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

Document number: SD-WM-DP-074

Section 7 **of** 8

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

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

Originator: A D Rice
Co: WHC

Recipient:
Co:

References: EDT-612158

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STRONTIUM ANALYSES

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LABCORE Data Entry Template for Worklist# 192

OP
12

Analyst: DWS **Instrument:** AB00 12 **Method:** LA-220-101 D1

Worklist Comment: Sr-90 See Scot Fitzgerald for Sample Size. WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test		Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@SR90-01	SR90-01	SOLID			N/A	uCi/g
1	BLNK-PREP				@SR90-01	SR90-01C	SOLID			N/A	% Rec
1	BLNK-PREP				@SR90-01	SR90-01E	SOLID			N/A	% Ct.
2	STD				@SR90-01	SR90-01	SOLID			N/A	uCi/g
2	STD				@SR90-01	SR90-01C	SOLID			N/A	% Rec
2	STD				@SR90-01	SR90-01E	SOLID			N/A	% Ct.
3	SAMPLE	S94T000005	0		@SR90-01	SR90-01	SOLID	N/A			uCi/g
3	SAMPLE	S94T000005	0		@SR90-01	SR90-01C	SOLID	N/A			% Rec
3	SAMPLE	S94T000005	0		@SR90-01	SR90-01E	SOLID	N/A			% Ct.
4	DUP	S94T000005	0		@SR90-01	SR90-01	SOLID			N/A	uCi/g
4	DUP	S94T000005	0		@SR90-01	SR90-01C	SOLID			N/A	% Rec
4	DUP	S94T000005	0		@SR90-01	SR90-01E	SOLID			N/A	% Ct.
5	BLNK-PREP				@SR90-01	SR90-01	SOLID			N/A	uCi/g
5	BLNK-PREP				@SR90-01	SR90-01C	SOLID			N/A	% Rec
5	BLNK-PREP				@SR90-01	SR90-01E	SOLID			N/A	% Ct.
~~6~~	~~STD~~				~~@SR90-01~~	~~SR90-01~~	~~SOLID~~			~~N/A~~	~~uCi/g~~
SLF 12-12-94 ~~6~~	~~STD~~				~~@SR90-01~~	~~SR90-01C~~	~~SOLID~~			~~N/A~~	~~% Rec~~
~~6~~	~~STD~~				~~@SR90-01~~	~~SR90-01E~~	~~SOLID~~			~~N/A~~	~~% Ct.~~
7	SAMPLE	S94T000067	0		@SR90-01	SR90-01	SOLID	N/A			uCi/g
7	SAMPLE	S94T000067	0		@SR90-01	SR90-01C	SOLID	N/A			% Rec

Data Entry Comments: STD# 51B52 value is 1.1139E00 uci/L
1.1139E-3 uci/ml
Worklist is being rerun due to high blank levels
12-6-94

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

LABCORE Data Entry Template for Worklist# 192

Analyst: DWS **Instrument:** AB00 **Method:** LA-220-101

Worklist Comment: Sr-90 See Scot Fitzgerald for Sample Size. WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test	Matrix	Actual	Found	DL	Unit
7	SAMPLE	S94T000067	0		@SR90-01 SR90-01E	SOLID	N/A			% Ct.
8	DUP	S94T000067	0		@SR90-01 SR90-01	SOLID			N/A	uCi/g
8	DUP	S94T000067	0		@SR90-01 SR90-01C	SOLID			N/A	% Rec
8	DUP	S94T000067	0		@SR90-01 SR90-01E	SOLID			N/A	% Ct.

Final page for worklist # 192

Analyst Signature

Date 12-14-94

12/12/94

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 103 (E-2), 104 (D-1)

						BLANK
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
BLANK	TOTAL COUNTS	(TC)	1389	GROSS WEIGHT	(W2)	8.0115
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.9210
192	BACKGROUND in cpm	(BKG)	3	NET WEIGHT	(W3)	0.0905
Test Code	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (hours)	(DT)	6.83
@SR90-01	DILUTION FACTOR	(DF)	1	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Matrix	ENTER MATRIX AS: LIQUID, DIRECT SOLID,			Y-90 EFFICIENCY FACTOR	(C2)	0.4660
SOLID DIGEST	<<<<< or SOLID DIGEST <<<<<			SAMPLE COUNT RATE	(Rs)	135.90
Sample #	DIGEST grams of SOLIDS/L	(Dg/L)	2.2092	CRITICAL LEVEL	(Lc)	1.04
S94T000005	SEPARATION TIME	(ST)	04:00 AM	Rmax		N/A
Instrument Code	SEPARATION DATE	(SD)	12/05/94	DETECTION LIMIT	(Ld)	2.18
WB27811	TIME OF COUNT	(TOC)	10:50 AM	Sr-89/90 CONC. in µCi/g =		2.7147E-01
Analyst	DATE OF COUNT	(DOC)	12/05/94			
DWS						
Date						
12/05/94						
Time						
06:30 AM						

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
Sr-89/90 µCi/g = Rs*1000mL/L*DF/
(C1 + C2 * (1 - e to the power of ((-natural log 2) / 64.2 * DT)) *SS*(Dg/L)*Rec.*2220000dpm/µCi)
NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA x 0.1000))

Relative Counting Error = (The Square Root of (TC + BKG * CT)) / (TC - BKG * CT) * 1.96 * 100
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

v RESULTS v

Sr-89/90 CONCENTRATION =	2.71E-01	µCi/g	DETECTION LIMIT
RELATIVE COUNTING ERROR =	5.4%		4.35E-03 µCi/g
PERCENT CARRIER RECOVERY =	90.5%		

Data Entry by:		Date:	12/06/94
Approved by:		Date:	12/6/94

Form 22010N_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 103 (E-2), 104 (D-1)

							STANDARD
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
STANDARD	TOTAL COUNTS	(TC)	10330	GROSS WEIGHT	(W2)		8.0596
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.9706
192	BACKGROUND in cpm	(BKG)	3	NET WEIGHT	(W3)		0.0890
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (hours)	(DT)		6.00
@SR90-01	DILUTION FACTOR	(DF)	1	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Matrix	ENTER MATRIX AS: LIQUID, DIRECT SOLID,			Y-90 EFFICIENCY FACTOR	(C2)		0.4660
LIQUID	<<<<< or SOLID DIGEST <<<<<			SAMPLE COUNT RATE	(Rs)		1030.00
Sample #	DIGEST DILUTION FACTOR	(DDF)	1	CRITICAL LEVEL	(Lc)		1.04
S94T000005 , 67	SEPARATION TIME	(ST)	04:00 AM	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	12/05/94	DETECTION LIMIT	(Ld)		2.18
WB27811	TIME OF COUNT	(TOC)	10:00 AM	Sr-89/90 CONC. in µCi/L =			1.1656E+00
Analyst	DATE OF COUNT	(DOC)	12/05/94				
DWS							
Date							
12/05/94							
Time							
06:30 AM							

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
Sr-89/90 µCi/L = Rs*1000mL/L *DF*DDF/
(C1 + C2 * (1 - e to the power of ((-natural log 2) / 64.2 * DT)) *SS*Rec.*2220000dpm/µCi)
NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA x 0.1000))
Sr-89/90 µCi/mL = (Sr-89/90 µCi/L) / 1000mL/L
Relative Counting Error = (The Square Root of (TC + BKG * CT)) / (TC - BKG * CT) * 1.96 * 100
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

v RESULTS v

			DETECTION LIMIT
Sr-89/90 CONCENTRATION =	1.17E-03	µCi/mL	
RELATIVE COUNTING ERROR =	1.9%		
PERCENT CARRIER RECOVERY =	89.0%		2.46E-06 µCi/mL

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

Form 22010N_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 103 (E-2), 104 (D-1)

							SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	10549	GROSS WEIGHT	(W2)	7.9866
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.8944
192	BACKGROUND in cpm	(BKG)	3	NET WEIGHT	(W3)	0.0922
Test Code	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (hours)	(DT)	7.08
@SR90-01	DILUTION FACTOR	(DF)	1	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Matrix	ENTER MATRIX AS: LIQUID, DIRECT SOLID,			Y-90 EFFICIENCY FACTOR	(C2)	0.4660
SOLID DIGEST	<<<<< or SOLID DIGEST <<<<<			SAMPLE COUNT RATE	(Rs)	1051.90
Sample #	DIGEST grams of SOLIDS/L	(Dg/L)	2.2092	CRITICAL LEVEL	(Lc)	1.04
S94T000005	SEPARATION TIME	(ST)	04:00 AM	Rmax		N/A
Instrument Code	SEPARATION DATE	(SD)	12/05/94	DETECTION LIMIT	(Ld)	2.18
WB27811	TIME OF COUNT	(TOC)	11:05 AM	Sr-89/90 CONC. in µCi/g =		2.0572E+00
Analyst	DATE OF COUNT	(DOC)	12/05/94			
DWS						
Date						
12/05/94						
Time						
06:30 AM						

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
Sr-89/90 µCi/g = Rs*1000mL/L*DF/
(C1 + C2 * (1 - e to the power of ((-natural log 2) / 64.2 * DT)) *SS*(Dg/L)*Rec.*2220000dpm/µCi)
NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA x 0.1000))

Relative Counting Error = (The Square Root of (TC + BKG * CT)) / (TC - BKG * CT) * 1.96 * 100
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

v RESULTS v

Sr-89/90 CONCENTRATION =	2.06E+00	µCi/g	DETECTION LIMIT
RELATIVE COUNTING ERROR =	1.9%		4.26E-03 µCi/g
PERCENT CARRIER RECOVERY =	92.2%		

Data Entry by: [signature] Date: 12/06/94
Approved by: [signature] Date: 12/6/94

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 103 (E-2), 104 (D-1)

							DUPLICATE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
DUPLICATE	TOTAL COUNTS	(TC)	10590	GROSS WEIGHT	(W2)		7.9631
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.8730
192	BACKGROUND in cpm	(BKG)	3	NET WEIGHT	(W3)		0.0901
Test Code	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (hours)	(DT)		6.50
@SR90-01	DILUTION FACTOR	(DF)	1	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Matrix	ENTER MATRIX AS: LIQUID, DIRECT SOLID,			Y-90 EFFICIENCY FACTOR	(C2)		0.4660
SOLID DIGEST	<<<<< or SOLID DIGEST <<<<<			SAMPLE COUNT RATE	(Rs)		1056.00
Sample #	DIGEST grams of SOLIDS/L	(Dg/L)	2.216	CRITICAL LEVEL	(Lc)		1.04
S94T000005	SEPARATION TIME	(ST)	04:00 AM	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	12/05/94	DETECTION LIMIT	(Ld)		2.18
WB27811	TIME OF COUNT	(TOC)	10:30 AM	Sr-89/90 CONC. in µCi/g =			2.1197E+00
Analyst	DATE OF COUNT	(DOC)	12/05/94				
DWS							
Date							
12/05/94							
Time							
06:30 AM							

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
Sr-89/90 µCi/g = Rs*1000mL/L*DF/
(C1 + C2 * (1 - e to the power of ((-natural log 2) / 64.2 * DT)) *SS*(Dg/L)*Rec.*2220000dpm/µCi)
NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA x 0.1000))

Relative Counting Error = (The Square Root of (TC + BKG * CT)) / (TC - BKG * CT) * 1.96 * 100
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

v RESULTS v

			DETECTION LIMIT
Sr-89/90 CONCENTRATION =	2.12E+00	µCi/g	
RELATIVE COUNTING ERROR =	1.9%		
PERCENT CARRIER RECOVERY =	90.1%		4.37E-03 µCi/g

Data Entry by:	[signature]	Date:	12/06/94
Approved by:	[signature]	Date:	12/6/94

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 103 (E-2), 104 (D-1)

						BLANK
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
BLANK	TOTAL COUNTS	(TC)	1246	GROSS WEIGHT	(W2)	7.9875
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.8957
192	BACKGROUND in cpm	(BKG)	3	NET WEIGHT	(W3)	0.0918
Test Code	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (hours)	(DT)	6.25
@SR90-01	DILUTION FACTOR	(DF)	1	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Matrix	ENTER MATRIX AS: LIQUID, DIRECT SOLID,			Y-90 EFFICIENCY FACTOR	(C2)	0.4660
SOLID DIGEST	<<<<< or SOLID DIGEST <<<<<			SAMPLE COUNT RATE	(Rs)	121.60
Sample #	DIGEST grams of SOLIDS/L	(Dg/L)	1.82	CRITICAL LEVEL	(Lc)	1.04
S94T000067	SEPARATION TIME	(ST)	04:00 AM	Rmax		N/A
Instrument Code	SEPARATION DATE	(SD)	12/05/94	DETECTION LIMIT	(Ld)	2.18
WB27811	TIME OF COUNT	(TOC)	10:15 AM	Sr-89/90 CONC. in µCi/g =		2.9245E-01
Analyst	DATE OF COUNT	(DOC)	12/05/94			
DWS						
Date						
12/05/94						
Time						
06:30 AM						

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
Sr-89/90 µCi/g = Rs*1000mL/L*DF/
(C1 + C2 * (1 - e to the power of ((-natural log 2) / 64.2 * DT)) *SS*(Dg/L)*Rec.*2220000dpm/µCi)
NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA x 0.1000))

Relative Counting Error = (The Square Root of (TC + BKG * CT)) / (TC - BKG * CT) * 1.96 * 100
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

v RESULTS v

Sr-89/90 CONCENTRATION =	2.92E-01	µCi/g	DETECTION LIMIT
RELATIVE COUNTING ERROR =	5.8%		
PERCENT CARRIER RECOVERY =	91.8%		5.24E-03 µCi/g

Data Entry by:	[signature]	Date:	12/06/94
Approved by:	[signature]	Date:	12/6/94

Form 22010N_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 103 (E-2), 104 (D-1)

							SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	147896	GROSS WEIGHT	(W2)	8.0800
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.9886
192	BACKGROUND in cpm	(BKG)	3	NET WEIGHT	(W3)	0.0914
Test Code	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (hours)	(DT)	8.50
@SR90-01	DILUTION FACTOR	(DF)	1	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Matrix	ENTER MATRIX AS: LIQUID, DIRECT SOLID,			Y-90 EFFICIENCY FACTOR	(C2)	0.4660
SOLID DIGEST	<<<<< or SOLID DIGEST <<<<<			SAMPLE COUNT RATE	(Rs)	14786.60
Sample #	DIGEST grams of SOLIDS/L	(Dg/L)	1.82	CRITICAL LEVEL	(Lc)	1.04
S94T000067	SEPARATION TIME	(ST)	04:00 AM	Rmax		N/A
Instrument Code	SEPARATION DATE	(SD)	12/05/94	DETECTION LIMIT	(Ld)	2.18
WB27811	TIME OF COUNT	(TOC)	12:30 PM	Sr-89/90 CONC. in µCi/g =		3.4904E+01
Analyst	DATE OF COUNT	(DOC)	12/05/94			
DWS						
Date						
12/05/94						
Time						
06:30 AM						

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
Sr-89/90 µCi/g = Rs*1000mL/L*DF/
(C1 + C2 * (1 - e to the power of ((-natural log 2) / 64.2 * DT)) *SS*(Dg/L)*Rec.*2220000dpm/µCi)
NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA x 0.1000))

Relative Counting Error = (The Square Root of (TC + BKG * CT)) / (TC - BKG * CT) * 1.96 * 100
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

v RESULTS v

Sr-89/90 CONCENTRATION =	3.49E+01	µCi/g	DETECTION LIMIT
RELATIVE COUNTING ERROR =	0.5%		
PERCENT CARRIER RECOVERY =	91.4%		5.14E-03 µCi/g

Data Entry by:		Date:	12/06/94
Approved by:		Date:	12/6/94

Form 22010N_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 103 (E-2), 104 (D-1)

							DUPLICATE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
DUPLICATE	TOTAL COUNTS	(TC)	130698	GROSS WEIGHT	(W2)	7.9182
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.8264
192	BACKGROUND in cpm	(BKG)	3	NET WEIGHT	(W3)	0.0918
Test Code	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (hours)	(DT)	8.83
@SR90-01	DILUTION FACTOR	(DF)	1	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Matrix	ENTER MATRIX AS: LIQUID, DIRECT SOLID,			Y-90 EFFICIENCY FACTOR	(C2)	0.4660
SOLID DIGEST	<<<<< or SOLID DIGEST <<<<<			SAMPLE COUNT RATE	(Rs)	13066.80
Sample #	DIGEST grams of SOLIDS/L	(Dg/L)	1.8964	CRITICAL LEVEL	(Lc)	1.04
S94T000067	SEPARATION TIME	(ST)	04:00 AM	Rmax		N/A
Instrument Code	SEPARATION DATE	(SD)	12/05/94	DETECTION LIMIT	(Ld)	2.18
WB27811	TIME OF COUNT	(TOC)	12:50 PM	Sr-89/90 CONC. in µCi/g =		2.9375E+01
Analyst	DATE OF COUNT	(DOC)	12/05/94			
DWS						
Date						
12/05/94						
Time						
06:30 AM						

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
Sr-89/90 µCi/g = Rs*1000mL/L*DF/
(C1 + C2 * (1 - e to the power of ((-natural log 2) / 64.2 * DT)) *SS*(Dg/L)*Rec.*2220000dpm/µCi)
NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA x 0.1000))

Relative Counting Error = (The Square Root of (TC + BKG * CT)) / (TC - BKG * CT) * 1.96 * 100
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

v RESULTS v

			DETECTION LIMIT
Sr-89/90 CONCENTRATION =	2.94E+01	µCi/g	
RELATIVE COUNTING ERROR =	0.5%		
PERCENT CARRIER RECOVERY =	91.8%		4.90E-03 µCi/g

Data Entry by: Date: 12/06/94
Approved by: Date: 12/6/94

Form 22010N_C Rev. 1.0

LABCORE Data Entry Template for Worklist# 219

Analyst: slh **Instrument:** AB00 12 **Method:** LA-220-101 D-1

Worklist Comment: Sr-90 Use 1 mL sample size. SLF WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test		Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@SR90-01	SR90-01	SOLID			N/A	uCi/g
1	BLNK-PREP				@SR90-01	SR90-01C	SOLID			N/A	% Rec
1	BLNK-PREP				@SR90-01	SR90-01E	SOLID			N/A	% Ct.
2	STD				@SR90-01	SR90-01	SOLID			N/A	uCi/g
2	STD				@SR90-01	SR90-01C	SOLID			N/A	% Rec
2	STD				@SR90-01	SR90-01E	SOLID			N/A	% Ct.
3	SAMPLE	S94T000005	0		@SR90-01	SR90-01	SOLID	N/A			uCi/g
3	SAMPLE	S94T000005	0		@SR90-01	SR90-01C	SOLID	N/A			% Rec
3	SAMPLE	S94T000005	0		@SR90-01	SR90-01E	SOLID	N/A			% Ct.
4	DUP	S94T000005	0		@SR90-01	SR90-01	SOLID			N/A	uCi/g
4	DUP	S94T000005	0		@SR90-01	SR90-01C	SOLID			N/A	% Rec
4	DUP	S94T000005	0		@SR90-01	SR90-01E	SOLID			N/A	% Ct.
5	BLNK-PREP				@SR90-01	SR90-01	SOLID			N/A	uCi/g
5	BLNK-PREP				@SR90-01	SR90-01C	SOLID			N/A	% Rec
5	BLNK-PREP				@SR90-01	SR90-01E	SOLID			N/A	% Ct.
6	STD				@SR90-01	SR90-01	SOLID			N/A	uCi/g
6	STD				@SR90-01	SR90-01C	SOLID			N/A	% Rec
6	STD				@SR90-01	SR90-01E	SOLID			N/A	% Ct.
7	SAMPLE	S94T000067	0		@SR90-01	SR90-01	SOLID	N/A			uCi/g
7	SAMPLE	S94T000067	0		@SR90-01	SR90-01C	SOLID	N/A			% Rec

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist# 219

Analyst: slh **Instrument:** AB00 12 **Method:** LA-220-101 D-1

Worklist Comment: Sr-90 Use 1 mL sample size. SLF

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

Seg Type	Sample#	Rep Al	Test	Matrix	Actual	Found	DL	Unit
7 SAMPLE	S94T000067	0	@SR90-01 SR90-01E	SOLID	N/A			% Ct.
8 DUP	S94T000067	0	@SR90-01 SR90-01	SOLID			N/A	uCi/g
8 DUP	S94T000067	0	@SR90-01 SR90-01C	SOLID			N/A	% Rec
8 DUP	S94T000067	0	@SR90-01 SR90-01E	SOLID			N/A	% Ct.

Final page for worklist # 219

X Sandra Atwal Bartright
Analyst Signature

12/9/94
Date

M C Bielman

12/12/94

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 103 (E-2), 104 (D-1)

							BLANK
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
BLANK	TOTAL COUNTS	(TC)	774	GROSS WEIGHT	(W2)		8.0145
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.9268
219	BACKGROUND in cpm	(BKG)	3.1	NET WEIGHT	(W3)		0.0877
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (hours)	(DT)		41.37
@SR90-01	DILUTION FACTOR	(DF)	1	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Matrix	ENTER MATRIX AS: LIQUID, DIRECT SOLID,			Y-90 EFFICIENCY FACTOR	(C2)		0.4660
SOLID DIGEST	<<<<< or SOLID DIGEST <<<<<			SAMPLE COUNT RATE	(Rs)		74.30
Sample #	DIGEST grams of SOLIDS/L	(Dg/L)	2.2092	CRITICAL LEVEL	(Lc)		1.06
S94T5	SEPARATION TIME	(ST)	07:16 PM	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	12/08/94	DETECTION LIMIT	(Ld)		2.21
WB27811	TIME OF COUNT	(TOC)	12:38 PM	Sr-89/90 CONC. in µCi/g =			2.9485E-02
Analyst	DATE OF COUNT	(DOC)	12/10/94				
SLH							
Date							
12/08/94							
Time							
10:00 PM							

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
Sr-89/90 µCi/g = Rs*1000mL/L*DF/
(C1 + C2 * (1 - e to the power of ((-natural log 2) / 64.2 * DT)) *SS*(Dg/L)*Rec.*2220000dpm/µCi)
NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA x 0.1000))

Relative Counting Error = (The Square Root of (TC + BKG * CT)) / (TC - BKG * CT) * 1.96 * 100
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

v RESULTS v

Sr-89/90 CONCENTRATION =	2.95E-02	µCi/g	DETECTION LIMIT
RELATIVE COUNTING ERROR =	7.5%		
PERCENT CARRIER RECOVERY =	87.7%		8.78E-04 µCi/g

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

1842

Form 22010N_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 103 (E-2), 104 (D-1)

						STANDARD
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
STANDARD	TOTAL COUNTS	(TC)	12158	GROSS WEIGHT	(W2)	8.0461
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.9556
219	BACKGROUND in cpm	(BKG)	3.1	NET WEIGHT	(W3)	0.0905
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (hours)	(DT)	29.15
@SR90-01	DILUTION FACTOR	(DF)	1	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Matrix	ENTER MATRIX AS: LIQUID, DIRECT SOLID,			Y-90 EFFICIENCY FACTOR	(C2)	0.4660
LIQUID	<<<<< or SOLID DIGEST <<<<<			SAMPLE COUNT RATE	(Rs)	1212.70
Sample #	DIGEST DILUTION FACTOR	(DDF)	1	CRITICAL LEVEL	(Lc)	1.06
S94T05,67	SEPARATION TIME	(ST)	07:16 PM	Rmax		N/A
Instrument Code	SEPARATION DATE	(SD)	12/08/94	DETECTION LIMIT	(Ld)	2.21
WB27811	TIME OF COUNT	(TOC)	12:25 AM	Sr-89/90 CONC. in µCi/L =		1.1099E+00
Analyst	DATE OF COUNT	(DOC)	12/10/94			
SLH						
Date						
12/08/94						
Time						
10:00 PM						

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
Sr-89/90 µCi/L = Rs*1000mL/L *DF*DDF/
(C1 + C2 * (1 - e to the power of ((-natural log 2) / 64.2 * DT)) *SS*Rec.*2220000dpm/µCi)
NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA x 0.1000))
Sr-89/90 µCi/mL = (Sr-89/90 µCi/L) / 1000mL/L
Relative Counting Error = (The Square Root of (TC + BKG * CT)) / (TC - BKG * CT) * 1.96 * 100
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

v RESULTS v

Sr-89/90 CONCENTRATION =	1.11E-03	µCi/mL	DETECTION LIMIT
RELATIVE COUNTING ERROR =	1.8%		
PERCENT CARRIER RECOVERY =	90.5%		2.02E-06 µCi/mL

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

Form 22010N_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 103 (E-2), 104 (D-1)

							SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
SAMPLE	TOTAL COUNTS	(TC)	38200	GROSS WEIGHT	(W2)		8.0690
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.9772
219	BACKGROUND in cpm	(BKG)	3.1	NET WEIGHT	(W3)		0.0918
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (hours)	(DT)		18.80
@SR90-01	DILUTION FACTOR	(DF)	1	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Matrix	ENTER MATRIX AS: LIQUID, DIRECT SOLID,			Y-90 EFFICIENCY FACTOR	(C2)		0.4660
SOLID DIGEST	<<<<< or SOLID DIGEST <<<<<			SAMPLE COUNT RATE	(Rs)		3816.90
Sample #	DIGEST grams of SOLIDS/L	(Dg/L)	2.2092	CRITICAL LEVEL	(Lc)		1.06
S94T5	SEPARATION TIME	(ST)	06:02 PM	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	12/09/94	DETECTION LIMIT	(Ld)		2.21
WB27811	TIME OF COUNT	(TOC)	12:50 PM	Sr-89/90 CONC. in µCi/g =			1.6834E+00
Analyst	DATE OF COUNT	(DOC)	12/10/94				
SLH							
Date							
12/09/94							
Time							
10:00 PM							

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
Sr-89/90 µCi/g = Rs*1000mL/L*DF/
(C1 + C2 * (1 - e to the power of ((-natural log 2) / 64.2 * DT)) *SS*(Dg/L)*Rec.*2220000dpm/µCi)
NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA x 0.1000))

Relative Counting Error = (The Square Root of (TC + BKG * CT)) / (TC - BKG * CT) * 1.96 * 100
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

v RESULTS v

			DETECTION LIMIT
Sr-89/90 CONCENTRATION =	1.68E+00	µCi/g	
RELATIVE COUNTING ERROR =	1.0%		
PERCENT CARRIER RECOVERY =	91.8%		9.76E-04 µCi/g

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

Form 22010N_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 103 (E-2), 104 (D-1)

							DUPLICATE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
DUPLICATE	TOTAL COUNTS	(TC)	39403	GROSS WEIGHT	(W2)	7.9416
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.8504
219	BACKGROUND in cpm	(BKG)	3.1	NET WEIGHT	(W3)	0.0912
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (hours)	(DT)	6.97
@SR90-01	DILUTION FACTOR	(DF)	1	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Matrix	ENTER MATRIX AS: LIQUID, DIRECT SOLID,			Y-90 EFFICIENCY FACTOR	(C2)	0.4660
SOLID DIGEST	<<<<< or SOLID DIGEST <<<<<			SAMPLE COUNT RATE	(Rs)	3937.20
Sample #	DIGEST grams of SOLIDS/L	(Dg/L)	2.216	CRITICAL LEVEL	(Lc)	1.06
S94T5	SEPARATION TIME	(ST)	06:02 PM	Rmax		N/A
Instrument Code	SEPARATION DATE	(SD)	12/09/94	DETECTION LIMIT	(Ld)	2.21
WB27811	TIME OF COUNT	(TOC)	01:00 AM	Sr-89/90 CONC. in µCi/g =		1.9425E+00
Analyst	DATE OF COUNT	(DOC)	12/10/94			
SLH						
Date						
12/09/94						
Time						
10:00 PM						

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
Sr-89/90 µCi/g = Rs*1000mL/L*DF/
(C1 + C2 * (1 - e to the power of ((-natural log 2) / 64.2 * DT)) *SS*(Dg/L)*Rec.*2220000dpm/µCi)
NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA x 0.1000))

Relative Counting Error = (The Square Root of (TC + BKG * CT)) / (TC - BKG * CT) * 1.96 * 100
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

v RESULTS v

			DETECTION LIMIT
Sr-89/90 CONCENTRATION =	1.94E+00	µCi/g	1.09E-03 µCi/g
RELATIVE COUNTING ERROR =	1.0%		
PERCENT CARRIER RECOVERY =	91.2%		

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

Form 22010N_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 103 (E-2), 104 (D-1)

							BLANK
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
BLANK	TOTAL COUNTS	(TC)	1309	GROSS WEIGHT	(W2)		7.9583
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.8620
219	BACKGROUND in cpm	(BKG)	3.1	NET WEIGHT	(W3)		0.0933
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (hours)	(DT)		8.47
@SR90-01	DILUTION FACTOR	(DF)	1	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Matrix	ENTER MATRIX AS: LIQUID, DIRECT SOLID,			Y-90 EFFICIENCY FACTOR	(C2)		0.4660
SOLID DIGEST	<<<<< or SOLID DIGEST <<<<<			SAMPLE COUNT RATE	(Rs)		127.80
Sample #	DIGEST grams of SOLIDS/L	(Dg/L)	1.82	CRITICAL LEVEL	(Lc)		1.06
S94T67	SEPARATION TIME	(ST)	06:02 PM	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	12/09/94	DETECTION LIMIT	(Ld)		2.21
WB27811	TIME OF COUNT	(TOC)	02:30 AM	Sr-89/90 CONC. in µCi/g =			7.3907E-02
Analyst	DATE OF COUNT	(DOC)	12/10/94				
SLH							
Date							
12/09/94							
Time							
10:00 PM							

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
Sr-89/90 µCi/g = Rs*1000mL/L*DF/
(C1 + C2 * (1 - e to the power of ((-natural log 2) / 64.2 * DT)) *SS*(Dg/L)*Rec.*2220000dpm/µCi)
NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA x 0.1000))

Relative Counting Error = (The Square Root of (TC + BKG * CT)) / (TC - BKG * CT) * 1.96 * 100
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

v RESULTS v

			DETECTION LIMIT
Sr-89/90 CONCENTRATION =	7.39E-02	µCi/g	
RELATIVE COUNTING ERROR =	5.6%		
PERCENT CARRIER RECOVERY =	93.3%		1.28E-03 µCi/g

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 103 (E-2), 104 (D-1)

							SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	708370	GROSS WEIGHT	(W2)	8.0998
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	8.0091
219	BACKGROUND in cpm	(BKG)	3.1	NET WEIGHT	(W3)	0.0907
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (hours)	(DT)	31.73
@SR90-01	DILUTION FACTOR	(DF)	1	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Matrix	ENTER MATRIX AS: LIQUID, DIRECT SOLID,			Y-90 EFFICIENCY FACTOR	(C2)	0.4660
SOLID DIGEST	<<<<< or SOLID DIGEST <<<<<			SAMPLE COUNT RATE	(Rs)	70833.90
Sample #	DIGEST grams of SOLIDS/L	(Dg/L)	1.82	CRITICAL LEVEL	(Lc)	1.06
S94T67	SEPARATION TIME	(ST)	07:16 PM	Rmax		N/A
Instrument Code	SEPARATION DATE	(SD)	12/08/94	DETECTION LIMIT	(Ld)	2.21
WB27611	TIME OF COUNT	(TOC)	03:00 AM	Sr-89/90 CONC. in µCi/g =		3.4942E+01
Analyst	DATE OF COUNT	(DOC)	12/10/94			
SLH						
Date						
12/08/94						
Time						
10:00 PM						

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
Sr-89/90 µCi/g = Rs*1000mL/L*DF/
(C1 + C2 * (1 - e to the power of ((-natural log 2) / 64.2 * DT)) *SS*(Dg/L)*Rec.*2220000dpm/µCi)
NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA x 0.1000))

Relative Counting Error = (The Square Root of (TC + BKG * CT)) / (TC - BKG * CT) * 1.96 * 100
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

v RESULTS v

Sr-89/90 CONCENTRATION =	3.49E+01	µCi/g	DETECTION LIMIT
RELATIVE COUNTING ERROR =	0.2%		
PERCENT CARRIER RECOVERY =	90.7%		1.09E-03 µCi/g

Data Entry by:		Date:	12/12/94
Approved by:		Date:	12/12/94

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 103 (E-2), 104 (D-1)

							DUPLICATE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
DUPLICATE	TOTAL COUNTS	(TC)	618106	GROSS WEIGHT	(W2)		7.9650
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.8740
219	BACKGROUND in cpm	(BKG)	3.1	NET WEIGHT	(W3)		0.0910
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (hours)	(DT)		32.10
@SR90-01	DILUTION FACTOR	(DF)	1	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Matrix	ENTER MATRIX AS: LIQUID, DIRECT SOLID,			Y-90 EFFICIENCY FACTOR	(C2)		0.4660
SOLID DIGEST	<<<<< or SOLID DIGEST <<<<<			SAMPLE COUNT RATE	(Rs)		61807.50
Sample #	DIGEST grams of SOLIDS/L	(Dg/L)	1.8964	CRITICAL LEVEL	(Lc)		1.06
S94T67	SEPARATION TIME	(ST)	07:16 PM	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	12/08/94	DETECTION LIMIT	(Ld)		2.21
WB27811	TIME OF COUNT	(TOC)	03:22 AM	Sr-89/90 CONC. in µCi/g =			2.9095E+01
Analyst	DATE OF COUNT	(DOC)	12/10/94				
SLH							
Date							
12/08/94							
Time							
10:00 PM							

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
Sr-89/90 µCi/g = Rs*1000mL/L*DF/
(C1 + C2 * (1 - e to the power of ((-natural log 2) / 64.2 * DT)) *SS*(Dg/L)*Rec.*2220000dpm/µCi)
NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA x 0.1000))

Relative Counting Error = (The Square Root of (TC + BKG * CT)) / (TC - BKG * CT) * 1.96 * 100
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

v RESULTS v

			DETECTION LIMIT
Sr-89/90 CONCENTRATION =	2.91E+01	µCi/g	
RELATIVE COUNTING ERROR =	0.2%		
PERCENT CARRIER RECOVERY =	91.0%		1.04E-03 µCi/g

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

Form 22010N_C Rev. 1.0

Sy103

LABCORE Data Entry Template for Worklist# 263

Analyst: MCJ **Instrument:** AB00 12 **Method:** LA-220-101 D-1

Worklist Comment: Sr-90 Determine SS using Ludlum detector. SLF WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test		Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@SR90-01	SR90-01	SOLID			N/A	uCi/g
1	BLNK-PREP				@SR90-01	SR90-01C	SOLID			N/A	% Rec
1	BLNK-PREP				@SR90-01	SR90-01E	SOLID			N/A	% Ct.
2	STD	51B52			@SR90-01	SR90-01	SOLID			N/A	uCi/g
2	STD				@SR90-01	SR90-01C	SOLID			N/A	% Rec
2	STD				@SR90-01	SR90-01E	SOLID			N/A	% Ct.
3	SAMPLE	S94T000299	0		@SR90-01	SR90-01	SOLID	N/A			uCi/g
3	SAMPLE	S94T000299	0		@SR90-01	SR90-01C	SOLID	N/A			% Rec
3	SAMPLE	S94T000299	0		@SR90-01	SR90-01E	SOLID	N/A			% Ct.
4	DUP	S94T000299	0		@SR90-01	SR90-01	SOLID			N/A	uCi/g
4	DUP	S94T000299	0		@SR90-01	SR90-01C	SOLID			N/A	% Rec
4	DUP	S94T000299	0		@SR90-01	SR90-01E	SOLID			N/A	% Ct.
5	SAMPLE	S94T000300	0		@SR90-01	SR90-01	SOLID	N/A			uCi/g
5	SAMPLE	S94T000300	0		@SR90-01	SR90-01C	SOLID	N/A			% Rec
5	SAMPLE	S94T000300	0		@SR90-01	SR90-01E	SOLID	N/A			% Ct.
6	DUP	S94T000300	0		@SR90-01	SR90-01	SOLID			N/A	uCi/g
6	DUP	S94T000300	0		@SR90-01	SR90-01C	SOLID			N/A	% Rec
6	DUP	S94T000300	0		@SR90-01	SR90-01E	SOLID			N/A	% Ct.

Data Entry Comments:

Blank has high carrier recovery - batch will be recun

12-28-94

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

LABCORE Data Entry Template for Worklist# 263

Analyst: mcJ **Instrument:** AB00 12 **Method:** LA-220-101

Worklist Comment: Sr-90 Determine SS using Ludlum detector. SLF WHC-SD-WM-DP-074, REV. 0

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

Final page for worklist # 263

Mike Jones
Analyst Signature

12-19-94
Date

MG Bielman

12/21/94

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 103 (E-2), 104 (D-1)

							BLANK
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
BLANK	TOTAL COUNTS	(TC)	49	GROSS WEIGHT	(W2)	8.1245
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.8943
263	BACKGROUND in cpm	(BKG)	2.5	NET WEIGHT	(W3)	0.2302
Test Code	SAMPLE VOLUME in mL	(SS)	0.200	DELTA TIME (hours)	(DT)	2.42
@SR90-01	DILUTION FACTOR	(DF)	1	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Matrix	ENTER MATRIX AS: LIQUID, DIRECT SOLID,			Y-90 EFFICIENCY FACTOR	(C2)	0.4660
SOLID DIGEST	<<<<< or SOLID DIGEST <<<<<			SAMPLE COUNT RATE	(Rs)	2.40
Sample #	DIGEST grams of SOLIDS/L	(Dg/L)	1.7448	CRITICAL LEVEL	(Lc)	0.95
S94T299,300	SEPARATION TIME	(ST)	10:40 PM	Rmax		N/A
Instrument Code	SEPARATION DATE	(SD)	12/19/94	DETECTION LIMIT	(Ld)	2.00
WB27811	TIME OF COUNT	(TOC)	01:05 AM	Sr-89/90 CONC. in µCi/g =		3.1297E-03
Analyst	DATE OF COUNT	(DOC)	12/20/94			
MCJ						
Date						
12/19/94						
Time						
11:30 PM						

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
Sr-89/90 µCi/g = Rs*1000mL/L*DF/
(C1 + C2 * (1 - e to the power of ((-natural log 2) / 64.2 * DT)) *SS*(Dg/L)*Rec.*2220000dpm/µCi)
NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA x 0.1000))

Relative Counting Error = (The Square Root of (TC + BKG * CT)) / (TC - BKG * CT) * 1.96 * 100
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

v RESULTS v

Sr-89/90 CONCENTRATION =	3.13E-03	µCi/g	DETECTION LIMIT
RELATIVE COUNTING ERROR =	70.3%		2.60E-03 µCi/g
PERCENT CARRIER RECOVERY =	230.2%		

Data Entry by: MCJ Date: 12/21/94
Approved by: [signature] Date: 12/21/94

Form 22010N_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

BEST AVAILABLE COPY

Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 103 (E-2), 104 (D-1)

						STANDARD
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
STANDARD	TOTAL COUNTS	(TC)	9156	GROSS WEIGHT	(W2)	8.0808
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.9849
263	BACKGROUND in cpm	(BKG)	2.5	NET WEIGHT	(W3)	0.0959
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (hours)	(DT)	3.42
@SR90-01	DILUTION FACTOR	(DF)	1	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Matrix	ENTER MATRIX AS: LIQUID, DIRECT SOLID,			Y-90 EFFICIENCY FACTOR	(C2)	0.4660
LIQUID	<<<<< or SOLID DIGEST <<<<<			SAMPLE COUNT RATE	(Rs)	913.10
Sample #	DIGEST DILUTION FACTOR	(DDF)	1	CRITICAL LEVEL	(Lc)	0.95
S94T299,300	SEPARATION TIME	(ST)	10:40 PM	Rmax		N/A
Instrument Code	SEPARATION DATE	(SD)	12:00 AM	DETECTION LIMIT	(Ld)	2.00
WB27811	TIME OF COUNT	(TOC)	02:05 AM	Sr-89/90 CONC. in µCi/L =		9.8623E-01
Analyst	DATE OF COUNT	(DOC)	12/20/94			
MCJ						
Date						
12/19/94						
Time						
11:30 PM						

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
Sr-89/90 µCi/L = Rs*1000mL/L *DF*DDF/
(C1 + C2 * (1 - e to the power of ((-natural log 2) / 64.2 * DT)) *SS*Rec.*2220000dpm/µCi)
NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA x 0.1000))
Sr-89/90 µCi/mL = (Sr-89/90 µCi/L) / 1000mL/L
Relative Counting Error = (The Square Root of (TC + BKG * CT)) / (TC - BKG * CT) * 1.96 * 100
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

v RESULTS v

			DETECTION LIMIT
Sr-89/90 CONCENTRATION =	9.86E-04	µCi/mL	2.16E-06 µCi/mL
RELATIVE COUNTING ERROR =	2.1%		
PERCENT CARRIER RECOVERY =	95.9%		

Data Entry by:		Date:	12/22/94
Approved by:		Date:	12/27/94

Form 22010N_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 103 (E-2), 104 (D-1)

							SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	3473	GROSS WEIGHT	(W2)	8.0429
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.9462
263	BACKGROUND in cpm	(BKG)	2.5	NET WEIGHT	(W3)	0.0967
Test Code	SAMPLE VOLUME in mL	(SS)	0.200	DELTA TIME (hours)	(DT)	3.83
@SR90-01	DILUTION FACTOR	(DF)	1	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Matrix	ENTER MATRIX AS: LIQUID, DIRECT SOLID,			Y-90 EFFICIENCY FACTOR	(C2)	0.4660
SOLID DIGEST	<<<<< or SOLID DIGEST <<<<<			SAMPLE COUNT RATE	(Rs)	344.80
Sample #	DIGEST grams of SOLIDS/L	(Dg/L)	1.7448	CRITICAL LEVEL	(Lc)	0.95
S94T299	SEPARATION TIME	(ST)	10:40 PM	Rmax		N/A
Instrument Code	SEPARATION DATE	(SD)	12/19/94	DETECTION LIMIT	(Ld)	2.00
WB27811	TIME OF COUNT	(TOC)	02:30 AM	Sr-89/90 CONC. in µCi/g =		1.0535E+00
Analyst	DATE OF COUNT	(DOC)	12/20/94			
MCJ						
Date						
12/19/94						
Time						
11:30 PM						

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
Sr-89/90 µCi/g = Rs*1000mL/L*DF/
(C1 + C2 * (1 - e to the power of ((-natural log 2) / 64.2 * DT)) *SS*(Dg/L)*Rec.*2220000dpm/µCi)
NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA x 0.1000))

Relative Counting Error = (The Square Root of (TC + BKG * CT)) / (TC - BKG * CT) * 1.96 * 100
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

v RESULTS v

Sr-89/90 CONCENTRATION =	1.05E+00	µCi/g	DETECTION LIMIT
RELATIVE COUNTING ERROR =	3.4%		
PERCENT CARRIER RECOVERY =	96.7%		6.10E-03 µCi/g

Data Entry by:	[signature]	Date:	12/21/94
Approved by:	[signature]	Date:	12/21/94

Form 22010N_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 103 (E-2), 104 (D-1)

							DUPLICATE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
DUPLICATE	TOTAL COUNTS	(TC)	4118	GROSS WEIGHT	(W2)	7.9308
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.8342
263	BACKGROUND in cpm	(BKG)	3.3	NET WEIGHT	(W3)	0.0966
Test Code	SAMPLE VOLUME in mL	(SS)	0.200	DELTA TIME (hours)	(DT)	7.58
@SR90-01	DILUTION FACTOR	(DF)	1	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Matrix	ENTER MATRIX AS: LIQUID, DIRECT SOLID,			Y-90 EFFICIENCY FACTOR	(C2)	0.4660
SOLID DIGEST	<<<<< or SOLID DIGEST <<<<<			SAMPLE COUNT RATE	(Rs)	408.50
Sample #	DIGEST grams of SOLIDS/L	(Dg/L)	1.624	CRITICAL LEVEL	(Lc)	1.09
S94T299	SEPARATION TIME	(ST)	10:40 PM	Rmax		N/A
Instrument Code	SEPARATION DATE	(SD)	12/19/94	DETECTION LIMIT	(Ld)	2.28
WB27811	TIME OF COUNT	(TOC)	06:15 AM	Sr-89/90 CONC. in µCi/g =		1.1485E+00
Analyst	DATE OF COUNT	(DOC)	12/20/94			
MCJ						
Date						
12/19/94						
Time						
11:30 PM						

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
Sr-89/90 µCi/g = Rs*1000mL/L*DF/
(C1 + C2 * (1 - e to the power of ((-natural log 2) / 64.2 * DT)) *SS*(Dg/L)*Rec.*2220000dpm/µCi)
NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA x 0.1000))

Relative Counting Error = (The Square Root of (TC + BKG * CT)) / (TC - BKG * CT) * 1.96 * 100
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

v RESULTS v

Sr-89/90 CONCENTRATION =	1.15E+00	µCi/g	DETECTION LIMIT
RELATIVE COUNTING ERROR =	3.1%		
PERCENT CARRIER RECOVERY =	96.6%		6.41E-03 µCi/g

Data Entry by:		Date:	12/21/94
Approved by:		Date:	

Form 22010N_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 103 (E-2), 104 (D-1)

							SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	43629	GROSS WEIGHT	(W2)	8.0598
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.9630
263	BACKGROUND in cpm	(BKG)	3.3	NET WEIGHT	(W3)	0.0968
Test Code	SAMPLE VOLUME in mL	(SS)	0.050	DELTA TIME (hours)	(DT)	7.92
@SR90-01	DILUTION FACTOR	(DF)	1	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Matrix	ENTER MATRIX AS: LIQUID, DIRECT SOLID,			Y-90 EFFICIENCY FACTOR	(C2)	0.4660
SOLID DIGEST	<<<<< or SOLID DIGEST <<<<<			SAMPLE COUNT RATE	(Rs)	4359.60
Sample #	DIGEST grams of SOLIDS/L	(Dg/L)	2.5308	CRITICAL LEVEL	(Lc)	1.09
S94T300	SEPARATION TIME	(ST)	10:45 PM	Rmax		N/A
Instrument Code	SEPARATION DATE	(SD)	12/19/94	DETECTION LIMIT	(Ld)	2.28
WB27811	TIME OF COUNT	(TOC)	06:40 AM	Sr-89/90 CONC. in µCi/g =		3.5145E+01
Analyst	DATE OF COUNT	(DOC)	12/20/94			
MCJ						
Date						
12/19/94						
Time						
11:30 PM						

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
Sr-89/90 µCi/g = Rs*1000mL/L*DF/
(C1 + C2 * (1 - e to the power of ((-natural log 2) / 64.2 * DT)) *SS*(Dg/L)*Rec.*2220000dpm/µCi)
NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA x 0.1000))

Relative Counting Error = (The Square Root of (TC + BKG * CT)) / (TC - BKG * CT) * 1.96 * 100
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

v RESULTS v

			DETECTION LIMIT
Sr-89/90 CONCENTRATION =	3.51E+01	µCi/g	1.84E-02 µCi/g
RELATIVE COUNTING ERROR =	0.9%		
PERCENT CARRIER RECOVERY =	96.8%		

Data Entry by: [signature] Date: 12/21/94
Approved by: [signature] Date: 12/21/94

Form 22010N_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 103 (E-2), 104 (D-1)

							DUPLICATE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
DUPLICATE	TOTAL COUNTS	(TC)	38252	GROSS WEIGHT	(W2)		8.0536
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.9566
263	BACKGROUND in cpm	(BKG)	3.3	NET WEIGHT	(W3)		0.0970
Test Code	SAMPLE VOLUME in mL	(SS)	0.050	DELTA TIME (hours)	(DT)		8.42
@SR90-01	DILUTION FACTOR	(DF)	1	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Matrix	ENTER MATRIX AS: LIQUID, DIRECT SOLID,			Y-90 EFFICIENCY FACTOR	(C2)		0.4660
SOLID DIGEST	<<<<< or SOLID DIGEST <<<<<			SAMPLE COUNT RATE	(Rs)		3821.90
Sample #	DIGEST grams of SOLIDS/L	(Dg/L)	2.5532	CRITICAL LEVEL	(Lc)		1.09
S94T300	SEPARATION TIME	(ST)	10:45 PM	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	12/19/94	DETECTION LIMIT	(Ld)		2.28
WB27811	TIME OF COUNT	(TOC)	07:10 AM	Sr-89/90 CONC. in µCi/g =			3.0324E+01
Analyst	DATE OF COUNT	(DOC)	12/20/94				
MCJ							
Date							
12/19/94							
Time							
11:30 PM							

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
Sr-89/90 µCi/g = Rs*1000mL/L*DF/
(C1 + C2 * (1 - e to the power of ((-natural log 2) / 64.2 * DT)) *SS*(Dg/L)*Rec.*2220000dpm/µCi)
NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA x 0.1000))

Relative Counting Error = (The Square Root of (TC + BKG * CT)) / (TC - BKG * CT) * 1.96 * 100
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

v RESULTS v

			DETECTION LIMIT
Sr-89/90 CONCENTRATION =	3.03E+01	µCi/g	
RELATIVE COUNTING ERROR =	1.0%		
PERCENT CARRIER RECOVERY =	97.0%		1.81E-02 µCi/g

Data Entry by:	[signature]	Date:	12/21/94
Approved by:	[signature]	Date:	12/21/94

Form 22010N_C Rev. 1.0

54103

LABCORE Data Entry Template for Worklist# 321

Analyst: AKL **Instrument:** AB00 12 **Method:** LA-220-101 D-1

Worklist Comment: Use .500 mL for sample 299 and .100 mL for sample 300. SLF

Seg	Type	Sample#	Rep	Al	Test		Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@SR90-01	SR90-01	SOLID			N/A	uCi/g
1	BLNK-PREP				@SR90-01	SR90-01C	SOLID			N/A	% Rec
1	BLNK-PREP				@SR90-01	SR90-01E	SOLID			N/A	% Ct.
2	STD 51B52				@SR90-01	SR90-01	SOLID			N/A	uCi/g
2	STD				@SR90-01	SR90-01C	SOLID			N/A	% Rec
2	STD				@SR90-01	SR90-01E	SOLID			N/A	% Ct.
3	SAMPLE	S94T000299	0		@SR90-01	SR90-01	SOLID	N/A			uCi/g
3	SAMPLE	S94T000299	0		@SR90-01	SR90-01C	SOLID	N/A			% Rec
3	SAMPLE	S94T000299	0		@SR90-01	SR90-01E	SOLID	N/A			% Ct.
4	DUP	S94T000299	0		@SR90-01	SR90-01	SOLID			N/A	uCi/g
4	DUP	S94T000299	0		@SR90-01	SR90-01C	SOLID			N/A	% Rec
4	DUP	S94T000299	0		@SR90-01	SR90-01E	SOLID			N/A	% Ct.
5	SAMPLE	S94T000300	0		@SR90-01	SR90-01	SOLID	N/A			uCi/g
5	SAMPLE	S94T000300	0		@SR90-01	SR90-01C	SOLID	N/A			% Rec
5	SAMPLE	S94T000300	0		@SR90-01	SR90-01E	SOLID	N/A			% Ct.
6	DUP	S94T000300	0		@SR90-01	SR90-01	SOLID			N/A	uCi/g
6	DUP	S94T000300	0		@SR90-01	SR90-01C	SOLID			N/A	% Rec
6	DUP	S94T000300	0		@SR90-01	SR90-01E	SOLID			N/A	% Ct.

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

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist# 321

Analyst: AKL **Instrument:** AB00 12 **Method:** LA-220-101 0-1

Worklist Comment: Use .500 mL for sample 299 and .100 mL for sample 300. SLF

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

Final page for worklist # 321

Alita Ferro
Analyst Signature

12-29-94
Date

M Bricman 12/30/94

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

Data Entry Comments:

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

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY
RADCHEM ANALYTICAL BATCH AND SUMMARY SHEET
STRONTIUM-SOLIDS ERR

TEST CODE:	@SR90-01	SAMPLE POINT:	0
INSTRUMENT:	WB27811	SAMPLE PREP:	0
ANALYST:	AKL	BATCH ID:	0
		ANALYSIS DATE:	January 3, 1995

		UNITS:	µCi/g						
SAMPLE TYPE	SAMPLE NO.	ANALYTE	RESULT #1	DUPLICATE	AVERAGE	RPD%	% REC	DET LIM	%CT ER
STANDARD	51B52	Sr-90	1.00E-03				90.2%	2.21E-06	2.0%
BLANK	S94T299,300	Sr-90	1.49E-03					2.53E-03	130.7%
SAMPLE 1	S94T299	Sr-90	1.11E+00	1.14E+00	1.12E+00	2.3%		2.53E-03	2.1%
DUPLICATE 1	S94T299	Sr-90						2.40E-03	2.0%
SAMPLE 2	S94T300	Sr-90	3.75E+01	3.22E+01	3.48E+01	15.2%		8.66E-03	0.7%
DUPLICATE 2	S94T300	Sr-90						8.57E-03	0.7%
STANDARD END									
	STD ID:	STD VOL.:							
STANDARD	0	1.000							

NARRATIVE: **Analyst Comments:**

Chemist Comments:

DETECTION LIMITS ARE ADJUSTED FOR DIFFERENT SAMPLE SIZES.
RESULTS FOR STANDARDS ARE IN µCi/mL

Form Completed By:	MC BIERMAN	Signature:	[signature]	Date:	01/03/95
Chemist Approval:	SL FITZGERALD	Signature:	[signature]	Date:	1/4/95

Revision 2.1

LAB LEADER INFO:	
Method:	LA-220-101(D-1)
Test Code	@SR90-01
Matrix:	SOLID
Work List #	321
Batch #	
Prepared By:	MC BIERMAN
Date Complete:	01/03/95
Time Complete:	15:00
Chemist:	SL FITZGERALD
Analyst:	AKL
Analysis Date:	12/30/94
Detector Number:	12
Instrument Code:	WB27811
Rerun:	
Sample Prep:	
Sample Point:	
Book Number:	

Sample Type	Sample #
STANDARD	51B52
BLANK	594T299,300
SAMPLE 1	594T299
DUPLICATE 1	594T299
SAMPLE 2	594T300
DUPLICATE 2	594T300
ST-END	

TECH INFO:

Liquids Standard Run

INPUT	
TOTAL COUNTS	9251
COUNT TIME in MINUTES	10
BACKGROUND in cpm	3
SAMPLE VOLUME in mL	1
DILUTION FACTOR	1
DIGEST DILUTION FACTOR	1
SEPARATION TIME	10:00
SEPARATION DATE	12/29/94
TIME OF COUNT	13:25
DATE OF COUNT	12/29/94
CARRIER ADDED in mL	1
GROSS WEIGHT	8.024
TARE WEIGHT	7.9287
STANDARD VALUE	1.1121

RESULT	
SAMPLE COUNT RATE	9.23E+02
CRITICAL LEVEL	9.71E-01
NET WEIGHT	0.0953
DELTA TIME (hours)	3.42
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.03
Sr-89/90 CONC in µCi/mL	1.00E-03
Relative Counting Error	2.0%
Percent Carrier Recovery	95.3%

Solid-Blank Run:

INPUT	
TOTAL COUNTS	38
COUNT TIME in MINUTES	10
BACKGROUND in cpm	3
SAMPLE VOLUME in mL	0.5
DILUTION FACTOR	1
DIGEST FACTOR (g/L)	1.7448
SEPARATION TIME	10:00
SEPARATION DATE	12/29/94
TIME OF COUNT	13:35
DATE OF COUNT	12/29/94
CARRIER ADDED in mL	1
GROSS WEIGHT	7.9869
TARE WEIGHT	7.8915

RESULT	
SAMPLE COUNT RATE	1.20E+00
CRITICAL LEVEL	9.71E-01
NET WEIGHT	0.0954
DELTA TIME (hours)	3.58
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.03
Sr-89/90 CONC in µCi/g	1.49E-03
Relative Counting Error	130.7%
Percent Carrier Recovery	95.4%

Solid-Sample Run 2:

INPUT	
TOTAL COUNTS	87989
COUNT TIME in MINUTES	10
BACKGROUND in cpm	3
SAMPLE VOLUME in mL	0.1
DILUTION FACTOR	1
DIGEST FACTOR (g/L)	2.5308
SEPARATION TIME	10:05
SEPARATION DATE	12/29/94
TIME OF COUNT	14:15
DATE OF COUNT	12/29/94
CARRIER ADDED in mL	1
GROSS WEIGHT	8.0145
TARE WEIGHT	7.9192

RESULT	
SAMPLE COUNT RATE	8.80E+03
CRITICAL LEVEL	9.71E-01
NET WEIGHT	0.0953
DELTA TIME (hours)	4.17
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.03
Sr-89/90 CONC in µCi/g	3.75E+01
Relative Counting Error	0.7%
Percent Carrier Recovery	95.3%

Solid-Duplicate Run 2:

INPUT	
TOTAL COUNTS	76363
COUNT TIME in MINUTES	10
BACKGROUND in cpm	3
SAMPLE VOLUME in mL	0.1
DILUTION FACTOR	1
DIGEST FACTOR (g/L)	2.5532
SEPARATION TIME	10:05
SEPARATION DATE	12/29/94
TIME OF COUNT	14:30
DATE OF COUNT	12/29/94
CARRIER ADDED in mL	1
GROSS WEIGHT	7.9719
TARE WEIGHT	7.8767

RESULT	
SAMPLE COUNT RATE	7.63E+03
CRITICAL LEVEL	9.71E-01
NET WEIGHT	0.0952
DELTA TIME (hours)	4.42
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.03
Sr-89/90 CONC in µCi/g	3.22E+01
Relative Counting Error	0.7%
Percent Carrier Recovery	95.2%

Solid-Sample Run:

INPUT	
TOTAL COUNTS	8929
COUNT TIME in MINUTES	10
BACKGROUND in cpm	3
SAMPLE VOLUME in mL	0.5
DILUTION FACTOR	1
DIGEST FACTOR (g/L)	1.7448
SEPARATION TIME	10:00
SEPARATION DATE	12/29/94
TIME OF COUNT	13:45
DATE OF COUNT	12/29/94
CARRIER ADDED in mL	1
GROSS WEIGHT	8.0335
TARE WEIGHT	7.9386

RESULT	
SAMPLE COUNT RATE	8.90E+02
CRITICAL LEVEL	9.71E-01
NET WEIGHT	0.0949
DELTA TIME (hours)	3.75
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.03
Sr-89/90 CONC in µCi/g	1.11E+00
Relative Counting Error	2.1%
Percent Carrier Recovery	94.9%

Solid-Duplicate Run:

INPUT	
TOTAL COUNTS	9646
COUNT TIME in MINUTES	10
BACKGROUND in cpm	3
SAMPLE VOLUME in mL	0.5
DILUTION FACTOR	1
DIGEST FACTOR (g/L)	1.824
SEPARATION TIME	10:00
SEPARATION DATE	12/29/94
TIME OF COUNT	14:00
DATE OF COUNT	12/29/94
CARRIER ADDED in mL	1
GROSS WEIGHT	8.0278
TARE WEIGHT	7.9322

RESULT	
SAMPLE COUNT RATE	9.62E+02
CRITICAL LEVEL	9.71E-01
NET WEIGHT	0.0956
DELTA TIME (hours)	4.00
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.03
Sr-89/90 CONC in µCi/g	1.14E+00
Relative Counting Error	2.0%
Percent Carrier Recovery	95.6%

Liquids Standard End

INPUT	
TOTAL COUNTS	
COUNT TIME in MINUTES	
BACKGROUND in cpm	
SAMPLE VOLUME in mL	
DILUTION FACTOR	
DIGEST DILUTION FACTOR	
SEPARATION TIME	
SEPARATION DATE	
TIME OF COUNT	
DATE OF COUNT	
CARRIER ADDED in mL	
GROSS WEIGHT	
TARE WEIGHT	
STANDARD VALUE	

RESULT	
SAMPLE COUNT RATE	
CRITICAL LEVEL	
NET WEIGHT	
DELTA TIME (hours)	
SR-90 EFFICIENCY FACTOR	
Y-90 EFFICIENCY FACTOR	
Rmax	
DETECTION LIMIT	
Sr-89/90 CONC in µCi/mL	
Relative Counting Error	
Percent Carrier Recovery	

Form Completed By:	MC BIERMAN	Signature:	[signature]	Date:	03-Jan-95
Chemist Approval:	SL FITZGERALD	Signature:	[signature]	Date:	1-4-95

Revision 2.1

1860

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 104 (D-1)

							BLANK
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA		1.000
BLANK	TOTAL COUNTS	(TC)	38	GROSS WEIGHT	(W2)		7.9869
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.8915
321	BACKGROUND in cpm	(BKG)	2.6	NET WEIGHT	(W3)		0.0954
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)		3.58
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST FACTOR (g/L)	DDF	1.7448				
SOLID	SAMPLE COUNT RATE	(Rs)	1.20	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Sample #	CRITICAL LEVEL	(Lc)	0.97	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
S94T299,300	SEPARATION TIME	(ST)	10:00	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	12/29/94	DETECTION LIMIT	(Ld)		2.03
WB27811	TIME OF COUNT	(TOC)	13:35	Sr-89/90 CONC in µCi/g			1.4907E-03
Analyst	DATE OF COUNT	(DOC)	12/29/94				
AKL							
Date							
01/03/95							
Time							
15:00							

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 w

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

1861

v RESULTS v

Sr-89/90 CONCENTRATION =	1.49E-03	µCi/g
RELATIVE COUNTING ERROR =	130.7%	
PERCENT CARRIER RECOVERY =	95.4%	

DETECTION LEVEL

2.53E-03 µCi/g

Data Entry by:	MC BIERMAN	Date:	03-Jan-95
Approved by:	SL FITZGERALD	Date:	1-4-95

Form WB Rev. 2.1 220-10n_WB

Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 104 (D-1) LIQUIDS

						STANDARD
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA	1.000
STANDARD	TOTAL COUNTS	(TC)	9251	GROSS WEIGHT	(W2)	8.0240
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.9287
321	BACKGROUND in cpm	(BKG)	2.6	NET WEIGHT	(W3)	0.0953
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)	3.42
@SR90-01	DILUTION FACTOR	(DF)	1			
Matrix	DIGEST DILUTION FACTOR	DDF	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	922.50	SR-90 EFFICIENCY FACTO	(C1)	0.4180
Sample #	CRITICAL LEVEL	(Lc)	0.97	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
51B52	SEPARATION TIME	(ST)	10:00	Rmax		N/A
Instrument Code	SEPARATION DATE	(SD)	12/29/94	DETECTION LIMIT	(Ld)	2.03
WB27811	TIME OF COUNT	(TOC)	13:25	Sr-89/90 CONC. in µCi/L =		1.0027E+00
Analyst	DATE OF COUNT	(DOC)	12/29/94			
AKL						
Date						
01/03/95						
Time						
15:00						

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

1862

v RESULTS v

Sr-89/90 CONCENTRATION	=	1.00E-03	µCi/mL
RELATIVE COUNTING ERROR	=	2.0%	
PERCENT CARRIER RECOVERY	=	95.3%	

DETECTION LEVEL

2.21E-06 µCi/L

Data Entry by:	MC BIERMAN		Date:	03-Jan-95
Approved by:	SL FITZGERALD		Date:	1-4-95

Form WB Rev. 2.1 220-10n_WB

LA-220-101 / D-1 **Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 104 (D-1)**

Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA		SAMPLE 1.000
SAMPLE	TOTAL COUNTS	(TC)	8929	GROSS WEIGHT	(W2)		8.0335
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.9386
321	BACKGROUND in cpm	(BKG)	2.6	NET WEIGHT	(W3)		0.0949
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)		3.75
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST FACTOR (g/L)	DDF	1.7448				
SOLID	SAMPLE COUNT RATE	(Rs)	890.30	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Sample #	CRITICAL LEVEL	(Lc)	0.97	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
S94T299	SEPARATION TIME	(ST)	10:00	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	12/29/94	DETECTION LIMIT	(Ld)		2.03
WB27811	TIME OF COUNT	(TOC)	13:45	Sr-89/90 CONC in µCi/g			1.1098E+00
Analyst	DATE OF COUNT	(DOC)	12/29/94				
AKL							
Date							
01/03/95							
Time							
15:00							

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

1563

v RESULTS v

Sr-89/90 CONCENTRATION =	1.11E+00	µCi/g	
RELATIVE COUNTING ERROR =	2.1%		
PERCENT CARRIER RECOVERY =	94.9%		

DETECTION LEVEL

2.53E-03 µCi/g

Data Entry by:	MC BIERMAN	Date:	03-Jan-95
Approved by:	SL FITZGERALD	Date:	1-4-95

Form WB Rev. 2.1 220-10n_WB

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 104 (D-1)

							DUPLICATE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA		1.000
DUPLICATE	TOTAL COUNTS	(TC)	9646	GROSS WEIGHT	(W2)		8.0278
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.9322
321	BACKGROUND in cpm	(BKG)	2.6	NET WEIGHT	(W3)		0.0956
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)		4.00
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST FACTOR (g/L)	DDF	1.824				
SOLID	SAMPLE COUNT RATE	(Rs)	962.00	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Sample #	CRITICAL LEVEL	(Lc)	0.97	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
S94T299	SEPARATION TIME	(ST)	10:00	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	12/29/94	DETECTION LIMIT	(Ld)		2.03
WB27811	TIME OF COUNT	(TOC)	14:00	Sr-89/90 CONC in µCi/g			1.1355E+00
Analyst	DATE OF COUNT	(DOC)	12/29/94				
AKL							
Date							
01/03/95							
Time							
15:00							

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

1864

v RESULTS v

Sr-89/90 CONCENTRATION	=	1.14E+00	µCi/g
RELATIVE COUNTING ERROR	=	2.0%	
PERCENT CARRIER RECOVERY	=	95.6%	

DETECTION LEVEL

2.40E-03 µCi/g

Data Entry by:	MC BIERMAN	Date:	03-Jan-95
Approved by:	SL FITZGERALD	Date:	1-4-95

Form WB Rev. 2.1 220-10n_WB Page 1 of 1

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 104 (D-1)

						SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA	1.000
SAMPLE	TOTAL COUNTS	(TC)	87989	GROSS WEIGHT	(W2)	8.0145
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.9192
321	BACKGROUND in cpm	(BKG)	2.6	NET WEIGHT	(W3)	0.0953
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)	4.17
@SR90-01	DILUTION FACTOR	(DF)	1			
Matrix	DIGEST DILUTION FACTOR	DDF	2.5308			
SOLID	SAMPLE COUNT RATE	(Rs)	8796.30	SR-90 EFFICIENCY FACTO	(C1)	0.4180
Sample #	CRITICAL LEVEL	(Lc)	0.97	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
S94T300	SEPARATION TIME	(ST)	10:05	Rmax		N/A
Instrument Code	SEPARATION DATE	(SD)	12/29/94	DETECTION LIMIT	(Ld)	2.03
WB27811	TIME OF COUNT	(TOC)	14:15	Sr-89/90 CONC in µCi/g		3.7465E+01
Analyst	DATE OF COUNT	(DOC)	12/29/94			
AKL						
Date						
01/03/95						
Time						
15:00						

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

1865

v RESULTS v

Sr-89/90 CONCENTRATION	=	3.75E+01	µCi/g
RELATIVE COUNTING ERROR	=	0.7%	
PERCENT CARRIER RECOVERY	=	95.3%	

DETECTION LEVEL

8.66E-03 µCi/g

Data Entry by:	MC BIERMAN	Date:	03-Jan-95
Approved by:	SL FITZGERALD	Date:	1-4-95

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 104 (D-1)

Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA		DUPLICATE 1.000
DUPLICATE	TOTAL COUNTS	(TC)	76363	GROSS WEIGHT	(W2)		7.9719
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.8767
321	BACKGROUND in cpm	(BKG)	2.6	NET WEIGHT	(W3)		0.0952
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)		4.42
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST DILUTION FACTOR	(Dg/L)	2.5532				
SOLID	SAMPLE COUNT RATE	(Rs)	7633.70	SR-90 EFFICIENCY FACTO	(C1)		0.4180
Sample #	CRITICAL LEVEL	(Lc)	0.97	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
S94T300	SEPARATION TIME	(ST)	10:05	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	12/29/94	DETECTION LIMIT	(Ld)		2.03
WB27811	TIME OF COUNT	(TOC)	14:30	Sr-89/90 CONC in µCi/g			3.2174E+01
Analyst	DATE OF COUNT	(DOC)	12/29/94				
AKL							
Date							
01/03/95							
Time							
15:00							

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

1866

v RESULTS v

Sr-89/90 CONCENTRATION =	3.22E+01	µCi/g
RELATIVE COUNTING ERROR =	0.7%	
PERCENT CARRIER RECOVERY =	95.2%	

DETECTION LEVEL

8.57E-03 µCi/g

Data Entry by:	MC BIERMAN		Date:	03-Jan-95
Approved by:	SL FITZGERALD		Date:	1-4-95

Form WB Rev. 2.1 220-10n_WB

SY 103

LABCORE Data Entry Template for Worklist# 387

Analyst: AKL **Instrument:** AB00 12 **Method:** LA-220-101 D-1

Worklist Comment: See Scot Fitzgerald for sample size. SLf WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test		Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@SR90-01	SR90-01	SOLID			N/A	uCi/g
1	BLNK-PREP				@SR90-01	SR90-01C	SOLID			N/A	% Rec
1	BLNK-PREP				@SR90-01	SR90-01E	SOLID			N/A	% Ct.
2	STD	51852			@SR90-01	SR90-01	SOLID			N/A	uCi/g
2	STD				@SR90-01	SR90-01C	SOLID			N/A	% Rec
2	STD				@SR90-01	SR90-01E	SOLID			N/A	% Ct.
3	SAMPLE	S94T000268	0	R	@SR90-01	SR90-01	SOLID	N/A			uCi/g
3	SAMPLE	S94T000268	0	R	@SR90-01	SR90-01C	SOLID	N/A			% Rec
3	SAMPLE	S94T000268	0	R	@SR90-01	SR90-01E	SOLID	N/A			% Ct.
4	DUP	S94T000268	0	R	@SR90-01	SR90-01	SOLID			N/A	uCi/g
4	DUP	S94T000268	0	R	@SR90-01	SR90-01C	SOLID			N/A	% Rec
4	DUP	S94T000268	0	R	@SR90-01	SR90-01E	SOLID			N/A	% Ct.
5	SAMPLE	S94T000282	0	R	@SR90-01	SR90-01	SOLID	N/A			uCi/g
5	SAMPLE	S94T000282	0	R	@SR90-01	SR90-01C	SOLID	N/A			% Rec
5	SAMPLE	S94T000282	0	R	@SR90-01	SR90-01E	SOLID	N/A			% Ct.
6	DUP	S94T000282	0	R	@SR90-01	SR90-01	SOLID			N/A	uCi/g
6	DUP	S94T000282	0	R	@SR90-01	SR90-01C	SOLID			N/A	% Rec
6	DUP	S94T000282	0	R	@SR90-01	SR90-01E	SOLID			N/A	% Ct.
7	SAMPLE	S94T000283	0	R	@SR90-01	SR90-01	SOLID	N/A			uCi/g
7	SAMPLE	S94T000283	0	R	@SR90-01	SR90-01C	SOLID	N/A			% Rec

Data Entry Comments:

Samples 282 + 283 will be rerun due to high RPD. [signature] 1-18-95 AR

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

LABCORE Data Entry Template for Worklist# 387

Analyst: AKL **Instrument:** AB00 12 **Method:** LA-220-101 D-1

Worklist Comment: See Scot Fitzgerald for sample size. SLf WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test		Matrix	Actual	Found	DL	Unit
7	SAMPLE	S94T000283	0	R	@SR90-01	SR90-01E	SOLID	N/A			% Ct.
8	DUP	S94T000283	0	R	@SR90-01	SR90-01	SOLID			N/A	uCi/g
8	DUP	S94T000283	0	R	@SR90-01	SR90-01C	SOLID			N/A	% Rec
8	DUP	S94T000283	0	R	@SR90-01	SR90-01E	SOLID			N/A	% Ct.
9	SAMPLE	S94T000284	0	R	@SR90-01	SR90-01	SOLID	N/A			uCi/g
9	SAMPLE	S94T000284	0	R	@SR90-01	SR90-01C	SOLID	N/A			% Rec
9	SAMPLE	S94T000284	0	R	@SR90-01	SR90-01E	SOLID	N/A			% Ct.
10	DUP	S94T000284	0	R	@SR90-01	SR90-01	SOLID			N/A	uCi/g
10	DUP	S94T000284	0	R	@SR90-01	SR90-01C	SOLID			N/A	% Rec
10	DUP	S94T000284	0	R	@SR90-01	SR90-01E	SOLID			N/A	% Ct.

Final page for worklist # 387

Analyst Signature

Date 1-13-95

1-17-95

Data Entry Comments:

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

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY
RADCHEM ANALYTICAL BATCH AND SUMMARY SHEET
STRONTIUM-SOLIDS ERR

TEST CODE:	@SR90-01	SAMPLE POINT:	0
INSTRUMENT:	WB27811	SAMPLE PREP:	0
ANALYST:	AKL	BATCH ID:	0
		ANALYSIS DATE:	January 17, 1995

UNITS: µCi/g

SAMPLE TYPE	SAMPLE NO.	ANALYTE	RESULT #1	DUPLICATE	AVERAGE	RPD%	% REC	DET LIM	%CT ER
STANDARD *	51B52	Sr-90	1.02E-03				91.7%	2.16E-06	2.0%
BLANK	S94T268	Sr-90	2.10E-02					2.14E-02	83.2%
SAMPLE 1	S94T268	Sr-90	1.84E+00	1.68E+00	1.76E+00	9.2%		2.14E-02	4.7%
DUPLICATE 1	S94T268	Sr-90						2.14E-02	5.0%
SAMPLE 2	S94T282	Sr-90	1.59E+00	9.81E-01	1.29E+00	47.4%		2.14E-02	5.1%
DUPLICATE 2	S94T282	Sr-90						2.21E-02	6.7%
STANDARD END									
	STD ID:	STD VOL.:							
STANDARD	0	1.000							

NARRATIVE: Analyst Comments:

Chemist Comments:

DETECTION LIMITS ARE ADJUSTED FOR DIFFERENT SAMPLE SIZES.
* RESULTS FOR STANDARDS ARE IN µCi/mL

Form Completed By:	MC BIERMAN	Signature:		Date:	01/17/95
Chemist Approval:	SL FITZGERALD	Signature:		Date:	1/18/95

Revision 2.1

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

LAB LEADER INFO:	
Method:	LA-220-101(D-1)
Test Code	@SR90-01
Matrix:	SOLID
Work List #	387
Batch #	
Prepared By:	MC BIERMAN
Date Complete:	01/17/95
Time Complete:	11:00
Chemist:	SL FITZGERALD
Analyst:	AKL
Analysis Date:	01/13/95
Detector Number:	12
Instrument Code:	WB27811
Rerun:	
Sample Prep:	
Sample Point:	
Book Number:	

Sample Type	Sample #
STANDARD	51B52
BLANK	594T268
SAMPLE 1	594T268
DUPLICATE 1	594T268
SAMPLE 2	594T282
DUPLICATE 2	594T282
ST-END	

PRINT

TECH INFO:

Liquids Standard Run

INPUT	
TOTAL COUNTS	9622
COUNT TIME in MINUTES	10
BACKGROUND in cpm	3
SAMPLE VOLUME in mL	1
DILUTION FACTOR	1
DIGEST DILUTION FACTOR	1
SEPARATION TIME	12:50
SEPARATION DATE	01/13/95
TIME OF COUNT	16:55
DATE OF COUNT	01/13/95
CARRIER ADDED in mL	1
GROSS WEIGHT	7.035
TARE WEIGHT	6.9381
STANDARD VALUE	1.1108

RESULT	
SAMPLE COUNT RATE	9.60E+02
CRITICAL LEVEL	9.71E-01
NET WEIGHT	0.0969
DELTA TIME (hours)	4.08
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.03
Sr-89/90 CONC in µCi/mL	1.02E-03
Relative Counting Error	2.0%
Percent Carrier Recovery	96.9%

Solid-Blank Run:

INPUT	
TOTAL COUNTS	46
COUNT TIME in MINUTES	10
BACKGROUND in cpm	3
SAMPLE VOLUME in mL	1
DILUTION FACTOR	101
DIGEST FACTOR (g/L)	10.1704
SEPARATION TIME	12:50
SEPARATION DATE	01/13/95
TIME OF COUNT	16:42
DATE OF COUNT	01/13/95
CARRIER ADDED in mL	1
GROSS WEIGHT	7.0039
TARE WEIGHT	6.9065

RESULT	
SAMPLE COUNT RATE	2.00E+00
CRITICAL LEVEL	9.71E-01
NET WEIGHT	0.0974
DELTA TIME (hours)	3.87
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.03
Sr-89/90 CONC in µCi/g	2.10E-02
Relative Counting Error	83.2%
Percent Carrier Recovery	97.4%

Solid-Sample Run 2:

INPUT	
TOTAL COUNTS	1540
COUNT TIME in MINUTES	10
BACKGROUND in cpm	3
SAMPLE VOLUME in mL	1
DILUTION FACTOR	101
DIGEST FACTOR (g/L)	10.0594
SEPARATION TIME	12:55
SEPARATION DATE	01/13/95
TIME OF COUNT	18:00
DATE OF COUNT	01/13/95
CARRIER ADDED in mL	1
GROSS WEIGHT	7.043
TARE WEIGHT	6.9458

RESULT	
SAMPLE COUNT RATE	1.51E+02
CRITICAL LEVEL	9.71E-01
NET WEIGHT	0.0972
DELTA TIME (hours)	5.08
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.03
Sr-89/90 CONC in µCi/g	1.59E+00
Relative Counting Error	5.1%
Percent Carrier Recovery	97.2%

Solid-Duplicate Run 2:

INPUT	
TOTAL COUNTS	927
COUNT TIME in MINUTES	10
BACKGROUND in cpm	3
SAMPLE VOLUME in mL	1
DILUTION FACTOR	101
DIGEST FACTOR (g/L)	10.0282
SEPARATION TIME	12:55
SEPARATION DATE	01/13/95
TIME OF COUNT	18:10
DATE OF COUNT	01/13/95
CARRIER ADDED in mL	1
GROSS WEIGHT	7.0516
TARE WEIGHT	6.9577

RESULT	
SAMPLE COUNT RATE	9.01E+01
CRITICAL LEVEL	9.71E-01
NET WEIGHT	0.0939
DELTA TIME (hours)	5.25
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.03
Sr-89/90 CONC in µCi/g	9.81E-01
Relative Counting Error	6.7%
Percent Carrier Recovery	93.9%

Solid-Sample Run:

INPUT	
TOTAL COUNTS	1780
COUNT TIME in MINUTES	10
BACKGROUND in cpm	3
SAMPLE VOLUME in mL	1
DILUTION FACTOR	101
DIGEST FACTOR (g/L)	10.1704
SEPARATION TIME	12:50
SEPARATION DATE	01/13/95
TIME OF COUNT	17:06
DATE OF COUNT	01/13/95
CARRIER ADDED in mL	1
GROSS WEIGHT	7.0655
TARE WEIGHT	6.9685

RESULT	
SAMPLE COUNT RATE	1.75E+02
CRITICAL LEVEL	9.71E-01
NET WEIGHT	0.0970
DELTA TIME (hours)	4.27
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.03
Sr-89/90 CONC in µCi/g	1.84E+00
Relative Counting Error	4.7%
Percent Carrier Recovery	97.0%

Solid-Duplicate Run:

INPUT	
TOTAL COUNTS	1620
COUNT TIME in MINUTES	10
BACKGROUND in cpm	3
SAMPLE VOLUME in mL	1
DILUTION FACTOR	101
DIGEST FACTOR (g/L)	10.1704
SEPARATION TIME	12:50
SEPARATION DATE	01/13/95
TIME OF COUNT	17:47
DATE OF COUNT	01/13/95
CARRIER ADDED in mL	1
GROSS WEIGHT	7.081
TARE WEIGHT	6.9851

RESULT	
SAMPLE COUNT RATE	1.59E+02
CRITICAL LEVEL	9.71E-01
NET WEIGHT	0.0959
DELTA TIME (hours)	4.95
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.03
Sr-89/90 CONC in µCi/g	1.68E+00
Relative Counting Error	5.0%
Percent Carrier Recovery	95.9%

Liquids Standard End

INPUT	
TOTAL COUNTS	
COUNT TIME in MINUTES	
BACKGROUND in cpm	
SAMPLE VOLUME in mL	
DILUTION FACTOR	
DIGEST DILUTION FACTOR	
SEPARATION TIME	
SEPARATION DATE	
TIME OF COUNT	
DATE OF COUNT	
CARRIER ADDED in mL	
GROSS WEIGHT	
TARE WEIGHT	
STANDARD VALUE	

RESULT	
SAMPLE COUNT RATE	
CRITICAL LEVEL	
NET WEIGHT	
DELTA TIME (hours)	
SR-90 EFFICIENCY FACTOR	
Y-90 EFFICIENCY FACTOR	
Rmax	
DETECTION LIMIT	
Sr-89/90 CONC in µCi/mL	
Relative Counting Error	
Percent Carrier Recovery	

Form Completed By:	MC BIERMAN	Signature:	MC Bierman	Date:	17-Jan-95
Chemist Approval:	SL FITZGERALD	Signature:	SL Fitzgerald	Date:	1-18-95

Revision 2.1

1870

LA-220-101 / D-1 **Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 104 (D-1)**

							BLANK
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
BLANK	TOTAL COUNTS	(TC)	46	GROSS WEIGHT	(W2)		7.0039
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		6.9065
387	BACKGROUND in cpm	(BKG)	2.6	NET WEIGHT	(W3)		0.0974
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)		3.87
@SR90-01	DILUTION FACTOR	(DF)	101				
Matrix	DIGEST FACTOR (g/L)	DDF	10.1704				
SOLID	SAMPLE COUNT RATE	(Rs)	2.00	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Sample #	CRITICAL LEVEL	(Lc)	0.97	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
S94T268	SEPARATION TIME	(ST)	12:50	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	01/13/95	DETECTION LIMIT	(Ld)		2.03
WB27811	TIME OF COUNT	(TOC)	16:42	Sr-89/90 CONC in µCi/g			2.1017E-02
Analyst	DATE OF COUNT	(DOC)	01/13/95				
AKL							
Date							
01/17/95							
Time							
11:00							

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 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

v RESULTS v

Sr-89/90 CONCENTRATION =	2.10E-02	µCi/g
RELATIVE COUNTING ERROR =	83.2%	
PERCENT CARRIER RECOVERY =	97.4%	

DETECTION LEVEL

2.14E-02 µCi/g

Data Entry by:	MC BIERMAN	Date:	17-Jan-95
Approved by:	SL FITZGERALD	Date:	1-18-95

Form WB Rev. 2.1 220-10n_WB Page 1 of 1

Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 104 (D-1) LIQUIDS

							STANDARD
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA		1.000
STANDARD	TOTAL COUNTS	(TC)	9622	GROSS WEIGHT	(W2)		7.0350
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		6.9381
387	BACKGROUND in cpm	(BKG)	2.6	NET WEIGHT	(W3)		0.0969
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)		4.08
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST DILUTION FACTOR	DDF	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	959.60	SR-90 EFFICIENCY FACTO	(C1)		0.4180
Sample #	CRITICAL LEVEL	(Lc)	0.97	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
51B52	SEPARATION TIME	(ST)	12:50	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	01/13/95	DETECTION LIMIT	(Ld)		2.03
WB27811	TIME OF COUNT	(TOC)	16:55	Sr-89/90 CONC. in µCi/L =			1.0182E+00
Analyst	DATE OF COUNT	(DOC)	01/13/95				
AKL							
Date							
01/17/95							
Time							
11:00							

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

v RESULTS v

Sr-89/90 CONCENTRATION =	1.02E-03	µCi/mL
RELATIVE COUNTING ERROR =	2.0%	
PERCENT CARRIER RECOVERY =	96.9%	

DETECTION LEVEL

2.16E-06 µCi/L

Data Entry by:	MC BIERMAN	Date:	17-Jan-95
Approved by:	SL FITZGERALD	Date:	1-18-95

Form WB Rev. 2.1 220-10n_WB

LA-220-101 / D-1 **Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 104 (D-1)**

Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA		SAMPLE 1.000
SAMPLE	TOTAL COUNTS	(TC)	1780	GROSS WEIGHT	(W2)		7.0655
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		6.9685
387	BACKGROUND in cpm	(BKG)	2.6	NET WEIGHT	(W3)		0.0970
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)		4.27
@SR90-01	DILUTION FACTOR	(DF)	101				
Matrix	DIGEST FACTOR (g/L)	DDF	10.1704				
SOLID	SAMPLE COUNT RATE	(Rs)	175.40	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Sample #	CRITICAL LEVEL	(Lc)	0.97	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
S94T268	SEPARATION TIME	(ST)	12:50	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	01/13/95	DETECTION LIMIT	(Ld)		2.03
WB27811	TIME OF COUNT	(TOC)	17:06	Sr-89/90 CONC in µCi/g			1.8427E+00
Analyst	DATE OF COUNT	(DOC)	01/13/95				
AKL							
Date							
01/17/95							
Time							
11:00							

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

v RESULTS v

Sr-89/90 CONCENTRATION =	1.84E+00	µCi/g
RELATIVE COUNTING ERROR =	4.7%	
PERCENT CARRIER RECOVERY =	97.0%	

DETECTION LEVEL

2.14E-02 µCi/g

Data Entry by:	MC BIERMAN		Date:	17-Jan-95
Approved by:	SL FITZGERALD		Date:	1-18-95

Form WB Rev. 2.1 220-10n_WB

LA-220-101 / D-1 **Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 104 (D-1)**

Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA	DUPLICATE 1.000
DUPLICATE	TOTAL COUNTS	(TC)	1620	GROSS WEIGHT	(W2)	7.0810
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	6.9851
387	BACKGROUND in cpm	(BKG)	2.6	NET WEIGHT	(W3)	0.0959
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)	4.95
@SR90-01	DILUTION FACTOR	(DF)	101			
Matrix	DIGEST FACTOR (g/L)	DDF	10.1704			
SOLID	SAMPLE COUNT RATE	(Rs)	159.40	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Sample #	CRITICAL LEVEL	(Lc)	0.97	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
S94T268	SEPARATION TIME	(ST)	12:50	Rmax		N/A
Instrument Code	SEPARATION DATE	(SD)	01/13/95	DETECTION LIMIT	(Ld)	2.03
WB27811	TIME OF COUNT	(TOC)	17:47	Sr-89/90 CONC in µCi/g		1.6812E+00
Analyst	DATE OF COUNT	(DOC)	01/13/95			
AKL						
Date						
01/17/95						
Time						
11:00						

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

v RESULTS v

Sr-89/90 CONCENTRATION =	1.68E+00	µCi/g
RELATIVE COUNTING ERROR =	5.0%	
PERCENT CARRIER RECOVERY =	95.9%	

DETECTION LEVEL

2.14E-02 µCi/g

Data Entry by:	MC BIERMAN		Date:	17-Jan-95
Approved by:	SL FITZGERALD		Date:	1-18-95

Form WB Rev. 2.1 220-10n_WB Page 1 of 1

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

LA-220-101 / D-1 **Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 104 (D-1)**

							SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA		1.000
SAMPLE	TOTAL COUNTS	(TC)	1540	GROSS WEIGHT	(W2)		7.0430
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		6.9458
387	BACKGROUND in cpm	(BKG)	2.6	NET WEIGHT	(W3)		0.0972
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)		5.08
@SR90-01	DILUTION FACTOR	(DF)	101				
Matrix	DIGEST DILUTION FACTOR	DDF	10.0594				
SOLID	SAMPLE COUNT RATE	(Rs)	151.40	SR-90 EFFICIENCY FACTO	(C1)		0.4180
Sample #	CRITICAL LEVEL	(Lc)	0.97	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
S94T262	SEPARATION TIME	(ST)	12:55	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	01/13/95	DETECTION LIMIT	(Ld)		2.03
WBZ7611	TIME OF COUNT	(TOC)	18:00	Sr-89/90 CONC in µCi/g			1.5906E+00
Analyst	DATE OF COUNT	(DOC)	01/13/95				
AKL							
Date							
01/17/95							
Time							
11:00							

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

v RESULTS v

Sr-89/90 CONCENTRATION	=	1.59E+00	µCi/g
RELATIVE COUNTING ERROR	=	5.1%	
PERCENT CARRIER RECOVERY	=	97.2%	

DETECTION LEVEL

2.14E-02 µCi/g

Data Entry by:	MC BIERMAN		Date:	17-Jan-95
Approved by:	SL FITZGERALD		Date:	1-18-95

Form WB Rev. 2.1 220-10n_WB Page 1 of 1

LA-220-101 / D-1 **Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 104 (D-1)**

							DUPLICATE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA		1.000
DUPLICATE	TOTAL COUNTS	(TC)	927	GROSS WEIGHT	(W2)		7.0516
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		6.9577
387	BACKGROUND in cpm	(BKG)	2.6	NET WEIGHT	(W3)		0.0939
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)		5.25
@SR90-01	DILUTION FACTOR	(DF)	101				
Matrix	DIGEST DILUTION FACTOR	(Dg/L)	10.0262				
SOLID	SAMPLE COUNT RATE	(Rs)	90.10	SR-90 EFFICIENCY FACTO	(C1)		0.4180
Sample #	CRITICAL LEVEL	(Lc)	0.97	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
594T282	SEPARATION TIME	(ST)	12:55	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	01/13/95	DETECTION LIMIT	(Ld)		2.03
WB27811	TIME OF COUNT	(TOC)	18:10	Sr-89/90 CONC in µCi/g			9.8115E-01
Analyst	DATE OF COUNT	(DOC)	01/13/95				
AKL							
Date							
01/17/95							
Time							
11:00							

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

v RESULTS v

Sr-89/90 CONCENTRATION	=	9.81E-01	µCi/g
RELATIVE COUNTING ERROR	=	6.7%	
PERCENT CARRIER RECOVERY	=	93.9%	

DETECTION LEVEL
2.21E-02 µCi/g

Data Entry by:	MC BIERMAN		Date:	17-Jan-95
Approved by:	SL FITZGERALD		Date:	1-18-95

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

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY
RADCHEM ANALYTICAL BATCH AND SUMMARY SHEET
STRONTIUM-SOLIDS ERR

TEST CODE:	@SR90-01	SAMPLE POINT:	0
INSTRUMENT:	WB27811	SAMPLE PREP:	0
ANALYST:	AKL	BATCH ID:	0
		ANALYSIS DATE:	January 17, 1995

		UNITS:	µCi/g						
SAMPLE TYPE	SAMPLE NO.	ANALYTE	RESULT #1	DUPLICATE	AVERAGE	RPD%	% REC	DET LIM	%CT ER
STANDARD *									
BLANK		Sr-90						ERR	
SAMPLE 1	S94T283	Sr-90	1.89E+00	2.36E+00	2.12E+00	22.0%		2.19E-02	4.8%
DUPLICATE 1	S94T283	Sr-90						2.15E-02	4.2%
SAMPLE 2	S94T284	Sr-90	2.21E+00	2.10E+00	2.16E+00	4.8%		2.11E-02	4.3%
DUPLICATE 2	S94T284	Sr-90						2.13E-02	4.4%
STANDARD END									
	STD ID:	STD VOL.:							

NARRATIVE: **Analyst Comments:**

Chemist Comments:

DETECTION LIMITS ARE ADJUSTED FOR DIFFERENT SAMPLE SIZES.
* RESULTS FOR STANDARDS ARE IN µCi/mL

Form Completed By:	MC BIERMAN	Signature:	[signature]	Date:	01/17/95
Chemist Approval:	SL FITZGERALD	Signature:	[signature]	Date:	1-18-95

Revision 2.1

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

LAB LEADER INFO:	
Method:	LA-220-101(D-1)
Test Code	@SR90-01
Matrix:	SOLID
Work List #	387
Batch #	
Prepared By:	MC BIERMAN
Date Complete:	01/17/95
Time Complete:	11:00
Chemist:	SL FITZGERALD
Analyst:	AKL
Analysis Date:	01/13/95
Detector Number:	12
Instrument Code:	WB27811
Rerun:	
Sample Prep:	
Sample Point:	
Book Number:	

Sample Type	Sample #
STANDARD	
BLANK	
SAMPLE 1	S94T283
DUPLICATE 1	S94T283
SAMPLE 2	S94T284
DUPLICATE 2	S94T284
ST-END	

PRINT

18 76

TECH INFO:

Liquids Standard Run

INPUT	
TOTAL COUNTS	
COUNT TIME in MINUTES	
BACKGROUND in cpm	
SAMPLE VOLUME in mL	
DILUTION FACTOR	
DIGEST DILUTION FACTOR	
SEPARATION TIME	
SEPARATION DATE	
TIME OF COUNT	
DATE OF COUNT	
CARRIER ADDED in mL	
GROSS WEIGHT	
TARE WEIGHT	
STANDARD VALUE	

RESULT	
SAMPLE COUNT RATE	
CRITICAL LEVEL	
NET WEIGHT	
DELTA TIME (hours)	
SR-90 EFFICIENCY FACTOR	
Y-90 EFFICIENCY FACTOR	
Rmax	
DETECTION LIMIT	
Sr-89/90 CONC in µCi/mL	
Relative Counting Error	
Percent Carrier Recovery	

Solid-Blank Run:

INPUT	
TOTAL COUNTS	
COUNT TIME in MINUTES	
BACKGROUND in cpm	
SAMPLE VOLUME in mL	
DILUTION FACTOR	
DIGEST FACTOR (g/L)	
SEPARATION TIME	
SEPARATION DATE	
TIME OF COUNT	
DATE OF COUNT	
CARRIER ADDED in mL	
GROSS WEIGHT	
TARE WEIGHT	

RESULT	
SAMPLE COUNT RATE	
CRITICAL LEVEL	
NET WEIGHT	
DELTA TIME (hours)	
SR-90 EFFICIENCY FACTOR	
Y-90 EFFICIENCY FACTOR	
Rmax	
DETECTION LIMIT	
Sr-89/90 CONC in µCi/g	
Relative Counting Error	
Percent Carrier Recovery	

Solid-Sample Run 2:

INPUT	
TOTAL COUNTS	2154
COUNT TIME in MINUTES	10
BACKGROUND in cpm	3
SAMPLE VOLUME in mL	1
DILUTION FACTOR	101
DIGEST FACTOR (g/L)	10.2424
SEPARATION TIME	12:59
SEPARATION DATE	01/13/95
TIME OF COUNT	18:45
DATE OF COUNT	01/13/95
CARRIER ADDED in mL	1
GROSS WEIGHT	7.0631
TARE WEIGHT	6.9671

RESULT	
SAMPLE COUNT RATE	2.13E+02
CRITICAL LEVEL	9.71E-01
NET WEIGHT	0.0960
DELTA TIME (hours)	5.77
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.03
Sr-89/90 CONC in µCi/g	2.21E+00
Relative Counting Error	4.3%
Percent Carrier Recovery	96.0%

Solid-Duplicate Run 2:

INPUT	
TOTAL COUNTS	2031
COUNT TIME in MINUTES	10
BACKGROUND in cpm	3
SAMPLE VOLUME in mL	1
DILUTION FACTOR	101
DIGEST FACTOR (g/L)	10.1256
SEPARATION TIME	12:59
SEPARATION DATE	01/13/95
TIME OF COUNT	18:57
DATE OF COUNT	01/13/95
CARRIER ADDED in mL	1
GROSS WEIGHT	6.9123
TARE WEIGHT	6.8165

RESULT	
SAMPLE COUNT RATE	2.01E+02
CRITICAL LEVEL	9.71E-01
NET WEIGHT	0.0958
DELTA TIME (hours)	5.97
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.03
Sr-89/90 CONC in µCi/g	2.10E+00
Relative Counting Error	4.4%
Percent Carrier Recovery	95.8%

Solid-Sample Run:

INPUT	
TOTAL COUNTS	1779
COUNT TIME in MINUTES	10
BACKGROUND in cpm	3
SAMPLE VOLUME in mL	1
DILUTION FACTOR	101
DIGEST FACTOR (g/L)	9.9601
SEPARATION TIME	12:55
SEPARATION DATE	01/13/95
TIME OF COUNT	18:21
DATE OF COUNT	01/13/95
CARRIER ADDED in mL	1
GROSS WEIGHT	7.0126
TARE WEIGHT	6.9173

RESULT	
SAMPLE COUNT RATE	1.75E+02
CRITICAL LEVEL	9.71E-01
NET WEIGHT	0.0953
DELTA TIME (hours)	5.43
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.03
Sr-89/90 CONC in µCi/g	1.89E+00
Relative Counting Error	4.8%
Percent Carrier Recovery	95.3%

Solid-Duplicate Run:

INPUT	
TOTAL COUNTS	2259
COUNT TIME in MINUTES	10
BACKGROUND in cpm	3
SAMPLE VOLUME in mL	1
DILUTION FACTOR	101
DIGEST FACTOR (g/L)	9.962
SEPARATION TIME	12:55
SEPARATION DATE	01/13/95
TIME OF COUNT	18:34
DATE OF COUNT	01/13/95
CARRIER ADDED in mL	1
GROSS WEIGHT	7.0632
TARE WEIGHT	6.9661

RESULT	
SAMPLE COUNT RATE	2.23E+02
CRITICAL LEVEL	9.71E-01
NET WEIGHT	0.0971
DELTA TIME (hours)	5.65
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.03
Sr-89/90 CONC in µCi/g	2.36E+00
Relative Counting Error	4.2%
Percent Carrier Recovery	97.1%

Liquids Standard End

INPUT	
TOTAL COUNTS	
COUNT TIME in MINUTES	
BACKGROUND in cpm	
SAMPLE VOLUME in mL	
DILUTION FACTOR	
DIGEST DILUTION FACTOR	
SEPARATION TIME	
SEPARATION DATE	
TIME OF COUNT	
DATE OF COUNT	
CARRIER ADDED in mL	
GROSS WEIGHT	
TARE WEIGHT	
STANDARD VALUE	

RESULT	
SAMPLE COUNT RATE	
CRITICAL LEVEL	
NET WEIGHT	
DELTA TIME (hours)	
SR-90 EFFICIENCY FACTOR	
Y-90 EFFICIENCY FACTOR	
Rmax	
DETECTION LIMIT	
Sr-89/90 CONC in µCi/mL	
Relative Counting Error	
Percent Carrier Recovery	

Form Completed By:	MC BIERMAN	Signature:	[signature]	Date:	17-Jan-95
Chemist Approval:	SL FITZGERALD	Signature:	[signature]	Date:	1-18-95

Revision 2.1

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

LA-220-101 / D-1 **Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 104 (D-1)**

							SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA		1.000
SAMPLE	TOTAL COUNTS	(TC)	1779	GROSS WEIGHT	(W2)		7.0126
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		6.9173
387	BACKGROUND in cpm	(BKG)	2.6	NET WEIGHT	(W3)		0.0953
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)		5.43
@SR90-01	DILUTION FACTOR	(DF)	101				
Matrix	DIGEST FACTOR (g/L)	DDF	9.9601				
SOLID	SAMPLE COUNT RATE	(Rs)	175.30	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Sample #	CRITICAL LEVEL	(Lc)	0.97	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
S94T283	SEPARATION TIME	(ST)	12.55	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	01/13/95	DETECTION LIMIT	(Ld)		2.03
WB27811	TIME OF COUNT	(TOC)	18.21	Sr-89/90 CONC in µCi/g			1.8900E+00
Analyst	DATE OF COUNT	(DOC)	01/13/95				
AKL							
Date							
01/17/95							
Time							
11:00							

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

v RESULTS v

Sr-89/90 CONCENTRATION =	1.89E+00	µCi/g
RELATIVE COUNTING ERROR =	4.8%	
PERCENT CARRIER RECOVERY =	95.3%	

DETECTION LEVEL

2.19E-02 µCi/g

Data Entry by:	MC BIERMAN	Date:	17-Jan-95
Approved by:	SL FITZGERALD	Date:	1-18-95

Form WB Rev. 2.1 220-10n_WB Page 1 of 1

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

LA-220-101 / D-1 **Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 104 (D-1)**

							DUPLICATE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA		1.000
DUPLICATE	TOTAL COUNTS	(TC)	2259	GROSS WEIGHT	(W2)		7.0632
Work Unit	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		6.9661
387	BACKGROUND in cpm	(BKG)	2.6	NET WEIGHT	(W3)		0.0971
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)		5.65
@SR90-01	DILUTION FACTOR	(DF)	101				
Matrix	DIGEST FACTOR (g/L)	DDF	9.962				
SOLID	SAMPLE COUNT RATE	(Rs)	223.30	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Sample #	CRITICAL LEVEL	(Lc)	0.97	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
S94T283	SEPARATION TIME	(ST)	12:55	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	01/13/95	DETECTION LIMIT	(Ld)		2.03
WB27811	TIME OF COUNT	(TOC)	18:34	Sr-89/90 CONC in µCi/g			2.3570E+00
Analyst	DATE OF COUNT	(DOC)	01/13/95				
AKL							
Date							
01/17/95							
Time							
11:00							

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

v RESULTS v

Sr-89/90 CONCENTRATION	=	2.36E+00	µCi/g
RELATIVE COUNTING ERROR	=	4.2%	
PERCENT CARRIER RECOVERY	=	97.1%	

DETECTION LEVEL

2.15E-02 µCi/g

Data Entry by:	MC BIERMAN		Date:	17-Jan-95
Approved by:	SL FITZGERALD		Date:	1-18-95

Form WB Rev. 2.1 220-10n_WB Page 1 of 1

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

LA-220-101 / D-1 **Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 104 (D-1)**

							SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA		1.000
SAMPLE	TOTAL COUNTS	(TC)	2154	GROSS WEIGHT	(W2)		7.0631
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		6.9671
387	BACKGROUND in cpm	(BKG)	2.6	NET WEIGHT	(W3)		0.0960
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)		5.77
@SR90-01	DILUTION FACTOR	(DF)	101				
Matrix	DIGEST DILUTION FACTOR	DDF	10.2425				
SOLID	SAMPLE COUNT RATE	(Rs)	212.80	SR-90 EFFICIENCY FACTO	(C1)		0.4180
Sample #	CRITICAL LEVEL	(Lc)	0.97	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
S94T284	SEPARATION TIME	(ST)	12:59	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	01/13/95	DETECTION LIMIT	(Ld)		2.03
WB27B11	TIME OF COUNT	(TOC)	18:45	Sr-89/90 CONC in µCi/g			2.2070E+00
Analyst	DATE OF COUNT	(DOC)	01/13/95				
AKL							
Date							
01/17/95							
Time							
11:00							

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

v RESULTS v

Sr-89/90 CONCENTRATION	=	2.21E+00	µCi/g
RELATIVE COUNTING ERROR	=	4.3%	
PERCENT CARRIER RECOVERY	=	96.0%	

DETECTION LEVEL

2.11E-02 µCi/g

Data Entry by:	MC BIERMAN		Date:	17-Jan-95
Approved by:	SL FITZGERALD		Date:	1-18-95

Form WB Rev. 2.1 220-10n_WB Page 1 of 1

LA-220-101 / D-1 **Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 104 (D-1)**

Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA		DUPLICATE 1.000
DUPLICATE	TOTAL COUNTS	(TC)	2031	GROSS WEIGHT	(W2)		6.9123
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		6.8165
387	BACKGROUND in cpm	(BKG)	2.6	NET WEIGHT	(W3)		0.0958
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)		5.97
@SR90-01	DILUTION FACTOR	(DF)	101				
Matrix	DIGEST DILUTION FACTOR	(Dg/L)	10.1256				
SOLID	SAMPLE COUNT RATE	(Rs)	200.50	SR-90 EFFICIENCY FACTO	(C1)		0.4180
Sample #	CRITICAL LEVEL	(Lc)	0.97	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
S94T284	SEPARATION TIME	(ST)	12:59	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	01/13/95	DETECTION LIMIT	(Ld)		2.03
WB27811	TIME OF COUNT	(TOC)	18:57	Sr-89/90 CONC in µCi/g			2.1034E+00
Analyst	DATE OF COUNT	(DOC)	01/13/95				
AKL							
Date							
01/17/95							
Time							
11:00							

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

v RESULTS v

Sr-89/90 CONCENTRATION =	2.10E+00	µCi/g
RELATIVE COUNTING ERROR =	4.4%	
PERCENT CARRIER RECOVERY =	95.8%	

DETECTION LEVEL
2.13E-02 µCi/g

Data Entry by:	MC BIERMAN		Date:	17-Jan-95
Approved by:	SL FITZGERALD		Date:	1-18-95

Form WB Rev. 2.1 220-10n_WB Page 1 of 1

Sy103

LABCORE Data Entry Template for Worklist# 459

Analyst: DCD **Instrument:** AB00 12 **Method:** LA-220-101 D-1

Worklist Comment: Data re-entry for sample 282 and 283. SLF

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

Seg	Type	Sample#	Rep	Al	Test		Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@SR90-01	SR90-01	SOLID			N/A	uCi/g
1	BLNK-PREP				@SR90-01	SR90-01C	SOLID			N/A	% Rec
1	BLNK-PREP				@SR90-01	SR90-01E	SOLID			N/A	% Ct.
2	STD				@SR90-01	SR90-01	SOLID			N/A	uCi/g
2	STD				@SR90-01	SR90-01C	SOLID			N/A	% Rec
2	STD				@SR90-01	SR90-01E	SOLID			N/A	% Ct.
3	SAMPLE	S94T000282	0	R	@SR90-01	SR90-01	SOLID	N/A			uCi/g
3	SAMPLE	S94T000282	0	R	@SR90-01	SR90-01C	SOLID	N/A			% Rec
3	SAMPLE	S94T000282	0	R	@SR90-01	SR90-01E	SOLID	N/A			% Ct.
4	DUP	S94T000282	0	R	@SR90-01	SR90-01	SOLID			N/A	uCi/g
4	DUP	S94T000282	0	R	@SR90-01	SR90-01C	SOLID			N/A	% Rec
4	DUP	S94T000282	0	R	@SR90-01	SR90-01E	SOLID			N/A	% Ct.
5	SAMPLE	S94T000283	0	R	@SR90-01	SR90-01	SOLID	N/A			uCi/g
5	SAMPLE	S94T000283	0	R	@SR90-01	SR90-01C	SOLID	N/A			% Rec
5	SAMPLE	S94T000283	0	R	@SR90-01	SR90-01E	SOLID	N/A			% Ct.
6	DUP	S94T000283	0	R	@SR90-01	SR90-01	SOLID			N/A	uCi/g
6	DUP	S94T000283	0	R	@SR90-01	SR90-01C	SOLID			N/A	% Rec
6	DUP	S94T000283	0	R	@SR90-01	SR90-01E	SOLID			N/A	% Ct.

Data Entry Comments: Data re-entry for worklist 422 (attached).

1-24-95

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

LABCORE Data Entry Template for Worklist# 459

Analyst: DCD **Instrument:** AB00 12 **Method:** LA-220-101 D-1

Worklist Comment: Data re-entry for sample 282 and 283. SLF WHC-SD-WM-DP-074, REV. 0

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

Final page for worklist # 459

Analyst Signature

1-24-95
Date

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist# 422

Analyst: DcD **Instrument:** AB00 12 **Method:** LA-220-101 / D-1

Worklist Comment: Sr-90 Use .100 mL sample size. SLF WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test		Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@SR90-01	SR90-01	SOLID			N/A	uCi/g
1	BLNK-PREP				@SR90-01	SR90-01C	SOLID			N/A	% Rec
1	BLNK-PREP				@SR90-01	SR90-01E	SOLID			N/A	% Ct.
2	STD	#51B52			@SR90-01	SR90-01	SOLID			N/A	uCi/g
2	STD				@SR90-01	SR90-01C	SOLID			N/A	% Rec
2	STD				@SR90-01	SR90-01E	SOLID			N/A	% Ct.
3	SAMPLE	S94T000282	0	R	@SR90-01	SR90-01	SOLID	N/A			uCi/g
3	SAMPLE	S94T000282	0	R	@SR90-01	SR90-01C	SOLID	N/A			% Rec
3	SAMPLE	S94T000282	0	R	@SR90-01	SR90-01E	SOLID	N/A			% Ct.
4	DUP	S94T000282	0	R	@SR90-01	SR90-01	SOLID			N/A	uCi/g
4	DUP	S94T000282	0	R	@SR90-01	SR90-01C	SOLID			N/A	% Rec
4	DUP	S94T000282	0	R	@SR90-01	SR90-01E	SOLID			N/A	% Ct.
5	SAMPLE	S94T000283	0	R	@SR90-01	SR90-01	SOLID	N/A			uCi/g
5	SAMPLE	S94T000283	0	R	@SR90-01	SR90-01C	SOLID	N/A			% Rec
5	SAMPLE	S94T000283	0	R	@SR90-01	SR90-01E	SOLID	N/A			% Ct.
6	DUP	S94T000283	0	R	@SR90-01	SR90-01	SOLID			N/A	uCi/g
6	DUP	S94T000283	0	R	@SR90-01	SR90-01C	SOLID			N/A	% Rec
6	DUP	S94T000283	0	R	@SR90-01	SR90-01E	SOLID			N/A	% Ct.

Data Entry Comments:

Data rejected in error — re-entered under worklist 459. [illegible] 1-24-95

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

LABCORE Data Entry Template for Worklist# 422

Analyst: DCD **Instrument:** AB00 _____ **Method:** LA-220-101 / D-1

Worklist Comment: Sr-90 Use .100 mL sample size. SLF WHC-SD-WM-DP-074, REV. 0

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

Final page for worklist # 422

David C Dunham
Analyst Signature

1-22-95 / 0700
Date

1-23-95

Data Entry Comments:

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

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY
RADCHEM ANALYTICAL BATCH AND SUMMARY SHEET
STRONTIUM-SOLIDS ERR

TEST CODE:	@SR90-01	SAMPLE POINT:	0
INSTRUMENT:	WB27811	SAMPLE PREP:	0
ANALYST:	DC DUNHAM	BATCH ID:	0
		ANALYSIS DATE:	January 23, 1995

		UNITS:	µCi/g						
SAMPLE TYPE	SAMPLE NO.	ANALYTE	RESULT #1	DUPLICATE	AVERAGE	RPD%	% REC	DET LIM	%CT ER
STANDARD *	51B52	Sr-90	1.04E-03				93.4%	2.07E-06	1.9%
BLANK	S94T282	Sr-90	1.67E-03					2.00E-03	96.8%
SAMPLE 1	S94T282	Sr-90	1.65E+00	9.54E-01	1.30E+00	53.3%		2.05E-03	1.5%
DUPLICATE 1	S94T282	Sr-90						2.07E-03	2.0%
SAMPLE 2	S94T283	Sr-90	1.88E+00	2.43E+00	2.15E+00	26.6%		2.08E-03	1.4%
DUPLICATE 2	S94T283	Sr-90						2.07E-03	1.3%
STANDARD END									
	STD ID:	STD VOL.:							
STANDARD	0	1.000							

NARRATIVE: Analyst Comments:

Chemist Comments:

DETECTION LIMITS ARE ADJUSTED FOR DIFFERENT SAMPLE SIZES.
* RESULTS FOR STANDARDS ARE IN µCi/mL

Form Completed By:	MC BIERMAN	Signature:		Date:	01/23/95
Chemist Approval:	SL FITZGERALD	Signature:		Date:	1/24/95

Revision 2.1

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

LAB LEADER INFO:	
Method:	LA 220-101(D-1)
Test Code	@SR90-01
Matrix:	SOLID
Work List #	422
Batch #	
Prepared By:	MC BIERMAN
Date Complete:	01/23/95
Time Complete:	10:00
Chemist:	SL FITZGERALD
Analyst:	DC DUNHAM
Analysis Date:	01/22/95
Detector Number:	12
Instrument Code:	WB27811
Rerun:	
Sample Prep:	
Sample Point:	
Book Number:	

Sample Type	Sample #
STANDARD	51B52
BLANK	S94T282
SAMPLE 1	S94T282
DUPLICATE 1	S94T282
SAMPLE 2	S94T283
DUPLICATE 2	S94T283
ST-END	

PRINT

TECH INFO:

Liquids Standard Run

INPUT	
TOTAL COUNTS	10236
COUNT TIME in MINUTES	10
BACKGROUND in cpm	3
SAMPLE VOLUME in mL	1
DILUTION FACTOR	1
DIGEST DILUTION FACTOR	1
SEPARATION TIME	05:30
SEPARATION DATE	01/22/95
TIME OF COUNT	13:00
DATE OF COUNT	01/22/95
CARRIER ADDED in mL	1
GROSS WEIGHT	7.0916
TARE WEIGHT	6.994
STANDARD VALUE	1.1104

RESULT	
SAMPLE COUNT RATE	1.02E+03
CRITICAL LEVEL	9.71E-01
NET WEIGHT	0.0976
DELTA TIME (hours)	7.50
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.03
Sr-89/90 CONC in µCi/mL	1.04E-03
Relative Counting Error	1.9%
Percent Carrier Recovery	97.6%

Solid-Blank Run:

INPUT	
TOTAL COUNTS	43
COUNT TIME in MINUTES	10
BACKGROUND in cpm	3
SAMPLE VOLUME in mL	0.1
DILUTION FACTOR	1
DIGEST FACTOR (g/L)	10.0594
SEPARATION TIME	05:30
SEPARATION DATE	01/22/95
TIME OF COUNT	13:12
DATE OF COUNT	01/22/95
CARRIER ADDED in mL	1
GROSS WEIGHT	7.0036
TARE WEIGHT	6.9037

RESULT	
SAMPLE COUNT RATE	1.70E+00
CRITICAL LEVEL	9.71E-01
NET WEIGHT	0.0999
DELTA TIME (hours)	7.70
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.03
Sr-89/90 CONC in µCi/g	1.67E-03
Relative Counting Error	95.8%
Percent Carrier Recovery	99.9%

Solid-Sample Run 2:

INPUT	
TOTAL COUNTS	18388
COUNT TIME in MINUTES	10
BACKGROUND in cpm	3
SAMPLE VOLUME in mL	0.1
DILUTION FACTOR	1
DIGEST FACTOR (g/L)	9.9601
SEPARATION TIME	05:30
SEPARATION DATE	01/22/95
TIME OF COUNT	13:55
DATE OF COUNT	01/22/95
CARRIER ADDED in mL	1
GROSS WEIGHT	7.9914
TARE WEIGHT	7.8948

RESULT	
SAMPLE COUNT RATE	1.84E+03
CRITICAL LEVEL	9.71E-01
NET WEIGHT	0.0966
DELTA TIME (hours)	8.42
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.03
Sr-89/90 CONC in µCi/g	1.88E+00
Relative Counting Error	1.4%
Percent Carrier Recovery	96.6%

Solid-Duplicate Run 2:

INPUT	
TOTAL COUNTS	23798
COUNT TIME in MINUTES	10
BACKGROUND in cpm	3
SAMPLE VOLUME in mL	0.1
DILUTION FACTOR	1
DIGEST FACTOR (g/L)	9.962
SEPARATION TIME	05:30
SEPARATION DATE	01/22/95
TIME OF COUNT	14:05
DATE OF COUNT	01/22/95
CARRIER ADDED in mL	1
GROSS WEIGHT	7.1499
TARE WEIGHT	7.0534

RESULT	
SAMPLE COUNT RATE	2.38E+03
CRITICAL LEVEL	9.71E-01
NET WEIGHT	0.0965
DELTA TIME (hours)	8.58
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.03
Sr-89/90 CONC in µCi/g	2.43E+00
Relative Counting Error	1.3%
Percent Carrier Recovery	96.5%

Solid-Sample Run:

INPUT	
TOTAL COUNTS	16401
COUNT TIME in MINUTES	10
BACKGROUND in cpm	3
SAMPLE VOLUME in mL	0.1
DILUTION FACTOR	1
DIGEST FACTOR (g/L)	10.0594
SEPARATION TIME	05:30
SEPARATION DATE	01/22/95
TIME OF COUNT	13:25
DATE OF COUNT	01/22/95
CARRIER ADDED in mL	1
GROSS WEIGHT	8.0504
TARE WEIGHT	7.9528

RESULT	
SAMPLE COUNT RATE	1.64E+03
CRITICAL LEVEL	9.71E-01
NET WEIGHT	0.0976
DELTA TIME (hours)	7.92
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.03
Sr-89/90 CONC in µCi/g	1.65E+00
Relative Counting Error	1.5%
Percent Carrier Recovery	97.6%

Solid-Duplicate Run:

INPUT	
TOTAL COUNTS	9418
COUNT TIME in MINUTES	10
BACKGROUND in cpm	3
SAMPLE VOLUME in mL	0.1
DILUTION FACTOR	1
DIGEST FACTOR (g/L)	10.0282
SEPARATION TIME	05:30
SEPARATION DATE	01/22/95
TIME OF COUNT	13:40
DATE OF COUNT	01/22/95
CARRIER ADDED in mL	1
GROSS WEIGHT	8.0645
TARE WEIGHT	7.9678

RESULT	
SAMPLE COUNT RATE	9.39E+02
CRITICAL LEVEL	9.71E-01
NET WEIGHT	0.0967
DELTA TIME (hours)	8.17
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.03
Sr-89/90 CONC in µCi/g	9.54E-01
Relative Counting Error	2.0%
Percent Carrier Recovery	96.7%

Liquids Standard End

INPUT	
TOTAL COUNTS	
COUNT TIME in MINUTES	
BACKGROUND in cpm	
SAMPLE VOLUME in mL	
DILUTION FACTOR	
DIGEST DILUTION FACTOR	
SEPARATION TIME	
SEPARATION DATE	
TIME OF COUNT	
DATE OF COUNT	
CARRIER ADDED in mL	
GROSS WEIGHT	
TARE WEIGHT	
STANDARD VALUE	

RESULT	
SAMPLE COUNT RATE	
CRITICAL LEVEL	
NET WEIGHT	
DELTA TIME (hours)	
SR-90 EFFICIENCY FACTOR	
Y-90 EFFICIENCY FACTOR	
Rmax	
DETECTION LIMIT	
Sr-89/90 CONC in µCi/mL	
Relative Counting Error	
Percent Carrier Recovery	

Form Completed By:	MC BIERMAN	Signature:	[illegible]	Date:	23-Jan-95
Chemist Approval:	SL FITZGERALD	Signature:	[illegible]	Date:	1/24/95

Revision 2.1

1888

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

LA-220-101 / D-1 **Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 104 (D-1)**

							BLANK
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
BLANK	TOTAL COUNTS	(TC)	43	GROSS WEIGHT	(W2)		7.0036
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		6.9037
422	BACKGROUND in cpm	(BKG)	2.6	NET WEIGHT	(W3)		0.0999
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)		7.70
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST FACTOR (g/L)	DDF	10.0594				
SOLID	SAMPLE COUNT RATE	(Rs)	1.70	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Sample #	CRITICAL LEVEL	(Lc)	0.97	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
S94T282	SEPARATION TIME	(ST)	06:30	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	01/22/95	DETECTION LIMIT	(Ld)		2.03
WB27811	TIME OF COUNT	(TOC)	13:12	Sr-89/90 CONC in µCi/g			1.6741E-03
Analyst	DATE OF COUNT	(DOC)	01/22/95				
DC DUNHAM							
Date							
01/23/95							
Time							
10:00							

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 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

v RESULTS v

Sr-89/90 CONCENTRATION	=	1.67E-03	µCi/g
RELATIVE COUNTING ERROR	=	95.8%	
PERCENT CARRIER RECOVERY	=	99.9%	

DETECTION LEVEL

2.00E-03 µCi/g

Data Entry by:	MC BIERMAN	Date:	23-Jan-95
Approved by:	SL FITZGERALD	Date:	1/28/95

Form WB Rev. 2.1 220-10n_WB Page 1 of 1

Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 104 (D-1) LIQUIDS

							STANDARD
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA		1.000
STANDARD	TOTAL COUNTS	(TC)	10236	GROSS WEIGHT	(W2)		7.0916
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		6.9940
422	BACKGROUND in cpm	(BKG)	2.6	NET WEIGHT	(W3)		0.0976
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)		7.50
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST DILUTION FACTOR	DDF	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	1021.00	SR-90 EFFICIENCY FACTO	(C1)		0.4180
Sample #	CRITICAL LEVEL	(Lc)	0.97	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
51B52	SEPARATION TIME	(ST)	05:30	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	01/22/95	DETECTION LIMIT	(Ld)		2.03
WB27811	TIME OF COUNT	(TOC)	13:00	Sr-89/90 CONC. in µCi/L =			1.0374E+00
Analyst	DATE OF COUNT	(DOC)	01/22/95				
DC DUNHAM							
Date							
01/23/95							
Time							
10:00							

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

v RESULTS v

Sr-89/90 CONCENTRATION =	1.04E-03	µCi/mL
RELATIVE COUNTING ERROR =	1.9%	
PERCENT CARRIER RECOVERY =	97.6%	

DETECTION LEVEL
2.07E-06 µCi/L

Data Entry by:	MC BIERMAN		Date:	23-Jan-95
Approved by:	SL FITZGERALD		Date:	1/24/95

Form WB Rev. 2.1 220-10n_WB

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

LA-220-101 / D-1 **Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 104 (D-1)**

							SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
SAMPLE	TOTAL COUNTS	(TC)	16401	GROSS WEIGHT	(W2)		8.0504
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.9528
422	BACKGROUND in cpm	(BKG)	2.6	NET WEIGHT	(W3)		0.0976
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)		7.92
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST FACTOR (g/L)	DDF	10.0594				
SOLID	SAMPLE COUNT RATE	(Rs)	1637.50	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Sample #	CRITICAL LEVEL	(Lc)	0.97	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
S94T282	SEPARATION TIME	(ST)	05:30	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	01/22/95	DETECTION LIMIT	(Ld)		2.03
WB27811	TIME OF COUNT	(TOC)	13:25	Sr-89/90 CONC in µCi/g			1.6469E+00
Analyst	DATE OF COUNT	(DOC)	01/22/95				
DC DUNHAM							
Date							
01/23/95							
Time							
10:00							

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

v RESULTS v

Sr-89/90 CONCENTRATION =	1.65E+00	µCi/g
RELATIVE COUNTING ERROR =	1.5%	
PERCENT CARRIER RECOVERY =	97.6%	

DETECTION LEVEL

2.05E-03 µCi/g

Data Entry by:	MC BIERMAN		Date:	23-Jan-95
Approved by:	SL FITZGERALD		Date:	1/24/95

Form WB Rev. 2.1 220-10n_WB Page 1 of 1

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

LA-220-101 / D-1 **Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 104 (D-1)**

							DUPLICATE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA		1.000
DUPLICATE	TOTAL COUNTS	(TC)	9418	GROSS WEIGHT	(W2)		8.0645
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.9678
422	BACKGROUND in cpm	(BKG)	2.6	NET WEIGHT	(W3)		0.0967
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)		8.17
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST FACTOR (g/L)	DDF	10.0262				
SOLID	SAMPLE COUNT RATE	(Rs)	939.20	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Sample #	CRITICAL LEVEL	(Lc)	0.97	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
S94T282	SEPARATION TIME	(ST)	05:30	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	01/22/95	DETECTION LIMIT	(Ld)		2.03
WB27811	TIME OF COUNT	(TOC)	13:40	Sr-89/90 CONC in µCi/g			9.5395E-01
Analyst	DATE OF COUNT	(DOC)	01/22/95				
DC DUNHAM							
Date							
01/23/95							
Time							
10:00							

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

v RESULTS v

Sr-89/90 CONCENTRATION	=	9.54E-01	µCi/g
RELATIVE COUNTING ERROR	=	2.0%	
PERCENT CARRIER RECOVERY	=	96.7%	

DETECTION LEVEL

2.07E-03 µCi/g

Data Entry by:	MC BIERMAN		Date:	23-Jan-95
Approved by:	SL FITZGERALD		Date:	1/24/95

Form WB Rev. 2.1 220-10n_WB Page 1 of 1

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

LA-220-101 / D-1 **Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 104 (D-1)**

							SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA		1.000
SAMPLE	TOTAL COUNTS	(TC)	18388	GROSS WEIGHT	(W2)		7.9914
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.8948
422	BACKGROUND in cpm	(BKG)	2.6	NET WEIGHT	(W3)		0.0966
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)		8.42
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST DILUTION FACTOR	DDF	9.9601				
SOLID	SAMPLE COUNT RATE	(Rs)	1836.20	SR-90 EFFICIENCY FACTO	(C1)		0.4180
Sample #	CRITICAL LEVEL	(Lc)	0.97	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
S94T283	SEPARATION TIME	(ST)	05:30	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	01/22/95	DETECTION LIMIT	(Ld)		2.03
WB27811	TIME OF COUNT	(TOC)	13:55	Sr-89/90 CONC in µCi/g			1.8750E+00
Analyst	DATE OF COUNT	(DOC)	01/22/95				
DC DUNHAM							
Date							
01/23/95							
Time							
10:00							

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

v RESULTS v

Sr-89/90 CONCENTRATION	=	1.88E+00	µCi/g
RELATIVE COUNTING ERROR	=	1.4%	
PERCENT CARRIER RECOVERY	=	96.6%	

DETECTION LEVEL

2.08E-03 µCi/g

Data Entry by:	MC BIERMAN		Date:	23-Jan-95
Approved by:	SL FITZGERALD		Date:	1/24/95

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

LA-220-101 / D-1 **Sr-89/90 : LA-220-101 (D-1), 102 (E-2), 104 (D-1)**

							DUPLICATE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
DUPLICATE	TOTAL COUNTS	(TC)	23798	GROSS WEIGHT	(W2)		7.1499
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.0534
422	BACKGROUND in cpm	(BKG)	2.6	NET WEIGHT	(W3)		0.0965
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)		8.58
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST DILUTION FACTOR	(Dg/L)	9.962				
SOLID	SAMPLE COUNT RATE	(Rs)	2377.20	SR-90 EFFICIENCY FACTO	(C1)		0.4180
Sample #	CRITICAL LEVEL	(Lc)	0.97	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
S94T283	SEPARATION TIME	(ST)	05:30	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	01/22/95	DETECTION LIMIT	(Ld)		2.03
WB27811	TIME OF COUNT	(TOC)	14:05	Sr-89/90 CONC in µCi/g			2.4255E+00
Analyst	DATE OF COUNT	(DOC)	01/22/95				
DC DUNHAM							
Date							
01/23/95							
Time							
10:00							

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

v RESULTS v

Sr-89/90 CONCENTRATION	=	2.43E+00	µCi/g
RELATIVE COUNTING ERROR	=	1.3%	
PERCENT CARRIER RECOVERY	=	96.5%	

DETECTION LEVEL
2.07E-03 µCi/g

Data Entry by:	MC BIERMAN		Date:	23-Jan-95
Approved by:	SL FITZGERALD		Date:	1/24/95

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

LABCORE Data Entry Template for Worklist# 820

Analyst: MJ **Instrument:** AB00 AL 11070 **Book #** 51B52

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

Worklist Comment: Determine sample size using Ludlum. SLF

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

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				@SR90-01 SR90-01	LIQUID			N/A	uCi/mL
		1	STD				@SR90-01 SR90-01C	LIQUID			N/A	% Recovery
		1	STD				@SR90-01 SR90-01E	LIQUID			N/A	% Ct. Error
		2	BLNK-PREP				@SR90-01 SR90-01	LIQUID			N/A	uCi/mL
		2	BLNK-PREP				@SR90-01 SR90-01C	LIQUID			N/A	% Recovery
		2	BLNK-PREP				@SR90-01 SR90-01E	LIQUID			N/A	% Ct. Error
		3	BLNK/BKG				@SR90-01 SR90-01	LIQUID			N/A	uCi/mL
94000020	SY-103	4	SAMPLE	S95T000328	0		@SR90-01 SR90-01	LIQUID	N/A			uCi/mL
94000020	SY-103	4	SAMPLE	S95T000328	0		@SR90-01 SR90-01C	LIQUID	N/A			% Recovery
94000020	SY-103	4	SAMPLE	S95T000328	0		@SR90-01 SR90-01E	LIQUID	N/A			% Ct. Error
94000020	SY-103	5	DUP	S95T000328	0		@SR90-01 SR90-01	LIQUID			N/A	uCi/mL
94000020	SY-103	5	DUP	S95T000328	0		@SR90-01 SR90-01C	LIQUID			N/A	% Recovery
94000020	SY-103	5	DUP	S95T000328	0		@SR90-01 SR90-01E	LIQUID			N/A	% Ct. Error
94000020	SY-103	6	SAMPLE	S95T000329	0		@SR90-01 SR90-01	LIQUID	N/A			uCi/mL
94000020	SY-103	6	SAMPLE	S95T000329	0		@SR90-01 SR90-01C	LIQUID	N/A			% Recovery
94000020	SY-103	6	SAMPLE	S95T000329	0		@SR90-01 SR90-01E	LIQUID	N/A			% Ct. Error
94000020	SY-103	7	DUP	S95T000329	0		@SR90-01 SR90-01	LIQUID			N/A	uCi/mL
94000020	SY-103	7	DUP	S95T000329	0		@SR90-01 SR90-01C	LIQUID			N/A	% Recovery

Data Entry Comments: Sample 328 will be rerun due to high RPD value. [illegible] 4/7/95

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

LABCORE Data Entry Template for Worklist# 820

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
94000020	SY-103	7	DUP	S95T000329	0		@SR90-01 SR90-01E	LIQUID			N/A	% Ct. Error
94000020	SY-103	8	SAMPLE	S95T000330	0		@SR90-01 SR90-01	LIQUID	N/A			uCi/mL
94000020	SY-103	8	SAMPLE	S95T000330	0		@SR90-01 SR90-01C	LIQUID	N/A			% Recovery
94000020	SY-103	8	SAMPLE	S95T000330	0		@SR90-01 SR90-01E	LIQUID	N/A			% Ct. Error
94000020	SY-103	9	DUP	S95T000330	0		@SR90-01 SR90-01	LIQUID			N/A	uCi/mL
94000020	SY-103	9	DUP	S95T000330	0		@SR90-01 SR90-01C	LIQUID			N/A	% Recovery
94000020	SY-103	9	DUP	S95T000330	0		@SR90-01 SR90-01E	LIQUID			N/A	% Ct. Error
94000020	SY-103	10	SAMPLE	S95T000331	0		@SR90-01 SR90-01	LIQUID	N/A			uCi/mL
94000020	SY-103	10	SAMPLE	S95T000331	0		@SR90-01 SR90-01C	LIQUID	N/A			% Recovery
94000020	SY-103	10	SAMPLE	S95T000331	0		@SR90-01 SR90-01E	LIQUID	N/A			% Ct. Error
94000020	SY-103	11	DUP	S95T000331	0		@SR90-01 SR90-01	LIQUID			N/A	uCi/mL
94000020	SY-103	11	DUP	S95T000331	0		@SR90-01 SR90-01C	LIQUID			N/A	% Recovery
94000020	SY-103	11	DUP	S95T000331	0		@SR90-01 SR90-01E	LIQUID			N/A	% Ct. Error

Final page for worklist # 820

Mike Jones 3.29.95
Analyst Signature **Date**

C.J. Garner 3/30/95
Analyst Signature **Date**

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

Data Entry Comments:

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

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY
RADCHEM ANALYTICAL BATCH AND SUMMARY SHEET
STRONTIUM-LIQUIDS ERR

TEST CODE:	@SR90-01	SAMPLE POINT:	0
INSTRUMENT:	WB27811	SAMPLE PREP:	0
ANALYST:	MCJ	BATCH ID:	0
		ANALYSIS DATE:	March 30, 1995

		UNITS:	µCi/mL						
SAMPLE TYPE	SAMPLE NO.	ANALYTE	RESULT #1	DUPLICATE	AVERAGE	RPD%	% REC	DET LIM	%CT ER
STANDARD *	WORKLIST 820	Sr-90	1.02E-03				92.3%	2.60E-06	2.0%
BLANK	WORKLIST 820	Sr-90	< 3.69E-02					5.18E-02	348.4%
SAMPLE 1	S95T328	Sr-90	5.28E+00	2.86E+00	4.07E+00	59.6%		5.17E-02	4.0%
DUPLICATE 1	S95T328	Sr-90						5.15E-02	5.5%
SAMPLE 2	S95T329	Sr-90	2.50E+00	2.30E+00	2.40E+00	8.4%		5.21E-02	6.0%
DUPLICATE 2	S95T329	Sr-90						5.13E-02	6.2%
STANDARD END									
	STD ID:	STD VOL.:							
STANDARD	51B52	1.000							

NARRATIVE: Analyst Comments:

Chemist Comments:

DETECTION LIMITS ARE ADJUSTED FOR DIFFERENT SAMPLE SIZES.
* RESULTS FOR STANDARDS ARE IN µCi/mL

Form Completed By:	C J OJANEN	Signature:		Date:	03/30/95
Chemist Approval:	SL FITZGERALD	Signature:		Date:	3/30/95

Revision 2.1

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

LAB LEADER INFO:	
Method:	LA-220-101(D-1)
Test Code	@SR90-01
Matrix:	LIQUID
Work List #	820
Batch #	
Prepared By:	C J OJANEN
Date Complete:	03/30/95
Time Complete:	14:00
Chemist:	SL FITZGERALD
Analyst:	MCJ
Analysis Date:	03/29/95
Detector Number:	12
Instrument Code:	WB27811
Rerun:	
Sample Prep:	
Sample Point:	
Book Number:	51B52

Sample Type	Sample #
STANDARD	WORKLIST 820
BLANK	WORKLIST 820
SAMPLE 1	S95T328
DUPLICATE 1	S95T328
SAMPLE 2	S95T329
DUPLICATE 2	S95T329
ST-END	

PRINT

TECH INFO:

Liquids Standard Run

INPUT	
TOTAL COUNTS	9500
COUNT TIME in MINUTES	10
BACKGROUND in cpm	4
SAMPLE VOLUME in mL	1
DILUTION FACTOR	1
DIGEST DILUTION FACTOR	1
SEPARATION TIME	13:25
SEPARATION DATE	03/29/95
TIME OF COUNT	18:30
DATE OF COUNT	03/29/95
CARRIER ADDED in mL	1
GROSS WEIGHT	7.8309
TARE WEIGHT	7.7366
STANDARD VALUE	1.1055

RESULT	
SAMPLE COUNT RATE	9.46E+02
CRITICAL LEVEL	1.16E+00
NET WEIGHT	0.0943
DELTA TIME (hours)	5.08
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.41
Sr-89/90 CONC in µCi/mL	1.02E-03
Relative Counting Error	2.0%
Percent Carrier Recovery	94.3%

Liquids Blank Run

INPUT	
TOTAL COUNTS	42
COUNT TIME in MINUTES	10
BACKGROUND in cpm	4
SAMPLE VOLUME in mL	0.1
DILUTION FACTOR	101
DIGEST DILUTION FACTOR	20
SEPARATION TIME	13:25
SEPARATION DATE	03/29/95
TIME OF COUNT	18:45
DATE OF COUNT	03/29/95
CARRIER ADDED in mL	1
GROSS WEIGHT	7.7975
TARE WEIGHT	7.7022

RESULT	
SAMPLE COUNT RATE	5.00E-01
CRITICAL LEVEL	1.16E+00
NET WEIGHT	0.0953
DELTA TIME (hours)	5.33
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	1.72
DETECTION LIMIT	2.41
Sr-89/90 CONC in µCi/mL	< 3.69E-02
Relative Counting Error	348.4%
Percent Carrier Recovery	95.3%

Liquids Sample Run 2

INPUT	
TOTAL COUNTS	1191
COUNT TIME in MINUTES	10
BACKGROUND in cpm	4
SAMPLE VOLUME in mL	0.1
DILUTION FACTOR	101
DIGEST DILUTION FACTOR	20
SEPARATION TIME	13:30
SEPARATION DATE	03/29/95
TIME OF COUNT	19:30
DATE OF COUNT	03/29/95
CARRIER ADDED in mL	1
GROSS WEIGHT	8.0415
TARE WEIGHT	7.9475

RESULT	
SAMPLE COUNT RATE	1.15E+02
CRITICAL LEVEL	1.16E+00
NET WEIGHT	0.0940
DELTA TIME (hours)	6.00
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.41
Sr-89/90 CONC in µCi/mL	2.50E+00
Relative Counting Error	6.0%
Percent Carrier Recovery	94.0%

Liquids Duplicate Run 2

INPUT	
TOTAL COUNTS	1116
COUNT TIME in MINUTES	10
BACKGROUND in cpm	4
SAMPLE VOLUME in mL	0.1
DILUTION FACTOR	101
DIGEST DILUTION FACTOR	20
SEPARATION TIME	13:30
SEPARATION DATE	03/29/95
TIME OF COUNT	19:40
DATE OF COUNT	03/29/95
CARRIER ADDED in mL	1
GROSS WEIGHT	7.7488
TARE WEIGHT	7.6534

RESULT	
SAMPLE COUNT RATE	1.08E+02
CRITICAL LEVEL	1.16E+00
NET WEIGHT	0.0954
DELTA TIME (hours)	6.17
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.41
Sr-89/90 CONC in µCi/mL	2.30E+00
Relative Counting Error	6.2%
Percent Carrier Recovery	95.4%

Liquids Sample Run

INPUT	
TOTAL COUNTS	2496
COUNT TIME in MINUTES	10
BACKGROUND in cpm	4
SAMPLE VOLUME in mL	0.1
DILUTION FACTOR	101
DIGEST DILUTION FACTOR	20
SEPARATION TIME	13:25
SEPARATION DATE	03/29/95
TIME OF COUNT	19:05
DATE OF COUNT	03/29/95
CARRIER ADDED in mL	1
GROSS WEIGHT	7.7815
TARE WEIGHT	7.6864

RESULT	
SAMPLE COUNT RATE	2.46E+02
CRITICAL LEVEL	1.16E+00
NET WEIGHT	0.0951
DELTA TIME (hours)	5.67
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.41
Sr-89/90 CONC in µCi/mL	5.28E+00
Relative Counting Error	4.0%
Percent Carrier Recovery	95.1%

Liquids Duplicate Run

INPUT	
TOTAL COUNTS	1373
COUNT TIME in MINUTES	10
BACKGROUND in cpm	4
SAMPLE VOLUME in mL	0.1
DILUTION FACTOR	101
DIGEST DILUTION FACTOR	20
SEPARATION TIME	13:25
SEPARATION DATE	03/29/95
TIME OF COUNT	19:17
DATE OF COUNT	03/29/95
CARRIER ADDED in mL	1
GROSS WEIGHT	7.7316
TARE WEIGHT	7.6363

RESULT	
SAMPLE COUNT RATE	1.34E+02
CRITICAL LEVEL	1.16E+00
NET WEIGHT	0.0953
DELTA TIME (hours)	5.87
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.41
Sr-89/90 CONC in µCi/mL	2.86E+00
Relative Counting Error	5.5%
Percent Carrier Recovery	95.3%

Liquids Standard End

INPUT	
TOTAL COUNTS	
COUNT TIME in MINUTES	
BACKGROUND in cpm	
SAMPLE VOLUME in mL	
DILUTION FACTOR	
DIGEST DILUTION FACTOR	
SEPARATION TIME	
SEPARATION DATE	
TIME OF COUNT	
DATE OF COUNT	
CARRIER ADDED in mL	
GROSS WEIGHT	
TARE WEIGHT	
STANDARD VALUE	

RESULT	
SAMPLE COUNT RATE	
CRITICAL LEVEL	
NET WEIGHT	
DELTA TIME (hours)	
SR-90 EFFICIENCY FACTOR	
Y-90 EFFICIENCY FACTOR	
Rmax	
DETECTION LIMIT	
Sr-89/90 CONC in µCi/mL	
Relative Counting Error	
Percent Carrier Recovery	

Form Completed By:	C J OJANEN	Signature:	C J Ojanen	Date:	30-Mar-95
Chemist Approval:	SL FITZGERALD	Signature:	SL Fitzgerald	Date:	3/30/95

Revision 2.1

1598

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

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
STANDARD	TOTAL COUNTS	(TC)	9500	GROSS WEIGHT	(W2)		7.8309
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.7366
820	BACKGROUND in cpm	(BKG)	3.7	NET WEIGHT	(W3)		0.0943
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)		5.08
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST DILUTION FACTOR	DDF	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	946.30	SR-90 EFFICIENCY FACTO	(C1)		0.4180
Sample #	CRITICAL LEVEL	(Lc)	1.16	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
WORKLIST 820	SEPARATION TIME	(ST)	13:25	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	03/29/95	DETECTION LIMIT	(Ld)		2.41
WB27811	TIME OF COUNT	(TOC)	18:30	Sr-89/90 CONC. in µCi/L =			1.0206E+00
Analyst	DATE OF COUNT	(DOC)	03/29/95				
MCJ							
Date							
03/30/95							
Time							
14:00							

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

v RESULTS v

Sr-89/90 CONCENTRATION	=	1.02E-03	µCi/mL
RELATIVE COUNTING ERROR	=	2.0%	
PERCENT CARRIER RECOVERY	=	94.3%	

DETECTION LEVEL
2.60E-06 µCi/L

Data Entry by:	C J OJANEN	C J Ojanen	Date:	30-Mar-95
Approved by:	SL FITZGERALD		Date:	3/30/95

Form WB Rev. 2.1 220-10n_WB

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

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

							BLANK
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA		1.000
BLANK	TOTAL COUNTS	(TC)	42	GROSS WEIGHT	(W2)		7.7975
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.7022
820	BACKGROUND in cpm	(BKG)	3.7	NET WEIGHT	(W3)		0.0953
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)		5.33
@SR90-01	DILUTION FACTOR	(DF)	101				
Matrix	DIGEST DILUTION FACTOR	DDF	20				
LIQUID	SAMPLE COUNT RATE	(Rs)	0.50	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Sample #	CRITICAL LEVEL	(Lc)	1.16	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
WORKLIST 820	SEPARATION TIME	(ST)	13:25	Rmax			1.72
Instrument Code	SEPARATION DATE	(SD)	03/29/95	DETECTION LIMIT	(Ld)		2.41
WB27811	TIME OF COUNT	(TOC)	18:45	Sr-89/90 CONC in µCi/L		<	3.6900E+01
Analyst	DATE OF COUNT	(DOC)	03/29/95				
MCJ							
Date							
03/30/95							
Time							
14:00							

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<=Lc and RS>=0 or Replace RS with 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

v RESULTS v

Sr-89/90 CONCENTRATION =	< 3.69E-02	µCi/mL
LESS THAN Value was Determined from Rmax.		
RELATIVE COUNTING ERROR =	348.4%	
PERCENT CARRIER RECOVERY =	95.3%	

DETECTION LEVEL

5.18E-02 µCi/mL

Data Entry by:	C J OJANEN		Date:	30-Mar-95
Approved by:	SL FITZGERALD		Date:	3/30/95

Form WB Rev. 2.1 220-10n_WB Page 1 of 1

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)	2496	GROSS WEIGHT	(W2)		7.7815
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.6864
820	BACKGROUND in cpm	(BKG)	3.7	NET WEIGHT	(W3)		0.0951
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)		5.67
@SR90-01	DILUTION FACTOR	(DF)	101				
Matrix	DIGEST DILUTION FACTOR	DDF	20				
LIQUID	SAMPLE COUNT RATE	(Rs)	245.90	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Sample #	CRITICAL LEVEL	(Lc)	1.16	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
S95T328	SEPARATION TIME	(ST)	13:25	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	03/29/95	DETECTION LIMIT	(Ld)		2.41
WB27811	TIME OF COUNT	(TOC)	19:05	Sr-89/90 CONC in µCi/L			5.2793E+03
Analyst	DATE OF COUNT	(DOC)	03/29/95				
MCJ							
Date							
03/30/95							
Time							
14:00							

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<=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

v RESULTS v

Sr-89/90 CONCENTRATION =	5.28E+00	µCi/mL
RELATIVE COUNTING ERROR =	4.0%	
PERCENT CARRIER RECOVERY =	95.1%	

DETECTION LEVEL

5.17E-02 µCi/mL

Data Entry by:	C J OJANEN	C.J. Ojanen	Date:	30-Mar-95
Approved by:	SL FITZGERALD		Date:	3/30/95

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

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

							DUPLICATE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA		1.000
DUPLICATE	TOTAL COUNTS	(TC)	1373	GROSS WEIGHT	(W2)		7.7316
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.6363
820	BACKGROUND in cpm	(BKG)	3.7	NET WEIGHT	(W3)		0.0953
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)		5.87
@SR90-01	DILUTION FACTOR	(DF)	101				
Matrix	DIGEST DILUTION FACTOR	DDF	20				
LIQUID	SAMPLE COUNT RATE	(Rs)	133.60	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Sample #	CRITICAL LEVEL	(Lc)	1.16	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
S95T328	SEPARATION TIME	(ST)	13:25	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	03/29/95	DETECTION LIMIT	(Ld)		2.41
WB27811	TIME OF COUNT	(TOC)	19:17	Sr-89/90 CONC in µCi/L			2.8562E+03
Analyst	DATE OF COUNT	(DOC)	03/29/95				
MCJ							
Date							
03/30/95							
Time							
14:00							

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<=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

v RESULTS v

Sr-89/90 CONCENTRATION	=	2.86E+00	µCi/mL
RELATIVE COUNTING ERROR	=	5.5%	
PERCENT CARRIER RECOVERY	=	95.3%	

DETECTION LEVEL

5.15E-02 µCi/mL

Data Entry by:	C J OJANEN		Date:	30-Mar-95
Approved by:	SL FITZGERALD		Date:	3/30/95

Form WB Rev. 2.1 220-10n_WB

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)	1191	GROSS WEIGHT	(W2)		8.0415
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.9475
820	BACKGROUND in cpm	(BKG)	3.7	NET WEIGHT	(W3)		0.0940
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)		6.00
@SR90-01	DILUTION FACTOR	(DF)	101				
Matrix	DIGEST DILUTION FACTOR	DDF	20				
LIQUID	SAMPLE COUNT RATE	(Rs)	115.40	SR-90 EFFICIENCY FACTO	(C1)		0.4180
Sample #	CRITICAL LEVEL	(Lc)	1.16	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
S95T329	SEPARATION TIME	(ST)	13:30	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	03/29/95	DETECTION LIMIT	(Ld)		2.41
WB27611	TIME OF COUNT	(TOC)	19:30	Sr-89/90 CONC in µCi/L			2.4977E+03
Analyst	DATE OF COUNT	(DOC)	03/29/95				
MCJ							
Date							
03/30/95							
Time							
14:00							

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<=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

v RESULTS v

Sr-89/90 CONCENTRATION =	2.50E+00	µCi/mL
RELATIVE COUNTING ERROR =	6.0%	
PERCENT CARRIER RECOVERY =	94.0%	

DETECTION LEVEL

5.21E-02 µCi/mL

Data Entry by:	C J OJANEN		Date:	30-Mar-95
Approved by:	SL FITZGERALD		Date:	3/30/95

Form WB Rev. 2.1 220-10n_WB Page 1 of 1

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

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

							DUPLICATE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA		1.000
DUPLICATE	TOTAL COUNTS	(TC)	1116	GROSS WEIGHT	(W2)		7.7488
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.6534
820	BACKGROUND in cpm	(BKG)	3.7	NET WEIGHT	(W3)		0.0954
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)		6.17
@SR90-01	DILUTION FACTOR	(DF)	101				
Matrix	DIGEST DILUTION FACTOR	(Dg/L)	20				
LIQUID	SAMPLE COUNT RATE	(Rs)	107.90	SR-90 EFFICIENCY FACTO	(C1)		0.4180
Sample #	CRITICAL LEVEL	(Lc)	1.16	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
S95T329	SEPARATION TIME	(ST)	13:30	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	03/29/95	DETECTION LIMIT	(Ld)		2.41
WB27511	TIME OF COUNT	(TOC)	19:40	Sr-89/90 CONC in µCi/L			2.2971E+03
Analyst	DATE OF COUNT	(DOC)	03/29/95				
MCJ							
Date							
03/30/95							
Time							
14:00							

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<=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

v RESULTS v

Sr-89/90 CONCENTRATION =	2.30E+00	µCi/mL
RELATIVE COUNTING ERROR =	6.2%	
PERCENT CARRIER RECOVERY =	95.4%	

DETECTION LEVEL
5.13E-02 µCi/mL

Data Entry by:	C J OJANEN		Date:	30-Mar-95
Approved by:	SL FITZGERALD		Date:	3/30/95

Form WB Rev. 2.1 220-10n_WB Page 1 of 1

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

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY
RADCHEM ANALYTICAL BATCH AND SUMMARY SHEET
STRONTIUM-LIQUIDS ERR

TEST CODE:	@SR90-01	SAMPLE POINT:	0
INSTRUMENT:	WB27811	SAMPLE PREP:	0
ANALYST:	MCJ	BATCH ID:	0
		ANALYSIS DATE:	March 30, 1995

		UNITS:	µCi/mL						
SAMPLE TYPE	SAMPLE NO.	ANALYTE	RESULT #1	DUPLICATE	AVERAGE	RPD%	% REC	DET LIM	%CT ER
STANDARD *									
BLANK									
SAMPLE 1	S95T330	Sr-90	1.77E-01	2.03E-01	1.90E-01	14.0%		5.12E-02	29.6%
DUPLICATE 1	S95T330	Sr-90						5.15E-02	26.8%
SAMPLE 2	S95T331	Sr-90	3.25E-01	3.18E-01	3.22E-01	1.9%		5.18E-02	19.5%
DUPLICATE 2	S95T331	Sr-90						5.15E-02	19.6%
STANDARD END									
	STD ID:	STD VOL.:							

NARRATIVE: Analyst Comments:

Chemist Comments:

DETECTION LIMITS ARE ADJUSTED FOR DIFFERENT SAMPLE SIZES.
* RESULTS FOR STANDARDS ARE IN µCi/mL

Form Completed By:	CJ OJANEN	Signature:	C.J. Ojanen	Date:	03/30/95
Chemist Approval:	SL FITZGERALD	Signature:	[illegible]	Date:	3/30/95

Revision 2.1

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

LAB LEADER INFO:	
Method:	LA220-101(D-1)
Test Code	@SR90-01
Matrix:	LIQUID
Work List #	820
Batch #	
Prepared By:	CJ OJANEN
Date Complete:	03/30/95
Time Complete:	14:00
Chemist:	SL FITZGERALD
Analyst:	MCJ
Analysis Date:	03/29/95
Detector Number:	12
Instrument Code:	WB27811
Rerun:	
Sample Prep:	
Sample Point:	
Book Number:	

Sample Type	Sample #
STANDARD	
BLANK	
SAMPLE 1	S95T330
DUPLICATE 1	S95T330
SAMPLE 2	S95T331
DUPLICATE 2	S95T331
ST-END	

PRINT

TECH INFO:

Liquids Standard Run

INPUT	
TOTAL COUNTS	
COUNT TIME in MINUTES	
BACKGROUND in cpm	
SAMPLE VOLUME in mL	
DILUTION FACTOR	
DIGEST DILUTION FACTOR	
SEPARATION TIME	
SEPARATION DATE	
TIME OF COUNT	
DATE OF COUNT	
CARRIER ADDED in mL	
GROSS WEIGHT	
TARE WEIGHT	
STANDARD VALUE	

RESULT	
SAMPLE COUNT RATE	
CRITICAL LEVEL	
NET WEIGHT	
DELTA TIME (hours)	
SR-90 EFFICIENCY FACTOR	
Y-90 EFFICIENCY FACTOR	
Rmax	
DETECTION LIMIT	
Sr-89/90 CONC in µCi/mL	
Relative Counting Error	
Percent Carrier Recovery	

Liquids Blank Run

INPUT	
TOTAL COUNTS	
COUNT TIME in MINUTES	
BACKGROUND in cpm	
SAMPLE VOLUME in mL	
DILUTION FACTOR	
DIGEST DILUTION FACTOR	
SEPARATION TIME	
SEPARATION DATE	
TIME OF COUNT	
DATE OF COUNT	
CARRIER ADDED in mL	
GROSS WEIGHT	
TARE WEIGHT	

RESULT	
SAMPLE COUNT RATE	
CRITICAL LEVEL	
NET WEIGHT	
DELTA TIME (hours)	
SR-90 EFFICIENCY FACTOR	
Y-90 EFFICIENCY FACTOR	
Rmax	
DETECTION LIMIT	
Sr-89/90 CONC in µCi/mL	
Relative Counting Error	
Percent Carrier Recovery	

Liquids Sample Run 2

INPUT	
TOTAL COUNTS	188
COUNT TIME in MINUTES	10
BACKGROUND in cpm	4
SAMPLE VOLUME in mL	0.1
DILUTION FACTOR	101
DIGEST DILUTION FACTOR	20
SEPARATION TIME	13:30
SEPARATION DATE	03/29/95
TIME OF COUNT	20:15
DATE OF COUNT	03/29/95
CARRIER ADDED in mL	1
GROSS WEIGHT	8.1041
TARE WEIGHT	8.0102

RESULT	
SAMPLE COUNT RATE	1.51E+01
CRITICAL LEVEL	1.16E+00
NET WEIGHT	0.0939
DELTA TIME (hours)	6.75
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.41
Sr-89/90 CONC in µCi/mL	3.25E-01
Relative Counting Error	19.5%
Percent Carrier Recovery	93.9%

Liquids Duplicate Run 2

INPUT	
TOTAL COUNTS	186
COUNT TIME in MINUTES	10
BACKGROUND in cpm	4
SAMPLE VOLUME in mL	0.1
DILUTION FACTOR	101
DIGEST DILUTION FACTOR	20
SEPARATION TIME	13:30
SEPARATION DATE	03/29/95
TIME OF COUNT	20:25
DATE OF COUNT	03/29/95
CARRIER ADDED in mL	1
GROSS WEIGHT	8.072
TARE WEIGHT	7.9777

RESULT	
SAMPLE COUNT RATE	1.49E+01
CRITICAL LEVEL	1.16E+00
NET WEIGHT	0.0943
DELTA TIME (hours)	6.92
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.41
Sr-89/90 CONC in µCi/mL	3.18E-01
Relative Counting Error	19.6%
Percent Carrier Recovery	94.3%

Liquids Sample Run

INPUT	
TOTAL COUNTS	120
COUNT TIME in MINUTES	10
BACKGROUND in cpm	4
SAMPLE VOLUME in mL	0.1
DILUTION FACTOR	101
DIGEST DILUTION FACTOR	20
SEPARATION TIME	13:30
SEPARATION DATE	03/29/95
TIME OF COUNT	19:50
DATE OF COUNT	03/29/95
CARRIER ADDED in mL	1
GROSS WEIGHT	7.7691
TARE WEIGHT	7.6738

RESULT	
SAMPLE COUNT RATE	8.30E+00
CRITICAL LEVEL	1.16E+00
NET WEIGHT	0.0953
DELTA TIME (hours)	6.33
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.41
Sr-89/90 CONC in µCi/mL	1.77E-01
Relative Counting Error	29.6%
Percent Carrier Recovery	95.3%

Liquids Duplicate Run

INPUT	
TOTAL COUNTS	132
COUNT TIME in MINUTES	10
BACKGROUND in cpm	4
SAMPLE VOLUME in mL	0.1
DILUTION FACTOR	101
DIGEST DILUTION FACTOR	20
SEPARATION TIME	13:30
SEPARATION DATE	03/29/95
TIME OF COUNT	20:00
DATE OF COUNT	03/29/95
CARRIER ADDED in mL	1
GROSS WEIGHT	7.7374
TARE WEIGHT	7.6428

RESULT	
SAMPLE COUNT RATE	9.50E+00
CRITICAL LEVEL	1.16E+00
NET WEIGHT	0.0946
DELTA TIME (hours)	6.50
SR-90 EFFICIENCY FACTOR	0.42
Y-90 EFFICIENCY FACTOR	0.47
Rmax	N/A
DETECTION LIMIT	2.41
Sr-89/90 CONC in µCi/mL	2.03E-01
Relative Counting Error	26.8%
Percent Carrier Recovery	94.6%

Liquids Standard End

INPUT	
TOTAL COUNTS	
COUNT TIME in MINUTES	
BACKGROUND in cpm	
SAMPLE VOLUME in mL	
DILUTION FACTOR	
DIGEST DILUTION FACTOR	
SEPARATION TIME	
SEPARATION DATE	
TIME OF COUNT	
DATE OF COUNT	
CARRIER ADDED in mL	
GROSS WEIGHT	
TARE WEIGHT	
STANDARD VALUE	

RESULT	
SAMPLE COUNT RATE	
CRITICAL LEVEL	
NET WEIGHT	
DELTA TIME (hours)	
SR-90 EFFICIENCY FACTOR	
Y-90 EFFICIENCY FACTOR	
Rmax	
DETECTION LIMIT	
Sr-89/90 CONC in µCi/mL	
Relative Counting Error	
Percent Carrier Recovery	

Form Completed By:	CJ OJANEN	Signature:	[signature]	Date:	30-Mar-95
Chemist Approval:	SL FITZGERALD	Signature:	[signature]	Date:	3/30/95

Revision 2.1

1906

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

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)	120	GROSS WEIGHT	(W2)		7.7691
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.6738
820	BACKGROUND in cpm	(BKG)	3.7	NET WEIGHT	(W3)		0.0953
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)		6.33
@SR90-01	DILUTION FACTOR	(DF)	101				
Matrix	DIGEST DILUTION FACTOR	DDF	20				
LIQUID	SAMPLE COUNT RATE	(Rs)	8.30	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Sample #	CRITICAL LEVEL	(Lc)	1.16	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
S95T330	SEPARATION TIME	(ST)	13:30	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	03/29/95	DETECTION LIMIT	(Ld)		2.41
WB27811	TIME OF COUNT	(TOC)	19:50	Sr-89/90 CONC in µCi/L			1.7658E+02
Analyst	DATE OF COUNT	(DOC)	03/29/95				
MCJ							
Date							
03/30/95							
Time							
14:00							

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<=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

v RESULTS v

Sr-89/90 CONCENTRATION =	1.77E-01	µCi/mL
RELATIVE COUNTING ERROR =	29.6%	
PERCENT CARRIER RECOVERY =	95.3%	

DETECTION LEVEL

5.12E-02 µCi/mL

Data Entry by:	CJ OJANEN		Date:	30-Mar-95
Approved by:	SL FITZGERALD		Date:	3/30/95

Form WB Rev. 2.1 220-10n_WB Page 1 of 1

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

							DUPLICATE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA		1.000
DUPLICATE	TOTAL COUNTS	(TC)	132	GROSS WEIGHT	(W2)		7.7374
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.6428
820	BACKGROUND in cpm	(BKG)	3.7	NET WEIGHT	(W3)		0.0946
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)		6.50
@SR90-01	DILUTION FACTOR	(DF)	101				
Matrix	DIGEST DILUTION FACTOR	DDF	20				
LIQUID	SAMPLE COUNT RATE	(Rs)	9.50	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Sample #	CRITICAL LEVEL	(Lc)	1.16	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
S951330	SEPARATION TIME	(ST)	13:30	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	03/29/95	DETECTION LIMIT	(Ld)		2.41
WB27811	TIME OF COUNT	(TOC)	20:00	Sr-89/90 CONC in µCi/L			2.0325E+02
Analyst	DATE OF COUNT	(DOC)	03/29/95				
MCJ							
Date							
03/30/95							
Time							
14:00							

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<=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

v RESULTS v

Sr-89/90 CONCENTRATION	=	2.03E-01	µCi/mL
RELATIVE COUNTING ERROR	=	26.8%	
PERCENT CARRIER RECOVERY	=	94.6%	

DETECTION LEVEL

5.15E-02 µCi/mL

Data Entry by:	CJ OJANEN		Date:	30-Mar-95
Approved by:	SL FITZGERALD		Date:	

Form WB Rev. 2.1 220-10n_WB Page 1 of 1

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)	188	GROSS WEIGHT	(W2)		8.1041
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		8.0102
820	BACKGROUND in cpm	(BKG)	3.7	NET WEIGHT	(W3)		0.0939
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)		6.75
@SR90-01	DILUTION FACTOR	(DF)	101				
Matrix	DIGEST DILUTION FACTOR	DDF	20				
LIQUID	SAMPLE COUNT RATE	(Rs)	15.10	SR-90 EFFICIENCY FACTO	(C1)		0.4180
Sample #	CRITICAL LEVEL	(Lc)	1.16	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
S95T331	SEPARATION TIME	(ST)	13:30	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	03/29/95	DETECTION LIMIT	(Ld)		2.41
WB27811	TIME OF COUNT	(TOC)	20:15	Sr-89/90 CONC in µCi/L			3.2462E+02
Analyst	DATE OF COUNT	(DOC)	03/29/95				
MCJ							
Date							
03/30/95							
Time							
14:00							

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<=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

v RESULTS v

Sr-89/90 CONCENTRATION	=	3.25E-01	µCi/mL
RELATIVE COUNTING ERROR	=	19.5%	
PERCENT CARRIER RECOVERY	=	93.9%	

DETECTION LEVEL

5.18E-02 µCi/mL

Data Entry by:	CJ OJANEN	Date:	30-Mar-95
Approved by:	SL FITZGERALD	Date:	

Form WB Rev. 2.1 220-10n_WB Page 1 of 1

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

Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA		DUPLICATE 1.000
DUPLICATE	TOTAL COUNTS	(TC)	186	GROSS WEIGHT	(W2)		8.0720
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.9777
820	BACKGROUND in cpm	(BKG)	3.7	NET WEIGHT	(W3)		0.0943
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)		6.92
@SR90-01	DILUTION FACTOR	(DF)	101				
Matrix	DIGEST DILUTION FACTOR	(Dg/L)	20				
LIQUID	SAMPLE COUNT RATE	(Rs)	14.90	SR-90 EFFICIENCY FACTO	(C1)		0.4180
Sample #	CRITICAL LEVEL	(Lc)	1.16	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
S95T331	SEPARATION TIME	(ST)	13:30	Rmax			N/A
Instrument Code	SEPARATION DATE	(SD)	03/29/95	DETECTION LIMIT	(Ld)		2.41
WB27811	TIME OF COUNT	(TOC)	20:25	Sr-89/90 CONC in µCi/L			3.1841E+02
Analyst	DATE OF COUNT	(DOC)	03/29/95				
MCJ							
Date							
03/30/95							
Time							
14:00							

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<=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

v RESULTS v

Sr-89/90 CONCENTRATION =	3.18E-01	µCi/mL
RELATIVE COUNTING ERROR =	19.6%	
PERCENT CARRIER RECOVERY =	94.3%	

DETECTION LEVEL
5.15E-02 µCi/mL

Data Entry by:	CJ OJANEN	Date:	30-Mar-95
Approved by:	SL FITZGERALD	Date:	3/30/95

Form WB Rev. 2.1 220-10n_WB Page 1 of 1

LABCORE Data Entry Template for Worklist# 1008

Analyst: SL **Instrument:** AB00 10 **Book #** 5/BJ-2

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

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

Worklist Comment: Use .100-10-.100 mL sample size. Rerun #1. SLF

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				@SR90-01 SR90-01	LIQUID			N/A	uCi/mL
		1	STD				@SR90-01 SR90-01C	LIQUID			N/A	% Recovery
		1	STD				@SR90-01 SR90-01E	LIQUID			N/A	% Ct. Error
		2	BLNK-PREP				@SR90-01 SR90-01	LIQUID			N/A	uCi/mL
		2	BLNK-PREP				@SR90-01 SR90-01C	LIQUID			N/A	% Recovery
		2	BLNK-PREP				@SR90-01 SR90-01E	LIQUID			N/A	% Ct. Error
		3	BLNK/BKG				@SR90-01 SR90-01	LIQUID			N/A	uCi/mL
94000020	SY-103	4	SAMPLE	S95T000328	0		@SR90-01 SR90-01	LIQUID	N/A			uCi/mL
94000020	SY-103	4	SAMPLE	S95T000328	0		@SR90-01 SR90-01C	LIQUID	N/A			% Recovery
94000020	SY-103	4	SAMPLE	S95T000328	0		@SR90-01 SR90-01E	LIQUID	N/A			% Ct. Error
94000020	SY-103	5	DUP	S95T000328	0		@SR90-01 SR90-01	LIQUID			N/A	uCi/mL
94000020	SY-103	5	DUP	S95T000328	0		@SR90-01 SR90-01C	LIQUID			N/A	% Recovery
94000020	SY-103	5	DUP	S95T000328	0		@SR90-01 SR90-01E	LIQUID			N/A	% Ct. Error

Final page for worklist # 1008

Sue Lai 4-7-95
Analyst Signature **Date**

C.J. Quinn 4/10/95
Analyst Signature **Date**

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 103 (E-2), 104 (D-1)

							STANDARD
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)	1.000
STANDARD	TOTAL COUNTS	(TC)	9148	GROSS WEIGHT	(W2)	7.9666
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.8741
1008	BACKGROUND in cpm	(BKG)	12	NET WEIGHT	(W3)	0.0925
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (hours)	(DT)	4.08
@SR90-01	DILUTION FACTOR	(DF)	1	SR-90 EFFICIENCY FACTOR	(C1)	0.4051
Matrix	ENTER MATRIX AS: LIQUID, DIRECT SOLID,			Y-90 EFFICIENCY FACTOR	(C2)	0.4503
LIQUID	<<<<< or SOLID DIGEST <<<<<			SAMPLE COUNT RATE	(Rs)	902.80
Sample #	DIGEST DILUTION FACTOR	(DDF)	1	CRITICAL LEVEL	(Lc)	2.09
WORKLIST 1008	SEPARATION TIME	(ST)	11:15 AM	Rmax		N/A
Instrument Code	SEPARATION DATE	(SD)	04/07/95	DETECTION LIMIT	(Ld)	4.26
WB26870	TIME OF COUNT	(TOC)	03:20 PM	Sr-89/90 CONC. in µCi/L =		1.0356E+00
Analyst	DATE OF COUNT	(DOC)	04/07/95			
SL SCL						
Date						
04/07/95						
Time						
03:45 PM						

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
Sr-89/90 µCi/L = Rs*1000mL/L *DF*DDF/
(C1 + C2 * (1 - e to the power of ((-natural log 2) / 64.2 * DT)) *SS*Rec.*2220000dpm/µCi)
NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA x 0.1000))
Sr-89/90 µCi/mL = (Sr-89/90 µCi/L) / 1000mL/L
Relative Counting Error = (The Square Root of (TC + BKG * CT)) / (TC - BKG * CT) * 1.96 * 100
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

v RESULTS v

Sr-89/90 CONCENTRATION =	1.04E-03	µCi/mL	DETECTION LIMIT
RELATIVE COUNTING ERROR =	2.1%		
PERCENT CARRIER RECOVERY =	92.5%		4.89E-06 µCi/mL

Data Entry by:	[signature]	Date:	04/10/95
Approved by:	[signature]	Date:	4/10/95

Form 22010N_C Rev. 1.0

1912

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 103 (E-2), 104 (D-1)

							BLANK
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)		1.000
BLANK	TOTAL COUNTS	(TC)	137	GROSS WEIGHT	(W2)		7.9749
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.8879
1008	BACKGROUND in cpm	(BKG)	12	NET WEIGHT	(W3)		0.0870
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (hours)	(DT)		4.25
@SR90-01	DILUTION FACTOR	(DF)	101	SR-90 EFFICIENCY FACTOR	(C1)		0.4051
Matrix	ENTER MATRIX AS: LIQUID, DIRECT SOLID,			Y-90 EFFICIENCY FACTOR	(C2)		0.4503
LIQUID	<<<<< or SOLID DIGEST <<<<<			SAMPLE COUNT RATE	(Rs)		1.70
Sample #	DIGEST DILUTION FACTOR	(DDF)	20	CRITICAL LEVEL	(Lc)		2.09
WORKLIST 1008	SEPARATION TIME	(ST)	11:15 AM	Rmax			3.90
Instrument Code	SEPARATION DATE	(SD)	04/07/95	DETECTION LIMIT	(Ld)		4.26
WB26870	TIME OF COUNT	(TOC)	03:30 PM	Sr-89/90 CONC. in µCi/L =		<	9.5789E+01
Analyst	DATE OF COUNT	(DOC)	04/07/95				
SL SCL							
Date							
04/07/95							
Time							
03:45 PM							

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
Sr-89/90 µCi/L = Rs*1000mL/L *DF*DDF/
(C1 + C2 * (1 - e to the power of ((-natural log 2) / 64.2 * DT)) *SS*Rec.*2220000dpm/µCi)
NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA x 0.1000))
Sr-89/90 µCi/mL = (Sr-89/90 µCi/L) / 1000mL/L
Relative Counting Error = (The Square Root of (TC + BKG * CT)) / (TC - BKG * CT) * 1.96 * 100
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

v RESULTS v

Sr-89/90 CONCENTRATION =	<	9.58E-02	µCi/mL	DETECTION LIMIT
RELATIVE COUNTING ERROR =		184.8%		1.05E-01 µCi/mL
PERCENT CARRIER RECOVERY =		87.0%		

Data Entry by:		Date:	04/10/95
Approved by:		Date:	4/10/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 103 (E-2), 104 (D-1)

							SAMPLE
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	1386	GROSS WEIGHT	(W2)	7.9964
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.9039
1008	BACKGROUND in cpm	(BKG)	12	NET WEIGHT	(W3)	0.0925
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (hours)	(DT)	4.67
@SR90-01	DILUTION FACTOR	(DF)	101	SR-90 EFFICIENCY FACTOR	(C1)	0.4051
Matrix	ENTER MATRIX AS: LIQUID, DIRECT SOLID,			Y-90 EFFICIENCY FACTOR	(C2)	0.4503
LIQUID	<<<<< or SOLID DIGEST <<<<<			SAMPLE COUNT RATE	(Rs)	126.60
Sample #	DIGEST DILUTION FACTOR	(DDF)	20	CRITICAL LEVEL	(Lc)	2.09
S95T328	SEPARATION TIME	(ST)	11:15 AM	Rmax		N/A
Instrument Code	SEPARATION DATE	(SD)	04/07/95	DETECTION LIMIT	(Ld)	4.26
WB26870	TIME OF COUNT	(TOC)	03:55 PM	Sr-89/90 CONC. in µCi/L =		2.9150E+03
Analyst	DATE OF COUNT	(DOC)	04/07/95			
SL SCL						
Date						
04/07/95						
Time						
03:45 PM						

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
Sr-89/90 µCi/L = Rs*1000mL/L *DF*DDF/
(C1 + C2 * (1 - e to the power of ((-natural log 2) / 64.2 * DT)) *SS*Rec.*2220000dpm/µCi)
NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA x 0.1000))
Sr-89/90 µCi/mL = (Sr-89/90 µCi/L) / 1000mL/L
Relative Counting Error = (The Square Root of (TC + BKG * CT)) / (TC - BKG * CT) * 1.96 * 100
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

v RESULTS v

Sr-89/90 CONCENTRATION =	2.91E+00	µCi/mL	DETECTION LIMIT
RELATIVE COUNTING ERROR =	6.0%		
PERCENT CARRIER RECOVERY =	92.5%		9.82E-02 µCi/mL

Data Entry by:		Date:	04/10/95
Approved by:		Date:	4/10/95

Form 22010N_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 103 (E-2), 104 (D-1)

							DUPLICATE
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)	1.000
DUPLICATE	TOTAL COUNTS	(TC)	1396	GROSS WEIGHT	(W2)	8.0048
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.9163
1008	BACKGROUND in cpm	(BKG)	12	NET WEIGHT	(W3)	0.0885
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (hours)	(DT)	4.88
@SR90-01	DILUTION FACTOR	(DF)	101	SR-90 EFFICIENCY FACTOR	(C1)	0.4051
Matrix	ENTER MATRIX AS: LIQUID, DIRECT SOLID,			Y-90 EFFICIENCY FACTOR	(C2)	0.4503
LIQUID	<<<<< or SOLID DIGEST <<<<<			SAMPLE COUNT RATE	(Rs)	127.60
Sample #	DIGEST DILUTION FACTOR	(DDF)	20	CRITICAL LEVEL	(Lc)	2.09
S95T328	SEPARATION TIME	(ST)	11:15 AM	Rmax		N/A
Instrument Code	SEPARATION DATE	(SD)	04/07/95	DETECTION LIMIT	(Ld)	4.26
WB26870	TIME OF COUNT	(TOC)	04:08 PM	Sr-89/90 CONC. in µCi/L =		3.0636E+03
Analyst	DATE OF COUNT	(DOC)	04/07/95			
SL BCL						
Date						
04/07/95						
Time						
03:45 PM						

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
Sr-89/90 µCi/L = Rs*1000mL/L *DF*DDF/
(C1 + C2 * (1 - e to the power of ((-natural log 2) / 64.2 * DT)) *SS*Rec.*2220000dpm/µCi)
NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA x 0.1000))
Sr-89/90 µCi/mL = (Sr-89/90 µCi/L) / 1000mL/L
Relative Counting Error = (The Square Root of (TC + BKG * CT)) / (TC - BKG * CT) * 1.96 * 100
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

v RESULTS v

			DETECTION LIMIT
Sr-89/90 CONCENTRATION =	3.06E+00	µCi/mL	
RELATIVE COUNTING ERROR =	6.0%		
PERCENT CARRIER RECOVERY =	88.5%		1.02E-01 µCi/mL

Data Entry by:		Date:	04/10/95
Approved by:		Date:	4/10/95

1915

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TECHNETIUM ANALYSES

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LABCORE Data Entry Template for Worklist# 181

Analyst: SMF **Instrument:** LSC00 6000 **Method:** LA-438-101 D-2

Worklist Comment: 1 ML SAMPLE SIZE WHC-SD-WM-DP-074, REV. 0

	Seg	Type	Sample#	Rep	Al	Test	Matrix	Actual	Found	DL	Unit
3-4	1	BLNK-PREP				@TC99-01 TC99-01	SOLID			N/A	uCi/g
	1	BLNK-PREP				@TC99-01 TC99-01E	SOLID			N/A	% Ct.
	1	BLNK-PREP				@TC99-01 TC99-01T	SOLID			N/A	% Rec
1-2	2	STD				@TC99-01 TC99-01	SOLID			N/A	uCi/g
	2	STD				@TC99-01 TC99-01E	SOLID			N/A	% Ct.
	2	STD				@TC99-01 TC99-01T	SOLID			N/A	% Rec
5-6	3	SAMPLE	S94T000005	0		@TC99-01 TC99-01	SOLID	N/A			uCi/g
	3	SAMPLE	S94T000005	0		@TC99-01 TC99-01T	SOLID	N/A			% Rec
	3	SAMPLE	S94T000005	0		@TC99-01 TC99-01E	SOLID	N/A			% Ct.
9-10	4	DUP	S94T000005	0		@TC99-01 TC99-01	SOLID			N/A	uCi/g
	4	DUP	S94T000005	0		@TC99-01 TC99-01E	SOLID			N/A	% Ct.
	4	DUP	S94T000005	0		@TC99-01 TC99-01T	SOLID			N/A	% Rec
7-8	5	SPK	S94T000005	0		@TC99-01 TC99-01	SOLID			N/A	uCi/g
	5	SPK	S94T000005	0		@TC99-01 TC99-01T	SOLID			N/A	% Rec

Final page for worklist # 181

Analyst Signature

12-1-94
Date
12/6/94

Data Entry Comments: Tracer STD #138BS1 ; SPK #135BS1, .100 ml

Matrix SPK - 1.0 ml Sample + .250 ml STD # 138BS1

STD .250 ml sample size, all others 1.0 ml sample size

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

Rerun requested due to low spike recovery.

D H Milliken
12-2-94

BEST AVAILABLE COPY

PAGE: 1

ID: TC 99 1 DEC 1994 19:30
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
B1	**-1	20.00	168.9	50.40	6.36	53.14	94.85	1.90	21.03	
		Blank Average		DPM for	TC99 :	53.14	COEF. OF VAR:		0.000	
1	**-3	20.00	166.0	513.20	1.99	487.42	94.94	1.33	42.74	2P
2	**-4	20.00	160.5	3063.80	0.81	3168.48	95.10	0.23	64.42	2P
3	**-5	20.00	157.4	2945.05	0.83	3040.85	95.19	0.33	86.21	2P
4	**-6	20.00	156.5	49.10	6.97	-1.57	95.21	13.91	107.96	2P
5	**-7	20.00	159.7	393.10	2.28	360.12	95.12	2.22	129.67	2P
6	**-8	20.00	165.9	3313.90	0.78	3437.32	94.94	0.28	151.45	
7	**-9	20.00	162.4	861.65	1.53	853.43	95.05	0.83	173.15	
8	**-10	20.00	164.1	3881.20	0.72	4032.46	95.00	0.22	194.92	
9	**-11	20.00	167.8	399.65	2.26	368.07	94.88	1.88	216.64	
10	**-12	20.00	165.4	3235.55	0.79	3354.23	94.96	0.19	238.32	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			BLANK
Type	Spike (Tracer) Book Number		135B51
BLANK	Activity for 100µl of Spike Added in dpm	(dm3)	8088
Work List	Volume of Sample in mL	(SS)	1
181	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	2.2092
TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	-1.57
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3040.85
SOLID	Background cpm	(BKG cpm)	50.4
Sample #	Background Time Counted in Minutes	(BKG time)	20
S94T000005	Instrument Fractional Efficiency	(EFF)	0.9521
Instrument Code	% Counting Error		6.97
WC16085	Detection Limit	(Ld)	7.91
Analyst	Critical Level	(Lc)	3.70
SMF	Tc-99 Concentration in µCi/g =	<	4.2889E-03
Date			
12/01/94			
Time			
12:00 PM			

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 - dm1))

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

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

v RESULTS v

RESULT				DETECTION LEVEL
	Tc-99 Concentration in µCi/g =	<	4.29E-03	
	% Counting Error =		6.97	
	Spike (Tracer) Recovery =		56.4%	4.29E-03 µCi/g

Data Entry by: [signature] Date: 12/05/94
Approved by: [signature] Date: 12/5/94

Form 438101_C Rev. 1.0

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			STANDARD
Type	Spike (Tracer) Book Number		135B51
STANDARD	Activity for 100µl of Spike Added in dpm	(dm3)	8088
Work List	Volume of Sample in mL	(SS)	0.25
181	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	1
TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	487.42
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3168.48
LIQUID	Background cpm	(BKG cpm)	50.4
Sample #	Background Time Counted in Minutes	(BKG time)	20
S94T000005	Instrument Fractional Efficiency	(EFF)	0.9494
Instrument Code	% Counting Error		1.99
WC16085	Detection Limit	(Ld)	7.94
Analyst	Critical Level	(Lc)	3.70
SMF	Tc-99 Concentration in µCi/L =		2.6494E+00
Date			
12/01/94			
Time			
12:00 PM			

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

v RESULTS v

RESULT	Tc-99 Concentration in µCi/mL	=	2.65E-03	DETECTION LEVEL
	% Counting Error	=	1.99	
	Spike (Tracer) Recovery	=	49.7%	4.31E-05 µCi/mL

Data Entry by: Date: 12/05/94
Approved by: Date: 12/5/94

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			SAMPLE
Type	Spike (Tracer) Book Number		135B51
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	8088
Work List	Volume of Sample in mL	(SS)	1
181	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	2.2092
TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	360.12
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3437.32
SOLID	Background cpm	(BKG cpm)	50.4
Sample #	Background Time Counted in Minutes	(BKG time)	20
S94T000005	Instrument Fractional Efficiency	(EFF)	0.9512
Instrument Code	% Counting Error		2.28
WC16085	Detection Limit	(Ld)	7.92
Analyst	Critical Level	(Lc)	3.70
SMF	Tc-99 Concentration in µCi/g =		1.9299E-01
Date			
12/01/94			
Time			
12:00 PM			

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 - dm1))

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

v RESULTS v

			DETECTION LEVEL
RESULT	Tc-99 Concentration in µCi/g =	1.93E-01	
	% Counting Error =	2.28	
	Spike (Tracer) Recovery =	57.1%	4.24E-03 µCi/g

Data Entry by: Date: 12/05/94
Approved by: Date: 12/5/94

Form 438101_C Rev. 1/0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			DUPLICATE
Type	Spike (Tracer) Book Number		135B51
DUPLICATE	Activity for 100µl of Spike Added in dpm	(dm3)	8088
Work List	Volume of Sample in mL	(SS)	1
181	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	2.216
TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	368.07
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3354.23
SOLID	Background cpm	(BKG cpm)	50.4
Sample #	Background Time Counted in Minutes	(BKG time)	20
S94T000005	Instrument Fractional Efficiency	(EFF)	0.9488
Instrument Code	% Counting Error		2.26
WC16085	Detection Limit	(Ld)	7.94
Analyst	Critical Level	(Lc)	3.70
SMF	Tc-99 Concentration in µCi/g =		2.0264E-01
Date			
12/01/94			
Time			
12:00 PM			

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 - dm1))

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

v RESULTS v

RESULT			DETECTION LEVEL
	Tc-99 Concentration in µCi/g =	2.03E-01	
	% Counting Error =	2.26	
	Spike (Tracer) Recovery =	55.4%	4.37E-03 µCi/g

Data Entry by:		Date:	12/05/94
Approved by:		Date:	12/5/94

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			SPIKE
Type	Spike (Tracer) Book Number		135B51
SPIKE	<<<<< RE-ENTER COMPLETE TYPE <<<<<		8088
Work List	Volume of Sample in mL	(SS)	1.25
181	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	2.2092
TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	853.43
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	4032.46
SOLID	Background cpm	(BKG cpm)	50.4
Sample #	Background Time Counted in Minutes	(BKG time)	20
S94T000005	Instrument Fractional Efficiency	(EFF)	0.9505
Instrument Code	% Counting Error		1.53
WC16085	Detection Limit	(Ld)	7.93
Analyst	Critical Level	(Lc)	3.70
SMF	Tc-99 Concentration in µCi/g =		3.5417E-01
Date			
12/01/94			
Time			
12:00 PM			

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 - dm1))

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

(3.5417E-1 - 1.9271E-1) / (dpm - dpm) / (conc - conc) (dil sts / vol sts / dil s / vol s) / 2.35 µCi/L × 100% = 60.61%

1/.25 / 1/1.25 v RESULTS v

60.6%

RESULT			DETECTION LEVEL
	Tc-99 Concentration in µCi/g =	3.54E-01	
	% Counting Error =	1.53	
	Spike (Tracer) Recovery =	59.0%	3.29E-03 µCi/g

Data Entry by:		Date:	12/05/94
Approved by:		Date:	12/8/94

Form 438101_C Rev. 1.0

QA 3

LABCORE Data Entry Template for Worklist# 225

Analyst: JVS **Instrument:** LSC00 6000 **Method:** LA-438-101 D-2

Worklist Comment: 1ml sample size/.25 ml std as matrix spike/js WHC-SD-WM-DP-074, REV. 0

	Seg	Type	Sample#	Rep	Al	Test	Matrix	Actual	Found	DL	Unit
1-2	1	BLNK-PREP				@TC99-01 TC99-01	SOLID			N/A	uCi/g
	1	BLNK-PREP				@TC99-01 TC99-01E	SOLID			N/A	% Ct.
	1	BLNK-PREP				@TC99-01 TC99-01T	SOLID			N/A	% Rec
3-4	2	STD	47B52			@TC99-01 TC99-01	SOLID			N/A	uCi/g
	2	STD				@TC99-01 TC99-01E	SOLID			N/A	% Ct.
	2	STD				@TC99-01 TC99-01T	SOLID			N/A	% Rec
5-6	3	SAMPLE	S94T000067	0		@TC99-01 TC99-01	SOLID	N/A			uCi/g
	3	SAMPLE	S94T000067	0		@TC99-01 TC99-01T	SOLID	N/A			% Rec
	3	SAMPLE	S94T000067	0		@TC99-01 TC99-01E	SOLID	N/A			% Ct.
7-8	4	DUP	S94T000067	0		@TC99-01 TC99-01	SOLID			N/A	uCi/g
	4	DUP	S94T000067	0		@TC99-01 TC99-01E	SOLID			N/A	% Ct.
	4	DUP	S94T000067	0		@TC99-01 TC99-01T	SOLID			N/A	%
9-10	5	SPK	S94T000067	0		@TC99-01 TC99-01	SOLID			N/A	uCi/g
	5	SPK	S94T000067	0		@TC99-01 TC99-01T	SOLID			N/A	% Rec

Final page for worklist # 225

Analyst Signature

12-16-94
Date

Data Entry Comments: Spike ID 135/351
Spike recovery high (140%) will rerun

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

Page: 1

Raymond 12/17/94

ID: TC 99 17 DEC 1994 02:36

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
B1	**-1	20.00	189.1	56.05	6.04	59.56	94.10	2.01	21.03	
		Blank	Average	DPM for	TC99 :	59.56	COEF. OF	VAR:	0.000	
1	**-3	20.00	160.4	51.70	6.49	-5.20	95.10	6.89	42.64	
2	**-4	20.00	176.7	3614.80	0.74	3762.11	94.59	0.13	64.26	
3	**-5	20.00	168.9	592.70	1.84	565.32	94.85	0.59	85.82	2P
4	**-6	20.00	173.1	4186.65	0.69	4360.88	94.71	0.09	107.41	2P
5	**-7	20.00	171.9	484.20	2.04	451.46	94.75	0.81	129.00	
6	**-8	20.00	172.4	3927.10	0.71	4085.75	94.74	0.10	150.62	
7	**-9	20.00	171.6	492.15	2.02	459.80	94.76	0.90	172.24	2P
8	**-10	20.00	168.0	3692.95	0.74	3832.80	94.88	0.12	193.85	
9	**-11	20.00	173.1	1084.65	1.36	1085.65	94.71	0.56	215.53	2P
10	**-12	20.00	161.9	3989.90	0.71	4137.67	95.06	0.08	237.09	

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			BLANK
Type	Spike (Tracer) Book Number		135B51
BLANK	Activity for 100µl of Spike Added in dpm	(dm3)	8088
Work List	Volume of Sample in mL	(SS)	0.25
225	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	1.82
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	-5.2
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3762
SOLID	Background cpm	(BKG cpm)	56
Sample #	Background Time Counted in Minutes	(BKG time)	20
S94T67	Instrument Fractional Efficiency	(EFF)	0.951
Instrument Code	% Counting Error		6.49
WC16085	Detection Limit	(Ld)	8.34
Analyst	Critical Level	(Lc)	3.90
JMV	Tc-99 Concentration in µCi/g =	<	1.7732E-02
Date			
12/16/94			
Time			
03:00 PM			

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 - dm1))

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

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

v RESULTS v

				DETECTION LEVEL
RESULT	Tc-99 Concentration in µCi/g =	<	1.77E-02	
	% Counting Error =		6.49	
	Spike (Tracer) Recovery =		69.9%	1.77E-02 µCi/g

Data Entry by:		Date:	12/21/94
Approved by:		Date:	12/28/94

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			STANDARD
Type	Spike (Tracer) Book Number		135B51
STANDARD	Activity for 100µl of Spike Added in dpm	(dm3)	8088
Work List	Volume of Sample in mL	(SS)	0.25
225	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	565
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	4361
LIQUID	Background cpm	(BKG cpm)	56
Sample #	Background Time Counted in Minutes	(BKG time)	20
S94T67	Instrument Fractional Efficiency	(EFF)	0.9485
Instrument Code	% Counting Error		1.84
WC16085	Detection Limit	(Ld)	8.36
Analyst	Critical Level	(Lc)	3.90
JMV	Tc-99 Concentration in µCi/L =		2.1691E+00
Date			
12/16/94	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Time	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
03:00 PM	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

v RESULTS v

			DETECTION LEVEL
RESULT	Tc-99 Concentration in µCi/mL =	2.17E-03	
	% Counting Error =	1.84	
	Spike (Tracer) Recovery =	70.4%	3.21E-05 µCi/mL

Data Entry by: [signature] Date: 12/21/94
Approved by: [signature] Date: 12/23/94

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			SAMPLE
Type	Spike (Tracer) Book Number		135B51
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	8088
Work List	Volume of Sample in mL	(SS)	0.25
225	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	1.82
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	451
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	4086
SOLID	Background cpm	(BKG cpm)	56
Sample #	Background Time Counted in Minutes	(BKG time)	20
S94T67	Instrument Fractional Efficiency	(EFF)	0.9475
Instrument Code	% Counting Error		2.04
WC16085	Detection Limit	(Ld)	8.37
Analyst	Critical Level	(Lc)	3.90
JMV	Tc-99 Concentration in µCi/g =		9.9346E-01
Date			
12/16/94	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Time	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
03:00 PM	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 - dm1))		
	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3		

v RESULTS v

				DETECTION LEVEL
RESULT	Tc-99 Concentration in µCi/g	=	9.93E-01	
	% Counting Error	=	2.04	
	Spike (Tracer) Recovery	=	67.4%	1.84E-02 µCi/g

Data Entry by:	[signature]	Date:	12/21/94
Approved by:	[signature]	Date:	12/28/94

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			DUPLICATE
Type	Spike (Tracer) Book Number		135B51
DUPLICATE	Activity for 100µl of Spike Added in dpm	(dm3)	8088
Work List	Volume of Sample in mL	(SS)	0.25
225	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	1.8964
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	460
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3833
SOLID	Background cpm	(BKG cpm)	56
Sample #	Background Time Counted in Minutes	(BKG time)	20
S94T67	Instrument Fractional Efficiency	(EFF)	0.9476
Instrument Code	% Counting Error		2.02
WC16085	Detection Limit	(Ld)	8.37
Analyst	Critical Level	(Lc)	3.90
JMV	Tc-99 Concentration in µCi/g =		1.0480E+00
Date			
12/16/94	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Time	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
03:00 PM	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 - dm1))		
	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3		

v RESULTS v

				DETECTION LEVEL
RESULT	Tc-99 Concentration in µCi/g	=	1.05E+00	
	% Counting Error	=	2.02	
	Spike (Tracer) Recovery	=	62.6%	1.91E-02 µCi/g

Data Entry by:		Date:	12/21/94
Approved by:		Date:	12/23/94

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			SPIKE
Type	Spike (Tracer) Book Number		135B51
SPIKE	<<<<< RE-ENTER COMPLETE TYPE <<<<<		8088
Work List	Volume of Sample in mL	(SS)	0.25
225	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	1.82
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	1086
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	4138
SOLID	Background cpm	(BKG cpm)	56
Sample #	Background Time Counted in Minutes	(BKG time)	20
S94T67	Instrument Fractional Efficiency	(EFF)	0.9471
Instrument Code	% Counting Error		1.36
WC16085	Detection Limit	(Ld)	8.38
Analyst	Critical Level	(Lc)	3.90
JMV	Tc-99 Concentration in µCi/g =		2.8492E+00
Date			
12/16/94	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Time	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
03:00 PM	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 - dm1))

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

(5.1855 - 1.808) (1.25/1.25) /2.41 × 100% = 140.1%

4-18-95

v RESULTS v

RESULT			DETECTION LEVEL
	Tc-99 Concentration in µCi/g =	2.85E+00	
	% Counting Error =	1.36	
	Spike (Tracer) Recovery =	56.6%	2.20E-02 µCi/g

Data Entry by:		Date:	12/21/94
Approved by:		Date:	12/28/94

Form 438101_C Rev. 1.0

LABCORE Data Entry Template for Worklist# 232

QA 3

Analyst: JMV **Instrument:** LSC003 6500 **Method:** LA-438-101 D-2

Worklist Comment: 1 mL sample size/.25 mL std as matrix spike/ jls WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test		Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@TC99-01	TC99-01	SOLID			N/A	uCi/g
1	BLNK-PREP				@TC99-01	TC99-01E	SOLID			N/A	% Ct.
1-2 1	BLNK-PREP				@TC99-01	TC99-01T.	SOLID			N/A	% Rec
2	STD	47B52			@TC99-01	TC99-01	SOLID			N/A	uCi/g
34 2	STD				@TC99-01	TC99-01E	SOLID			N/A	% Ct.
~~5-6~~ 5-6 2	STD				@TC99-01	TC99-01T	SOLID			N/A	% Rec
3	SAMPLE	S94T000005	0		@TC99-01	TC99-01	SOLID	N/A			uCi/g
* 4-18-95 3	SAMPLE	S94T000005	0		@TC99-01	TC99-01T	SOLID	N/A			% Rec
3	SAMPLE	S94T000005	0		@TC99-01	TC99-01E	SOLID	N/A			% Ct.
4	DUP	S94T000005	0		@TC99-01	TC99-01	SOLID			N/A	uCi/g
4	DUP	S94T000005	0		@TC99-01	TC99-01E	SOLID			N/A	% Ct.
4	DUP	S94T000005	0		@TC99-01	TC99-01T	SOLID			N/A	% Rec
5	SPK	S94T000005	0		@TC99-01	TC99-01	SOLID			N/A	uCi/g
5	SPK	S94T000005	0		@TC99-01	TC99-01T	SOLID			N/A	% Rec

Final page for worklist # 232

Joseph Umscheid
Analyst Signature

12-14-94
Date

M C Brown 12/15/94

Data Entry Comments: Ran Extra Std to Clear QSCR AL

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

Page: 1

ID: 99TC 15 DEC 1994 07:52

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	:EDIT
SCINTILLATOR:		LIQUID	LUMEX	:YES	LOW SAMPLE REJ:	0		

DATA BUFFER IS FULL. DATA WILL GO TO PRINTER ONLY.

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
Blank B1	**-1	20.00	201.6	48.20	6.62	51.34	93.88	4.58	21.15	2P
		Blank Average		DPM for	99TC :	51.34	COEF. OF VAR:		0.000	
Blank 1	**-3	20.00	170.2	50.85	6.85	2.09	95.17	13.99	42.91	2P
Blank sph 2	**-4	20.00	157.9	2160.85	0.96	2210.40	95.54	0.35	64.61	
std 3	**-5	20.00	168.5	599.00	1.84	577.74	95.22	1.15	86.31	2P
std sph 4	**-6	20.00	160.0	2763.45	0.85	2842.92	95.48	0.20	107.96	
std 5	**-7	20.00	162.2	534.10	1.94	508.43	95.41	0.72	129.53	
std sph 6	**-8	20.00	160.6	2887.65	0.83	2973.52	95.46	0.14	151.16	2P
smp sph 7	**-9	20.00	160.0	2600.15	0.88	2671.94	95.48	0.23	172.83	2P
sph sph 8	**-10	20.00	165.3	3309.20	0.78	3420.33	95.32	0.21	194.55	
sample 9	**-11	20.00	159.4	417.80	2.21	386.16	95.50	1.66	216.26	2P
S.D. sph 10	**-12	20.00	152.2	2520.50	0.89	2582.61	95.69	0.22	237.94	2P
sph 11	**-1	20.00	165.5	1034.05	1.40	1033.54	95.31	0.68	259.73	
~~S.D.~~ 12	**-2	20.00	158.6	412.60	2.22	380.61	95.52	1.47	281.41	2P

sample Dup

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A-18-95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			STANDARD
Type	Spike (Tracer) Book Number		135B51
STANDARD	Activity for 100µl of Spike Added in dpm	(dm3)	8088
Work List	Volume of Sample in mL	(SS)	0.25
232	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	577.74
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	2842.92
LIQUID	Background cpm	(BKG cpm)	48.2
Sample #	Background Time Counted in Minutes	(BKG time)	20
S94T5	Instrument Fractional Efficiency	(EFF)	0.9522
Instrument Code	% Counting Error		1.84
WC51586	Detection Limit	(Ld)	7.74
Analyst	Critical Level	(Lc)	3.62
JMV	Tc-99 Concentration in µCi/L =		3.7169E+00
Date			
12/14/94			
Time			
03:00 PM			

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

v RESULTS v

RESULT	Tc-99 Concentration in µCi/mL	=	3.72E-03	DETECTION LEVEL
	% Counting Error	=	1.84	
	Spike (Tracer) Recovery	=	42.0%	4.98E-05 µCi/mL

Data Entry by:	[illegible]	Date:	12/15/94
Approved by:	[illegible]	Date:	12/21/94

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			BLANK
Type	Spike (Tracer) Book Number		135B51
BLANK	Activity for 100µl of Spike Added in dpm	(dm3)	8088
Work List	Volume of Sample in mL	(SS)	0.25
232	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	2.2092
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	2.09
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	2210.4
SOLID	Background cpm	(BKG cpm)	48.2
Sample #	Background Time Counted in Minutes	(BKG time)	20
S94T5	Instrument Fractional Efficiency	(EFF)	0.9517
Instrument Code	% Counting Error		6.85
WC51586	Detection Limit	(Ld)	7.74
Analyst	Critical Level	(Lc)	3.62
JMV	Tc-99 Concentration in µCi/g =	<	2.3133E-02
Date			
12/14/94	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Time	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
03:00 PM	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 - dm1))

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

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

v RESULTS v

				DETECTION LEVEL
RESULT	Tc-99 Concentration in µCi/g =	<	2.31E-02	
	% Counting Error =		6.85	
	Spike (Tracer) Recovery =		41.0%	2.31E-02 µCi/g

Data Entry by:	[signature]	Date:	12/15/94
Approved by:	[signature]	Date:	12/21/94

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			sample
Type	Spike (Tracer) Book Number		135B51
sample	Activity for 100µl of Spike Added in dpm	(dm3)	8088
Work List	Volume of Sample in mL	(SS)	0.25
232	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	2.2092
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	386.16
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	2671.94
SOLID	Background cpm	(BKG cpm)	48.2
Sample #	Background Time Counted in Minutes	(BKG time)	20
S94T5	Instrument Fractional Efficiency	(EFF)	0.955
Instrument Code	% Counting Error		2.21
WC51586	Detection Limit	(Ld)	7.72
Analyst	Critical Level	(Lc)	3.62
JMV	Tc-99 Concentration in µCi/g =		1.1144E+00
Date			
12/14/94	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Time	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
03:00 PM	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 - dm1))		
	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3		

v RESULTS v

RESULT	Tc-99 Concentration in µCi/g	=	1.11E+00	DETECTION LEVEL
	% Counting Error	=	2.21	
	Spike (Tracer) Recovery	=	42.4%	2.23E-02 µCi/g

Data Entry by:	[signature]	Date:	12/15/94
Approved by:	[signature]	Date:	12/21/94

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			DUPLICATE
Type	Spike (Tracer) Book Number		135B51
DUPLICATE	Activity for 100µl of Spike Added in dpm	(dm3)	8088
Work List	Volume of Sample in mL	(SS)	0.25
232	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	2.216
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	380.16
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	2582.61
SOLID	Background cpm	(BKG cpm)	48.2
Sample #	Background Time Counted in Minutes	(BKG time)	20
S94T5	Instrument Fractional Efficiency	(EFF)	0.9552
Instrument Code	% Counting Error		2.22
WC51586	Detection Limit	(Ld)	7.72
Analyst	Critical Level	(Lc)	3.62
JMV	Tc-99 Concentration in µCi/g =		1.1351E+00
Date			
12/14/94	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Time	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
03:00 PM	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 - dm1))		

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

v RESULTS v

			DETECTION LEVEL
RESULT	Tc-99 Concentration in µCi/g =	1.14E+00	
	% Counting Error =	2.22	
	Spike (Tracer) Recovery =	40.8%	2.30E-02 µCi/g

Data Entry by:	[illegible]	Date:	12/15/94
Approved by:	[illegible]	Date:	12/21/94

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			SPIKE
Type	Spike (Tracer) Book Number		135B51
SPIKE	<<<<< RE-ENTER COMPLETE TYPE <<<<<		8088
Work List	Volume of Sample in mL	(SS)	0.25
232	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	2.2092
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	1033.54
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3420.33
SOLID	Background cpm	(BKG cpm)	48.2
Sample #	Background Time Counted in Minutes	(BKG time)	20
S94T5	Instrument Fractional Efficiency	(EFF)	0.9531
Instrument Code	% Counting Error		1.4
WC51586	Detection Limit	(Ld)	7.73
Analyst	Critical Level	(Lc)	3.62
JMV	Tc-99 Concentration in µCi/g =		2.8564E+00
Date			
12/14/94	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Time	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
03:00 PM	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 - dm1))		

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

(2.8564/2.2092 L/L) − 1.114 (2.2092)) (1.33/1.35) / 2.41 µCi/L × 100% = 160%

12-22-94

4-18-95

v RESULTS v

			DETECTION LEVEL
RESULT	Tc-99 Concentration in µCi/g =	2.86E+00	
	% Counting Error =	1.4	
	Spike (Tracer) Recovery =	44.3%	2.14E-02 µCi/g

Data Entry by:		Date:	12/15/94
Approved by:		Date:	12/21/94

Form 438101_C Rev. 1.0

Emp 1-10 51/102 A2

LABCORE Data Entry Template for Worklist# 335

Analyst: SLH **Instrument:** LSC00 **Method:** LA-438-101 D-2

Worklist Comment: .25 mL sample size / .25 mL std as matrix spike / jls WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test	Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@TC99-01 TC99-01	SOLID			N/A	uCi/g
1	BLNK-PREP				@TC99-01 TC99-01E	SOLID			N/A	% Ct.
1	BLNK-PREP				@TC99-01 TC99-01T	SOLID			N/A	% Rec
2	STD	47B52			@TC99-01 TC99-01	SOLID			N/A	uCi/g
2	STD				@TC99-01 TC99-01E	SOLID			N/A	% Ct.
2	STD				@TC99-01 TC99-01T	SOLID			N/A	% Rec
3	SAMPLE	S94T000005	0		@TC99-01 TC99-01	SOLID	N/A			uCi/g
3	SAMPLE	S94T000005	0		@TC99-01 TC99-01T	SOLID	N/A			% Rec
3	SAMPLE	S94T000005	0		@TC99-01 TC99-01E	SOLID	N/A			% Ct.
4	DUP	S94T000005	0		@TC99-01 TC99-01	SOLID			N/A	uCi/g
4	DUP	S94T000005	0		@TC99-01 TC99-01E	SOLID			N/A	% Ct.
4	DUP	S94T000005	0		@TC99-01 TC99-01T	SOLID			N/A	% R
5	SPK	S94T000005	0		@TC99-01 TC99-01	SOLID			N/A	uCi/g
5	SPK	S94T000005 133B51	0		@TC99-01 TC99-01T	SOLID			N/A	% Rec

Final page for worklist # 335

Sandra Ann Boatright
Analyst Signature

12-31-94
Date

Data Entry Comments:

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

Page: 1

A K Johnson 12-31-94

USER: 5 ID:TC99. LS5801 PRESET TIME: 20.00 SAT 31 DEC 1994 18:19
SAMPLE REPEAT: 1 CYCLE REPEAT: 1 SCR:N RS232:N
H#: 1 AQC:Y QCF:N RCM:Y 2 PHASE MONITOR:N
RCM-TIME: 0.10 INT:999.95
CHANNEL 1-LL:150 UL: 800 2SIGMA: 0.10 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0

SINGLE LABEL DPM SET UP ON 20 DEC 1991 13:14

UNKNOWN ID:TC99. LS5801 UNKNOWN REPLICATES: 1
UNKNOWN NORM FACTOR ISO1:@ 1.00000
UNKNOWN UNITS ISO1:DPM
UNKNOWN HALF LIFE CORRECTION:N
INDIVIDUAL UNKNOWN NORM FACTORS:N BACKGROUND QUENCH CURVES:Y
STANDARD ID:131B28-A 1-10 QUENCH LIMITS LOW:73.67 HIGH:207.7
HALF LIFE(DAYS) ISO1:N
STANDARD DPM ISO1:0.00000000

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

SAM	POS	CH	CPM	2SIG%	TIME	EL TIME	AVG H#	RCM%	ERR
B1	**- 1	1	56.15	5.97	20.00	20.92	161.0	13.22	

BACKGROUND QUENCH CURVES: CONSTANT

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CHANNEL 1
QUENCH CURVE COEFFICIENTS
A: 56.15000 B:0.00000000 C:0.00000000 D:0.00000000000

BACKGROUND QUENCH CURVE CORRELATION TABLE

BKG	H#	MEASURED CPM.	CALCULATED CPM.	PERCENT DIFF.	FLAG
1	161.0	56.15	56.15	0.00	

BACKGROUND QUENCH LIMITS LOW:0.000 HIGH:1000.
TOTAL QUENCH LIMITS LOW:73.67 HIGH:207.7

SAM	POS	CH	CPM	2SIG%	TIME	EL TIME	AVG H#	RCM%	ERR
1	**- 3	1	357.50	2.37	20.00	42.17	129.0	2.24	
	ISO1 %EFF CH1:94.64							ISO1 DPM :318.4308	
2	**- 4	1	2214.20	0.95	20.00	63.28	128.0	0.32	
	ISO1 %EFF CH1:94.66							ISO1 DPM :2279.787	
3	**- 5	1	61.15	5.72	20.00	84.41	127.0	19.85	
	ISO1 %EFF CH1:94.68							ISO1 DPM :5.280912	
4	**- 6	1	1892.10	1.03	20.00	105.53	127.0	0.72	
	ISO1 %EFF CH1:94.68							ISO1 DPM :1939.098	

SAM	POS	CH	CPM	2SIG%	TIME	EL TIME	AVG H#	RCM%	ER
5	**- 7	1	116.80	4.14	20.00	126.65	129.0	9.67	
	ISO1	%EFF	CH1:94.64				ISO1	DPM :64.08771	
6	**- 8	1	1933.00	1.02	20.00	147.79	128.0	0.39	
	ISO1	%EFF	CH1:94.66				ISO1	DPM :1982.724	
7	**- 9	1	115.00	4.17	20.00	168.90	125.0	9.32	
	ISO1	%EFF	CH1:94.71				ISO1	DPM :62.13594	
8	**-10	1	2026.70	0.99	20.00	190.01	130.0	0.44	
	ISO1	%EFF	CH1:94.61				ISO1	DPM :2082.842	
9	**-11	1	416.90	2.19	20.00	211.12	129.0	3.23	
	ISO1	%EFF	CH1:94.64				ISO1	DPM :381.1977	
10	**-12	1	2260.15	0.94	20.00	232.23	127.0	0.34	
	ISO1	%EFF	CH1:94.68				ISO1	DPM :2327.826	

BEST AVAILABLE COPY

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

BEST AVAILABLE COPY

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

			STANDARD
Type	Spike (Tracer) Book Number		133B51
STANDARD	Activity for 100µl of Spike Added in dpm	(dm3)	7002.6
Work List	Volume of Sample in mL	(SS)	0.25
335	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	318.4308
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	2279.787
LIQUID	Background cpm	(BKG cpm)	56.15
Sample #	Background Time Counted in Minutes	(BKG time)	20
S94T05	Instrument Fractional Efficiency	(EFF)	0.9464
Instrument Code	% Counting Error		2.37
WB27818	Detection Limit	(Ld)	8.39
Analyst	Critical Level	(Lc)	3.90
SLH	Tc-99 Concentration in µCi/L =		2.0484E+00
Date			
12/31/94			
Time			
01:00 PM			

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

v RESULTS v

				DETECTION LEVEL
RESULT	Tc-99 Concentration in µCi/mL	=	2.05E-03	
	% Counting Error	=	2.37	
	Spike (Tracer) Recovery	=	42.0%	5.40E-05 µCi/mL

Data Entry by:	Jennifer L. Hilbert	Date:	01/06/95
Approved by:	[illegible]	Date:	1/6/95

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			BLANK
Type	Spike (Tracer) Book Number		133B51
BLANK	Activity for 100µl of Spike Added in dpm	(dm3)	7002.6
Work List	Volume of Sample in mL	(SS)	0.25
335	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	2.2092
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	5.280912
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	1939.098
SOLID	Background cpm	(BKG cpm)	56.15
Sample #	Background Time Counted in Minutes	(BKG time)	20
S94T05	Instrument Fractional Efficiency	(EFF)	0.9468
Instrument Code	% Counting Error		5.72
WB27818	Detection Limit	(Ld)	8.39
Analyst	Critical Level	(Lc)	3.90
SLH	Tc-99 Concentration in µCi/g =	<	2.4780E-02
Date			
12/31/94			
Time			
01:00 PM			

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 - dm1))

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

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

v RESULTS v

RESULT	Tc-99 Concentration in µCi/g =	<	2.48E-02	DETECTION LEVEL
	% Counting Error =		5.72	
	Spike (Tracer) Recovery =		41.4%	2.48E-02 µCi/g

Data Entry by:	Jennifer L. Simpson	Date:	01/06/95
Approved by:	J. L. Simpson	Date:	1/6/95

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			SAMPLE
Type	Spike (Tracer) Book Number		133B51
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	7002.6
Work List	Volume of Sample in mL	(SS)	0.25
335	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	2.2092
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	64.08771
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	1982.724
SOLID	Background cpm	(BKG cpm)	56.15
Sample #	Background Time Counted in Minutes	(BKG time)	20
S94T05	Instrument Fractional Efficiency	(EFF)	0.9464
Instrument Code	% Counting Error		4.14
WB27818	Detection Limit	(Ld)	8.39
Analyst	Critical Level	(Lc)	3.90
SLH	Tc-99 Concentration in µCi/g =		1.9077E-01
Date			
12/31/94	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Time	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
01:00 PM	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 - dm1))

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

v RESULTS v

			DETECTION LEVEL
RESULT	Tc-99 Concentration in µCi/g =	1.91E-01	
	% Counting Error =	4.14	
	Spike (Tracer) Recovery =	41.1%	2.50E-02 µCi/g

Data Entry by:	Jennifer L. Shipp	Date:	01/06/95
Approved by:	J. B. Shipp	Date:	

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			DUPLICATE
Type	Spike (Tracer) Book Number		133B51
DUPLICATE	Activity for 100µl of Spike Added in dpm	(dm3)	7002.6
Work List	Volume of Sample in mL	(SS)	0.25
335	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	2.216
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	62.13594
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	2082.842
SOLID	Background cpm	(BKG cpm)	56.15
Sample #	Background Time Counted in Minutes	(BKG time)	20
S94T05	Instrument Fractional Efficiency	(EFF)	0.9471
Instrument Code	% Counting Error		4.17
WB27818	Detection Limit	(Ld)	8.39
Analyst	Critical Level	(Lc)	3.90
SLH	Tc-99 Concentration in µCi/g =		1.7508E-01
Date			
12/31/94			
Time			
01:00 PM			

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 - dm1))

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

v RESULTS v

RESULT	Tc-99 Concentration in µCi/g =	1.75E-01	DETECTION LEVEL
	% Counting Error =	4.17	
	Spike (Tracer) Recovery =	43.3%	2.36E-02 µCi/g

Data Entry by:	Jennifer [illegible]	Date:	01/06/95
Approved by:	[illegible]	Date:	1/6/95

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			SPIKE
Type	Spike (Tracer) Book Number		133B51
SPIKE	<<<<< RE-ENTER COMPLETE TYPE <<<<<		7002.6
Work List	Volume of Sample in mL	(SS)	0.25
335	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	2.2092
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	381.1977
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	2327.826
SOLID	Background cpm	(BKG cpm)	56.15
Sample #	Background Time Counted in Minutes	(BKG time)	20
S94T05	Instrument Fractional Efficiency	(EFF)	0.9464
Instrument Code	% Counting Error		2.19
WB27818	Detection Limit	(Ld)	8.39
Analyst	Critical Level	(Lc)	3.90
SLH	Tc-99 Concentration in µCi/g =		1.1184E+00
Date			
12/31/94			
Time			
01:00 PM			

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 - dm1))

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

((1.1184)(2.2092) - (1.9077E-1)(2.2092)) (1/25 / 1/25) / 2.41 µCi/L × 100% = 85.0%

JS 4-18-95

v RESULTS v

RESULT			DETECTION LEVEL
	Tc-99 Concentration in µCi/g =	1.12E+00	
	% Counting Error =	2.19	
	Spike (Tracer) Recovery =	41.7%	2.46E-02 µCi/g

Data Entry by:	Jennifer [illegible]	Date:	01/06/95
Approved by:	[illegible]	Date:	1/6/95

Form 438101_C Rev. 1.0

SY103

LABCORE Data Entry Template for Worklist# 336

1-12-95 D-2

Analyst: RJM **Instrument:** LSC0 5801 **Method:** LA-438-101 ~~D-2~~ 4-18-95

Worklist Comment: .25 mL sample size / .25 mL std as matrix spike / jls WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test	Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@TC99-01 TC99-01	SOLID			N/A	uCi/g
1	BLNK-PREP				@TC99-01 TC99-01E	SOLID			N/A	% Ct.
1	BLNK-PREP				@TC99-01 TC99-01T	SOLID			N/A	% Rec
2	STD	47B52			@TC99-01 TC99-01	SOLID			N/A	uCi/g
2	STD				@TC99-01 TC99-01E	SOLID			N/A	% Ct.
2	STD				@TC99-01 TC99-01T	SOLID			N/A	% Rec
3	SAMPLE	S94T000067	0		@TC99-01 TC99-01	SOLID	N/A			uCi/g
3	SAMPLE	S94T000067	0		@TC99-01 TC99-01T	SOLID	N/A			% Rec
3	SAMPLE	S94T000067	0		@TC99-01 TC99-01E	SOLID	N/A			% Ct.
4	DUP	S94T000067	0		@TC99-01 TC99-01	SOLID			N/A	uCi/g
4	DUP	S94T000067	0		@TC99-01 TC99-01E	SOLID			N/A	% Ct.
4	DUP	S94T000067	0		@TC99-01 TC99-01T	SOLID			N/A	% R
5	SPK	S94T000067	0		@TC99-01 TC99-01	SOLID			N/A	uCi/g
5	SPK	S94T000067	0		@TC99-01 TC99-01T	SOLID			N/A	% Rec

~~133B51~~ 4-18-95
133B51

Final page for worklist # 336

Patricia T. McCown
Analyst Signature

1/3/~~94~~ 95
Date RJM 1/3/95

M G Bierman

Data Entry Comments: Rerun (used in report)

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

Page: 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			BLANK
Type	Spike (Tracer) Book Number		133B51
BLANK	Activity for 100µl of Spike Added in dpm	(dm3)	7002.6
Work List	Volume of Sample in mL	(SS)	0.25
336	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	1.82
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	8.3
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3700
SOLID	Background cpm	(BKG cpm)	50.45
Sample #	Background Time Counted in Minutes	(BKG time)	20
S94T67	Instrument Fractional Efficiency	(EFF)	0.9294
Instrument Code	% Counting Error		5.86
WB27818	Detection Limit	(Ld)	8.11
Analyst	Critical Level	(Lc)	3.70
PJM	Tc-99 Concentration in µCi/g =		1.5586E-02
Date			
01/03/95	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Time	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
06:30 AM	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 - dm1))

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

v RESULTS v

				DETECTION LEVEL
RESULT	Tc-99 Concentration in µCi/g	=	1.56E-02	
	% Counting Error	=	5.86	
	Spike (Tracer) Recovery	=	79.1%	1.52E-02 µCi/g

Data Entry by:	M. G. Brown	Date:	01/04/95
Approved by:	[illegible]	Date:	1/4/95

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			STANDARD
Type	Spike (Tracer) Book Number		133B51
STANDARD	Activity for 100µl of Spike Added in dpm	(dm3)	7002.6
Work List	Volume of Sample in mL	(SS)	0.25
336	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	608.3
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	4277.8
LIQUID	Background cpm	(BKG cpm)	50.45
Sample #	Background Time Counted in Minutes	(BKG time)	20
WORKLIST#336	Instrument Fractional Efficiency	(EFF)	0.9293
Instrument Code	% Counting Error		1.8
WB27818	Detection Limit	(Ld)	8.11
Analyst	Critical Level	(Lc)	3.70
PJM	Tc-99 Concentration in µCi/L =		2.0916E+00
Date			
01/03/95	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Time	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
06:30 AM	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

v RESULTS v

RESULT	Tc-99 Concentration in µCi/mL =	2.09E-03	DETECTION LEVEL
	% Counting Error =	1.8	
	Spike (Tracer) Recovery =	78.6%	2.79E-05 µCi/mL

Data Entry by:		Date:	01/04/95
Approved by:		Date:	1/4/95

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			SAMPLE
Type	Spike (Tracer) Book Number		133B51
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	7002.6
Work List	Volume of Sample in mL	(SS)	0.25
336	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	1.82
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	120.9
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3799.9
SOLID	Background cpm	(BKG cpm)	50.45
Sample #	Background Time Counted in Minutes	(BKG time)	20
S94T67	Instrument Fractional Efficiency	(EFF)	0.9293
Instrument Code	% Counting Error		3.5
WB27818	Detection Limit	(Ld)	8.11
Analyst	Critical Level	(Lc)	3.70
PJM	Tc-99 Concentration in µCi/g =		2.2782E-01
Date			
01/03/95	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Time	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
06:30 AM	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 - dm1))		

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

v RESULTS v

			DETECTION LEVEL
RESULT	Tc-99 Concentration in µCi/g =	2.28E-01	
	% Counting Error =	3.5	
	Spike (Tracer) Recovery =	78.8%	1.53E-02 µCi/g

Data Entry by: [signature] Date: 01/04/95

Approved by: [signature] Date: 1/4/95

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			DUPLICATE
Type	Spike (Tracer) Book Number		133B51
DUPLICATE	Activity for 100µl of Spike Added in dpm	(dm3)	7002.6
Work List	Volume of Sample in mL	(SS)	0.25
336	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	1.8964
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	123.6
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3774.2
SOLID	Background cpm	(BKG cpm)	50.45
Sample #	Background Time Counted in Minutes	(BKG time)	20
S94T67	Instrument Fractional Efficiency	(EFF)	0.9294
Instrument Code	% Counting Error		3.48
WB27818	Detection Limit	(Ld)	8.11
Analyst	Critical Level	(Lc)	3.70
PJM	Tc-99 Concentration in µCi/g =		2.2526E-01
Date			
01/03/95	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Time	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
06:30 AM	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 - dm1))

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

v RESULTS v

				DETECTION LEVEL
RESULT	Tc-99 Concentration in µCi/g	=	2.25E-01	
	% Counting Error	=	3.48	
	Spike (Tracer) Recovery	=	78.2%	1.48E-02 µCi/g

Data Entry by: M. Brown Date: 01/04/95

Approved by: Jennifer E. Brown Date: 1/4/95

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			SPIKE
Type	Spike (Tracer) Book Number		133B51
SPIKE	<<<<< RE-ENTER COMPLETE TYPE <<<<<		7002.6
Work List	Volume of Sample in mL	(SS)	0.25
336	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	1.82
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	699.2
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	4388.8
SOLID	Background cpm	(BKG cpm)	50.45
Sample #	Background Time Counted in Minutes	(BKG time)	20
S94T67	Instrument Fractional Efficiency	(EFF)	0.9293
Instrument Code	% Counting Error		1.69
WB27818	Detection Limit	(Ld)	8.11
Analyst	Critical Level	(Lc)	3.70
PJM	Tc-99 Concentration in µCi/g =		1.3138E+00
Date			
01/03/95	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Time	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
06:30 AM	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 - dm1))		

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

(1.3138 (1.82) - 2.2782E-1 (1.82)) (1/.25 / 1/.25) / 2.41 µCi/L × 100% = 82.0%

v RESULTS v

				DETECTION LEVEL
RESULT	Tc-99 Concentration in µCi/g =	1.31E+00		
	% Counting Error =	1.69		1.52E-02 µCi/g
	Spike (Tracer) Recovery =	79.0%		

Data Entry by: M C Bryan Date: 01/04/95

Approved by: Jennifer L Shepherd Date: 1/4/95

Form 438101_C Rev. 1.0

LABCORE Data Entry Template for Worklist# 825

Analyst: RPM **Instrument:** LSC00 6500 **Book #** 47B52

Method: LA-438-101 Rev/Mod D-2 value = 2.4100 E0

Worklist Comment: Run as usual / jls WHC-SD-WM-DP-074, REV. 0

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				@TC99-01 TC99-01	LIQUID			N/A	uCi/mL
		1	STD				@TC99-01 TC99-01E	LIQUID			N/A	% Ct. Error
		1	STD				@TC99-01 TC99-01T	LIQUID			N/A	% Recovery
		2	BLNK-PREP				@TC99-01 TC99-01	LIQUID			N/A	uCi/mL
		2	BLNK-PREP				@TC99-01 TC99-01E	LIQUID			N/A	% Ct. Error
		2	BLNK-PREP				@TC99-01 TC99-01T	LIQUID			N/A	% Recovery
94000020	SY-103	3	SAMPLE	S95T000328	0		@TC99-01 TC99-01	LIQUID	N/A			uCi/mL
94000020	SY-103	3	SAMPLE	S95T000328	0		@TC99-01 TC99-01T	LIQUID	N/A			% Recovery
94000020	SY-103	3	SAMPLE	S95T000328	0		@TC99-01 TC99-01E	LIQUID	N/A			% Ct. Error
94000020	SY-103	4	DUP	S95T000328	0		@TC99-01 TC99-01	LIQUID			N/A	uCi/mL
94000020	SY-103	4	DUP	S95T000328	0		@TC99-01 TC99-01E	LIQUID			N/A	% Ct. Error
94000020	SY-103	4	DUP	S95T000328	0		@TC99-01 TC99-01T	LIQUID			N/A	% Recovery
94000020	SY-103	5	SAMPLE	S95T000329	0		@TC99-01 TC99-01	LIQUID	N/A			uCi/mL
94000020	SY-103	5	SAMPLE	S95T000329	0		@TC99-01 TC99-01T	LIQUID	N/A			% Recovery
94000020	SY-103	5	SAMPLE	S95T000329	0		@TC99-01 TC99-01E	LIQUID	N/A			% Ct. Error
94000020	SY-103	6	DUP	S95T000329	0		@TC99-01 TC99-01	LIQUID			N/A	uCi/mL
94000020	SY-103	6	DUP	S95T000329	0		@TC99-01 TC99-01E	LIQUID			N/A	% Ct. Error
94000020	SY-103	6	DUP	S95T000329	0		@TC99-01 TC99-01T	LIQUID			N/A	% Recovery

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist# 825

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
94000020	SY-103	7	SAMPLE	S95T000330	0		@TC99-01 TC99-01	LIQUID	N/A			uCi/mL
94000020	SY-103	7	SAMPLE	S95T000330	0		@TC99-01 TC99-01T	LIQUID	N/A			% Recovery
94000020	SY-103	7	SAMPLE	S95T000330	0		@TC99-01 TC99-01E	LIQUID	N/A			% Ct. Error
94000020	SY-103	8	DUP	S95T000330	0		@TC99-01 TC99-01	LIQUID			N/A	uCi/mL
94000020	SY-103	8	DUP	S95T000330	0		@TC99-01 TC99-01E	LIQUID			N/A	% Ct. Error
94000020	SY-103	8	DUP	S95T000330	0		@TC99-01 TC99-01T	LIQUID			N/A	% Recovery
94000020	SY-103	9	SAMPLE	S95T000331	0		@TC99-01 TC99-01	LIQUID	N/A			uCi/mL
94000020	SY-103	9	SAMPLE	S95T000331	0		@TC99-01 TC99-01T	LIQUID	N/A			% Recovery
94000020	SY-103	9	SAMPLE	S95T000331	0		@TC99-01 TC99-01E	LIQUID	N/A			% Ct. Error
94000020	SY-103	10	DUP	S95T000331	0		@TC99-01 TC99-01	LIQUID			N/A	uCi/mL
94000020	SY-103	10	DUP	S95T000331	0		@TC99-01 TC99-01E	LIQUID			N/A	% Ct. Error
94000020	SY-103	10	DUP	S95T000331	0		@TC99-01 TC99-01T	LIQUID			N/A	% Recovery

Final page for worklist # 825

C.J. Quinn 4/6/95
Analyst Signature **Date**

R D Mayer 3/29/95
Analyst Signature **Date**

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

Data Entry Comments:

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

PAGE: 1

[illegible]

SAM NO	POS	TIME MIN	HH	99TC CPM	99TC %ERROR	99TC DPM	99TC EFF-1	LUMEX %	ELAPSED TIME	2P
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	44.85	[illegible]	[illegible]	[illegible]	[illegible]
	Blank	Average		DPM	for	99TC :	44.85	COEF. OF	VAR:	0.000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.82	629.14	[illegible]	[illegible]		
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	5000.47	[illegible]	[illegible]		
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	8.24	9.57	95.46	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4296.38	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2121.64	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6592.16	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2124.40	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6149.80	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1882.82	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6106.43	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1889.70	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6008.00	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	392.82	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4501.42	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	405.20	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4332.24	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	493.33	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4224.60	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	464.45	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4321.03	[illegible]	[illegible]	[illegible]	

BEST AVAILABLE COPY

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			STANDARD
Type	Spike (Tracer) Book Number		80B52
STANDARD	Activity for 100µl of Spike Added in dpm	(dm3)	8982.2
Work List	Volume of Sample in mL	(SS)	0.25
825	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	629.14
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	5000.47
LIQUID	Background cpm	(BKG cpm)	43.05
Sample #	Background Time Counted in Minutes	(BKG time)	20
WORKLIST 825	Instrument Fractional Efficiency	(EFF)	0.9547
Instrument Code	% Counting Error		1.82
WC51586	Detection Limit	(Ld)	7.30
Analyst	Critical Level	(Lc)	3.42
RDM	Tc-99 Concentration in µCi/L =		2.3293E+00
Date			
03/29/95			
Time			
10:10 PM			

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

v RESULTS v

				DETECTION LEVEL
RESULT	Tc-99 Concentration in µCi/mL	=	2.33E-03	
	% Counting Error	=	1.82	
	Spike (Tracer) Recovery	=	73.0%	2.70E-05 µCi/mL

Data Entry by:	C.G. Chamen	Date:	03/31/95
Approved by:	[signature]	Date:	4/3/95

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			BLANK
Type	Spike (Tracer) Book Number		80B52
BLANK	Activity for 100µl of Spike Added in dpm	(dm3)	8982.2
Work List	Volume of Sample in mL	(SS)	0.25
825	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	20
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	9.57
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	4296.38
LIQUID	Background cpm	(BKG cpm)	43.05
Sample #	Background Time Counted in Minutes	(BKG time)	20
WORKLIST 825	Instrument Fractional Efficiency	(EFF)	0.9546
Instrument Code	% Counting Error		8.24
WC51586	Detection Limit	(Ld)	7.30
Analyst	Critical Level	(Lc)	3.42
RDM	Tc-99 Concentration in µCi/L =		7.2260E-01
Date			
03/29/95	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Time	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
10:10 PM	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

v RESULTS v

				DETECTION LEVEL
RESULT	Tc-99 Concentration in µCi/mL	=	7.23E-04	
	% Counting Error	=	8.24	
	Spike (Tracer) Recovery	=	71.6%	5.52E-04 µCi/mL

Data Entry by:		Date:	08/01/95
Approved by:		Date:	9/1/95

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			SAMPLE
Type	Spike (Tracer) Book Number		80B52
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	8982.2
Work List	Volume of Sample in mL	(SS)	0.25
825	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	20
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	2121.64
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	6592.16
LIQUID	Background cpm	(BKG cpm)	43.05
Sample #	Background Time Counted in Minutes	(BKG time)	20
S95T328	Instrument Fractional Efficiency	(EFF)	0.9507
Instrument Code	% Counting Error		0.99
WC51586	Detection Limit	(Ld)	7.33
Analyst	Critical Level	(Lc)	3.42
RDM	Tc-99 Concentration in µCi/L =		1.5361E+02
Date			
03/29/95			
Time			
10:10 PM			

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

v RESULTS v

RESULT	Tc-99 Concentration in µCi/mL	=	1.54E-01	DETECTION LEVEL
	% Counting Error	=	0.99	
	Spike (Tracer) Recovery	=	74.7%	5.31E-04 µCi/mL

Data Entry by:		Date:	08/01/95
Approved by:		Date:	8/1/95

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			DUPLICATE
Type	Spike (Tracer) Book Number		80B52
DUPLICATE	Activity for 100µl of Spike Added in dpm	(dm3)	8982.2
Work List	Volume of Sample in mL	(SS)	0.25
825	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	20
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	2124.4
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	6149.8
LIQUID	Background cpm	(BKG cpm)	43.05
Sample #	Background Time Counted in Minutes	(BKG time)	20
S95T328	Instrument Fractional Efficiency	(EFF)	0.9543
Instrument Code	% Counting Error		0.99
WC51586	Detection Limit	(Ld)	7.31
Analyst	Critical Level	(Lc)	3.42
RDM	Tc-99 Concentration in µCi/L =		1.7082E+02
Date			
03/29/95	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Time	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
10:10 PM	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

v RESULTS v

				DETECTION LEVEL
RESULT	Tc-99 Concentration in µCi/mL	=	1.71E-01	
	% Counting Error	=	0.99	
	Spike (Tracer) Recovery	=	67.2%	5.88E-04 µCi/mL

Data Entry by:		Date:	08/01/95
Approved by:		Date:	8/1/95

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			SAMPLE
Type	Spike (Tracer) Book Number		80B52
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	8982.2
Work List	Volume of Sample in mL	(SS)	0.25
825	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	20
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	1882.82
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	6106.43
LIQUID	Background cpm	(BKG cpm)	43.05
Sample #	Background Time Counted in Minutes	(BKG time)	20
S95T329	Instrument Fractional Efficiency	(EFF)	0.9542
Instrument Code	% Counting Error		1.05
WC51586	Detection Limit	(Ld)	7.31
Analyst	Critical Level	(Lc)	3.42
RDM	Tc-99 Concentration in µCi/L =		1.4429E+02
Date			
03/29/95	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Time	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
10:10 PM	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

v RESULTS v

RESULT				DETECTION LEVEL
	Tc-99 Concentration in µCi/mL	=	1.44E-01	
	% Counting Error	=	1.05	
	Spike (Tracer) Recovery	=	70.5%	5.60E-04 µCi/mL

Data Entry by:		Date:	08/01/95
Approved by:		Date:	8/1/95

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			DUPLICATE
Type	Spike (Tracer) Book Number		80B52
DUPLICATE	Activity for 100µl of Spike Added in dpm	(dm3)	8982.2
Work List	Volume of Sample in mL	(SS)	0.25
825	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	20
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	1889.7
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	6008
LIQUID	Background cpm	(BKG cpm)	43.05
Sample #	Background Time Counted in Minutes	(BKG time)	20
S95T329	Instrument Fractional Efficiency	(EFF)	0.9543
Instrument Code	% Counting Error		1.05
WC51586	Detection Limit	(Ld)	7.31
Analyst	Critical Level	(Lc)	3.42
RDM	Tc-99 Concentration in µCi/L =		1.4852E+02
Date			
03/29/95			
Time			
10:10 PM			

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

v RESULTS v

RESULT			DETECTION LEVEL
	Tc-99 Concentration in µCi/mL =	1.49E-01	
	% Counting Error =	1.05	
	Spike (Tracer) Recovery =	68.8%	5.74E-04 µCi/mL

Data Entry by:		Date:	08/01/95
Approved by:		Date:	8/1/95

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			SAMPLE
Type	Spike (Tracer) Book Number		80B52
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	8982.2
Work List	Volume of Sample in mL	(SS)	0.25
825	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	20
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	392.82
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	4501.42
LIQUID	Background cpm	(BKG cpm)	43.05
Sample #	Background Time Counted in Minutes	(BKG time)	20
S95T330	Instrument Fractional Efficiency	(EFF)	0.9554
Instrument Code	% Counting Error		2.25
WC51586	Detection Limit	(Ld)	7.30
Analyst	Critical Level	(Lc)	3.42
RDM	Tc-99 Concentration in µCi/L =		3.0947E+01
Date			
03/29/95	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Time	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
10:10 PM	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

v RESULTS v

RESULT				DETECTION LEVEL
	Tc-99 Concentration in µCi/mL	=	3.09E-02	
	% Counting Error	=	2.25	
	Spike (Tracer) Recovery	=	68.6%	5.75E-04 µCi/mL

Data Entry by:		Date:	08/01/95
Approved by:		Date:	8/1/95

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			DUPLICATE
Type	Spike (Tracer) Book Number		80B52
DUPLICATE	Activity for 100µl of Spike Added in dpm	(dm3)	8982.2
Work List	Volume of Sample in mL	(SS)	0.25
825	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	20
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	405.2
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	4332.24
LIQUID	Background cpm	(BKG cpm)	43.05
Sample #	Background Time Counted in Minutes	(BKG time)	20
S95T330	Instrument Fractional Efficiency	(EFF)	0.9553
Instrument Code	% Counting Error		2.21
WC51586	Detection Limit	(Ld)	7.30
Analyst	Critical Level	(Lc)	3.42
RDM	Tc-99 Concentration in µCi/L =		3.3398E+01
Date			
03/29/95			
Time			
10:10 PM			

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

v RESULTS v

RESULT			DETECTION LEVEL
	Tc-99 Concentration in µCi/mL =	3.34E-02	
	% Counting Error =	2.21	
	Spike (Tracer) Recovery =	65.6%	6.02E-04 µCi/mL

Data Entry by:		Date:	08/01/95
Approved by:		Date:	8/1/95

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			SAMPLE
Type	Spike (Tracer) Book Number		80B52
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	8982.2
Work List #	Volume of Sample in mL	(SS)	0.25
825	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	20
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	493.33
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	4224.6
LIQUID	Background cpm	(BKG cpm)	43.05
Sample #	Background Time Counted in Minutes	(BKG time)	20
S95T331	Instrument Fractional Efficiency	(EFF)	0.9532
Instrument Code	% Counting Error		2.03
WC51586	Detection Limit	(Ld)	7.32
Analyst	Critical Level	(Lc)	3.42
RDM	Tc-99 Concentration in µCi/L =		4.2796E+01
Date			
03/29/95	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Time	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
10:10 PM	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

v RESULTS v

RESULT			DETECTION LEVEL
	Tc-99 Concentration in µCi/mL =	4.28E-02	
	% Counting Error =	2.03	
	Spike (Tracer) Recovery =	62.3%	6.35E-04 µCi/mL

Data Entry by: Date: 08/01/95
Approved by: Date: 8/1/95

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			DUPLICATE
Type	Spike (Tracer) Book Number		80B52
DUPLICATE	Activity for 100µl of Spike Added in dpm	(dm3)	8982.2
Work List	Volume of Sample in mL	(SS)	0.25
825	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	20
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	484.45
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	4321.03
LIQUID	Background cpm	(BKG cpm)	43.05
Sample #	Background Time Counted in Minutes	(BKG time)	20
S95T331	Instrument Fractional Efficiency	(EFF)	0.9545
Instrument Code	% Counting Error		2.08
WC51586	Detection Limit	(Ld)	7.31
Analyst	Critical Level	(Lc)	3.42
RDM	Tc-99 Concentration in µCi/L =		3.8981E+01
Date			
03/29/95	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Time	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
10:10 PM	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

v RESULTS v

				DETECTION LEVEL
RESULT	Tc-99 Concentration in µCi/mL	=	3.90E-02	
	% Counting Error	=	2.08	
	Spike (Tracer) Recovery	=	64.4%	6.13E-04 µCi/mL

Data Entry by:		Date:	08/01/95
Approved by:		Date:	8/1/95

Form 438101_C Rev. 1.0

LABCORE Data Entry Template for Worklist# 1579

Analyst: DPB **Instrument:** LSC00 _____ **Book #** 47B52

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

Worklist Comment: .25 mL sample size / jls WHC-SD-WM-DP-074, REV. 0

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				@TC99-01 TC99-01	SOLID			N/A	uCi/g
		1	STD				@TC99-01 TC99-01E	SOLID			N/A	% Ct. Error
		1	STD				@TC99-01 TC99-01T	SOLID			N/A	% Recovery
		2	BLNK-PREP				@TC99-01 TC99-01	SOLID			N/A	uCi/g
		2	BLNK-PREP				@TC99-01 TC99-01E	SOLID			N/A	% Ct. Error
		2	BLNK-PREP				@TC99-01 TC99-01T	SOLID			N/A	% Recovery
94000020	SY-103	3	SAMPLE	S94T000299	0	F	@TC99-01 TC99-01	SOLID	N/A			uCi/g
94000020	SY-103	3	SAMPLE	S94T000299	0	F	@TC99-01 TC99-01T	SOLID	N/A			% Recovery
94000020	SY-103	3	SAMPLE	S94T000299	0	F	@TC99-01 TC99-01E	SOLID	N/A			% Ct. Error
94000020	SY-103	4	DUP	S94T000299	0	F	@TC99-01 TC99-01	SOLID			N/A	uCi/g
94000020	SY-103	4	DUP	S94T000299	0	F	@TC99-01 TC99-01E	SOLID			N/A	% Ct. Error
94000020	SY-103	4	DUP	S94T000299	0	F	@TC99-01 TC99-01T	SOLID			N/A	% Recovery
94000020	SY-103	5	SAMPLE	S94T000300	0	F	@TC99-01 TC99-01	SOLID	N/A			uCi/g
94000020	SY-103	5	SAMPLE	S94T000300	0	F	@TC99-01 TC99-01T	SOLID	N/A			% Recovery
94000020	SY-103	5	SAMPLE	S94T000300	0	F	@TC99-01 TC99-01E	SOLID	N/A			% Ct. Error
94000020	SY-103	6	DUP	S94T000300	0	F	@TC99-01 TC99-01	SOLID			N/A	uCi/g
94000020	SY-103	6	DUP	S94T000300	0	F	@TC99-01 TC99-01E	SOLID			N/A	% Ct. Error
94000020	SY-103	6	DUP	S94T000300	0	F	@TC99-01 TC99-01T	SOLID			N/A	% Recovery

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist# 1579

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT

Final page for worklist # 1579

Daniel J Bromley 6/15/95
Analyst Signature Date

Shon L Uglum 6-20-95
Analyst Signature Date

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

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			STANDARD
Type	Spike (Tracer) Book Number		80B52
STANDARD	Activity for 100µl of Spike Added in dpm	(dm3)	8982.2
Work List	Volume of Sample in mL	(SS)	0.25
1579	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	619.85
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	4622.55
LIQUID	Background cpm	(BKG cpm)	45.95
Sample #	Background Time Counted in Minutes	(BKG time)	20
WORKLIST#1579	Instrument Fractional Efficiency	(EFF)	0.9552
Instrument Code	% Counting Error		1.78
WC51586	Detection Limit	(Ld)	7.54
Analyst	Critical Level	(Lc)	3.53
dpb	Tc-99 Concentration in µCi/L =		2.5062E+00
Date			
06/15/95	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Time	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
02:00 PM	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

v RESULTS v

			DETECTION LEVEL
RESULT	Tc-99 Concentration in µCi/mL =	2.51E-03	
	% Counting Error =	1.78	
	Spike (Tracer) Recovery =	66.8%	3.05E-05 µCi/mL

Data Entry by: [signature] Date: 06/20/95
Approved by: [signature] Date: 20 Jun 95

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			BLANK
Type	Spike (Tracer) Book Number		80B52
BLANK	Activity for 100µl of Spike Added in dpm	(dm3)	8982.2
Work List	Volume of Sample in mL	(SS)	0.25
1579	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	1.0488
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	9.12
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3915.6
SOLID	Background cpm	(BKG cpm)	45.95
Sample #	Background Time Counted in Minutes	(BKG time)	20
S94T299	Instrument Fractional Efficiency	(EFF)	0.9551
Instrument Code	% Counting Error		6.54
WC51586	Detection Limit	(Ld)	7.54
Analyst	Critical Level	(Lc)	3.53
dpb	Tc-99 Concentration in µCi/g =		3.6025E-02
Date			
06/15/95	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Time	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
02:00 PM	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 - dm1))

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

v RESULTS v

				DETECTION LEVEL
RESULT	Tc-99 Concentration in µCi/g	=	3.60E-02	
	% Counting Error	=	6.54	
	Spike (Tracer) Recovery	=	65.2%	2.98E-02 µCi/g

Data Entry by: [signature] Date: 06/20/95

Approved by: [signature] Date: 20 Jun 95

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			SAMPLE
Type	Spike (Tracer) Book Number		80B52
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	8982.2
Work List	Volume of Sample in mL	(SS)	0.25
1579	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	1.0488
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	30.98
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3830.68
SOLID	Background cpm	(BKG cpm)	45.95
Sample #	Background Time Counted in Minutes	(BKG time)	20
S94T299	Instrument Fractional Efficiency	(EFF)	0.9548
Instrument Code	% Counting Error		5.45
WC51586	Detection Limit	(Ld)	7.54
Analyst	Critical Level	(Lc)	3.53
dpb	Tc-99 Concentration in µCi/g =		1.2581E-01
Date			
06/15/95	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Time	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
02:00 PM	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 - dm1))

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

v RESULTS v

			DETECTION LEVEL
RESULT	Tc-99 Concentration in µCi/g =	1.26E-01	
	% Counting Error =	5.45	
	Spike (Tracer) Recovery =	63.5%	3.06E-02 µCi/g

Data Entry by: [signature] Date: 06/20/95

Approved by: [signature] Date: 20 Jun 95

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			DUPLICATE
Type	Spike (Tracer) Book Number		80B52
DUPLICATE	Activity for 100µl of Spike Added in dpm	(dm3)	8982.2
Work List	Volume of Sample in mL	(SS)	0.25
1579	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	1.074
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	41.46
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3771.53
SOLID	Background cpm	(BKG cpm)	45.95
Sample #	Background Time Counted in Minutes	(BKG time)	20
S94T299	Instrument Fractional Efficiency	(EFF)	0.9547
Instrument Code	% Counting Error		5.09
WC51586	Detection Limit	(Ld)	7.54
Analyst	Critical Level	(Lc)	3.53
dpb	Tc-99 Concentration in µCi/g =		1.6749E-01
Date			
06/15/95	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Time	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
02:00 PM	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 - dm1))

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

v RESULTS v

			DETECTION LEVEL
RESULT	Tc-99 Concentration in µCi/g =	1.67E-01	
	% Counting Error =	5.09	
	Spike (Tracer) Recovery =	62.3%	3.05E-02 µCi/g

Data Entry by: [signature] Date: 06/20/95

Approved by: [signature] Date: 20 Jun 95

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			SAMPLE
Type	Spike (Tracer) Book Number		80B52
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	8982.2
Work List	Volume of Sample in mL	(SS)	0.25
1579	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	2.068
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	121.84
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	4058.64
SOLID	Background cpm	(BKG cpm)	45.95
Sample #	Background Time Counted in Minutes	(BKG time)	20
S94T300	Instrument Fractional Efficiency	(EFF)	0.9551
Instrument Code	% Counting Error		3.6
WC51586	Detection Limit	(Ld)	7.54
Analyst	Critical Level	(Lc)	3.53
dpb	Tc-99 Concentration in µCi/g =		2.4221E-01
Date			
06/15/95	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Time	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
02:00 PM	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 - dm1))

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

v RESULTS v

RESULT			DETECTION LEVEL
	Tc-99 Concentration in µCi/g =	2.42E-01	
	% Counting Error =	3.6	
	Spike (Tracer) Recovery =	65.7%	1.50E-02 µCi/g

Data Entry by: Shannon L. Uhle Date: 06/20/95

Approved by: [illegible] Date: 20 Jun 95

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			DUPLICATE
Type	Spike (Tracer) Book Number		80B52
DUPLICATE	Activity for 100µl of Spike Added in dpm	(dm3)	8982.2
Work List	Volume of Sample in mL	(SS)	0.25
1579	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	2.0628
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	125.31
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	4123.16
SOLID	Background cpm	(BKG cpm)	45.95
Sample #	Background Time Counted in Minutes	(BKG time)	20
S94T300	Instrument Fractional Efficiency	(EFF)	0.9541
Instrument Code	% Counting Error		3.56
WC51586	Detection Limit	(Ld)	7.55
Analyst	Critical Level	(Lc)	3.53
dpb	Tc-99 Concentration in µCi/g =		2.4592E-01
Date			
06/15/95	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)		
Time	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF		
02:00 PM	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 - dm1))

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

v RESULTS v

			DETECTION LEVEL
RESULT	Tc-99 Concentration in µCi/g =	2.46E-01	
	% Counting Error =	3.56	
	Spike (Tracer) Recovery =	66.8%	1.48E-02 µCi/g

Data Entry by: [signature] Date: 06/20/95

Approved by: [signature] Date: 20 Jun 95

Form 438101_C Rev. 1.0

A Johansen 6-15-95

LABCORE Data Entry Template for Worklist# 1693

Analyst: JBS **Instrument:** LSC00 LS 6000 LL **Book #** 47B52

Method: LA-438-101 Rev/Mod D-2 WHC-SD-WM-DP-074, REV. 0 { Spike # 80B52 Spike Vol. .100 ml

Worklist Comment: Please Rush. SLF

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD	47B52			@TC99-01 TC99-01	SOLID			N/A	uCi/g
		1 STD	"			@TC99-01 TC99-01E	SOLID			N/A	% Ct. Error
		1 STD	"			@TC99-01 TC99-01T	SOLID			N/A	% Recovery
		2 BLNK-PREP				@TC99-01 TC99-01	SOLID			N/A	uCi/g
		2 BLNK-PREP				@TC99-01 TC99-01E	SOLID			N/A	% Ct. Error
		2 BLNK-PREP				@TC99-01 TC99-01T	SOLID			N/A	% Recovery
94000020	SY-103	3 SAMPLE	S95T000295	0	R	@TC99-01 TC99-01	SOLID	N/A			uCi/g
94000020	SY-103	3 SAMPLE	S95T000295	0	R	@TC99-01 TC99-01T	SOLID	N/A			% Recovery
94000020	SY-103	3 SAMPLE	S95T000295	0	R	@TC99-01 TC99-01E	SOLID	N/A			% Ct. Error
94000020	SY-103	4 DUP	S95T000295	0	R	@TC99-01 TC99-01	SOLID			N/A	uCi/g
94000020	SY-103	4 DUP	S95T000295	0	R	@TC99-01 TC99-01E	SOLID			N/A	% Ct. Error
94000020	SY-103	4 DUP	S95T000295	0	R	@TC99-01 TC99-01T	SOLID			N/A	% Recovery
94000020	SY-103	5 SAMPLE	S95T000296	0	R	@TC99-01 TC99-01	SOLID	N/A			uCi/g
94000020	SY-103	5 SAMPLE	S95T000296	0	R	@TC99-01 TC99-01T	SOLID	N/A			% Recovery
94000020	SY-103	5 SAMPLE	S95T000296	0	R	@TC99-01 TC99-01E	SOLID	N/A			% Ct. Error
94000020	SY-103	6 DUP	S95T000296	0	R	@TC99-01 TC99-01	SOLID			N/A	uCi/g
94000020	SY-103	6 DUP	S95T000296	0	R	@TC99-01 TC99-01E	SOLID			N/A	% Ct. Error
94000020	SY-103	6 DUP	S95T000296	0	R	@TC99-01 TC99-01T	SOLID			N/A	% Recovery

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist# 1693

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT

Final page for worklist # 1693

Analyst Signature 6-24-95 Date

Analyst Signature 6-26-95 Date

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

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			STANDARD
Type	Spike (Tracer) Book Number		80B52
STANDARD	Activity for 100µl of Spike Added in dpm	(dm3)	8982.2
Work List	Volume of Sample in mL	(SS)	0.25
1693	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	512.63
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3910.27
LIQUID	Background cpm	(BKG cpm)	47.05
Sample #	Background Time Counted in Minutes	(BKG time)	20
WORKLIST#1693	Instrument Fractional Efficiency	(EFF)	0.9533
Instrument Code	% Counting Error		1.94
WC16085	Detection Limit	(Ld)	7.64
Analyst	Critical Level	(Lc)	3.57
DGG	Tc-99 Concentration in µCi/L =		2.4418E+00
Date			
06/24/95			
Time			
10:30 PM			

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

v RESULTS v

			DETECTION LEVEL
RESULT	Tc-99 Concentration in µCi/mL =	2.44E-03	
	% Counting Error =	1.94	
	Spike (Tracer) Recovery =	56.7%	3.64E-05 µCi/mL

Data Entry by: [signature] Date: 06/26/95
Approved by: [signature] Date: 26 Jun 95

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			BLANK
Type	Spike (Tracer) Book Number		80B52
BLANK	Activity for 100µl of Spike Added in dpm	(dm3)	8982.2
Work List	Volume of Sample in mL	(SS)	1
1693	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	5.0842
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	-2.04
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	3468.26
SOLID	Background cpm	(BKG cpm)	47.05
Sample #	Background Time Counted in Minutes	(BKG time)	20
S95T295	Instrument Fractional Efficiency	(EFF)	0.9534
Instrument Code	% Counting Error		6.93
WC16085	Detection Limit	(Ld)	7.64
Analyst	Critical Level	(Lc)	3.57
DGG	Tc-99 Concentration in µCi/g =	<	1.7519E-03
Date			
06/24/95			
Time			
10:30 PM			

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 - dm1))

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

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

v RESULTS v

RESULT				DETECTION LEVEL
	Tc-99 Concentration in µCi/g =	<	1.75E-03	
	% Counting Error =		6.93	
	Spike (Tracer) Recovery =		58.0%	1.75E-03 µCi/g

Data Entry by: [signature] Date: 06/26/95
Approved by: [signature] Date: 26 Jun 95

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			SAMPLE
Type	Spike (Tracer) Book Number		80B52
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	8982.2
Work List	Volume of Sample in mL	(SS)	1
1693	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	5.0842
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	729.6
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	4179.05
SOLID	Background cpm	(BKG cpm)	47.05
Sample #	Background Time Counted in Minutes	(BKG time)	20
S95T295	Instrument Fractional Efficiency	(EFF)	0.9532
Instrument Code	% Counting Error		1.65
WC16085	Detection Limit	(Ld)	7.64
Analyst	Critical Level	(Lc)	3.57
DGG	Tc-99 Concentration in µCi/g =		1.6832E-01
Date			
06/24/95			
Time			
10:30 PM			

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 - dm1))

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

v RESULTS v

RESULT			DETECTION LEVEL
	Tc-99 Concentration in µCi/g =	1.68E-01	
	% Counting Error =	1.65	
	Spike (Tracer) Recovery =	57.6%	1.76E-03 µCi/g

Data Entry by: [signature] Date: 06/26/95
Approved by: [signature] Date: 26 Jun 95

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			DUPLICATE
Type	Spike (Tracer) Book Number		80B52
DUPLICATE	Activity for 100µl of Spike Added in dpm	(dm3)	8982.2
Work List	Volume of Sample in mL	(SS)	1
1693	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	5.1787
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	714.8
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	4213.96
SOLID	Background cpm	(BKG cpm)	47.05
Sample #	Background Time Counted in Minutes	(BKG time)	20
S95T295	Instrument Fractional Efficiency	(EFF)	0.9534
Instrument Code	% Counting Error		1.66
WC16085	Detection Limit	(Ld)	7.64
Analyst	Critical Level	(Lc)	3.57
DGG	Tc-99 Concentration in µCi/g =		1.5960E-01
Date			
06/24/95			
Time			
10:30 PM			

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 - dm1))

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

v RESULTS v

			DETECTION LEVEL
RESULT	Tc-99 Concentration in µCi/g =	1.60E-01	
	% Counting Error =	1.66	
	Spike (Tracer) Recovery =	58.4%	1.71E-03 µCi/g

Data Entry by: [signature] Date: 06/26/95
Approved by: [signature] Date: 26 Jun 95

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			SAMPLE
Type	Spike (Tracer) Book Number		80B52
SAMPLE	Activity for 100µl of Spike Added in dpm	(dm3)	8982.2
Work List	Volume of Sample in mL	(SS)	1
1693	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	5.0774
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	609.23
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	4037.87
SOLID	Background cpm	(BKG cpm)	47.05
Sample #	Background Time Counted in Minutes	(BKG time)	20
S95T296	Instrument Fractional Efficiency	(EFF)	0.9533
Instrument Code	% Counting Error		1.79
WC16085	Detection Limit	(Ld)	7.64
Analyst	Critical Level	(Lc)	3.57
DGG	Tc-99 Concentration in µCi/g =		1.4159E-01
Date			
06/24/95			
Time			
10:30 PM			

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 - dm1))

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

v RESULTS v

			DETECTION LEVEL
RESULT	Tc-99 Concentration in µCi/g =	1.42E-01	
	% Counting Error =	1.79	
	Spike (Tracer) Recovery =	57.3%	1.78E-03 µCi/g

Data Entry by: [signature] Date: 06/26/95
Approved by: [signature] Date: 26 Jun 95

Form 438101_C Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

			DUPLICATE
Type	Spike (Tracer) Book Number		80B52
DUPLICATE	Activity for 100µl of Spike Added in dpm	(dm3)	8982.2
Work List	Volume of Sample in mL	(SS)	1
1693	Dilution Factor	(DF)	1
Test Code	Digest Grams of Solids/Liter	(Dg/L)	5.1855
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1)	569.14
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2)	4066.05
SOLID	Background cpm	(BKG cpm)	47.05
Sample #	Background Time Counted in Minutes	(BKG time)	20
S95T296	Instrument Fractional Efficiency	(EFF)	0.9534
Instrument Code	% Counting Error		1.85
WC16085	Detection Limit	(Ld)	7.64
Analyst	Critical Level	(Lc)	3.57
DGG	Tc-99 Concentration in µCi/g =		1.2699E-01
Date			
06/24/95			
Time			
10:30 PM			

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 - dm1))

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

v RESULTS v

			DETECTION LEVEL
RESULT	Tc-99 Concentration in µCi/g =	1.27E-01	
	% Counting Error =	1.85	
	Spike (Tracer) Recovery =	58.4%	1.70E-03 µCi/g

Data Entry by: Shyron Little Date: 06/26/95
Approved by: [illegible] Date: 26 Jun 95

Form 438101_C Rev. 1.0

D. Hamilton
6-25-95

ID: TC 99 25 JUN 1995 04:12
USER: 5 COMMENT:LS 6000
PRESET TIME : 20.00
DATA CALC : SL DPM H# :YES SAMPLE REPEATS: 1 PRINTER : STL
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
B1	**-1	20.00	137.3	47.05	6.56	49.18	95.66	1.21	20.98	
		Blank Average DPM for TC99 : 49.18 COEF. OF VAR: 0.000								
1	**-3	20.00	151.6	535.60	1.94	512.63	95.33	0.83	42.58	
2	**-4	20.00	151.1	3775.30	0.73	3910.27	95.35	0.11	64.20	
3	**-5	20.00	151.6	44.95	6.93	-2.04	95.34	6.00	85.78	2P
4	**-6	20.00	152.0	3353.00	0.77	3468.26	95.32	0.12	107.37	2P
5	**-7	20.00	152.4	742.30	1.65	729.60	95.32	0.48	128.96	
6	**-8	20.00	152.5	4030.10	0.70	4179.05	95.31	0.08	150.54	
7	**-9	20.00	151.6	728.35	1.66	714.80	95.34	0.49	172.12	
8	**-10	20.00	152.5	4063.35	0.70	4213.96	95.31	0.08	193.69	
9	**-11	20.00	151.9	627.65	1.79	609.23	95.33	0.51	215.24	
10	**-12	20.00	148.5	3899.50	0.72	4037.87	95.41	0.07	236.80	
11	**-1	20.00	151.5	589.50	1.85	569.14	95.34	0.57	258.49	
12	**-2	20.00	151.6	3923.25	0.71	4066.05	95.33	0.08	280.06	

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

NEPTUNIUM ANALYSES

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QA

LABCORE Data Entry Template for Worklist# 199

PSM

Analyst: RMcCown **Instrument:** NP01 _____ **Method:** LA-933-141 (H-O)

Worklist Comment: Run one standard only. -LLF WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test	Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@NP23701 NP23701	SOLID			N/A	uCi/g
1	BLNK-PREP				@NP23701 NP23701E	SOLID			N/A	% Ct.
2	STD	~~90B43~~ 90B43			@NP23701 NP23701	SOLID			N/A	uCi/g
2	STD	12-7-94			@NP23701 NP23701E	SOLID			N/A	% Ct.
3	SAMPLE	S94T000005	0		@NP23701 NP23701	SOLID	N/A			uCi/g
3	SAMPLE	S94T000005	0		@NP23701 NP23701E	SOLID	N/A			% Ct.
4	DUP	S94T000005	0		@NP23701 NP23701	SOLID			N/A	uCi/g
4	DUP	S94T000005	0		@NP23701 NP23701E	SOLID			N/A	% Ct.
5	SPK	S94T000005	0		@NP23701 NP23701	SOLID			N/A	uCi/g
6	BLNK-PREP				@NP23701 NP23701	SOLID			N/A	uCi/g
6	BLNK-PREP				@NP23701 NP23701E	SOLID			N/A	% Ct.
7	STD	90B43			@NP23701 NP23701	SOLID			N/A	uCi/g
7	STD				@NP23701 NP23701E	SOLID			N/A	% Ct.
8	SAMPLE	S94T000067	0		@NP23701 NP23701	SOLID	N/A			uCi/g
8	SAMPLE	S94T000067	0		@NP23701 NP23701E	SOLID	N/A			% Ct.
9	DUP	S94T000067	0		@NP23701 NP23701	SOLID			N/A	uCi/g
9	DUP	S94T000067	0		@NP23701 NP23701E	SOLID			N/A	% Ct.
10	SPK	S94T000067	0		@NP23701 NP23701	SOLID			N/A	uCi/g

Data Entry Comments: (Spike rec.) Recum performed & used for S94T00005 RL

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

LABCORE Data Entry Template for Worklist# 199

Analyst: RHMcCown **Instrument:** NP01 DPC #1 **Method:** LA-933-141

Worklist Comment: Run one standard only. -LLF WHC-SD-WM-DP-074, REV. 0

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

Final page for worklist # 199

RHMcCown
Analyst Signature

12/4/94
Date

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-0) SOLIDS

			BLANK
Sample Volume in mL	(SS)		0.250
Dilution Factor	(DF)		1
Mount Factor (1/Mount Volume in mL)	(Mt F)		2
Digest Grams of Solids/Liter	(D g/l)		2.2092
Gross Counts	(Gc)		133
Time counted in Minutes	(Tc)		30
Background in cpm	(bkg)		4
Lc, Rmax, or Rs,(Sample Rate) as Appropriate			1.31
µCi/L in Digest Solution =		<	2.8285E-02

Type
BLANK
Work List
199
Test Code
@NP237-01
Matrix
SOLID
Sample #
S94T000005
Instrument Code
WB26875
Analyst
~~RSM~~ PJM
Date
12/04/94
Time
07:30 AM

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

12-5-94

Np-237 µCi/kg	=	< 1.28E+01
Np-237 µCi/g	=	< 1.28E-02

LESS THAN Value was Determined from Rmax.

Relative Counting Error	=	239.8%

DETECTION LEVEL

1.76E-02 µCi/g

Data Entry by:		Date:	12/05/94
Approved by:		Date:	5 Dec. 94

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-0) LIQUIDS/SOLIDS

			STANDARD
Type	Sample Volume in mL	(SS)	0.100
STANDARD	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
199	Digest Dilution Factor	(DDF)	1
Test Code	Gross Counts	(Gc)	17340
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	4
LIQUID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		574.00
Sample #	µCi/L in Sample =		3.1027E+01
S94T000005			
Instrument Code			
WB26875			
Analyst			
RGM			
Date			
12/04/94			
Time			
07:30 AM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/L = Rs * 1000mL/L * DF * 3 * Mt F * DDF / (0.5 * SS * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/mL = Np-237 µCi/L / 1000mL/L

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

PJM 12-5-94

Np-237 µCi/L	=	3.10E+01
Np-237 µCi/mL	=	3.10E-02
Relative Counting Error	=	1.5%

DETECTION LEVEL

9.70E-05 µCi/mL

Data Entry by:	[signature]	Date:	12/05/94
Approved by:	[signature]	Date:	5 Dec 94

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-0) SOLIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.250
SAMPLE	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
199	Digest Grams of Solids/Liter	(D g/l)	2.2092
Test Code	Gross Counts	(Gc)	127
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	4
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.10
Sample #	µCi/L in Digest Solution =	<	2.3735E-02
S94T000005			
Instrument Code			
WB26875			
Analyst			
~~RSM~~ PJM			
Date			
12/04/94 12.5.94			
Time			
07:30 AM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/kg	=	< 1.07E+01
Np-237 µCi/g	=	< 1.07E-02

LESS THAN Value was Determined from Rmax.

Relative Counting Error	=	440.1%

DETECTION LEVEL

1.76E-02 µCi/g

Data Entry by: M Blumenn		Date:	12/05/94
Approved by:		Date:	5 Dec 94

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-0) SOLIDS

			DUPLICATE
Type	Sample Volume in mL	(SS)	0.250
DUPLICATE	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
199	Digest Grams of Solids/Liter	(D g/l)	2.216
Test Code	Gross Counts	(Gc)	126
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	4
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.13
Sample #	µCi/L in Digest Solution =	<	2.4493E-02
S94T000005			
Instrument Code			
WB26875	Sample Count Rate (Rs) = (Gc / Tc) - bkg		
Analyst	Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)		
PJM ~~RSM~~	WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.		
Date	Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg		
12/04/94 12.5.94	Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100		
Time			
07:30 AM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

Np-237 µCi/kg	=	< 1.11E+01
Np-237 µCi/g	=	< 1.11E-02

LESS THAN Value was Determined from Rmax.

Relative Counting Error	=	385.8%

DETECTION LEVEL

1.75E-02 µCi/g

Data Entry by:	[signature]	Date:	12/05/94
Approved by:	[signature]	Date:	5 Dec 94

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-0) SPIKED SAMPLE

			SPIKE
Type	Sample Volume in mL	(SS)	0.250
SPIKE	Dilution Factor for Sample in Spiked Vial	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
199	Gross Counts	(Gc)	15490
Test Code	Time Counted in Minutes	(Tc)	30
@NP237-01	Background in cpm	(bkg)	4
Matrix	Spike Volume in mL	(Svol)	0.100
SOLID	Spike Dilution Factor	(SDF)	1
Sample #	Spike Value in µCi/L	(Sval)	3.635E+01
S94T000005	Sample µCi/L in Sample or Digest as appropriate from Form #1		<2.3735E-2
Instrument Code	Sample + Spike µCi/L	(S+S)	1.108E+01
WB26875			
Analyst			
~~RSM~~ PJM			
Date			
12/04/94 12-5-94			
Time			
07:30 AM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Sample + Spike µCi/L (S+S) = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * 2220000dpm/µCi)

Percent Spike Recovery = (((S+S) - Sample µCi/L) * ((SDF/Svol) / (DF/SS)) / Sval) * 100

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

PERCENT SPIKE RECOVERY = 76.2%

Data Entry by:	[signature]	Date:	12/05/94
Approved by:	[signature]	Date:	5 Dec 94

Form 933141_X Rev. 1.2

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-0) SOLIDS

			BLANK
Type	Sample Volume in mL	(SS)	0.250
BLANK	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
199	Digest Grams of Solids/Liter	(D g/l)	1.82
Test Code	Gross Counts	(Gc)	124
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	4
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		0.99
Sample #	µCi/L in Digest Solution =		< 2.1459E-02
S94T000067			
Instrument Code			
WB26875			
Analyst			
~~RCM~~ PJM			
Date			
12/04/94 12-5-94			
Time			
07:30 AM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/kg	=	< 1.18E+01
Np-237 µCi/g	=	< 1.18E-02

LESS THAN Value was Determined from Rmax.

Relative Counting Error	=	500.0%

DETECTION LEVEL

2.13E-02 µCi/g

Data Entry by:	[signature]	Date:	12/05/94
Approved by:	[signature]	Date:	5 Dec 94

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-0) SOLIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.250
SAMPLE	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
199	Digest Grams of Solids/Liter	(D g/l)	1.82
Test Code	Gross Counts	(Gc)	100
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	4
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		0.85
Sample #	µCi/L in Digest Solution =		< 1.8423E-02
S94T000067			
Instrument Code			
WB26875			
Analyst			
~~RGM~~ PJM			
Date			
12/04/94			
Time			
07:30 AM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

12.5.94

Np-237 µCi/kg	=	< 1.01E+01
Np-237 µCi/g	=	< 1.01E-02

LESS THAN Value was Determined from Lc.

Relative Counting Error	=	145.4%

DETECTION LEVEL

2.13E-02 µCi/g

Data Entry by:	[signature]	Date:	12/05/94
Approved by:	[signature]	Date:	5 Dec 94

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-0) SOLIDS

				DUPLICATE
Type	Sample Volume in mL	(SS)		0.250
DUPLICATE	Dilution Factor	(DF)		1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)		2
199	Digest Grams of Solids/Liter	(D g/l)		1.8964
Test Code	Gross Counts	(Gc)		127
@NP237-01	Time counted in Minutes	(Tc)		30
Matrix	Background in cpm	(bkg)		4
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate			1.10
Sample #	µCi/L in Digest Solution =		<	2.3735E-02
S94T000067				
Instrument Code				
WB26875				
Analyst				
RSM				
Date				
12/04/94				
Time				
07:30 AM				

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

PJM
12.5.94

Np-237 µCi/kg	=	< 1.25E+01
Np-237 µCi/g	=	< 1.25E-02

LESS THAN Value was Determined from Rmax.

Relative Counting Error	=	440.1%

DETECTION LEVEL

2.05E-02 µCi/g

Data Entry by:	[signature]	Date:	12/05/94
Approved by:	[signature]	Date:	5 Dec 94

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-0) SPIKED SAMPLE

			SPIKE
Type	Sample Volume in mL	(SS)	0.250
SPIKE	Dilution Factor for Sample in Spiked Vial	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
199	Gross Counts	(Gc)	16809
Test Code	Time Counted in Minutes	(Tc)	30
@NP237-01	Background in cpm	(bkg)	4
Matrix	Spike Volume in mL	(Svol)	0.100
SOLID	Spike Dilution Factor	(SDF)	1
Sample #	Spike Value in µCi/L	(Sval)	3.635E+01
S94T000067	Sample µCi/L in Sample or Digest as appropriate from Form #1		<1.8423E-2
Instrument Code	Sample + Spike µCi/L	(S+S)	1.203E+01
WB26875			
Analyst			
PJM ~~RSM~~	Sample Count Rate (Rs) = (Gc / Tc) - bkg		
Date	Sample + Spike µCi/L (S+S) = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * 2220000dpm/µCi)		
12.5.94 12/04/94	Percent Spike Recovery = (((S+S) - Sample µCi/L) * ((SDF/Svol) / (DF/SS)) / Sval) * 100		
Time	WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.		
07:30 AM			

PERCENT SPIKE RECOVERY = 82.7%

Data Entry by:	[illegible]	Date:	12/05/94
Approved by:	[illegible]	Date:	5 Dec 94

Form 933141_X Rev. 1.2

LABCORE Data Entry Template for Worklist# 221

Analyst: BJM **Instrument:** NP01 _____ **Method:** LA-933-141 (H-0)

Worklist Comment: Ran batch as normal. --LLF

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

Seg	Type	Sample#	Rep	Al	Test	Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@NP23701 NP23701	SOLID			N/A	uCi/g
1	BLNK-PREP				@NP23701 NP23701E	SOLID			N/A	% Ct.
2	STD #90B43				@NP23701 NP23701	SOLID			N/A	uCi/g
2	STD				@NP23701 NP23701E	SOLID			N/A	% Ct.
3	SAMPLE	S94T000005	0		@NP23701 NP23701	SOLID	N/A			uCi/g
3	SAMPLE	S94T000005	0		@NP23701 NP23701E	SOLID	N/A			% Ct.
4	DUP	S94T000005	0		@NP23701 NP23701	SOLID			N/A	uCi/g
4	DUP	S94T000005	0		@NP23701 NP23701E	SOLID			N/A	% Ct.
5	SPK	S94T000005	0		@NP23701 NP23701	SOLID			N/A	uCi/g

Final page for worklist # 221

BJ McCoem
Analyst Signature

12/9/94
Date
12/12/94

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-0) SOLIDS

			BLANK
Type	Sample Volume in mL	(SS)	0.250
BLANK	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
221	Digest Grams of Solids/Liter	(D g/l)	2.2092
Test Code	Gross Counts	(Gc)	142
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	5
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		0.95
Sample #	µCi/L in Digest Solution =		< 2.0597E-02
S94T5			
Instrument Code			
~~WB26875~~ ALIPS37	Sample Count Rate (Rs) = (Gc / Tc) - bkg		
Analyst	Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)		
PJM	WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.		
Date	Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg		
12/09/94	Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100		
Time			
07:30 AM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

ALI 12-12-94

Np-237 µCi/kg	=	< 9.32E+00
Np-237 µCi/g	=	< 9.32E-03

LESS THAN Value was Determined from Lc.

Relative Counting Error	=	418.7%

DETECTION LEVEL

1.95E-02 µCi/g

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

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-0) LIQUIDS/SOLIDS

			STANDARD
Type	Sample Volume in mL	(SS)	0.100
STANDARD	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
221	Digest Dilution Factor	(DDF)	1
Test Code	Gross Counts	(Gc)	14901
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	4
LIQUID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		492.70
Sample #	µCi/L in Sample =		2.6632E+01
S94T5			
Instrument Code			
~~WB26875~~ AL10540	Sample Count Rate (Rs) = (Gc / Tc) - bkg		
Analyst	Np-237 µCi/L = Rs * 1000mL/L * DF * 3 * Mt F * DDF / (0.5 * SS * 2220000dpm/µCi)		
PJM	WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.		
Date	Np-237 µCi/mL = Np-237 µCi/L / 1000mL/L		
12/09/94	Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100		
Time			
07:30 AM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

227
12.12.94

Np-237 µCi/L	=	2.66E+01
Np-237 µCi/mL	=	2.66E-02
Relative Counting Error	=	1.6%

DETECTION LEVEL

9.70E-05 µCi/mL

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

Approved by: [signature] Date: 12 Dec 94

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-0) SOLIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.250
SAMPLE	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
221	Digest Grams of Solids/Liter	(D g/l)	2.2092
Test Code	Gross Counts	(Gc)	157
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	5
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.20
Sample #	µCi/L in Digest Solution =		< 2.5881E-02
S94T5			
Instrument Code			
~~WB26875~~ AL-10541			
Analyst			
PJM			
Date			
12/09/94			
Time			
07:30 AM			

227
12.12.94

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/kg = < 1.17E+01

Np-237 µCi/g = < 1.17E-02

LESS THAN Value was Determined from Rmax.

Relative Counting Error = 490.6%

DETECTION LEVEL

1.95E-02 µCi/g

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

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-0) SOLIDS

			DUPLICATE
Type	Sample Volume in mL	(SS)	0.250
DUPLICATE	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
221	Digest Grams of Solids/Liter	(D g/l)	2.216
Test Code	Gross Counts	(Gc)	144
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	5
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		0.95
Sample #	µCi/L in Digest Solution =		< 2.0597E-02
S94T5			
Instrument Code			
~~WB26875~~ AL10539	Sample Count Rate (Rs) = (Gc / Tc) - bkg		
Analyst	Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)		
PJM	WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.		
Date	Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg		
12/09/94	Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100		
Time			
07:30 AM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

AJJ 12.12.94

Np-237 µCi/kg	=	< 9.29E+00
Np-237 µCi/g	=	< 9.29E-03

LESS THAN Value was Determined from Lc.

Relative Counting Error	=	500.0%

DETECTION LEVEL

1.95E-02 µCi/g

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

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-0) SPIKED SAMPLE

			SPIKE
Type	Sample Volume in mL	(SS)	0.250
SPIKE	Dilution Factor for Sample in Spiked Vial	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
221	Gross Counts	(Gc)	12963
Test Code	Time Counted in Minutes	(Tc)	30
@NP237-01	Background in cpm	(bkg)	4
Matrix	Spike Volume in mL	(Svol)	0.100
SOLID	Spike Dilution Factor	(SDF)	1
Sample #	Spike Value in µCi/L	(Sval)	3.635E+01
S94T5	Sample µCi/L in Sample or Digest as appropriate from Form #1		<2.5881E-2
Instrument Code	Sample + Spike µCi/L	(S+S)	9.256E+00
~~WB26875~~ AL10540			
Analyst			
PJM			
Date			
12/09/94			
Time			
07:30 AM			

12.12.94

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Sample + Spike µCi/L (S+S) = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * 2220000dpm/µCi)

Percent Spike Recovery = (((S+S) - Sample µCi/L) * ((SDF/Svol) / (DF/SS)) / Sval) * 100

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

PERCENT SPIKE RECOVERY = 63.7%

Data Entry by:		Date:	12/12/94
Approved by:		Date:	12 Dec 94

Form 933141_X Rev. 1.2

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SY103

LABCORE Data Entry Template for Worklist# 287

Analyst: DCD **Instrument:** NP01 _____ **Method:** LA-933-141 H-1

Worklist Comment: Use 0.250 mL sample size. --LLF WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test		Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@NP23701	NP23701	SOLID			N/A	uCi/g
1	BLNK-PREP				@NP23701	NP23701E	SOLID			N/A	% Ct.
2	STD	90B43			@NP23701	NP23701	SOLID			N/A	uCi/g
2	STD	90B43			@NP23701	NP23701E	SOLID			N/A	% Ct.
3	SAMPLE	S94T000299	0		@NP23701	NP23701	SOLID	N/A			uCi/g
3	SAMPLE	S94T000299	0		@NP23701	NP23701E	SOLID	N/A			% Ct.
4	DUP	S94T000299	0		@NP23701	NP23701	SOLID			N/A	uCi/g
4	DUP	S94T000299	0		@NP23701	NP23701E	SOLID			N/A	% Ct.
5	SPK	S94T000299	0		@NP23701	NP23701	SOLID			N/A	uCi/g
6	SAMPLE	S94T000300	0		@NP23701	NP23701	SOLID	N/A			uCi/g
6	SAMPLE	S94T000300	0		@NP23701	NP23701E	SOLID	N/A			% Ct.
7	DUP	S94T000300	0		@NP23701	NP23701	SOLID			N/A	uCi/g
7	DUP	S94T000300	0		@NP23701	NP23701E	SOLID			N/A	% Ct.
8	SPK	S94T000300	0		@NP23701	NP23701	SOLID			N/A	uCi/g

Final page for worklist # 287

Dainel C. Dunham
Analyst Signature

12-27-94
Date

MC Bloom 12/27/94

Data Entry Comments: S94T000300 rerun due to spike recovery low

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

Page: 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

RRJ 12.28.94 ~~NA~~ NP-237: LA-933-141 (H-1) SOLIDS

			BLANK
Type	Sample Volume in mL	(SS)	0.250
BLANK	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
287	Digest Grams of Solids/Liter	(D g/l)	1.7448
Test Code	Gross Counts	(Gc)	221
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	7
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.51
Sample #	µCi/L in Digest Solution =		< 3.2616E-02
S94T299,300			
Instrument Code			
AL10539			
Analyst			
DCD			
Date			
12/27/94			
Time			
12:00 PM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/kg	=	< 1.87E+01
Np-237 µCi/g	=	< 1.87E-02

LESS THAN Value was Determined from Rmax.

Relative Counting Error	=	369.9%

DETECTION LEVEL

2.91E-02 µCi/g

Data Entry by:	[signature]	Date:	12/28/94
Approved by:	[signature]	Date:	28 Dec 94

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) LIQUIDS/SOLIDS

			STANDARD
Type	Sample Volume in mL	(SS)	0.250
STANDARD	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
287	Digest Dilution Factor	(DDF)	1
Test Code	Gross Counts	(Gc)	41033
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	5
LIQUID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1362.77
Sample #	µCi/L in Sample =		2.9465E+01
S94T299,300			
Instrument Code			
AL10540			
Analyst			
DCD			
Date			
12/27/94			
Time			
12:00 PM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/L = Rs * 1000mL/L * DF * 3 * Mt F * DDF / (0.5 * SS * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/mL = Np-237 µCi/L / 1000mL/L

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/L	=	2.95E+01
Np-237 µCi/mL	=	2.95E-02
Relative Counting Error	=	1.0%

DETECTION LEVEL

4.32E-05 µCi/mL

Data Entry by:	[illegible]	Date:	12/28/94
Approved by:	[illegible]	Date:	28 Dec 94

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

BEST AVAILABLE COPY

12.28.94 ~~NA~~ NP-237: LA-933-141 (H-1) SOLIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.250
SAMPLE	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
287	Digest Grams of Solids/Liter	(D g/l)	1.7448
Test Code	Gross Counts	(Gc)	185
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	5
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.17
Sample #	µCi/L in Digest Solution =		2.5225E-02
S94T299			
Instrument Code			
AL10541			
Analyst			
DCD			
Date			
12/27/94			
Time			
12:00 PM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/kg	=	1.45E+01
Np-237 µCi/g	=	1.45E-02
Relative Counting Error	=	102.5%

DETECTION LEVEL

2.47E-02 µCi/g

Data Entry by:	[illegible]	Date:	12/28/94
Approved by:	[illegible]	Date:	28 Dec 94

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SOLIDS

			DUPLICATE
Type	Sample Volume in mL	(SS)	0.250
DUPLICATE	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
287	Digest Grams of Solids/Liter	(D g/l)	1.824
Test Code	Gross Counts	(Gc)	236
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	7
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		2.03
Sample #	µCi/L in Digest Solution =		< 4.3853E-02
S94T299			
Instrument Code			
AL10539	Sample Count Rate (Rs) = (Gc / Tc) - bkg		
Analyst	Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)		
DCD	WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.		
Date	Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg		
12/27/94	Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100		
Time			
12:00 PM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

Np-237 µCi/kg	=	< 2.40E+01
Np-237 µCi/g	=	< 2.40E-02

LESS THAN Value was Determined from Rmax.

Relative Counting Error	=	159.2%

DETECTION LEVEL

2.78E-02 µCi/g

Data Entry by:	[signature]	Date:	12/28/94
Approved by:	[signature]	Date:	28 Dec 94

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SPIKED SAMPLE

			SPIKE
Sample Volume in mL	(SS)	0.250
Dilution Factor for Sample in Spiked Vial	(DF)	1
Mount Factor (1/Mount Volume in mL)	(Mt F)	2
Gross Counts	(Gc)	42134
Time Counted in Minutes	(Tc)	30
Background in cpm	(bkg)	5
Spike Volume in mL	(Svol)	0.250
Spike Dilution Factor	(SDF)	1
Spike Value in µCi/L	(Sval)	3.635E+01
Sample µCi/L in Sample or Digest as appropriate from Form #1		2.523E-02
Sample + Spike µCi/L	(S+S)	3.026E+01

Type	Work List	Test Code	Matrix	Sample #	Instrument Code	Analyst	Date	Time
SPIKE	287	@NP237-01	SOLID	S94T299	AL10540	DCD	12/27/94	12:00 PM

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Sample + Spike µCi/L (S+S) = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * 2220000dpm/µCi)

Percent Spike Recovery = (((S+S) - Sample µCi/L) * ((SDF/Svol) / (DF/SS)) / Sval) * 100

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

PERCENT SPIKE RECOVERY = 83.2%

Data Entry by: [signature] Date: 12/28/94

Approved by: [signature] Date: 28 Dec 94

Form 933141_X Rev. 1.2

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SOLIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.250
SAMPLE	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
287	Digest Grams of Solids/Liter	(D g/l)	2.5308
Test Code	Gross Counts	(Gc)	191
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	5
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.37
Sample #	µCi/L in Digest Solution =		2.9550E-02
S94T300			
Instrument Code			
AL10541			
Analyst			
DCD			
Date			
12/27/94			
Time			
12:00 PM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/kg	=	1.17E+01
Np-237 µCi/g	=	1.17E-02
Relative Counting Error	=	88.3%

DETECTION LEVEL

1.71E-02 µCi/g

Data Entry by:	[signature]	Date:	12/28/94
Approved by:	[signature]	Date:	28 Dec 94

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SOLIDS

				DUPLICATE
Type	Sample Volume in mL	(SS)		0.250
DUPLICATE	Dilution Factor	(DF)		1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)		2
287	Digest Grams of Solids/Liter	(D g/l)		2.5532
Test Code	Gross Counts	(Gc)		228
@NP237-01	Time counted in Minutes	(Tc)		30
Matrix	Background in cpm	(bkg)		7
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate			1.75
Sample #	µCi/L in Digest Solution =		<	3.7861E-02
S94T300				
Instrument Code				
AL10539				
Analyst				
DCD				
Date				
12/27/94				
Time				
12:00 PM				

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/kg	=	< 1.48E+01
Np-237 µCi/g	=	< 1.48E-02

LESS THAN Value was Determined from Rmax.

Relative Counting Error	=	227.9%

DETECTION LEVEL

1.99E-02 µCi/g

Data Entry by:	[signature]	Date:	12/28/94
Approved by:	[signature]	Date:	28 Dec 94

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SPIKED SAMPLE

			SPIKE
Sample Volume in mL	(SS)	0.250
Dilution Factor for Sample in Spiked Vial	(DF)	1
Mount Factor (1/Mount Volume in mL)	(Mt F)	2
Gross Counts	(Gc)	36152
Time Counted in Minutes	(Tc)	30
Background in cpm	(bkg)	5
Spike Volume in mL	(Svol)	0.250
Spike Dilution Factor	(SDF)	1
Spike Value in µCi/L	(Sval)	3.635E+01
Sample µCi/L in Sample or Digest as appropriate from Form #1		2.955E-02
Sample + Spike µCi/L	(S+S)	2.595E+01

Type	SPIKE
Work List	287
Test Code	@NP237-01
Matrix	SOLID
Sample #	S94T300
Instrument Code	AL10540
Analyst	DCD
Date	12/27/94
Time	12:00 PM

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Sample + Spike µCi/L (S+S) = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * 2220000dpm/µCi)

Percent Spike Recovery = (((S+S) - Sample µCi/L) * ((SDF/Svol) / (DF/SS)) / Sval) * 100

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

PERCENT SPIKE RECOVERY = 71.3%

Data Entry by:	[illegible]	Date:	12/28/94
Approved by:	[illegible]	Date:	28 Dec 94

Form 933141_X Rev. 1.2

LABCORE Data Entry Template for Worklist# 365

Analyst: SLH **Instrument:** NP01 AMC #1 **Method:** LA-933-141 H-O

Worklist Comment: WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test		Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@NP23701	NP23701	SOLID			N/A	uCi/g
1	BLNK-PREP				@NP23701	NP23701E	SOLID			N/A	% Ct.
2	STD 90B43				@NP23701	NP23701	SOLID			N/A	uCi/g
2	STD				@NP23701	NP23701E	SOLID			N/A	% Ct.
3	SAMPLE	S94T000300	0	F	@NP23701	NP23701	SOLID	N/A			uCi/g
3	SAMPLE	S94T000300	0	F	@NP23701	NP23701E	SOLID	N/A			% Ct.
4	DUP	S94T000300	0	F	@NP23701	NP23701	SOLID			N/A	uCi/g
4	DUP	S94T000300	0	F	@NP23701	NP23701E	SOLID			N/A	% Ct.
5	SPK 90B43	S94T000300	0	F	@NP23701	NP23701	SOLID			N/A	uCi/g

Final page for worklist # 365

Sandra J Hood Boatright
Analyst Signature

1-6-95
Date

1-9-95

Data Entry Comments: review

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SOLIDS

			BLANK
Type	Sample Volume in mL	(SS)	0.300
BLANK	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
365	Digest Grams of Solids/Liter	(D g/l)	2.5308
Test Code	Gross Counts	(Gc)	219
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	6
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.30
Sample #	µCi/L in Digest Solution =		2.3423E-02
S94T300			
Instrument Code			
AL10539	Sample Count Rate (Rs) = (Gc / Tc) - bkg		
Analyst	Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)		
SLH	WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.		
Date	Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg		
01/06/95	Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100		
Time			
10:00 PM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

Np-237 µCi/kg	=	9.26E+00
Np-237 µCi/g	=	9.26E-03
Relative Counting Error	=	100.4%

DETECTION LEVEL

1.55E-02 µCi/g

Data Entry by:	M S Sierra	Date:	01/09/95
Approved by:	[illegible]	Date:	10 Jan 95

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) LIQUIDS/SOLIDS

			STANDARD
Type	Sample Volume in mL	(SS)	0.250
STANDARD	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
365	Digest Dilution Factor	(DDF)	1
Test Code	Gross Counts	(Gc)	36015
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	6
LIQUID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1194.50
Sample #	µCi/L in Sample =		2.5827E+01
WORKLIST#365			
Instrument Code			
AL10539			
Analyst			
SLH			
Date			
01/06/95			
Time			
10:00 PM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/L = Rs * 1000mL/L * DF * 3 * Mt F * DDF / (0.5 * SS * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/mL = Np-237 µCi/L / 1000mL/L

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/L	=	2.58E+01
Np-237 µCi/mL	=	2.58E-02
Relative Counting Error	=	1.0%

DETECTION LEVEL

4.71E-05 µCi/mL

Data Entry by:	[illegible]	Date:	01/09/95
Approved by:	[illegible]	Date:	10 Jan 95

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

BEST AVAILABLE COPY

Np-237 : LA-933-141 (H-1) SOLIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.300
SAMPLE	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
365	Digest Grams of Solids/Liter	(D g/l)	2.5308
Test Code	Gross Counts	(Gc)	210
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	6
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		2.09
Sample #	µCi/L in Digest Solution =		< 3.7589E-02
S94T300			
Instrument Code			
AL10539	Sample Count Rate (Rs) = (Gc / Tc) - bkg		
Analyst	Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)		
SLH	WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.		
Date	Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg		
01/06/95	Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100		
Time			
10:00 PM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

Np-237 µCi/kg	=	< 1.49E+01
Np-237 µCi/g	=	< 1.49E-02

LESS THAN Value was Determined from Rmax.

Relative Counting Error	=	129.0%

DETECTION LEVEL

1.55E-02 µCi/g

Data Entry by:	[signature]	Date:	01/09/95
Approved by:	[signature]	Date:	10 Jan 95

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SOLIDS

			DUPLICATE
Type	Sample Volume in mL	(SS)	0.300
DUPLICATE	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
365	Digest Grams of Solids/Liter	(D g/l)	2.5532
Test Code	Gross Counts	(Gc)	199
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	6
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.70
Sample #	µCi/L in Digest Solution =		< 3.0704E-02
S94T300			
Instrument Code			
AL10539	Sample Count Rate (Rs) = (Gc / Tc) - bkg		
Analyst	Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)		
SLH	WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.		
Date	Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg		
01/06/95	Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100		
Time			
10:00 PM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

Np-237 µCi/kg	=	< 1.20E+01
Np-237 µCi/g	=	< 1.20E-02

LESS THAN Value was Determined from Rmax.

Relative Counting Error	=	200.8%

DETECTION LEVEL

1.54E-02 µCi/g

Data Entry by:	[signature]	Date:	01/09/95
Approved by:	[signature]	Date:	10 Jan 95

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SPIKED SAMPLE

			SPIKE
Type	Sample Volume in mL	(SS)	0.300
SPIKE	Dilution Factor for Sample in Spiked Vial	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
365	Gross Counts	(Gc)	41531
Test Code	Time Counted in Minutes	(Tc)	30
@NP237-01	Background in cpm	(bkg)	6
Matrix	Spike Volume in mL	(Svol)	0.250
SOLID	Spike Dilution Factor	(SDF)	1
Sample #	Spike Value in µCi/L	(Sval)	3.635E+01
S94T300	Sample µCi/L in Sample or Digest as appropriate from Form #1		<3.7589E-2
Instrument Code	Sample + Spike µCi/L	(S+S)	2.484E+01
AL10539			
Analyst			
SLH			
Date			
01/06/95			
Time			
10:00 PM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Sample + Spike µCi/L (S+S) = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * 2220000dpm/µCi)

Percent Spike Recovery = (((S+S) - Sample µCi/L) * ((SDF/Svol) / (DF/SS)) / Sval) * 100

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

PERCENT SPIKE RECOVERY = 82.0%

Data Entry by:	[illegible]	Date:	01/09/95
Approved by:	[illegible]	Date:	10 Jan 95

Form 933141_X Rev. 1.2

5403

LABCORE Data Entry Template for Worklist# 381

Analyst: JMV **Instrument:** NP01 **Method:** LA-933-141 — H-1

Worklist Comment: WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test	Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@NP23701 NP23701	SOLID			N/A	uCi/g
1	BLNK-PREP				@NP23701 NP23701E	SOLID			N/A	% Ct.
2	STD	90843			@NP23701 NP23701	SOLID			N/A	uCi/g
2	STD				@NP23701 NP23701E	SOLID			N/A	% Ct.
3	SAMPLE	S94T000268	0	R	@NP23701 NP23701	SOLID	N/A			uCi/g
3	SAMPLE	S94T000268	0	R	@NP23701 NP23701E	SOLID	N/A			% Ct.
4	DUP	S94T000268	0	R	@NP23701 NP23701	SOLID			N/A	uCi/g
4	DUP	S94T000268	0	R	@NP23701 NP23701E	SOLID			N/A	% Ct.
5	SPK	S94T000268	0	R	@NP23701 NP23701	SOLID			N/A	uCi/g
6	SAMPLE	S94T000282	0	R	@NP23701 NP23701	SOLID	N/A			uCi/g
6	SAMPLE	S94T000282	0	R	@NP23701 NP23701E	SOLID	N/A			% Ct.
7	DUP	S94T000282	0	R	@NP23701 NP23701	SOLID			N/A	uCi/g
7	DUP	S94T000282	0	R	@NP23701 NP23701E	SOLID			N/A	% Ct.
8	SPK	S94T000282	0	R	@NP23701 NP23701	SOLID			N/A	uCi/g

Final page for worklist # 381

Jerry Upshaw
Analyst Signature

1-13-95
Date

M G Bickman

1-17-95

Data Entry Comments: 282 rerun due to spike recovery

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SOLIDS

			BLANK
Type	Sample Volume in mL	(SS)	0.250
BLANK	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
381	Digest Grams of Solids/Liter	(D g/l)	10.1704
Test Code	Gross Counts	(Gc)	148
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	6
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.04
Sample #	µCi/L in Digest Solution =		< 2.2563E-02
S94T268			
Instrument Code			
AL10541			
Analyst			
JMV			
Date			
01/13/95			
Time			
02:00 PM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/kg	=	< 2.22E+00
Np-237 µCi/g	=	< 2.22E-03

LESS THAN Value was Determined from Lc.

Relative Counting Error	=	110.9%

DETECTION LEVEL

4.63E-03 µCi/g

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

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) LIQUIDS/SOLIDS

			STANDARD
Type	Sample Volume in mL	(SS)	0.250
STANDARD	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
381	Digest Dilution Factor	(DDF)	1
Test Code	Gross Counts	(Gc)	36472
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	6
LIQUID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1209.73
Sample #	µCi/L in Sample =		2.6156E+01
WORKLIST#381			
Instrument Code			
AL10541			
Analyst			
JMV			
Date			
01/13/95			
Time			
02:00 PM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/L = Rs * 1000mL/L * DF * 3 * Mt F * DDF / (0.5 * SS * 2220000dpm/µCi)

WHERE: 3 is an internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/mL = Np-237 µCi/L / 1000mL/L

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/L	=	2.62E+01
Np-237 µCi/mL	=	2.62E-02
Relative Counting Error	=	1.0%

DETECTION LEVEL

4.71E-05 µCi/mL

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

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SOLIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.250
SAMPLE	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
381	Digest Grams of Solids/Liter	(D g/l)	10.1704
Test Code	Gross Counts	(Gc)	145
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	6
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.04
Sample #	µCi/L in Digest Solution =		< 2.2563E-02
S94T268			
Instrument Code			
AL10541			
Analyst			
JMV			
Date			
01/13/95			
Time			
02:00 PM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/kg	=	< 2.22E+00
Np-237 µCi/g	=	< 2.22E-03

LESS THAN Value was Determined from Lc.

Relative Counting Error	=	101.0%

DETECTION LEVEL

4.63E-03 µCi/g

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

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SOLIDS

			DUPLICATE
Type	Sample Volume in mL	(SS)	0.250
DUPLICATE	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
381	Digest Grams of Solids/Liter	(D g/l)	10.1704
Test Code	Gross Counts	(Gc)	141
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	6
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.04
Sample #	µCi/L in Digest Solution =		< 2.2563E-02
S94T268			
Instrument Code			
AL10541			
Analyst			
JMV			
Date			
01/13/95			
Time			
02:00 PM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/kg	=	< 2.22E+00
Np-237 µCi/g	=	< 2.22E-03

LESS THAN Value was Determined from Lc.

Relative Counting Error	=	90.0%

DETECTION LEVEL

4.63E-03 µCi/g

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

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SPIKED SAMPLE

			SPIKE
Type	Sample Volume in mL	(SS)	0.250
SPIKE	Dilution Factor for Sample in Spiked Vial	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
381	Gross Counts	(Gc)	44124
Test Code	Time Counted in Minutes	(Tc)	30
@NP237-01	Background in cpm	(bkg)	6
Matrix	Spike Volume in mL	(Svol)	0.250
SOLID	Spike Dilution Factor	(SDF)	1
Sample #	Spike Value in µCi/L	(Sval)	3.635E+01
S94T268	Sample µCi/L in Sample or Digest as appropriate from Form #1		<2.2563E-2
Instrument Code	Sample + Spike µCi/L	(S+S)	3.167E+01
AL10541			
Analyst			
JMV			
Date			
01/13/95			
Time			
02:00 PM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Sample + Spike µCi/L (S+S) = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * 2220000dpm/µCi)

Percent Spike Recovery = (((S+S) - Sample µCi/L) * ((SDF/Svol) / (DF/SS)) / Sval) * 100

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

PERCENT SPIKE RECOVERY = 87.1%

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

Form 933141_X Rev. 1.2

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SOLIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.250
SAMPLE	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
381	Digest Grams of Solids/Liter	(D g/l)	10.0594
Test Code	Gross Counts	(Gc)	139
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	6
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.04
Sample #	µCi/L in Digest Solution =		< 2.2563E-02
S94T282			
Instrument Code			
AL10541			
Analyst			
JMV			
Date			
01/13/95			
Time			
02:00 PM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/kg	=	< 2.24E+00
Np-237 µCi/g	=	< 2.24E-03

LESS THAN Value was Determined from Lc.

Relative Counting Error	=	85.4%

DETECTION LEVEL

4.68E-03 µCi/g

Data Entry by:	M C Sumner	Date:	01/17/95
Approved by:	[illegible]	Date:	17 Jan 95

Form 933141_C Rev. 1.4

2022

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SOLIDS

			DUPLICATE
Type	Sample Volume in mL	(SS)	0.250
DUPLICATE	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
381	Digest Grams of Solids/Liter	(D g/l)	10.0282
Test Code	Gross Counts	(Gc)	174
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	6
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.04
Sample #	µCi/L in Digest Solution =		< 2.2563E-02
S94T282			
Instrument Code			
AL10541			
Analyst			
JMV			
Date			
01/13/95			
Time			
02:00 PM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/kg	=	< 2.25E+00
Np-237 µCi/g	=	< 2.25E-03

LESS THAN Value was Determined from Lc.

Relative Counting Error	=	500.0%

DETECTION LEVEL

4.70E-03 µCi/g

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

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SPIKED SAMPLE

			SPIKE
Type	Sample Volume in mL	(SS)	0.250
SPIKE	Dilution Factor for Sample in Spiked Vial	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
381	Gross Counts	(Gc)	20626
Test Code	Time Counted in Minutes	(Tc)	30
@NP237-01	Background in cpm	(bkg)	6
Matrix	Spike Volume in mL	(Svol)	0.250
SOLID	Spike Dilution Factor	(SDF)	1
Sample #	Spike Value in µCi/L	(Sval)	3.635E+01
S94T282	Sample µCi/L in Sample or Digest as appropriate from Form #1		<2.2563E-2
Instrument Code	Sample + Spike µCi/L	(S+S)	1.474E+01
AL10541			
Analyst			
JMV			
Date			
01/13/95			
Time			
02:00 PM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Sample + Spike µCi/L (S+S) = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * 2220000dpm/µCi)

Percent Spike Recovery = (((S+S) - Sample µCi/L) * ((SDF/Svol) / (DF/SS)) / Sval) * 100

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

PERCENT SPIKE RECOVERY = 40.5%

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

Form 933141_X Rev. 1.2

3y 95

LABCORE Data Entry Template for Worklist# 382

Analyst: PJM **Instrument:** NP01 _____ **Method:** LA-933-141 H-1

Worklist Comment: WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test		Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@NP23701	NP23701	SOLID			N/A	uCi/g
1	BLNK-PREP				@NP23701	NP23701E	SOLID			N/A	% Ct.
2	STD	90B43			@NP23701	NP23701	SOLID			N/A	uCi/g
2	STD				@NP23701	NP23701E	SOLID			N/A	% Ct.
3	SAMPLE	S94T000283	0	R	@NP23701	NP23701	SOLID	N/A			uCi/g
3	SAMPLE	S94T000283	0	R	@NP23701	NP23701E	SOLID	N/A			% Ct.
4	DUP	S94T000283	0	R	@NP23701	NP23701	SOLID			N/A	uCi/g
4	DUP	S94T000283	0	R	@NP23701	NP23701E	SOLID			N/A	% Ct.
5	SPK	S94T000283	0	R	@NP23701	NP23701	SOLID			N/A	uCi/g
6	SAMPLE	S94T000284	0	R	@NP23701	NP23701	SOLID	N/A			uCi/g
6	SAMPLE	S94T000284	0	R	@NP23701	NP23701E	SOLID	N/A			% Ct.
7	DUP	S94T000284	0	R	@NP23701	NP23701	SOLID			N/A	uCi/g
7	DUP	S94T000284	0	R	@NP23701	NP23701E	SOLID			N/A	% Ct.
8	SPK	S94T000284	0	R	@NP23701	NP23701	SOLID			N/A	uCi/g

Final page for worklist # 382

Patricia J. McCourt
Analyst Signature

1/14/95
Date

MPJ, 1/17

1-17-95

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SOLIDS

			BLANK
Type	Sample Volume in mL	(SS)	0.250
BLANK	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
382	Digest Grams of Solids/Liter	(D g/l)	9.9601
Test Code	Gross Counts	(Gc)	150
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	6
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.04
Sample #	µCi/L in Digest Solution =		< 2.2563E-02
S94T283			
Instrument Code			
AL10541	Sample Count Rate (Rs) = (Gc / Tc) - bkg		
Analyst	Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)		
PJM	WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.		
Date	Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg		
01/14/95	Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100		
Time			
03:30 PM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

Np-237 µCi/kg	=	< 2.27E+00
Np-237 µCi/g	=	< 2.27E-03

LESS THAN Value was Determined from Lc.

Relative Counting Error	=	118.7%

DETECTION LEVEL

4.73E-03 µCi/g

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

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) LIQUIDS/SOLIDS

			STANDARD
Type	Sample Volume in mL	(SS)	0.250
STANDARD	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
382	Digest Dilution Factor	(DDF)	1
Test Code	Gross Counts	(Gc)	43025
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	6
LIQUID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1428.17
Sample #	µCi/L in Sample =		3.0879E+01
WORKLIST#382			
Instrument Code			
AL10541	Sample Count Rate (Rs) = (Gc / Tc) - bkg		
Analyst	Np-237 µCi/L = Rs * 1000mL/L * DF * 3 * Mt F * DDF / (0.5 * SS * 2220000dpm/µCi)		
PJM	WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.		
Date	Np-237 µCi/mL = Np-237 µCi/L / 1000mL/L		
01/14/95	Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100		
Time			
03:30 PM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

Np-237 µCi/L	=	3.09E+01
Np-237 µCi/mL	=	3.09E-02
Relative Counting Error	=	1.0%

DETECTION LEVEL

4.71E-05 µCi/mL

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

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SOLIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.250
SAMPLE	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
382	Digest Grams of Solids/Liter	(D g/l)	9.9601
Test Code	Gross Counts	(Gc)	156
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	6
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.04
Sample #	µCi/L in Digest Solution =		< 2.2563E-02
S94T283			
Instrument Code			
AL10541			
Analyst			
PJM			
Date			
01/14/95			
Time			
03:30 PM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/kg	=	< 2.27E+00
Np-237 µCi/g	=	< 2.27E-03

LESS THAN Value was Determined from Lc.

Relative Counting Error	=	149.7%

DETECTION LEVEL

4.73E-03 µCi/g

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

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SOLIDS

			DUPLICATE
Type	Sample Volume in mL	(SS)	0.250
DUPLICATE	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
382	Digest Grams of Solids/Liter	(D g/l)	9.962
Test Code	Gross Counts	(Gc)	177
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	6
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.04
Sample #	µCi/L in Digest Solution =		< 2.2563E-02
S94T283			
Instrument Code			
AL10541			
Analyst			
PJM			
Date			
01/14/95			
Time			
03:30 PM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/kg	=	< 2.26E+00
Np-237 µCi/g	=	< 2.26E-03

LESS THAN Value was Determined from Lc.

Relative Counting Error	=	500.0%

DETECTION LEVEL

4.73E-03 µCi/g

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

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SPIKED SAMPLE

			SPIKE
Type	Sample Volume in mL	(SS)	0.250
SPIKE	Dilution Factor for Sample in Spiked Vial	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
382	Gross Counts	(Gc)	37972
Test Code	Time Counted in Minutes	(Tc)	30
@NP237-01	Background in cpm	(bkg)	6
Matrix	Spike Volume in mL	(Svol)	0.250
SOLID	Spike Dilution Factor	(SDF)	1
Sample #	Spike Value in µCi/L	(Sval)	3.635E+01
S94T283	Sample µCi/L in Sample or Digest as appropriate from Form #1		<2.2563E-2
Instrument Code	Sample + Spike µCi/L	(S+S)	2.724E+01
AL10541			
Analyst			
PJM			
Date			
01/14/95			
Time			
03:30 PM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Sample + Spike µCi/L (S+S) = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * 2220000dpm/µCi)

Percent Spike Recovery = (((S+S) - Sample µCi/L) * ((SDF/Svol) / (DF/SS)) / Sval) * 100

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

PERCENT SPIKE RECOVERY = 74.9%

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

Form 933141_X Rev. 1.2

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SOLIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.250
SAMPLE	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
382	Digest Grams of Solids/Liter	(D g/l)	10.2425
Test Code	Gross Counts	(Gc)	165
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	6
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.04
Sample #	µCi/L in Digest Solution =		< 2.2563E-02
S94T284			
Instrument Code			
AL10541			
Analyst			
PJM			
Date			
01/14/95			
Time			
03:30 PM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/kg = < 2.20E+00

Np-237 µCi/g = < 2.20E-03

LESS THAN Value was Determined from Lc.

Relative Counting Error = 242.7%

DETECTION LEVEL

4.60E-03 µCi/g

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

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SOLIDS

				DUPLICATE
Type	Sample Volume in mL	(SS)		0.250
DUPLICATE	Dilution Factor	(DF)		1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)		2
382	Digest Grams of Solids/Liter	(D g/l)		10.1256
Test Code	Gross Counts	(Gc)		184
@NP237-01	Time counted in Minutes	(Tc)		30
Matrix	Background in cpm	(bkg)		6
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate			1.18
Sample #	µCi/L in Digest Solution	=	<	2.5571E-02
S94T284				
Instrument Code				
AL10541				
Analyst				
PJM				
Date				
01/14/95				
Time				
03:30 PM				

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/kg	=	< 2.53E+00
Np-237 µCi/g	=	< 2.53E-03

LESS THAN Value was Determined from Rmax.

Relative Counting Error	=	500.0%

DETECTION LEVEL

4.65E-03 µCi/g

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

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SPIKED SAMPLE

			SPIKE
Type	Sample Volume in mL	(SS)	0.250
SPIKE	Dilution Factor for Sample in Spiked Vial	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
382	Gross Counts	(Gc)	40267
Test Code	Time Counted in Minutes	(Tc)	30
@NP237-01	Background in cpm	(bkg)	6
Matrix	Spike Volume in mL	(Svol)	0.250
SOLID	Spike Dilution Factor	(SDF)	1
Sample #	Spike Value in µCi/L	(Sval)	3.635E+01
S94T284	Sample µCi/L in Sample or Digest as appropriate from Form #1		<2.2563E-2
Instrument Code	Sample + Spike µCi/L	(S+S)	2.889E+01
AL10541			
Analyst			
PJM			
Date			
01/14/95			
Time			
03:30 PM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Sample + Spike µCi/L (S+S) = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * 2220000dpm/µCi)

Percent Spike Recovery = (((S+S) - Sample µCi/L) * ((SDF/Svol) / (DF/SS)) / Sval) * 100

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

PERCENT SPIKE RECOVERY = 79.5%

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

Form 933141_X Rev. 1.2

34103

LABCORE Data Entry Template for Worklist# 430

Analyst: DCD **Instrument:** NP01 AL10539 **Method:** LA-933-141 / H-1

Worklist Comment: WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test		Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@NP23701	NP23701	SOLID			N/A	uCi/g
1	BLNK-PREP				@NP23701	NP23701E	SOLID			N/A	% Ct.
2	STD	# 90B43			@NP23701	NP23701	SOLID			N/A	uCi/g
2	STD				@NP23701	NP23701E	SOLID			N/A	% Ct.
3	SAMPLE	S94T000282	0	R	@NP23701	NP23701	SOLID	N/A			uCi/g
3	SAMPLE	S94T000282	0	R	@NP23701	NP23701E	SOLID	N/A			% Ct.
4	DUP	S94T000282	0	R	@NP23701	NP23701	SOLID			N/A	uCi/g
4	DUP	S94T000282	0	R	@NP23701	NP23701E	SOLID			N/A	% Ct.
5	SPK	S94T000282	0	R	@NP23701	NP23701	SOLID			N/A	uCi/g
6	SAMPLE	S94T000283	0	R	@NP23701	NP23701	SOLID	N/A			uCi/g
6	SAMPLE	S94T000283	0	R	@NP23701	NP23701E	SOLID	N/A			% Ct.
7	DUP	S94T000283	0	R	@NP23701	NP23701	SOLID			N/A	uCi/g
7	DUP	S94T000283	0	R	@NP23701	NP23701E	SOLID			N/A	% Ct.
8	SPK	S94T000283	0	R	@NP23701	NP23701	SOLID			N/A	uCi/g
9	SAMPLE	S94T000284	0	R	@NP23701	NP23701	SOLID	N/A			uCi/g
9	SAMPLE	S94T000284	0	R	@NP23701	NP23701E	SOLID	N/A			% Ct.
10	DUP	S94T000284	0	R	@NP23701	NP23701	SOLID			N/A	uCi/g
10	DUP	S94T000284	0	R	@NP23701	NP23701E	SOLID			N/A	% Ct.
11	SPK	S94T000284	0	R	@NP23701	NP23701	SOLID			N/A	uCi/g

Data Entry Comments: Reruns due to spike recovery, used in report
Spike #90B43

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

LABCORE Data Entry Template for Worklist# 430

Analyst: DCD **Instrument:** NP01 _____ **Method:** LA-933-141 / H-1

Worklist Comment: WHC-SD-WM-DP-074, REV. 0

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

Final page for worklist # 430

Daniel Dunham
Analyst Signature

1-23-95 / 0730
Date

M Brown
1-24-95

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SOLIDS

			BLANK
Type	Sample Volume in mL	(SS)	0.250
BLANK	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
430	Digest Grams of Solids/Liter	(D g/l)	10.0594
Test Code	Gross Counts	(Gc)	210
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	7
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.13
Sample #	µCi/L in Digest Solution =		< 2.4371E-02
S94T282			
Instrument Code			
AL10539			
Analyst			
DCD			
Date			
01/23/95			
Time			
07:30 AM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-608-002.

Np-237 µCi/kg	=	< 2.42E+00
Np-237 µCi/g	=	< 2.42E-03

LESS THAN Value was Determined from Rmax.

Relative Counting Error	=	500.0%

DETECTION LEVEL

5.04E-03 µCi/g

Data Entry by:	[signature]	Date:	01/25/95
Approved by:	[signature]	Date:	25 Jan 95

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) LIQUIDS/SOLIDS

			STANDARD
Type	Sample Volume in mL	(SS)	0.250
STANDARD	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
430	Digest Dilution Factor	(DDF)	1
Test Code	Gross Counts	(Gc)	40548
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	7
LIQUID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1344.60
Sample #	µCi/L in Sample =		2.9072E+01
WORKLIST#430			
Instrument Code			
AL10539	Sample Count Rate (Rs) = (Gc / Tc) - bkg		
Analyst	Np-237 µCi/L = Rs * 1000mL/L * DF * 3 * Mt F * DDF / (0.5 * SS * 2220000dpm/µCi)		
DCD	WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.		
Date	Np-237 µCi/mL = Np-237 µCi/L / 1000mL/L		
01/23/95	Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100		
Time			
07:30 AM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

Np-237 µCi/L	=	2.91E+01
Np-237 µCi/mL	=	2.91E-02
Relative Counting Error	=	1.0%

DETECTION LEVEL

5.07E-05 µCi/mL

Data Entry by:	[signature]	Date:	01/25/95
Approved by:	[signature]	Date:	25 Jan 95

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SOLIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.250
SAMPLE	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
430	Digest Grams of Solids/Liter	(D g/l)	10.0594
Test Code	Gross Counts	(Gc)	175
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	7
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.13
Sample #	µCi/L in Digest Solution =		< 2.4371E-02
S94T282			
Instrument Code			
AL10539			
Analyst			
DCD			
Date			
01/23/95			
Time			
07:30 AM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/kg	=	< 2.42E+00
Np-237 µCi/g	=	< 2.42E-03

LESS THAN Value was Determined from Lc.

Relative Counting Error	=	109.9%

DETECTION LEVEL

5.04E-03 µCi/g

Data Entry by:	[signature]	Date:	01/25/95
Approved by:	[signature]	Date:	25 Jan 95

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SOLIDS

			DUPLICATE
Type	Sample Volume in mL	(SS)	0.250
DUPLICATE	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
430	Digest Grams of Solids/Liter	(D g/l)	10.0282
Test Code	Gross Counts	(Gc)	211
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	7
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.16
Sample #	µCi/L in Digest Solution =		< 2.5121E-02
S94T282			
Instrument Code			
AL10539	Sample Count Rate (Rs) = (Gc / Tc) - bkg		
Analyst	Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)		
DCD	WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.		
Date	Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg		
01/23/95	Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100		
Time			
07:30 AM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

Np-237 µCi/kg	=	< 2.51E+00
Np-237 µCi/g	=	< 2.51E-03

LESS THAN Value was Determined from Rmax.

Relative Counting Error	=	500.0%

DETECTION LEVEL

5.06E-03 µCi/g

Data Entry by:	[signature]	Date:	01/25/95
Approved by:	[signature]	Date:	25 Jan 95

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SPIKED SAMPLE

			SPIKE
Type	Sample Volume in mL	(SS)	0.250
SPIKE	Dilution Factor for Sample in Spiked Vial	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
430	Gross Counts	(Gc)	36850
Test Code	Time Counted in Minutes	(Tc)	30
@NP237-01	Background in cpm	(bkg)	7
Matrix	Spike Volume in mL	(Svol)	0.250
SOLID	Spike Dilution Factor	(SDF)	1
Sample #	Spike Value in µCi/L	(Sval)	3.635E+01
S94T282	Sample µCi/L in Sample or Digest as appropriate from Form #1		<2.4371E-2
Instrument Code	Sample + Spike µCi/L	(S+S)	2.641E+01
AL10539			
Analyst			
DCD			
Date			
01/23/95			
Time			
07:30 AM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Sample + Spike µCi/L (S+S) = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * 2220000dpm/µCi)

Percent Spike Recovery = (((S+S) - Sample µCi/L) * ((SDF/Svol) / (DF/SS)) / Sval) * 100

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

PERCENT SPIKE RECOVERY = 72.6%

Data Entry by:	[illegible]	Date:	01/25/95
Approved by:	[illegible]	Date:	25 Jan 95

Form 933141_X Rev. 1.2

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SOLIDS

				SAMPLE
Type	Sample Volume in mL	(SS)		0.250
SAMPLE	Dilution Factor	(DF)		1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)		2
430	Digest Grams of Solids/Liter	(D g/l)		9.9601
Test Code	Gross Counts	(Gc)		224
@NP237-01	Time counted in Minutes	(Tc)		30
Matrix	Background in cpm	(bkg)		7
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate			1.61
Sample #	µCi/L in Digest Solution	=	<	3.4864E-02
S94T283				
Instrument Code				
AL10539	Sample Count Rate (Rs) = (Gc / Tc) - bkg			
Analyst	Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)			
DCD	WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.			
Date	Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg			
01/23/95	Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100			
Time				
07:30 AM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.			

Np-237 µCi/kg	=	< 3.50E+00
Np-237 µCi/g	=	< 3.50E-03

LESS THAN Value was Determined from Rmax.

Relative Counting Error	=	291.7%

DETECTION LEVEL

5.09E-03 µCi/g

Data Entry by:	M Brown	Date:	01/25/95
Approved by:	[illegible]	Date:	25 Jan 95

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SOLIDS

			DUPLICATE
Type	Sample Volume in mL	(SS)	0.250
DUPLICATE	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
430	Digest Grams of Solids/Liter	(D g/l)	9.962
Test Code	Gross Counts	(Gc)	180
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	7
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.13
Sample #	µCi/L in Digest Solution =		< 2.4371E-02
S94T283			
Instrument Code			
AL10539			
Analyst			
DCD			
Date			
01/23/95			
Time			
07:30 AM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/kg	=	< 2.45E+00
Np-237 µCi/g	=	< 2.45E-03

LESS THAN Value was Determined from Lc.

Relative Counting Error	=	129.0%

DETECTION LEVEL

5.09E-03 µCi/g

Data Entry by:	[signature]	Date:	01/25/95
Approved by:	[signature]	Date:	25 Jan 95

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SPIKED SAMPLE

			SPIKE
Type	Sample Volume in mL	(SS)	0.250
SPIKE	Dilution Factor for Sample in Spiked Vial	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
430	Gross Counts	(Gc)	37435
Test Code	Time Counted in Minutes	(Tc)	30
@NP237-01	Background in cpm	(bkg)	7
Matrix	Spike Volume in mL	(Svol)	0.250
SOLID	Spike Dilution Factor	(SDF)	1
Sample #	Spike Value in µCi/L	(Sval)	3.635E+01
S94T283	Sample µCi/L in Sample or Digest as appropriate from Form #1		<3.4864E-2
Instrument Code	Sample + Spike µCi/L	(S+S)	2.683E+01
AL10539			
Analyst			
DCD			
Date			
01/23/95			
Time			
07:30 AM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Sample + Spike µCi/L (S+S) = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * 2220000dpm/µCi)

Percent Spike Recovery = (((S+S) - Sample µCi/L) * ((SDF/Svol) / (DF/SS)) / Sval) * 100

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

PERCENT SPIKE RECOVERY = 73.8%

Data Entry by:	[illegible]	Date:	01/25/95
Approved by:	[illegible]	Date:	25 Jan 95

Form 933141_X Rev. 1.2

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

BEST AVAILABLE COPY

Np-237 : LA-933-141 (H-1) SOLIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.250
SAMPLE	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
430	Digest Grams of Solids/Liter	(D g/l)	10.2425
Test Code	Gross Counts	(Gc)	213
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	7
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.23
Sample #	µCi/L in Digest Solution =		< 2.6620E-02
S94T284			
Instrument Code			
AL10539			
Analyst			
DCD			
Date			
01/23/95			
Time			
07:30 AM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/kg	=	< 2.60E+00
Np-237 µCi/g	=	< 2.60E-03

LESS THAN Value was Determined from Rmax.

Relative Counting Error	=	500.0%

DETECTION LEVEL

4.95E-03 µCi/g

Data Entry by:	[signature]	Date:	01/25/95
Approved by:	[signature]	Date:	25 Jan 95

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SOLIDS

			DUPLICATE
Type	Sample Volume in mL	(SS)	0.250
DUPLICATE	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
430	Digest Grams of Solids/Liter	(D g/l)	10.1256
Test Code	Gross Counts	(Gc)	226
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	7
SOLID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.68
Sample #	µCi/L in Digest Solution =		< 3.6363E-02
S94T284			
Instrument Code			
AL10539	Sample Count Rate (Rs) = (Gc / Tc) - bkg		
Analyst	Np-237 µCi/g = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * D g/L * 2220000dpm/µCi)		
DCD	WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.		
Date	Np-237 µCi/kg = Np-237 µCi/g * 1000g/kg		
01/23/95	Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100		
Time			
07:30 AM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

Np-237 µCi/kg	=	< 3.59E+00
Np-237 µCi/g	=	< 3.59E-03

LESS THAN Value was Determined from Rmax.

Relative Counting Error	=	255.8%

DETECTION LEVEL

5.01E-03 µCi/g

Data Entry by:	[signature]	Date:	01/25/95
Approved by:	[signature]	Date:	25 Jan 95

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SPIKED SAMPLE

			SPIKE
Type	Sample Volume in mL	(SS)	0.250
SPIKE	Dilution Factor for Sample in Spiked Vial	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
430	Gross Counts	(Gc)	40769
Test Code	Time Counted in Minutes	(Tc)	30
@NP237-01	Background in cpm	(bkg)	7
Matrix	Spike Volume in mL	(Svol)	0.250
SOLID	Spike Dilution Factor	(SDF)	1
Sample #	Spike Value in µCi/L	(Sval)	3.635E+01
S94T284	Sample µCi/L in Sample or Digest as appropriate from Form #1		<2.662E-2
Instrument Code	Sample + Spike µCi/L	(S+S)	2.923E+01
AL10539			
Analyst			
DCD			
Date			
01/23/95			
Time			
07:30 AM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Sample + Spike µCi/L (S+S) = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * 2220000dpm/µCi)

Percent Spike Recovery = (((S+S) - Sample µCi/L) * ((SDF/Svol) / (DF/SS)) / Sval) * 100

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

PERCENT SPIKE RECOVERY = 80.4%

Data Entry by:	[illegible]	Date:	01/25/95
Approved by:	[illegible]	Date:	25 Jan 95

Form 933141_X Rev. 1.2

LABCORE Data Entry Template for Worklist# 830

Analyst: AKL **Instrument:** NP01 _____ **Book #** 90643

Method: LA-933-141 Rev/Mod H-1

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

Worklist Comment: Run as normal. --LLF

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				@NP23701 NP23701	LIQUID			N/A	uCi/mL
		1	STD				@NP23701 NP23701E	LIQUID			N/A	% Ct. Error
		2	BLNK-PREP				@NP23701 NP23701	LIQUID			N/A	uCi/mL
		2	BLNK-PREP				@NP23701 NP23701E	LIQUID			N/A	% Ct. Error
94000020	SY-103	3	SAMPLE	S95T000328	0		@NP23701 NP23701	LIQUID	N/A			uCi/mL
94000020	SY-103	3	SAMPLE	S95T000328	0		@NP23701 NP23701E	LIQUID	N/A			% Ct. Error
94000020	SY-103	4	DUP	S95T000328	0		@NP23701 NP23701	LIQUID			N/A	uCi/mL
94000020	SY-103	4	DUP	S95T000328	0		@NP23701 NP23701E	LIQUID			N/A	% Ct. Error
94000020	SY-103	5	SPK	S95T000328	0		@NP23701 NP23701	LIQUID			N/A	uCi/mL
94000020	SY-103	6	SAMPLE	S95T000329	0		@NP23701 NP23701	LIQUID	N/A			uCi/mL
94000020	SY-103	6	SAMPLE	S95T000329	0		@NP23701 NP23701E	LIQUID	N/A			% Ct. Error
94000020	SY-103	7	DUP	S95T000329	0		@NP23701 NP23701	LIQUID			N/A	uCi/mL
94000020	SY-103	7	DUP	S95T000329	0		@NP23701 NP23701E	LIQUID			N/A	% Ct. Error
94000020	SY-103	8	SPK	S95T000329	0		@NP23701 NP23701	LIQUID			N/A	uCi/mL

Final page for worklist # 830

G Lewis 3/31/95
Analyst Signature **Date**

C.J. Quinn 4/5/95
Analyst Signature **Date**

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) LIQUIDS/SOLIDS

			STANDARD
Type	Sample Volume in mL	(SS)	0.250
STANDARD	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
830	Digest Dilution Factor	(DDF)	1
Test Code	Gross Counts	(Gc)	43196
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	5
LIQUID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1434.87
Sample #	µCi/L in Sample =		3.1024E+01
WORKLIST 830			
Instrument Code			
AL10539			
Analyst			
AKL			
Date			
03/31/95			
Time			
03:30 PM			

~~NP01~~
4-19-95

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/L = Rs * 1000mL/L * DF * 3 * Mt F * DDF / (0.5 * SS * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/mL = Np-237 µCi/L / 1000mL/L

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/L	=	3.10E+01
Np-237 µCi/mL	=	3.10E-02
Relative Counting Error	=	0.9%

DETECTION LEVEL

4.32E-05 µCi/mL

Data Entry by:	C.J. Opsion	Date:	04/05/95
Approved by:	[illegible]	Date:	5 Apr 95

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) LIQUIDS/SOLIDS

			BLANK
Type	Sample Volume in mL	(SS)	0.250
BLANK	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
830	Digest Dilution Factor	(DDF)	20
Test Code	Gross Counts	(Gc)	147
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	5
LIQUID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		0.95
Sample #	µCi/L in Digest Solution =		< 2.0597E-02
WORKLIST 830			
Instrument Code			
AL10539	Sample Count Rate (Rs) = (Gc / Tc) - bkg		
Analyst	Np-237 µCi/L = Rs * 1000mL/L * DF * 3 * Mt F * DDF / (0.5 * SS * 2220000dpm/µCi)		
AKL	WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.		
Date	Np-237 µCi/mL = Np-237 µCi/L / 1000mL/L		
03/31/95	Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100		
Time			
03:30 PM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

Np-237 µCi/L = < 4.12E-01

Np-237 µCi/mL = < 4.12E-04

LESS THAN Value was Determined from Lc.

Relative Counting Error = 500.0%

DETECTION LEVEL

8.63E-04 µCi/mL

Data Entry by:	C.J. Opsen	Date:	04/05/95
Approved by:	[illegible]	Date:	5 Apr 95

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) LIQUIDS/SOLIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.250
SAMPLE	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
830	Digest Dilution Factor	(DDF)	20
Test Code	Gross Counts	(Gc)	178
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	5
LIQUID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.93
Sample #	µCi/L in Digest Solution =		< 4.1717E-02
S95T328			
Instrument Code			
AL10539			
Analyst			
AKL			
Date			
03/31/95			
Time			
03:30 PM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/L = Rs * 1000mL/L * DF * 3 * Mt F * DDF / (0.5 * SS * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/mL = Np-237 µCi/L / 1000mL/L

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/L = < 8.34E-01

Np-237 µCi/mL = < 8.34E-04

LESS THAN Value was Determined from Rmax.

Relative Counting Error = 126.8%

DETECTION LEVEL

8.63E-04 µCi/mL

Data Entry by:	C. Jones	Date:	04/05/95
Approved by:	[illegible]	Date:	5 Apr 95

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) LIQUIDS/SOLIDS

			DUPLICATE
Type	Sample Volume in mL	(SS)	0.250
DUPLICATE	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
830	Digest Dilution Factor	(DDF)	20
Test Code	Gross Counts	(Gc)	162
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	5
LIQUID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.37
Sample #	µCi/L in Digest Solution =		< 2.9654E-02
S95T328			
Instrument Code			
AL10539			
Analyst			
AKL			
Date			
03/31/95			
Time			
03:30 PM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/L = Rs * 1000mL/L * DF * 3 * Mt F * DDF / (0.5 * SS * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/mL = Np-237 µCi/L / 1000mL/L

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/L	=	< 5.93E-01
Np-237 µCi/mL	=	< 5.93E-04

LESS THAN Value was Determined from Rmax.

Relative Counting Error	=	288.5%

DETECTION LEVEL

8.63E-04 µCi/mL

Data Entry by:	C. Ojeda	Date:	04/05/95
Approved by:	[illegible]	Date:	5 Apr 95

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SPIKED SAMPLE

			SPIKE
Sample Volume in mL	(SS)	0.250
Dilution Factor for Sample in Spiked Vial	(DF)	1
Mount Factor (1/Mount Volume in mL)	(Mt F)	2
Gross Counts	(Gc)	43277
Time Counted in Minutes	(Tc)	30
Background in cpm	(bkg)	5
Spike Volume in mL	(Svol)	0.250
Spike Dilution Factor	(SDF)	1
Spike Value in µCi/L	(Sval)	3.635E+01
Sample µCi/L in Sample or Digest as appropriate from Form #1		<4.1717E-2
Sample + Spike µCi/L	(S+S)	3.108E+01

Type	Work List	Test Code	Matrix	Sample #	Instrument Code	Analyst	Date	Time
SPIKE	830	@NP237-01	LIQUID	S95T328	AL10539	AKL	03/31/95	03:30 PM

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Sample + Spike µCi/L (S+S) = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * 2220000dpm/µCi)

Percent Spike Recovery = (((S+S) - Sample µCi/L) * ((SDF/Svol) / (DF/SS)) / Sval) * 100

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

PERCENT SPIKE RECOVERY = 85.5%

Data Entry by: [signature] Date: 04/05/95

Approved by: [signature] Date: 5 Apr 95

Form 933141_X Rev. 1.2

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) LIQUIDS/SOLIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.250
SAMPLE	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
830	Digest Dilution Factor	(DDF)	20
Test Code	Gross Counts	(Gc)	175
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	5
LIQUID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.82
Sample #	µCi/L in Digest Solution =		< 3.9456E-02
S95T329			
Instrument Code			
AL10539			
Analyst			
AKL			
Date			
03/31/95			
Time			
03:30 PM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/L = Rs * 1000mL/L * DF * 3 * Mt F * DDF / (0.6 * SS * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.6 is the Counting Effeciency Factor.

Np-237 µCi/mL = Np-237 µCi/L / 1000mL/L

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/L = < 7.89E-01

Np-237 µCi/mL = < 7.89E-04

LESS THAN Value was Determined from Rmax.

Relative Counting Error = 141.3%

DETECTION LEVEL

8.63E-04 µCi/mL

Data Entry by:	C. Opinion	Date:	04/05/95
Approved by:	[signature]	Date:	5 Apr 95

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) LIQUIDS/SOLIDS

			DUPLICATE
Type	Sample Volume in mL	(SS)	0.250
DUPLICATE	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
830	Digest Dilution Factor	(DDF)	20
Test Code	Gross Counts	(Gc)	152
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	5
LIQUID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.02
Sample #	µCi/L in Digest Solution =	<	2.2107E-02
S95T329			
Instrument Code			
AL10539			
Analyst			
AKL			
Date			
03/31/95			
Time			
03:30 PM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/L = Rs * 1000mL/L * DF * 3 * Mt F * DDF / (0.5 * SS * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/mL = Np-237 µCi/L / 1000mL/L

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/L = < 4.42E-01

Np-237 µCi/mL = < 4.42E-04

LESS THAN Value was Determined from Rmax.

Relative Counting Error = 500.0%

DETECTION LEVEL

8.63E-04 µCi/mL

Data Entry by:	C. Quinn	Date:	04/05/95
Approved by:	[illegible]	Date:	5 Apr 95

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SPIKED SAMPLE

			SPIKE
Type	Sample Volume in mL	(SS)	0.250
SPIKE	Dilution Factor for Sample in Spiked Vial	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
830	Gross Counts	(Gc)	41308
Test Code	Time Counted in Minutes	(Tc)	30
@NP237-01	Background in cpm	(bkg)	5
Matrix	Spike Volume in mL	(Svol)	0.250
LIQUID	Spike Dilution Factor	(SDF)	1
Sample #	Spike Value in µCi/L	(Sval)	3.635E+01
S95T329	Sample µCi/L in Sample or Digest as appropriate from Form #1		<3.9456E-2
Instrument Code	Sample + Spike µCi/L	(S+S)	2.966E+01
AL10539			
Analyst			
AKL			
Date			
03/31/95			
Time			
03:30 PM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Sample + Spike µCi/L (S+S) = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * 2220000dpm/µCi)

Percent Spike Recovery = (((S+S) - Sample µCi/L) * ((SDF/Svol) / (DF/SS)) / Sval) * 100

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

PERCENT SPIKE RECOVERY = 81.6%

Data Entry by:	C.J. Opiner	Date:	04/05/95
Approved by:	[illegible]	Date:	5 Apr 95

Form 933141_X Rev. 1.2

LABCORE Data Entry Template for Worklist# 831

Analyst: AKL **Instrument:** NP01 _____ **Book #** 90643

Method: LA-933-141 Rev/Mod H-1

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

Worklist Comment: Run as normal. --LLF

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				@NP23701 NP23701	LIQUID			N/A	uCi/mL
		1	STD				@NP23701 NP23701E	LIQUID			N/A	% Ct. Error
		2	BLNK-PREP				@NP23701 NP23701	LIQUID			N/A	uCi/mL
		2	BLNK-PREP				@NP23701 NP23701E	LIQUID			N/A	% Ct. Error
94000020	SY-103	3	SAMPLE	S95T000330	0		@NP23701 NP23701	LIQUID	N/A			uCi/mL
94000020	SY-103	3	SAMPLE	S95T000330	0		@NP23701 NP23701E	LIQUID	N/A			% Ct. Error
94000020	SY-103	4	DUP	S95T000330	0		@NP23701 NP23701	LIQUID			N/A	uCi/mL
94000020	SY-103	4	DUP	S95T000330	0		@NP23701 NP23701E	LIQUID			N/A	% Ct. Error
94000020	SY-103	5	SPK	S95T000330	0		@NP23701 NP23701	LIQUID			N/A	uCi/mL
94000020	SY-103	6	SAMPLE	S95T000331	0		@NP23701 NP23701	LIQUID	N/A			uCi/mL
94000020	SY-103	6	SAMPLE	S95T000331	0		@NP23701 NP23701E	LIQUID	N/A			% Ct. Error
94000020	SY-103	7	DUP	S95T000331	0		@NP23701 NP23701	LIQUID			N/A	uCi/mL
94000020	SY-103	7	DUP	S95T000331	0		@NP23701 NP23701E	LIQUID			N/A	% Ct. Error
94000020	SY-103	8	SPK	S95T000331	0		@NP23701 NP23701	LIQUID			N/A	uCi/mL

Final page for worklist # 831

Alta Lewis 4/3/95
Analyst Signature **Date**

C.J. Oainen 4/5/95
Analyst Signature **Date**

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) LIQUIDS/SOLIDS

			STANDARD
Type	Sample Volume in mL	(SS)	0.250
STANDARD	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
831	Digest Dilution Factor	(DDF)	1
Test Code	Gross Counts	(Gc)	46070
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	5
LIQUID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1530.67
Sample #	µCi/L in Sample =		3.3095E+01
WORKLIST 831			
Instrument Code			
AL10539			
Analyst			
AKL			
Date			
04/03/95			
Time			
03:00 PM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/L = Rs * 1000mL/L * DF * 3 * Mt F * DDF / (0.5 * SS * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/mL = Np-237 µCi/L / 1000mL/L

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/L	=	3.31E+01
Np-237 µCi/mL	=	3.31E-02
Relative Counting Error	=	0.9%

DETECTION LEVEL

4.32E-05 µCi/mL

Data Entry by:	C.J. Apman	Date:	04/05/95
Approved by:	[illegible]	Date:	5 Ap-95

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) LIQUIDS/SOLIDS

			BLANK
Type	Sample Volume in mL	(SS)	0.250
BLANK	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
831	Digest Dilution Factor	(DDF)	20
Test Code	Gross Counts	(Gc)	175
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	5
LIQUID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.82
Sample #	µCi/L in Digest Solution =		< 3.9456E-02
WORKLIST 831			
Instrument Code			
AL10539			
Analyst			
AKL			
Date			
04/03/95			
Time			
03:00 PM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/L = Rs * 1000mL/L * DF * 3 * Mt F * DDF / (0.5 * SS * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/mL = Np-237 µCi/L / 1000mL/L

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/L	=	< 7.89E-01
Np-237 µCi/mL	=	< 7.89E-04

LESS THAN Value was Determined from Rmax.

Relative Counting Error	=	141.3%

DETECTION LEVEL

8.63E-04 µCi/mL

Data Entry by:	J. Chenen	Date:	04/05/95
Approved by:	[illegible]	Date:	5 Apr 95

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) LIQUIDS/SOLIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.250
SAMPLE	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
831	Digest Dilution Factor	(DDF)	20
Test Code	Gross Counts	(Gc)	173
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	5
LIQUID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.76
Sample #	µCi/L in Digest Solution =		< 3.7949E-02
S95T330			
Instrument Code			
AL10539			
Analyst			
AKL			
Date			
04/03/95			
Time			
03:00 PM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/L = Rs * 1000mL/L * DF * 3 * Mt F * DDF / (0.5 * SS * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/mL = Np-237 µCi/L / 1000mL/L

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/L = < 7.59E-01

Np-237 µCi/mL = < 7.59E-04

LESS THAN Value was Determined from Rmax.

Relative Counting Error = 153.2%

DETECTION LEVEL

8.63E-04 µCi/mL

Data Entry by:	J. Opsum	Date:	04/05/95
Approved by:	[illegible]	Date:	5 Apr 95

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) LIQUIDS/SOLIDS

			DUPLICATE
Type	Sample Volume in mL	(SS)	0.250
DUPLICATE	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
831	Digest Dilution Factor	(DDF)	20
Test Code	Gross Counts	(Gc)	155
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	5
LIQUID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.13
Sample #	µCi/L in Digest Solution =		< 2.4372E-02
S95T330			
Instrument Code			
AL10539			
Analyst			
AKL			
Date			
04/03/95			
Time			
03:00 PM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/L = Rs * 1000mL/L * DF * 3 * Mt F * DDF / (0.5 * SS * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/mL = Np-237 µCi/L / 1000mL/L

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/L	=	< 4.87E-01
Np-237 µCi/mL	=	< 4.87E-04

LESS THAN Value was Determined from Rmax.

Relative Counting Error	=	500.0%

DETECTION LEVEL

8.63E-04 µCi/mL

Data Entry by:	C. Gayen	Date:	04/05/95
Approved by:	[illegible]	Date:	5 Apr 95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SPIKED SAMPLE

			SPIKE
Sample Volume in mL	(SS)		0.250
Dilution Factor for Sample in Spiked Vial	(DF)		1
Mount Factor (1/Mount Volume in mL)	(Mt F)		2
Gross Counts	(Gc)		41452
Time Counted in Minutes	(Tc)		30
Background in cpm	(bkg)		5
Spike Volume in mL	(Svol)		0.250
Spike Dilution Factor	(SDF)		1
Spike Value in µCi/L	(Sval)		3.635E+01
Sample µCi/L in Sample or Digest as appropriate from Form #1			<3.7949E-2
Sample + Spike µCi/L	(S+S)		2.977E+01

Type	SPIKE
Work List	~~930~~ 831
Test Code	@NP237-01
Matrix	LIQUID
Sample #	S95T330
Instrument Code	AL10539
Analyst	AKL
Date	04/03/95
Time	03:00 PM

4.5.95

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Sample + Spike µCi/L (S+S) = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * 2220000dpm/µCi)

Percent Spike Recovery = (((S+S) - Sample µCi/L) * ((SDF/Svol) / (DF/SS)) / Sval) * 100

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

PERCENT SPIKE RECOVERY = 81.9%

Data Entry by:	C. Opsen	Date:	04/05/95
Approved by:		Date:	5 Apr 95

Form 933141_X Rev. 1.2

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) LIQUIDS/SOLIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.250
SAMPLE	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
831	Digest Dilution Factor	(DDF)	20
Test Code	Gross Counts	(Gc)	166
@NP237-01	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	5
LIQUID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.51
Sample #	µCi/L in Digest Solution =		< 3.2671E-02
S95T331			
Instrument Code			
AL10539			
Analyst			
AKL			
Date			
04/03/95			
Time			
03:00 PM			

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/L = Rs * 1000mL/L * DF * 3 * Mt F * DDF / (0.5 * SS * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/mL = Np-237 µCi/L / 1000mL/L

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/L	=	< 6.53E-01
Np-237 µCi/mL	=	< 6.53E-04

LESS THAN Value was Determined from Rmax.

Relative Counting Error	=	217.8%

DETECTION LEVEL

8.63E-04 µCi/mL

Data Entry by:	C. Garner	Date:	04/05/95
Approved by:	[illegible]	Date:	5 Apr 95

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) LIQUIDS/SOLIDS

			DUPLICATE
Sample Volume in mL	(SS)		0.250
Dilution Factor	(DF)		1
Mount Factor (1/Mount Volume in mL)	(Mt F)		2
Digest Dilution Factor	(DDF)		20
Gross Counts	(Gc)		211
Time counted in Minutes	(Tc)		30
Background in cpm	(bkg)		5
Lc, Rmax, or Rs,(Sample Rate) as Appropriate			2.03
µCi/L in Digest Solution =			4.3964E-02

Type	
DUPLICATE	
Work List	
831	
Test Code	
@NP237-01	
Matrix	
LIQUID	
Sample #	
S95T331	
Instrument Code	
AL10539	
Analyst	
AKL	
Date	
04/03/95	
Time	
03:00 PM	

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Np-237 µCi/L = Rs * 1000mL/L * DF * 3 * Mt F * DDF / (0.5 * SS * 2220000dpm/µCi)

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

Np-237 µCi/mL = Np-237 µCi/L / 1000mL/L

Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / | (Gc - bkg * Tc) |] * 1.96 * 100

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

Np-237 µCi/L	=	8.79E-01
Np-237 µCi/mL	=	8.79E-04
Relative Counting Error	=	61.0%

DETECTION LEVEL

8.63E-04 µCi/mL

Data Entry by:	C.J. Opsum	Date:	04/05/95
Approved by:	[illegible]	Date:	5 Apr 95

Form 933141_C Rev. 1.4

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Np-237 : LA-933-141 (H-1) SPIKED SAMPLE

			SPIKE
Sample Volume in mL	(SS)		0.250
Dilution Factor for Sample in Spiked Vial	(DF)		1
Mount Factor (1/Mount Volume in mL)	(Mt F)		2
Gross Counts	(Gc)		44332
Time Counted in Minutes	(Tc)		30
Background in cpm	(bkg)		5
Spike Volume in mL	(Svol)		0.250
Spike Dilution Factor	(SDF)		1
Spike Value in µCi/L	(Sval)		3.635E+01
Sample µCi/L in Sample or Digest as appropriate from Form #1			<3.2671E-2
Sample + Spike µCi/L	(S+S)		3.184E+01

Type	SPIKE
Work List	831
Test Code	@NP237-01
Matrix	LIQUID
Sample #	S95T331
Instrument Code	AL10539
Analyst	AKL
Date	04/03/95
Time	03:00 PM

Sample Count Rate (Rs) = (Gc / Tc) - bkg

Sample + Spike µCi/L (S+S) = Rs * 1000mL/L * DF * 3 * Mt F / (0.5 * SS * 2220000dpm/µCi)

Percent Spike Recovery = (((S+S) - Sample µCi/L) * ((SDF/Svol) / (DF/SS)) / Sval) * 100

WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Effeciency Factor.

PERCENT SPIKE RECOVERY = 87.6%

Data Entry by:	C.J. Oansen	Date:	04/05/95
Approved by:	[illegible]	Date:	5 Apr 95

Form 933141_X Rev. 1.2

AMERICIUM/CURIUM ANALYSES

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LABCORE Data Entry Template for Worklist# 180

Analyst: AKL **Instrument:** AM01 _____ **Method:** LA-953-103 A-1

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

Seg	Type	Sample#	Rep	Al	Test		Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@AM24102	AM24101	SOLID			N/A	uCi/g
1	BLNK-PREP				@AM24102	AM24101E	SOLID			N/A	% Ct.
1	BLNK-PREP				@AM24102	AM24301T	SOLID			N/A	% Rec
1	BLNK-PREP				@AM24102	CM24301	SOLID			N/A	uCi/g
1	BLNK-PREP				@AM24102	CM24301E	SOLID			N/A	% Ct.
2	STD	83B43			@AM24102	AM24101	SOLID			N/A	uCi/g
2	STD				@AM24102	AM24301T	SOLID			N/A	% Rec
2	STD				@AM24102	AM24101E	SOLID			N/A	% Ct.
3	SAMPLE	S94T000005	0		@AM24102	AM24101	SOLID	N/A			uCi/g
3	SAMPLE	S94T000005	0		@AM24102	AM24101T	SOLID	N/A			% Rec
3	SAMPLE	S94T000005	0		@AM24102	AM24101E	SOLID	N/A			% Ct.
3	SAMPLE	S94T000005	0		@AM24102	CM24301	SOLID	N/A			uCi/g
3	SAMPLE	S94T000005	0		@AM24102	CM24301E	SOLID	N/A			% Ct.
4	DUP	S94T000005	0		@AM24102	AM24101	SOLID			N/A	uCi/g
4	DUP	S94T000005	0		@AM24102	AM24301T	SOLID			N/A	% Rec
4	DUP	S94T000005	0		@AM24102	AM24101E	SOLID			N/A	% Ct.
4	DUP	S94T000005	0		@AM24102	CM24301	SOLID			N/A	uCi/g
4	DUP	S94T000005	0		@AM24102	CM24301E	SOLID			N/A	% Ct.

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist# 180

Analyst: AKL **Instrument:** AM01 _____ **Method:** LA-953-103 A-1

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

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

Final page for worklist # 180

Alta Lewis
Analyst Signature

12-1-94
Date

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

			BLANK
Type	Spike (Tracer) Book Number		87B43
BLANK	Activity of Am243 Tracer in dpm/mL	(SPKA)	9140
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
180	Volume of Sample in mL	(SS)	0.500
Test Code	Dilution Factor	(DF)	1
@AM241-02	Digest Grams / Liter	(Dg/L)	2.2092
Matrix	Am-241 Area Peak Height from AEA	(C241)	58
SOLID	Am-243 Area Peak Height from AEA	(C243)	6256
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	6
S94T000005	Total AT Count	(ATOT)	10575
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	6
Analyst	Am 241 µCi/g	= <	2.4807E-02
AKL			
Date			
12/01/94			
Time			
03:00 PM			

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))

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

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

Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100

Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

NOTE: Am 241 Result is a LESS THAN Value

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	< 2.48E-02	
Cm 243/244 µCi/g	=	< 2.48E-02	
Relative counting error (Am-241)	=	25.9%	
Relative counting error (Cm-243/244)	=	80.1%	
Am-243 Tracer Recovery	=	75.1%	2.48E-02

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

Form 953103WB Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) LIQUID

			STANDARD
Type	Spike (Tracer) Book Number		87B43
STANDARD	Activity of Am243 Tracer in dpm/mL	(SPKA)	9140
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
180	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	101
@AM241-02	Digest Dilution Factor	(DDF)	1
Matrix	Am-241 Area Peak Height from AEA	(C241)	1470
LIQUID	Am-243 Area Peak Height from AEA	(C243)	2365
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	3
S94T000005	Total AT Count	(ATOT)	17071
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	6
Analyst	Am 241 µCi/L	=	2.5846E+01
LEWIS			
Date			
12/01/94			
Time			
03:00 PM			

Cm-243/244 µCi/L = CM * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Am-241 µCi/L = C241 * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

Print

			Detection Level in µCi/mL
Am 241 µCi/mL	=	2.58E-02	
Cm 243/244 µCi/mL	=	< 2.74E-03	
Relative counting error (Am-241)	=	6.5%	
Relative counting error (Cm-243/244)	=	113.2%	
Am-243 Tracer Recovery	=	76.0%	2.74E-03

Data Entry by:	[illegible]	Date:	12/06/94
Approved by:	[illegible]	Date:	6 Dec 94

Form 953103WB Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

			SAMPLE
Type	Spike (Tracer) Book Number		87B43
SAMPLE	Activity of Am243 Tracer in dpm/mL	(SPKA)	9140
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
180	Volume of Sample in mL	(SS)	0.500
Test Code	Dilution Factor	(DF)	1
@AM241-02	Digest Grams / Liter	(Dg/L)	2.2092
Matrix	Am-241 Area Peak Height from AEA	(C241)	74
SOLID	Am-243 Area Peak Height from AEA	(C243)	3652
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	9
S94T000005	Total AT Count	(ATOT)	9264
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	6
Analyst	Am 241 µCi/g	= <	2.8697E-02
AKL			
Date			
12/01/94			
Time			
03:00 PM			

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100
NOTE: Am 241 Result is a LESS THAN Value

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	< 2.87E-02	
Cm 243/244 µCi/g	=	< 2.87E-02	
Relative counting error (Am-241)	=	23.0%	
Relative counting error (Cm-243/244)	=	65.4%	
Am-243 Tracer Recovery	=	64.9%	2.87E-02

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

				DUPLICATE
Type	Spike (Tracer) Book Number			87B43
DUPLICATE	Activity of Am243 Tracer in dpm/mL		(SPKA)	9140
Work List	Spike (Tracer) Volume in mL		(SPKV)	0.100
180	Volume of Sample in mL		(SS)	0.500
Test Code	Dilution Factor		(DF)	1
@AM241-02	Digest Grams / Liter		(Dg/L)	2.216
Matrix	Am-241 Area Peak Height from AEA		(C241)	54
SOLID	Am-243 Area Peak Height from AEA		(C243)	2745
Sample #	Cm-243/244 Area Peak Height from AEA		(CM)	5
S94T000005	Total AT Count		(ATOT)	9421
Instrument Code	AT Count Time in Minutes		(MIN CT'd)	30
WC38931	Background in CPM		(BKG)	6
Analyst	Am 241 µCi/g	=	<	2.8106E-02
AKL				
Date				
12/01/94				
Time				
03:00 PM				

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100
NOTE: Am 241 Result is a LESS THAN Value

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	< 2.81E-02	
Cm 243/244 µCi/g	=	< 2.81E-02	
Relative counting error (Am-241)	=	26.9%	
Relative counting error (Cm-243/244)	=	87.7%	
Am-243 Tracer Recovery	=	66.1%	2.81E-02

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

Form 953103WB Rev. 1.0

Westinghouse Hanford Co.

4.19.95

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

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

SAMPLE
STD
File ID: 2a2683.CNF

Counted on: 12/ 2/94 @14: 8
Detector: AEA2
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1371.7	1371.7	306.386	306.386	22.000	18.774	11.000	5.903
2	2217.9	2217.9	260.020	259.925	22.000	17.433	11.000	5.245

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am241	0.373	5.480	5.504	-.024	0.09	70.56	1.1	404.4	0.182E-03
	Pu238		5.499	5.504	-.005				528.0	0.238E-03
2	Am243	0.599	5.276	5.291	-.015	0.08	113.35	0.9	616.9	0.278E-03
	Pu240		5.144	5.291	-.147				610.7	0.275E-03
Totals:		0.971	<--valid peaks only-->				183.90			

DETECTOR CALIBRATION
Energy(MEV) = 4.095 + (0.0046)*Channel
Energy range (MeV): 4.095 TO 6.450
Efficiency = 0.1856 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	90889.0	100.000
Smoothed	90888.9	100.000
Composite fit	88282.4	97.132
Residuals	2606.6	2.868

Analyzed by: _____
EMB

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 2072 TO 2083.

Spectrum 2a2683.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 17275.6


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1.......................................................................2..
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Raw Data Dump for AEA Spectrum: 2a2683.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	5.
21	0.	3.	0.	2.	3.	1.	5.	0.	2.	3.
31	1.	2.	4.	5.	0.	2.	3.	2.	3.	1.
41	3.	2.	6.	3.	2.	3.	6.	4.	1.	3.
51	1.	5.	1.	1.	5.	1.	3.	1.	1.	2.
61	7.	1.	3.	7.	2.	2.	2.	2.	4.	3.
71	2.	3.	2.	2.	1.	3.	6.	3.	1.	3.
81	2.	2.	4.	1.	1.	4.	4.	3.	5.	2.
91	4.	4.	6.	2.	4.	4.	3.	1.	8.	8.
101	4.	4.	6.	3.	8.	8.	5.	7.	11.	6.
111	10.	8.	4.	7.	10.	7.	8.	9.	7.	11.
121	8.	6.	8.	5.	10.	6.	11.	8.	9.	7.
131	13.	12.	10.	14.	15.	11.	7.	14.	16.	16.
141	12.	13.	10.	20.	15.	14.	14.	14.	13.	12.
151	15.	20.	13.	13.	20.	25.	20.	12.	20.	22.
161	16.	18.	16.	18.	19.	13.	27.	19.	15.	20.
171	15.	26.	21.	23.	28.	26.	28.	24.	32.	29.
181	22.	30.	30.	28.	28.	24.	37.	30.	38.	49.
191	45.	42.	30.	41.	44.	47.	36.	39.	46.	43.
201	42.	63.	48.	54.	50.	68.	66.	65.	65.	75.
211	77.	82.	96.	91.	123.	102.	98.	105.	132.	162.
221	139.	162.	166.	176.	172.	198.	213.	228.	242.	253.
231	271.	308.	311.	339.	342.	377.	392.	442.	474.	548.
241	553.	655.	688.	741.	854.	889.	968.	1138.	1225.	1398.
251	1472.	1613.	1768.	1939.	2058.	2158.	2272.	2327.	2323.	2365.
261	2265.	2282.	2072.	1946.	1743.	1684.	1411.	1257.	1027.	915.
271	652.	569.	506.	399.	359.	293.	276.	236.	232.	233.
281	235.	205.	249.	246.	267.	286.	308.	354.	398.	438.
291	434.	524.	584.	661.	774.	828.	870.	925.	1069.	1105.
301	1205.	1265.	1394.	1364.	1449.	1470.	1380.	1356.	1364.	1228.
311	1139.	1049.	905.	777.	713.	568.	484.	354.	303.	239.
321	199.	152.	130.	101.	60.	63.	38.	23.	16.	11.
331	13.	5.	4.	3.	0.	0.	0.	0.	0.	2.
341	1.	0.	0.	1.	0.	0.	2.	1.	0.	1.
351	3.	3.	1.	2.	1.	0.	2.	3.	1.	0.
361	0.	0.	2.	2.	3.	1.	1.	2.	1.	0.
371	1.	1.	1.	0.	0.	2.	1.	0.	0.	1.
381	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
421	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
441	0.	1.	2.	0.	0.	0.	1.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	2.	1.	0.	1.	0.
481	0.	0.	1.	0.	0.	1.	3.	0.	0.	2.
491	0.	0.	0.	0.	0.	1.	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. 2.01

DATA REDUCTION REPORT

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

SAMPLE
BLANK
File ID: 3a3412.CNF

Counted on: 12/ 2/94 @14: 9
Detector: AEA3
Geometry number: 1
Count time: 28800. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	46.9	46.9	303.766	303.766	16.000	8.130	8.000	2.958
2	5487.8	5487.8	256.335	256.335	14.000	6.627	7.000	4.986
3	154.8	154.8	231.889	230.096	14.000	4.451	7.000	2.509

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am241	0.011	5.480	5.471	0.009	0.04	1.78	6.7	13.0	0.584E-05
	Pu238		5.499	5.471	0.028				16.9	0.763E-05
2	Am243	0.934	5.276	5.253	0.023	0.03	151.55	0.7	1050.6	0.473E-03
3	Pu239	0.025	5.143	5.132	0.011	0.02	4.09	7.1	28.1	0.126E-04
	Pu240		5.144	5.132	0.012				28.1	0.126E-04
		---					---			
Totals:		0.970	<--valid peaks only-->				157.41			

DETECTOR CALIBRATION
Energy(MEV) = 4.074 + (0.0046)*Channel
Energy range (MeV): 4.074 TO 6.429
Efficiency = 0.1457 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	77858.0	100.000
Smoothed	77858.0	100.000
Composite fit	75558.3	97.046
Residuals	2299.7	2.954

Analyzed by: _____
EMB

Spectrum 3a3412.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 30922.7


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3
.3.
3.2
...............2
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.............................................................. 2
......2......
..
1
1
1
1
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Raw Data Dump for AEA Spectrum: 3a3412.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
21	0.	1.	2.	0.	0.	0.	0.	0.	1.	1.
31	0.	0.	0.	0.	0.	1.	0.	0.	0.	2.
41	1.	1.	0.	0.	1.	0.	0.	0.	0.	1.
51	0.	0.	0.	1.	1.	0.	0.	1.	1.	1.
61	0.	2.	0.	0.	0.	0.	0.	2.	0.	0.
71	1.	1.	0.	0.	0.	1.	0.	0.	1.	0.
81	1.	0.	1.	0.	0.	1.	0.	0.	0.	0.
91	0.	1.	0.	1.	0.	1.	0.	1.	0.	1.
101	0.	0.	1.	0.	1.	0.	0.	1.	0.	1.
111	1.	0.	0.	0.	0.	0.	4.	1.	2.	2.
121	0.	0.	0.	2.	0.	1.	1.	4.	2.	1.
131	1.	1.	0.	3.	0.	0.	0.	0.	2.	3.
141	5.	1.	2.	1.	4.	7.	4.	8.	3.	7.
151	2.	5.	6.	6.	7.	4.	4.	5.	1.	1.
161	1.	3.	2.	1.	3.	1.	2.	1.	1.	1.
171	1.	0.	2.	0.	0.	0.	0.	1.	1.	1.
181	0.	0.	0.	3.	1.	1.	0.	0.	1.	0.
191	3.	1.	1.	0.	1.	3.	0.	5.	3.	2.
201	3.	1.	2.	3.	1.	5.	1.	2.	3.	9.
211	6.	9.	6.	7.	19.	22.	45.	35.	31.	49.
221	60.	54.	87.	97.	118.	150.	183.	187.	200.	218.
231	215.	215.	223.	178.	183.	186.	164.	214.	224.	277.
241	364.	473.	585.	806.	934.	1195.	1472.	1850.	2228.	2680.
251	3337.	3983.	4907.	5596.	5953.	6256.	6211.	5627.	4579.	3430.
261	2517.	1823.	1210.	870.	712.	575.	535.	496.	485.	417.
271	307.	254.	204.	139.	78.	59.	34.	10.	17.	4.
281	3.	3.	0.	1.	0.	4.	2.	2.	5.	4.
291	10.	7.	11.	13.	19.	23.	25.	27.	46.	38.
301	49.	45.	58.	44.	52.	45.	35.	33.	28.	16.
311	13.	10.	10.	3.	5.	3.	3.	1.	0.	0.
321	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	0.	1.	2.	0.	1.
351	2.	4.	2.	6.	0.	1.	1.	3.	1.	4.
361	2.	6.	2.	3.	2.	1.	1.	6.	3.	0.
371	0.	2.	1.	0.	1.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	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. 2.01

DATA REDUCTION REPORT

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

SAMPLE
S94T000005
File ID: 4a4887.CNF

Counted on: 12/ 2/94 @14:10
Detector: AEA4
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	58.8	58.8	305.432	305.432	12.000	5.715	6.000	3.751
2	2996.2	2996.2	259.850	259.850	12.000	4.492	6.000	3.678
3	202.9	202.9	234.534	234.170	14.000	6.080	7.000	4.019

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu238	0.020	5.499	5.509	-.010	0.03	1.59	7.1	27.4	0.123E-04
	Am241		5.480	5.509	-.029				21.0	0.944E-05
2	Am243	0.873	5.276	5.294	-.018	0.02	69.91	1.1	874.0	0.394E-03
3	Pu239	0.070	5.143	5.174	-.031	0.03	5.60	5.0	69.3	0.312E-04
	Pu240		5.144	5.174	-.030				69.3	0.312E-04
		---					---			
Totals:		0.963	<--valid peaks only-->				77.11			

DETECTOR CALIBRATION
Energy(MEV) = 4.073 + (0.0047)*Channel
Energy range (MeV): 4.073 TO 6.480
Efficiency = 0.0808 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	38448.0	100.000
Smoothed	38447.9	100.000
Composite fit	37017.7	96.280
Residuals	1430.3	3.720

Analyzed by: _____
EMB

Spectrum 4a4887.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 19862.2


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3
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...3.
3..2.
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1
1
1
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Raw Data Dump for AEA Spectrum: 4a4887.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	2.	0.	0.	0.	0.	0.	1.	0.	0.	0.
41	0.	0.	0.	1.	1.	1.	0.	0.	1.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	1.	0.	1.	0.	0.	1.	1.	1.
71	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	0.	0.	2.	0.	0.	1.	0.	0.
91	1.	0.	1.	0.	1.	1.	1.	2.	1.	0.
101	0.	2.	0.	0.	1.	0.	0.	0.	0.	0.
111	1.	0.	0.	0.	0.	1.	1.	0.	2.	0.
121	0.	0.	1.	1.	0.	0.	0.	1.	0.	1.
131	1.	0.	1.	0.	3.	0.	1.	0.	2.	3.
141	1.	0.	1.	3.	0.	4.	2.	2.	1.	2.
151	2.	0.	1.	2.	2.	2.	0.	2.	3.	2.
161	1.	1.	0.	0.	0.	1.	0.	1.	0.	2.
171	2.	0.	1.	1.	0.	1.	2.	1.	4.	0.
181	1.	4.	3.	3.	4.	0.	2.	3.	3.	0.
191	2.	1.	0.	4.	3.	2.	6.	4.	1.	3.
201	4.	8.	9.	5.	5.	6.	7.	6.	10.	6.
211	9.	5.	5.	10.	15.	18.	12.	10.	17.	34.
221	39.	32.	50.	48.	56.	70.	82.	95.	127.	154.
231	196.	209.	251.	253.	225.	230.	202.	156.	120.	122.
241	118.	107.	133.	120.	166.	232.	322.	348.	497.	608.
251	698.	756.	1011.	1201.	1455.	2041.	2516.	3098.	3535.	3652.
261	3241.	2705.	1898.	1237.	747.	426.	281.	213.	214.	161.
271	160.	140.	122.	99.	82.	72.	45.	35.	19.	7.
281	6.	2.	2.	2.	3.	2.	2.	6.	2.	6.
291	7.	2.	6.	11.	11.	16.	17.	22.	18.	38.
301	39.	50.	69.	54.	61.	74.	58.	44.	42.	24.
311	12.	15.	12.	8.	4.	2.	1.	2.	4.	1.
321	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.
331	0.	1.	0.	0.	0.	1.	0.	0.	0.	0.
341	1.	0.	1.	0.	0.	0.	1.	0.	1.	0.
351	2.	0.	0.	2.	2.	1.	3.	4.	2.	5.
361	3.	4.	4.	3.	8.	9.	8.	4.	4.	1.
371	2.	2.	3.	5.	2.	5.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.
441	0.	1.	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	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	1.	0.	0.	2.	0.	1.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

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

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

SAMPLE
S94T000005-D
File ID: 5a5815.CNF

Counted on: 12/ 2/94 @14:11
Detector: AEA5
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	47.3	47.3	303.579	303.579	20.000	22.687	10.000	1.134
2	2591.5	2591.5	258.157	258.147	24.000	19.930	12.000	7.232
3?	7.5	7.5	164.260	164.003	66.000	1.000	33.000	0.100

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Peak Centroid Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am241	0.059	5.480	5.495	-.015	0.11	8.20	3.1	72.7	0.328E-04
	Pu238		5.499	5.495	0.004				95.0	0.428E-04
2	Am243	0.929	5.276	5.282	-.006	0.09	129.82	0.8	1093.7	0.493E-03
	Pu240		5.144	5.282	-.138				1082.7	0.488E-03
3		????		4.839			0.60	19.2		
Totals:		0.988	<--valid peaks only-->				138.02			

DETECTOR CALIBRATION
Energy(MEV) = 4.068 + (0.0047)*Channel
Energy range (MeV): 4.068 TO 6.475
Efficiency = 0.1199 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	67061.0	100.000
Smoothed	67061.0	100.000
Composite fit	66539.9	99.223
Residuals	521.1	0.777

Analyzed by: _____
EMB

Spectrum 5a5815.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 19460.7


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3
3
3
3
3
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3
3
3
1
1
1
1
1
2
12.
1...2.
1..........2
1...........................2
1.............................................................2..
1.....................................................................2.
1.................................2
1......2.
1
1
1
1
1
```

Raw Data Dump for AEA Spectrum: 5a5815.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	3.	2.	3.	1.
21	2.	2.	3.	1.	2.	2.	4.	2.	7.	7.
31	2.	2.	3.	1.	1.	1.	1.	6.	2.	4.
41	4.	3.	2.	3.	2.	4.	2.	1.	2.	3.
51	2.	2.	5.	2.	1.	4.	3.	1.	4.	6.
61	0.	2.	2.	3.	4.	3.	3.	4.	2.	3.
71	4.	2.	4.	4.	2.	4.	1.	4.	1.	5.
81	6.	3.	3.	2.	3.	2.	2.	0.	3.	4.
91	5.	7.	6.	5.	1.	1.	2.	3.	5.	4.
101	3.	3.	4.	7.	7.	1.	5.	4.	5.	3.
111	4.	7.	4.	4.	3.	7.	2.	8.	2.	11.
121	3.	7.	7.	7.	5.	11.	6.	5.	7.	5.
131	5.	7.	5.	6.	9.	5.	10.	9.	7.	10.
141	7.	6.	6.	8.	9.	6.	8.	7.	7.	9.
151	8.	12.	12.	11.	15.	13.	9.	14.	6.	13.
161	16.	13.	20.	9.	16.	19.	9.	11.	13.	9.
171	23.	12.	11.	15.	16.	13.	10.	15.	25.	11.
181	11.	19.	19.	15.	11.	27.	13.	20.	16.	24.
191	21.	15.	24.	22.	18.	23.	26.	27.	27.	26.
201	36.	31.	43.	51.	49.	34.	43.	48.	52.	56.
211	67.	65.	64.	70.	76.	85.	92.	94.	109.	126.
221	142.	142.	155.	169.	177.	195.	215.	224.	230.	287.
231	284.	275.	370.	355.	395.	444.	465.	473.	572.	661.
241	688.	736.	881.	1026.	1112.	1223.	1334.	1534.	1704.	1838.
251	2086.	2287.	2341.	2489.	2701.	2745.	2709.	2716.	2653.	2665.
261	2507.	2299.	2096.	1940.	1750.	1517.	1335.	1153.	974.	786.
271	630.	521.	430.	351.	266.	197.	178.	127.	125.	81.
281	66.	59.	39.	29.	41.	27.	19.	20.	21.	18.
291	24.	27.	22.	33.	45.	34.	39.	54.	42.	37.
301	51.	49.	49.	41.	54.	46.	39.	37.	37.	36.
311	33.	31.	26.	16.	15.	19.	7.	13.	7.	8.
321	8.	9.	2.	2.	1.	1.	2.	0.	0.	0.
331	0.	0.	1.	1.	3.	0.	1.	1.	1.	2.
341	1.	1.	0.	2.	3.	1.	1.	1.	4.	1.
351	0.	2.	1.	3.	2.	1.	3.	3.	2.	1.
361	2.	1.	2.	4.	5.	2.	4.	4.	3.	3.
371	5.	4.	4.	3.	1.	0.	2.	1.	1.	2.
381	2.	0.	1.	1.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
421	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
431	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
441	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
461	1.	0.	0.	0.	0.	0.	0.	1.	0.	0.
471	0.	0.	0.	0.	1.	1.	0.	2.	0.	1.
481	0.	0.	0.	0.	0.	1.	1.	1.	0.	1.
491	2.	0.	0.	0.	0.	1.	0.	0.	0.	0.
511	0.	0.								

LABCORE Data Entry Template for Worklist# 201

Analyst: AKL **Instrument:** AM01 ABC #1 **Method:** LA-953-103 A-1 4.14.95

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

Seg	Type	Sample#	Rep	Al	Test	Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@AM24102 AM24101	SOLID			N/A	uCi/g
1	BLNK-PREP				@AM24102 AM24101E	SOLID			N/A	% Ct.
1	BLNK-PREP				@AM24102 AM24301T	SOLID			N/A	% Rec
1	BLNK-PREP				@AM24102 CM24301	SOLID			N/A	uCi/g
1	BLNK-PREP				@AM24102 CM24301E	SOLID			N/A	% Ct.
2	STD	83B43			@AM24102 AM24101	SOLID			N/A	uCi/g
2	STD				@AM24102 AM24301T	SOLID			N/A	% Rec
2	STD				@AM24102 AM24101E	SOLID			N/A	% Ct.
3	SAMPLE	S94T000067	0		@AM24102 AM24101	SOLID	N/A			uCi/g
3	SAMPLE	S94T000067	0		@AM24102 AM24101T	SOLID	N/A			% Rec
3	SAMPLE	S94T000067	0		@AM24102 AM24101E	SOLID	N/A			% Ct.
3	SAMPLE	S94T000067	0		@AM24102 CM24301	SOLID	N/A			uCi/g
3	SAMPLE	S94T000067	0		@AM24102 CM24301E	SOLID	N/A			% Ct.
4	DUP	S94T000067	0		@AM24102 AM24101	SOLID			N/A	uCi/g
4	DUP	S94T000067	0		@AM24102 AM24301T	SOLID			N/A	% Rec
4	DUP	S94T000067	0		@AM24102 AM24101E	SOLID			N/A	% Ct.
4	DUP	S94T000067	0		@AM24102 CM24301	SOLID			N/A	uCi/g
4	DUP	S94T000067	0		@AM24102 CM24301E	SOLID			N/A	% Ct.

Data Entry Comments: rerun due to ~~RPD~~ high detection limit ar

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

LABCORE Data Entry Template for Worklist# 201

Analyst: AKL **Instrument:** AM01 ARC #1 **Method:** LA-953-103 A-1 4-19-95

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

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

Final page for worklist # 201

Alita Lewis
Analyst Signature

12-2-94
Date

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

			BLANK
Type	Spike (Tracer) Book Number		87B43
BLANK	Activity of Am243 Tracer in dpm/mL	(SPKA)	9140
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
201	Volume of Sample in mL	(SS)	0.100
Test Code	Dilution Factor	(DF)	101
@AM241-02	Digest Grams / Liter	(Dg/L)	1.82
Matrix	Am-241 Area Peak Height from AEA	(C241)	23
SOLID	Am-243 Area Peak Height from AEA	(C243)	4653
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	2
S94T000067	Total AT Count	(ATOT)	11195
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	5
Analyst	Am 241 µCi/g	= <	1.4250E+01
AKL			
Date			
12/02/94			
Time			
02:50 PM			

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100
NOTE: Am 241 Result is a LESS THAN Value

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	< 1.43E+01	
Cm 243/244 µCi/g	=	< 1.43E+01	
Relative counting error (Am-241)	=	41.0%	
Relative counting error (Cm-243/244)	=	138.6%	
Am-243 Tracer Recovery	=	80.2%	1.43E+01

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

Form 953103WB Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) LIQUID

				STANDARD
Type	Spike (Tracer) Book Number			87B43
STANDARD	Activity of Am243 Tracer in dpm/mL	(SPKA)		9140
Work List	Spike (Tracer) Volume in mL	(SPKV)		0.100
201	Volume of Sample in mL	(SS)		1.000
Test Code	Dilution Factor	(DF)		101
@AM241-02	Digest Dilution Factor	(DDF)		1
Matrix	Am-241 Area Peak Height from AEA	(C241)		3078
LIQUID	Am-243 Area Peak Height from AEA	(C243)		5089
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)		3
S94T000067	Total AT Count	(ATOT)		17028
Instrument Code	AT Count Time in Minutes	(MIN CT'd)		30
WC38931	Background in CPM	(BKG)		5
Analyst	Am 241 µCi/L		=	2.5151E+01
AKL				
Date				
12/02/94				
Time				
02:50 PM				

Cm-243/244 µCi/L = CM * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Am-241 µCi/L = C241 * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

Print

			Detection Level in µCi/mL
Am 241 µCi/mL	=	2.52E-02	
Cm 243/244 µCi/mL	=	< 2.71E-03	
Relative counting error (Am-241)	=	4.5%	
Relative counting error (Cm-243/244)	=	113.2%	
Am-243 Tracer Recovery	=	76.7%	2.71E-03

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

Form 953103WB Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

			SAMPLE
Type	Spike (Tracer) Book Number		87B43
SAMPLE	Activity of Am243 Tracer in dpm/mL	(SPKA)	9140
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
201	Volume of Sample in mL	(SS)	0.100
Test Code	Dilution Factor	(DF)	101
@AM241-02	Digest Grams / Liter	(Dg/L)	1.82
Matrix	Am-241 Area Peak Height from AEA	(C241)	39
SOLID	Am-243 Area Peak Height from AEA	(C243)	4160
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	5
S94T000067	Total AT Count	(ATOT)	8044
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	5
Analyst	Am 241 µCi/g	= <	2.0027E+01
AKL			
Date			
12/02/94			
Time			
02:50 PM			

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100
NOTE: Am 241 Result is a LESS THAN Value

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	< 2.00E+01	
Cm 243/244 µCi/g	=	< 2.00E+01	
Relative counting error (Am-241)	=	31.5%	
Relative counting error (Cm-243/244)	=	87.7%	
Am-243 Tracer Recovery	=	57.0%	2.00E+01

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

Form 953103WB Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

				DUPLICATE
Type	Spike (Tracer) Book Number			87B43
DUPLICATE	Activity of Am243 Tracer in dpm/mL		(SPKA)	9140
Work List	Spike (Tracer) Volume in mL		(SPKV)	0.100
201	Volume of Sample in mL		(SS)	0.100
Test Code	Dilution Factor		(DF)	101
@AM241-02	Digest Grams / Liter		(Dg/L)	1.5964
Matrix	Am-241 Area Peak Height from AEA		(C241)	46
SOLID	Am-243 Area Peak Height from AEA		(C243)	8456
Sample #	Cm-243/244 Area Peak Height from AEA		(CM)	4
S94T000067	Total AT Count		(ATOT)	9469
Instrument Code	AT Count Time in Minutes		(MIN CT'd)	30
WC38931	Background in CPM		(BKG)	5
Analyst	Am 241 µCi/g	=	<	1.6217E+01
AKL				
Date				
12/02/94				
Time				
02:50 PM				

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100
NOTE: Am 241 Result is a LESS THAN Value

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	< 1.62E+01	
Cm 243/244 µCi/g	=	< 1.62E+01	
Relative counting error (Am-241)	=	29.0%	
Relative counting error (Cm-243/244)	=	98.0%	
Am-243 Tracer Recovery	=	67.6%	1.62E+01

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

Form 953103WB Rev. 1.0

2089

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S94T000067 std 022 4.19.95
File ID: 6a6646.CNF

Counted on: 12/ 3/94 @ 2:22
Detector: AEA6
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	2757.9	2757.9	304.604	304.604	16.000	8.982	8.000	5.553
2	4519.6	4519.6	258.306	258.304	14.000	7.409	7.000	4.362
3	447.0	447.0	232.557	231.459	16.000	6.558	8.000	2.902

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am241	0.361	5.480	5.496	-.016	0.04	89.54	0.9	325.2	0.146E-03
	Pu238		5.499	5.496	0.003				424.6	0.191E-03
2	Am243	0.558	5.276	5.283	-.007	0.03	138.46	0.8	477.5	0.215E-03
3	Pu239	0.059	5.143	5.159	-.016	0.03	14.62	3.3	49.9	0.225E-04
	Pu240		5.144	5.159	-.015				49.9	0.225E-04
Totals:		0.978	<--valid peaks only-->				242.63			

DETECTOR CALIBRATION
Energy(MEV) = 4.095 + (0.0046)*Channel
Energy range (MeV): 4.095 TO 6.450
Efficiency = 0.2929 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	119110.0	100.000
Smoothed	119110.2	100.000
Composite fit	116482.0	97.794
Residuals	2628.0	2.206

Analyzed by: _____
VR

Spectrum 6a6646.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 29817.5


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3
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2....3.
..23....
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......1..
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Raw Data Dump for AEA Spectrum: 6a6646.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	0.	2.	0.
21	0.	1.	1.	0.	0.	1.	0.	0.	1.	0.
31	0.	1.	0.	1.	0.	1.	0.	1.	0.	0.
41	0.	1.	1.	1.	0.	0.	2.	1.	2.	4.
51	1.	0.	2.	0.	1.	1.	2.	0.	1.	1.
61	0.	1.	1.	0.	0.	0.	1.	0.	2.	0.
71	2.	0.	1.	0.	1.	0.	1.	1.	1.	3.
81	0.	1.	2.	2.	1.	1.	0.	0.	1.	1.
91	0.	0.	5.	1.	0.	1.	4.	1.	3.	1.
101	3.	2.	2.	3.	0.	0.	0.	3.	1.	2.
111	1.	3.	0.	0.	3.	4.	1.	2.	6.	1.
121	1.	4.	3.	1.	4.	5.	1.	5.	0.	1.
131	2.	4.	1.	2.	4.	2.	7.	3.	5.	1.
141	2.	6.	3.	2.	7.	8.	4.	7.	4.	9.
151	8.	7.	7.	7.	5.	9.	9.	9.	7.	9.
161	6.	6.	9.	5.	10.	9.	7.	7.	7.	9.
171	10.	5.	6.	12.	9.	10.	11.	8.	9.	10.
181	10.	11.	8.	12.	9.	16.	15.	13.	14.	10.
191	18.	19.	12.	18.	11.	28.	18.	28.	16.	17.
201	31.	33.	34.	26.	34.	42.	29.	38.	44.	45.
211	51.	45.	68.	72.	88.	85.	105.	102.	135.	124.
221	175.	177.	237.	282.	300.	353.	386.	424.	508.	557.
231	596.	572.	577.	537.	501.	459.	479.	409.	321.	387.
241	400.	460.	558.	602.	766.	881.	1036.	1283.	1558.	1861.
251	2190.	2463.	2927.	3549.	4003.	4483.	5033.	5056.	5089.	4578.
261	3791.	3093.	2351.	1617.	1180.	872.	681.	561.	487.	450.
271	377.	351.	313.	271.	234.	166.	148.	95.	129.	120.
281	109.	115.	132.	159.	170.	213.	233.	275.	298.	399.
291	461.	547.	641.	797.	960.	1057.	1314.	1581.	1800.	2098.
301	2451.	2684.	2981.	3044.	3078.	2864.	2498.	2105.	1763.	1329.
311	1047.	845.	717.	546.	405.	295.	249.	184.	140.	76.
321	55.	33.	22.	10.	2.	2.	0.	0.	1.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
351	1.	0.	2.	0.	0.	3.	0.	3.	0.	0.
361	0.	1.	0.	2.	3.	1.	1.	2.	0.	0.
371	2.	0.	1.	0.	1.	1.	1.	0.	1.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Em Bucla

Westinghouse Hanford Co.

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

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

SAMPLE
S94T000067
File ID: 7a7252.CNF Blank 4.19.95

Counted on: 12/ 3/94 @ 2:23
Detector: AEA7
Geometry number: 1
Count time: 28806. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	18.9	18.9	302.981	304.024	10.000	3.733	5.000	0.829
2	4156.4	4156.4	257.211	257.210	16.000	7.762	8.000	4.407

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		5.486			0.84	9.8		
2	Am243	0.940	5.276	5.266	0.010	0.04	130.84	0.8	603.2	0.272E-03
Totals:		0.940	<--valid peaks only-->				130.84			

DETECTOR CALIBRATION
Energy(MEV) = 4.057 + (0.0047)*Channel
Energy range (MeV): 4.057 TO 6.464
Efficiency = 0.2191 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	66802.0	100.000
Smoothed	66802.0	100.000
Composite fit	63218.6	94.636
Residuals	3583.4	5.364

Analyzed by: _____
VR

Spectrum 7a7252.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 25343.0


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...........2...
1.
1
1
1
1
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Raw Data Dump for AEA Spectrum: 7a7252.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	1.	0.	1.
21	1.	1.	0.	0.	1.	3.	2.	0.	1.	0.
31	0.	2.	0.	0.	1.	1.	1.	0.	1.	1.
41	1.	1.	1.	2.	2.	0.	0.	1.	0.	1.
51	1.	0.	1.	0.	1.	2.	2.	0.	0.	0.
61	0.	1.	0.	1.	4.	1.	2.	2.	0.	1.
71	2.	0.	2.	0.	1.	3.	3.	1.	2.	0.
81	1.	2.	1.	5.	2.	1.	4.	1.	0.	0.
91	0.	1.	1.	0.	2.	1.	2.	1.	2.	3.
101	2.	3.	2.	3.	2.	4.	1.	3.	3.	1.
111	2.	0.	2.	0.	0.	2.	7.	0.	3.	1.
121	6.	2.	1.	5.	4.	1.	2.	2.	3.	3.
131	4.	4.	6.	4.	3.	2.	4.	9.	5.	3.
141	3.	4.	2.	6.	8.	6.	12.	6.	4.	5.
151	5.	6.	9.	9.	4.	12.	8.	6.	4.	4.
161	4.	6.	11.	7.	4.	4.	9.	8.	10.	4.
171	7.	11.	3.	8.	12.	12.	11.	13.	6.	6.
181	7.	13.	9.	11.	16.	13.	7.	9.	12.	21.
191	14.	17.	23.	9.	24.	16.	20.	20.	17.	18.
201	40.	21.	21.	24.	25.	38.	31.	41.	36.	43.
211	34.	44.	44.	50.	63.	51.	46.	54.	68.	67.
221	73.	79.	102.	120.	103.	125.	119.	161.	147.	178.
231	185.	216.	225.	246.	287.	289.	295.	362.	378.	389.
241	469.	543.	651.	735.	870.	1087.	1281.	1464.	1725.	2008.
251	2375.	2858.	3217.	3853.	4342.	4615.	4653.	4476.	4177.	3595.
261	2924.	2234.	1603.	1148.	894.	605.	442.	414.	310.	275.
271	230.	206.	153.	112.	83.	63.	46.	28.	20.	12.
281	12.	2.	3.	2.	3.	2.	2.	5.	1.	8.
291	3.	4.	8.	6.	8.	13.	2.	20.	20.	16.
301	23.	21.	15.	21.	21.	16.	11.	6.	2.	1.
311	1.	5.	3.	1.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
341	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
351	0.	1.	0.	2.	1.	0.	0.	0.	0.	0.
361	0.	0.	1.	0.	0.	1.	2.	1.	0.	1.
371	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	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.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	1.	0.	0.	0.	0.	0.	0.	1.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	1.	0.								

Em Bowler

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-074, REV. 0

DATA REDUCTION REPORT

SAMPLE
S94T000067 sample 4-19-95
File ID: 8a8427.CNF

Counted on: 12/ 3/94 @ 2:23
Detector: AEA8
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	27.2	27.2	305.391	305.391	14.000	7.073	7.000	1.690
2	3523.2	3523.2	258.794	258.793	14.000	6.656	7.000	5.187

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		0.012		6.547	0.11		1.27	7.9	575.8	0.259E-03
2	~~Cm243~~	0.928	5.786	5.802	-.016	0.11	96.74	0.9	60236.9	0.271E-01
	~~Cm244~~ Am-243		5.796	5.802	-.006				43973.0	0.198E-01
		---					---			
Totals:		0.940	<--valid peaks only-->				98.01			

12-6-94

DETECTOR CALIBRATION
Energy(MEV) = 1.661 + (0.0160)*Channel
Energy range (MeV): 1.661 TO 9.853
Efficiency = 0.0022 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	50067.0	100.000
Smoothed	50067.0	100.000
Composite fit	47048.4	93.971
Residuals	3018.6	6.029

Analyzed by: _____
VR

Spectrum 8a8427.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 23797.2


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

Raw Data Dump for AEA Spectrum: 8a8427.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.	1.	1.	0.
31	1.	0.	1.	1.	1.	1.	0.	0.	0.	0.
41	1.	0.	0.	0.	0.	1.	0.	0.	1.	0.
51	1.	0.	1.	0.	1.	1.	1.	0.	0.	0.
61	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.
71	0.	1.	0.	1.	1.	0.	0.	1.	0.	1.
81	0.	1.	1.	0.	0.	0.	0.	1.	1.	1.
91	1.	1.	0.	0.	1.	1.	0.	1.	0.	1.
101	0.	0.	2.	0.	0.	0.	0.	0.	0.	1.
111	0.	2.	0.	0.	0.	1.	0.	0.	2.	0.
121	0.	0.	1.	0.	0.	1.	0.	0.	0.	1.
131	3.	0.	1.	1.	1.	0.	1.	0.	0.	1.
141	0.	2.	4.	0.	3.	3.	4.	1.	1.	4.
151	3.	0.	1.	2.	3.	1.	4.	4.	2.	0.
161	1.	0.	3.	1.	3.	3.	1.	0.	2.	3.
171	2.	2.	0.	2.	1.	2.	1.	4.	2.	2.
181	3.	2.	1.	2.	4.	4.	4.	4.	1.	1.
191	2.	1.	3.	6.	4.	4.	3.	5.	3.	6.
201	7.	6.	6.	7.	7.	7.	7.	6.	6.	11.
211	14.	7.	10.	12.	13.	16.	18.	27.	20.	37.
221	36.	36.	41.	42.	41.	64.	67.	101.	95.	124.
231	126.	133.	161.	163.	148.	131.	158.	167.	146.	150.
241	188.	179.	223.	287.	341.	400.	516.	603.	843.	940.
251	1149.	1479.	1818.	2304.	2800.	3294.	3754.	4160.	4018.	3725.
261	3283.	2584.	2092.	1483.	1007.	721.	533.	403.	339.	315.
271	297.	233.	181.	165.	115.	72.	84.	40.	31.	13.
281	11.	7.	0.	6.	2.	0.	5.	1.	3.	3.
291	3.	3.	12.	7.	9.	8.	17.	14.	14.	24.
301	25.	23.	21.	28.	36.	20.	39.	16.	13.	20.
311	6.	8.	9.	12.	0.	0.	1.	2.	1.	0.
321	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
341	0.	0.	1.	0.	3.	0.	0.	0.	1.	1.
351	3.	0.	4.	1.	2.	3.	2.	3.	1.	3.
361	1.	1.	5.	4.	0.	4.	0.	1.	1.	0.
371	0.	1.	2.	2.	1.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
491	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Em Brown

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S94T000067 D.P. 423
File ID: 9a.CNF
4-19-95

Counted on: 12/ 3/94 @ 2:24
Detector: AEA9
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	30.3	30.3	302.083	302.083	16.000	4.649	8.000	4.135
2	6427.9	6427.9	255.567	255.567	10.000	3.283	5.000	3.720

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		5.505			0.70	10.7		
2	Am243	0.899	5.276	5.291	-.015	0.02	123.44	0.8	891.9	0.402E-03
Totals:		0.899	<--valid peaks only-->				123.44			

DETECTOR CALIBRATION
Energy(MEV) = 4.115 + (0.0046)*Channel
Energy range (MeV): 4.115 TO 6.470
Efficiency = 0.1398 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	65918.0	100.000
Smoothed	65918.0	100.000
Composite fit	59597.1	90.411
Residuals	6320.9	9.589

Analyzed by: _____
VR

Spectrum 9a.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 31617.2


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1
1
1
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Raw Data Dump for AEA Spectrum: 9a.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
21	1.	1.	1.	1.	0.	1.	0.	0.	1.	0.
31	0.	0.	2.	1.	0.	0.	0.	0.	1.	1.
41	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
51	0.	1.	0.	0.	1.	0.	1.	0.	0.	0.
61	0.	0.	0.	0.	1.	1.	1.	0.	0.	1.
71	0.	1.	0.	0.	2.	0.	2.	0.	0.	0.
81	0.	0.	0.	0.	0.	2.	0.	0.	0.	2.
91	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
101	1.	0.	0.	0.	0.	0.	0.	0.	1.	1.
111	1.	1.	0.	1.	0.	2.	0.	0.	3.	0.
121	0.	0.	1.	0.	1.	0.	1.	2.	3.	1.
131	0.	0.	1.	0.	1.	1.	3.	2.	0.	2.
141	0.	3.	2.	3.	0.	4.	2.	6.	2.	5.
151	6.	1.	2.	0.	2.	2.	0.	0.	2.	1.
161	6.	0.	3.	0.	0.	2.	1.	0.	1.	2.
171	1.	1.	1.	1.	1.	1.	3.	1.	2.	2.
181	3.	4.	1.	2.	1.	1.	2.	0.	2.	4.
191	0.	1.	1.	2.	3.	1.	2.	0.	1.	1.
201	3.	4.	4.	6.	2.	4.	2.	1.	6.	5.
211	6.	6.	5.	7.	10.	8.	11.	11.	17.	15.
221	10.	9.	19.	15.	17.	31.	31.	39.	62.	58.
231	65.	60.	84.	81.	107.	82.	103.	115.	106.	131.
241	187.	257.	375.	542.	706.	924.	1089.	1138.	1319.	1675.
251	2302.	3380.	5099.	6901.	8456.	8367.	6788.	4624.	2564.	1431.
261	839.	634.	538.	517.	525.	502.	511.	505.	409.	346.
271	235.	161.	108.	45.	17.	2.	1.	1.	0.	1.
281	1.	0.	1.	1.	1.	3.	0.	2.	1.	1.
291	3.	3.	4.	5.	8.	2.	11.	11.	20.	29.
301	46.	34.	36.	31.	14.	20.	12.	14.	5.	3.
311	2.	5.	1.	4.	3.	0.	1.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
351	0.	0.	0.	2.	1.	0.	2.	0.	0.	3.
361	4.	2.	0.	0.	0.	2.	2.	0.	2.	0.
371	4.	3.	0.	4.	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.	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 Data Entry Template for Worklist# 215

Analyst: AKL **Instrument:** AM01 **Method:** LA-953-103 (A-1)

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

Seg	Type	Sample#	Rep	Al	Test	Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@AM24102 AM24101	SOLID			N/A	uCi/g
1	BLNK-PREP				@AM24102 AM24101E	SOLID			N/A	% Ct.
1	BLNK-PREP				@AM24102 AM24301T	SOLID			N/A	% Rec
1	BLNK-PREP				@AM24102 CM24301	SOLID			N/A	uCi/g
1	BLNK-PREP				@AM24102 CM24301E	SOLID			N/A	% Ct.
2	STD 83B43				@AM24102 AM24101	SOLID			N/A	uCi/g
2	STD				@AM24102 AM24301T	SOLID			N/A	% Rec
2	STD				@AM24102 AM24101E	SOLID			N/A	% Ct.
3	SAMPLE	S94T000067	0		@AM24102 AM24101	SOLID	N/A			uCi/g
3	SAMPLE	S94T000067	0		@AM24102 AM24101T	SOLID	N/A			% Rec
3	SAMPLE	S94T000067	0		@AM24102 AM24101E	SOLID	N/A			% Ct.
3	SAMPLE	S94T000067	0		@AM24102 CM24301	SOLID	N/A			uCi/g
3	SAMPLE	S94T000067	0		@AM24102 CM24301E	SOLID	N/A			% Ct.
4	DUP	S94T000067	0		@AM24102 AM24101	SOLID			N/A	uCi/g
4	DUP	S94T000067	0		@AM24102 AM24301T	SOLID			N/A	% Rec
4	DUP	S94T000067	0		@AM24102 AM24101E	SOLID			N/A	% Ct.
4	DUP	S94T000067	0		@AM24102 CM24301	SOLID			N/A	uCi/g
4	DUP	S94T000067	0		@AM24102 CM24301E	SOLID			N/A	% Ct.

Data Entry Comments: Rerun due to ↑ RPD AR

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

2102

LABCORE Data Entry Template for Worklist# 215

Analyst: AKL **Instrument:** AM01 _____ **Method:** LA-953-103

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

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

Final page for worklist # 215

Alita Luis
Analyst Signature

12-9-94
Date

MGSiolman

12/12/94

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

				BLANK
Type	Spike (Tracer) Book Number			87B43
BLANK	Activity of Am243 Tracer in dpm/mL	(SPKA)		9140
Work List	Spike (Tracer) Volume in mL	(SPKV)		0.100
215	Volume of Sample in mL	(SS)		0.100
Test Code	Dilution Factor	(DF)		1
@AM241-02	Digest Grams / Liter	(Dg/L)		1.82
Matrix	Am-241 Area Peak Height from AEA	(C241)		48
SOLID	Am-243 Area Peak Height from AEA	(C243)		8909
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)		6
S94T67	Total AT Count	(ATOT)		11128
Instrument Code	AT Count Time in Minutes	(MIN CT'd)		30
WC38931	Background in CPM	(BKG)		5
Analyst	Am 241 µCi/g	=	<	1.4202E-01
AKL				
Date				
12/09/94				
Time				
12:00 PM				

AKJ 12-12-94

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100
NOTE: Am 241 Result is a LESS THAN Value

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	< 1.42E-01	
Cm 243/244 µCi/g	=	< 1.42E-01	
Relative counting error (Am-241)	=	28.4%	
Relative counting error (Cm-243/244)	=	80.0%	
Am-243 Tracer Recovery	=	79.6%	1.42E-01

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

Form 953103WB Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) LIQUID

			STANDARD
Type	Spike (Tracer) Book Number		87B43
STANDARD	Activity of Am243 Tracer in dpm/mL	(SPKA)	9140
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
215	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	101
~~@AM244-94~~ Am-241	Digest Dilution Factor	(DDF)	1
Matrix	Am-241 Area Peak Height from AEA	(C241)	3288
LIQUID	Am-243 Area Peak Height from AEA	(C243)	5627
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	2
S94T67	Total AT Count	(ATOT)	17231
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	5
Analyst	Am 241 µCi/L	=	2.4298E+01
AKL			
Date			
12/09/94			
Time			
12:00 PM			

227 12.12.94

Cm-243/244 µCi/L = CM * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Am-241 µCi/L = C241 * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

Print

			Detection Level in µCi/mL
Am 241 µCi/mL	=	2.43E-02	
Cm 243/244 µCi/mL	=	< 2.64E-03	
Relative counting error (Am-241)	=	4.3%	
Relative counting error (Cm-243/244)	=	138.6%	
Am-243 Tracer Recovery	=	78.6%	2.64E-03

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

Form 953103WB Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

			SAMPLE
Type	Spike (Tracer) Book Number		87B43
SAMPLE	Activity of Am243 Tracer in dpm/mL	(SPKA)	9140
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
215	Volume of Sample in mL	(SS)	0.100
Test Code	Dilution Factor	(DF)	1
@AM241-02	Digest Grams / Liter	(Dg/L)	1.82
Matrix	Am-241 Area Peak Height from AEA	(C241)	2045
SOLID	Am-243 Area Peak Height from AEA	(C243)	7897
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	102
S94T67	Total AT Count	(ATOT)	14602
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	5
Analyst	Am 241 µCi/g	=	5.8580E-01
AKL			
Date			
12/09/94			
Time			
12:00 PM			

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	5.86E-01	
Cm 243/244 µCi/g	=	< 1.35E-01	
Relative counting error (Am-241)	=	4.9%	
Relative counting error (Cm-243/244)	=	19.5%	
Am-243 Tracer Recovery	=	83.7%	1.35E-01

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

Form 953103WB Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

			DUPLICATE
Type	Spike (Tracer) Book Number		87B43
DUPLICATE	Activity of Am243 Tracer in dpm/mL	(SPKA)	9140
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
215	Volume of Sample in mL	(SS)	0.100
Test Code	Dilution Factor	(DF)	1
@AM241-~~01~~ 02	Digest Grams / Liter	(Dg/L)	1.8964
Matrix	Am-241 Area Peak Height from AEA	(C241)	4663
SOLID	Am-243 Area Peak Height from AEA	(C243)	7756
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	99
S94T67	Total AT Count	(ATOT)	103770
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	5
Analyst	Am 241 µCi/g	=	1.3052E+00
AKL			
Date			
12/09/94			
Time			
12:00 PM			

12.12.94

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	1.31E+00	
Cm 243/244 µCi/g	=	< 1.09E-01	
Relative counting error (Am-241)	=	3.6%	
Relative counting error (Cm-243/244)	=	19.8%	
Am-243 Tracer Recovery	=	472.0%	1.09E-01

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

Form 953103WB Rev. 1.0

2107

D. H Milicia
12-10-94

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S94T000067 STD
File ID: 8a8444.CNF

Counted on: 12/10/94 @ 3:47
Detector: AEA8
Geometry number: 1
Count time: 28800. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	2917.7	2917.7	304.404	304.404	16.000	8.624	8.000	6.634
2	4934.0	4934.0	258.671	258.671	14.000	7.257	7.000	5.414

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am241	0.372	5.480	5.502	-.022	0.04	89.31	0.9	1555.0	0.700E-03
	Pu238		5.499	5.502	-.003				2030.1	0.914E-03
2	Am243	0.590	5.276	5.287	-.011	0.03	141.48	0.8	2338.9	0.105E-02
Totals:		0.962	<--valid peaks only-->				230.79			

DETECTOR CALIBRATION
Energy(MEV) = 4.071 + (0.0047)*Channel
Energy range (MeV): 4.071 TO 6.477
Efficiency = 0.0611 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	115101.0	100.000
Smoothed	115100.9	100.000
Composite fit	110777.4	96.244
Residuals	4323.6	3.756

Analyzed by: _____
ALJ

)2108

107 flm 8/03/95

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                    Spectrum 8a8444.CNF
1 Legend:  Raw = ....  Modeled Peaks = 1,2,.., etc     Display Max.:   33331.7

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Raw Data Dump for AEA Spectrum: 8a8444.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	2.	1.	0.	0.
21	0.	1.	0.	0.	1.	0.	2.	1.	1.	0.
31	1.	1.	0.	0.	0.	2.	0.	0.	0.	1.
41	0.	0.	1.	0.	1.	2.	1.	0.	1.	1.
51	1.	0.	2.	2.	0.	0.	0.	0.	1.	0.
61	0.	1.	2.	0.	0.	1.	1.	1.	1.	0.
71	0.	3.	1.	1.	1.	1.	0.	0.	0.	0.
81	0.	1.	0.	0.	0.	0.	0.	0.	2.	2.
91	1.	2.	2.	0.	4.	1.	0.	3.	1.	1.
101	1.	0.	0.	1.	1.	1.	0.	3.	1.	0.
111	1.	2.	0.	0.	2.	1.	0.	1.	0.	2.
121	0.	2.	1.	3.	2.	0.	1.	1.	4.	0.
131	1.	1.	1.	2.	0.	4.	3.	1.	3.	4.
141	0.	0.	1.	1.	1.	2.	2.	2.	1.	2.
151	6.	3.	5.	2.	4.	1.	7.	2.	2.	2.
161	0.	1.	6.	4.	4.	4.	7.	4.	4.	2.
171	3.	3.	0.	5.	4.	7.	3.	3.	6.	5.
181	5.	5.	9.	7.	5.	5.	4.	11.	5.	5.
191	7.	4.	13.	8.	9.	11.	9.	12.	13.	11.
201	12.	10.	17.	10.	14.	16.	23.	18.	19.	22.
211	22.	19.	22.	23.	18.	37.	31.	29.	34.	30.
221	40.	46.	38.	52.	56.	50.	61.	64.	80.	78.
231	87.	110.	117.	135.	131.	150.	170.	202.	200.	265.
241	298.	317.	376.	460.	579.	702.	834.	999.	1179.	1512.
251	1905.	2280.	2783.	3560.	4216.	4810.	5311.	5627.	5591.	5114.
261	4501.	3782.	2769.	2022.	1530.	1109.	827.	625.	536.	459.
271	461.	350.	323.	274.	205.	187.	134.	123.	84.	95.
281	93.	113.	112.	106.	153.	141.	217.	217.	257.	304.
291	345.	476.	558.	650.	763.	1005.	1238.	1576.	1909.	2218.
301	2594.	2944.	3267.	3288.	3254.	2948.	2547.	2179.	1723.	1382.
311	1131.	853.	679.	542.	440.	325.	221.	188.	123.	83.
321	37.	40.	13.	12.	4.	1.	2.	0.	1.	0.
331	2.	0.	0.	0.	0.	0.	0.	0.	0.	1.
341	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
351	0.	0.	0.	2.	2.	0.	0.	0.	0.	1.
361	1.	0.	0.	1.	1.	1.	1.	2.	1.	1.
371	2.	0.	2.	2.	1.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
431	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
441	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	1.	0.	0.	0.	1.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

D. H. Milian
12-10-94

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S94T000067 BLK
File ID: 9a1201.CNF

Counted on: 12/10/94 @ 3:47
Detector: AEA9
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?	37.9	37.9	301.964	301.964	10.000	5.091	5.000	3.577
2	6974.6	6974.6	254.566	254.566	10.000	3.661	5.000	3.367

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Peak Centroid Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		5.504			0.97	9.1		
2	Am243	0.895	5.276	5.286	-.0100	.02	146.41	0.7	1244.9	0.561E-03
Totals:		0.895	<--valid peaks only-->				146.41			

DETECTOR CALIBRATION
Energy(MEV) = 4.115 + (0.0046)*Channel
Energy range (MeV): 4.115 TO 6.471
Efficiency = 0.1188 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	78536.0	100.000
Smoothed	78536.0	100.000
Composite fit	70743.1	90.077
Residuals	7792.9	9.923

Analyzed by: _____
ALJ

Spectrum 9a1201.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 40664.5


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Raw Data Dump for AEA Spectrum: 9a1201.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	1.	0.	1.	1.	0.	1.	1.
31	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
41	0.	1.	1.	0.	0.	0.	0.	0.	1.	1.
51	0.	1.	0.	0.	0.	2.	0.	0.	0.	0.
61	0.	0.	0.	0.	1.	1.	1.	0.	2.	1.
71	1.	0.	0.	0.	2.	0.	0.	2.	2.	2.
81	0.	0.	0.	0.	0.	2.	0.	0.	0.	0.
91	0.	1.	0.	1.	0.	0.	1.	3.	0.	2.
101	0.	1.	2.	1.	0.	3.	2.	0.	1.	1.
111	1.	2.	1.	0.	2.	0.	1.	2.	0.	2.
121	0.	0.	5.	2.	2.	0.	0.	2.	2.	1.
131	2.	1.	1.	1.	2.	3.	0.	4.	3.	2.
141	4.	2.	6.	1.	6.	2.	8.	11.	4.	7.
151	3.	3.	2.	6.	4.	7.	1.	3.	4.	4.
161	2.	3.	2.	1.	2.	1.	6.	5.	3.	4.
171	4.	5.	2.	5.	7.	4.	4.	4.	6.	5.
181	6.	3.	1.	5.	7.	9.	8.	9.	6.	6.
191	11.	9.	7.	10.	7.	7.	9.	15.	10.	15.
201	22.	28.	20.	21.	25.	13.	20.	29.	20.	23.
211	24.	29.	32.	38.	43.	47.	38.	46.	45.	48.
221	61.	47.	72.	66.	75.	98.	122.	124.	117.	154.
231	172.	189.	205.	219.	223.	262.	258.	285.	315.	403.
241	473.	617.	859.	1006.	1241.	1411.	1615.	1774.	2383.	3031.
251	4252.	5813.	7340.	8747.	8909.	7408.	5184.	3056.	1716.	1079.
261	759.	649.	555.	530.	561.	553.	544.	397.	347.	265.
271	226.	131.	64.	31.	8.	0.	2.	0.	2.	1.
281	2.	0.	0.	1.	2.	1.	1.	3.	4.	6.
291	6.	6.	13.	5.	12.	24.	20.	30.	20.	47.
301	44.	38.	48.	36.	28.	11.	15.	7.	7.	6.
311	7.	1.	0.	0.	0.	2.	1.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	1.	0.	0.	0.	0.	1.	1.	0.	0.
351	2.	2.	2.	4.	1.	0.	0.	0.	2.	2.
361	2.	4.	6.	1.	3.	0.	1.	1.	2.	0.
371	2.	2.	0.	0.	0.	1.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
431	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

D.H. Milbrin
12-10-94

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S94T000067 SAM
File ID: 10a2048.CNF

Counted on: 12/10/94 @ 3:48
Detector: AEA10
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	75.3	75.3	371.330	371.330	12.000	3.190	6.000	1.693
2	1634.9	1634.9	302.234	302.234	14.000	5.308	7.000	4.019
3	6266.0	6266.0	255.762	255.762	10.000	3.718	5.000	2.895
4?	22.9	22.9	152.067	152.067	176.000	1.000	88.000	0.100
5?	0.5	0.1	140.110	139.283	4.000	0.100	2.000	0.100

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		5.816			1.87	6.5		
2	Pu238	0.193	5.499	5.498	0.0010	0.02	41.41	1.4	419.2	0.189E-03
	Am241		5.480	5.498	-.018				321.1	0.145E-03
3	Am243	0.647	5.276	5.285	-.0090	0.02	138.77	0.8	1021.7	0.460E-03
4		????		4.808			1.81	6.6		
5		????		4.749			0.00	*****		
Totals:		0.840	<--valid peaks only-->				180.19			

DETECTOR CALIBRATION
Energy(MEV) = 4.108 + (0.0046)*Channel
Energy range (MeV): 4.108 TO 6.463
Efficiency = 0.1372 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	102986.0	100.000
Smoothed	102986.0	100.000
Composite fit	88263.9	85.705
Residuals	14722.1	14.295

Analyzed by: _____
ALJ

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 32019.9


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Raw Data Dump for AEA Spectrum: 10a2048.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	3.	0.	3.
21	1.	0.	1.	3.	0.	1.	0.	1.	2.	2.
31	0.	2.	0.	1.	1.	1.	0.	2.	2.	1.
41	2.	2.	2.	3.	1.	0.	3.	1.	1.	1.
51	0.	2.	0.	1.	1.	1.	1.	2.	5.	4.
61	1.	2.	1.	2.	1.	2.	2.	3.	5.	1.
71	1.	3.	3.	3.	2.	5.	5.	3.	4.	1.
81	6.	0.	1.	0.	1.	4.	6.	8.	4.	5.
91	3.	0.	2.	4.	2.	5.	3.	8.	5.	4.
101	6.	2.	2.	5.	6.	6.	1.	6.	6.	5.
111	9.	6.	12.	11.	7.	6.	7.	9.	6.	6.
121	8.	8.	16.	11.	4.	10.	6.	10.	16.	5.
131	13.	13.	17.	13.	15.	17.	13.	17.	21.	8.
141	23.	16.	13.	15.	14.	12.	23.	10.	19.	23.
151	18.	26.	20.	20.	17.	17.	18.	19.	17.	25.
161	29.	19.	22.	29.	29.	39.	30.	32.	28.	35.
171	35.	32.	31.	39.	40.	40.	41.	43.	47.	44.
181	45.	49.	49.	52.	64.	57.	59.	51.	64.	66.
191	77.	87.	85.	72.	81.	89.	97.	83.	74.	97.
201	101.	95.	107.	102.	94.	97.	99.	96.	129.	113.
211	147.	127.	120.	148.	158.	169.	172.	170.	158.	177.
221	190.	193.	185.	213.	217.	231.	266.	240.	248.	273.
231	358.	323.	366.	346.	403.	401.	402.	427.	452.	509.
241	560.	698.	747.	897.	1134.	1318.	1473.	1559.	1773.	2085.
251	2717.	3570.	4983.	6374.	7489.	7897.	7041.	5133.	3100.	1713.
261	1021.	746.	604.	604.	590.	523.	565.	488.	453.	366.
271	343.	274.	189.	115.	95.	64.	91.	92.	104.	114.
281	94.	95.	119.	123.	127.	136.	130.	175.	205.	262.
291	274.	354.	384.	429.	484.	562.	673.	841.	1216.	1547.
301	1828.	2045.	1923.	1566.	1113.	742.	580.	476.	427.	363.
311	306.	256.	188.	149.	109.	55.	33.	16.	6.	4.
321	2.	0.	2.	2.	1.	1.	2.	1.	2.	2.
331	0.	3.	2.	1.	3.	6.	2.	4.	5.	5.
341	3.	2.	9.	1.	4.	6.	3.	6.	6.	6.
351	10.	10.	9.	6.	8.	13.	10.	10.	17.	17.
361	28.	27.	33.	30.	31.	37.	26.	43.	71.	74.
371	102.	85.	73.	54.	32.	13.	5.	0.	0.	0.
381	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	1.	0.	1.	1.
401	0.	0.	0.	0.	0.	0.	1.	1.	0.	1.
411	0.	1.	1.	0.	0.	0.	1.	0.	0.	1.
421	0.	2.	0.	2.	0.	2.	4.	4.	1.	4.
431	3.	2.	1.	1.	3.	4.	5.	14.	8.	5.
441	6.	1.	1.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	1.	0.	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.								

D. Hamilton
12-10-94

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S94T000067 DOP
File ID: 11a3004.CNF

Counted on: 12/10/94 @ 3:49
Detector: AEA11
Geometry number: 1
Count time: 28800. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	69.2	69.2	369.780	369.780	10.000	3.373	5.000	1.973
2	3955.7	3955.7	303.067	303.067	12.000	4.255	6.000	2.521
3	6229.2	6229.2	254.470	254.469	12.000	3.906	6.000	2.638
4	51343.9	51343.9	228.932	228.929	12.000	3.625	6.000	2.935
5?	20.9	20.9	135.617	135.617	156.000	1.000	78.000	0.100
6?	0.6	0.1	125.438	125.438	4.000	0.100	2.000	0.100

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Peak Centroid Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		5.809			1.66	6.9		
2	Pu238	0.072	5.499	5.502	-.0030	.02	101.00	0.9	1193.9	0.538E-03
	Am241		5.480	5.502	-.022				914.5	0.412E-03
3	Am243	0.105	5.276	5.278	-.0020	.02	147.27	0.7	1266.0	0.570E-03
4	Pu239	0.795	5.143	5.161	-.0180	.02	1113.45	0.3	9476.1	0.427E-02
	Pu240		5.144	5.161	-.017				9476.1	0.427E-02
5		????		4.732			1.64	7.0		
6		????		4.685			0.00	*****		
Totals:		0.972	<--valid peaks only-->				1361.72			

DETECTOR CALIBRATION
Energy(MEV) = 4.108 + (0.0046)*Channel
Energy range (MeV): 4.108 TO 6.463
Efficiency = 0.1175 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	672444.0	100.000
Smoothed	672443.9	100.000
Composite fit	655212.1	97.437
Residuals	17231.9	2.563

analyzed by: ALJ

Spectrum 11a3004.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 335458.0


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Raw Data Dump for AEA Spectrum: 11a3004.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	2.	7.	4.	3.	2.
21	2.	5.	4.	3.	4.	2.	7.	3.	4.	3.
31	3.	3.	7.	7.	4.	4.	7.	6.	5.	6.
41	5.	4.	2.	4.	2.	9.	2.	4.	5.	3.
51	5.	4.	2.	3.	4.	5.	5.	4.	2.	4.
61	9.	3.	4.	3.	3.	5.	3.	5.	3.	6.
71	9.	6.	6.	3.	4.	5.	7.	6.	3.	7.
81	7.	6.	11.	4.	7.	12.	6.	9.	4.	9.
91	13.	7.	5.	3.	4.	7.	4.	7.	2.	8.
101	4.	11.	7.	9.	5.	6.	8.	7.	7.	10.
111	6.	12.	6.	8.	9.	11.	13.	7.	11.	18.
121	18.	14.	12.	12.	13.	16.	14.	12.	11.	10.
131	14.	11.	21.	21.	15.	26.	14.	18.	16.	16.
141	13.	17.	23.	26.	18.	23.	22.	28.	24.	26.
151	30.	31.	30.	31.	33.	28.	34.	35.	45.	46.
161	47.	50.	45.	43.	50.	66.	47.	66.	48.	78.
171	64.	82.	85.	78.	73.	76.	89.	92.	88.	105.
181	113.	137.	120.	131.	135.	133.	166.	136.	180.	226.
191	218.	242.	235.	293.	285.	325.	325.	375.	359.	436.
201	481.	499.	491.	583.	669.	706.	814.	886.	1044.	1192.
211	1415.	1793.	2241.	3027.	4181.	5722.	7083.	8710.	9898.	10936.
221	12304.	14654.	17882.	23220.	30725.	41007.	51333.	60474.	63514.	58353.
231	45767.	31240.	18610.	9695.	4223.	1529.	568.	302.	294.	365.
241	440.	589.	771.	971.	1161.	1361.	1513.	1742.	2178.	3005.
251	4070.	5443.	6952.	7756.	7732.	6526.	4653.	2847.	1630.	954.
261	654.	572.	512.	489.	457.	482.	447.	402.	336.	262.
271	175.	136.	91.	56.	51.	44.	64.	72.	53.	80.
281	93.	98.	101.	127.	138.	154.	214.	272.	403.	504.
291	671.	909.	1195.	1450.	1640.	1836.	2027.	2346.	2863.	3271.
301	3823.	4387.	4663.	4406.	3934.	2802.	1592.	795.	435.	274.
311	205.	149.	98.	67.	40.	18.	11.	4.	0.	0.
321	0.	0.	0.	3.	0.	0.	0.	1.	1.	1.
331	1.	0.	1.	1.	1.	0.	0.	0.	1.	2.
341	0.	1.	0.	1.	2.	0.	2.	1.	2.	2.
351	2.	5.	5.	5.	6.	5.	6.	16.	20.	23.
361	23.	37.	29.	43.	34.	32.	50.	63.	73.	99.
371	67.	52.	41.	22.	12.	1.	1.	1.	0.	0.
381	1.	0.	0.	0.	0.	1.	2.	1.	0.	0.
391	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	1.	0.	0.	1.	1.	0.	0.	0.
411	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
421	0.	0.	2.	0.	0.	0.	2.	2.	1.	3.
431	3.	3.	3.	2.	3.	6.	4.	8.	9.	3.
441	2.	0.	1.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

LABCORE Data Entry Template for Worklist# 246

Analyst: AKL **Instrument:** AM01 **Method:** LA-953-103 (A-1)

Worklist Comment: Use 0.1 mL sample size. --LLF

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

Seg	Type	Sample#	Rep	Al	Test		Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@AM24102	AM24101	SOLID			N/A	uCi/g
1	BLNK-PREP				@AM24102	AM24101E	SOLID			N/A	% Ct.
1	BLNK-PREP				@AM24102	AM24101T	SOLID			N/A	% Rec
1	BLNK-PREP				@AM24102	CM24301	SOLID			N/A	uCi/g
1	BLNK-PREP				@AM24102	CM24301E	SOLID			N/A	% Ct.
2	STD 83843				@AM24102	AM24101	SOLID			N/A	uCi/g
2	STD				@AM24102	AM24101E	SOLID			N/A	% Ct.
2	STD				@AM24102	AM24101T	SOLID			N/A	% Rec
3	SAMPLE	S94T000067	0		@AM24102	AM24101	SOLID	N/A			uCi/g
3	SAMPLE	S94T000067	0		@AM24102	AM24101T	SOLID	N/A			% Rec
3	SAMPLE	S94T000067	0		@AM24102	AM24101E	SOLID	N/A			% Ct.
3	SAMPLE	S94T000067	0		@AM24102	CM24301	SOLID	N/A			uCi/g
3	SAMPLE	S94T000067	0		@AM24102	CM24301E	SOLID	N/A			% Ct.
4	DUP	S94T000067	0		@AM24102	AM24101	SOLID			N/A	uCi/g
4	DUP	S94T000067	0		@AM24102	AM24101E	SOLID			N/A	% Ct.
4	DUP	S94T000067	0		@AM24102	AM24101T	SOLID			N/A	% Rec
4	DUP	S94T000067	0		@AM24102	CM24301	SOLID			N/A	uCi/g
4	DUP	S94T000067	0		@AM24102	CM24301E	SOLID			N/A	% Ct.

Data Entry Comments: 2ND rerun, used in report

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

LABCORE Data Entry Template for Worklist# 246

Analyst: AKL **Instrument:** AM01 _____ **Method:** LA-953-103 (A-1)

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

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

Final page for worklist # 246

Alita Lewis
Analyst Signature

12/18/94
Date

MCBicknell

12/21/94

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

				BLANK
Type	Spike (Tracer) Book Number			87B43
BLANK	Activity of Am243 Tracer in dpm/mL		(SPKA)	9140
Work List	Spike (Tracer) Volume in mL		(SPKV)	0.100
246	Volume of Sample in mL		(SS)	0.100
Test Code	Dilution Factor		(DF)	1
@AM241-02	Digest Grams / Liter		(Dg/L)	1.82
Matrix	Am-241 Area Peak Height from AEA		(C241)	19
SOLID	Am-243 Area Peak Height from AEA		(C243)	3965
Sample #	Cm-243/244 Area Peak Height from AEA		(CM)	4
S94T67	Total AT Count		(ATOT)	9988
Instrument Code	AT Count Time in Minutes		(MIN CT'd)	30
WC38931	Background in CPM		(BKG)	5
Analyst	Am 241 µCi/g	=	<	1.5838E-01
AKL				
Date				
12/18/94				
Time				
12:00 PM				

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100
NOTE: Am 241 Result is a LESS THAN Value

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	< 1.58E-01	
Cm 243/244 µCi/g	=	< 1.58E-01	
Relative counting error (Am-241)	=	45.1%	
Relative counting error (Cm-243/244)	=	98.0%	
Am-243 Tracer Recovery	=	71.4%	1.58E-01

Data Entry by:	[illegible]	Date:	12/22/94
Approved by:	[illegible]	Date:	22 Dec 94

Form 953103WB Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) LIQUID

			STANDARD
Type	Spike (Tracer) Book Number		87B43
STANDARD	Activity of Am243 Tracer in dpm/mL	(SPKA)	9140
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
246	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	101
@AM241-01	Digest Dilution Factor	(DDF)	1
Matrix	Am-241 Area Peak Height from AEA	(C241)	318
LIQUID	Am-243 Area Peak Height from AEA	(C243)	544
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	5
S94T67	Total AT Count	(ATOT)	2963
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	5
Analyst	Am 241 µCi/L	=	2.4308E+01
AKL			
Date			
12/18/94			
Time			
12:00 PM			

12.21.94

Cm-243/244 µCi/L = CM * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Am-241 µCi/L = C241 * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

Print

			Detection Level in µCi/mL
Am 241 µCi/mL	=	2.43E-02	
Cm 243/244 µCi/mL	=	< 1.61E-02	
Relative counting error (Am-241)	=	13.8%	
Relative counting error (Cm-243/244)	=	88.1%	
Am-243 Tracer Recovery	=	12.9%	1.61E-02

Data Entry by:	[signature]	Date:	12/22/94
Approved by:	[signature]	Date:	22 Dec 94

Form 953103WB Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

			SAMPLE
Type	Spike (Tracer) Book Number		87B43
SAMPLE	Activity of Am243 Tracer in dpm/mL	(SPKA)	9140
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
246	Volume of Sample in mL	(SS)	0.100
Test Code	Dilution Factor	(DF)	1
@AM241-02	Digest Grams / Liter	(Dg/L)	1.82
Matrix	Am-241 Area Peak Height from AEA	(C241)	1331
SOLID	Am-243 Area Peak Height from AEA	(C243)	4913
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	61
S94T67	Total AT Count	(ATOT)	13907
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	7
Analyst	Am 241 µCi/g	=	6.1285E-01
AKL			
Date			
12/18/94			
Time			
12:00 PM			

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	6.13E-01	
Cm 243/244 µCi/g	=	< 1.44E-01	
Relative counting error (Am-241)	=	6.1%	
Relative counting error (Cm-243/244)	=	25.3%	
Am-243 Tracer Recovery	=	78.6%	1.44E-01

Data Entry by:	[illegible]	Date:	12/22/94
Approved by:	[illegible]	Date:	22 Dec 94

Form 953103WB Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

			DUPLICATE
Type	Spike (Tracer) Book Number		87B43
DUPLICATE	Activity of Am243 Tracer in dpm/mL	(SPKA)	9140
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
246	Volume of Sample in mL	(SS)	0.100
Test Code	Dilution Factor	(DF)	1
@AM241-01	Digest Grams / Liter	(Dg/L)	1.8964
Matrix	Am-241 Area Peak Height from AEA	(C241)	345
SOLID	Am-243 Area Peak Height from AEA	(C243)	1549
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	17
S94T67	Total AT Count	(ATOT)	5842
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	5
Analyst	Am 241 µCi/g	=	4.8354E-01
AKL			
Date			
12/18/94			
Time			
12:00 PM			

12-21-94

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	4.84E-01	
Cm 243/244 µCi/g	=	< 3.20E-01	
Relative counting error (Am-241)	=	11.7%	
Relative counting error (Cm-243/244)	=	47.8%	
Am-243 Tracer Recovery	=	34.0%	3.20E-01

Data Entry by: [signature] Date: 12/22/94
Approved by: [signature] Date: 22 Dec 94

Form 953103WB Rev. 1.0

D. H. Milian
12-18-94

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S94T000067-STD
File ID: 2a2730.CNF

Counted on: 12/18/94 @ 8:18
Detector: AEA2
Geometry number: 1
Count time: 28800. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	292.5	292.5	303.481	303.481	20.000	16.584	10.000	6.787
2	496.7	496.7	257.024	257.001	20.000	14.847	10.000	6.248

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am241	0.376	5.480	5.507	-.027	0.08	13.26	2.5	130.7	0.589E-04
	Pu238		5.499	5.507	-.008				170.7	0.769E-04
2	Am243	0.609	5.276	5.293	-.017	0.07	21.47	2.0	201.0	0.905E-04
Totals:		0.986	<--valid peaks only-->				34.73			

DETECTOR CALIBRATION
Energy(MEV) = 4.111 + (0.0046)*Channel
Energy range (MeV): 4.111 TO 6.466
Efficiency = 0.1079 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	16915.0	100.000
Smoothed	16915.0	100.000
Composite fit	16670.0	98.552
Residuals	245.0	1.448

Analyzed by: _____
VR

Spectrum 2a2730.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 3338.6


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1.......................2
..2....
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....................................1
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1
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Raw Data Dump for AEA Spectrum: 2a2730.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
21	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	1.	0.	0.	0.	1.	0.	0.	0.	0.	0.
51	0.	0.	1.	1.	0.	0.	0.	1.	0.	0.
61	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	3.	1.	0.	1.	0.	1.	0.	0.	1.
81	0.	1.	0.	2.	0.	0.	0.	0.	0.	0.
91	0.	2.	1.	1.	0.	1.	2.	0.	0.	0.
101	0.	0.	0.	0.	1.	0.	2.	0.	0.	1.
111	0.	0.	0.	0.	0.	0.	1.	0.	3.	0.
121	2.	0.	1.	2.	1.	0.	1.	0.	1.	0.
131	1.	2.	2.	1.	2.	4.	0.	1.	2.	1.
141	3.	0.	0.	2.	0.	2.	1.	0.	1.	2.
151	1.	1.	2.	2.	0.	3.	2.	0.	0.	2.
161	3.	0.	0.	1.	4.	0.	2.	1.	2.	1.
171	2.	1.	0.	2.	0.	1.	0.	2.	4.	1.
181	1.	2.	3.	2.	4.	2.	2.	3.	3.	2.
191	3.	2.	2.	6.	3.	3.	7.	1.	6.	2.
201	1.	3.	1.	1.	5.	5.	3.	3.	7.	6.
211	3.	8.	5.	6.	10.	3.	5.	12.	8.	6.
221	8.	10.	10.	14.	11.	19.	20.	18.	27.	27.
231	29.	25.	30.	38.	45.	65.	67.	63.	103.	112.
241	97.	137.	185.	159.	204.	233.	253.	334.	364.	391.
251	419.	461.	465.	472.	499.	529.	544.	488.	511.	456.
261	388.	334.	286.	269.	222.	188.	156.	108.	99.	75.
271	63.	57.	53.	38.	24.	29.	33.	27.	41.	34.
281	37.	33.	29.	46.	50.	48.	80.	77.	86.	93.
291	124.	127.	131.	176.	205.	238.	277.	252.	277.	301.
301	274.	311.	293.	318.	283.	274.	284.	236.	200.	171.
311	163.	131.	108.	68.	60.	52.	42.	23.	25.	24.
321	12.	9.	11.	4.	2.	2.	1.	0.	1.	1.
331	0.	0.	0.	0.	0.	0.	0.	1.	0.	2.
341	1.	1.	0.	2.	0.	2.	1.	1.	2.	3.
351	2.	1.	3.	3.	1.	4.	4.	2.	6.	3.
361	2.	5.	2.	2.	2.	1.	3.	4.	3.	1.
371	1.	2.	0.	0.	0.	0.	2.	0.	0.	0.
381	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	1.	0.	0.	1.	0.	0.	0.	0.	1.
421	0.	0.	0.	1.	0.	2.	1.	0.	0.	0.
431	0.	0.	0.	2.	1.	0.	1.	0.	0.	1.
441	0.	0.	1.	0.	0.	0.	0.	1.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
461	0.	0.	1.	0.	0.	1.	1.	0.	0.	0.
471	1.	0.	1.	1.	2.	0.	1.	1.	0.	2.
481	1.	0.	1.	1.	0.	1.	0.	0.	0.	0.
491	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
511	0.	0.								

D H Milbrin
12-18-94

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S94T000067-BLANK
File ID: 3a3459.CNF

Counted on: 12/18/94 @ 8:19
Detector: AEA3
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	12.7	12.7	296.966	296.966	16.000	12.322	8.000	0.616
2	3649.6	3649.6	250.672	250.671	18.000	13.518	9.000	6.080

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Th228	0.014	5.430	5.454	-.024	0.06	2.11	6.2	20.1	0.905E-05
	Am241		5.480	5.454	0.026				15.2	0.684E-05
2	Am243	0.975	5.276	5.246	0.030	0.06	149.68	0.7	1020.2	0.460E-03
	Pu240		5.144	5.246	-.102				1010.0	0.455E-03
Totals:		0.989	<--valid peaks only-->				151.80			

DETECTOR CALIBRATION
Energy(MEV) = 4.117 + (0.0045)*Channel
Energy range (MeV): 4.117 TO 6.421
Efficiency = 0.1482 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	73676.0	100.000
Smoothed	73676.0	100.000
Composite fit	72870.9	98.907
Residuals	805.1	1.093

Analyzed by: _____
VR

Spectrum 3a3459.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 26749.6


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1.......................................................................2
1..........................2
1.2...
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Raw Data Dump for AEA Spectrum: 3a3459.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
21	0.	0.	0.	0.	0.	2.	1.	0.	0.	0.
31	0.	0.	0.	0.	1.	2.	0.	1.	0.	0.
41	0.	0.	2.	1.	1.	0.	2.	1.	1.	0.
51	0.	0.	1.	0.	2.	2.	0.	0.	1.	0.
61	0.	2.	1.	0.	1.	0.	1.	3.	2.	0.
71	0.	0.	0.	1.	1.	0.	1.	2.	0.	0.
81	0.	0.	1.	0.	1.	0.	1.	2.	1.	1.
91	2.	1.	2.	0.	1.	1.	0.	2.	1.	1.
101	0.	4.	3.	0.	0.	3.	2.	0.	1.	2.
111	0.	0.	1.	4.	0.	1.	3.	3.	0.	1.
121	1.	2.	1.	4.	2.	2.	3.	2.	9.	2.
131	3.	2.	2.	7.	7.	3.	4.	2.	2.	4.
141	5.	5.	4.	4.	6.	4.	5.	1.	5.	6.
151	3.	5.	6.	5.	2.	4.	5.	6.	5.	5.
161	4.	4.	6.	7.	4.	5.	9.	9.	5.	1.
171	7.	4.	3.	4.	4.	6.	4.	9.	12.	11.
181	11.	13.	5.	11.	9.	7.	5.	11.	12.	13.
191	13.	13.	10.	11.	13.	23.	15.	14.	19.	17.
201	33.	24.	28.	31.	31.	27.	48.	36.	30.	52.
211	52.	58.	51.	54.	70.	83.	97.	90.	95.	119.
221	109.	143.	149.	183.	222.	232.	263.	289.	340.	406.
231	479.	526.	615.	694.	816.	875.	1106.	1227.	1424.	1639.
241	1897.	2123.	2409.	2637.	2999.	3291.	3468.	3705.	3796.	3965.
251	3824.	3794.	3525.	3202.	2809.	2459.	2045.	1579.	1267.	1038.
261	811.	704.	528.	433.	373.	311.	223.	174.	130.	118.
271	106.	60.	60.	29.	17.	16.	6.	8.	6.	3.
281	6.	4.	1.	6.	6.	3.	8.	7.	8.	8.
291	7.	15.	19.	8.	14.	12.	9.	15.	15.	8.
301	5.	6.	6.	8.	4.	5.	3.	2.	5.	0.
311	3.	1.	0.	1.	1.	0.	0.	0.	0.	0.
321	1.	0.	0.	0.	0.	0.	0.	2.	0.	0.
331	0.	0.	1.	2.	0.	1.	0.	1.	0.	0.
341	0.	0.	0.	1.	3.	0.	0.	1.	0.	1.
351	1.	2.	0.	4.	0.	2.	3.	2.	2.	0.
361	4.	3.	1.	2.	1.	2.	1.	1.	0.	0.
371	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
431	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
481	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

D H Milian
12-18-94

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S94T000067-SAM
File ID: 4a4930.CNF

Counted on: 12/18/94 @ 8:20
Detector: AEA4
Geometry number: 1
Count time: 28800. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	45.3	45.3	372.508	372.508	10.000	4.183	5.000	1.915
2	1109.8	1109.8	304.785	304.785	12.000	5.298	6.000	4.344
3	4025.3	4025.3	259.315	259.315	12.000	4.330	6.000	3.659

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm243	0.010	5.786	5.820	-.034	0.02	1.29	7.9	22.6	0.102E-04
	Cm244		5.796	5.820	-.024				16.5	0.743E-05
2	Pu238	0.217	5.499	5.502	-.003	0.02	27.56	1.7	487.7	0.220E-03
	Am241		5.480	5.502	-.022				373.5	0.168E-03
3	Am243	0.725	5.276	5.288	-.012	0.02	91.92	0.9	1182.8	0.533E-03
Totals:		0.952	<--valid peaks only-->				120.78			

DETECTOR CALIBRATION
Energy(MEV) = 4.070 + (0.0047)*Channel
Energy range (MeV): 4.070 TO 6.476
Efficiency = 0.0785 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	60877.0	100.000
Smoothed	60877.0	100.000
Composite fit	57975.3	95.233
Residuals	2901.7	4.767

Analyzed by: _____
VR

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Raw Data Dump for AEA Spectrum: 4a4930.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
21	0.	0.	2.	1.	0.	0.	0.	0.	2.	0.
31	0.	0.	0.	1.	0.	0.	0.	0.	0.	1.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.
61	0.	0.	1.	1.	0.	0.	0.	0.	1.	1.
71	0.	1.	0.	0.	0.	0.	0.	1.	1.	0.
81	2.	1.	0.	0.	0.	1.	0.	3.	0.	1.
91	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
101	1.	0.	1.	0.	0.	0.	0.	0.	1.	0.
111	1.	0.	1.	1.	0.	0.	0.	1.	1.	1.
121	0.	0.	1.	0.	2.	0.	2.	0.	2.	0.
131	0.	0.	0.	0.	0.	1.	0.	1.	1.	3.
141	0.	1.	0.	0.	0.	1.	1.	0.	0.	0.
151	0.	0.	1.	0.	1.	0.	2.	1.	1.	2.
161	1.	1.	1.	0.	3.	1.	1.	0.	1.	2.
171	1.	1.	0.	0.	1.	4.	2.	0.	0.	2.
181	0.	0.	0.	1.	2.	1.	1.	2.	0.	1.
191	0.	0.	2.	1.	2.	1.	0.	1.	4.	3.
201	0.	4.	2.	2.	1.	1.	2.	2.	3.	4.
211	9.	4.	3.	2.	6.	1.	5.	6.	9.	9.
221	9.	6.	5.	15.	6.	15.	14.	20.	21.	26.
231	27.	60.	63.	60.	66.	81.	97.	106.	117.	106.
241	117.	127.	153.	192.	241.	350.	461.	590.	682.	791.
251	975.	1131.	1370.	1715.	2320.	3035.	3782.	4563.	4913.	4758.
261	4050.	2947.	1953.	1239.	677.	423.	318.	258.	202.	218.
271	221.	176.	167.	141.	88.	74.	53.	25.	18.	15.
281	34.	24.	25.	25.	38.	31.	28.	47.	58.	67.
291	85.	121.	165.	201.	229.	290.	315.	385.	441.	619.
301	770.	1022.	1195.	1331.	1279.	1218.	1040.	691.	478.	323.
311	262.	181.	143.	120.	94.	76.	56.	35.	13.	13.
321	4.	5.	1.	0.	0.	0.	0.	1.	0.	1.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	0.	1.	0.	2.	1.
351	3.	3.	3.	4.	3.	10.	4.	6.	7.	7.
361	13.	22.	18.	30.	22.	18.	35.	28.	33.	36.
371	61.	45.	49.	51.	46.	19.	15.	6.	3.	1.
381	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	1.	0.	0.	0.	0.	0.	1.	0.	0.	0.
421	0.	0.	2.	0.	1.	2.	1.	0.	2.	0.
431	1.	3.	2.	4.	2.	2.	2.	5.	7.	6.
441	6.	4.	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.	0.	0.	0.	0.	0.	1.	1.	0.
481	0.	0.	0.	0.	0.	2.	0.	0.	2.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

D. Hamilton
12-18-94

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S94T000067-DUP
File ID: 5a5858.CNF

Counted on: 12/18/94 @ 8:20
Detector: AEA5
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	13.5	13.5	372.966	372.966	20.000	12.929	10.000	3.496
2	322.5	322.5	306.069	306.067	22.000	18.042	11.000	5.599
3	1460.8	1460.8	259.535	259.511	20.000	18.023	10.000	8.923

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		5.827			0.66	11.0		
2	Am241	0.198	5.480	5.513	-.033	0.08	16.46	2.2	67.3	0.303E-04
	Pu238		5.499	5.513	-.014				87.9	0.396E-04
3	Am243	0.789	5.276	5.294	-.018	0.08	65.44	1.1	254.1	0.114E-03
	Pu240		5.144	5.294	-.150				251.6	0.113E-03
		---					---			
Totals:		0.987	<--valid peaks only-->				81.90			

DETECTOR CALIBRATION
Energy(MEV) = 4.075 + (0.0047)*Channel
Energy range (MeV): 4.075 TO 6.481
Efficiency = 0.2601 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	39814.0	100.000
Smoothed	39813.7	99.999
Composite fit	39634.5	99.549
Residuals	179.5	0.451

Analyzed by: _____
VR

Spectrum 5a5858.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 11119.7


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Raw Data Dump for AEA Spectrum: 5a5858.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	1.	2.	1.
21	1.	0.	1.	3.	3.	2.	1.	1.	0.	4.
31	3.	0.	1.	0.	2.	0.	0.	4.	0.	2.
41	3.	3.	3.	1.	1.	1.	2.	0.	0.	1.
51	1.	2.	1.	2.	2.	1.	0.	0.	2.	2.
61	1.	1.	1.	2.	1.	0.	0.	0.	3.	3.
71	1.	0.	0.	1.	1.	3.	0.	0.	0.	3.
81	3.	1.	5.	3.	1.	2.	1.	0.	0.	2.
91	3.	2.	0.	2.	0.	1.	2.	3.	0.	2.
101	3.	2.	1.	0.	0.	1.	1.	0.	0.	0.
111	1.	1.	1.	2.	2.	0.	3.	0.	3.	0.
121	0.	2.	0.	1.	2.	3.	0.	1.	2.	0.
131	7.	1.	1.	1.	1.	2.	2.	1.	1.	3.
141	2.	0.	3.	0.	3.	2.	2.	2.	2.	3.
151	3.	0.	1.	0.	0.	3.	3.	1.	1.	3.
161	4.	1.	1.	2.	5.	1.	1.	3.	2.	2.
171	1.	2.	4.	3.	2.	1.	4.	2.	0.	4.
181	2.	2.	0.	6.	3.	2.	1.	4.	0.	4.
191	5.	3.	3.	4.	5.	9.	4.	7.	4.	12.
201	5.	3.	4.	8.	8.	6.	10.	9.	3.	10.
211	5.	9.	7.	6.	14.	11.	13.	6.	20.	18.
221	11.	8.	13.	19.	31.	12.	25.	27.	32.	48.
231	50.	57.	62.	72.	95.	84.	130.	132.	154.	181.
241	216.	245.	329.	388.	419.	525.	577.	641.	755.	829.
251	987.	1141.	1206.	1285.	1364.	1489.	1428.	1525.	1529.	1549.
261	1498.	1403.	1252.	1233.	1042.	941.	845.	752.	591.	514.
271	379.	364.	271.	209.	185.	118.	136.	102.	83.	71.
281	71.	65.	37.	57.	58.	60.	70.	73.	75.	81.
291	93.	128.	141.	176.	182.	215.	241.	243.	248.	297.
301	273.	319.	307.	311.	342.	345.	331.	313.	297.	281.
311	266.	201.	190.	186.	140.	129.	109.	64.	58.	54.
321	39.	35.	19.	20.	15.	14.	12.	5.	6.	0.
331	0.	1.	0.	0.	1.	2.	0.	1.	1.	0.
341	3.	1.	1.	3.	2.	0.	2.	3.	1.	3.
351	4.	7.	1.	3.	4.	3.	5.	10.	4.	6.
361	7.	10.	6.	9.	9.	9.	9.	18.	12.	11.
371	14.	12.	17.	12.	12.	14.	9.	7.	8.	8.
381	8.	4.	1.	3.	1.	0.	3.	1.	3.	0.
391	0.	2.	0.	0.	0.	2.	0.	0.	0.	0.
401	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
411	0.	1.	0.	1.	1.	0.	0.	0.	0.	1.
421	0.	1.	0.	0.	1.	1.	0.	3.	1.	0.
431	0.	3.	1.	2.	0.	2.	1.	1.	2.	1.
441	0.	3.	3.	0.	1.	0.	2.	0.	2.	0.
451	0.	0.	0.	1.	1.	0.	1.	0.	0.	0.
461	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
471	1.	1.	0.	0.	0.	0.	1.	1.	1.	0.
481	0.	0.	0.	1.	0.	0.	1.	1.	0.	2.
491	1.	0.	0.	0.	0.	0.	0.	1.	0.	0.
511	0.	0.								

LABCORE Data Entry Template for Worklist# 285

Sy103 .12 .OA 12-20-94

Analyst: AKL **Instrument:** AM01 _____ **Method:** LA-953-103 ~~A-C~~ A-1

Worklist Comment: Contact chemist for sample size. --LLF WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test	Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@AM24102 AM24101	SOLID			N/A	uCi/g
1	BLNK-PREP				@AM24102 AM24101E	SOLID			N/A	% Ct.
1	BLNK-PREP				@AM24102 AM24101T	SOLID			N/A	% Rec
1	BLNK-PREP				@AM24102 CM24301	SOLID			N/A	uCi/g
1	BLNK-PREP				@AM24102 CM24301E	SOLID			N/A	% Ct.
2	STD 83843				@AM24102 AM24101	SOLID			N/A	uCi/g
2	STD				@AM24102 AM24101E	SOLID			N/A	% Ct.
2	STD				@AM24102 AM24101T	SOLID			N/A	% Rec
3	SAMPLE	S94T000299	0		@AM24102 AM24101	SOLID	N/A			uCi/g
3	SAMPLE	S94T000299	0		@AM24102 AM24101E	SOLID	N/A			% Ct.
3	SAMPLE	S94T000299	0		@AM24102 AM24101T	SOLID	N/A			% Rec
3	SAMPLE	S94T000299	0		@AM24102 CM24301	SOLID	N/A			uCi/g
3	SAMPLE	S94T000299	0		@AM24102 CM24301E	SOLID	N/A			% Ct.
4	DUP	S94T000299	0		@AM24102 AM24101	SOLID			N/A	uCi/g
4	DUP	S94T000299	0		@AM24102 AM24101E	SOLID			N/A	% Ct.
4	DUP	S94T000299	0		@AM24102 AM24101T	SOLID			N/A	% Rec
4	DUP	S94T000299	0		@AM24102 CM24301	SOLID			N/A	uCi/g
4	DUP	S94T000299	0		@AM24102 CM24301E	SOLID			N/A	% Ct.
5	SAMPLE	S94T000300	0		@AM24102 AM24101	SOLID	N/A			uCi/g
5	SAMPLE	S94T000300	0		@AM24102 AM24101E	SOLID	N/A			% Ct.

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist# 285

Analyst: AYL **Instrument:** AM01 _____ **Method:** LA-953-103

Worklist Comment: Contact chemist for sample size. --LLF

Seg	Type	Sample#	Rep	Al	Test		Matrix	Actual	Found	DL	Unit
5	SAMPLE	S94T000300	0		@AM24102	AM24101T	SOLID	N/A			% Rec
5	SAMPLE	S94T000300	0		@AM24102	CM24301	SOLID	N/A			uCi/g
5	SAMPLE	S94T000300	0		@AM24102	CM24301E	SOLID	N/A			% Ct.
6	DUP	S94T000300	0		@AM24102	AM24101	SOLID			N/A	uCi/g
6	DUP	S94T000300	0		@AM24102	AM24101E	SOLID			N/A	% Ct.
6	DUP	S94T000300	0		@AM24102	AM24101T	SOLID			N/A	% Rec
6	DUP	S94T000300	0		@AM24102	CM24301	SOLID			N/A	uCi/g
6	DUP	S94T000300	0		@AM24102	CM24301E	SOLID			N/A	% Ct.

Final page for worklist # 285

G Lewis
Analyst Signature

12-20-94
Date

M B Bisson

12/21/94

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

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

BEST AVAILABLE COPY

Am-241 : LA-953-103(A-1) SOLID

			BLANK
Type	Spike (Tracer) Book Number		87B43
BLANK	Activity of Am243 Tracer in dpm/mL	(SPKA)	9140
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
285	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	1
@AM241-0 Y2	Digest Grams / Liter	(Dg/L)	1.7448
Matrix	Am-241 Area Peak Height from AEA	(C241)	5
SOLID	Am-243 Area Peak Height from AEA	(C243)	940
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	2
S94T299,300	Total AT Count	(ATOT)	2960
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	5
Analyst	Am 241 µCi/g	= <	5.7870E-02
AKL			
Date			
12/19/94			
Time			
03:30 PM			

AJJ 12-21-94

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100
NOTE: Am 241 Result is a LESS THAN Value

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	< 5.79E-02	
Cm 243/244 µCi/g	=	< 5.79E-02	
Relative counting error (Am-241)	=	87.9%	
Relative counting error (Cm-243/244)	=	138.7%	
Am-243 Tracer Recovery	=	20.4%	5.79E-02

Data Entry by:	[signature]	Date:	12/22/94
Approved by:	[signature]	Date:	22 Dec 94

Form 953103WB Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) LIQUID

			STANDARD
Type	Spike (Tracer) Book Number		87B43
STANDARD	Activity of Am243 Tracer in dpm/mL	(SPKA)	9140
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
285	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	101
@AM241-02	Digest Dilution Factor	(DDF)	1
Matrix	Am-241 Area Peak Height from AEA	(C241)	1471
LIQUID	Am-243 Area Peak Height from AEA	(C243)	2478
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	2
S94T299,300	Total AT Count	(ATOT)	16443
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	5
Analyst	Am 241 µCi/L	=	2.4685E+01
AKL			
Date			
12/19/94			
Time			
03:30 PM			

AAJ 12-22-94

Cm-243/244 µCi/L = CM * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Am-241 µCi/L = C241 * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

Print

			Detection Level in µCi/mL
Am 241 µCi/mL	=	2.47E-02	
Cm 243/244 µCi/mL	=	< 2.79E-03	
Relative counting error (Am-241)	=	6.5%	
Relative counting error (Cm-243/244)	=	138.6%	
Am-243 Tracer Recovery	=	74.6%	2.79E-03

Data Entry by:	[signature]	Date:	12/22/94
Approved by:	[signature]	Date:	22 Dec 94

Form 953103WB Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

			SAMPLE
Type	Spike (Tracer) Book Number		87B43
SAMPLE	Activity of Am243 Tracer in dpm/mL	(SPKA)	9140
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
285	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	1
@AM241-072	Digest Grams / Liter	(Dg/L)	1.7448
Matrix	Am-241 Area Peak Height from AEA	(C241)	106
SOLID	Am-243 Area Peak Height from AEA	(C243)	5267
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	3
S94T299	Total AT Count	(ATOT)	11018
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	6
Analyst	Am 241 µCi/g	= <	1.5225E-02
AKL			
Date			
12/19/94			
Time			
03:30 PM			

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100
NOTE: Am 241 Result is a LESS THAN Value

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	< 1.52E-02	
Cm 243/244 µCi/g	=	< 1.52E-02	
Relative counting error (Am-241)	=	19.2%	
Relative counting error (Cm-243/244)	=	113.2%	
Am-243 Tracer Recovery	=	77.5%	1.52E-02

Data Entry by:	[illegible]	Date:	12/22/94
Approved by:	[illegible]	Date:	22 Dec 94

Form 953103WB Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

				DUPLICATE
Type	Spike (Tracer) Book Number			87E43
DUPLICATE	Activity of Am243 Tracer in dpm/mL	(SPKA)		9140
Work List	Spike (Tracer) Volume in mL	(SPKV)		0.100
285	Volume of Sample in mL	(SS)		1.000
Test Code	Dilution Factor	(DF)		1
@AM241-01	Digest Grams / Liter	(Dg/L)		1.824
Matrix	Am-241 Area Peak Height from AEA	(C241)		134
SOLID	Am-243 Area Peak Height from AEA	(C243)		3530
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)		10
S94T299	Total AT Count	(ATOT)		11113
Instrument Code	AT Count Time in Minutes	(MIN CT'd)		30
WC38931	Background in CPM	(BKG)		6
Analyst	Am 241 µCi/g	=	<	1.4690E-02
AKL				
Date				
12/19/94				
Time				
03:30 PM				

12.22.94

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100
NOTE: Am 241 Result is a LESS THAN Value

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	< 1.47E-02	
Cm 243/244 µCi/g	=	< 1.47E-02	
Relative counting error (Am-241)	=	17.3%	
Relative counting error (Cm-243/244)	=	62.1%	
Am-243 Tracer Recovery	=	76.8%	1.47E-02

Data Entry by:	[signature]	Date:	12/22/94
Approved by:	[signature]	Date:	22 Dec 94

Form 953103WB Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

			SAMPLE
Type	Spike (Tracer) Book Number		87B43
SAMPLE	Activity of Am243 Tracer in dpm/mL	(SPKA)	9140
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
285	Volume of Sample in mL	(SS)	0.300
Test Code	Dilution Factor	(DF)	1
@AM241-02	Digest Grams / Liter	(Dg/L)	2.5308
Matrix	Am-241 Area Peak Height from AEA	(C241)	1871
SOLID	Am-243 Area Peak Height from AEA	(C243)	1426
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	80
S94T300	Total AT Count	(ATOT)	8563
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	5
Analyst	Am 241 µCi/g	=	7.1149E-01
AKL			
Date			
12/19/94			
Time			
03:30 PM			

12.22.94

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	7.11E-01	
Cm 243/244 µCi/g	=	< 1.02E-01	
Relative counting error (Am-241)	=	6.9%	
Relative counting error (Cm-243/244)	=	22.5%	
Am-243 Tracer Recovery	=	26.5%	1.02E-01

Data Entry by:	[signature]	Date:	12/22/94
Approved by:	[signature]	Date:	22 Dec 94

Form 953103WB Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

			DUPLICATE
Type	Spike (Tracer) Book Number		87B43
DUPLICATE	Activity of Am243 Tracer in dpm/mL	(SPKA)	9140
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
285	Volume of Sample in mL	(SS)	0.300
Test Code	Dilution Factor	(DF)	1
@AM241-02	Digest Grams / Liter	(Dg/L)	2.5532
Matrix	Am-241 Area Peak Height from AEA	(C241)	1808
SOLID	Am-243 Area Peak Height from AEA	(C243)	1556
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	90
S94T300	Total AT Count	(ATOT)	7201
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	5
Analyst	Am 241 µCi/g	=	6.2456E-01
AKL			
Date			
12/19/94			
Time			
03:30 PM			

AAJ 12.22.94

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	6.25E-01	
Cm 243/244 µCi/g	=	< 1.13E-01	
Relative counting error (Am-241)	=	6.8%	
Relative counting error (Cm-243/244)	=	21.2%	
Am-243 Tracer Recovery	=	23.8%	1.13E-01

Data Entry by:	[signature]	Date:	12/22/94
Approved by:	[signature]	Date:	22 Dec 94

EM Barela
12-21-94

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
BLANK
File ID: 2a2735.CNF

Counted on: 12/20/94 @18:19
Detector: AEA2
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	854.4	854.4	256.868	256.868	22.000	16.196	11.000	8.590

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.973	5.276	5.279	-.003	0.07	36.18	1.5	608.1	0.274E-03
	Pu240		5.144	5.279	-.135				602.0	0.271E-03
Totals:		0.973	<--valid peaks only-->				36.18			

DETECTOR CALIBRATION
Energy(MEV) = 4.097 + (0.0046)*Channel
Energy range (MeV): 4.097 TO 6.452
Efficiency = 0.0601 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	17850.0	100.000
Smoothed	17850.0	100.000
Composite fit	17369.0	97.305
Residuals	481.0	2.695

Analyzed by: _____
DM

Spectrum 2a2735.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5865.3


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

Raw Data Dump for AEA Spectrum: 2a2735.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	1.	0.	0.	0.	3.	2.	0.
51	0.	0.	1.	0.	2.	2.	3.	0.	0.	0.
61	0.	0.	0.	0.	1.	0.	0.	0.	1.	1.
71	1.	0.	1.	0.	0.	1.	0.	0.	1.	1.
81	0.	1.	0.	0.	0.	2.	0.	0.	1.	1.
91	0.	0.	0.	2.	1.	2.	2.	1.	0.	0.
101	1.	0.	0.	1.	2.	2.	1.	0.	1.	2.
111	2.	0.	0.	0.	1.	2.	0.	0.	0.	1.
121	2.	1.	1.	0.	0.	2.	1.	2.	4.	1.
131	0.	0.	1.	5.	2.	0.	1.	0.	2.	3.
141	1.	3.	2.	4.	5.	0.	3.	1.	3.	2.
151	3.	3.	2.	2.	3.	1.	1.	1.	0.	4.
161	4.	2.	2.	1.	0.	2.	4.	0.	4.	3.
171	1.	2.	1.	2.	0.	2.	4.	4.	1.	3.
181	2.	3.	2.	1.	1.	2.	5.	2.	3.	2.
191	4.	2.	0.	3.	3.	7.	3.	3.	0.	2.
201	4.	6.	3.	7.	4.	8.	6.	5.	5.	7.
211	9.	7.	3.	14.	9.	9.	10.	11.	12.	9.
221	10.	8.	19.	8.	12.	20.	21.	13.	23.	28.
231	37.	41.	55.	48.	57.	66.	92.	93.	132.	124.
241	179.	174.	265.	304.	318.	398.	402.	506.	564.	646.
251	721.	782.	782.	852.	874.	940.	892.	881.	835.	780.
261	711.	635.	579.	493.	392.	306.	242.	208.	171.	142.
271	100.	93.	58.	60.	40.	30.	27.	18.	16.	9.
281	9.	7.	3.	0.	0.	1.	0.	2.	4.	1.
291	2.	1.	4.	2.	1.	4.	1.	1.	3.	4.
301	4.	3.	5.	3.	0.	1.	3.	0.	3.	0.
311	0.	2.	0.	1.	0.	1.	0.	0.	0.	0.
321	1.	1.	1.	0.	1.	0.	0.	0.	2.	1.
331	1.	0.	0.	1.	1.	0.	0.	0.	0.	0.
341	1.	0.	1.	0.	2.	3.	1.	1.	2.	2.
351	2.	1.	1.	0.	0.	0.	0.	0.	1.	0.
361	2.	1.	1.	0.	0.	0.	1.	1.	0.	1.
371	0.	1.	0.	1.	0.	0.	1.	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.	1.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
421	3.	0.	1.	1.	1.	1.	1.	1.	1.	2.
431	1.	1.	0.	1.	0.	0.	1.	0.	1.	1.
441	0.	2.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	1.	0.	0.	0.	1.	0.
461	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
471	1.	0.	0.	2.	0.	1.	0.	0.	0.	0.
481	1.	1.	2.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Em Barlu
12-21-94

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
STD
File ID: 3a3465.CNF

Counted on: 12/20/94 @18:20
Detector: AEA3
Geometry number: 1
Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1402.5	1402.5	314.004	314.004	24.000	21.960	12.000	2.173
2	1958.3	1958.3	267.876	267.519	20.000	14.626	10.000	2.322
3?	0.0	0.1	191.985	191.985	0.000	0.100	0.000	0.100

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am241	0.561	5.480	5.557	-.077	0.10	142.76	0.7	580.1	0.261E-03
	Pu238		5.499	5.557	-.058				757.4	0.341E-03
2	Am243	0.531	5.276	5.338	-.062	0.07	135.04	0.9	521.0	0.235E-03
3		????		4.983			0.00	*****		
Totals:		1.092	<--valid peaks only-->				277.80			

DETECTOR CALIBRATION
Energy(MEV) = 4.081 + (0.0047)*Channel
Energy range (MeV): 4.081 TO 6.487
Efficiency = 0.2618 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	122069.0	100.000
Smoothed	122069.0	100.000
Composite fit	133349.6	109.241
Residuals	-11280.6	-9.241

Analyzed by: _____
DM

Spectrum 3a3465.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 18216.0


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2
3
12
 1 2
.1  2
..1    2
...1.     2
....1.........2
.....1................2..............
.......1......................2............
........1.................................2...........
..........1.........................................2..............
..............1............2................
...2..............1...
.......................1..
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.....................................1
....................1.
....1
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Raw Data Dump for AEA Spectrum: 3a3465.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	3.	0.	2.
21	0.	1.	0.	0.	1.	1.	1.	0.	1.	0.
31	0.	1.	0.	1.	0.	0.	0.	0.	1.	0.
41	0.	0.	2.	0.	0.	0.	0.	1.	1.	1.
51	1.	1.	0.	1.	0.	2.	1.	0.	0.	0.
61	1.	0.	1.	0.	1.	1.	0.	0.	0.	0.
71	0.	0.	1.	1.	3.	0.	1.	0.	0.	0.
81	2.	1.	0.	1.	1.	1.	1.	0.	0.	0.
91	2.	0.	0.	1.	0.	1.	1.	1.	2.	1.
101	2.	1.	0.	3.	1.	2.	1.	2.	4.	2.
111	2.	1.	3.	3.	0.	2.	1.	1.	1.	2.
121	2.	2.	2.	0.	1.	2.	1.	2.	0.	0.
131	0.	2.	1.	1.	2.	2.	2.	4.	1.	6.
141	2.	3.	7.	1.	4.	2.	0.	1.	4.	2.
151	2.	8.	4.	3.	3.	2.	6.	5.	5.	6.
161	2.	7.	4.	4.	3.	8.	3.	7.	5.	8.
171	5.	5.	7.	9.	3.	12.	8.	6.	9.	9.
181	9.	14.	7.	13.	14.	13.	7.	22.	17.	23.
191	15.	21.	20.	20.	11.	16.	19.	19.	16.	17.
201	19.	23.	30.	35.	33.	22.	41.	35.	40.	50.
211	42.	52.	60.	55.	52.	68.	54.	62.	88.	81.
221	62.	113.	128.	110.	133.	159.	153.	154.	189.	213.
231	250.	278.	345.	382.	428.	496.	588.	642.	781.	899.
241	1070.	1126.	1262.	1364.	1505.	1484.	1527.	1494.	1516.	1498.
251	1433.	1462.	1499.	1455.	1571.	1557.	1571.	1669.	1795.	1850.
261	1953.	2017.	2168.	2290.	2378.	2392.	2400.	2478.	2469.	2261.
271	2168.	2164.	1902.	1733.	1658.	1457.	1233.	1147.	917.	802.
281	707.	607.	565.	576.	552.	657.	731.	706.	795.	861.
291	871.	963.	921.	898.	890.	868.	922.	912.	930.	933.
301	940.	913.	965.	1042.	1087.	1124.	1084.	1188.	1308.	1337.
311	1387.	1428.	1471.	1471.	1397.	1396.	1350.	1261.	1225.	1117.
321	1023.	887.	755.	682.	575.	461.	355.	279.	214.	196.
331	134.	122.	83.	59.	35.	24.	14.	15.	10.	2.
341	2.	0.	2.	0.	0.	0.	0.	0.	0.	0.
351	1.	0.	0.	0.	0.	1.	0.	1.	0.	0.
361	0.	1.	0.	1.	0.	0.	0.	1.	0.	1.
371	0.	0.	2.	2.	0.	0.	0.	0.	0.	0.
381	0.	1.	1.	1.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	1.	0.	1.	1.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	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.	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.								

Em Brooks
12-21-94

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S94T000299SAM
File ID: 4a4936.CNF

Counted on: 12/20/94 @18:21
Detector: AEA4
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	83.8	83.8	305.664	305.664	12.000	4.818	6.000	3.450
2	4196.5	4196.5	260.220	260.220	12.000	3.881	6.000	3.599

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu238	0.021	5.499	5.491	0.008	0.02	2.08	6.2	23.4	0.105E-04
	Am241		5.480	5.491	-.011				17.9	0.806E-05
2	Am243	0.905	5.276	5.282	-.006	0.02	89.87	0.9	733.3	0.330E-03
Totals:		0.926	<--valid peaks only-->				91.96			

DETECTOR CALIBRATION
Energy(MEV) = 4.085 + (0.0046)*Channel
Energy range (MeV): 4.085 TO 6.440
Efficiency = 0.1238 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	47689.0	100.000
Smoothed	47689.0	100.000
Composite fit	44142.6	92.563
Residuals	3546.4	7.437

Analyzed by: _____
DM

Spectrum 4a4936.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 27399.2


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1
1
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Raw Data Dump for AEA Spectrum: 4a4936.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	2.	0.	0.	1.	0.	0.	0.	1.	1.	0.
31	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
51	0.	1.	0.	0.	0.	0.	1.	0.	0.	0.
61	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.
71	1.	0.	0.	1.	1.	2.	0.	0.	0.	0.
81	1.	1.	0.	1.	0.	0.	1.	0.	0.	1.
91	1.	0.	0.	0.	0.	0.	1.	1.	1.	0.
101	0.	0.	0.	0.	1.	0.	0.	0.	1.	1.
111	1.	0.	1.	0.	1.	0.	2.	0.	0.	0.
121	0.	1.	2.	0.	1.	2.	3.	0.	1.	1.
131	1.	1.	2.	0.	0.	2.	0.	0.	0.	0.
141	1.	2.	0.	0.	2.	2.	1.	2.	0.	0.
151	1.	1.	0.	1.	1.	0.	2.	2.	2.	1.
161	3.	3.	1.	1.	1.	0.	1.	1.	0.	1.
171	1.	2.	1.	2.	0.	3.	3.	2.	2.	2.
181	0.	3.	4.	3.	6.	1.	5.	1.	3.	2.
191	4.	3.	1.	4.	1.	2.	9.	3.	10.	7.
201	8.	4.	3.	8.	7.	7.	7.	6.	6.	8.
211	6.	12.	15.	7.	11.	15.	14.	12.	14.	20.
221	22.	17.	11.	19.	19.	33.	25.	28.	36.	44.
231	29.	49.	55.	38.	73.	83.	88.	106.	127.	124.
241	152.	161.	151.	159.	185.	237.	322.	446.	570.	695.
251	773.	909.	1013.	1119.	1485.	2122.	3012.	4020.	4930.	5267.
261	4907.	4032.	2939.	1806.	1064.	557.	350.	275.	259.	223.
271	206.	218.	181.	149.	115.	80.	63.	46.	21.	8.
281	11.	4.	3.	2.	1.	2.	4.	2.	4.	4.
291	5.	8.	11.	10.	16.	22.	26.	24.	25.	36.
301	40.	65.	62.	92.	96.	106.	90.	60.	58.	34.
311	19.	18.	9.	12.	9.	10.	4.	3.	3.	1.
321	0.	2.	1.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	1.	0.	0.	0.	2.
351	2.	1.	2.	0.	0.	2.	0.	0.	0.	0.
361	1.	3.	1.	2.	2.	0.	3.	1.	2.	0.
371	2.	2.	3.	3.	3.	3.	2.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	1.	0.	3.
431	1.	0.	0.	1.	2.	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.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
481	1.	0.	0.	0.	0.	0.	1.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Em Bauer
12-21-94

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S94T000299DUP
File ID: 5a5863.CNF

Counted on: 12/20/94 @18:22
Detector: AEA5
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	115.6	115.6	303.572	303.572	26.000	23.398	13.000	1.707
2	3291.8	3291.8	258.733	258.710	22.000	19.334	11.000	9.628

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am241	0.090	5.480	5.505	-.025	0.11	14.92	2.3	111.0	0.500E-04
	Pu238		5.499	5.505	-.006				144.9	0.653E-04
2	Am243	0.915	5.276	5.294	-.018	0.09	151.63	0.7	1071.0	0.482E-03
	Pu240		5.144	5.294	-.150				1060.3	0.478E-03
Totals:		1.005	<--valid peaks only-->				166.55			

DETECTOR CALIBRATION
Energy(MEV) = 4.078 + (0.0047)*Channel
Energy range (MeV): 4.078 TO 6.484
Efficiency = 0.1430 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	79540.0	100.000
Smoothed	79540.0	100.000
Composite fit	79948.5	100.514
Residuals	-408.5	-0.514

Analyzed by: _____
DM

Spectrum 5a5863.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 25376.0


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1
1
1
12
1....2.
1..................2..
1.................................................2.
1.......................................................................2..
1.................................2.
1......2.
1
.1
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1
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Raw Data Dump for AEA Spectrum: 5a5863.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	2.	1.	4.	3.
21	3.	3.	2.	1.	1.	1.	4.	2.	3.	5.
31	1.	3.	3.	1.	4.	1.	0.	3.	1.	1.
41	2.	1.	4.	2.	3.	1.	3.	1.	4.	4.
51	2.	3.	3.	0.	4.	5.	3.	4.	3.	4.
61	3.	3.	2.	3.	2.	1.	0.	2.	1.	4.
71	1.	8.	4.	3.	3.	0.	3.	4.	1.	3.
81	2.	3.	3.	4.	3.	0.	5.	3.	2.	1.
91	4.	3.	3.	2.	1.	3.	1.	1.	2.	5.
101	2.	1.	4.	0.	3.	2.	5.	2.	2.	5.
111	6.	6.	6.	3.	4.	2.	3.	4.	5.	3.
121	4.	7.	3.	5.	4.	3.	2.	4.	4.	3.
131	3.	2.	5.	4.	0.	3.	5.	7.	6.	4.
141	5.	5.	4.	2.	4.	6.	1.	2.	2.	6.
151	3.	6.	3.	6.	4.	8.	7.	4.	7.	3.
161	4.	8.	2.	4.	4.	3.	3.	8.	7.	4.
171	6.	7.	4.	7.	5.	3.	9.	9.	8.	2.
181	8.	10.	10.	9.	13.	8.	11.	13.	12.	10.
191	6.	11.	13.	13.	10.	15.	13.	16.	19.	21.
201	25.	13.	19.	21.	20.	25.	27.	40.	26.	35.
211	40.	29.	38.	34.	50.	52.	41.	54.	44.	52.
221	72.	66.	77.	79.	88.	97.	91.	122.	143.	143.
231	162.	200.	229.	220.	278.	310.	380.	386.	452.	559.
241	625.	788.	863.	951.	1193.	1266.	1422.	1718.	1890.	2209.
251	2442.	2583.	2820.	3118.	3191.	3493.	3476.	3530.	3478.	3379.
261	3268.	3067.	3042.	2696.	2340.	2148.	1790.	1554.	1350.	1098.
271	943.	747.	606.	427.	369.	291.	257.	195.	142.	122.
281	88.	67.	49.	62.	45.	41.	35.	39.	31.	47.
291	53.	54.	60.	62.	69.	81.	70.	101.	99.	96.
301	110.	125.	134.	115.	115.	108.	103.	108.	102.	81.
311	84.	69.	64.	50.	49.	43.	35.	23.	27.	10.
321	12.	13.	8.	6.	5.	2.	0.	1.	0.	0.
331	3.	1.	3.	2.	2.	1.	1.	1.	0.	1.
341	0.	1.	1.	0.	0.	1.	1.	4.	1.	4.
351	0.	0.	1.	2.	0.	1.	1.	2.	0.	5.
361	4.	4.	4.	3.	6.	4.	3.	5.	[illegible]	4.
371	6.	8.	10.	3.	4.	6.	4.	6.	4.	4.
381	5.	1.	0.	1.	1.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
431	0.	1.	1.	0.	1.	1.	1.	1.	2.	0.
441	1.	0.	0.	0.	0.	0.	1.	0.	0.	0.
451	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	1.	0.	1.	0.	0.	1.	0.
471	1.	0.	0.	1.	0.	1.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
491	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
511	0.	0.								

Em Bacon
12-20-94

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S94T000300SAM
File ID: 6a6689.CNF

Counted on: 12/20/94 @18:23
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	67.5	67.5	372.421	372.421	14.000	8.669	7.000	3.407
2	1705.7	1705.7	304.077	304.077	16.000	10.378	8.000	4.114
3	1276.6	1276.6	257.683	257.646	16.000	9.281	8.000	3.709

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm244	0.021	5.796	5.807	-.011	0.04	2.51	5.6	21.6	0.972E-05
	Cm243		5.786	5.807	-.021				29.6	0.133E-04
2	Am241	0.548	5.480	5.492	-.012	0.05	66.84	1.1	610.3	0.275E-03
	Pu238		5.499	5.492	0.007				796.8	0.359E-03
3	Am243	0.395	5.276	5.279	-.003	0.04	48.21	1.3	418.0	0.188E-03
Totals:		0.964	<--valid peaks only-->				117.56			

DETECTOR CALIBRATION
Energy(MEV) = 4.093 + (0.0046)*Channel
Energy range (MeV): 4.093 TO 6.449
Efficiency = 0.1165 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	58566.0	100.000
Smoothed	58566.0	100.000
Composite fit	56432.9	96.358
Residuals	2133.1	3.642

Analyzed by: _____
DM

Spectrum 6a6689.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 11307.6


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Raw Data Dump for AEA Spectrum: 6a6689.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.
21	0.	0.	1.	0.	1.	2.	1.	1.	0.	0.
31	1.	2.	0.	0.	0.	0.	1.	0.	1.	2.
41	1.	0.	1.	1.	0.	1.	1.	0.	2.	3.
51	0.	1.	2.	1.	2.	1.	0.	0.	2.	2.
61	2.	1.	0.	1.	0.	4.	3.	1.	2.	1.
71	2.	0.	1.	1.	0.	1.	1.	1.	2.	1.
81	0.	1.	0.	3.	2.	3.	1.	2.	1.	4.
91	1.	1.	2.	2.	2.	4.	1.	2.	5.	3.
101	2.	2.	5.	3.	0.	0.	4.	2.	3.	1.
111	1.	2.	1.	3.	1.	2.	6.	5.	4.	2.
121	6.	3.	3.	2.	3.	6.	4.	5.	2.	5.
131	5.	1.	4.	1.	3.	2.	9.	5.	4.	8.
141	7.	7.	8.	6.	4.	4.	0.	4.	3.	7.
151	2.	9.	4.	12.	4.	4.	4.	8.	9.	9.
161	7.	10.	10.	6.	5.	7.	5.	5.	10.	14.
171	14.	7.	9.	15.	9.	10.	22.	16.	18.	13.
181	10.	11.	17.	15.	19.	11.	20.	20.	21.	26.
191	19.	16.	17.	19.	14.	25.	20.	19.	26.	22.
201	23.	25.	24.	23.	27.	26.	29.	31.	36.	38.
211	31.	24.	46.	43.	35.	43.	44.	52.	45.	43.
221	52.	49.	50.	59.	70.	59.	79.	85.	85.	96.
231	109.	100.	109.	120.	135.	144.	185.	200.	206.	225.
241	252.	273.	355.	335.	406.	484.	521.	579.	606.	792.
251	852.	947.	1043.	1151.	1218.	1398.	1357.	1426.	1341.	1182.
261	1088.	888.	711.	505.	395.	278.	234.	221.	186.	188.
271	179.	188.	166.	157.	125.	151.	151.	138.	144.	158.
281	178.	178.	216.	250.	282.	295.	354.	373.	425.	478.
291	544.	565.	640.	774.	897.	1017.	1107.	1216.	1367.	1515.
301	1663.	1805.	1756.	1871.	1764.	1704.	1509.	1293.	1060.	837.
311	643.	502.	387.	292.	240.	209.	150.	116.	83.	48.
321	22.	18.	8.	6.	6.	1.	1.	2.	1.	0.
331	2.	3.	2.	1.	2.	1.	0.	1.	2.	2.
341	3.	2.	2.	2.	5.	5.	3.	7.	5.	7.
351	7.	11.	12.	12.	17.	13.	15.	14.	25.	23.
361	24.	33.	30.	39.	28.	54.	37.	55.	80.	66.
371	73.	66.	78.	63.	59.	65.	52.	30.	23.	18.
381	13.	3.	5.	1.	0.	0.	0.	0.	0.	1.
391	0.	0.	0.	1.	0.	2.	1.	1.	1.	0.
401	1.	0.	0.	0.	1.	0.	1.	1.	0.	1.
411	1.	3.	1.	0.	0.	0.	0.	2.	1.	1.
421	1.	4.	1.	1.	2.	0.	4.	3.	0.	3.
431	1.	2.	5.	4.	3.	4.	2.	2.	4.	4.
441	3.	5.	3.	3.	2.	3.	4.	0.	1.	0.
451	0.	0.	1.	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.	1.
511	0.	0.								

Em Baeke
12-21-94

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S94T000300DUP
File ID: 7a7295.CNF

Counted on: 12/20/94 @18:24
Detector: AEA7
Geometry number: 1
Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	66.9	66.9	370.250	370.250	12.000	5.288	6.000	2.773
2	1591.3	1591.3	303.055	303.055	16.000	7.916	8.000	6.254
3	1359.5	1359.5	257.991	257.991	14.000	6.770	7.000	5.400

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm244	0.021	5.796	5.803	-.007	0.02	1.91	6.5	15.2	0.685E-05
	Cm243		5.786	5.803	-.017				20.8	0.939E-05
2	Am241	0.524	5.480	5.487	-.007	0.04	46.79	1.3	395.6	0.178E-03
	Pu238		5.499	5.487	0.012				516.5	0.233E-03
3	Am243	0.419	5.276	5.276	0.000	0.03	37.41	1.5	300.4	0.135E-03
Totals:		0.965	<--valid peaks only-->				86.11			

DETECTOR CALIBRATION
Energy(MEV) = 4.063 + (0.0047)*Channel
Energy range (MeV): 4.063 TO 6.469
Efficiency = 0.1258 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	42830.0	100.000
Smoothed	42830.1	100.000
Composite fit	41336.1	96.512
Residuals	1493.9	3.488

Analyzed by: _____
DM

Spectrum 7a7295.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 10286.6


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Raw Data Dump for AEA Spectrum: 7a7295.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	2.	0.	1.
21	0.	1.	0.	0.	0.	0.	1.	2.	0.	1.
31	1.	0.	2.	0.	1.	1.	0.	1.	1.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
51	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
61	0.	2.	0.	0.	0.	0.	0.	0.	1.	0.
71	0.	0.	1.	0.	0.	0.	2.	1.	0.	0.
81	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
101	2.	0.	0.	1.	1.	0.	0.	1.	0.	0.
111	1.	1.	1.	0.	0.	2.	0.	1.	0.	0.
121	0.	1.	1.	1.	1.	0.	1.	1.	0.	0.
131	0.	0.	0.	2.	0.	0.	2.	3.	1.	0.
141	0.	0.	0.	1.	2.	2.	1.	0.	1.	0.
151	0.	0.	1.	0.	1.	1.	0.	0.	1.	1.
161	0.	0.	1.	0.	1.	2.	1.	1.	0.	1.
171	0.	0.	0.	1.	2.	2.	2.	3.	1.	2.
181	0.	3.	2.	2.	3.	1.	2.	0.	2.	0.
191	2.	0.	1.	3.	5.	0.	1.	2.	0.	2.
201	2.	2.	6.	3.	2.	6.	7.	1.	4.	4.
211	12.	4.	7.	4.	10.	6.	9.	11.	8.	7.
221	9.	7.	14.	12.	19.	14.	13.	13.	14.	17.
231	25.	21.	29.	38.	35.	38.	44.	47.	60.	72.
241	63.	86.	90.	128.	160.	183.	250.	317.	351.	429.
251	522.	693.	826.	1024.	1316.	1456.	1526.	1556.	1456.	1319.
261	1074.	789.	611.	433.	326.	222.	182.	161.	117.	117.
271	87.	99.	72.	58.	57.	57.	34.	43.	60.	36.
281	48.	60.	51.	86.	84.	97.	116.	129.	157.	186.
291	247.	309.	366.	478.	544.	674.	795.	1097.	1234.	1544.
301	1633.	1806.	1808.	1711.	1518.	1325.	1049.	809.	630.	479.
311	372.	336.	232.	220.	155.	107.	68.	47.	33.	27.
321	6.	6.	1.	0.	1.	2.	0.	0.	0.	0.
331	0.	1.	0.	1.	0.	1.	2.	3.	0.	1.
341	1.	1.	1.	1.	4.	3.	0.	2.	1.	1.
351	3.	6.	4.	8.	6.	4.	14.	15.	20.	23.
361	24.	34.	32.	33.	57.	55.	48.	60.	68.	68.
371	90.	61.	40.	46.	32.	16.	8.	4.	4.	0.
381	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.
391	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
401	1.	0.	0.	0.	0.	0.	0.	1.	0.	1.
411	0.	1.	0.	1.	0.	0.	0.	0.	1.	1.
421	0.	0.	1.	0.	2.	2.	4.	2.	0.	2.
431	2.	6.	6.	4.	4.	5.	1.	4.	6.	5.
441	3.	2.	1.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	1.	0.	1.	0.	0.	0.	0.	2.	1.
481	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	5.	0.								

Sy103 QA

LABCORE Data Entry Template for Worklist# 383

Analyst: AKL **Instrument:** AM01 _____ **Method:** LA-953-103 A-1

Worklist Comment: See chemist for sample size. --LLF WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test		Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@AM24102	AM24101	SOLID			N/A	uCi/g
1	BLNK-PREP				@AM24102	AM24101E	SOLID			N/A	% Ct.
1	BLNK-PREP				@AM24102	AM24101T	SOLID			N/A	% Rec
1	BLNK-PREP				@AM24102	CM24301	SOLID			N/A	uCi/g
1	BLNK-PREP				@AM24102	CM24301E	SOLID			N/A	% Ct.
2	STD 83B43				@AM24102	AM24101	SOLID			N/A	uCi/g
2	STD				@AM24102	AM24101E	SOLID			N/A	% Ct.
2	STD				@AM24102	AM24101T	SOLID			N/A	% Rec
3	SAMPLE	S94T000268	0	R	@AM24102	AM24101	SOLID	N/A			uCi/g
3	SAMPLE	S94T000268	0	R	@AM24102	AM24101E	SOLID	N/A			% Ct.
3	SAMPLE	S94T000268	0	R	@AM24102	AM24101T	SOLID	N/A			% Rec
3	SAMPLE	S94T000268	0	R	@AM24102	CM24301	SOLID	N/A			uCi/g
3	SAMPLE	S94T000268	0	R	@AM24102	CM24301E	SOLID	N/A			% Ct.
4	DUP	S94T000268	0	R	@AM24102	AM24101	SOLID			N/A	uCi/g
4	DUP	S94T000268	0	R	@AM24102	AM24101E	SOLID			N/A	% Ct.
4	DUP	S94T000268	0	R	@AM24102	AM24101T	SOLID			N/A	% Rec
4	DUP	S94T000268	0	R	@AM24102	CM24301	SOLID			N/A	uCi/g
4	DUP	S94T000268	0	R	@AM24102	CM24301E	SOLID			N/A	% Ct.
5	SAMPLE	S94T000282	0	R	@AM24102	AM24101	SOLID	N/A			uCi/g
5	SAMPLE	S94T000282	0	R	@AM24102	AM24101E	SOLID	N/A			% Ct.

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist# 383

Analyst: AKL **Instrument:** AM01 **Method:** LA-953-103 A-1

Worklist Comment: See chemist for sample size. --LLF WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test		Matrix	Actual	Found	DL	Unit
5	SAMPLE	S94T000282	0	R	@AM24102	AM24101T	SOLID	N/A			% Rec
5	SAMPLE	S94T000282	0	R	@AM24102	CM24301	SOLID	N/A			uCi/g
5	SAMPLE	S94T000282	0	R	@AM24102	CM24301E	SOLID	N/A			% Ct.
6	DUP	S94T000282	0	R	@AM24102	AM24101	SOLID			N/A	uCi/g
6	DUP	S94T000282	0	R	@AM24102	AM24101E	SOLID			N/A	% Ct.
6	DUP	S94T000282	0	R	@AM24102	AM24101T	SOLID			N/A	% Rec
6	DUP	S94T000282	0	R	@AM24102	CM24301	SOLID			N/A	uCi/g
6	DUP	S94T000282	0	R	@AM24102	CM24301E	SOLID			N/A	% Ct.

Final page for worklist # 383

Cilita Fairs
Analyst Signature

1-11-95
Date

M G Bielan

1-12-95

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) LIQUID

			STANDARD
Type	Spike (Tracer) Book Number		87B43
STANDARD	Activity of Am243 Tracer in dpm/mL	(SPKA)	9140
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
383	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	101
@AM241-02	Digest Dilution Factor	(DDF)	1
Matrix	Am-241 Area Peak Height from AEA	(C241)	1846
LIQUID	Am-243 Area Peak Height from AEA	(C243)	3204
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	2
WORKLIST#383	Total AT Count	(ATOT)	16769
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	7
Analyst	Am 241 µCi/L	=	2.3958E+01
AKL			
Date			
01/11/95			
Time			
09:00 AM			

Cm-243/244 µCi/L = CM * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Am-241 µCi/L = C241 * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

Print

			Detection Level in µCi/mL
Am 241 µCi/mL	=	2.40E-02	
Cm 243/244 µCi/mL	=	< 2.71E-03	
Relative counting error (Am-241)	=	5.7%	
Relative counting error (Cm-243/244)	=	138.6%	
Am-243 Tracer Recovery	=	76.6%	2.71E-03

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

Form 953103WB Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

				BLANK
Type	Spike (Tracer) Book Number			87B43
BLANK	Activity of Am243 Tracer in dpm/mL	(SPKA)		9140
Work List	Spike (Tracer) Volume in mL	(SPKV)		0.100
383	Volume of Sample in mL	(SS)		1.000
Test Code	Dilution Factor	(DF)		1
@AM241-02	Digest Grams / Liter	(Dg/L)		10.1704
Matrix	Am-241 Area Peak Height from AEA	(C241)		11
SOLID	Am-243 Area Peak Height from AEA	(C243)		3115
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)		4
S94T268	Total AT Count	(ATOT)		10637
Instrument Code	AT Count Time in Minutes	(MIN CT'd)		30
WC38931	Background in CPM	(BKG)		7
Analyst	Am 241 µCi/g	=	<	2.6708E-03
AKL				
Date				
01/11/95				
Time				
09:00 AM				

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100
NOTE: Am 241 Result is a LESS THAN Value

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	< 2.67E-03	
Cm 243/244 µCi/g	=	< 2.67E-03	
Relative counting error (Am-241)	=	59.2%	
Relative counting error (Cm-243/244)	=	98.1%	
Am-243 Tracer Recovery	=	75.8%	2.67E-03

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

			SAMPLE
Type	Spike (Tracer) Book Number		101B43
SAMPLE	Activity of Am243 Tracer in dpm/mL	(SPKA)	9427
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
383	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	1
@AM241-02	Digest Grams / Liter	(Dg/L)	10.1704
Matrix	Am-241 Area Peak Height from AEA	(C241)	237
SOLID	Am-243 Area Peak Height from AEA	(C243)	3105
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	21
S94T268	Total AT Count	(ATOT)	12544
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	7
Analyst	Am 241 µCi/g	=	3.1869E-03
AKL			
Date			
01/11/95			
Time			
09:00 AM			

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	3.19E-03	
Cm 243/244 µCi/g	=	< 2.58E-03	
Relative counting error (Am-241)	=	13.2%	
Relative counting error (Cm-243/244)	=	42.9%	
Am-243 Tracer Recovery	=	81.0%	2.58E-03

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

Form 953103WB Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

			DUPLICATE
Type	Spike (Tracer) Book Number		101B43
DUPLICATE	Activity of Am243 Tracer in dpm/mL	(SPKA)	9427
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
383	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	1
@AM241-02	Digest Grams / Liter	(Dg/L)	10.1704
Matrix	Am-241 Area Peak Height from AEA	(C241)	410
SOLID	Am-243 Area Peak Height from AEA	(C243)	5749
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	23
S94T268	Total AT Count	(ATOT)	13107
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	7
Analyst	Am 241 µCi/g	=	2.9777E-03
AKL			
Date			
01/11/95			
Time			
09:00 AM			

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	2.98E-03	
Cm 243/244 µCi/g	=	< 2.45E-03	
Relative counting error (Am-241)	=	10.0%	
Relative counting error (Cm-243/244)	=	41.0%	
Am-243 Tracer Recovery	=	85.1%	2.45E-03

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

Form 953103WB Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

				SAMPLE
Type	Spike (Tracer) Book Number			101B43
SAMPLE	Activity of Am243 Tracer in dpm/mL	(SPKA)		9427
Work List	Spike (Tracer) Volume in mL	(SPKV)		0.100
383	Volume of Sample in mL	(SS)		1.000
Test Code	Dilution Factor	(DF)		1
@AM241-02	Digest Grams / Liter	(Dg/L)		10.0594
Matrix	Am-241 Area Peak Height from AEA	(C241)		202
SOLID	Am-243 Area Peak Height from AEA	(C243)		3406
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)		14
S94T282	Total AT Count	(ATOT)		11183
Instrument Code	AT Count Time in Minutes	(MIN CT'd)		30
WC38931	Background in CPM	(BKG)		7
Analyst	Am 241 µCi/g	=	<	2.8812E-03
AKL				
Date				
01/11/95				
Time				
09:00 AM				

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100
NOTE: Am 241 Result is a LESS THAN Value

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	< 2.88E-03	
Cm 243/244 µCi/g	=	< 2.88E-03	
Relative counting error (Am-241)	=	14.2%	
Relative counting error (Cm-243/244)	=	52.5%	
Am-243 Tracer Recovery	=	73.3%	2.88E-03

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

Form 953103WB Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

				DUPLICATE
Type	Spike (Tracer) Book Number			101B43
DUPLICATE	Activity of Am243 Tracer in dpm/mL		(SPKA)	9427
Work List	Spike (Tracer) Volume in mL		(SPKV)	0.100
383	Volume of Sample in mL		(SS)	1.000
Test Code	Dilution Factor		(DF)	1
@AM241-02	Digest Grams / Liter		(Dg/L)	10.0282
Matrix	Am-241 Area Peak Height from AEA		(C241)	194
SOLID	Am-243 Area Peak Height from AEA		(C243)	5240
Sample #	Cm-243/244 Area Peak Height from AEA		(CM)	16
S94T282	Total AT Count		(ATOT)	12620
Instrument Code	AT Count Time in Minutes		(MIN CT'd)	30
WC38931	Background in CPM		(BKG)	7
Analyst	Am 241 µCi/g	=	<	2.5018E-03
AKL				
Date				
01/11/95				
Time				
09:00 AM				

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100
NOTE: Am 241 Result is a LESS THAN Value

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	< 2.50E-03	
Cm 243/244 µCi/g	=	< 2.50E-03	
Relative counting error (Am-241)	=	14.3%	
Relative counting error (Cm-243/244)	=	49.1%	
Am-243 Tracer Recovery	=	84.6%	2.50E-03

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

Em Bauer
01/11/95

Westinghouse Hanford Co.

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

Rev. 2.01

DATA REDUCTION REPORT

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

SAMPLE
STD-WRKLST#383
File ID: 4a4984.CNF

Counted on: 1/11/95 @11: 3
Detector: AE[illegible]1
Geometry number: 1
Count time: [illegible]804. 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	1647.8	1647.8	302.709	302.709	[illegible]	7.595	7.000	3.240
2	2821.2	2821.2	257.326	257.316	[illegible]	6.512	6.000	2.783

PEAK RESULTS

Peak Error Limit: [illegible]%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea
1	Am241	0.368	5.480	5.487	-.007	0.04	[illegible]	1.2	389.0	0.175E-03
	Pu238		5.499	5.487	0.012				507.8	0.229E-03
2	Am243	0.603	5.276	5.273	0.003	0.03	[illegible]	0.9	605.0	0.273E-03
Totals:		0.972	<--valid peaks only-->				[illegible]			

DETECTOR CALIBRATION

Energy(MEV) = 4.064 + [illegible]*Channel
Energy range (MeV): 4.[illegible] 6.470
Efficiency = 0.[illegible]/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	74441.[illegible]	100.000
Smoothed	74441.	100.000
Composite fit	72332.[illegible]	97.168
Residuals	21[illegible].	2.832

Analyst: _____

Spectrum 4a4984.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc **Display Max.: 16852.2**

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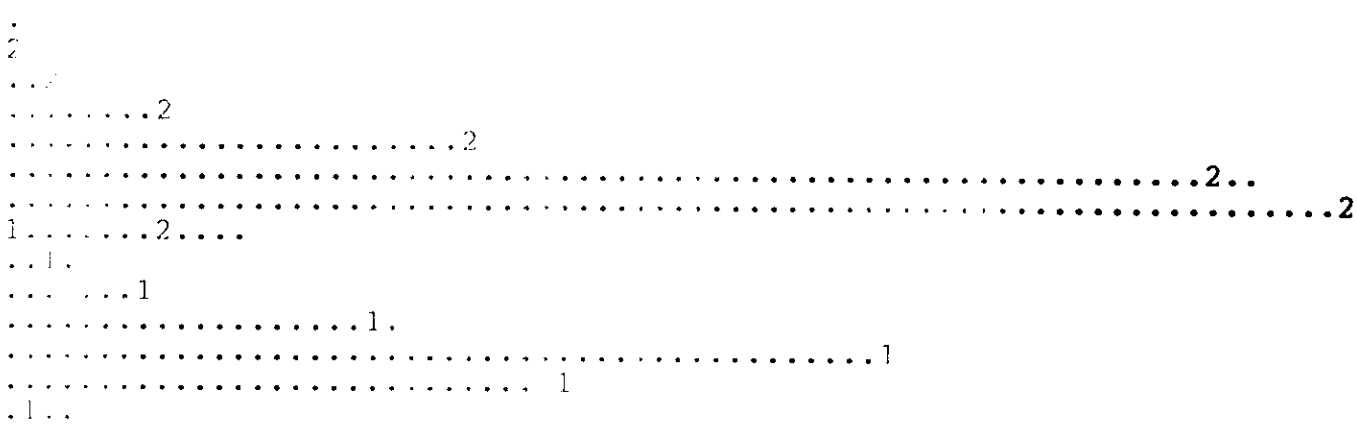

Raw Data Dump for AEA Spectrum: 4a4984.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	2.	2.
21	0.	1.	0.	1.	0.	1.	0.	0.	0.	1.
31	0.	0.	0.	1.	0.	2.	0.	0.	0.	0.
41	0.	0.	2.	0.	0.	1.	0.	0.	1.	2.
51	1.	3.	0.	1.	0.	1.	1.	0.	1.	1.
61	2.	1.	1.	2.	0.	0.	3.	1.	0.	2.
71	2.	0.	0.	2.	4.	3.	0.	3.	1.	0.
81	1.	3.	3.	1.	2.	0.	[illegible]	2.	1.	1.
91	4.	1.	0.	6.	0.	6.	[illegible]	2.	3.	3.
101	3.	4.	6.	1.	4.	3.	3.	4.	4.	3.
111	5.	2.	2.	3.	1.	3.	2.	3.	5.	3.
121	4.	4.	7.	7.	7.	[illegible]	[illegible]	4.	1.	4.
131	1.	5.	3.	4.	6.	[illegible]	[illegible]	4.	6.	5.
141	7.	9.	10.	7.	5.	[illegible]	[illegible]	4.	6.	5.
151	8.	6.	11.	10.	6.	[illegible]	[illegible]	10.	5.	6.
161	13.	8.	6.	8.	6.	[illegible]	[illegible]	13.	6.	12.
171	11.	10.	11.	12.	11.	[illegible]	[illegible]	7.	13.	4.
181	14.	13.	13.	12.	14.	[illegible]	[illegible]	19.	14.	15.
191	10.	15.	13.	14.	16.	[illegible]	[illegible]	23.	24.	23.
201	25.	21.	22.	21.	17.	[illegible]	[illegible]	17.	34.	28.
211	28.	33.	28.	39.	37.	[illegible]	[illegible]	51.	61.	48.
221	44.	61.	72.	72.	79.	[illegible]	[illegible]	97.	109.	128.
231	147.	137.	198.	212.	216.	[illegible]	[illegible]	322.	376.	424.
241	464.	518.	636.	744.	805.	[illegible]	[illegible]	1251.	1451.	1614.
251	1782.	2018.	2193.	2466.	2842.	[illegible]	[illegible]	3204.	2871.	2441.
261	1961.	1394.	890.	617.	368.	[illegible]	[illegible]	212.	215.	178.
271	154.	134.	125.	144.	106.	[illegible]	[illegible]	80.	116.	114.
281	140.	155.	167.	221.	238.	[illegible]	[illegible]	349.	419.	484.
291	527.	632.	732.	816.	957.	[illegible]	[illegible]	1281.	1390.	1553.
301	1725.	1846.	1805.	1724.	1596.	[illegible]	[illegible]	721.	536.	360.
311	266.	184.	160.	121.	101.	[illegible]	[illegible]	43.	19.	13.
321	7.	2.	0.	0.	0.	[illegible]	[illegible]	0.	0.	0.
331	1.	0.	0.	0.	0.	[illegible]	[illegible]	0.	0.	0.
341	0.	0.	1.	0.	1.	[illegible]	[illegible]	0.	0.	2.
351	0.	1.	0.	0.	1.	[illegible]	[illegible]	1.	0.	1.
361	0.	0.	1.	0.	1.	[illegible]	[illegible]	1.	1.	1.
371	0.	1.	1.	0.	0.	[illegible]	[illegible]	0.	0.	0.
381	0.	0.	0.	0.	0.	[illegible]	[illegible]	0.	0.	0.
391	0.	0.	0.	0.	0.	[illegible]	[illegible]	0.	0.	0.
401	0.	0.	0.	0.	0.	[illegible]	[illegible]	0.	0.	0.
411	0.	0.	0.	0.	0.	[illegible]	[illegible]	0.	0.	0.
421	0.	0.	0.	0.	0.	[illegible]	[illegible]	0.	0.	0.
431	0.	0.	0.	0.	0.	[illegible]	[illegible]	0.	0.	0.
441	0.	0.	0.	0.	0.	[illegible]	[illegible]	0.	0.	0.
451	0.	0.	0.	0.	0.	[illegible]	[illegible]	0.	0.	0.
461	0.	0.	1.	0.	0.	[illegible]	[illegible]	0.	0.	0.
471	0.	0.	0.	0.	0.	[illegible]	[illegible]	0.	0.	1.
481	0.	0.	0.	0.	0.	[illegible]	[illegible]	0.	0.	0.
491	0.	0.	0.	0.	0.	[illegible]	[illegible]	0.	0.	0.
511	0.	0.								

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

Rev. 2.01

DATA REDUCTION REPORT

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

SAMPLE
BLANK-S94T268
File ID: 5a5911.CNF

Counted on: 1/11/95 @11: 4
Detector: AEA5
Geometry number: 1
Count time: 28804. **Sec**

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM **Final**	**Tau Initial**	**Tau Final**
1	2970.7	2970.7	257.162	257.162	[illegible]	**21.366**	**11.000**	**7.777**

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err 095	**d/m**	**Activity uCi/ea**
1	Am243	0.966	5.276	5.284	-.008	0.10	[illegible]	0.7	**1072.3**	**0.483E-03**
	Pu240		5.144	5.284	-.140				**1061.6**	**0.478E-03**
Totals:		0.966	<--valid peaks only-->				[illegible]			

DETECTOR CALIBRATION
Energy(MEV) = 4.076 + ([illegible])*Channel
Energy range (MeV): 4.076 [illegible] 6.482
Efficiency = 0.[illegible] CPM/DPM

TOTAL COUNT DATA

Item	Total	% Recovery
Raw spectrum	757[illegible]	**100.000**
Smoothed	757[illegible]	**100.000**
Composite fit	731[illegible]	**96.598**
Residuals	257[illegible]	**3.402**

Analyzed by: _____

Spectrum 5a5911.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc **Display Max.: 21393.7**

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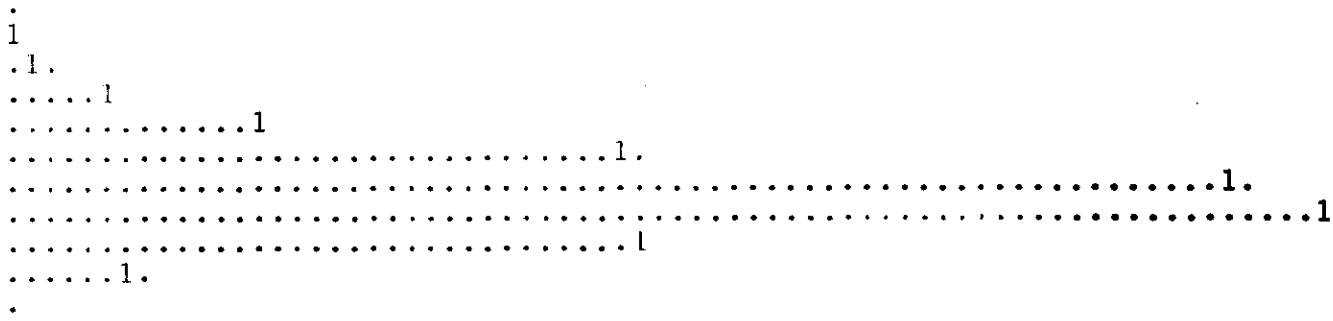

Raw Data Dump for AEA Spectrum: 5a5911.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	3.	2.	6.	5.
21	7.	2.	5.	3.	1.	4.	5.	5.	5.	5.
31	6.	7.	4.	5.	5.	6.	8.	0.	8.	5.
41	3.	5.	1.	3.	8.	10.	5.	3.	6.	7.
51	4.	4.	5.	3.	7.	[illegible]	[illegible]	8.	5.	4.
61	6.	6.	5.	5.	6.	6.	6.	8.	6.	8.
71	2.	14.	7.	8.	6.	8.	6.	11.	6.	11.
81	10.	7.	7.	7.	8.	8.	5.	10.	5.	8.
91	4.	7.	7.	7.	5.	5.	[illegible]	8.	6.	11.
101	9.	11.	3.	10.	9.	5.	12.	14.	5.	11.
111	10.	5.	13.	7.	10.	12.	[illegible]	15.	7.	6.
121	9.	9.	9.	3.	13.	12.	1[illegible]	10.	14.	11.
131	16.	8.	9.	10.	8.	1[illegible]	[illegible]	15.	12.	17.
141	9.	20.	14.	9.	9.	1[illegible]	[illegible]	9.	17.	17.
151	15.	11.	21.	11.	11.	[illegible]	[illegible]	12.	13.	10.
161	20.	21.	9.	14.	12.	1[illegible]	[illegible]	19.	10.	17.
171	20.	22.	17.	16.	21.	2[illegible]	[illegible]	13.	29.	20.
181	32.	24.	13.	20.	15.	2[illegible]	[illegible]	32.	29.	30.
191	38.	31.	26.	32.	34.	4[illegible]	[illegible]	37.	46.	31.
201	26.	48.	36.	52.	48.	5[illegible]	[illegible]	53.	68.	60.
211	54.	72.	72.	67.	73.	9[illegible]	1[illegible]	100.	94.	120.
221	127.	127.	145.	168.	156.	18[illegible]	[illegible]	227.	219.	242.
231	300.	328.	394.	428.	447.	52[illegible]	[illegible]	661.	755.	898.
241	924.	1044.	1210.	1303.	1476.	16[illegible]	1[illegible]	1989.	2174.	2369.
251	2542.	2711.	2823.	2995.	3077.	311[illegible]	[illegible]	3106.	2983.	2791.
261	2662.	2417.	2305.	2003.	1804.	14[illegible]	[illegible]	1188.	925.	790.
271	585.	485.	405.	336.	245.	1[illegible]	[illegible]	135.	98.	84.
281	52.	36.	36.	23.	26.	[illegible]	[illegible]	8.	7.	4.
291	6.	9.	5.	10.	5.	[illegible]	[illegible]	9.	10.	8.
301	6.	7.	11.	7.	9.	[illegible]	[illegible]	5.	7.	8.
311	3.	4.	0.	3.	1.	[illegible]	[illegible]	3.	0.	0.
321	0.	2.	0.	2.	0.	[illegible]	[illegible]	0.	1.	0.
331	0.	0.	0.	0.	1.	[illegible]	[illegible]	0.	0.	0.
341	1.	0.	1.	2.	0.	[illegible]	[illegible]	1.	1.	2.
351	0.	1.	1.	1.	4.	[illegible]	[illegible]	0.	2.	0.
361	0.	1.	0.	3.	2.	[illegible]	[illegible]	0.	0.	0.
371	0.	0.	0.	1.	0.	[illegible]	[illegible]	0.	1.	0.
381	0.	1.	0.	0.	0.	[illegible]	[illegible]	0.	0.	0.
391	0.	0.	0.	0.	0.	[illegible]	[illegible]	0.	0.	0.
401	0.	0.	0.	0.	0.	[illegible]	[illegible]	0.	0.	0.
411	0.	0.	0.	0.	0.	[illegible]	[illegible]	0.	0.	0.
421	0.	1.	0.	0.	1.	[illegible]	[illegible]	0.	0.	1.
431	1.	1.	0.	0.	0.	[illegible]	[illegible]	0.	0.	1.
441	1.	0.	1.	0.	0.	[illegible]	[illegible]	0.	0.	0.
451	0.	0.	0.	0.	0.	[illegible]	[illegible]	0.	0.	0.
461	0.	0.	0.	0.	0.	[illegible]	[illegible]	0.	0.	0.
471	0.	0.	1.	0.	0.	[illegible]	[illegible]	0.	0.	0.
481	0.	0.	1.	1.	1.	[illegible]	[illegible]	0.	1.	0.
491	0.	0.	0.	0.	1.	[illegible]	[illegible]	0.	0.	0.
511	0.	0.								

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Em Bueln

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

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SAMPLE
S94T268-SAMPLE
File ID: 2a2786.CNF

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

Counted on: 1/11/95 @11: 2
Detector: AEA2
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	16.7	16.7	371.530	371.530	18.000	12.941	9.000	3.349
2	213.3	213.3	301.471	301.469	26.000	22.549	13.000	4.580
3	2902.4	2902.4	256.439	256.414	22.000	16.958	11.000	5.049

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		5.816			0.84	9.7		
2	Am241	0.082	5.480	5.494	-.014	0.10	13.95	2.4	53.7	0.242E-04
	Pu238		5.499	5.494	0.005				70.1	0.316E-04
3	Am243	0.865	5.276	5.287	-.011	0.08	147.72	0.7	540.0	0.243E-03
	Pu240		5.144	5.287	-.143				534.6	0.241E-03
		---					---			
Totals:		0.947	<--valid peaks only-->				161.68			

DETECTOR CALIBRATION
Energy(MEV) = 4.107 + (0.0046)*Channel
Energy range (MeV): 4.107 TO 6.463
Efficiency = 0.2763 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	81953.0	100.000
Smoothed	81953.0	100.000
Composite fit	78020.5	95.201
Residuals	3932.5	4.799

Analyzed by: _____
MB

Spectrum 2a2786.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc **Display Max.: 20513.0**

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

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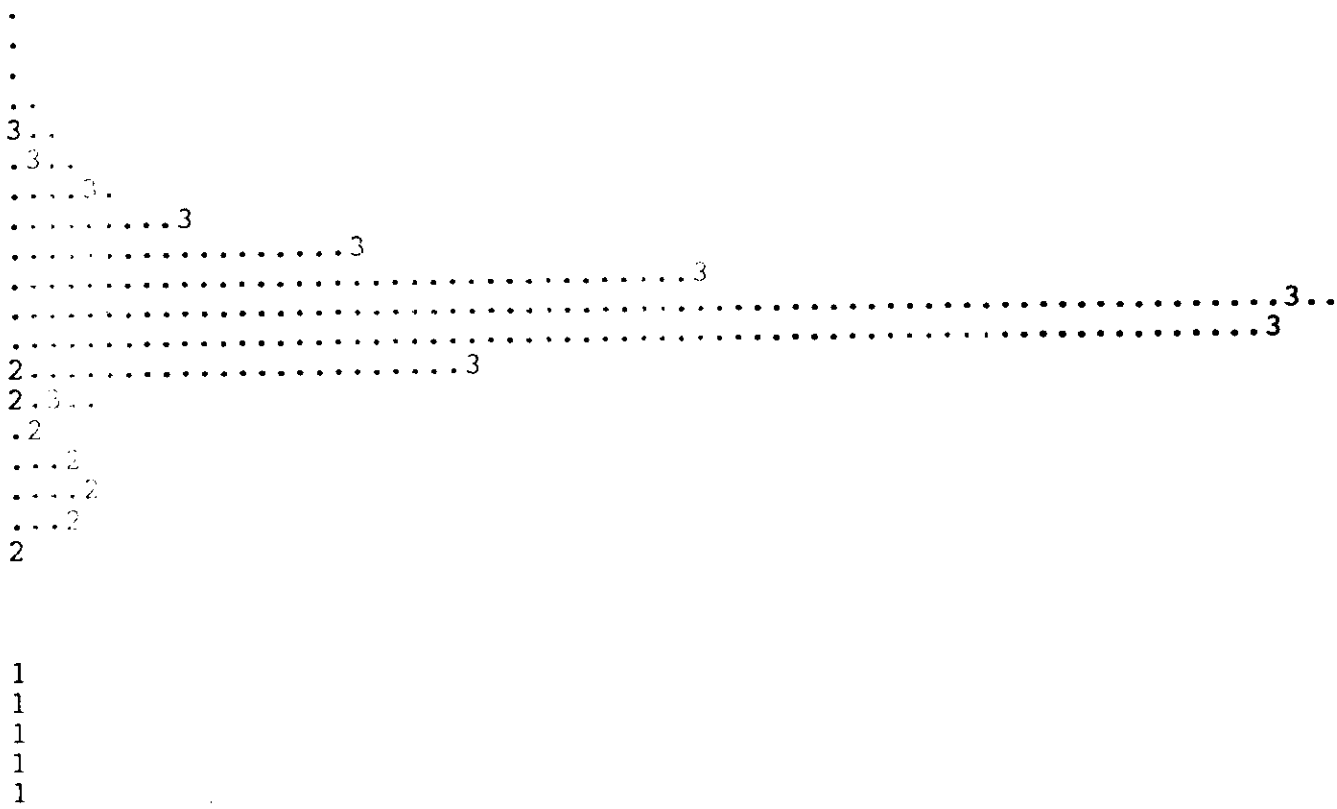

Raw Data Dump for AEA Spectrum: 2a2786.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	2.	1.	2.	2.
21	3.	2.	3.	1.	2.	2.	0.	4.	3.	4.
31	1.	2.	2.	2.	2.	5.	2.	5.	4.	4.
41	2.	1.	0.	5.	3.	4.	3.	2.	5.	3.
51	4.	6.	2.	3.	4.	3.	5.	2.	5.	1.
61	4.	5.	4.	5.	7.	5.	7.	8.	4.	3.
71	7.	5.	3.	3.	9.	5.	6.	14.	8.	6.
81	8.	9.	9.	6.	8.	9.	11.	5.	11.	8.
91	7.	10.	5.	6.	9.	10.	5.	15.	9.	8.
101	6.	6.	10.	9.	16.	7.	12.	11.	7.	9.
111	9.	9.	15.	6.	14.	10.	9.	8.	15.	25.
121	6.	14.	12.	19.	9.	14.	14.	19.	11.	12.
131	12.	18.	9.	22.	14.	18.	1[illegible].	19.	9.	24.
141	14.	21.	24.	19.	21.	18.	2[illegible].	29.	21.	23.
151	24.	27.	34.	15.	20.	25.	3[illegible].	26.	32.	29.
161	24.	38.	31.	31.	44.	34.	2[illegible].	38.	39.	38.
171	42.	42.	35.	35.	36.	44.	3[illegible].	42.	42.	63.
181	42.	48.	52.	57.	46.	46.	6[illegible].	66.	59.	54.
191	59.	75.	58.	61.	84.	69.	8[illegible].	88.	88.	83.
201	87.	104.	109.	122.	121.	139.	1[illegible].	135.	122.	143.
211	143.	161.	158.	184.	192.	172.	1[illegible].	214.	230.	225.
221	258.	260.	284.	288.	299.	328.	3[illegible].	363.	367.	432.
231	447.	487.	513.	588.	614.	646.	7[illegible].	760.	835.	948.
241	1021.	1084.	1232.	1376.	1603.	1707.	18[illegible].	1961.	2264.	2419.
251	2522.	2739.	2937.	2909.	3034.	3105.	30[illegible].	2914.	2812.	2670.
261	2410.	2060.	1891.	1604.	1405.	1077.	8[illegible].	730.	649.	505.
271	370.	294.	245.	221.	172.	146.	1[illegible].	99.	100.	68.
281	73.	81.	66.	64.	65.	77.	[illegible].	86.	101.	87.
291	105.	118.	127.	168.	168.	161.	1[illegible].	210.	206.	220.
301	237.	221.	209.	198.	189.	183.	1[illegible].	184.	174.	130.
311	127.	92.	78.	71.	51.	36.	[illegible].	33.	23.	12.
321	13.	5.	8.	5.	6.	3.	.	1.	1.	0.
331	1.	2.	2.	1.	0.	2.	.	3.	3.	3.
341	0.	2.	4.	4.	2.	3.	.	3.	2.	5.
351	4.	1.	2.	6.	9.	8.	.	10.	8.	15.
361	8.	12.	11.	9.	16.	13.	[illegible].	13.	18.	15.
371	15.	21.	15.	17.	9.	9.	.	13.	10.	7.
381	6.	3.	3.	2.	1.	0.	.	0.	0.	0.
391	1.	0.	0.	0.	0.	0.	.	1.	0.	0.
401	1.	0.	0.	0.	0.	0.	.	1.	0.	0.
411	0.	0.	2.	0.	0.	0.	.	0.	0.	0.
421	0.	0.	0.	1.	3.	4.	.	0.	3.	0.
431	0.	2.	2.	3.	1.	2.	.	4.	4.	1.
441	4.	1.	0.	2.	2.	2.	.	0.	0.	0.
451	1.	0.	0.	0.	0.	0.	.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	.	0.	0.	0.
471	0.	0.	1.	0.	0.	0.	.	1.	3.	0.
481	0.	0.	1.	2.	1.	2.	.	1.	0.	0.
491	0.	0.	0.	0.	0.	0.	.	1.	0.	0.
511	0.	0.								

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

Rev. 2.01

DATA REDUCTION REPORT

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SAMPLE
S94T268-DUP
File ID: 3a3517.CNF

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

Counted on: 1/11/95 @11: 3
Detector: AEA3
Geometry number: 1
Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	19.7	19.7	364.871	364.871	18.000	8.085	9.000	3.555
2	362.4	362.4	296.891	296.891	16.000	9.087	8.000	3.929
3	5202.9	5202.9	250.070	250.069	16.000	8.106	8.000	3.944
4?	21.8	21.8	157.853	157.849	132.000	1.000	66.000	0.100
5?	0.0	0.1	141.592	141.592	0.000	0.100	0.000	0.100

PEAK RESULTS

Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		5.806			0.69	10.8		
2	Am241	0.066	5.480	5.493	-.0130	.04	13.13	2.5	96.8	0.436E-04
	Pu238		5.499	5.493	0.006				126.4	0.569E-04
3	Am243	0.875	5.276	5.278	-.0020	.04	174.02	0.7	1218.7	0.549E-03
4		????		4.854			1.13	6.8		
5		????		4.779			0.40	*****		
Totals:		0.941	<--valid peaks only-->				188.00			

DETECTOR CALIBRATION

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

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	95853.0	100.000
Smoothed	95853.0	100.000
Composite fit	91402.5	95.357
Residuals	4450.5	4.643

Analyzed by: _____
MB

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1
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Raw Data Dump for AEA Spectrum: 3a3517.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
21	0.	2.	1.	1.	0.	0.	0.	1.	0.	0.
31	1.	1.	0.	0.	3.	1.	2.	1.	0.	1.
41	1.	0.	2.	2.	1.	0.	0.	4.	0.	1.
51	0.	0.	2.	2.	5.	0.	1.	0.	2.	0.
61	3.	0.	0.	1.	0.	3.	2.	1.	0.	2.
71	0.	2.	1.	1.	3.	2.	3.	2.	0.	1.
81	2.	1.	0.	2.	2.	2.	2.	0.	2.	4.
91	2.	2.	2.	0.	5.	3.	3.	3.	6.	5.
101	2.	1.	3.	1.	4.	5.	4.	3.	7.	4.
111	4.	5.	1.	2.	3.	5.	4.	4.	8.	3.
121	5.	2.	3.	8.	3.	5.	8.	6.	10.	7.
131	4.	7.	2.	5.	9.	11.	5.	10.	6.	13.
141	11.	13.	7.	11.	9.	9.	1[illegible].	5.	11.	13.
151	13.	16.	15.	15.	12.	12.	2[illegible].	18.	19.	16.
161	10.	10.	17.	28.	30.	19.	3[illegible].	22.	30.	18.
171	15.	27.	28.	27.	19.	32.	2[illegible].	28.	24.	31.
181	29.	31.	38.	44.	35.	31.	3[illegible].	34.	44.	52.
191	51.	52.	56.	52.	57.	49.	6[illegible].	76.	67.	91.
201	58.	95.	81.	76.	98.	89.	9[illegible].	103.	107.	108.
211	112.	110.	134.	140.	131.	172.	1[illegible].	171.	189.	207.
221	200.	232.	273.	297.	320.	359.	3[illegible].	431.	440.	483.
231	583.	578.	680.	837.	905.	1036.	1[illegible].	1373.	1623.	1946.
241	2098.	2543.	2817.	3332.	3768.	4260.	4[illegible].	5358.	5741.	5749.
251	5634.	5090.	4401.	3498.	2693.	1996.	1[illegible].	1006.	813.	621.
261	579.	464.	394.	417.	327.	255.	[illegible].	147.	99.	83.
271	68.	39.	40.	27.	44.	26.	.	35.	40.	51.
281	70.	66.	84.	82.	112.	126.	1[illegible].	173.	193.	216.
291	272.	275.	319.	371.	372.	418.	[illegible].	393.	360.	306.
301	224.	201.	151.	112.	96.	66.	.	34.	32.	13.
311	24.	14.	3.	6.	6.	1.	.	3.	1.	0.
321	0.	0.	0.	0.	0.	0.	.	0.	1.	1.
331	0.	1.	1.	1.	0.	0.	.	1.	1.	0.
341	1.	1.	1.	4.	5.	3.	.	1.	2.	1.
351	6.	5.	5.	10.	10.	13.	.	15.	11.	14.
361	14.	19.	22.	23.	22.	1[illegible].	[illegible].	16.	22.	12.
371	10.	3.	1.	0.	0.	[illegible].	.	0.	0.	0.
381	0.	0.	0.	0.	0.	[illegible].	.	0.	0.	0.
391	0.	0.	0.	1.	1.	[illegible].	.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	.	1.	0.	0.
411	0.	0.	0.	0.	0.	0.	.	0.	0.	0.
421	0.	3.	0.	1.	0.	0.	.	1.	1.	2.
431	1.	1.	0.	0.	1.	0.	.	2.	0.	0.
441	0.	0.	0.	0.	0.	0.	.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	.	0.	0.	0.
511	0.	0.								

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Rev. 2.01

DATA REDUCTION REPORT

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

SAMPLE
S94T282-SAMPLE
File ID: 6a6735.CNF

Counted on: 1/11/95 @11: 5
Detector: AE[illegible]
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?	11.5	11.5	372.345	372.345	[illegible]	8.091	8.000	2.303
2	184.2	184.2	304.143	304.143	[illegible]	10.487	9.000	2.879
3	3085.7	3085.7	258.186	258.181	[illegible]	8.827	8.000	2.533
4	34.9	34.9	137.501	137.462	[illegible]	1.000	90.000	0.100
5?	3.2	3.2	110.513	109.274	[illegible]	0.064	8.000	0.003
6?	3.9	3.9	73.704	73.097	[illegible]	1.274	3.000	0.279
7?	5.0	5.0	54.753	54.258	[illegible]	3.856	6.000	0.279

PEAK RESULTS
Peak Error Limit [illegible] 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Diff.	FWHM	Count	%err 025	d/m	Activity uCi/ea
1		????		5.793			[illegible]	12.7		
2	Am241	0.053	5.480	5.480	0.000	0.05	[illegible]	3.1	75.0	0.338E-04
	Pu238		5.499	5.480	0.019				97.9	0.441E-04
3	Am243	0.828	5.276	5.268	0.008	0.04	[illegible]	0.8	1119.1	0.504E-03
4		0.017		4.713	0.00		[illegible]	5.4	22.6	0.102E-04
5		????		4.583			[illegible]	22.5		
6		????		4.417			[illegible]	53.6		
7		????		4.330			[illegible]	22.5		
Totals:		0.897	<--valid peaks only-->							

DETECTOR CALIBRATION
Energy(MEV) = 4.081 + [illegible] channel
Energy range (MeV): [illegible]
Efficiency = [illegible]

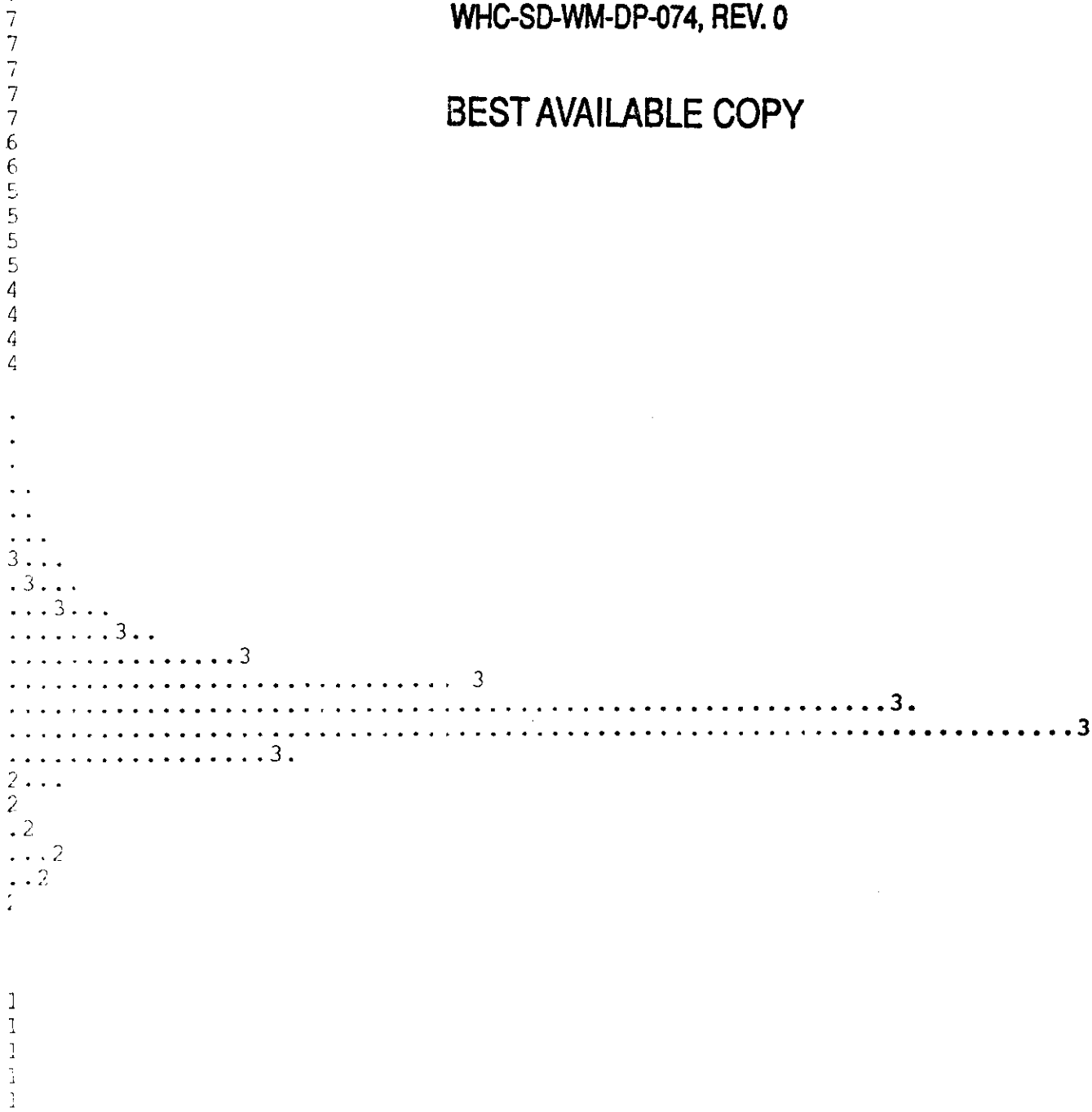
TOTAL COUNT DATA

Item	Total	% Recovery
Raw spectrum	781[illegible]	[illegible]0.000
Smoothed	781[illegible]	[illegible]0.000
Composite fit	70[illegible]	90.588
Residuals	7[illegible]	9.412

Analyzed by: MB

Spectrum 6a6735.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc **Display Max.: 21082.6**



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

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Raw Data Dump for AEA Spectrum: 6a6735.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	4.	12.	5.
21	9.	5.	1.	6.	6.	9.	5.	10.	4.	15.
31	8.	9.	7.	6.	6.	3.	1[illegible].	6.	6.	10.
41	9.	8.	6.	8.	9.	5.	1[illegible].	6.	10.	13.
51	13.	7.	10.	11.	15.	1[illegible].	[illegible].	10.	12.	8.
61	6.	9.	7.	10.	12.	9.	5.	9.	13.	10.
71	12.	12.	6.	15.	14.	8.	[illegible].	6.	8.	17.
81	7.	8.	15.	9.	14.	1[illegible].	1[illegible].	10.	7.	17.
91	9.	14.	11.	13.	11.	1[illegible].	[illegible].	16.	13.	15.
101	19.	12.	16.	19.	17.	1[illegible].	[illegible].	12.	25.	16.
111	19.	18.	18.	18.	12.	1[illegible].	1[illegible].	14.	23.	24.
121	24.	31.	30.	18.	20.	3[illegible].	2[illegible].	25.	29.	25.
131	20.	26.	34.	34.	20.	2[illegible].	[illegible].	26.	29.	26.
141	25.	28.	23.	40.	29.	3[illegible].	[illegible].	41.	39.	34.
151	32.	34.	40.	43.	43.	3[illegible].	[illegible].	45.	40.	51.
161	41.	39.	45.	56.	40.	3[illegible].	[illegible].	62.	55.	71.
171	62.	77.	38.	73.	50.	6[illegible].	[illegible].	76.	79.	79.
181	87.	91.	70.	81.	81.	10[illegible].	1[illegible].	87.	97.	92.
191	93.	134.	115.	98.	121.	11[illegible].	[illegible].	117.	125.	145.
201	147.	138.	159.	179.	154.	1[illegible].	[illegible].	174.	192.	181.
211	206.	199.	187.	239.	228.	2[illegible].	[illegible].	2[illegible]8.	269.	285.
221	333.	330.	320.	335.	353.	3[illegible].	[illegible].	4[illegible]0.	438.	431.
231	461.	554.	542.	593.	642.	5[illegible].	[illegible].	7[illegible]0.	770.	785.
241	839.	904.	1039.	1132.	1234.	12[illegible].	1[illegible].	15[illegible]2.	1755.	1877.
251	2089.	2256.	2500.	2581.	2922.	30[illegible].	[illegible].	33[illegible]4.	3338.	3129.
261	2780.	2283.	1816.	1372.	936.	6[illegible].	[illegible].	4[illegible]2.	341.	325.
271	266.	218.	214.	182.	159.	1[illegible].	[illegible].	[illegible]7.	55.	49.
281	44.	42.	43.	38.	54.	[illegible].	[illegible].	[illegible]2.	57.	66.
291	70.	77.	106.	87.	108.	1[illegible].	[illegible].	1[illegible]9.	142.	155.
301	177.	184.	202.	201.	195.	1[illegible].	[illegible].	1[illegible]4.	116.	90.
311	76.	54.	53.	31.	37.	[illegible].	[illegible].	[illegible]2.	12.	7.
321	7.	2.	0.	2.	0.	[illegible].	[illegible].	0.	2.	1.
331	0.	3.	1.	0.	0.	[illegible].	[illegible].	1.	1.	2.
341	0.	1.	1.	0.	1.	[illegible].	[illegible].	2.	1.	1.
351	5.	5.	2.	2.	4.	[illegible].	[illegible].	2.	10.	5.
361	1.	6.	6.	7.	12.	[illegible].	[illegible].	6.	8.	12.
371	11.	11.	14.	12.	7.	[illegible].	[illegible].	6.	8.	2.
381	0.	0.	0.	0.	0.	[illegible].	[illegible].	1.	0.	0.
391	0.	0.	0.	0.	1.	[illegible].	[illegible].	0.	0.	0.
401	0.	0.	0.	0.	0.	[illegible].	[illegible].	0.	0.	0.
411	0.	0.	0.	0.	0.	[illegible].	[illegible].	0.	1.	0.
421	1.	0.	0.	0.	0.	[illegible].	[illegible].	0.	0.	1.
431	0.	1.	2.	0.	0.	[illegible].	[illegible].	1.	1.	2.
441	0.	0.	0.	0.	1.	[illegible].	[illegible].	0.	0.	0.
451	0.	0.	0.	0.	0.	[illegible].	[illegible].	0.	0.	0.
461	0.	0.	0.	0.	0.	[illegible].	[illegible].	0.	0.	0.
471	0.	0.	0.	0.	0.	[illegible].	[illegible].	0.	0.	0.
481	0.	0.	0.	0.	0.	[illegible].	[illegible].	0.	0.	0.
491	0.	0.	0.	0.	0.	[illegible].	[illegible].	0.	1.	0.
511	0.	0.								

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

Rev. 2.0

DATA REDUCTION REPORT

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SAMPLE
S94T282-

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

File ID: 7a73

Counted on: 1 5 11: 5
Detector: A
Geometry number: 1
Count time: 03. Sec

PEAK ANAL

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Final	Tau Initial	Tau Final
1?	10.7	10.7	368.761	368.76	7.886	7.000	4.675
2	163.2	163.2	303.675	303.67	9.085	8.000	4.612
3	4696.0	4696.0	258.528	258.52	9.243	7.000	5.737

PEAK RE
Peak Error Li

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWH	Corr 5	d/m	Activity uCi/ea
1		????		5.796			.5		
2	Am241	0.036	5.480	5.490	-.0100.04			50.8	0.229E-04
	Pu238		5.499	5.490	0.009			66.4	0.299E-04
3	Am243	0.921	5.276	5.278	-.0020.04		.7	1235.1	0.556E-03
Totals:		0.957	<--valid peaks only-->						

DETECTOR CA
Energy(MEV) = 4.063
Energy range (MeV):
Efficiency =

Channel
0
1

TOTAL COUNT

Item	T	Recovery
Raw spectrum	7	.000
Smoothed	7	.000
Composite fit	7	.887
Residuals		.113

An

Spectrum 7a7337.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,..., etc Display Max.: 32092.1

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

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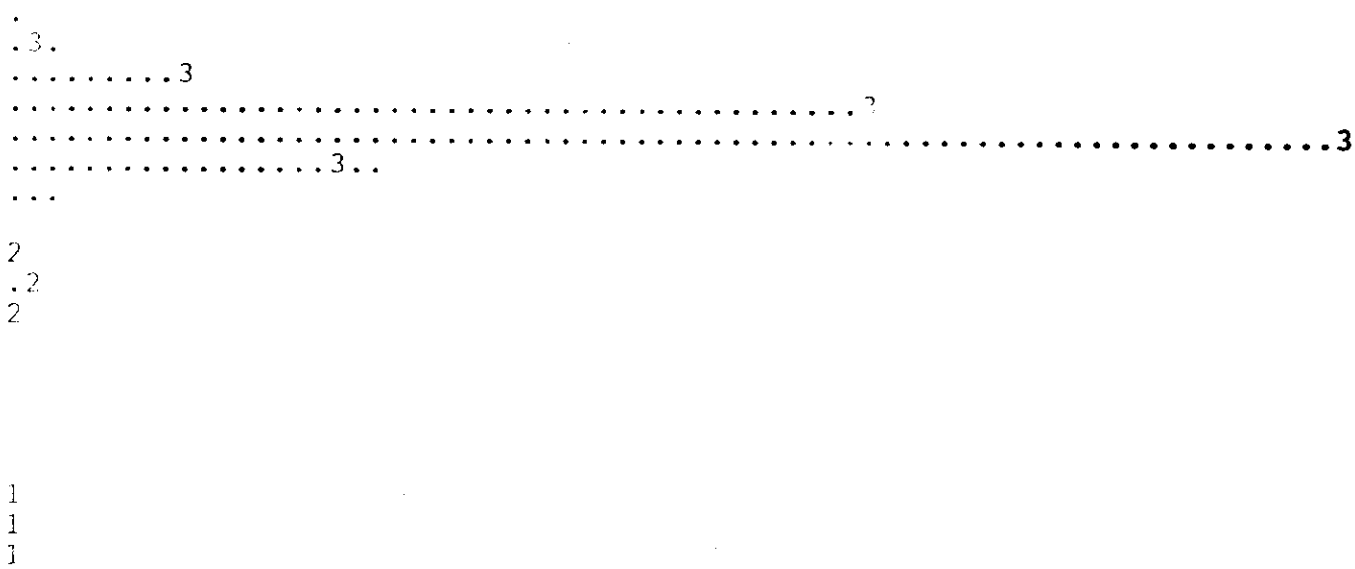

Raw Data Dump for AEA Spectrum: 7a7337.CNF

1	0.	0.	0.	0.	0.	[illegible]	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	[illegible]	[illegible]	1.	1.	0.
21	0.	1.	1.	0.	3.	[illegible]	[illegible]	0.	0.	0.
31	0.	0.	0.	0.	0.	[illegible]	[illegible]	0.	0.	1.
41	1.	0.	1.	1.	0.	[illegible]	[illegible]	1.	0.	1.
51	0.	0.	1.	1.	0.	[illegible]	[illegible]	0.	0.	0.
61	0.	0.	1.	4.	0.	[illegible]	[illegible]	0.	1.	0.
71	0.	1.	1.	0.	1.	[illegible]	[illegible]	2.	0.	1.
81	1.	0.	0.	3.	0.	[illegible]	[illegible]	0.	1.	0.
91	1.	0.	0.	2.	1.	[illegible]	[illegible]	0.	0.	0.
101	1.	1.	1.	0.	0.	[illegible]	[illegible]	0.	0.	0.
111	0.	4.	1.	0.	1.	[illegible]	[illegible]	0.	2.	1.
121	0.	0.	0.	1.	1.	[illegible]	[illegible]	0.	2.	1.
131	0.	1.	1.	4.	0.	[illegible]	[illegible]	4.	1.	2.
141	1.	1.	4.	0.	2.	[illegible]	[illegible]	0.	1.	2.
151	0.	4.	3.	1.	3.	[illegible]	[illegible]	1.	3.	1.
161	2.	1.	0.	2.	0.	[illegible]	[illegible]	3.	2.	5.
171	7.	2.	1.	1.	1.	[illegible]	[illegible]	7.	4.	2.
181	3.	7.	4.	1.	6.	[illegible]	[illegible]	6.	5.	6.
191	8.	9.	6.	7.	7.	[illegible]	[illegible]	10.	11.	19.
201	21.	14.	12.	13.	20.	[illegible]	[illegible]	21.	20.	33.
211	30.	27.	29.	25.	30.	[illegible]	[illegible]	39.	44.	44.
221	43.	54.	52.	55.	73.	[illegible]	[illegible]	83.	87.	103.
231	114.	135.	144.	155.	207.	[illegible]	[illegible]	242.	258.	276.
241	321.	385.	438.	542.	645.	[illegible]	[illegible]	[illegible].	1378.	1634.
251	2072.	2444.	3105.	3618.	4117.	[illegible]	[illegible]	[illegible].	5240.	4867.
261	4207.	3502.	2874.	2196.	1678.	[illegible]	[illegible]	[illegible].	545.	462.
271	382.	313.	240.	211.	189.	[illegible]	[illegible]	[illegible].	51.	28.
281	24.	17.	21.	17.	15.	[illegible]	[illegible]	[illegible].	18.	27.
291	22.	29.	35.	45.	57.	[illegible]	[illegible]	[illegible].	112.	138.
301	155.	194.	176.	180.	177.	[illegible]	[illegible]	[illegible].	87.	74.
311	48.	47.	37.	32.	21.	[illegible]	[illegible]	[illegible].	3.	5.
321	4.	2.	1.	0.	0.	[illegible]	[illegible]	[illegible].	1.	0.
331	0.	1.	1.	0.	0.	[illegible]	[illegible]	[illegible].	1.	0.
341	1.	2.	1.	1.	1.	[illegible]	[illegible]	1.	2.	1.
351	1.	3.	1.	0.	1.	[illegible]	[illegible]	3.	0.	5.
361	4.	7.	3.	6.	8.	[illegible]	[illegible]	[illegible].	13.	13.
371	8.	6.	7.	9.	1.	[illegible]	[illegible]	1.	2.	0.
381	0.	0.	0.	0.	0.	[illegible]	[illegible]	[illegible].	0.	0.
391	0.	0.	0.	0.	0.	[illegible]	[illegible]	[illegible].	0.	0.
401	0.	0.	0.	0.	0.	[illegible]	[illegible]	[illegible].	0.	0.
411	0.	0.	0.	0.	0.	[illegible]	[illegible]	[illegible].	0.	0.
421	0.	0.	1.	0.	0.	[illegible]	[illegible]	[illegible].	0.	1.
431	0.	1.	0.	1.	0.	[illegible]	[illegible]	1.	1.	1.
441	0.	1.	0.	0.	0.	[illegible]	[illegible]	[illegible].	0.	0.
451	0.	0.	0.	0.	0.	[illegible]	[illegible]	[illegible].	0.	0.
461	0.	0.	0.	0.	0.	[illegible]	[illegible]	[illegible].	0.	0.
471	0.	0.	0.	0.	0.	[illegible]	[illegible]	[illegible].	0.	0.
481	0.	0.	0.	0.	0.	[illegible]	[illegible]	[illegible].	1.	1.
491	0.	0.	0.	0.	0.	[illegible]	[illegible]	[illegible].	0.	0.
511	2.	0.								

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Sy 103

LABCORE Data Entry Template for Worklist# 384

Analyst: AKL **Instrument:** AM01 _____ **Method:** LA-953-103 A-1

Worklist Comment: See chemist for sample size. --LLF WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test	Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@AM24102 AM24101	SOLID			N/A	uCi/g
1	BLNK-PREP				@AM24102 AM24101E	SOLID			N/A	% Ct.
1	BLNK-PREP				@AM24102 AM24101T	SOLID			N/A	% Rec
1	BLNK-PREP				@AM24102 CM24301	SOLID			N/A	uCi/g
1	BLNK-PREP				@AM24102 CM24301E	SOLID			N/A	% Ct.
2	STD	83843			@AM24102 AM24101	SOLID			N/A	uCi/g
2	STD				@AM24102 AM24101E	SOLID			N/A	% Ct.
2	STD				@AM24102 AM24101T	SOLID			N/A	% Rec
3	SAMPLE	S94T000283	0	R	@AM24102 AM24101	SOLID	N/A			uCi/g
3	SAMPLE	S94T000283	0	R	@AM24102 AM24101E	SOLID	N/A			% Ct.
3	SAMPLE	S94T000283	0	R	@AM24102 AM24101T	SOLID	N/A			% Rec
3	SAMPLE	S94T000283	0	R	@AM24102 CM24301	SOLID	N/A			uCi/g
3	SAMPLE	S94T000283	0	R	@AM24102 CM24301E	SOLID	N/A			% Ct.
4	DUP	S94T000283	0	R	@AM24102 AM24101	SOLID			N/A	uCi/g
4	DUP	S94T000283	0	R	@AM24102 AM24101E	SOLID			N/A	% Ct.
4	DUP	S94T000283	0	R	@AM24102 AM24101T	SOLID			N/A	% Rec
4	DUP	S94T000283	0	R	@AM24102 CM24301	SOLID			N/A	uCi/g
4	DUP	S94T000283	0	R	@AM24102 CM24301E	SOLID			N/A	% Ct.
5	SAMPLE	S94T000284	0	R	@AM24102 AM24101	SOLID	N/A			uCi/g
5	SAMPLE	S94T000284	0	R	@AM24102 AM24101E	SOLID	N/A			% Ct.

Data Entry Comments:
most <MDA, but ↑ RDP, return

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

LABCORE Data Entry Template for Worklist# 384

Analyst: _____ **Instrument:** AM01 _____ **Method:** LA-953-103

Worklist Comment: See chemist for sample size. --LLF WHC-SD-WM-DP-074, REV. 0

Seg	Type	Sample#	Rep	Al	Test		Matrix	Actual	Found	DL	Unit
5	SAMPLE	S94T000284	0	R	@AM24102	AM24101T	SOLID	N/A			% Rec
5	SAMPLE	S94T000284	0	R	@AM24102	CM24301	SOLID	N/A			uCi/g
5	SAMPLE	S94T000284	0	R	@AM24102	CM24301E	SOLID	N/A			% Ct.
6	DUP	S94T000284	0	R	@AM24102	AM24101	SOLID			N/A	uCi/g
6	DUP	S94T000284	0	R	@AM24102	AM24101E	SOLID			N/A	% Ct.
6	DUP	S94T000284	0	R	@AM24102	AM24101T	SOLID			N/A	% Rec
6	DUP	S94T000284	0	R	@AM24102	CM24301	SOLID			N/A	uCi/g
6	DUP	S94T000284	0	R	@AM24102	CM24301E	SOLID			N/A	% Ct.

Final page for worklist # 384

Aleta Lewis
Analyst Signature

1-11-95
Date

M Bicia
1-12-95

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

953-103 (A-1) 1.17.95

Am-241 : LA-~~503-156 (D-1)~~ SOLID

			BLANK
Type	Spike (Tracer) Book Number		87B43
BLANK	Activity of Am243 Tracer in dpm/mL	(SPKA)	9140
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
384	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	1
@AM241-02	Digest Grams / Liter	(Dg/L)	9.9601
Matrix	Am-241 Area Peak Height from AEA	(C241)	1
SOLID	Am-243 Area Peak Height from AEA	(C243)	2
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	1
S94T283	Total AT Count	(ATOT)	243
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	5
Analyst	Am 241 µCi/g	=	2.0668E-02
AKL			
Date			
01/11/95			
Time			
10:00 AM			

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

			Detection Level in µCi/g
Am 241 µCi/g	=	2.07E-02	
Cm 243/244 µCi/g	=	2.07E-02	
Relative counting error (Am-241)	=	240.0%	
Relative counting error (Cm-243/244)	=	240.0%	
Am-243 Tracer Recovery	=	0.5%	2.07E-02

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

Form 503156AC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

953-103 (A-1) 1-17-95

Am-241 : LA-~~503-156 (D-1)~~ LIQUID

			STANDARD
Type	Spike (Tracer) Book Number		87B43
STANDARD	Activity of Am243 Tracer in dpm/mL	(SPKA)	9140
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
384	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	101
@AM241-02	Digest Dilution Factor	(DDF)	1
Matrix	Am-241 Area Peak Height from AEA	(C241)	1755
LIQUID	Am-243 Area Peak Height from AEA	(C243)	2987
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	1
WORKLIST#384	Total AT Count	(ATOT)	12434
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	5
Analyst	Am 241 µCi/L	=	2.4432E+01
AKL			
Date			
01/11/95			
Time			
10:00 AM			

Cm-243/244 µCi/L = CM * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Am-241 µCi/L = C241 * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

			Detection Level in µCi/mL
Am 241 µCi/mL	=	2.44E-02	
Cm 243/244 µCi/mL	=	< 3.68E-03	
Relative counting error (Am-241)	=	5.9%	
Relative counting error (Cm-243/244)	=	196.0%	
Am-243 Tracer Recovery	=	56.4%	3.68E-03

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

Form 503156AC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

			SAMPLE
Type	Spike (Tracer) Book Number		87B43
SAMPLE	Activity of Am243 Tracer in dpm/mL	(SPKA)	9140
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
384	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	1
@AM241-02	Digest Grams / Liter	(Dg/L)	9.9601
Matrix	Am-241 Area Peak Height from AEA	(C241)	167
SOLID	Am-243 Area Peak Height from AEA	(C243)	1139
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	11
S94T283	Total AT Count	(ATOT)	5811
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	5
Analyst	Am 241 µCi/g	=	6.0607E-03
AKL			
Date			
01/11/95			
Time			
10:00 AM			

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))

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

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

Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100

Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	6.06E-03	
Cm 243/244 µCi/g	=	< 5.74E-03	
Relative counting error (Am-241)	=	16.2%	
Relative counting error (Cm-243/244)	=	59.4%	
Am-243 Tracer Recovery	=	36.0%	5.74E-03

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

953-103 (A-1) 1.17.95

Am-241 : LA-~~503-156 (D-1)~~ SOLID

			DUPLICATE
Type	Spike (Tracer) Book Number		87B43
DUPLICATE	Activity of Am243 Tracer in dpm/mL	(SPKA)	9140
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
384	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	1
@AM241-02	Digest Grams / Liter	(Dg/L)	9.962
Matrix	Am-241 Area Peak Height from AEA	(C241)	90
SOLID	Am-243 Area Peak Height from AEA	(C243)	997
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	9
S94T283	Total AT Count	(ATOT)	2792
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	5
Analyst	Am 241 µCi/g = <		1.1691E-02
AKL			
Date			
01/11/95			
Time			
10:00 AM			

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100
NOTE: Am 241 Result is a LESS THAN Value

			Detection Level in µCi/g
Am 241 µCi/g	=	< 1.17E-02	
Cm 243/244 µCi/g	=	< 1.17E-02	
Relative counting error (Am-241)	=	21.6%	
Relative counting error (Cm-243/244)	=	65.6%	
Am-243 Tracer Recovery	=	17.7%	1.17E-02

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

Form 503156AC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

953-103 (A-1) 1.17.95

Am-241 : LA-~~503-156 (D-1)~~ SOLID

			SAMPLE
Type	Spike (Tracer) Book Number		87B43
SAMPLE	Activity of Am243 Tracer in dpm/mL	(SPKA)	9140
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
384	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	1
@AM241-02	Digest Grams / Liter	(Dg/L)	10.2425
Matrix	Am-241 Area Peak Height from AEA	(C241)	1
SOLID	Am-243 Area Peak Height from AEA	(C243)	3
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	5
S94T284	Total AT Count	(ATOT)	182
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	5
Analyst	Am 241 µCi/g	= <	2.0098E-02
AKL			
Date			
01/11/95			
Time			
10:00 AM			

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100
NOTE: Am 241 Result is a LESS THAN Value

			Detection Level in µCi/g
Am 241 µCi/g	=	< 2.01E-02	
Cm 243/244 µCi/g	=	6.70E-02	
Relative counting error (Am-241)	=	226.3%	
Relative counting error (Cm-243/244)	=	143.1%	
Am-243 Tracer Recovery	=	0.2%	2.01E-02

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

Form 503156AC Rev. 2.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

953-103 (A-1) 1-17-95

Am-241 : LA-~~503-156 (D-1)~~ SOLID

			DUPLICATE
Type	Spike (Tracer) Book Number		87B43
DUPLICATE	Activity of Am243 Tracer in dpm/mL	(SPKA)	9140
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
384	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	1
@AM241-02	Digest Grams / Liter	(Dg/L)	10.1256
Matrix	Am-241 Area Peak Height from AEA	(C241)	86
SOLID	Am-243 Area Peak Height from AEA	(C243)	1304
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	7
S94T284	Total AT Count	(ATOT)	9547
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	5
Analyst	Am 241 µCi/g	= <	3.1618E-03
AKL			
Date			
01/11/95			
Time			
10:00 AM			

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100
NOTE: Am 241 Result is a LESS THAN Value

			Detection Level in µCi/g
Am 241 µCi/g	=	< 3.16E-03	
Cm 243/244 µCi/g	=	< 3.16E-03	
Relative counting error (Am-241)	=	21.8%	
Relative counting error (Cm-243/244)	=	74.3%	
Am-243 Tracer Recovery	=	64.3%	3.16E-03

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

Form 503156AC Rev. 2.0

Em Bailey
01-11-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
BLANK-S94T283
File ID: 9a1265.CNF

Counted on: 1/11/95 @13:10
Detector: AEA9
Geometry number: 1
Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
Totals:		0.000	<--valid peaks only-->				0.00			

DETECTOR CALIBRATION
Energy(MEV) = 4.121 + (0.0046)*Channel
Energy range (MeV): 4.121 TO 6.476
Efficiency = 0.1379 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	87.0	100.000
Smoothed	87.0	100.000
Composite fit	0.0	0.000
Residuals	87.0	100.000

Analyzed by: _____
MB

Raw Data Dump for AEA Spectrum: 9a1265.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.	1.	0.	1.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
81	0.	0.	0.	0.	1.	0.	0.	0.	1.	0.
91	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	1.	0.	1.	0.	0.	0.	0.	0.	1.	0.
111	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
121	2.	3.	0.	0.	0.	0.	0.	0.	0.	0.
131	1.	2.	2.	0.	0.	1.	0.	0.	1.	0.
141	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
151	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
161	0.	0.	1.	0.	0.	1.	2.	0.	0.	0.
171	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
181	0.	0.	0.	0.	1.	0.	0.	1.	1.	1.
191	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
201	1.	2.	0.	1.	1.	2.	0.	1.	0.	0.
211	1.	0.	0.	0.	0.	0.	1.	1.	0.	1.
221	0.	2.	0.	0.	0.	2.	1.	0.	0.	0.
231	0.	0.	1.	0.	0.	0.	1.	0.	1.	2.
241	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
251	0.	1.	0.	1.	0.	0.	1.	0.	0.	0.
261	1.	0.	0.	0.	0.	0.	0.	2.	0.	1.
271	1.	0.	1.	2.	0.	1.	0.	1.	1.	1.
281	0.	0.	0.	1.	1.	1.	2.	0.	2.	0.
291	1.	1.	1.	1.	0.	1.	1.	0.	0.	0.
301	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
311	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
351	0.	0.	0.	1.	0.	1.	0.	0.	0.	0.
361	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	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.								

Gm Bazla
01-11-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
STD-WRKLST#384
File ID: 8a8508.CNF

Counted on: 1/11/95 @13: 9
Detector: AEA8
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	1545.2	1545.2	304.118	304.118	16.000	8.928	8.000	3.645
2	2631.6	2631.6	258.518	258.505	14.000	7.914	7.000	3.200

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am241	0.347	5.480	5.510	-.030	0.04	57.18	1.2	543.2	0.245E-03
	Pu238		5.499	5.510	-.011				709.1	0.319E-03
2	Am243	0.574	5.276	5.296	-.020	0.04	94.44	0.9	851.7	0.384E-03
Totals:		0.921	<--valid peaks only-->				151.62			

DETECTOR CALIBRATION
Energy(MEV) = 4.081 + (0.0047)*Channel
Energy range (MeV): 4.081 TO 6.487
Efficiency = 0.1120 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	79004.0	100.000
Smoothed	79004.0	100.000
Composite fit	72785.1	92.128
Residuals	6218.9	7.872

Analyzed by: _____
MB

Spectrum 8a8508.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 17855.7


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Raw Data Dump for AEA Spectrum: 8a8508.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
21	0.	0.	0.	0.	0.	0.	1.	2.	0.	0.
31	1.	1.	0.	0.	0.	0.	1.	0.	0.	0.
41	0.	2.	1.	0.	0.	0.	0.	0.	0.	1.
51	1.	0.	1.	1.	1.	1.	0.	0.	1.	0.
61	0.	0.	1.	1.	1.	0.	1.	2.	1.	1.
71	0.	0.	0.	0.	2.	2.	0.	0.	0.	1.
81	0.	0.	0.	0.	0.	2.	2.	1.	1.	1.
91	1.	1.	0.	0.	0.	2.	1.	0.	0.	0.
101	1.	0.	1.	2.	0.	3.	0.	0.	0.	1.
111	2.	2.	2.	1.	3.	1.	2.	2.	0.	1.
121	2.	0.	3.	2.	4.	2.	0.	0.	3.	3.
131	1.	5.	1.	0.	0.	2.	2.	7.	5.	1.
141	5.	1.	4.	6.	5.	8.	4.	3.	6.	4.
151	2.	8.	2.	6.	6.	9.	7.	2.	8.	6.
161	4.	10.	6.	5.	6.	8.	2.	7.	5.	9.
171	12.	11.	15.	15.	11.	16.	14.	8.	13.	18.
181	13.	22.	18.	24.	20.	26.	17.	24.	23.	35.
191	31.	26.	26.	36.	29.	42.	41.	43.	41.	60.
201	52.	53.	56.	55.	59.	77.	71.	55.	74.	79.
211	110.	107.	106.	149.	140.	132.	134.	148.	177.	158.
221	161.	213.	177.	224.	215.	245.	272.	288.	302.	344.
231	317.	382.	366.	386.	381.	398.	430.	443.	465.	488.
241	525.	549.	550.	616.	660.	728.	799.	875.	1028.	1112.
251	1310.	1477.	1711.	2013.	2265.	2583.	2874.	2914.	2987.	2696.
261	2358.	2017.	1436.	1142.	845.	647.	516.	426.	377.	339.
271	342.	351.	275.	332.	286.	240.	219.	220.	257.	254.
281	230.	262.	296.	274.	310.	316.	325.	355.	387.	392.
291	402.	446.	502.	568.	649.	691.	788.	953.	1130.	1187.
301	1445.	1556.	1709.	1755.	1645.	1469.	1333.	1154.	852.	681.
311	503.	442.	332.	250.	224.	170.	139.	90.	52.	40.
321	22.	7.	10.	2.	3.	0.	1.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
341	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.
351	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
361	1.	0.	1.	0.	0.	0.	0.	1.	0.	0.
371	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	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.	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.								

Em Barela
01-11-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S94T283-SAMPLE
File ID: 10a2107.CNF

Counted on: 1/11/95 @13:10
Detector: AEA10
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	154.6	154.6	291.733	291.733	20.000	16.567	10.000	3.459
2	1072.3	1072.3	245.277	245.232	22.000	16.131	11.000	4.167
3	18.3	18.3	162.678	162.217	60.000	215.414	30.000	32.986

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Th228	0.132	5.430	5.459	-.029	0.08	9.26	2.9	110.4	0.497E-04
	Am241		5.480	5.459	0.021				83.4	0.376E-04
2	Am243	0.818	5.276	5.245	0.031	0.07	57.28	1.2	489.5	0.220E-03
	Pu240		5.144	5.245	-.101				484.6	0.218E-03
3	Np237	0.040	4.781	4.863	-.082	0.99	2.79	21.8	27.2	0.122E-04
	Pu242		4.878	4.863	0.015				23.6	0.106E-04
		---					---			
Totals:		0.990	<--valid peaks only-->				69.34			

DETECTOR CALIBRATION
Energy(MEV) = 4.117 + (0.0046)*Channel
Energy range (MeV): 4.117 TO 6.472
Efficiency = 0.1182 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	33611.0	100.000
Smoothed	33611.0	100.000
Composite fit	33282.4	99.022
Residuals	328.6	0.978

Analyzed by: _____
MB

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 8341.4


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1.........................................2..
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Raw Data Dump for AEA Spectrum: 10a2107.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	2.	1.	0.
21	0.	2.	0.	0.	3.	1.	1.	1.	1.	2.
31	0.	0.	1.	2.	0.	1.	0.	0.	0.	2.
41	1.	2.	0.	4.	2.	2.	3.	2.	1.	1.
51	3.	1.	2.	0.	1.	1.	0.	1.	2.	1.
61	3.	0.	4.	2.	2.	4.	2.	0.	0.	2.
71	1.	3.	1.	2.	5.	5.	2.	2.	1.	4.
81	4.	3.	3.	2.	2.	0.	2.	2.	2.	1.
91	8.	2.	0.	5.	2.	0.	5.	7.	5.	3.
101	0.	1.	3.	3.	2.	7.	6.	4.	2.	5.
111	6.	6.	5.	5.	0.	6.	7.	1.	8.	4.
121	4.	0.	5.	2.	8.	6.	5.	6.	4.	9.
131	9.	6.	5.	8.	11.	11.	9.	12.	9.	9.
141	12.	11.	5.	13.	11.	14.	9.	6.	14.	11.
151	11.	9.	22.	16.	7.	16.	14.	18.	15.	19.
161	17.	22.	19.	22.	14.	16.	20.	19.	14.	17.
171	25.	33.	24.	29.	26.	25.	34.	25.	31.	36.
181	26.	42.	41.	39.	27.	40.	48.	42.	37.	48.
191	51.	41.	45.	63.	51.	67.	63.	55.	67.	67.
201	57.	69.	54.	65.	92.	86.	87.	102.	103.	108.
211	106.	115.	126.	142.	165.	173.	142.	182.	186.	188.
221	206.	239.	261.	276.	287.	310.	351.	374.	422.	460.
231	521.	544.	556.	602.	694.	718.	800.	813.	1000.	936.
241	1049.	1100.	1089.	1096.	1139.	1127.	1074.	1006.	1007.	890.
251	824.	763.	597.	478.	400.	258.	195.	146.	123.	108.
261	88.	98.	77.	58.	55.	45.	47.	44.	48.	36.
271	45.	54.	65.	59.	56.	59.	65.	94.	87.	88.
281	85.	103.	127.	116.	141.	124.	153.	149.	149.	157.
291	159.	160.	167.	136.	151.	133.	118.	124.	92.	66.
301	71.	39.	34.	24.	23.	17.	12.	12.	8.	6.
311	2.	1.	4.	2.	0.	1.	1.	3.	1.	0.
321	4.	0.	1.	0.	2.	1.	0.	1.	0.	0.
331	0.	1.	0.	1.	0.	4.	0.	2.	1.	5.
341	5.	2.	5.	6.	2.	2.	5.	2.	4.	10.
351	10.	8.	7.	5.	6.	9.	10.	6.	6.	3.
361	7.	7.	11.	7.	11.	7.	6.	4.	6.	4.
371	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
391	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	1.	1.	1.	0.	2.	0.	0.	0.	0.	0.
421	1.	0.	1.	0.	2.	1.	0.	0.	2.	0.
431	1.	1.	0.	1.	2.	0.	2.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	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.								

Eric Boulu
01-11-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
SS94T283-DUP
File ID: 11a3122.CNF

Counted on: 1/11/95 @13:11
Detector: AEA11
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	80.3	80.3	300.347	300.347	14.000	7.019	7.000	2.183
2	860.8	860.8	253.543	253.540	12.000	5.685	6.000	1.941

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am241	0.092	5.480	5.491	-.011	0.03	3.19	5.0	26.4	0.119E-04
	Pu238		5.499	5.491	0.008				34.5	0.155E-04
2	Am243	0.895	5.276	5.276	0.000	0.03	30.94	1.6	243.8	0.110E-03
Totals:		0.987	<--valid peaks only-->				34.13			

DETECTOR CALIBRATION
Energy(MEV) = 4.110 + (0.0046)*Channel
Energy range (MeV): 4.110 TO 6.465
Efficiency = 0.1282 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	16593.0	100.000
Smoothed	16593.0	100.000
Composite fit	16383.8	98.739
Residuals	209.2	1.261

Analyzed by: _____
MB

Spectrum 11a3122.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 6151.8


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Raw Data Dump for AEA Spectrum: 11a3122.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.	1.	0.	0.	0.	0.
51	0.	0.	1.	0.	0.	0.	0.	1.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
71	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
81	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.
91	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
101	0.	0.	0.	1.	1.	0.	0.	0.	0.	1.
111	0.	0.	0.	0.	0.	1.	0.	2.	0.	1.
121	1.	1.	0.	0.	0.	1.	0.	0.	0.	0.
131	0.	0.	0.	1.	0.	0.	1.	0.	0.	0.
141	0.	1.	1.	1.	0.	0.	0.	1.	0.	0.
151	0.	0.	0.	0.	1.	0.	0.	0.	1.	1.
161	1.	0.	1.	1.	0.	0.	1.	0.	0.	1.
171	2.	0.	3.	1.	0.	1.	0.	3.	0.	1.
181	0.	0.	5.	1.	1.	3.	4.	1.	2.	4.
191	3.	2.	3.	3.	3.	2.	4.	1.	5.	5.
201	6.	4.	3.	4.	6.	10.	5.	11.	14.	7.
211	5.	12.	13.	15.	11.	18.	26.	24.	20.	30.
221	35.	36.	44.	39.	57.	59.	65.	60.	79.	84.
231	70.	96.	120.	120.	149.	155.	202.	203.	229.	276.
241	332.	360.	389.	460.	532.	564.	604.	688.	688.	764.
251	744.	867.	897.	997.	891.	786.	563.	333.	218.	142.
261	101.	95.	100.	57.	65.	71.	55.	59.	34.	34.
271	18.	9.	19.	11.	8.	7.	10.	15.	13.	10.
281	21.	16.	13.	25.	24.	27.	28.	23.	61.	36.
291	38.	35.	52.	62.	67.	63.	71.	76.	79.	90.
301	90.	82.	70.	49.	38.	22.	19.	19.	15.	13.
311	10.	3.	3.	0.	2.	0.	0.	1.	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.	1.	0.	1.	1.	1.	2.	3.	0.
351	1.	1.	1.	4.	3.	3.	0.	4.	1.	5.
361	6.	5.	3.	9.	6.	2.	7.	6.	7.	8.
371	9.	4.	4.	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.	1.	2.	0.	1.	0.	0.	1.
431	0.	0.	2.	0.	1.	1.	3.	1.	0.	1.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Em. Baeda
01-11-95

Westinghouse Hanford Co.

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

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

SAMPLE
S94T284-SAMPLE
File ID: 12a4921.CNF

Counted on: 1/11/95 @13:11
Detector: AEA12
Geometry number: 1
Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
Totals:		0.000	<--valid peaks only-->				0.00			

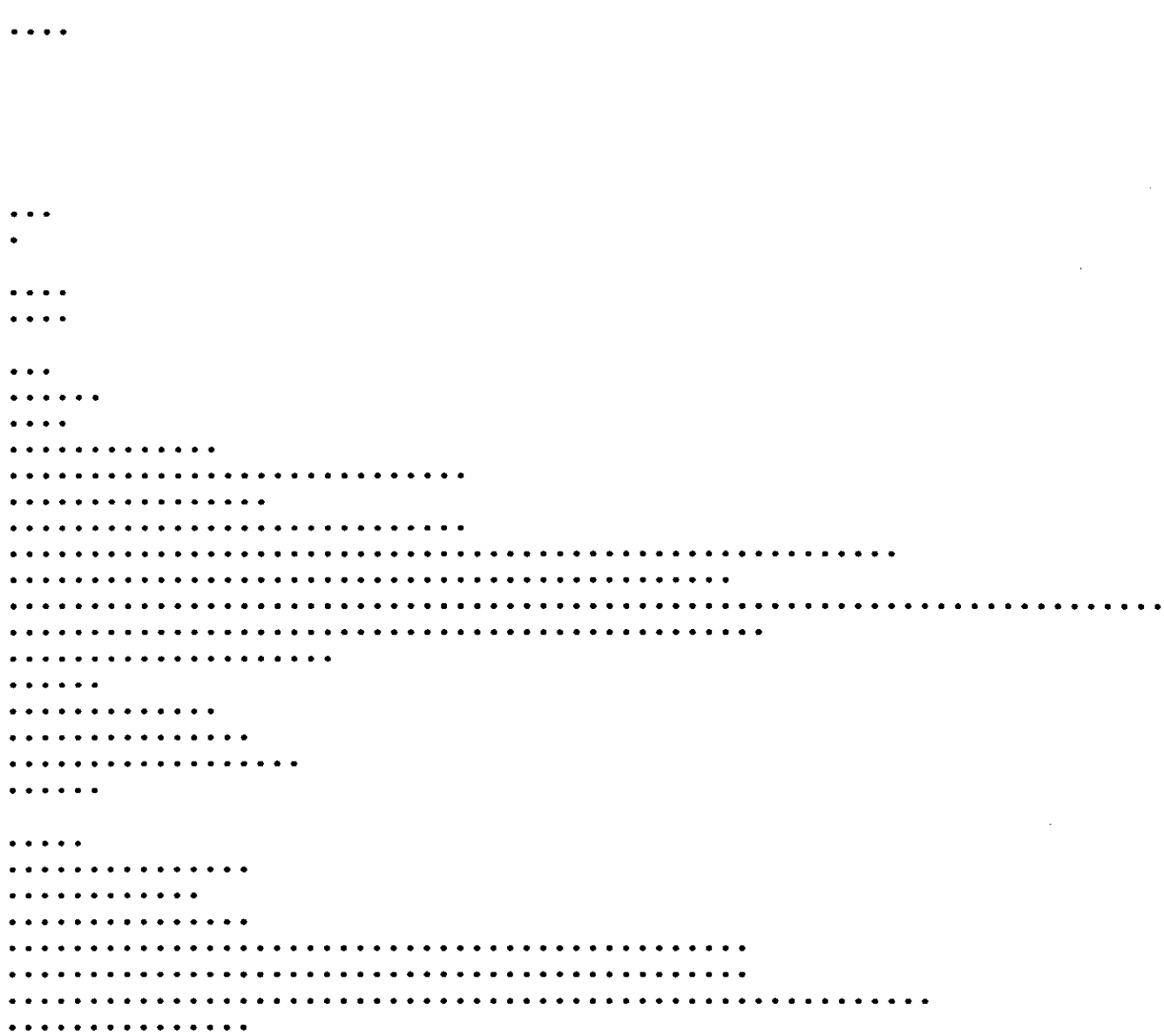
DETECTOR CALIBRATION
Energy(MEV) = 4.108 + (0.0046)*Channel
Energy range (MeV): 4.108 TO 6.463
Efficiency = 0.1248 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	130.0	100.000
Smoothed	130.0	100.000
Composite fit	0.0	0.000
Residuals	130.0	100.000

Analyzed by: _____
MB

Spectrum 12a4921.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 14.5



Raw Data Dump for AEA Spectrum: 12a4921.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.	0.
61	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
111	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
121	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
131	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
141	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
151	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
161	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
171	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
181	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.
191	0.	0.	0.	0.	2.	0.	0.	1.	0.	0.
201	0.	0.	2.	0.	0.	4.	0.	1.	0.	0.
211	0.	0.	0.	0.	3.	0.	0.	0.	0.	1.
221	2.	0.	1.	2.	1.	2.	1.	2.	1.	2.
231	2.	1.	0.	3.	0.	1.	1.	1.	2.	0.
241	1.	3.	3.	1.	2.	2.	1.	3.	2.	0.
251	1.	1.	1.	1.	1.	2.	1.	0.	1.	0.
261	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
271	0.	1.	1.	1.	0.	0.	1.	0.	0.	0.
281	0.	0.	0.	0.	1.	0.	2.	1.	0.	1.
291	1.	0.	0.	0.	0.	1.	1.	0.	0.	0.
301	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
311	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
321	1.	1.	0.	1.	0.	0.	0.	1.	0.	1.
331	0.	0.	1.	0.	0.	0.	1.	0.	0.	1.
341	0.	0.	0.	2.	0.	3.	0.	1.	3.	1.
351	1.	1.	1.	0.	1.	3.	0.	3.	1.	0.
361	1.	1.	5.	2.	0.	2.	0.	1.	0.	2.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	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.								

1-12-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S94T284-DUP
File ID: 2a2787.CNF

Counted on: 1/11/95 @19:56
Detector: AEA2
Geometry number: 1
Count time: 28806. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	74.0	74.0	300.230	300.230	24.000	21.853	12.000	1.479
2	1210.6	1210.6	253.840	253.799	22.000	18.473	11.000	2.838

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am241	0.095	5.480	5.488	-.008	0.10	10.06	2.8	38.7	0.174E-04
	Pu238		5.499	5.488	0.011				50.5	0.228E-04
2	Am243	0.836	5.276	5.275	0.001	0.08	88.87	1.0	324.9	0.146E-03
	Pu240		5.144	5.275	-.131				321.6	0.145E-03
		---					---			
Totals:		0.930	<--valid peaks only-->				98.92			

DETECTOR CALIBRATION
Energy(MEV) = 4.107 + (0.0046)*Channel
Energy range (MeV): 4.107 TO 6.463
Efficiency = 0.2763 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	51061.0	100.000
Smoothed	51061.0	100.000
Composite fit	47492.8	93.012
Residuals	3568.2	6.988

Analyzed by: _____
EMB

Spectrum 2a2787.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 9537.4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Raw Data Dump for AEA Spectrum: 2a2787.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	2.	0.	2.
21	4.	5.	1.	4.	2.	3.	3.	2.	2.	0.
31	6.	1.	6.	4.	3.	3.	2.	2.	6.	3.
41	6.	6.	8.	5.	3.	4.	3.	2.	3.	2.
51	4.	4.	3.	4.	2.	4.	5.	4.	9.	5.
61	4.	9.	8.	6.	3.	5.	10.	3.	6.	3.
71	9.	5.	12.	11.	6.	11.	6.	7.	8.	5.
81	13.	10.	12.	15.	12.	8.	13.	7.	14.	13.
91	12.	11.	11.	13.	18.	12.	18.	12.	13.	17.
101	19.	16.	14.	17.	18.	17.	13.	17.	19.	22.
111	19.	20.	20.	20.	21.	28.	23.	20.	19.	27.
121	23.	26.	28.	28.	26.	33.	31.	34.	35.	36.
131	36.	33.	38.	31.	35.	33.	39.	47.	38.	44.
141	37.	38.	50.	46.	40.	45.	44.	53.	55.	43.
151	53.	58.	65.	59.	76.	47.	41.	74.	71.	54.
161	73.	68.	74.	74.	71.	78.	76.	69.	77.	77.
171	89.	68.	91.	83.	98.	99.	101.	112.	93.	107.
181	111.	103.	126.	127.	113.	125.	128.	143.	143.	140.
191	154.	130.	146.	158.	164.	164.	151.	182.	182.	173.
201	188.	186.	203.	199.	202.	223.	219.	226.	237.	246.
211	289.	234.	262.	300.	279.	338.	289.	338.	351.	339.
221	351.	359.	349.	408.	430.	435.	487.	501.	435.	512.
231	471.	533.	538.	589.	580.	631.	632.	707.	679.	726.
241	730.	811.	857.	922.	979.	1041.	1031.	1099.	1167.	1151.
251	1247.	1253.	1291.	1304.	1244.	1230.	1174.	1045.	964.	885.
261	783.	727.	609.	493.	437.	357.	300.	204.	137.	125.
271	121.	111.	92.	73.	80.	49.	49.	46.	41.	47.
281	53.	50.	37.	44.	52.	50.	41.	41.	49.	55.
291	61.	58.	68.	66.	73.	62.	72.	63.	77.	86.
301	65.	83.	54.	71.	71.	54.	50.	40.	36.	30.
311	29.	24.	27.	12.	18.	20.	15.	5.	11.	3.
321	4.	2.	2.	3.	2.	0.	2.	1.	1.	2.
331	1.	0.	1.	0.	0.	2.	1.	3.	2.	0.
341	3.	1.	0.	1.	4.	3.	4.	2.	4.	2.
351	4.	0.	0.	6.	1.	2.	4.	2.	4.	3.
361	1.	5.	5.	4.	7.	5.	3.	3.	1.	2.
371	4.	3.	4.	3.	3.	1.	5.	0.	2.	6.
381	1.	1.	2.	0.	0.	0.	0.	0.	1.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
411	1.	0.	0.	0.	1.	0.	0.	1.	0.	0.
421	0.	0.	0.	0.	1.	1.	0.	0.	0.	1.
431	0.	0.	1.	2.	1.	1.	0.	0.	0.	1.
441	0.	2.	1.	0.	0.	0.	0.	0.	0.	0.
451	1.	0.	0.	0.	0.	1.	1.	1.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	1.	0.	1.	2.	1.	2.	0.
481	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
491	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Sy/Ac

OA

LABCORE Data Entry Template for Worklist# 418

Analyst: AKL **Instrument:** AM01 _____ **Method:** LA-953-103 A-1

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

Seg	Type	Sample#	Rep	Al	Test	Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@AM24102 AM24101	SOLID			N/A	uCi/g
1	BLNK-PREP				@AM24102 AM24101E	SOLID			N/A	% Ct.
1	BLNK-PREP				@AM24102 AM24101T	SOLID			N/A	% Rec
1	BLNK-PREP				@AM24102 CM24301	SOLID			N/A	uCi/g
1	BLNK-PREP				@AM24102 CM24301E	SOLID			N/A	% Ct.
2	STD 83643				@AM24102 AM24101	SOLID			N/A	uCi/g
2	STD				@AM24102 AM24101E	SOLID			N/A	% Ct.
2	STD				@AM24102 AM24101T	SOLID			N/A	% Rec
3	SAMPLE	S94T000283	0	R	@AM24102 AM24101	SOLID	N/A			uCi/g
3	SAMPLE	S94T000283	0	R	@AM24102 AM24101E	SOLID	N/A			% Ct.
3	SAMPLE	S94T000283	0	R	@AM24102 AM24101T	SOLID	N/A			% Rec
3	SAMPLE	S94T000283	0	R	@AM24102 CM24301	SOLID	N/A			uCi/g
3	SAMPLE	S94T000283	0	R	@AM24102 CM24301E	SOLID	N/A			% Ct.
4	DUP	S94T000283	0	R	@AM24102 AM24101	SOLID			N/A	uCi/g
4	DUP	S94T000283	0	R	@AM24102 AM24101E	SOLID			N/A	% Ct.
4	DUP	S94T000283	0	R	@AM24102 AM24101T	SOLID			N/A	% Rec
4	DUP	S94T000283	0	R	@AM24102 CM24301	SOLID			N/A	uCi/g
4	DUP	S94T000283	0	R	@AM24102 CM24301E	SOLID			N/A	% Ct.
5	SAMPLE	S94T000284	0	R	@AM24102 AM24101	SOLID	N/A			uCi/g
5	SAMPLE	S94T000284	0	R	@AM24102 AM24101E	SOLID	N/A			% Ct.

Data Entry Comments:
ONE >MDA (RPD?) on resum R looks ok to me

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

LABCORE Data Entry Template for Worklist# 418

Analyst: AKL **Instrument:** AM01 _____ **Method:** LA-953-103 A-1

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

Seg	Type	Sample#	Rep	Al	Test		Matrix	Actual	Found	DL	Unit
5	SAMPLE	S94T000284	0	R	@AM24102	AM24101T	SOLID	N/A			% Rec
5	SAMPLE	S94T000284	0	R	@AM24102	CM24301	SOLID	N/A			uCi/g
5	SAMPLE	S94T000284	0	R	@AM24102	CM24301E	SOLID	N/A			% Ct.
6	DUP	S94T000284	0	R	@AM24102	AM24101	SOLID			N/A	uCi/g
6	DUP	S94T000284	0	R	@AM24102	AM24101E	SOLID			N/A	% Ct.
6	DUP	S94T000284	0	R	@AM24102	AM24101T	SOLID			N/A	% Rec
6	DUP	S94T000284	0	R	@AM24102	CM24301	SOLID			N/A	uCi/g
6	DUP	S94T000284	0	R	@AM24102	CM24301E	SOLID			N/A	% Ct.

Final page for worklist # 418

Alta Lewis
Analyst Signature

1-19-95
Date

1-20-95

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

				BLANK
Type	Spike (Tracer) Book Number			101B43
BLANK	Activity of Am243 Tracer in dpm/mL	(SPKA)		9427
Work List	Spike (Tracer) Volume in mL	(SPKV)		0.100
418	Volume of Sample in mL	(SS)		1.000
Test Code	Dilution Factor	(DF)		1
@AM241-02	Digest Grams / Liter	(Dg/L)		9.9601
Matrix	Am-241 Area Peak Height from AEA	(C241)		25
SOLID	Am-243 Area Peak Height from AEA	(C243)		6977
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)		3
S94T283	Total AT Count	(ATOT)		12976
Instrument Code	AT Count Time in Minutes	(MIN CT'd)		30
WC38931	Background in CPM	(BKG)		6
Analyst	Am 241 µCi/g	=	<	2.3641E-03
AKL				
Date				
01/19/95				
Time				
10:00 AM				

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100
NOTE: Am 241 Result is a LESS THAN Value

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	< 2.36E-03	
Cm 243/244 µCi/g	=	< 2.36E-03	
Relative counting error (Am-241)	=	39.3%	
Relative counting error (Cm-243/244)	=	113.2%	
Am-243 Tracer Recovery	=	90.2%	2.36E-03

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) LIQUID

			STANDARD
Type	Spike (Tracer) Book Number		101B43
STANDARD	Activity of Am243 Tracer in dpm/mL	(SPKA)	9427
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
418	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	101
@AM241-02	Digest Dilution Factor	(DDF)	1
Matrix	Am-241 Area Peak Height from AEA	(C241)	2115
LIQUID	Am-243 Area Peak Height from AEA	(C243)	4300
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	4
WORKLIST#418	Total AT Count	(ATOT)	19805
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	5
Analyst	Am 241 µCi/L	=	2.1095E+01
AKL			
Date			
01/19/95			
Time			
10:00 AM			

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

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

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

Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100

Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

Print

			Detection Level in µCi/mL
Am 241 µCi/mL	=	2.11E-02	
Cm 243/244 µCi/mL	=	< 2.30E-03	
Relative counting error (Am-241)	=	5.2%	
Relative counting error (Cm-243/244)	=	98.0%	
Am-243 Tracer Recovery	=	93.2%	2.30E-03

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

			SAMPLE
Type	Spike (Tracer) Book Number		101B43
SAMPLE	Activity of Am243 Tracer in dpm/mL	(SPKA)	9427
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
418	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	1
@AM241-02	Digest Grams / Liter	(Dg/L)	9.9601
Matrix	Am-241 Area Peak Height from AEA	(C241)	568
SOLID	Am-243 Area Peak Height from AEA	(C243)	5192
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	34
S94T283	Total AT Count	(ATOT)	15395
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	5
Analyst	Am 241 µCi/g	=	4.6641E-03
AKL			
Date			
01/19/95			
Time			
10:00 AM			

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))

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

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

Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100

Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	4.66E-03	
Cm 243/244 µCi/g	=	< 2.19E-03	
Relative counting error (Am-241)	=	8.7%	
Relative counting error (Cm-243/244)	=	33.7%	
Am-243 Tracer Recovery	=	97.2%	2.19E-03

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

				DUPLICATE
Type	Spike (Tracer) Book Number			101B43
DUPLICATE	Activity of Am243 Tracer in dpm/mL	(SPKA)		9427
Work List	Spike (Tracer) Volume in mL	(SPKV)		0.100
418	Volume of Sample in mL	(SS)		1.000
Test Code	Dilution Factor	(DF)		1
@AM241-02	Digest Grams / Liter	(Dg/L)		9.962
Matrix	Am-241 Area Peak Height from AEA	(C241)		290
SOLID	Am-243 Area Peak Height from AEA	(C243)		3393
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)		19
S94T283	Total AT Count	(ATOT)		15341
Instrument Code	AT Count Time in Minutes	(MIN CT'd)		30
WC38931	Background in CPM	(BKG)		6
Analyst	Am 241 µCi/g		=	3.6432E-03
AKL				
Date				
01/19/95				
Time				
10:00 AM				

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))

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

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

Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100

Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	3.64E-03	
Cm 243/244 µCi/g	=	< 2.16E-03	
Relative counting error (Am-241)	=	12.0%	
Relative counting error (Cm-243/244)	=	45.1%	
Am-243 Tracer Recovery	=	98.8%	2.16E-03

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

Form 953103WB Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

			SAMPLE
Type	Spike (Tracer) Book Number		101B43
SAMPLE	Activity of Am243 Tracer in dpm/mL	(SPKA)	9427
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
418	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	1
@AM241-02	Digest Grams / Liter	(Dg/L)	10.2425
Matrix	Am-241 Area Peak Height from AEA	(C241)	1267
SOLID	Am-243 Area Peak Height from AEA	(C243)	6479
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	75
S94T284	Total AT Count	(ATOT)	15552
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	7
Analyst	Am 241 µCi/g	=	8.1074E-03
AKL			
Date			
01/19/95			
Time			
10:00 AM			

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	8.11E-03	
Cm 243/244 µCi/g	=	< 2.28E-03	
Relative counting error (Am-241)	=	6.0%	
Relative counting error (Cm-243/244)	=	22.8%	
Am-243 Tracer Recovery	=	90.8%	2.28E-03

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

Form 953103WB Rev. 1.0

2222

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

				DUPLICATE
Type	Spike (Tracer) Book Number			101B43
DUPLICATE	Activity of Am243 Tracer in dpm/mL	(SPKA)		9427
Work List	Spike (Tracer) Volume in mL	(SPKV)		0.100
418	Volume of Sample in mL	(SS)		1.000
Test Code	Dilution Factor	(DF)		1
@AM241-02	Digest Grams / Liter	(Dg/L)		10.1256
Matrix	Am-241 Area Peak Height from AEA	(C241)		305
SOLID	Am-243 Area Peak Height from AEA	(C243)		6352
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)		27
S94T284	Total AT Count	(ATOT)		14768
Instrument Code	AT Count Time in Minutes	(MIN CT'd)		30
WC38931	Background in CPM	(BKG)		7
Analyst	Am 241 µCi/g	=	<	2.1345E-03
AKL				
Date				
01/19/95				
Time				
10:00 AM				

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100
NOTE: Am 241 Result is a LESS THAN Value

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	< 2.13E-03	
Cm 243/244 µCi/g	=	< 2.13E-03	
Relative counting error (Am-241)	=	11.5%	
Relative counting error (Cm-243/244)	=	37.8%	
Am-243 Tracer Recovery	=	98.2%	2.13E-03

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

A Johansen 1-20-95

Westinghouse Hanford Co.

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

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

SAMPLE
S94T283-STD
File ID: 2a2810.CNF

Counted on: 1/20/95 @ 4:10
Detector: AEA2
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1983.0	1983.0	303.045	303.045	22.000	17.385	11.000	7.475
2	4005.0	4005.0	256.409	256.388	22.000	16.320	11.000	7.421
3?	17.6	17.6	178.807	178.748	74.000	1.000	37.000	0.100
4?	2.5	2.5	158.165	160.000	8.000	0.000	4.000	2.611
5?	5.6	5.6	137.038	136.557	10.000	4.830	5.000	0.640

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am241	0.335	5.480	5.505	-.025	0.08	90.28	0.9	856.8	0.386E-03
	Pu238		5.499	5.505	-.006				1118.6	0.504E-03
2	Am243	0.651	5.276	5.290	-.014	0.08	175.63	0.7	1582.5	0.713E-03
	Pu240		5.144	5.290	-.146				1566.7	0.706E-03
3		????		4.933			1.41	7.6		
4		????		4.847			0.01	1532.		
5		????		4.739			0.38	23.4		
Totals:		0.986	<--valid peaks only-->				265.91			

DETECTOR CALIBRATION
Energy(MEV) = 4.111 + (0.0046)*Channel
Energy range (MeV): 4.111 TO 6.466
Efficiency = 0.1121 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	129499.0	100.000
Smoothed	129499.0	100.000
Composite fit	128520.9	99.245
Residuals	978.1	0.755

Analyzed by: _____
EMB

Spectrum 2a2810.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 27309.6


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Raw Data Dump for AEA Spectrum: 2a2810.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	0.	3.	5.
21	1.	1.	1.	2.	1.	4.	2.	3.	4.	2.
31	2.	3.	1.	2.	2.	4.	2.	0.	3.	6.
41	4.	5.	5.	1.	5.	4.	1.	2.	6.	4.
51	1.	3.	5.	4.	3.	0.	3.	3.	2.	7.
61	3.	5.	2.	4.	5.	4.	5.	4.	2.	1.
71	4.	2.	6.	6.	10.	3.	3.	5.	4.	6.
81	11.	3.	7.	5.	8.	4.	2.	6.	11.	2.
91	3.	6.	3.	10.	5.	4.	7.	8.	5.	4.
101	4.	5.	8.	1.	9.	6.	6.	15.	8.	9.
111	4.	6.	8.	7.	8.	6.	7.	1.	5.	4.
121	9.	7.	10.	10.	8.	9.	10.	9.	11.	9.
131	10.	8.	5.	9.	9.	8.	18.	7.	10.	8.
141	8.	11.	5.	5.	12.	9.	10.	9.	7.	8.
151	13.	11.	16.	5.	5.	12.	9.	17.	8.	12.
161	9.	10.	9.	11.	17.	6.	12.	7.	15.	17.
171	14.	6.	12.	13.	11.	10.	11.	25.	16.	15.
181	15.	11.	12.	16.	16.	17.	24.	18.	18.	15.
191	25.	16.	26.	20.	26.	24.	34.	23.	30.	31.
201	39.	32.	31.	30.	28.	32.	43.	42.	44.	48.
211	43.	60.	58.	54.	66.	52.	79.	82.	85.	98.
221	116.	98.	101.	125.	130.	131.	206.	206.	219.	220.
231	278.	283.	329.	376.	418.	479.	548.	621.	742.	845.
241	1017.	1168.	1330.	1507.	1764.	1916.	2257.	2565.	2870.	3130.
251	3361.	3672.	3886.	4132.	4175.	4300.	4227.	3990.	3801.	3585.
261	3115.	2842.	2455.	2080.	1824.	1436.	1267.	990.	801.	655.
271	493.	431.	337.	310.	276.	257.	251.	224.	190.	212.
281	204.	255.	243.	288.	318.	400.	446.	541.	643.	767.
291	806.	921.	1072.	1199.	1295.	1443.	1668.	1778.	1906.	1938.
301	2089.	2063.	2058.	2115.	1931.	1787.	1829.	1553.	1414.	1146.
311	1000.	895.	697.	596.	464.	372.	300.	231.	145.	152.
321	111.	79.	61.	21.	22.	25.	14.	5.	5.	1.
331	2.	2.	1.	0.	0.	0.	2.	0.	2.	0.
341	0.	1.	1.	0.	2.	2.	2.	1.	3.	2.
351	1.	2.	0.	0.	3.	4.	3.	0.	3.	1.
361	1.	1.	2.	3.	0.	0.	4.	3.	1.	0.
371	1.	1.	0.	0.	1.	0.	1.	0.	0.	0.
381	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
391	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
431	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	1.	0.	0.	1.	0.	0.	1.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
461	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	1.	0.	1.	2.	0.
481	0.	0.	1.	1.	2.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S94T283-BLK
File ID: 3a3541.CNF

Counted on: 1/20/95 @ 4:11
Detector: AEA3
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	18.0	18.0	300.866	300.866	14.000	8.156	7.000	0.408
2	6179.5	6179.5	255.569	255.568	14.000	6.915	7.000	3.966

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am241	0.015	5.480	5.494	-.014	0.04	2.93	5.2	25.7	0.116E-04
	Pu238		5.499	5.494	0.005				33.5	0.151E-04
2	Am243	0.944	5.276	5.285	-.009	0.03	186.34	0.7	1549.1	0.698E-03
Totals:		0.959	<--valid peaks only-->				189.27			

DETECTOR CALIBRATION
Energy(MEV) = 4.110 + (0.0046)*Channel
Energy range (MeV): 4.110 TO 6.465
Efficiency = 0.1215 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	94794.0	100.000
Smoothed	94794.0	100.000
Composite fit	90861.8	95.852
Residuals	3932.3	4.148

Analyzed by: _____
EMB

Spectrum 3a3541.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 38750.1


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1....................2
1.......................................................................2
1.................................................... 2
1...2.....
1
1
1
1
1
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Raw Data Dump for AEA Spectrum: 3a3541.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
21	3.	0.	1.	1.	1.	1.	0.	0.	1.	1.
31	0.	2.	1.	0.	0.	0.	1.	2.	0.	3.
41	0.	1.	0.	0.	1.	1.	1.	0.	1.	0.
51	1.	1.	0.	0.	2.	0.	0.	0.	2.	1.
61	1.	0.	0.	0.	0.	0.	0.	0.	0.	2.
71	1.	1.	1.	0.	3.	1.	1.	1.	0.	0.
81	0.	1.	0.	0.	1.	1.	1.	2.	0.	2.
91	0.	1.	1.	1.	1.	0.	0.	1.	0.	1.
101	1.	1.	2.	0.	0.	1.	1.	2.	1.	0.
111	2.	2.	1.	1.	2.	0.	1.	1.	1.	3.
121	1.	1.	0.	4.	0.	5.	2.	2.	1.	1.
131	3.	7.	2.	4.	3.	2.	1.	0.	1.	2.
141	1.	3.	4.	7.	2.	4.	5.	5.	4.	6.
151	4.	5.	5.	2.	4.	4.	6.	8.	2.	6.
161	3.	6.	7.	4.	5.	3.	4.	8.	6.	7.
171	5.	6.	6.	8.	7.	7.	13.	8.	12.	10.
181	7.	10.	12.	10.	18.	8.	10.	12.	23.	10.
191	13.	17.	18.	19.	12.	25.	27.	36.	28.	36.
201	44.	39.	34.	20.	37.	44.	38.	43.	41.	42.
211	59.	56.	56.	50.	72.	67.	61.	77.	85.	83.
221	118.	98.	107.	121.	142.	175.	167.	190.	225.	238.
231	273.	293.	329.	322.	381.	441.	478.	597.	650.	734.
241	923.	1062.	1218.	1436.	1784.	2040.	2323.	2814.	3184.	3700.
251	4571.	5185.	6005.	6723.	6968.	6977.	6454.	5546.	4491.	3259.
261	2270.	1581.	1136.	880.	722.	603.	556.	484.	448.	380.
271	297.	238.	166.	100.	83.	41.	15.	13.	5.	4.
281	2.	2.	3.	1.	2.	0.	1.	2.	1.	7.
291	4.	1.	6.	8.	8.	10.	12.	15.	21.	18.
301	25.	14.	16.	18.	11.	4.	7.	3.	4.	6.
311	3.	3.	2.	0.	3.	1.	0.	1.	0.	1.
321	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	2.	0.	2.	3.	2.	0.
351	0.	0.	0.	2.	0.	0.	2.	0.	0.	0.
361	3.	0.	2.	1.	1.	2.	2.	1.	2.	0.
371	1.	1.	0.	1.	2.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
431	1.	0.	0.	1.	0.	1.	0.	0.	0.	0.
441	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
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.								

A Johnson 1-20-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S94T283-SAM
File ID: 4a4006.CNF

Counted on: 1/20/95 @ 4:11
Detector: AEA4
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	29.6	29.6	370.222	370.222	12.000	3.943	6.000	1.850
2	477.6	477.6	302.016	302.016	12.000	5.611	6.000	3.645
3	4399.9	4399.9	256.666	256.665	12.000	4.728	6.000	3.197

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		5.823			0.82	9.9		
2	Pu238	0.099	5.499	5.502	-.003	0.03	12.89	2.5	206.3	0.929E-04
	Am241		5.480	5.502	-.022				158.0	0.712E-04
3	Am243	0.847	5.276	5.289	-.013	0.02	110.61	0.9	1287.2	0.580E-03
Totals:		0.945	<--valid peaks only-->				123.50			

DETECTOR CALIBRATION
Energy(MEV) = 4.082 + (0.0047)*Channel
Energy range (MeV): 4.082 TO 6.489
Efficiency = 0.0868 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	62708.0	100.000
Smoothed	62708.0	100.000
Composite fit	59684.1	95.178
Residuals	3023.9	4.822

Analyzed by: _____
EMB

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 22349.1


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Raw Data Dump for AEA Spectrum: 4a4006.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	2.	0.	1.
21	0.	2.	1.	0.	0.	0.	1.	0.	0.	0.
31	0.	2.	0.	0.	0.	0.	0.	1.	0.	0.
41	0.	1.	2.	1.	0.	0.	1.	3.	2.	0.
51	0.	0.	0.	2.	2.	2.	0.	2.	0.	3.
61	3.	1.	0.	0.	1.	1.	0.	0.	0.	2.
71	0.	3.	1.	1.	1.	0.	1.	1.	2.	2.
81	0.	5.	1.	1.	1.	1.	1.	0.	0.	4.
91	1.	2.	2.	1.	2.	1.	1.	1.	3.	4.
101	0.	0.	1.	2.	0.	2.	2.	1.	3.	1.
111	1.	3.	0.	3.	1.	1.	2.	4.	2.	1.
121	2.	0.	2.	0.	5.	0.	1.	2.	1.	0.
131	1.	2.	2.	1.	2.	3.	7.	2.	2.	4.
141	4.	2.	4.	3.	5.	5.	2.	2.	4.	2.
151	4.	2.	6.	5.	2.	3.	3.	5.	2.	4.
161	3.	4.	6.	5.	5.	9.	6.	5.	3.	5.
171	5.	2.	5.	3.	5.	3.	4.	3.	7.	5.
181	1.	6.	9.	1.	5.	3.	9.	7.	9.	7.
191	10.	12.	4.	6.	7.	5.	12.	5.	9.	17.
201	17.	12.	13.	18.	10.	11.	18.	14.	21.	17.
211	15.	16.	20.	20.	22.	19.	20.	31.	31.	37.
221	34.	36.	36.	37.	44.	52.	65.	54.	78.	75.
231	98.	120.	130.	134.	158.	173.	195.	203.	238.	261.
241	334.	416.	473.	618.	768.	949.	1074.	1298.	1455.	1822.
251	2175.	2657.	3287.	4038.	4624.	5059.	5192.	4767.	3786.	2756.
261	1669.	1018.	613.	345.	260.	207.	246.	213.	185.	165.
271	149.	122.	80.	62.	39.	27.	24.	20.	11.	16.
281	19.	32.	23.	26.	26.	37.	65.	46.	67.	82.
291	106.	121.	142.	171.	188.	238.	274.	338.	448.	483.
301	525.	568.	508.	470.	348.	220.	157.	140.	78.	61.
311	56.	34.	26.	28.	9.	11.	6.	6.	2.	1.
321	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
331	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
341	0.	0.	2.	0.	1.	1.	0.	1.	0.	2.
351	3.	2.	4.	0.	4.	6.	5.	8.	10.	11.
361	10.	17.	19.	15.	14.	26.	26.	28.	33.	33.
371	34.	29.	26.	18.	1.	0.	1.	1.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	1.	1.	0.	1.	0.
421	0.	0.	0.	1.	0.	1.	1.	2.	2.	5.
431	2.	3.	4.	1.	5.	2.	2.	4.	5.	1.
441	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	1.	0.	0.	0.	0.	0.	0.	1.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

1-20-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S94T283-DUP
File ID: 5a5933.CNF

Counted on: 1/20/95 @ 4:12
Detector: AEA5
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	17.1	17.1	365.549	365.549	36.000	32.559	18.000	6.753
2	277.0	277.0	298.057	298.051	24.000	25.847	12.000	1.207
3	3133.3	3133.3	252.064	251.982	24.000	27.083	12.000	6.202
4?	0.0	0.1	149.307	149.307	0.000	0.100	0.000	0.100

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		5.787			1.22	8.1		
2	Am241	0.212	5.480	5.469	0.011	0.12	51.11	1.3	384.5	0.173E-03
	Pu238		5.499	5.469	0.030				502.0	0.226E-03
3	Am243	0.845	5.276	5.253	0.023	0.13	203.89	0.7	1456.5	0.656E-03
	Pu240		5.144	5.253	-.109				1442.0	0.650E-03
4		????		4.770			0.00	*****		
		---					---			
Totals:		1.056	<--valid peaks only-->				255.00			

DETECTOR CALIBRATION
Energy(MEV) = 4.069 + (0.0047)*Channel
Energy range (MeV): 4.069 TO 6.475
Efficiency = 0.1414 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	115889.0	100.000
Smoothed	115889.0	100.000
Composite fit	123005.4	106.141
Residuals	-7116.4	-6.141

Analyzed by: _____
EMB

Spectrum 5a5933.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 25814.1


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1
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Raw Data Dump for AEA Spectrum: 5a5933.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	4.	3.	7.	5.
21	0.	5.	4.	4.	3.	4.	6.	3.	5.	6.
31	0.	3.	6.	3.	2.	4.	5.	4.	4.	3.
41	7.	2.	4.	8.	1.	5.	6.	5.	8.	5.
51	2.	4.	3.	4.	3.	5.	4.	5.	5.	4.
61	1.	3.	4.	3.	3.	4.	4.	4.	2.	4.
71	7.	3.	6.	6.	8.	7.	8.	3.	4.	6.
81	3.	6.	6.	2.	5.	6.	4.	3.	7.	5.
91	9.	4.	6.	6.	7.	6.	5.	8.	5.	1.
101	5.	5.	6.	3.	8.	6.	4.	4.	2.	6.
111	3.	6.	5.	3.	12.	4.	9.	7.	6.	5.
121	10.	6.	10.	13.	8.	8.	10.	5.	3.	4.
131	9.	3.	10.	8.	10.	9.	9.	6.	8.	7.
141	7.	13.	7.	7.	16.	7.	9.	9.	13.	13.
151	13.	3.	10.	13.	7.	18.	12.	12.	10.	12.
161	15.	9.	16.	17.	12.	10.	9.	19.	13.	15.
171	16.	10.	14.	16.	25.	16.	29.	18.	28.	31.
181	28.	24.	20.	24.	31.	38.	34.	38.	49.	47.
191	60.	49.	47.	66.	63.	56.	82.	82.	96.	108.
201	110.	88.	125.	119.	156.	154.	168.	195.	196.	194.
211	247.	269.	279.	285.	337.	363.	380.	433.	476.	509.
221	572.	595.	711.	693.	749.	854.	822.	994.	1075.	1172.
231	1237.	1322.	1541.	1598.	1686.	1848.	1980.	2029.	2268.	2323.
241	2515.	2687.	2838.	2909.	3033.	3092.	3215.	3302.	3383.	3330.
251	3356.	3288.	3308.	3393.	3155.	3034.	2801.	2604.	2578.	2278.
261	2117.	1849.	1666.	1455.	1195.	1000.	897.	735.	578.	503.
271	418.	396.	313.	247.	254.	199.	195.	191.	168.	180.
281	164.	189.	203.	188.	208.	177.	207.	223.	252.	270.
291	263.	262.	280.	273.	248.	281.	274.	283.	290.	286.
301	242.	257.	184.	215.	221.	150.	155.	166.	138.	114.
311	107.	85.	80.	48.	49.	44.	32.	24.	15.	16.
321	11.	17.	6.	3.	3.	7.	4.	2.	1.	1.
331	2.	2.	1.	2.	4.	2.	1.	2.	4.	8.
341	6.	3.	5.	7.	7.	7.	10.	14.	11.	7.
351	11.	10.	11.	17.	13.	12.	9.	12.	19.	19.
361	19.	19.	15.	17.	17.	16.	19.	15.	16.	17.
371	17.	15.	14.	18.	11.	10.	9.	6.	6.	6.
381	2.	5.	1.	2.	2.	2.	1.	2.	1.	0.
391	1.	0.	0.	0.	0.	1.	0.	0.	0.	0.
401	0.	1.	1.	0.	0.	2.	0.	1.	0.	0.
411	1.	2.	2.	0.	1.	1.	2.	3.	2.	1.
421	1.	1.	2.	3.	2.	2.	1.	1.	1.	4.
431	4.	0.	4.	0.	5.	6.	4.	3.	2.	2.
441	1.	3.	1.	1.	2.	2.	2.	0.	1.	1.
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.	1.	1.	0.	0.	0.	0.	1.
481	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
491	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
511	0.	0.								

1-20-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S94T284-SAM
File ID: 6a6754.CNF

Counted on: 1/20/95 @ 4:13
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?	66.9	66.9	371.807	371.807	12.000	6.385	6.000	2.914
2	1130.8	1130.8	302.588	302.588	16.000	9.509	8.000	5.622
3	5776.5	5776.5	256.232	256.231	16.000	7.717	8.000	4.749

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		5.806			2.14	6.1		
2	Am241	0.169	5.480	5.488	-.008	0.04	37.92	1.5	325.9	0.147E-03
	Pu238		5.499	5.488	0.011				425.4	0.192E-03
3	Am243	0.790	5.276	5.274	0.002	0.04	177.39	0.7	1447.3	0.652E-03
Totals:		0.959	<--valid peaks only-->				215.31			

DETECTOR CALIBRATION
Energy(MEV) = 4.096 + (0.0046)*Channel
Energy range (MeV): 4.096 TO 6.451
Efficiency = 0.1238 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	107750.0	100.000
Smoothed	107750.0	100.000
Composite fit	104389.4	96.881
Residuals	3360.6	3.119

Analyzed by: _____
EMB

Spectrum 6a6754.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 34503.0


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Raw Data Dump for AEA Spectrum: 6a6754.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	0.	1.	1.
21	0.	2.	0.	1.	0.	0.	0.	1.	0.	1.
31	2.	2.	0.	0.	1.	0.	0.	0.	2.	1.
41	0.	0.	2.	3.	0.	1.	0.	0.	1.	0.
51	2.	0.	0.	0.	1.	1.	0.	0.	0.	0.
61	0.	2.	1.	1.	1.	2.	0.	0.	1.	1.
71	0.	2.	2.	1.	1.	1.	1.	0.	0.	0.
81	1.	0.	2.	1.	1.	0.	2.	2.	0.	1.
91	1.	2.	5.	1.	2.	0.	2.	0.	0.	1.
101	2.	1.	1.	0.	2.	1.	3.	0.	3.	1.
111	2.	6.	0.	5.	5.	1.	1.	2.	4.	1.
121	0.	2.	2.	1.	0.	1.	2.	1.	0.	5.
131	2.	1.	5.	1.	7.	2.	4.	3.	0.	2.
141	1.	1.	5.	5.	3.	2.	3.	3.	4.	2.
151	2.	6.	7.	3.	2.	3.	9.	2.	3.	8.
161	3.	4.	1.	4.	2.	1.	1.	3.	5.	6.
171	10.	6.	8.	9.	7.	7.	4.	3.	7.	6.
181	6.	6.	6.	11.	6.	7.	10.	4.	9.	7.
191	14.	11.	11.	13.	9.	11.	16.	11.	12.	15.
201	15.	15.	18.	20.	16.	11.	21.	22.	22.	26.
211	38.	33.	30.	28.	35.	47.	36.	35.	54.	55.
221	51.	53.	73.	71.	73.	80.	103.	129.	123.	124.
231	176.	170.	196.	247.	288.	300.	355.	387.	460.	575.
241	655.	777.	962.	1166.	1408.	1662.	1971.	2414.	2798.	3318.
251	3909.	4492.	5191.	6023.	6357.	6479.	6319.	5797.	4915.	4026.
261	3083.	2212.	1554.	1122.	782.	661.	619.	510.	483.	402.
271	369.	288.	236.	165.	139.	86.	63.	53.	52.	51.
281	55.	67.	67.	75.	80.	128.	132.	165.	212.	263.
291	267.	349.	407.	462.	599.	652.	787.	914.	1001.	1158.
301	1237.	1267.	1184.	1224.	1081.	836.	717.	575.	473.	358.
311	282.	240.	163.	141.	103.	80.	50.	30.	25.	14.
321	11.	1.	3.	1.	1.	1.	1.	0.	1.	0.
331	0.	0.	0.	1.	0.	1.	0.	2.	0.	2.
341	0.	3.	2.	1.	4.	1.	1.	2.	3.	1.
351	1.	4.	2.	4.	8.	5.	9.	12.	16.	19.
361	32.	24.	53.	37.	42.	43.	52.	62.	57.	70.
371	75.	72.	72.	67.	52.	32.	20.	16.	15.	12.
381	2.	2.	1.	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.	1.	0.	1.	2.	0.	1.	1.	1.	0.
421	1.	0.	1.	0.	0.	0.	2.	0.	3.	2.
431	1.	5.	2.	3.	8.	5.	4.	7.	3.	7.
441	11.	5.	4.	5.	8.	2.	0.	1.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
511	0.	0.								

R Johnson 1-20-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S94T284-DUP
File ID: 7a7358.CNF

Counted on: 1/20/95 @ 4:13
Detector: AEA7
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	20.4	20.4	369.576	369.576	16.000	7.035	8.000	3.193
2	266.8	266.8	302.219	302.219	16.000	9.412	8.000	6.117
3	5601.8	5601.8	256.240	256.240	16.000	8.186	8.000	6.095

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		5.824			0.67	10.9		
2	Am241	0.047	5.480	5.507	-.027	0.04	8.72	3.0	92.8	0.418E-04
	Pu238		5.499	5.507	-.008				121.2	0.546E-04
3	Am243	0.917	5.276	5.291	-.015	0.04	168.69	0.7	1703.9	0.768E-03
Totals:		0.964	<--valid peaks only-->				177.41			

DETECTOR CALIBRATION
Energy(MEV) = 4.087 + (0.0047)*Channel
Energy range (MeV): 4.087 TO 6.493
Efficiency = 0.1000 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	88349.0	100.000
Smoothed	88349.0	100.000
Composite fit	85493.8	96.768
Residuals	2855.3	3.232

Analyzed by: _____
EMB

Spectrum 7a7358.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 33279.0


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..3
................3
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.........3...
..

2
...2
.2



1
1
1
1
```

Raw Data Dump for AEA Spectrum: 7a7358.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	0.	1.	1.
21	0.	1.	1.	0.	0.	0.	1.	2.	1.	2.
31	1.	0.	1.	0.	0.	1.	0.	0.	1.	0.
41	1.	2.	1.	0.	0.	0.	1.	0.	0.	1.
51	1.	0.	2.	0.	2.	1.	1.	0.	1.	0.
61	0.	0.	1.	1.	0.	0.	1.	1.	2.	0.
71	1.	2.	1.	0.	0.	1.	1.	0.	0.	0.
81	1.	0.	0.	0.	0.	1.	0.	0.	0.	1.
91	0.	0.	2.	0.	2.	2.	1.	0.	2.	1.
101	0.	1.	0.	2.	2.	1.	3.	0.	2.	2.
111	0.	1.	2.	1.	1.	2.	0.	0.	1.	0.
121	2.	1.	1.	5.	0.	0.	1.	1.	3.	2.
131	0.	0.	3.	7.	1.	4.	1.	1.	1.	2.
141	0.	3.	0.	3.	0.	2.	3.	1.	0.	1.
151	0.	2.	0.	1.	2.	0.	1.	1.	5.	3.
161	5.	0.	0.	1.	4.	2.	2.	5.	6.	2.
171	3.	2.	6.	3.	4.	5.	7.	6.	3.	8.
181	6.	3.	0.	6.	3.	12.	2.	3.	6.	8.
191	9.	8.	7.	7.	11.	8.	11.	4.	7.	10.
201	13.	12.	11.	18.	6.	21.	18.	18.	15.	22.
211	15.	20.	17.	32.	21.	30.	35.	31.	45.	52.
221	39.	54.	60.	66.	60.	61.	95.	100.	97.	112.
231	127.	146.	152.	175.	169.	194.	230.	252.	297.	365.
241	468.	593.	722.	879.	1118.	1365.	1743.	2154.	2580.	3196.
251	3810.	4502.	5117.	5768.	6200.	6352.	6048.	5488.	4864.	4189.
261	3199.	2358.	1730.	1222.	937.	733.	568.	499.	393.	323.
271	284.	226.	206.	140.	108.	58.	50.	33.	22.	16.
281	10.	15.	16.	16.	14.	15.	18.	40.	33.	46.
291	48.	71.	81.	113.	140.	180.	184.	234.	271.	260.
301	305.	292.	283.	271.	227.	211.	170.	131.	85.	76.
311	66.	49.	31.	31.	19.	20.	10.	9.	8.	7.
321	3.	3.	0.	0.	0.	0.	0.	0.	0.	0.
331	1.	0.	0.	0.	0.	0.	0.	1.	0.	1.
341	1.	0.	0.	1.	1.	0.	1.	0.	0.	2.
351	3.	5.	3.	5.	5.	4.	3.	8.	9.	9.
361	9.	11.	9.	20.	14.	17.	19.	13.	27.	23.
371	19.	15.	16.	10.	8.	9.	5.	3.	2.	1.
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	1.	0.	0.	2.	0.	0.	0.	1.	0.	2.
431	1.	1.	2.	1.	0.	0.	0.	2.	0.	0.
441	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	1.	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# 445

Analyst: AKL **Instrument:** AM01 **Method:** LA-953-103 A-1

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

Seg	Type	Sample#	Rep	Al	Test	Matrix	Actual	Found	DL	Unit
1	BLNK-PREP				@AM24102 AM24101	SOLID			N/A	uCi/g
1	BLNK-PREP				@AM24102 AM24101E	SOLID			N/A	% Ct.
1	BLNK-PREP				@AM24102 AM24101T	SOLID			N/A	% Rec
1	BLNK-PREP				@AM24102 CM24301	SOLID			N/A	uCi/g
1	BLNK-PREP				@AM24102 CM24301E	SOLID			N/A	% Ct.
2	STD	83343			@AM24102 AM24101	SOLID			N/A	uCi/g
2	STD				@AM24102 AM24101E	SOLID			N/A	% Ct.
2	STD				@AM24102 AM24101T	SOLID			N/A	% Rec
3	SAMPLE	S94T000283	0	R	@AM24102 AM24101	SOLID	N/A			uCi/g
3	SAMPLE	S94T000283	0	R	@AM24102 AM24101E	SOLID	N/A			% Ct.
3	SAMPLE	S94T000283	0	R	@AM24102 AM24101T	SOLID	N/A			% Rec
3	SAMPLE	S94T000283	0	R	@AM24102 CM24301	SOLID	N/A			uCi/g
3	SAMPLE	S94T000283	0	R	@AM24102 CM24301E	SOLID	N/A			% Ct.
4	DUP	S94T000283	0	R	@AM24102 AM24101	SOLID			N/A	uCi/g
4	DUP	S94T000283	0	R	@AM24102 AM24101E	SOLID			N/A	% Ct.
4	DUP	S94T000283	0	R	@AM24102 AM24101T	SOLID			N/A	% Rec
4	DUP	S94T000283	0	R	@AM24102 CM24301	SOLID			N/A	uCi/g
4	DUP	S94T000283	0	R	@AM24102 CM24301E	SOLID			N/A	% Ct.
5	SAMPLE	S94T000284	0	R	@AM24102 AM24101	SOLID	N/A			uCi/g
5	SAMPLE	S94T000284	0	R	@AM24102 AM24101E	SOLID	N/A			% Ct.

Data Entry Comments: used in report

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

LABCORE Data Entry Template for Worklist# 445

Analyst: AKL **Instrument:** AM01 **Method:** LA-953-103 A-1

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

Seg	Type	Sample#	Rep	Al	Test		Matrix	Actual	Found	DL	Unit
5	SAMPLE	S94T000284	0	R	@AM24102	AM24101T	SOLID	N/A			% Rec
5	SAMPLE	S94T000284	0	R	@AM24102	CM24301	SOLID	N/A			uCi/g
5	SAMPLE	S94T000284	0	R	@AM24102	CM24301E	SOLID	N/A			% Ct.
6	DUP	S94T000284	0	R	@AM24102	AM24101	SOLID			N/A	uCi/g
6	DUP	S94T000284	0	R	@AM24102	AM24101E	SOLID			N/A	% Ct.
6	DUP	S94T000284	0	R	@AM24102	AM24101T	SOLID			N/A	% Rec
6	DUP	S94T000284	0	R	@AM24102	CM24301	SOLID			N/A	uCi/g
6	DUP	S94T000284	0	R	@AM24102	CM24301E	SOLID			N/A	% Ct.

Final page for worklist # 445

Alita Lewis
Analyst Signature

1-24-95
Date

MGR.....

1-27-95

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

BEST AVAILABLE COPY

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

Am-241 : LA-953-103(A-1) SOLID

			BLANK
Type	Spike (Tracer) Book Number		101B43
BLANK	Activity of Am243 Tracer in dpm/mL	(SPKA)	9427
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
445	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	1
@AM241-02	Digest Grams / Liter	(Dg/L)	9.9601
Matrix	Am-241 Area Peak Height from AEA	(C241)	13
SOLID	Am-243 Area Peak Height from AEA	(C243)	6140
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	2
S94T283	Total AT Count	(ATOT)	12222
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	5
Analyst	Am 241 µCi/g = <		2.5023E-03
AKL			
Date			
01/24/95			
Time			
01:30 PM			

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100
NOTE: Am 241 Result is a LESS THAN Value

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	< 2.50E-03	
Cm 243/244 µCi/g	=	< 2.50E-03	
Relative counting error (Am-241)	=	54.4%	
Relative counting error (Cm-243/244)	=	138.6%	
Am-243 Tracer Recovery	=	85.2%	2.50E-03

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

Form 953103WB Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) LIQUID

			STANDARD
Type	Spike (Tracer) Book Number		101B43
STANDARD	Activity of Am243 Tracer in dpm/mL	(SPKA)	9427
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
445	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	101
@AM241-02	Digest Dilution Factor	(DDF)	1
Matrix	Am-241 Area Peak Height from AEA	(C241)	2619
LIQUID	Am-243 Area Peak Height from AEA	(C243)	5333
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	2
WORKLIST#445	Total AT Count	(ATOT)	15791
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	5
Analyst	Am 241 µCi/L	=	2.1062E+01
AKL			
Date			
01/24/95			
Time			
01:30 PM			

Cm-243/244 µCi/L = CM * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Am-241 µCi/L = C241 * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

Print

			Detection Level in µCi/mL
Am 241 µCi/mL	=	2.11E-02	
Cm 243/244 µCi/mL	=	< 2.89E-03	
Relative counting error (Am-241)	=	4.7%	
Relative counting error (Cm-243/244)	=	138.6%	
Am-243 Tracer Recovery	=	74.2%	2.89E-03

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

Form 953103WB Rev. 1.0

2245

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

			SAMPLE
Type	Spike (Tracer) Book Number		101B43
SAMPLE	Activity of Am243 Tracer in dpm/mL	(SPKA)	9427
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
445	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	1
@AM241-02	Digest Grams / Liter	(Dg/L)	9.9601
Matrix	Am-241 Area Peak Height from AEA	(C241)	482
SOLID	Am-243 Area Peak Height from AEA	(C243)	3970
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	29
S94T283	Total AT Count	(ATOT)	13966
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	5
Analyst	Am 241 µCi/g	=	5.1762E-03
AKL			
Date			
01/24/95			
Time			
01:30 PM			

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	5.18E-03	
Cm 243/244 µCi/g	=	< 2.45E-03	
Relative counting error (Am-241)	=	9.5%	
Relative counting error (Cm-243/244)	=	36.5%	
Am-243 Tracer Recovery	=	87.1%	2.45E-03

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

Form 953103WB Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

			DUPLICATE
Type	Spike (Tracer) Book Number		101B43
DUPLICATE	Activity of Am243 Tracer in dpm/mL	(SPKA)	9427
Work List	Spike (Tracer) Volume in mL	(SPKV)	0.100
445	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	1
@AM241-02	Digest Grams / Liter	(Dg/L)	9.962
Matrix	Am-241 Area Peak Height from AEA	(C241)	513
SOLID	Am-243 Area Peak Height from AEA	(C243)	6881
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	34
S94T283	Total AT Count	(ATOT)	14339
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	5
Analyst	Am 241 µCi/g	=	3.1779E-03
AKL			
Date			
01/24/95			
Time			
01:30 PM			

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	3.18E-03	
Cm 243/244 µCi/g	=	< 2.28E-03	
Relative counting error (Am-241)	=	9.0%	
Relative counting error (Cm-243/244)	=	33.7%	
Am-243 Tracer Recovery	=	93.4%	2.28E-03

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

Form 953103WB Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

				SAMPLE
Type	Spike (Tracer) Book Number			101B43
SAMPLE	Activity of Am243 Tracer in dpm/mL		(SPKA)	9427
Work List	Spike (Tracer) Volume in mL		(SPKV)	0.100
445	Volume of Sample in mL		(SS)	1.000
Test Code	Dilution Factor		(DF)	1
@AM241-02	Digest Grams / Liter		(Dg/L)	10.2425
Matrix	Am-241 Area Peak Height from AEA		(C241)	1043
SOLID	Am-243 Area Peak Height from AEA		(C243)	5497
Sample #	Cm-243/244 Area Peak Height from AEA		(CM)	64
S94T284	Total AT Count		(ATOT)	14057
Instrument Code	AT Count Time in Minutes		(MIN CT'd)	30
WC38931	Background in CPM		(BKG)	5
Analyst	Am 241 µCi/g	=		7.8663E-03
AKL				
Date				
01/24/95				
Time				
01:30 PM				

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	7.87E-03	
Cm 243/244 µCi/g	=	< 2.51E-03	
Relative counting error (Am-241)	=	6.6%	
Relative counting error (Cm-243/244)	=	24.6%	
Am-243 Tracer Recovery	=	82.7%	2.51E-03

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-1) SOLID

				DUPLICATE
Type	Spike (Tracer) Book Number			101B43
DUPLICATE	Activity of Am243 Tracer in dpm/mL	(SPKA)		9427
Work List	Spike (Tracer) Volume in mL	(SPKV)		0.100
445	Volume of Sample in mL	(SS)		1.000
Test Code	Dilution Factor	(DF)		1
@AM241-02	Digest Grams / Liter	(Dg/L)		10.1256
Matrix	Am-241 Area Peak Height from AEA	(C241)		317
SOLID	Am-243 Area Peak Height from AEA	(C243)		6958
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)		22
S94T284	Total AT Count	(ATOT)		13253
Instrument Code	AT Count Time in Minutes	(MIN CT'd)		30
WC38931	Background in CPM	(BKG)		5
Analyst	Am 241 µCi/g	=	<	2.3660E-03
AKL				
Date				
01/24/95				
Time				
01:30 PM				

Cm-243/244 µCi/g = CM * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Am-241 µCi/g = C241 * SPKA * SPKV * DF * (1000mL/L) / (C243 * SS * Dg/L * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100
NOTE: Am 241 Result is a LESS THAN Value

Print

			Detection Level in µCi/g
Am 241 µCi/g	=	< 2.37E-03	
Cm 243/244 µCi/g	=	< 2.37E-03	
Relative counting error (Am-241)	=	11.3%	
Relative counting error (Cm-243/244)	=	41.9%	
Am-243 Tracer Recovery	=	88.6%	2.37E-03

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

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S94T284-DUP
File ID: 8a8542.CNF

Counted on: 1/25/95 @ 6:37
Detector: AEA8
Geometry number: 1
Count time: 28800. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	16.3	16.3	373.572	373.572	14.000	5.380	7.000	2.404
2	271.4	271.4	304.668	304.668	16.000	8.179	8.000	6.424
3	6016.3	6016.3	259.137	259.137	14.000	6.727	7.000	5.962

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		5.832			0.50	12.6		
2	Pu238	0.046	5.499	5.508	-.009	0.04	8.10	3.1	86.6	0.390E-04
	Am241		5.480	5.508	-.028				66.4	0.299E-04
3	Am243	0.918	5.276	5.294	-.018	0.03	162.21	0.7	1262.3	0.569E-03
		---					---			
Totals:		0.964	<--valid peaks only-->				170.30			

DETECTOR CALIBRATION
Energy(MEV) = 4.076 + (0.0047)*Channel
Energy range (MeV): 4.076 TO 6.483
Efficiency = 0.1298 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	84771.0	100.000
Smoothed	84771.0	100.000
Composite fit	81987.0	96.716
Residuals	2784.0	3.284

Analyzed by: DM 1-25-95

Spectrum 8a8542.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 41246.9


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Raw Data Dump for AEA Spectrum: 8a8542.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
21	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	3.	0.	0.	2.	0.
41	2.	0.	0.	0.	0.	0.	1.	1.	0.	0.
51	0.	0.	0.	1.	0.	0.	0.	0.	2.	0.
61	0.	0.	0.	0.	1.	0.	0.	0.	0.	1.
71	1.	1.	0.	0.	0.	0.	1.	0.	0.	0.
81	0.	1.	0.	0.	0.	1.	0.	0.	1.	0.
91	0.	0.	0.	2.	1.	0.	0.	0.	0.	1.
101	0.	0.	1.	0.	2.	1.	0.	0.	0.	0.
111	0.	0.	1.	2.	0.	0.	0.	1.	1.	0.
121	1.	0.	0.	2.	1.	0.	1.	0.	2.	1.
131	1.	1.	1.	0.	2.	0.	1.	0.	1.	0.
141	1.	0.	2.	0.	1.	0.	1.	1.	0.	1.
151	0.	0.	0.	0.	1.	1.	0.	1.	1.	0.
161	2.	1.	2.	2.	1.	2.	0.	0.	2.	0.
171	1.	2.	2.	3.	1.	0.	2.	1.	2.	1.
181	2.	2.	0.	1.	1.	1.	0.	0.	0.	1.
191	1.	0.	2.	3.	0.	1.	2.	1.	0.	1.
201	2.	0.	4.	0.	3.	4.	3.	4.	6.	7.
211	5.	6.	4.	5.	4.	7.	6.	6.	11.	3.
221	4.	15.	12.	12.	21.	13.	19.	20.	25.	35.
231	41.	31.	48.	56.	73.	102.	104.	121.	130.	144.
241	178.	221.	292.	331.	466.	554.	700.	918.	1117.	1406.
251	1811.	2311.	2839.	3662.	4438.	5333.	6343.	6752.	6958.	6604.
261	5842.	4851.	3833.	2815.	2065.	1434.	1029.	779.	668.	571.
271	495.	454.	337.	288.	207.	180.	135.	74.	55.	36.
281	30.	14.	9.	5.	11.	8.	10.	9.	8.	16.
291	33.	30.	44.	39.	67.	77.	84.	127.	159.	204.
301	191.	273.	305.	317.	310.	267.	262.	204.	173.	143.
311	106.	88.	55.	60.	50.	32.	26.	24.	14.	7.
321	7.	5.	2.	2.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	1.	1.	0.	0.	3.
351	0.	2.	1.	0.	1.	4.	1.	2.	1.	2.
361	7.	4.	4.	7.	11.	10.	12.	12.	10.	14.
371	13.	18.	20.	15.	22.	12.	11.	7.	5.	3.
381	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	2.	1.	1.	0.	0.	0.	2.	2.	1.	2.
441	0.	1.	1.	3.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S94T283-BLK
File ID: 3a3555.CNF

Counted on: 1/25/95 @ 6:34
Detector: AEA3
Geometry number: 1
Count time: 28800. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	5385.3	5385.3	256.658	256.658	14.000	7.381	7.000	3.999
2?	21.5	21.5	156.822	156.822	152.000	1.000	76.000	0.100
3?	3.8	3.8	127.435	127.088	8.000	0.671	4.000	0.307

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.909	5.276	5.287	-.011	0.03	169.12	0.7	1401.4	0.631E-03
2		????		4.827			1.71	6.8		
3		????		4.691			0.08	107.		
Totals:		0.909	<--valid peaks only-->				169.12			

DETECTOR CALIBRATION
Energy(MEV) = 4.106 + (0.0046)*Channel
Energy range (MeV): 4.106 TO 6.461
Efficiency = 0.1219 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	89329.0	100.000
Smoothed	89329.0	100.000
Composite fit	82034.3	91.834
Residuals	7294.8	8.166

Analyzed by: DM 1-25-95

Spectrum 3a3555.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 30403.9


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Raw Data Dump for AEA Spectrum: 3a3555.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	3.	3.	1.
21	2.	0.	4.	2.	3.	3.	2.	2.	2.	1.
31	5.	4.	2.	4.	3.	3.	3.	2.	4.	5.
41	2.	5.	2.	5.	2.	3.	5.	5.	3.	1.
51	0.	7.	5.	3.	2.	5.	5.	5.	1.	3.
61	8.	2.	4.	1.	1.	6.	10.	3.	4.	3.
71	1.	2.	6.	5.	1.	7.	3.	11.	6.	3.
81	1.	7.	3.	8.	7.	8.	2.	5.	6.	9.
91	9.	3.	6.	6.	5.	4.	5.	5.	7.	13.
101	8.	4.	7.	3.	8.	8.	7.	11.	6.	4.
111	6.	10.	13.	5.	12.	6.	7.	9.	5.	9.
121	13.	8.	11.	12.	10.	11.	16.	15.	15.	4.
131	16.	6.	10.	7.	19.	14.	12.	14.	11.	12.
141	10.	12.	13.	13.	10.	14.	18.	14.	15.	12.
151	15.	18.	13.	19.	12.	26.	23.	17.	15.	20.
161	14.	23.	19.	21.	21.	20.	23.	32.	22.	29.
171	35.	21.	23.	27.	25.	19.	36.	20.	38.	24.
181	26.	33.	36.	46.	39.	33.	45.	37.	50.	32.
191	41.	56.	41.	60.	62.	67.	60.	45.	60.	55.
201	63.	68.	65.	91.	66.	71.	81.	88.	92.	84.
211	80.	112.	100.	107.	123.	129.	139.	130.	119.	156.
221	168.	168.	169.	191.	201.	221.	218.	243.	237.	274.
231	275.	348.	365.	364.	420.	465.	502.	567.	616.	670.
241	740.	843.	967.	1140.	1349.	1518.	1743.	2055.	2473.	2685.
251	3195.	3835.	4565.	5200.	5807.	6140.	6038.	5588.	4987.	4035.
261	3181.	2334.	1563.	1159.	805.	687.	566.	554.	501.	429.
271	363.	285.	215.	167.	110.	92.	51.	28.	18.	16.
281	7.	3.	5.	3.	1.	2.	4.	3.	3.	4.
291	4.	6.	5.	6.	2.	7.	4.	8.	13.	9.
301	10.	9.	4.	11.	9.	6.	6.	2.	8.	1.
311	3.	2.	2.	1.	0.	1.	2.	2.	0.	0.
321	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
341	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.
351	0.	1.	0.	0.	0.	1.	1.	2.	0.	0.
361	2.	1.	2.	1.	0.	1.	1.	1.	0.	2.
371	1.	2.	1.	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.	1.
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.	1.	0.	0.	0.	0.	0.	0.	0.	0.
481	1.	1.	0.	1.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S94T283-STD
File ID: 4a4020.CNF

Counted on: 1/25/95 @ 6:35
Detector: AEA4
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	2071.3	2071.3	303.202	303.202	12.000	4.535	6.000	4.290
2	4260.3	4260.3	257.882	257.882	12.000	3.729	6.000	3.605

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu238	0.327	5.499	5.504	-.005	0.02	46.93	1.3	756.1	0.341E-03
	Am241		5.480	5.504	-.024				579.1	0.261E-03
2	Am243	0.620	5.276	5.291	-.015	0.02	88.98	0.9	1042.6	0.470E-03
Totals:		0.947	<--valid peaks only-->				135.90			

DETECTOR CALIBRATION
Energy(MEV) = 4.079 + (0.0047)*Channel
Energy range (MeV): 4.079 TO 6.485
Efficiency = 0.0862 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	68925.0	100.000
Smoothed	68925.0	100.000
Composite fit	65240.3	94.654
Residuals	3684.7	5.346

Analyzed by: MB
DM 1-25-95

Spectrum 4a4020.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 23547.0


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Raw Data Dump for AEA Spectrum: 4a4020.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
21	0.	1.	0.	1.	1.	0.	0.	0.	0.	0.
31	0.	0.	0.	2.	0.	0.	0.	0.	0.	0.
41	0.	1.	0.	0.	2.	0.	2.	1.	0.	1.
51	1.	0.	0.	0.	0.	0.	1.	0.	0.	0.
61	0.	0.	0.	0.	0.	1.	2.	2.	0.	1.
71	1.	0.	0.	1.	1.	1.	1.	1.	0.	0.
81	1.	0.	0.	2.	1.	0.	1.	0.	0.	0.
91	1.	0.	0.	1.	1.	1.	0.	0.	0.	0.
101	0.	2.	0.	0.	0.	0.	0.	0.	0.	0.
111	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
121	1.	0.	1.	0.	0.	1.	0.	2.	1.	0.
131	2.	0.	1.	0.	1.	1.	2.	0.	1.	1.
141	0.	1.	0.	0.	1.	0.	1.	1.	0.	0.
151	1.	2.	0.	1.	0.	0.	0.	0.	1.	1.
161	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.
171	1.	2.	0.	0.	0.	1.	2.	1.	0.	2.
181	0.	1.	3.	2.	1.	1.	2.	3.	1.	0.
191	1.	0.	0.	0.	2.	1.	2.	0.	0.	2.
201	4.	3.	0.	1.	1.	2.	3.	4.	1.	0.
211	0.	3.	2.	4.	2.	2.	2.	5.	4.	4.
221	9.	6.	4.	9.	12.	10.	6.	10.	13.	19.
231	17.	18.	37.	65.	63.	63.	89.	82.	80.	80.
241	103.	117.	155.	246.	320.	472.	599.	700.	822.	898.
251	936.	1241.	1682.	2473.	3425.	4313.	5082.	5333.	4831.	3685.
261	2379.	1461.	778.	449.	314.	247.	251.	210.	231.	197.
271	162.	135.	101.	74.	46.	41.	34.	18.	36.	33.
281	42.	48.	56.	61.	58.	60.	54.	91.	114.	162.
291	221.	290.	367.	417.	462.	501.	571.	800.	1101.	1514.
301	1967.	2448.	2619.	2351.	1993.	1430.	985.	642.	479.	346.
311	298.	238.	209.	128.	115.	86.	48.	32.	14.	7.
321	1.	1.	1.	0.	0.	0.	0.	0.	0.	1.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
341	0.	0.	1.	0.	1.	0.	1.	1.	0.	0.
351	0.	0.	2.	0.	0.	1.	0.	0.	0.	0.
361	1.	1.	0.	1.	1.	0.	2.	1.	1.	2.
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	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
481	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S94T283-SAM
File ID: 5a5947.CNF

Counted on: 1/25/95 @ 6:35
Detector: AEA5
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	22.5	22.5	375.313	375.313	18.000	11.124	9.000	2.389
2?	4.8	4.8	371.284	371.284	12.000	0.100	6.000	0.038
3	440.9	440.9	306.070	306.067	22.000	17.984	11.000	4.270
4	3727.9	3727.9	259.572	259.545	24.000	19.888	12.000	7.959
5?	21.5	21.5	181.164	183.062	76.000	1.000	38.000	0.100
6?	3.3	3.3	145.360	144.646	8.000	0.598	4.000	0.354

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		5.838			1.22	8.1		
2		????		5.819			0.10	82.5		
3	Am241	0.119	5.480	5.513	-.033	0.08	25.22	1.8	191.0	0.860E-04
	Pu238		5.499	5.513	-.014				249.3	0.112E-03
4	Am243	0.858	5.276	5.294	-.018	0.09	181.75	0.7	1306.7	0.589E-03
	Pu240		5.144	5.294	-.150				1293.6	0.583E-03
5		????		4.935			1.72	6.9		
6		????		4.754			0.06	136.		
		---					---			
Totals:		0.977	<--valid peaks only-->				206.98			

DETECTOR CALIBRATION
Energy(MEV) = 4.074 + (0.0047)*Channel
Energy range (MeV): 4.074 TO 6.481
Efficiency = 0.1405 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	101680.0	100.000
Smoothed	101680.0	100.000
Composite fit	100841.3	99.175
Residuals	838.7	0.825

Analyzed by: DM 1-25-95

2259

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Raw Data Dump for AEA Spectrum: 5a5947.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	1.	2.	3.
21	1.	5.	3.	2.	1.	3.	5.	6.	4.	7.
31	1.	1.	5.	0.	2.	5.	2.	3.	3.	1.
41	4.	6.	2.	4.	4.	6.	8.	2.	11.	4.
51	3.	8.	2.	4.	6.	6.	5.	5.	1.	3.
61	4.	2.	7.	4.	3.	5.	5.	5.	2.	1.
71	3.	4.	3.	4.	6.	7.	3.	6.	1.	8.
81	11.	3.	6.	5.	3.	4.	2.	7.	2.	11.
91	8.	3.	5.	8.	8.	6.	3.	7.	5.	9.
101	5.	3.	3.	3.	3.	1.	5.	3.	4.	10.
111	8.	6.	7.	2.	5.	4.	6.	1.	7.	4.
121	5.	11.	8.	7.	7.	9.	3.	2.	4.	6.
131	2.	6.	4.	6.	11.	7.	6.	2.	10.	14.
141	11.	9.	7.	8.	13.	8.	12.	9.	3.	5.
151	6.	6.	11.	12.	9.	8.	10.	11.	9.	13.
161	13.	11.	12.	9.	19.	12.	17.	19.	15.	14.
171	11.	14.	14.	20.	18.	17.	10.	20.	18.	23.
181	25.	15.	20.	22.	15.	16.	20.	19.	21.	21.
191	19.	43.	29.	26.	42.	32.	29.	45.	37.	41.
201	41.	39.	52.	57.	62.	55.	66.	63.	52.	49.
211	67.	77.	65.	60.	74.	58.	98.	92.	100.	91.
221	114.	133.	117.	128.	158.	182.	187.	205.	224.	225.
231	231.	288.	297.	334.	355.	435.	467.	573.	610.	629.
241	733.	877.	974.	1148.	1310.	1440.	1672.	1838.	2145.	2327.
251	2526.	2812.	3038.	3294.	3480.	3651.	3745.	3970.	3969.	3889.
261	3807.	3643.	3410.	3202.	2871.	2684.	2341.	1964.	1755.	1461.
271	1300.	1020.	845.	657.	533.	395.	384.	304.	237.	219.
281	171.	117.	120.	119.	97.	98.	105.	115.	149.	142.
291	180.	182.	189.	211.	257.	274.	288.	349.	346.	381.
301	435.	402.	460.	442.	405.	482.	457.	420.	399.	364.
311	358.	323.	253.	206.	208.	178.	138.	124.	98.	85.
321	76.	47.	33.	21.	14.	24.	8.	9.	4.	3.
331	1.	4.	5.	2.	4.	2.	2.	1.	1.	1.
341	0.	1.	0.	2.	3.	5.	1.	1.	4.	2.
351	5.	7.	7.	5.	6.	7.	6.	8.	10.	12.
361	9.	21.	12.	22.	19.	18.	20.	25.	19.	20.
371	21.	29.	20.	11.	25.	29.	15.	24.	9.	19.
381	12.	10.	12.	3.	6.	4.	1.	3.	0.	0.
391	0.	0.	0.	1.	0.	1.	0.	0.	0.	0.
401	0.	1.	0.	0.	0.	1.	1.	0.	0.	1.
411	1.	0.	0.	1.	0.	1.	0.	0.	1.	0.
421	1.	0.	1.	0.	1.	0.	1.	1.	1.	1.
431	1.	2.	2.	5.	3.	2.	1.	4.	3.	5.
441	3.	2.	2.	3.	3.	0.	3.	0.	1.	1.
451	1.	2.	1.	0.	0.	0.	0.	0.	0.	0.
461	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
471	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	2.	2.	1.	1.	1.	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

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

SAMPLE
S94T283-DUP
File ID: 6a6768.CNF

Counted on: 1/25/95 @ 6:36
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?	29.5	29.5	372.788	372.788	14.000	5.972	7.000	2.472
2	450.4	450.4	302.889	302.889	16.000	9.139	8.000	5.225
3	6057.0	6057.0	256.525	256.525	14.000	7.564	7.000	4.843

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		5.806			0.97	9.1		
2	Am241	0.073	5.480	5.485	-.0050.04		15.01	2.3	129.1	0.581E-04
	Pu238		5.499	5.485	0.014				168.5	0.759E-04
3	Am243	0.895	5.276	5.271	0.0050.03		182.74	0.7	1492.2	0.672E-03
		---					---			
Totals:		0.968	<--valid peaks only-->				197.74			

DETECTOR CALIBRATION
Energy(MEV) = 4.091 + (0.0046)*Channel
Energy range (MeV): 4.091 TO 6.447
Efficiency = 0.1237 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	98046.0	100.000
Smoothed	98045.6	100.000
Composite fit	95393.3	97.294
Residuals	2652.7	2.706

Analyzed by: DM 1-25-95

Spectrum 6a6768.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 35049.0


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Raw Data Dump for AEA Spectrum: 6a6768.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.
21	2.	0.	2.	1.	1.	2.	1.	0.	1.	0.
31	0.	1.	1.	0.	0.	1.	0.	3.	0.	0.
41	1.	1.	0.	0.	0.	0.	2.	0.	0.	2.
51	0.	0.	2.	1.	0.	1.	1.	1.	0.	0.
61	3.	1.	0.	1.	0.	0.	0.	2.	1.	2.
71	1.	0.	1.	0.	0.	1.	1.	0.	0.	0.
81	0.	1.	0.	0.	2.	1.	1.	0.	1.	1.
91	3.	0.	1.	1.	1.	0.	1.	0.	1.	0.
101	1.	0.	1.	1.	1.	1.	0.	2.	0.	0.
111	0.	0.	0.	2.	0.	0.	1.	1.	0.	1.
121	1.	2.	0.	2.	0.	1.	2.	1.	0.	2.
131	3.	0.	0.	2.	1.	0.	3.	1.	0.	0.
141	0.	0.	2.	0.	2.	0.	2.	0.	2.	4.
151	0.	3.	0.	0.	1.	0.	2.	4.	1.	2.
161	0.	0.	3.	0.	2.	1.	4.	3.	1.	4.
171	2.	1.	1.	4.	0.	4.	3.	4.	2.	0.
181	6.	0.	4.	1.	4.	2.	4.	2.	3.	5.
191	4.	9.	4.	6.	6.	10.	5.	7.	7.	14.
201	12.	8.	6.	10.	11.	11.	13.	13.	15.	14.
211	25.	10.	18.	24.	18.	25.	23.	27.	32.	29.
221	36.	37.	46.	39.	49.	74.	63.	82.	91.	113.
231	134.	141.	168.	192.	208.	282.	300.	363.	414.	459.
241	550.	710.	898.	1100.	1298.	1627.	1930.	2293.	2820.	3305.
251	3936.	4644.	5275.	5873.	6514.	6881.	6771.	6303.	5380.	4402.
261	3316.	2481.	1815.	1176.	926.	746.	648.	542.	525.	467.
271	376.	324.	245.	195.	117.	80.	62.	30.	31.	21.
281	19.	22.	21.	31.	29.	34.	50.	63.	73.	68.
291	108.	120.	147.	195.	235.	251.	279.	344.	367.	444.
301	454.	513.	512.	451.	436.	375.	317.	224.	188.	151.
311	114.	110.	76.	46.	42.	38.	20.	16.	11.	3.
321	3.	4.	2.	1.	0.	0.	0.	0.	0.	0.
331	1.	0.	0.	0.	0.	0.	1.	0.	0.	0.
341	0.	0.	0.	0.	0.	0.	1.	0.	1.	1.
351	6.	0.	1.	1.	5.	3.	3.	6.	6.	8.
361	11.	11.	15.	20.	18.	19.	25.	25.	24.	29.
371	31.	30.	31.	34.	28.	20.	23.	11.	4.	1.
381	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	1.	0.	0.	0.	0.	1.	0.	0.	0.
401	0.	1.	0.	0.	0.	1.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
421	0.	0.	0.	2.	1.	1.	1.	3.	1.	3.
431	1.	0.	0.	1.	4.	3.	3.	2.	0.	5.
441	3.	4.	3.	2.	4.	2.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S94T284-SAM
File ID: 7a7372.CNF

Counted on: 1/25/95 @ 6:37
Detector: AEA7
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	55.1	55.1	372.358	372.358	14.000	6.773	7.000	3.716
2	939.8	939.8	304.149	304.149	16.000	8.645	8.000	7.007
3	4828.1	4828.1	258.312	258.312	16.000	7.664	8.000	6.786

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		5.834			1.68	6.9		
2	Pu238	0.166	5.499	5.513	-.014	0.04	28.57	1.7	387.5	0.175E-03
	Am241		5.480	5.513	-.033				296.8	0.134E-03
3	Am243	0.798	5.276	5.298	-.022	0.04	137.66	0.8	1358.0	0.612E-03
Totals:		0.964	<--valid peaks only-->				166.23			

DETECTOR CALIBRATION
Energy(MEV) = 4.084 + (0.0047)*Channel
Energy range (MeV): 4.084 TO 6.490
Efficiency = 0.1024 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	82779.0	100.000
Smoothed	82779.0	100.000
Composite fit	80606.3	97.375
Residuals	2172.7	2.625

Analyzed by: MC Bennett
DM 1-25-95

Spectrum 7a7372.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 32278.5


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Raw Data Dump for AEA Spectrum: 7a7372.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
21	1.	0.	0.	1.	0.	1.	0.	0.	1.	0.
31	0.	1.	1.	0.	1.	0.	0.	0.	0.	1.
41	0.	0.	1.	0.	2.	0.	2.	0.	0.	1.
51	1.	0.	0.	1.	2.	0.	0.	2.	1.	1.
61	0.	0.	0.	2.	0.	1.	0.	0.	0.	0.
71	1.	1.	0.	1.	1.	0.	0.	2.	2.	1.
81	1.	1.	2.	0.	0.	1.	0.	0.	2.	0.
91	0.	0.	2.	1.	2.	2.	0.	2.	0.	1.
101	0.	0.	1.	0.	2.	1.	1.	0.	1.	0.
111	0.	1.	0.	0.	0.	1.	1.	0.	1.	0.
121	0.	2.	1.	1.	2.	0.	2.	0.	3.	1.
131	3.	0.	1.	3.	1.	1.	0.	1.	2.	0.
141	1.	2.	1.	1.	0.	1.	2.	0.	0.	1.
151	0.	0.	1.	3.	0.	2.	2.	1.	2.	0.
161	1.	0.	2.	0.	1.	1.	1.	1.	1.	0.
171	3.	0.	3.	2.	2.	0.	3.	4.	0.	1.
181	1.	1.	2.	2.	2.	1.	2.	7.	4.	2.
191	0.	1.	1.	2.	2.	2.	2.	2.	1.	1.
201	4.	3.	5.	4.	2.	4.	3.	5.	1.	4.
211	2.	5.	3.	10.	4.	5.	4.	6.	11.	8.
221	8.	12.	9.	13.	12.	13.	24.	19.	27.	27.
231	25.	49.	48.	55.	73.	86.	101.	120.	121.	158.
241	200.	234.	255.	375.	460.	568.	731.	965.	1226.	1523.
251	2033.	2602.	3001.	3724.	4343.	4920.	5378.	5497.	5345.	4806.
261	4114.	3461.	2665.	2062.	1454.	1013.	804.	609.	490.	392.
271	361.	279.	257.	215.	142.	107.	93.	59.	54.	42.
281	23.	20.	26.	26.	28.	36.	55.	50.	84.	96.
291	115.	127.	160.	236.	284.	334.	432.	553.	584.	763.
301	933.	994.	1028.	1043.	1014.	973.	746.	611.	554.	408.
311	344.	268.	209.	178.	128.	96.	71.	50.	43.	28.
321	9.	9.	5.	2.	4.	0.	2.	0.	0.	1.
331	0.	0.	1.	0.	0.	0.	1.	0.	0.	2.
341	0.	0.	0.	0.	0.	1.	1.	1.	1.	2.
351	1.	2.	0.	3.	3.	7.	6.	5.	12.	10.
361	8.	15.	22.	34.	28.	38.	49.	42.	56.	49.
371	54.	64.	60.	53.	53.	28.	35.	15.	11.	8.
381	8.	4.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	2.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
421	1.	0.	1.	1.	0.	1.	1.	1.	1.	3.
431	3.	4.	2.	7.	10.	5.	5.	6.	6.	5.
441	6.	3.	0.	0.	3.	0.	1.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	2.	0.								

LABCORE Data Entry Template for Worklist# 823

Analyst: AKL **Instrument:** AM01 _____ **Book #** 104643

Method: LA-953-103 Rev/Mod A-2 WHC-SD-WM-DP-074, REV. 0

Worklist Comment: See chemist for sample size. --LLF

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				@AM24102 AM24101	LIQUID			N/A	uCi/mL
		1	STD				@AM24102 AM24101E	LIQUID			N/A	% Ct. Error
		1	STD				@AM24102 AM24101T	LIQUID			N/A	% Recovery
		2	BLNK-PREP				@AM24102 AM24101	LIQUID			N/A	uCi/mL
		2	BLNK-PREP				@AM24102 AM24101E	LIQUID			N/A	% Ct. Error
		2	BLNK-PREP				@AM24102 AM24101T	LIQUID			N/A	% Recovery
		2	BLNK-PREP				@AM24102 CM24301	LIQUID			N/A	uCi/mL
		2	BLNK-PREP				@AM24102 CM24301E	LIQUID			N/A	% Ct. Error
94000020	SY-103	3	SAMPLE	S95T000328	0		@AM24102 AM24101	LIQUID	N/A			uCi/mL
94000020	SY-103	3	SAMPLE	S95T000328	0		@AM24102 AM24101E	LIQUID	N/A			% Ct. Error
94000020	SY-103	3	SAMPLE	S95T000328	0		@AM24102 AM24101T	LIQUID	N/A			% Recovery
94000020	SY-103	3	SAMPLE	S95T000328	0		@AM24102 CM24301	LIQUID	N/A			uCi/mL
94000020	SY-103	3	SAMPLE	S95T000328	0		@AM24102 CM24301E	LIQUID	N/A			% Ct. Error
94000020	SY-103	4	DUP	S95T000328	0		@AM24102 AM24101	LIQUID			N/A	uCi/mL
94000020	SY-103	4	DUP	S95T000328	0		@AM24102 AM24101E	LIQUID			N/A	% Ct. Error
94000020	SY-103	4	DUP	S95T000328	0		@AM24102 AM24101T	LIQUID			N/A	% Recovery
94000020	SY-103	4	DUP	S95T000328	0		@AM24102 CM24301	LIQUID			N/A	uCi/mL
94000020	SY-103	4	DUP	S95T000328	0		@AM24102 CM24301E	LIQUID			N/A	% Ct. Error

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist# 823

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
94000020	SY-103	5 SAMPLE	S95T000329	0		@AM24102 AM24101	LIQUID	N/A			uCi/mL
94000020	SY-103	5 SAMPLE	S95T000329	0		@AM24102 AM24101E	LIQUID	N/A			% Ct. Error
94000020	SY-103	5 SAMPLE	S95T000329	0		@AM24102 AM24101T	LIQUID	N/A			% Recovery
94000020	SY-103	5 SAMPLE	S95T000329	0		@AM24102 CM24301	LIQUID	N/A			uCi/mL
94000020	SY-103	5 SAMPLE	S95T000329	0		@AM24102 CM24301E	LIQUID	N/A			% Ct. Error
94000020	SY-103	6 DUP	S95T000329	0		@AM24102 AM24101	LIQUID			N/A	uCi/mL
94000020	SY-103	6 DUP	S95T000329	0		@AM24102 AM24101E	LIQUID			N/A	% Ct. Error
94000020	SY-103	6 DUP	S95T000329	0		@AM24102 AM24101T	LIQUID			N/A	% Recovery
94000020	SY-103	6 DUP	S95T000329	0		@AM24102 CM24301	LIQUID			N/A	uCi/mL
94000020	SY-103	6 DUP	S95T000329	0		@AM24102 CM24301E	LIQUID			N/A	% Ct. Error

Final page for worklist # 823

Alita Lewis 3/30/95
Analyst Signature **Date**

C.J. Oanem 4/4/95
Analyst Signature **Date**

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

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-2) LIQUID

			STANDARD
Type	Tracer Book Number		101B43
STANDARD	Activity of Am243 Tracer in dpm/mL	(SPKA)	9427
Work List	Tracer Volume in mL	(SPKV)	0.100
823	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	101
@AM241-02	Digest Dilution Factor	(DDF)	1
Matrix	Am-241 Area Peak Height from AEA	(C241)	1778
LIQUID	Am-243 Area Peak Height from AEA	(C243)	2814
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	6
WORKLIST 823	Total AT Count	(ATOT)	13677
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	5
Analyst	Am 241 µCi/L	=	2.7099E+01
AKL			
Date			
03/30/95			
Time			
01:30 PM			

Cm-243/244 µCi/L = CM * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Am-241 µCi/L = C241 * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

Print

			Detection Level in µCi/mL
Am 241 µCi/mL	=	2.71E-02	
Cm 243/244 µCi/mL	=	< 3.66E-03	
Relative counting error (Am-241)	=	5.9%	
Relative counting error (Cm-243/244)	=	80.1%	
Am-243 Tracer Recovery	=	58.6%	3.66E-03

Data Entry by:	[signature]	Date:	04/04/95
Approved by:	[signature]	Date:	4 Apr 95

Form 953103WB Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-2) LIQUID

			BLANK
Type	Tracer Book Number		101B43
BLANK	Activity of Am243 Tracer in dpm/mL	(SPKA)	9427
Work List	Tracer Volume in mL	(SPKV)	0.100
823	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	1
@AM241-02	Digest Dilution Factor	(DDF)	20
Matrix	Am-241 Area Peak Height from AEA	(C241)	6
LIQUID	Am-243 Area Peak Height from AEA	(C243)	1803
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	3
WORKLIST 823	Total AT Count	(ATOT)	3871
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	3
Analyst	Am 241 µCi/L	= <	1.5934E+00
AKL			
Date			
03/30/95			
Time			
01:30 PM			

Cm-243/244 µCi/L = CM * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Am-241 µCi/L = C241 * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100
NOTE: Am 241 Result is a LESS THAN Value

Print

			Detection Level in µCi/mL
Am 241 µCi/mL	=	< 1.59E-03	
Cm 243/244 µCi/mL	=	< 1.59E-03	
Relative counting error (Am-241)	=	80.1%	
Relative counting error (Cm-243/244)	=	113.3%	
Am-243 Tracer Recovery	=	26.7%	1.59E-03

Data Entry by: C.J. Chun Date: 04/04/95
Approved by: [illegible] Date: 4 Apr 95

Form 953103WB Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-2) LIQUID

			SAMPLE
Type	Tracer Book Number		101B43
SAMPLE	Activity of Am243 Tracer in dpm/mL	(SPKA)	9427
Work List	Tracer Volume in mL	(SPKV)	0.100
823	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	1
@AM241-02	Digest Dilution Factor	(DDF)	20
Matrix	Am-241 Area Peak Height from AEA	(C241)	576
LIQUID	Am-243 Area Peak Height from AEA	(C243)	2922
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	44
S95T328	Total AT Count	(ATOT)	9368
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	4
Analyst	Am 241 µCi/L	=	1.6741E+00
AKL			
Date			
03/30/95			
Time			
01:30 PM			

Cm-243/244 µCi/L = CM * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Am-241 µCi/L = C241 * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

Print

			Detection Level in µCi/mL
Am 241 µCi/mL	=	1.67E-03	
Cm 243/244 µCi/mL	=	< 7.77E-04	
Relative counting error (Am-241)	=	8.9%	
Relative counting error (Cm-243/244)	=	29.8%	
Am-243 Tracer Recovery	=	54.6%	7.77E-04

Data Entry by:	C.J. Carmen	Date: 04/04/95
Approved by:	[illegible]	Date: 4 Apr. 95

Form 953103WB Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-2) LIQUID

			DUPLICATE
Type	Tracer Book Number		101B43
DUPLICATE	Activity of Am243 Tracer in dpm/mL	(SPKA)	9427
Work List	Tracer Volume in mL	(SPKV)	0.100
823	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	1
@AM24102	Digest Dilution Factor	(DDF)	20
Matrix	Am-241 Area Peak Height from AEA	(C241)	383
LIQUID	Am-243 Area Peak Height from AEA	(C243)	1785
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	29
S95T328	Total AT Count	(ATOT)	7191
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	5
Analyst	Am 241 µCi/L	=	1.8223E+00
AKL			
Date			
03/30/95			
Time			
01:30 PM			

Cm-243/244 µCi/L = CM * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Am-241 µCi/L = C241 * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

Print

			Detection Level in µCi/mL
Am 241 µCi/mL	=	1.82E-03	
Cm 243/244 µCi/mL	=	< 1.04E-03	
Relative counting error (Am-241)	=	11.0%	
Relative counting error (Cm-243/244)	=	36.7%	
Am-243 Tracer Recovery	=	41.0%	1.04E-03

Data Entry by:	[illegible]	Date:	04/04/95
Approved by:	[illegible]	Date:	4 Apr 95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-2) LIQUID

			SAMPLE
Type	Tracer Book Number		101B43
SAMPLE	Activity of Am243 Tracer in dpm/mL	(SPKA)	9427
Work List	Tracer Volume in mL	(SPKV)	0.100
823	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	1
@AM24102	Digest Dilution Factor	(DDF)	20
Matrix	Am-241 Area Peak Height from AEA	(C241)	604
LIQUID	Am-243 Area Peak Height from AEA	(C243)	2454
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	45
S95T329	Total AT Count	(ATOT)	6923
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	4
Analyst	Am 241 µCi/L	=	2.0903E+00
AKL			
Date			
03/30/95			
Time			
01:30 PM			

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

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

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

Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100

Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

Print

			Detection Level in µCi/mL
Am 241 µCi/mL	=	2.09E-03	
Cm 243/244 µCi/mL	=	< 1.10E-03	
Relative counting error (Am-241)	=	8.9%	
Relative counting error (Cm-243/244)	=	29.5%	
Am-243 Tracer Recovery	=	38.6%	1.10E-03

Data Entry by: [illegible] Date: 04/04/95

Approved by: [illegible] Date: 4 Apr 95

Form 953103WB Rev. 1.1

2274

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-2) LIQUID

			DUPLICATE
Type	Tracer Book Number		101B43
DUPLICATE	Activity of Am243 Tracer in dpm/mL	(SPKA)	9427
Work List	Tracer Volume in mL	(SPKV)	0.100
823	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	1
@AM241-02	Digest Dilution Factor	(DDF)	20
Matrix	Am-241 Area Peak Height from AEA	(C241)	465
LIQUID	Am-243 Area Peak Height from AEA	(C243)	2071
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	36
S95T329	Total AT Count	(ATOT)	6589
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	5
Analyst	Am 241 µCi/L	=	1.9069E+00
AKL			
Date			
03/30/95			
Time			
01:30 PM			

Cm-243/244 µCi/L = CM * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Am-241 µCi/L = C241 * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

Print

			Detection Level in µCi/mL
Am 241 µCi/mL	=	1.91E-03	
Cm 243/244 µCi/mL	=	< 1.14E-03	
Relative counting error (Am-241)	=	10.1%	
Relative counting error (Cm-243/244)	=	32.9%	
Am-243 Tracer Recovery	=	37.2%	1.14E-03

Data Entry by:	C.J. Ramm	Date:	04/04/95
Approved by:	[illegible]	Date:	4 Apr 95

Form 953103WB Rev. 1.1

Em Beula 04/01/95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
WORKLIST-823-STD
File ID: 2a2016.CNF

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

Counted on: 4/ 1/95 @11:57
Detector: AEA2
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1650.0	1650.0	304.765	304.765	22.000	17.671	11.000	8.557
2	2639.2	2639.2	258.308	258.294	20.000	15.824	10.000	7.783
3?	12.1	12.1	191.213	191.082	62.000	1.000	31.000	0.100

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am241	0.391	5.480	5.502	-.022	0.08	73.63	1.0	684.1	0.308E-03
	Pu238		5.499	5.502	-.003				893.2	0.402E-03
2	Am243	0.597	5.276	5.288	-.012	0.07	112.37	0.9	991.3	0.447E-03
	Pu240		5.144	5.288	-.144				981.4	0.442E-03
3		????		4.979			0.97	9.2		
Totals:		0.989	<--valid peaks only-->				186.00			

DETECTOR CALIBRATION
Energy(MEV) = 4.100 + (0.0046)*Channel
Energy range (MeV): 4.100 TO 6.455
Efficiency = 0.1145 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	90325.0	100.000
Smoothed	90325.0	100.000
Composite fit	89752.9	99.367
Residuals	572.1	0.633

Analyzed by: _____
DM

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 2276 TO 2293

Raw Data Dump for AEA Spectrum: 7a7555.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	1.	1.	1.
21	0.	1.	0.	0.	0.	0.	1.	0.	0.	1.
31	0.	0.	2.	0.	1.	1.	1.	1.	0.	0.
41	4.	1.	0.	1.	3.	0.	0.	0.	1.	0.
51	0.	1.	1.	0.	3.	2.	0.	0.	3.	1.
61	0.	1.	0.	1.	0.	0.	1.	3.	2.	2.
71	1.	1.	1.	0.	0.	2.	2.	1.	2.	1.
81	1.	3.	2.	2.	1.	1.	1.	0.	1.	2.
91	0.	1.	2.	0.	0.	1.	0.	2.	0.	0.
101	2.	1.	0.	3.	2.	2.	0.	0.	1.	0.
111	0.	1.	1.	2.	0.	0.	2.	0.	2.	4.
121	2.	1.	0.	0.	2.	1.	3.	2.	0.	3.
131	0.	0.	2.	3.	1.	1.	4.	6.	1.	2.
141	1.	2.	1.	2.	2.	1.	0.	3.	2.	3.
151	0.	1.	2.	7.	2.	2.	2.	6.	3.	5.
161	1.	4.	3.	3.	2.	4.	5.	6.	6.	2.
171	3.	7.	0.	3.	3.	2.	2.	3.	2.	9.
181	7.	6.	2.	3.	7.	6.	3.	3.	2.	6.
191	2.	3.	4.	10.	8.	5.	6.	10.	6.	3.
201	6.	10.	9.	6.	7.	7.	7.	10.	12.	9.
211	11.	10.	12.	12.	16.	13.	7.	15.	21.	18.
221	19.	19.	23.	24.	36.	26.	41.	37.	41.	52.
231	69.	81.	83.	105.	118.	115.	148.	166.	191.	265.
241	293.	313.	373.	438.	538.	597.	736.	871.	1032.	1159.
251	1341.	1564.	1649.	1844.	2071.	1986.	1940.	1834.	1558.	1296.
261	1061.	770.	586.	425.	288.	210.	152.	145.	113.	102.
271	106.	90.	71.	42.	42.	43.	24.	19.	18.	32.
281	30.	30.	30.	39.	44.	67.	82.	79.	90.	117.
291	135.	154.	175.	234.	246.	276.	319.	373.	415.	451.
301	442.	465.	446.	443.	368.	317.	227.	220.	146.	125.
311	97.	63.	53.	42.	37.	22.	8.	11.	1.	6.
321	1.	1.	2.	1.	0.	0.	0.	0.	2.	0.
331	0.	0.	0.	1.	0.	2.	0.	0.	0.	0.
341	0.	0.	1.	1.	2.	0.	1.	1.	2.	0.
351	2.	2.	5.	3.	3.	7.	4.	11.	16.	9.
361	18.	11.	18.	14.	14.	27.	30.	16.	28.	28.
371	36.	20.	19.	13.	7.	9.	5.	4.	2.	0.
381	0.	1.	0.	0.	0.	2.	0.	0.	1.	0.
391	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
421	1.	0.	0.	0.	1.	1.	2.	1.	0.	0.
431	1.	1.	0.	2.	2.	2.	1.	0.	2.	2.
441	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
481	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	2.	0.								

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 11399.9


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Ex Beta

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S95T329-DUP
File ID: 7a7555.CNF

Counted on: 4/ 1/95 @12: 2
Detector: AEA7
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	26.3	26.3	370.114	370.115	10.000	5.432	5.000	2.188
2	424.8	424.8	302.217	302.217	16.000	9.547	8.000	4.857
3	1815.2	1815.2	256.137	256.135	16.000	8.636	8.000	4.680

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm243	0.011	5.786	5.816	-.030	0.03	0.85	9.7	4.7	0.214E-05
	Cm244		5.796	5.816	-.020				3.5	0.156E-05
2	Am241	0.191	5.480	5.497	-.017	0.04	14.86	2.3	64.1	0.289E-04
	Pu238		5.499	5.497	0.002				83.7	0.377E-04
3	Am243	0.773	5.276	5.280	-.004	0.04	60.16	1.2	246.5	0.111E-03
Totals:		0.975	<--valid peaks only-->				75.87			

DETECTOR CALIBRATION
Energy(MEV) = 4.077 + (0.0047)*Channel
Energy range (MeV): 4.077 TO 6.483
Efficiency = 0.2465 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	37360.0	100.000
Smoothed	37360.0	100.000
Composite fit	36420.9	97.486
Residuals	939.1	2.514

Analyzed by: _____
DM

Raw Data Dump for AEA Spectrum: 6a6954.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	1.	0.	1.	0.	0.	0.	1.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	1.	0.	1.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	1.	0.	0.	0.	0.	0.	1.
61	0.	1.	0.	2.	0.	1.	0.	0.	0.	0.
71	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
81	0.	1.	1.	0.	2.	1.	0.	0.	0.	2.
91	0.	0.	2.	0.	0.	0.	0.	1.	1.	0.
101	0.	0.	0.	0.	1.	0.	1.	1.	1.	0.
111	1.	1.	1.	1.	1.	0.	1.	1.	0.	0.
121	0.	0.	0.	0.	0.	0.	0.	2.	1.	0.
131	0.	0.	2.	1.	2.	2.	1.	0.	3.	1.
141	1.	0.	1.	1.	1.	2.	0.	0.	0.	0.
151	3.	2.	1.	0.	0.	1.	2.	2.	2.	1.
161	3.	1.	2.	1.	0.	1.	5.	2.	0.	0.
171	0.	2.	2.	4.	2.	0.	1.	4.	2.	1.
181	4.	0.	3.	2.	4.	3.	6.	1.	7.	5.
191	1.	8.	7.	6.	3.	5.	4.	5.	8.	5.
201	9.	7.	14.	7.	11.	16.	10.	17.	11.	11.
211	15.	24.	14.	20.	20.	19.	28.	24.	27.	28.
221	31.	30.	51.	57.	45.	63.	70.	80.	79.	93.
231	126.	118.	136.	155.	188.	247.	275.	279.	314.	412.
241	470.	490.	586.	727.	830.	959.	1090.	1230.	1433.	1513.
251	1711.	1911.	2070.	2230.	2454.	2409.	2281.	2097.	1830.	1410.
261	1115.	826.	626.	457.	314.	235.	207.	176.	175.	152.
271	109.	106.	88.	86.	66.	55.	66.	40.	51.	46.
281	42.	59.	44.	81.	82.	90.	108.	99.	142.	161.
291	193.	235.	227.	324.	282.	344.	427.	428.	501.	550.
301	542.	604.	568.	525.	473.	435.	343.	241.	239.	138.
311	104.	90.	66.	52.	51.	31.	20.	16.	10.	3.
321	4.	1.	1.	0.	0.	0.	0.	0.	0.	0.
331	1.	1.	0.	1.	0.	2.	2.	2.	2.	2.
341	1.	0.	1.	6.	1.	0.	2.	3.	0.	4.
351	4.	5.	3.	7.	14.	7.	14.	11.	9.	15.
361	9.	17.	26.	21.	~~24.~~	30.	23.	24.	23.	30.
371	45.	42.	36.	29.	~~30.~~	24.	9.	9.	5.	3.
381	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.
401	0.	0.	0.	1.	0.	0.	0.	1.	0.	1.
411	0.	0.	1.	1.	0.	1.	0.	1.	2.	0.
421	0.	0.	0.	1.	0.	1.	5.	0.	1.	1.
431	0.	0.	2.	2.	2.	0.	1.	4.	2.	1.
441	1.	2.	2.	1.	0.	2.	0.	0.	1.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	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.								

448

Spectrum 6a6954.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 14350.6


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Em Bauer

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S95T329-SAM
File ID: 6a6954.CNF

Counted on: 4/ 1/95 @12: 1
Detector: AEA6
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	35.4	35.4	371.860	371.860	14.000	5.711	7.000	1.987
2	533.9	533.9	302.324	302.324	18.000	9.564	9.000	4.206
3	2187.6	2187.6	255.826	255.822	14.000	8.564	7.000	3.844

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm244	0.013	5.796	5.805	-.009	0.03	1.26	8.0	4.3	0.192E-05
	Cm243		5.786	5.805	-.019				5.8	0.263E-05
2	Am241	0.197	5.480	5.485	-.005	0.04	19.62	2.0	70.5	0.317E-04
	Pu238		5.499	5.485	0.014				92.0	0.414E-04
3	Am243	0.775	5.276	5.271	0.005	0.04	77.03	1.0	262.7	0.118E-03
Totals:		0.985	<--valid peaks only-->				97.90			

DETECTOR CALIBRATION
Energy(MEV) = 4.095 + (0.0046)*Channel
Energy range (MeV): 4.095 TO 6.450
Efficiency = 0.2962 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	47708.0	100.000
Smoothed	47708.3	100.001
Composite fit	46996.7	98.509
Residuals	711.3	1.491

Analyzed by: _____
DM

22882

Raw Data Dump for AEA Spectrum: 5a5135.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	2.	1.	2.	1.
21	2.	1.	3.	3.	1.	2.	1.	0.	3.	0.
31	2.	1.	0.	2.	2.	3.	1.	1.	3.	0.
41	1.	5.	3.	2.	0.	3.	3.	2.	1.	4.
51	4.	3.	2.	2.	1.	3.	1.	2.	1.	1.
61	2.	0.	1.	1.	2.	2.	0.	0.	1.	1.
71	1.	3.	2.	4.	0.	2.	1.	1.	4.	1.
81	0.	1.	1.	1.	1.	2.	3.	0.	3.	0.
91	1.	1.	2.	2.	2.	1.	0.	0.	4.	1.
101	4.	1.	2.	2.	3.	1.	1.	3.	3.	4.
111	4.	4.	3.	8.	3.	4.	5.	3.	4.	0.
121	1.	5.	3.	1.	2.	2.	4.	3.	3.	5.
131	5.	3.	2.	3.	4.	2.	2.	1.	4.	3.
141	1.	2.	0.	3.	5.	0.	1.	3.	3.	2.
151	4.	2.	3.	3.	2.	2.	4.	2.	3.	0.
161	3.	4.	2.	4.	4.	6.	3.	2.	4.	5.
171	6.	8.	2.	6.	7.	8.	3.	4.	3.	9.
181	7.	5.	3.	5.	7.	4.	6.	7.	5.	5.
191	11.	6.	7.	16.	7.	13.	9.	11.	19.	14.
201	19.	15.	15.	15.	17.	21.	19.	18.	22.	23.
211	16.	27.	15.	19.	31.	33.	27.	29.	29.	53.
221	35.	40.	54.	67.	55.	58.	72.	81.	84.	114.
231	143.	147.	154.	207.	205.	218.	273.	299.	361.	401.
241	446.	478.	566.	586.	765.	796.	901.	1026.	1100.	1241.
251	1417.	1473.	1572.	1629.	1777.	1743.	1779.	1785.	1736.	1734.
261	1597.	1529.	1365.	1289.	1116.	974.	901.	722.	587.	488.
271	420.	311.	248.	206.	177.	168.	120.	98.	72.	82.
281	84.	86.	60.	70.	80.	92.	81.	107.	128.	130.
291	149.	161.	185.	218.	237.	294.	266.	297.	305.	331.
301	342.	334.	383.	374.	337.	332.	318.	303.	267.	213.
311	207.	199.	177.	141.	117.	116.	87.	72.	39.	41.
321	32.	19.	16.	12.	13.	4.	2.	6.	3.	3.
331	0.	2.	2.	0.	1.	0.	1.	2.	1.	4.
341	1.	2.	0.	0.	4.	4.	3.	3.	4.	3.
351	2.	7.	8.	2.	7.	8.	8.	11.	7.	10.
361	17.	14.	15.	20.	21.	20.	19.	29.	16.	30.
371	28.	20.	23.	15.	19.	16.	13.	11.	10.	8.
381	6.	8.	4.	1.	3.	4.	1.	1.	0.	1.
391	2.	1.	0.	0.	0.	1.	0.	0.	0.	1.
401	0.	2.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	1.	0.	0.	0.	1.	0.	0.	1.
421	0.	1.	1.	2.	2.	1.	0.	0.	0.	1.
431	0.	0.	0.	1.	0.	2.	2.	1.	1.	1.
441	1.	0.	0.	0.	1.	1.	1.	2.	2.	0.
451	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.
461	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
481	2.	0.	1.	2.	0.	1.	0.	0.	2.	0.
491	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
511	0.	0.								

Spectrum 5a5135.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 12706.7


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Em Barela

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S95T328-DUP
File ID: 5a5135.CNF

Counted on: 4/ 1/95 @12: 0
Detector: AEA5
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	24.6	24.6	370.292	370.292	20.000	14.154	10.000	5.593
2	347.8	347.8	303.747	303.746	24.000	19.762	12.000	5.982
3	1701.9	1701.9	258.118	258.084	22.000	19.690	11.000	7.766

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm243	0.010	5.786	5.810	-.024	0.07	1.07	8.7	5.8	0.262E-05
	Cm244		5.796	5.810	-.014				4.2	0.191E-05
2	Am241	0.179	5.480	5.497	-.017	0.09	18.44	2.1	78.2	0.352E-04
	Pu238		5.499	5.497	0.002				102.1	0.460E-04
3	Am243	0.804	5.276	5.282	-.006	0.09	82.97	1.0	334.2	0.151E-03
	Pu240		5.144	5.282	-.138				330.8	0.149E-03
Totals:		0.993	<--valid peaks only-->				102.47			

DETECTOR CALIBRATION
Energy(MEV) = 4.069 + (0.0047)*Channel
Energy range (MeV): 4.069 TO 6.476
Efficiency = 0.2508 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	49532.0	100.000
Smoothed	49531.9	100.000
Composite fit	49191.3	99.312
Residuals	340.7	0.688

Analyzed by: _____
DM

Raw Data Dump for AEA Spectrum: 4a4209.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.	1.
31	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
41	0.	1.	0.	0.	2.	1.	1.	0.	0.	0.
51	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.
61	0.	0.	1.	1.	0.	1.	0.	1.	0.	1.
71	0.	0.	0.	0.	0.	1.	1.	1.	0.	1.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	1.	0.	0.	0.	1.	0.	3.	0.	0.	0.
101	0.	0.	0.	1.	0.	1.	1.	0.	0.	0.
111	1.	0.	1.	0.	0.	0.	0.	2.	0.	0.
121	0.	0.	0.	1.	1.	0.	2.	1.	1.	0.
131	0.	1.	2.	1.	1.	1.	0.	0.	0.	1.
141	0.	2.	2.	2.	0.	0.	0.	1.	0.	0.
151	1.	3.	0.	1.	0.	0.	0.	0.	1.	1.
161	1.	0.	0.	0.	2.	0.	1.	1.	1.	0.
171	1.	0.	0.	0.	0.	1.	0.	2.	0.	0.
181	0.	3.	1.	1.	0.	0.	1.	1.	1.	1.
191	2.	2.	0.	2.	1.	1.	2.	0.	1.	1.
201	1.	4.	2.	1.	0.	5.	5.	6.	2.	3.
211	5.	6.	5.	5.	9.	8.	10.	3.	10.	12.
221	13.	15.	19.	13.	23.	25.	35.	44.	54.	50.
231	51.	56.	66.	84.	77.	120.	140.	154.	188.	220.
241	277.	319.	419.	528.	660.	789.	892.	1088.	1216.	1447.
251	1772.	2068.	2460.	2803.	2886.	2922.	2572.	2013.	1488.	940.
261	587.	362.	220.	187.	157.	124.	128.	105.	118.	77.
271	60.	54.	42.	23.	16.	9.	19.	19.	12.	17.
281	20.	27.	28.	34.	39.	41.	80.	72.	99.	121.
291	160.	157.	189.	233.	249.	321.	378.	478.	530.	551.
301	576.	499.	416.	323.	257.	160.	123.	105.	74.	53.
311	51.	34.	25.	16.	10.	6.	3.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
331	0.	0.	0.	0.	1.	0.	0.	0.	1.	0.
341	1.	0.	0.	0.	3.	2.	3.	1.	4.	3.
351	3.	4.	6.	11.	9.	6.	12.	9.	17.	14.
361	28.	18.	18.	20.	32.	24.	27.	44.	26.	34.
371	29.	30.	11.	11.	3.	3.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
421	0.	1.	0.	0.	1.	1.	0.	3.	2.	1.
431	2.	2.	0.	0.	0.	5.	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.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
481	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 15572.0


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Em Brooks

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S95T328-SAM
File ID: 4a4209.CNF

Counted on: 4/ 1/95 @11:59
Detector: AEA4
Geometry number: 1
Count time: 28800. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	31.4	31.4	368.842	368.842	14.000	4.981	7.000	1.986
2	487.9	487.9	300.540	300.540	12.000	6.401	6.000	4.252
3	2517.8	2517.8	255.315	255.315	14.000	5.360	7.000	3.375

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm243	0.012	5.786	5.818	-.032	0.02	1.01	8.9	9.0	0.404E-05
	Cm244		5.796	5.818	-.022				6.6	0.295E-05
2	Pu238	0.162	5.499	5.497	0.002	0.03	13.71	2.4	124.1	0.559E-04
	Am241		5.480	5.497	-.017				95.1	0.428E-04
3	Am243	0.800	5.276	5.284	-.008	0.03	67.60	1.1	445.1	0.201E-03
Totals:		0.974	<--valid peaks only-->				82.31			

DETECTOR CALIBRATION
Energy(MEV) = 4.084 + (0.0047)*Channel
Energy range (MeV): 4.084 TO 6.491
Efficiency = 0.1534 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	40563.0	100.000
Smoothed	40563.0	100.000
Composite fit	39510.0	97.404
Residuals	1053.0	2.596

Analyzed by: _____
DM

Raw Data Dump for AEA Spectrum: 3a3716.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	1.	0.	0.	0.	1.	0.	0.	0.	0.
41	0.	0.	0.	2.	0.	1.	1.	0.	0.	1.
51	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.
61	2.	0.	0.	0.	0.	0.	1.	0.	0.	0.
71	0.	1.	0.	0.	0.	1.	0.	0.	0.	1.
81	0.	0.	1.	1.	0.	0.	0.	2.	0.	0.
91	0.	3.	0.	0.	0.	3.	1.	0.	0.	0.
101	0.	0.	2.	0.	0.	1.	0.	0.	0.	1.
111	0.	2.	2.	0.	0.	2.	0.	0.	1.	0.
121	1.	1.	0.	2.	2.	0.	0.	2.	0.	1.
131	1.	1.	0.	0.	2.	2.	2.	2.	0.	1.
141	2.	2.	1.	0.	2.	2.	3.	1.	2.	2.
151	4.	1.	1.	0.	2.	2.	2.	4.	1.	0.
161	1.	2.	1.	1.	2.	2.	6.	1.	3.	4.
171	0.	2.	3.	2.	2.	3.	3.	4.	3.	1.
181	3.	2.	6.	8.	3.	6.	4.	4.	3.	4.
191	5.	3.	4.	4.	5.	6.	6.	6.	9.	5.
201	11.	9.	8.	5.	13.	11.	14.	9.	12.	10.
211	11.	11.	20.	24.	13.	19.	24.	18.	24.	26.
221	31.	43.	31.	39.	51.	58.	75.	69.	91.	79.
231	85.	124.	140.	135.	143.	174.	181.	226.	272.	265.
241	341.	358.	407.	499.	504.	582.	688.	764.	882.	1019.
251	1155.	1300.	1429.	1569.	1642.	1803.	1711.	1687.	1604.	1438.
261	1086.	896.	650.	429.	326.	254.	187.	142.	152.	124.
271	129.	105.	80.	55.	41.	26.	19.	14.	10.	1.
281	2.	1.	2.	1.	0.	4.	2.	2.	4.	2.
291	1.	3.	5.	3.	1.	0.	0.	1.	4.	4.
301	3.	6.	6.	4.	6.	4.	6.	1.	2.	1.
311	0.	2.	2.	3.	0.	1.	0.	0.	0.	1.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	1.	0.	2.	1.	0.
341	1.	0.	0.	3.	2.	1.	0.	0.	1.	1.
351	2.	2.	1.	3.	3.	3.	2.	3.	3.	2.
361	3.	2.	0.	3.	1.	2.	2.	2.	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	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.	1.	1.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Spectrum 3a3716.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 9833.1


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Em Bailla

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
WORKLIST-823-BLK
File ID: 3a3716.CNF

Counted on: 4/ 1/95 @11:59
Detector: AEA3
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1605.6	1605.6	256.991	256.991	16.000	8.840	8.000	3.715

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.966	5.276	5.269	0.007	0.04	58.56	1.2	335.3	0.151E-03
Totals:		0.966	<--valid peaks only-->				58.56			

DETECTOR CALIBRATION
Energy(MEV) = 4.087 + (0.0046)*Channel
Energy range (MeV): 4.087 TO 6.442
Efficiency = 0.1764 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	29094.0	100.000
Smoothed	29094.0	100.000
Composite fit	28110.2	96.619
Residuals	983.8	3.381

Analyzed by: _____
DM

Raw Data Dump for AEA Spectrum: 2a2016.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	1.	3.	0.
21	1.	1.	1.	3.	3.	1.	5.	4.	3.	3.
31	3.	3.	5.	6.	2.	2.	0.	1.	1.	4.
41	6.	3.	2.	1.	1.	2.	2.	2.	2.	6.
51	3.	5.	2.	1.	1.	6.	3.	1.	4.	3.
61	1.	6.	2.	6.	3.	7.	4.	5.	1.	5.
71	5.	6.	6.	5.	5.	0.	6.	5.	9.	5.
81	2.	2.	4.	6.	2.	3.	4.	7.	3.	3.
91	8.	4.	2.	5.	5.	1.	5.	4.	5.	3.
101	4.	5.	4.	2.	4.	2.	4.	5.	2.	3.
111	3.	5.	8.	5.	3.	4.	6.	4.	4.	7.
121	7.	8.	6.	9.	5.	9.	6.	7.	3.	3.
131	7.	8.	3.	4.	8.	6.	6.	7.	5.	7.
141	6.	8.	11.	4.	4.	9.	3.	5.	5.	8.
151	3.	7.	5.	3.	1.	6.	6.	3.	6.	3.
161	6.	2.	10.	1.	8.	6.	8.	1.	6.	13.
171	7.	7.	8.	6.	3.	8.	10.	5.	6.	5.
181	7.	5.	8.	10.	6.	7.	12.	7.	10.	12.
191	19.	9.	12.	11.	6.	10.	15.	19.	9.	8.
201	11.	17.	14.	14.	19.	17.	15.	15.	18.	14.
211	14.	16.	19.	24.	21.	22.	16.	36.	27.	35.
221	38.	31.	38.	37.	47.	51.	64.	67.	76.	75.
231	91.	120.	116.	140.	151.	194.	224.	267.	337.	333.
241	461.	535.	624.	752.	893.	955.	1120.	1297.	1538.	1637.
251	1819.	2105.	2258.	2396.	2610.	2676.	2814.	2799.	2792.	2675.
261	2414.	2287.	2090.	1824.	1531.	1300.	1148.	867.	749.	616.
271	469.	354.	299.	274.	229.	200.	168.	136.	147.	135.
281	122.	140.	150.	173.	185.	229.	269.	313.	365.	457.
291	472.	580.	707.	808.	882.	1026.	1172.	1219.	1438.	1473.
301	1628.	1660.	1769.	1778.	1682.	1669.	1657.	1543.	1401.	1277.
311	1113.	983.	830.	672.	565.	452.	397.	292.	241.	173.
321	124.	107.	75.	46.	34.	21.	12.	17.	4.	5.
331	4.	5.	1.	0.	2.	1.	1.	0.	0.	0.
341	0.	1.	2.	1.	0.	1.	1.	0.	5.	2.
351	2.	1.	2.	1.	1.	3.	3.	6.	4.	3.
361	3.	0.	3.	4.	2.	2.	2.	4.	1.	3.
371	1.	2.	1.	2.	1.	1.	0.	1.	1.	0.
381	0.	0.	1.	0.	0.	1.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
431	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.
441	2.	0.	1.	0.	1.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	1.	2.	0.	1.	1.	0.	0.	0.
471	0.	1.	0.	0.	1.	0.	2.	0.	0.	0.
481	0.	1.	0.	1.	1.	1.	1.	1.	2.	0.
491	3.	0.	0.	0.	1.	0.	1.	0.	0.	0.
511	0.	0.								

Spectrum 2a2016.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 19342.8


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LABCORE Data Entry Template for Worklist# 824

Analyst: ARL **Instrument:** AM01 _____ **Book #** 104643

Method: LA-953-103 Rev/Mod A-2 **WHC-SD-WM-DP-074, REV. 0**

Worklist Comment: See chemist for sample size. --LLF

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				@AM24102 AM24101	LIQUID			N/A	uCi/mL
		1	STD				@AM24102 AM24101E	LIQUID			N/A	% Ct. Error
		1	STD				@AM24102 AM24101T	LIQUID			N/A	% Recovery
		2	BLNK-PREP				@AM24102 AM24101	LIQUID			N/A	uCi/mL
		2	BLNK-PREP				@AM24102 AM24101E	LIQUID			N/A	% Ct. Error
		2	BLNK-PREP				@AM24102 AM24101T	LIQUID			N/A	% Recovery
		2	BLNK-PREP				@AM24102 CM24301	LIQUID			N/A	uCi/mL
		2	BLNK-PREP				@AM24102 CM24301E	LIQUID			N/A	% Ct. Error
94000020	SY-103	3	SAMPLE	S95T000330	0		@AM24102 AM24101	LIQUID	N/A			uCi/mL
94000020	SY-103	3	SAMPLE	S95T000330	0		@AM24102 AM24101E	LIQUID	N/A			% Ct. Error
94000020	SY-103	3	SAMPLE	S95T000330	0		@AM24102 AM24101T	LIQUID	N/A			% Recovery
94000020	SY-103	3	SAMPLE	S95T000330	0		@AM24102 CM24301	LIQUID	N/A			uCi/mL
94000020	SY-103	3	SAMPLE	S95T000330	0		@AM24102 CM24301E	LIQUID	N/A			% Ct. Error
94000020	SY-103	4	DUP	S95T000330	0		@AM24102 AM24101	LIQUID			N/A	uCi/mL
94000020	SY-103	4	DUP	S95T000330	0		@AM24102 AM24101E	LIQUID			N/A	% Ct. Error
94000020	SY-103	4	DUP	S95T000330	0		@AM24102 AM24101T	LIQUID			N/A	% Recovery
94000020	SY-103	4	DUP	S95T000330	0		@AM24102 CM24301	LIQUID			N/A	uCi/mL
94000020	SY-103	4	DUP	S95T000330	0		@AM24102 CM24301E	LIQUID			N/A	% Ct. Error

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist# 824

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
94000020	SY-103	5 SAMPLE	S95T000331	0		@AM24102 AM24101	LIQUID	N/A			uCi/mL
94000020	SY-103	5 SAMPLE	S95T000331	0		@AM24102 AM24101E	LIQUID	N/A			% Ct. Error
94000020	SY-103	5 SAMPLE	S95T000331	0		@AM24102 AM24101T	LIQUID	N/A			% Recovery
94000020	SY-103	5 SAMPLE	S95T000331	0		@AM24102 CM24301	LIQUID	N/A			uCi/mL
94000020	SY-103	5 SAMPLE	S95T000331	0		@AM24102 CM24301E	LIQUID	N/A			% Ct. Error
94000020	SY-103	6 DUP	S95T000331	0		@AM24102 AM24101	LIQUID			N/A	uCi/mL
94000020	SY-103	6 DUP	S95T000331	0		@AM24102 AM24101E	LIQUID			N/A	% Ct. Error
94000020	SY-103	6 DUP	S95T000331	0		@AM24102 AM24101T	LIQUID			N/A	% Recovery
94000020	SY-103	6 DUP	S95T000331	0		@AM24102 CM24301	LIQUID			N/A	uCi/mL
94000020	SY-103	6 DUP	S95T000331	0		@AM24102 CM24301E	LIQUID			N/A	% Ct. Error

Final page for worklist # 824

Alita Lewis 3/30/95
Analyst Signature **Date**

C. J. Barnes 4/5/95
Analyst Signature **Date**

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

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-2) LIQUID

			STANDARD
Type	Tracer Book Number		101B43
STANDARD	Activity of Am243 Tracer in dpm/mL	(SPKA)	9427
Work List	Tracer Volume in mL	(SPKV)	0.100
824	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	101
@AM241-02	Digest Dilution Factor	(DDF)	1
Matrix	Am-241 Area Peak Height from AEA	(C241)	4200
LIQUID	Am-243 Area Peak Height from AEA	(C243)	7131
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	2
WORKLIST 824	Total AT Count	(ATOT)	21786
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	3
Analyst	Am 241 µCi/L	=	2.5260E+01
AKL			
Date			
03/30/95			
Time			
03:00 PM			

Cm-243/244 µCi/L = CM * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Am-241 µCi/L = C241 * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

Print

			Detection Level in µCi/mL
Am 241 µCi/mL	=	2.53E-02	
Cm 243/244 µCi/mL	=	< 2.22E-03	
Relative counting error (Am-241)	=	3.8%	
Relative counting error (Cm-243/244)	=	138.6%	
Am-243 Tracer Recovery	=	96.6%	2.22E-03

Data Entry by:	[illegible]	Date:	04/04/95
Approved by:	[illegible]	Date:	4 Apr 95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-2) LIQUID

			BLANK
Type	Tracer Book Number		101B43
BLANK	Activity of Am243 Tracer in dpm/mL	(SPKA)	9427
Work List	Tracer Volume in mL	(SPKV)	0.100
824	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	1
@AM241-02	Digest Dilution Factor	(DDF)	20
Matrix	Am-241 Area Peak Height from AEA	(C241)	8
LIQUID	Am-243 Area Peak Height from AEA	(C243)	3127
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	1
WORKLIST 824	Total AT Count	(ATOT)	8220
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	4
Analyst	Am 241 µCi/L	= <	7.4321E-01
AKL			
Date			
03/30/95			
Time			
03:00 PM			

Cm-243/244 µCi/L = CM * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Am-241 µCi/L = C241 * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100
NOTE: Am 241 Result is a LESS THAN Value

Print

			Detection Level in µCi/mL
Am 241 µCi/mL	=	< 7.43E-04	
Cm 243/244 µCi/mL	=	< 7.43E-04	
Relative counting error (Am-241)	=	69.4%	
Relative counting error (Cm-243/244)	=	196.0%	
Am-243 Tracer Recovery	=	57.1%	7.43E-04

Data Entry by:	[signature]	Date:	04/04/95
Approved by:	[signature]	Date:	4 Apr 95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-2) LIQUID

				SAMPLE
Type	Tracer Book Number			101B43
SAMPLE	Activity of Am243 Tracer in dpm/mL	(SPKA)		9427
Work List	Tracer Volume in mL	(SPKV)		0.100
824	Volume of Sample in mL	(SS)		1.000
Test Code	Dilution Factor	(DF)		1
@AM24102	Digest Dilution Factor	(DDF)		20
Matrix	Am-241 Area Peak Height from AEA	(C241)		336
LIQUID	Am-243 Area Peak Height from AEA	(C243)		3095
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)		14
S95T330	Total AT Count	(ATOT)		6804
Instrument Code	AT Count Time in Minutes	(MIN CT'd)		30
WC38931	Background in CPM	(BKG)		5
Analyst	Am 241 µCi/L	=	<	1.0004E+00
AKL				
Date				
03/30/95				
Time				
03:00 PM				

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

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

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

Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100

Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100

NOTE: Am 241 Result is a LESS THAN Value

Print

			Detection Level in µCi/mL
Am 241 µCi/mL	=	< 1.00E-03	
Cm 243/244 µCi/mL	=	< 1.00E-03	
Relative counting error (Am-241)	=	11.3%	
Relative counting error (Cm-243/244)	=	52.5%	
Am-243 Tracer Recovery	=	42.4%	1.00E-03

Data Entry by:	[illegible]	Date:	04/04/95
Approved by:	[illegible]	Date:	4 Apr 95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-2) LIQUID

			DUPLICATE
Type	Tracer Book Number		101B43
DUPLICATE	Activity of Am243 Tracer in dpm/mL	(SPKA)	9427
Work List	Tracer Volume in mL	(SPKV)	0.100
824	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	1
@AM24102	Digest Dilution Factor	(DDF)	20
Matrix	Am-241 Area Peak Height from AEA	(C241)	259
LIQUID	Am-243 Area Peak Height from AEA	(C243)	2751
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	12
S95T330	Total AT Count	(ATOT)	8211
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	3
Analyst	Am 241 µCi/L = <		8.0901E-01
AKL			
Date			
03/30/95			
Time			
03:00 PM			

Cm-243/244 µCi/L = CM * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Am-241 µCi/L = C241 * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100
NOTE: **Am 241 Result is a LESS THAN Value**

Print

			Detection Level in µCi/mL
Am 241 µCi/mL	=	< 8.09E-04	
Cm 243/244 µCi/mL	=	< 8.09E-04	
Relative counting error (Am-241)	=	12.7%	
Relative counting error (Cm-243/244)	=	56.7%	
Am-243 Tracer Recovery	=	52.5%	8.09E-04

Data Entry by:	[illegible]	Date:	04/04/95
Approved by:	[illegible]	Date:	4 Apr 95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-2) LIQUID

				SAMPLE
Type	Tracer Book Number			101B43
SAMPLE	Activity of Am243 Tracer in dpm/mL	(SPKA)		9427
Work List	Tracer Volume in mL	(SPKV)		0.100
824	Volume of Sample in mL	(SS)		1.000
Test Code	Dilution Factor	(DF)		1
@AM241-02	Digest Dilution Factor	(DDF)		20
Matrix	Am-241 Area Peak Height from AEA	(C241)		100
LIQUID	Am-243 Area Peak Height from AEA	(C243)		2418
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)		7
S95T331	Total AT Count	(ATOT)		5713
Instrument Code	AT Count Time in Minutes	(MIN CT'd)		30
WC38931	Background in CPM	(BKG)		5
Analyst	Am 241 µCi/L	=	<	1.1240E+00
AKL				
Date				
03/30/95				
Time				
03:00 PM				

Cm-243/244 µCi/L = CM * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Am-241 µCi/L = C241 * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100
NOTE: Am 241 Result is a LESS THAN Value

Print

			Detection Level in µCi/mL
Am 241 µCi/mL	=	< 1.12E-03	
Cm 243/244 µCi/mL	=	< 1.12E-03	
Relative counting error (Am-241)	=	20.0%	
Relative counting error (Cm-243/244)	=	74.2%	
Am-243 Tracer Recovery	=	37.8%	1.12E-03

Data Entry by:	[illegible]	Date:	04/04/95
Approved by:	[illegible]	Date:	4 Apr 95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Am-241 : LA-953-103(A-2) LIQUID

			DUPLICATE
Type	Tracer Book Number		101B43
DUPLICATE	Activity of Am243 Tracer in dpm/mL	(SPKA)	9427
Work List	Tracer Volume in mL	(SPKV)	0.100
824	Volume of Sample in mL	(SS)	1.000
Test Code	Dilution Factor	(DF)	1
@AM241-02	Digest Dilution Factor	(DDF)	20
Matrix	Am-241 Area Peak Height from AEA	(C241)	77
LIQUID	Am-243 Area Peak Height from AEA	(C243)	1947
Sample #	Cm-243/244 Area Peak Height from AEA	(CM)	6
S95T331	Total AT Count	(ATOT)	3501
Instrument Code	AT Count Time in Minutes	(MIN CT'd)	30
WC38931	Background in CPM	(BKG)	3
Analyst	Am 241 µCi/L	= <	1.8300E+00
AKL			
Date			
03/30/95			
Time			
03:00 PM			

Cm-243/244 µCi/L = CM * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Am-241 µCi/L = C241 * SPKA * SPKV * DF * DDF * (1000mL/L) / (C243 * SS * (2220000dpm/µCi))
Tracer % Recovery = ((ATOT / MIN CT'd - BKG) * 2 * (C243 / (C241 + C243)) / (SPKA * SPKV)) * 100
Relative Counting Error (Am-241) = Square Root of ((1 / C241) + (1/C243)) * 1.96 * 100
Relative Counting Error (Cm-243/244) = Square Root of ((1 / CM) + (1/C243)) * 1.96 * 100
NOTE: Am 241 Result is a LESS THAN Value

Print

			Detection Level in µCi/mL
Am 241 µCi/mL	=	< 1.83E-03	
Cm 243/244 µCi/mL	=	< 1.83E-03	
Relative counting error (Am-241)	=	22.8%	
Relative counting error (Cm-243/244)	=	80.1%	
Am-243 Tracer Recovery	=	23.2%	1.83E-03

Data Entry by:	[signature]	Date:	04/04/95
Approved by:	[signature]	Date:	4 Apr 95

A Johnson 4-2-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
WORKLIST-824-STD
File ID: 17a1706.CNF

Counted on: 4/ 1/95 @15:20
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	3403.7	3403.7	307.386	307.386	12.000	4.430	6.000	2.407
2	5737.3	5737.3	261.807	261.805	10.000	3.331	5.000	1.842

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am241	0.360	5.480	5.478	0.002	0.02	91.18	0.9	900.6	0.406E-03
2	Am243	0.558	5.276	5.269	0.007	0.02	141.09	0.8	1323.3	0.596E-03
Totals:		0.918	<--valid peaks only-->				232.26			

DETECTOR CALIBRATION
Energy(MEV) = 4.064 + (0.0046)*Channel
Energy range (MeV): 4.064 TO 6.420
Efficiency = 0.1077 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	121417.0	100.000
Smoothed	121417.7	100.001
Composite fit	111490.9	91.825
Residuals	9926.1	8.175

Analyzed by: _____
DM

Spectrum 17a1706.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 36203.9


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Raw Data Dump for AEA Spectrum: 17a1706.CNF

1	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
21	1.	1.	0.	1.	0.	1.	0.	0.	0.	0.
31	0.	3.	2.	1.	0.	0.	0.	0.	2.	0.
41	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.
51	0.	0.	0.	1.	0.	0.	0.	2.	1.	2.
61	1.	0.	0.	0.	1.	2.	0.	1.	0.	0.
71	0.	0.	0.	1.	0.	1.	0.	0.	0.	0.
81	2.	0.	0.	1.	0.	0.	2.	1.	0.	0.
91	0.	1.	2.	1.	1.	0.	1.	0.	1.	0.
101	0.	0.	0.	0.	1.	0.	0.	0.	2.	0.
111	1.	0.	0.	0.	0.	0.	1.	4.	0.	1.
121	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
131	2.	5.	2.	0.	1.	1.	0.	1.	1.	3.
141	2.	0.	1.	0.	0.	1.	1.	1.	0.	2.
151	1.	1.	2.	1.	3.	3.	1.	1.	3.	3.
161	1.	5.	4.	3.	4.	3.	3.	5.	2.	7.
171	9.	5.	7.	2.	7.	6.	4.	4.	9.	9.
181	6.	8.	8.	15.	12.	15.	15.	15.	18.	18.
191	12.	15.	17.	28.	19.	21.	26.	19.	34.	24.
201	27.	42.	29.	23.	35.	40.	46.	53.	45.	49.
211	54.	53.	53.	71.	70.	79.	63.	101.	78.	89.
221	93.	102.	119.	134.	130.	141.	164.	156.	189.	190.
231	201.	211.	254.	265.	306.	345.	343.	379.	407.	441.
241	495.	511.	597.	570.	705.	731.	841.	917.	1094.	1263.
251	1433.	1704.	1947.	2144.	2343.	2496.	2987.	3658.	4318.	5396.
261	6414.	7131.	6806.	4773.	2578.	1108.	659.	469.	477.	450.
271	423.	421.	433.	399.	379.	326.	265.	266.	217.	202.
281	186.	201.	216.	226.	280.	265.	308.	316.	342.	355.
291	429.	489.	543.	590.	682.	840.	1014.	1178.	1252.	1341.
301	1502.	1658.	1977.	2304.	2980.	3524.	4144.	4200.	3625.	2306.
311	1366.	847.	719.	583.	527.	453.	322.	242.	204.	157.
321	89.	43.	12.	6.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	1.	0.	0.	0.	0.	1.
341	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
351	0.	1.	0.	1.	0.	0.	0.	2.	0.	0.
361	1.	0.	0.	2.	0.	0.	2.	0.	0.	2.
371	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
471	0.	0.	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.								

A Johnson 4-2-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
WORKLIST-824-BLK
File ID: 18a1806.CNF

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

Counted on: 4/ 1/95 @15:21
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	2601.8	2601.8	254.348	254.348	10.000	3.713	5.000	1.476
2	20.6	20.6	160.217	160.198	146.000	1.000	73.000	0.100

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.852	5.276	5.262	0.014	0.02	78.28	1.0	9883.6	0.445E-02
2		0.018		4.829		0.00	1.64	7.0	204.8	0.923E-04
Totals:		0.869	<--valid peaks only-->				79.92			

DETECTOR CALIBRATION
Energy(MEV) = 4.092 + (0.0046)*Channel
Energy range (MeV): 4.092 TO 6.447
Efficiency = 0.0080 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	44121.0	100.000
Smoothed	44120.9	100.000
Composite fit	38361.6	86.946
Residuals	5759.4	13.054

Analyzed by: _____
DM

Spectrum 18a1806.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 16984.1


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Raw Data Dump for AEA Spectrum: 18a1806.CNF

1	0.	0.	0.	0.	0.	0.	0.	3.	0.	0.
11	1.	0.	0.	1.	1.	0.	1.	0.	0.	0.
21	0.	2.	0.	0.	0.	1.	1.	0.	0.	0.
31	1.	0.	0.	1.	2.	0.	0.	1.	0.	0.
41	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
51	0.	0.	0.	1.	1.	0.	0.	1.	1.	2.
61	0.	0.	1.	1.	0.	1.	0.	1.	0.	0.
71	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
81	0.	2.	2.	1.	0.	0.	1.	0.	1.	0.
91	2.	0.	0.	3.	0.	2.	1.	3.	1.	3.
101	2.	0.	2.	1.	2.	1.	1.	3.	1.	0.
111	0.	0.	0.	4.	3.	1.	2.	2.	2.	2.
121	0.	6.	2.	8.	2.	3.	2.	4.	2.	4.
131	6.	4.	4.	7.	3.	7.	4.	6.	4.	7.
141	6.	8.	7.	10.	10.	6.	5.	6.	10.	17.
151	11.	13.	17.	13.	15.	14.	15.	15.	20.	24.
161	13.	20.	15.	16.	12.	17.	18.	15.	24.	21.
171	28.	15.	30.	34.	28.	34.	31.	33.	38.	18.
181	43.	42.	49.	39.	46.	36.	32.	52.	56.	45.
191	46.	56.	44.	52.	61.	53.	41.	59.	67.	78.
201	70.	81.	84.	63.	91.	90.	93.	92.	107.	119.
211	118.	124.	137.	118.	145.	141.	163.	169.	172.	198.
221	183.	223.	209.	233.	261.	246.	295.	303.	335.	373.
231	326.	403.	405.	438.	498.	467.	519.	542.	590.	631.
241	725.	786.	828.	972.	1103.	1216.	1268.	1345.	1453.	1684.
251	1974.	2291.	2738.	2968.	3127.	2838.	1887.	1009.	405.	254.
261	197.	180.	159.	149.	133.	159.	131.	94.	80.	52.
271	60.	23.	20.	11.	0.	0.	1.	1.	0.	1.
281	3.	2.	2.	0.	0.	2.	2.	4.	1.	0.
291	3.	3.	2.	1.	1.	2.	3.	6.	4.	8.
301	4.	7.	3.	3.	2.	2.	0.	0.	0.	3.
311	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
351	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
361	0.	0.	0.	1.	0.	0.	0.	0.	0.	1.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

A Johnson 4-2-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S95T330-SAM
File ID: 19a1906.CNF

Counted on: 4/ 1/95 @15:22
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?	11.2	11.2	366.649	366.649	10.000	3.195	5.000	1.290
2	242.1	242.1	297.948	297.948	12.000	4.133	6.000	2.411
3	2502.8	2502.8	252.088	252.087	10.000	3.206	5.000	1.830

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		5.804			0.32	15.7		
2	Pu238	0.082	5.499	5.488	0.011	0.02	6.17	3.6	441.4	0.199E-03
	Am241		5.480	5.488	-.008				338.1	0.152E-03
3	Am243	0.794	5.276	5.278	-.002	0.01	60.02	1.2	3125.1	0.141E-02
		---					---			
Totals:		0.875	<--valid peaks only-->				66.19			

DETECTOR CALIBRATION
Energy(MEV) = 4.118 + (0.0046)*Channel
Energy range (MeV): 4.118 TO 6.473
Efficiency = 0.0194 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	36301.0	100.000
Smoothed	36300.5	99.999
Composite fit	31930.1	87.959
Residuals	4370.9	12.041

Analyzed by: _____
DM

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                    Spectrum 19a1906.CNF
1 Legend:  Raw = ....  Modeled Peaks = 1,2,.., etc     Display Max.:    15731.5

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Raw Data Dump for AEA Spectrum: 19a1906.CNF

1	0.	0.	1.	1.	0.	2.	1.	0.	0.	1.
11	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
21	1.	0.	0.	0.	0.	1.	0.	0.	2.	0.
31	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
41	0.	1.	0.	0.	0.	0.	0.	0.	0.	2.
51	1.	0.	0.	0.	0.	0.	1.	1.	0.	0.
61	1.	0.	0.	0.	0.	0.	0.	0.	1.	2.
71	1.	1.	1.	0.	0.	0.	0.	1.	0.	1.
81	0.	1.	0.	0.	1.	0.	0.	0.	1.	0.
91	0.	1.	2.	2.	2.	2.	0.	0.	2.	1.
101	0.	1.	1.	0.	2.	0.	1.	1.	3.	1.
111	1.	0.	1.	0.	3.	3.	1.	2.	3.	3.
121	3.	2.	3.	6.	0.	3.	1.	5.	2.	3.
131	4.	3.	1.	4.	2.	2.	4.	7.	2.	10.
141	2.	6.	4.	6.	10.	5.	4.	6.	7.	7.
151	8.	8.	12.	7.	6.	10.	7.	9.	11.	13.
161	10.	3.	8.	6.	12.	14.	12.	13.	10.	13.
171	15.	14.	18.	13.	12.	11.	14.	22.	18.	19.
181	15.	12.	13.	16.	20.	23.	22.	15.	21.	22.
191	27.	22.	18.	31.	30.	26.	33.	32.	35.	22.
201	29.	35.	34.	28.	27.	34.	30.	42.	48.	43.
211	40.	47.	44.	52.	71.	63.	68.	79.	67.	86.
221	74.	105.	96.	96.	119.	129.	145.	162.	170.	201.
231	230.	254.	270.	261.	327.	312.	347.	362.	408.	528.
241	609.	724.	793.	832.	910.	1022.	1136.	1417.	1777.	2300.
251	2716.	3068.	3095.	2391.	1331.	562.	276.	222.	183.	159.
261	135.	136.	138.	150.	128.	89.	82.	59.	37.	34.
271	20.	13.	17.	12.	18.	18.	24.	17.	23.	21.
281	30.	26.	38.	36.	44.	44.	65.	51.	83.	78.
291	87.	110.	124.	151.	171.	205.	252.	336.	257.	194.
301	142.	76.	61.	43.	48.	22.	23.	21.	24.	19.
311	4.	5.	0.	1.	0.	0.	0.	0.	0.	0.
321	0.	0.	1.	1.	1.	0.	0.	0.	0.	1.
331	1.	0.	0.	1.	0.	1.	1.	0.	2.	1.
341	2.	1.	1.	1.	1.	2.	0.	2.	4.	1.
351	1.	1.	0.	1.	4.	3.	6.	11.	6.	7.
361	9.	6.	6.	10.	9.	12.	14.	14.	6.	7.
371	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	1.	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.	0.	0.	0.	0.	0.	0.	0.	1.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
431	1.	0.	2.	2.	1.	1.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	1.	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.								

A Johnson 4-2-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

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

SAMPLE
S95T330-DUP
File ID: 20a2006.CNF

Counted on: 4/ 1/95 @15:23
Detector: AEA20
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?	10.5	10.5	362.500	362.500	12.000	4.503	6.000	1.229
2	220.7	220.7	295.452	295.452	12.000	5.668	6.000	1.660
3	2321.3	2321.3	250.286	250.282	12.000	4.305	6.000	1.375

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		5.796			0.41	13.9		
2	Am241	0.086	5.480	5.481	-.001	0.03	8.68	3.0	683.6	0.308E-03
	Pu238		5.499	5.481	0.018				892.5	0.402E-03
3	Am243	0.814	5.276	5.269	0.007	0.02	82.08	1.0	6141.1	0.277E-02
Totals:		0.900	<--valid peaks only-->				90.75			

DETECTOR CALIBRATION
Energy(MEV) = 4.093 + (0.0047)*Channel
Energy range (MeV): 4.093 TO 6.499
Efficiency = 0.0135 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	48389.0	100.000
Smoothed	48389.2	100.000
Composite fit	43767.8	90.450
Residuals	4621.2	9.550

Analyzed by: _____
DM

Spectrum 20a2006.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 13914.4


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Raw Data Dump for AEA Spectrum: 20a2006.CNF

1	0.	0.	1.	0.	0.	0.	0.	0.	1.	0.
11	0.	1.	0.	0.	0.	2.	0.	0.	0.	2.
21	0.	1.	0.	0.	0.	0.	0.	1.	1.	0.
31	2.	0.	0.	0.	0.	2.	1.	0.	2.	1.
41	1.	0.	0.	1.	0.	1.	1.	0.	2.	1.
51	0.	1.	1.	1.	1.	0.	1.	0.	1.	1.
61	1.	1.	0.	0.	0.	0.	0.	1.	2.	1.
71	1.	0.	1.	1.	0.	1.	0.	1.	0.	1.
81	0.	1.	0.	1.	0.	1.	2.	2.	1.	5.
91	3.	2.	0.	1.	0.	1.	1.	1.	2.	1.
101	0.	1.	2.	3.	0.	5.	4.	4.	2.	4.
111	3.	2.	0.	2.	3.	4.	4.	0.	2.	7.
121	3.	7.	2.	3.	6.	6.	4.	4.	8.	8.
131	5.	3.	6.	10.	6.	6.	9.	9.	5.	5.
141	6.	8.	10.	15.	14.	3.	16.	8.	9.	21.
151	13.	21.	10.	18.	18.	19.	17.	16.	15.	18.
161	21.	16.	15.	19.	26.	23.	28.	26.	19.	11.
171	21.	20.	21.	30.	36.	36.	30.	27.	34.	35.
181	34.	34.	40.	41.	45.	39.	55.	44.	65.	54.
191	55.	62.	47.	67.	62.	61.	70.	71.	81.	86.
201	86.	111.	80.	106.	122.	93.	102.	127.	120.	145.
211	157.	162.	157.	162.	180.	187.	252.	236.	254.	273.
221	297.	305.	333.	341.	381.	408.	427.	444.	433.	550.
231	573.	581.	625.	614.	700.	778.	821.	856.	897.	1040.
241	1110.	1188.	1260.	1348.	1471.	1668.	1853.	2136.	2448.	2649.
251	2751.	2401.	1856.	1028.	559.	288.	228.	170.	191.	165.
261	161.	152.	153.	116.	110.	86.	69.	59.	53.	50.
271	38.	42.	42.	46.	55.	47.	59.	60.	79.	60.
281	76.	96.	95.	103.	113.	96.	116.	115.	136.	136.
291	164.	160.	200.	240.	224.	259.	246.	172.	118.	83.
301	53.	43.	44.	38.	27.	21.	20.	16.	7.	2.
311	3.	0.	1.	0.	0.	0.	0.	1.	1.	1.
321	1.	1.	0.	2.	1.	1.	1.	3.	0.	2.
331	1.	1.	1.	2.	4.	0.	5.	0.	2.	1.
341	3.	4.	0.	3.	3.	4.	2.	3.	5.	2.
351	6.	7.	4.	9.	7.	7.	12.	9.	4.	9.
361	12.	10.	12.	12.	8.	7.	5.	2.	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.	0.	0.	1.	1.	0.
401	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
411	0.	0.	0.	1.	0.	0.	1.	2.	2.	1.
421	1.	0.	0.	0.	0.	3.	1.	1.	1.	1.
431	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

A.L. Johnson 4-2-95

Westinghouse Hanford Co.

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

Rev. 2.01

DATA REDUCTION REPORT

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

SAMPLE
S95T331-SAM
File ID: 21a2105.CNF

Counted on: 4/ 1/95 @15:23
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	78.7	78.7	302.614	302.614	10.000	4.163	5.000	2.270
2	1982.2	1982.2	257.245	257.245	12.000	3.550	6.000	1.738

PEAK RESULTS

Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu238	0.033	5.499	5.488	0.011	0.02	2.07	6.2	142.2	0.641E-04
	Am241		5.480	5.488	-.008				108.9	0.491E-04
2	Am243	0.850	5.276	5.275	0.001	0.02	52.63	1.2	2632.0	0.119E-02
Totals:		0.884	<--valid peaks only-->				54.70			

DETECTOR CALIBRATION

Energy(MEV) = 4.066 + (0.0047)*Channel
Energy range (MeV): 4.066 TO 6.472
Efficiency = 0.0202 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	29725.0	100.000
Smoothed	29724.5	99.998
Composite fit	26263.1	88.353
Residuals	3461.9	11.647

Analyzed by: _____
DM

Spectrum 21a2105.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 9790.2


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Raw Data Dump for AEA Spectrum: 21a2105.CNF

1	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	1.	0.	0.	0.	0.	0.	0.	2.	1.	1.
31	0.	1.	1.	0.	0.	0.	0.	0.	1.	0.
41	0.	0.	0.	1.	0.	0.	0.	1.	2.	1.
51	0.	0.	0.	0.	1.	0.	1.	0.	0.	0.
61	1.	0.	0.	0.	0.	1.	1.	0.	1.	2.
71	0.	0.	0.	0.	2.	1.	1.	1.	1.	0.
81	1.	1.	1.	1.	0.	3.	0.	1.	1.	0.
91	1.	0.	0.	1.	0.	1.	0.	1.	0.	1.
101	1.	2.	1.	1.	1.	0.	4.	1.	2.	2.
111	0.	3.	4.	1.	3.	0.	2.	6.	1.	5.
121	3.	4.	2.	2.	2.	3.	3.	9.	2.	5.
131	3.	5.	3.	3.	4.	3.	4.	3.	3.	3.
141	0.	4.	5.	2.	5.	4.	5.	5.	3.	4.
151	2.	3.	7.	10.	4.	5.	10.	5.	12.	13.
161	10.	11.	9.	9.	13.	9.	7.	15.	9.	9.
171	8.	15.	6.	8.	12.	18.	7.	13.	20.	15.
181	17.	13.	21.	17.	20.	9.	23.	13.	18.	18.
191	15.	17.	22.	28.	22.	31.	19.	21.	26.	24.
201	24.	27.	29.	26.	32.	32.	36.	38.	33.	37.
211	43.	46.	40.	45.	57.	54.	52.	52.	65.	66.
221	69.	68.	64.	88.	75.	89.	81.	119.	111.	119.
231	115.	136.	144.	171.	164.	183.	208.	246.	245.	243.
241	256.	311.	343.	401.	471.	538.	600.	718.	754.	905.
251	986.	1077.	1195.	1490.	1703.	2109.	2372.	2418.	2051.	1290.
261	596.	295.	190.	158.	134.	124.	127.	106.	99.	100.
271	92.	67.	44.	35.	23.	12.	11.	10.	6.	4.
281	6.	8.	11.	6.	12.	7.	10.	11.	14.	21.
291	21.	11.	31.	33.	32.	30.	34.	32.	45.	76.
301	68.	98.	100.	86.	58.	34.	22.	17.	16.	16.
311	5.	5.	0.	8.	6.	3.	1.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
331	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
341	0.	0.	0.	0.	1.	0.	1.	0.	0.	0.
351	1.	1.	0.	2.	1.	1.	1.	0.	1.	0.
361	2.	1.	3.	4.	1.	0.	5.	1.	6.	7.
371	6.	3.	2.	3.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	2.	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.	1.	0.	0.	0.
431	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

A Johnson 4-2-95

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
S95T331-DUP
File ID: 22a2205.CNF

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

Counted on: 4/ 1/95 @15:24
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	56.2	56.2	304.430	304.430	10.000	3.828	5.000	2.247
2	1521.2	1521.2	258.865	258.865	10.000	3.042	5.000	1.986

PEAK RESULTS
Peak Error Limit: 25%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu238	0.035	5.499	5.481	0.018	0.02	1.40	7.6	20.2	0.910E-05
	Am241		5.480	5.481	-.001				15.5	0.697E-05
2	Am243	0.844	5.276	5.272	0.004	0.01	33.83	1.5	355.9	0.160E-03
Totals:		0.879	<--valid peaks only-->				35.23			

DETECTOR CALIBRATION
Energy(MEV) = 4.081 + (0.0046)*Channel
Energy range (MeV): 4.081 TO 6.436
Efficiency = 0.0960 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	19236.0	100.000
Smoothed	19236.0	100.000
Composite fit	16911.1	87.914
Residuals	2324.9	12.086

Analyzed by: _____
DM

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                    Spectrum 22a2205.CNF
1 Legend:  Raw = ....  Modeled Peaks = 1,2,.., etc     Display Max.:    8764.1

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Raw Data Dump for AEA Spectrum: 22a2205.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
31	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
41	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
51	1.	1.	0.	0.	0.	1.	0.	0.	1.	0.
61	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
71	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
81	1.	0.	2.	0.	0.	0.	0.	0.	0.	0.
91	1.	1.	2.	1.	0.	1.	0.	0.	0.	0.
101	0.	0.	1.	0.	1.	2.	0.	0.	0.	0.
111	0.	1.	0.	1.	4.	1.	3.	1.	2.	1.
121	2.	3.	3.	2.	3.	1.	3.	0.	1.	1.
131	1.	1.	2.	1.	2.	4.	0.	3.	5.	3.
141	3.	4.	3.	3.	2.	4.	4.	7.	4.	3.
151	1.	5.	2.	5.	2.	5.	7.	2.	4.	3.
161	5.	3.	5.	4.	8.	8.	2.	2.	4.	5.
171	2.	5.	6.	7.	8.	9.	12.	11.	9.	7.
181	5.	10.	7.	9.	9.	14.	11.	11.	11.	14.
191	15.	7.	9.	12.	12.	10.	11.	6.	15.	10.
201	13.	13.	18.	12.	10.	10.	11.	16.	21.	21.
211	16.	30.	21.	18.	22.	21.	17.	22.	30.	28.
221	30.	27.	23.	28.	36.	31.	33.	35.	26.	38.
231	45.	46.	42.	51.	73.	71.	63.	100.	88.	94.
241	100.	108.	150.	154.	177.	218.	265.	317.	382.	481.
251	481.	511.	582.	702.	868.	1076.	1418.	1702.	1947.	1804.
261	1277.	649.	265.	156.	106.	83.	98.	91.	92.	92.
271	90.	74.	50.	45.	34.	19.	9.	2.	2.	3.
281	4.	4.	3.	4.	5.	2.	5.	6.	4.	6.
291	14.	8.	8.	13.	20.	24.	18.	28.	25.	32.
301	35.	43.	54.	63.	77.	62.	25.	22.	13.	13.
311	9.	9.	6.	4.	3.	2.	3.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	1.	0.	0.	0.	0.	0.	0.	1.	1.	0.
351	0.	0.	0.	1.	1.	0.	0.	0.	0.	1.
361	0.	1.	0.	5.	2.	1.	1.	4.	1.	1.
371	4.	6.	5.	1.	2.	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	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
441	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	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.								