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2	1	Cog.Eng. Ruth A. Esch Ruth A. Esch 1/4/96			
2	1	Cog. Mgr. J.G. Kristofzski 1/5/96			
2	1	QA Tzu L. Tung 1/4/96			
		Safety			
		Env.			
2	1	Production, Planning & Control A.D. Rice 1-4-96			
4	4	Ruth D. Schreiber Ruth D. Schreiber 1/4/96			

18. L. R. Webb 1-8-96
Signature of EDT Originator — Date

19. N/A
Authorized Representative for Receiving Organization — Date

20. J.G. Kristofzski 1/6/96
Cognizant Manager — Date

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R. A. Esch
Westinghouse Hanford Company, Richland, WA 99352
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Hanford Company

P.O. Box 1970 Richland, WA 99352

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ANALYTICAL SERVICES

60-DAY COMPATIBILITY SAFETY ISSUES AND FINAL RESULTS FOR 244-TX DCRT, GRAB SAMPLES TX-95-1, TX-95-2 AND TX-95-3

Project Coordinator: RUTH A. ESCH

Prepared for the U.S. Department of Energy
Office of Environmental Restoration
and Waste Management

by

Westinghouse Hanford Company
Box 1970
Richland, Washington

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NARRATIVE

60 DAY WASTE COMPATIBILITY SAFETY ISSUE AND FINAL RESULTS FOR 244-TX DCRT GRAB SAMPLES TX-95-1, TX-95-2 AND TX-95-3

Summary

Three grab samples (TX-95-1, TX-95-2, and TX-95-3) were taken from tank 241-TX-244 riser 8 on November 7, 1995 and received by the 222-S Laboratory on that same day. Samples TX-95-1 and TX-95-2 were designated as supernate liquids, and sample TX-95-3 was designated as a supernate/sludge. These samples were analyzed to support the waste compatibility safety program. Accuracy and precision criteria were met for all analyses. No notifications were required based on sample results.

Appearance, Over-the-Top Reading and Sample Breakdown

Attachment 1 is provided as a cross-reference for relating the tank farm customer ID numbers with the 222-S Laboratory LABCORE sample numbers and the portion of the sample that was analyzed.

Table 1 summarizes the appearance information and the over-the-top (OTR) readings that were performed on these samples.

Table 1: Appearance and OTR for 244-TX DCRT Liquid Grab Samples

CUSTOMER ID	LAB ID	APPEARANCE				OTR (MRAD/HR)
		Color	Clarity	Org Layer	Solids	
TX-95-1	S95T003591	Yellow	Clear	None	Trace Red/brown	60
TX-95-2	S95T003592	Yellow	Clear	None	None	200
TX-95-3	S95T003593	Yellow	Clear	None	~40% Settled Dark brown	250

Sample TX-95-3 contained about 40% settled solids and was the only sample that required special handling, as directed in the referenced TSAP. The sample handling is described below.

The percent settled solids was determined by calculating the ratio of the measured height of the settled solids to that of the entire sample. This method gives a close approximation of the actual percent solids. The result was 35.7% settled solids.

The liquid was removed from the settled solids and discarded. It was difficult to remove all of the liquid layer without also collecting some of the solids. Therefore, approximately 2 mm of liquid was left on the surface of the settled solids (sludge).

The sludge was transferred to four centrifuge cones. The following data was collected BEFORE the sludge was centrifuged.

Weight of sludge: 46.38 g	Bulk Density
Volume of sludge: 40.2 mL	Sludge = 1.15 g/mL

The sludge was centrifuged for 1 hour to determine the volume percent solids and to separate the liquid and solid portions. After centrifugation the surface of the solids appeared "pimpled". The liquid was decanted and discarded after volume measurements were taken.

The following data was collected AFTER centrifugation.

Weight of solids:	21.32 g	Bulk Density
Volume of solids:	16.15 mL	Solids alone = 1.32 g/mL
Weight of liquids:	25.06 g	Bulk Density
Volume of liquids:	23.25 mL	Liquids alone = 1.08 g/mL

The volume percent solids was calculated, after centrifugation, as follows:

$$\text{Vol \% Solids} = \frac{\text{Total vol solids}}{\text{Vol liquids + Vol solids}} = \frac{16.15 \text{ mL}}{39.40 \text{ mL}} \times 100 = 41\% \text{ solids}$$

The solids were very dark brown after removing the liquid. Approximately 14.35 g was collected for analysis. The dose rate was 300 mrad/hr. The material that remained after all analyses were complete was archived for possible future analysis.

Analytical Results

Tables

Two result tables are attached. Table 2 is the summary report from the Laboratory Information Management System (LABCORE). Table 3 provides the inductively coupled plasma (ICP) serial dilution results. The serial dilution values were obtained from the raw data. The accuracy of the ICP results was assessed using these results in addition to matrix spikes. The sample was analyzed both undiluted and with a 5-fold serial dilution. For acceptable performance, the relative percent difference (RPD) between the serial dilution and the undiluted results must be less than or equal to 10%.

Analytical Deviations

TX-95-1 and TX-95-2

For sample TX-95-1, sample number S95T003708 was analyzed for inorganic analytes, and S95T003710 for radionuclides. The supernate remaining after subsampling was archived as S95T003591.

With respect to sample TX-95-2, sample number S95T003709 was analyzed for inorganic analytes, and S95T003711 for radionuclides. The supernate remaining after subsampling was archived as S95T003592.

The strontium analysis had ^{90}Sr detected in the blank (the blank result was nearly twice the detection limit calculated for the sample). This indicates that the samples may have become contaminated during the analysis. However, since the blank result was several orders of magnitude less than the sample result, no reruns were requested.

For the gamma energy analysis (GEA), ^{60}Co results are given in Table 2 with the ^{137}Cs results.

The OH^- analysis was performed prior to the pH analysis, and was reported as less than the detection limit (<42 μg/mL). This detection limit is based on the small sample size used due to limited sample. Since the sample result showed no detectable OH^-, and in an effort to conserve sample for other analyses, no duplicate was run. The duplicate result was reported as I.S. to indicate that there was insufficient sample to rerun with a larger sample size to achieve a lower detection limit. Since the pH measured during the analysis was less than 12, the OH^- analysis was not required, and no reruns were requested.

The spike recovery for the fluoride (F^-) analysis on sample S95T003708 was 144.9%. This value is high with respect to the laboratories recommended control limits of 75% - 125% recovery. Since the high recovery is due to matrix interferrence, no reruns were requested.

TX-95-3

The volume percent solids result for the solid portion of the sludge was reported on sample number S95T003767. Analyses for total alpha (AT), total beta (TB), $^{239/240}Pu$, total uranium (U), and iron (Fe) by inductively coupled plasma (ICP) were performed on a fusion digest as sample number S95T003768. These are designated with an "F" in the aliquot class (A#) column in Table 2. The material remaining after all analyses were complete was archived as sample number S95T003767.

The TB analysis had detectable beta activity in the blank (the blank result was slightly above the calculated detection limit). This indicates that the samples may have become contaminated during sample preparation, or during the analysis. However, since the blank result was several orders of magnitude less than the sample result, no reruns were requested.

Procedures

Table 4 lists the analytical procedures used for performing the sample analyses. Abreviations for analyses are defined in the table notes.

Table 4: Analytical Procedures

Analysis	Sample Portion	Preparation Procedure +	Analysis Procedure
DSC	Supernate	N/A	LA-514-113 Rev. C-0
TGA	Supernate	N/A	LA-560-112 Rev. B-0
TOC	Supernate	N/A	LA-344-105 Rev. C-0
GEA: ^{137}Cs	Supernate	N/A	LA-548-121 Rev. D-1
90Sr	Supernate	N/A	LA-220-101 Rev. D-1
ICP: Al, Fe, Na ICP: Fe only	Supernate Solid	N/A LA-549-141 Rev. D-0	LA-505-161 Rev. C-0 LA-505-151 Rev. D-3
OH	Supernate	N/A	LA-211-102 Rev. C-0
IC: Cl^-, F^-, PO_4^{3-}, SO_4^{2-}, NO_3^-, NO_2^-	Supernate	N/A	LA-533-105 Rev. D-1
pH	Supernate	N/A	LA-212-106 Rev. A-0
TIC *	Supernate	N/A	LA-622-102 Rev. C-0
$^{239/240}Pu$ *	Supernate Solid	N/A LA-549-141 Rev. D-0	LA-943-127 Rev. B-0
^{241}Am	Supernate	N/A	LA-953-103 Rev. A-4
Sp.G.	Supernate	N/A	LA-510-112 Rev. C-3
U	Solid	LA-549-141 Rev. D-0	LA-925-009 Rev. A-1
AT/TB	Solid	LA-549-141 Rev. D-0	LA-508-101 Rev. D-2

Notes:

* Deviations: TIC procedure LA-344-105, listed in the referenced TSAP, is incorrect.

$^{239/240}Pu$ procedure LA-503-156, listed in the referenced TSAP, was superseded by the procedure listed in the table.

+ The preparation used on the solid samples is a fusion digestion. This preparation is denoted with an "F" in the aliquot class (A#) column in Table 2. The ICP direct analyses on the liquid samples are denoted with a "D" in the A# column in Table 2 to indicate that an acidification or dilution was performed.

Abreviations:
N/A = not applicable (direct samples)
DSC = differential scanning calorimetry
TGA = thermogravimetric analysis
TOC = total organic carbon
GEA = gamma energy analysis
ICP = inductively coupled plasma; the two procedures are analytically equivalent, two different instruments were used.
OH = hydroxide
IC = ion chromatography
TIC = total inorganic carbon
Sp.G. = specific gravity
AT/TB = total alpha/total beta

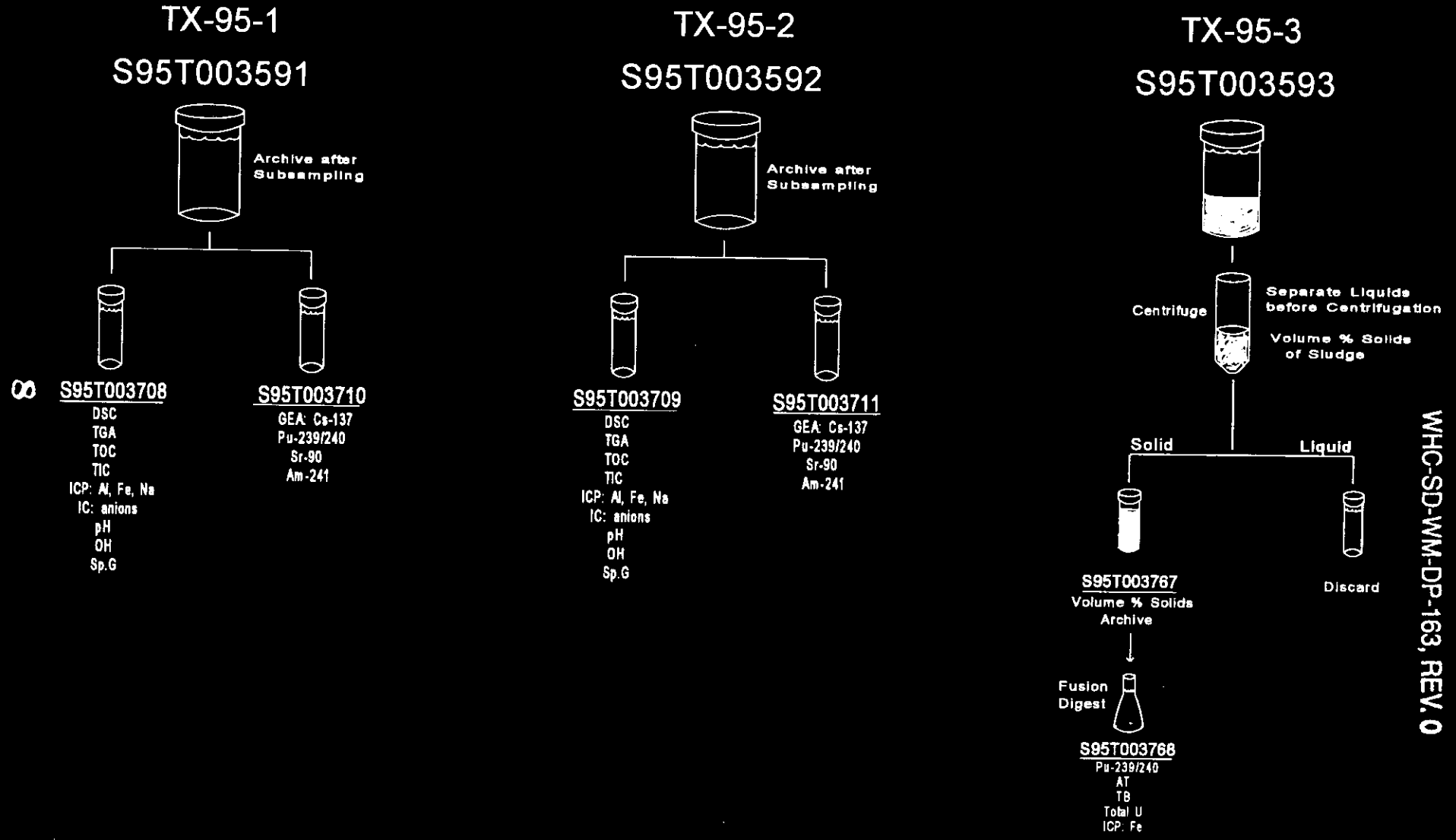
Reference

WHC-SD-WM-TSAP-037, Rev. 1C, "Compatibility Grab Sampling and Analysis Plan", dated November 21, 1995, Westinghouse Hanford Company, Richland, WA 99352

ATTACHMENT 1

TX-244 GRAB SAMPLE BREAKDOWN

Attachment 1
TX-244 GRAB SAMPLE BREAKDOWN
Riser 8



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SUBSAMPLE WORKSHEET

Tank: TX-244 **Core:** N/A Auger/Segment: N/A

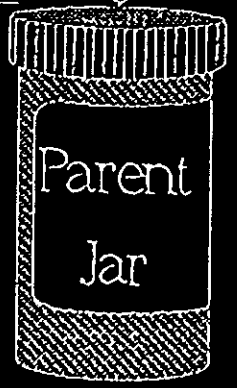
Date: / /

Date Subsampled: / /

P.C. RA Esch

Phone# 373-4314

Jar Depleted: YES/NO ☐ ☒



Parent Jar

LABCORE # S95T003591

Jar#: orig. bottle

Jar/Vial Size: 125 mL

Initial Weight: _____ g

Final Weight _____ g

Net Weight: _____ g

Group # 95000189

Bin# ☐

WHC-SD-WM-DP-163, REV. 0

6

Labcore Entry Initials: _____

Tests: _____

LABCORE # N/A

Jar#

Jar/Vial Size: _____ mL

Final Weight: _____ g

Initial Weight: _____ g

Net Weight: _____ g

RAE 12/8/95

Labcore Entry Initials: _____

Tests: _____

LABCORE # _____

Jar#

Jar/Vial Size: _____ mL

Final Weight: _____ g

Initial Weight: _____ g

Net Weight: _____ g

Bin #

Labcore Entry Initials: _____

Tests: ARCHIVE

LABCORE # S95T003591

Jar# orig. bottle

Jar/Vial Size: 125 mL

Final Weight: _____ g

Initial Weight: _____ g

Net Weight: _____ g

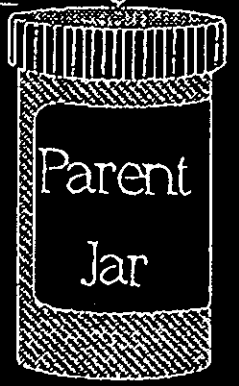
Special Instructions: move sample from room 2B to hotcell for archive. Sample will be archived in the original sample bottle. Archive data entry can report ~~*~~ 93 g with comment "wt. based on ~85 mL with SpG = 1.09".

12/8/95

09/26/95 08:38 509 373 1432 002

SUBSAMPLE WORKSHEET

Tank: TX-244 **Core:** N/A Auger/Segment: N/A



Date: / /

Date Subsampled: / /

P.C. RA Esch

Phone# 373-4314

Jar Depleted: YES/NO ☐ ☒

Parent Jar

LABCORE # S95T003592

Jar#: orig. bottle

Jar/Vial Size: 125 mL

Initial Weight: _____ g

Final Weight _____ g

Net Weight: _____ g

Group # 95000189

Bin# ☐

WHC-SD-WM-DP-163, REV. 0

Labcore Entry Initials:	Labcore Entry Initials:	Labcore Entry Initials:
Tests:	Tests:	Bin #
LABCORE #	LABCORE #	Tests: ARCHIVE
Jar#	Jar#	LABCORE # S95T003592
Jar/Vial Size: _____ mL	Jar/Vial Size: _____ mL	Jar# orig. bottle
Final Weight: _____ g	Final Weight: _____ g	Jar/Vial Size: 125 mL
Initial Weight: _____ g	Initial Weight: _____ g	Final Weight: _____ g
Net Weight: _____ g	Net Weight: _____ g	Initial Weight: _____ g
		Net Weight: _____ g

N/A West 12/8/95

Special Instructions: move sample from room 2B to hotcell for archive. Sample will be archived in the original sample bottle. Archive data entry can report 92 g with comment "wt. based on ~85 mL with SpG = 1.08."

SAMPLE DATA SUMMARY

Table 2: Results for Waste Compatibility Study
TX-244 GRAB

RISER: 8
SEGMENT #: TX-95-1

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003708			Tot. Organic Carbon by Coul.	ug/mL	101.0	4.00e-01	1.86e+03	1.71e+03	1.78e+03	8.40	92.80	55.00	n/a
S95T003708			Tot. Inorg. Carbon by Coul.	ug/mL	91.68	2.200	2.12e+03	2.04e+03	2.08e+03	3.85	95.80	55.00	n/a
S95T003708			% Water by TGA using Mettler	%	100.9	n/a	85.80	85.76	85.78	0.05	n/a	n/a	n/a
S95T003708			Specific Gravity	Sp.G.	96.40	n/a	1.090	1.090	1.090	0.00	n/a	1.00e-02	n/a
S95T003708			pH Direct	pH	100.1	n/a	10.19	10.15	10.17	0.39	n/a	1.00e-02	n/a
S95T003708			OH- by Pot. Titration	ug/mL	95.18	<42.00	< 42	I.S.	n/a	n/a	n/a	42.00	n/a
S95T003708		D	DSC Exotherm on Perkin Elmer	Joules/g	96.48	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S95T003708		D	Aluminium-ICP-Acid Dil.	ug/mL	97.20	<5.00e-02	<5.05e+00	<5.05e0	n/a	n/a	97.60	5.050	n/a
S95T003708		D	Iron-ICP-Acid Dil.	ug/mL	104.4	<5.00e-02	21.50	21.80	21.65	1.39	102.4	5.050	n/a
S95T003708		D	Sodium-ICP-Acid Dil.	ug/mL	98.00	<1.00e-01	4.14e+04	4.12e+04	4.13e+04	0.48	n/a	10.10	n/a
S95T003708			Sulfate by IC - Dionex 4000i	ug/mL	105.2	<1.19e-01	8.12e+03	8.10e+03	8.11e+03	0.25	104.8	151.1	n/a
S95T003708			Phosphate by IC - Dionex 4000i	ug/mL	110.6	<1.19e-01	5.05e+03	5.01e+03	5.03e+03	0.80	107.9	132.2	n/a
S95T003708			Nitrate by IC - Dionex 4000i	ug/mL	107.5	<1.40e-01	7.25e+04	7.20e+04	7.23e+04	0.69	107.2	1.43e+03	n/a
S95T003708			Nitrite by IC - Dionex 4000i	ug/mL	105.2	<1.07e-01	1.19e+04	1.19e+04	1.19e+04	0.00	109.5	118.9	n/a
S95T003708			Fluoride by IC - Dionex 4000i	ug/mL	111.7	<1.30e-02	686.4	673.0	679.7	1.91	144.9	14.44	n/a
S95T003708			Chloride by IC - Dionex 4000i	ug/mL	105.4	<1.70e-02	709.8	682.0	695.9	4.02	97.77	18.89	n/a
S95T003710			Strontium-89/90 High Level	uCi/mL	99.13	8.72e-04	8.49e-02	8.33e-02	8.41e-02	1.90	n/a	4.97e-04	3.19E+00
S95T003710			Pu-239/240 by Ion Exchange	uCi/mL	103.1	<7.17e-05	4.27e-03	4.27e-03	4.27e-03	0.00	n/a	2.37e-04	1.81E+00
S95T003710			Cesium-137 by GEA	uCi/mL	101.6	<1.18e-04	6.530	6.770	6.650	3.61	n/a	1.18e-04	0.24
S95T003710			Cobalt-60 by GEA	uCi/mL	97.65	<5.68e-05	<4.03e-04	7.08e-04	n/a	n/a	n/a	5.68e-05	n/a
S95T003710			Am-241 by Extraction	uCi/mL	88.60	<2.90e-04	<2.73E-04	<2.95E-4	n/a	n/a	n/a	2.73e-04	5.65E+00

Table 2: Results for Waste Compatibility Study
TX-244 GRAB

RISER: 8
SEGMENT #: TX-95-2

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003709			Tot. Organic Carbon by Coul.	ug/mL	101.0	4.00e-01	2.08e+03	1.78e+03	1.93e+03	15.5	n/a	55.00	n/a
S95T003709			Tot. Inorg. Carbon by Coul.	ug/mL	91.68	2.200	2.32e+03	1.99e+03	2.16e+03	15.5	n/a	55.00	n/a
S95T003709			% Water by TGA using Mettler	%	100.9	n/a	85.31	86.46	85.88	1.34	n/a	n/a	n/a
S95T003709			Specific Gravity	Sp.G.	96.40	n/a	1.080	1.080	1.080	0.00	n/a	1.00e-02	n/a
S95T003709			pH Direct	pH	100.1	n/a	10.19	n/a	n/a	n/a	n/a	1.00e-02	n/a
S95T003709			OH- by Pot. Titration	ug/mL	95.18	<42.00	< 42	I.S.	n/a	n/a	n/a	42.00	n/a
S95T003709			DSC Exotherm on Perkin Elmer	Joules/g	96.48	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S95T003709	D		Aluminium-ICP-Acid Dil.	ug/mL	97.20	<5.00e-02	<5.05e+00	<5.05e0	n/a	n/a	97.10	5.050	n/a
S95T003709	D		Iron-ICP-Acid Dil.	ug/mL	104.4	<5.00e-02	20.80	20.70	20.75	0.48	97.20	5.050	n/a
S95T003709	D		Sodium-ICP-Acid Dil.	ug/mL	98.00	<1.00e-01	4.30e+04	4.25e+04	4.28e+04	1.17	n/a	10.10	n/a
S95T003709			Sulfate by IC - Dionex 4000i	ug/mL	105.2	<1.19e-01	8.12e+03	8.27e+03	8.20e+03	1.83	n/a	151.1	n/a
S95T003709			Phosphate by IC - Dionex 4000i	ug/mL	110.6	<1.19e-01	5.10e+03	5.14e+03	5.12e+03	0.78	n/a	132.2	n/a
S95T003709			Nitrate by IC - Dionex 4000i	ug/mL	107.5	<1.40e-01	7.39e+04	7.37e+04	7.38e+04	0.27	n/a	1.43e+03	n/a
S95T003709			Nitrite by IC - Dionex 4000i	ug/mL	105.2	<1.07e-01	1.19e+04	1.21e+04	1.20e+04	1.67	n/a	118.9	n/a
S95T003709			Fluoride by IC - Dionex 4000i	ug/mL	111.7	<1.30e-02	690.4	701.0	695.7	1.58	n/a	14.44	n/a
S95T003709			Chloride by IC - Dionex 4000i	ug/mL	105.4	<1.70e-02	704.9	716.0	710.5	1.55	n/a	18.89	n/a
S95T003711			Strontium-89/90 High Level	uCi/mL	99.13	8.72e-04	9.24e-02	9.19e-02	9.21e-02	0.54	n/a	4.96e-04	3.05E+00
S95T003711			Pu-239/240 by Ion Exchange	uCi/mL	103.1	<7.17e-05	4.42e-03	4.41e-03	4.42e-03	0.23	n/a	2.48e-04	1.77E+00
S95T003711			Cesium-137 by GEA	uCi/mL	101.6	<1.18e-04	6.790	7.160	6.975	5.30	n/a	1.18e-04	0.23
S95T003711			Cobalt-60 by GEA	uCi/mL	97.65	<5.68e-05	6.68e-04	<0.00e0	n/a	n/a	n/a	5.68e-05	36.58
S95T003711			Am-241 by Extraction	uCi/mL	88.60	<2.90e-04	<2.56E-04	<2.88E-4	n/a	n/a	n/a	2.56e-04	5.25E+00

Table 2: Results for Waste Compatibility Study
TX-244 GRAB

RISER: 8
SEGMENT #: TX-95-3

SEGMENT PORTION: Sludge (from Liquid Grab Sample)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003767			Volume % Solids	%	n/a	n/a	41.00	n/a	n/a	n/a	n/a	n/a	n/a
S95T003768		F	Alpha of Digested Solid	uCi/g	106.2	<4.35e-03	1.950	1.860	1.905	4.72	94.90	5.11e-03	2.65E+00
S95T003768		F	Beta of Solid Sample	uCi/g	108.0	1.78e-02	35.40	34.40	34.90	2.87	108.8	1.77e-02	4.38E-01
S95T003768		F	Iron -ICP-Fusion	ug/g	101.8	<5.00e-02	2.83e+04	3.02e+04	2.92e+04	6.50	99.50	998.0	n/a
S95T003768		F	Pu-239/240 by Ion Exchange	uCi/g	88.28	<3.90e-02	5.36e-01	5.89e-01	5.62e-01	9.42	n/a	3.54e-02	2.11E+00
S95T003768		F	Uranium by Phosphorescence	ug/g	90.40	5.700	2.04e+03	2.06e+03	2.05e+03	0.98	98.07	1.080	3.09E+00

Table 3

ICP Serial Dilution Results for 244-TX DCRT
Waste Compatibility Study

Sample ID	Analyte	Sample Result (µg/mL) Undiluted	Serial Dilution Result (µg/mL)	RPD
S95T003708				
(TX-95-1)	Al	<5.05	<5.05	n/a
	Fe	21.50	23.35	8.2
	Na	4.14E+04	4.34E+04	4.7
S95T003709				
(TX-95-2)	Al	<5.05	<5.05	n/a
	Fe	20.80	20.70	0.5
	Na	4.30E+04	4.51E+04	4.8
S95T003768				
(TX-95-3)	Fe *	2.83E+04	2.77E+04	2.1

RPD (Relative Percent Difference) = (ABS(Sample - Serial Dilution))/[(Sample +Serial Dilution)/2] X 100

* The Fe results for this sample are reported in µg/g.

CHAIN OF CUSTODY FORMS

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

COPY

C.O.C. No. N/A

Page 1 of 1

Collector: J. Sickels	Contact/Requestor: N/A	Telephone No.: 373-3578 MSIN: S7/03 FAX:
SAF No.: SEE below	Sample Origin: 244-TX R# 8	Purchase Order/Charge Code: N/A
Project Title: N/A	Logbook No.: N/A	Ice Chest No.: N/A Temp.:
Shipped To (Lab): 222S	Method of Shipment: WESTINGHOUSE TRANSPORTATION	Bill of Lading/Air Bill No.: N/A
Protocol: N/A	Data Turnaround: N/A	Offsite Property No.: N/A

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
TX-95-1		—	11-7-95	1114	1 GLASS 125mL	DOSE ON CONTACT 27mR/Hr	N/A
TX-95-2		✓	11-7-95	1126	1 GLASS 125mL		

17

WHC-SD-WM-DP-163, REV. 0

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes): Radioactive

MSDS ☐ Yes ☒ No

SPECIAL INSTRUCTIONS: SEAL # Sample #1 1051; " " " #2 1050

Hold Time: N/A

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
James Sickels	JAMES	Sickels	11-7-95 1250	James [signature]		James Fluhanty	11-7-95 1309
James [signature]		JAMES Fluhanty	1340/11-7	[signature]		SS Dubes	11-7-95 1340

Matrix*

S	= Soil	DS	= Drum Solids
SE	= Sediment	DL	= Drum Liquids
SO	= Solid	T	= Tissue
SL	= Sludge	WI	= Wipe
W	= Water	L	= Liquid
O	= Oil	V	= Vegetation
A	= Air	X	= Other

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

DISTRIBUTION: White - Remain with Samples Color - Customer

BC-6000-828 (09/95)

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

COPY

C.O.C. No. N/A

Page 1 of 1

Collector: JAMES SICKELS	Contact/Requestor: N/A	Telephone No.: 373-3578 MSIN: 57/03 FAX:
SAF No.: N/A	Sample Origin: TX-244 R# 8	Purchase Order/Charge Code: N/A
Project Title: N/A	Logbook No.: N/A	Ice Chest No.: N/A Temp.:
Shipped To (Lab): 222S	Method of Shipment: WHC $TRANSPORTATION TB 11-7-95	Bill of Lading/Air Bill No.: N/A
Protocol: N/A	Data Turnaround: N/A	Offsite Property No.: N/A

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
TX-95-3		L	11-7-95	1135	1-GLASS (125 mL)	DOSE ON CONTACT 52 mR/hr	N/A

18

WHC-SD-WM-DP-163, REV. 0

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes): RADIOACTIVE

MSDS ☐ Yes ☒ No

SPECIAL INSTRUCTIONS: ~~SEE A~~ SEAL # 1049 TB 11-7-95

Hold Time

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
James Sickels / JAMES SICKELS	11-7-95	James Fuhardy / James Fuhardy	11-7-95 1402
James Fuhardy / James Fuhardy	1440/11-7-95	EE Dubes / EE Dubes	11-7-95 1440

Matrix*

S = Soil		DS = Drum Solids	
SE = Sediment		DL = Drum Liquids	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wipe	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

DISTRIBUTION: White - Remain with Samples Color - Customer

BC-6000-828 (09/95)

SAMPLE HANDLING

LABCORE Data Entry Template for Worklist# 3387

Analyst: SMF **Instrument:** NONE _____ **Book #** N/A

Method: LA-519-151 Rev/Mod E-2

Worklist Comment: TX-244 Grab @BRKDWN1

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
95000189	TX-244 GRAB	1	SAMPLE	S95T003591	0		@BRKDWN1 DOSERATE	LIQUID	N/A	over the top 60 mrad/hr		mrad/hour
95000189	TX-244 GRAB	1	SAMPLE	S95T003591	0		@BRKDWN1 APPEAR01	LIQUID	N/A	~~incomplete~~ ~~complete~~ complete SMF 11·10·95		RAE 11/21/95
95000189	TX-244 GRAB	1	SAMPLE	S95T003591	0		@BRKDWN1 SAMPAMT2	LIQUID	N/A	125		mL
95000189	TX-244 GRAB	2	SAMPLE	S95T003592	0		@BRKDWN1 DOSERATE	LIQUID	N/A	200		mrad/hour
95000189	TX-244 GRAB	2	SAMPLE	S95T003592	0		@BRKDWN1 APPEAR01	LIQUID	N/A	complete		
95000189	TX-244 GRAB	2	SAMPLE	S95T003592	0		@BRKDWN1 SAMPAMT2	LIQUID	N/A	125		mL
95000189	TX-244 GRAB	3	SAMPLE	S95T003593	0		@BRKDWN1 DOSERATE	SOLID	N/A	250		mrad/hour
95000189	TX-244 GRAB	3	SAMPLE	S95T003593	0		@BRKDWN1 APPEAR01	SOLID	N/A	complete		
95000189	TX-244 GRAB	3	SAMPLE	S95T003593	0		@BRKDWN1 SAMPAMT2	SOLID	N/A	125 mL		~~g~~ RAE 11/10/95

Final page for worklist # 3387

Susie M. Fulton 11·10·95
Analyst Signature **Date**

[signature] 11-11-95
Analyst Signature **Date**

Appearance Data

Sample #	Color	Clarity	Solids?	Org. Layer?
S95T003591	yellow	clear	trace of reddish-brown	No
S95T003592	yellow	clear	No	No
S95T003593	yellow	clear	~ 40% settled dark brown	No

RAEsch 11/21/95

This sample was removed pumping on a separate day. Data entered at worklist review. RAEsch 11/21/95

Data Entry Comments:

stored in cell 27

S95T003591 incomplete - unable to remove vial from pig. Notified R. Esch

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.

Worklist Reviewed, edited and approved by RAEsch 11/21/95

TX-244 GRAB SAMPLES RISER 8

TX-95-3 Sampling Depth? 36' 1" = 433"

S95T003593 Parent Sample

APPEARANCE: Clear yellow liquid w/ approx. 40% settled solids. Solids are reddish brown fine grain solids that are easily suspended.

Dose Rate: w/o: 300 mrad/hr correction factor of 5.

Vol % Settled Solids = $\frac{\text{Height solids}}{\text{Height total sample}} = \frac{30 \text{ mm}}{84 \text{ mm}} \times 100 = 35.7\%$

Remove liquid from settled solids using a transfer pipet and discard. Transfer the solids to centrifuge cones. Record volume and weight of sludge before centrifugation. Centrifuge the sludge for a minimum of 1 hour. Record volume of liquid and solids after centrifugation. Remove liquid and discard. Record weight of solids that remain.

Before centrifugation:

Check weights: 20 g wt = 20.00 g
100 g wt = 99.99 g

2 mm of liquid were unable to be removed from the surface of the solids without removing solid material also.
11/26/95

Final wt cone 1 + sludge 19.42 g	Final wt cone 2 + sludge 20.54 g
Tare wt cone 1 7.55 g	Tare wt cone 2 7.48 g
net wt sludge 11.87 g	net wt sludge 13.06 g
vol sludge 10.4 mL	vol sludge 11.3 mL

11/26/95

Final wt cone 3 + sludge 17.90 g
Tare wt cone 3 7.47 g
net wt sludge 10.43 g
vol sludge 9.0 mL

Final wt cone 4 + sludge 18.49 g
Tare wt cone 4 7.47 g
net wt sludge 11.02 g
vol sludge 9.5 mL

Total wt. sludge 46.38 g Total vol sludge 40.2 mL

Bulk Density of sludge before centrifugation: Total wt sludge 46.38 g / vol sludge 40.2 mL = 1.15 g/mL

After Centrifugation:
START Centrifuge : 12:53 PM (setting 6 EIC clinical centrifuge)
STOP Centrifuge : 14:24 PM

vol sample cone 1 10.1 mL
vol solids cone 1 4.0 mL
vol liquid cone 1 6.1 mL

vol sample cone 2 11.0 mL
vol solids cone 2 4.5 mL
vol liquid cone 2 6.5 mL

vol sample cone 3 8.9 mL
vol solids cone 3 3.75 mL
vol liquid cone 3 5.15 mL

vol sample cone 4 9.4 mL
vol solids cone 4 3.9 mL
vol liquid cone 4 5.5 mL

Surface of solids after centrifuging appeared moguled; ie. many small sharp peaks on surface.

Remove liquid and discard.
Recheck weights 20g wt 20.00 g 100g wt 99.99 g

Final wt cone 1 + solids 12.87 g
Tare wt cone 1 7.55 g
net wt solids 5.32 g

Final wt cone 2 + solids 13.49 g
Tare wt cone 2 7.48 g
net wt solids 6.01 g

Final wt cone 3 + sludge 12.37 g
Tare wt cone 3 7.47 g
net wt sludge 4.90 g

Final wt cone 4 + sludge 12.56 g
Tare wt cone 4 7.47 g
net wt sludge 5.09 g

11/26/95

Total vol. liquid 23.25 mL

Total wt. solids 21.32 g Total vol solids 16.15 mL

Bulk Density of centrifuged solids: $\frac{\text{net wt solids } 21.32 \text{ g}}{\text{vol solids } 16.15 \text{ mL}} = 1.32 \text{ g/mL}$

Vol % Solids = $\frac{\text{Total vol solids}}{\text{Total vol sludge}} = \frac{16.15 \text{ mL}}{39.40 \text{ mL}} \times 100 = 41\ \%$

S95T003767 SOLIDS - very dark brown after removing liquid. liquid was a more intense yellow after centrifugation.

Final wt vial + sludge 29.85 g

Tare wt vial 15.5 g

net wt sludge 14.35 g

weights are approximate for archive purpose - had to back-calculate tare weight based on approximate amount of material transfered from cone 1. See below.

Dose Rate: w/o: 300 mrad/hr
correction factor of 5

Vial + cone 1 material 19.73 g
- material transfered from cone 1 - 4.24 g
15.49 g
≈ 15.5 g tare wt of vial

Cone 1 after removing material 8.63 g
tare wt cone 1 7.55 g
1.08 g remain

net wt cone 1 before transfer 5.32 g
- amt. remaining - 1.08 g left (remain)
4.24 g transfered
- assuming negligible material left on spatula

11/26/95

INORGANIC ANALYSES

LABCORE Data Entry Template for Worklist# 3824

Analyst: JDS **Instrument:** DSC0 3 **Book #** 12N14A 11/28/95 BDV B

Method: LA-514-114 Rev/Mod C-1

Worklist Comment: Please run TX-244 DSCs under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD				DSC-03	LIQUID	28.45	28.56	N/A	Joules/g
95000189	TX-244 GRAB	2 SAMPLE	S95T003708	0		DSC-03	LIQUID	N/A	Ø		Joules/g
95000189	TX-244 GRAB	3 DUP	S95T003708	0		DSC-03	LIQUID	Ø	Ø	N/A	Joules/g
		4 STD				DSC-03	LIQUID	28.45	27.45	N/A	Joules/g
95000189	TX-244 GRAB	5 SAMPLE	S95T003709	0		DSC-03	LIQUID	N/A	Ø		Joules/g
95000189	TX-244 GRAB	6 DUP	S95T003709	0		DSC-03	LIQUID	Ø	Ø	N/A	Joules/g

Final page for worklist # 3824

See attached for signatures
Analyst Signature **Date** 11/28/95

Shawn L Wahlen 11-28-95
Analyst Signature **Date**

Verified by Blandina Valenzuela 12/1/95

For data entry purposes this batch was placed on ~~3421~~ 12/1/95 BDV Worklist # 3421

Data Entry Comments: S95T003708 produced ~~one~~ two endotherms one at 114.4°C with a delta H of 1810.4 J/g and second at 136.8°C with a delta H of 24.9 J/g. 11/28/95

S95T003709 produced two endotherms one at 116.6 °C with a delta H of 1600.3 J/g and second at 140.6°C with a delta H of 20.7 J/g

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# 3421

Analyst: ADP **Instrument:** DSC0 _____ **Book #** _____

Method: LA-514-113 Rev/Mod C-1

Worklist Comment: Please run DSCs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-01	LIQUID			N/A	Joules/g
95000158	B-204	2	SAMPLE	S95T002976	0		DSC-01	LIQUID	N/A			Joules/g
95000158	B-204	3	DUP	S95T002976	0		DSC-01	LIQUID			N/A	Joules/g
95000158	B-204	4	SAMPLE	S95T002984	0		DSC-01	LIQUID	N/A			Joules/g
95000158	B-204	5	DUP	S95T002984	0		DSC-01	LIQUID			N/A	Joules/g
95000189	TX-244 GRAB	6	SAMPLE	S95T003708	0		DSC-01	LIQUID	N/A			Joules/g
95000189	TX-244 GRAB	7	DUP	S95T003708	0		DSC-01	LIQUID			N/A	Joules/g
95000189	TX-244 GRAB	8	SAMPLE	S95T003709	0		DSC-01	LIQUID	N/A			Joules/g
95000189	TX-244 GRAB	9	DUP	S95T003709	0		DSC-01	LIQUID			N/A	Joules/g
95000180	BY104 ROTARY	10	SAMPLE	S95T003713	0		DSC-01	LIQUID	N/A			Joules/g
95000180	BY104 ROTARY	11	DUP	S95T003713	0		DSC-01	LIQUID			N/A	Joules/g

Final page for worklist # 3421

Analyst Signature **Date**

Susie M. Fulton 11.21.95
B McCown 11/25/95
Anthony Purnton 11-22-95

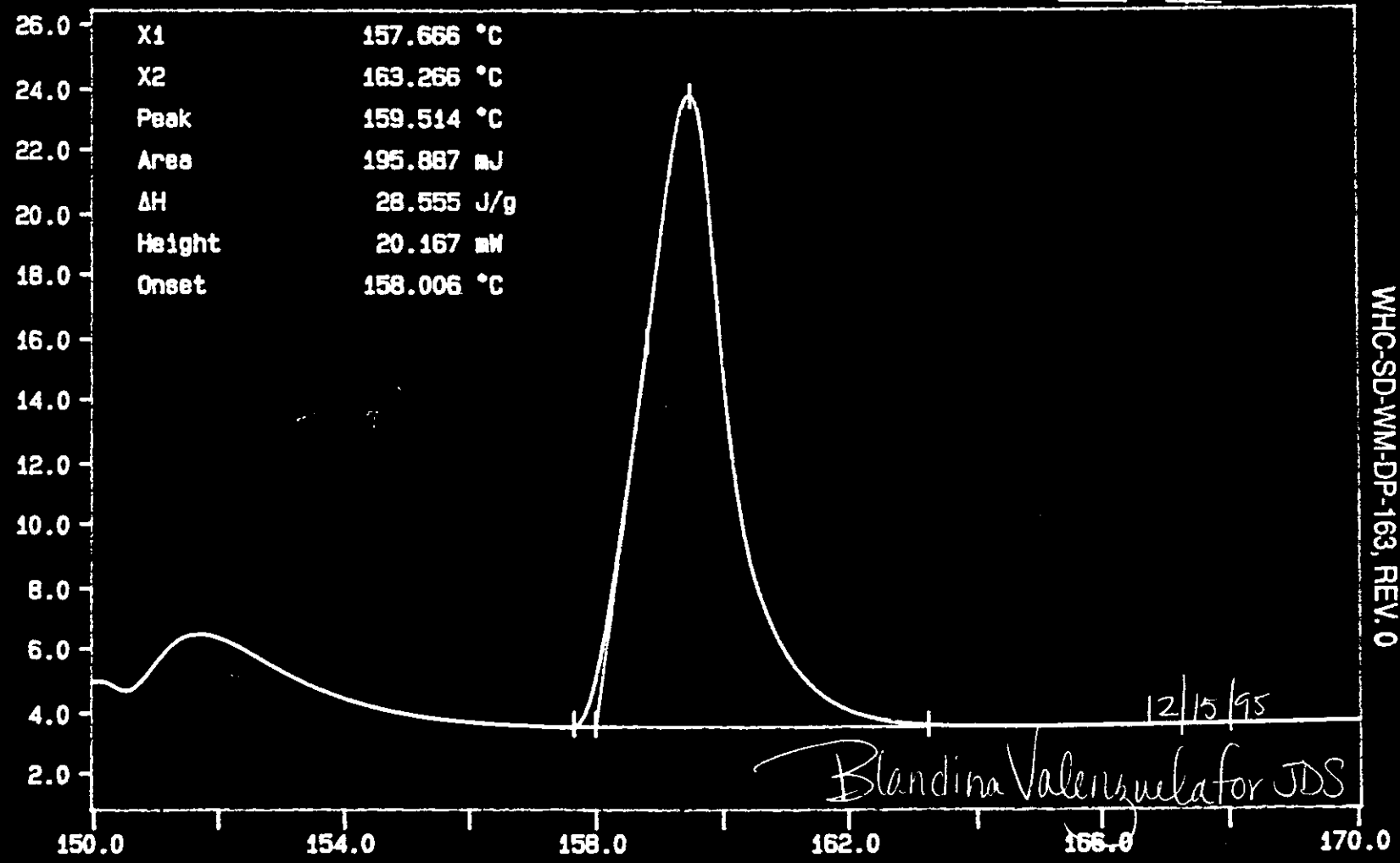
Analyst Signature **Date**

Data Entry Comments: Worklist needed to be broken up to accomodate the different tanks

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.

Curve 1: DSC
File info: IND112101 Tue Nov 21 07:55:04 1995
Sample Weight: 6.860 mg
12N14A Indium at 10C/min

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 27 TO 29.



27

WHC-SD-WM-DP-163, REV.0

N2, EXOTHERM DOWN

Temperature (°C)

TEMP1: 150.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 170.0 C

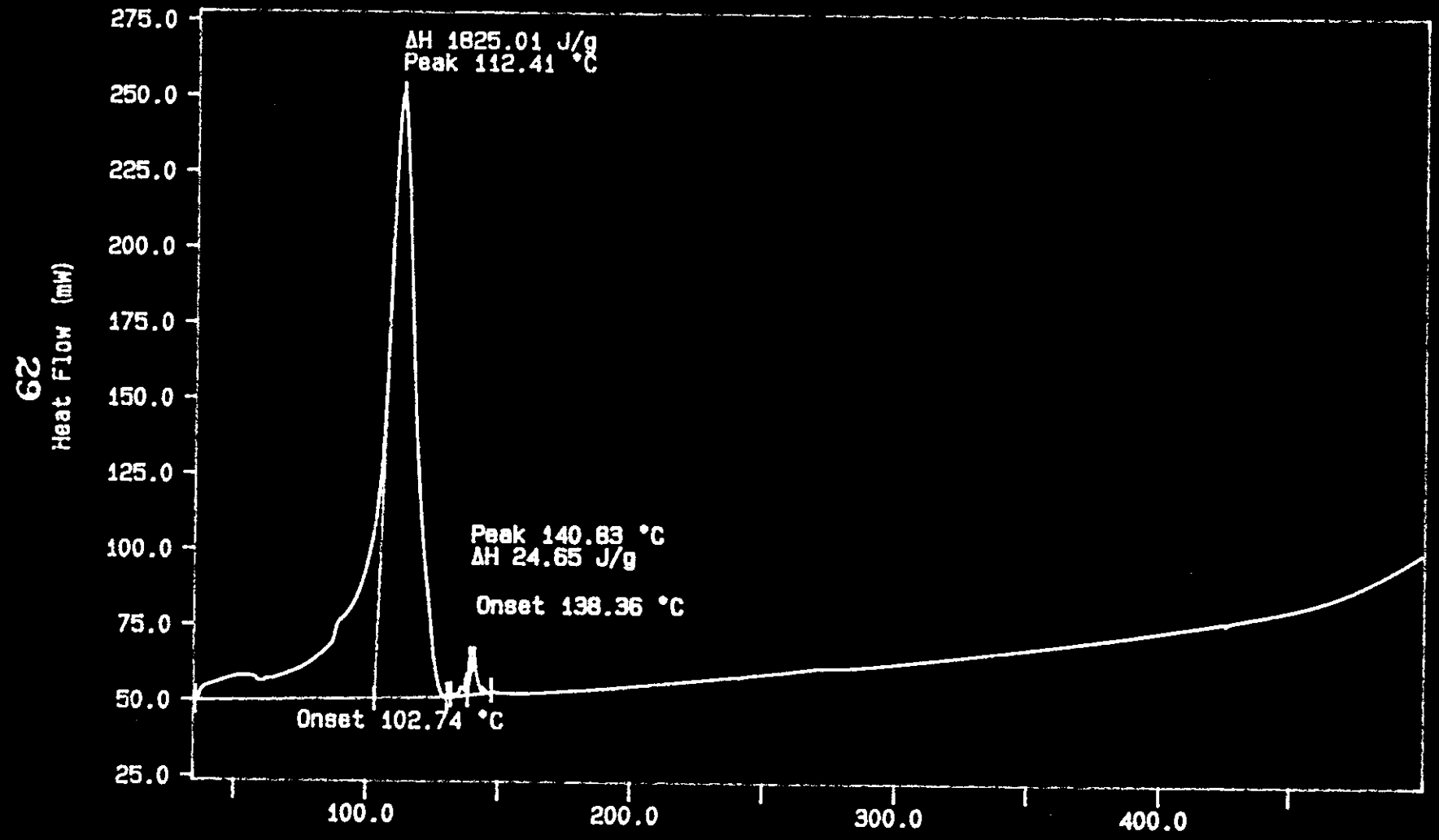
JD SPELLMAN
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Nov 21 08:30:13 1995

Curve 1: DSC
File info: SAM112201 Wed Nov 22 01:31:18 1995
Sample Weight: 11.040 mg
S95T003708

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Wed Nov 22 03:30:20 1995

WHC-SD-WM-DP-163, REV.0

Curve 1: DSC
File info: SAM112202 Wed Nov 22 02:28:57 1995
Sample Weight: 11.290 mg
S95T003708 DUP



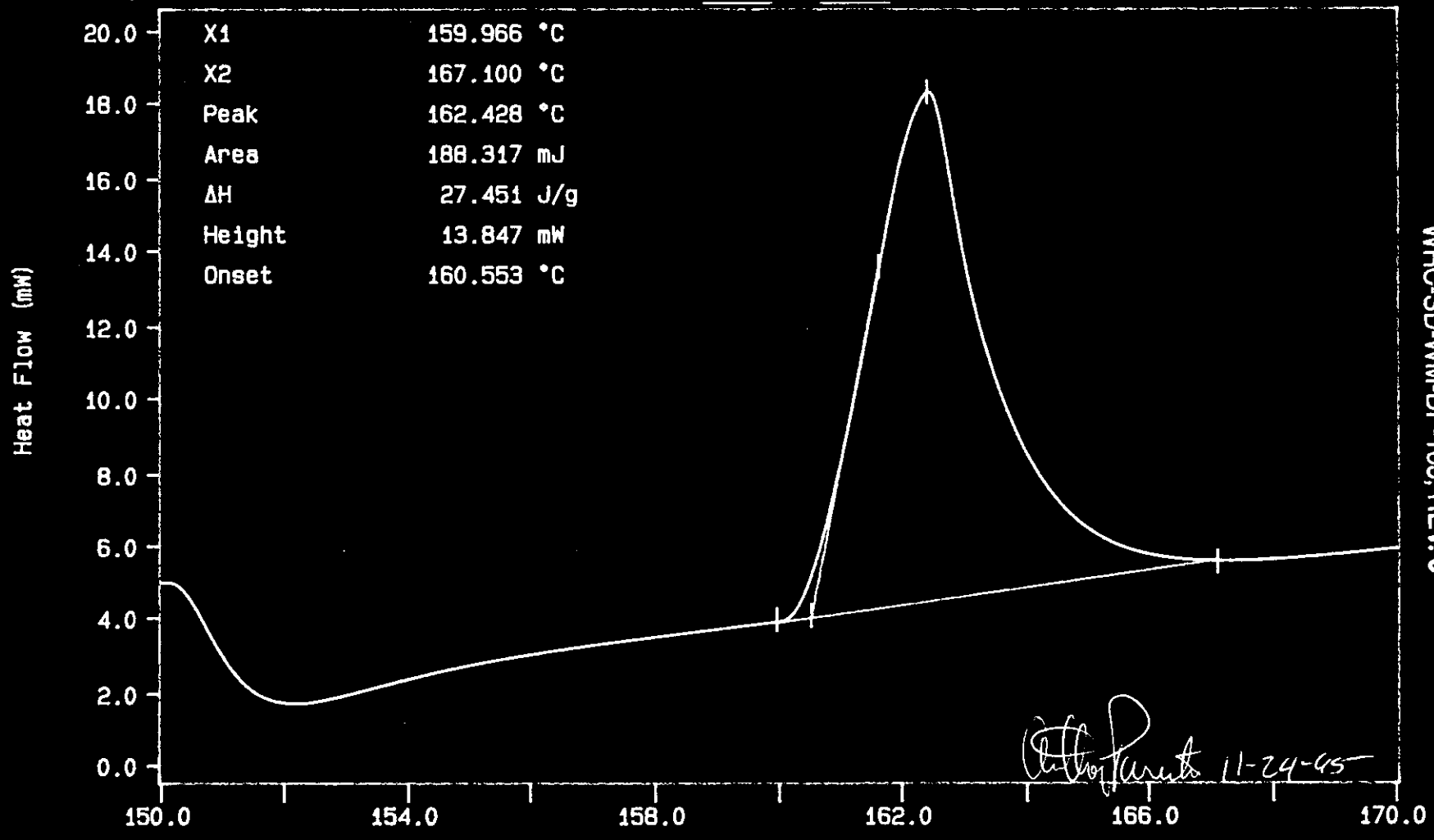
WHC-SD-WM-DP-163, REV.0

exotherm down, N2 purge gas

TEMP1: 35.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 500.0 C

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Wed Nov 22 03:18:59 1995

Curve 1: DSC
File info: IND112403 Fri Nov 24 12:42:09 1995
Sample Weight: 6.860 mg
12N14A Indium at 10C/min
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 30 TO 32.

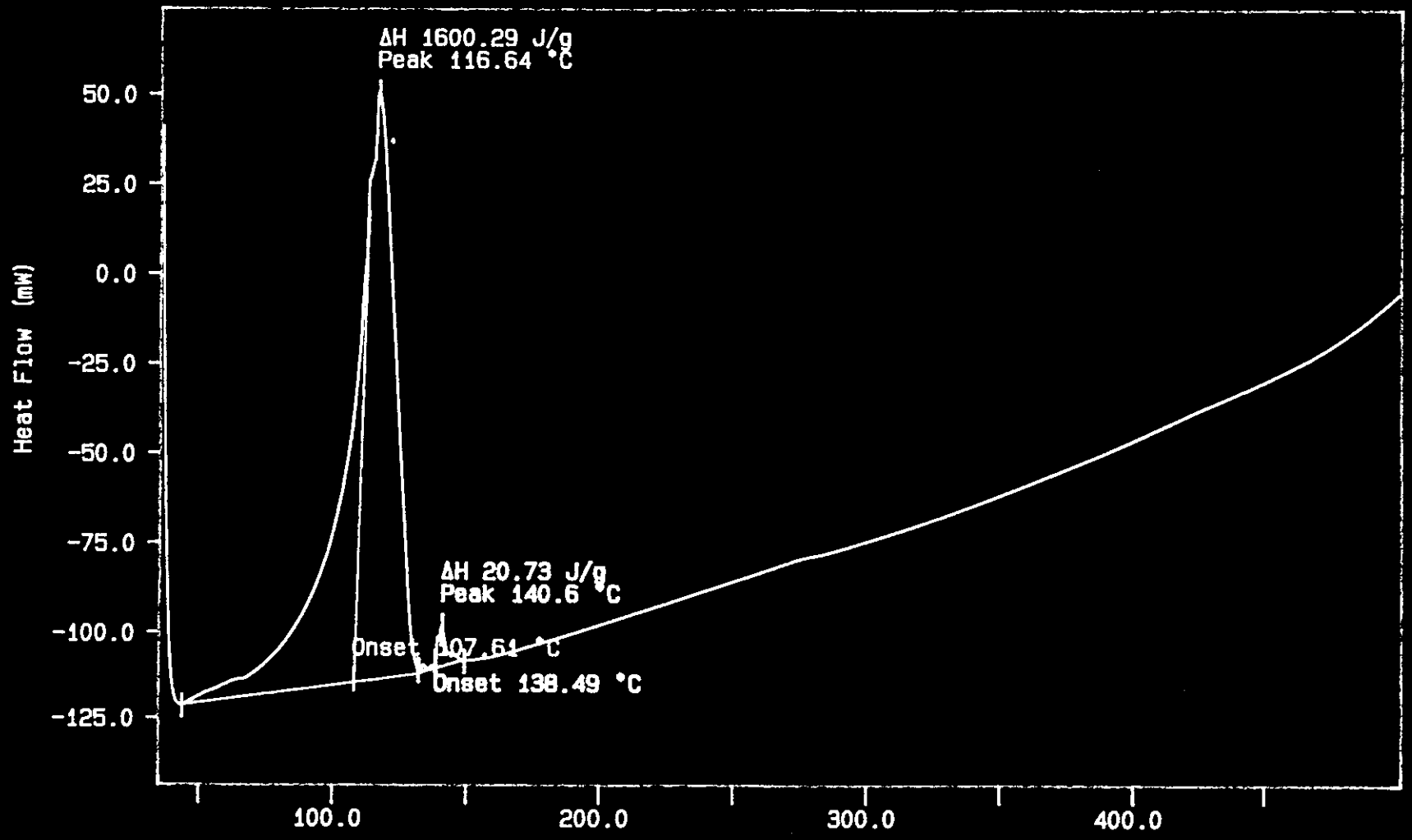


N2, EXOTHERM DOWN
TEMP1: 150.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 170.0 C

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Fri Nov 24 12:44:56 1995

WHC-SD-WM-DP-163, REV.0

Curve 1: DSC
File info: SAM112401 Fri Nov 24 13:40:54 1995
Sample Weight: 12.440 mg
S95T003709 SAM



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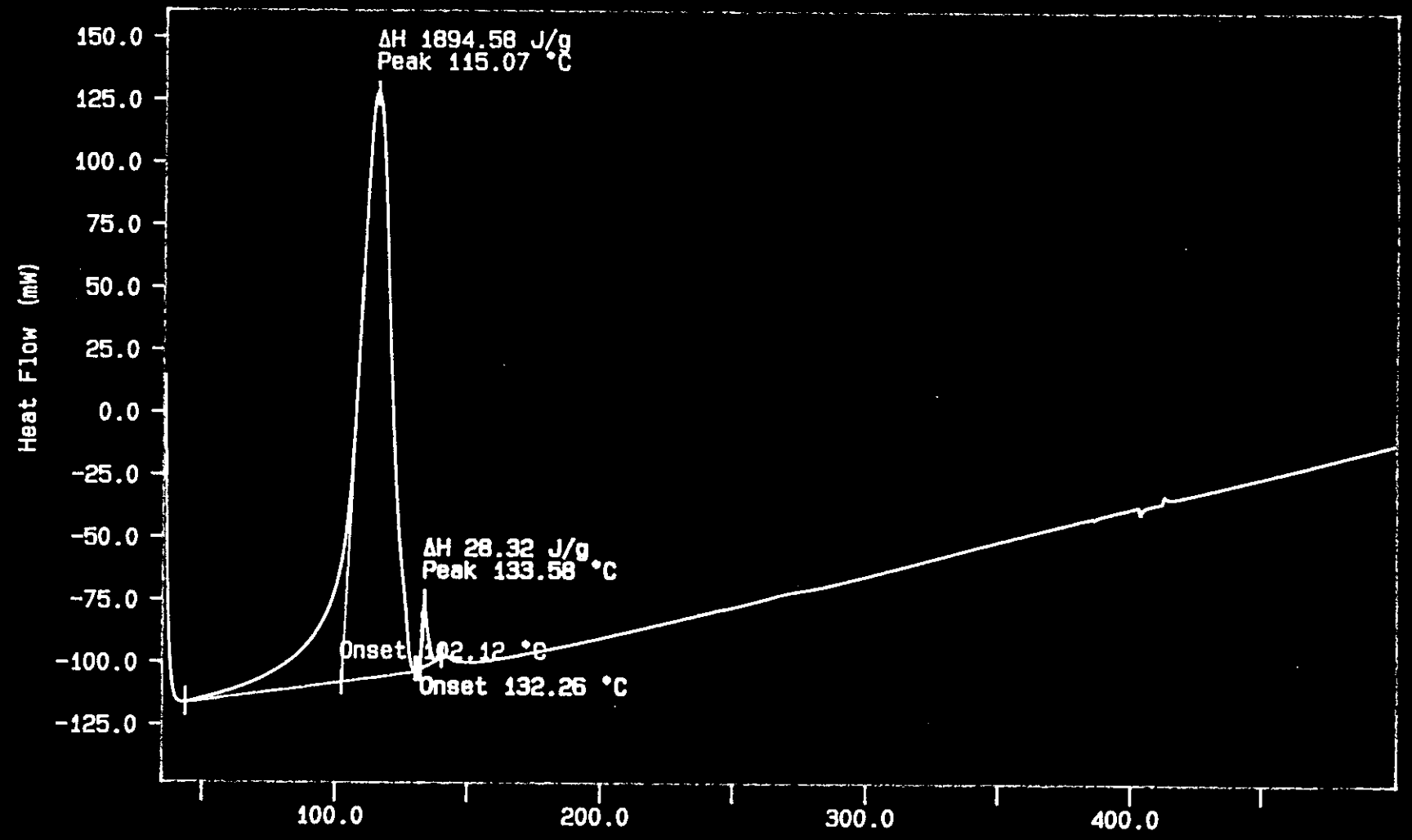
exotherm down, N2 purge gas

TEMP1: 35.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 500.0 C

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Fri Nov 24 13:45:44 1995

Curve 1: DSC
File info: SAM112403 Fri Nov 24 14:38:29 1995
Sample Weight: 12.280 mg
S95T003709 DUP



exotherm down, N2 purge gas

TEMP1: 35.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 500.0 C

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Fri Nov 24 14:40:28 1995

LABCORE Data Entry Template for Worklist# 4285

Analyst: SMF **Instrument:** TGA0 1 **Book #** 65N8A

Method: LA-560-112 Rev/Mod B1 WHC-SD-WM-DP-163, REV. 0

Worklist Comment: Please run TX-244 TGAs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-01	LIQUID	59.74	60.29	N/A	%
95000189	TX-244 GRAB	2	SAMPLE	S95T003708	0		TGA-01	LIQUID	N/A	85.80		%
95000189	TX-244 GRAB	3	DUP	S95T003708	0		TGA-01	LIQUID	85.80	85.76	N/A	%
95000189	TX-244 GRAB	4	SAMPLE	S95T003709	0		TGA-01	LIQUID	N/A	85.31		%
95000189	TX-244 GRAB	5	DUP	S95T003709	0		TGA-01	LIQUID	85.31	86.46	N/A	%

Final page for worklist # 4285

S M Fulton 12-15-95
Analyst Signature Date

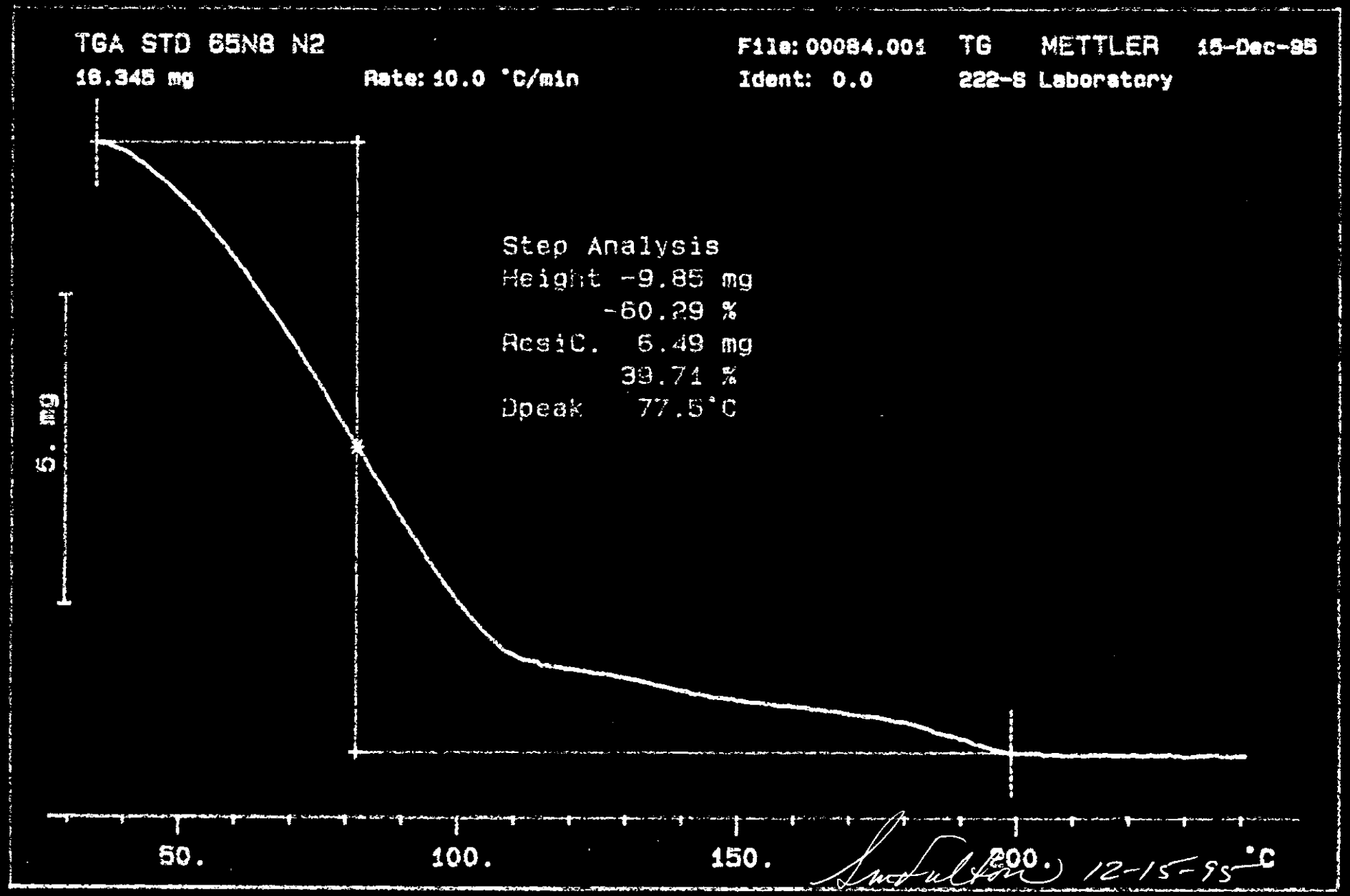
Linda Conklin 12/18/95
Analyst Signature Date

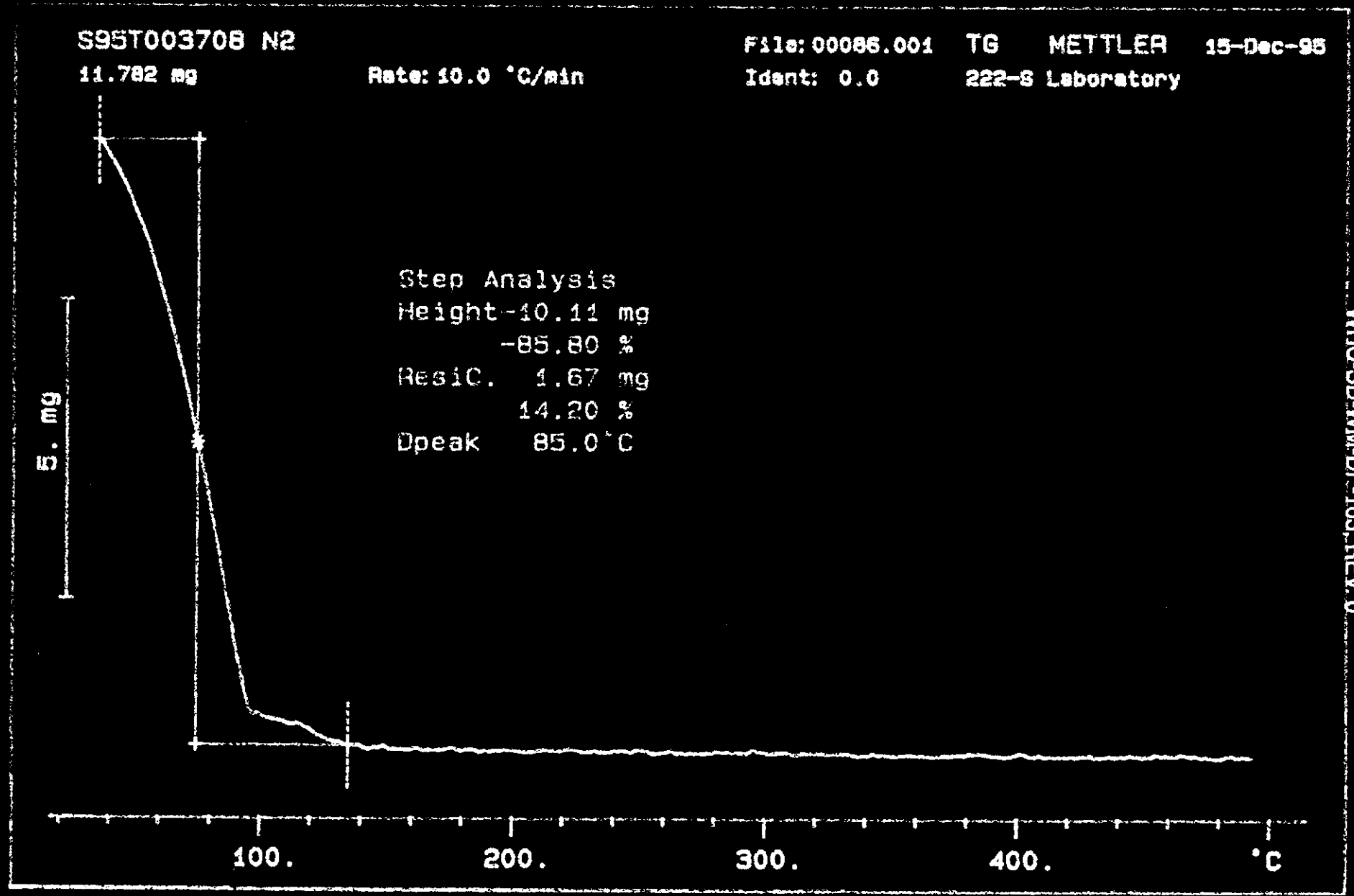
Verified 12/21/95 J M Luge

Data Entry Comments:

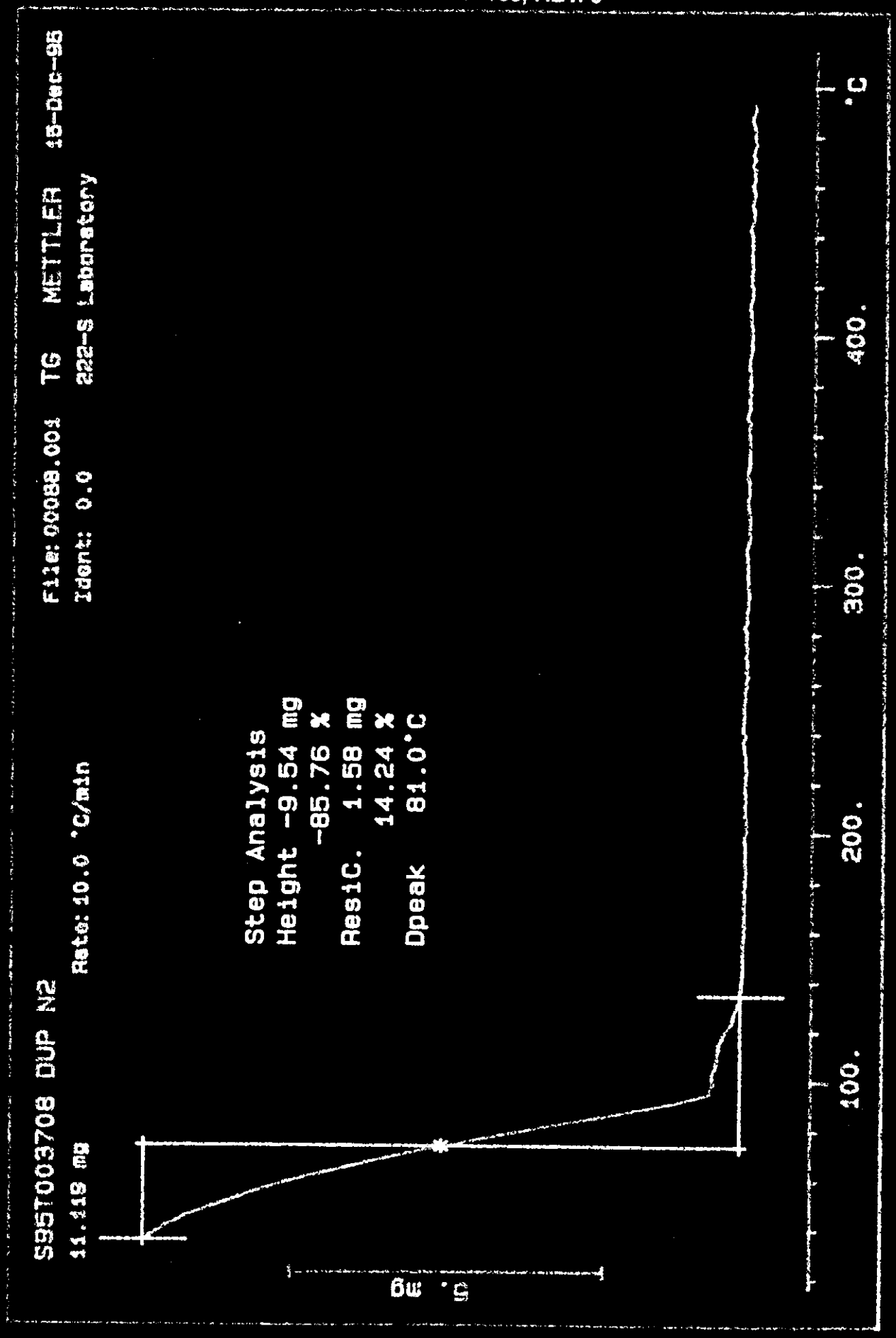
Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

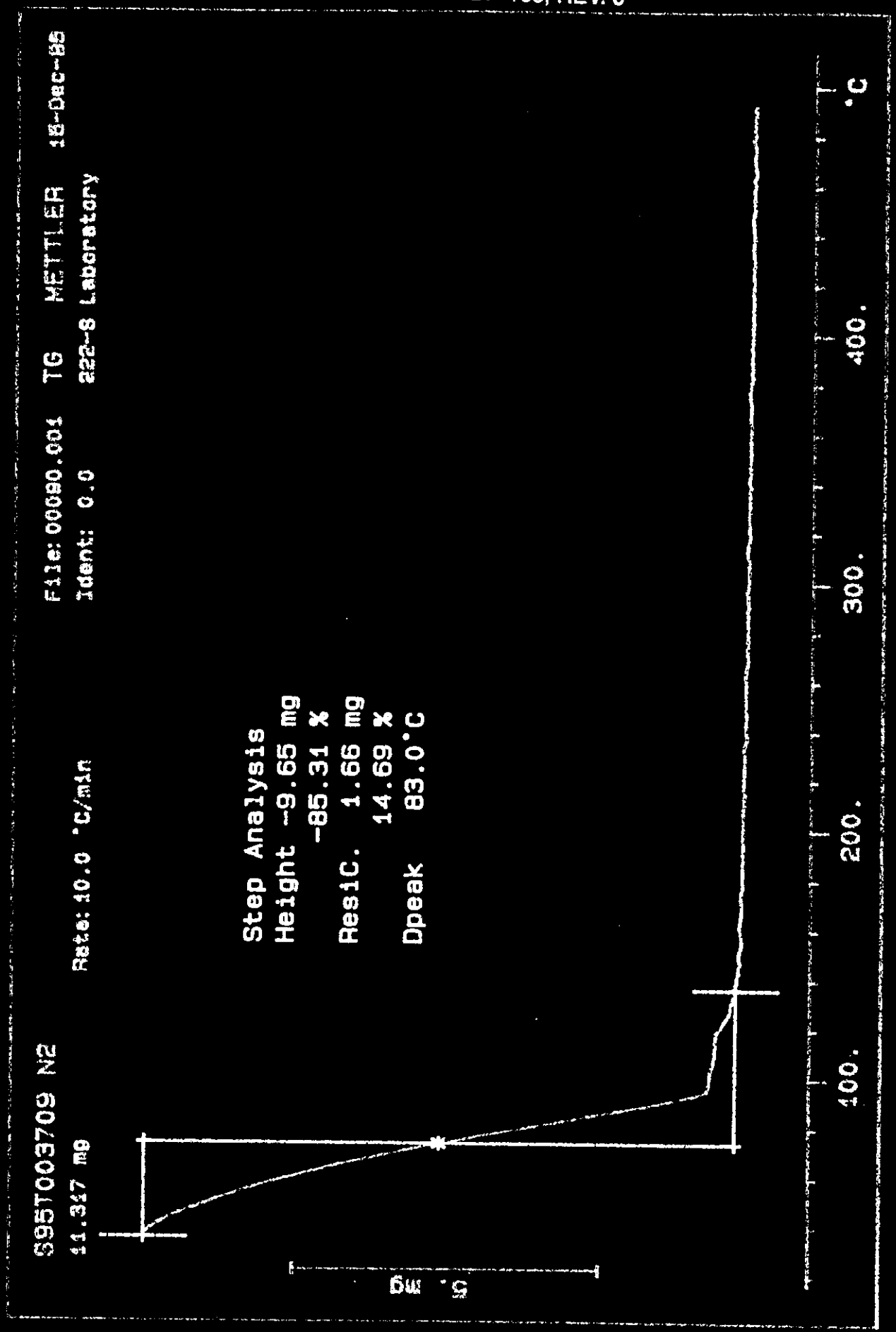
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 34 TO 38.

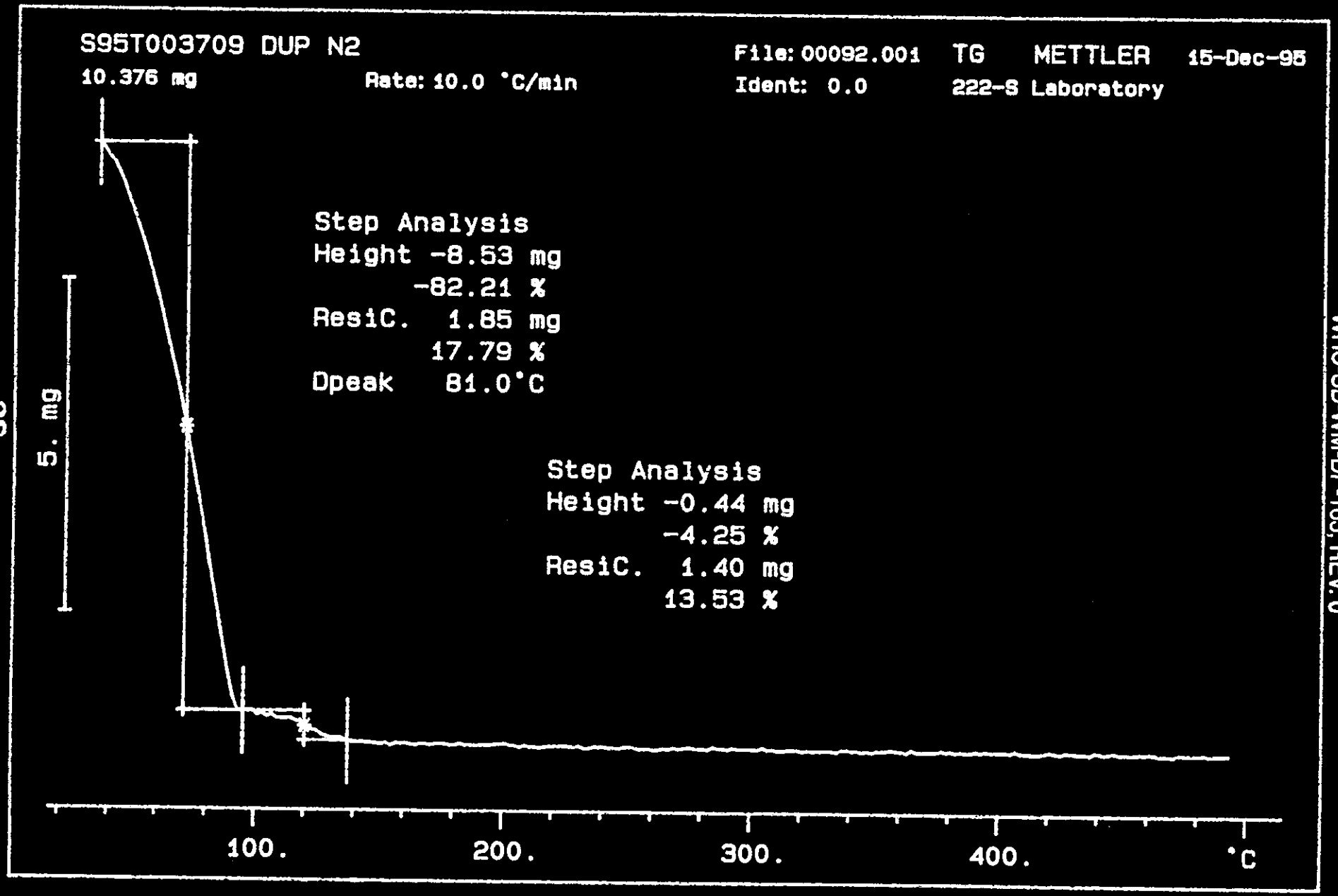




WHC-SD-WM-DP-163, REV. 0


S95T003708 DUP N2
11.119 mg
Rate: 10.0 °C/min
File: 00088.001 TG METTLER 18-Dec-96
Ident: 0.0 222-S Laboratory
Step Analysis
Height -9.54 mg
-85.76 %
ResiC. 1.58 mg
14.24 %
Dpeak 81.0°C
mg
100.
200.
300.
400.
°C


S95T003709 N2
11.317 mg
Rate: 10.0 °C/min
File: 00090.001 TG METTLER 18-Dec-95
Ident: 0.0 222-S Laboratory
Step Analysis
Height -9.65 mg
-85.31 %
Resic. 1.66 mg
14.69 %
Dpeak 83.0°C
5. mg
100.
200.
300.
400.
°C


S95T003709 DUP N2
10.376 mg
Rate: 10.0 °C/min
File: 00092.001 TG METTLER 15-Dec-95
Ident: 0.0 222-S Laboratory
Step Analysis
Height -8.53 mg
-82.21 %
ResiC. 1.85 mg
17.79 %
Dpeak 81.0°C
Step Analysis
Height -0.44 mg
-4.25 %
ResiC. 1.40 mg
13.53 %
5. mg
100.
200.
300.
400.
°C

LABCORE Data Entry Template for Worklist# 3681

Analyst: EAL **Instrument:** BA001 **Book #** 134N16-B

Method: LA-510-112 Rev/Mod C-3

Worklist Comment: SpG TX-244 (Do not run in replicate)

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			SPG-01	LIQUID	1.11	1.07	N/A	Sp.G.
95000189	TX-244 GRAB	2 SAMPLE	S95T003708	0	SPG-01	LIQUID	N/A	1.09	.01	Sp.G.
95000189	TX-244 GRAB	3 DUP	S95T003708	0	SPG-01	LIQUID	1.09	1.09	N/A	Sp.G.
95000189	TX-244 GRAB	4 SAMPLE	S95T003709	0	SPG-01	LIQUID	N/A	1.08	.01	Sp.G.
95000189	TX-244 GRAB	5 DUP	S95T003709	0	SPG-01	LIQUID	1.08	1.08	N/A	Sp.G.

Final page for worklist # 3681

Ann Lambel 12-02-95
Analyst Signature Date

Linda Conlin 12/4/95
Analyst Signature Date

(1) STD
1.93357g
~~2.09067g~~ 12-2-95
2.09167g

Dup STD.
1.95905g
2.12344g

(2) S95T003708
1.93357g
2.09668g

1.96594g Dup 3708
2.12906g

(3) S95T003709
1.9159g
2.07328g

1.91311g Dup 3709
2.07562g

Reviewed by
H. Anastor 12-5-95

Data Entry Comments: Pipette Volume: 150.17 ul

I was unaware we were suppose to print tare and final weights - thus - 1ST Std weight is not printed. (EAL)

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

1.95905 g STD DUP

1.93357 g 08 SAMPLE

1.96594 g 08 DUP

1.91159 g 09 SAMPLE

1.91311 g 09 DUP

THREE

----- CALIBRATION ------
12/02/95 16:09:53
CAL BEGIN
STD 10.1.19
TYPE : AT 261
2.00.00
787082
CAL END
--------- END ---------

worklist #
3681

2.09167 g ~~08 Sample~~ STD EAL

2.12344 g STD DUP

2.09668 g 08

2.12906 g 08 DUP

2.07328 g 09

2.07562 g 09 DUP

SPECIFIC GRAVITY : LA-510-112 (C-3)

Type
STANDARD
Work List
3681
Test Code
SPG-01
Matrix
LIQUID
Sample#
134N16B
Instrument Code
BA001
Analyst
A LAMBEL
Date
12/02/95
Time

	STANDARD	STANDARD
Gross Weight (W2)	2.0917	2.1234
Tare Weight (W1)	1.9336	1.9591
Weight of Solution (W2-W1)	0.1581	0.16435
Volume of Solution µL	150.1700	150.1700
Specific Gravity	1.0528	1.0944
Specific Gravity (Average)	1.0736	

Gross Weight (W2) = Wt. of vial + cap + cotton + solution
Tare Weight (W1) = Wt. of vial + cap + cotton

Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]

v RESULT v

Specific Gravity Average =	1.074

Data Entry by: Linda Conlon Date: 12/02/95

Approved by: Albert for H. Anastas Date: 1/3/96

Form 510112L1 Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (C-3)

		SAMPLE	REPLICATE
Type			
SAMPLE	Gross Weight (W2)	2.0967	
Work List	Tare Weight (W1)	1.9336	
3681	Weight of Solution (W2-W1)	0.16311	0
Test Code	Volume of Solution µL	150.1700	
SPG-01	Specific Gravity	1.0862	NA
Matrix			
LIQUID			
Sample #			
S95T003708			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
A LAMBEL	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
Date			
12/02/95	v RESULT v		
Time	Specific Gravity =	1.086	

Data Entry by:	Linda Conlin	Date:	12/02/95
Approved by:	RAEnk for H. Anastos	Date:	1/3/96

Form 510112L1 Rev. 1.1

Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (C-3)

Type
SAMPLE
Work List
3681
Test Code
SPG-01
Matrix
LIQUID
Sample #
S95T003708 DUP
Instrument Code
BA001
Analyst
A LAMBEL
Date
12/02/95
Time

	SAMPLE	REPLICATE
Gross Weight (W2)	2.1291	
Tare Weight (W1)	1.9659	
Weight of Solution (W2-W1)	0.16312	0
Volume of Solution µL	150.1700	
Specific Gravity	1.0862	NA

Gross Weight (W2) = Wt. of vial + cap + cotton + solution
Tare Weight (W1) = Wt. of vial + cap + cotton

Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]

v RESULT v

Specific Gravity =	1.086

Data Entry by: [signature] Date: 12/02/95

Approved by: [signature] for H. Anantatmula Date: 1/3/96

Form 510112L1 Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (C-3)

Type
SAMPLE
Work List
3681
Test Code
SPG-01
Matrix
LIQUID
Sample #
S95T003709
Instrument Code
BA001
Analyst
A LAMBEL
Date
12/02/95
Time

	SAMPLE	REPLICATE
Gross Weight (W2)	2.0733	
Tare Weight (W1)	1.9116	
Weight of Solution (W2-W1)	0.16169	0
Volume of Solution µL	150.1700	
Specific Gravity	1.0767	NA

Gross Weight (W2) = Wt. of vial + cap + cotton + solution
Tare Weight (W1) = Wt. of vial + cap + cotton

Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]

v RESULT v

Specific Gravity =	1.077

Data Entry by:	Linda Conlin	Date:	12/02/95
Approved by:	for H. Anderson	Date:	1/3/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (C-3)

Type
SAMPLE
Work List
3681
Test Code
SPG-01
Matrix
LIQUID
Sample #
S95T003709 DUP
Instrument Code
BA001
Analyst
A LAMBEL
Date
12/02/95
Time

	SAMPLE	REPLICATE
Gross Weight (W2)	2.0756	
Tare Weight (W1)	1.9131	
Weight of Solution (W2-W1)	0.16251	0
Volume of Solution µL	150.1700	
Specific Gravity	1.0822	NA

Gross Weight (W2) = Wt. of vial + cap + cotton + solution
Tare Weight (W1) = Wt. of vial + cap + cotton

Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]

v RESULT v

Specific Gravity =	1.082

Data Entry by: Linda Conlin Date: 12/02/95

Approved by: for H. Anderson Date: 1/3/96

Form 510112L1 Rev. 1.1

LABCORE Data Entry Template for Worklist# 4465

Analyst: RAW **Instrument:** PH01 **Book #** 110N16 H

Method: LA-212-102

Worklist Comment: pH reruns TX-244, Herting

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STDPH			PH	QC	9.18	9.19	N/A	
95000189	TX-244 GRAB	2 SAMPLE	S95T003708	0	PH-01	LIQUID	N/A	10.19	0.01	pH
95000189	TX-244 GRAB	3 DUP	S95T003708	0	PH-01	LIQUID	10.19	10.15	N/A	pH
95000189	TX-244 GRAB	4 SAMPLE	S95T003709	0	PH-01	LIQUID	N/A	10.19	0.01	pH
95000176	HERTING	5 SAMPLE	S95R000010	0	PH-01	LIQUID	N/A	9.52	0.01	pH
95000176	HERTING	6 DUP	S95R000010	0	PH-01	LIQUID	9.52	9.52	N/A	pH
95000176	HERTING	7 SAMPLE	S95R000011	0	PH-01	LIQUID	N/A	9.54	0.01	pH
95000176	HERTING	8 DUP	S95R000011	0	PH-01	LIQUID	9.54	9.54	N/A	pH
95000192	HERTING	9 SAMPLE	S95R000045	0	PH-01	LIQUID	N/A	10.43	0.01	pH
95000192	HERTING	10 SAMPLE	S95R000046	0	PH-01	LIQUID	N/A	10.40	0.01	pH
95000196	HERTING	11 SAMPLE	S95R000051	0	PH-01	LIQUID	N/A	I.S.	0.01	pH
95000196	HERTING	12 SAMPLE	S95R000052	0	PH-01	LIQUID	N/A	I.S.	0.01	pH

Final page for worklist # 4465

RW Schroeder 12/19/95 For RA Wendland
Analyst Signature Date

R. WENDLAND 12-19-95

R. Jones 12-21-95
Analyst Signature Date

Data Entry Comments: pH meter #2 used RWS
I.S. = insufficient sample remaining. RWS 12/20/95
Reviewed by H Knaster 12-28-95

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.

calibration data	
date	95-12-19
pH(S) 1	7.00
pH(S) 2	10.00
t.cal.	22.0 °C
slope(rel)	.992
U(as)	-11.3 mV
electr. input	1
	========
pH	9.19
pH	9.19

Id.#1	3708
pH	10.19
Id.#1	3709
pH	10.19
Id.#1	10
Id.#1	10
pH	9.52
pH	9.52
Id.#1	11
pH	9.54
pH	9.54
Id.#1	3708
pH	10.15
Id.#1	45
pH	10.43
Id.#1	46
pH	10.40

RUSH

LABCORE Data Entry Template for Worklist# 3700

Analyst: DSS **Instrument:** PH01 ~~AL1110~~ WC06695 **Book #** 57N8

Method: LA-211-102 Rev/Mod C-0

Worklist Comment: C103 & TX-244 OH

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK			OH-01	LIQUID	1	<42	N/A	ug/mL
		2 STD			OH-01	LIQUID		1.58e4	N/A	ug/mL
95000189	TX-244 GRAB	3 SAMPLE	S95T003708	0	OH-01	LIQUID	N/A	<42	42	ug/mL
95000189	TX-244 GRAB	4 DUP	S95T003708	0	OH-01	LIQUID	<42	I.S. ~~n/a~~ ~~I.S.~~	N/A	ug/mL
95000189	TX-244 GRAB	5 SAMPLE	S95T003709	0	OH-01	LIQUID	N/A	<42	42	ug/mL
95000189	TX-244 GRAB	6 DUP	S95T003709	0	OH-01	LIQUID	<42	I.S. ~~n/a~~ ~~I.S.~~	N/A	ug/mL
95000148	C-103	7 SAMPLE	S95T002773	0	OH-01	LIQUID	N/A	<63	63	ug/mL
95000148	C-103	8 SAMPLE	S95T002774	0	OH-01	LIQUID	N/A	<63	~~63~~ 63	ug/mL
95000148	C-103	9 SAMPLE	S95T002775	0	OH-01	LIQUID	N/A	<63	6.3	ug/mL

rae 12/15/95 & 12/18/95

rae 12/15/95 & 12/18/95

RWS 12/4/95

Final page for worklist # 3700

DS Griffin 11-30-95
Analyst Signature Date

R. Wendland 12-1-95
Analyst Signature Date

RWS 12/4/95

0.2005M HNO3

Reviewed RW Schroeder 12/05/95

Sample duplicate for samples 3708 and 3709 marked ~~n/a~~ I.S. because ~~pH was less than 12. If pH<12 OH test is not required.~~ rae 12/18/95 rae 12/18/95 RWS 12/15/95 a very large sample size would be required to achieve better results, and there was not enough sample to run a larger sample size. However, since the pH was <12, OH test is not required so no reason was requested. rae 12/18/95

Data Entry Comments: PH's - 1ST IS W/O BACl, 2ND WITH BACl

2ML USED WHEN SHORTAGE OF SAMPLE

3708,9 (NO DUPS)

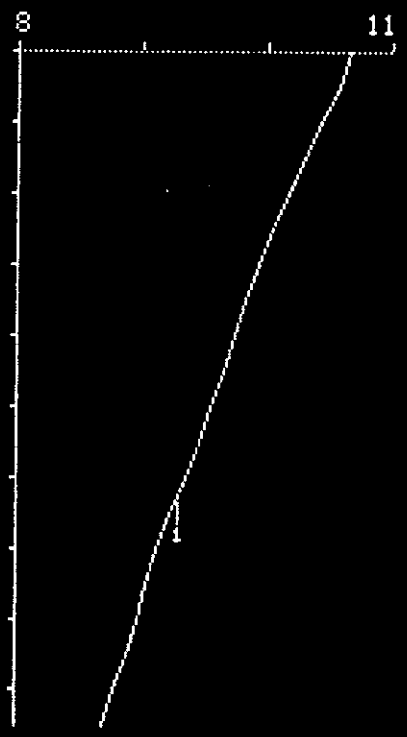
Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

```
pH          11.22
pH          10.66


date 95-12-01 time 13:50
GET pH          12  #  277
Id.#1         2774
Id.#2        .2005
pH(init)    10.65
            V/ml          pH
EP1          .632        9.30
manual stop
          ========
```

2 mL DIRECT

```
date 95-12-01 time 13:50
GET pH          12  #  277
.10ml/div       ΔpH=1/div
start V    .000 ml
```



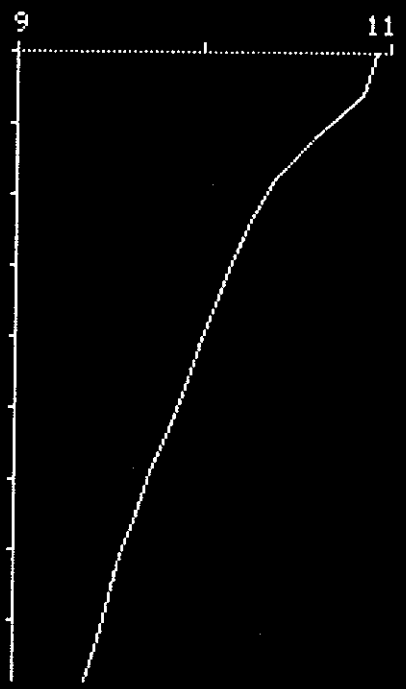

```
pH          11.48
pH          10.92

date 95-12-01 time 14:01
GET pH          12  #  278
Id.#1         2775
Id.#2        .2005
pH(init)    10.92
stop V reached
          ========
```

2 mL DIRECT

```
rep.            5

date 95-12-01 time 14:01
GET pH          12  #  278
.10ml/div       ΔpH=1/div
start V    .000 ml
```



```
date 95-12-01 time 12:44
GET pH          12  #  273
Id.#1            0
Id.#2        .2005
pH(init)      4.27
            V/ml          pH
EP1         .014        3.70
manual stop
        ========
```

BLK

```
date 95-12-01 time 12:44
GET pH          12  #  273
.10ml/div        ΔpH=1/div
start V    .000 ml
```

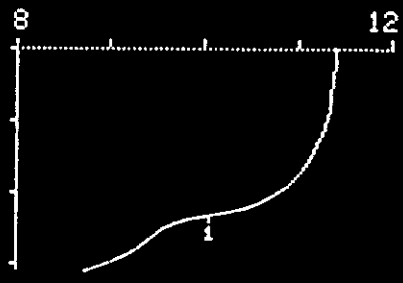
CALIB.

```
calibration data
date      95-12-01
pH(S) 1       7.00
pH(S) 2      10.00
t.cal.        24.0 °C
slope(rel)    .993
U(as)        -25.3 mV
electr. input  1
        ========
```

STD

```
date 95-12-01 time 12:35
GET pH          12  #  269
Id.#1            1
Id.#2        .2005
pH(init)     11.35
            V/ml          pH
EP1         .232       10.05
manual stop
        ========
```

```
date 95-12-01 time 12:36
GET pH          12  #  269
.10ml/div        ΔpH=1/div
start V    .000 ml
```

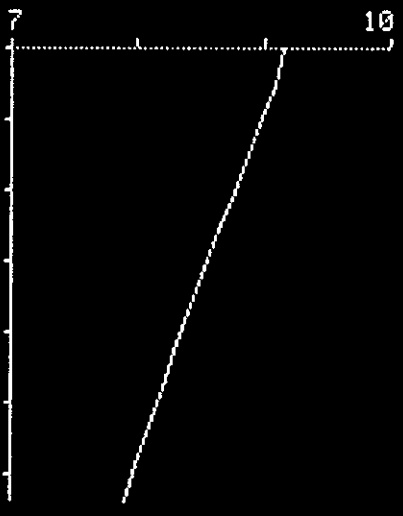



```
pH          10.23
pH           9.20
```

```
date 95-12-01 time 12:56
GET pH          12  #  274
Id.#1         3708
Id.#2        .2005
pH(init)      9.14
manual stop
```

3mL DIRECT

```
date 95-12-01 time 12:57
GET pH          12  #  274
.10ml/div        ΔpH=1/div
start V    .000 ml
```

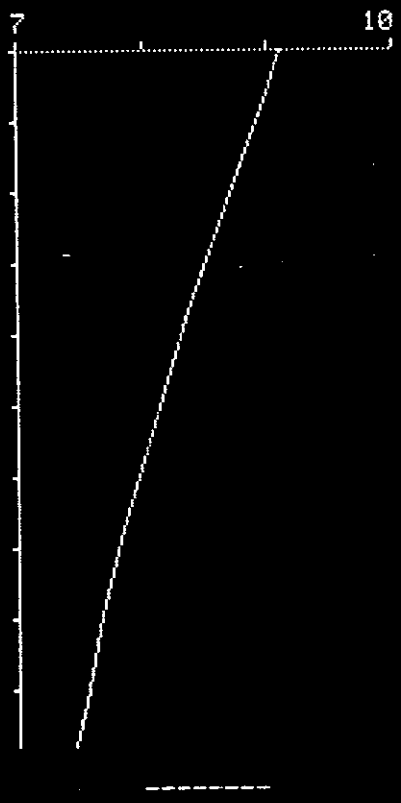


pH 10.09
pH 9.13

date 95-12-01 time 13:05
GET pH 12 # 275
Id.#1 3709
Id.#2 .2005
pH(init) 9.09
stop V reached
========

3 mL DIRECT

date 95-12-01 time 13:13
GET pH 12 # 275
.10ml/div ΔpH=1/div
start V .000 ml

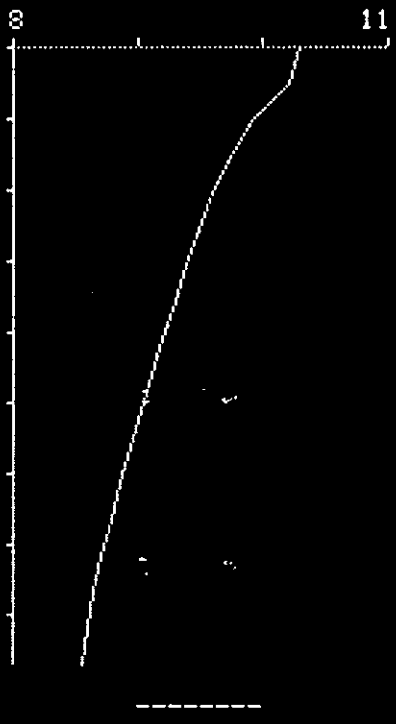


pH 11.14
pH 10.29

date 95-12-01 time 13:40
GET pH 12 # 276
Id.#1 2773
Id.#2 .2005
pH(init) 10.29
manual stop
========

2 mL DIRECT

date 95-12-01 time 13:41
GET pH 12 # 276
.10ml/div ΔpH=1/div
start V .000 ml



BEST AVAILABLE COPY

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-163, REV. 0

OH (AUTO) : LA-211-102 (C-0)

Type	Sample Size (mL) SS	Blank
Blank	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.000
3700	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	0.00E+00
OH-01	OH in Sample in µg/mL (PPM)	0.00E+00
Matrix		
Liquid		
Sample #	Detection Limit = 125µg / SS * DF	
BLNK		
Instrument Code	Detection Limit (µg/mL)	4.17E+01
WC06695		
Analyst	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
DG Griffin		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
11/30/95		
Time		Blank
12:45 AM	Concentration of OH in Sample (Molarity)	0.00E+00
	OH in Sample in µg/mL (PPM)	<42

The Result is < Detection Limit

Data Entry by:	RW Schroeder	Date:	12/04/95
Approved by:	for RW Schroeder	Date:	1/3/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-163, REV. 0

OH (AUTO) : LA-211-102 (C-0)

Type	Sample Size (mL) SS	Standard
Standard	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.232
3700	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	9.30E-01
OH-01	OH in Sample in µg/mL (PPM)	1.58E+04
Matrix		
Liquid		
Sample #		
57N8		
Instrument Code		
WC06695		
Analyst	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
DG Griffin		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
11/30/95		
Time		Standard
12:45 AM	Concentration of OH in Sample (Molarity)	9.30E-01
	OH in Sample in µg/mL (PPM)	1.58E+04

Data Entry by:	R W Schweiger	Date:	12/04/95
Approved by:	R W Schweiger	Date:	12/5/95

Form 211102_1 Rev. 1.3

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-163, REV. 0

OH (AUTO) : LA-211-102 (C-0)

Type	Sample Size (mL) SS	Sample
Sample	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.000
3700	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	0.00E+00
OH-01	OH in Sample in µg/mL (PPM)	0.00E+00
Matrix		
Liquid		
Sample #	Detection Limit = 125µg / SS * DF	
S95T003708		
Instrument Code	Detection Limit (µg/mL)	4.17E+01
WC06695		
Analyst	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
DG Griffin		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
11/30/95		
Time		Sample
12:45 AM	Concentration of OH in Sample (Molarity)	0.00E+00
	OH in Sample in µg/mL (PPM)	<42

The Result is < Detection Limit

Data Entry by: RW Schroeder Date: 12/04/95

Approved by: RW Schroeder Date: 12/5/95

Form 211102_1 Rev. 1.3

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-163, REV. 0

OH (AUTO) : LA-211-102 (C-0)

Type	Sample Size (mL) SS	Sample
Sample	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.000
3700	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	0.00E+00
OH-01	OH in Sample in µg/mL (PPM)	0.00E+00
Matrix		
Liquid		
Sample #	Detection Limit = 125µg / SS * DF	
S95T003709		
Instrument Code	Detection Limit (µg/mL)	4.17E+01
WC06695		
Analyst	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
DG Griffin		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
11/30/95		
Time		Sample
12:45 AM	Concentration of OH in Sample (Molarity)	0.00E+00
	OH in Sample in µg/mL (PPM)	<42

The Result is < Detection Limit

Data Entry by:	RW Schneider	Date:	12/04/95
Approved by:	RW Schneider	Date:	12/6/95

Form 211102_1 Rev. 1.3 Page 1 of 1

LABCORE Data Entry Template for Worklist# 3739

Analyst: D Sato **Instrument:** ICP01 2 14/14/95 SP **Book#** 48B4C

Method: LA-505-151/161 Rev/Mod B.0 14/14/95 SP 345 LAD 12695

Worklist Comment: ICP (direct) TX-244 and B-204

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	ICV				@ICP-QC	QC		
2	ICB				@ICP-QC	QC		
3	ICSA				@ICP-QC	QC		
4	ICSAB				@ICP-QC	QC		
5	SAMPLE	S95T003708	0	D	@ICP-D01	LIQUID	95000189	TX-244 GRAB
	Analytes Requested: AL-D-01 , FE-D-01 , NA-D-01							
6	DUP	S95T003708	0	D	@ICP-D01	LIQUID		
7	SPK	S95T003708	0	D	@ICP-D01	LIQUID		
8	CCV				@ICP-QC	QC		
9	CCB				@ICP-QC	QC		
10	SAMPLE	S95T003709	0	D	@ICP-D01	LIQUID	95000189	TX-244 GRAB
	Analytes Requested: AL-D-01 , FE-D-01 , NA-D-01							
11	DUP	S95T003709	0	D	@ICP-D01	LIQUID		
12	SPK	S95T003709	0	D	@ICP-D01	LIQUID		
13	SAMPLE	S95T003770	0	D	@ICP-D01	LIQUID	95000161	B-204
	Analytes Requested: AG-D-01 , AL-D-01 , AS-D-01 , B-D-01 , BA-D-01 , BE-D-01 , BI-D-01 , CA-D-01 , CD-D-01 , CE-D-01 , CO-D-01 , CR-D-01 , CU-D-01 , FE-D-01 , K-D-01 , LA-D-01 , LI-D-01 , MG-D-01 , MN-D-01 , MO-D-01 , NA-D-01 , ND-D-01 , NI-D-01 , P-D-01 , PB-D-01 , S-D-01 , SB-D-01 , SE-D-01 , SI-D-01 , SM-D-01 , SR-D-01 , TI-D-01 , TL-D-01 , U-D-01 , V-D-01 , ZN-D-01 , ZR-D-01							
14	DUP	S95T003770	0	D	@ICP-D01	LIQUID		

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist# 3739

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
15	SPK	S95T003770	0	D	@ICP-D01	LIQUID		
16	ICSA				@ICP-QC	QC		
17	ICSAB				@ICP-QC	QC		
18	CCV				@ICP-QC	QC		
19	CCB				@ICP-QC	QC		

Final page for worklist # 3739

JK [illegible] 12-04-95
Analyst Signature Date

Reviewed by:
[illegible] 12/4/95
Analyst Signature Date

S95T003708_L, .1-10-2.8 ml, DF 505
S95T003708 .1-10 101
S95T003708_D .1-10 101
S95T003708_Q .1-10 101 .1ml sample + 2ml SSTS + 8 ml HNO_3

S95T003709_L, .1-10-2.8, DF 505
S95T003709 .1-10 101
S95T003709_D .1-10 101
S95T003709_Q .1-10 101 .1ml sample + 2 ml SSTS + 8 ml HNO_3

S95T003770_L, 2.8 DF 5
S95T003770 direct 1
S95T003770_D direct 1
S95T003770_Q direct 1.25 8 ml sample + 2 ml SSTS

Data Entry Comments:

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

Analysis Report Summary Mon 12-04-95 10:27:39 AM page 1

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	951204A	ICP2	12/04/95	08:57	DKS	Q	CONC
2	ICB	951204A	ICP2	12/04/95	09:00	DKS	Q	CONC
3	ICSA	951204A	ICP2	12/04/95	09:03	DKS	Q	CONC
4	ICSAB	951204A	ICP2	12/04/95	09:06	DKS	Q	CONC
5	S95T003708_L	951204A	ICP2	12/04/95	09:10	DKS	S	CONC
6	S95T003708	951204A	ICP2	12/04/95	09:13	DKS	S	CONC
7	S95T003708_D	951204A	ICP2	12/04/95	09:17	DKS	S	CONC
8	S95T003708_A	951204A	ICP2	12/04/95	09:20	DKS	S	CONC
9	CCV	951204A	ICP2	12/04/95	09:32	DKS	Q	CONC
10	CCB	951204A	ICP2	12/04/95	09:37	DKS	Q	CONC
11	S95T003709_L	951204A	ICP2	12/04/95	09:44	DKS	S	CONC
12	S95T003709	951204A	ICP2	12/04/95	09:47	DKS	S	CONC
13	S95T003709_D	951204A	ICP2	12/04/95	09:51	DKS	S	CONC
14	S95T003709A	951204A	ICP2	12/04/95	09:55	DKS	S	CONC
15	S95T003770_L	951204A	ICP2	12/04/95	10:00	DKS	S	CONC
16	S95T003770	951204A	ICP2	12/04/95	10:04	DKS	S	CONC
17	S95T003770_D	951204A	ICP2	12/04/95	10:08	DKS	S	CONC
18	S95T003770_A	951204A	ICP2	12/04/95	10:11	DKS	S	CONC
19	ICSA	951204A	ICP2	12/04/95	10:16	DKS	Q	CONC
20	ICSAB	951204A	ICP2	12/04/95	10:18	DKS	Q	CONC
21	CCV_1	951204A	ICP2	12/04/95	10:21	DKS	Q	CONC
22	CCB_1	951204A	ICP2	12/04/95	10:24	DKS	Q	CONC

JK 12/8

12-04-95

TK-244 S95T003708
S95T003709

B-204 S95T003770

Work list # 3759

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SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 57 TO 61.

#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	5.087	4.859	5.283	4.992	4.995	5.196
2	ICB	.0012	.0021	-.0019	-.0004	.0002	-.0000
3	ICSA	-.0116	240.3	-.0135	-.0035	.0033	.0001
4	ICSAB	.9589	238.5	.0090	-.0001	.4732	.4865
5	S95T003708_L	.5731	3.728	-5.268	7.846	.0808	.0085
6	S95T003708_	.3997	2.369	-9.941	8.634	.0519	-.0105
7	S95T003708_D	.3773	2.191	-9.973	9.053	.0591	-.0070
8	S95T003708_A	81.28	98.57	96.81	109.9	96.71	102.8
9	CCV	4.955	4.983	5.146	4.998	4.961	5.140
10	CCB	.0017	.0064	-.0122	-.0012	.0002	-.0001
11	S95T003709_L	.6238	3.076	-10.68	9.876	.0899	-.0268
12	S95T003709_	.4757	3.041	-9.693	8.893	.0621	-.0062
13	S95T003709_D	.4469	2.905	-9.986	8.932	.0664	-.0091
14	S95T003709A	77.73	98.12	93.58	106.9	93.32	98.18
15	S95T003770_L	.0109	.0346	.0158	1.293	.0007	-.0003
16	S95T003770_	.0006	.0539	-.0119	2.325	.0003	-.0002
17	S95T003770_D	-.0009	.0577	-.0054	2.337	.0003	-.0002
18	S95T003770_A	1.272	1.359	1.327	3.683	1.225	1.308
19	ICSA	-.0114	241.8	-.0879	-.0021	.0033	.0001
20	ICSAB	.9248	241.3	-.1019	-.0011	.4609	.4729
21	CCV_1	4.927	4.923	5.071	4.954	4.924	5.101
22	CCB_1	-.0007	-.0016	-.0114	.0032	.0000	-.0001

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	ICV	5.220	5.292	5.253	5.184	5.230	5.284
2	ICB	-.0191	.0015	.0006	.0061	.0028	-.0003
3	ICSA	-.0298	257.1	.0010	.0165	.0010	-.0061
4	ICSAB	-.0248	255.7	.9789	.0193	.4828	.4850
5	S95T003708_L	-2.663	4.346	-.0530	.2108	.3676	179.3
6	S95T003708_	.6514	1.937	-.0240	.0211	.4695	179.4
7	S95T003708_D	1.685	-1.887	.0277	.1081	.4467	179.4
8	S95T003708_A	103.3	105.5	106.3	102.8	105.2	284.4
9	CCV	4.986	5.009	5.032	5.111	5.053	5.081
10	CCB	.0079	.0007	-.0006	.0097	-.0017	-.0000
11	S95T003709_L	-.1313	-4.225	-.2812	-.4846	.1436	170.4
12	S95T003709_	.9798	-1.256	-.0237	.8561	.3432	168.3
13	S95T003709_D	1.526	-1.667	.0667	1.133	.3226	167.1
14	S95T003709A	97.97	96.53	98.21	98.26	98.00	266.8
15	S95T003770_L	.0959	.1764	.0007	.0312	-.0044	.0016
16	S95T003770_	-.0089	.3423	.0002	.0060	-.0015	.0060
17	S95T003770_D	-.0097	.3515	-.0002	.0027	-.0038	.0049
18	S95T003770_A	1.320	1.714	1.310	1.297	1.304	1.323
19	ICSA	-.0053	242.9	.0007	.0156	-.0004	-.0057
20	ICSAB	-.0039	241.8	.9309	.0091	.4618	.4621
21	CCV_1	4.953	5.013	4.995	5.083	5.020	5.067
22	CCB_1	-.0179	-.0025	-.0014	-.0046	-.0015	-.0008

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#	Sample Name	Cu	Eu	Fe	K	La	Li
1	ICV	5.059	.0093	5.222	5.021	5.076	4.836
2	ICB	.0002	.0017	.0014	.1075	.0015	.0019
3	ICSA	-.0089	-.0160	95.99	.2445	-.0028	.0039
4	ICSAB	.4760	-.0124	96.20	.3805	-.0030	.9579
5	S95T003708_L	.2697	.9103	25.35	711.1	.1102	.7828
6	S95T003708	.0872	.2251	21.55	677.0	.0512	.2800
7	S95T003708_D	.1480	.2260	21.84	678.1	.1305	.2991
8	S95T003708_A	99.50	.3360	125.0	767.3	100.2	95.07
9	CCV	5.124	.0104	5.076	5.031	5.034	5.068
10	CCB	-.0000	.0007	.0016	.0117	.0013	.0013
11	S95T003709_L	.1525	.4792	21.40	744.8	.4641	.7049
12	S95T003709	.1871	.1136	20.84	690.0	.2762	.1988
13	S95T003709_D	.0735	.1533	20.71	664.4	.2998	.2967
14	S95T003709A	98.09	.3073	118.6	771.7	96.53	97.80
15	S95T003770_L	.0027	.0116	.0642	.2405	.0059	.0159
16	S95T003770	.0014	.0037	.1104	.5213	.0018	.0090
17	S95T003770_D	.0005	.0035	.1083	.3380	.0010	.0092
18	S95T003770_A	1.305	.0064	1.418	1.805	1.267	1.263
19	ICSA	-.0097	.0173	92.51	.1586	-.0020	.0047
20	ICSAB	.4716	.0216	93.14	-.0402	-.0035	.9779
21	CCV_1	5.075	.0107	5.037	4.941	5.010	5.020
22	CCB_1	-.0000	.0022	-.0001	.0020	-.0005	.0017

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	4.929	5.092	5.213	4.896	5.111	5.221
2	ICB	.0101	.0007	.0003	.0102	.0009	-.0020
3	ICSA	241.0	-.0064	-.0116	192.8	.0104	-.0148
4	ICSAB	236.7	.4572	-.0146	190.1	.0121	.9431
5	S95T003708_L	5.167	.3980	9.602	43430.	.8215	10.20
6	S95T003708	1.222	.1578	10.60	41440.	-.0648	7.160
7	S95T003708_D	2.152	.1444	10.49	41190.	-.0208	8.363
8	S95T003708_A	97.07	99.72	117.9	41550.	100.3	112.3
9	CCV	4.963	4.941	5.057	5.031	5.220	5.040
10	CCB	-.0006	.0003	-.0008	.0000	-.0021	-.0044
11	S95T003709_L	2.226	.1976	9.992	45060.	-.1722	7.028
12	S95T003709	1.158	.0942	9.831	43040.	.1516	7.983
13	S95T003709_D	.8991	.1222	9.887	42530.	-.1359	7.449
14	S95T003709A	95.81	93.14	110.8	42970.	99.97	104.7
15	S95T003770_L	.0467	.0154	-.0055	2.609	-.0009	.0063
16	S95T003770	.0799	.0211	-.0012	4.660	-.0001	.0005
17	S95T003770_D	.0666	.0217	-.0018	4.752	-.0034	-.0035
18	S95T003770_A	1.363	1.262	1.321	5.908	1.310	1.311
19	ICSA	240.3	-.0069	-.0130	193.9	.0116	-.0161
20	ICSAB	237.6	.4353	-.0121	193.4	.0121	.8815
21	CCV_1	4.866	4.891	5.024	4.982	5.199	5.024
22	CCB_1	.0077	.0008	.0028	.0075	.0007	-.0076

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#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	5.321	5.320	5.059	4.907	5.035	5.149
2	ICB	.0109	-.0067	-.0005	.0116	.0238	.0217
3	ICSA	.0102	.0555	-.0291	.0183	.0134	.0302
4	ICSAB	.0186	1.067	-.0322	.0081	.0144	.0284
5	S95T003708_L	1677.	4.706	2780.	8.633	17.69	15.15
6	S95T003708	1694.	-1.050	2805.	-.0849	3.515	9.772
7	S95T003708_D	1720.	-1.179	2811.	1.526	3.930	9.126
8	S95T003708_A	1793.	108.3	2879.	102.6	107.0	118.3
9	CCV	5.086	5.030	5.010	4.758	5.058	5.294
10	CCB	.0002	-.0056	-.0059	.0031	.0230	.0190
11	S95T003709_L	1567.	-3.545	2729.	1.047	12.64	17.48
12	S95T003709	1581.	2.014	2714.	.6130	4.127	9.748
13	S95T003709_D	1561.	.7687	2692.	1.882	4.907	9.820
14	S95T003709A	1680.	98.77	2803.	95.82	107.0	119.8
15	S95T003770_L	.0304	-.0265	.2280	.0138	.2367	2.522
16	S95T003770	-.0020	-.0073	.4738	.0128	.0561	4.370
17	S95T003770_D	-.0027	-.0142	.4697	.0046	.0659	4.395
18	S95T003770_A	1.362	1.320	1.813	1.253	1.324	6.240
19	ICSA	.0142	.0375	-.0331	.0219	.0159	.0505
20	ICSAB	.0260	.9850	-.0171	.0076	.0362	.0427
21	CCV_1	5.133	5.029	4.965	4.719	4.976	5.245
22	CCB_1	.0009	.0027	.0006	.0072	.0544	.0305

#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	4.909	4.954	.0618	4.935	5.125	9.567
2	ICB	.0157	.0005	-.0020	.0006	.0044	.0625
3	ICSA	.0007	-.0025	-.0069	.0017	.0326	.0722
4	ICSAB	-.0045	-.0024	-.0018	.0025	.0106	.0665
5	S95T003708_L	8.110	.2001	.3962	.4635	-6.209	486.6
6	S95T003708	2.509	.1341	2.082	.1187	.7220	455.4
7	S95T003708_D	2.739	.1303	2.041	.1595	-.3236	454.0
8	S95T003708_A	97.72	97.35	3.902	100.3	101.5	641.9
9	CCV	5.074	4.964	.0461	4.887	4.947	10.14
10	CCB	.0079	.0003	.0051	.0008	-.0223	.0143
11	S95T003709_L	4.763	.2340	-.8732	.1317	-6.817	503.7
12	S95T003709	1.645	.1290	1.590	.1130	.7306	475.9
13	S95T003709_D	2.344	.1294	1.745	.0590	-1.093	471.3
14	S95T003709A	97.93	94.99	1.575	96.14	96.45	669.6
15	S95T003770_L	.1320	.0023	-.0217	.0027	-.0508	.4663
16	S95T003770	.0335	.0019	-.0023	.0009	.0086	.1505
17	S95T003770_D	.0317	.0019	-.0090	.0007	-.0033	.1392
18	S95T003770_A	1.288	1.248	.0016	1.257	1.268	2.657
19	ICSA	.0139	-.0024	-.0192	.0017	.0126	.2965
20	ICSAB	.0090	-.0022	-.0148	.0017	.0015	.3033
21	CCV_1	5.035	4.951	.0371	4.866	4.924	10.07
22	CCB_1	.0182	.0004	-.0097	.0007	-.0036	.0634

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#	Sample Name	V	Y	Zn	Zr
1	ICV	5.077	.0111	5.205	5.005
2	ICB	.0041	.0010	-.0001	.0023
3	ICSA	.0014	.0123	.0010	-.0006
4	ICSAB	.4741	.0123	.9898	-.0005
5	S95T003708_L	1.684	.4664	1.831	2.384
6	S95T003708	.8148	.2262	2.030	1.169
7	S95T003708_D	.8175	.2506	1.800	1.229
8	S95T003708_A	103.3	.4241	108.5	102.2
9	CCV	5.005	.0111	5.037	4.957
10	CCB	.0013	.0003	.0002	.0001
11	S95T003709_L	1.031	.3403	1.530	1.848
12	S95T003709	.5510	.1858	1.916	1.032
13	S95T003709_D	.6338	.2115	1.976	1.130
14	S95T003709A	98.57	.3965	102.2	98.49
15	S95T003770_L	.0282	.0076	.0334	.0225
16	S95T003770	.0067	.0020	.0653	.0053
17	S95T003770_D	.0063	.0019	.0717	.0053
18	S95T003770_A	1.290	.0049	1.421	1.277
19	ICSA	.0027	.0128	.0028	.0024
20	ICSAB	.4637	.0124	.9548	.0020
21	CCV_1	4.988	.0110	5.016	4.935
22	CCB_1	.0042	.0010	.0000	.0050

JK Lee
12-04-95

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FILE # 951211A.DAT

LABCORE Data Entry Template for Worklist# 4065

Analyst: B. GOECKE **Instrument:** ICP01 _____ **Book#** 49B4PA

Method: LA-505-151/~~161~~ Rev/Mod D-3

Worklist Comment: ICP TX-224 (FUSION)

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	ICV				@ICP-QC	QC		
2	ICB				@ICP-QC	QC		
3	ICSA				@ICP-QC	QC		
4	ICSAB				@ICP-QC	QC		
5	PREPBLKARL				@ICP-F04	SOLID		
6	SAMPLE	S95T003768	0	F	@ICP-F04	SOLID	95000189	TX-244 GRAB
		Analytes Requested: FE-F-01						
7	DUP	S95T003768	0	F	@ICP-F04	SOLID		
8	SPK	S95T003768	0	F	@ICP-F04	SOLID		
9	ICSA				@ICP-QC	QC		
10	ICSAB				@ICP-QC	QC		
11	CCV				@ICP-QC	QC		
12	CCB				@ICP-QC	QC		

Final page for worklist # 4065

Reviewed by:

[signature] 12-11-95
Analyst Signature Date

[signature] 12/12/95
Analyst Signature Date

PREPBLKARL	.250mL - 10mL	DF
S95T003768-L	.250mL - 10mL - 2mL - 8mL	1
S95T003768	.250mL - 10mL	205
S95T003768-D	.250mL - 10mL	41
S95T003768-A	.250mL - 2mL - 8mL	41

Data Entry Comments:

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

Identity 1: ICV Identity 2: Quality Control 9:48 AM December 11, 1995
Task name : OPTIMA
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	5.019	4.941	5.013	4.873	4.884	5.003	5.015	4.960
S.D.	0.003	0.003	0.011	0.001	0.013	0.003	0.006	0.022
% R.S.D.	0.066	0.056	0.223	0.025	0.261	0.064	0.125	0.437

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	5.086	5.017	4.996	5.093	4.629	5.050	5.237	9.923
S.D.	0.006	0.005	0.009	0.031	0.002	0.015	0.013	0.006
% R.S.D.	0.113	0.106	0.182	0.614	0.053	0.306	0.245	0.062

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	4.974	5.003	4.952	5.100	5.008	4.766	5.078	4.913
S.D.	0.003	0.002	0.003	0.069	0.027	0.009	0.014	0.023
% R.S.D.	0.057	0.041	0.059	1.358	0.546	0.181	0.280	0.465

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	5.103	5.300	4.933	5.062	4.957	5.025	5.155	4.940
S.D.	0.005	0.038	0.003	0.016	0.006	0.010	0.011	0.014
% R.S.D.	0.098	0.720	0.063	0.307	0.122	0.200	0.215	0.286

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	5.016	4.730	5.066	5.153	4.869
S.D.	0.008	0.063	0.004	0.003	0.010
% R.S.D.	0.169	1.337	0.074	0.058	0.213

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[signature] 12-11-95
FILE A 95 1211A.DAT
TX-224 FUSION
SS5TW0 3768
.250mL-10mL

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 63 TO 75.

Identity 1: ICB Identity 2: Quality Control 9:51 AM December 11, 1995
Task name : OPTIMA
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.001	0.000	-0.009	0.003	-0.017	0.011	-0.000	0.000
S.D.	0.002	0.000	0.008	0.002	0.004	0.003	0.000	0.000
% R.S.D.	315.668	30.551	96.822	74.651	23.079	29.938	130.686	83.543

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.000	-0.002	0.000	0.007	0.000	-0.000	0.008	0.024
S.D.	0.000	0.002	0.002	0.002	0.000	0.001	0.003	0.060
% R.S.D.	72.333	132.680	511.321	34.647	50.999	543.654	41.151	251.656

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.009	0.001	0.000	-0.003	0.006	0.000	0.006	0.010
S.D.	0.014	0.012	0.000	0.008	0.002	0.000	0.004	0.004
% R.S.D.	164.449	1676.291	113.793	239.065	34.542	86.603	71.427	42.855

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.001	-0.039	0.001	-0.005	-0.000	-0.000	0.005	0.058
S.D.	0.001	0.005	0.001	0.011	0.000	0.000	0.000	0.009
% R.S.D.	153.662	12.199	97.666	203.814	245.195	34.971	3.450	15.811

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	-0.000	-0.046	0.001	0.000	0.026
S.D.	0.000	0.021	0.001	0.000	0.031
% R.S.D.	11011.748	45.491	61.767	116.494	120.494

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Identity 1: ICSA Identity 2: Quality Control 9:55 AM December 11, 1995
Task name : OPTIMA
Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.010	0.002	-0.013	0.026	200.242	0.009	0.004	-0.000
S.D.	0.001	0.000	0.011	0.002	0.687	0.002	0.000	0.000
% R.S.D.	10.327	3.396	81.491	8.369	0.343	19.430	6.007	126.034

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	-0.005	0.009	0.004	99.925	106.788	0.002	-0.048	0.052
S.D.	0.000	0.002	0.001	0.250	0.305	0.003	0.005	0.043
% R.S.D.	3.183	24.374	20.868	0.250	0.286	134.860	11.400	82.751

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.010	0.044	0.004	0.031	0.003	110.557	0.026	188.177
S.D.	0.014	0.008	0.000	0.013	0.008	0.238	0.004	1.342
% R.S.D.	144.606	18.446	6.859	42.155	242.621	0.215	17.266	0.713

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.002	-0.029	-0.000	-0.004	0.001	0.002	0.017	0.112
S.D.	0.003	0.010	0.001	0.011	0.000	0.000	0.001	0.008
% R.S.D.	206.466	34.063	311.135	261.651	14.310	15.614	5.241	7.069

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.004	-0.026	0.003	0.003	0.025
S.D.	0.000	0.041	0.001	0.000	0.021
% R.S.D.	6.933	158.447	30.900	0.218	84.142

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Identity 1: ICSAB Identity 2: Quality Control 9:57 AM December 11, 1995
Task name : OPTIMA
Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.008	0.002	-0.028	0.026	202.191	0.503	0.501	0.938
S.D.	0.000	0.000	0.014	0.002	0.384	0.002	0.000	0.002
% R.S.D.	4.075	3.571	50.947	8.391	0.190	0.364	0.037	0.224

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	1.027	1.006	0.004	99.976	107.737	0.513	-0.057	0.098
S.D.	0.004	0.007	0.001	0.153	0.201	0.002	0.009	0.025
% R.S.D.	0.350	0.720	28.910	0.153	0.187	0.318	15.363	25.114

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-0.010	0.057	0.506	0.025	0.012	111.245	0.045	190.291
S.D.	0.010	0.007	0.001	0.008	0.008	0.196	0.006	0.367
% R.S.D.	100.134	12.218	0.195	33.555	64.109	0.177	13.400	0.193

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.003	0.003	1.035	0.985	0.001	1.018	0.017	0.072
S.D.	0.001	0.024	0.002	0.013	0.000	0.004	0.000	0.017
% R.S.D.	38.750	729.734	0.232	1.369	16.418	0.391	1.360	23.633

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.511	0.005	0.507	0.506	-0.023
S.D.	0.001	0.039	0.001	0.001	0.009
% R.S.D.	0.145	858.185	0.273	0.205	37.452

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Identity 1: prepblkarl Identity 2: .250ml-10ml 10:04 AM December 11, 1995
Task name : OPTIMA
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-0.000	0.000	0.000	-0.013	-0.008	0.003	0.000	-0.000
S.D.	0.001	0.000	0.019	0.003	0.006	0.002	0.000	0.000
% R.S.D.	495.519	19.245	12848.259	19.048	81.605	57.772	260.457	397.002

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.003	0.337	0.003	0.005	0.015	0.001	0.002	0.035
S.D.	0.001	0.001	0.004	0.001	0.000	0.001	0.001	0.019
% R.S.D.	27.246	0.269	159.834	18.193	0.828	96.139	40.878	55.072

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-0.008	0.013	0.000	-0.015	0.006	0.002	0.006	0.154
S.D.	0.002	0.004	0.000	0.018	0.001	0.000	0.006	0.001
% R.S.D.	21.235	32.334	16.654	123.154	17.031	11.111	92.935	0.802

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.001	-0.008	0.001	-0.008	0.000	-0.002	0.002	456.001
S.D.	0.001	0.016	0.001	0.011	0.000	0.001	0.001	0.134
% R.S.D.	72.622	196.772	61.454	140.069	64.846	41.543	37.677	0.029

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.001	-0.018	0.000	-0.000	0.009
S.D.	0.000	0.028	0.000	0.000	0.021
% R.S.D.	39.343	157.224	11298.047	1.851	227.978

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Identity 1: S95T003768_L Identity 2: .250ml-10ml-2ml-8ml 10:08 AM December 11, 1995
Task name : OPTIMA
Sample Weight : 1.0000 Solution Volume : 205.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-0.320	1.198	89.433	19.371	1.740	1.739	0.098	0.170
S.D.	0.394	0.025	1.572	0.643	0.924	0.751	0.134	0.104
% R.S.D.	122.960	2.113	1.758	3.318	53.089	43.178	136.053	61.215

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	1.354	61.992	19.526	56.987	7.120	7.280	4.491	-7.720
S.D.	0.032	0.643	0.400	0.635	0.044	0.195	0.556	14.290
% R.S.D.	2.340	1.037	2.051	1.114	0.615	2.677	12.370	185.110

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	1.841	-2.071	0.398	18.742	4.612	0.982	-0.274	90.188
S.D.	4.443	2.622	0.060	3.255	1.004	0.020	1.467	0.253
% R.S.D.	241.372	126.557	15.093	17.367	21.769	2.038	535.763	0.280

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.144	-5.070	-0.001	-4.030	-0.041	-0.175	0.503	19883.564
S.D.	0.265	1.864	0.270	1.552	0.062	0.031	0.078	108.861
% R.S.D.	183.532	36.766	28053.793	38.518	153.411	17.543	15.455	0.547

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	20.165	-26.376	0.369	-0.001	6.664
S.D.	0.139	4.073	0.192	0.024	8.157
% R.S.D.	0.687	15.442	52.040	2433.998	122.399

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Identity 1: S95T003768 Identity 2: .250ml-10ml 10:12 AM December 11, 1995
Task name : OPTIMA
Sample Weight : 1.0000 Solution Volume : 41.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-0.035	1.200	97.812	21.127	3.777	0.130	0.097	-0.001
S.D.	0.013	0.004	0.776	0.177	0.046	0.075	0.006	0.003
% R.S.D.	36.482	0.322	0.793	0.838	1.206	58.095	5.770	343.939

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.730	64.632	20.703	58.122	7.311	6.831	0.231	6.431
S.D.	0.008	0.338	0.079	0.138	0.008	0.131	0.247	0.456
% R.S.D.	1.042	0.523	0.380	0.238	0.114	1.914	106.992	7.088

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-0.113	0.810	0.335	23.717	4.025	0.964	0.499	87.182
S.D.	0.133	0.016	0.000	0.647	0.303	0.007	0.161	0.232
% R.S.D.	118.025	2.034	0.000	2.727	7.539	0.720	32.179	0.266

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.069	-1.593	-0.013	-1.035	0.087	0.055	0.140	18870.430
S.D.	0.035	0.243	0.012	0.358	0.009	0.006	0.022	41.143
% R.S.D.	51.406	15.283	92.221	34.580	10.451	11.213	16.057	0.218

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	20.820	-0.396	0.031	0.006	0.259
S.D.	0.014	0.606	0.003	0.005	0.394
% R.S.D.	0.067	153.270	11.034	74.583	152.266

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Identity 1: S95T003768_D Identity 2: .250ml-10ml 10:15 AM December 11, 1995
Task name : OPTIMA
Sample Weight : 1.0000 Solution Volume : 41.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-163, REV. 0

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-0.049	1.128	101.505	20.364	3.249	0.086	0.056	-0.004
S.D.	0.042	0.000	0.791	0.094	0.114	0.075	0.019	0.008
% R.S.D.	85.356	0.000	0.780	0.463	3.503	87.191	34.403	216.166

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.496	52.209	19.242	61.785	4.487	6.464	0.115	6.456
S.D.	0.006	0.234	0.166	0.309	0.009	0.131	0.159	1.782
% R.S.D.	1.128	0.449	0.862	0.500	0.192	2.021	138.552	27.600

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-0.376	0.749	0.328	22.933	3.535	0.888	-0.051	87.999
S.D.	0.490	0.338	0.005	0.580	0.126	0.000	0.053	0.583
% R.S.D.	130.326	45.114	1.559	2.528	3.572	0.000	104.263	0.663

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.011	-2.169	-0.022	0.201	0.052	-0.003	0.045	20869.510
S.D.	0.020	0.085	0.028	0.338	0.022	0.017	0.030	98.815
% R.S.D.	187.611	3.906	126.708	168.154	42.094	547.580	65.872	0.473

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	20.814	-1.329	-0.046	-0.025	-1.244
S.D.	0.024	1.820	0.043	0.005	1.215
% R.S.D.	0.115	136.975	94.599	19.715	97.645

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Identity 1: S95T003768_A Identity 2: .250ml-2ml-8ml 10:19 AM December 11, 1995
Task name : OPTIMA
Sample Weight : 1.0000 Solution Volume : 41.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-163, REV. 0

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	40.796	41.056	137.335	61.459	43.072	40.693	40.391	37.222
S.D.	0.032	0.079	0.650	0.096	0.198	0.130	0.047	0.087
% R.S.D.	0.078	0.192	0.473	0.156	0.461	0.320	0.116	0.235

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	41.154	103.798	60.973	98.949	42.782	47.556	42.365	87.300
S.D.	0.076	0.183	0.244	0.320	0.021	0.104	0.287	0.886
% R.S.D.	0.184	0.177	0.400	0.324	0.048	0.219	0.677	1.015

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	39.801	39.977	39.953	63.560	43.792	37.963	40.816	124.326
S.D.	0.045	0.126	0.064	1.173	0.395	0.036	0.116	0.267
% R.S.D.	0.114	0.315	0.160	1.846	0.902	0.094	0.284	0.215

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	40.972	43.280	33.395	41.111	39.982	40.479	40.484	19013.972
S.D.	0.040	0.889	0.100	0.832	0.067	0.065	0.220	18.072
% R.S.D.	0.098	2.053	0.300	2.025	0.167	0.160	0.543	0.095

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	61.091	37.261	41.227	40.349	39.565
S.D.	0.087	1.354	0.027	0.068	0.461
% R.S.D.	0.142	3.634	0.065	0.168	1.166

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Identity 1: ICSA Identity 2: Quality Control 10:22 AM December 11, 1995
Task name : OPTIMA
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.009	0.002	-0.023	0.028	198.963	0.011	0.003	0.000
S.D.	0.001	0.000	0.003	0.001	0.854	0.002	0.000	0.000
% R.S.D.	7.085	1.634	11.622	2.727	0.429	17.082	1.477	603.514

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	-0.006	0.003	0.004	99.858	106.181	0.002	-0.051	0.057
S.D.	0.000	0.001	0.002	0.301	0.378	0.001	0.008	0.029
% R.S.D.	6.276	42.014	45.823	0.302	0.356	32.108	15.587	50.953

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.002	0.035	0.004	0.042	-0.009	107.993	0.044	187.474
S.D.	0.004	0.005	0.000	0.012	0.012	0.685	0.006	0.227
% R.S.D.	269.743	12.970	3.676	28.791	130.463	0.634	12.804	0.121

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.001	-0.034	0.001	-0.031	0.000	0.000	0.015	0.106
S.D.	0.001	0.003	0.001	0.010	0.000	0.000	0.001	0.005
% R.S.D.	83.225	7.575	60.025	31.331	68.377	48.123	4.260	4.777

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.003	0.031	0.001	0.003	-0.003
S.D.	0.000	0.032	0.001	0.000	0.005
% R.S.D.	1.374	101.709	52.222	0.146	193.665

BEST AVAILABLE COPY

Identity 1: ICSAB Identity 2: Quality Control 10:25 AM December 11, 1995
Task name : OPTIMA
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-163, REV. 0

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.007	0.002	-0.014	0.030	199.709	0.504	0.497	0.919
S.D.	0.001	0.000	0.007	0.003	0.168	0.003	0.000	0.006
% R.S.D.	9.097	2.727	54.577	9.374	0.084	0.631	0.017	0.617

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	1.017	1.000	0.009	100.747	107.011	0.512	-0.052	0.073
S.D.	0.003	0.003	0.001	0.281	0.216	0.000	0.014	0.009
% R.S.D.	0.281	0.252	8.378	0.279	0.202	0.083	26.611	12.466

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.003	0.041	0.499	0.019	0.006	109.332	0.050	186.694
S.D.	0.004	0.002	0.001	0.008	0.017	0.291	0.004	0.901
% R.S.D.	132.337	3.874	0.207	42.687	263.637	0.267	7.119	0.482

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.002	0.041	1.033	0.990	0.001	1.008	0.017	0.142
S.D.	0.001	0.023	0.002	0.016	0.000	0.009	0.001	0.010
% R.S.D.	80.340	55.032	0.177	1.660	32.283	0.845	3.729	7.323

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.511	0.039	0.502	0.500	-0.004
S.D.	0.002	0.009	0.002	0.002	0.014
% R.S.D.	0.328	24.377	0.315	0.313	375.023

BEST AVAILABLE COPY

Identity 1: CCV Identity 2: Quality Control 10:29 AM December 11, 1995
Task name : OPTIMA
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	5.048	4.955	4.988	4.889	4.922	5.025	5.014	4.928
S.D.	0.004	0.015	0.051	0.010	0.018	0.011	0.013	0.042
% R.S.D.	0.071	0.299	1.027	0.212	0.358	0.228	0.269	0.852

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	5.129	5.056	5.026	5.162	4.626	5.080	5.263	10.060
S.D.	0.003	0.015	0.006	0.012	0.008	0.009	0.011	0.028
% R.S.D.	0.064	0.293	0.118	0.238	0.165	0.180	0.202	0.277

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	4.966	5.017	4.953	5.067	4.986	4.793	5.089	4.916
S.D.	0.027	0.004	0.015	0.081	0.035	0.006	0.030	0.044
% R.S.D.	0.539	0.079	0.311	1.589	0.696	0.117	0.588	0.903

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	5.116	5.316	4.969	5.073	4.952	5.055	5.176	5.015
S.D.	0.020	0.026	0.002	0.044	0.010	0.009	0.007	0.058
% R.S.D.	0.385	0.494	0.047	0.863	0.194	0.182	0.143	1.162

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	5.041	4.727	5.096	5.169	4.852
S.D.	0.004	0.060	0.002	0.006	0.009
% R.S.D.	0.073	1.270	0.030	0.112	0.195

BEST AVAILABLE COPY

Identity 1: CCB Identity 2: Quality Control 10:32 AM December 11, 1995
Task name : OPTIMA
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.002	0.000	0.022	0.015	-0.011	0.004	0.000	0.000
S.D.	0.002	0.000	0.011	0.001	0.002	0.003	0.000	0.000
% R.S.D.	90.955	38.188	47.615	6.052	16.056	75.242	112.050	85.705

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.001	0.003	0.001	0.002	0.001	0.001	0.000	0.080
S.D.	0.000	0.002	0.003	0.002	0.000	0.002	0.003	0.038
% R.S.D.	26.379	69.287	201.931	124.225	11.985	270.141	559.421	47.835

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-0.004	0.018	0.000	-0.003	0.007	0.002	0.012	0.016
S.D.	0.010	0.008	0.000	0.012	0.006	0.000	0.007	0.003
% R.S.D.	265.929	44.862	258.915	388.558	79.173	5.973	57.828	20.828

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.003	-0.024	-0.000	-0.006	0.002	-0.000	0.004	0.037
S.D.	0.002	0.014	0.001	0.018	0.000	0.000	0.000	0.013
% R.S.D.	67.163	57.881	155.759	279.185	26.763	74.967	11.255	36.664

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	-0.000	-0.044	-0.000	0.000	-0.001
S.D.	0.000	0.010	0.001	0.000	0.021
% R.S.D.	54.455	21.846	210.341	6.225	2442.282

12/12/95

BEST AVAILABLE COPY

LABCORE Data Entry Template for Worklist# 4147

Analyst: RAW **Instrument:** TOC01WB39A37 **Book #** 16N12 C 11N12G

Method: LA-344-105 Rev/Mod C-0

Worklist Comment: TOC-01 TX-244

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK				TOC-01	LIQUID	1	~~<5.00~~ 0.4	N/A Hea 12-18-95	ug/mL
		2	STD				TOC-01	LIQUID	3.00 E3	3.03 E3	N/A	ug/mL
95000189	TX-244 GRAB	3	SAMPLE	S95T003708	0		TOC-01	LIQUID	N/A	1.86 E3	5.50 E1	ug/mL
95000189	TX-244 GRAB	4	DUP	S95T003708	0		TOC-01	LIQUID	1.86 E3	1.71 E3	N/A	ug/mL
95000189	TX-244 GRAB	5	SPK	S95T003708	0		TOC-01	LIQUID	100	92.8 %	N/A	ug/mL
95000189	TX-244 GRAB	6	SAMPLE	S95T003709	0		TOC-01	LIQUID	N/A	2.08 E3	5.50 E1	ug/mL
95000189	TX-244 GRAB	7	DUP	S95T003709	0		TOC-01	LIQUID	2.08 E3	1.78 E3	N/A	ug/mL

Final page for worklist # 4147

R. Wendland 12-12-95
Analyst Signature Date

[signature] 12-18-95
Analyst Signature Date

Data Entry Comments: SAM — .200 — 2mL H_2SO_4 (.5M) Reviewed by H. Anastor 12-19-95

SPK — .200 — .200 11N12G

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-163, REV. 0

TOC : LA-344-105 (C-0) LIQUIDS

			STANDARD
Type	Sample Volume in mL	(SS)	0.200
STANDARD	H2SO4 Volume in mL	(VR)	2.000
Work Cat	Volume Injected in mL	(VI)	0.200
4147	Dilution Factor	(DF)	11
Test Code	Digest Dilution Factor	(DDF)	1
TOC-01	µg of Carbon in Sample	(C1)	56.1
Matrix	µg of Carbon in Blank	(C2)	1.1
LIQUID	g of Carbon/L	=	3.03E+00

Sample
16N12C

Instrument Code
WB39937

Analyst
R. WENDLAND

Date
12/12/95

Time
12:30 PM

$$\text{g of Carbon/L} = \frac{(C1-C2) * DF * DDF}{VI * 1000}$$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

$$\text{Detection Level (µg/mL)} = \frac{1\ \mu g\ C * DF * DDF}{VI}$$

µg Carbon/mL =	3.03E+03	DETECTION LEVEL in µg/mL
		5.50E+01

Data Entry by: [signature] Date: 12/14/95
Approved by: H. Anastor Date: 12-18-95

Form 344105_C Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-163, REV. 0

TOC : LA-344-105 (C-0) LIQUIDS

				BLANK
BLANK	Sample Volume in mL	(SS)		0.200
	H2SO4 Volume in mL	(VR)		0.200
4147	Volume Injected in mL	(VI)		0.200
	Dilution Factor	(DF)		1
TOC-01	Digest Dilution Factor	(DDF)		1
	µg of Carbon in Sample	(C1)		1.5
LIQUID	µg of Carbon in Blank	(C2)		1.1
	g of Carbon/L	=	<	5.00E-03

BLANK
WB39937
R. WENDLAND
12/12/95
12:30 PM

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

Detection Level (µg/mL) = $\frac{1 \text{ µg C} * DF * DDF}{VI}$

$|1.5-1.1| = 0.4$

NOTE: Reported Result is Below Detection Level.

µg Carbon/mL =	< 5.00E+00	DETECTION LEVEL in µg/mL
		5.00E+00

Data Entry by: [illegible] Date: 12/14/95
Approved by: H. Anastor Date: 12-18-95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-163, REV. 0

TOC : LA-344-105 (C-0) LIQUIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.200
SAMPLE	H2SO4 Volume in mL	(VR)	2.000
Work List	Volume Injected in mL	(VI)	0.200
4147	Dilution Factor	(DF)	11
Test Code	Digest Dilution Factor	(DDF)	1
TOC-01	µg of Carbon in Sample	(C1)	35
Matrix	µg of Carbon in Blank	(C2)	1.1
LIQUID	g of Carbon/L =		1.86E+00
Sample			
S9RT003708			
Instrument Code			
WB39937			
Analyst			
R. WENDLAND			
Date			
12/12/95			
Time			
12:30 PM			

$$\text{g of Carbon/L} = \frac{(C1-C2) * DF * DDF}{VI * 1000}$$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

$$\text{Detection Level (µg/mL)} = \frac{1\ \mu g\ C * DF * DDF}{VI}$$

µg Carbon/mL =	1.86E+03	DETECTION LEVEL in µg/mL
		5.50E+01

Data Entry by:	[signature]	Date:	12/14/95
Approved by:	H. Anastor	Date:	12-18-95

Form 344105_C Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-163, REV. 0

TOC : LA-344-105 (C-0) LIQUIDS

SAMPLE/DUPLICATE
4147
TOC-01
LIQUID
S9RT003708
WB39937
R. WENDLAND
12/12/95
12:30 PM

		SAMPLE/DUPLICATE
Sample Volume in mL	(SS)	0.200
H2SO4 Volume in mL	(VR)	2.000
Volume Injected in mL	(VI)	0.200
Dilution Factor	(DF)	11
Digest Dilution Factor	(DDF)	1
µg of Carbon in Sample	(C1)	32.1
µg of Carbon in Blank	(C2)	1.1
g of Carbon/L	=	1.71E+00

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

Detection Level (µg/mL) = $\frac{1 \mu g\ C * DF * DDF}{VI}$

µg Carbon/mL =	1.71E+03	DETECTION LEVEL in µg/mL
		5.50E+01

Data Entry by: [signature] Date: 12/14/95

Approved by: H. Anastos Date: 12-18-95

Form 344105_C Rev. 1.1

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

WHC-SD-WM-DP-163, REV. 0

TOC: LA-344-105 SPIKED SAMPLE

SPIKE

SPIKE	>>>>>> Sample Vial Data <<<<<<		>>>>> Spiked Vial Data <<<<<	SPIKE
	Sample Volume in mL	0.200	Sample Size in mL (SS)	0.200
	H2SO4 Volume in mL	2.000	Spike Volume in mL	0.200
4147	Volume Injected in mL	0.200	H2SO4 Volume in mL	0.000
	µg of Carbon in Sample	32.1	Volume Injected in mL	0.200
TOC-01	µg of Carbon in Blank	1.1	Sample Pre-Spike Dil. Factor (PDF)	11
			Spike Value (µg/ml)	748
LIQUID			µg C in Sample + Spike	86
			µg C in Blank	1.1
S95T003708				
WB39937				
R. WENDLAND				
12/12/95				
01:04 PM				

PERCENT SPIKE REC = $\frac{\text{µg Carbon Recovered from Spike} * 100}{\text{µg Carbon in Spike}}$

WHERE : µg Carbon Recovered from Spike =

[(µgC in sample + spike - µgC in blank) * (Spike Correction Factor)]

- [(µgC sample - µgC blank) * (Sample Correction Factor) * (Sample Size Correction Factor) * (PDF)]

Spike Correction Factor = $\frac{\text{Total volume in spiked sample vial (mL)}}{\text{Volume injected (mL)}}$

Sample Correction Factor = $\frac{\text{Total volume in sample vial (mL)}}{\text{Volume injected (mL)}}$

Sample Size Correction Factor = $\frac{\text{Sample size in (mL) in spiked vial}}{\text{Sample size (mL) in sample}}$

Sample Pre-Spike Dilution Factor = $\frac{1}{\text{Dilution of Sample Before Added to Spike Vial}}$

WHERE : µg Carbon in Spike = Spike Value (µg/mL) * Spike Volume (mL)

Percent Spike Recovery 92.8%

Data Entry by: C Stark Date: 14-Dec-95

Approved by: S. Anastos Date: 12-18-95

Form X Rev. 1.1

{/ system;exit}yes~

{/ print;block}~
{/ print;printtofit}

Control Log

Date/Initials	Description of Change
6/2/94 MLB	VERBAGE ADDED FOR CLARIFICATION, REV. 1.1
5/10/95 MLB	FONTS CHANGED IN B41,42,43, NO CALCULATIONS EFFECTED.
10/19/95 RLR	Added print range to cell A100 (for ACE-2), REV 1.1
10/31/95 RLR	Shaded unprotected cells light yellow, REV 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-163, REV. 0

TOC : LA-344-105 (C-0) LIQUIDS

			SAMPLE
SAMPLE	Sample Volume in mL	(SS)	0.200
	H2SO4 Volume in mL	(VR)	2.000
4147	Volume Injected in mL	(VI)	0.200
	Dilution Factor	(DF)	11
TOC-01	Digest Dilution Factor	(DDF)	1
	µg of Carbon in Sample	(C1)	39
LIQUID	µg of Carbon in Blank	(C2)	1.1
	g of Carbon/L	=	2.08E+00
S9RT003709			
WB39937			
R. WENDLAND			
12/12/95			
12:30 PM			

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

Detection Level (µg/mL) = $\frac{1 \text{ µg C} * DF * DDF}{VI}$

µg Carbon/mL =	2.08E+03	DETECTION LEVEL in µg/mL
		5.50E+01

Data Entry by: [signature] Date: 12/14/95

Approved by: [signature] Date: 12.18.95

Form 344105_C Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-163, REV. 0

TOC : LA-344-105 (C-0) LIQUIDS

SAMPLE/DUPLICATE			SAMPLE/DUPLICATE
4147	Sample Volume in mL	(SS)	0.200
TOC-01	H2SO4 Volume in mL	(VR)	2.000
LIQUID	Volume Injected in mL	(VI)	0.200
S9RT003709	Dilution Factor	(DF)	11
WB39937	Digest Dilution Factor	(DDF)	1
R. WENDLAND	µg of Carbon in Sample	(C1)	33.4
12/12/95	µg of Carbon in Blank	(C2)	1.1
12:30 PM	g of Carbon/L	=	1.78E+00

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

Detection Level (µg/mL) = $\frac{1 \text{ µg C} * DF * DDF}{VI}$

µg Carbon/mL =	1.78E+03	DETECTION LEVEL in µg/mL
		5.50E+01

Data Entry by: [signature] Date: 12/14/95

Approved by: H. Anastos Date: 12-18-95

Form 344105_C Rev. 1.1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD *Date: 12/12/95* *Time: 12:30:26*

Sample Size = 200 uL *Analyst : RA WENDLAND*
Dil Factor = 11 *Min Readings = 10*
Blank ID # = BLK *Max Readings = 10*
Blank Value = .2997219 ug/minute C *% Difference = 10*

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	15.10	100.00
3	1.51	43.00	64.88
4	2.01	51.80	16.99
5	2.51	54.20	4.43
6	3.01	55.10	1.63
7	3.51	55.50	0.72
8	4.01	55.70	0.36
9	4.51	55.90	0.36
10	5.01	56.10	0.36

BLANK VALUE = 1.5 micrograms carbon
BLANK FACTOR = 1.5 / 5.004639 = +3.0E-01 ug/min Carbon

SAMPLE RESULTS:
(56.1 - 1.500238)(11)/(200) = +3.00E+00 g/L Carbon
(56.1 - 1.500238)(11)/(200)(12) = +2.50E-01 Molar Carbon

Sample Run By: _____
RA WENDLAND *00000*

RW 12-12-95

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 84 TO 91.

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
< < < BLANK ANALYSIS > > >

Sample: BLK Date: 12/12/95 Time: 11:58:52

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = N/A

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	0.30	33.33
3	1.51	0.60	50.00
4	2.01	0.80	25.00
5	2.51	0.90	11.11
6	3.01	1.00	10.00
7	3.51	1.10	9.09
8	4.01	1.30	15.38
9	4.50	1.40	7.14
10	5.00	1.50	6.67

BLANK VALUE = 1.5 micrograms carbon
BLANK FACTOR = 1.5 / 5.004639 = +3.0E-01 ug/min Carbon

Sample Run By: _____
RA WENDLAND 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BASE *Date: 12/12/95* *Time: 12:05:51*

Sample Size = 200 uL *Analyst : RA WENDLAND*
Dil Factor = 1 *Min Readings = 10*
Blank ID # = BLK *Max Readings = 10*
Blank Value = .2997219 ug/minute C *% Difference = 10*

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	0.20	50.00
3	1.51	0.30	33.33
4	2.01	0.40	25.00
5	2.51	0.50	20.00
6	3.01	0.60	16.67
7	3.51	0.70	14.29
8	4.00	0.90	22.22
9	4.50	1.00	10.00
10	5.00	1.10	9.09

BLANK VALUE = 1.5 micrograms carbon
BLANK FACTOR = 1.5 / 5.004639 = +3.0E-01 ug/min Carbon

SAMPLE RESULTS:
(1.1 - 1.499963)(1)/(200) = < 5.00 E-3 g/L Carbon
(1.1 - 1.499963)(1)/(200)(12) = < 4.17 E-4 Molar Carbon

Sample Run By: _____
RA WENDLAND *00000*

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 8 *Date: 12/12/95* *Time: 12:38:21*

Sample Size = 200 uL *Analyst : RA WENDLAND*
Dil Factor = 11 *Min Readings = 10*
Blank ID # = BLK *Max Readings = 10*
Blank Value = .2997219 ug/minute C *% Difference = 10*

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	15.60	100.00
3	1.51	27.50	43.27
4	2.01	31.30	12.14
5	2.51	32.90	4.86
6	3.01	33.60	2.08
7	3.51	34.10	1.47
8	4.01	34.40	0.87
9	4.50	34.70	0.86
10	5.00	35.00	0.86

BLANK VALUE = 1.5 micrograms carbon
BLANK FACTOR = 1.5 / 5.004639 = +3.0E-01 ug/min Carbon

SAMPLE RESULTS:
(35 - 1.500018)(11)/(200) = +1.84E+00 g/L Carbon
(35 - 1.500018)(11)/(200)(12) = +1.54E-01 Molar Carbon

Sample Run By: _____
RA WENDLAND *00000*

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 8D *Date: 12/12/95* *Time: 12:44:20*

Sample Size = 200 uL *Analyst : RA WENDLAND*
Dil Factor = 11 *Min Readings = 10*
Blank ID # = BLK *Max Readings = 10*
Blank Value = .2997219 ug/minute C *% Difference = 10*

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	13.80	98.55
3	1.51	24.50	43.67
4	2.01	28.00	12.50
5	2.51	29.60	5.41
6	3.01	30.30	2.31
7	3.51	31.00	2.26
8	4.01	31.50	1.59
9	4.50	31.80	0.94
10	5.00	32.10	0.93

BLANK VALUE = 1.5 micrograms carbon
BLANK FACTOR = 1.5 / 5.004639 = +3.0E-01 ug/min Carbon

SAMPLE RESULTS:
(32.1 - 1.5)(11)/(200) = +1.68E+00 g/L Carbon
(32.1 - 1.5)(11)/(200)(12) = +1.40E-01 Molar Carbon

Sample Run By: _____
RA WENDLAND *00000*

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 8S *Date: 12/12/95* *Time: 13:04:11*

Sample Size = 200 uL *Analyst : RA WENDLAND*
Dil Factor = 1 *Min Readings = 10*
Blank ID # = BLK *Max Readings = 10*
Blank Value = .2997219 ug/minute C *% Difference = 10*

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	11.40	95.61
3	1.50	59.50	80.84
4	2.00	70.90	16.08
5	2.51	77.00	7.92
6	3.01	80.50	4.35
7	3.50	82.70	2.66
8	4.00	84.20	1.78
9	4.50	85.20	1.17
10	5.00	86.00	0.93

BLANK VALUE = 1.5 micrograms carbon
BLANK FACTOR = 1.5 / 5.004639 = +3.0E-01 ug/min Carbon

SAMPLE RESULTS:
(86 - 1.499963)(1)/(200) = +4.23E-01 g/L Carbon
(86 - 1.499963)(1)/(200)(12) = +3.52E-02 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 9 *Date: 12/12/95* *Time: 12:58:16*

Sample Size = 200 uL *Analyst : RA WENDLAND*
Dil Factor = 11 *Min Readings = 10*
Blank ID # = BLK *Max Readings = 10*
Blank Value = .2997219 ug/minute C *% Difference = 10*

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.50	0.00
2	1.01	22.60	93.36
3	1.50	29.90	24.41
4	2.00	33.40	10.48
5	2.51	35.50	5.92
6	3.01	36.50	2.74
7	3.51	37.30	2.14
8	4.00	38.00	1.84
9	4.50	38.60	1.55
10	5.01	39.00	1.03

BLANK VALUE = 1.5 micrograms carbon
BLANK FACTOR = 1.5 / 5.004639 = +3.0E-01 ug/min Carbon

SAMPLE RESULTS:
(39 - 1.500311)(11)/(200) = +2.06E+00 g/L Carbon
(39 - 1.500311)(11)/(200)(12) = +1.72E-01 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 9D *Date: 12/12/95* *Time: 13:23:26*

WHC-SD-WM-DP-163, REV. 0

Sample Size = 200 uL *Analyst : RA WENDLAND*
Dil Factor = 11 *Min Readings = 10*
Blank ID # = BLK *Max Readings = 10*
Blank Value = .2997219 ug/minute C *% Difference = 10*

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	19.20	97.40
3	1.50	24.60	21.95
4	2.00	27.10	9.23
5	2.51	29.10	6.87
6	3.01	30.70	5.21
7	3.51	31.50	2.54
8	4.01	32.30	2.48
9	4.51	32.90	1.82
10	5.01	33.40	1.50

BLANK VALUE = 1.5 micrograms carbon
BLANK FACTOR = 1.5 / 5.004639 = +3.0E-01 ug/min Carbon

SAMPLE RESULTS:
(33.4 - 1.500256)(11)/(200) = +1.75E+00 g/L Carbon
(33.4 - 1.500256)(11)/(200)(12) = +1.46E-01 Molar Carbon

Sample Run By: _____
RA WENDLAND *00000*

LABCORE Data Entry Template for Worklist# 3694

Analyst: [illegible] **Instrument:** TIC01 **Book #** 17NN2-D

Method: LA-622-102 Rev/Mod ~~B-7~~ 12-2-95 C-0

Worklist Comment: TX-244 TIC-01

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK				TIC-01	LIQUID	1	2.2 1.10e+2 Nea 12-4-95	N/A	ug/mL
		2	STD				TIC-01	LIQUID	6.01e+2	5.51e+2	N/A	ug/mL
95000189	TX-244 GRAB	3	SAMPLE	S95T003708	0		TIC-01	LIQUID	N/A	~~1.06e+2~~ ~~2.75e+2~~ 1.10e 5.00 RWS 12/4/95	N/A	ug/mL
95000189	TX-244 GRAB	4	DUP	S95T003708	0		TIC-01	LIQUID	~~2.75e+2~~	~~1.02e+4~~	N/A	ug/mL
95000189	TX-244 GRAB	5	SPK	S95T003708	0		TIC-01	LIQUID	100%	~~2.11e~~ 2.32e3 RWS 12/4/95	N/A	ug/mL
95000189	TX-244 GRAB	6	SAMPLE	S95T003709	0		TIC-01	LIQUID	N/A	~~1.16e+4~~ 2.32e3 RWS 12/4/95	~~2.75e+2~~	ug/mL
95000189	TX-244 GRAB	7	DUP	S95T003709	0		TIC-01	LIQUID	~~1.16e+4~~	~~9.93e+3~~ 1.99e3 RWS 12/4/95	N/A	ug/mL

2.12e3 / 5.50e

95.8%

5.50e1

Final page for worklist # 3694

[illegible] 12/1/95
Analyst Signature **Date**

Linda Conlin 12/2/95
Analyst Signature **Date**

Reviewed and edited RW Schroeder 12/4/95

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.

TIC: LA-622-102 (B-2)

WORKLIST #	ANALYST SIGNATURE	ANALYSIS DATE	ANALYSIS TIME	INSTRUMENT CODE
3694	[signature]	12/2/15	0352	

Block 1

☐ SAMPLE ☒ STANDARD ☐ DUPLICATE PREP BLANK ☐ SPIKE REAGENT BLANK

SAMPLE # = STD # = 17N12-D

SAMPLE VOLUME IN mL .200
SPIKE VOLUME IN mL
VOLUME INJECTED IN mL .200
H20 VOLUME ADDED FOR DILUTION IN mL (if necessary)
ALIQUOT of DILUTED SAMPLE to be SPIKED (if necessary)

Block 2

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE PREP BLANK ☒ SPIKE REAGENT BLANK

SAMPLE # = STD # =

SAMPLE VOLUME IN mL .200ml
SPIKE VOLUME IN mL
VOLUME INJECTED IN mL .200ml
H20 VOLUME ADDED FOR DILUTION IN mL (if necessary)
ALIQUOT of DILUTED SAMPLE to be SPIKED (if necessary)

Block 3

☒ SAMPLE ☐ STANDARD ☐ DUPLICATE PREP BLANK ☐ SPIKE REAGENT BLANK

SAMPLE # = S95T003708 STD # =

SAMPLE VOLUME IN mL 1
SPIKE VOLUME IN mL
VOLUME INJECTED IN mL .200
H20 VOLUME ADDED FOR DILUTION IN mL (if necessary) 10
ALIQUOT of DILUTED SAMPLE to be SPIKED (if necessary)

Block 4

☐ SAMPLE ☐ STANDARD ☒ DUPLICATE PREP BLANK ☐ SPIKE REAGENT BLANK

SAMPLE # = S95T003708 STD # =

SAMPLE VOLUME IN mL 1
SPIKE VOLUME IN mL
VOLUME INJECTED IN mL .200
H20 VOLUME ADDED FOR DILUTION IN mL (if necessary) 10
ALIQUOT of DILUTED SAMPLE to be SPIKED (if necessary)

Block 5

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE PREP BLANK ☒ SPIKE REAGENT BLANK

SAMPLE # = S95T003708 STD # =

SAMPLE VOLUME IN mL 1
SPIKE VOLUME IN mL 1
VOLUME INJECTED IN mL .200
H20 VOLUME ADDED FOR DILUTION IN mL (if necessary) 10
ALIQUOT of DILUTED SAMPLE to be SPIKED (if necessary) 1

Block 6

☒ SAMPLE ☐ STANDARD ☐ DUPLICATE PREP BLANK ☐ SPIKE REAGENT BLANK

SAMPLE # = S95T003709 STD # =

SAMPLE VOLUME IN mL 1
SPIKE VOLUME IN mL
VOLUME INJECTED IN mL .200
H20 VOLUME ADDED FOR DILUTION IN mL (if necessary) 10
ALIQUOT of DILUTED SAMPLE to be SPIKED (if necessary)

Block 7

☒ SAMPLE ☐ STANDARD ☐ DUPLICATE PREP BLANK ☐ SPIKE REAGENT BLANK

SAMPLE # = S95T003709 STD # =

SAMPLE VOLUME IN mL 1
SPIKE VOLUME IN mL
VOLUME INJECTED IN mL .200
H20 VOLUME ADDED FOR DILUTION IN mL (if necessary) 10
ALIQUOT of DILUTED SAMPLE to be SPIKED (if necessary)

Block 8

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE PREP BLANK ☐ SPIKE REAGENT BLANK

SAMPLE # = STD # =

SAMPLE VOLUME IN mL
SPIKE VOLUME IN mL
VOLUME INJECTED IN mL
H20 VOLUME ADDED FOR DILUTION IN mL (if necessary)
ALIQUOT of DILUTED SAMPLE to be SPIKED (if necessary)

93

WHC-SD-WM-DP-163, REV. 0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-163, REV. 0

TIC : LA-622-102 (C-0) LIQUIDS

			STANDARD
STANDARD	Sample Volume in mL	(SS)	0.200
	Dilution Factor	(DF)	1.000
	Digest Dilution Factor	(DDF)	1.000
3694	µg of Carbon in Sample	(C1)	111.6
	µg of Carbon in Blank	(C2)	1.4
TIC-01			
LIQUID	g of Carbon/L	=	5.51E-01
17N12D			
TIC01			
RDM			
12/02/95			
03:53 AM			

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

Detection Level (µg/mL) = $\frac{1 \text{ µg C} * DF * DDF}{SS}$

µg Carbon/mL =	5.51E+02	DETECTION LEVEL in µg/mL
		5.00E+00

Data Entry by:	Linda Conlin	Date:	12/02/95
Approved by:	R W Schmidt	Date:	12/4/95

Form 622102_C Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-163, REV. 0

TIC : LA-622-102 (C-0) LIQUIDS

			Sample
Sample	Sample Volume in mL	(SS)	0.200
	Dilution Factor	(DF)	11.000
3694	Digest Dilution Factor	(DDF)	1.000
	µg of Carbon in Sample	(C1)	39.9
TIC-01	µg of Carbon in Blank	(C2)	1.4
Liquid	g of Carbon/L	=	2.12E+00
S95T003708			
TIC01			
RD Meyers			
12/02/95			

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

Detection Level (µg/mL) = $\frac{1 \text{ µg C} * DF * DDF}{SS}$

µg Carbon/mL =	2.12E+03	DETECTION LEVEL in µg/mL
		5.50E+01

Data Entry by: RW Schroeder Date: 12/04/95

Approved by: RW Schroeder for RW Schroeder Date: 1/3/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-163, REV. 0

TIC : LA-622-102 (C-0) LIQUIDS

Sample
3694
TIC-01
Liquid
S95T003708 Dup
TIC01
RD Meyers
12/02/95

		Sample
Sample Volume in mL	(SS)	0.200
Dilution Factor	(DF)	11.000
Digest Dilution Factor	(DDF)	1.000
µg of Carbon in Sample	(C1)	38.4
µg of Carbon in Blank	(C2)	1.4

g of Carbon/L = 2.04E+00

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

Detection Level (µg/mL) = $\frac{1 \text{ µg C} * DF * DDF}{SS}$

µg Carbon/mL =	2.04E+03	DETECTION LEVEL in µg/mL
		5.50E+01

Data Entry by: RW Schroeder Date: 12/04/95

Approved by: RW Schroeder for RW Schroeder Date: 1/2/96

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

TOC: LA-344-105 SPIKED SAMPLE

SPIKE

Type	>>>>>> Sample Vial Data <<<<<<		>>>>> Spiked Vial Data <<<<<	
SPIKE	Sample Volume in mL	1.000	Sample Size in mL (SS)	1.000
Work Lot	H2SO4 Volume in mL	10.000	Spike Volume in mL	1.000
3694	Volume Injected in mL	0.200	H2SO4 Volume in mL	0.000
Test Code	µg of Carbon in Sample	39.9	Volume Injected in mL	0.200
TIC-01	µg of Carbon in Blank	1.4	Sample Pre-Spike Dil. Factor (PDF)	11
Matrix			Spike Value (µg/ml)	601
Liquid			µg C in Sample + Spike	78.2
Sample #			µg C in Blank	1.4
S95T003708				
Instrument Code				
TIC01				
Analyst				
RD Meyers				
Date				
12/01/95				
Time				

PERCENT SPIKE REC = $\frac{\text{µg Carbon Recovered from Spike} * 100}{\text{µg Carbon in Spike}}$

WHERE : µg Carbon Recovered from Spike =

[(µgC in sample + spike - µgC in blank) * (Spike Correction Factor)]

- [(µgC sample - µgC blank) * (Sample Correction Factor) * (Sample Size Correction Factor) * (PDF)]

Spike Correction Factor = $\frac{\text{Total volume in spiked sample vial (mL)}}{\text{Volume injected (mL)}}$

Sample Correction Factor = $\frac{\text{Total volume in sample vial (mL)}}{\text{Volume injected (mL)}}$

Sample Size Correction Factor = $\frac{\text{Sample size in (mL) in spiked vial}}{\text{Sample size (mL) in sample}}$

Sample Pre-Spike Dilution Factor = $\frac{1}{\text{Dilution of Sample Before Added to Spike Vial}}$

WHERE : µg Carbon in Spike = Spike Value (µg/mL) * Spike Volume (mL)

Percent Spike Recovery 95.8%

Data Entry by: RW Schroeder Date: 04-Dec-95

Approved by: Ralph for RW Schroeder Date: 1/3/96

Form X Rev. 1.1

{/ system;exit}yes~

{/ print;block}~
{/ print;printtofit}

Control Log

Date/Initials	Description of Change
6/2/94 MLB	VERBAGE ADDED FOR CLARIFICATION, REV. 1.1
5/10/95 MLB	FONTS CHANGED IN B41,42,43, NO CALCULATIONS EFFECTED.
10/19/95 RLR	Added print range to cell A100 (for ACE-2), REV 1.1
10/31/95 RLR	Shaded unprotected cells light yellow, REV 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-163, REV. 0

TIC : LA-622-102 (C-0) LIQUIDS

Type
Sample
Work List
3694
Test Code
TIC-01
Matrix
Liquid
Sample #
S95T003709
Instrument Code
TIC01
Analyst
RD Meyers
Date
12/02/95
Time

		Sample
Sample Volume in mL	(SS)	0.200
Dilution Factor	(DF)	11.000
Digest Dilution Factor	(DDF)	1.000
µg of Carbon in Sample	(C1)	43.5
µg of Carbon in Blank	(C2)	1.4
g of Carbon/L	=	2.32E+00

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

Detection Level (µg/mL) = $\frac{1 \text{ µg C} * DF * DDF}{SS}$

µg Carbon/mL =	2.32E+03	DETECTION LEVEL in µg/mL
		5.50E+01

Data Entry by: RW Schroeder Date: 12/04/95

Approved by: for RW Schroeder Date: 1/3/96

Form 622102_C Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-163, REV. 0

TIC : LA-622-102 (C-0) LIQUIDS

Type	Sample Volume in mL (SS)	Sample
Sample	Dilution Factor (DF)	0.200
Work List	Digest Dilution Factor (DDF)	11.000
3694	µg of Carbon in Sample (C1)	1.000
Test Code	µg of Carbon in Blank (C2)	37.5
TIC-01		1.4
Matrix		
Liquid	g of Carbon/L =	1.99E+00
Sample #		
S95T003709 Dup		
Instrument Code		
TIC01		
Analyst		
RD Meyers		
Date		
12/02/95		
Time		

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

Detection Level (µg/mL) = $\frac{1 \text{ µg C} * DF * DDF}{SS}$

µg Carbon/mL =	1.99E+03	DETECTION LEVEL in µg/mL
		5.50E+01

Data Entry by: RW Schroeder Date: 12/04/95

Approved by: RD Meyers for RW Schroeder Date: 1/3/96

Form 622102_C Rev. 1.1

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 17N12-D Date: 12/02/95 Time: 01:22:37

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .1999144 ug/minute C

Analyst : RD MEYERS
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	3.40	100.00
3	1.51	24.80	86.29
4	2.00	50.90	51.28
5	2.50	71.80	29.11
6	3.00	86.30	16.80
7	3.51	94.90	9.06
8	4.01	100.60	5.67
9	4.50	104.30	3.55
10	5.00	106.70	2.25
11	5.50	108.40	1.57
12	6.00	109.80	1.28
13	6.50	110.80	0.90
14	7.00	111.60	0.72

BLANK VALUE = 1.4 micrograms carbon
BLANK FACTOR = 1.4 / 7.002998 = +2.0E-01 ug/min Carbon

SAMPLE RESULTS:
(111.6 - 1.400201)(1)/(200) = +5.510E-01 g/L Carbon
(111.6 - 1.400201)(1)/(200)(12) = +4.592E-02 Molar Carbon

Sample Run By: RD MEYERS 12-02-95
RD MEYERS 00000

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 100 TO 101.

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BLK Date: 12/02/95 Time: 01:12:35

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = N/A

Analyst : RD MEYERS
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	0.10	100.00
3	1.50	0.20	50.00
4	2.00	0.40	50.00
5	2.50	0.50	20.00
6	3.00	0.60	16.67
7	3.50	0.70	14.29
8	4.00	0.80	12.50
9	4.50	0.90	11.11
10	5.00	1.00	10.00
11	5.50	1.10	9.09
12	6.00	1.20	8.33
13	6.50	1.30	7.69
14	7.00	1.40	7.14

BEST AVAILABLE COPY

BLANK VALUE = 1.4 micrograms carbon
BLANK FACTOR = 1.4 / 7.002998 = +2.0E-01 ug/min Carbon

Sample Run By: RD MEYERS 12-12-95

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: REAGENT BLK Date: 12/02/95 Time: 01:31:08

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .1999144 ug/minute C

Analyst : RD MEYERS
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	0.60	50.00
3	1.51	1.00	40.00
4	2.01	1.30	23.08
5	2.51	1.70	23.53
6	3.01	2.00	15.00
7	3.51	2.30	13.04
8	4.01	2.40	4.17
9	4.51	2.70	11.11
10	5.01	2.90	6.90
11	5.51	3.10	6.45
12	6.01	3.30	6.06
13	6.50	3.50	5.71
14	7.00	3.60	2.78

BLANK VALUE = 1.4 micrograms carbon
BLANK FACTOR = 1.4 / 7.002998 = +2.0E-01 ug/min Carbon

SAMPLE RESULTS:
(3.6 - 1.400367)(1)/(200) = +1.1E-02 g/L Carbon
(3.6 - 1.400367)(1)/(200)(12) = +9.2E-04 Molar Carbon

Sample Run By: RDMeyers 120295
RD MEYERS 00000

|3.6 - 1.4| = 2.2

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 3708 Date: 12/02/95 Time: 02:11:01

Sample Size = 200 uL
Dil Factor = ~~55~~ 11 RDM 1/3/96
Blank ID # = BLK
Blank Value = .1999144 ug/minute C

Analyst : RD MEYERS
Min Readings = 14
Max Readings = 14
% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.20	0.00
2	1.01	4.30	95.35
3	1.51	15.20	71.71
4	2.01	24.50	37.96
5	2.51	30.30	19.14
6	3.01	33.80	10.36
7	3.51	35.70	5.32
8	4.01	36.90	3.25
9	4.51	37.80	2.38
10	5.01	38.40	1.56
11	5.51	38.90	1.29
12	6.01	39.30	1.02
13	6.51	39.60	0.76
14	7.01	39.90	0.75

BLANK VALUE = 1.4 micrograms carbon
BLANK FACTOR = 1.4 / 7.002998 = +2.0E-01 ug/min Carbon

SAMPLE RESULTS: 11 RDM 1/3/96
(39.9 - 1.401101) ~~(55)~~/(200) = RDM 1/3/96 2.12E+00
~~+1.06E+01~~ g/L Carbon
(39.9 - 1.401101)(55)/(200)(12) = +8.82E-01 Molar Carbon

Sample Run By: RDMeyers 12.02.95
RD MEYERS 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 3708DUP Date: 12/02/95 Time: 02:19:43

Sample Size = 200 uL
Dil Factor = ~~55~~ 11 rdm 1/3/96
Blank ID # = BLK
Blank Value = .1999144 ug/minute C

Analyst : RD MEYERS
Min Readings = 14
Max Readings = 14
% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.10	0.00
2	1.01	5.60	98.21
3	1.51	17.60	68.18
4	2.01	26.20	32.82
5	2.51	31.30	16.29
6	3.01	34.00	7.94
7	3.51	35.40	3.95
8	4.01	36.30	2.48
9	4.51	36.80	1.36
10	5.01	37.20	1.08
11	5.51	37.60	1.06
12	6.01	37.90	0.79
13	6.51	38.10	0.52
14	7.00	38.40	0.78

BLANK VALUE = 1.4 micrograms carbon
BLANK FACTOR = 1.4 / 7.002998 = +2.0E-01 ug/min Carbon

SAMPLE RESULTS:
(38.4 - 1.400367) ~~(55)~~ 11 rdm 1/3/96 /(200) = 2.04E+00
(38.4 - 1.400367) (55)/(200)(12) = ~~+1.02E+01~~ rdm 1/3/96 g/L Carbon
+8.48E-01 Molar Carbon

Sample Run By: [signature] 12-02-95
RD MEYERS 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 3708SPK Date: 12/02/95 Time: 03:36:34

Sample Size = 200 uL
Dil Factor = 55
Blank ID # = BLK
Blank Value = .1999144 ug/minute C

Analyst : RD MEYERS
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	12.90	99.22
3	1.51	37.90	65.96
4	2.01	56.20	32.56
5	2.51	66.10	14.98
6	3.01	71.60	7.68
7	3.51	74.20	3.50
8	4.01	75.70	1.98
9	4.51	76.40	0.92
10	5.01	77.00	0.78
11	5.51	77.30	0.39
12	6.01	77.70	0.51
13	6.50	78.00	0.38
14	7.00	78.20	0.26

BLANK VALUE = 1.4 micrograms carbon
BLANK FACTOR = 1.4 / 7.002998 = +2.0E-01 ug/min Carbon

SAMPLE RESULTS:
(78.2 - 1.4002)(55)/(200) = +2.11E+01 g/L Carbon
(78.2 - 1.4002)(55)/(200)(12) = +1.76E+00 Molar Carbon

Sample Run By: RD Meyers 12.02.95
RD MEYERS 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 3709 Date: 12/02/95 Time: 03:44:49

Sample Size = 200 uL
Dil Factor = 55
Blank ID # = BLK
Blank Value = .1999144 ug/minute C

Analyst : RD MEYERS
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	11.90	100.00
3	1.51	27.30	56.41
4	2.01	36.00	24.17
5	2.51	40.20	10.45
6	3.01	41.90	4.06
7	3.51	42.60	1.64
8	4.00	42.90	0.70
9	4.50	43.00	0.23
10	5.00	43.20	0.46
11	5.50	43.30	0.23
12	6.00	43.40	0.23
13	6.50	43.40	0.00
14	7.00	43.50	0.23

BLANK VALUE = 1.4 micrograms carbon
BLANK FACTOR = 1.4 / 7.002998 = +2.0E-01 ug/min Carbon

SAMPLE RESULTS:
(43.5 - 1.4002)(55)/(200) = +1.16E+01 g/L Carbon
(43.5 - 1.4002)(55)/(200)(12) = +9.65E-01 Molar Carbon

Sample Run By: RD MEYERS 12-05-95
00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 3709DUP Date: 12/02/95 Time: 03:52:57

Sample Size = 200 uL Analyst : RD MEYERS
Dil Factor = 55 Min Readings = 14
Blank ID # = BLK Max Readings = 14
Blank Value = .1999144 ug/minute C % Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.00	0.00
2	1.01	9.00	100.00
3	1.51	22.40	59.82
4	2.01	30.20	25.83
5	2.51	34.00	11.18
6	3.01	35.70	4.76
7	3.51	36.50	2.19
8	4.01	36.80	0.82
9	4.50	37.00	0.54
10	5.00	37.10	0.27
11	5.50	37.20	0.27
12	6.00	37.30	0.27
13	6.50	37.30	0.00
14	7.00	37.50	0.53

BLANK VALUE = 1.4 micrograms carbon
BLANK FACTOR = 1.4 / 7.002998 = +2.0E-01 ug/min Carbon

SAMPLE RESULTS:
(37.5 - 1.400166)(55)/(200) = +9.93E+00 g/L Carbon
(37.5 - 1.400166)(55)/(200)(12) = +8.27E-01 Molar Carbon

Sample Run By: RD MEYERS 12-02-95 00000

RADIOCHEMICAL ANALYSES

Shy 3

TX 244

12/04/95 16:08
A-0004-1

LABCORE Data Entry Template for Worklist# 4061

Analyst: AKL **Instrument:** AB00 #16 **Book#** 11856

Method: LA-508-101 Rev/Mod D-2

Worklist Comment: Determine sample size using Ludlum. Use .1 mL A&B-SPK. SLF

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@AB-01	SOLID		
2	BLNK-PREP				@AB-01	SOLID		
3	BLNK/BKG				@AB-01	SOLID		
4	SAMPLE	S95T003768	0	F	@AB-01	SOLID	95000189	TX-244 GRAB
		Analytes Requested: ALPHA01 , ALPHA01E, BETA-01 , BETA-01E						
5	DUP	S95T003768	0	F	@AB-01	SOLID		
6	SPK	S95T003768	0	F	@AB-01	SOLID		

Final page for worklist # 4061

[signature] 12/7/95
Analyst Signature Date

[signature] 12/8/95
Analyst Signature Date

[signature] 12/8/95

Data Entry Comments:

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

WHC-SD-WM-DP-163, REV. 0

LABCORE Completed Worklist Report for Worklist# 4061

Analyst: akl **Instrument:** AB16 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: Determine sample size using Ludlum. Use .1 mL A&B-SPK. SLF

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0	@AB-01	ALPHA01	SOLID	1.92E-05	2.04E-5	106.250	% Recovery
1	STD		0	@AB-01	ALPHA01E	SOLID	1	3.72E+00	3.720	% Ct. Error
1	STD		0	@AB-01	BETA-01	SOLID	2.74E-04	2.96E-4	108.030	% Recovery
1	STD		0	@AB-01	BETA-01E	SOLID	1	6.90E-01	0.690	% Ct. Error
2	BLNK-PREP		0	@AB-01	ALPHA01	SOLID	1	<4.35E-3		uCi/g
2	BLNK-PREP		0	@AB-01	ALPHA01E	SOLID	1.00	5.00E+02	500.000	% Ct. Error
2	BLNK-PREP		0	@AB-01	BETA-01	SOLID	1	1.78E-2	2.000e-002	uCi/g
2	BLNK-PREP		0	@AB-01	BETA-01E	SOLID	1.00	8.49E+01	84.900	% Ct. Error
3	BLNK/BKG		0	@AB-01	ALPHA01	SOLID	1.00E+00	1.21E+00	1.210	uCi/g
3	BLNK/BKG		0	@AB-01	BETA-01	SOLID	1.00E+00	1.23E+00	1.230	uCi/g
4	SAMPLE	S95T003768	0	F @AB-01	ALPHA01	SOLID	N/A	1.95E+00	5.110e-003	uCi/g
4	SAMPLE	S95T003768	0	F @AB-01	ALPHA01E	SOLID	N/A	2.65E+00	0.000	% Ct. Error
4	SAMPLE	S95T003768	0	F @AB-01	BETA-01	SOLID	N/A	3.54E+01	1.770e-002	uCi/g
4	SAMPLE	S95T003768	0	F @AB-01	BETA-01E	SOLID	N/A	4.38E-01	0.000	% Ct. Error
5	DUP	S95T003768	0	F @AB-01	ALPHA01	SOLID	1.95E+0	1.86E+0	4.720	RPD
5	DUP	S95T003768	0	F @AB-01	ALPHA01E	SOLID	1.00	2.74E+00	2.740	% Ct. Error
5	DUP	S95T003768	0	F @AB-01	BETA-01	SOLID	3.54E+1	3.44E+1	2.870	RPD
5	DUP	S95T003768	0	F @AB-01	BETA-01E	SOLID	1.00	4.45E-01	0.450	% Ct. Error
6	SPK	S95T003768	0	F @AB-01	ALPHA01	SOLID	3.92E-02	3.72E-02	94.900	% Recovery
6	SPK	S95T003768	0	F @AB-01	BETA-01	SOLID	1.70E-01	1.85E-01	108.820	% Recovery

Final page for worklist# 4061

Analyst Signature Date

Analyst Signature Date

Reviewer Signature 12/11/95 Date

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

WORKBOOK PAGE: STD1

TB : LA-508-101 (D-2) STANDARD

Type
STD
Work List
4061
AT or TB ?
TB
Test Code
@AB-01
Matrix
LIQUID
Batch Number
95004578
Rerun
0
Sample Prep
N/A
Sample #
WL4061
Instrument Code
WB27806
Prepared By
SZC
Chemist
SLF
Analyst
AKL
Date Complete
12/08/95
Analysis Date
12/07/95
Analysis Time
12:00 PM
Sample Point
TX-244

		STANDARD	REPLICATE
DETECTOR NUMBER		16	16
DISH SIZE (1 , 2 , or 5)	(MS)	2	2
GROSS COUNTS	(GC)	82108	84374
COUNT TIME in MINUTES	(CT)	30	30
BACKGROUND in cpm	(BKG)	15	15
SAMPLE SIZE in mL	(SS)	10.000	10.000
DILUTION FACTOR	(DF)	1	1
STANDARD BOOK NUMBER	(Std BN)	11B56	11B56
EFFICIENCY FACTOR	(EFF)	0.4195	0.4195
Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		2721.933	2797.467
Standard Value in µCi/mL		2.74E-04	
Concentration in µCi/L	=	2.92E-01	
Replicate Concentration in µCi/L	=	3.00E-01	
AVERAGE CONCENTRATION in µCi/L	=	2.9633E-01	

Rs (Sample Count Rate) = (TC / CT) - BKG

TOTAL BETA µCi/L = Rs * 1000mL/L * DF / (EFF * SS * 2220000dpm/µCi)

TOTAL BETA µCi/mL = TOTAL BETA µCi/L / 1000mL/L

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

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

			DETECTION LEVEL
TOTAL BETA CONTRATION in µCi/mL		2.96E-04	
RELATIVE COUNTING ERROR	=	0.7%	3.64E-07 µCi/mL

Analyst:		SZC	Date: 08-Dec-95
Signature of Chemist:		SLF	Date: 12/11/95

STANDARD.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: STD2

AT : LA-508-101 (D-2) STANDARD

Type	DETECTOR NUMBER		STANDARD	REPLICATE
STD	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	2600	2936
4061	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.22	0.22
AT	SAMPLE SIZE in mL	(SS)	10.000	10.000
Test Code	DILUTION FACTOR	(DF)	1	1
@AB-01	STANDARD BOOK NUMBER	(Std BN)	11B56	11B56
Matrix	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		93.113	97.647
Batch Number	Standard Value in µCi/mL		1.92E-05	
95004578	Concentration in µCi/L	=	1.99E-02	
Rerun	Replicate Concentration in µCi/L	=	2.09E-02	
0	AVERAGE CONCENTRATION in µCi/L	=	2.0420E-02	
Sample Prep				
N/A				
Sample #				
WL4061				
Instrument Code				
WB27806				
Prepared By				
SZC				
Chemist				
SLF				
Analyst				
AKL				
Date Complete				
12/08/95				
Analysis Date				
12/07/95				
Analysis Time				
12:00 PM				
Sample Point				
TX-244				

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF / (EFF * SS * 2220000dpm/µCi)

ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L

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

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

ALPHA TOTAL CONCENTRATION in µCi/mL		2.04E-05	DETECTION LEVEL
RELATIVE COUNTING ERROR	=	3.7%	1.05E-07 µCi/mL

Analyst:		SZC	Date: 08-Dec-95
Signature of Chemist:		SLF	Date: 12/11/95

STANDARD.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: BLANK3

WHC-SD-WM-DP-163, REV. 0

TB : LA-508-101 (D-2) SOLIDS

Type			BLNK-PREP	REPLICATE
BLNK-PREP	DETECTOR NUMBER		16	16
Work List	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
4061	GROSS COUNTS	(GC)	522	582
AT or TB ?	COUNT TIME in MINUTES	(CT)	30	30
TB	BACKGROUND in cpm	(BKG)	15	15
Test Code	SAMPLE SIZE in mL	(SS)	0.100	0.100
@AB-01	DILUTION FACTOR	(DF)	1	1
Matrix	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.054	2.054
SOLID	EFFICIENCY FACTOR	(EFF)	0.4195	0.4195
Batch Number	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		2.400	4.400
95004578	Blank Concentration in µCi/g		1.25E-02	
Rerun	Replicate Concentration in µCi/g		2.30E-02	
0	Average Concentration in µCi/g		1.7774E-02	

Sample Prep: N/A

Sample # : WL#4061

Instrument Code: WB27806

Prepared By: SZC

Chemist: SLF

Analyst: AKL

Date Complete: 12/08/95

Analysis Date: 12/07/95

Analysis Time: 12:00 PM

Sample Point: TX-244

Rs (Sample Count Rate) = (TC / CT) - BKG

TOTAL BETA µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)

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

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

v RESULTS v

			DETECTION LEVEL
TOTAL BETA	in µCi/g	1.78E-02	
RELATIVE COUNTING ERROR		84.9%	1.77E-02 µCi/g

Analyst:		SZC	Date: 08-Dec-95
Signature of Chemist:		SLF	Date: 12/11/95

BLANK.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: BLANK4

AT : LA-508-101 (D-2) SOLIDS

Type	DETECTOR NUMBER		BLNK-PREP	REPLICATE
BLNK-PREP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	12	4
4061	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.22	0.22
AT	SAMPLE SIZE in mL	(SS)	0.100	0.100
Test Code	DILUTION FACTOR	(DF)	1	1
@AB-01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.054	2.054
Matrix	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		0.417	0.200

Batch Number			
95004578	Blank Concentration in µCi/g	<	4.35E-03
Rerun	Replicate Concentration in µCi/g	<	2.08E-03
0	Maximum Concentration in µCi/g	<	4.3486E-03

Sample Prep: N/A

Sample #: WL#4061

Instrument Code: WB27806

Prepared By: SZC

Chemist: SLF

Analyst: AKL

Date Complete: 12/08/95

Analysis Date: 12/07/95

Analysis Time: 12:00 PM

Sample Point: TX-244

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)

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

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

v RESULTS v

			DETECTION LEVEL
ALPHA TOTAL	in µCi/g	< 4.35E-03	5.11E-03 µCi/g
LESS THAN Value was Determined from Rmax.			
RELATIVE COUNTING ERROR		500.0%	

Analyst: SZC Date: 08-Dec-95

Signature of Chemist: SLF Date: 12/11/95

BLANK.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SAM7

TB : LA-508-101 (D-2) SOLIDS

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		16	16
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	201713	205174
4061	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	15	15
TB	SAMPLE SIZE in mL	(SS)	0.100	0.100
Test Code	DILUTION FACTOR	(DF)	1	1
@AB-01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.054	2.054
Matrix	EFFICIENCY FACTOR	(EFF)	0.4195	0.4195
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		6708.767	6824.133

Batch Number		
95004578	Blank Concentration in µCi/g	3.51E+01
Rerun	Replicate Concentration in µCi/g	3.57E+01
0	Average Concentration in µCi/g	3.5373E+01

Sample Prep: FUSION01

Sample #: S95T003768

Instrument Code: WB27806

Prepared By: SZC

Chemist: SLF

Analyst: AKL

Date Complete: 12/08/95

Analysis Date: 12/07/95

Analysis Time: 12:00 PM

Sample Point: TX-244

Rs (Sample Count Rate) = (TC / CT) - BKG

TOTAL BETA µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)

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

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

v RESULTS v

			DETECTION LEVEL
TOTAL BETA	in µCi/g	3.54E+01	
RELATIVE COUNTING ERROR		0.4%	1.77E-02 µCi/g

Analyst: SZC Date: 08-Dec-95

Signature of Chemist: SLF Date: 12/11/95

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SAM8

AT : LA-508-101 (D-2) SOLIDS

Type			SAMPLE	REPLICATE
SAMPLE	DETECTOR NUMBER		16	16
Work List	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
4061	GROSS COUNTS	(GC)	5470	5760
AT or TB ?	COUNT TIME in MINUTES	(CT)	30	30
AT	BACKGROUND in cpm	(BKG)	0.22	0.22
Test Code	SAMPLE SIZE in mL	(SS)	0.100	0.100
@AB-01	DILUTION FACTOR	(DF)	1	1
Matrix	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.054	2.054
SOLID	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
Batch Number	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		182.113	191.780
95004578				
Rerun	Blank Concentration in µCi/g		1.90E+00	
0	Replicate Concentration in µCi/g		2.00E+00	
Sample Prep	Average Concentration in µCi/g		1.9486E+00	
FUSION01				
Sample #				
S95T003768				
Instrument Code				
WB27806				
Prepared By				
SZC				
Chemist				
SLF				
Analyst				
AKL				
Date Complete				
12/08/95				
Analysis Date				
12/07/95				
Analysis Time				
12:00 PM				
Sample Point				
TX-244				

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)

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

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

v RESULTS v

			DETECTION LEVEL
ALPHA TOTAL	in µCi/g	1.95E+00	
RELATIVE COUNTING ERROR		2.7%	5.11E-03 µCi/g

Analyst:		SZC	Date: 08-Dec-95
Signature of Chemist		SLF	Date: 12/11/95

SAMPLE.WB1 Rev. 1.0 50810 ML

WORKBOOK PAGE: DUP9

TB : LA-508-101 (D-2) SOLIDS

			DUP	REPLICATE
Type	DETECTOR NUMBER		16	16
DUP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	199926	194923
4061	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	15	15
TB	SAMPLE SIZE in mL	(SS)	0.100	0.100
Test Code	DILUTION FACTOR	(DF)	1	1
@AB-01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.048	2.048
Matrix	EFFICIENCY FACTOR	(EFF)	0.4195	0.4195
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		6649.200	6482.433

Batch Number		
95004578	Blank Concentration in µCi/g	3.49E+01
Rerun	Replicate Concentration in µCi/g	3.40E+01
0	Average Concentration in µCi/g	3.4425E+01

Sample Prep: FUSION01

Sample #: S95T003768

Instrument Code: WB27806

Prepared By: SZC

Chemist: SLF

Analyst: AKL

Date Complete: 12/08/95

Analysis Date: 12/07/95

Analysis Time: 12:00 PM

Sample Point: TX-244

Rs (Sample Count Rate) = (TC / CT) - BKG

TOTAL BETA µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)

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

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

v RESULTS v

			DETECTION LEVEL
TOTAL BETA	in µCi/g	3.44E+01	
RELATIVE COUNTING ERROR		0.4%	1.78E-02 µCi/g

Analyst:		SZC	Date: 08-Dec-95
Signature of Chemist:		SLF	Date: 12/11/95

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: DUP1

AT : LA-508-101 (D-2) SOLIDS

Type			DUP	REPLICATE
DUP	DETECTOR NUMBER		16	16
Work List	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
4061	GROSS COUNTS	(GC)	5528	5147
AT or TB ?	COUNT TIME in MINUTES	(CT)	30	30
AT	BACKGROUND in cpm	(BKG)	0.22	0.22
Test Code	SAMPLE SIZE in mL	(SS)	0.100	0.100
@AB-01	DILUTION FACTOR	(DF)	1	1
Matrix	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.048	2.048
SOLID	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
Batch Number	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		184.047	171.347
95004578				
Rerun	Blank Concentration in µCi/g		1.92E+00	
0	Replicate Concentration in µCi/g		1.79E+00	
Sample Prep	Average Concentration in µCi/g		1.8576E+00	
FUSION01				
Sample #				
S95T003768				
Instrument Code				
WB27806				
Prepared By				
SZC				
Chemist				
SLF				
Analyst				
AKL				
Date Complete				
12/08/95				
Analysis Date				
12/07/95				
Analysis Time				
12:00 PM				
Sample Point				
TX-244				

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)

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

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

v RESULTS v

			DETECTION LEVEL
ALPHA TOTAL	in µCi/g	1.86E+00	
RELATIVE COUNTING ERROR		2.7%	5.13E-03 µCi/g

Analyst: SZC Date: 08-Dec-95

Signature of Chemist: SLF Date: 12/11/95

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SPIKE11

TB : LA-508-101 (D-2) SPIKED SAMPLE

			SPIKE	REPLICATE
Type	DETECTOR NUMBER		16	16
SPK	DISH SIZE 1 , 2 , or 5	(MS)	2	2
Work List	TOTAL COUNTS	(TC)	711327	726628
4061	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	15	15
TB	SAMPLE VOLUME in mL (Spiked Vial)	(SS)	0.100	0.100
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial)	(DF)	1	1
@AB-01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.054	2.054
Matrix	SPIKE VOLUME in mL	(SVol)	0.100	0.100
SOLID	SPIKE DILUTION FACTOR	(SDF)	1	1
Batch Number	SPIKE BOOK NUMBER	(Spk BN)	86B52	86B52
95004578	SPIKE VALUE in µCi/mL	(SVal)	1.6976E-01	1.6976E-01
Rerun	INSTRUMENT EFFICIENCY FACTOR	(EFF)	0.4195	0.4195
0	SAMPLE + SPIKE µCi/g	(S+S)	1.24E+02	1.27E+02
Sample Prep	AVERAGE or MAXIMUM µCi/g in SAMPLE		3.5373E+01	
FUSION01				
Sample #				
S95T003768	Rs (Sample Count Rate) = (TC / CT) - BKG			
Instrument Code	SAMPLE + SPIKE µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L *2220000dpm/µCi)			
WB27806	QC ACTUAL = SVal			
Prepared By	QC FOUND = (((S+S µCi/g - SAMPLE µCi/g) * ((SDF/(SVol*1000))/(DF/SS/Dg/L))))			
SZC	PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) *100			
Chemist				
SLF				
Analyst				
AKL				
Date Complete				
12/08/95				
Analysis Date				
12/07/95	QC ACTUAL	=	1.70E-01	
Analysis Time	QC FOUND	=	1.85E-01	
12:00 PM	AVG. PERCENT SPIKE RECOVERY	=	108.7%	
Sample Point				
TX-244				

Analyst:		SZC	Date: 08-Dec-95
Signature of Chemist:		SLF	Date: 12/11/95

SPIKE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SPIKE12

AT : LA-508-101 (D-2) SPIKED SAMPLE

Type	DETECTOR NUMBER		SPIKE	REPLICATE
SPK	DISH SIZE 1 , 2 , or 5	(MS)	2	2
Work List	TOTAL COUNTS	(TC)	56948	58533
4061	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.22	0.22
AT	SAMPLE VOLUME in mL (Spiked Vial)	(SS)	0.100	0.100
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial)	(DF)	1	1
@AB-01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.054	2.054
Matrix	SPIKE VOLUME in mL	(SVol)	0.100	0.100
SOLID	SPIKE DILUTION FACTOR	(SDF)	1	1
Batch Number	SPIKE BOOK NUMBER	(Spk BN)	119B43	119B43
95004578	SPIKE VALUE in µCi/mL	(SVal)	3.9217E-02	3.9217E-02
Rerun	INSTRUMENT EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
0	SAMPLE + SPIKE µCi/g	(S+S)	1.98E+01	2.03E+01
Sample Prep	AVERAGE or MAXIMUM µCi/g in SAMPLE		1.9486E+00	
FUSION01				

Sample # S95T003768
Instrument Code WB27806
Prepared By SZC
Chemist SLF
Analyst AKL
Date Complete 12/08/95
Analysis Date 12/07/95
Analysis Time 12:00 PM
Sample Point TX-244

Rs (Sample Count Rate) = (TC / CT) - BKG
SAMPLE + SPIKE µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L *2220000dpm/µCi)
QC ACTUAL = SVal
QC FOUND = (((S+S µCi/g - SAMPLE µCi/g) * ((SDF/(SVol*1000))/(DF/SS/Dg/L))))
PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) *100

QC ACTUAL	=	3.92E-02
QC FOUND	=	3.72E-02
AVG. PERCENT SPIKE RECOVERY	=	94.9%

Analyst:	SZC	Date: 08-Dec-95
Signature of Chemist:	SLF	Date: 12/11/95

SPIKE.WB1 Rev. 1.0 508101ML

LABCORE Data Entry Template for Worklist# 3513

Analyst: CRJ **Instrument:** GEA00 ~~2~~ 3 DM **Book#** 144B52

Method: LA-548-121 Rev/Mod D-1

Worklist Comment: GEA TX-244 Grab; use 0.500 ml sample. R(0) -PPB

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@GEA-01	LIQUID		
2	BLNK				@GEA-01	LIQUID		
3	SAMPLE	S95T003710	0		@GEA-01	LIQUID	95000189	TX-244 GRAB
		Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
4	DUP	S95T003710	0		@GEA-01	LIQUID		
5	SAMPLE	S95T003711	0		@GEA-01	LIQUID	95000189	TX-244 GRAB
		Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
6	DUP	S95T003711	0		@GEA-01	LIQUID		

Final page for worklist # 3513

C J Jensen 11-17-95
Analyst Signature **Date**

C.J. Ojanen 11/20/95
Analyst Signature **Date**

Data Entry Comments:

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

```
*****************************************************************************
* 222-S Laboratory Counting Room   18-NOV-1995 01:07:37.85                  *
*****************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              3513
Sample ID:               WORKLIST3513-STD
Sample Size:             1.00000E-03 L
Dilution Factor:         1.00000E+00

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:             GEA3
File Number:             dka300:[spec.GEA3]3g3014.cnf
Geometry:                42
Count Time:              0 00:50:00.00 sec
Real Time:               0 00:50:08.31 sec
Dead Time:               0.3%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       18-NOV-1995 00:16:52.11
Decayed to:              18-NOV-1995 00:16:52.11
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 DM
Background Subtract:     DKA300:[SPEC.GEA3]3GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:      11-MAR-1994 11:47:01.11
 Date of last efficiency calibration:  15-MAR-1994 10:28:40.20
*****************************************************************************
```

Removed by:

EmBarcle

Verified by:

RJ Machelor 11/20/95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.60*	22847	1.52	1323.38	1316	16	1.4		CS-137	25.8
0	1173.11	13284	1.84	2346.48	2338	18	1.9		CO-60	21.0
0	1332.34	11847	1.94	2665.05	2655	19	1.9		CO-60	20.7

Summary of Nuclide Activity
Sample ID : WORKLIST3513-STD Acquisition date : 18-NOV-1995 00:16:52

Total number of lines in spectrum 3
Number of unidentified lines 0
Number of lines tentatively identified by NID 3 100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CO-60	5.27Y	1.000	2.084E+01	2.084E+01	0.028E+01	1.34	
CS-137	30.00Y	1.000	2.582E+01	2.582E+01	0.037E+01	1.45	
Total Activity :			4.667E+01	4.667E+01			
Grand Total Activity :			4.667E+01	4.667E+01			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : WORKLIST3513-STD
Acquisition date : 18-NOV-1995 00:16:52

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	1068.	477.59	1.0767E+00
NA-22	86.	1274.53	7.2868E-02
NA-24	24.	1368.55	4.1274E-02
K-40	147.	1460.75	9.9342E-01
SC-46	459.	1120.55	1.5084E-01
CR-51	1045.	320.08	8.0143E-01
MN-54	609.	834.83	1.3498E-01
CO-56	631.	846.76	1.3908E-01
CO-57	1136.	122.06	5.8322E-02
CO-58	595.	810.78	1.3081E-01
FE-59	583.	1099.25	2.9612E-01
ZN-65	604.	1115.55	3.4013E-01
SE-75	1276.	264.66	1.3270E-01
KR-85	788.	514.00	2.3386E+01
SR-85	788.	514.01	1.0572E-01
Y-88	14.	1836.06	3.8982E-02
Y-90	11.	1760.70	1.1689E-01
Y-91	175.	1204.67	3.3054E+01
NB-94	686.	871.09	1.4858E-01
NB-95	520.	765.78	1.1603E-01
ZR-95	532.	756.73	2.1279E-01
RU-103	805.	497.08	1.0978E-01
RURH-106	546.	621.93	2.0017E+00
AG-108m	467.	722.94	1.1503E-01
CD-109	1014.	88.03	1.8250E+00
AG-110M	875.	657.76	1.3934E-01
SN-113	994.	391.69	1.4336E-01
TE-123m	1162.	159.00	6.0694E-02
SB-124	534.	602.73	9.7823E-02
SB-125	1093.	427.89	3.5093E-01
TE-125m	1048.	109.27	1.8238E+01
I-129	995.	39.60	0.0000E+00
I-131	1013.	364.48	1.0821E-01
XE-131m	1207.	163.93	2.6898E+00
BA-133	1052.	356.02	1.4157E-01
CS-134	550.	604.70	9.9763E-02
CS-136	606.	818.51	1.3286E-01
CS-138	29.	1435.86	9.9121E-02
CE-139	1189.	165.85	6.5826E-02
BA-140	682.	537.31	4.0194E-01
LA-140	13.	1596.21	3.5893E-02
CE-141	1177.	145.44	1.0369E-01
CE-144	1220.	133.51	4.5748E-01
CEPR-144	1220.	133.51	9.1415E-01
EU-152	24.	1408.01	1.9820E-01
EU-154	87.	1274.51	2.1210E-01
EU-155	1047.	86.54	2.1022E-01
HF-181	967.	482.18	1.3273E-01
TA-182	934.	67.75	2.9827E-01
HG-203	1164.	279.20	9.4499E-02
BI-207	537.	569.70	9.3415E-02

Sample ID : WORKLIST3513-STD Acquisition date : 18-NOV-1995 00:16:52

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
TL-208	1182.	277.36	1.2232E+00
PB-210	957.	46.50	0.0000E+00
BI-212	484.	727.18	1.6067E+00
PB-212	1370.	238.63	1.7098E-01
BI-214	614.	609.31	2.3107E-01
PB-214	1036.	351.92	4.3075E-01
RA-224	1426.	240.99	1.9368E+00
RA-226	1447.	186.10	1.7811E+00
AC-228	759.	911.21	6.1025E-01
TH-228	1043.	84.37	5.7000E+00
TH-229	1017.	88.47	2.6490E-01
U-232	934.	57.78	1.4303E+02
PA-233	1125.	312.17	2.1306E-01
PA-234M	597.	1001.03	2.6470E-01
TH-234	924.	63.29	3.6130E+00
U-235	1433.	185.71	1.0773E-01
NP-237	1046.	86.48	5.5664E-01
U-237	931.	59.54	6.6721E-01
NP-238	617.	984.45	5.6609E-01
NP-239	1025.	106.12	2.2895E-01
PU-239	1258.	129.30	8.0799E+02
AM-241	931.	59.54	6.3996E-01
AM-243	1008.	74.67	1.5650E-01

```
*****************************************************************************
* 222-S Laboratory Counting Room   18-NOV-1995 02:26:36.73                  *
*****************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Sample ID:              WORKLIST3513-BLK
Sample Size:            1.00000E-03 L
Dilution Factor:        2.00000E+00

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:            GEA3
File Number:            dka300:[spec.GEA3]3g3015.cnf
Geometry:               42
Description:
Count Time:             0 00:50:00.00 sec
Real Time:              0 00:50:00.44 sec

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:      18-NOV-1995 01:29:14.59
Decayed to:             18-NOV-1995 01:29:14.59
Standard Deviations:    2
Analysis Library:       ENVGEA
Analyst:                EMB
Background Subtract:    DKA300:[SPEC.GEA3]3GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:      11-MAR-1994 11:47:01.11
 Date of last efficiency calibration:  15-MAR-1994 10:28:40.20
*****************************************************************************
```

Removed by: Eric Barela

date: _____

Verified by: R.S. Machelor 11/20/95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	734.96	22	0.99	1470.09	1466	11	72.3			
0	813.56	12	0.82	1627.29	1624	6	82.7			
0	1460.76*	29	1.46	2922.00	2915	15	88.5		K-40	1.01

Summary of Nuclide Activity
Sample ID : WORKLIST3513-BLK Acquisition date : 18-NOV-1995 01:29:14

Total number of lines in spectrum 3
Number of unidentified lines 2
Number of lines tentatively identified by NID 1 33.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.28E+09Y	1.000	1.010E+00	1.010E+00	0.894E+00	88.50	K
Total Activity :			1.010E+00	1.010E+00			
Grand Total Activity :			1.010E+00	1.010E+00			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : WORKLIST3513-BLK Acquisition date : 18-NOV-1995 01:29:14

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	35.	477.59	3.8769E-01
NA-22	13.	1274.53	5.5692E-02
NA-24	7.	1368.55	4.4807E-02
SC-46	15.	1120.55	5.4964E-02
CR-51	50.	320.08	3.5039E-01
MN-54	17.	834.83	4.5663E-02
CO-56	12.	846.76	3.8243E-02
CO-57	84.	122.06	3.1766E-02
CO-58	20.	810.78	4.8026E-02
FE-59	14.	1099.25	9.2905E-02
CO-60	12.	1332.50	5.6845E-02
ZN-65	11.	1115.55	9.2893E-02
SE-75	61.	264.66	5.7898E-02
KR-85	49.	514.00	1.1707E+01
SR-85	49.	514.01	5.2798E-02
Y-88	1.	1836.06	2.0984E-02
Y-90	15.	1760.70	2.7661E-01
Y-91	7.	1204.67	1.3212E+01
NB-94	19.	871.09	4.9768E-02
NB-95	12.	765.78	3.5822E-02
ZR-95	16.	756.73	7.2674E-02
RU-103	20.	497.08	3.4246E-02
RURH-106	19.	621.93	7.5362E-01
AG-108m	28.	722.94	5.6132E-02
CD-109	61.	88.03	8.9555E-01
AG-110M	28.	657.76	4.9465E-02
SN-113	36.	391.69	5.4591E-02
TE-123m	85.	159.00	3.2809E-02
SB-124	18.	602.73	3.6090E-02
SB-125	51.	427.89	1.5094E-01
TE-125m	72.	109.27	9.5586E+00
I-129	50.	39.60	0.0000E+00
I-131	27.	364.48	3.5434E-02
XE-131m	85.	163.93	1.4244E+00
BA-133	43.	356.02	5.7248E-02
CS-134	18.	604.70	3.6450E-02
CS-136	18.	818.51	4.5243E-02
CS-137	127.	661.66	1.1843E-01
CS-138	11.	1435.86	1.2011E-01
CE-139	75.	165.85	3.3075E-02
BA-140	28.	537.31	1.6243E-01
LA-140	3.	1596.21	3.2218E-02
CE-141	75.	145.44	5.2187E-02
CE-144	61.	133.51	2.0534E-01
CEPR-144	61.	133.51	4.1024E-01
EU-152	14.	1408.01	3.0161E-01
EU-154	13.	1274.51	1.6154E-01
EU-155	66.	86.54	1.0598E-01
HF-181	35.	482.18	5.0535E-02
TA-182	52.	67.75	1.4030E-01
HG-203	57.	279.20	4.1906E-02

Sample ID : WORKLIST3513-BLK Acquisition date : 18-NOV-1995 01:29:14

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BI-207	29.	569.70	4.3646E-02
TL-208	57.	277.36	5.3841E-01
PB-210	52.	46.50	0.0000E+00
BI-212	20.	727.18	6.4663E-01
PB-212	73.	238.63	7.9114E-02
BI-214	53.	609.31	1.3605E-01
PB-214	66.	351.92	2.1794E-01
RA-224	71.	240.99	8.6474E-01
RA-226	81.	186.10	8.4324E-01
AC-228	32.	911.21	2.4875E-01
TH-228	67.	84.37	2.8940E+00
TH-229	63.	88.47	1.3155E-01
U-232	50.	57.78	6.6222E+01
PA-233	39.	312.17	7.9354E-02
PA-234M	14.	1001.03	8.1384E-02
TH-234	64.	63.29	1.9040E+00
U-235	80.	185.71	5.0902E-02
NP-237	67.	86.48	2.8168E-01
U-237	54.	59.54	3.2180E-01
NP-238	12.	984.45	1.6013E-01
NP-239	69.	106.12	1.1877E-01
PU-239	79.	129.30	4.0582E+02
AM-241	54.	59.54	3.0865E-01
AM-243	75.	74.67	8.5199E-02

```
**********************************************************************************
* 222-S Laboratory Counting Room   18-NOV-1995 03:28:12.10                       *
**********************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              3513
Sample ID:               S95T003710-SAM
Sample Size:             1.00000E-03 L
Dilution Factor:         2.00000E+00

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:             GEA3
File Number:             dka300:[spec.GEA3]3g3016.cnf
Geometry:                43
Count Time:              0 00:50:00.00 sec
Real Time:               0 00:51:37.49 sec
Dead Time:               3.1%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       18-NOV-1995 02:35:41.78
Decayed to:              18-NOV-1995 02:35:41.78
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 EMB
Background Subtract:     DKA300:[SPEC.GEA3]3GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:       11-MAR-1994 11:47:01.11
 Date of last efficiency calibration:   15-MAR-1994 10:11:20.05
**********************************************************************************
```

Removed by: Em Bailey

Verified by: BB Machelor 11/20/95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.57*	741412	1.53	1323.31	1316	16	0.2		CS-137	6.535E+03
0	1322.25	121	1.66	2644.87	2639	14	35.9			

Sample ID : S95T003710-SAM Acquisition date : 18-NOV-1995 02:35:41

Total number of lines in spectrum 2
Number of unidentified lines 1
Number of lines tentatively identified by NID 1 50.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CS-137	30.00Y	1.000	6.535E+03	6.535E+03	0.015E+03	0.24	
Total Activity :			6.535E+03	6.535E+03			
Grand Total Activity :			6.535E+03	6.535E+03			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)	
BE-7	21958.	477.59	3.9268E+01	
NA-22	54.	1274.53	4.2771E-01	
NA-24	14.	1368.55	2.3402E-01	
K-40	130.	1460.75	6.9029E+00	
SC-46	110.	1120.55	5.5417E-01	
CR-51	19318.	320.08	2.7748E+01	
MN-54	356.	834.83	8.0165E-01	
CO-56	340.	846.76	7.9324E-01	
CO-57	20701.	122.06	2.0249E+00	
CO-58	371.	810.78	8.0260E-01	
FE-59	129.	1099.25	1.0451E+00	
CO-60	44.	1332.50	4.0320E-01	E-4
ZN-65	107.	1115.55	1.0738E+00	
SE-75	21701.	264.66	4.4827E+00	
KR-85	11416.	514.00	7.1994E+02	
SR-85	11413.	514.01	3.2550E+00	
Y-88	5.	1836.06	1.6953E-01	
Y-90	5.	1760.70	5.8664E-01	
Y-91	67.	1204.67	1.5232E+02	
NB-94	312.	871.09	7.7834E-01	
NB-95	454.	765.78	8.4306E-01	
ZR-95	429.	756.73	1.4869E+00	
RU-103	13895.	497.08	3.6839E+00	
RURH-106	4126.	621.93	4.3222E+01	
AG-108m	537.	722.94	9.6030E-01	
CD-109	16986.	88.03	6.4369E+01	
AG-110M	14628.	657.76	4.4446E+00	
SN-113	20255.	391.69	5.0761E+00	
TE-123m	21420.	159.00	2.2411E+00	
SB-124	4235.	602.73	2.1745E+00	
SB-125	23333.	427.89	1.2803E+01	
TE-125m	18678.	109.27	6.3549E+02	
I-129	15238.	39.60	0.0000E+00	
I-131	19224.	364.48	3.7197E+00	
XE-131m	21552.	163.93	9.8642E+01	
BA-133	18916.	356.02	4.7530E+00	
CS-134	4256.	604.70	2.1885E+00	
CS-136	371.	818.51	8.0738E-01	
CS-138	12.	1435.86	4.8399E-01	
CE-139	21574.	165.85	2.4403E+00	
BA-140	8148.	537.31	1.1207E+01	
LA-140	5.	1596.21	1.5625E-01	
CE-141	21785.	145.44	3.7294E+00	
CE-144	21346.	133.51	1.5669E+01	
CEPR-144	21346.	133.51	3.1310E+01	
EU-152	8.	1408.01	8.5220E-01	
EU-154	54.	1274.51	1.2426E+00	
EU-155	16917.	86.54	7.2975E+00	
HF-181	18052.	482.18	4.6187E+00	
TA-182	15334.	67.75	1.0138E+01	
HG-203	21052.	279.20	3.2845E+00	

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BI-207	5016.	569.70	2.2802E+00
TL-208	21154.	277.36	4.2309E+01
PB-210	15020.	46.50	0.0000E+00
BI-212	562.	727.18	1.3482E+01
PB-212	23737.	238.63	5.8869E+00
BI-214	4104.	609.31	4.7061E+00
PB-214	19008.	351.92	1.4860E+01
RA-224	23496.	240.99	6.4938E+01
RA-226	28886.	186.10	6.9806E+01
AC-228	238.	911.21	2.6467E+00
TH-228	17032.	84.37	1.9926E+02
TH-229	17060.	88.47	9.3438E+00
U-232	14919.	57.78	4.0827E+03
PA-233	19820.	312.17	7.2266E+00
PA-234M	174.	1001.03	1.0897E+00
TH-234	15127.	63.29	1.1788E+02
U-235	28491.	185.71	4.2143E+00
NP-237	16927.	86.48	1.9336E+01
U-237	14912.	59.54	2.0139E+01
NP-238	182.	984.45	2.3511E+00
NP-239	18043.	106.12	7.9756E+00
PU-239	21017.	129.30	2.6918E+04
AM-241	14912.	59.54	1.9317E+01
AM-243	16041.	74.67	5.3765E+00

```
*****************************************************************************
* 222-S Laboratory Counting Room   18-NOV-1995 06:57:17.58                  *
*****************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              3513
Sample ID:               S95T003710-DUP
Sample Size:             1.00000E-03 L
Dilution Factor:         2.00000E+00

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:             GEA3
File Number:             dka300:[spec.GEA3]3g3019.cnf
Geometry:                43
Count Time:              0 00:50:00.00 sec
Real Time:               0 00:51:41.15 sec
Dead Time:               3.3%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       18-NOV-1995 06:04:28.30
Decayed to:              18-NOV-1995 06:04:28.30
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 EMB
Background Subtract:     DKA300:[SPEC.GEA3]3GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:      11-MAR-1994 11:47:01.11
 Date of last efficiency calibration:  15-MAR-1994 10:11:20.05
*****************************************************************************
```

Removed by: Em Burela

Verified by: R Bachelor 11/20/95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.58*	768153	1.53	1323.33	1315	17	0.2		CS-137	6.770E+03
0	1173.13	69	1.56	2346.52	2339	17	67.3		CO-60	0.806
0	1322.42	130	2.02	2645.20	2638	14	34.8			
0	1332.38	53	1.82	2665.13	2657	16	32.2		CO-60	0.691

Total number of lines in spectrum 4
Number of unidentified lines 1
Number of lines tentatively identified by NID 3 75.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CO-60	5.27Y	1.000	7.080E-01	7.080E-01	2.060E-01	29.09	
CS-137	30.00Y	1.000	6.770E+03	6.770E+03	0.016E+03	0.23	
	Total Activity :		6.771E+03	6.771E+03			
	Grand Total Activity :		6.771E+03	6.771E+03			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	23117.	477.59	4.0290E+01
NA-22	58.	1274.53	4.4697E-01
NA-24	12.	1368.55	2.1484E-01
K-40	122.	1460.75	6.6730E+00
SC-46	117.	1120.55	5.7022E-01
CR-51	19877.	320.08	2.8147E+01
MN-54	354.	834.83	7.9927E-01
CO-56	350.	846.76	8.0438E-01
CO-57	21442.	122.06	2.0608E+00
CO-58	395.	810.78	8.2767E-01
FE-59	133.	1099.25	1.0622E+00
ZN-65	113.	1115.55	1.1052E+00
SE-75	22785.	264.66	4.5933E+00
KR-85	11832.	514.00	7.3296E+02
SR-85	11831.	514.01	3.3140E+00
Y-88	3.	1836.06	1.3112E-01
Y-90	7.	1760.70	6.8840E-01
Y-91	68.	1204.67	1.5266E+02
NB-94	326.	871.09	7.9549E-01
NB-95	432.	765.78	8.2297E-01
ZR-95	489.	756.73	1.5864E+00
RU-103	14483.	497.08	3.7611E+00
RURH-106	4266.	621.93	4.3946E+01
AG-108m	602.	722.94	1.0164E+00
CD-109	17554.	88.03	6.5436E+01
AG-110M	14933.	657.76	4.4908E+00
SN-113	20738.	391.69	5.1363E+00
TE-123m	22153.	159.00	2.2791E+00
SB-124	4380.	602.73	2.2114E+00
SB-125	24377.	427.89	1.3086E+01
TE-125m	19201.	109.27	6.4434E+02
I-129	15602.	39.60	0.0000E+00
I-131	19881.	364.48	3.7828E+00
XE-131m	22286.	163.93	1.0031E+02
BA-133	19890.	356.02	4.8738E+00
CS-134	4277.	604.70	2.1939E+00
CS-136	377.	818.51	8.1377E-01
CS-138	11.	1435.86	4.6852E-01
CE-139	22275.	165.85	2.4796E+00
BA-140	8509.	537.31	1.1453E+01
LA-140	7.	1596.21	1.9452E-01
CE-141	22187.	145.44	3.7637E+00
CE-144	22104.	133.51	1.5945E+01
CEPR-144	22103.	133.51	3.1861E+01
EU-152	8.	1408.01	8.5220E-01
EU-154	58.	1274.51	1.2963E+00
EU-155	17595.	86.54	7.4422E+00
HF-181	18494.	482.18	4.6749E+00
TA-182	15808.	67.75	1.0294E+01
HG-203	21874.	279.20	3.3480E+00
BI-207	5089.	569.70	2.2967E+00

Sample ID : S95T003710-DUP Acquisition date : 18-NOV-1995 06:04:28

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
TL-208	21939.	277.36	4.3088E+01
PB-210	15560.	46.50	0.0000E+00
BI-212	631.	727.18	1.4282E+01
PB-212	24345.	238.63	5.9618E+00
BI-214	4419.	609.31	4.8834E+00
PB-214	19728.	351.92	1.5148E+01
RA-224	24214.	240.99	6.5922E+01
RA-226	29523.	186.10	7.0571E+01
AC-228	287.	911.21	2.9065E+00
TH-228	17602.	84.37	2.0258E+02
TH-229	17576.	88.47	9.4841E+00
U-232	15460.	57.78	4.1561E+03
PA-233	20598.	312.17	7.3670E+00
PA-234M	163.	1001.03	1.0531E+00
TH-234	15655.	63.29	1.1991E+02
U-235	29141.	185.71	4.2621E+00
NP-237	17604.	86.48	1.9719E+01
U-237	15540.	59.54	2.0559E+01
NP-238	195.	984.45	2.4318E+00
NP-239	19057.	106.12	8.1967E+00
PU-239	22186.	129.30	2.7656E+04
AM-241	15540.	59.54	1.9719E+01
AM-243	16901.	74.67	5.5189E+00

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**********************************************************************************
* 222-S Laboratory Counting Room   18-NOV-1995 08:00:30.17                       *
**********************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              3513
Sample ID:               S05T003711-SAM
Sample Size:             1.00000E-03 L
Dilution Factor:         2.00000E+00

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:             GEA3
File Number:             dka300:[spec.GEA3]3g3020.cnf
Geometry:                43
Count Time:              0 00:50:00.00 sec
Real Time:               0 00:51:41.27 sec
Dead Time:               3.3%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       18-NOV-1995 07:07:52.25
Decayed to:              18-NOV-1995 07:07:52.25
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 EMB
Background Subtract:     DKA300:[SPEC.GEA3]3GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:       11-MAR-1994 11:47:01.11
 Date of last efficiency calibration:   15-MAR-1994 10:11:20.05
**********************************************************************************
```

Removed by: Raymond

Verified by: B D Michelson 11/20/95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.58*	770122	1.53	1323.34	1315	17	0.2		CS-137	6.788E+03
0	1172.98	54	1.53	2346.24	2340	14	83.3		CO-60	0.635
0	1322.44	134	2.64	2645.25	2638	15	39.4			
0	1332.05	52	1.94	2664.48	2655	20	40.7		CO-60	0.677

Total number of lines in spectrum 4
Number of unidentified lines 1
Number of lines tentatively identified by NID 3 75.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CO-60	5.27Y	1.000	6.682E-01	6.683E-01	2.445E-01	36.58	
CS-137	30.00Y	1.000	6.788E+03	6.788E+03	0.016E+03	0.23	
	Total Activity :		6.788E+03	6.788E+03			
	Grand Total Activity :		6.788E+03	6.788E+03			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	23086.	477.59	4.0264E+01
NA-22	77.	1274.53	5.1334E-01
NA-24	9.	1368.55	1.8504E-01
K-40	118.	1460.75	6.5770E+00
SC-46	126.	1120.55	5.9336E-01
CR-51	20297.	320.08	2.8443E+01
MN-54	387.	834.83	8.3560E-01
CO-56	340.	846.76	7.9301E-01
CO-57	21532.	122.06	2.0651E+00
CO-58	405.	810.78	8.3830E-01
FE-59	129.	1099.25	1.0469E+00
ZN-65	126.	1115.55	1.1643E+00
SE-75	22941.	264.66	4.6091E+00
KR-85	11786.	514.00	7.3151E+02
SR-85	11785.	514.01	3.3076E+00
Y-88	3.	1836.06	1.3161E-01
Y-90	4.	1760.70	5.1988E-01
Y-91	68.	1204.67	1.5251E+02
NB-94	316.	871.09	7.8282E-01
NB-95	469.	765.78	8.5711E-01
ZR-95	504.	756.73	1.6109E+00
RU-103	14498.	497.08	3.7630E+00
RURH-106	4094.	621.93	4.3055E+01
AG-108m	616.	722.94	1.0281E+00
CD-109	17661.	88.03	6.5635E+01
AG-110M	14747.	657.76	4.4627E+00
SN-113	20825.	391.69	5.1470E+00
TE-123m	22493.	159.00	2.2965E+00
SB-124	4416.	602.73	2.2204E+00
SB-125	24100.	427.89	1.3012E+01
TE-125m	19638.	109.27	6.5162E+02
I-129	15707.	39.60	0.0000E+00
I-131	19923.	364.48	3.7867E+00
XE-131m	22325.	163.93	1.0040E+02
BA-133	19593.	356.02	4.8372E+00
CS-134	4490.	604.70	2.2480E+00
CS-136	426.	818.51	8.6540E-01
CS-138	10.	1435.86	4.3776E-01
CE-139	22377.	165.85	2.4853E+00
BA-140	8491.	537.31	1.1441E+01
LA-140	8.	1596.21	2.0627E-01
CE-141	22269.	145.44	3.7706E+00
CE-144	22328.	133.51	1.6026E+01
CEPR-144	22326.	133.51	3.2021E+01
EU-152	9.	1408.01	8.9959E-01
EU-154	77.	1274.51	1.4910E+00
EU-155	17490.	86.54	7.4201E+00
HF-181	18746.	482.18	4.7066E+00
TA-182	15793.	67.75	1.0289E+01
HG-203	22138.	279.20	3.3681E+00
BI-207	5144.	569.70	2.3092E+00

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
TL-208	22265.	277.36	4.3406E+01
PB-210	15546.	46.50	0.0000E+00
BI-212	592.	727.18	1.3833E+01
PB-212	24476.	238.63	5.9778E+00
BI-214	4290.	609.31	4.8112E+00
PB-214	19729.	351.92	1.5149E+01
RA-224	24235.	240.99	6.5951E+01
RA-226	29258.	186.10	7.0253E+01
AC-228	299.	911.21	2.9689E+00
TH-228	17543.	84.37	2.0223E+02
TH-229	17801.	88.47	9.5447E+00
U-232	15560.	57.78	4.1695E+03
PA-233	20590.	312.17	7.3656E+00
PA-234M	194.	1001.03	1.1505E+00
TH-234	15637.	63.29	1.1985E+02
U-235	28982.	185.71	4.2504E+00
NP-237	17513.	86.48	1.9668E+01
U-237	15725.	59.54	2.0681E+01
NP-238	178.	984.45	2.3260E+00
NP-239	19071.	106.12	8.1997E+00
PU-239	22302.	129.30	2.7728E+04
AM-241	15724.	59.54	1.9836E+01
AM-243	16870.	74.67	5.5137E+00

```
**********************************************************************************
* 222-S Laboratory Counting Room   18-NOV-1995 11:24:08.58                      *
**********************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              3513
Sample ID:               S95T3711-DUP
Sample Size:             1.00000E-03 L
Dilution Factor:         2.00000E+00

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:             GEA3
File Number:             NI3AC:1.cnf
Geometry:                43
Count Time:              0 00:00:03.00 sec
Real Time:               0 00:00:03.10 sec
Dead Time:               3.2%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       18-NOV-1995 09:48:44.77
Decayed to:              18-NOV-1995 09:48:44.77
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 VR
Background Subtract:     DKA300:[SPEC.GEA3]3GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:       11-MAR-1994 11:47:01.11
 Date of last efficiency calibration:   15-MAR-1994 10:11:20.05
**********************************************************************************
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Removed by: Raymond

Verified by: [signature] 11/20/95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.56*	813	1.61	1323.31	1316	16	7.2		CS-137	7.165E+03

Summary of Nuclide Activity
Sample ID : S95T3711-DUP

Acquisition date : 18-NOV-1995 09:48:44

Total number of lines in spectrum	1	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	1	100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CS-137	30.00Y	1.000	7.165E+03	7.165E+03	0.515E+03	7.19	
Total Activity :			7.165E+03	7.165E+03			
Grand Total Activity :			7.165E+03	7.165E+03			

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	16.	477.59	1.0478E+03
NA-22	0.	1274.53	0.0000E+00
NA-24	0.	1368.55	0.0000E+00
K-40	0.	1460.75	0.0000E+00
SC-46	0.	1120.55	0.0000E+00
CR-51	23.	320.08	9.5036E+02
MN-54	0.	834.83	0.0000E+00
CO-56	0.	846.76	0.0000E+00
CO-57	21.	122.06	6.4277E+01
CO-58	0.	810.78	0.0000E+00
FE-59	0.	1099.25	0.0000E+00
CO-60	0.	1332.50	0.0000E+00
ZN-65	0.	1115.55	0.0000E+00
SE-75	22.	264.66	1.4427E+02
KR-85	6.	514.00	1.6663E+04
SR-85	6.	514.01	7.5453E+01
Y-88	0.	1836.06	0.0000E+00
Y-90	0.	1760.70	0.0000E+00
Y-91	0.	1204.67	0.0000E+00
NB-94	0.	871.09	0.0000E+00
NB-95	1.	765.78	3.9572E+01
ZR-95	0.	756.73	0.0000E+00
RU-103	18.	497.08	1.3308E+02
RURH-106	2.	621.93	1.0102E+03
AG-108m	1.	722.94	4.8384E+01
CD-109	25.	88.03	2.4452E+03
AG-110M	11.	657.76	1.2068E+02
SN-113	25.	391.69	1.7985E+02
TE-123m	19.	159.00	6.5894E+01
SB-124	5.	602.73	7.6010E+01
SB-125	27.	427.89	4.3532E+02
TE-125m	20.	109.27	2.0673E+04
I-129	13.	39.60	0.0000E+00
I-131	23.	364.48	1.2947E+02
XE-131m	31.	163.93	3.7238E+03
BA-133	25.	356.02	1.7336E+02
CS-134	6.	604.70	8.4597E+01
CS-136	0.	818.51	0.0000E+00
CS-138	0.	1435.86	0.0000E+00
CE-139	32.	165.85	9.3641E+01
BA-140	10.	537.31	3.9038E+02
LA-140	0.	1596.21	0.0000E+00
CE-141	19.	145.44	1.0989E+02
CE-144	21.	133.51	4.9155E+02
CEPR-144	21.	133.51	9.8221E+02
EU-152	0.	1408.01	0.0000E+00
EU-154	0.	1274.51	0.0000E+00
EU-155	27.	86.54	2.8917E+02
HF-181	21.	482.18	1.5564E+02
TA-182	14.	67.75	3.1145E+02
HG-203	17.	279.20	9.2897E+01

Sample ID : S95[illegible]3711-DUP Acquisition date : 18-NOV-1995 09:48:44

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BI-207	2.	569.70	4.6007E+01
TL-208	15.	277.36	1.1299E+03
PB-210	15.	46.50	0.0000E+00
BI-212	3.	727.18	9.5157E+02
PB-212	28.	238.63	2.0380E+02
BI-214	6.	609.31	1.8720E+02
PB-214	23.	351.92	2.8748E+02
RA-224	13.	240.99	1.5261E+03
RA-226	36.	186.10	2.4745E+03
AC-228	0.	911.21	0.0000E+00
TH-228	19.	84.37	6.5721E+03
TH-229	24.	88.47	3.4762E+02
U-232	17.	57.78	1.3585E+05
PA-233	18.	312.17	2.1920E+02
PA-234M	0.	1001.03	0.0000E+00
TH-234	16.	63.29	3.8364E+03
U-235	35.	185.71	1.4689E+02
NP-237	27.	86.48	7.6529E+02
U-237	17.	59.54	6.6913E+02
NP-238	1.	984.45	1.6026E+02
NP-239	21.	106.12	2.6877E+02
PU-239	31.	129.30	1.0381E+06
AM-241	17.	59.54	6.4298E+02
AM-243	9.	74.67	1.3021E+02

LABCORE Data Entry Template for Worklist# 3716

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

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

Worklist Comment: TX-244 Sr89/90 Determine sample size by ludlam. gjh

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@SR90-01	LIQUID		
2	BLNK				@SR90-01	LIQUID		
3	BLNK/BKG				@SR90-01	LIQUID		
4	SAMPLE	S95T003710	0		@SR90-01	LIQUID	95000189	TX-244 GRAB
		Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
5	DUP	S95T003710	0		@SR90-01	LIQUID		
6	SAMPLE	S95T003711	0		@SR90-01	LIQUID	95000189	TX-244 GRAB
		Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
7	DUP	S95T003711	0		@SR90-01	LIQUID		

Final page for worklist # 3716

[signature] 12/11/95
Analyst Signature **Date**

[signature] 12/12/95
Analyst Signature **Date**
[signature] 12.13.95

Data Entry Comments:

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

LABCORE Completed Worklist Report for Worklist# 3716

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

Method: _____ Rev/Mod _____

Worklist Comment: TX-244 Sr89/90 Determine sample size by ludlam. gjh

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@SR90-01 SR90-01	LIQUID	1.15E-03	1.14E-3	99.130	% Recovery
1	STD		0		@SR90-01 SR90-01C	LIQUID	100	9.67E+01	96.700	% Recovery
1	STD		0		@SR90-01 SR90-01E	LIQUID	1.00	1.92E+00	1.920	% Ct. Error
2	BLNK		0		@SR90-01 SR90-01	LIQUID	1	8.72E-4	0.000	uCi/mL
2	BLNK		0		@SR90-01 SR90-01C	LIQUID	100	9.66E+01	96.600	% Recovery
2	BLNK		0		@SR90-01 SR90-01E	LIQUID	1.00	5.00E+01	50.000	% Ct. Error
3	BLNK/BKG		0		@SR90-01 SR90-01	LIQUID	1	2.25E+00	2.250	uCi/mL
4	SAMPLE	S95T003710	0		@SR90-01 SR90-01	LIQUID	N/A	8.49E-02	4.970e-004	uCi/mL
4	SAMPLE	S95T003710	0		@SR90-01 SR90-01C	LIQUID	N/A	9.49E+01	1.000e-004	% Recovery
4	SAMPLE	S95T003710	0		@SR90-01 SR90-01E	LIQUID	N/A	3.19E+00	0.000	% Ct. Error
5	DUP	S95T003710	0		@SR90-01 SR90-01	LIQUID	8.49E-2	8.33E-2	1.900	RPD
5	DUP	S95T003710	0		@SR90-01 SR90-01C	LIQUID	100	9.96E+01	99.600	% Recovery
5	DUP	S95T003710	0		@SR90-01 SR90-01E	LIQUID	1.00	3.14E+00	3.140	% Ct. Error
6	SAMPLE	S95T003711	0		@SR90-01 SR90-01	LIQUID	N/A	9.24E-02	4.960e-004	uCi/mL
6	SAMPLE	S95T003711	0		@SR90-01 SR90-01C	LIQUID	N/A	9.48E+01	1.000e-004	% Recovery
6	SAMPLE	S95T003711	0		@SR90-01 SR90-01E	LIQUID	N/A	3.05E+00	0.000	% Ct. Error
7	DUP	S95T003711	0		@SR90-01 SR90-01	LIQUID	9.24E-2	9.19E-2	0.540	RPD
7	DUP	S95T003711	0		@SR90-01 SR90-01C	LIQUID	100	9.12E+01	91.200	% Recovery
7	DUP	S95T003711	0		@SR90-01 SR90-01E	LIQUID	1.00	3.12E+00	3.120	% Ct. Error

Final page for worklist# 3716

Analyst Signature **Date**

Analyst Signature **Date**

Reviewer Signature 12/14/95 **Date**

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

WORKBOOK PAGE: STD1

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

Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	STANDARD 1.000
STD	TOTAL COUNTS	(TC)	10548	GROSS WEIGHT	(W2)	7.0653
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	6.9686
3716	BACKGROUND in cpm	(BKG)	3.2	NET WEIGHT	(W3)	0.0967
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)	2.42
@SR90-01	DILUTION FACTOR	(DF)	1			
Matrix	DIGEST DILUTION FACTOR	DDF	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	1051.60	SR-90 EFFICIENCY FACTO	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.08	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
95004134	TIME OF SEPARATION	(ST)	12:30	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	12/11/95	DETECTION LIMIT	(Ld)	2.25
0	TIME OF COUNT	(TOC)	14:55	Sr-89/90 CONC. in µCi/L		1.1392E+00
Sample Prep	DATE OF COUNT	(DOC)	12/11/95			
N/A	STANDARD BOOK #		9B56			
Sample #	STANDARD VALUE in µCi/mL		1.1526E-03			
WL#3716						
Instrument Code						
WB27811	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
Prepared By	Sr-89/90 CONC in µCi/mL REPLACE RS WITH RMAX IF RS<=LcAND RS>=0 OR REPLACE RS WITH Lc IF RS<0					
MCB	RS*DF*DDF*1000/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)					
Chemist	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
SLF	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)					
Analyst	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
AKL	NOTE: Expected weight = CVA * 0.1					
Date Complete	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
12/12/95	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
Analysis Date						DETECTION LEVEL
12/11/95	Sr-89/90 CONCENTRATION		1.14E-03	µCi/mL		
Analysis Time						2.43E-06 µCi/L
02:00 PM	RELATIVE COUNTING ERROR		1.9%			
Sample Point						
TX-244 GRAB	PERCENT CARRIER RECOVERY		96.7%			

Analyst:		AKL	Date:	12-Dec-95
Signature of Chemist:		SLF	Date:	12/13/95

STANDARD WB1 REV 1.2 22010NML

WORKBOOK PAGE: BLANK2

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

Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	BLNK 1.000
BLNK	TOTAL COUNTS	(TC)	72	GROSS WEIGHT	(W2)	6.9961
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	6.8995
3716	BACKGROUND in cpm	(BKG)	3.2	NET WEIGHT	(W3)	0.0966
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)	2.83
@SR90-01	DILUTION FACTOR	(DF)	101			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	4.00	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.08	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
95004134	TIME OF SEPARATION	(ST)	12:30	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	12/11/95	DETECTION LIMIT	(Ld)	2.25
0	TIME OF COUNT	(TOC)	15:20	Sr-89/90 CONC in µCi/L		8.7208E-01
Sample Prep	DATE OF COUNT	(DOC)	12/11/95			
N/A						
Sample #						
WL#3716						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)					
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)					
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
AKL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
12/12/95						
Analysis Date						
12/11/95	Sr-89/90 CONCENTRATION		8.72E-04	µCi/mL ~~µCi/m~~		DETECTION LEVEL
Analysis Time				CAE 12/12/95		
02:00 PM	RELATIVE COUNTING ERROR		50.0%			4.90E-04 µCi/mL
Sample Point						
TX-244 GRAB	PERCENT CARRIER RECOVERY		96.6%			

Analyst:		AKL	Date:	12-Dec-95
Signature of Chemist:		SLF	Date:	12/13/95

BLANK.WB1 REV 1.2 22010NML

WORKBOOK PAGE: SAM4

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

						SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	3866	GROSS WEIGHT	(W2)	7.0281
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	6.9332
3716	BACKGROUND in cpm	(BKG)	3.2	NET WEIGHT	(W3)	0.0949
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)	3.03
@SR90-01	DILUTION FACTOR	(DF)	101			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	383.40	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.08	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
95004134	TIME OF SEPARATION	(ST)	12:30	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	12/11/95	DETECTION LIMIT	(Ld)	2.25
0	TIME OF COUNT	(TOC)	15:32	Sr-89/90 CONC in µCi/L		8.4895E+01
Sample Prep	DATE OF COUNT	(DOC)	12/11/95			
N/A						
Sample #						
S95T003710						

Instrument Code: WB27811
Prepared By: MCB
Chemist: SLF
Analyst: AKL
Date Complete: 12/12/95
Analysis Date: 12/11/95
Analysis Time: 02:00 PM
Sample Point: TX-244 GRAB

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

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

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

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

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

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

NOTE: Expected weight = CVA * 0.1

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

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

			DETECTION LEVEL
Sr-89/90 CONCENTRATION	8.49E-02	µCi/mL	4.97E-04 µCi/mL
RELATIVE COUNTING ERROR	3.2%		
PERCENT CARRIER RECOVERY	94.9%		

Analyst:	AKL	Date:	12-Dec-95
Signature of Chemist:	SLF	Date:	12/13/95

SAMPLE.WB1 REV 1.2 22010NML

WORKBOOK PAGE: DUP5

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

Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	DUP 1.000
DUP	TOTAL COUNTS	(TC)	3991	GROSS WEIGHT	(W2)	7.0707
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	6.9711
3716	BACKGROUND in cpm	(BKG)	3.2	NET WEIGHT	(W3)	0.0996
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)	3.25
@SR90-01	DILUTION FACTOR	(DF)	101			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	395.90	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.08	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
95004134	TIME OF SEPARATION	(ST)	12:30	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	12/11/95	DETECTION LIMIT	(Ld)	2.25
0	TIME OF COUNT	(TOC)	15:45	Sr-89/90 CONC in µCi/L		8.3323E+01
Sample Prep	DATE OF COUNT	(DOC)	12/11/95			
N/A						
Sample #						
S95T003710						

Instrument Code: WB27811

Prepared By: MCB

Chemist: SLF

Analyst: AKL

Date Complete: 12/12/95

Analysis Date: 12/11/95

Analysis Time: 02:00 PM

Sample Point: TX-244 GRAB

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

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

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

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

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

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

NOTE: Expected weight = CVA * 0.1

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

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

			DETECTION LEVEL
Sr-89/90 CONCENTRATION	8.33E-02	µCi/mL	4.73E-04 µCi/mL
RELATIVE COUNTING ERROR	3.1%		
PERCENT CARRIER RECOVERY	99.6%		

Analyst:	AKL	Date:	12-Dec-95
Signature of Chemist:	SLF	Date:	12/13/95

SAMPLE.WB1 REV 1.2 22010NML

WORKBOOK PAGE: SAM6

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

Type						SAMPLE
SAMPLE	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
Work List	TOTAL COUNTS	(TC)	4220	GROSS WEIGHT	(W2)	7.0487
3716	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	6.9539
Test Code	BACKGROUND in cpm	(BKG)	3.2	NET WEIGHT	(W3)	0.0948
@SR90-01	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)	3.42
Matrix	DILUTION FACTOR	(DF)	101			
LIQUID	DIGEST DILUTION FACTOR	(DDF)	1			
Batch Number	SAMPLE COUNT RATE	(Rs)	418.80	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
95004134	CRITICAL LEVEL	(Lc)	1.08	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
Rerun	TIME OF SEPARATION	(ST)	12:30	Rmax		N/A
0	DATE OF SEPARATION	(SD)	12/11/95	DETECTION LIMIT	(Ld)	2.25
Sample Prep	TIME OF COUNT	(TOC)	15:55	Sr-89/90 CONC in µCi/L		9.2434E+01
N/A	DATE OF COUNT	(DOC)	12/11/95			

Sample #	
S95T003711	
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100
Analyst	NOTE: Expected weight = CVA * 0.1
AKL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100
12/12/95	
Analysis Date	
12/11/95	
Analysis Time	
02:00 PM	
Sample Point	
TX-244 GRAB	

			DETECTION LEVEL
Sr-89/90 CONCENTRATION	9.24E-02	µCi/mL	4.96E-04 µCi/mL
RELATIVE COUNTING ERROR	3.1%		
PERCENT CARRIER RECOVERY	94.8%		

Analyst:	AKL	Date:	12-Dec-95
Signature of Chemist:	SLF	Date:	12/13/95

SAMPLE.WB1 REV 1.2 22010NML

WORKBOOK PAGE: DUP7

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

Type						DUP
DUP	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
Work List	TOTAL COUNTS	(TC)	4047	GROSS WEIGHT	(W2)	7.0285
3716	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	6.9373
Test Code	BACKGROUND in cpm	(BKG)	3.2	NET WEIGHT	(W3)	0.0912
@SR90-01	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)	3.67
Matrix	DILUTION FACTOR	(DF)	101			
LIQUID	DIGEST DILUTION FACTOR	(DDF)	1			
Batch Number	SAMPLE COUNT RATE	(Rs)	401.50	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
95004134	CRITICAL LEVEL	(Lc)	1.08	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
Rerun	TIME OF SEPARATION	(ST)	12:30	Rmax		N/A
0	DATE OF SEPARATION	(SD)	12/11/95	DETECTION LIMIT	(Ld)	2.25
Sample Prep	TIME OF COUNT	(TOC)	16:10	Sr-89/90 CONC in µCi/L		9.1858E+01
N/A	DATE OF COUNT	(DOC)	12/11/95			
Sample #						
S95T003711						

Instrument Code: WB27811

Prepared By: MCB

Chemist: SLF

Analyst: AKL

Date Complete: 12/12/95

Analysis Date: 12/11/95

Analysis Time: 02:00 PM

Sample Point: TX-244 GRAB

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

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

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

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

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

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

NOTE: Expected weight = CVA * 0.1

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

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

			DETECTION LEVEL
Sr-89/90 CONCENTRATION	9.19E-02	µCi/mL	
RELATIVE COUNTING ERROR	3.1%		5.14E-04 µCi/mL
PERCENT CARRIER RECOVERY	91.2%		

Analyst:	AKL	Date:	12-Dec-95
Signature of Chemist:	SLF	Date:	12/13/95

SAMPLE.WB1 REV 1.2 22010NML

LABCORE Completed Worklist Report for Worklist# 3796

Analyst: akl **Instrument:** AM01 **Book#** ID4843

Method: LA-953-103 Rev/Mod A-4

Worklist Comment: Determine sample size by Ludlum dlh

Seq	Type	Sample#	R	A	Test	Matrix	Actual		Found	DL or Yield	Unit
1	STD		0		@AM24101 AM24101	LIQUID	3.07E-02		2.72E-2	88.600	% Recovery
1	STD		0		@AM24101 AM24101E	LIQUID	1.00		1.31E+00	1.310	% Ct. Error
1	STD		0		@AM24101 AM24101T	LIQUID	100		7.69E+01	76.900	% Recovery
2	BLNK		0		@AM24101 AM24101	LIQUID	1		<2.90E-4		uCi/mL
2	BLNK		0		@AM24101 AM24101E	LIQUID	1.00		1.00E+02	100.000	% Ct. Error
2	BLNK		0		@AM24101 AM24101T	LIQUID	100		7.87E+01	78.700	% Recovery
3	SAMPLE	S95T003710	0		@AM24101 AM24101	LIQUID	N/A	<	2.73E-04	2.730e-004	uCi/mL
3	SAMPLE	S95T003710	0		@AM24101 AM24101E	LIQUID	N/A		5.65E+00	0.000	% Ct. Error
3	SAMPLE	S95T003710	0		@AM24101 AM24101T	LIQUID	N/A		8.36E+01	1.000e-007	% Recovery
4	DUP	S95T003710	0		@AM24101 AM24101	LIQUID	<2.73E-4		<2.95E-4		RPD
4	DUP	S95T003710	0		@AM24101 AM24101E	LIQUID	1.00		5.60E+00	5.600	% Ct. Error
4	DUP	S95T003710	0		@AM24101 AM24101T	LIQUID	100		7.97E+01	79.700	% Recovery
5	SAMPLE	S95T003711	0		@AM24101 AM24101	LIQUID	N/A	<	2.56E-04	2.560e-004	uCi/mL
5	SAMPLE	S95T003711	0		@AM24101 AM24101E	LIQUID	N/A		5.25E+00	0.000	% Ct. Error
5	SAMPLE	S95T003711	0		@AM24101 AM24101T	LIQUID	N/A		8.53E+01	1.000e-007	% Recovery
6	DUP	S95T003711	0		@AM24101 AM24101	LIQUID	<2.56E-4		<2.88E-4		RPD
6	DUP	S95T003711	0		@AM24101 AM24101E	LIQUID	1.00		5.70E+00	5.700	% Ct. Error
6	DUP	S95T003711	0		@AM24101 AM24101T	LIQUID	100		7.92E+01	79.200	% Recovery

Final page for worklist# 3796

Analyst Signature Date

Analyst Signature Date

11 Dec 95
Reviewer Signature Date

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

LABCORE Data Entry Template for Worklist# 3796

Analyst: AKL **Instrument:** AM01 _____ **Book #** 10918 43

Method: LA-953-103 Rev/Mod A-4

Worklist Comment: Determine sample size by Ludlum dlh

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				@AM24101 AM24101	LIQUID	_____	_____	N/A	uCi/mL
		1	STD				@AM24101 AM24101E	LIQUID	_____	_____	N/A	% Ct. Error
		1	STD				@AM24101 AM24101T	LIQUID	_____	_____	N/A	% Recovery
		2	BLNK				@AM24101 AM24101	LIQUID	_____	_____	N/A	uCi/mL
		2	BLNK				@AM24101 AM24101E	LIQUID	_____	_____	N/A	% Ct. Error
		2	BLNK				@AM24101 AM24101T	LIQUID	_____	_____	N/A	% Recovery
95000189	TX-244 GRAB	3	SAMPLE	S95T003710	0		@AM24101 AM24101	LIQUID	N/A	_____	_____	uCi/mL
95000189	TX-244 GRAB	3	SAMPLE	S95T003710	0		@AM24101 AM24101E	LIQUID	N/A	_____	_____	% Ct. Error
95000189	TX-244 GRAB	3	SAMPLE	S95T003710	0		@AM24101 AM24101T	LIQUID	N/A	_____	_____	% Recovery
95000189	TX-244 GRAB	4	DUP	S95T003710	0		@AM24101 AM24101	LIQUID	_____	_____	N/A	uCi/mL
95000189	TX-244 GRAB	4	DUP	S95T003710	0		@AM24101 AM24101E	LIQUID	_____	_____	N/A	% Ct. Error
95000189	TX-244 GRAB	4	DUP	S95T003710	0		@AM24101 AM24101T	LIQUID	_____	_____	N/A	% Recovery
95000189	TX-244 GRAB	5	SAMPLE	S95T003711	0		@AM24101 AM24101	LIQUID	N/A	_____	_____	uCi/mL
95000189	TX-244 GRAB	5	SAMPLE	S95T003711	0		@AM24101 AM24101E	LIQUID	N/A	_____	_____	% Ct. Error
95000189	TX-244 GRAB	5	SAMPLE	S95T003711	0		@AM24101 AM24101T	LIQUID	N/A	_____	_____	% Recovery
95000189	TX-244 GRAB	6	DUP	S95T003711	0		@AM24101 AM24101	LIQUID	_____	_____	N/A	uCi/mL
95000189	TX-244 GRAB	6	DUP	S95T003711	0		@AM24101 AM24101E	LIQUID	_____	_____	N/A	% Ct. Error
95000189	TX-244 GRAB	6	DUP	S95T003711	0		@AM24101 AM24101T	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# 3796

GROUP	PROJECT	S TYPE	SAMPLE#	R A -------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT

Final page for worklist # 3796

A Lewis 12/7/95
Analyst Signature Date

C.J. Ogier 12/8/95
Analyst Signature Date

M S Rodman 12/8/95

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.

WORKBOOK PAGE: STD1

Am 241 and Cm 243/244: LA-953-103 (A-4) LIQUID

Type	Date Counted		DEC-07-95	Am 241 AEA Frac. (C241)	STD 0.356
STD	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac. (C243)	0.549
Work List	Sample D.F.	(DF)	101	Cm 243/244 AEA Frac. (Cm)	0
3796	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts	19486
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.		114B43	Background in cpm (Bkg)	4
Matrix	Am-243 Tracer Value	(dpm/mL)	9214	Am 241 cpm	76.54
LIQUID	Detector Number		1	Am 243 cpm	118.05
Batch Number	Detector Efficiency	(DetEff)	0.5000	Cm 243/244 cpm	0
95004284	Standard Book No		104B43	AEA Count Time (min)	480
Rerun	Standard Value in µCi/mL		0.03067	Am 241 µCi/L =	2.7183E+01
0				Cm 243/244 µCi/L = <	4.9630E+00
Sample Point					
N/A					

Sample Number

WL3796

Instrument Code

AL10539

Prepared By

CJO

Chemist

LLF

Analyst

AKL

Date Complete

12/08/95

Analysis Date

12/07/95

Analysis Time

02:00 PM

Sample Point

TX-244

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

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

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

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

Am 241 µCi/mL =	2.72E-02	DETECTION LEVELS in µCi/mL
Relative Counting Error =	1.3%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241
Cm 243/244 µCi/mL	< 4.96E-03	4.96E-03
Relative Counting Error =	100.0%	Cm 243/244
Am 243 Tracer Recovery =	76.9%	4.96E-03

Analyst:	AKL	Date:	12/08/95
Signature of Chemist:	LLF	Date:	11 Dec 95

STANDARD.WB1 REV 1.2 953103ML

WORKBOOK PAGE: BLANK2

Am 241 and Cm 243/244: LA-953-103 (A-4) LIQUID / SOLID

Type	Date Counted		DEC-07-95	Am 241 AEA Frac. (C241)	BLNK
BLNK	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac. (C243)	0.908
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac. (Cm)	0
3796	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts	12106
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.		114B43	Background in cpm (Bkg)	4
Matrix	Am-243 Tracer Value	(dpm/mL)	9214	Am 241 cpm	0
LIQUID	Detector Number		2	Am 243 cpm	109.33
Batch Number	Detector Efficiency	(DetEff)	0.5000	Cm 243/244 cpm	0
95004284				AEA Count Time (min)	480
Rerun				Am 241 µCi/L = <	2.9024E-01
0				Cm 243/244 µCi/L = <	2.9024E-01
Sample Prep					
N/A					
Sample Number					
WL3796					
Instrument Code					
AL10540					
Prepared By					
CJO					
Chemist					
LLF					
Analyst					
AKL					
Date Complete					
12/08/95					
Analysis Date					
12/07/95					
Analysis Time					
02:00 PM					
Sample Point					
TX-244					

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

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

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

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

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

Am 241 µCi/mL	=	< 2.90E-04
Relative Counting Error	=	100.0%

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

Cm 243/244 µCi/mL		< 2.90E-04
Relative Counting Error	=	100.0%
Am 243 Tracer Recovery	=	78.7%

DETECTION LEVELS in µCi/mL	
Am 241	2.90E-04
Cm 243/244	2.90E-04

Analyst:	AKL	Date:	12/08/95
Signature of Chemist:	LLF	Date:	11 Dec 95

BLANK.WB1 REV 1.2 953103ML

WORKBOOK PAGE: SAM3

Am 241 and Cm 243/244: LA-953-103 (A-4) LIQUID / SOLID

Type	Date Counted		DEC-07-95	Am 241 AEA Frac.	(C241)	0.018
SAMPLE	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	0.908
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0
3796	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		12843
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		114B43	Background in cpm	(Bkg)	4
Matrix	Am-243 Tracer Value	(dpm/mL)	9214	Am 241 cpm		2.56
LIQUID	Detector Number		3	Am 243 cpm		130.85
Batch Number	Detector Efficiency	(DetEff)	0.5000	Cm 243/244 cpm		0
95004284				AEA Count Time	(min)	480
Rerun				Am 241 µCi/L =	<	2.7343E-01
0				Cm 243/244 µCi/L =	<	2.7343E-01
Sample Prep						
N/A						
Sample Number						
S95T003710						
Instrument Code						
AL10541						
Prepared By						
CJO						
Chemist						
LLF						
Analyst						
AKL						
Date Complete						
12/08/95						
Analysis Date						
12/07/95						
Analysis Time						
02:00 PM						
Sample Point						
TX-244						

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

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

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

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

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

Am 241 µCi/mL =	< 2.73E-04	DETECTION LEVELS in µCi/mL
Relative Counting Error =	5.6%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241
Cm 243/244 µCi/mL	< 2.73E-04	2.73E-04
Relative Counting Error =	100.0%	Cm 243/244
Am 243 Tracer Recovery =	83.6%	2.73E-04

Analyst:	AKL	Date:	12/08/95
Signature of Chemist:	LLF	Date:	11 Dec 95

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: DUP4

Am 241 and Cm 243/244: LA-953-103 (A-4) LIQUID / SOLID

Type	Date Counted		DEC-07-95	Am 241 AEA Frac. (C241)	DUP 0.017
DUP	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac. (C243)	0.851
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac. (Cm)	0
3796	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts	12626
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.		114B43	Background in cpm (Bkg)	4
Matrix	Am-243 Tracer Value	(dpm/mL)	9214	Am 241 cpm	2.6
LIQUID	Detector Number		1	Am 243 cpm	137.1
Batch Number	Detector Efficiency	(DetEff)	0.5000	Cm 243/244 cpm	0
95004284				AEA Count Time (min)	480
Rerun				Am 241 µCi/L = <	2.9548E-01
0				Cm 243/244 µCi/L = <	2.9548E-01
Sample Matrix					
N/A					
Sample Number					
S95T003710					
Instrument Code					
AL10539					
Prepared By					
CJO					
Chemist					
LLF					
Analyst					
AKL					
Date Complete					
12/08/95					
Analysis Date					
12/07/95					
Analysis Time					
02:00 PM					
Sample Point					
TX-244					

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

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

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

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

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

Am 241 µCi/mL =	< 2.95E-04	DETECTION LEVELS in µCi/mL
Relative Counting Error =	5.6%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241
Cm 243/244 µCi/mL	< 2.95E-04	2.95E-04
Relative Counting Error =	100.0%	Cm 243/244
Am 243 Tracer Recovery =	79.7%	2.95E-04

Analyst:	AKL	Date:	12/08/95
Signature of Chemist:	LLF	Date:	11 Dec 95

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: SAM5

Am 241 and Cm 243/244: LA-953-103 (A-4) LIQUID / SOLID

Type	Date Counted		DEC-07-95	Am 241 AEA Frac.	(C241)	SAMPLE 0.019
SAMPLE	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	0.952
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0
3796	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		12506
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		114B43	Background in cpm	(Bkg)	4
Matrix	Am-243 Tracer Value	(dpm/mL)	9214	Am 241 cpm		2.96
LIQUID	Detector Number		2	Am 243 cpm		148.13
Batch Number	Detector Efficiency	(DetEff)	0.5000	Cm 243/244 cpm		0
95004284				AEA Count Time	(min)	480
Reruns				Am 241 µCi/L =	<	2.5551E-01
0				Cm 243/244 µCi/L =	<	2.5551E-01
Sample Prep						
N/A						
Sample Number	Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))					
S95T003711	Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))					
Instrument Code						
AL10540	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100					
Prepared By	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV					
CJO						
Chemist	NOTE: Am-241 Result is a LESS THAN Value.					
LLF	Am 241 µCi/mL =		< 2.56E-04	DETECTION LEVELS in µCi/mL		
Analyst	Relative Counting Error =		5.3%			
AKL						
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241		
12/08/95	Cm 243/244 µCi/mL		< 2.56E-04	2.56E-04		
Analysis Date	Relative Counting Error =		100.0%	Cm 243/244		
12/07/95	Am 243 Tracer Recovery =		85.3%	2.56E-04		
Analysis Time						
02:00 PM						
Sample Point						
TX-244						

Analyst:	AKL	Date:	12/08/95
Signature of Chemist:	LLF	Date:	11 Dec 95

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: DUP6

Am 241 and Cm 243/244: LA-953-103 (A-4) LIQUID / SOLID

Type	Date Counted		DEC-07-95	Am 241 AEA Frac.	(C241)	DUP 0.017
DUP	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	0.91
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0
3796	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		12146
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		114B43	Background in cpm	(Bkg)	4
Matrix	Am-243 Tracer Value	(dpm/mL)	9214	Am 241 cpm		2.51
LIQUID	Detector Number		3	Am 243 cpm		132.2
Batch Number	Detector Efficiency	(DetEff)	0.5000	Cm 243/244 cpm		0
95004284				AEA Count Time	(min)	480
Rerun				Am 241 µCi/L =	<	2.88E-01
0				Cm 243/244 µCi/L =	<	2.88E-01
Sample Prep						
N/A						

Sample Number
S95T003711
Instrument Code
AL10541
Prepared By
CJO
Chemist
LLF
Analyst
AKL
Date Complete
12/08/95
Analysis Date
12/07/95
Analysis Time
02:00 PM
Sample Point
TX-244

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

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

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

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

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

Am 241 µCi/mL =	< 2.88E-04	
Relative Counting Error =	5.7%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		
Cm 243/244 µCi/mL	< 2.88E-04	
Relative Counting Error =	100.0%	
Am 243 Tracer Recovery =	79.2%	

DETECTION LEVELS in µCi/mL
Am 241
2.88E-04
Cm 243/244
2.88E-04

Analyst:	AKL	Date:	12/08/95
Signature of Chemist: LLFitz	LLF	Date:	11 Dec 95

SAMPLE.WB1 REV 1.2 953103ML

Raymond 12-7-95

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
WL3796-STD
File ID: 25a2583.CNF

Counted on: 12/ 7/95 @15:56
Detector: AEA25
Geometry number: 1
Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	3980.2	3980.2	305.306	305.306	10.000	3.131	5.000	3.236
2	6880.1	6880.1	259.638	259.638	8.000	2.369	4.000	2.552

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu238	0.356	5.487	5.480	0.007	0.01	76.54	1.0	8436.6	0.380E-02
	Am241		5.479	5.480	-.001				6462.1	0.291E-02
2	Am243	0.549	5.270	5.270	0.000	0.01	118.05	0.8	9463.5	0.426E-02
Totals:		0.905	<--valid peaks only-->				194.58			

DETECTOR CALIBRATION
Energy(MEV) = 4.076 + (0.0046)*Channel
Energy range (MeV): 4.076 TO 6.431
Efficiency = 0.0126 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	103223.0	100.000
Smoothed	103224.0	100.001
Composite fit	93403.7	90.487
Residuals	9819.3	9.513

Analyzed by: EMB

Spectrum 25a2583.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc
Display Max.: 39380.7

Raw Data Dump for AEA Spectrum: 25a2583.CNF

1	0.	0.	1.	0.	1.	0.	1.	0.	0.	0.
11	1.	1.	1.	1.	0.	0.	1.	0.	0.	0.
21	1.	0.	0.	0.	0.	0.	1.	0.	0.	0.
31	1.	0.	0.	0.	1.	1.	0.	0.	0.	0.
41	1.	1.	1.	0.	0.	1.	0.	0.	0.	0.
51	0.	1.	1.	1.	2.	0.	0.	1.	0.	1.
61	0.	1.	0.	0.	1.	0.	0.	2.	0.	1.
71	0.	0.	0.	2.	0.	0.	0.	1.	1.	0.
81	2.	0.	0.	0.	0.	0.	0.	1.	0.	0.
91	0.	0.	0.	0.	3.	0.	1.	0.	1.	3.
101	0.	1.	2.	1.	0.	0.	1.	0.	0.	0.
111	0.	0.	1.	1.	0.	2.	1.	0.	0.	1.
121	0.	0.	1.	0.	0.	0.	0.	2.	0.	3.
131	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.
141	0.	3.	1.	2.	0.	2.	0.	0.	4.	1.
151	1.	5.	0.	0.	1.	0.	0.	0.	0.	0.
161	2.	0.	2.	1.	2.	1.	1.	0.	2.	0.
171	0.	0.	0.	0.	0.	1.	1.	1.	2.	2.
181	0.	0.	2.	2.	0.	1.	3.	0.	1.	0.
191	0.	2.	3.	2.	5.	6.	0.	2.	3.	2.
201	4.	1.	2.	2.	5.	5.	1.	4.	3.	3.
211	2.	6.	5.	6.	9.	7.	7.	7.	6.	6.
221	11.	10.	14.	10.	14.	15.	21.	16.	25.	22.
231	37.	33.	34.	49.	57.	76.	99.	124.	136.	158.
241	150.	132.	186.	216.	248.	336.	444.	599.	832.	1153.
251	1346.	1409.	1274.	1506.	1856.	2859.	4262.	6510.	8859.	9807.
261	7580.	4145.	1655.	761.	556.	382.	350.	376.	343.	384.
271	374.	346.	299.	220.	181.	133.	89.	40.	30.	32.
281	38.	37.	71.	94.	106.	92.	107.	112.	103.	118.
291	206.	234.	335.	462.	631.	779.	860.	782.	859.	1091.
301	1323.	2029.	3113.	4331.	5391.	5247.	3684.	2015.	1112.	832.
311	719.	607.	556.	499.	359.	317.	230.	158.	74.	37.
321	6.	0.	1.	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.	0.	0.	0.
351	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.
361	0.	1.	0.	0.	0.	2.	0.	0.	0.	0.
371	0.	1.	2.	3.	4.	1.	0.	0.	1.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	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.	0.

Raymond 12-7-95

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
WL3796-BLK
File ID: 26a2688.CNF

Counted on: 12/ 7/95 @15:59
Detector: AEA26
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	4269.9	4269.9	256.909	256.909	10.000	3.608	5.000	1.915

PEAK RESULTS
Peak Error Limit: 30%

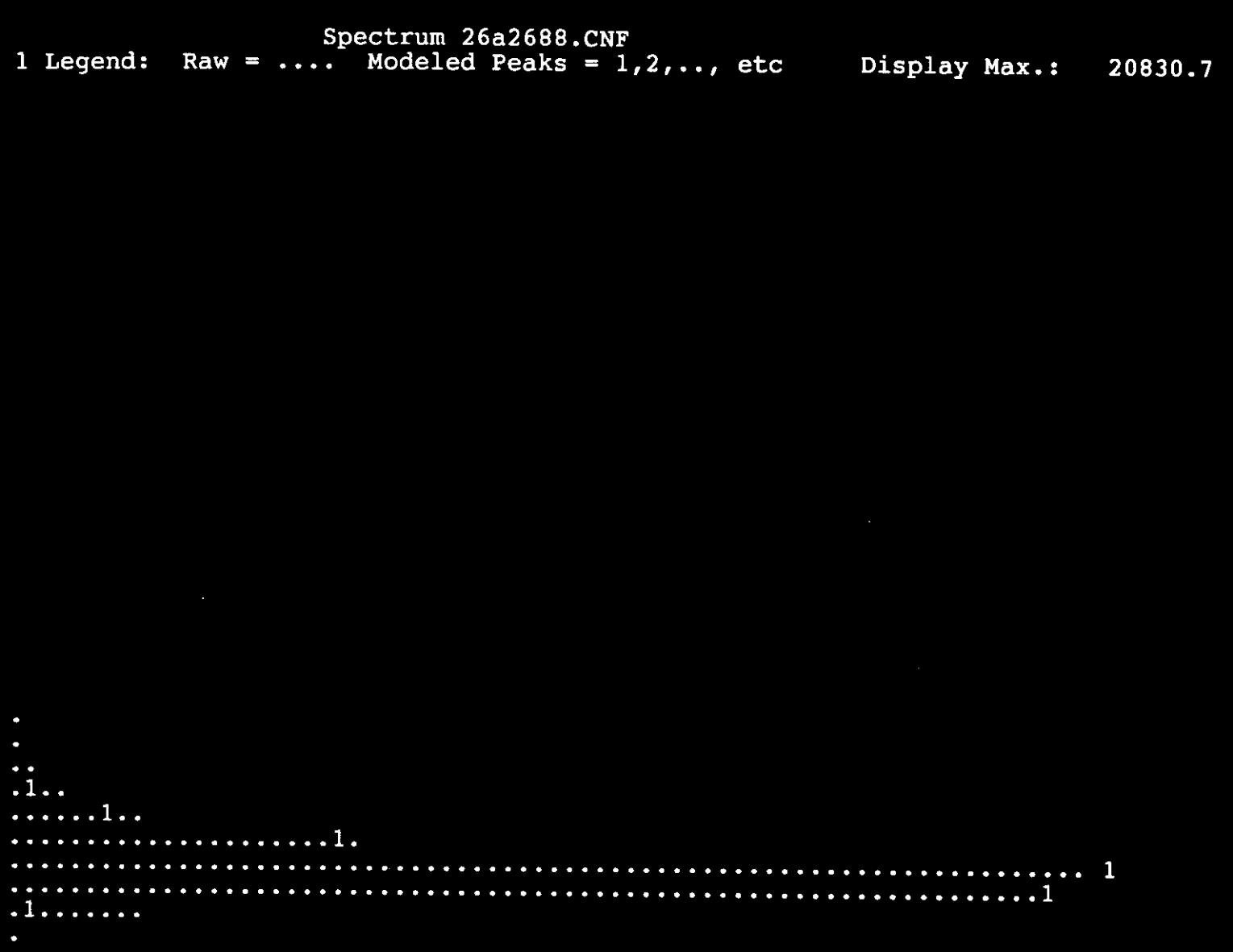
Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.908	5.270	5.267	0.003	0.02	109.33	0.9	5692.3	0.256E-02
Totals:		0.908	<--valid peaks only-->				109.33			

DETECTOR CALIBRATION
Energy(MEV) = 4.086 + (0.0046)*Channel
Energy range (MeV): 4.086 TO 6.441
Efficiency = 0.0194 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	57831.0	100.000
Smoothed	57831.4	100.001
Composite fit	52481.8	90.750
Residuals	5349.2	9.250

Analyzed by: _____
EMB


Spectrum 26a2688.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc
Display Max.: 20830.7

Raw Data Dump for AEA Spectrum: 26a2688.CNF

1	0.	0.	2.	0.	0.	0.	0.	0.	2.	0.
11	0.	0.	0.	1.	1.	0.	0.	0.	1.	0.
21	0.	0.	2.	2.	1.	0.	0.	0.	1.	0.
31	1.	1.	0.	1.	1.	2.	0.	1.	1.	1.
41	1.	2.	0.	2.	0.	0.	1.	1.	1.	0.
51	0.	0.	0.	2.	0.	0.	0.	1.	0.	1.
61	2.	0.	0.	0.	3.	1.	1.	1.	0.	2.
71	1.	0.	2.	0.	3.	1.	0.	2.	2.	0.
81	0.	1.	2.	0.	4.	0.	4.	0.	0.	1.
91	0.	2.	1.	2.	0.	2.	0.	0.	2.	3.
101	2.	0.	3.	1.	1.	4.	2.	3.	2.	1.
111	2.	2.	6.	2.	2.	3.	0.	3.	0.	2.
121	2.	4.	2.	3.	2.	2.	3.	4.	3.	6.
131	2.	1.	4.	4.	1.	5.	3.	0.	2.	5.
141	1.	5.	7.	2.	4.	4.	5.	4.	3.	6.
151	9.	7.	9.	6.	3.	6.	7.	4.	5.	5.
161	3.	4.	4.	6.	9.	5.	8.	8.	9.	12.
171	12.	9.	7.	6.	9.	5.	8.	15.	9.	18.
181	10.	13.	16.	18.	16.	24.	22.	31.	21.	20.
191	15.	17.	26.	24.	17.	27.	19.	25.	39.	34.
201	28.	35.	44.	37.	32.	46.	38.	56.	45.	51.
211	56.	50.	74.	43.	54.	74.	57.	87.	83.	100.
221	101.	106.	119.	122.	118.	142.	146.	146.	172.	189.
231	215.	215.	239.	280.	325.	348.	363.	429.	430.	463.
241	534.	633.	779.	773.	933.	1196.	1338.	1502.	1638.	1869.
251	1980.	2337.	2684.	3451.	4041.	4836.	5146.	4931.	3940.	2385.
261	1093.	545.	366.	286.	270.	230.	219.	216.	216.	189.
271	167.	111.	93.	64.	40.	19.	4.	0.	0.	1.
281	0.	1.	0.	0.	0.	0.	3.	1.	1.	3.
291	0.	1.	4.	2.	1.	9.	6.	6.	5.	6.
301	10.	10.	7.	8.	10.	8.	5.	1.	0.	1.
311	2.	0.	1.	0.	1.	0.	0.	1.	0.	1.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
341	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
351	0.	1.	1.	0.	1.	0.	0.	0.	0.	0.
361	0.	1.	2.	1.	1.	1.	2.	0.	2.	0.
371	0.	1.	3.	3.	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.								

Raymond 12-7-95

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
S95T3710-SAM
File ID: 27a2777.CNF

Counted on: 12/ 7/95 @16: 0
Detector: AEA27
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	121.5	121.5	306.918	306.918	10.000	3.223	5.000	2.533
2	6693.3	6693.3	260.827	260.827	10.000	2.958	5.000	2.669

PEAK RESULTS
Peak Error Limit: 30%

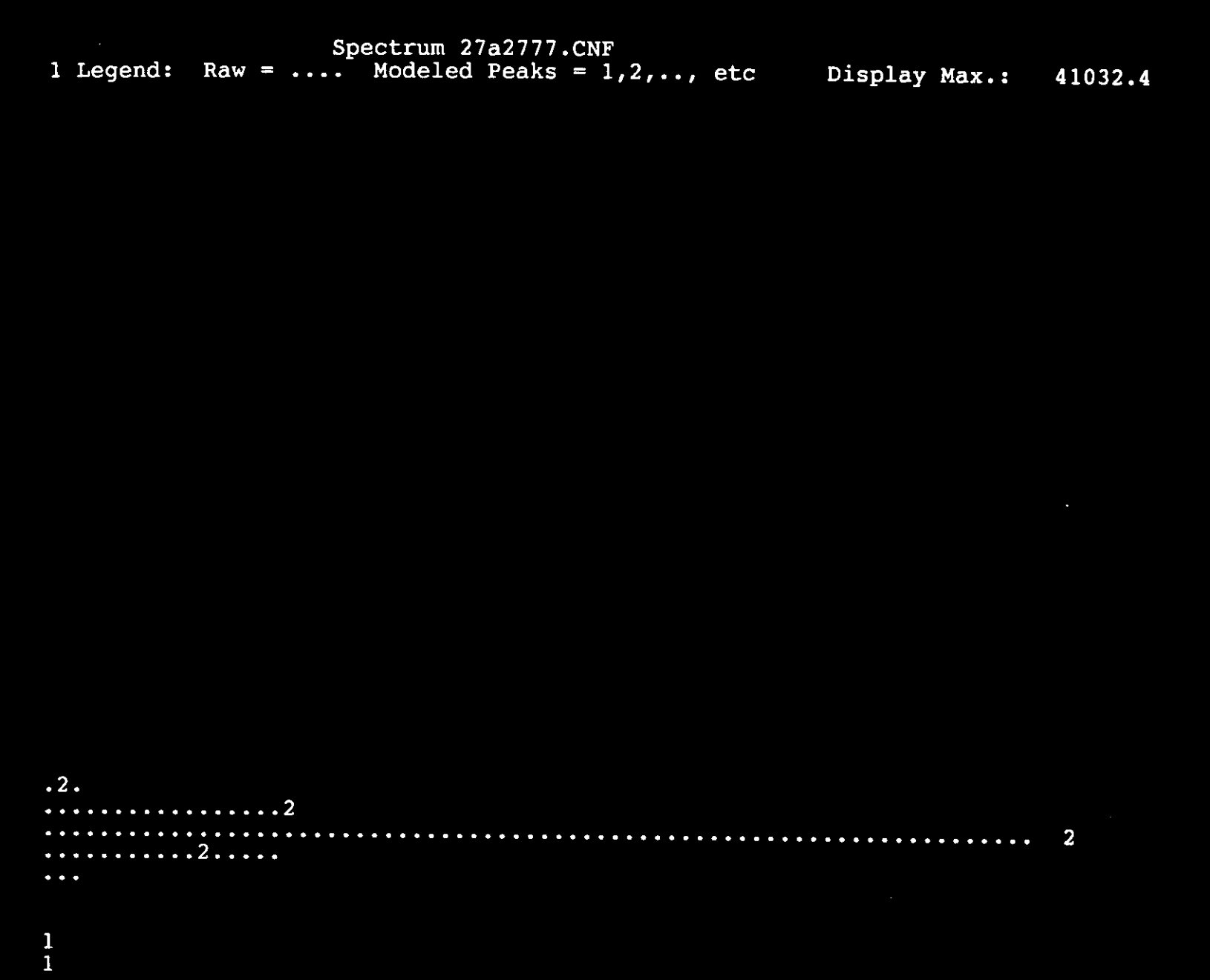
Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu238	0.018	5.487	5.488	-.001	0.01	2.56	5.6	190.9	0.860E-04
	Am241		5.479	5.488	-.009				146.2	0.659E-04
2	Am243	0.908	5.270	5.276	-.006	0.01	130.85	0.8	7105.8	0.320E-02
Totals:		0.925	<--valid peaks only-->				133.40			

DETECTOR CALIBRATION
Energy(MEV) = 4.076 + (0.0046)*Channel
Energy range (MeV): 4.076 TO 6.432
Efficiency = 0.0186 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	69202.0	100.000
Smoothed	69203.0	100.001
Composite fit	64037.8	92.538
Residuals	5164.2	7.462

Analyzed by: _____
EMB


Spectrum 27a2777.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc
Display Max.: 41032.4
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.....2.....
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1

Raw Data Dump for AEA Spectrum: 27a2777.CNF

1	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	1.	0.	1.	0.	0.	0.
21	0.	0.	1.	0.	0.	0.	0.	0.	1.	1.
31	1.	0.	0.	1.	0.	1.	0.	2.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
51	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
61	0.	1.	0.	0.	0.	2.	0.	1.	1.	1.
71	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
81	0.	0.	2.	0.	0.	0.	2.	0.	0.	1.
91	0.	0.	0.	0.	0.	2.	0.	0.	0.	0.
101	0.	1.	1.	0.	1.	1.	0.	1.	0.	0.
111	1.	1.	1.	0.	0.	0.	1.	0.	0.	0.
121	0.	0.	0.	0.	0.	1.	1.	0.	1.	1.
131	1.	0.	0.	1.	0.	2.	0.	3.	2.	0.
141	3.	1.	0.	2.	0.	3.	0.	0.	1.	1.
151	1.	1.	2.	0.	2.	0.	1.	1.	4.	2.
161	1.	0.	1.	0.	0.	1.	0.	2.	0.	2.
171	0.	0.	1.	2.	1.	3.	0.	0.	0.	0.
181	0.	1.	1.	1.	2.	0.	2.	2.	0.	3.
191	1.	1.	1.	5.	5.	1.	1.	2.	0.	1.
201	2.	3.	3.	2.	1.	2.	4.	2.	2.	3.
211	3.	5.	1.	4.	7.	5.	8.	3.	12.	7.
221	5.	12.	13.	9.	14.	12.	16.	16.	12.	18.
231	24.	29.	34.	37.	55.	72.	71.	93.	117.	166.
241	182.	198.	193.	193.	229.	318.	386.	525.	706.	957.
251	1213.	1401.	1694.	1635.	1900.	2409.	3370.	4566.	6448.	7974.
261	8791.	7794.	5322.	2780.	1226.	685.	484.	445.	386.	368.
271	354.	390.	355.	305.	224.	159.	146.	75.	51.	19.
281	1.	1.	0.	1.	4.	0.	6.	4.	4.	5.
291	6.	10.	13.	6.	13.	20.	25.	32.	29.	43.
301	41.	41.	60.	93.	105.	117.	173.	139.	92.	46.
311	29.	27.	19.	10.	15.	9.	13.	7.	6.	3.
321	2.	0.	1.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
351	1.	0.	0.	0.	1.	0.	1.	1.	0.	0.
361	1.	0.	2.	0.	0.	1.	1.	1.	1.	2.
371	3.	3.	6.	4.	3.	4.	4.	4.	1.	0.
381	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
431	0.	0.	0.	0.	0.	0.	0.	1.	0.	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.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
511	0.	0.								

Raymond 12-7-95

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
S95T3710-DUP
File ID: 28a2884.CNF

Counted on: 12/ 7/95 @16: 0
Detector: AEA28
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	101.5	101.5	297.964	297.964	12.000	4.492	6.000	2.753
2	5616.6	5616.6	252.201	252.201	12.000	3.616	6.000	2.133
3?	14.9	14.9	160.652	160.649	150.000	1.000	75.000	0.100

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu238	0.017	5.487	5.479	0.008	0.02	2.60	5.5	435.2	0.196E-03
	Am241		5.479	5.479	0.000				333.3	0.150E-03
2	Am243	0.881	5.270	5.268	0.002	0.02	137.10	0.8	16684.8	0.752E-02
3		????		4.847			1.19	8.2		
Totals:		0.898	<--valid peaks only-->				139.70			

DETECTOR CALIBRATION
Energy(MEV) = 4.108 + (0.0046)*Channel
Energy range (MeV): 4.108 TO 6.463
Efficiency = 0.0083 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	74664.0	100.000
Smoothed	74666.3	100.003
Composite fit	67624.6	90.572
Residuals	7039.4	9.428

Analyzed by: _____
EMB

Spectrum 28a2884.CNF

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1 Legend:  Raw = ....  Modeled Peaks = 1,2,.., etc     Display Max.:   36248.1

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Raw Data Dump for AEA Spectrum: 28a2884.CNF

1	0.	0.	2.	3.	1.	1.	0.	1.	0.	0.
11	0.	1.	0.	1.	1.	1.	1.	2.	0.	2.
21	4.	2.	1.	1.	2.	0.	1.	0.	1.	1.
31	0.	3.	1.	1.	0.	2.	0.	0.	1.	1.
41	1.	0.	1.	1.	0.	0.	0.	1.	1.	1.
51	5.	2.	2.	3.	3.	0.	3.	1.	1.	2.
61	2.	1.	0.	1.	3.	3.	1.	1.	1.	1.
71	1.	3.	0.	2.	4.	2.	0.	1.	4.	3.
81	3.	4.	3.	5.	1.	5.	2.	4.	1.	0.
91	3.	4.	3.	2.	3.	1.	0.	1.	6.	7.
101	1.	1.	3.	4.	4.	3.	1.	2.	4.	4.
111	5.	4.	4.	2.	3.	6.	3.	2.	7.	3.
121	5.	4.	2.	5.	2.	8.	6.	5.	5.	7.
131	4.	5.	2.	6.	7.	8.	5.	6.	7.	8.
141	6.	11.	10.	9.	1.	14.	6.	12.	7.	7.
151	3.	11.	4.	10.	13.	9.	8.	14.	13.	13.
161	13.	12.	12.	11.	10.	10.	14.	14.	10.	20.
171	12.	19.	11.	25.	17.	26.	16.	27.	22.	18.
181	26.	14.	23.	38.	27.	24.	28.	27.	30.	43.
191	36.	36.	28.	38.	32.	36.	59.	55.	54.	53.
201	61.	58.	49.	59.	64.	56.	63.	99.	70.	76.
211	87.	98.	100.	106.	96.	120.	108.	131.	142.	133.
221	174.	177.	186.	193.	212.	234.	290.	311.	321.	359.
231	358.	445.	462.	492.	539.	549.	632.	750.	890.	1015.
241	1234.	1422.	1726.	1961.	2114.	2327.	2689.	3311.	4040.	5097.
251	6086.	6894.	6757.	5510.	3720.	1811.	902.	565.	440.	404.
261	336.	348.	315.	340.	280.	249.	204.	139.	101.	80.
271	37.	14.	2.	5.	3.	6.	5.	11.	10.	8.
281	7.	12.	8.	15.	12.	17.	23.	26.	39.	19.
291	28.	38.	50.	54.	76.	103.	118.	123.	123.	84.
301	67.	40.	23.	20.	19.	10.	14.	18.	3.	5.
311	3.	3.	0.	1.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	1.	0.	0.	1.	0.	1.	0.
351	0.	0.	0.	1.	1.	1.	0.	4.	2.	4.
361	3.	1.	1.	2.	0.	6.	6.	7.	7.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
421	0.	0.	0.	0.	1.	0.	1.	0.	0.	0.
431	0.	0.	0.	0.	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.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Raymond 12-7-95

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
S95T3711-SAM
File ID: 29a2965.CNF

Counted on: 12/ 7/95 @16: 1
Detector: AEA29
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	81.3	81.3	302.108	302.108	12.000	5.915	6.000	2.003
2	4755.7	4755.7	255.722	255.722	12.000	5.448	6.000	2.405

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu238	0.019	5.487	5.479	0.008	0.03	2.96	5.2	39.8	0.179E-04
	Am241		5.479	5.479	0.000				30.5	0.137E-04
2	Am243	0.952	5.270	5.266	0.004	0.03	148.13	0.7	1448.4	0.652E-03
Totals:		0.971	<--valid peaks only-->				151.09			

DETECTOR CALIBRATION
Energy(MEV) = 4.089 + (0.0046)*Channel
Energy range (MeV): 4.089 TO 6.444
Efficiency = 0.1033 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	74653.0	100.000
Smoothed	74655.2	100.003
Composite fit	72521.7	97.145
Residuals	2131.3	2.855

Analyzed by: _____
EMB

Spectrum 29a2965.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 30427.7

Raw Data Dump for AEA Spectrum: 29a2965.CNF

1	0.	0.	1.	2.	1.	0.	0.	0.	1.	0.
11	2.	0.	0.	1.	0.	0.	0.	1.	1.	0.
21	0.	1.	0.	1.	0.	0.	0.	0.	1.	1.
31	2.	1.	1.	1.	0.	1.	1.	0.	2.	2.
41	0.	2.	0.	2.	2.	2.	0.	0.	0.	1.
51	1.	1.	0.	0.	2.	0.	5.	0.	0.	1.
61	1.	2.	3.	0.	1.	0.	0.	0.	0.	1.
71	0.	1.	2.	2.	3.	1.	1.	2.	1.	1.
81	0.	1.	1.	1.	2.	1.	1.	0.	2.	1.
91	1.	1.	2.	0.	2.	0.	1.	2.	1.	2.
101	2.	2.	2.	1.	2.	1.	3.	2.	4.	1.
111	2.	1.	1.	4.	0.	3.	3.	2.	1.	2.
121	3.	2.	0.	2.	2.	3.	5.	0.	1.	4.
131	2.	2.	2.	3.	0.	1.	2.	2.	1.	3.
141	3.	1.	3.	5.	5.	3.	8.	2.	3.	4.
151	7.	5.	3.	2.	1.	3.	3.	4.	5.	3.
161	3.	7.	1.	1.	7.	6.	1.	8.	7.	6.
171	3.	8.	7.	5.	15.	11.	8.	6.	8.	8.
181	10.	7.	6.	6.	17.	9.	8.	10.	11.	11.
191	13.	10.	11.	14.	20.	17.	15.	17.	20.	22.
201	28.	29.	19.	30.	31.	27.	24.	18.	24.	38.
211	26.	35.	33.	33.	44.	42.	44.	53.	68.	68.
221	75.	93.	79.	84.	103.	90.	138.	141.	183.	190.
231	256.	264.	288.	313.	406.	451.	496.	601.	604.	733.
241	848.	1022.	1189.	1418.	1634.	1949.	2202.	2622.	2946.	3151.
251	3597.	4037.	4371.	4844.	5136.	5333.	5164.	4419.	3415.	2136.
261	1133.	654.	491.	426.	366.	341.	308.	286.	248.	227.
271	154.	133.	73.	67.	27.	18.	4.	4.	3.	6.
281	4.	3.	13.	10.	12.	16.	17.	17.	21.	32.
291	30.	42.	45.	46.	53.	52.	59.	72.	78.	92.
301	91.	74.	86.	90.	74.	50.	26.	18.	5.	10.
311	9.	6.	6.	1.	5.	0.	1.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
341	0.	0.	1.	0.	0.	1.	1.	0.	1.	2.
351	0.	1.	0.	0.	1.	3.	1.	2.	1.	0.
361	3.	3.	2.	2.	5.	1.	6.	4.	5.	0.
371	4.	3.	1.	2.	1.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	1.	0.	0.	0.	1.	0.
431	0.	0.	1.	0.	0.	1.	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.								

Raymond 12-7-95

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
S95T3711-DUP
File ID: 30a3089.CNF

Counted on: 12/ 7/95 @16: 2
Detector: AEA30
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	101.2	101.2	298.836	298.836	12.000	4.311	6.000	2.773
2	5923.7	5923.7	253.210	253.210	10.000	3.317	5.000	2.282

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu238	0.017	5.487	5.480	0.007	0.02	2.51	5.6	31.3	0.141E-04
	Am241		5.479	5.480	-.001				23.9	0.108E-04
2	Am243	0.910	5.270	5.270	0.0000	0.02	132.20	0.8	1196.6	0.539E-03
Totals:		0.927	<--valid peaks only-->				134.72			

DETECTOR CALIBRATION
Energy(MEV) = 4.105 + (0.0046)*Channel
Energy range (MeV): 4.105 TO 6.461
Efficiency = 0.1116 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	69731.0	100.000
Smoothed	69731.8	100.001
Composite fit	64667.9	92.739
Residuals	5063.1	7.261

Analyzed by: EMB

Spectrum 30a3089.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc
Display Max.: 37531.0
2
....2.
.....2
2
.....2....
1
1

Raw Data Dump for AEA Spectrum: 30a3089.CNF

1	0.	0.	0.	1.	1.	1.	1.	1.	1.	0.
11	0.	0.	1.	1.	1.	1.	0.	0.	0.	0.
21	1.	0.	1.	0.	0.	1.	0.	0.	0.	0.
31	2.	0.	1.	0.	0.	1.	0.	0.	1.	0.
41	0.	0.	0.	2.	0.	1.	0.	1.	1.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
61	0.	0.	0.	0.	0.	2.	0.	2.	1.	0.
71	0.	1.	1.	0.	2.	1.	1.	0.	0.	0.
81	1.	2.	0.	1.	0.	2.	0.	0.	0.	1.
91	1.	0.	1.	1.	1.	4.	1.	1.	1.	0.
101	0.	2.	0.	1.	0.	1.	2.	0.	1.	0.
111	2.	1.	1.	4.	3.	1.	2.	1.	2.	0.
121	0.	1.	1.	2.	3.	3.	1.	2.	2.	2.
131	0.	0.	2.	3.	0.	2.	5.	4.	1.	3.
141	2.	4.	5.	2.	1.	3.	4.	2.	2.	3.
151	7.	2.	3.	0.	1.	2.	3.	3.	1.	3.
161	2.	4.	2.	4.	6.	3.	2.	3.	3.	1.
171	4.	3.	3.	5.	1.	7.	3.	8.	2.	8.
181	5.	3.	5.	9.	3.	8.	5.	5.	8.	4.
191	5.	7.	8.	9.	4.	5.	9.	11.	9.	7.
201	11.	17.	7.	15.	18.	15.	21.	23.	36.	18.
211	19.	23.	26.	36.	41.	32.	25.	39.	41.	55.
221	69.	45.	69.	69.	75.	73.	94.	119.	158.	186.
231	217.	226.	268.	299.	329.	356.	442.	468.	590.	707.
241	837.	1140.	1317.	1558.	1881.	1932.	2229.	2512.	3168.	4046.
251	5109.	6509.	7389.	7371.	5740.	3564.	1651.	813.	554.	454.
261	402.	375.	349.	374.	347.	320.	266.	220.	150.	88.
271	40.	18.	8.	2.	3.	2.	6.	5.	3.	4.
281	6.	8.	4.	7.	10.	17.	15.	17.	31.	39.
291	30.	43.	29.	36.	60.	76.	106.	115.	125.	123.
301	72.	67.	37.	22.	23.	10.	12.	14.	8.	1.
311	4.	4.	1.	0.	0.	0.	0.	0.	0.	0.
321	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
341	0.	0.	0.	1.	0.	0.	0.	1.	0.	1.
351	0.	0.	1.	0.	0.	3.	3.	2.	3.	3.
361	2.	1.	0.	3.	5.	1.	5.	4.	7.	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	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	1.	0.	0.	0.	2.	0.	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.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

LABCORE Completed Worklist Report for Worklist# 3748

Analyst: akl **Instrument:** PU01 **Book#** 104643

Method: LA-943-127 Rev/Mod B-1

Worklist Comment: Determine sample size by Ludlum. --LLF

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@PU23901 PU23901	LIQUID	1.28E-01	1.32E-1	103.130	% Recovery
1	STD		0		@PU23901 PU23901E	LIQUID	1.00	2.38E+00	2.380	% Ct. Error
1	STD		0		@PU23901 PU23901T	LIQUID	100	6.49E+01	64.900	% Recovery
2	BLNK		0		@PU23901 PU23901	LIQUID	1	<7.17E-5		uCi/mL
2	BLNK		0		@PU23901 PU23901T	LIQUID	100	3.98E+01	39.800	% Recovery
2	BLNK		0		@PU23901 PU23901E	LIQUID	1.00	1.00E+02	100.000	% Ct. Error
3	SAMPLE	S95T003710	0		@PU23901 PU23901	LIQUID	N/A	4.27E-03	2.370e-004	uCi/mL
3	SAMPLE	S95T003710	0		@PU23901 PU23901T	LIQUID	N/A	8.00E+01	1.000e-007	% Recovery
3	SAMPLE	S95T003710	0		@PU23901 PU23901E	LIQUID	N/A	1.81E+00	0.000	% Ct. Error
4	DUP	S95T003710	0		@PU23901 PU23901	LIQUID	4.27E-3	4.27E-3	0.000	RPD
4	DUP	S95T003710	0		@PU23901 PU23901T	LIQUID	100	7.76E+01	77.600	% Recovery
4	DUP	S95T003710	0		@PU23901 PU23901E	LIQUID	1.00	1.79E+00	1.790	% Ct. Error
5	SAMPLE	S95T003711	0		@PU23901 PU23901	LIQUID	N/A	4.42E-03	2.480e-004	uCi/mL
5	SAMPLE	S95T003711	0		@PU23901 PU23901T	LIQUID	N/A	7.66E+01	1.000e-007	% Recovery
5	SAMPLE	S95T003711	0		@PU23901 PU23901E	LIQUID	N/A	1.77E+00	0.000	% Ct. Error
6	DUP	S95T003711	0		@PU23901 PU23901	LIQUID	4.42E-3	4.41E-3	0.230	RPD
6	DUP	S95T003711	0		@PU23901 PU23901T	LIQUID	100	6.89E+01	68.900	% Recovery
6	DUP	S95T003711	0		@PU23901 PU23901E	LIQUID	1.00	1.89E+00	1.890	% Ct. Error

Final page for worklist# 3748

Analyst Signature Date

Analyst Signature Date

[signature] 5 Dec 95
Reviewer Signature Date

Both samples show Pu-238 at quantifiable activity levels. Np-237 may be present ~~at below~~ very little activity at an energy that corresponds to Np-237.
[signature] 12/5/95

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

14

LABCORE Data Entry Template for Worklist# 3748

Analyst: ARL **Instrument:** PU01 **Book#** 10943

Method: LA-943-127 Rev/Mod B-1

Worklist Comment: Determine sample size by Ludlum. --LLF

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@PU23901	LIQUID		
2	BLNK				@PU23901	LIQUID		
3	SAMPLE	S95T003710	0		@PU23901	LIQUID	95000189	TX-244 GRAB
	Analytes Requested: PU23901 , PU23901E, PU23901T							
4	DUP	S95T003710	0		@PU23901	LIQUID		
5	SAMPLE	S95T003711	0		@PU23901	LIQUID	95000189	TX-244 GRAB
	Analytes Requested: PU23901 , PU23901E, PU23901T							
6	DUP	S95T003711	0		@PU23901	LIQUID		

Final page for worklist # 3748

ARL 11/30/95
Analyst Signature **Date**

[signature] 12/1/95
Analyst Signature **Date**

Sue Hogan 12/4/95

Data Entry Comments:

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

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-127 (B-1) LIQUID

Type	DATE COUNTED		NOV-30-95	PU 236 AEA FRAC (C236)	STD 0.430
STD	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC (C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC (C239)	0.579
3748	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	5015
Test Code	DIGEST DILUTION FACTOR	DDF	1.000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO		117B43	BACKGROUND in cpm (Bkg)	5.000
Matrix	DETECTOR NUMBER		1	PU 236 cpm	24.590
LIQUID	EFFICIENCY FACTOR	EFF	0.500	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE		09/12/95	PU 239 cpm	33.090
95004169	TRACER PREPARATION VALUE (dpm/mL)		2265.000	AEA COUNT TIME	480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2148.931	Pu 239/240 µCi/L	1.3164E+02
0	PU-238 TRACER VALUE (dpm/mL		0.000		
Sample Prep	STANDARD BOOK NO		104B43		
N/A	STANDARD VALUE in µCi/mL		0.128		

Samples #
WRKLST#3748
Instrument Code
AL10539
Prepared By
MCB
Chemist
LLF
Analyst
AKL
Date Complete
12/01/95
Analysis Date
11/30/95
Analysis Time
03:30 PM
Sample Point
TX-244 GRAB

Decay Time = Date Counted - Tracer Preparation Date

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

Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)* 1/EFF *C236*100/Pu-236 Decay Corr'd Value * SPKV

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

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)

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

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

v RESULTS v

			DETECTION LEVELS in µCi/mL
Pu 239/240 µCi/mL		1.32E-01	Pu 239/240 1.05E-02
Relative Counting Error	=	2.4%	
Pu 236 Tracer Recovery	=	64.9%	

Analyst: AKL Date: 01-Dec-95

Signature of Chemist: LLF Date: 5 Dec 95

STANDARD.WB1 REV 1.2 943127ML

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-127 (B-1) LIQUID / SOLID

Type					BLNK
BLNK	DATE COUNTED		NOV-30-95	PU 236 AEA FRAC (C236)	1.017
Work List	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC (C238)	0.000
3748	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC (C239)	0.000
Test Code	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	1383
@PU23901	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)	30
Matrix	TRACER BOOK NO		117B43	BACKGROUND in cpm (Bkg)	4.000
LIQUID	DETECTOR NUMBER		2	PU 236 cpm	16.170
Batch Number	EFFICIENCY FACTOR	EFF	0.5000	PU 238 cpm	0.000
95004169	TRACER PREPARATION DATE		09/12/95	PU 239 cpm	0.000
Rerun	TRACER PREPARATION VALUE (dpm/mL)		2265.00	AEA COUNT TIME	480
0	PU-236 DECAY CORR'D VALUE (dpm/mL)		2148.93	Pu 239/240 µCi/L =	< 7.166E-02
	PU-238 TRACER VALUE (dpm/mL)		0.00		

Sample Prep	
N/A	
Sample #	Decay Time = Date Counted - Tracer Preparation Date
WRKLST#3748	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)*C236*100/(Pu-236 Decay Corr'd Value * SPKV*EFF)
AL10540	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
MCB	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
LLF	
Analyst	
AKL	
Data Complete	v RESULTS v

12/01/95	Pu 239/240 µCi/mL		< 7.17E-05	DETECTION LEVELS in µCi/mL
Analysis Date	Relative Counting Error	=	100.0%	
11/30/95				
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.			Pu 239/240
03:30 PM	Pu 238 µCimL		< 7.17E-05	7.17E-05
Sample Point	Relative Counting Error	=	100.0%	Pu 238
TX:244 GRAB	Pu 236 Tracer Recovery	=	39.8%	7.17E-05

Analyst:		AKL	Date:	01-Dec-95
Signature of Chemist:	LLF	LLF	Date:	5 Dec 95

BLANK.WB1 REV 1.2 943127ML

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-127 (B-1) LIQUID / SOLID

Type
SAMPLE
Work List
3748
Test Code
@PU23901
Matrix
LIQUID
Batch Number
95004169
Rerun
0
Sample Prep
N/A
Sample #
S95T003710
Instrument Code
AL10541
Prepared By
MCB
Chemist
LLF
Analyst
AKL
Date Complete
12/01/95
Analysis Date
11/30/95
Analysis Time
03:30 PM
Sample Point
TX-244 GRAB

DATE COUNTED		NOV-30-95
SAMPLE VOLUME in mL	SS	0.100
SAMPLE DILUTION FACTOR	DF	1.000
TRACER VOLUME in mL	SPKV	0.100
DIGEST DILUTION FACTOR	DDF	1.0000
TRACER BOOK NO		117B43
DETECTOR NUMBER		3
EFFICIENCY FACTOR	EFF	0.500
TRACER PREPARATION DATE		09/12/95
TRACER PREPARATION VALUE (dpm/mL)		2265.000
PU-236 DECAY CORR'D VALUE (dpm/mL)		2148.931
PU-238 TRACER VALUE (dpm/mL)		0.000

		SAMPLE
PU 236 AEA FRAC	(C236)	0.153
PU 238 AEA FRAC	(C238)	0.149
PU 239 AEA FRAC	(C239)	0.675
TOTAL AT COUNTS		16994
AT COUNT TIME (MIN)		30
BACKGROUND in cpm	(Bkg)	5.000
PU 236 cpm		29.830
PU 238 cpm		29.190
PU 239 cpm		131.980
AEA COUNT TIME		480
Pu 239/240 µCi/L		4.2705E+00

Decay Time = Date Counted - Tracer Preparation Date

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

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

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

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)

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

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

v RESULTS v

			DETECTION LEVELS in µCi/mL
Pu 239/240 µCi/mL		4.27E-03	
Relative Counting Error	=	1.8%	
			Pu 239/240 2.37E-04
Pu 238 µCi/mL		9.43E-04	
Relative Counting Error	=	2.3%	
Pu 236 Tracer Recovery	=	80.0%	Pu 238 2.37E-04

Analyst: AKL Date: 01-Dec-95

Signature of Chemist: LLF Date: 5 Dec 95

SAMPLE.WB1 REV 1.2 943127ML

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-127 (B-1) LIQUID / SOLID

Type						DUP
DUP	DATE COUNTED		NOV-30-95	PU 236 AEA FRAC	(C236)	0.165
Work List	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.165
3748	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.683
Test Code	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		16293
@PU23901	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
Matrix	TRACER BOOK NO		117B43	BACKGROUND in cpm	(Bkg)	5.000
LIQUID	DETECTOR NUMBER		1	PU 236 cpm		30.500
Batch Number	EFFICIENCY FACTOR	EFF	0.500	PU 238 cpm		30.690
95004169	TRACER PREPARATION DATE		09/12/95	PU 239 cpm		134.810
Rerun	TRACER PREPARATION VALUE (dpm/mL)		2265.000	AEA COUNT TIME		480
0	PU-236 DECAY CORR'D VALUE (dpm/mL)		2148.931	Pu 239/240 µCi/L		4.2654E+00
Sample Prep	PU-238 TRACER VALUE (dpm/mL)		0.000			
N/A						

Decay Time = Date Counted - Tracer Preparation Date

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

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

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

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)

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

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

Sample #					
S95T003710					
Instrument Code					
AL10539					
Prepared By					
MCB					
Chemist					
LLF					
Analyst					
AKL					
Date Complete	v RESULTS v				
12/01/95	Pu 239/240 µCi/mL		4.27E-03	DETECTION LEVELS in µCi/mL	
Analysis Date	Relative Counting Error	=	1.8%		
11/30/95				Pu 239/240	
Analysis Time				2.41E-04	
03:30 PM	Pu 238 µCimL		9.68E-04		
Sample Point	Relative Counting Error	=	2.3%	Pu 238	
TX-244 GRAB	Pu 236 Tracer Recovery	=	77.6%	2.41E-04	

Analyst:		AKL	Date:	01-Dec-95
Signature of Chemist:		LLF	Date:	5 Dec 95

SAMPLE.WB1 REV 1.2 943127ML

WORKBOOK PAGE: SAM5

Pu 238 and 239/240 : LA-943-127 (B-1) LIQUID / SOLID

Type						SAMPLE
SAMPLE	DATE COUNTED		NOV-30-95	PU 236 AEA FRAC	(C236)	0.153
Work List	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.156
3748	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.698
Test Code	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		16266
@PU23901	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
Matrix	TRACER BOOK NO		117B43	BACKGROUND in cpm	(Bkg)	4.000
LIQUID	DETECTOR NUMBER		2	PU 236 cpm		31.000
Batch Number	EFFICIENCY FACTOR	EFF	0.500	PU 238 cpm		31.460
95004169	TRACER PREPARATION DATE		09/12/95	PU 239 cpm		141.000
Rerun	TRACER PREPARATION VALUE (dpm/mL)		2265.000	AEA COUNT TIME		480
0	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2148.931	Pu 239/240 µCi/L		4.4150E+00
Sample Prep	PU-238 TRACER VALUE	(dpm/mL)	0.000			
N/A						

Sample #: S95T003711

Instrument Code: AL10540

Prepared By: MCB

Chemist: LLF

Analyst: AKL

Date Complete: 12/01/95

Analysis Date: 11/30/95

Analysis Time: 03:30 PM

Sample Point: TX-244 GRAB

Decay Time = Date Counted - Tracer Preparation Date

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

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

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

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)

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

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

v RESULTS v

			DETECTION LEVELS in µCi/mL
Pu 239/240 µCi/mL		4.42E-03	
Relative Counting Error	=	1.8%	
			Pu 239/240 2.48E-04
Pu 238 µCi/mL		9.87E-04	
Relative Counting Error	=	2.3%	
			Pu 238 2.48E-04
Pu 236 Tracer Recovery	=	76.6%	

Analyst: AKL Date: 01-Dec-95

Signature of Chemist: LLF Date: 5 Dec 95

SAMPLE.WB1 REV 1.2 943127ML

WORKBOOK PAGE: DUP6

Pu 238 and 239/240 : LA-943-127 (B-1) LIQUID / SOLID

Type						DUP
DUP	DATE COUNTED		NOV-30-95	PU 236 AEA FRAC	(C236)	0.141
Work List	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.147
3748	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.642
Test Code	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		15892
@PU23901	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
Matrix	TRACER BOOK NO		117B43	BACKGROUND in cpm	(Bkg)	5.000
LIQUID	DETECTOR NUMBER		3	PU 236 cpm		27.410
Batch Number	EFFICIENCY FACTOR	EFF	0.500	PU 238 cpm		28.650
95004169	TRACER PREPARATION DATE		09/12/95	PU 239 cpm		125.020
Rerun	TRACER PREPARATION VALUE (dpm/mL)		2265.000	AEA COUNT TIME		480
0	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2148.931	Pu 239/240 µCi/L		4.4074E+00
Sample Type	PU-238 TRACER VALUE	(dpm/mL)	0.000			
N/A						
Sample #						
S95T003711						
Instrument Code						
AL10541						
Prepared By						
MCB						
Chemist						
LLF						
Analyst						
AKL						
Date Complete						
12/01/95						
Analysis Date						
11/30/95						
Analysis Time						
03:30 PM						
Sample Point						
TX-244 GRAB						

Decay Time = Date Counted - Tracer Preparation Date

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

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

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

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)

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

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

v RESULTS v

			DETECTION LEVELS in µCi/mL
Pu 239/240 µCi/mL		4.41E-03	
Relative Counting Error	=	1.9%	
			Pu 239/240
Pu 238 µCimL		1.01E-03	2.99E-04
Relative Counting Error	=	2.4%	
			Pu 238
Pu 236 Tracer Recovery	=	68.9%	2.99E-04

Analyst: AKL Date: 01-Dec-95

Signature of Chemist: LLF Date: 5 Dec 95

SAMPLE.WB1 REV 1.2 943127ML

Westinghouse Hanford Co.

G E N E 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
WORKLIST3748-STD
File ID: 25a2571.CNF

Counted on: 11/30/95 @23:29
Detector: AEA25
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	737.1	737.1	364.180	364.180	12.000	3.934	6.000	1.342
2?	9.9	9.9	306.607	306.205	8.000	1.795	4.000	0.520
3	1128.8	1128.8	231.809	231.809	12.000	4.343	6.000	1.930

PEAK RESULTS
Peak Error Limit: 30%

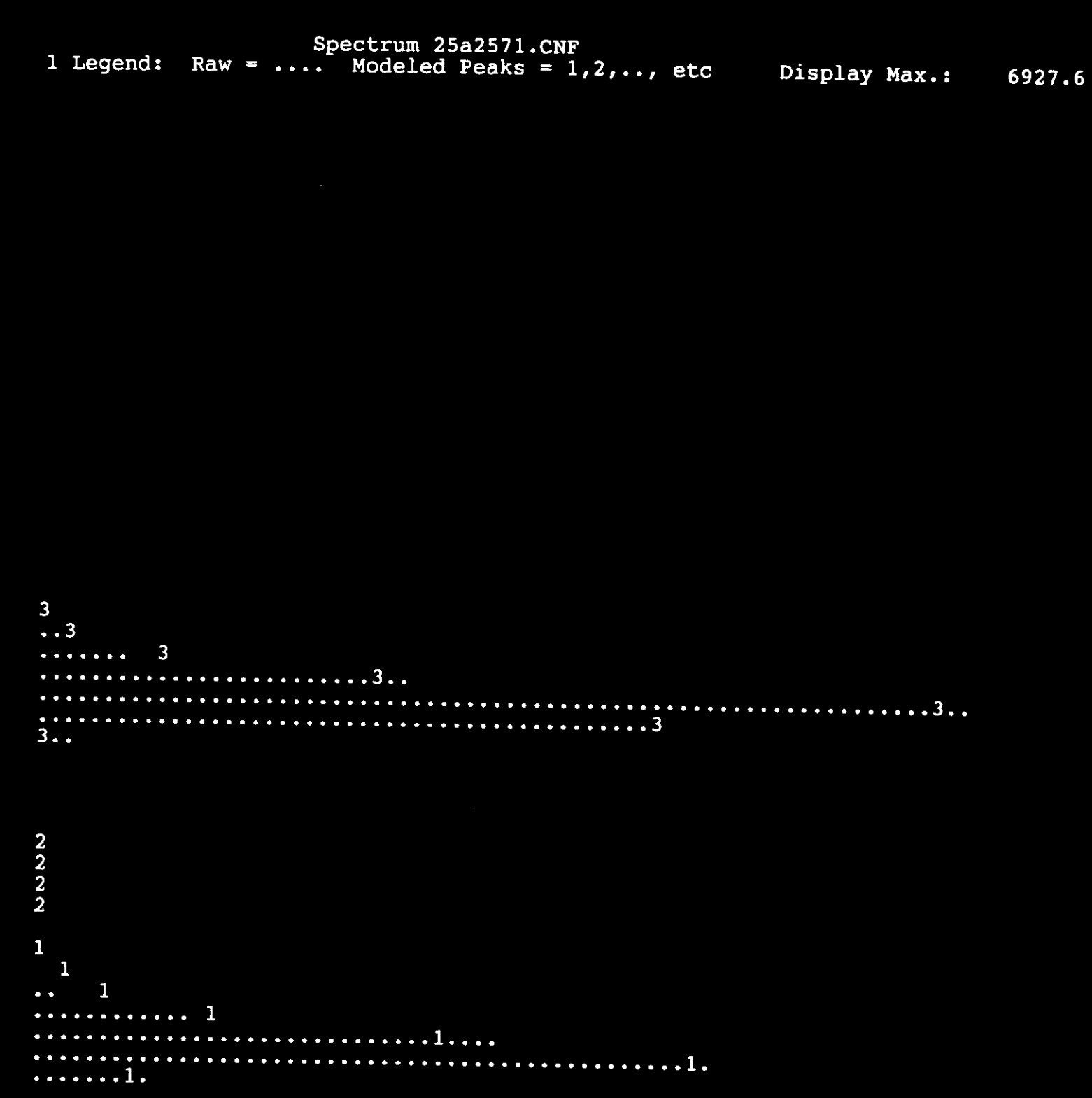
Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.430	5.755	5.749	0.006	0.02	24.59	1.8	1901.1	0.856E-03
2		????		5.482			0.33	19.0		
3	Pu239	0.579	5.147	5.140	0.007	0.02	33.09	1.6	2506.6	0.113E-02
	Pu240		5.144	5.140	0.004				2506.6	0.113E-02
Totals:		1.010	<--valid peaks only-->				57.68			

DETECTOR CALIBRATION
Energy(MEV) = 4.074 + (0.0046)*Channel
Energy range (MeV): 4.074 TO 6.429
Efficiency = 0.0132 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	27425.0	100.000
Smoothed	27425.0	100.000
Composite fit	27848.4	101.544
Residuals	-423.4	-1.544

Analyzed by: EMB 12-1-95


Spectrum 25a2571.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc
Display Max.: 6927.6

Raw Data Dump for AEA Spectrum: 25a2571.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
21	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
31	0.	0.	1.	0.	0.	0.	0.	0.	1.	0.
41	0.	0.	1.	0.	0.	1.	0.	0.	0.	0.
51	0.	2.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	2.	1.	0.	2.	1.	1.	0.	1.
71	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	0.	0.	0.	2.	0.	1.	0.	0.
91	1.	1.	1.	0.	0.	1.	1.	0.	1.	2.
101	0.	0.	0.	0.	1.	0.	0.	3.	0.	1.
111	0.	3.	1.	0.	0.	1.	0.	0.	0.	1.
121	0.	2.	1.	0.	1.	1.	0.	0.	2.	1.
131	0.	1.	1.	0.	0.	3.	0.	0.	0.	1.
141	1.	0.	2.	3.	1.	1.	1.	0.	3.	3.
151	2.	1.	2.	0.	2.	2.	1.	1.	3.	0.
161	1.	3.	2.	1.	1.	1.	2.	2.	4.	0.
171	2.	0.	1.	4.	0.	1.	2.	2.	2.	2.
181	1.	3.	0.	10.	5.	7.	2.	3.	3.	6.
191	10.	7.	5.	11.	6.	9.	13.	10.	14.	25.
201	12.	29.	24.	27.	37.	27.	28.	40.	58.	58.
211	69.	90.	95.	113.	131.	182.	214.	248.	290.	332.
221	427.	501.	493.	595.	591.	694.	744.	885.	975.	1172.
231	1249.	1268.	1272.	1029.	833.	449.	221.	85.	28.	9.
241	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.
251	0.	0.	1.	3.	0.	0.	0.	0.	0.	0.
261	1.	0.	2.	1.	0.	1.	0.	2.	2.	0.
271	1.	1.	2.	2.	1.	0.	1.	0.	0.	2.
281	1.	0.	2.	1.	2.	2.	2.	2.	3.	3.
291	6.	3.	5.	5.	3.	6.	11.	10.	8.	3.
301	12.	10.	9.	12.	16.	12.	14.	18.	13.	3.
311	3.	3.	3.	1.	2.	3.	1.	3.	3.	2.
321	4.	6.	5.	3.	4.	3.	4.	5.	6.	5.
331	11.	15.	18.	17.	18.	14.	27.	34.	21.	36.
341	37.	45.	45.	69.	77.	99.	134.	145.	183.	217.
351	278.	277.	356.	398.	452.	506.	516.	479.	517.	582.
361	647.	702.	742.	831.	819.	755.	623.	336.	125.	31.
371	1.	0.	2.	0.	1.	2.	1.	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	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	1.	0.								

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
WORKLIST3748-BLK
File ID: 26a2676.CNF

Counted on: 11/30/95 @23:30
Detector: AEA26
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	596.6	596.6	364.042	364.042	10.000	2.910	5.000	1.268

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	1.017	5.755	5.762	-.007	0.01	16.17	2.2	833.2	0.375E-03
	Cm243		5.779	5.762	0.017				1118.6	0.504E-03
Totals:		1.017	<--valid peaks only-->				16.17			

DETECTOR CALIBRATION
Energy(MEV) = 4.087 + (0.0046)*Channel
Energy range (MeV): 4.087 TO 6.442
Efficiency = 0.0198 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	7631.0	100.000
Smoothed	7630.5	99.993
Composite fit	7761.5	101.711
Residuals	-130.5	-1.711

Analyzed by: EMB 12-1-95

Spectrum 26a2676.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc
Display Max.: 3787.9
1
.. 1
..... 1
.....1..
.....1
.....1...

Raw Data Dump for AEA Spectrum: 26a2676.CNF

1	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
61	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	0.	0.	0.	0.	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.	1.	0.	0.	0.	0.	0.	0.	0.	1.
121	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
131	0.	1.	0.	0.	1.	1.	0.	0.	0.	0.
141	0.	0.	0.	0.	0.	0.	0.	1.	0.	3.
151	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
161	1.	0.	0.	0.	0.	1.	0.	0.	0.	1.
171	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
181	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
191	0.	0.	0.	0.	0.	1.	1.	0.	1.	1.
201	0.	0.	0.	0.	1.	0.	0.	1.	1.	0.
211	0.	0.	0.	0.	1.	0.	0.	1.	1.	1.
221	2.	0.	0.	2.	1.	0.	1.	4.	1.	1.
231	2.	3.	3.	3.	2.	1.	0.	0.	0.	0.
241	1.	0.	0.	2.	0.	0.	0.	0.	0.	0.
251	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
261	2.	0.	0.	0.	2.	0.	0.	0.	2.	0.
271	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
281	1.	1.	0.	0.	0.	0.	1.	0.	0.	0.
291	0.	0.	0.	2.	0.	2.	1.	1.	2.	1.
301	2.	4.	4.	1.	6.	3.	5.	3.	4.	2.
311	1.	0.	0.	1.	0.	1.	0.	1.	2.	2.
321	0.	1.	0.	1.	3.	3.	1.	0.	6.	3.
331	7.	4.	5.	6.	9.	6.	9.	5.	17.	18.
341	9.	16.	26.	40.	40.	59.	53.	67.	94.	111.
351	148.	181.	240.	297.	339.	340.	275.	277.	291.	386.
361	432.	537.	647.	714.	725.	561.	360.	119.	20.	2.
371	1.	0.	0.	0.	0.	0.	1.	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

SAMPLE
S95T3710-SAM
File ID: 27a2766.CNF

Counted on: 11/30/95 @23:31
Detector: AEA27
Geometry number: 1
Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1354.5	1354.5	365.801	365.801	10.000	2.340	5.000	1.355
2	1341.4	1341.4	307.788	307.787	10.000	2.385	5.000	1.425
3	6348.9	6348.9	233.509	233.509	10.000	3.136	5.000	2.490
4?	19.7	19.7	153.193	153.193	20.000	10.264	10.000	6.169

PEAK RESULTS
Peak Error Limit: 30%

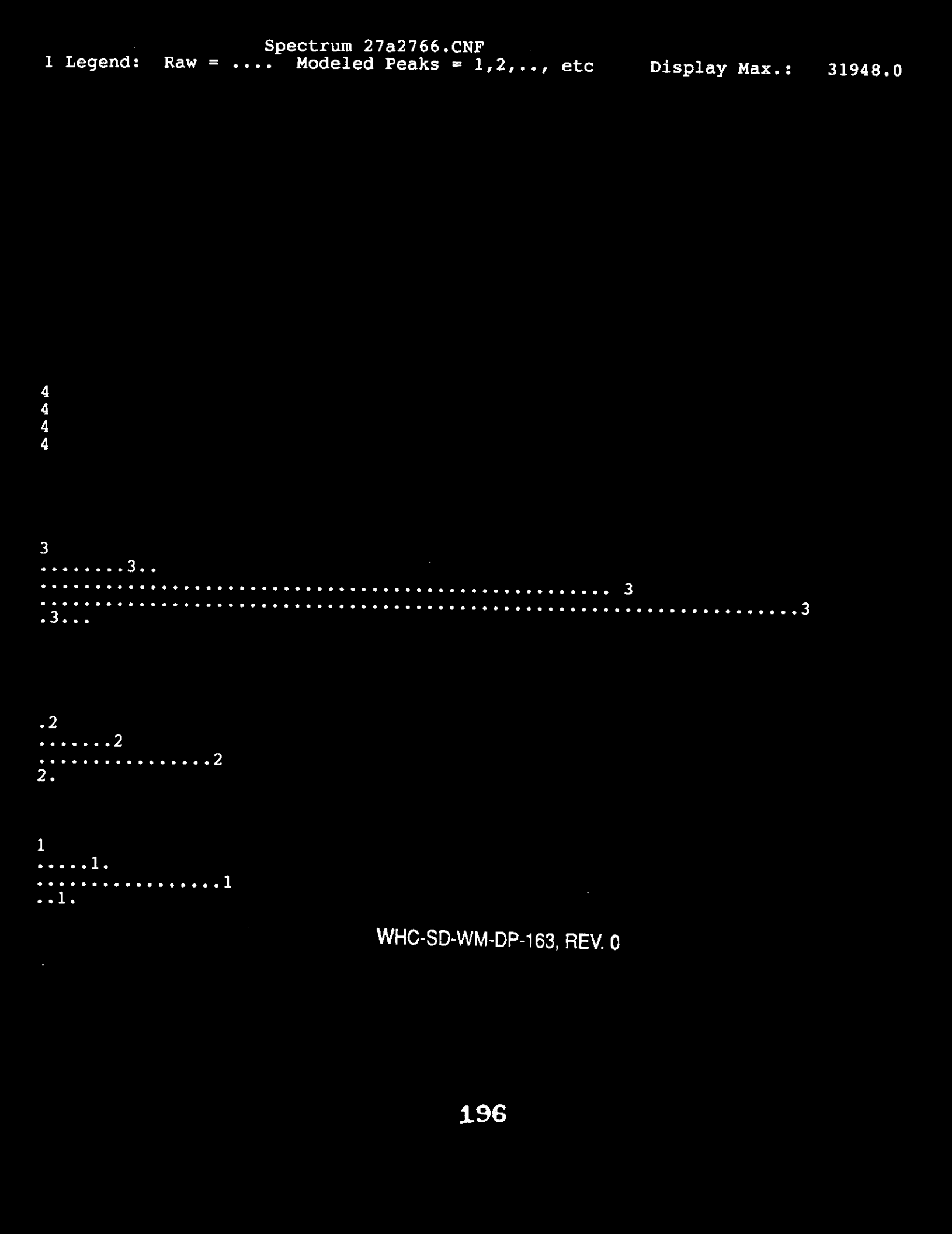
Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.153	5.755	5.760	-.0050.01		29.83	1.6	1681.7	0.758E-03
	Cm243		5.779	5.760	0.019				2257.6	0.102E-02
2	Pu238	0.149	5.487	5.494	-.0070.01		29.19	1.7	2239.9	0.101E-02
	Am241		5.479	5.494	-.015				1715.7	0.773E-03
3	Pu239	0.675	5.147	5.152	-.0050.01		131.98	0.8	7291.7	0.328E-02
	Pu240		5.144	5.152	-.008				7291.7	0.328E-02
4		????		4.782			0.68	10.9		
Totals:		0.977	<--valid peaks only-->				191.00			

DETECTOR CALIBRATION
Energy(MEV) = 4.078 + (0.0046)*Channel
Energy range (MeV): 4.078 TO 6.433
Efficiency = 0.0181 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	93856.0	100.000
Smoothed	93856.9	100.001
Composite fit	92007.7	98.031
Residuals	1848.3	1.969

Analyzed by: EMB 12-1-95


Spectrum 27a2766.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc
Display Max.: 31948.0
4
4
4
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..... 3
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2.
1
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Raw Data Dump for AEA Spectrum: 27a2766.CNF

1	0.	0.	1.	0.	1.	0.	1.	1.	1.	0.
11	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	1.	0.	0.	1.	1.	1.	1.	0.	1.	0.
51	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
61	0.	0.	0.	0.	2.	0.	0.	0.	0.	0.
71	0.	0.	1.	1.	0.	1.	0.	1.	0.	2.
81	0.	2.	1.	1.	0.	0.	1.	1.	0.	3.
91	0.	0.	1.	0.	0.	2.	2.	2.	1.	0.
101	1.	0.	0.	1.	0.	1.	0.	0.	1.	1.
111	0.	0.	2.	1.	1.	1.	1.	0.	2.	2.
121	3.	3.	6.	0.	0.	2.	4.	5.	4.	1.
131	6.	1.	1.	1.	2.	1.	5.	4.	5.	3.
141	2.	3.	4.	1.	7.	5.	10.	12.	14.	14.
151	12.	28.	26.	16.	20.	14.	15.	10.	9.	10.
161	3.	13.	7.	3.	6.	6.	5.	4.	3.	4.
171	5.	7.	5.	8.	2.	4.	4.	3.	2.	3.
181	3.	4.	3.	4.	2.	4.	5.	10.	10.	7.
191	12.	4.	8.	8.	14.	11.	14.	19.	13.	18.
201	25.	19.	17.	36.	23.	32.	50.	48.	54.	55.
211	71.	87.	113.	128.	150.	169.	237.	357.	376.	568.
221	831.	972.	1213.	1347.	1381.	1588.	1904.	2370.	2993.	4177.
231	5247.	6739.	7688.	8071.	6887.	4534.	2413.	1239.	513.	155.
241	21.	1.	0.	0.	1.	0.	2.	1.	2.	0.
251	1.	1.	0.	0.	3.	0.	1.	0.	1.	1.
261	2.	0.	1.	1.	4.	0.	2.	2.	1.	4.
271	6.	4.	3.	3.	1.	5.	9.	6.	11.	8.
281	12.	8.	10.	13.	18.	14.	12.	24.	28.	40.
291	59.	87.	101.	134.	183.	271.	394.	507.	570.	602.
301	560.	517.	567.	652.	875.	1150.	1593.	1759.	1595.	1045.
311	441.	76.	11.	2.	3.	1.	0.	1.	0.	0.
321	0.	1.	3.	3.	2.	1.	4.	4.	5.	7.
331	6.	5.	5.	8.	12.	7.	4.	10.	10.	10.
341	11.	13.	12.	19.	18.	29.	37.	51.	72.	92.
351	119.	160.	253.	359.	536.	579.	626.	520.	439.	420.
361	534.	662.	895.	1213.	1535.	1775.	1662.	1032.	419.	104.
371	11.	2.	0.	1.	1.	0.	0.	0.	0.	0.
381	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	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

SAMPLE
S95T3710-DUP
File ID: 28a2873.CNF

Counted on: 11/30/95 @23:32
Detector: AEA28
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1225.1	1225.1	358.886	358.886	10.000	2.602	5.000	1.260
2	1225.1	1225.1	300.594	300.593	10.000	2.793	5.000	1.383
3	5691.0	5691.0	226.061	226.061	12.000	3.503	6.000	2.168
4?	19.2	19.2	146.295	146.292	12.000	10.289	6.000	5.197

PEAK RESULTS
Peak Error Limit: 30%

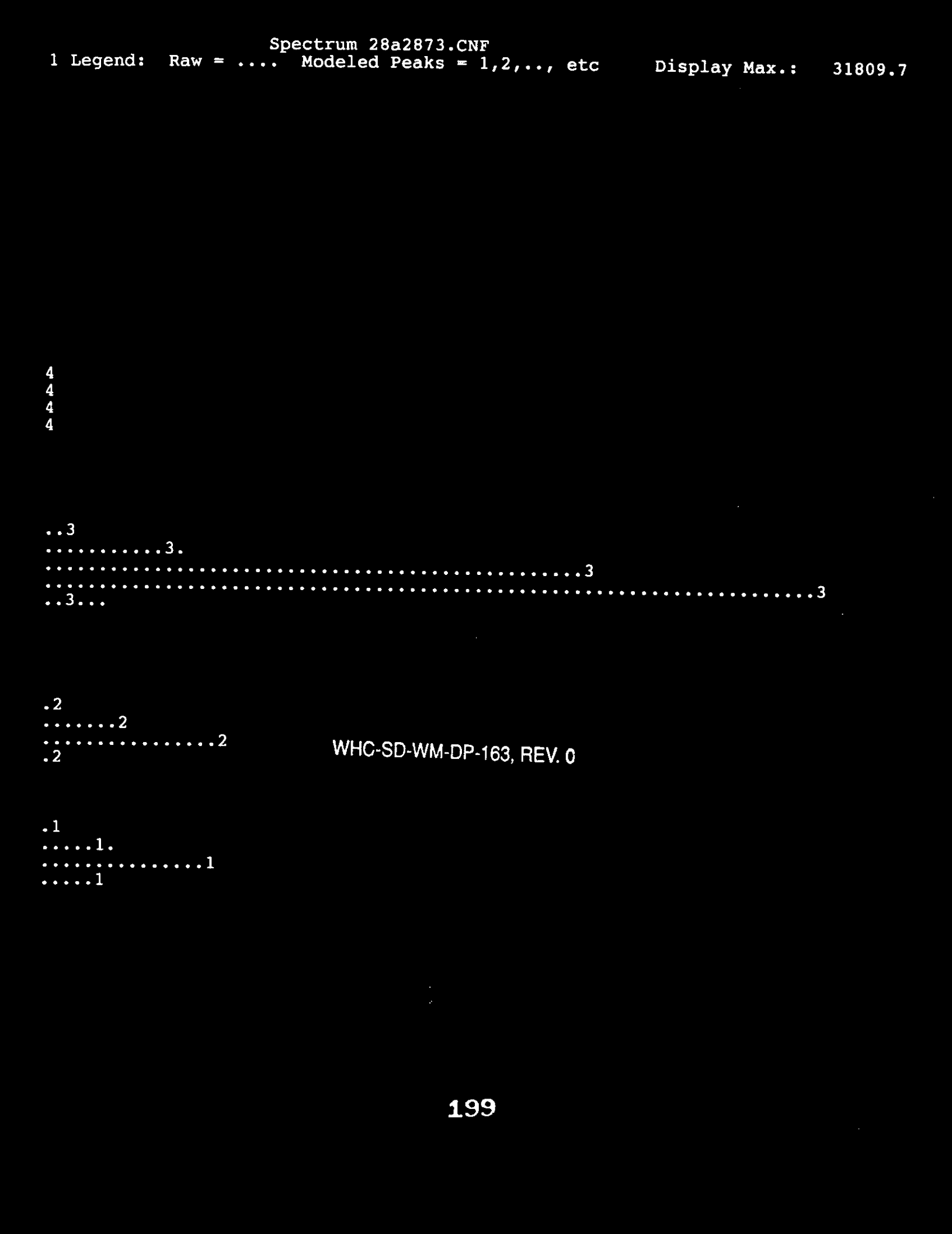
Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.155	5.755	5.764	-.0090	.01	30.50	1.6	306.9	0.138E-03
	Cm243		5.779	5.764	0.015				412.1	0.186E-03
2	Pu238	0.155	5.487	5.495	-.0080	.01	30.59	1.6	419.0	0.189E-03
	Am241		5.479	5.495	-.016				320.9	0.145E-03
3	Pu239	0.683	5.147	5.153	-.0060	.02	134.81	0.8	1329.5	0.599E-03
	Pu240		5.144	5.153	-.009				1329.5	0.599E-03
4		????		4.786			0.69	10.8		
Totals:		0.992	<--valid peaks only-->				195.91			

DETECTOR CALIBRATION
Energy(MEV) = 4.113 + (0.0046)*Channel
Energy range (MeV): 4.113 TO 6.468
Efficiency = 0.1014 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	94764.0	100.000
Smoothed	94763.5	99.999
Composite fit	94376.1	99.591
Residuals	387.9	0.409

Analyzed by: EMB 12-1-95


Spectrum 28a2873.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc
Display Max.: 31809.7
4
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Raw Data Dump for AEA Spectrum: 28a2873.CNF

1	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
11	0.	1.	0.	0.	1.	0.	1.	0.	0.	0.
21	0.	0.	2.	1.	0.	0.	1.	0.	1.	0.
31	0.	0.	0.	0.	0.	0.	2.	0.	0.	0.
41	1.	0.	0.	0.	0.	0.	1.	0.	1.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	1.	2.	1.	0.	0.	0.	0.	0.
71	1.	2.	1.	0.	0.	0.	0.	0.	0.	1.
81	0.	0.	1.	1.	1.	0.	0.	0.	0.	1.
91	0.	1.	1.	0.	0.	0.	2.	2.	0.	1.
101	1.	3.	1.	1.	0.	2.	2.	1.	2.	0.
111	1.	6.	3.	3.	0.	3.	3.	1.	2.	0.
121	3.	1.	1.	3.	0.	2.	4.	5.	3.	5.
131	5.	2.	3.	5.	7.	5.	7.	12.	5.	8.
141	13.	17.	19.	20.	20.	14.	27.	13.	22.	8.
151	9.	6.	6.	4.	7.	16.	7.	3.	2.	3.
161	6.	5.	1.	6.	3.	3.	1.	2.	5.	1.
171	5.	9.	5.	6.	7.	7.	5.	13.	6.	3.
181	3.	3.	7.	5.	13.	13.	17.	7.	18.	24.
191	21.	20.	23.	28.	32.	39.	45.	48.	48.	82.
201	80.	99.	116.	140.	136.	200.	209.	298.	324.	448.
211	564.	631.	821.	1048.	1321.	1529.	1744.	1885.	2124.	2505.
221	2974.	3621.	4432.	5395.	6468.	6768.	6746.	5444.	3596.	1916.
231	893.	344.	82.	8.	2.	0.	0.	1.	0.	1.
241	0.	0.	0.	0.	0.	0.	2.	0.	0.	4.
251	1.	2.	1.	0.	0.	2.	2.	1.	2.	5.
261	2.	0.	4.	5.	9.	6.	8.	7.	7.	7.
271	12.	9.	16.	7.	18.	27.	28.	35.	44.	39.
281	58.	62.	77.	86.	117.	158.	189.	257.	337.	436.
291	521.	631.	638.	643.	568.	670.	760.	907.	1181.	1429.
301	1527.	1406.	938.	415.	134.	21.	2.	0.	0.	2.
311	1.	0.	1.	1.	0.	2.	2.	2.	4.	2.
321	2.	3.	8.	9.	7.	13.	9.	7.	10.	11.
331	8.	14.	15.	26.	25.	30.	33.	44.	49.	59.
341	73.	106.	129.	173.	218.	313.	353.	474.	564.	600.
351	609.	489.	520.	579.	750.	881.	1045.	1344.	1567.	1435.
361	1072.	523.	134.	25.	3.	1.	2.	1.	2.	1.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	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

SAMPLE
S95T3711-SAM
File ID: 29a2954.CNF

Counted on: 11/30/95 @23:32
Detector: AEA29
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	1067.9	1067.9	362.631	362.631	10.000	3.344	5.000	1.361
2	1104.2	1104.2	304.574	304.572	10.000	3.308	5.000	1.385
3	5358.1	5358.1	230.167	230.167	12.000	4.077	6.000	2.189
4?	23.4	23.4	148.656	148.652	22.000	12.497	11.000	7.307

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.153	5.755	5.752	0.003	0.02	31.00	1.6	3811.7	0.172E-02
2	Pu238	0.156	5.487	5.485	0.002	0.02	31.46	1.6	5264.3	0.237E-02
	Am241		5.479	5.485	-.006				4032.2	0.182E-02
3	Pu239	0.698	5.147	5.143	0.004	0.02	141.00	0.8	16987.5	0.765E-02
	Pu240		5.144	5.143	0.001				16987.5	0.765E-02
4		????		4.768			0.88	9.6		
Totals:		1.007	<--valid peaks only-->				203.46			

DETECTOR CALIBRATION
Energy(MEV) = 4.084 + (0.0046)*Channel
Energy range (MeV): 4.084 TO 6.440
Efficiency = 0.0083 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	97017.0	100.000
Smoothed	97017.0	100.000
Composite fit	98085.2	101.101
Residuals	-1068.2	-1.101

Analyzed by: EMB 12-1-95

Spectrum 29a2954.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc
Display Max.: 35744.2
4
4
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1
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Raw Data Dump for AEA Spectrum: 29a2954.CNF

1	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
11	0.	0.	0.	2.	1.	0.	1.	0.	1.	0.
21	0.	0.	2.	1.	0.	1.	0.	0.	1.	2.
31	0.	0.	0.	0.	1.	0.	0.	0.	0.	1.
41	0.	1.	1.	2.	1.	0.	1.	2.	1.	1.
51	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.
61	0.	2.	0.	1.	1.	1.	0.	0.	1.	0.
71	0.	1.	0.	1.	3.	0.	1.	0.	1.	0.
81	3.	0.	1.	2.	0.	0.	0.	1.	2.	2.
91	1.	3.	1.	0.	0.	1.	1.	0.	0.	1.
101	1.	2.	1.	0.	1.	1.	3.	3.	2.	3.
111	2.	2.	2.	1.	2.	3.	4.	0.	1.	4.
121	5.	3.	6.	3.	5.	2.	1.	1.	3.	1.
131	3.	4.	1.	2.	4.	2.	6.	7.	5.	12.
141	8.	9.	9.	22.	17.	18.	23.	30.	27.	24.
151	17.	18.	19.	14.	13.	15.	8.	12.	10.	4.
161	3.	6.	5.	6.	2.	7.	9.	3.	2.	6.
171	6.	4.	2.	7.	2.	4.	5.	4.	5.	8.
181	5.	7.	8.	11.	8.	2.	4.	10.	11.	11.
191	10.	8.	9.	17.	18.	25.	21.	30.	33.	32.
201	42.	52.	52.	68.	94.	107.	137.	147.	174.	219.
211	267.	352.	431.	524.	658.	780.	964.	1160.	1434.	1670.
221	1855.	2047.	2459.	2827.	3331.	3720.	4469.	5140.	5851.	6183.
231	6205.	5413.	3902.	2470.	1220.	577.	200.	42.	13.	3.
241	0.	1.	1.	1.	0.	0.	0.	0.	3.	1.
251	3.	1.	2.	0.	0.	3.	1.	0.	1.	4.
261	2.	1.	2.	4.	3.	3.	2.	2.	6.	6.
271	4.	7.	6.	15.	6.	16.	12.	20.	18.	22.
281	27.	37.	45.	50.	65.	67.	94.	109.	137.	186.
291	237.	317.	354.	451.	558.	644.	673.	690.	683.	694.
301	816.	903.	1116.	1207.	1317.	1212.	964.	525.	190.	37.
311	4.	0.	2.	1.	1.	0.	3.	2.	2.	2.
321	4.	4.	2.	1.	2.	4.	3.	11.	5.	12.
331	8.	16.	17.	10.	18.	11.	22.	20.	25.	46.
341	45.	48.	64.	98.	114.	128.	155.	230.	249.	303.
351	411.	483.	544.	622.	583.	596.	606.	674.	753.	897.
361	1046.	1216.	1242.	1220.	911.	548.	218.	36.	4.	0.
371	1.	0.	1.	2.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	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.	1.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
S95T3711-DUP
File ID: 30a3078.CNF

Counted on: 11/30/95 @23:33
Detector: AEA30
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	888.5	888.5	359.558	359.558	10.000	2.900	5.000	1.026
2	929.3	929.3	301.494	301.489	10.000	3.057	5.000	1.105
3	4463.9	4463.9	227.138	227.137	12.000	3.580	6.000	1.592
4	47.2	47.2	146.448	146.419	130.000	1.000	65.000	0.100

PEAK RESULTS
Peak Error Limit: 30%

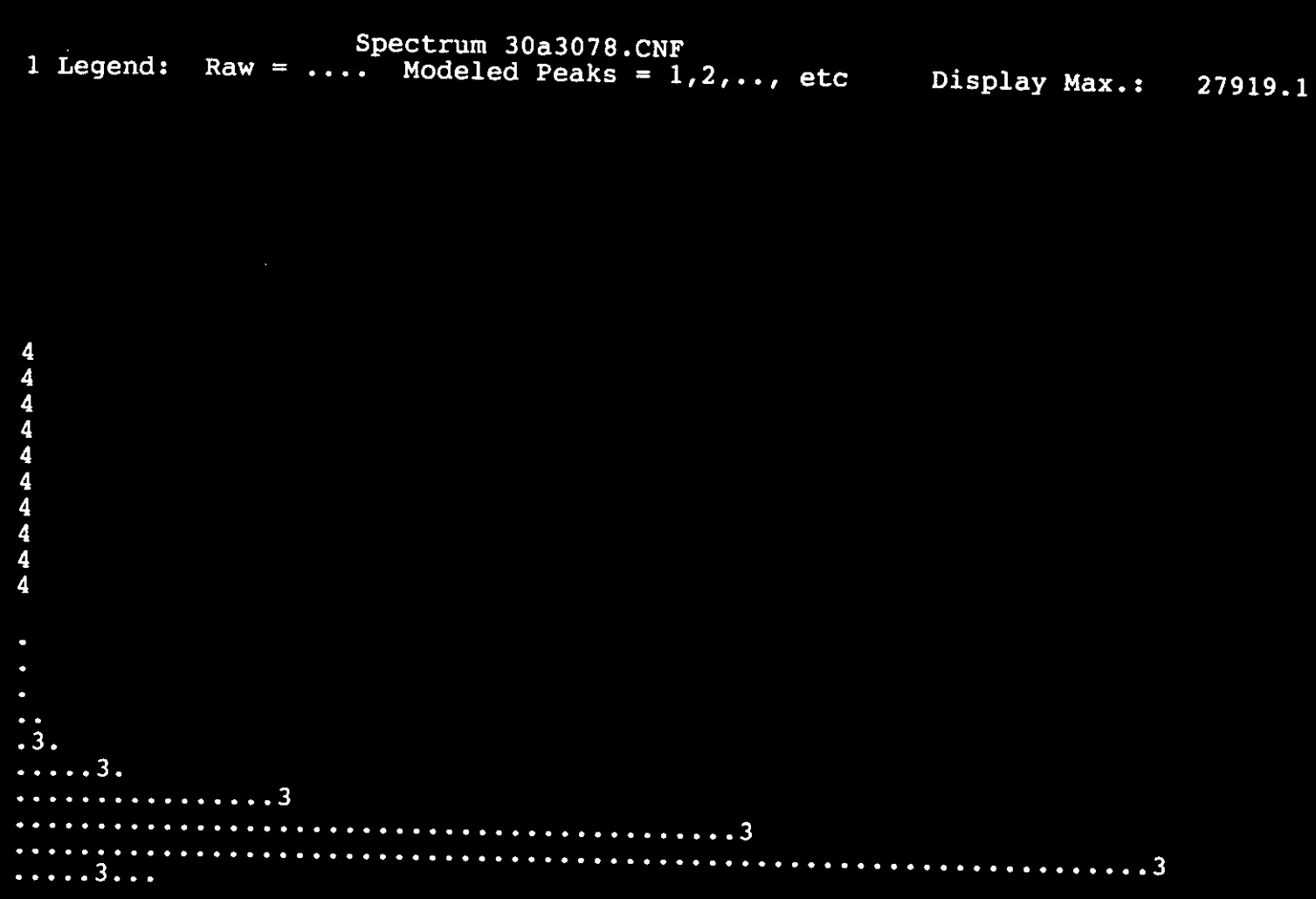
Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.141	5.755	5.757	-.002	0.01	27.41	1.7	244.9	0.110E-03
2	Pu238	0.147	5.487	5.490	-.003	0.01	28.55	1.7	347.2	0.156E-03
	Am241		5.479	5.490	-.011				265.9	0.120E-03
3	Pu239	0.642	5.147	5.148	-.001	0.02	125.02	0.8	1094.7	0.493E-03
	Pu240		5.144	5.148	-.004				1094.7	0.493E-03
4	Np237	0.019	4.769	4.777	-.008	0.00	3.73	4.6	37.6	0.169E-04
Totals:		0.949	<--valid peaks only-->				184.71			

DETECTOR CALIBRATION
Energy(MEV) = 4.103 + (0.0046)*Channel
Energy range (MeV): 4.103 TO 6.459
Efficiency = 0.1142 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	93457.0	100.000
Smoothed	93461.8	100.005
Composite fit	88663.5	94.871
Residuals	4793.5	5.129

Analyzed by: EMB 12-1-95


Spectrum 30a3078.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc
Display Max.: 27919.1
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Raw Data Dump for AEA Spectrum: 30a3078.CNF

1	0.	0.	6.	6.	5.	6.	5.	9.	4.	6.
11	5.	3.	8.	3.	3.	6.	3.	8.	7.	7.
21	4.	7.	9.	9.	4.	7.	6.	10.	8.	5.
31	5.	9.	7.	6.	5.	4.	8.	6.	5.	4.
41	5.	6.	7.	10.	8.	3.	5.	4.	4.	5.
51	5.	10.	4.	8.	7.	10.	11.	7.	7.	9.
61	7.	5.	9.	13.	8.	11.	10.	11.	11.	8.
71	10.	14.	3.	10.	9.	9.	12.	8.	11.	10.
81	9.	8.	8.	6.	6.	11.	15.	13.	7.	16.
91	15.	9.	16.	14.	15.	11.	14.	21.	12.	16.
101	9.	13.	18.	17.	11.	14.	17.	12.	15.	17.
111	14.	16.	17.	18.	20.	22.	15.	18.	20.	30.
121	21.	21.	27.	21.	26.	19.	21.	22.	27.	32.
131	26.	31.	24.	27.	26.	32.	30.	44.	38.	36.
141	34.	50.	36.	49.	48.	53.	46.	51.	46.	37.
151	29.	38.	35.	53.	50.	43.	45.	43.	47.	51.
161	53.	53.	50.	52.	45.	55.	48.	49.	57.	56.
171	67.	59.	70.	72.	70.	72.	67.	85.	82.	88.
181	83.	75.	114.	98.	109.	134.	125.	135.	137.	111.
191	143.	148.	173.	153.	184.	189.	236.	220.	251.	259.
201	270.	276.	359.	375.	384.	485.	478.	528.	611.	639.
211	676.	869.	935.	1142.	1279.	1466.	1548.	1703.	1984.	2062.
221	2201.	2596.	3095.	3600.	4167.	4699.	5311.	5161.	4464.	3057.
231	1605.	793.	328.	97.	20.	12.	12.	14.	23.	9.
241	17.	18.	15.	12.	9.	25.	22.	23.	20.	20.
251	21.	17.	19.	22.	26.	25.	32.	25.	25.	32.
261	22.	21.	26.	26.	30.	41.	37.	34.	49.	47.
271	55.	57.	58.	60.	72.	80.	92.	106.	102.	85.
281	117.	125.	150.	163.	158.	217.	211.	233.	292.	391.
291	469.	514.	510.	548.	556.	565.	599.	648.	794.	877.
301	1082.	1088.	1103.	705.	341.	102.	25.	12.	26.	13.
311	14.	19.	20.	23.	16.	23.	23.	16.	29.	17.
321	29.	31.	32.	34.	37.	40.	37.	42.	56.	36.
331	42.	56.	59.	72.	74.	71.	80.	100.	95.	122.
341	135.	161.	171.	205.	241.	229.	324.	376.	463.	516.
351	539.	520.	451.	489.	486.	636.	732.	864.	951.	1086.
361	1010.	724.	305.	98.	11.	3.	1.	1.	1.	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.	1.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

LABCORE Completed Worklist Report for Worklist# 4306

Analyst: akl **Instrument:** PU01 **Book#** 104643

Method: LA-943-127 Rev/Mod B-1

Worklist Comment: Use 0.1 mL sample size. --LLF WHC-SD-WM-DP-163, REV. 0

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@PU23901 PU23901	SOLID	1.28E-01	1.13E-1	88.280	% Recovery
1	STD		0		@PU23901 PU23901T	SOLID	100	4.15E+01	41.500	% Recovery
1	STD		0		@PU23901 PU23901E	SOLID	1	3.09E+00	3.090	% Ct. Error
2	BLNK-PREP		0		@PU23901 PU23901	SOLID	1	<3.90E-2		uCi/g
2	BLNK-PREP		0		@PU23901 PU23901T	SOLID	100	3.58E+01	35.800	% Recovery
2	BLNK-PREP		0		@PU23901 PU23901E	SOLID	1	1.00E+02	100.000	% Ct. Error
3	SAMPLE	S95T003768	0	F	@PU23901 PU23901	SOLID	N/A	5.36E-01	3.540e-002	uCi/g
3	SAMPLE	S95T003768	0	F	@PU23901 PU23901T	SOLID	N/A	8.80E+01	1.000e-007	% Recovery
3	SAMPLE	S95T003768	0	F	@PU23901 PU23901E	SOLID	N/A	2.11E+00	0.000	% Ct. Error
4	DUP	S95T003768	0	F	@PU23901 PU23901	SOLID	5.36E-1	5.89E-1	9.420	RPD
4	DUP	S95T003768	0	F	@PU23901 PU23901T	SOLID	100	6.72E+01	67.200	% Recovery
4	DUP	S95T003768	0	F	@PU23901 PU23901E	SOLID	1.00	2.36E+00	2.360	% Ct. Error

Final page for worklist# 4306

Analyst Signature Date

Analyst Signature Date

28 Dec 95

Reviewer Signature Date

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

12/15/95 14:40
A-0004-1

LABCORE Data Entry Template for Worklist# 4306

Analyst: AKL **Instrument:** PU01 **Book#** 104643

Method: LA-943-127 Rev/Mod B-1 WHC-SD-WM-DP-163, REV. 0

Worklist Comment: Use 0.1 mL sample size. --LLF

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@PU23901	SOLID		
2	BLNK-PREP				@PU23901	SOLID		
3	SAMPLE	S95T003768	0	F	@PU23901	SOLID	95000189	TX-244 GRAB
	Analytes Requested: PU23901 , PU23901E, PU23901T							
4	DUP	S95T003768	0	F	@PU23901	SOLID		

Final page for worklist # 4306

C Lewis 12/24/95
Analyst Signature **Date**

S E Hogan 12/27/95
Analyst Signature **Date**

MG Nelson 12/27/95

Data Entry Comments: AKL Rapped Jmv dropped

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

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-127 (B-1) LIQUID

Type					
STD	DATE COUNTED		DEC-24-95	PU 236 AEA FRAC (C236)	0.458
Work List	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC (C238)	0.000
4306	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC (C239)	0.538
Test Code	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	2997
@PU23901	DIGEST DILUTION FACTOR	DDF	1.000	AT COUNT TIME (MIN)	30
Matrix	TRACER BOOK NO		117B43	BACKGROUND in cpm (Bkg)	4.000
LIQUID	DETECTOR NUMBER		1	PU 236 cpm	15.490
Batch Number	EFFICIENCY FACTOR	EFF	0.500	PU 238 cpm	0.000
95004826	TRACER PREPARATION DATE		09/12/95	PU 239 cpm	18.190
Rerun	TRACER PREPARATION VALUE (dpm/mL)		2265.000	AEA COUNT TIME	480
0	PU-236 DECAY CORR'D VALUE (dpm/mL)		2114.861	Pu 239/240 µCi/L	1.1302E+02
Sample Prep	PU-238 TRACER VALUE (dpm/mL		0.000		
N/A	STANDARD BOOK NO		104B43		
Sample #	STANDARD VALUE in µCi/mL		0.128		
WL#4306					
Instrument Code					
AL10539					
Prepared By					
SEH					
Chemist					
LLF					
Analyst					
AKL					
Date Complete					
12/27/95					
Analysis Date					
12/24/95					
Analysis Time					
10:00 AM					
Sample Point					
TX-244 GRAB					

Decay Time = Date Counted - Tracer Preparation Date

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

Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)* 1/EFF *C236*100/Pu-236 Decay Corr'd Value * SPKV

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

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)

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

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

v RESULTS v

Pu 239/240 µCi/mL	1.13E-01	DETECTION LEVELS in µCi/mL
Relative Counting Error =	3.1%	Pu 239/240 1.52E-02
Pu 236 Tracer Recovery =	41.5%	

Analyst: AKL Date: 27-Dec-95

Signature of Chemist: LLF Date: 28 Dec 95

STANDARD.WB1 REV 1.2 943127ML

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-127 (B-1) LIQUID / SOLID

Type
BLNK-PREP
Work List
4306
Test Code
@PU23901
Matrix
SOLID
Batch Number
95004826
Rerun
0
Sample Prep
N/A
Sample #
WL#4306
Instrument Code
AL10540
Prepared By
SEH
Chemist
LLF
Analyst
AKL
Date Complete
12/27/95
Analysis Date
12/24/95
Analysis Time
10:00 AM
Sample Point
TX-244 GRAB

DATE COUNTED		DEC-24-95
SAMPLE VOLUME in mL	SS	0.100
SAMPLE DILUTION FACTOR	DF	1.000
TRACER VOLUME in mL	SPKV	0.100
DIGEST GRAMS of SOLIDS/L	Dg/L	2.0540
TRACER BOOK NO		117B43
DETECTOR NUMBER		2
EFFICIENCY FACTOR	EFF	0.5000
TRACER PREPARATION DATE		09/12/95
TRACER PREPARATION VALUE (dpm/mL)		2265.00
PU-236 DECAY CORR'D VALUE (dpm/mL)		2114.86
PU-238 TRACER VALUE (dpm/mL)		0.00

	BLNK-PREP
PU 236 AEA FRAC (C236)	0.996
PU 238 AEA FRAC (C238)	0.000
PU 239 AEA FRAC (C239)	0.000
TOTAL AT COUNTS	1231
AT COUNT TIME (MIN)	30
BACKGROUND in cpm (Bkg)	3.000
PU 236 cpm	12.500
PU 238 cpm	0.000
PU 239 cpm	0.000
AEA COUNT TIME	480
Pu 239/240 µCi/g = <	**3.900E-02**

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

v RESULTS v

Pu 239/240 µCi/g	**< 3.90E-02**	**DETECTION LEVELS in µCi/g**
Relative Counting Error	**= 100.0%**	
NOTE: Pu 238 Result is a LESS THAN Value.		**Pu 239/240 3.90E-02**
Pu 238 µCi/g	**< 3.90E-02**	
Relative Counting Error	**= 100.0%**	**Pu 238 3.90E-02**
Pu 236 Tracer Recovery	**= 35.8%**	

Analyst:	AKL	Date:	27-Dec-95
Signature of Chemist:	LLF	Date:	28 Dec 95

BLANK.WB1 REV 1.2 943127ML

WORKBOOK PAGE: SAM3

WHC-SD-WM-DP-163, REV. 0

Pu 238 and 239/240 : LA-943-127 (B-1) LIQUID / SOLID

						SAMPLE
Type	DATE COUNTED		DEC-24-95	PU 236 AEA FRAC	(C236)	0.446
SAMPLE	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.029
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.515
4306	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		6440
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	2.0540	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		117B43	BACKGROUND in cpm	(Bkg)	6.000
Matrix	DETECTOR NUMBER		3	PU 236 cpm		33.420
SOLID	EFFICIENCY FACTOR	EFF	0.500	PU 238 cpm		2.190
Batch Number	TRACER PREPARATION DATE		09/12/95	PU 239 cpm		38.680
95004826	TRACER PREPARATION VALUE (dpm/mL)		2265.000	AEA COUNT TIME		480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2114.861	Pu 239/240 µCi/g		5.3555E-01
1	PU-238 TRACER VALUE (dpm/mL)		0.000			
Sample Prep						
FUSION01						

Sample #
S95T003768
Instrument Code
AL10541
Prepared By
SEH
Chemist
LLF
Analyst
AKL
Date Complete
12/27/95
Analysis Date
12/24/95
Analysis Time
10:00 AM
Sample Point
TX-244 GRAB

Decay Time = Date Counted - Tracer Preparation Date

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

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

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

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)

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

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

v RESULTS v

			DETECTION LEVELS in µCi/g
Pu 239/240 µCi/g		5.36E-01	
Relative Counting Error	=	2.1%	
NOTE: Pu 238 Result is a LESS THAN Value.			Pu 239/240 3.54E-02
Pu 238 µCi/g		< 3.54E-02	
Relative Counting Error	=	6.2%	Pu 238 3.54E-02
Pu 236 Tracer Recovery	=	88.0%	

Analyst:	AKL	Date:	27-Dec-95
Signature of Chemist:	LLF	Date:	28 Dec 95

SAMPLE.WB1 REV 1.2 943127ML

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-127 (B-1) LIQUID / SOLID

Type						DUP
DUP	DATE COUNTED		DEC-24-95	PU 236 AEA FRAC	(C236)	0.427
Work List	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.032
4306	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.541
Test Code	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		5085
@PU23901	DIGEST GRAMS of SOLIDS/L	Dg/L	2.0480	AT COUNT TIME (MIN)		30
Matrix	TRACER BOOK NO		117B43	BACKGROUND in cpm	(Bkg)	3.000
SOLID	DETECTOR NUMBER		2	PU 236 cpm		25.760
Batch Number	EFFICIENCY FACTOR	EFF	0.500	PU 238 cpm		1.950
95004826	TRACER PREPARATION DATE		09/12/95	PU 239 cpm		32.660
Rerun	TRACER PREPARATION VALUE (dpm/mL)		2265.000	AEA COUNT TIME		480
1	PU-236 DECAY CORR'D VALUE (dpm/mL)		2114.861	Pu 239/240 µCi/g		5.8934E-01
Sample Prep	PU-238 TRACER VALUE (dpm/mL)		0.000			
FUSION01						

Sample #: S95T003768

Instrument Code: AL10540

Prepared By: SEH

Chemist: LLF

Analyst: AKL

Date Complete: 12/27/95

Analysis Date: 12/24/95

Analysis Time: 10:00 AM

Sample Point: TX-244 GRAB

Decay Time = Date Counted - Tracer Preparation Date

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

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

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

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)

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

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

v RESULTS v

			DETECTION LEVELS in µCi/g
Pu 239/240 µCi/g		5.89E-01	
Relative Counting Error	=	2.4%	
NOTE: Pu 238 Result is a LESS THAN Value.			Pu 239/240 4.86E-02
Pu 238 µCi/g		< 4.86E-02	
Relative Counting Error	=	6.6%	Pu 238 4.86E-02
Pu 236 Tracer Recovery	=	67.2%	

Analyst: AKL Date: 27-Dec-95

Signature of Chemist: LLF Date: 28 Dec 95

SAMPLE.WB1 REV 1.2 943127ML

Westinghouse Hanford Co.

G E N E 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
WL4306-STD
File ID: 13a1347.CNF

Counted on: 12/24/95 @12:29
Detector: AEA13
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	593.9	593.9	359.758	359.758	10.000	3.309	5.000	1.624
2?	10.5	10.5	302.231	302.197	8.000	2.116	4.000	0.914
3	804.0	804.0	226.827	226.827	10.000	3.671	5.000	2.648

PEAK RESULTS
Peak Error Limit: 30%

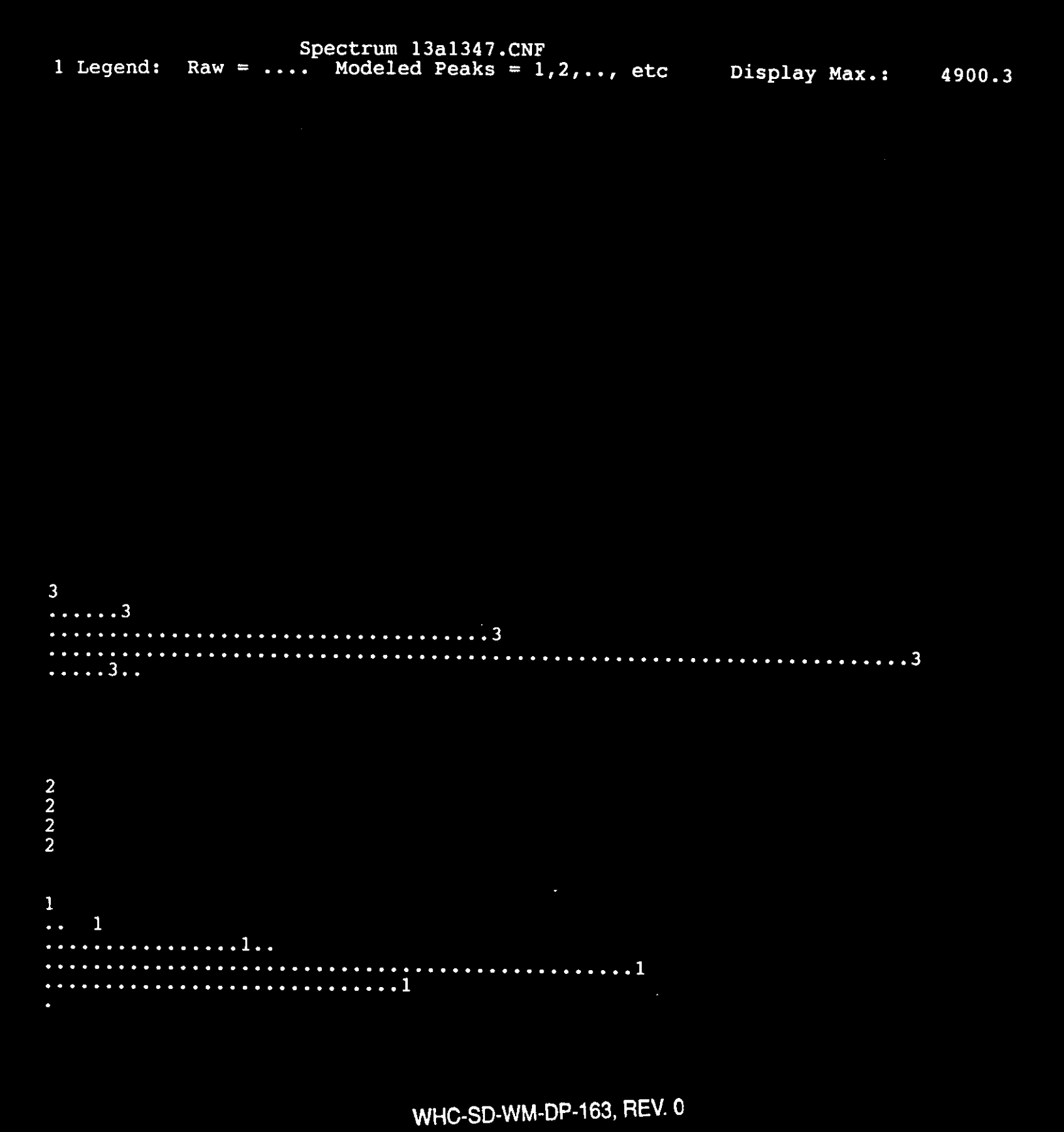
Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.458	5.755	5.759	-.004	0.02	15.49	2.3	162.3	0.731E-04
	Cm243		5.779	5.759	0.020				217.9	0.981E-04
2		????		5.495			0.27	17.7		
3	Pu239	0.538	5.147	5.148	-.001	0.02	18.19	2.1	186.8	0.841E-04
	Pu240		5.144	5.148	-.004				186.8	0.841E-04
Totals:		0.997	<--valid peaks only-->				33.68			

DETECTOR CALIBRATION
Energy(MEV) = 4.104 + (0.0046)*Channel
Energy range (MeV): 4.104 TO 6.460
Efficiency = 0.0974 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	16221.0	100.000
Smoothed	16221.0	100.000
Composite fit	16298.2	100.476
Residuals	-77.2	-0.476

Analyzed by: EMB


Spectrum 13a1347.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc
Display Max.: 4900.3

Raw Data Dump for AEA Spectrum: 13a1347.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
61	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
71	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
91	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
111	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
121	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
131	0.	0.	0.	0.	0.	2.	0.	0.	0.	0.
141	2.	0.	0.	0.	0.	0.	1.	0.	2.	0.
151	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.
161	0.	0.	0.	0.	0.	1.	2.	0.	0.	0.
171	0.	0.	0.	1.	1.	1.	0.	1.	1.	0.
181	2.	1.	0.	1.	2.	0.	1.	1.	2.	1.
191	2.	2.	0.	3.	1.	2.	2.	1.	3.	5.
201	4.	6.	6.	8.	3.	8.	10.	16.	20.	34.
211	52.	50.	80.	111.	118.	147.	181.	198.	254.	277.
221	339.	387.	549.	675.	812.	919.	989.	886.	705.	497.
231	236.	122.	61.	13.	2.	1.	0.	0.	1.	0.
241	0.	0.	0.	0.	3.	0.	1.	0.	0.	0.
251	1.	2.	1.	1.	0.	0.	1.	0.	1.	1.
261	1.	0.	0.	0.	0.	0.	0.	2.	0.	0.
271	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
281	0.	0.	0.	0.	2.	1.	2.	3.	3.	6.
291	2.	2.	3.	9.	5.	4.	8.	4.	8.	7.
301	13.	9.	16.	11.	4.	2.	1.	0.	0.	0.
311	0.	1.	0.	1.	0.	0.	1.	0.	1.	1.
321	1.	2.	0.	1.	2.	0.	5.	2.	1.	2.
331	1.	4.	3.	3.	6.	2.	7.	4.	9.	13.
341	18.	29.	41.	48.	70.	105.	147.	202.	244.	267.
351	296.	268.	261.	297.	327.	364.	477.	600.	689.	703.
361	678.	526.	333.	124.	40.	7.	1.	2.	0.	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	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.	1.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Raymond

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
WL4306-BKK
File ID: 14a1453.CNF

Counted on: 12/24/95 @12:30
Detector: AEA14
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	477.4	477.4	361.198	361.198	12.000	3.345	6.000	1.636

PEAK RESULTS
Peak Error Limit: 30%

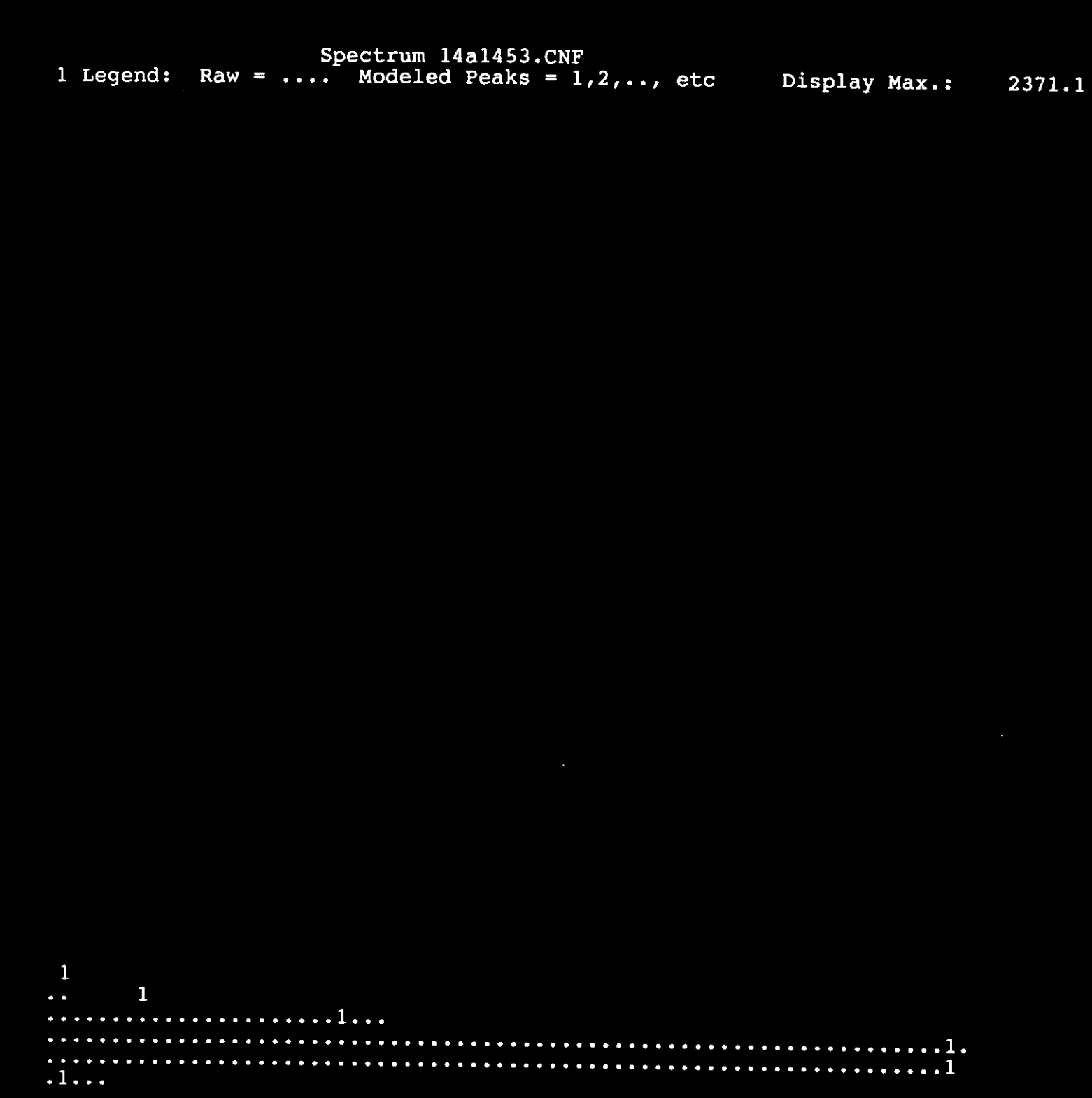
Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.996	5.755	5.752	0.003	0.02	12.50	2.5	668.0	0.301E-03
Totals:		0.996	<--valid peaks only-->				12.50			

DETECTOR CALIBRATION
Energy(MEV) = 4.091 + (0.0046)*Channel
Energy range (MeV): 4.091 TO 6.446
Efficiency = 0.0191 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	6026.0	100.000
Smoothed	6026.0	100.000
Composite fit	6002.2	99.605
Residuals	23.8	0.395

Analyzed by: EMB


Spectrum 14a1453.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc
Display Max.: 2371.1

Raw Data Dump for AEA Spectrum: 14a1453.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.	1.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	0.	0.	0.	1.	0.	1.	1.	0.	0.
81	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
91	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
111	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
121	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
131	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
141	0.	0.	0.	0.	0.	0.	1.	2.	0.	1.
151	1.	1.	1.	1.	0.	0.	1.	0.	0.	0.
161	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
171	1.	0.	0.	0.	0.	0.	0.	1.	2.	0.
181	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
191	1.	0.	0.	0.	0.	0.	0.	0.	0.	2.
201	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
211	1.	2.	0.	1.	1.	2.	0.	1.	3.	2.
221	3.	0.	2.	4.	7.	2.	7.	4.	4.	4.
231	6.	0.	0.	0.	0.	1.	0.	1.	0.	2.
241	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
251	0.	0.	0.	1.	1.	1.	0.	1.	1.	0.
261	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
271	1.	0.	0.	0.	1.	0.	0.	0.	0.	0.
281	0.	0.	0.	0.	0.	1.	0.	2.	0.	1.
291	3.	0.	2.	3.	2.	1.	3.	0.	2.	4.
301	0.	1.	2.	1.	2.	2.	3.	0.	0.	0.
311	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
321	0.	0.	1.	1.	2.	2.	0.	5.	1.	2.
331	2.	2.	3.	8.	2.	3.	10.	6.	8.	4.
341	6.	16.	18.	32.	33.	57.	70.	100.	158.	173.
351	190.	231.	255.	206.	219.	262.	290.	354.	464.	499.
361	552.	593.	477.	327.	174.	57.	12.	0.	0.	0.
371	1.	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.	1.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Raymond

Westinghouse Hanford Co.

G E N E 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
3768-SAM
File ID: 15a1535.CNF

Counted on: 12/24/95 @12:31
Detector: AEA15
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	1485.3	1485.3	361.946	361.946	10.000	2.600	5.000	1.517
2	100.7	100.7	303.344	303.341	8.000	2.518	4.000	1.540
3	1825.3	1825.3	227.994	227.994	10.000	3.457	5.000	2.883

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.446	5.755	5.773	-.018	0.01	33.42	1.5	309.2	0.139E-03
	Cm243		5.779	5.773	0.006				415.0	0.187E-03
2	Pu238	0.029	5.487	5.504	-.017	0.01	2.19	6.1	27.6	0.124E-04
	Am241		5.479	5.504	-.025				21.2	0.953E-05
3	Pu239	0.515	5.147	5.157	-.010	0.02	38.58	1.4	349.8	0.158E-03
	Pu240		5.144	5.157	-.013				349.8	0.158E-03
Totals:		0.991	<--valid peaks only-->				74.20			

DETECTOR CALIBRATION
Energy(MEV) = 4.108 + (0.0046)*Channel
Energy range (MeV): 4.108 TO 6.464
Efficiency = 0.1103 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	35956.0	100.000
Smoothed	35956.0	100.000
Composite fit	35616.9	99.057
Residuals	339.1	0.943

Analyzed by: EMB

Spectrum 15a1535.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc
Display Max.: 11726.3

Raw Data Dump for AEA Spectrum: 15a1535.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
31	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
61	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
81	1.	0.	1.	0.	0.	0.	0.	2.	0.	0.
91	1.	0.	1.	0.	0.	0.	0.	1.	1.	0.
101	0.	0.	0.	0.	0.	1.	1.	0.	2.	0.
111	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
121	0.	0.	0.	0.	0.	1.	0.	0.	0.	2.
131	2.	0.	0.	0.	0.	0.	0.	1.	0.	0.
141	1.	1.	3.	1.	3.	2.	1.	2.	1.	3.
151	3.	0.	0.	0.	0.	0.	0.	0.	0.	2.
161	2.	0.	0.	0.	0.	0.	1.	0.	0.	0.
171	0.	0.	2.	1.	0.	0.	0.	0.	1.	0.
181	2.	1.	0.	0.	0.	1.	3.	1.	0.	1.
191	0.	3.	4.	1.	5.	6.	2.	3.	5.	5.
201	9.	8.	8.	14.	15.	15.	17.	24.	22.	34.
211	59.	59.	101.	132.	200.	240.	289.	328.	344.	436.
221	449.	654.	806.	1034.	1437.	1759.	2131.	2284.	2090.	1629.
231	1151.	585.	303.	120.	42.	10.	1.	1.	0.	0.
241	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
251	0.	0.	0.	2.	1.	0.	1.	1.	0.	0.
261	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
271	1.	1.	0.	0.	0.	2.	0.	2.	0.	0.
281	0.	0.	2.	0.	2.	4.	1.	6.	11.	11.
291	13.	20.	27.	38.	44.	44.	34.	40.	55.	57.
301	88.	101.	118.	136.	104.	63.	18.	2.	1.	2.
311	0.	0.	1.	1.	0.	1.	0.	0.	0.	1.
321	1.	0.	1.	0.	4.	2.	2.	2.	3.	6.
331	6.	8.	3.	4.	7.	12.	4.	9.	16.	10.
341	18.	32.	30.	32.	58.	87.	122.	186.	308.	401.
351	480.	628.	636.	611.	475.	459.	593.	738.	1033.	1320.
361	1677.	1912.	1784.	1286.	669.	213.	59.	7.	2.	0.
371	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	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.								

Raymond

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
3768-DUP
File ID: 16a1623.CNF

Counted on: 12/24/95 @12:31
Detector: AEA16
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1096.4	1096.4	363.590	363.590	10.000	2.816	5.000	1.569
2	88.0	88.0	305.593	305.590	8.000	2.405	4.000	1.396
3	1469.4	1469.4	231.083	231.083	12.000	3.630	6.000	2.728

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.427	5.755	5.765	-.010	0.01	25.76	1.8	1946.8	0.877E-03
	Cm243		5.779	5.765	0.014				2613.6	0.118E-02
2	Pu238	0.032	5.487	5.498	-.011	0.01	1.95	6.4	200.5	0.903E-04
	Am241		5.479	5.498	-.019				153.5	0.692E-04
3	Pu239	0.541	5.147	5.155	-.008	0.02	32.66	1.6	2419.0	0.109E-02
	Pu240		5.144	5.155	-.011				2419.0	0.109E-02
Totals:		1.000	<--valid peaks only-->				60.36			

DETECTOR CALIBRATION
Energy(MEV) = 4.093 + (0.0046)*Channel
Energy range (MeV): 4.093 TO 6.448
Efficiency = 0.0135 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	28985.0	100.000
Smoothed	28985.0	100.000
Composite fit	28976.6	99.971
Residuals	8.4	0.029

Analyzed by: EMB

Spectrum 16a1623.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc
Display Max.: 8597.5
..3
.............3.
.....3
.....3
..
2
..2
..2
1
.....1
.....1
.....1
...1..

Raw Data Dump for AEA Spectrum: 16a1623.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
31	0.	0.	0.	0.	1.	0.	0.	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.	1.	0.
71	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
91	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
101	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
111	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
121	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
131	1.	0.	0.	1.	0.	0.	0.	0.	0.	1.
141	0.	0.	0.	0.	0.	1.	1.	1.	1.	3.
151	2.	0.	2.	0.	2.	1.	0.	0.	0.	0.
161	1.	0.	0.	0.	0.	1.	0.	0.	0.	1.
171	1.	0.	0.	0.	1.	1.	1.	0.	0.	0.
181	0.	1.	1.	1.	0.	1.	1.	0.	0.	2.
191	1.	1.	0.	2.	1.	3.	3.	3.	0.	1.
201	6.	3.	4.	3.	3.	5.	7.	5.	11.	12.
211	10.	30.	29.	46.	62.	86.	111.	169.	201.	248.
221	303.	373.	370.	445.	569.	694.	903.	1218.	1410.	1655.
231	1798.	1670.	1448.	910.	543.	274.	122.	32.	4.	1.
241	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
251	1.	0.	0.	0.	1.	0.	0.	0.	0.	1.
261	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
271	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
281	1.	0.	0.	0.	1.	1.	1.	2.	1.	4.
291	7.	13.	18.	18.	19.	36.	31.	43.	38.	44.
301	37.	57.	56.	74.	96.	135.	77.	65.	25.	7.
311	3.	1.	0.	0.	0.	0.	0.	0.	0.	1.
321	1.	1.	1.	2.	0.	2.	1.	2.	4.	5.
331	3.	3.	0.	2.	2.	3.	4.	6.	2.	6.
341	7.	10.	11.	20.	20.	34.	46.	81.	115.	175.
351	252.	344.	406.	497.	461.	443.	399.	405.	491.	656.
361	858.	1108.	1335.	1370.	1220.	872.	381.	128.	19.	2.
371	0.	1.	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.	1.	0.	0.	0.	0.	0.
431	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

LABCORE Completed Worklist Report for Worklist# 4045

Analyst: pjm **Instrument:** U01 **Book#** 148852

Method: LA-925-009 Rev/Mod A-1

Worklist Comment: 1-10 ML SAMPLE PREP / 0.1 ML SPIKE / JLS

Seq	Type	Sample#	R	A		Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@U-01	U-02	SOLID	8.44E-02	7.63E-02	90.400	% Recovery
2	BLNK-PREP		0		@U-01	U-02	SOLID	1	5.70E+00	5.700	ug/g
3	SAMPLE	S95T003768	0	F	@U-01	U-02	SOLID	N/A	2.04E+03	1.080	ug/g
3	SAMPLE	S95T003768	0	F	@U-01	U-02E	SOLID	N/A	3.09E+00	0.000	% Inst Error
4	DUP	S95T003768	0	F	@U-01	U-02	SOLID	2.04E+03	2.06E+03	0.980	RPD
5	SPK	S95T003768	0	F	@U-01	U-02	SOLID	5.69E+01	5.58E+01	98.070	% Recovery

Final page for worklist# 4045

Analyst Signature Date

Analyst Signature Date

Reviewer Signature 12/13/95 Date

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

LABCORE Data Entry Template for Worklist# 4045

Analyst: RJ McCown **Instrument:** U01 _____ **Book#** 148852

Method: LA-925-009 Rev/Mod A-1

Worklist Comment: 1-10 ML SAMPLE PREP / 0.1 ML SPIKE / JLS

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@U-01	SOLID		
2	BLNK-PREP				@U-01	SOLID		
3	SAMPLE	S95T003768	0	F	@U-01	SOLID	95000189	TX-244 GRAB
	Analytes Requested:				U-02	, U-02E		
4	DUP	S95T003768	0	F	@U-01	SOLID		
5	SPK	S95T003768	0	F	@U-01	SOLID		

Final page for worklist# 4045

RJ McCown 12/7/95
Analyst Signature **Date**

Emile Conlin 12/8/95
Analyst Signature **Date**

Data Entry Comments:

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

WORKBOOK PAGE: STD1

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type
STD
Work List
4045
Test Code
@U-01
Matrix
LIQUID
Batch Number
95004551
Rerun #
0
Sample Prep
N/A
Sample #
148B52
Instrument Code
U01
Prepared By
LC
Chemist
JLS
Analyst
PJM
Date Complete
12/12/95
Analysis Date
12/07/95
Analysis Time
04:55 AM
Sample Point
TX-244 GRAB

		STANDARD
STANDARD BOOK #		148B52
VOLUME OF SAMPLE (mL)	(SS)	1.00
DILUTION FACTOR OF SAMPLE	(DF)	1.00
PREPARATION FACTOR OF SAMPLE	(PF)	1.00
LIFETIME IN MICROSECONDS		265.00
R2 VALUE		0.9999
RANGE (HIGH OR LOW)		HIGH
INSTRUMENT UNCERTAINTY	(IU)	2.33E-06
INSTRUMENT RESULT	(IR)	7.63E-05
DETECTION LEVEL (µg/mL)		3.70E-05
RESULT (µg/mL)		7.63E-02
VALUE OF STANDARD		8.44E-02
%RECOVERY		90.40
RELATIVE % UNCERTAINTY		3.1

Result = DF * PF * IR * 1000

Detection Level = 3.70 E-08 * DF * PF * 1000

% Recovery = Result / Value of Standard * 100

Relative % Uncertainty = IU / IR * 100

Analyst:	PJM	Date:	12-Dec-95
Signature of Chemist:	JLS	Date:	12/13/95

STANDARD.WB1 REV 1.2 925009ML

WORKBOOK PAGE: BLANK2

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type
BLNK-PREP
Work List
4045
Test Code
@U-01
Matrix
SOLID
Batch Number
95004551
Rerun
0
Sample Prep
N/A
Sample #
BLANK-PREP
Instrument Code
U01
Prepared By
LC
Chemist
JLS
Analyst
PJM
Date Complete
12/12/95
Analysis Date
12/07/95
Analysis Time
04:55 AM
Sample Point
TX-244 GRAB

		BLANK
VOLUME OF SAMPLE (mL)	(SS)	1.00
DILUTION FACTOR OF SAMPLE	(DF)	1.00
PREPARATION FACTOR OF SAMPLE	(PF)	10.00
DIGEST FACTOR	(Dg/L)	2.0540
LIFETIME IN MICROSECONDS		254.00
R2 VALUE		0.9997
RANGE (HIGH OR LOW)		LOW
INSTRUMENT UNCERTAINTY	(IU)	1.28E-08
INSTRUMENT RESULT	(IR)	1.17E-06
DETECTION LEVEL µg/g		1.80E-01
CONCENTRATION IN SOLUTION (g/L)		1.17E-05
RESULT (µg/g)		5.70E+00
RELATIVE % UNCERTAINTY		1.1

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:		PJM	Date: 12-Dec-95
Signature of Chemist:		JLS	Date: 12/13/95

BLANK.WB1 REV 1.2 925009ML

WORKBOOK PAGE: SAM3

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Sample Type
SAMPLE
Work List
4045
Test Code
@U-01
Matrix
SOLID
Batch Number
95004551
Rerun
0
Sample Prep
FUSION01
Sample #
S95T003768
Instrument Code
U01
Prepared By
LC
Chemist
JLS
Analyst
PJM
Date Complete
12/12/95
Analysis Date
12/07/95
Analysis Time
04:55 AM
Sample Point
TX-244 GRAB

		SAMPLE
VOLUME OF SAMPLE (mL)	(SS)	1.00
DILUTION FACTOR OF SAMPLE	(DF)	6.00
PREPARATION FACTOR OF SAMPLE	(PF)	10.00
DIGEST FACTOR	(Dg/L)	2.0540
LIFETIME IN MICROSECONDS		208.00
R2 VALUE		0.9996
RANGE (HIGH OR LOW)		HIGH
INSTRUMENT UNCERTAINTY	(IU)	2.16E-06
INSTRUMENT RESULT	(IR)	7.00E-05
DETECTION LEVEL µg/g		1.08E+00
CONCENTRATION IN SOLUTION (g/L)		4.20E-03
RESULT (µg/g)		2.04E+03
RELATIVE % UNCERTAINTY		3.1

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:		PJM	Date: 12-Dec-95
Signature of Chemist:		JLS	Date: 12/13/95

SAMPLE.WB1 REV 1.2 925009ML

WORKBOOK PAGE: DUP4

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type
DUP
Work List
4045
Test Code
@U-01
Matrix
SOLID
Batch Number
95004551
Rerun
0
Sample Prep
FUSION01
Sample #
S95T003768
Instrument Code
U01
Prepared By
LC
Chemist
JLS
Analyst
PJM
Date Complete
12/12/95
Analysis Date
12/07/95
Analysis Time
04:55 AM
Sample Point
TX-244 GRAB

		DUP
VOLUME OF SAMPLE (mL)	(SS)	1.00
DILUTION FACTOR OF SAMPLE	(DF)	8.00
PREPARATION FACTOR OF SAMPLE	(PF)	10.00
DIGEST FACTOR	(Dg/L)	2.0480
LIFETIME IN MICROSECONDS		205.00
R2 VALUE		0.9997
RANGE (HIGH OR LOW)		HIGH
INSTRUMENT UNCERTAINTY	(IU)	2.15E-06
INSTRUMENT RESULT	(IR)	7.03E-05
DETECTION LEVEL µg/g		1.08E+00
CONCENTRATION IN SOLUTION (g/L)		4.22E-03
RESULT (µg/g)		2.06E+03
RELATIVE % UNCERTAINTY		3.1

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	PJM	Date:	12-Dec-95
Signature of Chemist:	JLS	Date:	12/13/95

SAMPLE.WB1 REV 1.2 925009ML

WORKBOOK PAGE: SPIKE5

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			SPIKE
SPK	SPIKE BOOK #		22B55
Work List	VOLUME OF SAMPLE + SPIKE (mL)	(SS)	1.00
4045	DILUTION FACTOR OF SAMPLE + SPIKE	(DF)	6.00
Test Code	PREPARATION FACTOR OF SAMPLE + SPIKE	(PF)	10.00
@U-01	DIGEST FACTOR OF SAMPLE	(DDF)	2.0540
Matrix	LIFETIME IN MICROSECONDS		209.00
SOLID	R2 VALUE		0.9997
Batch Number	RANGE (HIGH OR LOW)		HIGH
95004551	INSTRUMENT RESULT	(IR)	1.63E-04
Rerun	CONCENTRATION IN SOLUTION (g/L)	(CONC)	9.78E-03
0	SPIKE VALUE (g/L)	(SV)	5.69E-02
Sample Prep	INITIAL VOLUME OF SPIKE (mL)	(IV)	0.10
FUSION01	ORIGINAL SAMPLE VOLUME BEFORE PREP (mL)	(OSV)	1.00
Sample Number	CONCENTRATION IN SOLUTION (g/L) FROM SAMPLE FOR	(SR)	4.20E-03
S95T003768			
Instrument Code			
U01			
Prepared By			
LC			
Chemist			
JLS			
Analyst			
PJM			
Date Complete			
12/12/95			
Analysis Date			
12/07/95			
Analysis Time			
04:55 AM			
Sample Point			
TX-244 GRAB			

Concentration = IR * DF * PF

QC Actual (µg/mL) = SV (g/L) * 1000

QC Found (µg/mL) = (CONC - SR) * OSV / IV * 1000

% Recovery = QC FOUND / QC ACTUAL

QC ACTUAL	=	5.69E+01	µg/mL
QC FOUND	=	5.58E+01	µg/mL
% SPIKE RECOVERY	=	98.1%	

Analyst: PJM Date: 12-Dec-95

Signature of Chemist: JLS Date: 12/13/95

SPIKE.WB1 REV 1.2 925009ML

Uranium Data Collection Sheet

Download File Name: I:\935009\IN\4045.TXT Output Name: 4045

Spike Book Number: 22855 Spike Volume: .100 ML Date/Time: 12/7/95 0500

Sample Type	Sample Number	Sample Size	Preparation Factor	Dilution Factor	Digest Factor	Comments
STD		1ML	1	1	NA	
BLNK		1ML	10	1	2.0540	
SAM	595T003768	1ML	10	6	2.0540	
DUP	595T003768	1ML	10	6	2.0480	
SPK	595T003768	1ML	10	6	2.0540	
SAM						
DUP						
SPK						
SAM						
DUP						
SAM						
DUP						
SAM						

RJ McCown 12/7/95

Sample ID WL 4045 Date/Time 12/07/95/04:26:04
Description 148B52 STD Cal Y=9.12E+07X+847.008
Ref. Ratio 1.058 Intensity 6487 (t= 39 us)
Laser Pulses 500 Conc 7.63E-05 + 2.33E-06 G/L
Lifetime 265 + .499 us Dilution Factor 1 mL/mL
R2 .9999
Integrated 118990 FINAL RESULT 7.63E-05 + 2.33E-06 G/L
Range: HIGH 10ML TO 10ML PREP 1ML SAMPLE SIZE

Sample ID WL 4045 Date/Time 12/07/95/04:30:36
Description PREP BLANK Cal Y=9.12E+07X+847.008
Ref. Ratio 1.065 Intensity 93 (t= 39 us)
Laser Pulses 500 Conc -7.91E-06 + 3.29E-07 G/L
Lifetime 241 + 4.338 us Dilution Factor 1 mL/mL
R2 .9862
Integrated 1749 FINAL RESULT -7.91E-06 + 3.29E-07 G/L
Range: HIGH
Sample <= Blank

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Sample ID WL 4045 Date/Time 12/07/95/04:31:17
Description PREP BLANK Cal Y=7.98E+09X0
Ref. Ratio 1.047 Intensity 7627 (t= 39 us)
Laser Pulses 500 Conc 1.17E-06 + 1.28E-08 G/L
Lifetime 254 + .694 us Dilution Factor 1 mL/mL
R2 .9997
Integrated 136639 FINAL RESULT 1.17E-06 + 1.28E-08 G/L
Range: LOW 1ML TO 10ML PREP 1ML SAMPLE SIZE

Sample ID S95T003768 Date/Time 12/07/95/04:38:41
Description SAMPLELANK Cal Y=9.12E+07X+847.008
Ref. Ratio 1.075 Intensity 25802 (t= 39 us)
Laser Pulses 500 Conc 3.38E-04 + 1.36E-05 G/L
Lifetime 140 + 1.371 us Dilution Factor 1 mL/mL
R2 .9959
Integrated 250787 FINAL RESULT 3.38E-04 + 1.36E-05 G/L
Range: HIGH

RJM 12/7/95

Sample ID S95T003768 Date/Time 12/07/95/04:49:27
Description SAMPLE Cal Y=9.12E+07X+847.008
Ref. Ratio 1.09 Intensity 5674 (t= 39 us)
Laser Pulses 500 Conc 7.00E-05 + 2.16E-06 G/L
Lifetime 208 + .664 us Dilution Factor 1 mL/mL
R2 .9996
Integrated 87067 FINAL RESULT 7.00E-05 + 2.16E-06 G/L
Range: HIGH 1ML TO 10ML PREP 1ML - 5ML DILUTION 1ML SAMPLE SIZE

Sample ID S95T003768 Date/Time 12/07/95/04:51:55
Description DUPLICATE Cal Y=9.12E+07X+847.008
Ref. Ratio 1.095 Intensity 5741 (t= 39 us)
Laser Pulses 500 Conc 7.03E-05 + 2.15E-06 G/L
Lifetime 205 + .497 us Dilution Factor 1 mL/mL
R2 .9997
Integrated 86066 FINAL RESULT 7.03E-05 + 2.15E-06 G/L 1ML SAMPLE SIZE
Range: HIGH 1ML TO 10ML PREP 1ML - 5ML DILUTION

R J McCown
12/7/95

Sample ID S95T00376B
Description SPIKE
Ref. Ratio 1.092
Laser Pulses 500
Lifetime 209 + .522 us
R2 .9997
Integrated 190647
Range: HIGH

Date/Time 12/07/95/04:55:38
Cal Y=9.12E+07X+847.008
Intensity 12559 (t= 39 us)
Conc 1.63E-04 + 5.02E-06 G/L
Dilution Factor 1 mL/mL

FINAL RESULT 1.63E-04 + 5.02E-06 G/L

1ML TO 10ML PREP
+ .100 ML SPIKE # 22B55
1ML - 5ML DILUTION
1ML SAMPLE SIZE

DL McCown 12/7/95

Background Report

Background for HIGH Range — First Time Gate Used (sample) 4
Laser Pulses 500 — Date/Time 12/07/95/04:02:49

Reference		Sample	
Intensity	11687	Intensity	16
Lifetime	275.13 + .49 us		
R2	.99984		
Intercept	13911.06		

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Background Report

Background for LOW Range — First Time Gate Used (sample) 4
Laser Pulses 500 — Date/Time 12/07/95/04:03:54

Reference		Sample	
Intensity	11769	Intensity	539
Lifetime	274.31 + .58 us		
R2	.99981		
Intercept	14096.59		

Standard Report

Standard for HIGH Range - 9.90E-04 G/L
Laser Pulses 500 — Date/Time 12/07/95/04:06:43

Reference		Standard	
Intensity	12018	Intensity	50603
Lifetime	276.43 + .72 us	Lifetime	247.58 + .43 us
R2	.99969	R2	.9999
Intercept	14298.45	Intercept	90246.26 + 3.00E+02

Standard Report

Standard for HIGH Range - 4.98E-04 G/L
Laser Pulses 500 — Date/Time 12/07/95/04:09:41

Reference		Standard	
Intensity	12189	Intensity	40228
Lifetime	276.76 + .68 us	Lifetime	269.28 + .64 us
R2	.99974	R2	.9998
Intercept	14341.59	Intercept	47953.16 + 2.19E+02

Standard Report

Standard for LOW Range - 2.48E-06 G/L
Laser Pulses 500 — Date/Time 12/07/95/04:12:43

Reference		Standard	
Intensity	12069	Intensity	16274
Lifetime	274.73 + .69 us	Lifetime	261.74 + .32 us
R2	.99972	R2	.9999
Intercept	14414.98	Intercept	19788.32 + 1.41E+02

THE FOLLOWING ANALYSES ARE INCLUDED IN THE DATA PACKAGE BUT THE RESULTS HAVE NOT BEEN REPORTED IN THE FINAL SUMMARY REPORTS.

LABCORE Data Entry Template for Worklist# 3455

Analyst: SLH **Instrument:** PH01 **Book #** 110N16-H

Method: LA-212-102

WHC-SD-WM-DP-163, REV. 0

Worklist Comment: Herting pH

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STDPH				PH	QC	9.18	9.45	N/A	
95000192	HERTING	2 SAMPLE	S95R000046	0		PH-01	LIQUID	N/A	10.67	0.01	pH
95000192	HERTING	3 SAMPLE	S95R000045	0		PH-01	LIQUID	N/A	10.69	0.01	pH
95000196	HERTING	4 SAMPLE	S95R000051	0		PH-01	LIQUID	N/A	10.57	0.01	pH
95000196	HERTING	5 SAMPLE	S95R000052	0		PH-01	LIQUID	N/A	10.63	0.01	pH
95000189	TX-244 GRAB	6 SAMPLE	S95T003708	0		PH-01	LIQUID	N/A	10.31	0.01	pH
95000189	TX-244 GRAB	7 DUP	S95T003708	0		PH-01	LIQUID	SLH 10.31 ~~10.32~~ 12-18-95	10.32	N/A	pH
95000189	TX-244 GRAB	8 SAMPLE	S95T003709	0		PH-01	LIQUID	N/A	10.31	0.01	pH

Final page for worklist # 3455

Sandra L Hurd Boatright 12-17-95
Analyst Signature Date

Linda Conlin 12/19/95
Analyst Signature Date

R. WENDLAND 12-19-95

Results reviewed by Schroeder 12/20/95

DATA NOT USED IN PACKAGE

Data Entry Comments: SAMPLES 51 + 52 MT

Results rejected due to LCS failure RJ Schroeder 12/20/95

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 Completed Worklist Report for Worklist# 4038

Analyst: jmv **Instrument:** PU01 **Book#** 104B43

Method: LA-943-127 Rev/Mod B-1

WHC-SD-WM-DP-163, REV. 0

Worklist Comment: Determine sample size by Ludlum. --LLF

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@PU23901	PU23901 SOLID	1.28E-01	1.04E-1	81.250	% Recovery
1	STD		0		@PU23901	PU23901T SOLID	100	1.70E+00	1.700	% Recovery
1	STD		0		@PU23901	PU23901E SOLID	1	1.64E+01	16.400	% Ct. Error
2	BLNK-PREP		0		@PU23901	PU23901 SOLID	1	<1.41E-1		uCi/g
2	BLNK-PREP		0		@PU23901	PU23901T SOLID	100	5.70E+00	5.700	% Recovery
2	BLNK-PREP		0		@PU23901	PU23901E SOLID	1	1.00E+02	100.000	% Ct. Error
3	SAMPLE	S95T003768	0	F	@PU23901	PU23901 SOLID	N/A	1.30E+00	0.626	uCi/g
3	SAMPLE	S95T003768	0	F	@PU23901	PU23901T SOLID	N/A	1.92E+00	1.000e-007	% Recovery
3	SAMPLE	S95T003768	0	F	@PU23901	PU23901E SOLID	N/A	1.26E+01	0.000	% Ct. Error
4	DUP	S95T003768	0	F	@PU23901	PU23901 SOLID	1.30E+0	1.61E+0	21.310	RPD
4	DUP	S95T003768	0	F	@PU23901	PU23901T SOLID	100	1.54E+00	1.540	% Recovery
4	DUP	S95T003768	0	F	@PU23901	PU23901E SOLID	1.00	1.47E+01	14.700	% Ct. Error

Final page for worklist# 4038

Analyst Signature Date

Analyst Signature Date

15 Dec 95

Reviewer Signature Date

DATA NOT USED IN PACKAGE

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

LABCORE Data Entry Template for Worklist# 4038

Analyst: JW **Instrument:** PU01 **Book#** 104B43

Method: LA-943-127 Rev/Mod B-1 WHC-SD-WM-DP-163, REV. 0

Worklist Comment: Determine sample size by Ludlum. --LLF

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@PU23901	SOLID		
2	BLNK-PREP				@PU23901	SOLID		
3	SAMPLE	S95T003768	0	F	@PU23901	SOLID	95000189	TX-244 GRAB
		Analytes Requested: PU23901 , PU23901E, PU23901T						
4	DUP	S95T003768	0	F	@PU23901	SOLID		

Final page for worklist # 4038

[signature] 12/13/95
Analyst Signature Date

[signature] 12/12/95
Analyst Signature Date
Raymond 12.14.95
Verified SE Hogan 12/14/95

DATA
NOT USED
IN PACKAGE

Data Entry Comments:

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

WORKBOOK PAGE: STD1

WHC-SD-WM-DP-163, REV. 0

Pu 238 and 239/240 : LA-943-127 (B-1)

LIQUID

Type	DATE COUNTED		DEC-13-95	PU 236 AEA FRAC (C236)	STD 0.438
STD	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC (C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC (C239)	0.471
4038	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	244
Test Code	DIGEST DILUTION FACTOR	DDF	1.000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO		117B43	BACKGROUND in cpm (Bkg)	4.000
Matrix	DETECTOR NUMBER		2	PU 236 cpm	0.570
LIQUID	EFFICIENCY FACTOR	EFF	0.500	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE		09/12/95	PU 239 cpm	0.620
95004537	TRACER PREPARATION VALUE (dpm/mL)		2265.000	AEA COUNT TIME	480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2130.409	Pu 239/240 µCi/L	1.0423E+02
0	PU-238 TRACER VALUE (dpm/mL		0.000		
Sample Prep	STANDARD BOOK NO		104B43		
N/A	STANDARD VALUE in µCi/mL		0.128		
Sample #					
WL4038					
Instrument Code	Decay Time = Date Counted - Tracer Preparation Date				
AL10540	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]				
Prepared By	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)* 1/EFF *C236*100/Pu-236 Decay Corr'd Value * SPKV				
VAR	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(2220000 dpm/µCi)]				
Chemist	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)				
LLF	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]				
Analyst	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100				
JMV					
Date Complete	v RESULTS v				
12/14/95	Pu 239/240 µCi/mL		1.04E-01	DETECTION LEVELS in µCi/mL	
Analysis Date	Relative Counting Error	=	16.4%		
12/13/95				Pu 239/240	
Analysis Time				6.64E-02	
08:00 AM					
Sample Point					
TX-244 GRAB	Pu 236 Tracer Recovery	=	1.7%		

Analyst:	JMV	Date:	14-Dec-95
Signature of Chemist:	LLF	Date:	15 Dec 95

STANDARD.WB1 REV 1.2 943127ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-127 (B-1) LIQUID / SOLID

Type	DATE COUNTED		DEC-13-95	PU 236 AEA FRAC (C236)	BLNK-PREP
BLNK-PREP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC (C238)	0.995
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC (C239)	0.000
4038	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	0.000
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	2.0540	AT COUNT TIME (MIN)	333
@PU23901	TRACER BOOK NO		117B43	BACKGROUND in cpm (Bkg)	30
Matrix	DETECTOR NUMBER		3	PU 236 cpm	5.000
SOLID	EFFICIENCY FACTOR	EFF	0.5000	PU 238 cpm	2.200
Batch Number	TRACER PREPARATION DATE		09/12/95	PU 239 cpm	0.000
95004537	TRACER PREPARATION VALUE (dpm/mL)		2265.00	AEA COUNT TIME	0.000
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2130.41	AEA COUNT TIME	480
0	PU-238 TRACER VALUE (dpm/mL)		0.00	Pu 239/240 µCi/g = <	1.409E-01
Sample Prep					
N/A					

Sample #
WL4038
Instrument Code
AL10541
Prepared By
VAR
Chemist
LLF
Analyst
JMV
Date Complete
12/14/95
Analysis Date
12/13/95
Analysis Time
08:00 AM
Sample Point
TX-244 GRAB

Decay Time = Date Counted - Tracer Preparation Date

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

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

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

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)

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

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

v RESULTS v

			DETECTION LEVELS in µCi/g
Pu 239/240 µCi/g		< 1.41E-01	Pu 239/240
Relative Counting Error	=	100.0%	1.41E-01
NOTE: Pu 238 Result is a LESS THAN Value.			Pu 238
Pu 238 µCi/g		< 1.41E-01	1.41E-01
Relative Counting Error	=	100.0%	
Pu 236 Tracer Recovery	=	5.7%	

Analyst:	JMV	Date:	14-Dec-95
Signature of Chemist:	LLF	Date:	15 Dec 95

BLANK.WB1 REV 1.2 943127ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-127 (B-1) LIQUID / SOLID

Type						SAMPLE
SAMPLE	DATE COUNTED		DEC-13-95	PU 236 AEA FRAC	(C236)	0.224
Work List	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.000
4038	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.624
Test Code	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		394
@PU23901	DIGEST GRAMS of SOLIDS/L	Dg/L	2.0540	AT COUNT TIME (MIN)		30
Matrix	TRACER BOOK NO		117B43	BACKGROUND in cpm	(Bkg)	4.000
SOLID	DETECTOR NUMBER		2	PU 236 cpm		0.680
Batch Number	EFFICIENCY FACTOR	EFF	0.500	PU 238 cpm		0.000
95004537	TRACER PREPARATION DATE		09/12/95	PU 239 cpm		1.900
Rerun	TRACER PREPARATION VALUE (dpm/mL)		2265.000	AEA COUNT TIME		480
0	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2130.409	Pu 239/240 µCi/g		1.3015E+00
Sample Prep	PU-238 TRACER VALUE	(dpm/mL)	0.000			
FUSION01						

Sample #
S95T003768

Instrument Code
AL10540

Prepared By
VAR

Chemist
LLF

Analyst
JMV

Date Complete
12/14/95

Analysis Date
12/13/95

Analysis Time
08:00 AM

Sample Point
TX-244 GRAB

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

v RESULTS v

			DETECTION LEVELS in µCi/g
Pu 239/240 µCi/g		1.30E+00	
Relative Counting Error	=	12.6%	
NOTE: Pu 238 Result is a LESS THAN Value.			Pu 239/240 6.26E-01
Pu 238 µCi/g		< 6.26E-01	
Relative Counting Error	=	100.0%	Pu 238 6.26E-01
Pu 236 Tracer Recovery	=	1.9%	

Analyst:	JMV	Date:	14-Dec-95
Signature of Chemist:	LLF	Date:	15 Dec 95

SAMPLE.WB1 REV 1.2 943127ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-127 (B-1) LIQUID / SOLID

Type	DATE COUNTED		DEC-13-95	PU 236 AEA FRAC (C236)	DUP 0.203
DUP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC (C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC (C239)	0.696
4038	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	393
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	2.0480	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO		117B43	BACKGROUND in cpm (Bkg)	5.000
Matrix	DETECTOR NUMBER		3	PU 236 cpm	0.480
SOLID	EFFICIENCY FACTOR	EFF	0.500	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE		09/12/95	PU 239 cpm	1.640
95004537	TRACER PREPARATION VALUE (dpm/mL)		2265.000	AEA COUNT TIME	480
Return	PU-236 DECAY CORR'D VALUE (dpm/mL)		2130.409	Pu 239/240 µCi/g	1.6065E+00
0	PU-238 TRACER VALUE (dpm/mL)		0.000		
Sample Prep					
FUSION01					

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

Sample #	
S95T003768	
Instrument Code	
AL10541	
Prepared By	
VAR	
Chemist	
LLF	
Analyst	
JMV	
Date Complete	
12/14/95	
Analysis Date	
12/13/95	
Analysis Time	
08:00 AM	
Sample Point	
TX-244 GRAB	

v RESULTS v

			DETECTION LEVELS in µCi/g
Pu 239/240 µCi/g		1.61E+00	
Relative Counting Error	=	14.7%	
NOTE: Pu 238 Result is a LESS THAN Value.			Pu 239/240 6.92E-01
Pu 238 µCi/g		< 6.92E-01	
Relative Counting Error	=	100.0%	Pu 238 6.92E-01
Pu 236 Tracer Recovery	=	1.5%	

Analyst:	JMV	Date:	14-Dec-95
Signature of Chemist:	LLF	Date:	15 Dec 95

SAMPLE.WB1 REV 1.2 943127ML

DATA NOT USED IN PACKAGE

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-163, REV. 0

SAMPLE
WL4038-STD
File ID: 14a1435.CNF

Counted on: 12/13/95 @17: 0
Detector: AEA14
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	20.7	20.7	363.050	361.904	8.000	2.965	4.000	1.254
2	25.5	25.5	230.751	228.685	12.000	3.508	6.000	2.072

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.438	5.755	5.755	0.0000.01		0.57	11.8	47.2	0.213E-04
2	Pu239	0.471	5.147	5.142	0.0050.02		0.62	11.4	49.8	0.224E-04
	Pu240		5.144	5.142	0.002				49.8	0.224E-04
Totals:		0.909	<--valid peaks only-->				1.19			

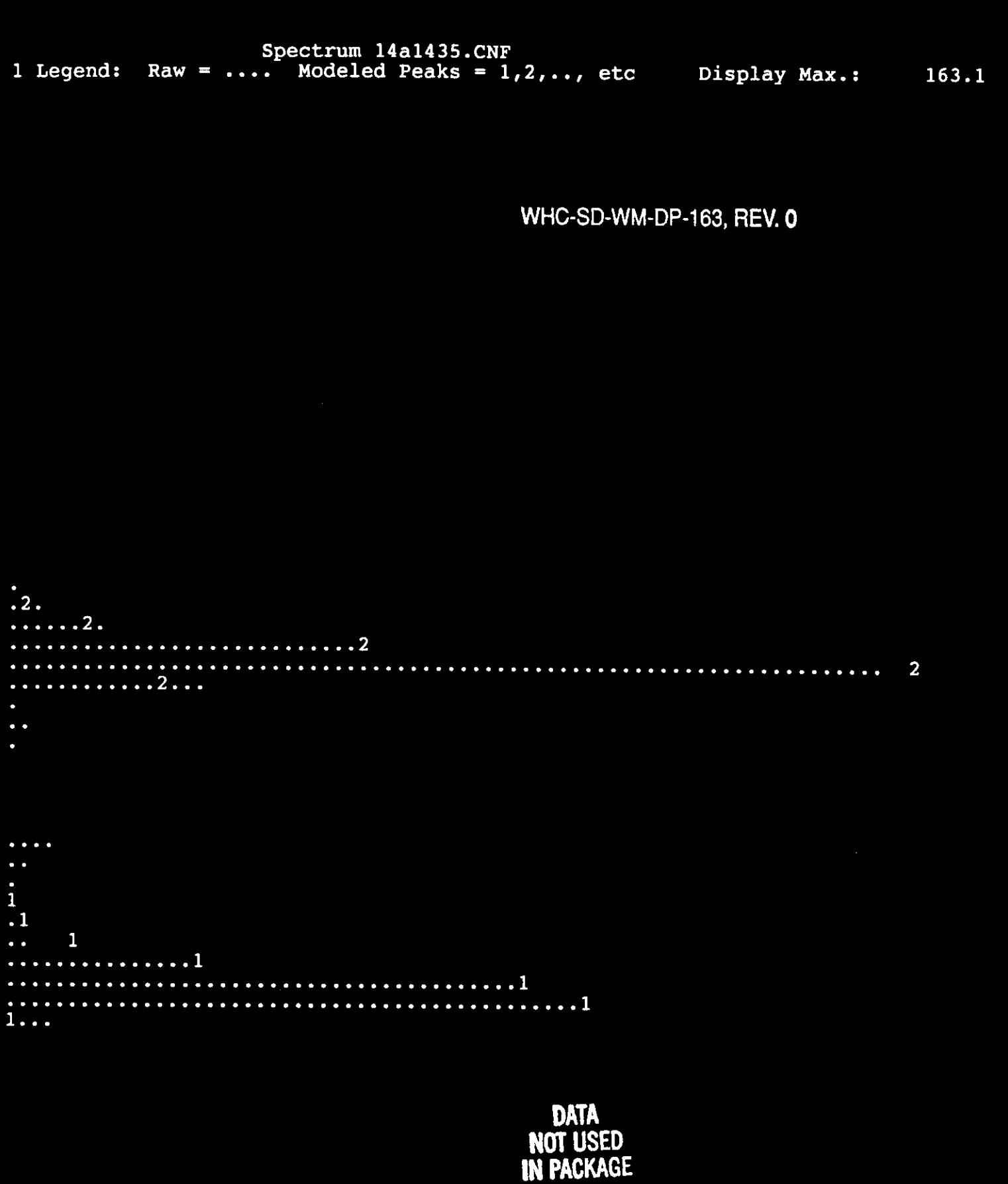
DETECTOR CALIBRATION
Energy(MEV) = 4.090 + (0.0046)*Channel
Energy range (MeV): 4.090 TO 6.446
Efficiency = 0.0124 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	629.0	100.000
Smoothed	629.0	100.000
Composite fit	571.9	90.919
Residuals	57.1	9.081

Analyzed by: _____
VR

DATA
NOT USED
IN PACKAGE



DATA
NOT USED
IN PACKAGE

Raw Data Dump for AEA Spectrum: 14a1435.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.	1.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
71	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
81	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
91	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
101	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
111	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.
121	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
131	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
141	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
151	0.	0.	2.	1.	0.	0.	0.	0.	0.	0.
161	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
171	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
181	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
191	0.	0.	1.	0.	1.	0.	0.	2.	0.	0.
201	0.	2.	1.	0.	0.	1.	2.	1.	1.	2.
211	3.	3.	7.	1.	2.	2.	2.	2.	2.	2.
221	13.	14.	13.	13.	13.	22.	20.	6.	8.	6.
231	21.	10.	7.	5.	3.	0.	0.	36.	28.	29.
241	1.	0.	0.	0.	0.	0.	0.	1.	0.	0.
251	1.	2.	0.	1.	0.	0.	0.	0.	1.	2.
261	0.	1.	2.	1.	0.	0.	0.	0.	1.	0.
271	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
281	0.	0.	1.	0.	0.	1.	0.	0.	0.	0.
291	0.	0.	0.	0.	0.	1.	2.	0.	1.	0.
301	4.	3.	2.	1.	2.	1.	0.	0.	0.	1.
311	0.	1.	0.	1.	1.	0.	1.	0.	0.	0.
321	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	2.	1.	0.	1.	0.	0.	0.	0.	2.
341	2.	0.	0.	3.	3.	4.	0.	6.	6.	6.
351	12.	5.	7.	15.	11.	10.	13.	12.	13.	21.
361	23.	22.	30.	16.	12.	3.	1.	0.	0.	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.	1.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

DATA NOT USED IN PACKAGE

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-163, REV. 0

SAMPLE
WL4038-BLK
File ID: 15a1516.CNF

Counted on: 12/13/95 @17: 0
Detector: AEA15
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	72.0	72.0	362.206	362.206	10.000	2.952	5.000	1.067

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Peak Centroid Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.995	5.755	5.770	-.0150.01		2.20	6.0	116.2	0.523E-04
	Cm243		5.779	5.770	0.009				156.0	0.703E-04
Totals:		0.995	<--valid peaks only-->				2.20			

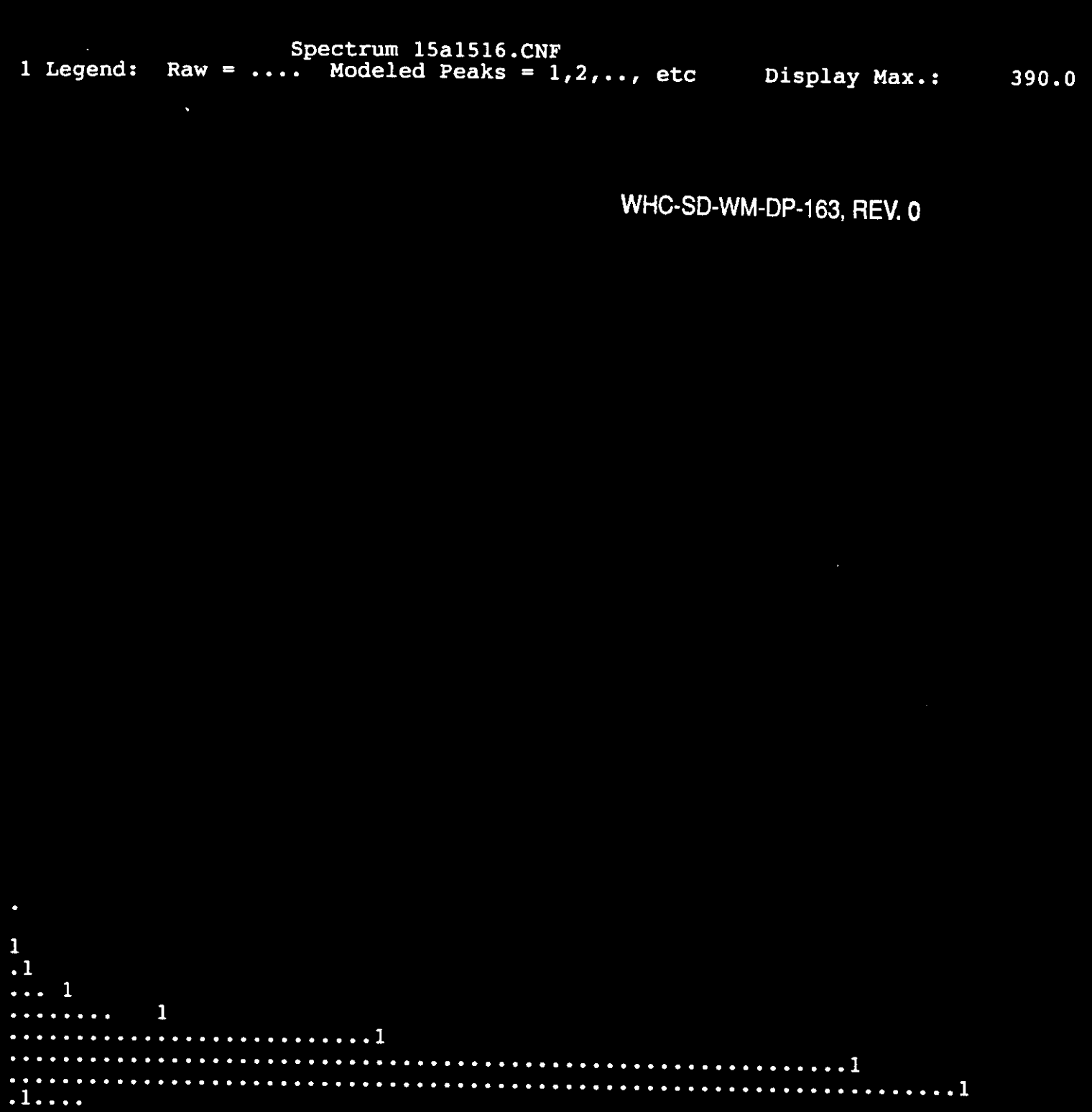
DETECTOR CALIBRATION
Energy(MEV) = 4.104 + (0.0046)*Channel
Energy range (MeV): 4.104 TO 6.459
Efficiency = 0.0193 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	1060.0	100.000
Smoothed	1060.0	100.000
Composite fit	1054.9	99.519
Residuals	5.1	0.481

Analyzed by: _____
VR

DATA
NOT USED
IN PACKAGE



DATA
NOT USED
IN PACKAGE

Raw Data Dump for AEA Spectrum: 15a1516.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.	0.	0.	0.	0.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	0.	0.	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.	1.	0.	0.	0.	0.
131	0.	0.	0.	0.	1.	0.	1.	0.	0.	1.
141	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
151	1.	0.	0.	1.	2.	1.	0.	0.	0.	0.
161	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
171	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
181	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
191	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
201	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
211	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
221	0.	1.	0.	1.	2.	1.	0.	1.	0.	0.
231	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.
241	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
251	0.	0.	0.	0.	2.	0.	0.	0.	0.	0.
261	1.	0.	0.	0.	0.	0.	2.	0.	0.	0.
271	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
281	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.
291	1.	0.	0.	1.	0.	0.	2.	0.	1.	1.
301	1.	2.	0.	0.	1.	0.	0.	0.	0.	0.
311	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
321	0.	0.	1.	1.	0.	0.	5.	3.	1.	1.
331	1.	0.	6.	4.	5.	5.	4.	4.	4.	2.
341	10.	5.	8.	11.	13.	9.	13.	14.	22.	37.
351	31.	34.	48.	42.	39.	46.	42.	39.	58.	64.
361	67.	88.	83.	80.	41.	16.	7.	2.	0.	0.
371	1.	2.	2.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
421	0.	0.	0.	0.	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.								

DATA
NOT USED
IN PACKAGE

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

WHC-SD-WM-DP-163, REV. 0

SAMPLE
S95T3768-SAM
File ID: 16a1606.CNF

Counted on: 12/13/95 @17: 1
Detector: AEA16
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	23.6	23.6	356.464	356.464	12.000	3.388	6.000	1.406
2	72.0	72.0	223.862	223.862	12.000	4.207	6.000	2.301

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.224	5.755	5.743	0.012	0.02	0.68	10.9	36.5	0.164E-04
2	Pu239	0.624	5.147	5.133	0.014	0.02	1.90	6.5	99.8	0.449E-04
	Pu240		5.144	5.133	0.011				99.8	0.449E-04
Totals:		0.847	<--valid peaks only-->				2.58			

DETECTOR CALIBRATION
Energy(MEV) = 4.103 + (0.0046)*Channel
Energy range (MeV): 4.103 TO 6.458
Efficiency = 0.0190 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	1459.0	100.000
Smoothed	1459.0	100.000
Composite fit	1236.3	84.737
Residuals	222.7	15.263

Analyzed by: _____
VR

DATA NOT USED IN PACKAGE

DATA
NOT USED
IN PACKAGE

Raw Data Dump for AEA Spectrum: 16a1606.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.	2.	0.
31	0.	1.	0.	1.	1.	0.	0.	0.	1.	0.
41	0.	0.	1.	0.	0.	0.	0.	0.	1.	0.
51	0.	0.	1.	0.	0.	0.	0.	0.	1.	0.
61	1.	0.	1.	0.	0.	0.	0.	0.	0.	1.
71	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
91	0.	0.	2.	0.	0.	0.	2.	0.	0.	0.
101	0.	2.	1.	0.	0.	1.	1.	0.	0.	1.
111	0.	0.	1.	0.	0.	1.	0.	1.	0.	0.
121	4.	1.	0.	0.	2.	0.	0.	0.	0.	0.
131	1.	1.	0.	0.	0.	1.	0.	1.	1.	1.
141	2.	1.	1.	1.	3.	0.	2.	2.	2.	0.
151	1.	1.	0.	0.	2.	0.	2.	0.	1.	3.
161	2.	1.	0.	2.	3.	1.	0.	2.	2.	1.
171	1.	1.	1.	5.	1.	0.	1.	1.	2.	2.
181	0.	0.	3.	1.	0.	1.	3.	3.	0.	0.
191	2.	1.	0.	2.	2.	2.	1.	0.	5.	4.
201	1.	5.	3.	6.	5.	4.	6.	9.	17.	6.
211	13.	20.	21.	22.	23.	31.	31.	24.	45.	60.
221	57.	76.	80.	85.	79.	67.	49.	28.	20.	3.
231	4.	0.	0.	1.	1.	0.	0.	0.	0.	0.
241	0.	1.	1.	0.	0.	2.	0.	0.	2.	1.
251	2.	3.	2.	3.	1.	0.	1.	0.	2.	0.
261	1.	0.	0.	0.	0.	0.	0.	2.	0.	0.
271	1.	1.	0.	0.	0.	0.	2.	0.	1.	1.
281	1.	0.	1.	0.	1.	3.	0.	4.	1.	3.
291	0.	2.	0.	7.	5.	4.	10.	4.	6.	8.
301	4.	2.	0.	4.	0.	0.	2.	1.	0.	0.
311	0.	0.	1.	0.	0.	0.	0.	0.	2.	0.
321	1.	2.	2.	0.	0.	1.	1.	0.	2.	0.
331	1.	1.	0.	0.	2.	3.	1.	2.	0.	2.
341	5.	6.	7.	10.	11.	11.	9.	13.	12.	11.
351	15.	14.	17.	23.	21.	29.	28.	23.	23.	7.
361	6.	0.	0.	0.	1.	0.	1.	2.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

DATA
NOT USED
IN PACKAGE

Westinghouse Hanford Co.

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

DATA REDUCTION REPORT

SAMPLE
S95T3768-DUP
File ID: 17a1795.CNF

Counted on: 12/13/95 @17: 2
Detector: AEA17
Geometry number: 1
Count time: 28807. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	12.2	12.2	359.183	359.183	12.000	4.180	6.000	1.133
2	52.6	52.6	225.700	225.700	12.000	5.034	6.000	2.119

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.203	5.755	5.750	0.005	0.02	0.48	12.9	5.0	0.223E-05
2	Pu239	0.696	5.147	5.136	0.011	0.02	1.64	7.0	16.7	0.750E-05
	Pu240		5.144	5.136	0.008				16.7	0.750E-05
Totals:		0.899	<--valid peaks only-->				2.12			

DETECTOR CALIBRATION
Energy(MEV) = 4.098 + (0.0046)*Channel
Energy range (MeV): 4.098 TO 6.453
Efficiency = 0.0987 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	1134.0	100.000
Smoothed	1134.0	100.000
Composite fit	1019.2	89.878
Residuals	114.8	10.122

Analyzed by: VR

DATA
NOT USED
IN PACKAGE

DATA NOT USED IN PACKAGE

Raw Data Dump for AEA Spectrum: 17a1795.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.	1.	0.	1.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	1.	0.	0.	0.	0.	0.	2.	0.	1.	0.
101	0.	1.	1.	0.	0.	0.	0.	0.	0.	1.
111	1.	1.	1.	1.	0.	0.	1.	0.	0.	0.
121	1.	0.	1.	1.	0.	2.	0.	0.	0.	2.
131	0.	0.	1.	0.	0.	0.	0.	0.	2.	2.
141	0.	0.	2.	0.	0.	1.	0.	2.	0.	1.
151	0.	1.	3.	0.	1.	0.	0.	0.	1.	0.
161	1.	0.	0.	0.	0.	0.	1.	1.	1.	0.
171	1.	0.	2.	1.	0.	0.	1.	0.	0.	0.
181	1.	1.	0.	1.	2.	0.	1.	1.	0.	2.
191	1.	1.	4.	2.	1.	1.	1.	3.	1.	5.
201	1.	1.	4.	3.	4.	6.	8.	3.	12.	9.
211	10.	16.	6.	12.	22.	28.	22.	23.	41.	40.
221	34.	53.	45.	50.	55.	60.	59.	47.	28.	34.
231	9.	9.	4.	2.	0.	0.	1.	0.	0.	1.
241	1.	0.	1.	1.	0.	1.	0.	1.	0.	0.
251	0.	2.	1.	2.	1.	3.	0.	0.	0.	0.
261	0.	0.	0.	0.	0.	0.	0.	0.	2.	0.
271	0.	0.	0.	1.	0.	0.	2.	1.	0.	1.
281	0.	2.	2.	1.	1.	2.	1.	2.	0.	1.
291	4.	0.	1.	4.	3.	2.	0.	1.	5.	3.
301	6.	5.	6.	4.	1.	0.	0.	0.	0.	0.
311	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
321	1.	0.	0.	2.	1.	1.	0.	0.	0.	0.
331	0.	2.	0.	0.	2.	2.	0.	3.	2.	1.
341	2.	3.	0.	6.	5.	7.	8.	8.	7.	8.
351	8.	12.	15.	4.	7.	13.	8.	14.	15.	12.
361	12.	10.	8.	2.	1.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	1.	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.								

DATA
NOT USED
IN PACKAGE

DISTRIBUTION SHEET

To	From	Page 1 of 1
Distribution	Production Planning and Control	Date: 12/18/95
Project Title/Work Order WHC-SD-WM-DP-163, Rev. 0, "60-Day Waste Compatibility Safety Issue and Final Results for 244-TX DCRT, Grab Samples TX-95-1, TX-95-2 and TX-95-3.		EDT NO.: 614769 ECN NO.: N/A

Name	MSIN	Text With all Attach	EDT/ECN ONLY
Pacific Northwest Laboratory			
J. R. Gormsen	K7-28		X
S. J. Harris	K7-22	X	
K. L. Silvers	P7-27		X
U.S. Department of Energy, RL			
C. A. Babel	S7-54	X	
Westinghouse Hanford Company			
J. N. Appel	G3-21		X
H. Babad	S7-30	X	
R. A. Esch	T6-06	X	
S. D. Estey	R2-11	X	
G. D. Forehand	S7-31		X
V. W. Hall	T6-03	X	
D. C. Hetzer	S6-31		X
L. Jensen	R2-12	X	
N. W. Kirch	R2-11	X	
M. J. Kupfer	H5-49	X	
J. E. Meacham	S7-15	X	
P. M. Morant	H4-25	X	
K. L. Powell	T6-04		X
L. W. Shelton	H5-49	X	
B. C. Simpson	R2-12		X
M. J. Sutey	T4-07	X	
L. A. Tusler	R2-11	X	
J. A. Voogd	H5-03		X
Central Files	A3-88	2	
EDMC	H6-08	X	
LTIC	T6-03		X
TCRC	R2-12	X	
TFIC (Tank Farm Information Center)	R1-20		X
Washington State Department of Ecology			
Single-Shell Tank Unit Manager			
A. B. Stone	B5-18	X	
U. S. Department of Energy			
Jim Poppiti 12800 Middlebrook Rd. Trevion II, EM-36 Germantown, MD 20874			X
Los Alamos Technical Associates			
T. T. Tran 309 Bradley Blvd. Richland, WA 99352		X	