A

Radiation Survey Data For Cask/PIG:	(7) FIELD	(31) LABORATORY
Over Top Dose Rate	0.5 mR/hr	0.5
Side Dose Rate	1.0 mR/hr	0.7
Bottom Dose Rate	0.5 mR/hr	0.5
Smearable Contamination	<10dpm (Alpha) 3-1-96	<20 (Alpha)
	<1000 mR/hr dpm/100cm² (Beta-Gamma)	<1K (Beta-Gamma)
RCT*	(Signature)	RCT* (Signature)

(8) Shipment Description

A. Work Package Number	ES-96-00098
B. Cask/PIG Seal Number	1948
C. Date and Time Sample Removed from Tank	3-1-96 / 1408hrs
D. Expected Liquid Content	100%
E. Expected Solid Content	—
F. Dose Rate Through Drill String (Auger)/On Contact (GRAB)	800mR/hr
G. Expected Sample Length (Auger)/ Volume (GRAB)	125ml

(9) INFORMATION (Include statement of laboratory tests to be performed.)

2-12

(10) Field Comments

(32) Laboratory Comments

(11) Point of Origin	(12) Destination	(13) Sender Name (Sign and PRINT)	(14) Date/Time	(15) Sender Comments
C106 R/7	222-S	R.J. Pekznik	3-1-96 / 1715	

(17) Relinquished By (Sign and PRINT)	(18) Received By (Sign and PRINT)	(19) Date/Time	(20) Receiver Comments
RJ Pekznik	C.E. Byrd	3-1-96 19:35	

(21) Relinquished By (Sign and PRINT)	(22) Received By (Sign and PRINT)	(23) Date/Time	(24) Receiver Comments
C.E. Byrd	David C. Dunbar	3-1-96 2010	

(25) Relinquished By (Sign and PRINT)	(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments

(16) Seal Intact Upon Release?	(29) Seal Intact Upon Receipt?	(30) Seal Data Consistent with this Record?		
		Shipment No.	Seal No.	Sample No.
☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No

DISTRIBUTION: White - Office of Sample Management Yellow - Recipient of Sample Pink - Waste Tank Sampling Goldenrod - Tank Farm Operations.

BC-6001-326 (01/96)

WHC-SD-WM-DP-183, REV. 0

005 ANALYTICAL LAB 222 13:22 03/04/96

CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

(1) Shipment Number 200E-02-TF (2) Sample Number 6C-96-16 (3) Supervisor R.J. PRAZNIK

(4) Tank C106 (5) Riser 7 (6) Cask/PIG Shipping Container Serial Number 6003B

Radiation Survey Data For Cask/PIG:	(7) FIELD	(31) LABORATORY
Over Top Dose Rate	<0.5 mR/hr	<0.5
Side Dose Rate	1.0 mR/hr	1
Bottom Dose Rate	0.5 mR/hr	0.5
Smearable Contamination	<PAM (Alpha)	<20 (Alpha)
	<1000 dpm/100cm² (Beta-Gamma)	<1K (Beta-Gamma)
RCT*	O Tom Graff (Signature)	RCT* (Signature)

(8) Shipment Description

A. Work Package Number	ES-96-00098
B. Cask/PIG Seal Number	1949
C. Date and Time Sample Removed from Tank	3-1-96 / 1420 hrs
D. Expected Liquid Content	100%
E. Expected Solid Content	—
F. Dose Rate Through Drill String (Auger)/On Contact (GRAB)	800 mR/hr
G. Expected Sample Length (Auger)/ Volume (GRAB)	125 ml.

(9) INFORMATION (Include statement of laboratory tests to be performed.)

2-73

(...) Comments

(32) Laboratory Comments

(11) Point of Origin	(12) Destination	(13) Sender Name (Sign and PRINT)	(14) Date/Time	(15) Sender Comments
C106 Riser 7	222-S	R.J. Praznik	3-1-96/1730	
(17) Relinquished By (Sign and PRINT)		**(18) Received By (Sign and PRINT)**	**(19) Date/Time**	**(20) Receiver Comments**
R.J. Praznik		C.E. Byrd	3-1-96 19:35	
(21) Relinquished By (Sign and PRINT)		**(22) Received By (Sign and PRINT)**	**(23) Date/Time**	**(24) Receiver Comments**
C.E. Byrd		David C. Dunbar	3-1-96 2010	
(25) Relinquished By (Sign and PRINT)		**(26) Received By (Sign and PRINT)**	**(27) Date/Time**	**(28) Receiver Comments**

(16) Seal Intact Upon Release?	(29) Seal Intact Upon Receipt?	(30) Seal Data Consistent with this Record?		
☒ Yes ☐ No	☐ Yes ☐ No	Shipment No. ☐ Yes ☐ No	Seal No. ☐ Yes ☐ No	Sample No. ☐ Yes ☐ No

DISTRIBUTION: White - Office of Sample Management Yellow - Recipient of Sample Pink - Waste Tank Sampling Goldenrod - Tank Farm Operations.

BC-6001-326 (01/96)

WHC-SD-WM-DP-183, REV. 0

006 ANALYTICAL LAB 222 13:22 03/04/96

CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

(1) Shipment Number 200E-07-TF (2) Sample Number 6C-96-17 (3) Supervisor JAMES SICKELS

(4) Tank 241-C-106 (5) Riser 1 (6) Cask/PIG Shipping Container Serial Number 6003D

Radiation Survey Data For Cask/PIG:	(7) FIELD	(31) LABORATORY
Over Top Dose Rate	<.5	<0.5 mr/hr
Side Dose Rate	<.5	<0.5 mr/hr
Bottom Dose Rate	<.5	<0.5 mr/hr
Smearable Contamination	<20 dpm/100cm² (Alpha)	<20 dpm/100cm² (Alpha)
	<1000 dpm/100cm² (Beta-Gamma)	<1,000 dpm/100cm² (Beta-Gamma)
RCT*	(Signature)	RCT* (Signature)

(8) Shipment Description

A. Work Package Number	ES-96-00125
B. Cask/PIG Seal Number	1932
C. Date and Time Sample Removed from Tank	2-23-96 1918
D. Expected Liquid Content	100%
E. Expected Solid Content	0%
F. Dose Rate Through Drill String (Auger)/On Contact (GRAB)	<.5 mr/hr
G. Expected Sample Length (Auger)/ Volume (GRAB)	120 mL

(9) INFORMATION (Include statement of laboratory tests to be performed.)

2-74

(10) Comments

Field Blind Lowered 20' into Riser.

(32) Laboratory Comments

(11) Point of Origin RF 1 241-C-106	(12) Destination 222S	(13) Sender Name (Sign and PRINT) James Sickels JAMES SICKELS	(14) Date/Time 0945 2-24-96	(15) Sender Comments
(17) Relinquished By (Sign and PRINT) James Sickels JAMES SICKELS		(18) Received By (Sign and PRINT) Daniel Dazo Daniel Garza	(19) Date/Time 1115 hrs 2-24-96	(20) Receiver Comments
(21) Relinquished By (Sign and PRINT) Daniel Dazo Daniel Garza		(22) Received By (Sign and PRINT) G. Walley G. Walley	(23) Date/Time 1145 2-24-96	(24) Receiver Comments
(25) Relinquished By (Sign and PRINT)		(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments

(30) Seal Intact Upon Release? ☒ Yes ☐ No

(29) Seal Intact Upon Receipt? ☒ Yes ☐ No

(30) Seal Date Consistent with this Record?

Shipment No. ☒ Yes ☐ No

Seal No. ☒ Yes ☐ No

Sample No. ☒ Yes ☐ No

DISTRIBUTION: White - Office of Sample Management Yellow - Recipient of Sample Pink - Waste Tank Sampling Goldenrod - Tank Farm Operations

BC-ams.sec

WHC SD WM PD 183, REV. 0

02/26/96 11:57 222 ANALYTICAL LAB 003

CORRESPONDENCE

2DON'T SAY IT --- *Write It!*

DATE: February 20, 1996

TO: J. L. Deichman T6-03

FROM: Ruth A Esch T6-06

Telephone: 373-4314

cc:

A.	D. Rice	T6-06
G.	B. Griffin	T6-16
C.	T. Narquis	T6-16
T.	F. Dale	T6-20
R.	D. Schreiber	R2-12
B.	A. Crawford	T6-09
J.	R. Jewett	T6-09
J.	M. Jones	S5-13
H.	Babad	S7-14
R.	J. Cash	S7-14
D.	A. Dodd	T6-50

SUBJECT: LOSS OF C-106 GRAB SAMPLES DUE TO OVERHEATING IN WATERBATH

John -

The C-106 Grab samples that were received by the laboratory on February 8, 1996 were lost/destroyed due to inadvertent overheating of the waterbath that the samples were placed in. This is how I perceive the situation:

On January 23, 1996, a meeting was held with Harry Babad, Ruth Schreiber, Jim Jewett, Cal Delegard, Beverly Crawford, Wayne Edmonson, and myself, to discuss exactly how the C-106 grab sample breakdown would be handled. One of the decisions that was agreed upon was that the samples would be kept at tank temperature during the breakdown in order to maintain the sample in the same state as it would be in the tank.

On January 24, 1996 the Sampling and Analysis Plan for C-106 was officially issued by Ruth Schreiber (C-106 Tank Coordinator). Beverly Crawford was assigned as the chemist in charge of preparing the test plan for the breakdown of the samples at 222-S Laboratory. Beverly had a draft copy of the test plan completed and distributed for comments by January 26, 1996. A death in the family took Beverly out of town until February 6, 1996, so that the paperwork for the test plan was stalled until that time.

On February 8, 1996 the four samples from riser 1 were taken between 10:30 and 11:30. They were received by the 222-S Laboratory between 14:30 and 16:15 on that day.

On February 9, 1996 the revised version of the test plan was given to Ruth Schreiber, who had additional comments. This same day it was decided that the samples could be loaded into the hotcell without the test plan, following procedure LO-160-101. This load in began around 9:30 that morning. Around 14:00 on that afternoon the room was released from the "airborne radioactivity area" status. Shortly after that, the sample jars, which had been placed into plastic cups, were placed in a waterbath to be maintained at 60° +/- 5° C. This temperature was monitored using a thermocouple which had originally been

placed directly into the water between the four sample bottles. Over the first weekend, no surveillance was requested for the waterbath.

On Monday, February 12, 1996, at 6:00, it was noted that the waterbath had gone dry, but the temperature (with the thermocouple sitting on the bottom of the waterbath) was reading 70° C. The waterbath was slowly refilled at this time, and the thermocouple was placed into the plastic cup which held sample 6C-95-1 supernate. Around 7:00, Ruth Schreiber's comments on the test plan were given to Beverly Crawford and incorporation of the comments was begun. Later that day a verbal request was made by Wayne Edmonson (Process Chemistry scientific technologist) to Troy Dale (shift operations manager) to set up a surveillance to refill the waterbath every four hours during the time periods that Wayne was not at work to perform that task. Troy asked Wayne to give him something other than a verbal request with no further detail about any additional paperwork required. At 14:19 on 2/12/96, Wayne sent an URGENT cc:MAIL message to Troy requesting that the surveillance begin that night.

On February 13, 1996, the laboratory shift manager on days (Michael Lindberg) showed Wayne a copy of the manager's logbook indicating that the surveillance request was made, and that the waterbath was checked with regular frequency. However, later that day he still found that the cap on sample 6C-96-1 had cracked and the sample had evaporated by about 70%. This sample was removed from the waterbath to avoid further evaporation.

The surveillance of the waterbath appeared to continue for the rest of the week, at least until Thursday, since the waterbath did not dry out during this period. On Thursday, February 15, 1996, the thermocouple was moved to the plastic cup holding sludge sample 6C-95-3 in order to keep the bath heating evenly.

On Friday, February 16, 1996, a new shift came on days at the 222-S Laboratory.

On Tuesday morning, February 20, 1996, the day shift manager (Dave Dunham) told Wayne Edmonson that the waterbath had been filled the previous day. When Wayne got into the lab around 8:30 AM, he found that the waterbath was completely dry and the thermocouple was reading 200° C. The thermocouple was in direct contact with both the plastic cup that was sitting on the bottom of the waterbath and the broken sample bottle. Because of the close proximity to the surface of the hotplate, it is believed that the measured 200° C very closely approximates the true temperature that the samples were exposed to.

At this time, it was discovered that the bottom had broken out of the supernate (6C-96-2) bottle, and the entire sample was lost. The bottle for the sludge sample 6C-96-3 had also broken, and the sludge material had been contained in the open plastic cup. The bottle for the second sludge sample (6C-96-4) was still intact, with no apparent loss of sample.

After several conversations between myself and the shift lab leader (Gary Hammitt) and Dave Dunham, I was informed that it was communicated to that shift, that the experiment for which the waterbath surveillance was required, was only supposed to go for three or four days. Wayne Edmonson said that he did not recall giving this information. His message to Troy Dale did not mention a date to stop the surveillance. Since no further instructions were specifically given to continue the surveillance over the weekend, the shift

did not continue to check the waterbath on a four hour basis. The waterbath was filled one time on Monday, February 19, 1996 when a technician noticed that the hotplate under the waterbath was turned on, and the waterbath was dry.

My understanding of the entire situation is that past practice had been that required surveillances would be communicated to the current shift manager. That information would be put into the shift manager's logbook, and the surveillance would continue until the requesting party informed the shift manager to stop. I was informed, only today, that such a surveillance actually falls under Standing Order 95-013 Rev. 0 "Temporary Data Collection", that was put in place June 27, 1995. If this is the case, I believe there was a great miscommunication to inform the appropriate personnel to fill out this data sheet.

Ruth Esch (373-4314)

WHC-SD-WM-DP-183, REV. 0

[2] From: Darrell W Edmonson at -WHC169 2/12/96 2:19PM (1120 bytes: 15 ln)
Priority: Urgent
To: Troy F Dale at -WHC32
Receipt Requested
cc: James R Jewett at -WHC167, Beverly A Crawford at -WHC167, Ruth A Esch at -WHC32
Subject: Waterbath surveillence hot cell 1E-1
---------- Message Contents ----------

Troy,

Per your request for more than verbal instructions, A waterbath has been placed into operation in the 1E-1 hot cell to condition C-106 grab samples to tank conditions. The temperature is set, a water hose is in place for water addition when necessary. Checks should be performed every 4 hours, and water added as necessary to maintain a water level approximately 1/2 inch below the metal bath lid. The off/on valve is tagged with an instruction tag to remind the operator to turn the valve off when not in use. Please place this request in the DOI and in the shift log book .

Wayne

2/13/96

A-NIGHTS M. COOK (MANAGER)

2400: FACILITY STATUS: AHU'S 1, 2, AND 4 ARE IN SERVICE. EF'S 1, 2, AND 3 ARE IN SERVICE. VAS PUMP #2 IS IN SERVICE. —

- ROOMS 1-P-1 AND 16-C REMAIN ON "RESTRICTED ACCESS". —

- ROOM 4-P REMAINS ON "RESTRICTED ACCESS" PENDING RESOLUTION OF WASTE HANDLING ISSUES IDENTIFIED 2/12/96. —

0140: ROOM 11-A HAS BEEN REMOVED FROM "ON MASK" STATUS. —

0445: WATER WAS ADDED TO THE 1E-1 HOTCELL WATERBATH AT: 2230 HRS, 2/12/96; 0210 HRS 2/13/96; AND 0430 2/13/96. —

0450: JACK SPELLMAN WILL BE 2 HRS LATE. —

- LATE ENTRY: RECEIVED CSP (B-417) AND TK-900 (B-418) SAMPLES @ 0205 HRS. —

0520: RECEIVED 225-WC SAMPLE. —

— MCL @ 0530 —

C-Days Michael Lindberg Manager

0520 Assumed Duties of Shift. —

0725 Relieved By R. Bushore. —

— ML 0725 —

0725: Assumed building operations duties. —

0800: A 222-S Work Control Center employee complained of chest pains after arriving at work and went to the 200 West First Aid center at approximately 0745, then moved to the 200 East aid center.

0920: The WCC employee was transported to Kadlec Hospital for observation, escorted by the manager.

0927: Spill reported in Room 4A. Shift manager responded.

0950: Spill was primarily uraplex with nitric acid with a K-Basin environmental sample. Approximately 2 mL spilled out on countertop and cleaned up. 18,000 DPM fixed β-γ was found and labeled on countertop,

0064-33

APPENDIX 1

PROCESSING AND SAMPLING RESULTS FROM BREAKDOWN of TANK 241-C-106 GRAB SAMPLES

To: Ruth Esch
Distrib: Jewett, Crawford
Re: Processing and sampling results from breakdown of tank 241-C-106 grab samples

The following tables summarize the data that were collected in controlled laboratory notebook WHC-N-912-1 to support the sample breakdown of grab samples obtained from tank 241-C-106. Copies of this notebook are attached to this report for reference. This notebook contains visual description, sample breakdown and physical properties data that were gathered in processing these grab samples.. All work was performed according to testplan WHC-SD-WM-TP-430, rev. 0 and rev. 1 "Preparation of Tank 241-C-106 Samples and Testing for Compatibility with Tank 241-AY-102 Supernate" and the sampling and analysis plan WHC-SD-WM-TSAP-080, rev. 0 and rev. 1 "Tank 241-C-106 Grab Sampling and Analysis Plan." The field blank sample 6C-96-17 was not included in the sample preparation and handling performed. Twelve samples taken from riser 1 and riser 7 at various depths were analyzed.

Table 1 - Visual Description and Volume % Settled Solids

Customer Sample ID	Visual Description	Vol, % Settled Solids	Notebook p.
6C-96-3	Sludge maintained form of container after heating to 200°C. Color is dark mocha brown. Sludge is dry. On close inspection appears to be like red clay clumped into large chunks. There is no evidence of charring. Chunks appear to be about 1 inch in diameter. Top chunk was darker brown while inner material was red-brown. A second chunk was flecked with yellow-white material. Majority of chunks are aboutm 1/8 inch in diamter and are various colors of gray, light brown and white. Material is dry and crumbly like Bentonite and is highly inhomogeneous.	NA	18
6C-96-4	Brown black solids no apparent supernate	100%	18
6C-96-5	Slightly cloudy yellow liquid.	24.1%	40
6C-96-6	Slightly yellow liquid with reddish-brown solids. Solids are fine. After heating, supernate was dark orange and had yellow crust adhering to the inside of the sample jar.	NA	40
6C-96-7	Brown sludge of thick soupy consistency. Contained several large peices of very hard solid.	100%	53,63

6C-96-8	Brown sludge of thick soupy consistency. No chunks noted.	100%	53
6C-96-10	Brownish-red sludge. No supernate identified.	100%	53
6C-96-11	Cloudy yellow supernate with settled red-brown solids.	82.3%	46
6C-96-12	Trace of solids mostly supernate. Solids were fine and red-brown in color. Supernate was clear and yellow.	1.2%	46
6C-96-13	Brownish-red sludge with supernate.	100%	53
6C-96-14	Brownish red sludge.	100%	53
6C-96-15	Supernate with solids in bottom that seemed to dissolve on storing to the point where only trace amount of solid were remaining.	NA	69

Table 2 - Sample Breakdown by Labcore Number

Labcore ID	Origin	Gross sample(g)	Tare (g)	Net sample (g)	Notebook page
S96T000530	6C-96-3 parent	---	---	---	98
S96T000531	6C-96-10 parent	---	---	---	53
S96T000532	6C-96-4 parent	---	---	---	99
S96T000534	6C-96-7 supernate	96.47	85.43	11.04	54
S96T000535	6C-96-10 supernate	95.53	86.07	9.46	55
S96T000536	6C-96-8 supernate	103.16	85.59	17.57	57
S96T000538	6C-96-8 supernate	43.29	18.39	24.90	45

Labcore ID	Origin	Gross sample(g)	Tare (g)	Net sample (g)	Notebook page
S96T000539	6C-96-6 supernate	43.25	18.89	24.36	45
S96T000541	6C-96-5 archive supernate	152.73	85.82	66.91	44
S96T000542	6C-96-7 dry sludge	20.72	20.37	0.35	81
S96T000543	6C-96-7 control	---	---	1.45	68
S96T000544	6C-96-7 interstital liquid	29.98	17.88	12.10	77
S96T000545	6C-96-10 filtered sludge	21.88	20.96	0.92	78
S96T000547	6C-96-10 filtered sludge	104.66	85.62	19.04	79
S96T000548	6C-96-7 filtered sludge	22.76	20.49	2.27	84
S96T000549	6C-96-7 filtered sludge	22.25	20.46	1.79	84
S96T000550	6C-96-7 filtered sludge	23.02	20.36	2.66	84
S96T000551	6C-96-7 filtered sludge	24.41	22.46	1.95	84
S96T000552	6C-96-7 filtered sludge	24.47	22.42	2.05	84
S96T000553	6C-96-7 filtered sludge	24.25	22.32	1.93	84
S96T000554	6C-96-7 filtered sludge	23.88	22.29	1.59	84

Labcore ID	Origin	Gross sample(g)	Tare (g)	Net sample (g)	Notebook page
S96T000558	6C-96-10 dried sludge	23.51	22.55	0.96	82
S96T000559	6C-96-10 interstitial liquid	19.51	9.68	9.83	56
S96T000560	6C-96-10 centrifuged sludge	22.73	20.39	2.34	81
S96T000562	6C-96-7 filtered sludge	86.38	85.76	0.62	84
S96T000563	6C-96-7 filtered supernate	21.88	20.96	0.92	80,78
S96T000564	6C-96-10 filtered sludge	---	---	---	79
S96T000565	6C-96-10 filtered sludge	24.45	22.32	2.13	79
S96T000566	6C-96-10 filtered sludge	24.57	22.51	2.06	79
S96T000567	6C-96-10 filtered sludge	24.08	22.19	1.89	79
S96T000568	6C-96-10 filtered sludge	22.43	20.27	2.16	79
S96T000569	6C-96-10 filtered sludge	24.41	22.41	2.00	80
S96T000570	6C-96-10 filtered sludge	22.49	20.54	1.95	80
S96T000575	6C-96-8 archive	178.35	85.63	92.72	58
S96T000576	6C-96-8 caustic demand	166.94	86.21	80.73	58

Labcore ID	Origin	Gross sample(g)	Tare (g)	Net sample (g)	Notebook page
S96T000836	6C-96-5 parent	---	---	---	42
S96T000837	6C-96-7 parent	---	---	---	53,76
S96T000840	6C-96-6 parent	310.22			42
S96T000843	6C-96-8 parent	---	---	---	57,97
S96T000854	6C-96-8 compat. test	31.22	15.59	15.63	98
S96T001021	6C-96-11 parent	---	---	---	46
S96T001022	6C-96-12 parent	177.72	---	---	46
S96T001023	6C-96-12 filtered supernate	20.82	18.17	2.65	48
S96T001024	6C-96-12 filtered supernate	21.13	18.91	2.22	48
S96T001025	6C-96-12 archive	157.87	85.78	72.09	47
S96T001026	6C-96-13 parent	---	---	---	53
S96T001027	6C-96-15 parent	---	---	---	69
S96T001030	6C-96-13 dried sludge	23.53	22.71	0.82	93

Labcore ID	Origin	Gross sample(g)	Tare (g)	Net sample (g)	Notebook page
S96T001032	6C-96-13 filtered interstitial liquid	15.80	15.54	0.26	91
S96T001034	6C-96-13 control	24.26	22.81	1.45	90
S96T001526	6C-96-3 dried raw sludge	23.21	22.55	0.66	101
S96T001527	6C-96-4 dried sludge	23.22	22.56	0.66	106
S96T001528	6C-96-4 interstitial liquid	39.09	15.61	23.48	101
S96T001530	6C-96-4 control	22.33	20.31	2.02	101
S96T001532	6C-96-4 archive	117.43	85.18	32.25	103
S96T001533	6C-96-4 filtered sludge	24.56	22.66	1.90	103
S96T001535	6C-96-4 filtered sludge	24.25	22.26	1.99	104
S96T001536	6C-96-4 filtered sludge	23.79	22.19	1.60	104
S96T001537	6C-96-4 filtered sludge	23.52	22.29	1.23	104
S96T001538	6C-96-4 filtered sludge	24.31	22.53	1.78	104
S96T001539	6C-96-4 filtered sludge	24.48	22.39	2.09	104

Labcore ID	Origin	Gross sample(g)	Tare (g)	Net sample (g)	Notebook page
S96T001540	6C-96-4 filtered sludge	24.50	22.39	2.11	104
S96T001544	6C-96-4 filtered interstitial liquid	30.43	15.62	14.81	102,103
S96T001545	6C-96-4 interstitial organic	problems encountered with solids washing			
S96T001546	6C-96-15 supernate	38.07	15.59	22.48	97
S96T001547	6C-96-14 supernate	105.65	78.31	27.34	97
S96T001548	6C-96-7 interstitial organic	15.01	14.01	1.00	73
S96T001549	6C-96-14 archive	179.13	78.19	100.94	98
S96T001550	6C-96-14 caustic demand	135.76	78.14	57.62	98
S96T001551	6C-96-14 compat. test	30.30	15.52	14.78	98
S96T001552	6C-96-13 archive	113.20	85.43	27.77	93
S96T001553	6C-96-13 interstitial organic	---	---	---	85
S96T001555	6C-96-13 archive	99.99	85.08	14.91	91

Labcore ID	Origin	Gross sample(g)	Tare (g)	Net sample (g)	Notebook page
S96T001556	6C-96-13 filtered sludge	24.29	22.70	1.59	92
S96T001557	6C-96-13 filtered sludge	24.27	22.54	1.73	92
S96T001558	6C-96-13 filtered sludge	24.05	22.20	1.85	91
S96T001559	6C-96-13 filtered sludge	24.33	23.02	1.31	91
S96T001560	6C-96-13 filtered sludge	24.08	22.26	1.82	92
S96T001561	6C-96-13 filtered sludge	23.96	21.92	2.04	92
S96T001562	6C-96-13 filtered sludge	22.53	20.57	1.96	92
S96T001566	6C-96-13 filtered interstial liquid	18.38	15.55	2.83	90
S96T001567	6C-96-10 organic	8.28	7.71	0.57	82
S96T001674	6C-96-11 dried sludge	22.47	22.33	0.14	95
S96T001675	6C-96-11 interstitial liquid	16.56	15.65	0.91	93
S96T001676	6C-96-11 control	24.66	22.24	2.42	93
S96T001677	6C-96-11 supernate	123.48	85.02	38.46	93
S96T001679	6C-96-11 interstitial organic	14.80	13.59	1.21	89

Labcore ID	Origin	Gross sample(g)	Tare (g)	Net sample (g)	Notebook page
S96T001680	6C-96-11 archive	101.56	85.32	16.24	93
S96T001681	6C-96-11 filtered interstitial liquid	19.13	15.61	3.52	93
S96T001682	6C-96-11 filtered sludge	23.10	21.89	1.21	93
S96T001683	6C-96-11 filtered sludge	24.64	22.73	1.91	94
S96T001684	6C-96-11 filtered sludge	23.50	22.02	1.48	94
S96T001685	6C-96-11 filtered sludge	23.42	22.02	1.40	94
S96T001686	6C-96-11 filtered sludge	23.67	22.04	1.63	94
S96T001687	6C-96-11 filtered sludge	24.72	22.19	2.53	94
S96T001688	6C-96-11 filtered sludge	25.16	22.28	2.88	94
S96T002021	6C-96-8 raw sludge	19.84	15.22	4.62	96
S96T002022	6C-96-8 raw sludge	20.26	15.24	5.02	96
S96T002024	6C-96-11 interstitial aqueous	30.55	13.71	16.84	95
S96T002025	6C-96-13 interstitial aqueous	33.43	14.03	19.40	95

Labcore ID	Origin	Gross sample(g)	Tare (g)	Net sample (g)	Notebook page
S96T002042	6C-96-8 raw sludge	20.26	15.24	5.02	95
S96T002350	6C-96-14 raw sludge	26.44	25.54	0.90	106
S96T002351	6C-96-14 raw sludge	27.49	26.44	1.05	107

Table 3 describes the physical properties of the samples as required by PCS to describe bulk density, water content by gravimetry and volume of solids. Bulk density was measured on wet sludge before centrifuging and is reported as the sum of the mass of material divided by the sum of the volumes of the sludge aliqouts. Density and volume % solids are reported in this way to be consistent with dry particle density results which were based on the total amount of material measured. Volume % solids measurements were taken as the volume of centrifuged solids to the volume of bulk material. Gravimetric % water was determined from drying sludge in the heated centrifuge in tapered cones over a period of days and in some cases weeks.

Table 3 - Physical Properties of Tank 241-C-106 Samples

Sample ID	Labcore ID	W(1) Net mass (g)	V(1) Volume (ml)	Density (g/ml)	W(3)[1] % water grav.	W(3)[2] % water TGA	V(2) vol. % Solids
6C-96-5	S96T000538	24.36	20.0	1.22	N/A	81.12	N/A
6C-96-12	S96T001023	21.48	17.5	1.23	N/A	79.03	N/A
6C-96-7	S96T000542	109.64	64	1.71	24.98	8.04	69.5
6C-96-10	S96T000558	68.75	39	1.76	22.86	11.71	85.2
6C-96-11	S96T001674	146.79	101.0	1.45	27.53	9.63	59.5
6C-96-13	S96T001030	74.64	49.0	1.52	---	9.24	67.3
6C-96-4	S96T001527	127.90	85.25	1.50	25.80	3.63	59.3

[1,2]Corrected values for particle density include the sum of hot cell water content and TGA result. Raw determinations were based on hot cell water loss alone.

Results from water content in the samples prooved to be quite variable and subsequent differential scanning calorimetry (DSC) and thermogravimetric analysis (TGA) results indicate that not all of the water had been removed from the sludges over the days taken to dry them. determined by TGA after the "dry" sample was removed from the hot cell (i.e. the last weight was observed). Raw values account for only the interstitial liquid and water removed through processing in the hot cell

Table 3 - Dry Particle Density

Sample ID	Raw Dry Particle Density	Corrected Dry Particle Density
6C-96-11	1.83	1.93
6C-96-13	*	1.93
6C-96-10	1.70	1.69
6C-96-7	1.84	1.87
6C-96-4	1.97	2.01

* Only one value reported, based on % water content from the control sample.

Specifically, the raw values reported are derived from the following formula:

$$\frac{W(1)-W(2)-\frac{W(3)}{100}*W(1)}{V(1)-((1-\frac{V(2)}{100})*V(1))-(\frac{W(3)}{99}*V(1))}$$

Where W(1) = total weight of bulk sludge
W(2) = weight of interstitial liquid

W(3) = weight % water removed in hot cell
V(1) = total volume bulk sludge
V(2) = volume % solids

In the corrected values the additional water measured in the dried sludges is added to the W(3) value. Sample 6C-96-13 was calculated based on % water content as determined from wet sludge (control sample) due to a discrepancy between the gross weight measured and the tare weight of the centrifuge cone used.

The process notebook notes have been copied and are attached for additional detail. I you have any further questions please feel free to call me at 373-1972.

B. A. Crawford
Principal Scientist
Process Chemistry and Statistics

APPENDIX 2

COMPATIBILITY TESTING

COMPATIBILITY TESTING

Pretest tank 241-AY-102 sludges for Organic and 241-C-106 sludge for Organic Separation

An aliquot of tank 241-AY-102 sludge, identified as 102-AY-9, was collected from riser 15H at 675 inches prior to addition of caustic to the tank. The sludge was centrifuged at 1215 g for 10 minutes at approximately 55°C. There was no organic evident which may have separated from the sludge. There was an interstitial liquid volume of 3.0 ml in 6.5 ml of bulk sludge material.

Under similar conditions as those stated above, tank 241-C-106 material was centrifuged at 10 g and there was no noticeable separation of organic from the sludge sample or interstitial liquid.

Supernate Characteristics

In addition to supernate from the sludge sample 102-AY-9, six other supernate samples were checked for foaming. The sample was vortexed with no foaming evident. By shaking the supernate, foaming occurred with subsequent break up in less than 5 seconds. This supernate was not used for the compatibility mixing as it was later learned that the sample was taken from tank 241-AY -102 prior to addition of caustic to the tank. Therefore, six other samples: 2AY-96-1, 2AY-96-2, 2AY-96-3, 2AY-96-4, 2AY-96-5, and 2AY-96-6 which were collected after the caustic addition were loaded into the hot cell as more representative candidates for current conditions. Each of the supernates was agitated with variable results. Samples 2AY-96-1, 2AY-96-2 and 2AY-96-6 foamed with foam dissipation in less than 20 seconds. Samples 2AY-96-3, 2AY-96-4 and 2AY-96-5 either foamed with immediate dissipation or there was no sign of foaming. Specifically, samples 2AY-96-5, 2AY-96-2 and 2AY-96-6 were used to perform the compatibility studies.

In addition to checking supernate from tank 241-AY-102, supernate samples from tank 241-C-106 were checked for foaming. Specifically, sample S96T000536 (parent sample 6C-96-8) and sample S96T001547 (parent sample 6C-96-14) showed foaming with immediate breakup of the foam (within 5 seconds).

Tank 241-C-106 Sludge mixed with neat 241-AY-102 Supernate

Sludge from tank 241-C-106 parent samples 6C-96-8 and 6C-96-14 were mixed individually with supernate from tank 241-AY-102 (parent sample 2AY-96-5) (see table 1).

Table 1 - Sludge mixed with 241-AY-102 (2AY-96-5)

Sludge ID	grad. Cylinder	wt. of supernate	wt. of sludge added	wt. % sludge
6C-96-8 (S96T000575)	A	53.31	9.98	11.4
6C-96-14 (S96T001550)	E	37.98	3.93	6.5

The weight % sludge value for total slurry was approximated for 10 weight % sludge. The exact concentration of sludge in the mixture was calculated as follows:

$$Wt.\ \%\ sludge = \frac{W(1) - W(2)}{W(3) + W(1)} * 100$$

where W(1) = wet sludge weight
W(2) = water weight in sludge = total sludge weight x % water content x .001
W(3) = supernate weight

The weight of sludge to total slurry was requested as 10 weight %. The 6C-96-8 sample was 10.9 weight percent after calculating. However, the concentration of 6C-96-14 sample was much lower at 6.5 weight percent once calculated. This discrepancy was due to incorrectly accounting for the interstitial liquid content of the sample.

Settling Behavior

Before settling, samples of 6C-96-8 and 6C-96-14 in 241-AY-102 supernate were light yellow and clear. The sludge was red-brown and fine in composition.

Upon mixing all solids were suspended in the supernate. Separation of solids from the supernate occurred within 10 minutes for both samples of pure sludge from 6C-96-8 and 6C-96-14. Sludge from 6C-96-14 appears to be settling out faster than the 6C-96-8 sample. Supernate appeared to be clear of suspended solids after 165 minutes.

The resultant pH difference and physical properties are summarized in table 2. Specifically, the pH shows an increase in the suspended slurry in sample 6C-96-8 and a small decrease in the resultant supernate. Sample 6C-96-14 shows a pH decrease in the slurry with a larger increase in the resultant supernate. The most profound difference is observed in the pH

increase in the supernate which was mixed with 6C-96-14 sludge. Generally, a small increase in specific gravity is also noted after mixing the superate with the 241-C-106 tank sludge.

Table 2 - Characteristics of Sludge Components Before and After addition of Supernate

Sample 6C-96-8: 241-C-106 Sludge with 241-AY-102 Supernate						
Fraction of Mixture	pH	SpG (g/ml)	% water by TGA	DSC (Joules/g)	Bulk Density (g/ml)	Vol. % settled solids
original supernate (S96T002765)	11.16	0.980	---	---	1.06	---
slurry (S96T002766)	11.22	---	96.24	0	---	17.85
resultant supernate (S96T002768)	11.10	1.005	---	---	---	---
resultant sludge (S96T002769)	---	---	73.78	---	1.34	---
Sample 6C-96-14: 241-C-106 Sludge with 241-AY-102 Supernate						
original supernate (S96T002765)	11.16	0.980	---	---	1.03	---
slurry (S96T002825)	11.12	---	95.78	0	---	7.69
resulting supernate (S96T002826)	11.50	0.988	---	---	---	---
resulting sludge (S96T002827)	---	---	95.08	---	1.07	---

Mixed Sludge from 241-C-106 and 241-AY-102

Sludge from parent sample 102-AY-9 was added to each of two graduated cylinders as described in table 3. With the exception of mixing the sludges in a 4 part C-106 sludge to 1 part AY-102 sludge proportion, the sludges were combined with supernate from tank 241-AY-102 in similar fashion as the previous sludges.

Upon mixing the mixed sludge with AY-102 supernate, there was no foaming, frothing, or bubble formation. The sludge remained brown and mixed quite well in the supernate.

Table 3 - Mixed sludge composition

Sample ID	Grad. Cylinder	AY-102 sludge added (g)	C-106 sludge added (g)	portion AY-102: C-106	AY-102 Supernate added	Wt. % sludge (dry weight basis)
6C-96-14 (S96T001549)	D	1.79	7.32	1:4.09	54.47	10.2
6C-96-8 (S96T000575)	B	1.77	7.13	1:4.03	61.70	9.8

Settling Behavior

Samples were vortexed until they were thoroughly mixed, then allowed to settle. Solids began to separate from the supernate within the first 10 minutes. After 205 minutes had elapsed, the supernate was still cloudy and clearing. At the next reading (1200 minutes), the supernate was clear yellow. The 6C-96-14 mixed sludge dropped out of solution faster than the 6C-96-8 mixed sludge. This behavior is similar to that observed with the previous study. This seems to indicate some difference in settling may occur with tank location. The 6C-96-14 sample settled 52 ml of suspended sludge within the first 10 minutes, with an initial settling rate of 5.2 ml/min which is more rapid than the previous run of 6C-96-14 material alone. The mixed sludge 6C-96-8 sample behaved similarly to the analogous C-106 sludge sample in all respects. The 6C-96-14 mixed sludge sample may be more rapid in settling due to the larger concentration of large particles than the other samples. The settling rate is reported in table 4 by time elapsed from initiation of settling.

Table 4 - Settling Rate by Time elapsed from Mixing

Sample ID	Time Elapsed	Settling Rate
6C-96-8	0 - 10 minutes	2.0 ml/ min
	10 - 20 minutes	1.8 ml/ min.
	20 - 30 minutes	0.3 ml/ min.
	30-105 minutes	0.067 ml/ min.
6C-96-8 with AY-102 sludge	0 - 10 minutes	1.9 ml/ min.
	10 - 20 minutes	2.0 ml/ min.
	20 - 30 minutes	0.70 ml/ min.

	30 - 40 minutes	0.25 ml/ min.
	40 - 60 minutes	0.15 ml/ min.
	60 - 205 minutes	0.043 ml/ min.
6C-96-14	0 - 10 minutes	2.0 ml/ min.
	10 - 20 minutes	1.2 ml/ min.
	20 - 30 minutes	0.15 ml/ min.
	30 - 105 minutes	0.027 ml/ min.
6C-96-14 with AY-102 sludge	0 - 10 minutes	5.2 ml/ min.
	10 - 20 minutes	1.0 ml/ min.
	20 - 30 minutes	0.05 ml/ min.
	30 - 40 minutes	*
	40 - 60 minutes	0.05 ml/ min.

*No difference between volume observations.

Rate constants based on a logarithmic decay of settling over time were calculated according to first order kinetics dependent on volume in ml. (See figures 1 and 2 which follow). The rate constants for 6C-96-8, 6C-96-8 with AY-102 sludge, 6C-96-14 and 6C-96-14 with AY-102 sludge are: 7.73×10^{-3} min^{-1}, 1.60×10^{-3} min^{-1}, 1.03×10^{-2} min^{-1}, and 1.73×10^{-3} min^{-1}, respectively.

Table 5 provides the comparison of supernate and sludge before and after mixing. The pH decreases when the supernate is mixed with the sludge. The pH decrease appears to be larger than that observed for 241-C-106 tank sludge alone and undoubtedly is due to the presence of 241-AY-102 sludge. (This sludge sample was taken before addition of caustic to the tank.) The supernate specific gravity increases after mixing.

Table 5 - Characteristics of Mixed Sludge Components Before and After addition of Supernate

Sample 6C-96-8 with 102-AY-9: Sludge with 241-AY-102 Supernate						
Fraction of Mixture	pH	SpG (g/ml)	% water by TGA	DSC (Joules/g)	Bulk Density (g/ml)	Vol. % settled solids
original supernate (S96T002833)	12.52	0.976	---	---		---
slurry (S96T002770)	11.71	---	96.86	0	---	15.4
resultant supernate (S96T002771)	11.81	1.002	---	---	---	---
resultant sludge (S96T002772)	---	---	79.49	---	1.03	---
Sample 6C-96-14 with 102-AY-9: sludge with 241-AY-102 Supernate						
original supernate (S96T002833)	12.52	0.976	---	---		---
slurry (S96T002829)	11.80	---	95.67	0	---	
resulting supernate (S96T002830)	11.91	0.996	---	---	---	---
resulting sludge (S96T002831)	---	---	83.85	---		---

Settling Rate

C-106 in AY-102 supernate

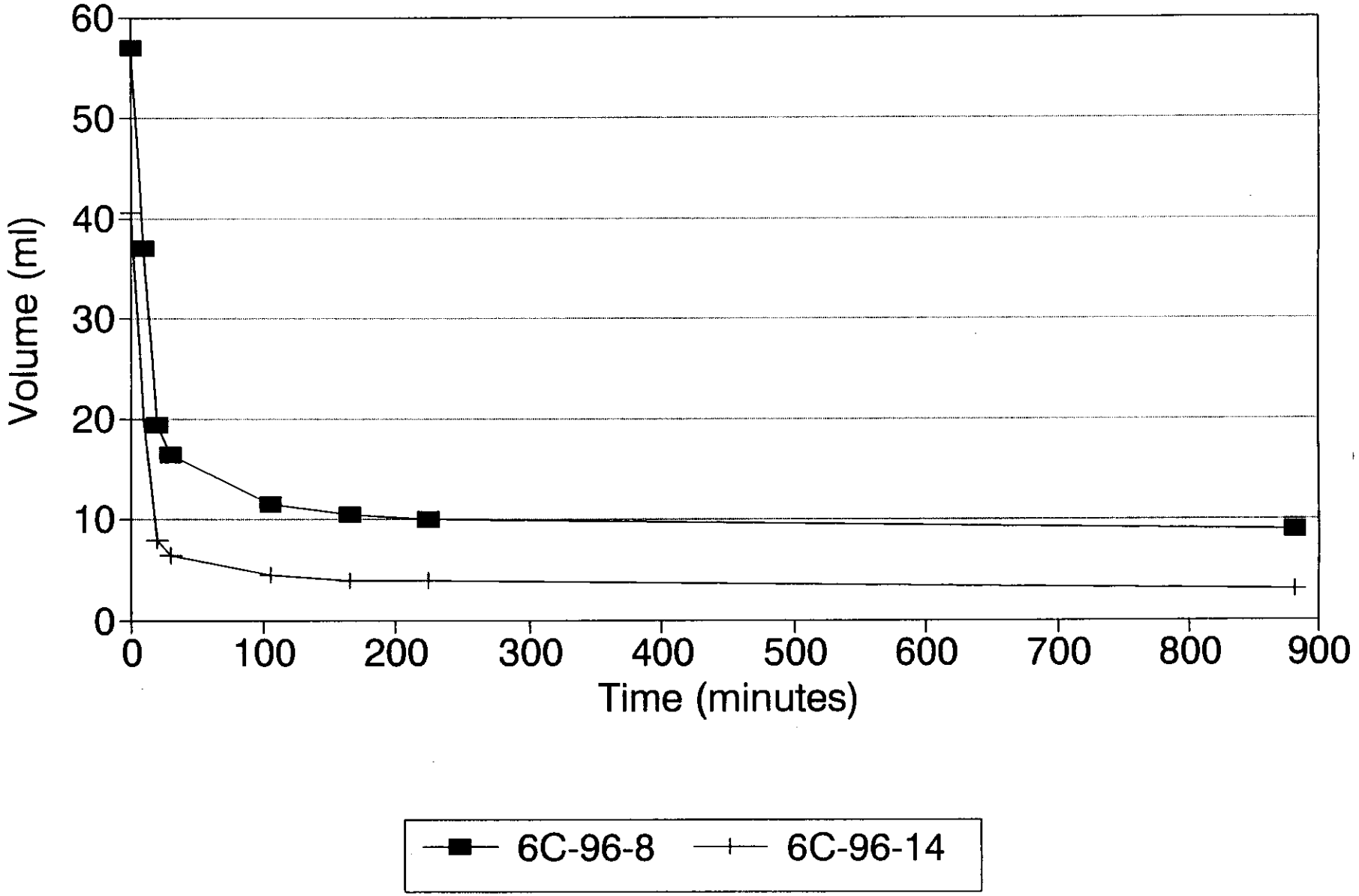


Fig 1

Settling Rate

Mixed C-106/AY-102 in AY-102 supernate

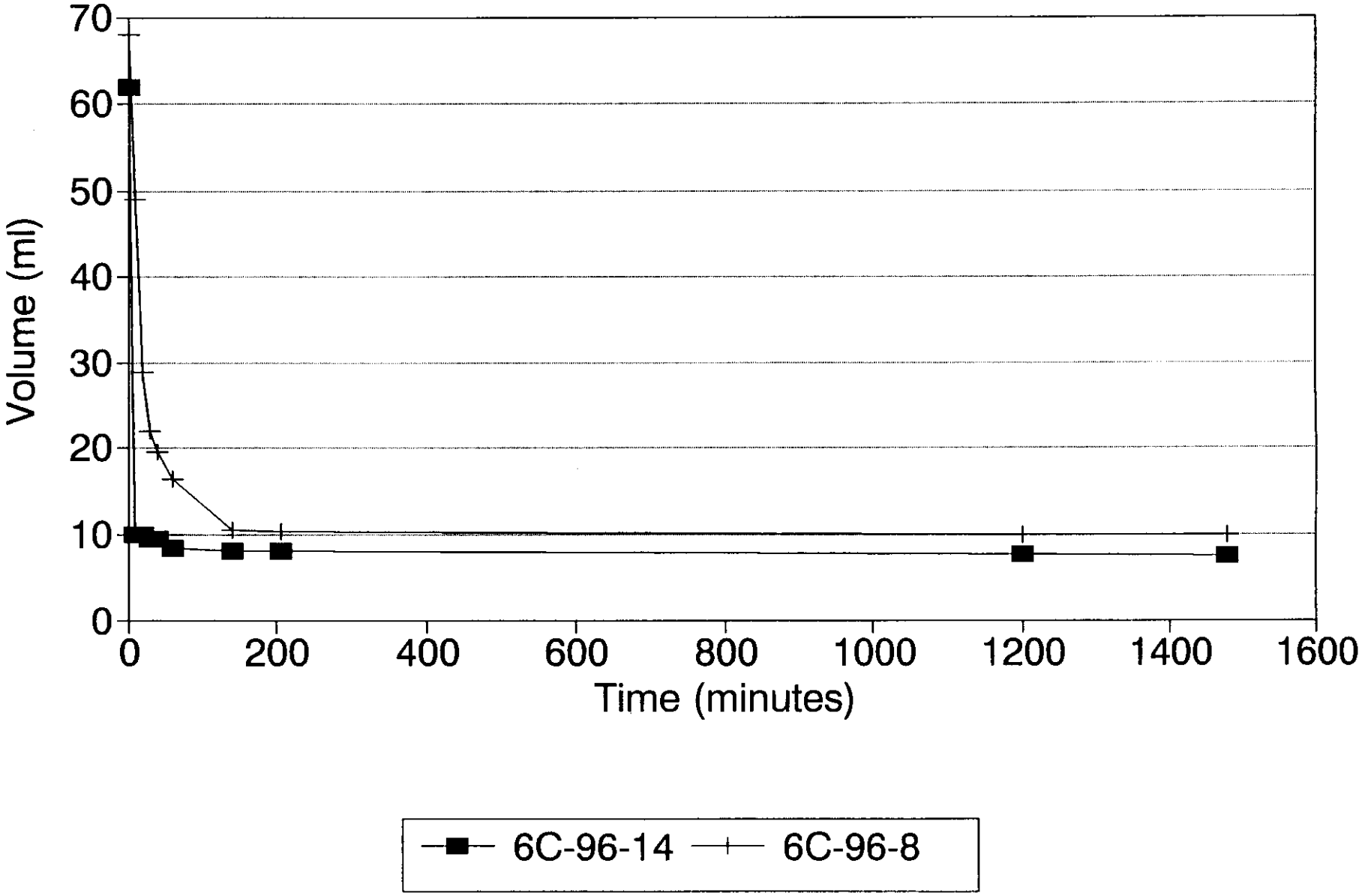


fig 2

APPENDIX 3

C-106 VISCOSITY AND PARTICLE SIZE DISTRIBUTION RESULTS

Westinghouse Hanford Company — **Internal Memo**

From: Process Chemistry and Statistics — 75764-PCS96-050
Phone: 373-6322 T6-09
Date: May 22, 1996
Subject: C-106 VISCOSITY AND PARTICLE SIZE DISTRIBUTION RESULTS

To: R. A. Esch T6-06

cc: J. R. Jewett T6-09
A. D. Rice T6-06
JFO File/LB

This letter reports the results of the viscosity and particle size distribution analyses conducted by the Process Chemistry and Statistics organization on samples collected from tank C-106. All information associated with this testing was recorded in laboratory notebooks WHC-N-1272-1 and RHO-RE-NB-208.

The viscosity was measured on two samples of tank C-106 supernatant liquid, S96T000536 and S96T001547. The viscosities of the samples were evaluated at approximately 36°C. The viscosities were measured with shear rates increasing from 0 s^{-1} to 300 s^{-1} and decreasing from 300 s^{-1} to 0 s^{-1}.

Attachment I contains viscosity curves (viscosity vs. shear rate) and raw data for the sample runs. The samples generally exhibited Newtonian behavior, viscosity remaining nearly constant with shear rate. The viscosities of both samples were within the 1.5 - 2.5 centipoise range over most of the shear rate range.

Attachment II contains the results of the particle size analyses. Small portions of sludge from samples S96T000854 and S96T001551 were withdrawn and diluted with liquid from samples S96T000536 and S96T001547, respectively. The majority of the particles in both samples have diameters less than 5 μm. The particle masses in samples S96T000854 and S96T001551 were distributed over diameter ranges up to 10 and 20 μm, respectively. The Brinkmann™ Model 2010 Particle Size Analyzer does not detect particulates smaller than 0.5 μm.

If you have any questions on this matter, feel free to call me at 373-6322.

J. F. O'Rourke, Advanced Engineer
Process Chemistry and Statistics

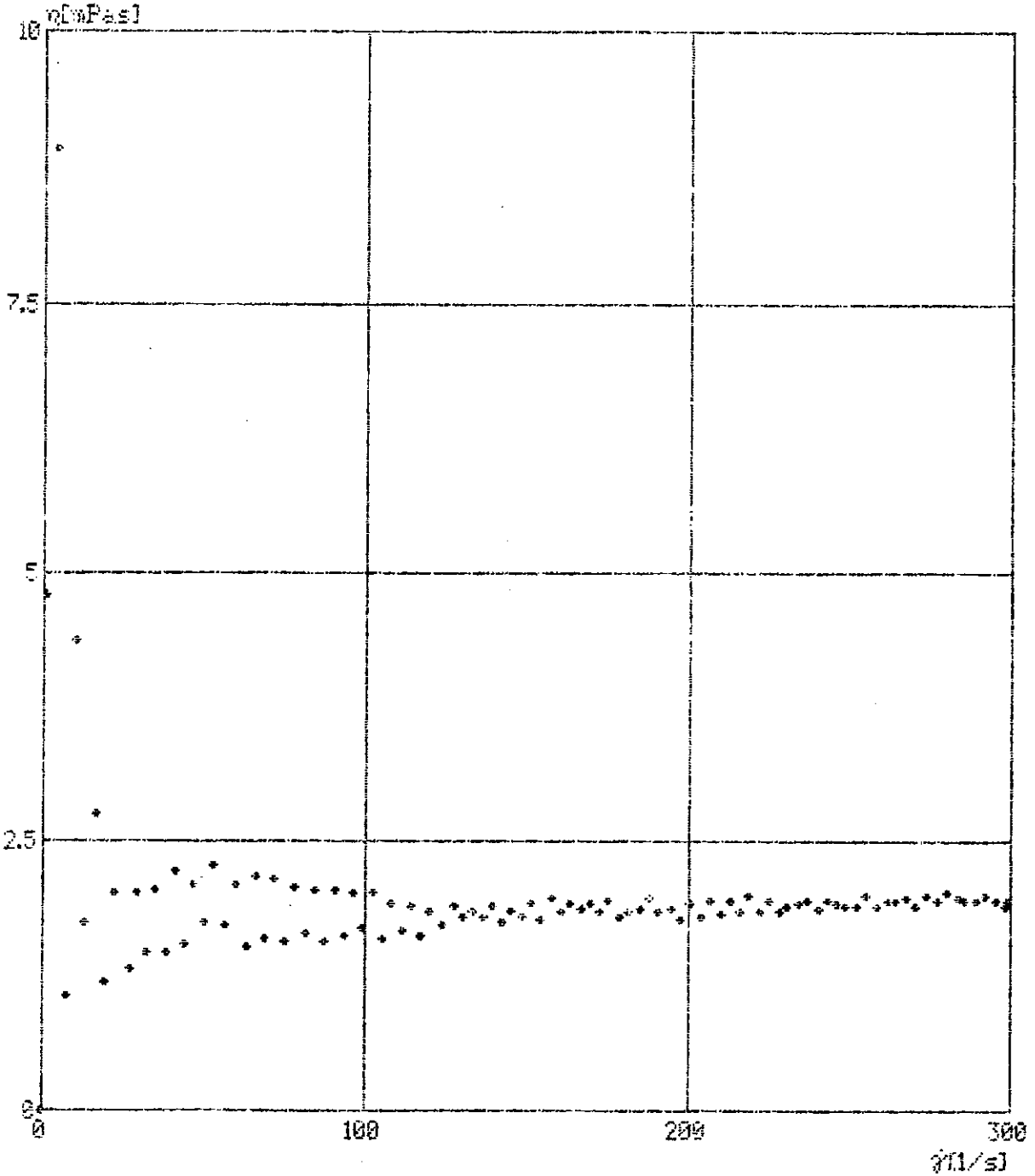
Attachments

75764-PCS96-050

Attachment I

TANK C-106 VISCOSITY RESULTS

Consisting of 7 Pages including the cover page



WESTINGHOUSE

Operator:
jwc

Substance:
s96t000~~356~~ 536
c106 #10 JFO 5/22/96

Test No.:
1

Test of:
05-21-1996

System:
CV20/ME45

Temperature:
25.0°C

*** S96536.ROT

HAAKE Rot 2.4

Date : 05-21-1996 Testdate : 05-21-1996
Substance : s96t000~~356~~ c106 #10
Test number : 1 536 JMO 5/22/96
Operator : jwc
Sensor : ME45 Meas. system : CV20
%Tau : 100% %D : 100%
Factor A : 0.800 Factor M : 3.000 Gap : 0.000 mm
Data stored in file C:\HAAKE\S96536.ROT
apparent viscosity:
Eta(min)=0.000 Eta(max)=8.939 Etam=2.142 s(n-1)=1.085

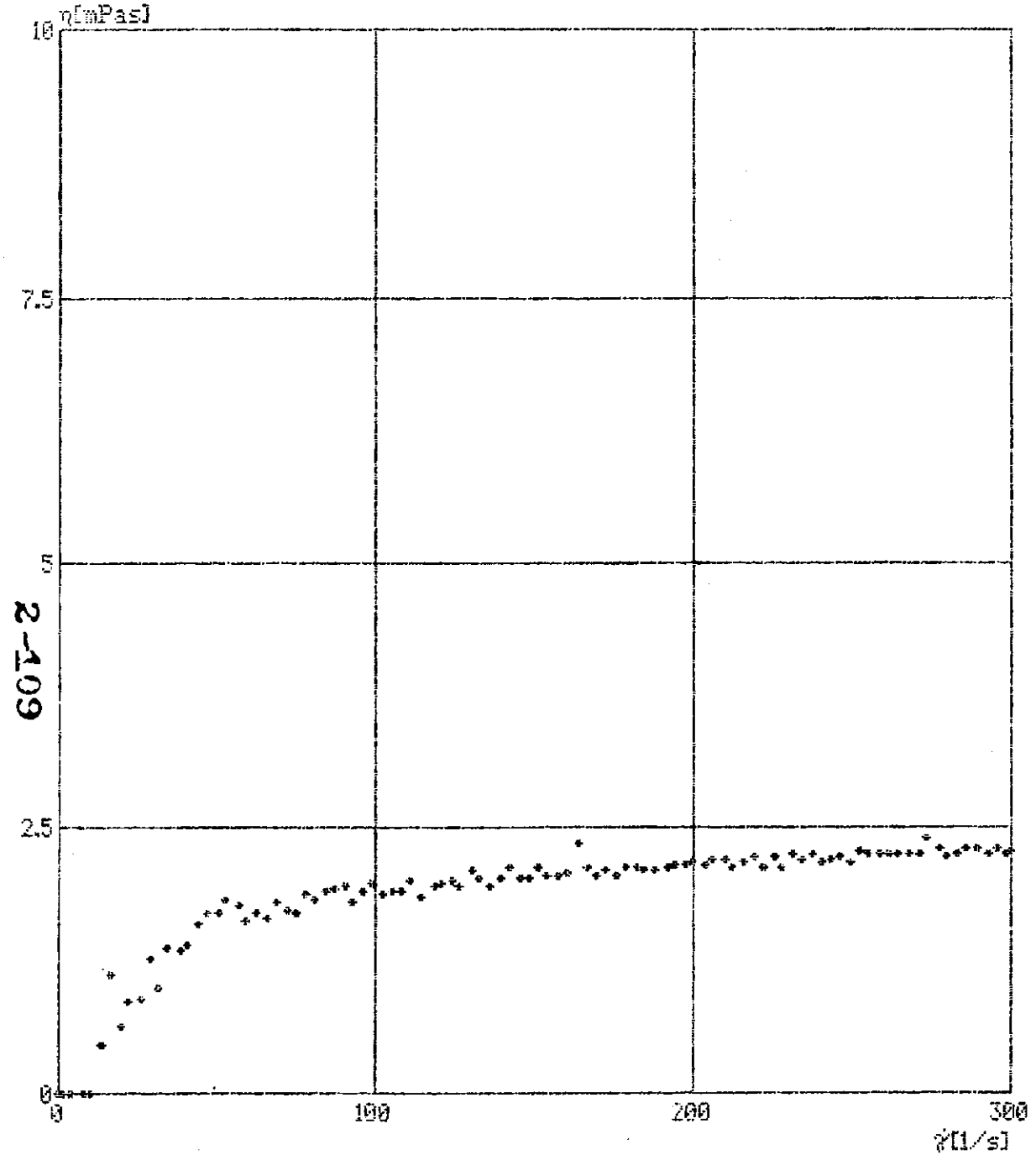
Point	D[1/s]	Tau[Pa]	Eta[mPas]	t[min]	Temp[xC]
1	0.000	0.029	0.000	0.00	31.7
2	4.374	0.039	8.939	0.05	31.9
3	10.460	0.046	4.359	0.11	32.1
4	16.520	0.046	2.762	0.17	31.9
5	22.550	0.046	2.023	0.24	32.1
6	29.030	0.059	2.020	0.30	32.2
7	35.040	0.072	2.046	0.36	32.5
8	41.060	0.091	2.222	0.42	32.5
9	47.070	0.099	2.105	0.48	32.7
10	53.130	0.121	2.282	0.54	32.9
11	60.120	0.126	2.103	0.61	32.9
12	66.180	0.143	2.166	0.67	32.9
13	72.240	0.155	2.147	0.73	33.1
14	78.300	0.163	2.081	0.79	33.2
15	84.460	0.173	2.052	0.85	33.3
16	90.470	0.185	2.046	0.91	33.5
17	96.380	0.196	2.028	0.97	33.5
18	102.500	0.206	2.009	1.04	33.7
19	108.500	0.207	1.910	1.10	33.8
20	114.400	0.216	1.892	1.15	33.7
21	120.500	0.222	1.838	1.22	34.0
22	127.600	0.242	1.900	1.29	34.2
23	133.600	0.246	1.844	1.35	34.1
24	139.500	0.265	1.896	1.41	34.2
25	145.600	0.269	1.844	1.47	34.3
26	151.600	0.289	1.908	1.53	34.1
27	157.600	0.309	1.960	1.59	34.5
30	175.800	0.343	1.950	1.77	34.6
31	181.800	0.338	1.857	1.83	34.6
32	187.800	0.370	1.971	1.89	34.7
33	194.900	0.365	1.873	1.96	35.0
34	200.900	0.387	1.927	2.02	35.1
35	206.900	0.401	1.940	2.08	35.0
36	212.900	0.416	1.953	2.14	34.9
37	218.800	0.437	1.995	2.20	35.0
38	224.900	0.438	1.947	2.26	35.1
39	231.000	0.441	1.907	2.32	35.2
40	237.000	0.463	1.953	2.38	35.2
41	243.100	0.476	1.957	2.44	34.9
42	249.100	0.471	1.889	2.50	35.2
43	255.100	0.511	2.003	2.56	35.4
44	262.200	0.511	1.949	2.63	35.4
45	268.100	0.525	1.959	2.69	35.4
46	274.200	0.545	1.987	2.75	35.6
47	280.300	0.567	2.023	2.81	35.3
48	286.200	0.559	1.954	2.87	35.7
49	292.200	0.587	2.007	2.93	35.6
50	298.200	0.567	1.901	2.99	35.6

5967000536 JPO 5/22/96

Segment number 2 of type 'Tau/D' is defined as :
D from 300.0 to 0.000 1/s in 3.00 min at 25.0xC.
Area is 82.58 Pa/s
50 steps are defined, 50 are actually present.

Apparent viscosity:
Eta(min)=1.069 Eta(max)=4.796 Etam=1.797 s(n-1)=0.4746

Point	D[1/s]	Tau[Pa]	Eta[mPas]	t[min]	Temp[xC]
1	299.500	0.580	1.936	3.00	35.6
2	295.700	0.579	1.957	3.05	36.0
3	289.600	0.566	1.953	3.11	35.6
4	283.600	0.562	1.981	3.18	35.5
5	277.600	0.540	1.944	3.24	35.6
6	270.500	0.516	1.908	3.31	35.7
7	264.500	0.515	1.946	3.37	35.8
8	258.500	0.493	1.906	3.43	35.7
9	252.500	0.476	1.884	3.49	35.8
10	246.400	0.474	1.925	3.55	35.8
11	240.400	0.447	1.860	3.61	35.9
12	234.300	0.450	1.919	3.67	35.9
13	228.300	0.422	1.850	3.73	35.6
14	222.300	0.409	1.841	3.79	35.8
15	216.100	0.396	1.833	3.85	35.9
16	210.100	0.385	1.830	3.91	35.7
17	204.100	0.365	1.788	3.97	36.1
18	198.100	0.351	1.770	4.03	36.0
19	191.100	0.351	1.835	4.10	36.3
20	185.000	0.345	1.867	4.16	36.1
21	178.900	0.319	1.785	4.22	36.2
22	172.900	0.319	1.847	4.28	35.9
23	166.900	0.310	1.859	4.34	36.3
24	160.900	0.296	1.839	4.40	36.1
25	154.800	0.275	1.777	4.46	35.9
26	148.800	0.267	1.796	4.52	36.3
27	142.700	0.250	1.754	4.59	36.1
28	136.700	0.244	1.783	4.65	36.1
29	130.600	0.236	1.806	4.71	36.2
30	124.700	0.215	1.725	4.77	36.1
31	117.600	0.190	1.618	4.84	36.1
32	111.600	0.188	1.681	4.90	36.2
33	105.600	0.168	1.593	4.96	36.2
34	99.460	0.168	1.690	5.02	36.1
35	93.400	0.151	1.619	5.08	36.3
36	87.440	0.137	1.565	5.14	36.1
37	81.380	0.134	1.650	5.20	36.4
38	75.370	0.119	1.574	5.26	36.3
39	69.400	0.111	1.596	5.32	36.2
40	63.340	0.096	1.523	5.38	36.2
41	56.300	0.096	1.713	5.45	36.0
42	50.290	0.087	1.736	5.51	36.2
43	44.130	0.068	1.536	5.57	36.3
44	38.120	0.056	1.470	5.63	36.2
45	32.110	0.047	1.461	5.69	36.3
46	26.950	0.035	1.306	5.75	36.2
47	19.530	0.023	1.201	5.82	36.3
48	13.470	0.023	1.742	5.88	36.2
49	7.317	0.008	1.069	5.94	36.3
50	1.359	0.007	4.796	6.00	36.2



WESTINGHOUSE

Operator:
jwo

Substance:
s96t001547 c-106-14

Test No.:
01

Test of:
05-21-1996

System:
CV20/ME45

Temperature:
25.0°C

*** S961571.ROT

WRAKE Rot 2.4

Date : 05-21-1996 Testdate : 05-21-1996
Substance : s96t001547 c-106-14
Test number : 01
Operator : jwc
Sensor : ME45 Meas. system : CV20
%Tau : 100% %D : 100%
Factor A : 0.800 Factor M : 3.000 Gap : 0.000 mm
Data stored in file C:\HAAKE\S961571.ROT

Apparent viscosity:
Eta(min)=0.000 Eta(max)=2.410 Etam=1.854 s(n-1)=0.5728

Point	D[1/s]	Tau[Pa]	Eta[mPas]	t[min]	Temp[xC]
1	0.000	0.000	0.000	0.00	33.8
2	4.316	0.000	0.000	0.05	34.0
3	10.370	0.000	0.000	0.11	34.1
4	16.410	0.018	1.112	0.17	34.1
5	22.550	0.020	0.867	0.24	34.1
6	29.030	0.036	1.257	0.30	34.3
7	35.040	0.048	1.376	0.36	34.3
8	41.060	0.057	1.397	0.42	34.2
9	47.210	0.080	1.684	0.48	34.5
10	53.230	0.096	1.812	0.54	34.6
11	59.240	0.096	1.628	0.60	34.6
12	66.280	0.110	1.652	0.67	34.7
13	72.290	0.124	1.713	0.73	34.3
14	78.350	0.146	1.863	0.79	34.7
15	84.410	0.160	1.899	0.85	35.0
16	90.470	0.176	1.945	0.91	34.9
17	96.480	0.184	1.905	0.97	34.9
18	102.500	0.193	1.882	1.04	34.8
19	108.500	0.205	1.886	1.10	35.0
20	114.700	0.211	1.841	1.16	35.2
21	120.700	0.237	1.966	1.22	35.1
22	126.700	0.245	1.934	1.28	35.2
23	132.800	0.267	2.011	1.34	35.3
24	139.700	0.284	2.033	1.41	35.5
25	145.900	0.295	2.019	1.47	35.2
26	151.900	0.321	2.111	1.53	35.3
27	157.900	0.323	2.047	1.59	35.2
28	163.900	0.385	2.345	1.65	35.2
30	176.100	0.362	2.058	1.77	35.3
31	182.100	0.388	2.133	1.83	35.2
32	188.100	0.395	2.100	1.89	35.4
33	194.100	0.418	2.155	1.95	35.3
34	200.200	0.437	2.180	2.01	35.4
35	206.300	0.451	2.186	2.07	35.5
36	212.300	0.452	2.130	2.13	35.6
37	219.400	0.488	2.222	2.20	35.4
38	225.500	0.501	2.219	2.26	35.8
39	231.400	0.520	2.247	2.32	35.6
40	237.500	0.536	2.255	2.39	35.9
41	243.600	0.536	2.199	2.45	35.7
42	249.600	0.541	2.167	2.51	35.7
43	255.500	0.577	2.260	2.57	35.5
44	261.600	0.590	2.257	2.63	36.2
45	267.700	0.600	2.239	2.69	35.6
46	273.700	0.660	2.410	2.75	35.9
47	279.800	0.622	2.222	2.81	35.8
48	285.800	0.657	2.298	2.87	35.9
49	292.800	0.661	2.257	2.94	35.8
50	298.900	0.673	2.250	3.00	35.8

5967001547 JRD 5/22/96

Segment number 2 of type 'Tau/D' is defined as :
D from 300.0 to 0.000 1/s in 3.00 min at 25.0xC.
Area is 95.50 Pa/s
50 steps are defined, 50 are actually present.

Apparent viscosity:
Eta(min)=0.000 Eta(max)=2.306 Etam=1.854 s(n-1)=0.5636

Point	D[1/s]	Tau[Pa]	Eta[mPas]	t[min]	Temp[xC]
1	299.900	0.683	2.278	3.00	36.1
2	295.600	0.682	2.306	3.06	36.0
3	289.500	0.665	2.296	3.12	36.0
4	283.500	0.640	2.257	3.18	36.1
5	277.400	0.637	2.297	3.24	35.9
6	271.600	0.609	2.241	3.30	35.9
7	264.500	0.594	2.247	3.37	35.8
8	258.400	0.584	2.260	3.43	36.2
9	252.200	0.575	2.279	3.49	36.0
10	246.300	0.546	2.217	3.55	36.0
11	240.300	0.520	2.164	3.61	36.1
12	234.200	0.516	2.204	3.67	35.9
13	228.200	0.486	2.131	3.73	36.0
14	222.100	0.473	2.130	3.79	35.8
15	216.100	0.468	2.165	3.85	35.6
16	210.100	0.464	2.208	3.91	35.9
17	204.000	0.439	2.154	3.97	35.9
18	197.900	0.424	2.140	4.03	35.8
19	191.900	0.405	2.112	4.09	36.1
20	184.900	0.390	2.108	4.16	36.0
21	178.800	0.381	2.129	4.22	36.2
22	172.700	0.362	2.098	4.28	36.0
23	166.700	0.355	2.126	4.34	35.9
24	160.700	0.332	2.068	4.40	36.1
25	154.600	0.315	2.040	4.47	36.1
26	148.700	0.302	2.034	4.53	35.9
27	142.700	0.301	2.110	4.59	36.0
28	136.600	0.266	1.947	4.65	36.1
29	130.500	0.274	2.097	4.71	36.0
30	124.400	0.249	2.001	4.77	35.9
31	118.500	0.229	1.936	4.83	36.3
32	111.300	0.223	2.002	4.90	36.1
33	105.300	0.199	1.894	4.96	35.9
34	99.270	0.197	1.983	5.02	36.1
35	93.260	0.167	1.789	5.08	36.2
36	87.240	0.167	1.912	5.14	36.1
37	81.230	0.149	1.829	5.20	36.2
38	75.120	0.126	1.683	5.26	36.1
39	69.060	0.124	1.793	5.32	36.0
40	63.050	0.107	1.695	5.38	36.0
41	57.040	0.100	1.760	5.44	36.2
42	51.030	0.086	1.686	5.50	36.1
43	44.920	0.072	1.596	5.56	36.0
44	38.860	0.052	1.342	5.62	36.0
45	31.820	0.031	0.983	5.69	35.9
46	26.630	0.023	0.881	5.75	36.0
47	20.270	0.013	0.643	5.81	36.0
48	14.190	0.007	0.459	5.87	36.2
49	8.138	0.000	0.000	5.93	36.1
50	1.188	0.000	0.000	6.00	35.9

75764-PCS96-050

Attachment II

TANK C-106 PARTICLE SIZE DISTRIBUTION RESULTS

Consisting of 9 Pages including the cover page

GALAI CIS1 VERSION 4.3 (WHC PROCESS CHEM. LABS)

WHC-SD-WM-DP-183, REV. 0

DILUENT SLUDGE

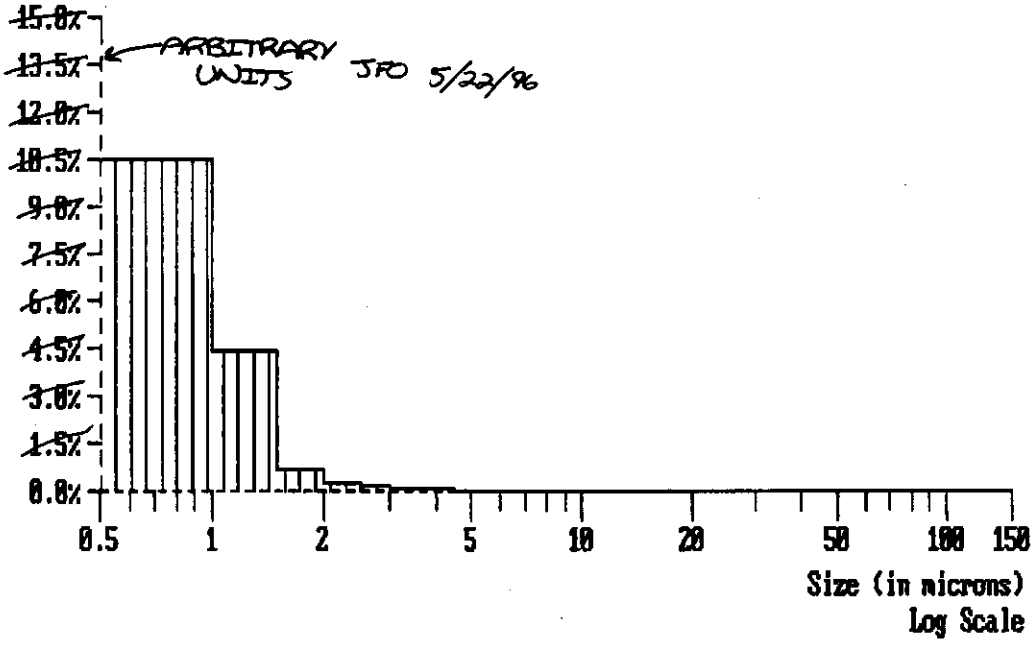
SAMPLE NAME : S96T000536 C106 S96T000854 JFO 5/22/96
FILE NAME : S96T536.02

DATE	: 22/05/1996	ACQ. RANGE	: 0.5-150	COUNTS	: 500884
TIME	: 08:31	ACQ. MODE	: SAMPLE	S.N.F.	: 0.93
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 732 SEC	S.D.U.	: 7829
CELL TYPE	: MAGNETIC (1)	SAMPLE SIZE	: 5	CONCENTR.	: 7.1E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: None	SOLIDS	: ~~5.6E-04 %~~ JFO 5/22/96

PROBABILITY NUMBER DENSITY GRAPH

Name: S96T000536 C106
7.1E+06 #/ml(100.0%)
Mode at 0.75 µm
<< SCALE RANGE (µm): ADJUSTED >>

Median : 0.82µm
Mean(nl): 0.91µm
S.D.(nl): 0.39µm
Conf(nl):100.00 %



GALAI CIS1 VERSION 4.3 (WHC PROCESS CHEM. LABS)

NUMBER DISTRIBUTION TABLE (RANGES)

DILUENT SLUDGE

SAMPLE NAME : S96T000536 C106 S96T000854 JFO 5/22/96
FILE NAME : S96T536.02

DATE	: 22/05/1996	ACQ. RANGE	: 0.5-150	COUNTS	: 500884
TIME	: 08:31	ACQ. MODE	: SAMPLE	S.N.F.	: 0.93
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 732 SEC	S.D.U.	: 7829
CELL TYPE	: MAGNETIC (1)	SAMPLE SIZE	: 5	CONCENTR.	: 7.1E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: None	SOLIDS	: ~~5.6E-04 %~~ JFO 5/22/96

RANGE (microns)	LOCAL (%)	UNDER(%)-CUMULATIVE-	OVER(%)
0.0 - 1.0	77.10	77.10	22.90
1.0 - 2.0	21.23	98.33	1.67
2.0 - 3.0	1.02	99.35	0.65
3.0 - 4.0	0.38	99.73	0.27
4.0 - 5.0	0.17	99.90	0.10
5.0 - 6.0	0.06	99.96	0.04
6.0 - 7.0	0.02	99.98	0.02
7.0 - 8.0	0.01	99.99	0.01
8.0 - 9.0	0.00	100.00	0.00
9.0 - 10.0	0.00	100.00	0.00
10.0 - 20.0	0.00	100.00	0.00
20.0 - 30.0	0.00	100.00	0.00
30.0 - 40.0	0.00	100.00	0.00
40.0 - 50.0	0.00	100.00	0.00
50.0 - 60.0	0.00	100.00	0.00
60.0 - 70.0	0.00	100.00	0.00
70.0 - 80.0	0.00	100.00	0.00
80.0 - 90.0	0.00	100.00	0.00
90.0 - 100.0	0.00	100.00	0.00
100.0 - 150.0	0.00	100.00	0.00

G A L A I - C I S - 1

Computerized Inspection System

GALAI CIS1 VERSION 4.3 (WHC PROCESS CHEM. LABS)

SAMPLE NAME : S96T000536 C106 (EFFLUENT) (SLUDGE) S96T000854 JFO 5/22/96
FILE NAME : S96T536.02

DATE	: 22/05/1996	ACQ. RANGE	: 0.5-150	COUNTS	: 500884
TIME	: 08:31	ACQ. MODE	: SAMPLE	S.N.F.	: 0.93
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 732 SEC	S.D.U.	: 7829
CELL TYPE	: MAGNETIC (1)	SAMPLE SIZE	: 5	CONCENTR.	: 7.1E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: None	SOLIDS	: ~~5.6E-04 %~~ JFO 5/22/96

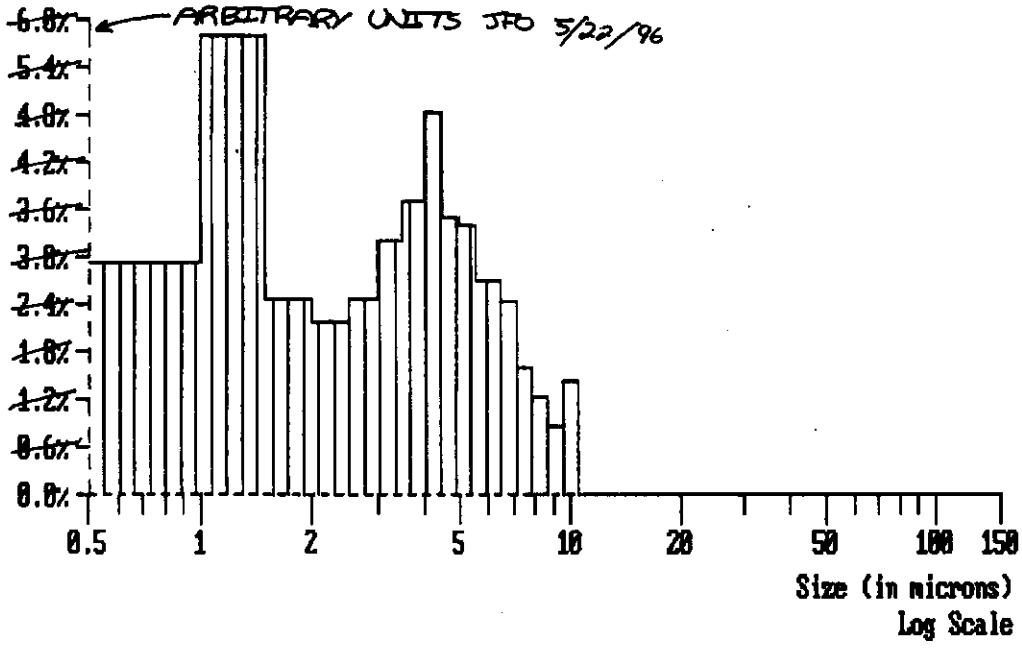
PROBABILITY VOLUME DENSITY GRAPH

Name: S96T000536 C106
5.6E-06 cc/ml(100.0%)
Mode at 1.25 µm

Mean(nv): 1.15µm
S.D.(nv): 0.46µm

Median : 1.74µm
Mean(vm): 2.74µm
S.D.(vm): 2.20µm
Conf(vm):100.00 %

<< SCALE RANGE (µm): ADJUSTED >>



GALAI CIS1 VERSION 4.3 (WHC PROCESS CHEM. LABS)

VOLUME DISTRIBUTION TABLE (RANGES)

SAMPLE NAME : S96T000536 C106 DILUENT SLUDGE S96T000854 JFO 5/22/96
FILE NAME : S96T536.02

DATE	: 22/05/1996	ACQ. RANGE	: 0.5-150	COUNTS	: 500884
TIME	: 08:31	ACQ. MODE	: SAMPLE	S.N.F.	: 0.93
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 732 SEC	S.D.U.	: 7829
CELL TYPE	: MAGNETIC (1)	SAMPLE SIZE	: 5	CONCENTR.	: 7.1E+06 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: None	SOLIDS	: ~~5.6E-04 %~~ JFO 5/22/96

RANGE (microns)	LOCAL (%)	UNDER(%)-CUMULATIVE-OVER(%)	
0.0 - 1.0	21.59	21.59	78.41
1.0 - 2.0	32.31	53.90	46.10
2.0 - 3.0	9.88	63.78	36.22
3.0 - 4.0	10.41	74.19	25.81
4.0 - 5.0	9.89	84.08	15.92
5.0 - 6.0	6.30	90.38	9.62
6.0 - 7.0	3.96	94.34	5.66
7.0 - 8.0	2.30	96.64	3.36
8.0 - 9.0	1.66	98.29	1.71
9.0 - 10.0	1.16	99.45	0.55
10.0 - 20.0	0.55	100.00	0.00
20.0 - 30.0	0.00	100.00	0.00
30.0 - 40.0	0.00	100.00	0.00
40.0 - 50.0	0.00	100.00	0.00
50.0 - 60.0	0.00	100.00	0.00
60.0 - 70.0	0.00	100.00	0.00
70.0 - 80.0	0.00	100.00	0.00
80.0 - 90.0	0.00	100.00	0.00
90.0 - 100.0	0.00	100.00	0.00
100.0 - 150.0	0.00	100.00	0.00

G A L A I - C I S - 1

Computerized Inspection System

GALAI CIS1 VERSION 4.3 (WHC PROCESS CHEM. LABS)

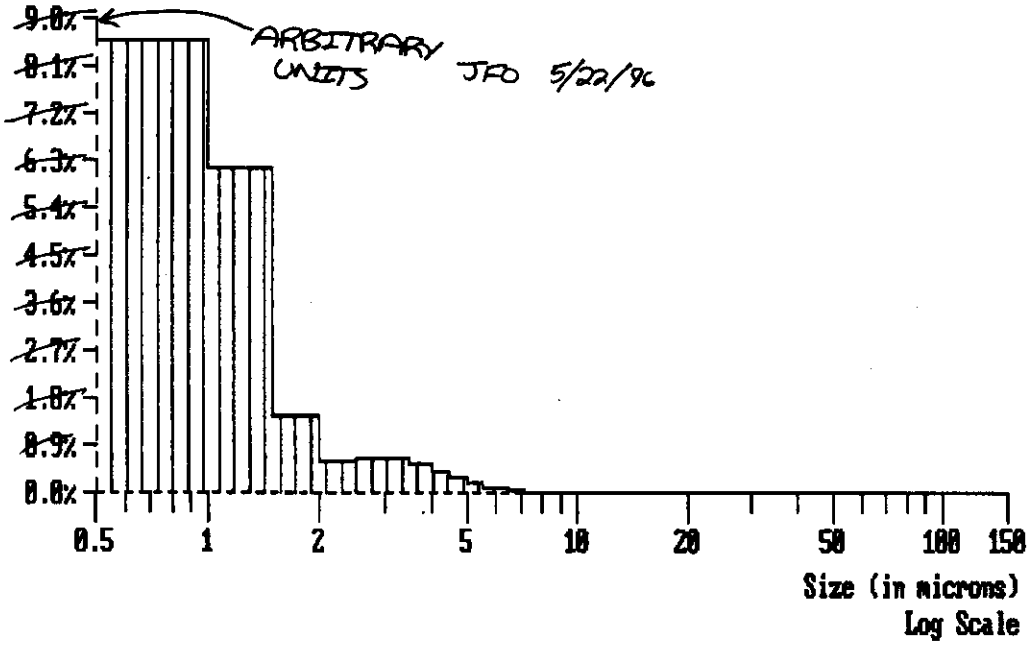
SLUDGE DILUENT
SAMPLE NAME : S96T001551 C106 S96T001547 JFO 5/22/96
FILE NAME : Data Not Saved.

DATE	: 21/05/1996	ACQ. RANGE	: 0.5-150	COUNTS	: 368341
TIME	: 12:34	ACQ. MODE	: SAMPLE	S.N.F.	: 0.51
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 437 SEC	S.D.U.	: 8455
CELL TYPE	: MAGNETIC (1)	SAMPLE SIZE	: 5	CONCENTR.	: 1.2E+07 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: None	SOLIDS	: ~~3.6E-03 %~~ JFO 5/22/96

PROBABILITY NUMBER DENSITY GRAPH

Name: S96T001551 C106
1.2E+07 #/ml(100.0%)
Mode at 0.75 µm
<< SCALE RANGE (µm): ADJUSTED >>

Median : 0.90µm
Mean(nl): 1.10µm
S.D.(nl): 0.78µm
Conf(nl):100.00 %



GALAI CIS1 VERSION 4.3 (WHC PROCESS CHEM. LABS)

NUMBER DISTRIBUTION TABLE (RANGES)

SAMPLE NAME : S96T001551 C106 (SLUDGE) S96T001547 (DILUENT) JPO 5/22/96
FILE NAME : Data Not Saved.

DATE	: 21/05/1996	ACQ. RANGE	: 0.5-150	COUNTS	: 368341
TIME	: 12:34	ACQ. MODE	: SAMPLE	S.N.F.	: 0.51
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 437 SEC	S.D.U.	: 8455
CELL TYPE	: MAGNETIC (1)	SAMPLE SIZE	: 5	CONCENTR.	: 1.2E+07 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: None	SOLIDS	: ~~3.6E-03~~ % JPO 5/22/96

RANGE (microns)	LOCAL (%)	UNDER(%)	CUMULATIVE	OVER(%)
0.0 - 1.0	62.99	62.99		37.01
1.0 - 2.0	30.67	93.66		6.34
2.0 - 3.0	2.84	96.50		3.50
3.0 - 4.0	1.90	98.39		1.61
4.0 - 5.0	0.92	99.32		0.68
5.0 - 6.0	0.36	99.68		0.32
6.0 - 7.0	0.16	99.84		0.16
7.0 - 8.0	0.06	99.90		0.10
8.0 - 9.0	0.03	99.94		0.06
9.0 - 10.0	0.02	99.96		0.04
10.0 - 20.0	0.04	100.00		0.00
20.0 - 30.0	0.00	100.00		0.00
30.0 - 40.0	0.00	100.00		0.00
40.0 - 50.0	0.00	100.00		0.00
50.0 - 60.0	0.00	100.00		0.00
60.0 - 70.0	0.00	100.00		0.00
70.0 - 80.0	0.00	100.00		0.00
80.0 - 90.0	0.00	100.00		0.00
90.0 - 100.0	0.00	100.00		0.00
100.0 - 150.0	0.00	100.00		0.00

GALAI CIS1 VERSION 4.3 (WHC PROCESS CHEM. LABS)

SAMPLE NAME : S96T001551 C106 (SLUDGE) S96T001547 (CLOSED) JFO 5/22/96
FILE NAME : Data Not Saved.

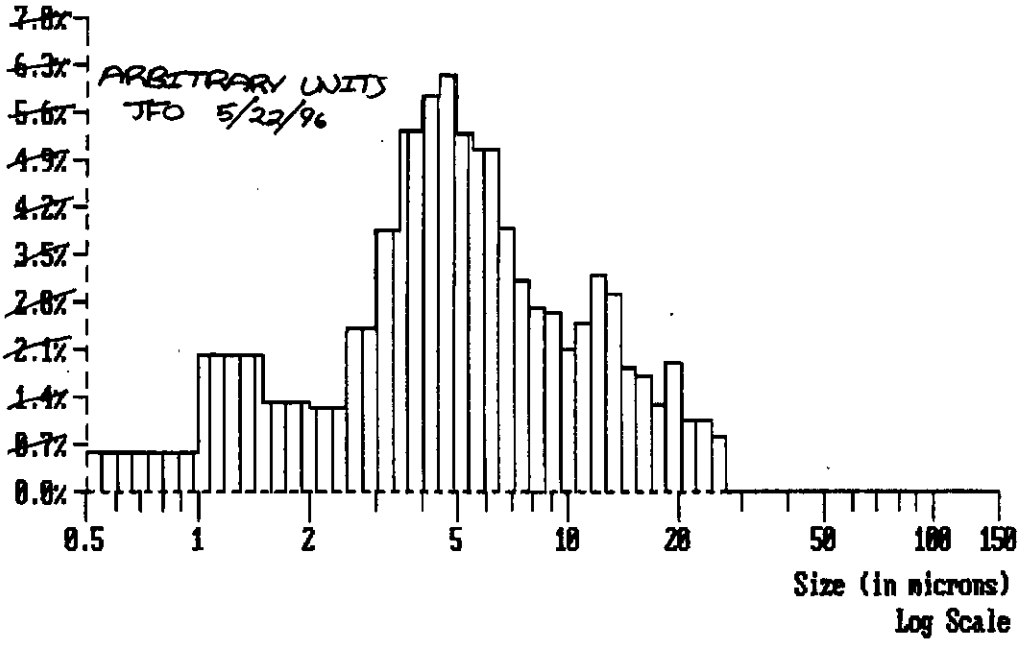
DATE	: 21/05/1996	ACQ. RANGE	: 0.5-150	COUNTS	: 368341
TIME	: 12:34	ACQ. MODE	: SAMPLE	S.N.F.	: 0.51
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 437 SEC	S.D.U.	: 8455
CELL TYPE	: MAGNETIC (1)	SAMPLE SIZE	: 5	CONCENTR.	: 1.2E+07 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: None	SOLIDS	: ~~3.6E-03~~ % JFO 5/22/96

PROBABILITY VOLUME DENSITY GRAPH

Name: S96T001551 C106
3.6E-05 cc/ml(100.0%)
Mode at 4.75 µm
<< SCALE RANGE (µm): ADJUSTED >>

Mean(nv): 1.80µm
S.D.(nv): 1.05µm

Median : 4.80µm
Mean(vm): 6.42µm
S.D.(vm): 5.26µm
Conf(vm):100.00 %



CALAI CIS1 VERSION 4.3 (WHC PROCESS CHEM. LABS)

VOLUME DISTRIBUTION TABLE (RANGES)

SLUDGE DILUENT

SAMPLE NAME : S96T001551 C106 S96T001547 JFO 5/22/96
FILE NAME : Data Not Saved.

DATE	: 21/05/1996	ACQ. RANGE	: 0.5-150	COUNTS	: 368341
TIME	: 12:34	ACQ. MODE	: SAMPLE	S.N.F.	: 0.51
CONFIG.	: 1 (0.7 S1)	ACQ. TIME	: 437 SEC	S.D.U.	: 8455
CELL TYPE	: MAGNETIC (1)	SAMPLE SIZE	: 5	CONCENTR.	: 1.2E+07 #/ml
SAMPLE TYPE	: REGULAR	REQ. CONF.	: None	SOLIDS	: ~~3.6E-03~~ % JFO 5/23/96

RANGE (microns)	LOCAL (%)	UNDER(%)	-CUMULATIVE-	OVER(%)
0.0 - 1.0	4.54	4.54		95.46
1.0 - 2.0	12.79	17.33		82.67
2.0 - 3.0	7.62	24.95		75.05
3.0 - 4.0	13.74	38.68		61.32
4.0 - 5.0	14.05	52.73		47.27
5.0 - 6.0	10.18	62.91		37.09
6.0 - 7.0	7.23	70.14		29.86
7.0 - 8.0	4.43	74.56		25.44
8.0 - 9.0	3.32	77.88		22.12
9.0 - 10.0	3.15	81.03		18.97
10.0 - 20.0	15.46	96.49		3.51
20.0 - 30.0	3.51	100.00		0.00
30.0 - 40.0	0.00	100.00		0.00
40.0 - 50.0	0.00	100.00		0.00
50.0 - 60.0	0.00	100.00		0.00
60.0 - 70.0	0.00	100.00		0.00
70.0 - 80.0	0.00	100.00		0.00
80.0 - 90.0	0.00	100.00		0.00
90.0 - 100.0	0.00	100.00		0.00
100.0 - 150.0	0.00	100.00		0.00

APPENDIX 4

PRELIMINARY CAUSTIC DEMAND DATA

TANK C-106 -- CAUSTIC DEMAND

Laboratory Instructions

P. 40

WHC-N-384 4

WHC-SD-WM-DP-183, REV. 0

TANK C-106 -- CAUSTIC DEMAND

The purpose of this caustic demand study is slightly different from the "normal" caustic demand test. Instead of measuring the amount of NaOH required to bring the free hydroxide content of samples up to a specific free hydroxide concentration, this test will measure the effects on C-106 samples of adding varied amounts of dilute (2 M) NaOH, simulating mixing of the C-106 waste with waste liquid from another tank. The test plan that governs this study is WHC-SD-WM-TP-430 Rev. 1, "Sample Preparation of Tank 241-C-106 Samples and Testing for Compatibility with Tank 241-AY-102 Supernate", B. A. Crawford, May 9, 1996.

Caustic demand measurements will be made on two samples from tank C-106. The samples are labeled S96T000576 and S96T001550. Sample S96T000576 is the settled solids fraction (supernatant liquid decanted) of grab sample 6C-96-8 (S96T000843), which was taken from the tank on 2/23/96. Sample S96T001550 is the settled solids fraction (supernatant liquid decanted) of grab sample 6C-96-14 (S96T001028), which was taken from the tank on 3/01/96. The settled solids will be designated as "the sludge" for the sludge caustic demand test. Breakdown of these samples are recorded on page 97 in Bev Crawford's laboratory notebook WHC-N-913-1.

Some essentially similar grab samples have been analyzed for chemical composition and radionuclide activities. Results are being compiled by Ruth Esch, but have not yet been published. Preliminary data indicate these sludge (i.e. settled solids) samples have a pH of approximately 10.1. Major components of the solid phase include Fe, Al, Si, TOC, and probably Na. Major components of the liquid phase include Na, NO_2^-, and TIC.

All of the samples needed for this project are currently located in the 1E-1 hotcell. All of the sample preparation work will be done in the same hotcell. Laboratory procedure number LA-211-102 will be used as the final authority on free hydroxide concentration.

Approval Designator: S

D. L. Herting, Cognizant Scientist Process Chemistry & Statistics	5/13/96 Date
J. R. Jewett, Manager Process Chemistry & Statistics	5/13/96 Date
S. B. Lamson, Manager 222-S Health Physics	5/14/96 Date

Step 1. Take Sample Aliquots Date: _____

Shake or stir the sample jar (S96T000576) to ensure that the sample is well mixed. Label five 15 mL centrifuge cones A through E. Record tare weights of cones. Transfer 5 mL of sample S96T000576 into each of the five centrifuge cones. Re-weigh the cones to determine the exact weight of sample in each cone. Record the volume of sample in each cone to the nearest 0.1 mL.

	A	B	C	D	E
Wt cone + sample, g					
Wt empty cone (tare)					
Wt sample, g					
Vol sample, mL					
Sample Density, g/mL					

Step 2. Add Caustic Date: _____

Record the NaOH concentration and density of the 2 M NaOH supplied by Standards Lab.

NaOH Concentration = _____ NaOH Density = _____

Add the following weights of 2 M NaOH to the sample aliquots. (Note: Do not fill cone E above the 15 mL mark.) Quickly and briefly vortex each cone as soon as possible after the NaOH addition, then re-weigh the cones to determine the weight of NaOH added. Then place the cones on a Labquake rocker to mix gently for 24 hours.

Desired Weights of NaOH:

A - 0.60 g B - 1.80 g C - 3.24 g D - 5.40 g E - 10.80 g

Actual Weights of NaOH Added:

	A	B	C	D	E
Wt cone + NaOH, g					
Wt cone + sample, g					
Wt NaOH added, g					
Vol NaOH added, mL					
Calc'd* OH conc [M]					

* Calculation of "theoretical" final OH^- concentration:

Let x = initial sample volume (mL), and y = volume NaOH added (mL)
Assume x+y = final volume (i.e., assume volumes are additive)

Then: MMA = mmoles OH^- added = (2.0)(y)
Theoretical OH^- Concentration = (MMA)/(x+y)

Step 3. Centrifugation Date: _____

After the cones have been on the Labquake rocker for 24 hours, transfer cones to a centrifuge. Allow the cones to centrifuge for 1 hour, or longer if necessary to obtain a clear supernatant liquid. Then record final weight of cone, and the total volume and centrifuged solids volume. Record total time in centrifuge: _____

	A	B	C	D	E
Wt cone after fuging					
Wt cone before fuge					
Wt gained or lost, g					
Tot vol in cone, mL					
Vol fuged solids, mL					

Step 5. Decant Supernate

Decant supernatant solutions into sample vials and submit for OH^-, ICP and TIC analyses. (Charge code XXXXX) The last character of the customer ID on each sample (HE384XXA etc.) should match the letter of the centrifuge cone.

Re-weigh the cones to determine the weight of centrifuged solids in each.

	A	B	C	D	E
Wt cone + fuged sol					
Wt empty cone (tare)					
Wt fuged solids, g					

The chemist will make a determination as to whether the solids should be saved for further analysis. This concludes the caustic demand analysis for sample S96T000576.

Step 1. Take Sample Aliquots Date: _____

Shake or stir the sample jar (S96T001550) to ensure that the sample is well mixed. Label five 15 mL centrifuge cones AA through EE. Record tare weights of cones. Transfer 5 mL of sample S96T001550 into each of the five centrifuge cones. Re-weigh the cones to determine the exact weight of sample in each cone. Record the volume of sample in each cone to the nearest 0.1 mL.

	AA	BB	CC	DD	EE
Wt cone + sample, g					
Wt empty cone (tare)					
Wt sample, g					
Vol sample, mL					
Sample Density, g/mL					

Step 2. Add Caustic Date: _____

Record the NaOH concentration and density of the 2 M NaOH supplied by Standards Lab.

NaOH Concentration = _____ NaOH Density = _____

Add the following weights of 2 M NaOH to the sample aliquots. (Note: Do not fill cone EE above the 15 mL mark.) Quickly and briefly vortex each cone as soon as possible after the NaOH addition, then re-weigh the cones to determine the weight of NaOH added. Then place the cones on a Labquake rocker to mix gently for 24 hours.

Desired Weights of NaOH:

AA - 0.60 g BB - 1.80 g CC - 3.24 g DD - 5.40 g EE - 10.80 g

Actual Weights of NaOH Added:

	AA	BB	CC	DD	EE
Wt cone + NaOH, g					
Wt cone + sample, g					
Wt NaOH added, g					
Vol NaOH added, mL					
Calc'd* OH conc [M]					

* Calculation of "theoretical" final OH^- concentration:

Let x = initial sample volume (mL), and y = volume NaOH added (mL)
Assume x+y = final volume (i.e., assume volumes are additive)

Then: MMA = mmoles OH^- added = (2.0)(y)
Theoretical OH^- Concentration = (MMA)/(x+y)

Step 3. Centrifugation Date: _____

After the cones have been on the Labquake rocker for 24 hours, transfer cones to a centrifuge. Allow the cones to centrifuge for 1 hour, or longer if necessary to obtain a clear supernatant liquid. Then record final weight of cone, and the total volume and centrifuged solids volume. Record total time in centrifuge: _____

	AA	BB	CC	DD	EE
Wt cone after fuging					
Wt cone before fuge					
Wt gained or lost, g					
Tot vol in cone, mL					
Vol fuged solids, mL					

Step 5. Decant Supernate

Decant supernatant solutions into sample vials and submit for OH^-, ICP and TIC analyses. (Charge code XXXXX) The last character of the customer ID on each sample (HE384XXA etc.) should match the letter of the centrifuge cone.

Re-weigh the cones to determine the weight of centrifuged solids in each.

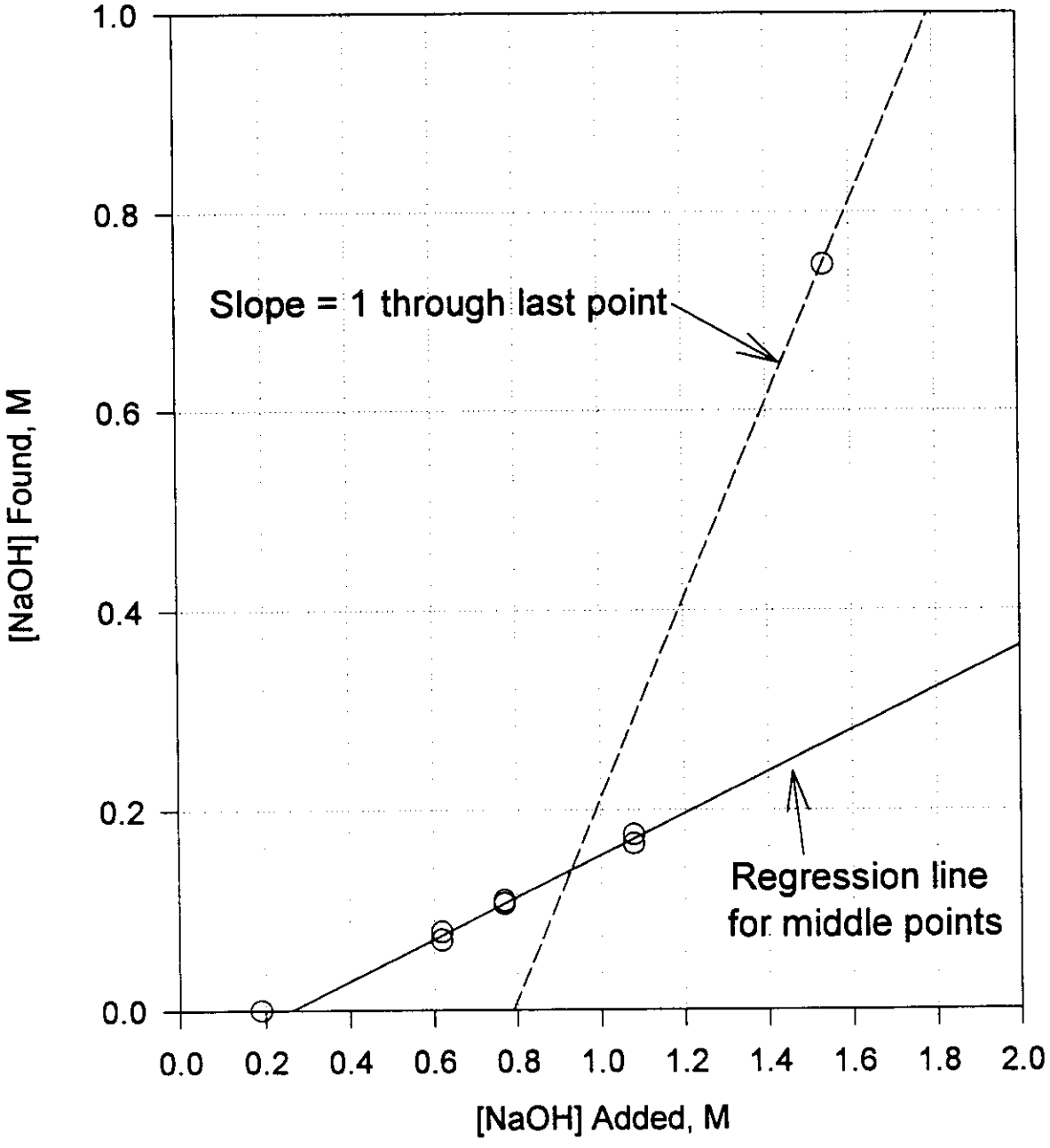
	AA	BB	CC	DD	EE
Wt cone + fuged sol					
Wt empty cone (tare)					
Wt fuged solids, g					

The chemist will make a determination as to whether the solids should be saved for further analysis. This concludes the caustic demand analysis for sample S96T001550.

Caustic Demand data for sample

6C-96-8

Tank C-106 Sludge Caustic Demand



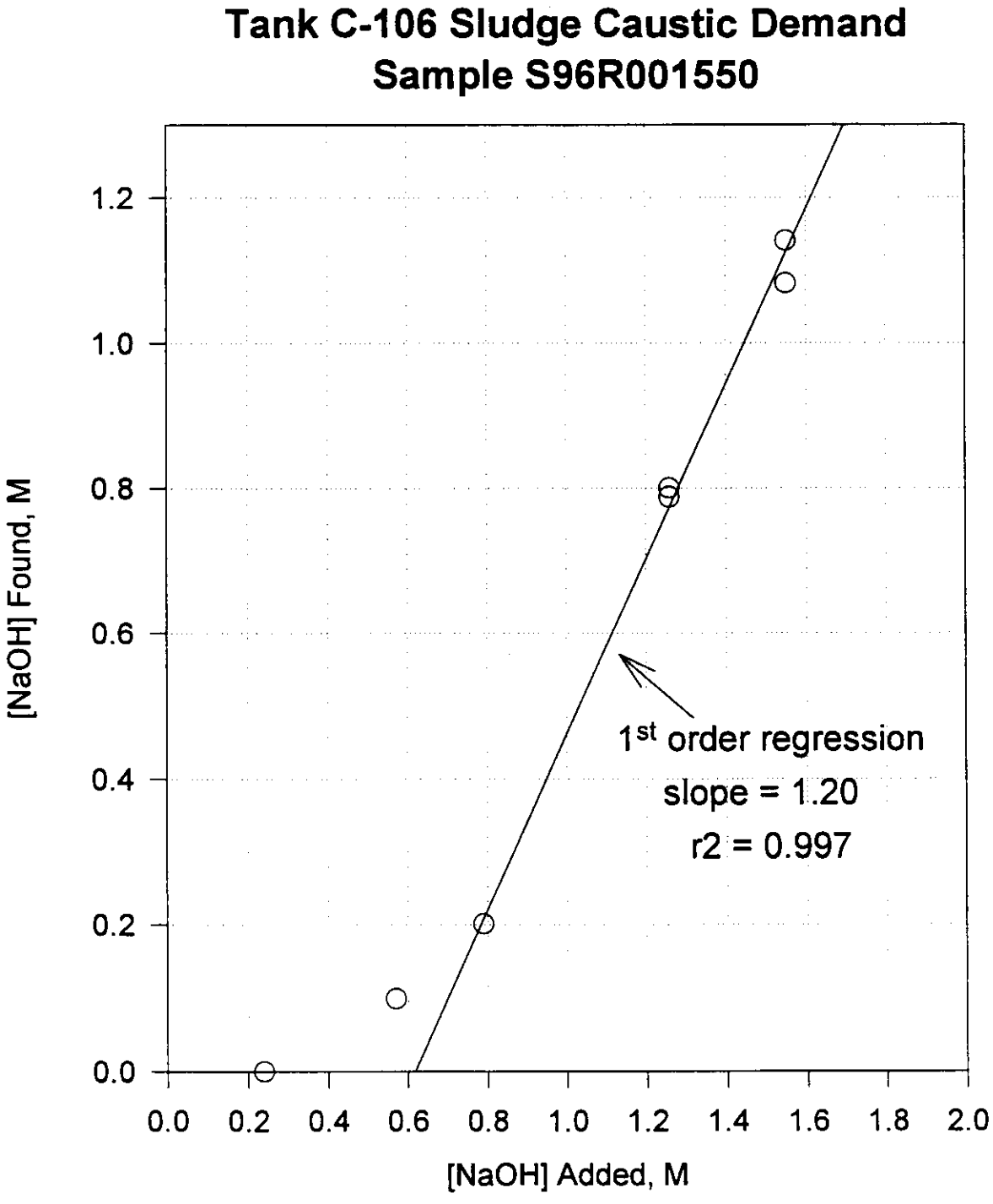
CAUSTIC DEMAND: TANK C-106 SAMPLE S96T000576

2.785 M NaOH, 1.11136 g/mL

Cone:	1	2	3	4	5	
Wt cone + sample	14.05	14.37	12.71	12.81	12.86	g
Wt empty cone (tare)	5.92	5.91	5.91	5.93	5.93	g
Wt sludge sample	8.13	8.46	6.80	6.88	6.93	g
Wt cone + NaOH	15.85	14.87	14.85	16.40	20.17	g
Wt cone + sample	14.05	14.37	12.71	12.81	12.86	g
Wt NaOH added	1.80	0.50	2.14	3.59	7.31	g
Vol NaOH added	1.62	0.45	1.93	3.23	6.58	mL
Tot vol in cone	7.3	6.5	7.0	8.3	11.9	mL
Vol fuged solids	3.8	3.8	3.3	3.3	3.2	mL
Original Sample Vol	5.7	6.1	5.1	5.1	5.3	mL
Wt cone + solids	11.83	11.81	10.88	10.78	10.54	g
Wt empty cone (tare)	5.92	5.91	5.91	5.93	5.93	g
Wt fuged solids	5.91	5.90	4.97	4.85	4.61	g
Wt% Fuged Solids -- (rel to orig sample)	73	70	73	70	67	%
Fuged Solids Density	1.56	1.55	1.51	1.47	1.44	g/mL
Sludge Density	1.43	1.40	1.34	1.36	1.30	g/mL
Sample ID S96R000...						
Found [OH]	1320	nd	1850	2980	12700	ug/mL
Found [OH]	1190	nd	1810	2830	12700	ug/mL
Found [OH]	0.078	0	0.109	0.175	0.747	M
Found [OH]	0.070	0	0.106	0.166	0.747	M
Calculated [OH]	0.62	0.19	0.77	1.08	1.54	M

Caustic Demand data for sample

6C-96-14


Tank C-106 Sludge Caustic Demand
Sample S96R001550
[NaOH] Found, M
[NaOH] Added, M
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
1st order regression
slope = 1.20
r2 = 0.997

CAUSTIC DEMAND: TANK C-106 SAMPLE S96T001550

2.785 M NaOH, 1.11136 g/mL

Cone:	1	2	3	4	5	
Wt cone + sample	12.64	12.07	11.86	11.52	13.07	g
Wt empty cone (tare)	5.90	5.91	5.91	5.95	5.95	g
Wt sludge sample	6.74	6.16	5.95	5.57	7.12	g
Wt cone + NaOH	13.11	13.37	13.80	15.33	20.36	g
Wt cone + sample	12.62	12.06	11.85	11.50	13.06	g
Wt NaOH added	0.49	1.31	1.95	3.83	7.30	g
Vol NaOH added	0.44	1.18	1.75	3.45	6.57	mL
Tot vol in cone	5.1	5.8	6.2	7.6	11.8	mL
Vol fuged solids	2.9	3.5	2.4	2.4	2.8	mL
Original Sample Vol	4.7	4.6	4.4	4.2	5.2	mL
Wt cone + solids	10.75	9.7	9.62	9.48	10.29	g
Wt empty cone (tare)	5.90	5.91	5.91	5.95	5.95	g
Wt fuged solids	4.85	3.79	3.71	3.53	4.34	g
Wt% Fuged Solids -- (rel to orig sample)	72	62	62	63	61	%
Fuged Solids Density	1.67	1.08	1.55	1.47	1.55	g/mL
Sludge Density	1.45	1.33	1.34	1.34	1.36	g/mL
Sample ID S96R000...	386	387	388	389	390	
Found [OH]	nd	1690	3420	13400	18400	ug/mL
Found [OH]	nd	1680	3410	13600	19400	ug/mL
Found [OH]	0.000	0.099	0.201	0.788	1.082	M
Found [OH]	0.000	0.099	0.201	0.800	1.141	M
Calculated [OH]	0.24	0.57	0.79	1.26	1.55	M

Pacific Northwest National Laboratory
Operated by Battelle for the U.S. Department of Energy

June 26, 1996

Harry Babad, S7-14
Westinghouse Hanford Company
Richland, Washington 99352

Dear Harry:

Enclosed please find a copy of my contribution to the report detailing the results of PNNL's characterization of the recovered organic from the Hanford Site storage tank 241-C-106. The enclosed report provides the results of the thermoanalysis of this material.

Sincerely yours,

RD Scheele

Randall D. Scheele
Process Chemistry Group
Process Technology Department

RDS:var

Enclosure

cc: BA Crawford, WHC
RA Esch, WHC
JG Kristofzski, WHC
RD Schrieber, WHC
JA Campbell, PNNL

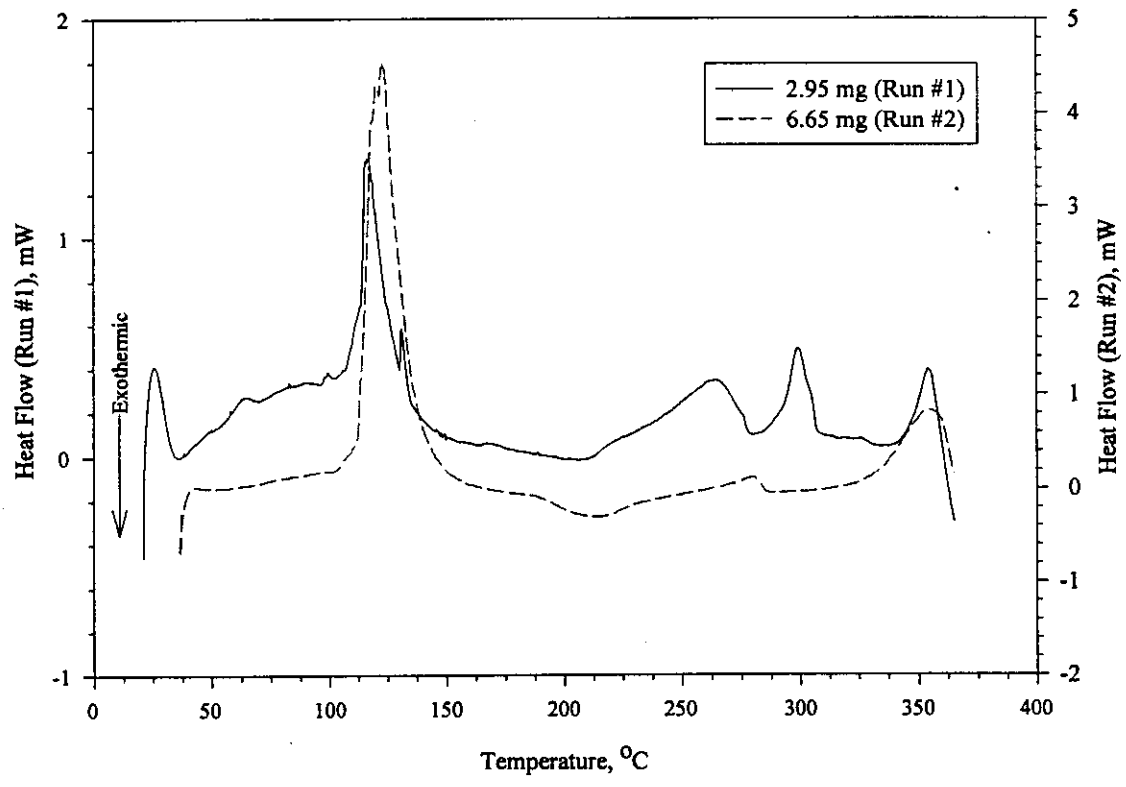
Battelle Boulevard ■ P.O. Box 999 ■ Richland, WA 99352
(509)376-0956 ■ RD_Scheele@pnl.gov ■ (509)372-3861

Thermal Behavior of C-106
Organic Material

R. D. Scheele & D. L. Alexander
June 1996

A sample of material obtained from the Hanford underground storage tank 241-C-106 (C-106) was received from the 325B shielded facility located in the 325 building in the 300 Area. We characterized aliquots of the sample contained in platinum sample pans using differential scanning calorimetry (DSC) and simultaneous differential thermal analysis and thermogravimetric analysis at 5°C/min. Due to the limited amount of material, two DSC and one DTA/TGA analyses were performed in a flowing argon atmosphere and one DSC analysis was performed in a flowing air atmosphere. The sample sizes ranged from 3 to near 8 mg. The material was dark and tarry in appearance.

The combined results of the DSC and the DTA/TGA analyses of the C-106 material in argon, which are presented in Figures 1 and 2, respectively, indicate that no exothermic reactions occur between the waste constituents up to 480°C; DTG also provided in Figure 2 is the derivative of the TGA. The DSC results for both analyses indicate that several endothermic reactions occur, though not reproducibly.



The TGA and the DTA, which should be less sensitive than the DSC, indicate that 3 different principal reactions occur as the material is heated. These three principal reactions appear to start near 100°C,

160°C, and 240°C. The endothermic reaction heats as measured by the DSC using the temperature ranges indicated by the TGA for these three reactions are provided in Table 1; due to the difficulties associated with assigning the correct baseline in these two runs, it is recommended that the values reported be considered more qualitative than quantitative. In the absence of chemical information on the nature of the evolved gases, any conjecture about the nature of the reactions that are observed would be speculation. Infrared and/or mass spectrographic analysis of the evolved gases could provide some insight into the nature of the reactions that occur.

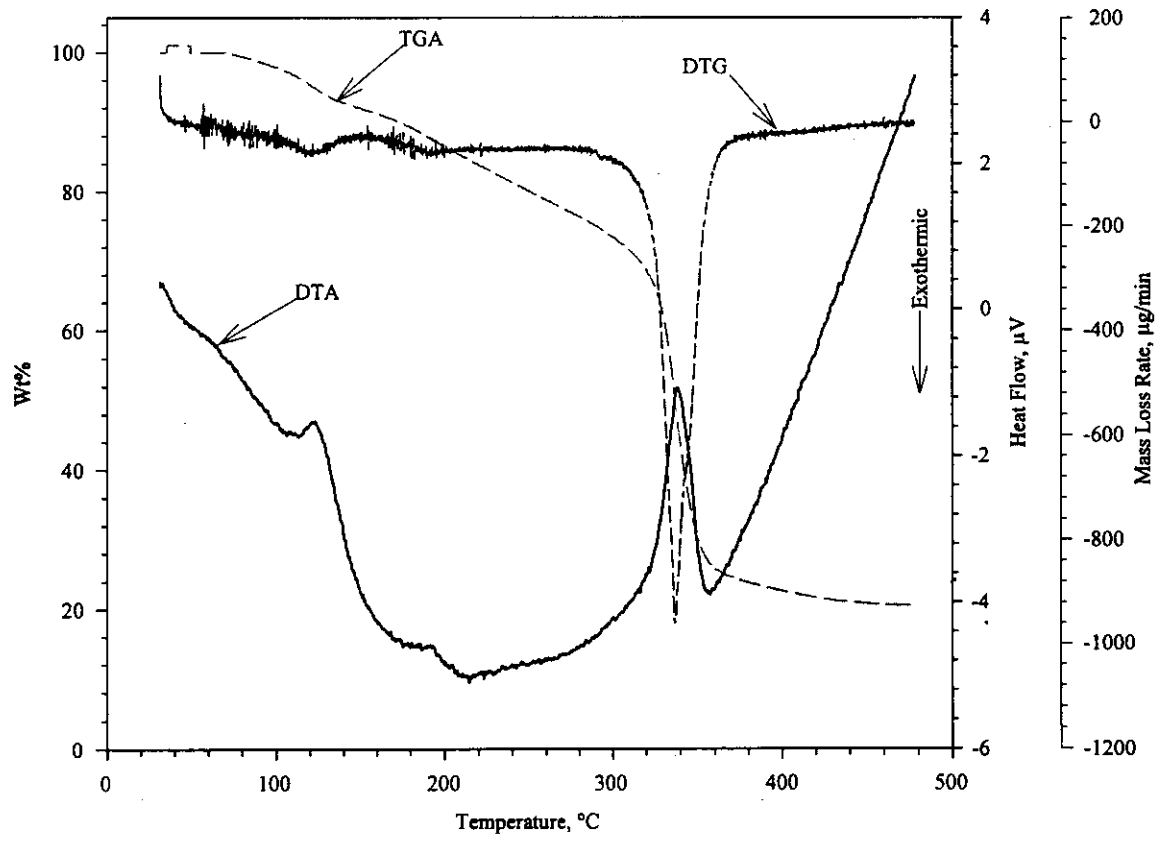


Figure 2. Thermal behavior of organic from C-106 as measured by simultaneous DTA and TGA at 5°C/min in a flowing argon atmosphere.

An 8 mg aliquot of the material was analyzed using DSC in an air atmosphere to determine the susceptibility of the material to reaction with oxygen in the air. The results of that characterization are provided in Figure 3 and Table 1. As Figure 3 shows and Table 1 provides, the material experiences an endothermic reaction between 80 and 150°C that requires 140 J/g. Between 250 and 450°C, the material reacts exothermicly with the air producing 890 J/g. The shape of this exothermic peak suggest that multiple reactions are occuring either due to a stepwise series of reactions or due to the reaction of multiple components in the waste with oxygen in the air.

Table 1. DSC Measured Enthalpies for C-106 Organic Sample.

Temperature Range, °C	ΔH, J/g		
	Sample		
	Run #1(2.9 mg) (Ar)	Run #2 (6.6 mg) (Ar)	Run #3 (7.9 mg)(Air)
100-160	55	145	140
160-210	Not Detected	2	Not Observed
240-360	220	145	
250-450	Not Observed	Not Observed	-890

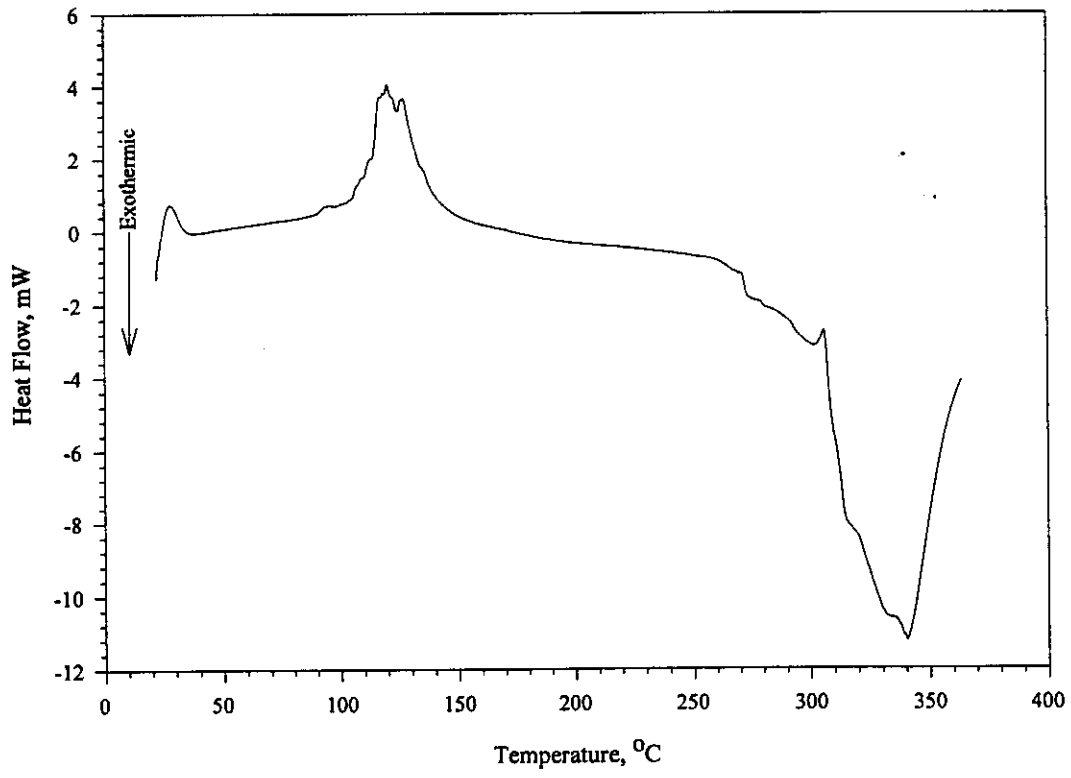


Figure 3. Thermal behavior of organic from C-106 as measured by DSC at 5°C/min in a flowing air atmosphere.

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