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Accession #: D296004872

Document #: SD-WM-DP-163

Title/Desc:

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

Pages: 262

JAN 08 1996

ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT No 614769

2. To: (Receiving Organization) Distribution	3. From: (Originating Organization) Production Planning and Control	4. Related EDT No.: N/A
5. Proj./Prog./Dept./Div.: DCR Tank 244-TX/Waste Management/PPC/Analytical Services	6. Cog. Engr.: Ruth A. Esch	7. Purchase Order No.: N/A
8. Originator Remarks: This document is being released into the supporting document system for retrievability purposes.		9. Equip./Component No.: N/A
		10. System/Bldg./Facility: N/A
11. Receiver Remarks: For release.		12. Major Assm. Dwg. No.: N/A
		13. Permit/Permit Application No.: N/A
		14. Required Response Date: 12/18/95

15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Approval Designator	Reason for Transmittal	Originator Disposition	Receiver Disposition
1	WHC-SD-WM-DP-163	N/A	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	Q	2	I	1

16. KEY			
Approval Designator (F)	Reason for Transmittal (G)		Disposition (H) & (I)
E, S, Q, D or N/A (see WHC-CM-3-5, Sec.12.7)	1. Approval 2. Release 3. Information	4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

(G)	(H)	17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)								(G)	(H)
Reason	Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	Reason	Disp.
2	1	Cog.Eng. Ruth A. Esch	<i>Ruth A. Esch</i>	1/4/96							
2	1	Cog. Mgr. J.G. Kristofzski	<i>J.G. Kristofzski</i>	1/5/96							
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18.		19.		20.		21. DOE APPROVAL (if required) Ctrl. No.					
L. R. Webb <i>L. R. Webb</i> Signature of EDT Originator		N/A Authorized Representative Date for Receiving Organization		J.G. Kristofzski <i>J.G. Kristofzski</i> Cognizant Manager Date		☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments					

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.

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U.S. Department of Energy Contract DE-AC06-87RL10930

EDT/ECN: EDT-614769 UC: 2070
Org Code: 75725 Charge Code: MD378
B&R Code: EW 3120074 Total Pages: 259

Key Words: 60-Day Waste Compatibility, Safety Issue, Final Results for Tank 241-TX-244, Grab Samples

Abstract: N/A

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Release Approval Date 1/8/96

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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

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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.

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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:

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

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.

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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 ($<42 \mu\text{g/mL}$). 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 interference, 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), $^{239/240}\text{Pu}$, 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. Abbreviations 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
^{90}Sr	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
$^{239/240}\text{Pu}$ *	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.

$^{239/240}\text{Pu}$ 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.

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Abbreviations:

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

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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: P/A

Date: / /

Date Subsampled: / /

P.C. RA Esc
Phone# 373-4314

LABCORE # S9ST003591

Jar#

orig. bottle

Jar/Vial Size: 125 mL

Initial Weight: g

Final Weight: g

Net Weight: g

Jar Depleted: YES/NO

☐ ☒

Group # 9500189

Bin#

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

9 Labcore Entry Initials: _____

Labcore Entry Initials: _____

Labcore Entry Initials: _____

Tests: _____

Tests: _____

Bin #

Tests: ARCHIVE

LABCORE #

LABCORE #

LABCORE # S9ST003591

Jar#

N/A

Jar#

Jar#

Jar/Vial Size: mL

Jar/Vial Size: mL

Jar/Vial Size: 125 mL

Final Weight: g

Final Weight: g

Final Weight: g

Initial Weight: g

Initial Weight: g

Initial Weight: g

Net Weight: g

Net Weight: g

Net Weight: g

Special Instructions:

more sample from room 2B to detail in 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 Sp6 = 1.04".

11/18/95

SUBSAMPLE WORKSHEET

Tank: TX-244 Core: N/A

Auger/Segment: 2/4

Date: 1/1

Date Subsampled: 1/1

P.C. RA Esch

Phone# 373-4314

Jar Depleted: YES/NO

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:

Bin #

Tests:

Tests:

Tests: ARCHIVE

LABCORE # N/A

LABCORE #

LABCORE # S95T003592

Jar#

Jar#

Jar# orig. bottle

Jar/Vial Size: mL

Jar/Vial Size: mL

Jar/Vial Size: 125 mL

Final Weight: g

Final Weight: g

Final Weight: g

Initial Weight: g

Initial Weight: g

Initial Weight: g

Net Weight: g

Net 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 92 g with comment "wt. based on ~85 mL with SpG = 1.08."

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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			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			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

RISER: 8
SEGMENT #: TX-95-3

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

SEGMENT PORTION: Sludge (from Liquid Grab Sample)

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S951003767		Volume % Solids	%	n/a	n/a	41.00	n/a	n/a	n/a	n/a	n/a	n/a
S951003768	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
S951003768	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
S951003768	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
S951003768	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
S951003768	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

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

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

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) = $(\text{ABS}(\text{Sample} - \text{Serial Dilution})) / ((\text{Sample} + \text{Serial Dilution}) / 2) \times 100$

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

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

CHAIN OF CUSTODY FORMS

Page 1 of 1

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

BC-6000-828 (09/95)

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

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		11/21/95
95000189	TX-244 GRAB	1 SAMPLE	S95T003591	0	@BRKDWN1 APPEAR01	LIQUID	N/A	incomplete complete		SMF 11/21/95
95000189	TX-244 GRAB	1 SAMPLE	S95T003591	0	@BRKDWN1 SAMPAMT2	LIQUID	N/A	125		11-10-95 ml
95000189	TX-244 GRAB	2 SAMPLE	S95T003592	0	@BRKDWN1 DOSERATE	LIQUID	N/A	200		mrads/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		mrads/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	125ml		8 ave 11/10/95

Final page for worklist #

3387

Lusie 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	This sample was removed 11/21/95 from pumping on a separate day. Data entered at worklist review. 11/21/95
S95T003592	yellow	clear	No	No	
S95T003593	yellow	clear	~ 40% settled dark brown	No	

Data Entry Comments:

stored in cell 27

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

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 assured by Rdnd 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.

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

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: $20 \text{ g wt} = \underline{20.00 \text{ g}}$
 $100 \text{ g wt} = \underline{99.99 \text{ g}}$

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 19.42gTare wt cone 1 7.55gnet wt sludge 11.87gvol sludge 10.4 mLFinal wt cone 2 + sludge 20.54gTare wt cone 2 7.48gnet wt sludge 13.06gvol sludge 11.3 mL

Edwin
 11/26/95

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

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: $\frac{\text{Total wt sludge } 46.38 \text{ g}}{\text{vol sludge } 40.2 \text{ mL}} = \underline{1.15} \text{ g/mL}$

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

Red
11/26/95

Total wt. solids 21.32 g Total vol. liquid 23.25 mL
 Total vol solids 16.15 mL

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

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

S95T003767

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

Final wt vial + sludge 29.85g
 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 transferred from
 cone 1. See below.

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

Vial + cone 1 material 19.73g
 - material transferred from cone 1 - 4.24g

 15.49g
 ~ 15.5g
 tare wt on vial

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

 1.08g remain

net wt cone 1 before transfer
 - amt. remaining

 5.32g
 - 1.08g left (remain)

 4.24g transferred
 - assuming negligible material left on spatula

RAE
 11/26/95

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

INORGANIC ANALYSES

LABCORE Data Entry Template for Worklist#

3824

Analyst: JDS Instrument: DSC0 3 Book # 12N14 ^{11/28/95 bdy} B

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

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

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 [Signature] Date 11/28/95

[Signature] 11-28-95
Analyst Signature Date

Verified by Blandina Valenzuela
12/1/95

for data entry purposes this batch
was placed on ^{12/1/95 bdy} ~~342~~ worklist # 3421

Data Entry Comments: S95T003708 produced ^{two} ~~one~~ 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.

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. Julton 11-21-95
At McCown 11/25/95
Anthony Purnell 11-22-95

Analyst Signature _____ Date _____

Data Entry Comments:

Worklist needed to be broken up to
accommodate the different tanks

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.

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

N2, EXOTHERM DOWN

TEMP: 150.0 °C TIME: 0.0 min RATE: 10.0 °C/min

Temperature (°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

82

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

Temperature (°C)

SM FULTON

PERKIN-ELMER

7 Series Thermal Analysis System

Wed Nov 22 03:30:20 1995

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

TEMP: 50.0 °C
TEMP: 500.0 °C
TIME: 0.0 min RATE: 10.0 °C/min

Temperature (°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

Curve 1: DSC

File info: SAM112401 Fri Nov 24 13:40:54 1995

Sample Weight: 12.440 mg

S95T003709 SAM

exotherm down, N2 purge gas

TEMP1: 35.0 °C TIME1: 0.0 min RATE1: 10.0 °C/min

Temperature (°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

Temperature (°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	<u>59.74</u>	<u>60.29</u>	<u>N/A</u>	%
95000189	TX-244 GRAB	2 SAMPLE	S95T003708	0	TGA-01	LIQUID	<u>N/A</u>	<u>85.80</u>		%
95000189	TX-244 GRAB	3 DUP	S95T003708	0	TGA-01	LIQUID	<u>85.80</u>	<u>85.76</u>	<u>N/A</u>	%
95000189	TX-244 GRAB	4 SAMPLE	S95T003709	0	TGA-01	LIQUID	<u>N/A</u>	<u>85.31</u>		%
95000189	TX-244 GRAB	5 DUP	S95T003709	0	TGA-01	LIQUID	<u>85.31</u>	<u>86.46</u>	<u>N/A</u>	%

Final page for worklist #

4285

Sm Fulton 12-15-95
Analyst Signature Date

Frank Corbin 12/18/95
Analyst Signature Date

Verified 12/21/95 J M Lye

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.

S95T003708 N2
11.782 mg

Rate: 10.0 °C/min

File: 00086.001 TG METTLER 15-Dec-98
Ident: 0.0 222-S Laboratory

Step Analysis
Height-10.11 mg
-85.80 %
Resid. 1.67 mg
14.20 %
Dpeak 85.0 °C

S95T003708 DUP N2

11.119 mg

Rate: 10.0 °C/min

File: 00088.001

TG

METTLER

15-Dec-95

Ident: 0.0

222-S Laboratory

Step Analysis

Height -9.54 mg

-85.76 %

ResidC. 1.58 mg

14.24 %

Dpeak 81.0 °C

S95T003709 N2

11.347 mg

Rate: 10.0 °C/min

File: 00080.001

TG

METTLER

18-Dec-85

Ident: 0.0

222-S Laboratory

Step Analysis

Height -9.65 mg

-85.31 %

ResidC. 1.66 mg

14.69 %

Dpeak 83.0 °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 %

38

5. mg

100.

200.

300.

400.

°C

LABCORE Data Entry Template for Worklist#

3681

Analyst: EL 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	<u>1.11</u>	<u>1.07</u>	<u>N/A</u>	Sp.G.
95000189	TX-244 GRAB	2 SAMPLE	S95T003708	0	SPG-01	LIQUID	<u>N/A</u>	<u>1.09</u>	<u>.01</u>	Sp.G.
95000189	TX-244 GRAB	3 DUP	S95T003708	0	SPG-01	LIQUID	<u>1.09</u>	<u>1.09</u>	<u>N/A</u>	Sp.G.
95000189	TX-244 GRAB	4 SAMPLE	S95T003709	0	SPG-01	LIQUID	<u>N/A</u>	<u>1.08</u>	<u>.01</u>	Sp.G.
95000189	TX-244 GRAB	5 DUP	S95T003709	0	SPG-01	LIQUID	<u>1.08</u>	<u>1.08</u>	<u>N/A</u>	Sp.G.

Final page for worklist #

3681

Ann Lambert 12/02/95
Analyst Signature Date

Frank Conlin 12/4/95
Analyst Signature Date

① STD
1.93357g
2.09667g 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

1.91159g
2.07328g

1.91311g Dup 3709
2.07562g

Data Entry Comments:

PIPETTE VOLUME: 150.17 uL

Reviewed by

H. Anastor 12-5-95

I was unaware we were suppose to print tare and final weights. Thus - 1ST Std weight is not printed. (201)

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.

WHC-SD-WM-DP-163, REV. 0
PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

TARE

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

2.12344 g STD DUP
2.09668 g 08
2.12906 g 08 DUP
2.07328 g 09
2.07562 g 09 DUP

----- CALIBRATION -----
12/02/95 16:09:53
CAL BEGIN
STD 10.1.19
TYPE : AT 261
2.00.00
787082
CAL END
----- END -----
2.09167 g 08 Sample
STD EAL

worklist # 3681

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

Type		STANDARD	STANDARD
STANDARD	Gross Weight (W2)	2.0917	2.1234
Work List	Tare Weight (W1)	1.9336	1.9591
3681	Weight of Solution (W2-W1)	0.1581	0.16435
Test Code	Volume of Solution μ L	150.1700	150.1700
SPG-01	Specific Gravity	1.0528	1.0944
Matrix	Specific Gravity (Average)	1.0736	
LIQUID			
Sample #			
134N16B			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst	Specific Gravity = $[(W2-W1) \times 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} \times 1.000 \text{ g/mL}]$		
A LAMBEL			
Date			
12/02/95			
Time			
	✓ RESULT ✓		
	Specific Gravity Average =	1.074	

Data Entry by: *Frank Conlin* Date: 12/02/95
Approved by: *Robert For H. Anastas* Date: 1/3/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		SAMPLE	REPLICATE
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 μ L	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	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
A LAMBEL			
Date			
12/02/95			
Time	v RESULT v		
	Specific Gravity =	1.086	

Data Entry by:

Janet Conlin

Date:

12/02/95

Approved by:

Robert for H. Anastos

Date:

1/2/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	2.1291	
Work List	Tare Weight (W1)	1.9659	
3681	Weight of Solution (W2-W1)	0.16312	0
Test Code	Volume of Solution μ L	150.1700	
SPG-01	Specific Gravity	1.0862	NA
Matrix			
LIQUID			
Sample #			
S95T003708 DUP			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst	Specific Gravity = $[(W2-W1) \times 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} \times 1.000 \text{ g/mL}]$		
A LAMBEL			
Date			
12/02/95			
Time			
	∇ RESULT ∇		
	Specific Gravity =	1.086	

Data Entry by:	<i>Franka Corbin</i>	Date:	12/02/95
Approved by:	<i>Robert for H. Anastro</i>	Date:	1/3/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	2.0733	
Work List	Tare Weight (W1)	1.9116	
3681	Weight of Solution (W2-W1)	0.16169	0
Test Code	Volume of Solution μ L	150.1700	
SPG-01	Specific Gravity	1.0767	NA
Matrix			
LIQUID			
Sample #			
S95T003709			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst	Specific Gravity = $[(W2-W1) \times 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} \times 1.000 \text{ g/mL}]$		
A LAMBEL			
Date			
12/02/95			
Time	v RESULT v		
	Specific Gravity =	1.077	

Data Entry by:

Date: 12/02/95

Approved by:

Date: 1/2/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	2.0756	
Work List	Tare Weight (W1)	1.9131	
3681	Weight of Solution (W2-W1)	0.16251	0
Test Code	Volume of Solution μ L	150.1700	
SPG-01	Specific Gravity	1.0822	NA
Matrix			
LIQUID			
Sample #			
S95T003709 DUP			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
A LAMBEL			
Date			
12/02/95			
Time	v RESULT v		
	Specific Gravity =	1.082	

Data Entry by:	<i>Frank Conlin</i>	Date:	12/02/95
Approved by:	<i>Mark for H. Anastos</i>	Date:	1/3/96

LABCORE Data Entry Template for Worklist#

4465

Analyst: RAW Instrument: PH01 Book # 110N16 H

Method: LA-212-U02

Worklist Comment: pH reruns TX-244, Herting

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

Final page for worklist #

4465

R. W. Schreder 12/19/95
Analyst Signature Date

R. Jones 12-21-95
Analyst Signature Date

R. WENDLAND 12-19-95

Data Entry Comments:

pH meter #2 used RWS

I.S. = insufficient sample remaining - RWS 12/20/95

Reviewed by Alhaster 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.

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

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
=====

Id.#1 3708

pH 10.19

Id.#1 3709

pH 10.19

Id.#1 10

Id.#1 10

pH 9.52

pH 9.52

pH 9.19
pH 9.19

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

LABCORE Data Entry Template for Worklist#

3700

Analyst: 1038 Instrument: PH01 ALH110 Book # 57N8

Method: LA-211-102 Rev/Mod C - O WC06695

Worklist Comment: C103 & TX-244 OH

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK			OH-01	LIQUID	<u>1</u>	<u><42</u>	N/A	ug/mL
		2 STD			OH-01	LIQUID		<u>1.58e4</u>	N/A	ug/mL
95000189	TX-244 GRAB	3 SAMPLE	S95T003708	0	OH-01	LIQUID	<u>N/A</u>	<u><42</u>	<u>42</u>	ug/mL
95000189	TX-244 GRAB	4 DUP	S95T003708	0	OH-01	LIQUID	<u><42</u>	<u>I.S. n/a</u>	<u>see 12/15/95 & 12/18/95</u>	ug/mL
95000189	TX-244 GRAB	5 SAMPLE	S95T003709	0	OH-01	LIQUID	<u>N/A</u>	<u><42</u>	<u>42</u>	ug/mL
95000189	TX-244 GRAB	6 DUP	S95T003709	0	OH-01	LIQUID	<u><42</u>	<u>I.S. n/a</u>	<u>see 12/15/95 & 12/18/95</u>	ug/mL
95000148	C-103	7 SAMPLE	S95T002773	0	OH-01	LIQUID	<u>N/A</u>	<u><63</u>	<u>63</u>	ug/mL
95000148	C-103	8 SAMPLE	S95T002774	0	OH-01	LIQUID	<u>N/A</u>	<u><63</u>	<u>63</u>	ug/mL
95000148	C-103	9 SAMPLE	S95T002775	0	OH-01	LIQUID	<u>N/A</u>	<u><63</u>	<u>6.3</u>	ug/mL

Final page for worklist #

3700

1038 En/lin 11-30-95
Analyst Signature Date

R. WENBLAND 12-19-95
Analyst Signature Date

R. W. W. 12/4/95

Reviewed R. W. W. 12/65/95

0.2005 M HNO3

Sample duplicate for samples 3708 and 3709 marked I.S. n/a because see 12/15/95 pH was less than 12. If pH < 12, OH test is not required. see 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 sample was requested. see 12/18/95

Data Entry Comments:

PH's - 1ST IS W/O BACI, 2ND WITH BACI

2 mL 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

ZML DIRECT

date 95-12-01 time 13:50
GET pH 12 # 277
.10ml/div Δ pH=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

ZML DIRECT

rep. 5

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

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

pH 10.23
 pH 9.28

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 Δ pH=1/div
 start V .000 ml

OH ANALYSIS

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

pH 10.09
pH 9.13

pH 11.14
pH 10.29

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

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

3 mL DIRECT

2 mL DIRECT

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

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

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

		Blank
Type	Sample Size (mL) SS	3.000
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:	<i>RW Schneider</i>	Date:	12/04/95
Approved by:	<i>RLH for RW Schneider</i>	Date:	1/3/96
Form 211102_1 Rev. 1.3		Page 1 of 1	

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)	0.050
Work List	HNO3 Titrant at OH end-point in mL	0.2005
3700	Dilution Factor DF	0.232
Test Code	Concentration of OH in Sample (Molarity)	1
OH-01	OH in Sample in µg/mL (PPM)	9.30E-01
Matrix		1.58E+04
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:	<i>Rui Schneider</i>	Date:	12/04/95
Approved by:	<i>Rui Schneider</i>	Date:	12/15/95

Form 211102_1 Rev. 1.3 Page 1 of 1

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)	3.000
Work List	HNO3 Titrant at OH end-point in mL	0.2005
3700	Dilution Factor DF	0.000
Test Code	Concentration of OH in Sample (Molarity)	1
OH-01	OH in Sample in µg/mL (PPM)	0.00E+00
Matrix		0.00E+00
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: <i>RW Schmitt</i>	Date: 12/04/95
Approved by: <i>RW Schmitt</i>	Date: 12/5/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

		Sample
Type	Sample Size (mL) SS	3.000
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		
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: <i>RW Schneider</i>	Date: 12/04/95
Approved by: <i>RW Schneider</i>	Date: 12/15/95
Form 211102_1 Rev. 1.3	

Page 1 of 1

LABCORE Data Entry Template for Worklist# 3739

Analyst: D Sato Instrument: ICP012 Book# 48B48C
14/1/95
Method: LA-505-151/161 Rev/Mod 3.0
14/1/95 249 LAD 12-6-95
Worklist Comment: ICP (direct) TX-224 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-DO1	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

[Signature]
Analyst Signature Date 12-04-95

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

S95T003708-L, 1-10-2.8 AL, JF 505
S95T003708 1-10 101
S95T003708-D 1-10 101
S95T003708-Q 1-10 101 1ml sample + 2ml SST5 + 8ml HNO₃

S95T003709-L, 1-10-2.8, JF 505
S95T003709 1-10 101
S95T003709-D 1-10 101
S95T003709-Q 1-10 101 1ml sample + 2ml SST5 + 8ml HNO₃

S95T003770-L, 2.8 JF 5
S95T003770 direct 1
S95T003770-D direct 1
S95T003770-Q direct 1.25 8ml sample + 2ml SST5

Data Entry Comments:

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

#	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 *[Signature]*

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12-04-95

TY-244 S95T003708

S95T003709

B-204 S95T003770

Worklist # 3759

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

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

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

#	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	ICSA _B	.4760	-.0124	96.20	.3805	-.0030	.9579
5	S25T003708 L	.2697	.9103	25.35	711.1	.1102	.7828
6	S25T003708 ₋	.0872	.2251	21.55	677.0	.0512	.2800
7	S25T003708 D	.1480	.2260	21.84	678.1	.1305	.2991
8	S25T003708 _{-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	S25T003709 L	.1525	.4792	21.40	744.8	.4641	.7049
12	S25T003709 ₋	.1871	.1136	20.84	690.0	.2762	.1988
13	S25T003709 D	.0735	.1533	20.71	664.4	.2998	.2967
14	S25T003709A	98.09	.3073	118.6	771.7	96.53	97.80
15	S25T003770 L	.0027	.0116	.0642	.2405	.0059	.0159
16	S25T003770 ₋	.0014	.0037	.1104	.5213	.0018	.0090
17	S25T003770 D	.0005	.0035	.1083	.3380	.0010	.0092
18	S25T003770 _{-A}	1.305	.0064	1.418	1.805	1.267	1.263
19	ICSA	-.0097	.0173	92.51	.1586	-.0020	.0047
20	ICSA _B	.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	ICSA _B	236.7	.4572	-.0146	190.1	.0121	.9431
5	S25T003708 L	5.167	.3980	9.602	43430.	.8215	10.20
6	S25T003708 ₋	1.222	.1578	10.60	41440.	-.0648	7.160
7	S25T003708 D	2.152	.1444	10.49	41190.	-.0208	8.363
8	S25T003708 _{-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	S25T003709 L	2.226	.1976	9.992	45060.	-.1722	7.028
12	S25T003709 ₋	1.158	.0942	9.831	43040.	.1516	7.983
13	S25T003709 D	.8991	.1222	9.887	42530.	-.1359	7.449
14	S25T003709A	95.81	93.14	110.8	42970.	99.97	104.7
15	S25T003770 L	.0467	.0154	-.0055	2.609	-.0009	.0063
16	S25T003770 ₋	.0799	.0211	-.0012	4.660	-.0001	.0005
17	S25T003770 D	.0666	.0217	-.0018	4.752	-.0034	-.0035
18	S25T003770 _{-A}	1.363	1.262	1.321	5.908	1.310	1.311
19	ICSA	240.3	-.0069	-.0130	193.9	.0116	-.0161
20	ICSA _B	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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WHC-SD-WM-DP-163, REV. 0

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

#	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

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12-04-95

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

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

Page: 1

LABCORE Data Entry Template for Worklist# 4065

Analyst: B. Goecke Instrument: ICP01 Book# 49848AMethod: LA-505-151/461 Rev/Mod D-3
12-1-95

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

[Signature] 12-11-95
Analyst Signature Date

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

PREPBLKARL . 250ul - 10ul
S95T003768-L . 250ul - 10ul - 2ul - 5ul
S95T003768 . 250ul - 10ul
S95T003768-A . 250ul - 10ul
S95T003768-H . 250ul - 2ul - 5ul

25
1
205
41
41
41

Data Entry Comments:

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

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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Handwritten:
 12-11-95
 F. J. E. A. 951211A.MAT
 TX-224 Fusion
 591700 376P
 2001-1000

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 163 TO 165.

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

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

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.001	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

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

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

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

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

	Zr	Sr	Bi	Si	Al	Co	Cu	Li
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(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	Ni	La	Fe	Ca	Cr	Nd	U
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(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	Sm	Ba	P	S	Mg	As	Na
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(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	Se	Ag	Pb	Ti	Cd	B	K
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(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	Sb	V	Be	Tl
	(ppm)	(ppm)	(ppm)	(ppm)	(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

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

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

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

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

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

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

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

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

	Zr	Sr	Bi	Si	Al	Co	Cu	Li
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(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	Ni	La	Fe	Ca	Cr	Nd	U
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(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	Sm	Ba	P	S	Mg	As	Na
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(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	Se	Ag	Pb	Ti	Cd	B	K
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(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	Sb	V	Be	Tl			
	(ppm)	(ppm)	(ppm)	(ppm)	(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

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

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.009	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			

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Identity 1: ICSAB Identity 2: Quality Control

10:25 AM December 11, 1995

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

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

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

	Zr	Sr	Bi	Si	Al	Co	Cu	Li
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(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	Ni	La	Fe	Ca	Cr	Nd	U
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(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	Sm	Ba	P	S	Mg	As	Na
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(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	Se	Ag	Pb	Ti	Cd	B	K
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(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	Sb	V	Be	Tl			
	(ppm)	(ppm)	(ppm)	(ppm)	(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			

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Identity 1: CCV Identity 2: Quality Control 10:29 AM December 11, 1995

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

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

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

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Identity 1: CCB Identity 2: Quality Control 10:32 AM December 11, 1995

Task name : OPTIMA

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

Sample Weight : 1.0000 Solution Volume : 1.00

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

	Zr	Sr	Bi	Si	Al	Co	Cu	Li
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(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	Ni	La	Fe	Ca	Cr	Nd	U
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(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	Sm	Ba	P	S	Mg	As	Na
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(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	Se	Ag	Pb	Ti	Cd	B	K
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(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	Sb	V	Be	Tl			
	(ppm)	(ppm)	(ppm)	(ppm)	(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			

8
12/12/95

BEST AVAILABLE COPY

LABCORE Data Entry Template for Worklist#

4147

Analyst: PAW Instrument: TOC01 WP39A37 Book # 16N12 C
11N12G
Method: LA-344-105 Rev/Mod C-D
Worklist Comment: TOC-01 TX-244

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK			TOC-01	LIQUID	<u>1</u>	<u>0.4</u> <u>5.00</u>	<u>12-18-95</u> N/A	ug/mL
		2 STD			TOC-01	LIQUID	<u>3.00^{E3}</u>	<u>3.03^{E3}</u>	N/A	ug/mL
95000189	TX-244 GRAB	3 SAMPLE	S95T003708	0	TOC-01	LIQUID	<u>N/A</u>	<u>1.86^{E3}</u>	<u>5.50^{E1}</u>	ug/mL
95000189	TX-244 GRAB	4 DUP	S95T003708	0	TOC-01	LIQUID	<u>1.86^{E3}</u>	<u>1.71^{E3}</u>	N/A	ug/mL
95000189	TX-244 GRAB	5 SPK	S95T003708	0	TOC-01	LIQUID	<u>100</u>	<u>92.8⁷⁰</u>	N/A	ug/mL
95000189	TX-244 GRAB	6 SAMPLE	S95T003709	0	TOC-01	LIQUID	<u>N/A</u>	<u>2.08^{E3}</u>	<u>5.50^{E1}</u>	ug/mL
95000189	TX-244 GRAB	7 DUP	S95T003709	0	TOC-01	LIQUID	<u>2.08^{E3}</u>	<u>1.78^{E3}</u>	N/A	ug/mL

Final page for worklist #

4147

R. Wendland 12-12-95
Analyst Signature Date

R. Wendland 12-18-95
Analyst Signature Date

Data Entry Comments:

SAN - .200 - 2ml H₂SO₄ (.5M)
SPK - .200 - .200
11N12G
Reviewed by H. Quast
12-19-95

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.

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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

LIQUIDS

STANDARD

12/07	Sample Volume in mL	(SS)	0.200
STANDARD	H2SO4 Volume in mL	(VR)	2.000
12/07	Volume Injected in mL	(VI)	0.200
4147	Dilution Factor	(DF)	11
12/07	Digest Dilution Factor	(DDF)	1
TOC-01	µg of Carbon in Sample	(C1)	56.1
12/07	µg of Carbon in Blank	(C2)	1.1
LIQUID	g of Carbon/L	=	3.03E+00

16N12C

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

WB39937

$$\mu\text{g of Carbon/mL} = \text{g of Carbon/L} * 1000000 \mu\text{g/g} / 1000 \text{ mL/L}$$

R. WENDLAND

12/12/95

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

12:30 PM

µg Carbon/mL = 3.03E+03

DETECTION LEVEL

in µg/mL

5.50E+01

Data Entry by: *R. Wendland*

Date: 12/14/95

Approved by: *H. Anastos*

Date: 12/18/95

Form 344105_C Rev. 1.1

Page 1 of 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
Sample Volume in mL	(SS)	0.200
BLANK	H2SO4 Volume in mL	(VR)
	Volume Injected in mL	(VI)
4147	Dilution Factor	(DF)
	Digest Dilution Factor	(DDF)
TOC-01	µg of Carbon in Sample	(C1)
	µg of Carbon in Blank	(C2)
LIQUID	g of Carbon/L	= < 5.00E-03
BLANK	g of Carbon/L	= $\frac{(C1-C2) \cdot DF \cdot DDF}{VI \cdot 1000}$
WB39937	µg of Carbon/mL	= g of Carbon/L $\cdot 1000000 \mu\text{g/g} / 1000 \text{ mL/L}$
R. WENDLAND	Detection Level (µg/mL)	= $\frac{1 \mu\text{g C} \cdot DF \cdot DDF}{VI}$
12/12/95		
12:30 PM		

$|1.5 - 1.1| = 0.4$

NOTE: Reported Result is Below Detection Level.

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

Data Entry by: <i>R. H. H.</i>	Date: 12/14/95
Approved by: <i>H. Anasor</i>	Date: 12-18-95

Form 344105_C Rev. 1.1

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Page 1 of 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 Volume in mL (SS)	0.200
SAMPLE	H2SO4 Volume in mL (VR)	2.000
	Volume Injected in mL (VI)	0.200
4147	Dilution Factor (DF)	11
	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	35
	µg of Carbon in Blank (C2)	1.1
LIQUID	g of Carbon/L =	1.86E+00
S9RT003708	g of Carbon/L = $\frac{(C1-C2) \cdot DF \cdot DDF}{VI \cdot 1000}$	
WB39937	µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L	
R. WENDLAND		
12/12/95	Detection Level (µg/mL) = $\frac{1 \mu g C \cdot DF \cdot DDF}{VI}$	
12:30 PM		

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

Data Entry by: <i>Al Hark</i>	Date: 12/14/95
Approved by: <i>H. Anator</i>	Date: 12-18-95
Form 344105_C Rev. 1.1	

Page 1 of 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 Volume in mL (SS)	0.200
SAMPLE/DUPLICATE	H2SO4 Volume in mL (VR)	2.000
	Volume Injected in mL (VI)	0.200
4147	Dilution Factor (DF)	11
	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	32.1
	µg of Carbon in Blank (C2)	1.1
LIQUID	g of Carbon/L =	1.71E+00

S9RT003708

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

WB39937

$$\mu\text{g of Carbon/mL} = \text{g of Carbon/L} * 1000000 \mu\text{g/g} / 1000 \text{ mL/L}$$

R. WENDLAND

12/12/95

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

12:30 PM

$\mu\text{g Carbon/mL} = 1.71\text{E}+03$		DETECTION LEVEL
		in µg/mL
		5.50E+01

Data Entry by: *Handwritten signature*

Date: 12/14/95

Approved by: *Handwritten signature*

Date: 12-18-95

Form 344105_C Rev. 1.1

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

TOC: LA-344-105

SPIKED SAMPLE

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
	ug of Carbon in Sample	32.1	Volume Injected in mL	0.200
TOC-01	ug of Carbon in Blank	1.1	Sample Pre-Spike Dil. Factor (PDF)	11
			Spike Value (ug/ml)	748
LIQUID			ug C in Sample + Spike	86
			ug C in Blank	1.1

WB39937

PERCENT SPIKE REC = $\frac{\mu\text{g Carbon Recovered from Spike} \times 100}{\mu\text{g Carbon in Spike}}$

R. WENDLAND

12/12/95

01:04 PM

WHERE : $\mu\text{g Carbon Recovered from Spike} =$

$$[(\mu\text{gC in sample} + \text{spike} - \mu\text{gC in blank}) \times (\text{Spike Correction Factor})]$$

$$- [(\mu\text{gC sample} - \mu\text{gC blank}) \times (\text{Sample Correction Factor}) \times (\text{Sample Size Correction Factor}) \times (\text{PDF})]$$

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 : $\mu\text{g Carbon in Spike} = \text{Spike Value } (\mu\text{g/mL}) \times \text{Spike Volume (mL)}$

Percent Spike Recovery 92.8%

Data Entry by: *elb* Date: 14-Dec-95
 Approved by: *H. Onator* Date: 12-18-95

Form X Rev. 1.1

{/ system;exit}yes~

```
{/ print;block}~
{/ print;printoff}
```

Control Log

Date/Initials
 6/2/94 MLB
 5/10/95 MLB
 10/19/95 RLR
 10/31/95 RLR

Description of Change
 VERBAGE ADDED FOR CLARIFICATION, REV. 1.1
 FONTS CHANGED IN B41,42,43, NO CALCULATIONS EFFECTED.
 Added print range to cell A100 (for ACE-2), REV 1.1
 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 Volume in mL (SS)	0.200
SAMPLE	H2SO4 Volume in mL (VR)	2.000
	Volume Injected in mL (VI)	0.200
4147	Dilution Factor (DF)	11
	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	39
	µg of Carbon in Blank (C2)	1.1
LIQUID	g of Carbon/L =	2.08E+00
S9RT003709	g of Carbon/L = $\frac{(C1-C2) \cdot DF \cdot DDF}{VI \cdot 1000}$	
WB39937	µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L	
R. WENDLAND	Detection Level (µg/mL) = $\frac{1 \mu\text{g C} \cdot DF \cdot DDF}{VI}$	
12/12/95		
12:30 PM		

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

Data Entry by: <i>At Bled</i>	Date: 12/14/95
Approved by: <i>H. Anastor</i>	Date: 12-18-95

Form 344105_C Rev. 1.1

Page 1 of 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 Volume in mL (SS)	0.200
SAMPLE/DUPLICATE	H2SO4 Volume in mL (VR)	2.000
4147	Volume Injected in mL (VI)	0.200
	Dilution Factor (DF)	11
	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	33.4
	µg of Carbon in Blank (C2)	1.1
LIQUID	g of Carbon/L =	1.78E+00
S9RT003709	g of Carbon/L = $\frac{(C1-C2) \cdot DF \cdot DDF}{VI \cdot 1000}$	
WB39937	µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L	
R. WENDLAND	Detection Level (µg/mL) = $\frac{1 \mu g C \cdot DF \cdot DDF}{VI}$	
12/12/95		
12:30 PM		

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

Data Entry by: <i>W. H. Heston</i>	Date: 12/14/95
Approved by: <i>H. Heston</i>	Date: 12-18-95

Form 344105_C Rev. 1.1

Page 1 of 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

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

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

Sample Size = 200 μ L Analyst : RA WENDLAND
Dil Factor = 11 Min Readings = 10
Blank ID # = BLK Max Readings = 10
Blank Value = .2997219 μ g/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 = $1.5 / 5.004639 = +3.0E-01$ μ g/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

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

Sample Size = 200 uL Analyst : RA WENDLAND
Dil Factor = 1 Min Readings = 10
Blank ID # = BLK Max Readings = 10
Blank Value = N/A % 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

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

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:

$(1.1 - 1.499963) (1) / (200) = < 5.00 \text{ E-3 g/L Carbon}$

$(1.1 - 1.499963) (1) / (200) (12) = < 4.17 \text{ E-4 Molar Carbon}$

Sample Run By: RA WENDLAND 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

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

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

Sample Size = 200 μ L Analyst : RA WENDLAND
Dil Factor = 11 Min Readings = 10
Blank ID # = BLK Max Readings = 10
Blank Value = .2997219 μ g/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 = $1.5 / 5.004639 = +3.0E-01$ μ g/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

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

WHC-SD-WM-DP-163, REV. 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 μ L 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: Rm

Instrument: TIC01

Book # 17NH-D

Method: LA-622-102 Rev/Mod B-2 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	N/A	12-4-95 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	2.12e3	1.10e ⁺²	5.00	2.12e3 / 5.50e
95000189	TX-244 GRAB	4 DUP	S95T003708	0	TIC-01	LIQUID	2.75e ⁺²	1.02e ⁺²	N/A	ug/mL
95000189	TX-244 GRAB	5 SPK	S95T003708	0	TIC-01	LIQUID	100%	2.14e ⁺²	N/A	95.8% ug/mL
95000189	TX-244 GRAB	6 SAMPLE	S95T003709	0	TIC-01	LIQUID	N/A	1.16e ⁺²	2.75e ⁺²	5.50e1
95000189	TX-244 GRAB	7 DUP	S95T003709	0	TIC-01	LIQUID	1.16e ⁺²	7.93e ⁺³	N/A	1.99e3 ug/mL

Final page for worklist # 3694

Analyst Signature Rm Date 12/2/95

Analyst Signature Frank Corbin Date 12/2/95

Reviewed and edited RW Schrock 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.

WORKLIST

ANALYST
PREP BLANKANALYSIS
DATEANALYSIS
TIMEINSTRUMENT
CODE#
3694

P. Morgan

12/2/15

0352

☒ 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

H2O VOLUME ADDED FOR DILUTION IN mL (if necessary)

ALiquot of DILUTED SAMPLE to be SPIKED (if necessary)

☐ SAMPLE
STANDARD☐ DUPLICATE
PREP BLANK☒ SPIKE
REAGENT BLANK

SAMPLE # =

STD # =

SAMPLE VOLUME IN mL .200ml

SPIKE VOLUME IN mL

VOLUME INJECTED IN mL .200ml

H2O VOLUME ADDED FOR DILUTION IN mL (if necessary)

ALiquot of DILUTED SAMPLE to be SPIKED (if necessary)

☒ SAMPLE
STANDARD☐ DUPLICATE
PREP BLANK☐ SPIKE
REAGENT BLANK

SAMPLE # = 595T003708

STD # =

SAMPLE VOLUME IN mL 1

SPIKE VOLUME IN mL

VOLUME INJECTED IN mL .200

H2O VOLUME ADDED FOR DILUTION IN mL (if necessary)

ALiquot of DILUTED SAMPLE to be SPIKED (if necessary)

10

☐ SAMPLE
STANDARD☒ DUPLICATE
PREP BLANK☐ SPIKE
REAGENT BLANK

SAMPLE # = 595T003708

STD # =

SAMPLE VOLUME IN mL 1

SPIKE VOLUME IN mL

VOLUME INJECTED IN mL .200

H2O VOLUME ADDED FOR DILUTION IN mL (if necessary)

ALiquot of DILUTED SAMPLE to be SPIKED (if necessary)

10

93

☐ SAMPLE
STANDARD☐ DUPLICATE
PREP BLANK☒ SPIKE
REAGENT BLANK

SAMPLE # = 595T003708

STD # =

SAMPLE VOLUME IN mL 1

SPIKE VOLUME IN mL 1

VOLUME INJECTED IN mL .200

H2O VOLUME ADDED FOR DILUTION IN mL (if necessary)

ALiquot of DILUTED SAMPLE to be SPIKED (if necessary)

10

☒ SAMPLE
STANDARD☐ DUPLICATE
PREP BLANK☐ SPIKE
REAGENT BLANK

SAMPLE # = 595T003709

STD # =

SAMPLE VOLUME IN mL 1

SPIKE VOLUME IN mL

VOLUME INJECTED IN mL .200

H2O VOLUME ADDED FOR DILUTION IN mL (if necessary)

ALiquot of DILUTED SAMPLE to be SPIKED (if necessary)

10

☒ SAMPLE
STANDARD☐ DUPLICATE
PREP BLANK☐ SPIKE
REAGENT BLANK

SAMPLE # = 595T003709

STD # =

SAMPLE VOLUME IN mL 1

SPIKE VOLUME IN mL

VOLUME INJECTED IN mL .200

H2O VOLUME ADDED FOR DILUTION IN mL (if necessary)

ALiquot of DILUTED SAMPLE to be SPIKED (if necessary)

10

☐ SAMPLE
STANDARD☐ DUPLICATE
PREP BLANK☐ SPIKE
REAGENT BLANK

SAMPLE # =

STD # =

SAMPLE VOLUME IN mL

SPIKE VOLUME IN mL

VOLUME INJECTED IN mL

H2O VOLUME ADDED FOR DILUTION IN mL (if necessary)

ALiquot of DILUTED SAMPLE to be SPIKED (if necessary)

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

TIC : LA-622-102 (C-0)		LIQUIDS	STANDARD
	Sample Volume in mL	(SS)	0.200
STANDARD	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	g of Carbon/L	=	$\frac{(C1-C2) * DF * DDF}{SS * 1000}$
TIC01	µg of Carbon/mL	=	g of Carbon/L * 1000000 µg/g / 1000 m
RDM			
12/02/95	Detection Level (µg/mL)	=	$\frac{1 \mu g C * DF * DDF}{SS}$
03:53 AM			

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

Data Entry by:	<i>[Signature]</i>	Date:	12/02/95
Approved by:	<i>[Signature]</i>	Date:	12/4/95

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
	Digest Dilution Factor (DDF)	1.000
3694	µg of Carbon in Sample (C1)	39.9
	µg of Carbon in Blank (C2)	1.4
TIC-01		
Liquid	g of Carbon/L =	2.12E+00
Sample		
S95T003708	g of Carbon/L =	$\frac{(C1-C2) * DF * DDF}{SS * 1000}$
Instrument Code		
TIC01		
RD Meyers	µg of Carbon/mL =	g of Carbon/L * 1000000 µg/g / 1000 m
12/02/95	Detection Level (µg/mL) =	$\frac{1 \mu g C * DF * DDF}{SS}$

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

Data Entry by:	<i>RW Schroeder</i>	Date:	12/04/95
Approved by:	<i>RLK for RW Schroeder</i>	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
Sample	Sample Volume in mL (SS)	0.200
3694	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
TIC-01		
Liquid	g of Carbon/L =	2.04E+00
S95T003708 Dup	g of Carbon/L =	$\frac{(C1-C2) * DF * DDF}{SS * 1000}$
TIC01	µg of Carbon/mL =	g of Carbon/L * 1000000 µg/g / 1000 m
RD Meyers	Detection Level (µg/mL) =	$\frac{1 \mu g C * DF * DDF}{SS}$
12/02/95		

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

Data Entry by:	<i>RW Schneider</i>	Date:	12/04/95
Approved by:	<i>REH for RW Schneider</i>	Date:	1/2/96

A	B	C	D	E	F	G	H	I	J
1	PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE								
2									
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25									

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

TOC: LA-344-105		SPIKED SAMPLE		SPIKE
27	Sample Type	>>>>> Sample Vial Data <<<<<	>>>>> Spiked Vial Data <<<<<	
28	SPIKE	Sample Volume in mL	1.000	Sample Size in mL (SS)
29	Work List	H2SO4 Volume in mL	10.000	Spike Volume in mL
30	3694	Volume Injected in mL	0.200	H2SO4 Volume in mL
31	3694	ug of Carbon in Sample	39.9	Volume Injected in mL
32	TIC-01	ug of Carbon in Blank	1.4	Sample Pre-Spike Dil. Factor (PDF)
33	Matrix			Spike Value (ug/mL)
34	Liquid			ug C in Sample + Spike
35	Sample #			ug C in Blank
36	S95T003708			
37	Instrument Code			
38	TIC01	PERCENT SPIKE REC = $\frac{\mu\text{g Carbon Recovered from Spike} \times 100}{\mu\text{g Carbon in Spike}}$		
39	Analyst	WHERE : $\mu\text{g Carbon Recovered from Spike} = [(\mu\text{gC in sample} + \text{spike} - \mu\text{gC in blank}) \times (\text{Spike Correction Factor})]$		
40	RD Meyers	- $[(\mu\text{gC sample} - \mu\text{gC blank}) \times (\text{Sample Correction Factor}) \times (\text{Sample Size Correction Factor}) \times (\text{PDF})]$		
41	Date	Spike Correction Factor = $\frac{\text{Total volume in spiked sample vial (mL)}}{\text{Volume injected (mL)}}$		
42	12/01/95	Sample Correction Factor = $\frac{\text{Total volume in sample vial (mL)}}{\text{Volume injected (mL)}}$		
43	Time	Sample Size Correction Factor = $\frac{\text{Sample size in (mL) in spiked vial}}{\text{Sample size (mL) in sample}}$		
44		Sample Pre-Spike Dilution Factor = $\frac{1}{\text{Dilution of Sample Before Added to Spike Vial}}$		
45		WHERE : $\mu\text{g Carbon in Spike} = \text{Spike Value } (\mu\text{g/mL}) \times \text{Spike Volume (mL)}$		
46		Percent Spike Recovery 95.8%		

63	Date Entry by:	<i>RW Schreder</i>	Date:	04-Dec-95
64	Approved by:	<i>Ratna for RW Schreder</i>	Date:	1/5/96

Form X Rev. 1.1

(/ system;exit)yes~

(/ print;block)~
(/ print;printtofit)

Control Log	
76	Date/Initials
77	6/2/94 MLB
78	5/10/95 MLB
79	10/19/95 RLR
80	10/31/95 RLR
Description of Change	
VERBAGE ADDED FOR CLARIFICATION, REV. 1.1	
FONTS CHANGED IN B41,42,43, NO CALCULATIONS EFFECTED.	
Added print range to cell A100 (for ACE-2), REV 1.1	
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

		Sample
Type	Sample Volume in mL (SS)	0.200
Sample	Dilution Factor (DF)	11.000
Work List	Digest Dilution Factor (DDF)	1.000
3694	µg of Carbon in Sample (C1)	43.5
Test Code	µg of Carbon in Blank (C2)	1.4
TIC-01		
Matrix		
Liquid	g of Carbon/L =	2.32E+00
Sample #	g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$	
S95T003709		
Instrument Code	µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m	
TIC01		
Analyst		
RD Meyers		
Date	Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{SS}$	
12/02/95		
Time		

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

Data Entry by: <i>RW Schroeder</i>	Date: 12/04/95
Approved by: <i>for RW Schroeder</i>	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
Type	Sample Volume in mL	(SS)	0.200
Sample	Dilution Factor	(DF)	11.000
Work List	Digest Dilution Factor	(DDF)	1.000
3694	µg of Carbon in Sample	(C1)	37.5
Test Code	µg of Carbon in Blank	(C2)	1.4
TIC-01			
Matrix			
Liquid	g of Carbon/L	=	1.99E+00
Sample #			
S95T003709 Dup	g of Carbon/L	=	$\frac{(C1-C2) * DF * DDF}{SS * 1000}$
Instrument Code			
TIC01			
Analyst	µg of Carbon/mL	=	g of Carbon/L * 1000000 µg/g / 1000 m
RD Meyers			
Date			
12/02/95	Detection Level (µg/mL)	=	$\frac{1 \mu g C * DF * DDF}{SS}$
Time			

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

Data Entry by:	<i>RW Schaefer</i>	Date:	12/04/95
Approved by:	<i>RD Meyers</i>	Date:	1/3/96

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

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 107.

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

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 12-02-95

RD MEYERS

00000

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

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:

RD MEYERS 12.02.95

RD MEYERS

00000

$|3.6 - 1.4| = 2.2$

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

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 *11/3/96*

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:

(39.9 - 1.401101) ~~(55)~~ / (200) =
(39.9 - 1.401101) (55) / (200) (12) =

11/3/96 2.12E+00
+1.06E+01
+8.82E-01

g/L Carbon
Molar Carbon

Sample Run By:

RD MEYERS 12-02-95

00000

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

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 *not 11/16*

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~~) / (200) =

(38.4 - 1.400367) (55) / (200) (12) =

not 11/16
2.04E+00
~~+1.02E+01~~
+8.48E-01

g/L Carbon
Molar Carbon

Sample Run By:

RD Meyers 12-02-95
RD MEYERS

00000

WHC-SD-WM-DP-163 REV 0
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

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

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 12-02-95

RD MEYERS

00000

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

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

Sample: 3709DUP

Date: 12/02/95

Time: 03:52:57

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		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

RD MEYERS

00000

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

RADIOCHEMICAL ANALYSES

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

TX 244

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

Page: 1

LABCORE Data Entry Template for Worklist# 4061

Analyst: AKL Instrument: AB00 #16 Book# 11056

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

AKL
Analyst Signature

12/7/95
Date

[Signature]
Analyst Signature

12/8/95
Date

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

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

STANDARD

		STANDARD	REPLICATE
Type	DETECTOR NUMBER	16	16
STD	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	82108	84374
4061	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	15	15
TB	SAMPLE SIZE in mL (SS)	10.000	10.000
Test Code	DILUTION FACTOR (DF)	1	1
QAB-01	STANDARD BOOK NUMBER (Std BN)	11B56	11B56
Matrix	EFFICIENCY FACTOR (EFF)	0.4195	0.4195
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	2721.933	2797.467
Batch Number	Standard Value in $\mu\text{Ci/mL}$	2.74E-04	
95004578	Concentration in $\mu\text{Ci/L}$	2.92E-01	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	3.00E-01	
0	AVERAGE CONCENTRATION in $\mu\text{Ci/L}$	2.9633E-01	
Sample Prep			
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	TOTAL BETA $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
WL4061	TOTAL BETA $\mu\text{Ci/mL}$ = TOTAL BETA $\mu\text{Ci/L} / 1000\text{mL/L}$		
Instrument Code	Relative Counting Error = $[\{ (\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT) \}]^2 * 1.96 * 100$		
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SZC			
Chemist			
SLF	TOTAL BETA CONTRATION in $\mu\text{Ci/mL}$	2.96E-04	
Analyst			DETECTION LEVEL
AKL			
Date Complete			3.64E-07 $\mu\text{Ci/mL}$
12/08/95	RELATIVE COUNTING ERROR =	0.7%	
Analysis Date			
12/07/95			
Analysis Time			
12:00 PM			
Sample Point			
TX-244			

Analyst:	SZC	Date: 08-Dec-95
Signature of Chemist:	SLF	Date: 12/11/95
STANDARD WB1 Rev. 1.0	508101ML	

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

STANDARD

		STANDARD	REPLICATE
Type	DETECTOR NUMBER	16	16
STD	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	2800	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 $\mu\text{Ci/mL}$	1.92E-05	
95004578	Concentration in $\mu\text{Ci/L}$ =	1.99E-02	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$ =	2.09E-02	
0	AVERAGE CONCENTRATION in $\mu\text{Ci/L}$ =	2.0420E-02	
Sample Prep			
N/A			
Sample #	Rs (Sample Count Rate) = (TC / CT) - BKG		
WL4061	ALPHA TOTAL $\mu\text{Ci/L}$ = Rs * 1000mL/L * DF / (EFF * SS * 2220000dpm/ μCi)		
Instrument Code	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L}$ / 1000mL/L		
WB27806	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100		
Prepared By	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
SZC			
Chemist			
SLF	ALPHA TOTAL CONCENTRATION in $\mu\text{Ci/mL}$	2.04E-05	DETECTION LEVEL
Analyst			
AKL			
Date Complete	RELATIVE COUNTING ERROR =	3.7%	1.05E-07 $\mu\text{Ci/mL}$
12/08/95			
Analysis Date			
12/07/95			
Analysis Time			
12:00 PM			
Sample Point			
TX-244			

Analyst:	SZC	Date: 08-Dec-95
Signature of Chemist:	SLF	Date: 12/11/95
STANDARD.WB1 Rev. 1.0	508101ML	

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

SOLIDS

Type	DETECTOR NUMBER	BLNK-PREP	REPLICATE
BLNK-PREP	DISH SIZE (1, 2, or 5) (MS)	16	16
Work List	GROSS COUNTS (GC)	2	2
4061	COUNT TIME in MINUTES (CT)	522	582
AT or TB ?	BACKGROUND in cpm (BKG)	30	30
TB	SAMPLE SIZE in mL (SS)	15	15
Test Code	DILUTION FACTOR (DF)	0.100	0.100
@AB-01	DIGEST GRAMS of SOLIDS / L (Dg/L)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	2.054	2.054
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.4195	0.4195
Batch Number		2.400	4.400
95004578	Blank Concentration in $\mu\text{Ci/g}$	1.25E-02	
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	2.30E-02	
0	Average Concentration in $\mu\text{Ci/g}$	1.7774E-02	
Sample Prep			
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	TOTAL BETA $\mu\text{Ci/g}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
WL#4061	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
Instrument Code	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
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			

v RESULTS v

TOTAL BETA	in $\mu\text{Ci/g}$	1.78E-02	DETECTION LEVEL
RELATIVE COUNTING ERROR		84.9%	1.77E-02 $\mu\text{Ci/g}$

Analyst:	SZC	Date: 08-Dec-95
Signature of Chemist:	SLF	Date: 12/11/95
BLANK.WB1 Rev. 1.0	508101ML	

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

SOLIDS

BLNK-PREP	REPLICATE
16	16
2	2
12	4
30	30
0.22	0.22
0.100	0.100
1	1
2.054	2.054
0.2104	0.2104
0.417	0.200

Type	DETECTOR NUMBER		
BLNK-PREP	DISH SIZE (1, 2, or 5)	(MS)	
Work List	GROSS COUNTS	(GC)	
4061	COUNT TIME in MINUTES	(CT)	
AT or TB ?	BACKGROUND in cpm	(BKG)	
AT	SAMPLE SIZE in mL	(SS)	
Test Code	DILUTION FACTOR	(DF)	
@AB-01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	
Matrix	EFFICIENCY FACTOR	(EFF)	
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE		
Batch Number			
95004578	Blank Concentration in $\mu\text{Ci/g}$	< 4.35E-03	
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	< 2.08E-03	
0	Maximum Concentration in $\mu\text{Ci/g}$	< 4.3486E-03	
Sample Prep			
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	$\text{ALPHA TOTAL } \mu\text{Ci/g} = R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
WL#4061			
Instrument Code	Relative Counting Error = $[(The\ Square\ Root\ of\ TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SZC			
Chemist			
SLF	α RESULTS α		
Analyst	ALPHA TOTAL in $\mu\text{Ci/g}$	< 4.35E-03	DETECTION LEVEL
AKL	LESS THAN Value was Determined from Rmax.		
Date Complete	RELATIVE COUNTING ERROR	500.0%	5.11E-03 $\mu\text{Ci/g}$
12/08/95			
Analysis Date			
12/07/95			
Analysis Time			
12:00 PM			
Sample Point			
TX-244			

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

BLANK WB1 Rev. 1.0

508101ML

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

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 $\mu\text{Ci/g}$	3.51E+01	
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	3.57E+01	
0	Average Concentration in $\mu\text{Ci/g}$	3.5373E+01	
Sample Prep			
FUSION01	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	TOTAL BETA $\mu\text{Ci/g}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
S95T003768			
Instrument Code	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
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			

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

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	16	16
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	5470	5760
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	182.113	191.780
Batch Number			
95004578	Blank Concentration in $\mu\text{Ci/g}$	1.90E+00	
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	2.00E+00	
0	Average Concentration in $\mu\text{Ci/g}$	1.9486E+00	
Sample Prep			
FUSION01	Rs (Sample Count Rate) = (TC / CT) - BKG		
Sample #	ALPHA TOTAL $\mu\text{Ci/g}$ = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/ μCi)		
S95T003768			
Instrument Code	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100		
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SZC			
Chemist			
SLF			
Analyst	v RESULTS v		
AKL	ALPHA TOTAL	in $\mu\text{Ci/g}$	1.95E+00
Date Complete			
12/08/95	RELATIVE COUNTING ERROR	2.7%	
Analysis Date			
12/07/95			
Analysis Time			
12:00 PM			
Sample Point			
TX-244			

Analyst	SZC	Date: 08-Dec-95
Signature of Chemist	SLF	Date: 12/11/95
SAMPLE WB1 Rev. 1.0	508101 ML	

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

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 $\mu\text{Ci/g}$	3.49E+01	
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	3.40E+01	
0	Average Concentration in $\mu\text{Ci/g}$	3.4425E+01	
Sample Prep			
FUSION01	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	TOTAL BETA $\mu\text{Ci/g}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
S95T003768			
Instrument Code	Relative Counting Error = $[(The\ Square\ Root\ of\ TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
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			

Analyst:	SZC	Date: 08-Dec-95
Signature of Chemist:	SLF	Date: 12/11/95
SAMPLE WB1 Rev. 1.0	508101ML	

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

WORKBOOK PAGE: DUP1

AT : 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)	5528	5147
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)	2.048	2.048
Matrix	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs.(SAMPLE RATE) as APPROPRIATE	184.047	171.347
Batch Number			
95004578	Blank Concentration in $\mu\text{Ci/g}$	1.92E+00	
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	1.79E+00	
0	Average Concentration in $\mu\text{Ci/g}$	1.8576E+00	
Sample Prep			
FUSION01	Rs (Sample Count Rate) = $(\text{TC} / \text{CT}) - \text{BKG}$		
Sample #	ALPHA TOTAL $\mu\text{Ci/g}$ = $\text{Rs} * 1000\text{mL/L} * \text{DF} / (\text{EFF} * \text{SS} * \text{Dg/L} * 2220000\text{dpm}/\mu\text{Ci})$		
S95T003768			
Instrument Code	Relative Counting Error = $[(\text{The Square Root of TC} + \text{BKG} * \text{CT}) / (\text{TC} - \text{BKG} * \text{CT})] * 1.96 * 100$		
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SZC			
Chemist			
SLF	ALPHA TOTAL	1.86E+00	
Analyst	in $\mu\text{Ci/g}$		
AKL			
Date Complete			
12/08/95	RELATIVE COUNTING ERROR	2.7%	
Analysis Date			
12/07/95			
Analysis Time			
12:00 PM			
Sample Point			
TX-244			

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 $\mu\text{Ci/mL}$ (SVal)	1.6976E-01	1.6976E-01
Rerun	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.4195	0.4195
0	SAMPLE + SPIKE $\mu\text{Ci/g}$ (S+S)	1.24E+02	1.27E+02
Sample Prep	AVERAGE or MAXIMUM $\mu\text{Ci/g}$ in SAMPLE	3.5373E+01	
FUSION01			
Sample #			
S95T003768			
Instrument Code			
WB27806			
Prepared By			
SZC			
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			

$$R_s (\text{Sample Count Rate}) = (TC / CT) - BKG$$

$$\text{SAMPLE} + \text{SPIKE } \mu\text{Ci/g} = R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$$

$$QC \text{ ACTUAL} = SVal$$

$$QC \text{ FOUND} = (((S+S \mu\text{Ci/g} - \text{SAMPLE } \mu\text{Ci/g}) * ((SDF/(SVol*1000))/(DF/SS/Dg/L))))$$

$$\text{PERCENT SPIKE RECOVERY} = (QC \text{ FOUND} / QC \text{ ACTUAL}) * 100$$

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

SPIKE WB1 Rev. 1.0

508101ML

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

WORKBOOK PAGE: SPIKE12

AT : 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)	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 $\mu\text{Ci/mL}$ (SVal)	3.9217E-02	3.9217E-02
Rerun	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.2104	0.2104
0	SAMPLE + SPIKE $\mu\text{Ci/g}$ (S+S)	1.98E+01	2.03E+01
Sample Prep	AVERAGE or MAXIMUM $\mu\text{Ci/g}$ 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 $\mu\text{Ci/g}$ = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/ μCi)
QC ACTUAL = SVal
QC FOUND = (((S+S $\mu\text{Ci/g}$ - SAMPLE $\mu\text{Ci/g}$) * ((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: 12/14/95
SPIKE.WB1 Rev. 1.0	508101ML	

LABCORE Data Entry Template for Worklist# 3513

Analyst: CLG Instrument: GEA00 23^{Dr} Book# 144 B52
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

CLG 11-17-95
Analyst Signature Date

CLG 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

Removed by:

Em Base

>>>>>>> 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%

Verified by:

D. Rachelson 11/20/95

>>>>>>> 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

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

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

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
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

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

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

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

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

```

*****
* 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
Removed by: Jim Basile
date: _____

>>>>>>> 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
Verified by: Dr. Rachel 11/20/95

>>>>>>> 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
*****

```

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

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

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
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

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

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

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

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

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

 * 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

Removed by:

Em Butler

>>>>>>> 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%

Verified by:

B. Rachelon 11/20/95

>>>>>>> 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

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			

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

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
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

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

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
<hr/>			
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

E-4

Sample ID : S95T003710-SAM

Acquisition date : 18-NOV-1995 02:35:41

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

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

 * 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

Removed by:

Em Buehler

>>>>>>>> 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%

Verified by:

Stachela 11/20/95

>>>>>>>> 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

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

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

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
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

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

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

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

 * 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

Removed by:

Raymond

>>>>>>>> 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%

Verified by:

R. J. Machel 11/20/95

>>>>>>>> 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

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

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

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
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

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

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

Sample ID : S05T003711-SAM

Acquisition date : 18-NOV-1995 07:07:52

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

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

 * 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

Removed by:

Raymond

>>>>>>> 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%

Verified by:

Shahab 11/20/95

>>>>>>> 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

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

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

Summary of Nuclide Activity
Sample ID : S95T3711-DUP

Page : 2
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

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

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
<hr/>			
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

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S95T3711-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

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

LABCORE Data Entry Template for Worklist# 3716

Analyst: AKL Instrument: AB00#12 Book# 9b576

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

AKL 12/11/95
Analyst Signature Date

Raymond 12/12/95
Analyst Signature Date
12.13.95

Data Entry Comments:

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

LABCORE Completed Worklist Report for Worklist# 3716

Analyst: ak1

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

Date

12/14/95

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

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

WORKBOOK PAGE: STD1

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1) LIQUIDS				STANDARD	
Type	DETECTOR NUMBER	12	CARRIER ADDED in mL (CVA)	1.000	
STD	TOTAL COUNTS (TC)	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 $\mu\text{Ci/L}$ 1.1392E+00		
Sample Prep	DATE OF COUNT (DOC)	12/11/95			
N/A	STANDARD BOOK #	9B56			
Sample #	STANDARD VALUE in $\mu\text{Ci/mL}$	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 $\mu\text{Ci/mL}$ REPLACE RS WITH RMAX IF $RS \leq Lc$ AND $RS > 0$ OR REPLACE RS WITH Lc IF $RS < 0$				
MCB	$RS * DF * DDF * 1000 / ((C1 + C2 * (1 - e \text{ to the power of } ((-\text{natural log } 2) / 64.2 * DT)))) * SS * REC * 2220000)$				
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 = $(\text{Net Weight} / \text{Expected weight}) * 100$				
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					
12/11/95	Sr-89/90 CONCENTRATION	1.14E-03	$\mu\text{Ci/mL}$	DETECTION LEVEL 2.43E-06 $\mu\text{Ci/L}$	
Analysis Time					
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

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

WORKBOOK PAGE: BLANK2

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

					BLNK
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA) 1.000
BLNK	TOTAL COUNTS	(TC)	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 $\mu\text{Ci/L}$	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 $\mu\text{Ci/L}$ Replace RS with RMAX if $RS \leq Lc$ and $RS \geq 0$ or Replace RS with Lc if $RS < 0$				
Prepared By	$RS * DF * DDF / ((C1 + C2 * (1 - e^{-((-\text{natural log } 2) / 64.2 * DT))}) * SS * REC * 2220000)$				
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		$\mu\text{Ci/mL}$	DETECTION LEVEL 4.90E-04 $\mu\text{Ci/mL}$
Analysis Time	RELATIVE COUNTING ERROR	50.0%			
02:00 PM					
Sample Point	PERCENT CARRIER RECOVERY	96.6%			
TX-244 GRAB					

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

BLANK.WB1 REV 1.2

22010NML

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

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	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						DETECTION LEVEL 4.97E-04 µCi/mL
12/11/95	Sr-89/90 CONCENTRATION	8.49E-02	µCi/mL			
Analysis Time						
02:00 PM	RELATIVE COUNTING ERROR	3.2%				
Sample Point						
TX-244 GRAB	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

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

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
DUP	TOTAL COUNTS	(TC)	3991	GROSS WEIGHT	(W2)	1.000
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.0707
3716	BACKGROUND in cpm	(BKG)	3.2	NET WEIGHT	(W3)	6.9711
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)	0.0996
@SR90-01	DILUTION FACTOR	(DF)	101			3.25
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 $\mu\text{Ci/L}$		8.3323E+01
Sample Prep	DATE OF COUNT	(DOC)	12/11/95			
N/A						
Sample #						
S95T003710						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB27811	Sr-89/90 CONC in $\mu\text{Ci/L}$ Replace RS with RMAX if $RS \leq Lc$ and $RS > 0$ or Replace RS with Lc if $RS < 0$					
Prepared By	$RS * DF * DDF / ((C1 + C2 * (1 - e^{(-\ln(2) / 64.2 * DT))}) * SS * REC * 2220000)$					
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		8.33E-02	$\mu\text{Ci/mL}$		DETECTION LEVEL 4.73E-04 $\mu\text{Ci/mL}$
Analysis Time						
02:00 PM	RELATIVE COUNTING ERROR		3.1%			
Sample Point						
TX-244 GRAB	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

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)	SAMPLE
SAMPLE	TOTAL COUNTS (TC)	4220	GROSS WEIGHT	(W2)	7.0487
Work List	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT	(W1)	6.9539
3716	BACKGROUND in cpm (BKG)	3.2	NET WEIGHT	(W3)	0.0948
Test Code	SAMPLE VOLUME in mL (SS)	0.500	DELTA TIME (HOURS)	(DT)	3.42
@SR90-01	DILUTION FACTOR (DF)	101			
Matrix	DIGEST DILUTION FACTOR (DDF)	1			
LIQUID	SAMPLE COUNT RATE (Rs)	418.80	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)	15:55	Sr-89/90 CONC in $\mu\text{Ci/L}$ 9.2434E+01		
Sample Prep	DATE OF COUNT (DOC)	12/11/95			
N/A					
Sample #					
S95T003711					
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
WB27811	Sr-89/90 CONC in $\mu\text{Ci/L}$ 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	9.24E-02	$\mu\text{Ci/mL}$	DETECTION LEVEL 4.96E-04 $\mu\text{Ci/mL}$	
Analysis Time					
02:00 PM	RELATIVE COUNTING ERROR	3.1%			
Sample Point					
TX-244 GRAB	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

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

WORKBOOK PAGE: DUP7

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
DUP	TOTAL COUNTS	(TC)	4047	GROSS WEIGHT	(W2)	1.000
Work List	COUNT TIME In MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.0285
3716	BACKGROUND In cpm	(BKG)	3.2	NET WEIGHT	(W3)	6.9373
Test Code	SAMPLE VOLUME In mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)	0.0912
@SR90-01	DILUTION FACTOR	(DF)	101			3.67
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	401.50	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)	16:10	Sr-89/90 CONC In µCi/L		9.1858E+01
Sample Prep	DATE OF COUNT	(DOC)	12/11/95			
N/A						
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	Sr-89/90 CONCENTRATION		9.19E-02	µCi/mL		DETECTION LEVEL 5.14E-04 µCi/mL
Analysis Time						
02:00 PM	RELATIVE COUNTING ERROR		3.1%			
Sample Point						
TX-244 GRAB	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# 104843

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

AKL # 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 # 104B43

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

A. Lewis 12/8/95
Analyst Signature Date

M. R. Lewis 12/2/95

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

STD

Type	Date Counted	DEC-07-95	Am 241 AEA Frac. (C241)	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		
Recon	Standard Value in $\mu\text{Ci/mL}$	0.03067	Am 241 $\mu\text{Ci/L}$ =	2.7183E+01		
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 4.9630E+00		
Sample Prep						
N/A						
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))					
WL3796	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))					
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100					
AL10539	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV					
Prepared By						
CJO						
Chemist						
LLF	Am 241 $\mu\text{Ci/mL}$ =	2.72E-02	DETECTION LEVELS in $\mu\text{Ci/mL}$			
Analyst	Relative Counting Error =	1.3%				
AKL						
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.					
12/08/95	Cm 243/244 $\mu\text{Ci/mL}$	< 4.96E-03	Am 241	4.96E-03		
Analysis Date	Relative Counting Error =	100.0%	Cm 243/244	4.96E-03		
12/07/95	Am 243 Tracer Recovery =	76.9%				
Analysis Time						
02:00 PM						
Sample Point						
TX-244						

Analyst:	AKL	Date:	12/08/95
Signature of Chemist: <i>AKL</i>	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.	114843	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			
Run			Am 241 $\mu\text{Ci/L}$ =	< 2.9024E-01			
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 2.9024E-01			
Sample Prep							
N/A							
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))						
WL3796	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))						
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100						
AL10540	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV						
Prepared By							
CJO							
Chemist	NOTE: Am-241 Result is a LESS THAN Value.						
LLF	Am 241 $\mu\text{Ci/mL}$ =	< 2.90E-04	DETECTION LEVELS In $\mu\text{Ci/mL}$	Am 241			
Analyst	Relative Counting Error =	100.0%					
AKL				2.90E-04			
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.						
12/08/95	Cm 243/244 $\mu\text{Ci/mL}$	< 2.90E-04					
Analysis Date	Relative Counting Error =	100.0%					
12/07/95	Am 243 Tracer Recovery =	78.7%					
Analysis Time							
02:00 PM							
Sample Point							
TX-244							

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

			LIQUID / SOLID		SAMPLE			
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			
Room				Am 241 $\mu\text{Ci/L}$ =	< 2.7343E-01			
0				Cm 243/244 $\mu\text{Ci/L}$ =	< 2.7343E-01			
Sample Prep								
N/A								
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))							
S95T003710	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))							
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100							
AL10541	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV							
Prepared By								
CJO								
Chemist	NOTE: Am-241 Result is a LESS THAN Value.							
LLF	Am 241 $\mu\text{Ci/mL}$ =	< 2.73E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$					
Analyst	Relative Counting Error =	5.6%						
AKL								
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.							
12/08/95	Cm 243/244 $\mu\text{Ci/mL}$	< 2.73E-04	Am 241					
Analysis Date	Relative Counting Error =	100.0%	2.73E-04					
12/07/95	Am 243 Tracer Recovery =	83.6%	Cm 243/244					
Analysis Time								
02:00 PM								
Sample Point								
TX-244								

Analyst:	AKL	Date:	12/08/95
Signature of Chemist: <i>AKL</i>	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

				DUP	
Type	Date Counted	DEC-07-95	Am 241 AEA Frac. (C241)		0.017
DUP	Sample Volume in mL (SS)	0.100	Am 243 AEA Frac. (C243)		0.881
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 (DetEm)	0.5000	Cm 243/244 cpm		0
95004284			AEA Count Time (min)		480
Ratio			Am 241 $\mu\text{Ci/L}$ =	<	2.9548E-01
0			Cm 243/244 $\mu\text{Ci/L}$ =	<	2.9548E-01
Sample Prep					
N/A					
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
S95T003710	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100				
AL10539	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEm) * C243 * 100 / Am-243 Tracer Value * SPKV				
Prepared By	CJO				
Chemist	NOTE: Am-241 Result is a LESS THAN Value.				
LLF	Am 241 $\mu\text{Ci/mL}$ =	< 2.95E-04	DETECTION LEVELS In $\mu\text{Ci/mL}$		
Analyst	Relative Counting Error =	5.6%			
AKL			Am 241		
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.		2.95E-04		
12/08/95	Cm 243/244 $\mu\text{Ci/mL}$	< 2.95E-04	Cm 243/244		
Analysis Date	Relative Counting Error =	100.0%	2.95E-04		
12/07/95	Am 243 Tracer Recovery =	79.7%			
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: SAM5

Am 241 and Cm 243/244: LA-953-103 (A-4)

LIQUID / SOLID

			SAMPLE			
Type	Date Counted	DEC-07-95	Am 241 AEA Frac. (C241)	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	12508		
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30		
QAM24101	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		
Recovery			Am 241 $\mu\text{Ci/L}$ =	< 2.5551E-01		
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 2.5551E-01		
Instrument Code						
N/A						
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))					
S95T003711	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))					
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100					
AL10540	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV					
Prepared By						
CJO						
Chemist	NOTE: Am-241 Result is a LESS THAN Value.					
LLF	Am 241 $\mu\text{Ci/mL}$ =	< 2.56E-04	DETECTION LEVELS In $\mu\text{Ci/mL}$			
Analyst	Relative Counting Error =	5.3%				
AKL						
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.					
12/08/95	Cm 243/244 $\mu\text{Ci/mL}$	< 2.56E-04	Am 241	2.56E-04		
Analysis Date	Relative Counting Error =	100.0%	Cm 243/244	2.56E-04		
12/07/95	Am 243 Tracer Recovery =	85.3%				
Analysis Time						
02:00 PM						
Sample Point						
TX-244						

Analyst:	AKL	Date:	12/08/95
Signature of Chemist: <i>AKL</i>	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

DUP

Type	Date Counted	DEC-07-95	Am 241 AEA Frac. (C241)	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.	114543	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			
Run			Am 241 $\mu\text{Ci/L}$ =	< 2.8801E-01			
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 2.8801E-01			
Sample Prep							
N/A							
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))						
S95T003711	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))						
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100						
AL10541	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV						
Prepared By	NOTE: Am-241 Result is a LESS THAN Value.						
CJO							
Chemist							
LLF	Am 241 $\mu\text{Ci/mL}$ =	< 2.88E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$	Am 241			
Analyst	Relative Counting Error =	5.7%					
AKL							
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.						
12/08/95	Cm 243/244 $\mu\text{Ci/mL}$	< 2.88E-04	Cm 243/244	2.88E-04			
Analysis Date	Relative Counting Error =	100.0%					
12/07/95	Am 243 Tracer Recovery =	79.2%					
Analysis Time							
02:00 PM							
Sample Point							
TX-244							

Analyst:	AKL	Date:	12/08/95
Signature of Chemist: <i>LLF</i>	LLF	Date:	11 Dec 95

SAMPLE WB1 REV 1.2

953103ML

Westinghouse Hanford Co.

Raymond
12-7-95

GENERAL ALPHA ENERGY ANALYSIS
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		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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	Peak Centroid				Count	%err		Activity
		Frac	Exp.	Obs.	Diff.	FWHM	Rate c/m	@95	d/m	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

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

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 39380.7

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

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.	0.
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.	0.	0.	0.	0.
351	1.	0.	0.	1.	0.	0.	1.	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.	0.	0.	0.	0.	0.	0.	1.	0.

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

Westinghouse Hanford Co.

Raymond
12-17-95

GENERAL ALPHA ENERGY ANALYSIS
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		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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 0.0030	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

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


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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.	0.	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.	0.	0.	0.	0.	0.	0.	0.	0.

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

Westinghouse Hanford Co.

Raymond
12-7-95

GENERAL ALPHA ENERGY ANALYSIS
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		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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	Count Rate	%err @95	d/m	Activity uCi/ea
		Exp.	Obs. Diff.	c/m			
1	Pu238	0.018	5.487 5.488 -.001	10.01	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	60.01	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

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

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 41032.4

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

Raw	Data	Dump	for	AEA	Spectrum:	27a2777.CNF				
1	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
21	0.	0.	1.	0.	0.	0.	0.	0.	1.	1.
31	1.	0.	0.	1.	0.	0.	1.	0.	2.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
51	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
61	0.	1.	0.	0.	0.	0.	2.	0.	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.								

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

Westinghouse Hanford Co.

Raymond
12-7-95

GENERAL ALPHA ENERGY ANALYSIS
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		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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	Exp.	Obs.	Diff.	FWHM	Count Rate	%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

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

Spectrum 28a2884.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 36248.1

1 Legend: Raw = Modeled Peaks = 1,2,.., etc

Display Max.: 36248.1

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

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.								

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

Westinghouse Hanford Co.

Raymond
12-7-95

GENERAL ALPHA ENERGY ANALYSIS
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		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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			Count Rate c/m	%err @95	d/m	Activity uCi/ea	
			Exp.	Obs.	Diff.					
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

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

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 30427.7

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

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.	0.	0.	0.	0.	0.	0.	0.	0.

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

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
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		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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	0.000	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

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

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 37531.0

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

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.								

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

LABCORE Completed Worklist Report for Worklist# 3748

Analyst: ak1

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

AK1 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.

AK1 12/5/95

14

11/22/95 16:37
A-0004-1

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

Page: 1

LABCORE Data Entry Template for Worklist# 3748

Analyst: AKL Instrument: PU01 Book# 104843Method: 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

Analyst Signature AKL Date 11/30/95Analyst Signature J. Hogan Date 12/1/95
J. Hogan 12/4/95

Data Entry Comments:

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

Pu 238 and 239/240 : LA-943-127 (B-1)

LIQUID

Type	DATE COUNTED	NOV-30-95	PU 236 AEA FRAC (C236)	STD
STD	SAMPLE VOLUME in mL	SS	0.100	0.430
Work List	SAMPLE DILUTION FACTOR	DF	101.000	0.000
3748	TRACER VOLUME in mL	SPKV	0.100	0.579
Test Code	DIGEST DILUTION FACTOR	DDF	1.000	5015
@PU23901	TRACER BOOK NO	117B43	AT COUNT TIME (MIN)	30
Matrix	DETECTOR NUMBER	1	BACKGROUND in cpm (Bkg)	5.000
LIQUID	EFFICIENCY FACTOR	EFF	0.500	24.590
Batch Number	TRACER PREPARATION DATE	09/12/95	PU 238 cpm	0.000
95004169	TRACER PREPARATION VALUE (dpm/mL)	2265.000	PU 239 cpm	33.090
Run	PU-236 DECAY CORR'D VALUE (dpm/mL)	2148.931	AEA COUNT TIME	480
0	PU-238 TRACER VALUE (dpm/mL)	0.000	Pu 239/240 μ Ci/L	1.3164E+02
Sample Prep	STANDARD BOOK NO	104B43		
N/A	STANDARD VALUE in μ Ci/mL	0.128		
Sample #				
WRKLST#3748				
Instrument Code	Decay Time = Date Counted - Tracer Preparation Date			
AL10539	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.95)}]			
Prepared By	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 1/EFF * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV			
MCB	Pu 239/240 μ Ci/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(2220000 dpm/ μ Ci)]			
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 μ Ci/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery / 100)(2220000 dpm/ μ Ci)(D g/L)(SS)]			
Analyst	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100			
AKL				
Date Complete	v RESULTS v			
12/01/95	Pu 239/240 μ Ci/mL	1.32E-01	DETECTION LEVELS in μ Ci/mL Pu 239/240 1.05E-02	
Analysis Date	Relative Counting Error =	2.4%		
11/30/95				
Analysis Time				
03:30 PM				
Sample Point				
TX-244 GRAB	Pu 236 Tracer Recovery =	64.9%		

Analyst:	AKL	Date:	01-Dec-95
Signature of Chemist: <i>AKL</i>	LLF	Date:	5 Dec 95

STANDARD WB1 REV 1.2

943127ML

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

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-127 (B-1)

LIQUID / SOLID

				BLNK
Type	DATE COUNTED	NOV-30-95	PU 236 AEA FRAC (C236)	1.017
BLNK	SAMPLE VOLUME in mL SS	0.100	PU 238 AEA FRAC (C238)	0.000
Work List	SAMPLE DILUTION FACTOR DF	1.000	PU 239 AEA FRAC (C239)	0.000
3748	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS	1383
Test Code	DIGEST DILUTION FACTOR DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	117B43	BACKGROUND in cpm (Bkg)	4.000
Matrix	DETECTOR NUMBER	2	PU 236 cpm	16.170
LIQUID	EFFICIENCY FACTOR EFF	0.5000	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE	09/12/95	PU 239 cpm	0.000
95004169	TRACER PREPARATION VALUE (dpm/mL)	2265.00	AEA COUNT TIME	480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)	2148.93	Pu 239/240 $\mu\text{Ci/L}$ =	< 7.166E-02
0	PU-238 TRACER VALUE (dpm/mL)	0.00		

Sample Prep
N/A

Decay Time = Date Counted - Tracer Preparation Date
 Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.95)}]
 Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)
 Pu 239/240 $\mu\text{Ci/L}$ = (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 $\mu\text{Ci/L}$ = [(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

LLF
Analyst
AKL

Date Complete

✓ RESULTS ✓

12/01/95	Pu 239/240 $\mu\text{Ci/mL}$	< 7.17E-05	DETECTION LEVELS in $\mu\text{Ci/mL}$ Pu 239/240 7.17E-05 Pu 238 7.17E-05
Analysis Date	Relative Counting Error	= 100.0%	
11/30/95	NOTE: Pu 238 Result is a LESS THAN Value.		
Analysis Time	Pu 238 $\mu\text{Ci/mL}$	< 7.17E-05	
03:30 PM	Relative Counting Error	= 100.0%	
Sample Point	Pu 236 Tracer Recovery	= 39.8%	
TX-244 GRAB			

Analyst: AKL Date: 01-Dec-95
 Signature of Chemist: *LLF* LLF Date: 5 Dec 95

BLANK.WB1 REV 1.2 943127ML

Pu 238 and 239/240 : LA-943-127 (B-1)

LIQUID / SOLID

				SAMPLE
Type	DATE COUNTED	NOV-30-95	PU 236 AEA FRAC (C236)	0.153
SAMPLE	SAMPLE VOLUME in mL	SS 0.100	PU 238 AEA FRAC (C238)	0.149
Work List	SAMPLE DILUTION FACTOR	DF 1.000	PU 239 AEA FRAC (C239)	0.675
3748	TRACER VOLUME in mL	SPKV 0.100	TOTAL AT COUNTS	16994
Test Code	DIGEST DILUTION FACTOR	DDF 1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	117B43	BACKGROUND in cpm (Bkg)	5.000
Matrix	DETECTOR NUMBER	3	PU 236 cpm	29.830
LIQUID	EFFICIENCY FACTOR	EFF 0.500	PU 238 cpm	29.190
Batch Number	TRACER PREPARATION DATE	09/12/95	PU 239 cpm	131.980
95004169	TRACER PREPARATION VALUE (dpm/mL)	2265.000	AEA COUNT TIME	480
Result	PU-236 DECAY CORR'D VALUE (dpm/mL)	2148.931	Pu 239/240 μ Ci/L	4.2705E+00
0	PU-238 TRACER VALUE (dpm/mL)	0.000		

Sample Prep

N/A

Sample #

S95T003710

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

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu 238 μ Ci/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery / 100)(2220000 dpm/ μ Ci)(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

LLF

Analyst

AKL

Date Complete

12/01/95

v RESULTS v

Analysis Date	Pu 239/240 μ Ci/mL	4.27E-03	DETECTION LEVELS In μ Ci/mL
11/30/95	Relative Counting Error	= 1.8%	
Analysis Time	Pu 238 μ Ci/mL	9.43E-04	Pu 239/240
03:30 PM	Relative Counting Error	= 2.3%	2.37E-04
Sample Point	Pu 236 Tracer Recovery	= 80.0%	Pu 238
TX-244 GRAB			2.37E-04

Analyst:

AKL

Date: 01-Dec-95

Signature of Chemist:

LLF

Date: 5 Dec 95

SAMPLE.WB1 REV 1.2

943127ML

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

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-127 (B-1)

LIQUID / SOLID

				DUP
Type	DATE COUNTED	NOV-30-95	PU 236 AEA FRAC (C236)	0.165
DUP	SAMPLE VOLUME in mL	SS 0.100	PU 238 AEA FRAC (C238)	0.165
Work List	SAMPLE DILUTION FACTOR	DF 1.000	PU 239 AEA FRAC (C239)	0.683
3748	TRACER VOLUME in mL	SPKV 0.100	TOTAL AT COUNTS	16293
Test Code	DIGEST DILUTION FACTOR	DDF 1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	117B43	BACKGROUND in cpm (Bkg)	5.000
Matrix	DETECTOR NUMBER	1	PU 236 cpm	30.500
LIQUID	EFFICIENCY FACTOR	EFF 0.500	PU 238 cpm	30.590
Batch Number	TRACER PREPARATION DATE	09/12/95	PU 239 cpm	134.810
95004169	TRACER PREPARATION VALUE (dpm/mL)	2265.000	AEA COUNT TIME	480
Result	PU-236 DECAY CORR'D VALUE (dpm/mL)	2148.931	Pu 239/240 µCi/L	4.2654E+00
0	PU-238 TRACER VALUE (dpm/mL)	0.000		

Sample Prep	
N/A	
Sample #	Decay Time = Date Counted - Tracer Preparation Date
S95T003710	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)
AL10539	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	

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	Pu 238 µCi/mL	9.68E-04	2.41E-04
03:30 PM	Relative Counting Error	= 2.3%	Pu 238
Sample Point	Pu 236 Tracer Recovery	= 77.6%	2.41E-04
TX-244 GRAB			

Analyst:	AKL	Date:	01-Dec-95
Signature of Chemist: <i>LLF</i>	LLF	Date:	5 Dec 95

SAMPLE.WB1 REV 1.2

943127ML

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

WORKBOOK PAGE: SAM5

Pu 238 and 239/240 : LA-943-127 (B-1)

LIQUID / SOLID

				SAMPLE
Type	DATE COUNTED	NOV-30-95	PU 236 AEA FRAC (C236)	0.153
SAMPLE	SAMPLE VOLUME in mL	SS	PU 238 AEA FRAC (C238)	0.156
Work List	SAMPLE DILUTION FACTOR	DF	PU 239 AEA FRAC (C239)	0.898
3748	TRACER VOLUME in mL	SPKV	TOTAL AT COUNTS	16266
Test Code	DIGEST DILUTION FACTOR	DDF	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	117B43	BACKGROUND in cpm (Bkg)	4.000
Main	DETECTOR NUMBER	2	PU 236 cpm	31.000
LIQUID	EFFICIENCY FACTOR	EFF	PU 238 cpm	31.460
Batch Number	TRACER PREPARATION DATE	09/12/95	PU 239 cpm	141.000
95004169	TRACER PREPARATION VALUE (dpm/mL)	2265.000	AEA COUNT TIME	480
Run	PU-236 DECAY CORR'D VALUE (dpm/mL)	2148.931	Pu 239/240 μ Ci/L	4.4160E+00
0	PU-238 TRACER VALUE (dpm/mL)	0.000		

Sumok Prop	
N/A	
Sample #	Decay Time = Date Counted - Tracer Preparation Date
S95T003711	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of $\{(-\ln 2 * \text{Decay Time}/1040.95)\}$]
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 μ Ci/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/ μ Ci)]
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 μ Ci/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery / 100)(2220000 dpm/ μ Ci)(D g/L)(SS)]
Chemist	Relative Counting Error = Square Root of $\{[1 / (\text{Pu 236 cpm} * \text{min})] + [1 / (\text{Pu 238 or 239/240 cpm} * \text{min})]\} * 1.96 * 100$
LLF	
Analyst	
AKL	

Date Complete	v RESULTS v			
12/01/95	Pu 239/240 μ Ci/mL		4.42E-03	DETECTION LEVELS in μ Ci/mL
Analysis Date	Relative Counting Error	=	1.8%	
11/30/95				Pu 239/240
Analysis Time				2.48E-04
03:30 PM	Pu 238 μ Ci/mL		9.87E-04	Pu 238
Sample Point	Relative Counting Error	=	2.3%	2.48E-04
TX-244 GRAB	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	DATE COUNTED	NOV-30-95	PU 236 AEA FRAC (C236)	DUP
DUP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC (C238)
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC (C239)
3748	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)
@PU23901	TRACER BOOK NO	117B43	BACKGROUND in cpm (Bkg)	30
Matrix	DETECTOR NUMBER	3	PU 236 cpm	5.000
LIQUID	EFFICIENCY FACTOR	EFF	0.500	PU 238 cpm
Batch Number	TRACER PREPARATION DATE	09/12/95	PU 239 cpm	27.410
95004169	TRACER PREPARATION VALUE (dpm/mL)	2265.000	AEA COUNT TIME	28.650
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)	2148.931	Pu 239/240 μ Ci/L	125.020
0	PU-238 TRACER VALUE (dpm/mL)	0.000		480
Sample Prep				4.4074E+00
N/A				

Sample #	Decay Time = Date Counted - Tracer Preparation Date
S95T003711	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)
AL10541	Pu 239/240 μ Ci/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/ μ Ci)]
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 μ Ci/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery / 100)(2220000 dpm/ μ Ci)(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	

Date Complete	v RESULTS v		
12/01/95	Pu 239/240 μ Ci/mL	4.41E-03	DETECTION LEVELS In μ Ci/mL
Analysis Date	Relative Counting Error =	1.9%	
11/30/95			Pu 239/240
Analysis Time	Pu 238 μ Ci/mL	1.01E-03	2.99E-04
03:30 PM	Relative Counting Error =	2.4%	Pu 238
Sample Point	Pu 236 Tracer Recovery =	68.9%	2.99E-04
TX-244 GRAB			

Analyst:	AKL	Date:	01-Dec-95
Signature of Chemist: <i>AKL</i>	LLF	Date:	5 Dec 95

SAMPLE.WB1 REV 1.2

943127ML

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01

DATA REDUCTION REPORT

SAMPLE
WORKLIST3748-STD
File ID: 25a2571.CNFCounted on: 11/30/95 @23:29
Detector: AEA25
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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	Exp.	Obs.	Diff.	FWHM	Count Rate	%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

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

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 6927.6

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

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.								

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

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01

DATA REDUCTION REPORT

SAMPLE
WORKLIST3748-BLK
File ID: 26a2676.CNFCounted on: 11/30/95 @23:30
Detector: AEA26
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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 -0.007	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

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

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 3787.9

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1
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WHC-SD-WM-DP-163, REV. 0

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.	0.	0.	0.	0.	0.	0.	0.	0.

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

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01

DATA REDUCTION REPORT

SAMPLE
S95T3710-SAM
File ID: 27a2766.CNFCounted on: 11/30/95 @23:31
Detector: AEA27
Geometry number: 1
Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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	Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.153	5.755	5.760	-0.005	0.01	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	-0.007	0.01	29.19	1.7	2239.9	0.101E-02
	Am241		5.479	5.494	-0.015				1715.7	0.773E-03
3	Pu239	0.675	5.147	5.152	-0.005	0.01	131.98	0.8	7291.7	0.328E-02
	Pu240		5.144	5.152	-0.008				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

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

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 31948.0

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

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.	0.	0.	0.	0.	0.	0.	0.	0.

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

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
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		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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		Count Rate	%err @95	d/m	Activity uCi/ea	
			Exp.	Obs. Diff.	c/m				
1	Pu236	0.155	5.755	5.764 -0.009	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 -0.008	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 -.006	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

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

Analyzed by:

EMB

12-1-95

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 31809.7

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

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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.	0.	0.	0.	0.	0.	0.	0.	0.

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

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01

DATA REDUCTION REPORT

SAMPLE
S95T3711-SAM
File ID: 29a2954.CNFCounted on: 11/30/95 @23:32
Detector: AEA29
Geometry number: 1
Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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			Count	%err	d/m	Activity
			Exp.	Obs.	Diff.	FWHM	Rate c/m @95		uCi/ea
1	Pu236	0.153	5.755	5.752	0.003	30.02	31.00	1.6	3811.7
2	Pu238	0.156	5.487	5.485	0.002	30.02	31.46	1.6	5264.3
	Am241		5.479	5.485	-0.006				4032.2
3	Pu239	0.698	5.147	5.143	0.004	40.02	141.00	0.8	16987.5
	Pu240		5.144	5.143	0.001				16987.5
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

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

Analyzed by:

EMB

12-1-98

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 35744.2

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

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.	0.	1.	0.
91	1.	3.	1.	0.	0.	1.	1.	0.	2.	2.
101	1.	2.	1.	0.	1.	1.	3.	3.	0.	1.
111	2.	2.	2.	1.	2.	3.	4.	0.	2.	3.
121	5.	3.	6.	3.	5.	2.	1.	1.	1.	4.
131	3.	4.	1.	2.	4.	2.	6.	7.	3.	1.
141	8.	9.	9.	22.	17.	18.	23.	30.	5.	12.
151	17.	18.	19.	14.	13.	15.	8.	12.	27.	24.
161	3.	6.	5.	6.	2.	7.	9.	10.	2.	4.
171	6.	4.	2.	7.	2.	4.	3.	2.	6.	6.
181	5.	7.	8.	11.	8.	2.	5.	4.	5.	8.
191	10.	8.	9.	17.	18.	25.	4.	10.	11.	11.
201	42.	52.	52.	68.	94.	21.	30.	33.	32.	32.
211	267.	352.	431.	524.	658.	107.	137.	147.	174.	219.
221	1855.	2047.	2459.	2827.	3331.	780.	964.	1160.	1434.	1670.
231	6205.	5413.	3902.	2470.	1220.	3720.	4469.	5140.	5851.	6183.
241	0.	1.	1.	1.	0.	577.	200.	42.	13.	3.
251	3.	1.	2.	0.	0.	0.	0.	0.	3.	1.
261	2.	1.	2.	4.	3.	3.	1.	0.	1.	4.
271	4.	7.	6.	15.	6.	2.	2.	2.	6.	6.
281	27.	37.	45.	50.	65.	16.	12.	20.	18.	22.
291	237.	317.	354.	50.	65.	67.	94.	109.	137.	186.
301	816.	903.	1116.	451.	558.	644.	673.	690.	683.	694.
311	4.	0.	2.	1.	1.	0.	964.	525.	190.	37.
321	4.	4.	2.	1.	2.	4.	3.	2.	2.	2.
331	8.	16.	17.	10.	18.	11.	3.	11.	5.	12.
341	45.	48.	64.	98.	114.	22.	22.	20.	25.	46.
351	411.	483.	544.	622.	583.	128.	155.	230.	249.	303.
361	1046.	1216.	1242.	1220.	596.	548.	606.	674.	753.	897.
371	1.	0.	1.	2.	0.	0.	218.	36.	4.	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.	0.	0.	0.	0.	0.	0.	0.	0.

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

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01

DATA REDUCTION REPORT

SAMPLE
S95T3711-DUP
File ID: 30a3078.CNFCounted on: 11/30/95 @23:33
Detector: AEA30
Geometry number: 1
Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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			Count Rate	%err @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.	c/m			
1	Pu236	0.141	5.755	5.757	-.0020	27.41	1.7	244.9	0.110E-03
2	Pu238	0.147	5.487	5.490	-.0030	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	-.0010	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	-.0080	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

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

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 27919.1

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

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.	0.	0.	0.	0.	0.	0.	0.	0.

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

Tx244

LABCORE Completed Worklist Report for Worklist# 4306

Analyst: akl

Instrument: PU01

Book# 104843

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

AKL 28 Dec 95
Reviewer Signature Date

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

LABCORE Data Entry Template for Worklist# 4306

Analyst: APL 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

APL 12/24/95
Analyst Signature Date

SE Hogan 12/27/95
Analyst Signature Date
MEC 12/27/95

Data Entry Comments: APL Prepared Inv dropped

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

Pu 238 and 239/240 : LA-943-127 (B-1)

LIQUID

Type	DATE COUNTED	DEC-24-95	STD
STD	SAMPLE VOLUME in mL SS	0.100	0.458
Work List	SAMPLE DILUTION FACTOR DF	101.000	0.000
4306	TRACER VOLUME in mL SPKV	0.100	0.538
Test Code	DIGEST DILUTION FACTOR DDF	1.000	2997
@PU23901	TRACER BOOK NO	117B43	30
Matrix	DETECTOR NUMBER	1	4.000
LIQUID	EFFICIENCY FACTOR EFF	0.500	15.490
Batch Number	TRACER PREPARATION DATE	09/12/95	0.000
95004826	TRACER PREPARATION VALUE (dpm/mL)	2265.000	18.190
Run	PU-236 DECAY CORR'D VALUE (dpm/mL)	2114.861	480
0	PU-238 TRACER VALUE (dpm/mL)	0.000	1.1302E+02
Sample Prep	STANDARD BOOK NO	104B43	
N/A	STANDARD VALUE in $\mu\text{Ci/mL}$	0.128	
Sample #			
WL#4306			
Instrument Code	Decay Time = Date Counted - Tracer Preparation Date		
AL10539	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.95)}]		
Prepared By	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 1/EFF * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV		
SEH	Pu 239/240 $\mu\text{Ci/L}$ = (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 $\mu\text{Ci/L}$ = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery / 100)(2220000 dpm/ μCi)(D g/L)(SS)]		
Analyst	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100		
AKL			
Date Complete	v RESULTS v		
12/27/95	Pu 239/240 $\mu\text{Ci/mL}$	1.13E-01	
Analysis Date	Relative Counting Error =	3.1%	
12/24/95			
Analysis Time			
10:00 AM			
Sample Point			
TX-244 GRAB	Pu 236 Tracer Recovery =	41.5%	

Analyst:	AKL	Date:	27-Dec-95
Signature of Chemist: <i>LLF</i>	LLF	Date:	28 Dec 95

STANDARD WB1 REV 1.2

943127ML

Pu 238 and 239/240 : LA-943-127 (B-1)**LIQUID / SOLID**

Type	DATE COUNTED	DEC-24-95	PU 236 AEA FRAC (C236)	BLNK-PREP
BLNK-PREP	SAMPLE VOLUME in mL SS	0.100	PU 238 AEA FRAC (C238)	0.000
Work List	SAMPLE DILUTION FACTOR DF	1.000	PU 239 AEA FRAC (C239)	0.000
4306	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS	1231
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)	3.000
Matrix	DETECTOR NUMBER	2	PU 236 cpm	12.500
SOLID	EFFICIENCY FACTOR EFF	0.5000	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE	09/12/95	PU 239 cpm	0.000
95004826	TRACER PREPARATION VALUE (dpm/mL)	2265.00	AEA COUNT TIME	480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)	2114.86	Pu 239/240 $\mu\text{Ci/g}$ =	< 3.90E-02
0	PU-238 TRACER VALUE (dpm/mL)	0.00		
Sample Prep				
N/A				
Sample #	Decay Time = Date Counted - Tracer Preparation Date			
WL#4306	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of $\{(-\ln 2 * \text{Decay Time})/1040.95\}$]			
Instrument Code	Pu 236 Tracer Recovery = $(\text{Total AT Counts} / \text{TC} - \text{Bkg}) * \text{C236} * 100 / (\text{Pu-236 Decay Corr'd Value} * \text{SPKV} * \text{EFF})$			
AL10540	Pu 239/240 $\mu\text{Ci/g}$ = $(\text{C239}) * (\text{Pu 236 Decay Corr'd Value}) * (\text{SPKV}) * (1000 \text{ mL/L}) * (\text{DF}) / \{(\text{C236}) * (\text{SS}) * (\text{D g/L}) * (2220000 \text{ dpm}/\mu\text{Ci})\}$			
Prepared By	Pu 238 dpm = $[(\text{Total AT Counts} / \text{TC}) - \text{Bkg} * 1/\text{EFF} * \text{C238}] - (\text{Pu-238 Tracer Value} * \text{SPKV} * \text{Pu 236 Tracer Recovery} / 100)$			
SEH	Pu 238 $\mu\text{Ci/g}$ = $[(\text{Pu 238 dpm}) * (\text{DF}) * (1000 \text{ mL/L})] / [(\text{Pu-236 Tracer Recovery} / 100) * (2220000 \text{ dpm}/\mu\text{Ci}) * (\text{D g/L}) * (\text{SS})]$			
Chemist	Relative Counting Error = Square Root of $\{[1/(\text{Pu 236 cpm} * \text{min})] + [1/(\text{Pu 238 or 239/240 cpm} * \text{min})]\} * 1.96 * 100$			
LLF				
Analyst				
AKL				
Date Complete	v RESULTS v			
12/27/95	Pu 239/240 $\mu\text{Ci/g}$ =	< 3.90E-02	DETECTION LEVELS in $\mu\text{Ci/g}$	
Analysis Date	Relative Counting Error =	100.0%	Pu 239/240	3.90E-02
12/24/95			Pu 238	3.90E-02
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.			
10:00 AM	Pu 238 $\mu\text{Ci/g}$ =	< 3.90E-02		
Sample Point	Relative Counting Error =	100.0%		
TX-244 GRAB	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

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
Run	PU-236 DECAY CORR'D VALUE (dpm/mL)		2114.861	Pu 239/240 $\mu\text{Ci/g}$	5.3555E-01
1	PU-238 TRACER VALUE (dpm/mL)		0.000		

Sample Prep	
FUSION01	
Sample #	Decay Time = Date Counted - Tracer Preparation Date
S95T003768	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of $\{(-\ln 2 * \text{Decay Time}/1040.95)\}$]
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)
AL10541	Pu 239/240 $\mu\text{Ci/g}$ = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000 mL/L) (DF) / [(C236) (SS) (D g/L) (2220000 dpm/ μCi)]
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)
SEH	Pu 238 $\mu\text{Ci/g}$ = [(Pu 238 dpm) (DF) (1000 mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000 dpm/ μCi) (D g/L) (SS)]
Chemist	Relative Counting Error = Square Root of $\{[1 / (\text{Pu 236 cpm} * \text{min})] + [1 / (\text{Pu 238 or 239/240 cpm} * \text{min})]\} * 1.96 * 100$
LLF	
Analyst	
AKL	
Date Complete	v RESULTS v

12/27/95	Pu 239/240 $\mu\text{Ci/g}$	5.36E-01	DETECTION LEVELS in $\mu\text{Ci/g}$ Pu 239/240 3.54E-02 Pu 238 3.54E-02
Analysis Date	Relative Counting Error =	2.1%	
12/24/95			
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.		
10:00 AM	Pu 238 $\mu\text{Ci/g}$	< 3.54E-02	
Sample Point	Relative Counting Error =	6.2%	
TX-244 GRAB	Pu 236 Tracer Recovery =	88.0%	

Analyst:	AKL	Date:	27-Dec-95
Signature of Chemist:	LLF	Date:	27 Dec 95

SAMPLE.WB1 REV 1.2

943127ML

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

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-127 (B-1)

LIQUID / SOLID

Type	DATE COUNTED	DEC-24-95	PU 236 AEA FRAC (C236)	DUP
DUP	SAMPLE VOLUME in mL SS	0.100	PU 238 AEA FRAC (C238)	0.427
Work List	SAMPLE DILUTION FACTOR DF	1.000	PU 239 AEA FRAC (C239)	0.032
4306	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS	0.541
Test Code	DIGEST GRAMS of SOLIDS/L Dg/L	2.0480	AT COUNT TIME (MIN)	5085
@PU23901	TRACER BOOK NO	117B43	BACKGROUND in cpm (Bkg)	30
Matrix	DETECTOR NUMBER	2	PU 236 cpm	3.000
SOLID	EFFICIENCY FACTOR EFF	0.500	PU 238 cpm	25.760
Batch Number	TRACER PREPARATION DATE	09/12/95	PU 239 cpm	1.950
95004826	TRACER PREPARATION VALUE (dpm/mL)	2265.000	AEA COUNT TIME	32.660
Rein	PU-236 DECAY CORR'D VALUE (dpm/mL)	2114.861	Pu 239/240 μ Ci/g	480
1	PU-238 TRACER VALUE (dpm/mL)	0.000		5.8934E-01
Sample Prep				
FUSION01				
Sample #	Decay Time = Date Counted - Tracer Preparation Date			
595T003768	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 μ Ci/g = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF) / [(C236)(SS)(D g/L)(2220000 dpm/ μ Ci)]			
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)			
SEH	Pu 238 μ Ci/g = [(Pu 238 dpm)(DF)(1000mL/L)] / [(Pu-236 Tracer Recovery / 100)(2220000 dpm/ μ Ci)(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				
Date Complete	v RESULTS v			
12/27/95	Pu 239/240 μ Ci/g	5.89E-01	DETECTION LEVELS in μ Ci/g	
Analysis Date	Relative Counting Error =	2.4%		
12/24/95				
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.			
10:00 AM	Pu 238 μ Ci/g	< 4.86E-02	Pu 239/240	
Sample Point	Relative Counting Error =	6.6%	4.86E-02	
TX-244 GRAB	Pu 236 Tracer Recovery =	67.2%	Pu 238	
			4.86E-02	

Analyst:	AKL	Date: 27-Dec-95
Signature of Chemist: <i>AKL</i>	LLF	Date: 28 Dec 95
SAMPLE.WB1 REV 1.2	943127ML	

Raymond

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
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		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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	Exp.	Obs.	Diff.	FWHM	Count Rate	%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

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

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 4900.3

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

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.	0.	0.	0.	0.	0.	0.	0.	0.

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

Raymond

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
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		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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	Exp.	Obs.	Diff.	FWHM	Count Rate	%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

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

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 2371.1

1
.. 1
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WHC-SD-WM-DP-163, REV. 0

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.	0.	0.	0.	0.	0.	0.	0.	0.

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

Raymond

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
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		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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			Count Rate c/m	%err @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.				
1	Pu236	0.446	5.755	5.773	-.018	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	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	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

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 11726.3

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

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2
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2

1
.....1..
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1..

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.	1.	0.	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.								

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

Reynold

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
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		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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			Count Rate	%err @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.				
1	Pu236	0.427	5.755	5.765	-0.010	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	-0.011	1.95	6.4	200.5	0.903E-04
	Am241		5.479	5.498	-0.019			153.5	0.692E-04
3	Pu239	0.541	5.147	5.155	-0.008	32.66	1.6	2419.0	0.109E-02
	Pu240		5.144	5.155	-0.011			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

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

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.:

8597.5

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1
.....1
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WHC-SD-WM-DP-163, REV. 0

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.	0.	0.	0.	0.	0.	0.	0.	0.

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

LABCORE Completed Worklist Report for Worklist# 4045

Analyst: pjw

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		2U-01	U-02	SOLID	8.44E-02	7.63E-02	90.400 % Recovery
2	BLNK-PREP		0		2U-01	U-02	SOLID	1	5.70E+00	5.700 ug/g
3	SAMPLE	S95T003768	0	F	2U-01	U-02	SOLID	N/A	2.04E+03	1.080 ug/g
3	SAMPLE	S95T003768	0	F	2U-01	U-02E	SOLID	N/A	3.09E+00	0.000 % Inst Error
4	DUP	S95T003768	0	F	2U-01	U-02	SOLID	2.04E+03	2.06E+03	0.980 RPD
5	SPK	S95T003768	0	F	2U-01	U-02	SOLID	5.69E+01	5.58E+01	98.070 % Recovery

Final page for worklist# 4045

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

12/13/95
Reviewer Signature _____ Date _____

LABCORE Data Entry Template for Worklist# 4045

Analyst: R. 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

R. 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.

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type	STANDARD
STD	
Work List	STANDARD BOOK #
4045	148B52
Test Code	VOLUME OF SAMPLE (mL) (SS)
@U-01	1.00
Matrix	DILUTION FACTOR OF SAMPLE (DF)
LIQUID	1.00
Batch Number	PREPARATION FACTOR OF SAMPLE (PF)
95004551	1.00
Run	LIFETIME IN MICROSECONDS
0	265.00
Sample Prep	R2 VALUE
N/A	0.9999
Sample #	RANGE (HIGH OR LOW)
148B52	HIGH
Instrument Code	INSTRUMENT UNCERTAINTY (IU)
U01	2.33E-06
Prepared By	INSTRUMENT RESULT (IR)
LC	7.63E-05
Chemist	DETECTION LEVEL (µg/mL)
JLS	3.70E-05
Analyst	RESULT (µg/mL)
PJM	7.63E-02
Date Complete	VALUE OF STANDARD
12/12/95	8.44E-02
Analysis Date	%RECOVERY
12/07/95	90.40
Analysis Time	RELATIVE % UNCERTAINTY
04:55 AM	3.1
Sample Point	
TX-244 GRAB	

$\text{Result} = \text{DF} * \text{PF} * \text{IR} * 1000$
 $\text{Detection Level} = 3.70 \text{ E-08} * \text{DF} * \text{PF} * 1000$
 $\% \text{ Recovery} = \text{Result} / \text{Value of Standard} * 100$
 $\text{Relative \% Uncertainty} = \text{IU} / \text{IR} * 100$

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		BLANK
Work List	VOLUME OF SAMPLE (mL) (SS)	1.00
4045	DILUTION FACTOR OF SAMPLE (DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE (PF)	10.00
@U-01	DIGEST FACTOR (Dg/L)	2.0540
Matrix	LIFETIME IN MICROSECONDS	254.00
SOLID	R2 VALUE	0.9997
Batch Number	RANGE (HIGH OR LOW)	LOW
95004551	INSTRUMENT UNCERTAINTY (IU)	1.28E-08
Rerun	INSTRUMENT RESULT (IR)	1.17E-06
0	DETECTION LEVEL µg/g	1.80E-01
Sample Prep		
N/A	CONCENTRATION IN SOLUTION (g/L)	1.17E-05
Sample #	RESULT (µg/g)	5.70E+00
BLANK-PREP	RELATIVE % UNCERTAINTY	1.1
Instrument Code		
U01		
Prepared By	Result = Conc. in Solution (g/L) * 1000000 / Dg/L	
LC		
Chemist	Detection Level = 3.70 E-08 * DF * PF * 1000000 / DF	
JLS		
Analyst	Relative % Uncertainty = IU / IR * 100	
PJM		
Date Complete	Concentration in Solution (g/L) = IR * DF * PF	
12/12/95		
Analysis Date		
12/07/95		
Analysis Time		
04:55 AM		
Sample Point		
TX-244 GRAB		

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

Type		SAMPLE
Work List	VOLUME OF SAMPLE (mL) (SS)	1.00
4045	DILUTION FACTOR OF SAMPLE (DF)	8.00
Test Code	PREPARATION FACTOR OF SAMPLE (PF)	10.00
@U-01	DIGEST FACTOR (Dg/L)	2.0540
Mgmt.	LIFETIME IN MICROSECONDS	208.00
SOLID	R2 VALUE	0.9996
Batch Number	RANGE (HIGH OR LOW)	HIGH
95004551	INSTRUMENT UNCERTAINTY (IU)	2.16E-06
Result	INSTRUMENT RESULT (IR)	7.00E-05
0	DETECTION LEVEL $\mu\text{g/g}$	1.08E+00
Sample Prep		
FUSION01	CONCENTRATION IN SOLUTION (g/L)	4.20E-03
Sample #	RESULT ($\mu\text{g/g}$)	2.04E+03
S95T003768	RELATIVE % UNCERTAINTY	3.1
Instrument Code		
U01		
Prepared By	Result = Conc. in Solution (g/L) * 1000000 / Dg/L	
LC		
Chemist	Detection Level = $3.70 \text{ E-}08 * \text{DF} * \text{PF} * 1000000 / \text{DF}$	
JLS		
Analyst	Relative % Uncertainty = $\text{IU} / \text{IR} * 100$	
PJM		
Date Complete	Concentration in Solution (g/L) = $\text{IR} * \text{DF} * \text{PF}$	
12/12/95		
Analysis Date		
12/07/95		
Analysis Time		
04:55 AM		
Sample Point		
TX-244 GRAB		

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	DUP	
Work List	VOLUME OF SAMPLE (mL) (SS)	1.00
4045	DILUTION FACTOR OF SAMPLE (DF)	6.00
Test Code	PREPARATION FACTOR OF SAMPLE (PF)	10.00
@U-01	DIGEST FACTOR (Dg/L)	2.0480
Matrix	LIFETIME IN MICROSECONDS	205.00
SOLID	R2 VALUE	0.9997
Batch Number	RANGE (HIGH OR LOW)	HIGH
95004551	INSTRUMENT UNCERTAINTY (IU)	2.15E-06
Rerun	INSTRUMENT RESULT (IR)	7.03E-05
0	DETECTION LEVEL $\mu\text{g/g}$	1.08E+00
Sample Prep		
FUSION01	CONCENTRATION IN SOLUTION (g/L)	4.22E-03
Sample #	RESULT ($\mu\text{g/g}$)	2.06E+03
S95T003768	RELATIVE % UNCERTAINTY	3.1
Instrument Code		
U01		
Prepared By	Result = Conc. in Solution (g/L) * 1000000 / Dg/L	
LC		
Chemist	Detection Level = $3.70 \text{ E-}08 * \text{DF} * \text{PF} * 1000000 / \text{DF}$	
JLS		
Analyst	Relative % Uncertainty = $\text{IU} / \text{IR} * 100$	
PJM		
Date Complete	Concentration in Solution (g/L) = $\text{IR} * \text{DF} * \text{PF}$	
12/12/95		
Analysis Date		
12/07/95		
Analysis Time		
04:55 AM		
Sample Point		
TX-244 GRAB		

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
Mod. 1.10	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
Run	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	Concentration = IR * DF * PF		
Prepared By			
LC	QC Actual (µg/mL) = SV (g/L) * 1000		
Chemist			
JLS	QC Found (µg/mL) = (CONC - SR) * OSV / IV * 1000		
Analyst			
PJM	% Recovery = QC FOUND / QC ACTUAL		
Date Complete			
12/12/95			
Analysis Date			
12/07/95	QC ACTUAL	=	5.69E+01 µg/mL
Analysis Time	QC FOUND	=	5.58E+01 µg/mL
04:55 AM	% SPIKE RECOVERY	=	98.1%
Sample Point			
TX-244 GRAB			

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:\9350C9\IN\4045.TXT Output Name: 4045Spike 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		1 ML	1	1	NA	
BLNK		1 ML	10	1	2.0540	
SAM	595T003768	1 ML	10	6	2.0540	
DUP	595T003768	1 ML	10	6	2.0480	
SPK	595T003768	1 ML	10	6	2.0540	
SAM						
DUP						
SPK						
SAM						
DUP						
SAM						
DUP						
SAM						

RMCCoun
12/7/95

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

Sample ID WL 4045 Date/Time 12/07/95/04:26:04
Description 148852 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

BEST AVAILABLE COPY

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 SAMPLE LANK 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 200787 FINAL RESULT 3.38E-04 + 1.36E-05 G/L
Range: HIGH

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

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

AS McCon
12/7/95

Sample ID S95T003768
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 # 22855
1ML - 5ML DILUTION
1ML SAMPLE SIZE

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

W. L. McCown
12/7/95

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

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	

BEST AVAILABLE COPY

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

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

**THE FOLLOWING ANALYSES ARE INCLUDED IN THE
DATA PACKAGE BUT THE RESULTS HAVE NOT BEEN
REPORTED IN THE FINAL SUMMARY REPORTS.**

LABCORE Data Entry Template for Worklist#

3455

Analyst: SLA Instrument: PH01 Book # 110 N16-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	^{SLAB} 10.31 10.32	10.32	N/A	pH
95000189	TX-244 GRAB	8 SAMPLE	S95T003709	0	PH-01	LIQUID	¹²⁻¹⁸⁻⁹⁵ N/A	10.31	0.01	pH

Final page for worklist #

3455

Sandra L. Hurl Butright 12-17-95
Analyst Signature Date

John Conlin 12/19/95
Analyst Signature Date

Results reviewed by R. Wendland
12/20/95

R. WENDLAND 12-19-95

DATA
NOT USED
IN PACKAGE

Data Entry Comments:

SAMPLES 51 + 52 MT

Results rejected due to LCS-failure R. Wendland 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.

TX244

LABCORE Completed Worklist Report for Worklist# 4038

Analyst: jmv

Instrument: PU01

Book# 104843

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

JA Fitt 15 Dec 95
Reviewer Signature Date

DATA
NOT USED
IN PACKAGE

LABCORE Data Entry Template for Worklist# 4038

Analyst: SW Instrument: PU01 Book# 104843
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

John M. Hubbard 12/13/95
Analyst Signature Date

C. J. Lewis 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.

Pu 238 and 239/240 : LA-943-127 (B-1)

LIQUID

Type	DATE COUNTED	DEC-13-95	STD
STD	SAMPLE VOLUME in mL SS	0.100	0.438
Work List	SAMPLE DILUTION FACTOR DF	101.000	0.000
4038	TRACER VOLUME in mL SPKV	0.100	0.471
Test Code	DIGEST DILUTION FACTOR DDF	1.000	244
@PU23901	TRACER BOOK NO	117B43	30
Matrix	DETECTOR NUMBER	2	4.000
LIQUID	EFFICIENCY FACTOR EFF	0.500	0.570
Batch Number	TRACER PREPARATION DATE	09/12/95	0.000
95004537	TRACER PREPARATION VALUE (dpm/mL)	2265.000	0.620
Run	PU-236 DECAY CORR'D VALUE (dpm/mL)	2130.409	480
0	PU-238 TRACER VALUE (dpm/mL)	0.000	1.0423E+02
Sample Prep	STANDARD BOOK NO	104B43	
N/A	STANDARD VALUE in $\mu\text{Ci/mL}$	0.128	
Sample #			
WL4038			
Instrument Code	Decay Time = Date Counted - Tracer Preparation Date		
AL10540	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * $\{e \text{ to the power of } [(-\ln 2 * \text{Decay Time})/1040.95]\}$		
Prepared By	Pu 236 Tracer Recovery = $(\text{Total AT Counts} / \text{TC} - \text{Bkg}) * 1/\text{EFF} * \text{C236} * 100 / \text{Pu-236 Decay Corr'd Value} * \text{SPKV}$		
VAR	Pu 239/240 $\mu\text{Ci/L}$ = $(\text{C239}) * (\text{Pu 236 Decay Corr'd Value}) * (\text{SPKV}) / (1000 \text{ mL/L}) * (\text{DF}) * (\text{DDF}) / [(\text{C236}) * (\text{SS}) * (2220000 \text{ dpm}/\mu\text{Ci})]$		
Chemist	Pu 238 dpm = $[(\text{Total AT Counts} / \text{TC}) - \text{Bkg} * 1/\text{EFF} * \text{C236}] - (\text{Pu-238 Tracer Value} * \text{SPKV} * \text{Pu 236 Tracer Recovery} / 100)$		
LLF	Pu 238 $\mu\text{Ci/L}$ = $[(\text{Pu 238 dpm}) * (\text{DF}) * (\text{DDF}) / (1000 \text{ mL/L})] / [(\text{Pu-236 Tracer Recovery} / 100) * (2220000 \text{ dpm}/\mu\text{Ci}) * (\text{D g/L}) * (\text{SS})]$		
Analyst	Relative Counting Error = Square Root of $[(1/(\text{Pu 236 cpm} * \text{min})) + (1/(\text{Pu 238 or 239/240 cpm} * \text{min}))] * 1.96 * 100$		
JMV			
Date Complete	v RESULTS v		
12/14/95	Pu 239/240 $\mu\text{Ci/mL}$ = 1.04E-01	DETECTION LEVELS in $\mu\text{Ci/mL}$	
Analysis Date	Relative Counting Error = 16.4%	Pu 239/240	
12/13/95		6.64E-02	
Analysis Time			
08:00 AM			
Sample Point			
TX-244 GRAB	Pu 236 Tracer Recovery = 1.7%		

Analyst:	JMV	Date:	14-Dec-95
Signature of Chemist: <i>[Signature]</i>	LLF	Date:	15 Dec 95

STANDARD WB1 REV 1.2

943127ML

DATA
NOT USED
IN PACKAGE

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

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)	0.000
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	333
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)	5.000
Matrix	DETECTOR NUMBER	3	PU 236 cpm	2.200
SOLID	EFFICIENCY FACTOR EFF	0.5000	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE	09/12/95	PU 239 cpm	0.000
95004537	TRACER PREPARATION VALUE (dpm/mL)	2265.00	AEA COUNT TIME	480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)	2130.41	Pu 239/240 $\mu\text{Ci/g}$ =	< 1.409E-01
0	PU-238 TRACER VALUE (dpm/mL)	0.00		

Sample Prep
N/A
Sample #
WL4038
Instrument Code
AL10541
Prepared By
VAR
Chemist
LLF
Analyst
JMV
Date Complete

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 $\mu\text{Ci/g}$ = (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 $\mu\text{Ci/g}$ = [(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

Date Complete	v RESULTS v		
12/14/95	Pu 239/240 $\mu\text{Ci/g}$	< 1.41E-01	DETECTION LEVELS in $\mu\text{Ci/g}$
Analysis Date	Relative Counting Error	= 100.0%	
12/13/95			
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.		Pu 239/240
08:00 AM	Pu 238 $\mu\text{Ci/g}$	< 1.41E-01	1.41E-01
Sample Point	Relative Counting Error	= 100.0%	Pu 238
TX-244 GRAB	Pu 236 Tracer Recovery	= 5.7%	1.41E-01

Analyst:	JMV	Date:	14-Dec-95
Signature of Chemist: <i>LLF</i>	LLF	Date:	15 Dec 95

BLANK.WB1 REV 1.2

943127ML

DATA
NOT USED
IN PACKAGE

241

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

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-127 (B-1)

LIQUID / SOLID

Type	DATE COUNTED	DEC-13-95	PU 236 AEA FRAC (C236)	SAMPLE
SAMPLE	SAMPLE VOLUME in mL SS	0.100	PU 236 AEA FRAC (C238)	0.224
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	0.624
Test Code	DIGEST GRAMS of SOLIDS/L Dg/L	2.0540	AT COUNT TIME (MIN)	394
@PU23901	TRACER BOOK NO	117B43	BACKGROUND in cpm (Bkg)	30
Matrix	DETECTOR NUMBER	2	PU 236 cpm	4.000
SOLID	EFFICIENCY FACTOR EFF	0.500	PU 238 cpm	0.680
Batch Number	TRACER PREPARATION DATE	09/12/95	PU 239 cpm	0.000
95004537	TRACER PREPARATION VALUE (dpm/mL)	2265.000	AEA COUNT TIME	1.900
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)	2130.409	Pu 239/240 µCi/g	480
0	PU-238 TRACER VALUE (dpm/mL)	0.000		1.3016E+00

Sample Prep	
FUSION01	
Sample #	Decay Time = Date Counted - Tracer Preparation Date
S95T003768	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/g = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)
VAR	Pu 238 µCi/g = [(Pu 238 dpm)(DF)(1000mL/L)] / [(Pu-236 Tracer Recovery / 100)(2220000 dpm/µCi)(D g/L)(SS)]
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min)))] * 1.96 * 100
LLF	
Analyst	
JMV	

LLF				
Analyst				
JMV				
Date Complete	v RESULTS v			
12/14/95	Pu 239/240 µCi/g	1.30E+00	DETECTION LEVELS in µCi/g	
Analysis Date	Relative Counting Error =	12.6%		
12/13/95				
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.			
08:00 AM	Pu 238 µCi/g	< 6.26E-01	Pu 239/240	
Sample Point	Relative Counting Error =	100.0%	6.26E-01	
TX-244 GRAB	Pu 236 Tracer Recovery =	1.9%	Pu 238	
			6.26E-01	

Analyst:	JMV	Date:	14-Dec-95
Signature of Chemist: <i>[Signature]</i>	LLF	Date:	15 Dec 95

SAMPLE WB1 REV 1.2

943127ML

DATA
NOT USED
IN PACKAGE

Pu 238 and 239/240 : LA-943-127 (B-1)

LIQUID / SOLID

Pu 238 and 239/240 : LA-943-127 (B-1)			LIQUID / SOLID		DUP
Type	DATE COUNTED		DEC-13-95	PU 236 AEA FRAC (C236)	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
Re-run	PU-236 DECAY CORR'D VALUE (dpm/mL)		2130.408	Pu 239/240 μ Ci/g	1.6065E+00
0	PU-238 TRACER VALUE (dpm/mL)		0.000		

Sample Prep

FUSION01

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

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

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu 238 μ Ci/g = [(Pu 238 dpm) (DF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000 dpm/ μ Ci) (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 μ Ci/g	1.61E+00	DETECTION LEVELS in μ Ci/g
Relative Counting Error =	14.7%	
NOTE: Pu 238 Result is a LESS THAN Value.		Pu 239/240
Pu 238 μ Ci/g	< 6.92E-01	6.92E-01
Relative Counting Error =	100.0%	Pu 238
Pu 236 Tracer Recovery =	1.5%	6.92E-01

Analyst:	JMV	Date:	14-Dec-95
Signature of Chemist: <i>[Signature]</i>	LLF	Date:	15 Dec 95

SAMPLE.WB1 REV 1.2

943127ML

DATA
NOT USED
IN PACKAGE

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01

DATA REDUCTION REPORT

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

SAMPLE
WL4038-STD
File ID: 14a1435.CNFCounted on: 12/13/95 @17: 0
Detector: AEA14
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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			Count Rate	%err @95	d/m	Activity uCi/ea	
			Exp.	Obs.	Diff.					
1	Pu236	0.438	5.755	5.755	0.0000	0.01	0.57	11.8	47.2	0.213E-04
2	Pu239	0.471	5.147	5.142	0.0050	0.02	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

Spectrum 14a1435.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 163.1

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**DATA
NOT USED
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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.	2.	0.	0.
191	0.	0.	1.	0.	1.	0.	0.	1.	1.	2.
201	0.	2.	1.	0.	0.	1.	2.	2.	2.	2.
211	3.	3.	7.	1.	2.	2.	2.	6.	8.	6.
221	13.	14.	13.	13.	13.	22.	20.	36.	28.	29.
231	21.	10.	7.	5.	3.	0.	0.	1.	0.	0.
241	1.	0.	0.	0.	0.	0.	0.	0.	1.	2.
251	1.	2.	0.	1.	0.	0.	0.	0.	1.	0.
261	0.	1.	2.	1.	0.	0.	0.	1.	0.	0.
271	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
281	0.	0.	1.	0.	0.	1.	0.	0.	1.	0.
291	0.	0.	0.	0.	0.	1.	2.	0.	0.	1.
301	4.	3.	2.	1.	2.	1.	0.	0.	0.	0.
311	0.	1.	0.	1.	1.	0.	1.	0.	0.	0.
321	2.	0.	0.	0.	0.	0.	0.	0.	0.	2.
331	0.	2.	1.	0.	1.	0.	0.	0.	0.	1.
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.	0.	0.	0.	0.	0.	0.	0.	0.

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

DATA
NOT USED
IN PACKAGE

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01

DATA REDUCTION REPORT

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

SAMPLE
WL4038-BLK
File ID: 15a1516.CNFCounted on: 12/13/95 @17: 0
Detector: AEA15
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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			Count Rate	%err @95	d/m	Activity uCi/ea	
			Exp.	Obs.	Diff.					
1	Pu236	0.995	5.755	5.770	-.015	0.01	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

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**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.	0.	1.	0.	0.	0.
131	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
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.	0.	0.	0.	0.	0.	0.	0.	0.

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

DATA
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Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01

DATA REDUCTION REPORT

SAMPLE
S95T3768-SAM
File ID: 16a1606.CNF

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

Counted on: 12/13/95 @17: 1
Detector: AEA16
Geometry number: 1
Count time: 28806. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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	Count Rate	%err @95	d/m	Activity uCi/ea
		Exp.	Obs. Diff.	c/m			
1	Pu236	0.224	5.755 5.743 0.012	0.68	10.9	36.5	0.164E-04
2	Pu239	0.624	5.147 5.133 0.014	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

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.:

410.6

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

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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.	1.	0.
71	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.
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.	0.	0.	0.	0.	0.	0.	0.	0.

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

DATA
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Westinghouse Hanford Co.
 GENERAL ALPHA ENERGY ANALYSIS
 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		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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	Exp.	Obs.	Diff.	FWHM	Count Rate	%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

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

DATA
 NOT USED
 IN PACKAGE

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.:

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

DATA
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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.	0.	0.	0.	0.	0.	0.	0.	0.

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

DATA
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DISTRIBUTION SHEET

To Distribution	From Production Planning and Control	Page 1 of 1
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.		Date: 12/18/95
		EDT NO.: 614769
		ECN NO.: N/A

Name	MSIN	Text With all Attach	EDT/ECN ONLY
<u>Pacific Northwest Laboratory</u>			
J. R. Gormsen	K7-28		X
S. J. Harris	K7-22	X	
K. L. Silvers	P7-27		X
<u>U.S. Department of Energy, RL</u>			
C. A. Babel	S7-54	X	
<u>Westinghouse Hanford Company</u>			
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
<u>Washington State Department of Ecology</u>			
Single-Shell Tank Unit Manager			
A. B. Stone	B5-18	X	
<u>U. S. Department of Energy</u>			
Jim Poppiti			X
12800 Middlebrook Rd.			
Trevion II, EM-36			
Germantown, MD 20874			
<u>Los Alamos Technical Associates</u>			
T. T. Tran		X	
309 Bradley Blvd.			
Richland, WA 99352			