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60-Day Waste Compatibility Safety Issues and Final Results for TX-244 Grab Samples

Jennifer L. Nuzum

Rust Federal Services of Hanford, Inc., Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-96RL13200

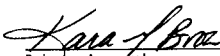
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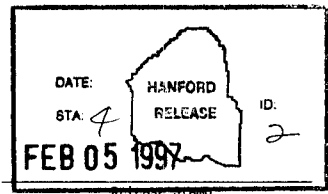
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ANALYTICAL SERVICES

60-DAY WASTE COMPATIBILITY SAFETY
ISSUES AND FINAL RESULTS FOR TX-244 GRAB SAMPLES

Project Coordinator: JENNIFER L. NUZUM

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

by

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TABLE OF CONTENTS

Narrative	3
AY-102 Sample Breakdown (Attachment 1)	10
Sample Data Summary	13
Waste Compatibility Corrosion Rules	21
Chain of Custody Forms	24
Breakdown Analysis	29
Inorganic Analysis	33
Differential Scanning Calorimetry (DSC)	
DSC Worklist # 14529 (5663, 5665, 5666)	35
DSC Worklist # 15677 (5663, 5665, 5666)	44
Thermogravimetric Analysis (TGA)	
TGA Worklist # 14523 (5663, 5665, 5666)	45
Specific Gravity Analysis (SpG)	
SpG Worklist # 14536 (5663, 5665, 5666)	54
Ph Analysis (Ph)	
Ph Worklist # 15080 (5663, 5665, 5666)	66
Hydroxide Analysis (OH) & (OHDEMAND)	
OH Worklist # 14496 (5663, 5665, 5666)	67
OH Worklist # 15934 (5663, 5665, 5666)	69
Ion Chromatographic Analysis (IC)	
IC Worklist # 14519 (5663, 5665, 5666)	74
Inductively Coupled Plasma Spectroscopy (ICP)	
ICP Worklist # 14801 (5663, 5665, 5666)	87
Total Organic Carbon Analysis (TOC)	
TOC Worklist # 14504 (5663, 5665, 5666)	94
Total Inorganic Carbon Analysis (TIC)	
TIC Worklist # 14502 (5663)	117
TIC Worklist # 14755 (5665, 5666)	128
Radiochemical Analysis	147
Gamma Energy Analysis (GEA)	
GEA Worklist # 14450 (5663, 5665, 5666)	149

TABLE OF CONTENTS (Continued)

Strontium Analysis (Sr-90)	
Sr-90 Worklist # 14472 (5663, 5665, 5666)	184
Americium 241 Analysis (Am-241)	
Am-241 Worklist # 14466 (5665, 5666)	194
Am-241 Worklist # 15466 (5663)	229
Plutonium 239 Analysis (Pu-239)	
Pu-239 Worklist # 14468 (5663, 5665, 5666)	248

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NARRATIVE

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222-S ANALYTICAL SERVICES

60-DAY WASTE COMPATIBILITY SAFETY ISSUES AND FINAL RESULTS
FOR TANK 241-TX-244 GRAB SAMPLES

Summary

Three grab samples (244-TX-96-1, 244-TX-96-2, and 244-TX-96-3)) were taken from Riser 8 of Tank 241-TX-244 on October 18, 1996, and received by 222-S Laboratory on October 18, 1996. These samples were analyzed in accordance with Compatibility Grab Sampling and Analysis Plan (TSAP) and Data Quality Objectives for Tank Farms Waste Compatibility Program (DQO) in support of the Waste Compatibility Program. Notifications were made in accordance with TSAP for pH and OH- analyses. Upon further review, the pH notification was deemed unnecessary, as the notification limit did not apply to this tank.

Appearance and Sample Breakdown

Attachment 1 illustrates samples generated in the laboratory for analyses and identifies their sources. Furthermore, this reference relates tank farm identification numbers to their corresponding 222-S Laboratory Information Management System sample numbers.

Table 1 summarizes appearance information and over-the-top (OTR) dose readings performed on each sample. Each sample contained less than 5% settled solids.

Table 1. Appearance and OTR for 241-TX-244 Liquid Grab Samples

Customer ID	Lab ID	Color	Clarity	Org. Layer	Solids	OTR (MRAD/HR)
244-TX-96-1	S96T005663	Yellow	Clear	None	<5%	4
244-TX-96-2	S96T005665	Yellow	Clear	None	<5%	5
244-TX-96-3	S96T005666	Yellow	Clear	None	<5%	4

HNF-SD-WM-DP-224, REV. 0

Analytical Results

The Data Summary Table (Table 2) included in this report compiles analytical results associated with each subsample.

Liquid subsamples that were prepared for analysis by an acid adjustment of the direct subsample are indicated by a "D" in the A# column in Table 2.

Compatibility Program Concerns

Differential Scanning Calorimetry (DSC) - Energetics Decision Rule

The exothermic energy based on dry weight of the subsample was calculated for all subsamples. The average of the thermogravimetric analysis (TGA) results for each subsample was used in the dry weight correction for that subsample. There were no exceptions to the quality control (QC) parameters stated in TSAP for these samples.

For waste compatibility energetics decision concerns, the exotherm/endotherm ratio must be less than one (1). Exotherm results for all subsamples were 0.00 J/g. Thus, this requirement was satisfied for all subsamples.

Nitrate (NO₃-), Hydroxide (OH-), and Nitrite (NO₂-) - Corrosion Decision Rule

Results with respect to waste compatibility corrosion rules are presented in Table 3. This table presents NO₃-, OH-, and NO₂- results in $\mu\text{g/mL}$ and molarity (M) units. The spreadsheet compares results to the concentration ranges specified in DQO. A "YES" will appear in the appropriate space for a condition that is met. Based on the NO₃- concentration, only one of three sets of conditions must be met for OH- and NO₂- concentrations. A "NO" appearing in the space is indicative of a condition not met. The OH- concentrations were not within acceptable ranges for corrosion control for all subsamples. The chemist noted there were no free OH- in the subsamples. Notification was made in accordance with TSAP. There were no exceptions to the QC parameters stated in TSAP for these subsamples.

Specific Gravity (Sp.G) - Flammable Gas Accumulation Decision Rule

Sp.G analysis is currently used to determine the potential the waste will cause an accumulation of flammable gases. The flammable gas decision rule requires the weighted mean Sp.G not exceed 1.41. The mean Sp.G for the three supernate subsamples was equal to 1.06. There were no exceptions to the QC parameters stated in TSAP for these subsamples.

Plutonium (239/240Pu) - Criticality Decision Rule

All 239/240Pu results were below the criticality prevention limit of 0.80 $\mu\text{Ci/mL}$ stated in DQO. There were no exceptions to the QC parameters stated in TSAP for these subsamples.

Inorganic Analyses

Thermogravimetric Analysis (TGA)

TGA results were typically determined by summing weight loss steps below 200°C. Weight loss steps above this were not used to determine the result. More information may be obtained by examining the raw data. There were no exceptions to the QC parameters stated in TSAP for these subsamples.

pH

There were no exceptions to the QC parameters stated in TSAP for these subsamples.

Ion Chromatography (IC)

Only required analyte results (Cl^- , F^- , PO_4^- , SO_4^- , NO_3^- , and NO_2^-) were considered in this report. Other "opportunistic" analyte results (Kristofski, 1995) are included in Table 2. These analytes do not have customer defined QC parameters and are not discussed. There were no exceptions to the QC parameters stated in TSAP for these subsamples.

Inductively Coupled Plasma Spectrophotometry (ICP)

Only required analytes (Al, Fe, Na) were considered in this report. Other "opportunistic" analytes are included in Table 2. These analytes do not have customer defined QC parameters and are not discussed.

The Na spike recovery shown in Table 2 for 244-TX-96-3 (S96T005666) is invalid because the spike concentration (1 ppm) is too low in comparison to the sample concentration (less than 25%). The raw data shows the spike recovery for a spike with an analyte level of 10 ppm. The spike recovery was 82.5%.

HNF-SD-WM-DP-224, REV. 0

Total Organic Carbon (TOC)

There were no exceptions to the QC parameters stated in TSAP for these subsamples.

Total Inorganic Carbon (TIC)

There were no exceptions to the QC parameters stated in TSAP for these subsamples.

Radionuclide Analyses

Americium (241Am)

Sample 244-TX-96-1 (S96T005663) was rerun due to poor precision. The rerun data showed a RPD between sample and duplicate of 59.6%. The chemist noted the sample was not homogenous. Further 241Am analysis was not requested.

Strontium 90 (90Sr)

There were no exceptions to the QC parameters stated in TSAP for these subsamples.

Gamma Energy Analysis (GEA)

Cesium 137 results only were considered in this report. Cobalt 60 results were included in Table 2 as "opportunistic." This analyte does not have customer defined QC parameters and is not discussed. There were no exceptions to the QC parameters stated in TSAP for these subsamples.

Special Request Analyses

Caustic Demand (OH Demand)

OH Demand analysis was added to the waste compatibility tests by request. The results can be found in Table 2.

Procedures

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

Table 4. Analytical Procedures

Analysis	Matrix	Preparation Procedure +	Analysis Procedure
DSC	Liquid	N/A	LA-514-114 Rev. C-1
TGA	Liquid	N/A	LA-560-112 Rev. B-1
Sp.G.	Liquid	N/A	LA-510-112 Rev. C-3
pH	Liquid	N/A	LA-212-106 Rev. A-0
OH-	Liquid	N/A	LA-211-102 Rev. C-0
IC	Liquid	N/A	LA-533-105 Rev. D-1
ICP	Liquid	N/A	LA-505-161 Rev. B-1
TOC	Liquid	N/A	LA-344-105 Rev. D-1
TIC	Liquid	N/A	LA-342-100 Rev. E-0
239/240Pu	Liquid	N/A	LA-943-128 Rev. B-0

HNF-SD-WM-DP-224, REV. 0

241Am	Liquid	N/A	LA-953-103 Rev. A-5
GEA	Liquid	N/A	LA-548-121 Rev. E-0
90Sr	Liquid	N/A	LA-220-101 Rev. D-1
+OH Demand	Liquid	N/A	LA-211-104 Rev. A-1

Notes:

N/A	not applicable (these are direct samples)
DSC	differential scanning calorimetry
TGA	thermogravimetric analysis
Sp.G.	specific gravity
OH-	hydroxide
IC	ion chromatography
ICP	inductively coupled plasma
TOC	total organic carbon
TIC	total inorganic carbon
239/240Pu	plutonium 239/240
241Am	americium 241
GEA	gamma energy analysis
90Sr	strontium-90
OH Demand	caustic demand
+	special request analysis

References

Sasaki, L.M., 1996, *Compatibility Grab Sampling and Analysis Plan for Fiscal Year 1997*, WHC-SD-WM-TSAP-115, Revision 0, Westinghouse Hanford Company, Richland, WA 99352.

Fowler, K.D., 1995, *Data Quality Objectives for Tank Waste Compatibility Program*, WHC-SD-WM-DQO-001, Revision 1, Westinghouse Hanford Company, Richland, WA 99352.

HNF-SD-WM-DP-224, REV. 0

ATTACHMENT 1

TX-244 SAMPLE BREAKDOWN

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Attachment 1

244-TX GRAB SAMPLE BREAKDOWN

Riser 8

1 in. below
zip. measurement

244-TX-96-1

S96T005663



DSC
TGA
TIC
TOC
ICP: Al, Fe, Na
IC: anions
pH
OH
Sp.G
GEA: Cs-137
Pu-239/240
Sr-90
Am-241

402 in.

244-TX-96-2

S96T005665

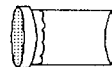


DSC
TGA
TIC
TOC
ICP: Al, Fe, Na
IC: anions
pH
OH
Sp.G
GEA: Cs-137
Pu-239/240
Sr-90
Am-241

421 in.

244-TX-96-3

S96T005666



DSC
TGA
TIC
TOC
ICP: Al, Fe, Na
IC: anions
pH
OH
Sp.G
GEA: Cs-137
Pu-239/240
Sr-90
Am-241

SAMPLE DATA SUMMARY

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HNF-SD-WM-DP-224, REV. 0

Table 2. Data Summary Table
244-TX GRAB

RISE: 8
SEGMENT #: 244-TX-96-1

SEGMENT PORTION: Supernate

Sample#	RI#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S961005663		DSC Exotherm DRY Calculated	Joules/g DRY	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S961005663		DSC Exotherm Perkin Elmer	Joules/g	10.1	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S961005663		Oil by wt. Titration	ug/mL	97.3	<42.00	PM7.74	n/a	n/a	n/a	n/a	125.0	n/a
S961005663		Classic Demand	moles OH-/L	105.3	<2.50e-03	1.32e-01	1.16e-01	1.24e-01	12.9	n/a	2.00e-03	n/a
S961005663		pH Direct	pH	100.0	n/a	10.12	10.14	10.13	0.20	n/a	1.00e-03	n/a
S961005663		Specific Gravity	SP-G.	98.73	n/a	1.052	1.062	1.057	0.95	n/a	1.00e-02	n/a
S961005663		Water by IGA on Perkin Elmer	ug/mL	98.73	n/a	88.93	88.93	88.78	0.38	n/a	n/a	n/a
S961005663		TOC by Acid/Coulometry	ug/mL	100.2	1.000	3.82e-02	334.0	358.0	13.4	n/a	5.000	n/a
S961005663		Total Organic Carbon by Coul.	ug/mL	103.2	4.00e-01	1.09e-02	103.0	106.0	5.66	n/a	5.000	n/a
S961005663		St. 250-300 by High Level	ug/mL	95.36	2.50e-05	1.50e-02	1.50e-02	1.50e-02	0.00	n/a	1.05e-05	1.08e+00
S961005663		St. 230-240 by RU-SPEC resin	ug/mL	93.96	<5.00e-06	4.37e-05	4.26e-05	4.39e-05	1.14	n/a	5.47e-06	2.18e+00
S961005663		0 Silver-ICP-Acid DIL.	ug/mL	99.80	<1.00e-02	2.320	2.290	2.305	1.30	n/a	1.010	n/a
S961005663		0 Aluminum-ICP-Acid DIL.	ug/mL	99.80	<1.00e-02	74.10	73.40	73.75	0.95	n/a	5.010	n/a
S961005663		0 Arsenic-ICP-Acid DIL.	ug/mL	103.8	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S961005663		0 Barium-ICP-Acid DIL.	ug/mL	100.2	<5.00e-02	< 5.050	<5.0560	n/a	n/a	n/a	5.050	n/a
S961005663		0 Barium-ICP-Acid DIL.	ug/mL	100.2	<5.00e-02	< 5.050	<5.0560	n/a	n/a	n/a	5.050	n/a
S961005663		0 Beryllium-ICP-Acid DIL.	ug/mL	103.0	<5.00e-03	<5.02e-01	<5.03e-01	n/a	n/a	n/a	5.05e-01	n/a
S961005663		0 Bismuth-ICP-Acid DIL.	ug/mL	99.80	<1.00e-01	1.15e-02	115.0	115.0	0.00	n/a	10.10	n/a
S961005663		0 Calcium-ICP-Acid DIL.	ug/mL	100.8	<5.00e-03	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S961005663		0 Calcium-ICP-Acid DIL.	ug/mL	100.8	<5.00e-03	<5.05e-01	<5.05e-01	n/a	n/a	n/a	5.05e-01	n/a
S961005663		0 Cerium-ICP-Acid DIL.	ug/mL	100.8	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S961005663		0 Cobalt-ICP-Acid DIL.	ug/mL	101.2	<2.00e-02	< 2.020	<2.0260	n/a	n/a	n/a	2.020	n/a
S961005663		0 Chromium-ICP-Acid DIL.	ug/mL	101.6	<1.00e-02	1.21e+02	121.0	121.0	0.00	n/a	1.010	n/a
S961005663		0 Copper-ICP-Acid DIL.	ug/mL	104.2	<1.00e-02	< 1.010	<1.0160	n/a	n/a	n/a	1.010	n/a
S961005663		0 Iron-ICP-Acid DIL.	ug/mL	100.8	<5.00e-02	28.10	28.00	28.05	0.36	n/a	5.050	n/a
S961005663		0 Potassium-ICP-Acid DIL.	ug/mL	100.8	<5.00e-01	59.60	<5.05e1	n/a	n/a	n/a	50.50	n/a
S961005663		0 Lanthanum-ICP-Acid DIL.	ug/mL	102.2	<5.00e-02	< 5.050	<5.0560	n/a	n/a	n/a	5.050	n/a
S961005663		0 Lithium-ICP-Acid DIL.	ug/mL	101.2	<1.00e-02	< 1.010	<1.0160	n/a	n/a	n/a	1.010	n/a
S961005663		0 Magnesium-ICP-Acid DIL.	ug/mL	97.20	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S961005663		0 Manganese-ICP-Acid DIL.	ug/mL	98.40	<5.00e-02	< 5.050	<5.0560	n/a	n/a	n/a	5.050	n/a
S961005663		0 Molybdenum-ICP-Acid DIL.	ug/mL	100.8	<5.00e-02	< 5.050	<5.0560	n/a	n/a	n/a	5.050	n/a
S961005663		0 Sodium-ICP-Acid DIL.	ug/mL	97.40	<1.00e-01	3.13e+04	3.14e+04	3.14e+04	0.95	n/a	10.10	n/a
S961005663		0 Neodymium-ICP-Acid DIL.	ug/mL	101.8	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S961005663		0 Nickel-ICP-Acid DIL.	ug/mL	100.2	<2.00e-02	< 2.020	<2.0260	n/a	n/a	n/a	2.020	n/a
S961005663		0 Phosphorus-ICP-Acid DIL.	ug/mL	101.2	<2.00e-01	4.65e+03	4.66e+03	4.66e+03	0.43	n/a	20.20	n/a
S961005663		0 Lead-ICP-Acid DIL.	ug/mL	100.0	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S961005663		0 Sulfur-ICP-Acid DIL.	ug/mL	99.40	<1.00e+03	1.04e+03	1.04e+03	1.04e+03	0.00	n/a	10.10	n/a
S961005663		0 Antimony-ICP-Acid DIL.	ug/mL	95.60	<6.00e-02	< 6.060	<6.0660	n/a	n/a	n/a	6.060	n/a
S961005663		0 Selenium-ICP-Acid DIL.	ug/mL	97.20	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S961005663		0 Silicon-ICP-Acid DIL.	ug/mL	96.80	<5.00e-02	< 5.050	<5.0560	n/a	n/a	n/a	5.050	n/a
S961005663		0 Strontium-ICP-Acid DIL.	ug/mL	99.00	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S961005663		0 Strontium-ICP-Acid DIL.	ug/mL	99.20	<1.00e-02	1.270	1.260	1.265	0.79	n/a	1.010	n/a
S961005663		0 Titanium-ICP-Acid DIL.	ug/mL	98.00	<1.00e-02	< 1.010	<1.0160	n/a	n/a	n/a	1.010	n/a

HNF-SD-WM-DP-224, REV. 0

Sample#	RA#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPO %	Spk Rec %	Det Limit	Count Err%
S961005663	D	Thallium-ICP-Acid Dil.	ug/mL	98.20	< 2.00e-01	< 20.20	< 2.02e1	n/a	n/a	n/a	20.20	n/a
S961005663	D	Vanadium-ICP-Acid Dil.	ug/mL	98.68	< 2.00e-01	< 50.50	< 3.05e1	n/a	n/a	n/a	50.50	n/a
S961005663	D	Zinc-ICP-Acid Dil.	ug/mL	100.9	< 5.00e-02	< 5.050	< 3.05e0	n/a	n/a	n/a	5.050	n/a
S961005663	D	Thallium-ICP-Acid Dil.	ug/mL	101.2	< 1.00e-02	< 1.010	< 1.01e0	n/a	n/a	n/a	1.010	n/a
S961005663	D	Zinc-ICP-Acid Dil.	ug/mL	98.69	< 1.00e-02	< 1.010	< 1.01e0	n/a	n/a	n/a	1.010	n/a
S961005663	D	Fluoride-IC-Dionex 4000/4500	ug/mL	88.47	< 1.20e-02	1.22e+03	1.22e+03	1.22e+03	0.00	n/a	25.45	n/a
S961005663	D	Chloride-IC-Dionex 4000/4500	ug/mL	100.9	< 1.70e-02	6.97e+02	683.0	686.9	1.16	n/a	36.06	n/a
S961005663	D	Nitrite-IC - Dionex 4000/4500	ug/mL	97.39	< 1.08e-01	3.51e+03	3.42e+03	3.47e+03	2.60	n/a	229.1	n/a
S961005663	D	Bromide by Ion Chromatogr.aph	ug/mL	99.83	< 1.25e-01	< 2.69e+02	< 2.65e2	n/a	n/a	n/a	265.1	n/a
S961005663	D	Nitrate by IC-Dionex 4000/4500	ug/mL	97.31	< 1.59e-01	5.85e+04	5.76e+04	5.80e+04	1.55	n/a	294.8	n/a
S961005663	D	Phosphate-IC-Dionex 4000/4500	ug/mL	100.9	< 1.20e-01	1.40e+04	1.38e+04	1.39e+04	1.44	n/a	256.5	n/a
S961005663	D	Sulfate by IC-Dionex 4000/4500	ug/mL	100.2	< 1.58e-01	2.86e+03	2.84e+03	2.85e+03	0.70	n/a	292.7	n/a
S961005663	D	Oxalate by IC-Dionex 4000/4500	ug/mL	102.3	< 1.61e-01	< 2.23e+02	< 2.23e2	n/a	n/a	n/a	222.7	n/a
S961005663	D	Cobalt-60 by GEA	uCi/mL	99.46	< 3.20e-05	< 3.66e-05	< 4.26e-5	n/a	n/a	n/a	3.66e-05	n/a
S961005663	D	Cesium-137 by GEA	uCi/mL	97.95	< 7.00e-05	3.56e-02	3.58e-02	3.58e-02	0.84	n/a	n/a	1.28
S961005663	D	Am-241 by Extraction	uCi/mL	88.23	< 6.79e-06	9.98e-05	5.40e-05	7.69e-05	59.6	n/a	1.42e-05	1.93e+00

Table 2. Data Summary Table
244-TX GRAB

RISE: 8
SEGMENT #: 244-TX-96-2

SEGMENT PORTION: Supernate

Sample #	RI #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPO %	Spk Rec %	Det Limit	Count Err%
S961005665		DSC Exotherm DRY Calculated	Joules/g Dry	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S961005665		DSC Exotherm on Perkin Elmer	Joules/g	100.1	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S961005665		On- by Pot. Titration	moles OH-/L	97.36	<42.00	PH=7.80	n/a	n/a	n/a	n/a	125.0	n/a
S961005665		Caustic Demand		105.5	<2.50e-03	1.84e-01	1.56e-01	1.60e-01	5.00	n/a	2.00e-03	n/a
S961005665		pH Direct	pH	100.0	n/a	10.15	10.15	10.15	0.00	n/a	1.00e-02	n/a
S961005665		Specific Gravity	Sp-G.	98.71	n/a	1.057	1.060	1.058	0.28	n/a	1.00e-02	n/a
S961005665		% Water by IGA on Perkin Elmer	%	98.71	n/a	88.88	88.66	88.77	0.25	n/a	n/a	n/a
S961005665		TIC by GC/MS/Chemistry	ug/mL	103.3	<5.000	3.79e-02	378.0	378.5	0.26	n/a	5.000	n/a
S961005665		Tot. Organic Carbon by Coul.	ug/mL	103.3	4.00e-01	1.52e-02	166.0	159.0	8.81	n/a	5.500	n/a
S961005665		Strontium-89/90 High Level	uCi/mL	93.53	2.50e-05	1.56e-02	1.59e-02	1.58e-02	1.90	n/a	1.09e-05	1.08e+00
S961005665		Pu-239/240 by TRU-SPEC Resin	uCi/mL	93.96	<3.50e-06	4.62e-05	4.61e-05	4.61e-05	0.22	n/a	5.82e-06	2.33e+00
S961005665		0 Silver-TP-Acid DIL.	ug/mL	99.80	<1.00e-02	2.250	2.260	2.255	0.44	n/a	1.010	n/a
S961005665		0 Aluminum-TP-Acid DIL.	ug/mL	98.40	<5.00e-02	72.70	72.70	72.70	0.00	n/a	5.050	n/a
S961005665		0 Arsenic-TP-Acid DIL.	ug/mL	103.8	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S961005665		0 Boron-TP-Acid DIL.	ug/mL	100.2	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	n/a	5.050	n/a
S961005665		0 Beryllium-TP-Acid DIL.	ug/mL	100.0	<5.00e-03	< 5.050	<5.05e-1	n/a	n/a	n/a	5.05e-01	n/a
S961005665		0 Bismuth-TP-Acid DIL.	ug/mL	101.0	<1.00e-01	1.09e-02	116.0	112.5	6.22	n/a	10.10	n/a
S961005665		0 Calcium-TP-Acid DIL.	ug/mL	99.80	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S961005665		0 Cadmium-TP-Acid DIL.	ug/mL	100.6	<5.00e-03	<5.05e-01	<5.05e-1	n/a	n/a	n/a	5.05e-01	n/a
S961005665		0 Cerium-TP-Acid DIL.	ug/mL	100.8	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S961005665		0 Cobalt-TP-Acid DIL.	ug/mL	101.2	<2.00e-02	< 2.020	<2.02e0	n/a	n/a	n/a	2.020	n/a
S961005665		0 Chromium-TP-Acid DIL.	ug/mL	101.6	<1.00e-02	1.20e-02	120.0	120.0	0.00	n/a	1.010	n/a
S961005665		0 Copper-TP-Acid DIL.	ug/mL	104.2	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	n/a	1.010	n/a
S961005665		0 Iron-TP-Acid DIL.	ug/mL	100.8	<5.00e-02	27.60	<5.05e1	27.65	0.36	n/a	5.050	n/a
S961005665		0 Potassium-TP-Acid DIL.	ug/mL	100.8	<5.00e-01	< 5.050	<5.05e0	n/a	n/a	n/a	50.50	n/a
S961005665		0 Lanthanum-TP-Acid DIL.	ug/mL	102.2	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	n/a	5.050	n/a
S961005665		0 Lithium-TP-Acid DIL.	ug/mL	101.2	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	n/a	1.010	n/a
S961005665		0 Magnesium-TP-Acid DIL.	ug/mL	97.20	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S961005665		0 Manganese-TP-Acid DIL.	ug/mL	98.40	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	n/a	5.050	n/a
S961005665		0 Molybdenum-TP-Acid DIL.	ug/mL	100.8	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	n/a	5.050	n/a
S961005665		0 Neodymium-TP-Acid DIL.	ug/mL	97.40	<1.00e-01	3.01e-04	2.98e+04	3.00e+04	1.00	n/a	10.10	n/a
S961005665		0 Nickel-TP-Acid DIL.	ug/mL	101.8	<2.00e-02	< 2.020	<2.02e0	n/a	n/a	n/a	2.020	n/a
S961005665		0 Phosphorus-TP-Acid DIL.	ug/mL	101.2	<2.00e-01	4.54e-03	4.53e+03	4.54e+03	0.22	n/a	20.20	n/a
S961005665		0 Lead-TP-Acid DIL.	ug/mL	100.0	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S961005665		0 Sulfur-TP-Acid DIL.	ug/mL	99.40	<1.00e-01	1.02e-03	1.02e+03	1.02e+03	0.00	n/a	10.10	n/a
S961005665		0 Antimony-TP-Acid DIL.	ug/mL	95.60	<6.00e-02	< 6.060	<6.06e0	n/a	n/a	n/a	6.060	n/a
S961005665		0 Selenium-TP-Acid DIL.	ug/mL	97.20	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S961005665		0 Silicon-TP-Acid DIL.	ug/mL	96.80	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	n/a	5.050	n/a
S961005665		0 Samarium-TP-Acid DIL.	ug/mL	99.00	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S961005665		0 Strontium-TP-Acid DIL.	ug/mL	99.20	<1.00e-02	1.260	1.270	1.265	0.79	n/a	1.010	n/a
S961005665		0 Titanium-TP-Acid DIL.	ug/mL	98.00	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	n/a	1.010	n/a

Sample #	RI #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S961005665	0	Thallium-ICP-Acid DIL.	ug/mL	98.20	<2.00e-01	< 20.20	<2.02e1	n/a	n/a	n/a	20.20	n/a
S961005665	0	Uranium-ICP-Acid DIL.	ug/mL	96.60	<5.00e-01	< 50.50	<5.05e1	n/a	n/a	n/a	50.50	n/a
S961005665	0	Vanadium-ICP-Acid DIL.	ug/mL	100.8	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	n/a	5.050	n/a
S961005665	0	Zinc-ICP-Acid DIL.	ug/mL	101.2	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	n/a	1.010	n/a
S961005665	0	Zirconium-ICP-Acid DIL.	ug/mL	98.80	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	n/a	1.010	n/a
S961005665	0	Fluoride-IC-Dionex 4000/4500	ug/mL	88.47	<1.20e-02	1.20e+03	1.23e+03	1.21e+03	2.47	n/a	25.45	n/a
S961005665	0	Chloride-IC-Dionex 4000/4500	ug/mL	100.9	<1.70e-02	6.94e+02	7.05 0	699.2	1.57	n/a	36.06	n/a
S961005665	0	Nitrite-IC - Dionex 4000/4500	ug/mL	97.39	<1.08e-01	3.44e+03	3.50e+03	3.47e+03	1.73	n/a	229.1	n/a
S961005665	0	Bromide by Ion Chromatograph	ug/mL	99.83	<1.25e-01	<2.65e+02	<2.65e2	n/a	n/a	n/a	265.1	n/a
S961005665	0	Nitrate by IC-Dionex 4000/4500	ug/mL	97.31	<1.39e-01	5.93e+04	5.86e+04	5.90e+04	1.19	n/a	294.8	n/a
S961005665	0	Phosphate-IC-Dionex 4000/4500	ug/mL	100.9	<1.20e-01	1.44e+04	1.42e+04	1.43e+04	1.40	n/a	254.5	n/a
S961005665	0	Sulfate by IC-Dionex 4000/4500	ug/mL	100.2	<1.38e-01	2.84e+03	2.90e+03	2.87e+03	2.09	n/a	292.7	n/a
S961005665	0	Oxalate by IC-Dionex 4000/4500	ug/mL	102.3	1.61e-01	<2.23e+02	<2.23e2	n/a	n/a	n/a	222.7	n/a
S961005665	0	Cobalt-60 by GEA	uCi/mL	99.46	<4.05e-05	4.05e-05	4.53e-5	n/a	n/a	n/a	4.05e-05	n/a
S961005665	0	Cesium-137 by GEA	uCi/mL	97.95	<7.20e-05	3.56e-02	3.57e-02	3.57e-02	0.28	n/a	n/a	1.29
S961005665	0	Am-241 by Extraction	uCi/mL	89.08	<5.99e-06	5.56e-05	5.81e-05	5.68e-05	4.40	n/a	1.03e-05	1.98e+00

Table 2. Data Summary Table
244-TX GNA6

RISER: 8
SEGMENT #: 244-TX-96-3

SEGMENT PORTION: Supernate

Sample #	R#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
5961005666		DSC Exotherm Dry, Calculated	Joules/g Dry	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
5961005666		DSC Exotherm on Perkin Elmer	Joules/g	100.1	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
5961005666		OH- by Pot. Titration	ug/mL	97.36	442.00	442.00	442.00	442.00	0.00	n/a	125.0	n/a
5961005666		Caustic Demand	moles OH-/L	105.0	2.50e-03	1.92e-01	1.64e-01	1.78e-01	15.8	n/a	2.00e-03	n/a
5961005666		pH Direct	pH	100.0	n/a	10.11	10.12	10.11	0.10	n/a	1.00e-02	n/a
5961005666		Specific Gravity	Sp. G.	98.71	n/a	1.062	1.033	1.047	2.77	n/a	1.00e-02	n/a
5961005666		% Water by TGA on Perkin Elmer	%	98.71	n/a	88.43	88.26	88.34	0.19	n/a	n/a	n/a
5961005666		TIC by Acid/Coulometry	ug/mL	100.7	<5.00e-01	1.77e+02	171.0	179.0	2.23	107.2	5.000	n/a
5961005666		Tot. Organic Carbon by Coul.	ug/mL	103.3	4.00e-01	1.74e+02	183.0	173.5	0.58	95.00	5.000	n/a
5961005666		Strontium-89 YD High Level	uCi/mL	93.96	2.15e-02	1.53e-02	1.58e-02	1.57e-02	1.92	n/a	1.03e-05	1.05e+00
5961005666		Pu-239/240 by TRU-SPEC Resin	uCi/mL	93.96	3.50e-06	6.09e-05	5.97e-05	6.01e-05	1.33	n/a	5.44e-06	1.82e+00
5961005666		D Silver-ICP-Acid Dil.	ug/mL	99.80	<1.00e-02	2.090	2.080	2.085	0.48	89.00	1.010	n/a
5961005666		D Aluminum-ICP-Acid Dil.	ug/mL	98.40	<1.00e-02	71.20	70.30	70.75	1.27	95.40	5.050	n/a
5961005666		D Arsenic-ICP-Acid Dil.	ug/mL	103.8	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	101.0	10.10	n/a
5961005666		D Boron-ICP-Acid Dil.	ug/mL	100.2	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	97.00	5.050	n/a
5961005666		D Beryllium-ICP-Acid Dil.	ug/mL	100.0	<5.00e-03	< 5.050	<5.05e0	n/a	n/a	99.10	5.05e-01	n/a
5961005666		D Bismuth-ICP-Acid Dil.	ug/mL	101.0	<1.00e-01	1.06e+02	112.0	109.0	5.50	102.0	10.10	n/a
5961005666		D Cadmium-ICP-Acid Dil.	ug/mL	99.80	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	101.0	10.10	n/a
5961005666		D Cerium-ICP-Acid Dil.	ug/mL	100.6	<5.00e-03	<5.05e-01	<5.05e-1	n/a	n/a	99.60	5.05e-01	n/a
5961005666		D Cobalt-ICP-Acid Dil.	ug/mL	100.8	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	99.50	10.10	n/a
5961005666		D Chromium-ICP-Acid Dil.	ug/mL	101.2	<2.00e-02	< 2.020	<2.02e0	n/a	n/a	99.80	2.020	n/a
5961005666		D Copper-ICP-Acid Dil.	ug/mL	104.2	<1.00e-02	< 1.010	<1.01e0	118.5	0.84	101.0	1.010	n/a
5961005666		D Iron-ICP-Acid Dil.	ug/mL	100.2	<1.00e-02	< 1.010	<1.01e0	27.30	1.47	99.50	1.010	n/a
5961005666		D Potassium-ICP-Acid Dil.	ug/mL	100.8	<5.00e-01	< 50.50	<5.05e1	n/a	n/a	145.0	50.50	n/a
5961005666		D Lanthanum-ICP-Acid Dil.	ug/mL	102.2	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	99.30	5.050	n/a
5961005666		D Lithium-ICP-Acid Dil.	ug/mL	97.20	<1.00e-02	< 1.010	<1.01e1	n/a	n/a	96.70	10.10	n/a
5961005666		D Magnesium-ICP-Acid Dil.	ug/mL	97.20	<1.00e-02	< 1.010	<1.01e1	n/a	n/a	93.60	10.10	n/a
5961005666		D Manganese-ICP-Acid Dil.	ug/mL	98.40	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	95.30	5.050	n/a
5961005666		D Molybdenum-ICP-Acid Dil.	ug/mL	100.8	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	101.0	5.050	n/a
5961005666		D Sodium-ICP-Acid Dil.	ug/mL	97.40	<1.00e-01	3.02e+04	3.02e+04	3.02e+04	1.00	179.0	10.10	n/a
5961005666		D Neodymium-ICP-Acid Dil.	ug/mL	101.8	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	97.80	10.10	n/a
5961005666		D Nickel-ICP-Acid Dil.	ug/mL	100.2	<2.00e-02	< 2.020	<2.02e0	n/a	n/a	99.90	2.020	n/a
5961005666		D Phosphorus-ICP-Acid Dil.	ug/mL	100.2	<2.00e-01	4.47e+03	4.48e+03	4.48e+03	0.22	233.0	20.20	n/a
5961005666		D Lead-ICP-Acid Dil.	ug/mL	100.0	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	114.0	10.10	n/a
5961005666		D Sulfur-ICP-Acid Dil.	ug/mL	99.40	<1.00e-01	1.01e+03	1.01e+03	1.01e+03	0.00	100.0	10.10	n/a
5961005666		D Antimony-ICP-Acid Dil.	ug/mL	95.60	<2.00e-02	< 6.060	<6.06e0	n/a	n/a	96.20	6.060	n/a
5961005666		D Selenium-ICP-Acid Dil.	ug/mL	97.20	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	97.60	10.10	n/a
5961005666		D Silicon-ICP-Acid Dil.	ug/mL	96.80	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	101.0	5.050	n/a
5961005666		D Samarium-ICP-Acid Dil.	ug/mL	99.00	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	97.00	10.10	n/a
5961005666		D Strontium-ICP-Acid Dil.	ug/mL	99.20	<1.00e-02	1.250	1.240	1.245	0.80	95.40	1.010	n/a
5961005666		D Titanium-ICP-Acid Dil.	ug/mL	98.00	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	96.40	1.010	n/a

Sample#	RA#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S961005666	D	Thallium-ICP-Acid Dil.	ug/mL	98.20	< 2.00e-01	< 3.0e-01	< 3.0e-01	n/a	n/a	102.0	20.20	n/a
S961005666	D	Uranium-ICP-Acid Dil.	ug/mL	96.60	< 3.00e-01	< 3.0e-01	< 3.0e-01	n/a	n/a	103.5	50.50	n/a
S961005666	D	Vanadium-ICP-Acid Dil.	ug/mL	100.9	< 3.00e-02	< 3.0e-02	< 3.0e-02	n/a	n/a	99.50	5.050	n/a
S961005666	D	Zinc-ICP-Acid Dil.	ug/mL	101.2	< 1.00e-02	< 1.0e-02	< 1.0e-02	n/a	n/a	101.0	1.010	n/a
S961005666	D	Zirconium-ICP-Acid Dil.	ug/mL	98.69	< 1.00e-02	< 1.0e-02	< 1.0e-02	n/a	n/a	97.20	1.010	n/a
S961005666	D	Fluoride-IC-Dioxex 4000/4500	ug/mL	98.47	< 1.20e-02	1.28e-03	1.47e-03	1.37e-03	13.8	102.7	25.43	n/a
S961005666	D	Chloride-IC-Dioxex 4000/4500	ug/mL	100.2	< 1.70e-02	6.75e-02	7.61e-02	7.18e-02	12.0	97.99	56.06	n/a
S961005666	D	Nitrite-IC - Dioxex 4000/4500	ug/mL	97.39	< 1.00e-01	3.51e-03	3.87e-03	3.69e-03	9.76	97.77	229.1	n/a
S961005666	D	Bromide by Ion Chromatograph	ug/mL	99.83	< 1.25e-01	< 2.65e-02	< 2.65e-02	n/a	n/a	95.76	265.1	n/a
S961005666	D	Nitrate by IC-Dioxex 4000/4500	ug/mL	100.9	< 1.35e-01	3.88e-04	6.72e-04	6.30e-04	13.3	104.4	294.8	n/a
S961005666	D	Phosphate-IC-Dioxex 4000/4500	ug/mL	100.2	< 1.20e-01	1.42e-04	1.62e-04	1.52e-04	13.2	104.2	254.5	n/a
S961005666	D	Sulfate by IC-Dioxex 4000/4500	ug/mL	102.3	< 1.38e-01	2.87e-03	3.40e-03	3.14e-03	16.9	99.21	292.7	n/a
S961005666	D	Oxalate by IC-Dioxex 4000/4500	ug/mL	102.3	1.61e-01	< 2.23e-02	< 2.23e-02	n/a	n/a	102.5	222.7	n/a
S961005666	D	Cobalt-60 by deA	uc1/mL	99.46	< 3.20e-05	< 2.93e-05	< 2.93e-05	n/a	n/a	n/a	2.93e-05	n/a
S961005666	D	Cesium-137 by deA	uc1/mL	97.95	< 7.00e-05	3.61e-02	3.49e-02	3.55e-02	3.38	n/a	n/a	1.28
S961005666	D	Am-241 by Extraction	uc1/mL	89.08	< 5.99e-06	5.79e-05	5.67e-05	5.71e-05	1.40	n/a	1.02e-05	2.13e+00

WASTE COMPATIBILITY CORROSION RULES

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TABLE 3. WASTE COMPATIBILITY CORROSION RULES

Sample ID	Analyte	Result (ug/ml)	Result (M)	$\frac{1}{2} [NO_3]$	$\frac{1}{2} [OH]$	$\frac{1}{2} [NO_2]$	$\frac{1}{2} [OH] + [NO_2]$
S96T005663	NO3	5.85E+04	0.944	$\leq 1.0 \text{ M?}$	$0.010 \text{ M} \leq [OH] \leq 5.0 \text{ M?}$	$0.011 \text{ M} \leq [NO_2] \leq 5.5 \text{ M}$	
	OH	N/A	0.000	YES	NO	YES	
	NO2	3.51E+03	0.076	$1.0 \text{ M} < [NO_3] \leq 3.0 \text{ M?}$	$0.4 \text{ M} < [NO_3] \leq [OH] < 10 \text{ M}$		$>= 0.4 * [NO_3]?$
				$3.0 \text{ M} < [NO_3] \leq 5.5 \text{ M?}$	$0.3 \leq [OH] < 10 \text{ M?}$		$>= 1.2 \text{ M?}$

Sample ID	Analyte	Result (ug/ml)	Result (M)	$\frac{1}{2} [NO_3]$	$\frac{1}{2} [OH]$	$\frac{1}{2} [NO_2]$	$\frac{1}{2} [OH] + [NO_2]$
S96T005665	NO3	5.93E+04	0.966	$\leq 1.0 \text{ M?}$	$0.010 \text{ M} \leq [OH] \leq 5.0 \text{ M?}$	$0.011 \text{ M} \leq [NO_2] \leq 5.5 \text{ M}$	
	OH	N/A	0.000	YES	NO	YES	
	NO2	3.44E+03	0.075	$1.0 \text{ M} < [NO_3] \leq 3.0 \text{ M?}$	$0.4 \text{ M} < [NO_3] \leq [OH] < 10 \text{ M}$		$>= 0.4 * [NO_3]?$
				$3.0 \text{ M} < [NO_3] \leq 5.5 \text{ M?}$	$0.3 \leq [OH] < 10 \text{ M?}$		$>= 1.2 \text{ M?}$

Sample ID	Analyte	Result (ug/ml)	Result (M)	$\frac{1}{2} [NO_3]$	$\frac{1}{2} [OH]$	$\frac{1}{2} [NO_2]$	$\frac{1}{2} [OH] + [NO_2]$
S96T005666	NO3	5.88E+04	0.948	$\leq 1.0 \text{ M?}$	$0.010 \text{ M} \leq [OH] \leq 5.0 \text{ M?}$	$0.011 \text{ M} \leq [NO_2] \leq 5.5 \text{ M}$	
	OH	N/A	0.000	YES	NO	YES	
	NO2	3.51E+03	0.076	$1.0 \text{ M} < [NO_3] \leq 3.0 \text{ M?}$	$0.4 \text{ M} < [NO_3] \leq [OH] < 10 \text{ M}$		$>= 0.4 * [NO_3]?$
				$3.0 \text{ M} < [NO_3] \leq 5.5 \text{ M?}$	$0.3 \leq [OH] < 10 \text{ M?}$		$>= 1.2 \text{ M?}$

HNF-SD-WM-DP-224, REV. 0

CHAIN OF CUSTODY FORMS

HNF-SD-WM-DP-224, REV. 0

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CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

Oct. 18. 1996 1:37PM WHC 222S LAB ROOM 2F BACKSIDE No. 6022 P. 1/1

Shipment Number 800E-08-TT (2) Sample Number 244-TX-96-1 (3) Supervisor R.J. Penzile
 Tank 244-TX (5) Riser 8 (6) Cask/PIG Shipping Container Serial Number 6003X D

(7) FIELD		(31) LABORATORY	
Over Top Dose Rate	<u><0.5</u>	A. Work Package Number	<u>WS-96-00265</u>
Side Dose Rate	<u><0.5</u>	B. Cask/PIG Seal Number	<u>2007</u>
Bottom Dose Rate	<u><0.5</u>	C. Date and Time Sample	<u>10.18.96/1056h-</u>
Smearable Contamination	<u><20</u>	Removed from Tank	<u>90%</u>
	(Alpha)	Expected Liquid Content	<u>* 10g</u>
	<u><1000</u>	Expected Solid Content	<u><0.5 mR/h</u>
	(Beta-Gamma)	Dose Rate Through Drill String	<u>125mL</u>
	(Signature)	Expected Sample Length (Auger/	
		Volume (RSC)	

INFORMATION (Include statement of laboratory tests to be performed.)

HNF-SD-WM-DP-224, REV. 0

(1) Point of Origin		(12) Destination		(32) Laboratory Comments	
<u>244-TX Unit 8</u>	<u>222-S</u>				
(14) Transmitted By (Sign and PRINT)	(15) Received By (Sign and PRINT)				
<u>James Sackels</u>	<u>James Sackels</u>				
(16) Transmitted By (Sign and PRINT)	(17) Received By (Sign and PRINT)				
<u>James Sackels</u>	<u>JOHN HARRING</u>				
(18) Transmitted By (Sign and PRINT)	(19) Received By (Sign and PRINT)				
<u>JOHN HARRING</u>	<u>Jim Knight Jr</u>				
(20) Transmitted By (Sign and PRINT)	(21) Received By (Sign and PRINT)				
<u>JOHN HARRING</u>	<u>Jim Knight Jr</u>				
(22) Seal Intact Upon Receipt?	(23) Seal Intact Upon Receipt?				
<u>Yes</u>	<u>Yes</u>				
(24) Seal Date Consistent with the Record?	(25) Seal Date Consistent with the Record?				
<u>Yes</u>	<u>Yes</u>				

26

* Suspended Solids

DISTRIBUTION: White - Office of Sample Management Yellow - Recipient of Sample Pink - Waste Tank Sampling Goldensred - Tank Farm Operations. 8C-6001-328 (01/98)

CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

Oct. 18, 1996 1:56PM WHC 222S LAB ROOM 2F BACKSIDE No. 6023 P. 2/2

Shipment Number 200E-08-TF (2) Sample Number 244-TX-96-2 (3) Supervisor R.J. Ruznik
 Tank 244-TX (5) Riser 8 (6) Cask/PIG Shipping Container Serial Number 6003B

distation Survey Data For Cask/PIG:		(7) FIELD	(31) LABORATORY	(8) Shipment Description
Over Top Dose Rate	<u>< 0.5</u>		<u>< 0.5</u>	A. Work Package Number <u>115-96-00265/0</u> <u>2006</u>
Side Dose Rate	<u>< 0.5</u>		<u>< 0.5</u>	B. Cask/PIG Seal Number
Bottom Dose Rate	<u>< 0.5</u>		<u>< 0.5</u>	C. Date and Time Sample Removed from Tank
Smearable Contamination	<u>< 20</u> (Alpha)		<u>< 200</u> (Alpha)	D. Expected Liquid Content <u>* 108</u>
	<u>< 1000</u> (Beta-Gamma)		<u>< 1K</u>	E. Expected Solid Content <u>< 0.5 m³</u>
ACT*	<u>[Signature]</u> (Signature)	ACT*	<u>[Signature]</u> (Signature)	F. Dose Rate Through Drill String (Auger/On Contact) (GRAs) Expected Sample Length (Auger/ Volume (GRAs)

1) INFORMATION (Include statement of laboratory tests to be performed.)

HF-SD-WM-DP-224, REV 0

27

2) Field Comments

* Suspended Solids

(32) Laboratory Comments

1) Point of Origin <u>244-TX well #8</u>	(12) Destination <u>222-S</u>	(13) Sender Name (Sign and PRINT) <u>[Signature]</u>	(14) Date/Time <u>10-18-96</u>	(15) Sender Comments
2) Released by (Sign and PRINT) <u>[Signature]</u>	(16) Received by (Sign and PRINT) <u>[Signature]</u>	(17) Date/Time <u>10-18-96</u>	(18) Receiver Comments	(19) Receiver Comments
3) Released by (Sign and PRINT) <u>[Signature]</u>	(20) Received by (Sign and PRINT) <u>[Signature]</u>	(21) Date/Time <u>10-18-96</u>	(22) Receiver Comments	(23) Receiver Comments
4) Released by (Sign and PRINT) <u>[Signature]</u>	(24) Received by (Sign and PRINT) <u>[Signature]</u>	(25) Date/Time <u>10-18-96</u>	(26) Receiver Comments	(27) Receiver Comments

(16) Seal Intact Upon Release?	(28) Seal Intact Upon Receipt?	(30) Seal Date Consistent with this Record?
☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No
Shipment No. <u>[Signature]</u> Seal No. <u>[Signature]</u> Sample No. <u>[Signature]</u>		

NOTATION: White - Office of Sample Management Yellow - Recipient of Sample Pink - Waste Tank Sampling Goldend - Tank Farm Operations.

BC-6001-326 (01/96)

CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

Oct. 18, 1996 1:56PM WHC 222S LAB ROOM 2F BACKSIDE No. 6023 P. 1/2

Shipment Number 220E-08-TF (2) Sample Number 244-TX-96-3 (3) Supervisor R.J. Penznik
 Tank 244-TX (5) Riser B (6) Cask/PIG Shipping Container Serial Number 6003A

(7) FIELD		(31) LABORATORY		(8) Shipment Description	
Over Top Dose Rate	<u>< 0.5</u>		<u>< 0.5</u>	A. Work Package Number	<u>WS-96-60265/0</u>
Side Dose Rate	<u>< 0.5</u>		<u>< 0.5</u>	B. Cask/PIG Seal Number	<u>2008</u>
Bottom Dose Rate	<u>< 0.5</u>		<u>< 0.5</u>	C. Date and Time Sample	<u>10/18/96/1125pm</u>
Smearable Contamination	<u>< 20</u>		<u>< 200</u>	Removed from Tank	<u>90g</u>
			(Alpha)	D. Expected Liquid Content	<u>* 10g</u>
			(Beta-Gamma)	E. Expected Solid Content	<u>LO.5 mth</u>
ACT: <u>[Signature]</u>		ACT: <u>[Signature]</u>		F. Dose Rate Through Drill String (Auger/On Content (GRAB))	<u>125ml</u>
			(Signature)	G. Expected Sample Length (Auger)/ Volume (GRAB)	

INFORMATION (Include statement of laboratory tests to be performed.)

HNF-SD-WM-DP-224, REV C

(32) Laboratory Comments

(3) Field Comments

* Suspended solids.

(1) Point of Origin		(11) Destination		(14) Date/Time		(15) Sender Comments	
<u>244-TX Unit # B</u>	<u>220-S</u>	<u>James Sacks</u>	<u>James Sacks</u>	<u>10-18-96</u>			
(2) Released by (Sign and PRINT)	(12) Received by (Sign and PRINT)	(16) Released by (Sign and PRINT)	(17) Received by (Sign and PRINT)	(18) Date/Time	(19) Date/Time	(20) Receiver Comments	
<u>James Sacks</u>	<u>James Sacks</u>	<u>James Sacks</u>	<u>James Sacks</u>	<u>10-18-96</u>	<u>10-18-96</u>		
(3) Relinquished by (Sign and PRINT)	(13) Relinquished by (Sign and PRINT)	(16) Relinquished by (Sign and PRINT)	(17) Relinquished by (Sign and PRINT)	(21) Date/Time	(22) Date/Time	(24) Receiver Comments	
<u>James Sacks</u>	<u>James Sacks</u>	<u>James Sacks</u>	<u>James Sacks</u>	<u>10-18-96</u>	<u>10-18-96</u>		
(4) Relinquished by (Sign and PRINT)	(13) Relinquished by (Sign and PRINT)	(16) Relinquished by (Sign and PRINT)	(17) Relinquished by (Sign and PRINT)	(23) Date/Time	(24) Date/Time	(26) Receiver Comments	
<u>James Sacks</u>	<u>James Sacks</u>	<u>James Sacks</u>	<u>James Sacks</u>	<u>10-18-96</u>	<u>10-18-96</u>		
(16) Seal Intact Upon Release?	(28) Seal Intact Upon Receipt?	(30) Seal Data Consistent with this Record?					
<u>Yes</u> ☒ No ☐	<u>Yes</u> ☒ No ☐	<u>Yes</u> ☒ No ☐					
Shipment No. <u>Yes</u> ☒ No ☐		Seal No. <u>Yes</u> ☒ No ☐					

ATTENTION: White - Office of Sample Management Yellow - Recipient of Sample Pink - Waste Tank Sampling Goldened - Tank Farm Operations.

BC-6001-326 (01/86)

BREAKDOWN ANALYSIS

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LABCORE Completed Worklist Report for Worklist# 14374

Analyst: srm

Instrument: NONE

Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: 244-TX GRAB / JLN

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 SAMPLE	S96T005663	0	@BRKDOWN1 DOSERATE	LIQUID	N/A	4	9.99e-002	mrad/hour
1 SAMPLE	S96T005663	0	@BRKDOWN1 APPEAR02	LIQUID	N/A	complete		
1 SAMPLE	S96T005663	0	@BRKDOWN1 SAMPAMT2	LIQUID	N/A	125		mL
2 SAMPLE	S96T005665	0	@BRKDOWN1 DOSERATE	LIQUID	N/A	5	9.99e-002	mrad/hour
2 SAMPLE	S96T005665	0	@BRKDOWN1 APPEAR02	LIQUID	N/A	complete		
2 SAMPLE	S96T005665	0	@BRKDOWN1 SAMPAMT2	LIQUID	N/A	125		mL
3 SAMPLE	S96T005666	0	@BRKDOWN1 DOSERATE	LIQUID	N/A	4	9.99e-002	mrad/hour
3 SAMPLE	S96T005666	0	@BRKDOWN1 APPEAR02	LIQUID	N/A	complete		
3 SAMPLE	S96T005666	0	@BRKDOWN1 SAMPAMT2	LIQUID	N/A	125		mL

Final page for worklist# 14374

Analyst Signature

Date

Analyst Signature

Date

 10/30/96

Reviewer Signature

Date

LABCORE Data Entry Template for Worklist# 14374

Analyst: SRM Instrument: NONE Book # _____

Method: LA-519-151 Rev/Mod _____

Worklist Comment: 244-TX GRAB / JLN

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
96001429	244-TX GRAB	1 SAMPLE	S96T005663	0	@BRKDOWN1 DOSERATE	LIQUID	N/A	4		mrad/hour
96001429	244-TX GRAB	1 SAMPLE	S96T005663	0	@BRKDOWN1 APPEAR02	LIQUID	N/A	complete		
96001429	244-TX GRAB	1 SAMPLE	S96T005663	0	@BRKDOWN1 SAMPAMT2	LIQUID	N/A	125		ml
96001429	244-TX GRAB	2 SAMPLE	S96T005665	0	@BRKDOWN1 DOSERATE	LIQUID	N/A	8 10/29/30 5		mrad/hour
96001429	244-TX GRAB	2 SAMPLE	S96T005665	0	@BRKDOWN1 APPEAR02	LIQUID	N/A	complete		
96001429	244-TX GRAB	2 SAMPLE	S96T005665	0	@BRKDOWN1 SAMPAMT2	LIQUID	N/A	125		ml
96001429	244-TX GRAB	3 SAMPLE	S96T005666	0	@BRKDOWN1 DOSERATE	LIQUID	N/A	8 4 10/29/30 5		mrad/hour
96001429	244-TX GRAB	3 SAMPLE	S96T005666	0	@BRKDOWN1 APPEAR02	LIQUID	N/A	complete		
96001429	244-TX GRAB	3 SAMPLE	S96T005666	0	@BRKDOWN1 SAMPAMT2	LIQUID	N/A	125		ml

Final page for worklist # 14374

Simon Morris 10-29-96
Analyst Signature Date

Analyst Signature Date

S96T005663

Clear yellow liquid <5% settled solids no organic layer

S96T005665

unable to retrieve sample from pig ^{gun} ~~retrieval~~

Clear yellow liquid <5% settled solids no organic layer

S96T005666

Clear yellow liquid <5% settled solids no organic layer

Data Entry Comments:

INORGANIC ANALYSIS

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LABCORE Data Entry Template for Worklist# 14529

Analyst: KRQ Instrument: DSC0 3 Book # 12N14B

Method: LA-514-114 Rev/Mod D-0

Worklist Comment: DSC-01 FOR 244-TX GRAB (N2)

RTS!

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-03	LIQUID	<u>28.45</u>	<u>28.48</u>	<u>N/A</u>	Joules/g
96001429	244-TX GRAB	2 SAMPLE	S96T005663	0	DSC-03	LIQUID	<u>N/A</u>	<u>Ø</u>		Joules/g
96001429	244-TX GRAB	3 DUP	S96T005663	0	DSC-03	LIQUID	<u>Ø</u>	<u>Ø</u>	<u>N/A</u>	Joules/g
96001429	244-TX GRAB	4 SAMPLE	S96T005665	0	DSC-03	LIQUID	<u>N/A</u>	<u>Ø</u>		Joules/g
96001429	244-TX GRAB	5 DUP	S96T005665	0	DSC-03	LIQUID	<u>Ø</u>	<u>Ø</u>	<u>N/A</u>	Joules/g
96001429	244-TX GRAB	6 SAMPLE	S96T005666	0	DSC-03	LIQUID	<u>N/A</u>	<u>Ø</u>		Joules/g
96001429	244-TX GRAB	7 DUP	S96T005666	0	DSC-03	LIQUID	<u>Ø</u>	<u>Ø</u>	<u>N/A</u>	Joules/g

Final page for worklist # 14529

See attached for signatures 12-16-96
Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Verified/Validated by
Blandina
Valenzuela
12-18-96

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.

worklistrpt Version 2.1 05/15/95
10/31/96 10:58

Page: 1

LABCORE Data Entry Template for Worklist# 14529

Analyst: ABD

Instrument: DSC0

Book # 120114-B

Method: LA-514-113 Rev/Mod

Worklist Comment: DSC-01 FOR 244-TX GRAB (N2)

RTS!

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-01	LIQUID			N/A	Joules/g
96001429	244-TX GRAB	2 SAMPLE	S96T005663	0	DSC-01	LIQUID	N/A			Joules/g
96001429	244-TX GRAB	3 DUP	S96T005663	0	DSC-01	LIQUID			N/A	Joules/g
96001429	244-TX GRAB	4 SAMPLE	S96T005665	0	DSC-01	LIQUID	N/A			Joules/g
96001429	244-TX GRAB	5 DUP	S96T005665	0	DSC-01	LIQUID			N/A	Joules/g
96001429	244-TX GRAB	6 SAMPLE	S96T005666	0	DSC-01	LIQUID	N/A			Joules/g
96001429	244-TX GRAB	7 DUP	S96T005666	0	DSC-01	LIQUID			N/A	Joules/g

Final page for worklist # 14529

Analyst Signature Blandina ValenzuelaDate 12/13/96

Analyst Signature

Date

DSC-03 instrument
was used.

12-16-96

Blandina

Valenzuela

Data Entry Comments:

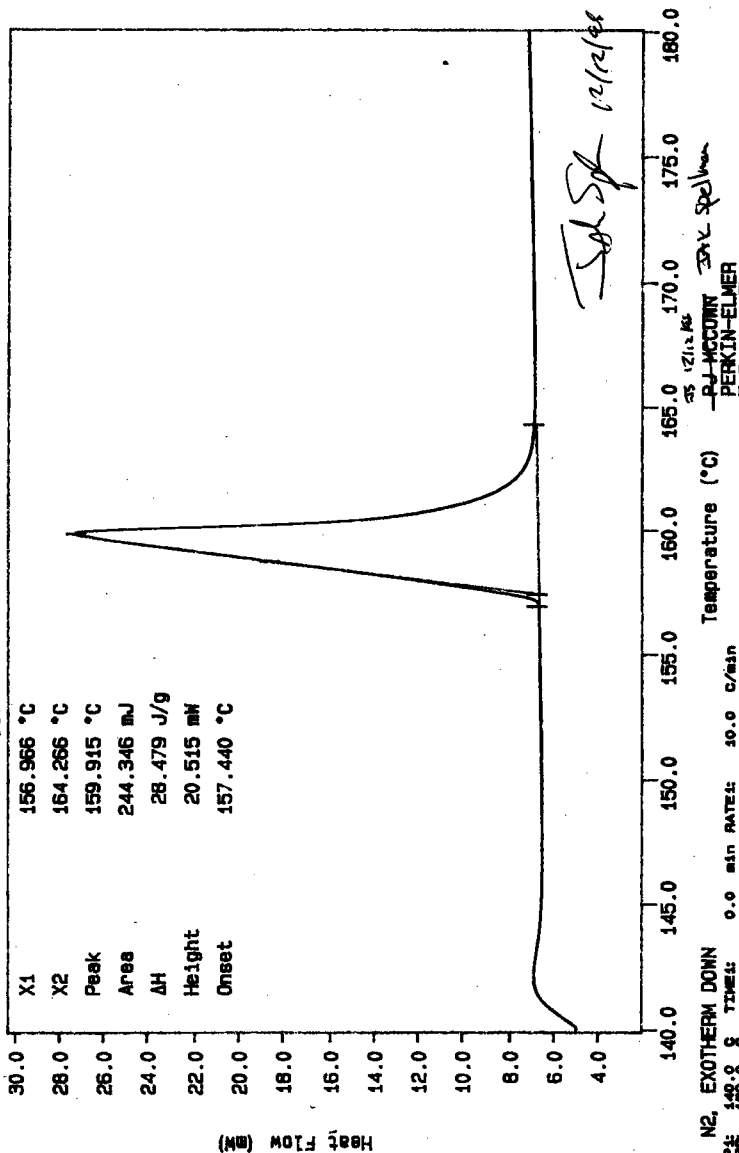
Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

File info: IND121201 Thu Dec 12 05:37:02 1996

Sample Weight: 8.580 mg

12N14-B INDIUM AT 10C/MIN

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 37 TO 44



N2. EXOTHERM DOWN

TEMP:	140.0	5	TIME:
TEMP:	160.0		

0.0 min RATE: 10.0 C/min

1712 1812

PA-MCCOMIN

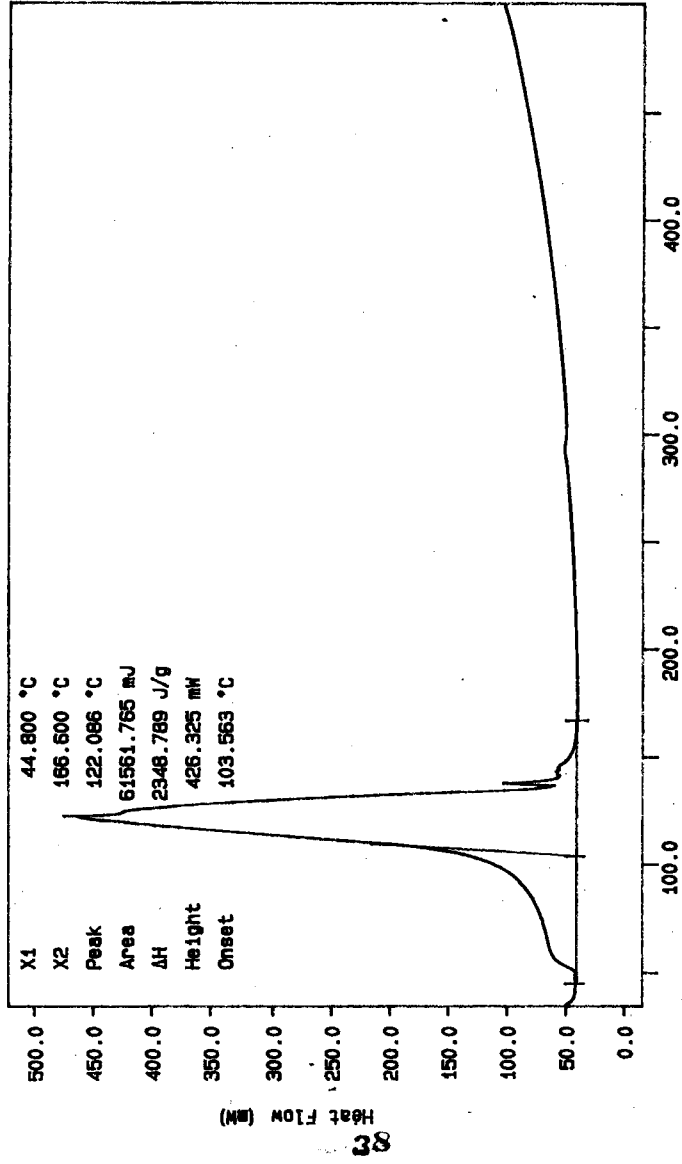
PERKIN-ELMER

7 Series Thermal Analysis System
Thu Dec 12 17:20:19 1996

Thu Dec 12 17:20:19 1996

TS 12/21/21

Curve 1: DSC
File Info: SAM121210 Thu Dec 12 22:18:43 1996
Sample Weight: 26.210 mg
S96T005663



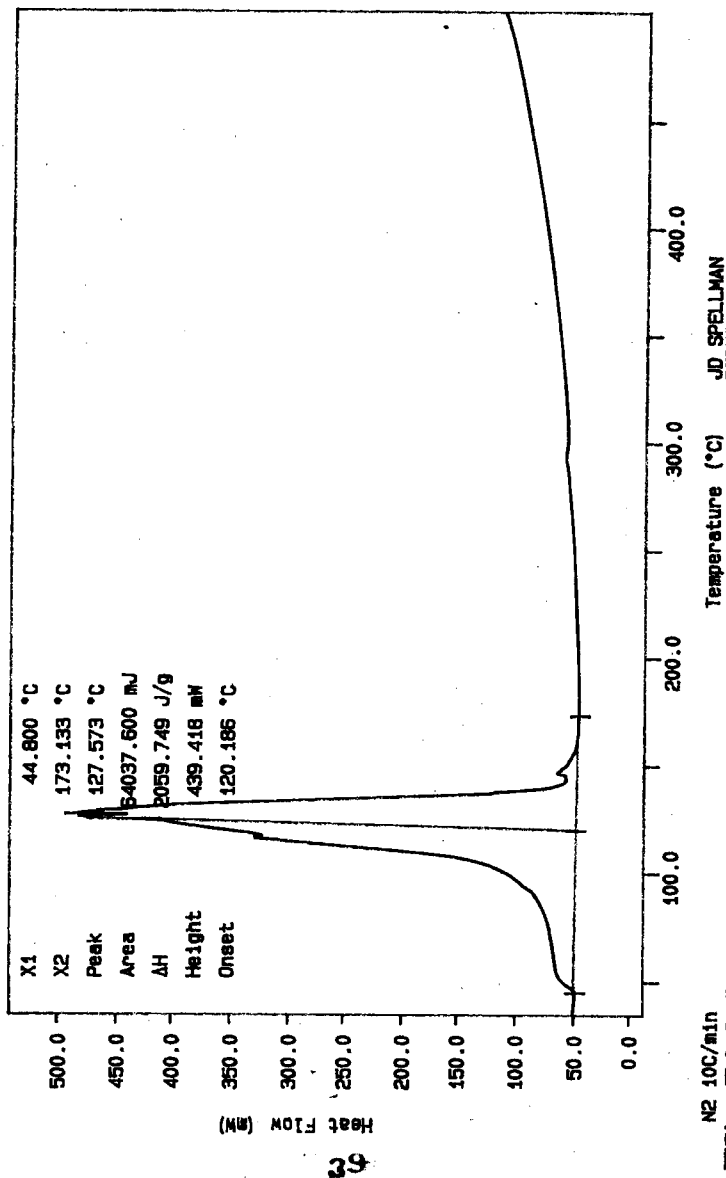
N2 10C/min
TIME: 88.8 g
88.8 g
JD SPELLMAN
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Dec 12 23:24:40 1996

Curve 1: DSC

File info: SAM121302 Fri Dec 13 00:21:38 1996

Sample Weight: 31.090 mg

S96T00563DUP

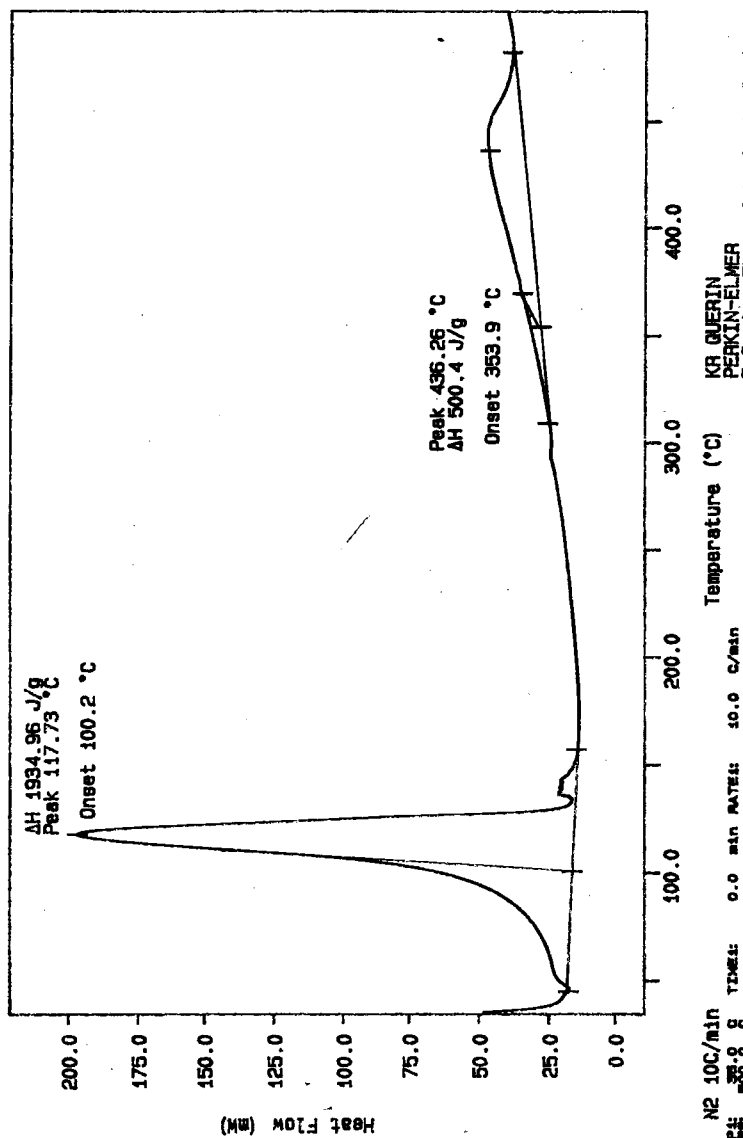
N2 10C/min
TEMP 50.0 °C
TIME 000.0 s

0.0 min RATE: 10.0 C/min

Temperature (°C)

JD SPELLMAN
PERKIN-ELMER
7 Series Thermal Analysis System
Fri Dec 13 00:26:53 1996

Curve 1: DSC
 File Info: SAN121305 Fri Dec 13 05:52:06 1996
 Sample Weight: 12.750 mg
 S96T005685 SAMPLE



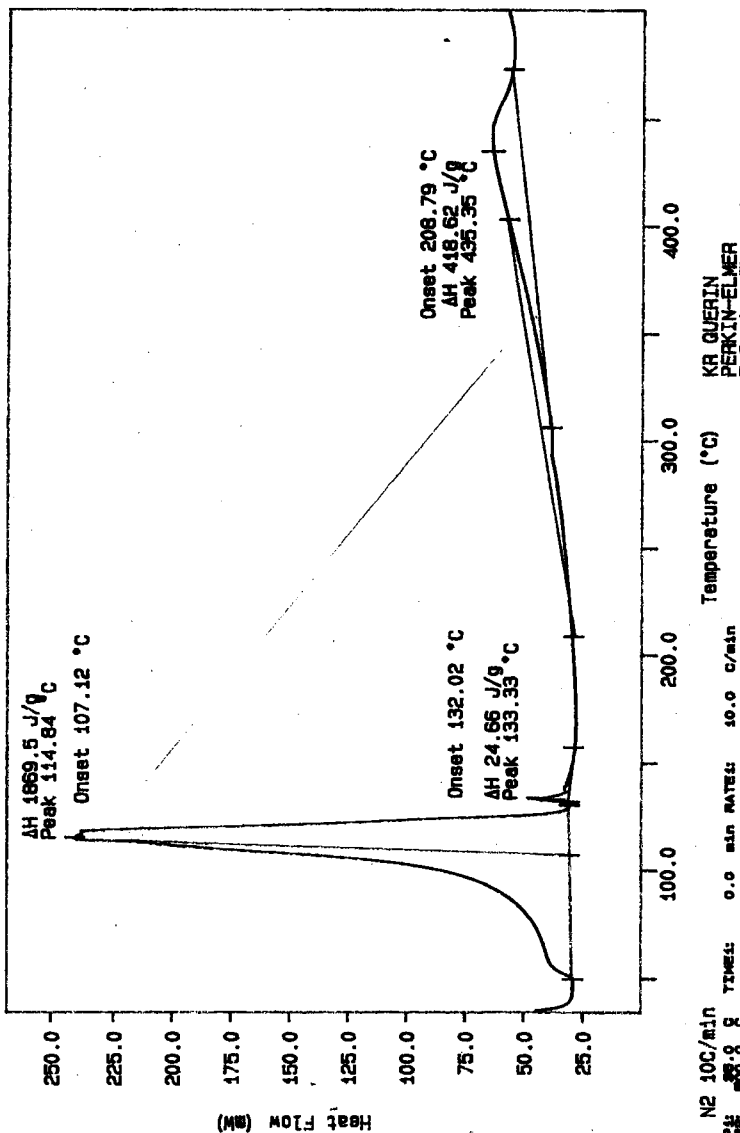
KR GUERIN
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Mon Dec 15 10:04:27 1996

Curve 1: DSC

File Info: 121306 Fri Dec 13 15:55:58 1996

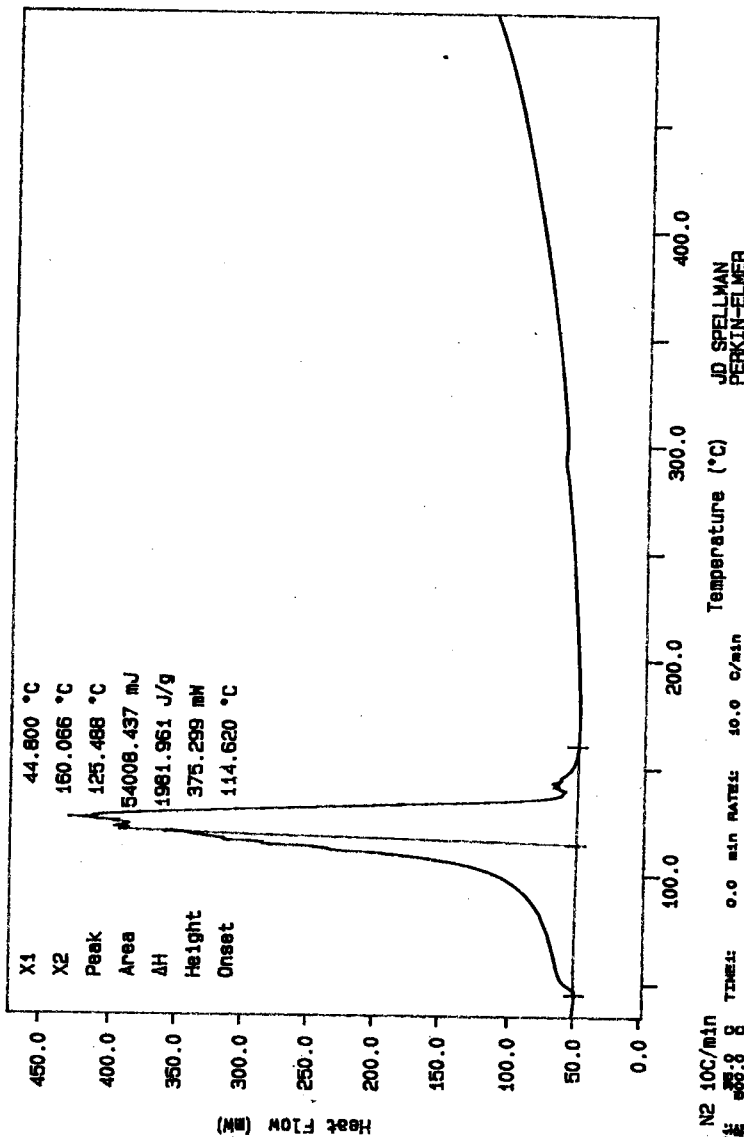
Sample Weight: 13.810 mg

S996T005665DUP



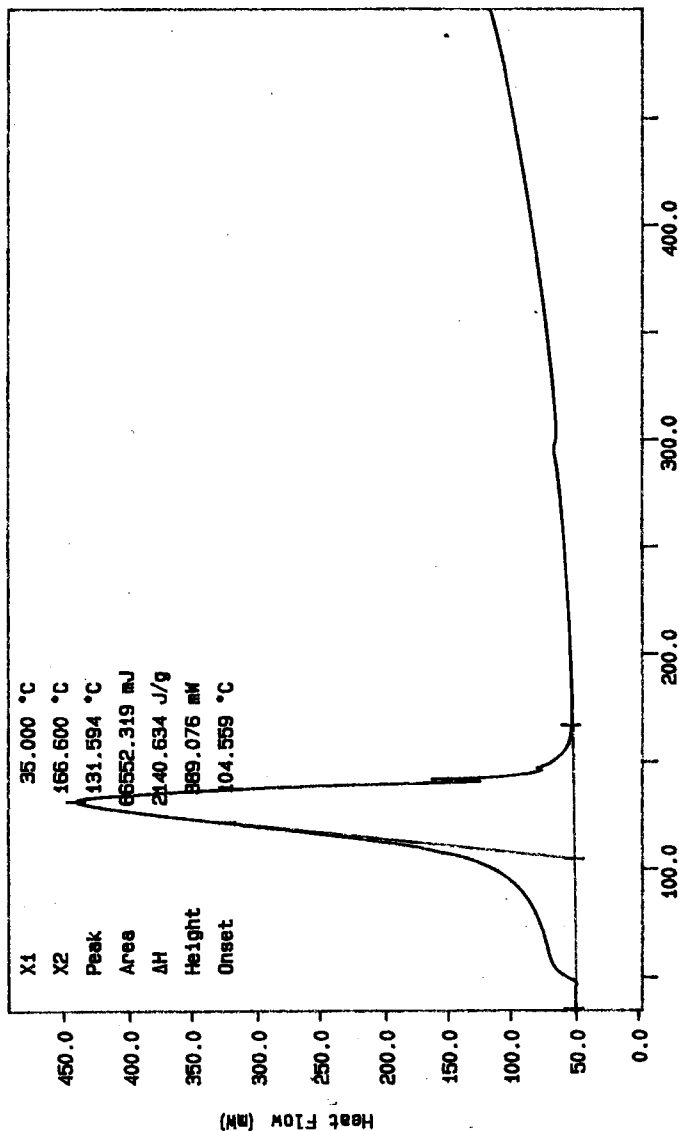
KR QUERIN
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Fri Dec 13 17:10:01 1996

Curve 1: DSC
 File Info: SAM121303 Fri Dec 13 01:27:28 1996
 Sample Weight: 27.250 mg
 S96T005666



N2 10C/min
 TIME: 00:08
 JD SPELLMAN
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Fri Dec 13 02:36:53 1996

Curve 1: DSC
 File Infor: SAM121304 Fri Dec 13 03:43:04 1996
 Sample Weight: 31.090 mg
 S96T005686DUP



JD SPELLMAN
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Fri Dec 13 04:38:16 1996

N2 10C/min
 TEMPERATURE 350.0 °C
 TIME 0.0 min RATE 10.0 °C/min

LABCORE Data Entry Template for Worklist# 15677

Analyst: BDV Instrument: DSC01 Book #

Method: LA-514-113 Rev/Mod

Worklist Comment: Dry DSC for 244-TX. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
96001429	244-TX GRAB	1 SAMPLE	S96T005663	0	DSC-02	LIQUID	N/A	<u>Ø</u>		Joules/g Dry
96001429	244-TX GRAB	2 DUP	S96T005663	0	DSC-02	LIQUID	<u>Ø</u>	<u>Ø</u>	N/A	Joules/g Dry
96001429	244-TX GRAB	3 SAMPLE	S96T005665	0	DSC-02	LIQUID	N/A	<u>Ø</u>		Joules/g Dry
96001429	244-TX GRAB	4 DUP	S96T005665	0	DSC-02	LIQUID	<u>Ø</u>	<u>Ø</u>	N/A	Joules/g Dry
96001429	244-TX GRAB	5 SAMPLE	S96T005666	0	DSC-02	LIQUID	N/A	<u>Ø</u>		Joules/g Dry
96001429	244-TX GRAB	6 DUP	S96T005666	0	DSC-02	LIQUID	<u>Ø</u>	<u>Ø</u>	N/A	Joules/g Dry

Final page for worklist # 15677

Blandina Valenzuela 12-17-96
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist# 14523

Analyst: KRO Instrument: TGA0 3 Book # 97N8A

Method: LA-514-114 Rev/Mod D-0

Worklist Comment: TGA-01 FOR 244-TX GRAB (N2)

RTS!

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-03	LIQUID	<u>59.4</u>	<u>58.66</u>	<u>N/A</u>	%
96001429	244-TX GRAB	2 SAMPLE	S96T005663	0	TGA-03	LIQUID	<u>N/A</u>	<u>88.59</u>		%
96001429	244-TX GRAB	3 DUP	S96T005663	0	TGA-03	LIQUID	<u>88.59</u>	<u>88.93</u>	<u>N/A</u>	%
96001429	244-TX GRAB	4 SAMPLE	S96T005665	0	TGA-03	LIQUID	<u>N/A</u>	<u>88.88</u>		%
96001429	244-TX GRAB	5 DUP	S96T005665	0	TGA-03	LIQUID	<u>88.88</u>	<u>88.66</u>	<u>N/A</u>	%
96001429	244-TX GRAB	6 SAMPLE	S96T005666	0	TGA-03	LIQUID	<u>N/A</u>	<u>88.43</u>		%
96001429	244-TX GRAB	7 DUP	S96T005666	0	TGA-03	LIQUID	<u>88.43</u>	<u>88.26</u>	<u>N/A</u>	%

Final page for worklist # 14523

See attached for signatures 12-16-96
Analyst Signature _____ Date _____

See attached for signatures 12-17-96
Analyst Signature _____ Date _____

Verified/Validated by
Blandina
Valenzuela
12-18-96

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# 14523

Analyst: ABD Instrument: TGA0 Book # 97N8A

Method: LA-560-112 Rev/Mod _____

Worklist Comment: TGA-01 FOR 244-TX GRAB (N2)

RTS!

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-01	LIQUID			N/A	%
96001429	244-TX GRAB	2	SAMPLE	S96T005663	0		TGA-01	LIQUID	N/A			%
96001429	244-TX GRAB	3	DUP	S96T005663	0		TGA-01	LIQUID			N/A	%
96001429	244-TX GRAB	4	SAMPLE	S96T005665	0		TGA-01	LIQUID	N/A			%
96001429	244-TX GRAB	5	DUP	S96T005665	0		TGA-01	LIQUID			N/A	%
96001429	244-TX GRAB	6	SAMPLE	S96T005666	0		TGA-01	LIQUID	N/A			%
96001429	244-TX GRAB	7	DUP	S96T005666	0		TGA-01	LIQUID			N/A	%

Final page for worklist # 14523

Analyst Signature Blandina Valenzuela Date 12/13/96

Analyst Signature _____ Date _____

TGA-03 instrument
was used.

12-16-96

Blandina

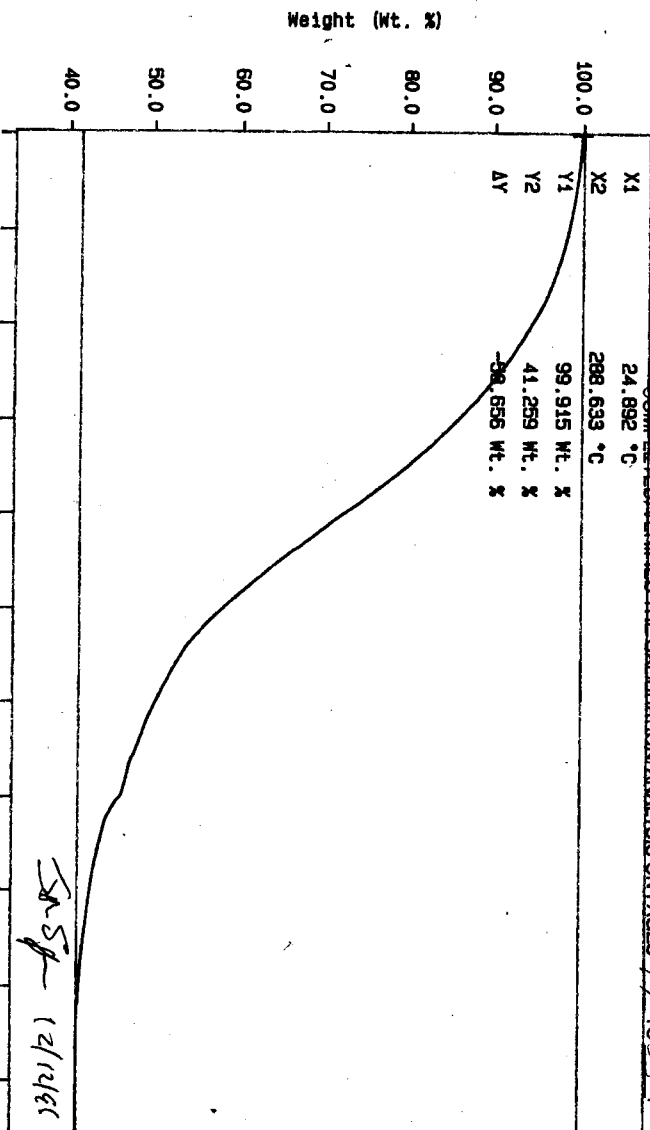
Valenzuela

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.

Curve 1: TGA
 File Info: TER121204 Thu Dec 12 05:59:29 1996
 Sample Weight: 24.171 mg
 TGA STD 82N8-A

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
 COMPLETED/REVIEWED THE CALIBRATION/ANALYSIS ON PAGES 47 TO 53.



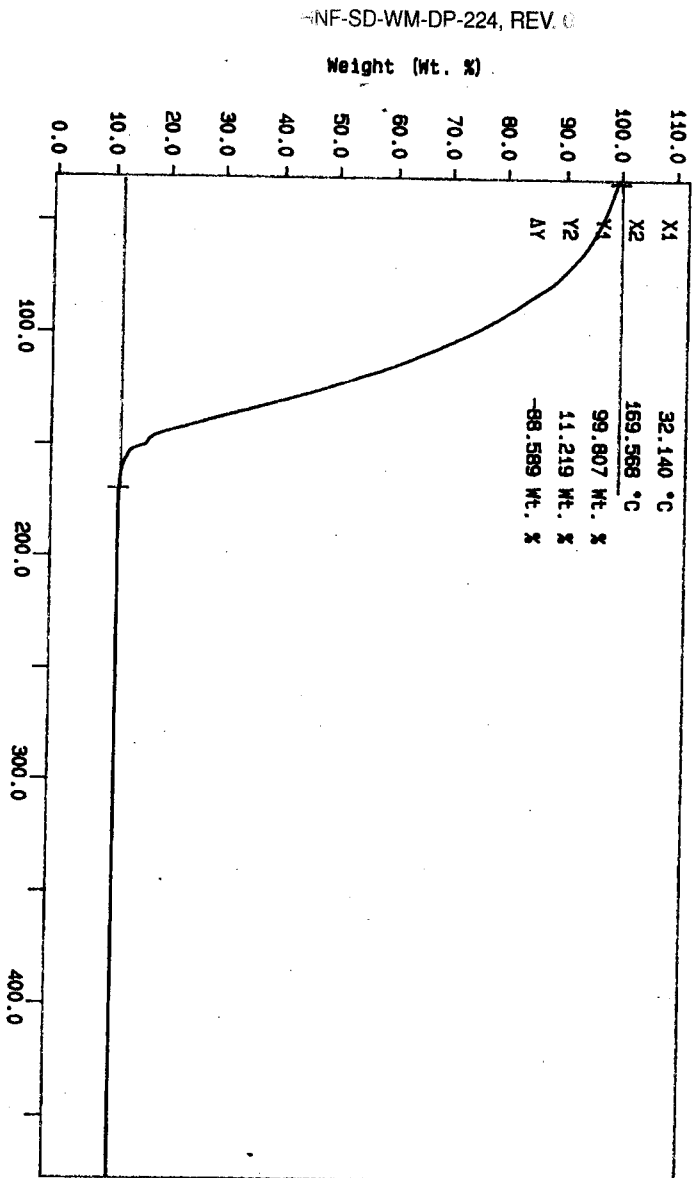
N2 100C/MIN
 Temperature: 200.0 °C
 Time: 0.0 min
 Rate: 10.0 °C/min

Temperature (°C)

35 12/12/96
 P. J. McCOMB SA Spillman
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Thu Dec 12 17:32:21 1996

SA Spillman (12/12/96)

Curve 1: TGA
 File Info: SAM121210 Thu Dec 12 22:32:00 1996
 Sample Weight: 19.109 mg
 S96T005663

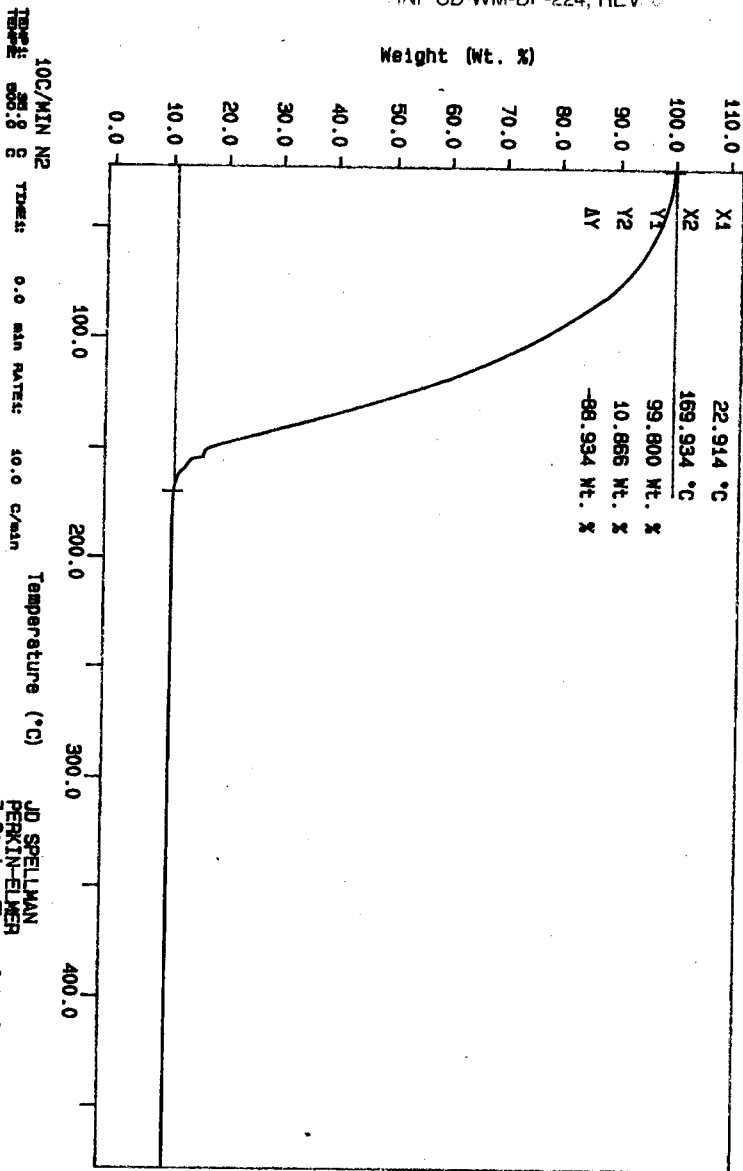


100C/NIN N2
 TGA: 50.8 g
 TGA: 600.8 g

TIME: 0.0 min RATE: 10.0 C/min

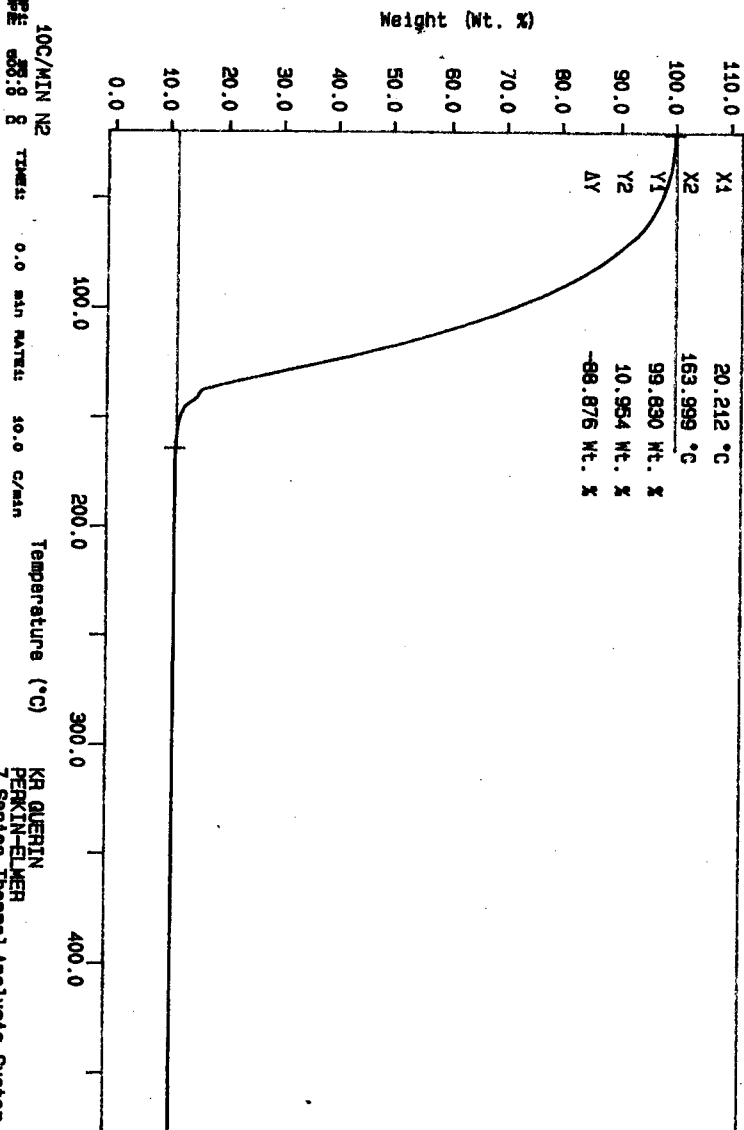
JD SPELMAN
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Thu Dec 12 23:25:42 1996

Curve 1: TGA
 File Info: SAM42302 Fri Dec 13 00:21:10 1996
 Sample Weight: 20.961 mg
 B96T005653DLP



JD SPELLMAN
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Fri Dec 13 00:33:32 1996

Curve 1: TGA
 File Info: SAM121305 Fri Dec 13 10:37:15 1996
 Sample Weight: 13.711 mg
 596700565SAM



KR QUERTZ
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Fri Dec 13 11:28:10 1996

Curve 1: TGA
 File Info: SAM121306 Fri Dec 13 15:06:59 1996
 Sample Weight: 10.662 mg
 S96T00566SDUP

INF-SD-WM-DP-224, REV. 0

10C/MIN N2
 THERM 500.0 g

TIME:

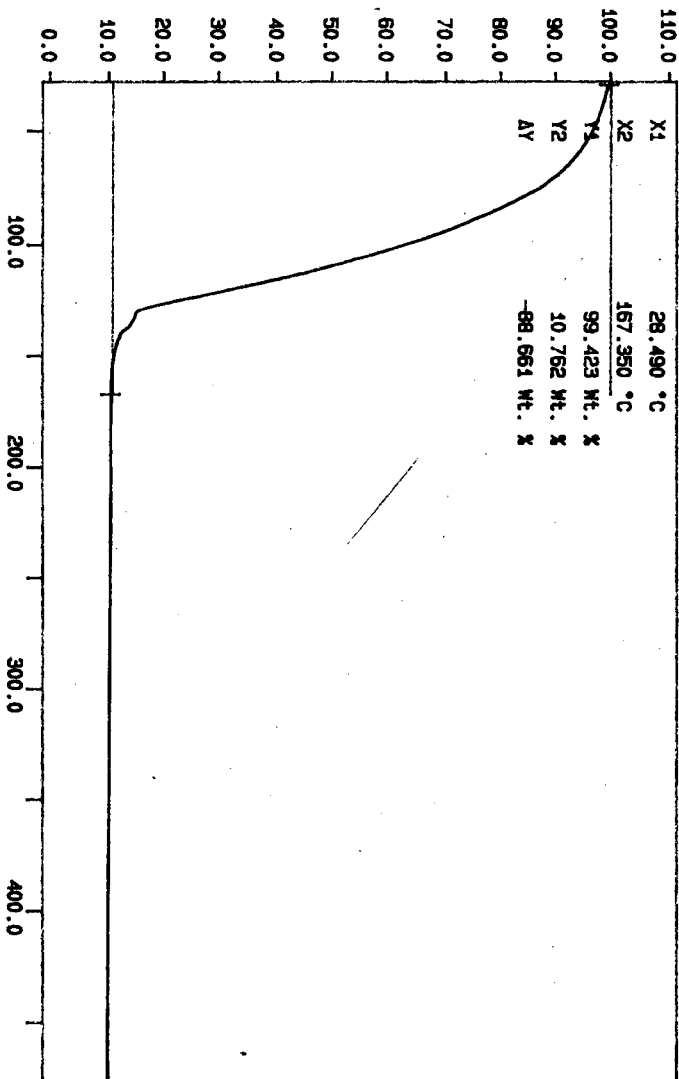
0.0 MIN RATE:

10.0 C/MIN

Temperature (°C)

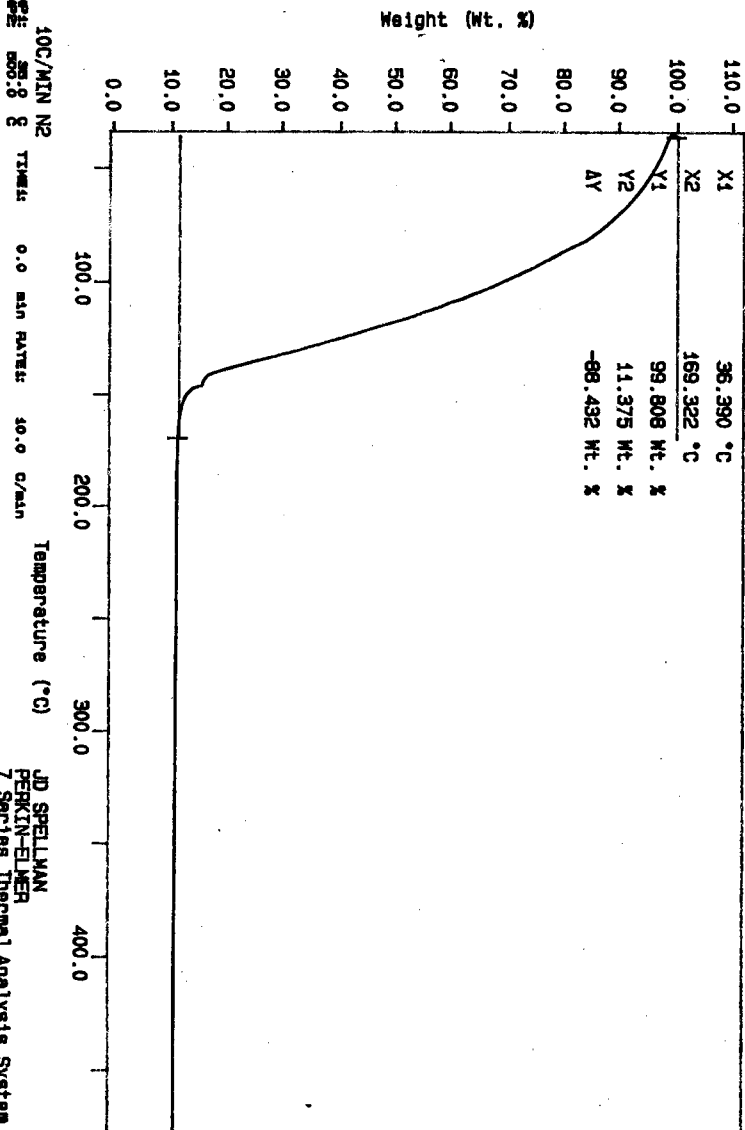
KR QUERTZ
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Fri Dec 13 15:11:11 1996

Weight (Wt. %)



Curve 1: TGA
 File Infor: SAM121303 Fri Dec 13 01:26:50 1996
 Sample Weight: 17.158 mg
 S96100566

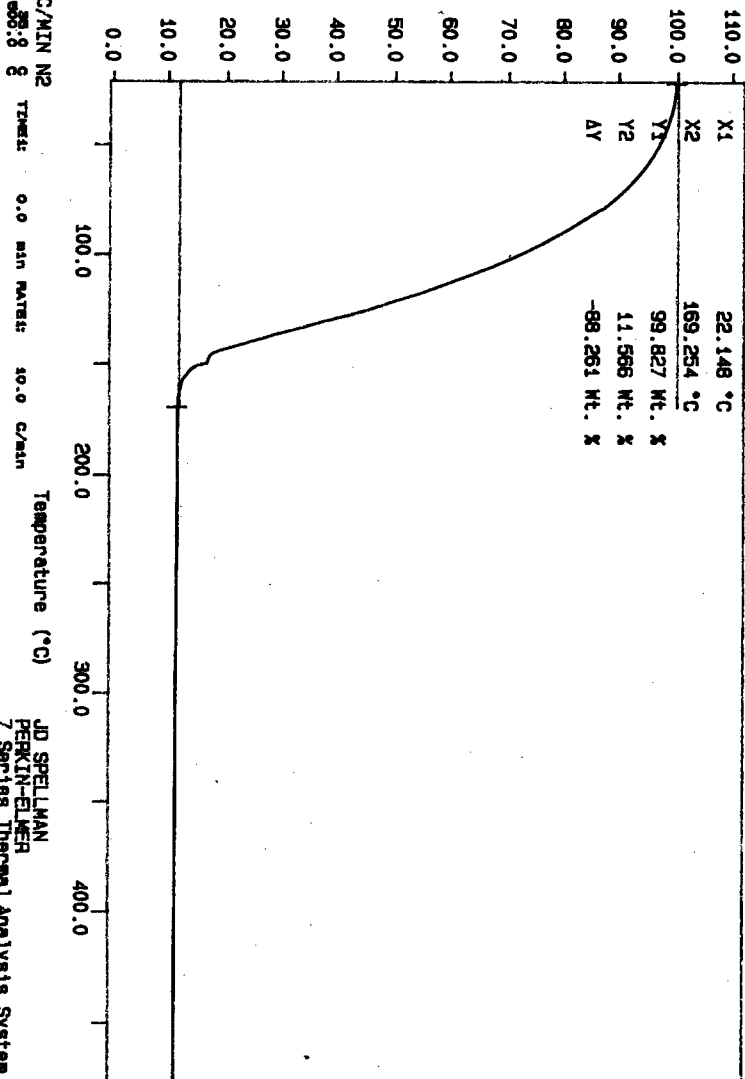
PNF-SD-WM-DP-224, REV. 0



File Info: SAM121304 Fri Dec 13 03:42:54 1996

S96T0056660UP

Weight (Wt. %)



JO SPELLMAN
PERKIN-ELMER
7 Series Thermal Analysis System
Fri Dec 13 04:52:26 1996

LABCORE Completed Worklist Report for Worklist# 14536

Analyst: eal

Instrument: BA001

Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: SPG-01 FOR (AN-105)(S-302 GRAB (244-TX GRAB) RTS!

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	SPG-01	LIQUID	1.398	1.380	98.712 % Recovery	
2 SAMPLE	S96T005546 0	SPG-01	LIQUID	N/A	1.422	1.00e-002 Sp.G.	
3 DUP	S96T005546 0	SPG-01	LIQUID	1.422	1.408	0.989 RPD	
4 SAMPLE	S96T005596 0	SPG-01	LIQUID	N/A	.987	1.00e-002 Sp.G.	
5 DUP	S96T005596 0	SPG-01	LIQUID	.987	.984	0.304 RPD	
6 SAMPLE	S96T005597 0	SPG-01	LIQUID	N/A	.978	1.00e-002 Sp.G.	
7 DUP	S96T005597 0	SPG-01	LIQUID	.978	.980	0.204 RPD	
8 SAMPLE	S96T005598 0	SPG-01	LIQUID	N/A	.989	1.00e-002 Sp.G.	
9 DUP	S96T005598 0	SPG-01	LIQUID	.989	.990	0.101 RPD	
10 SAMPLE	S96T005663 0	SPG-01	LIQUID	N/A	1.052	1.00e-002 Sp.G.	
11 DUP	S96T005663 0	SPG-01	LIQUID	1.052	1.062	0.946 RPD	
12 SAMPLE	S96T005665 0	SPG-01	LIQUID	N/A	1.057	1.00e-002 Sp.G.	
13 DUP	S96T005665 0	SPG-01	LIQUID	1.057	1.060	0.283 RPD	
14 SAMPLE	S96T005666 0	SPG-01	LIQUID	N/A	1.062	1.00e-002 Sp.G.	
15 DUP	S96T005666 0	SPG-01	LIQUID	1.062	1.033	2.768 RPD	

Final page for worklist# 14536

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Robert W. Schwed 11/7/96
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 14536

Analyst: EAL Instrument: BA001 Book # 133N16A

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

Worklist Comment: SPG-01 FOR (AN-105)(S-302 GRAB)(244-TX GRAB) RTS!

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			SPG-01	LIQUID	<u>1.39755</u>	<u>1.380</u>	<u>N/A</u>	Sp.G.
96000832	AN-105	2 SAMPLE	S96T005546	0	SPG-01	LIQUID	<u>N/A</u>	<u>1.4222</u>		Sp.G.
96000832	AN-105	3 DUP	S96T005546	0	SPG-01	LIQUID	<u>1.4222</u>	<u>1.4077</u>	<u>N/A</u>	Sp.G.
96001418	S-302 GRAB	4 SAMPLE	S96T005596	0	SPG-01	LIQUID	<u>N/A</u>	<u>.9873</u>		Sp.G.
96001418	S-302 GRAB	5 DUP	S96T005596	0	SPG-01	LIQUID	<u>.9873</u>	<u>.9839</u>	<u>N/A</u>	Sp.G.
96001418	S-302 GRAB	6 SAMPLE	S96T005597	0	SPG-01	LIQUID	<u>N/A</u>	<u>.9785</u>		Sp.G.
96001418	S-302 GRAB	7 DUP	S96T005597	0	SPG-01	LIQUID	<u>.9785</u>	<u>.9797</u>	<u>N/A</u>	Sp.G.
96001418	S-302 GRAB	8 SAMPLE	S96T005598	0	SPG-01	LIQUID	<u>N/A</u>	<u>.9887</u>		Sp.G.
96001418	S-302 GRAB	9 DUP	S96T005598	0	SPG-01	LIQUID	<u>.9887</u>	<u>.9897</u>	<u>N/A</u>	Sp.G.
96001429	244-TX GRAB	10 SAMPLE	S96T005663	0	SPG-01	LIQUID	<u>N/A</u>	<u>1.0518</u>		Sp.G.
96001429	244-TX GRAB	11 DUP	S96T005663	0	SPG-01	LIQUID	<u>1.0518</u>	<u>1.0616</u>	<u>N/A</u>	Sp.G.
96001429	244-TX GRAB	12 SAMPLE	S96T005665	0	SPG-01	LIQUID	<u>N/A</u>	<u>1.0574</u>		Sp.G.
96001429	244-TX GRAB	13 DUP	S96T005665	0	SPG-01	LIQUID	<u>1.0574</u>	<u>1.0605</u>	<u>N/A</u>	Sp.G.
96001429	244-TX GRAB	14 SAMPLE	S96T005666	0	SPG-01	LIQUID	<u>N/A</u>	<u>1.0616</u>		Sp.G.
96001429	244-TX GRAB	15 DUP	S96T005666	0	SPG-01	LIQUID	<u>1.0616</u>	<u>1.0327</u>	<u>N/A</u>	Sp.G.

Final page for worklist # 14536

A. Lankel 11/6/96

Susan Bee 11/06/96

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# 14536

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
Analyst Signature		Date				Analyst Signature			Date	

Data Entry Comments:

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

SPECIFIC GRAVITY ANALYSIS

al
 11.6.96
 GROSS WT.
 STD 1.97580 g
 STD 2.02370 g
 46 1.96090 g
 46Dup 2.05351 g
 96 1.948710 mg
 96Dup 1.98435 g
 97 2.00339 g
 97Dup 1.99932 g
 98 1.99422 g
 98Dup 2.01117 g
 63 2.05725 g
 63Dup 2.04069 g
 65 1.95272 g
 65Dup 1.98831 g
 66 1.95755 g
 66Dup 1.95312 g

al 11.6.96
 TARE WT :
 STD 1.83740 g
 STD 1.88580 g
 46 1.81851 g
 46Dup 1.91257 g
 96 1.84925 g
 96Dup 1.88584 g
 97 1.90542 g
 97Dup 1.90123 g
 98 1.89523 g
 98Dup 1.91288 g
 63 1.95194 g
 63Dup 1.93460 g
 65 1.84685 g
 65Dup 1.88213 g
 66 1.85126 g
 66Dup 1.84973 g

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

WORKLIST

ANALYST

INITIALS

ANALYSIS
DATEANALYSIS
TIMEINSTRUMENT
CODE

14536

JAL

11.6.96

0930 → 1215

☒ SAMPLE
☐ STANDARD ☐ DUPLICATE

SAMPLE # = STD # = 133N16-A

AL 11.6.96

TARE WEIGHT (g)	1.837405
GROSS WEIGHT (g)	1.973809
VOL. of SOLUTION (mL)	1.0012

REPLICATE	1.885809
REPLICATE	2.025106
REPLICATE	1.0012mL

☒ SAMPLE
☐ STANDARD ☒ DUPLICATE

SAMPLE # = STD # =

AL 11.6.96

TARE WEIGHT (g)	1.818519
GROSS WEIGHT (g)	1.968706
VOL. of SOLUTION (mL)	1.0012

REPLICATE	1.912579
REPLICATE	1.973519
REPLICATE	1.0012mL

☒ SAMPLE
☐ STANDARD ☒ DUPLICATE

SAMPLE # = STD # =

AL 11.6.96

TARE WEIGHT (g)	1.849259
GROSS WEIGHT (g)	1.978109
VOL. of SOLUTION (mL)	1.0012

REPLICATE	1.885809
REPLICATE	1.984359
REPLICATE	1.0012mL

☒ SAMPLE
☐ STANDARD ☒ DUPLICATE

SAMPLE # = STD # =

AL 11.6.96

TARE WEIGHT (g)	1.905479
GROSS WEIGHT (g)	2.003319
VOL. of SOLUTION (mL)	1.0012mL

REPLICATE	1.901239
REPLICATE	1.991329
REPLICATE	1.0012mL

☒ SAMPLE
☐ STANDARD ☒ DUPLICATE

SAMPLE # = STD # =

AL 11.6.96

TARE WEIGHT (g)	1.895239
GROSS WEIGHT (g)	1.994229
VOL. of SOLUTION (mL)	1.0012mL

REPLICATE	1.912089
REPLICATE	2.011179
REPLICATE	1.0012mL

☒ SAMPLE
☐ STANDARD ☒ DUPLICATE

SAMPLE # = STD # =

AL 11.6.96

TARE WEIGHT (g)	1.951949
GROSS WEIGHT (g)	2.041089
VOL. of SOLUTION (mL)	1.0012mL

REPLICATE	1.934609
REPLICATE	2.040819
REPLICATE	1.0012mL

☒ SAMPLE
☐ STANDARD ☒ DUPLICATE

SAMPLE # = STD # =

AL 11.6.96

TARE WEIGHT (g)	1.844859
GROSS WEIGHT (g)	1.962729
VOL. of SOLUTION (mL)	1.0012mL

REPLICATE	1.887139
REPLICATE	1.988139
REPLICATE	1.0012mL

☒ SAMPLE
☐ STANDARD ☒ DUPLICATE

SAMPLE # = STD # =

AL 11.6.96

TARE WEIGHT (g)	1.857269
GROSS WEIGHT (g)	1.967559
VOL. of SOLUTION (mL)	1.0012mL

REPLICATE	1.847739
REPLICATE	1.957129
REPLICATE	1.0012mL

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		STD	REPLICATE
STD	Gross Weight (W2)	1.9758	2.0237
Work List	Tare Weight (W1)	1.8374	1.8858
14536	Weight of Solution (W2-W1)	0.1384	0.1379
Test Code	Volume of Solution μ L	100.1200	100.1200
SPG-01	Specific Gravity	1.3823	1.3773
Matrix	Specific Gravity (Average)	1.3798	
LIQUID			
Sample #			
STD			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
EAL	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L}/\text{mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
11/06/96	$\checkmark$ RESULT $\checkmark$		
Time	Specific Gravity Average =	1.380	
12:15 PM			

Data Entry by:	Sue Bee	Date:	11/06/96
Approved by:	RW. Schuch	Date:	11/8/96
Form 510112L1 Rev. 1.1		Page/ 1 of 1	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	2.0573	
	Tare Weight (W1)	1.9519	
	14536 Weight of Solution (W2-W1)	0.10531	0
	Volume of Solution μ L	100.1200	
	SPG-01 Specific Gravity	1.0518	NA
LIQUID			
S96T005663			
BA001	Gross Weight (W2) = Wt. of vial + cap + cotton + solution Tare Weight (W1) = Wt. of vial + cap + cotton		
EAL	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
11/06/96	v RESULT v		
12:15 PM	Specific Gravity =		1.052

Data Entry by:	SUE Bee	Date:	11/06/96
Approved by:	RW Schmedt	Date:	11/8/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		DUP	REPLICATE
DUP	Gross Weight (W2)	2.0409	
	Tare Weight (W1)	1.9346	
14536	Weight of Solution (W2-W1)	0.10629	0
	Volume of Solution μ L	100.1200	
SPG-01	Specific Gravity	1.0616	NA
LIQUID			
S96T005663			
BA001	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
	Tare Weight (W1) = Wt. of vial + cap + cotton		
EAL	Specific Gravity = [(W2-W1) * 1000 μ L/mL] / [Vol. of Solution μ L * 1.000 g/mL]		
11/06/96	v RESULT v		
	Specific Gravity =	1.062	
12:15 PM			

Data Entry by:	<i>Sue Bee</i>	Date:	11/06/96
Approved by:	<i>RW Schroeder</i>	Date:	11/8/96
Form 510112L1 Rev. 1.1		Page 1 of 1	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.9527	
	Tare Weight (W1)	1.8469	
	14536 Weight of Solution (W2-W1)	0.10587	0
	Volume of Solution μ L	100.1200	
	SPG-01 Specific Gravity	1.0574	NA
LIQUID			
S96T005665			
BA001	Gross Weight (W2) = Wt. of vial + cap + cotton + solution Tare Weight (W1) = Wt. of vial + cap + cotton		
EAL	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
11/06/96	v RESULT v		
12:15 PM	Specific Gravity =		1.057

Data Entry by:	<i>Sue Bee</i>	Date:	11/06/96
Approved by:	<i>RW Schmidt</i>	Date:	11/8/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		DUP	REPLICATE
DUP	Gross Weight (W2)	1.9883	
	Tare Weight (W1)	1.8821	
14536	Weight of Solution (W2-W1)	0.10618	0
	Volume of Solution μ L	100.1200	
SPG-01	Specific Gravity	1.0605	NA
LIQUID			
S96T005665			
BA001	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
	Tare Weight (W1) = Wt. of vial + cap + cotton		
EAL	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
11/06/96	v RESULT v		
	Specific Gravity =	1.061	
12:15 PM			

Data Entry by:	Sue Bee	Date:	11/06/96
Approved by:	RW Schroeder	Date:	11/8/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.9576	
	Tare Weight (W1)	1.8513	
	14536 Weight of Solution (W2-W1)	0.10629	0
	Volume of Solution μ L	100.1200	
	SPG-01 Specific Gravity	1.0616	NA
LIQUID			
S96T005666			
BA001	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
EAL	Tare Weight (W1) = Wt. of vial + cap + cotton		
11/06/96	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
12:15 PM	v RESULT v		
	Specific Gravity =	1.062	

Data Entry by:	Sue Bee	Date:	11/06/96
Approved by:	RW Schreder	Date:	11/8/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		DUP	REPLICATE
DUP	Gross Weight (W2)	1.9531	
	Tare Weight (W1)	1.8497	
14536	Weight of Solution (W2-W1)	0.10339	0
	Volume of Solution μL	100.1200	
SPG-01	Specific Gravity	1.0327	NA
LIQUID			
S96T005666			
BA001	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
	Tare Weight (W1) = Wt. of vial + cap + cotton		
EAL	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
11/06/96	v RESULT v		
	Specific Gravity =	1.033	
12:15 PM			

Data Entry by:	<i>RW Schmed</i>	Date:	11/06/96
Approved by:	<i>RW Schmed</i>	Date:	11/8/96

LABCORE Data Entry Template for Worklist# 15080

Analyst: ADP Instrument: PH01 Book # 18N19-C

Method: LA-212-106 Rev/Mod B-0

RERUN

Worklist Comment: S-302 AND 244-TX FOR PH. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STDPH			PH-01	LIQUID	<u>7.00</u>	<u>7.00</u>	N/A	pH
96001418	S-302 GRAB	2 SAMPLE	S96T005596	0	PH-01	LIQUID	N/A	<u>ADP</u> <u>8.85</u>	<u>8.75</u>	pH
96001418	S-302 GRAB	3 DUP	S96T005596	0	PH-01	LIQUID	<u>8.75</u>	<u>8.76</u>	N/A	pH
96001418	S-302 GRAB	4 SAMPLE	S96T005597	0	PH-01	LIQUID	N/A	<u>8.80</u>		pH
96001418	S-302 GRAB	5 DUP	S96T005597	0	PH-01	LIQUID	<u>8.80</u>	<u>8.81</u>	N/A	pH
96001418	S-302 GRAB	6 SAMPLE	S96T005598	0	PH-01	LIQUID	N/A	<u>9.81</u>		pH
96001418	S-302 GRAB	7 DUP	S96T005598	0	PH-01	LIQUID	<u>9.81</u>	<u>9.81</u>	N/A	pH
96001429	244-TX GRAB	8 SAMPLE	S96T005663	0	PH-01	LIQUID	N/A	<u>10.12</u>		pH
96001429	244-TX GRAB	9 DUP	S96T005663	0	PH-01	LIQUID	<u>10.12</u>	<u>10.14</u>	N/A	pH
96001429	244-TX GRAB	10 SAMPLE	S96T005665	0	PH-01	LIQUID	N/A	<u>10.15</u>		pH
96001429	244-TX GRAB	11 DUP	S96T005665	0	PH-01	LIQUID	<u>10.15</u>	<u>10.15</u>	N/A	pH
96001429	244-TX GRAB	12 SAMPLE	S96T005666	0	PH-01	LIQUID	N/A	<u>10.11</u>		pH
96001429	244-TX GRAB	13 DUP	S96T005666	0	PH-01	LIQUID	<u>10.11</u>	<u>10.12</u>	N/A	pH

Final page for worklist # 15080

Anthony Perenton 11-24-96
Analyst Signature Date

James Lee 11/24/96
Analyst Signature Date

* these reruns were outside of acceptable limits, B shift mgr Glenn Walley was notified, QC overrides on all into labcore by John McCluskey
11/25/96

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# 14496

Analyst: RAW Instrument: PH01 WC06695 Book # 79NS

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

Worklist Comment: OH-01 244-TX GRAB

RTS!

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK				OH-01	LIQUID	<u>1</u>	<u><42</u>	<u>N/A</u>	ug/mL
		2	STD				OH-01	LIQUID	<u>1.66e4</u>	<u>1.62e4</u>	<u>N/A</u>	ug/mL
96001429	244-TX GRAB	3	SAMPLE	S96T005663	0		OH-01	LIQUID	<u>N/A</u>	<u>pH=7.74</u>		ug/mL
96001429	244-TX GRAB	4	DUP	S96T005663	0		OH-01	LIQUID		<u>N/A</u>	<u>N/A</u>	ug/mL
96001429	244-TX GRAB	5	SAMPLE	S96T005665	0		OH-01	LIQUID	<u>N/A</u>	<u>pH=7.80</u>		ug/mL
96001429	244-TX GRAB	6	DUP	S96T005665	0		OH-01	LIQUID		<u>N/A</u>	<u>N/A</u>	ug/mL
96001429	244-TX GRAB	7	SAMPLE	S96T005666	0		OH-01	LIQUID	<u>N/A</u>	<u>pH=7.71</u>		ug/mL
96001429	244-TX GRAB	8	DUP	S96T005666	0		OH-01	LIQUID		<u>N/A</u>	<u>N/A</u>	ug/mL

Final page for worklist # 14496

Analyst Signature

Date

Analyst Signature

Date

No free CH. Samples appear to be buffered.
Reported result is pH of sample after removal of buffer.
RAW Schneider 12/2/96

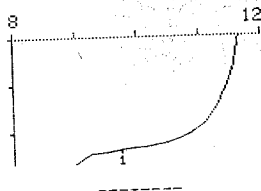
Data Entry Comments:

PH TOO LOW

Wk11st
14496

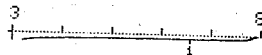
date 96-11-27 time 11:01
 GET pH 12 # 254
 Id.#1 1
 Id.#2 .2005
 pH(init) 11.64
 V/ml
 EPI .237 9.74
 manual stop
 =====

date 96-11-27 time 11:01
 GET pH 12 # 254
 .10ml/div Δ pH=1/div
 start V .000 ml



date 96-11-27 time 11:02
 GET pH 12 # 255
 Id.#1 0
 Id.#2 .2005
 pH(init) 7.93
 V/ml
 EPI .009 6.57
 manual stop
 =====

date 96-11-27 time 11:02
 GET pH 12 # 255
 .10ml/div Δ pH=1/div
 start V .000 ml



Id.#1 5663
 pH 10.17
 pH 7.74

Id.#1 5665
 pH 10.17
 pH 7.80

Id.#1 5666
 pH 10.14
 pH 7.71

LABCORE Data Entry Template for Worklist# 15934

Analyst: RAW Instrument: PH01 WC06695 Book # 95N8A OH SPK (1.0057M)
1.39N16.B std (0.3302M)

Method: LA-211-104 Rev/Mod A-D

Worklist Comment: 244-tx Grab. Run per procedure. new

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK			ONDEMAND	LIQUID	<u>1</u>	<u><0.0025</u>	<u>N/A</u>	moles OH-/L
		2 STD			ONDEMAND	LIQUID	<u>0.3302</u>	<u>0.3484</u>	<u>N/A</u>	moles OH-/L
96001429	244-TX GRAB	3 SAMPLE	S96T005663	0	ONDEMAND	LIQUID	<u>N/A</u>	<u>0.1318</u>	<u>0.0025</u>	moles OH-/L
56001429	244-TX GRAB	4 DUP	S96T005663	0	ONDEMAND	LIQUID	<u>0.1318</u>	<u>0.1158</u>	<u>N/A</u>	moles OH-/L
96001429	244-TX GRAB	5 SAMPLE	S96T005665	0	ONDEMAND	LIQUID	<u>N/A</u>	<u>0.1639</u>	<u>0.0025</u>	moles OH-/L
96001429	244-TX GRAB	6 DUP	S96T005665	0	ONDEMAND	LIQUID	<u>0.1639</u>	<u>0.1559</u>	<u>N/A</u>	moles OH-/L
96001429	244-TX GRAB	7 SAMPLE	S96T005666	0	ONDEMAND	LIQUID	<u>N/A</u>	<u>0.1920</u>	<u>0.0025</u>	moles OH-/L
96001429	244-TX GRAB	8 DUP	S96T005666	0	ONDEMAND	LIQUID	<u>0.1920</u>	<u>0.1639</u>	<u>N/A</u>	moles OH-/L

Final page for worklist # 15934

R. WENDLAND
Analyst Signature

Date

1-20-97

data entry by John McCluskey 01/28/97
Analyst Signature Date

Approved RAW Schneider 1/28/97

STD = 0.050 spk std + 0.050 std + 3.0 ml H₂O + 1 ml BaCl₂

SAM = .050 SPK + .050 SAM + 3.0 ml H₂O + 1 ml BaCl₂

Data Entry Comments:

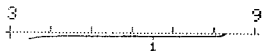
Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number,
R = Replicate Number, A = Aliquot Code.

calibration data
date 97-01-20 time 14:28
GET pH 12 # 18
pH(S) 1 7.00
pH(S) 2 10.00
t.cal. 25.0 °C
slope(rel) 1.001
U(as) -8.0 mV
electr. input 1
=====

Blank

date 97-01-20 time 14:28
GET pH 12 # 18
Id.#1 0
Id.#2 .2005
pH(init) 8.26
V/ml pH
EP1 .007 6.54
manual stop
=====

date 97-01-20 time 14:28
GET pH 12 # 18
.10ml/div $\Delta pH=1/\text{div}$
start V .000 ml



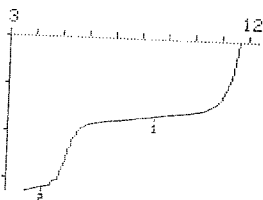
date 97-01-20 time 14:33
GET pH 12 # 19
Id.#1 0
Id.#2 .2005
pH(init) 11.72
V/ml pH
EP1 .166 8.42
EP2 .240 5.78
EP3 .370 4.35
manual stop
=====

50ul 95NBA plus 50ul 139468

Standard

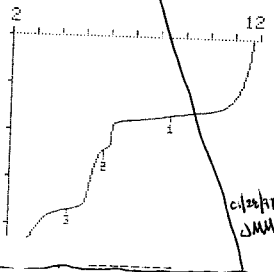
date 97-01-20 time 14:41
GET pH 12 # 20
Id.#1 1
Id.#2 .2005
pH(init) 11.64
V/ml pH
EP1 .164 8.56
EP2 .319 4.36
manual stop
=====

date 97-01-20 time 14:41
GET pH 12 # 20
.10ml/div $\Delta pH=1/\text{div}$
start V .000 ml



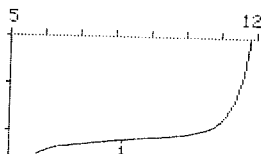
date 97-01-20 time 14:53
GET pH 12 # 21
Id.#1 1
Id.#2 .2005
pH(init) 11.72
V/ml pH
EP1 .166 8.42
EP2 .240 5.78
EP3 .370 4.35
manual stop
=====

date 97-01-20 time 14:53
GET pH 12 # 21
.10ml/div $\Delta pH=1/\text{div}$
start V .000 ml



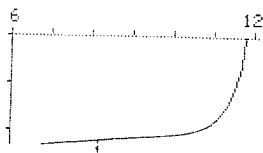
S96T005663

date 97-01-20 time 15:07
GET pH 12 # 22
Id.#1 5663
Id.#2 .2005
pH(init) 11.79
V/ml pH
EP1 .218 8.22
manual stop
=====



S96T005663 Dup

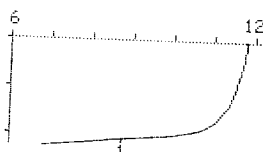
date 97-01-20 time 15:10
GET pH 12 # 23
Id.#1 5663
Id.#2 .2005
pH(init) 11.76
V/ml pH
EP1 .222 8.17
manual stop
=====



S96T005665

date 97-01-20 time 15:14
GET pH 12 # 24
Id.#1 5665
Id.#2 .2005
pH(init) 11.78
V/ml pH
EP1 .210 8.75
manual stop
=====

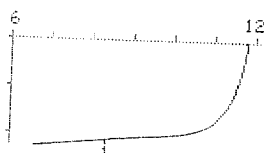
date 97-01-20 time 15:14
GET pH 12 # 24
.10ml/div dH=1/div
start V .000 ml



S96T005665 Dup

date 97-01-20 time 15:17
GET pH 12 # 25
Id.#1 5665
Id.#2 .2005
pH(init) 11.79
V/ml pH
EP1 .212 8.34
manual stop
=====

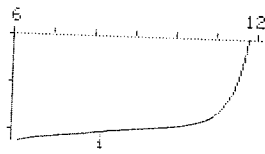
date 97-01-20 time 15:18
GET pH 12 # 25
.10ml/div dH=1/div
start V .000 ml



S96T005666

date 97-01-20 time 15:21
GET pH 12 # 26
Id.#1 5666
Id.#2 .2005
pH(init) 11.76
V/ml pH
EP1 .203 8.17
manual stop
=====

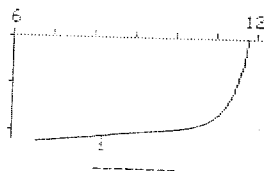
date 97-01-20 time 15:21
GET pH 12 # 26
.10ml/div dH=1/div
start V .000 ml



S96T005666 Dup

date 97-01-20 time 15:24
GET pH 12 # 27
Id.#1 5666
Id.#2 .2005
pH(init) 11.77
V/ml pH
EP1 .210 8.22
manual stop
=====

date 97-01-20 time 15:25
GET pH 12 # 27
.10ml/div dH=1/div
start V .000 ml



WL # 15934

01/28/97

data workshop by John McCluskey

HNF-SD-WM-DP-224, REV. 0

Blank:

$$\text{OH}^- \text{ spike} = 0$$

$$\text{OH}^- \text{ detected} = (0.007 \text{ mL})(0.2005 \text{ M}) = 0.0014 \text{ mmol}$$

$$\text{OH}^- \text{ consumed} = (0) - (0.0014 \text{ mmol}) = -0.0014 \text{ mmol}$$

$$\text{Buffering Capacity} < 0.0025 \text{ M} \quad (\text{where } 0.0025 \text{ M} = \text{MDL})$$

Standard:

$$0.050 \text{ mL } 95\text{NBA} + 0.050 \text{ mL } 139\text{N16B} + 3.0 \text{ mL } \text{H}_2\text{O} + 1.0 \text{ mL } \text{BaCl}_2$$

$$95\text{NBA} = 1.0057 \text{ M}$$

$$139\text{N16B} = 0.3302 \text{ M}$$

$$\text{OH}^- \text{ spike} = (0.050 \text{ mL})(1.0057 \text{ M}) = 0.0503 \text{ mmol}$$

$$\text{OH}^- \text{ detected} = (0.164 \text{ mL})(0.2005 \text{ M}) = 0.0329 \text{ mmol}$$

$$\text{OH}^- \text{ consumed} = (0.0503 \text{ mmol} - 0.0329 \text{ mmol}) = 0.0174 \text{ mmol}$$

$$C_{\text{Buff}} = 0.0174 \text{ mmol} / 0.050 \text{ mL} = 0.3484 \text{ M}$$

$$\text{Std \% R} = \frac{0.3484 \text{ M}}{0.3302 \text{ M}} (100) = 105 \% \text{ Recovery}$$

S96T005663:

$$\text{OH}^- \text{ spike} = (0.050 \text{ mL})(1.0057 \text{ M}) = 0.0503 \text{ mmol}$$

$$\text{OH}^- \text{ detected} = (0.218 \text{ mL})(0.2005 \text{ M}) = 0.0437 \text{ mmol}$$

$$\text{OH}^- \text{ consumed} = 0.0503 \text{ mmol} - 0.0437 \text{ mmol} = 0.0066 \text{ mmol}$$

$$C_{\text{Buff}} = \frac{0.0066 \text{ mmol}}{0.050 \text{ mL}} = 0.1318 \text{ M}$$

S96T005663 Dup:

$$\text{OH}^- \text{ spike} = (0.050 \text{ mL})(1.0057 \text{ M}) = 0.0503 \text{ mmol}$$

$$\text{OH}^- \text{ detected} = (0.222 \text{ mL})(0.2005 \text{ M}) = 0.0445 \text{ mmol}$$

$$\text{OH}^- \text{ consumed} = (0.0503 \text{ mmol} - 0.0445 \text{ mmol}) = 0.0058 \text{ mmol}$$

$$C_{\text{Buff}} = \frac{0.0058 \text{ mmol}}{0.050 \text{ mL}} = 0.1158 \text{ M}$$

$$\text{RPD} = \left| \frac{\frac{0.1318 - 0.1158}{0.1318 + 0.1158}}{2} \right| (100) = 12.9 \%$$

S96T005665 :

$$\text{OH}^-_{\text{spike}} = (0.050 \text{ mL})(1.0057 \text{ M}) = 0.0503 \text{ mmol}$$

$$\text{OH}^-_{\text{detected}} = (0.210 \text{ mL})(0.2005 \text{ M}) = 0.0421 \text{ mmol}$$

$$\text{OH}^-_{\text{consumed}} = (0.0503 \text{ mmol} - 0.0421 \text{ mmol}) = 0.0082 \text{ mmol}$$

$$C_{\text{Buff}} = \frac{0.0082 \text{ mmol}}{0.050 \text{ mL}} = 0.1639 \text{ M}$$

S96T005665 Dup :

$$\text{OH}^-_{\text{spike}} = (0.050 \text{ mL})(1.0057 \text{ M}) = 0.0503 \text{ mmol}$$

$$\text{OH}^-_{\text{detected}} = (0.212 \text{ mL})(0.2005 \text{ M}) = 0.0425 \text{ mmol}$$

$$\text{OH}^-_{\text{consumed}} = (0.0503 \text{ mmol}) - (0.0425 \text{ mmol}) = 0.0078 \text{ mmol}$$

$$C_{\text{Buff}} = \frac{0.0078 \text{ mmol}}{0.050 \text{ mL}} = 0.1559 \text{ M}$$

$$\text{RPD} = \left| \frac{0.1639 - 0.1559}{\frac{0.1639 + 0.1559}{2}} \right| (100) = 5.0 \%$$

S96T005666 :

$$\text{OH}^-_{\text{spike}} = (0.050 \text{ mL})(1.0057 \text{ M}) = 0.0503 \text{ mmol}$$

$$\text{OH}^-_{\text{detected}} = (0.203 \text{ mL})(0.2005 \text{ M}) = 0.0407 \text{ mmol}$$

$$\text{OH}^-_{\text{consumed}} = (0.0503 \text{ mmol}) - (0.0407 \text{ mmol}) = 0.0096 \text{ mmol}$$

$$C_{\text{Buff}} = \frac{0.0096 \text{ mmol}}{0.050 \text{ mL}} = 0.1920 \text{ M}$$

S96T005666 Dup :

$$\text{OH}^-_{\text{spike}} = (0.050 \text{ mL})(1.0057 \text{ M}) = 0.0503 \text{ mmol}$$

$$\text{OH}^-_{\text{detected}} = (0.210 \text{ mL})(0.2005 \text{ M}) = 0.0421 \text{ mmol}$$

$$\text{OH}^-_{\text{consumed}} = (0.0503 \text{ mmol}) - (0.0421 \text{ mmol}) = 0.0082 \text{ mmol}$$

$$C_{\text{Buff}} = \frac{0.0082 \text{ mmol}}{0.050 \text{ mL}} = 0.1639 \text{ M}$$

$$\text{RPD} = \left| \frac{0.1920 - 0.1639}{\frac{0.1920 + 0.1639}{2}} \right| (100) = 15.8 \%$$

LABCORE Completed Worklist Report for Worklist# 14519

Analyst: smf

Instrument: IC01

Book# 362204

Method: 1A-533+105 Rev/Mod D-1

Worklist Comment: @IC-01 FOR 244-TX GRAB

RTS!

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	CCB	0	@IC-QC F	QC	1	<1.20e-2		ug/mL
1	CCB	0	@IC-QC CL	QC	1	<1.70e-2		ug/mL
1	CCB	0	@IC-QC NO2	QC	1	<1.08e-1		ug/mL
1	CCB	0	@IC-QC BR	QC	1	<1.25e-1		ug/mL
1	CCB	0	@IC-QC NO3	QC	1	<1.39e-1		ug/mL
1	CCB	0	@IC-QC PO4	QC	1	<1.20e-1		ug/mL
1	CCB	0	@IC-QC SO4	QC	1	<1.38e-1		ug/mL
1	CCB	0	@IC-QC OXALATE2	QC	1	1.61e-01	0.161	ug/mL
2	CCV	0	@IC-QC F	QC	5.900e1	5.22e+01	88.475 %	Recovery
2	CCV	0	@IC-QC CL	QC	7.900e1	7.97e+01	100.886 %	Recovery
2	CCV	0	@IC-QC NO2	QC	5.390e2	5.26e+02	97.588 %	Recovery
2	CCV	0	@IC-QC BR	QC	5.890e2	5.88e+02	99.830 %	Recovery
2	CCV	0	@IC-QC NO3	QC	5.940e2	5.78e+02	97.306 %	Recovery
2	CCV	0	@IC-QC PO4	QC	5.440e2	5.49e+02	100.919 %	Recovery
2	CCV	0	@IC-QC SO4	QC	6.310e2	6.32e+02	100.158 %	Recovery
2	CCV	0	@IC-QC OXALATE2	QC	5.280e2	5.40e+02	102.273 %	Recovery
3	SAMPLE	S96T005663	@IC-01 F-02	LIQUID	N/A	1.215e+03	25.450	ug/mL
3	SAMPLE	S96T005663	@IC-01 CL-02	LIQUID	N/A	6.907e+02	36.060	ug/mL
3	SAMPLE	S96T005663	@IC-01 NO2-02	LIQUID	N/A	3.512e+03	229.100	ug/mL
3	SAMPLE	S96T005663	@IC-01 BR-02	LIQUID	N/A	2.651e+02	265.100	ug/mL
3	SAMPLE	S96T005663	@IC-01 NO3-02	LIQUID	N/A	5.848e+04	294.800	ug/mL
3	SAMPLE	S96T005663	@IC-01 PO4-02	LIQUID	N/A	1.399e+04	254.500	ug/mL
3	SAMPLE	S96T005663	@IC-01 SO4-02	LIQUID	N/A	2.859e+03	292.700	ug/mL
3	SAMPLE	S96T005663	@IC-01 OXALATE2	LIQUID	N/A	2.227e+02	222.700	ug/mL
4	DUP	S96T005663	@IC-01 F-02	LIQUID	1.22e+03	1.22e+03	0.000	RPD
4	DUP	S96T005663	@IC-01 CL-02	LIQUID	6.91e+02	6.83e+02	1.164	RPD
4	DUP	S96T005663	@IC-01 NO2-02	LIQUID	3.51e+03	3.42e+03	2.597	RPD
4	DUP	S96T005663	@IC-01 BR-02	LIQUID	<2.65e2	<2.65e2		RPD
4	DUP	S96T005663	@IC-01 NO3-02	LIQUID	5.85e+04	5.76e+04	1.550	RPD
4	DUP	S96T005663	@IC-01 PO4-02	LIQUID	1.40e+04	1.38e+04	1.439	RPD
4	DUP	S96T005663	@IC-01 SO4-02	LIQUID	2.86e+03	2.84e+03	0.702	RPD
4	DUP	S96T005663	@IC-01 OXALATE2	LIQUID	<2.23e2	<2.23e2		RPD
5	SAMPLE	S96T005665	@IC-01 F-02	LIQUID	N/A	1.198e+03	25.450	ug/mL
5	SAMPLE	S96T005665	@IC-01 CL-02	LIQUID	N/A	6.935e+02	36.060	ug/mL
5	SAMPLE	S96T005665	@IC-01 NO2-02	LIQUID	N/A	3.440e+03	229.100	ug/mL
5	SAMPLE	S96T005665	@IC-01 BR-02	LIQUID	N/A	2.651e+02	265.100	ug/mL
5	SAMPLE	S96T005665	@IC-01 NO3-02	LIQUID	N/A	5.931e+04	294.800	ug/mL
5	SAMPLE	S96T005665	@IC-01 PO4-02	LIQUID	N/A	1.441e+04	254.500	ug/mL
5	SAMPLE	S96T005665	@IC-01 SO4-02	LIQUID	N/A	2.839e+03	292.700	ug/mL
5	SAMPLE	S96T005665	@IC-01 OXALATE2	LIQUID	N/A	2.227e+02	222.700	ug/mL
6	DUP	S96T005665	@IC-01 F-02	LIQUID	1.20e+03	1.23e+03	2.469	RPD

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

LABCORE Completed Worklist Report for Worklist# 14519

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
6 DUP	S96T005665	0	©IC-01 CL-02	LIQUID	6.94e+02	7.05e+02	1.573	RPD
6 DUP	S96T005665	0	©IC-01 NO2-02	LIQUID	3.44e+03	3.50e+03	1.729	RPD
6 DUP	S96T005665	0	©IC-01 BR-02	LIQUID	<2.65e2	<2.65e2		RPD
6 DUP	S96T005665	0	©IC-01 NO3-02	LIQUID	5.93e+04	5.86e+04	1.187	RPD
6 DUP	S96T005665	0	©IC-01 PO4-02	LIQUID	1.44e+04	1.42e+04	1.399	RPD
6 DUP	S96T005665	0	©IC-01 SO4-02	LIQUID	2.84e+03	2.90e+03	2.091	RPD
6 DUP	S96T005665	0	©IC-01 OXALATE2	LIQUID	<2.23e2	<2.23e2		RPD
7 SAMPLE	S96T005666	0	©IC-01 F-02	LIQUID	N/A	1.277e+03	25.450	ug/mL
7 SAMPLE	S96T005666	0	©IC-01 CL-02	LIQUID	N/A	6.750e+02	36.060	ug/mL
7 SAMPLE	S96T005666	0	©IC-01 NO2-02	LIQUID	N/A	3.510e+03	229.100	ug/mL
7 SAMPLE	S96T005666	0	©IC-01 BR-02	LIQUID	N/A	2.651e+02	265.100	ug/mL
7 SAMPLE	S96T005666	0	©IC-01 NO3-02	LIQUID	N/A	5.875e+04	294.800	ug/mL
7 SAMPLE	S96T005666	0	©IC-01 PO4-02	LIQUID	N/A	1.418e+04	254.500	ug/mL
7 SAMPLE	S96T005666	0	©IC-01 SO4-02	LIQUID	N/A	2.871e+03	292.700	ug/mL
7 SAMPLE	S96T005666	0	©IC-01 OXALATE2	LIQUID	N/A	2.227e+02	222.700	ug/mL
8 DUP	S96T005666	0	©IC-01 F-02	LIQUID	1.28e+03	1.47e+03	13.818	RPD
8 DUP	S96T005666	0	©IC-01 CL-02	LIQUID	6.75e+02	7.61e+02	11.978	RPD
8 DUP	S96T005666	0	©IC-01 NO2-02	LIQUID	3.51e+03	3.87e+03	9.756	RPD
8 DUP	S96T005666	0	©IC-01 BR-02	LIQUID	<2.65e2	<2.65e2		RPD
8 DUP	S96T005666	0	©IC-01 NO3-02	LIQUID	5.88e+04	6.72e+04	13.333	RPD
8 DUP	S96T005666	0	©IC-01 PO4-02	LIQUID	1.42e+04	1.62e+04	13.158	RPD
8 DUP	S96T005666	0	©IC-01 SO4-02	LIQUID	2.87e+03	3.40e+03	16.906	RPD
8 DUP	S96T005666	0	©IC-01 OXALATE2	LIQUID	<2.23e2	<2.23e2		RPD
9 SPK	S96T005666	0	©IC-01 F-02	LIQUID	5.903e1	6.06e+01	102.712	% Recovery
9 SPK	S96T005666	0	©IC-01 CL-02	LIQUID	7.900e1	7.71e+01	97.595	% Recovery
9 SPK	S96T005666	0	©IC-01 NO2-02	LIQUID	5.390e2	5.27e+02	97.774	% Recovery
9 SPK	S96T005666	0	©IC-01 BR-02	LIQUID	5.890e2	5.64e+02	95.756	% Recovery
9 SPK	S96T005666	0	©IC-01 NO3-02	LIQUID	5.940e2	6.20e+02	104.377	% Recovery
9 SPK	S96T005666	0	©IC-01 PO4-02	LIQUID	5.440e2	5.67e+02	104.228	% Recovery
9 SPK	S96T005666	0	©IC-01 SO4-02	LIQUID	6.310e2	6.26e+02	99.208	% Recovery
9 SPK	S96T005666	0	©IC-01 OXALATE2	LIQUID	5.280e2	5.41e+02	102.462	% Recovery

Final page for worklist# 14519

Analyst Signature _____ Date _____

Analyst Signature *James L. V. Garcia* Date *12-13-96*Reviewer Signature *James M. Feys* Date *12/14/96**Updated
12-13-96**14519DC.CSV
PJCD Validated 12-17-96*

LABCORE Data Entry Template for Worklist# 14519

Analyst: SOIF Instrument: IC0 IC01 Book# 36020-A

Method: LA-533-105 Rev/Mod D-1

Worklist Comment: @IC-01 FOR 244-TX GRAB

RTS!

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 CCB			@IC-QC	QC		
2 CCV			@IC-QC	QC		
3 SAMPLE	S96T005663 0		@IC-01	LIQUID	96001429	244-TX GRAB
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
4 DUP	S96T005663 0		@IC-01	LIQUID		
5 SAMPLE	S96T005665 0		@IC-01	LIQUID	96001429	244-TX GRAB
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
6 DUP	S96T005665 0		@IC-01	LIQUID		
7 SAMPLE	S96T005666 0		@IC-01	LIQUID	96001429	244-TX GRAB
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
8 DUP	S96T005666 0		@IC-01	LIQUID		
9 SPK	S96T005666 0		@IC-01	LIQUID		

Final page for worklist # 14519

Susie M. Dutton 12-10-96
Analyst Signature Date

James M. Hinkle 12-13-96
Analyst Signature Date

Uploaded 12-13-96 14519DC.csv

Validated 12/16/96 Jm Leger

Data Entry Comments:

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

A-0010-IC				DATA FILE/WORKLIST RESOLUTION				13-Dec-96			
Worklist#: 14519				Data File: 14519DC.CSV							
		Seq	Type	Sample #	Seq#	Data File	Sample Name		Dilution		
-	=>	1	CCB		-	1	96120921.d01	CCB ELUENT BLAN		1.00	
	=>	2	CCV			2	96120921.d02	CCV STD 36N20-A		101.00	
	=>	3	SAMPLE	S96T005663		3	96120921.d08	S96T005663		2121.00	
	=>	4	DUP	S96T005663		4	96120921.d09	S96T005663	DUP	2121.00	
	=>	5	SAMPLE	S96T005665		5	96120921.d10	S96T005665		2121.00	
	=>	6	DUP	S96T005665		6	96120921.d11	S96T005665	DUP	2121.00	
	=>	7	SAMPLE	S96T005666		7	96120921.d12	S96T005666		2121.00	
	=>	8	DUP	S96T005666		8	96120921.d13	S96T005666	DUP	2121.00	
	=>	9	SPK	S96T005666		9	96120921.d14	S96T005666	SPK	2121.00	
+					+						

Save(F4) Abort(Shift-F3) ListFiles(Shift-F1) UploadFile(F8)

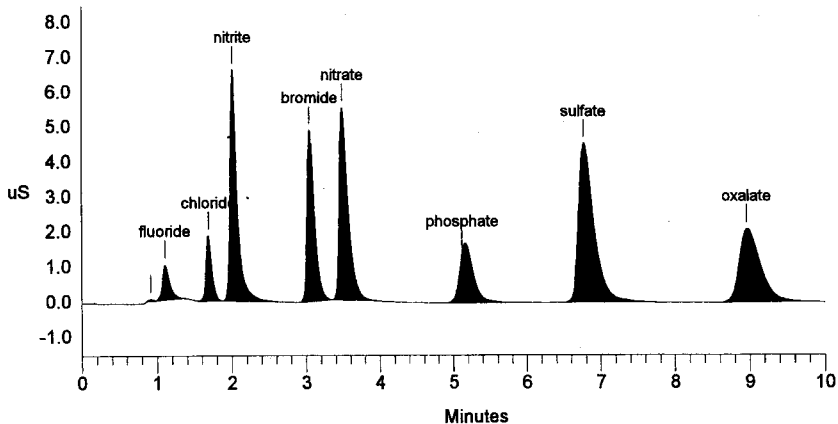
Sample Name: CCV STD 36N20-A Date: 12/09/1996 22:29:44
 Data File : C:\DX\DATA\96120921.D02
 Method : C:\DX\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 2 Detector: CDM-1
 Analyst : *Laurie M. Dalton* Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	101	3000	5Hz	0.00	10.00		50

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.91		0.000	43	163	1	
2	1.11	fluoride	52.224	998	6796	1	2.47
3	1.69	chloride	79.729	1849	10030	1	1.20
4	2.01	nitrite	526.149	6603	44140	1	-0.98
5	3.05	bromide	587.916	4884	34362	1	-1.82
6	3.49	nitrate	578.280	5509	45537	1	-2.42
7	5.12	phosphate	548.646	1371	21903	1	3.23
8	6.77	sulfate	632.016	4543	67073	1	2.42
9	8.96	oxalate	540.144	2095	41320	1	3.07
Totals			3545.105	27896	271323		

File: 96120921.D02 Sample: CCV STD 36N20-A



SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 78 TO 86.

```

=====
Sample Name: CCB ELUENT BLANK                      Date: 12/09/1996 22:14:37
Data File  : C:\DX\DATA\96120921.D01
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 1                 Detector: CDM-1
Analyst    :                                     Column: AG4A/AS4A anion column
=====

```

```

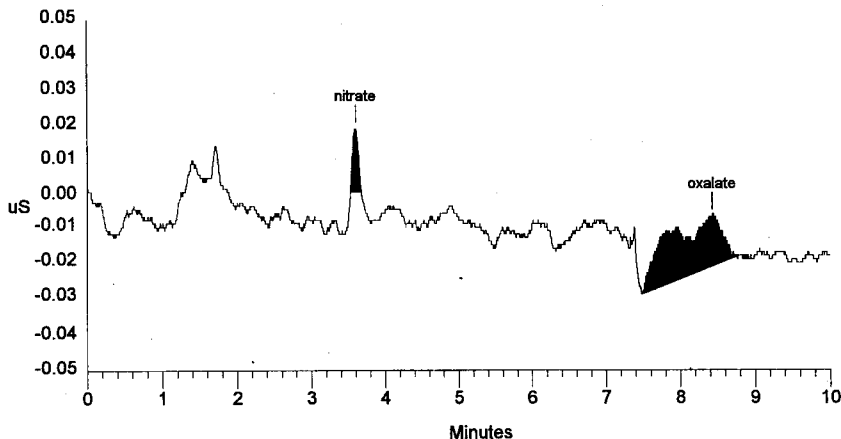
=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          1 3000 5Hz 0.00 10.00          50
=====

```

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	3.60	nitrate	0.006	18	98	1	0.56
2	8.43	oxalate	0.161	14	775	1	-3.07
Totals			0.166	32	874		

File: 96120921.D01 Sample: CCB ELUENT BLANK



```

=====
Sample Name: S96T005663                      Date: 12/10/1996 01:38:26
Data File  : C:\DX\DATA\96120921.D08
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 8           Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column
=====
  
```

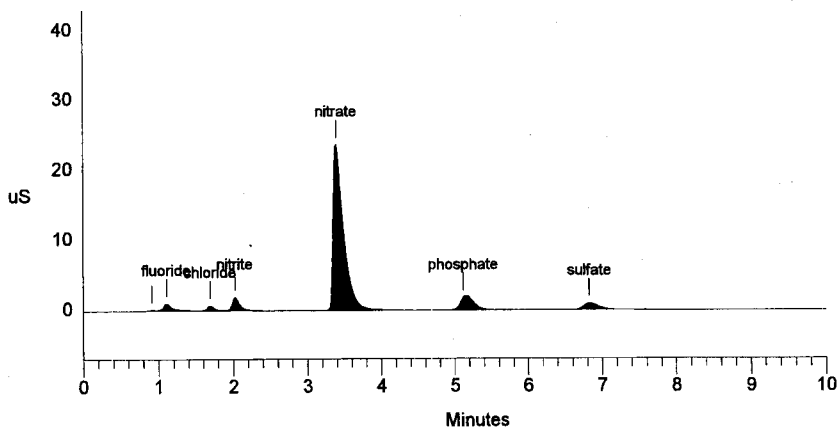
```

=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          2121    3000 5Hz  0.00 10.00          50
=====
  
```

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.91		0.000	46	190	2	
2	1.11	fluoride	1214.920	984	7617	2	2.47
3	1.69	chloride	690.658	715	4074	1	1.60
4	2.03	nitrite	3512.210	1864	13104	1	-0.33
5	3.39	nitrate	58478.872	23692	232000	1	-5.21
6	5.12	phosphate	13987.664	1817	26768	1	3.23
7	6.83	sulfate	2859.061	958	14955	1	3.23
Totals			80743.384	30076	298709		

File: 96120921.D08 Sample: S96T005663



```

=====
Sample Name: S96T005663   DUP                               Date: 12/10/1996 01:52:16
Data File  : C:\DX\DATA\96120921.D09
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 9                         Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column
=====

```

```

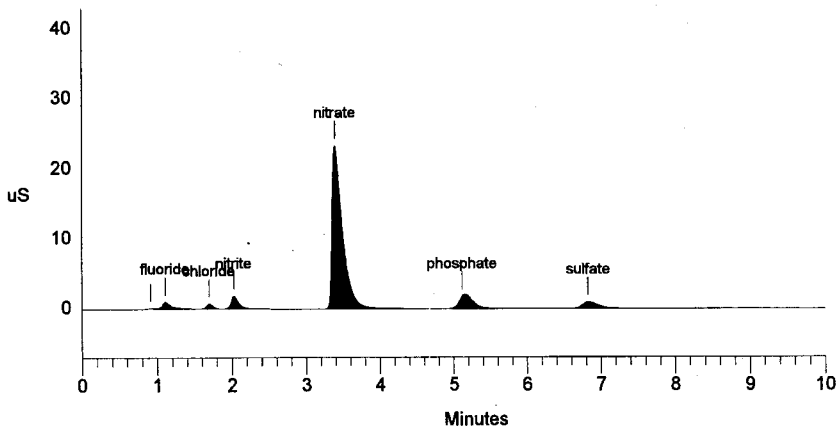
=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          2121    3000  5Hz   0.00 10.00          50
=====

```

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.91		0.000	43	172	2	
2	1.11	fluoride	1219.268	952	7648	2	2.47
3	1.69	chloride	682.816	702	4027	1	1.60
4	2.03	nitrite	3421.087	1811	12732	1	-0.33
5	3.39	nitrate	57583.186	23334	228171	1	-5.21
6	5.12	phosphate	13822.598	1749	26441	1	3.23
7	6.83	sulfate	2839.434	952	14858	1	3.23
Totals			79568.389	29543	294050		

File: 96120921.D09 Sample: S96T005663 DUP



```

=====
Sample Name: S96T005665                      Date: 12/10/1996 02:07:10
Data File  : C:\DX\DATA\96120921.D10
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 10          Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column
=====

```

```

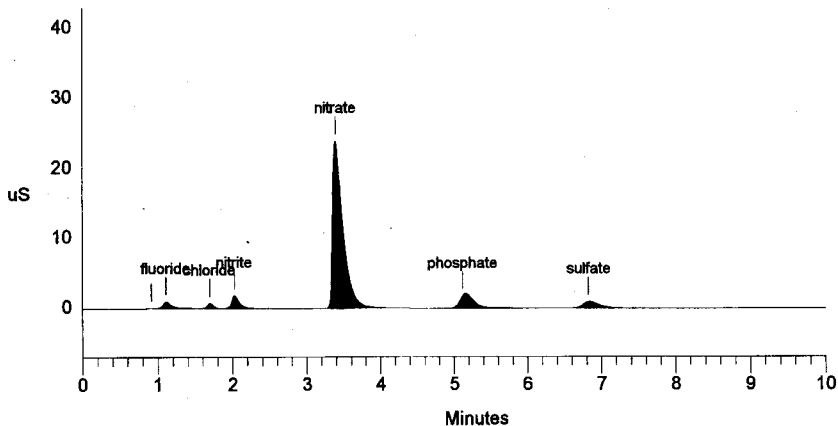
=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          2121    3000  5Hz   0.00 10.00      50
=====

```

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.91		0.000	43	174	2	
2	1.11	fluoride	1198.265	960	7501	2	2.47
3	1.69	chloride	693.504	719	4091	1	1.60
4	2.03	nitrite	3439.983	1831	12809	1	-0.33
5	3.39	nitrate	59308.158	24007	235555	1	-5.21
6	5.12	phosphate	14405.705	1782	27597	1	3.23
7	6.83	sulfate	2838.663	959	14854	1	3.23
Totals			81884.279	30302	302581		

File: 96120921.D10 Sample: S96T005665



```

=====
Sample Name: S96T005665   DUP                               Date: 12/10/1996 02:19:05
Data File  : C:\DX\DATA\96120921.D11
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 11                        Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column
=====

```

```

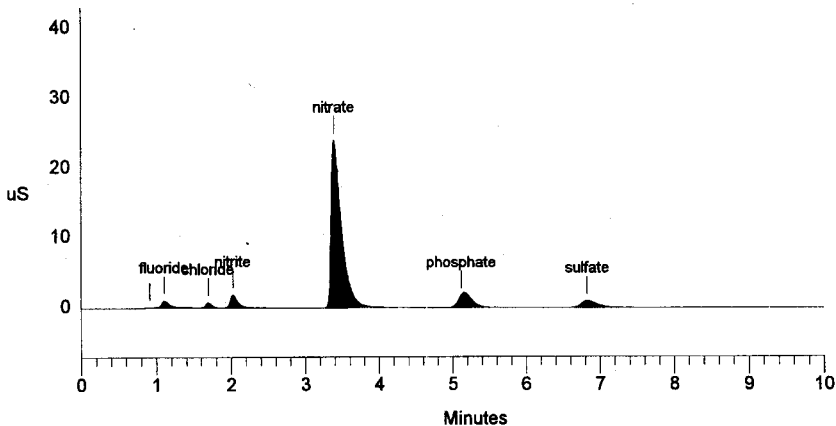
=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          2121  3000  5Hz   0.00 10.00          50
=====

```

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.91		0.000	43	176	2	
2	1.11	fluoride	1234.314	980	7753	2	2.47
3	1.69	chloride	705.106	749	4160	1	1.60
4	2.03	nitrite	3501.050	1846	13059	1	-0.33
5	3.39	nitrate	58605.351	24040	232542	1	-5.21
6	5.12	phosphate	14194.331	1787	27178	1	3.23
7	6.83	sulfate	2898.696	966	15150	1	3.23
Totals			81138.848	30411	300018		

File: 96120921.D11 Sample: S96T005665 DUP



```

=====
Sample Name: S96T005666                      Date: 12/10/1996 02:31:22
Data File  : C:\DX\DATA\96120921.D12
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 12          Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column
=====

```

```

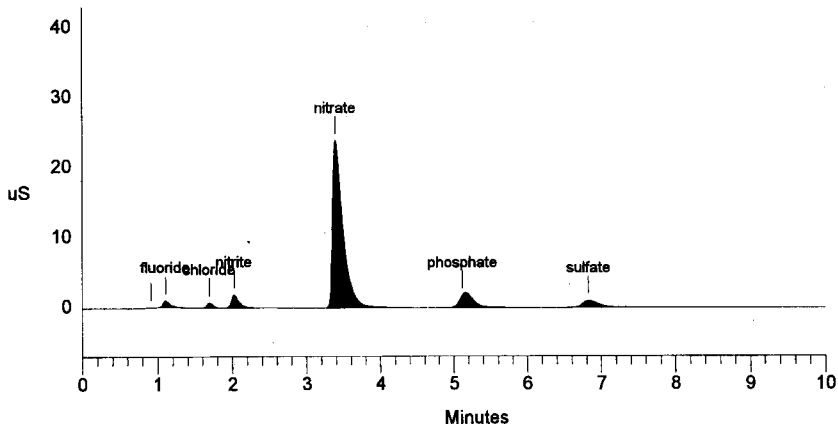
=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          2121   3000 5Hz   0.00 10.00          50
=====

```

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.91		0.000	45	187	2	
2	1.11	fluoride	1276.651	1002	8048	2	2.47
3	1.69	chloride	674.974	720	3979	1	1.60
4	2.03	nitrite	3509.665	1854	13094	1	-0.33
5	3.39	nitrate	58746.304	23904	233146	1	-5.21
6	5.12	phosphate	14181.816	1781	27153	1	3.23
7	6.83	sulfate	2870.901	976	15013	1	3.23
Totals			81260.311	30283	300621		

File: 96120921.D12 Sample: S96T005666



```

=====
Sample Name: S96T005666 DUP                      Date: 12/10/1996 02:43:08
Data File  : C:\DX\DATA\96120921.D13
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 13              Detector: CDM-1
Analyst    :                      Column: AG4A/AS4A anion column
=====

```

```

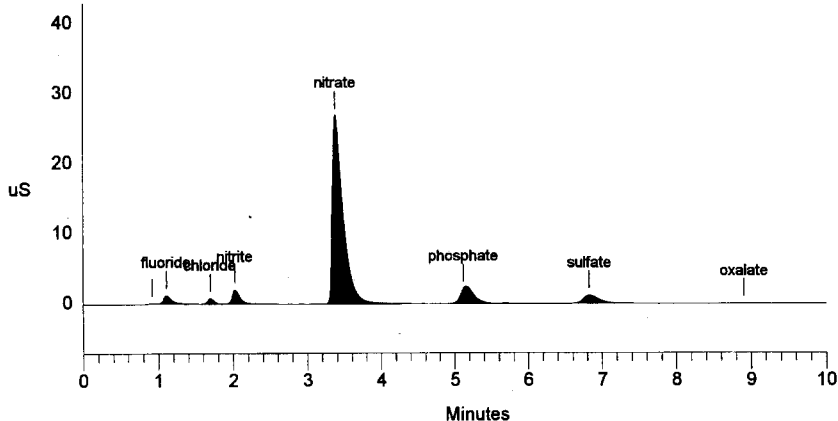
=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          2121    3000  5Hz   0.00 10.00      50
=====

```

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.92		0.000	52	210	2	
2	1.11	fluoride	1465.896	1186	9373	2	2.47
3	1.69	chloride	760.686	793	4495	1	1.60
4	2.03	nitrite	3874.040	2011	14583	1	-0.33
5	3.38	nitrate	67193.618	26963	269792	1	-5.59
6	5.12	phosphate	16205.781	2149	31176	1	3.23
7	6.83	sulfate	3399.396	1151	17622	1	3.23
8	8.91	oxalate	207.994	16	290	1	2.45
Totals			93107.411	34321	347541		

File: 96120921.D13 Sample: S96T005666 DUP



```

=====
Sample Name: S96T005666 SPK                      Date: 12/10/1996 02:54:54
Data File  : C:\DX\DATA\96120921.D14
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 14              Detector: CDM-1
Analyst    :                      Column: AG4A/AS4A anion column
=====

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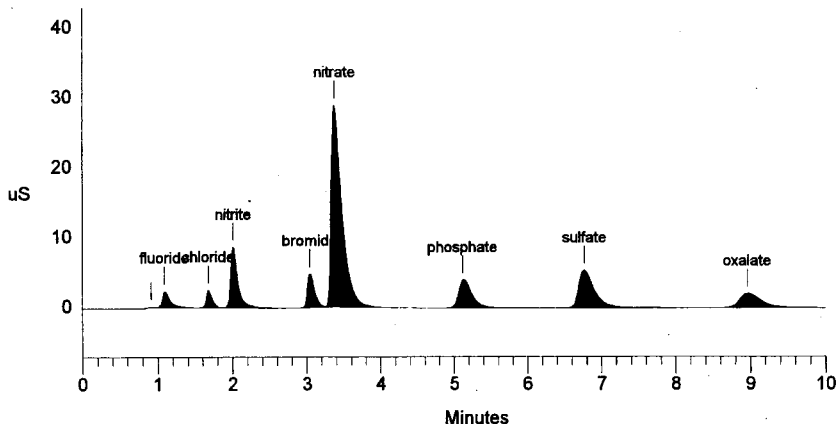
=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          2121  3000  5Hz   0.00 10.00          50
=====

```

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.91		0.000	75	298	2	
2	1.09	fluoride	2500.296	2333	16769	2	1.23
3	1.68	chloride	2232.524	2505	13453	1	0.80
4	2.01	nitrite	14164.797	8668	57113	1	-0.98
5	3.05	bromide	11393.867	4814	31616	1	-2.04
6	3.38	nitrate	71264.326	28898	287792	1	-5.59
7	5.12	phosphate	25643.591	3955	50290	1	3.23
8	6.77	sulfate	15522.343	5366	78541	1	2.42
9	8.96	oxalate	10934.624	2027	39801	1	3.07
Totals			153656.368	58640	575673		

File: 96120921.D14 Sample: S96T005666 SPK



11/08/96 09:40

HNF-SD-WM-DP-224, REV. 0

Page: 1

A-0004-1

LABCORE Data Entry Template for Worklist# 14801

Analyst: B. Goecke Instrument: ICP01 Book# 64841A

Method: LA-505-151/161 Rev/Mod 6-1

Worklist Comment: ICP TX-244 (DIRECT)

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	ICV				@ICP-QC	QC		
2	ICB				@ICP-QC	QC		
3	LLS				@ICP-QC	QC		
4	ICSA				@ICP-QC	QC		
5	ICSAB				@ICP-QC	QC		
6	SAMPLE	S96T005663	0	D	@ICP-D01	LIQUID	96001429	244-TX GRAB
		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						
7	DUP	S96T005663	0	D	@ICP-D01	LIQUID		
8	SAMPLE	S96T005665	0	D	@ICP-D01	LIQUID	96001429	244-TX GRAB
		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						
9	DUP	S96T005665	0	D	@ICP-D01	LIQUID		
10	CCV				@ICP-QC	QC		
11	CCB				@ICP-QC	QC		
12	SERDIL	S96T005666	0	D	@ICP-D01	LIQUID		

Data Entry Comments:

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

11/08/96 09:40

HNF-SD-WM-DP-224, REV. 0

Page: 2

A-0004-1

LABCORE Data Entry Template for Worklist# 14801

S Type	Sample#	R A	Test	Matrix	Group#	Project
13 SAMPLE	S96T005666	0 D	@ICP-D01	LIQUID	96001429	244-TX GRAB
Analytes Requested:						
			AG-D-01	AL-D-01	AS-D-01	B-D-01
			BE-D-01	BI-D-01	CA-D-01	CD-D-01
			CR-D-01	CU-D-01	FE-D-01	K-D-01
			MG-D-01	MN-D-01	MO-D-01	NA-D-01
			P-D-01	PB-D-01	S-D-01	SB-D-01
			SM-D-01	SR-D-01	TI-D-01	TL-D-01
			ZN-D-01	ZR-D-01	U-D-01	V-D-01
14 DUP	S96T005666	0 D	@ICP-D01	LIQUID		
15 SPK 1ppm	S96T005666	0 D	@ICP-D01	LIQUID		
16 ICSA			@ICP-QC	QC		
17 ICSAB			@ICP-QC	QC		
18 CCV			@ICP-QC	QC		
19 CCB			@ICP-QC	QC		

Final page for worklist # 14801

Analyst Signature 12-08-96
Date

Reviewed by:
South Ph. Pung 12/10/96
Analyst Signature Date

S96T005663	.1ml-10ml	101
5663-D	.1ml-10ml	101
5665	.1ml-10ml	101
5665-D	.1ml-10ml	101
5666-L	.1ml-12ml-2ml-2ml	505
5666	.1ml-10ml	101
5666-D	.1ml-10ml	101
5666-A	.1ml-2ml-(1127)-2ml	101
5666-X	.025ml-15ml	601
5666-A*	.025ml-15ml-12ml (444ml)	601

Data Entry Comments:

Spike recovery calculation:

$$S96T005666 \quad R^2 = \left(\frac{167.6}{101} \right) - \left(\frac{71.21}{101} \right) \times 100 = 95.4\%$$

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

Spike true value is 1.0 ppm for all elements except for Cu = 2.0 ppm.

Analysis Report

Summary

Mon 12-09-96 02:16:00 PM

page 1

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	961209B	ICP2	12/09/96	13:08	BJG	Q	CONC
2	ICB	961209B	ICP2	12/09/96	13:11	BJG	Q	CONC
3	LLS	961209B	ICP2	12/09/96	13:14	BJG	Q	CONC
4	ICSA	961209B	ICP2	12/09/96	13:17	BJG	Q	CONC
5	ICSAB	961209B	ICP2	12/09/96	13:20	BJG	Q	CONC
6	S96T005663	961209B	ICP2	12/09/96	13:24	BJG	S	CONC
7	S96T005663 D	961209B	ICP2	12/09/96	13:27	BJG	S	CONC
8	S96T005665	961209B	ICP2	12/09/96	13:30	BJG	S	CONC
9	S96T005665 D	961209B	ICP2	12/09/96	13:33	BJG	S	CONC
10	CCV	961209B	ICP2	12/09/96	13:36	BJG	Q	CONC
11	CCB	961209B	ICP2	12/09/96	13:39	BJG	Q	CONC
12	S96T005666 L	961209B	ICP2	12/09/96	13:42	BJG	S	CONC
13	S96T005666	961209B	ICP2	12/09/96	13:45	BJG	S	CONC
14	S96T005666 D	961209B	ICP2	12/09/96	13:48	BJG	S	CONC
15	S96T005666 A	961209B	ICP2	12/09/96	13:52	BJG	S	CONC
16	S96T005666 X	961209B	ICP2	12/09/96	13:56	BJG	S	CONC
17	S96T005666 -AX	961209B	ICP2	12/09/96	14:00	BJG	S	CONC
18	ICSA	961209B	ICP2	12/09/96	14:03	BJG	Q	CONC
19	ICSAB	961209B	ICP2	12/09/96	14:05	BJG	Q	CONC
20	CCV	961209B	ICP2	12/09/96	14:09	BJG	Q	CONC
21	CCB	961209B	ICP2	12/09/96	14:12	BJG	Q	CONC

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 89 TO 93.

[Signature]
12-09-96

TX-224
12-10-96

S96T005663, 5665, 5666

FILE # 0961209B.TXT

K, Na and P failed in the first part spike. A second part spike was made and the results are:

$$K = \frac{\left(\frac{5814}{601}\right) - \left(\frac{62.56}{601}\right)}{10} \times 100 = 95.7\%$$

$$Na = \frac{\left(\frac{35850}{601}\right) - \left(\frac{30890}{601}\right)}{10} \times 100 = 82.5\%$$

$$P = \frac{\left(\frac{10250}{601}\right) - \left(\frac{4561}{601}\right)}{10} \times 100 = 94.6\%$$

Analysis Report Averages Mon 12-09-96 02:16:00 PM page 2

#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	4.989	4.918	5.186	5.006	4.999	5.153
2	ICB	.0013	.0102	-.0106	.0020	.0001	.0005
3	LLS	.0226	.1134	.2083	.1023	.1005	.0107
4	ICSA	.0033	244.0	-.0102	.0017	.0002	.0007
5	ICSAB	.9711	244.6	-.0028	-.0031	.4777	.4835
6	S96T005663	2.325	74.09	-1.515	.6617	.0370	.0264
7	S96T005663 D	2.286	73.43	-1.073	.8114	.0284	.0445
8	S96T005665	2.250	72.72	.8356	.5626	.0255	.0446
9	S96T005665 D	2.260	72.69	-.2988	.8629	.0402	.0172
10	CCV	4.971	4.798	5.117	4.863	4.850	5.055
11	CCB	-.0010	-.0008	-.0053	.0054	.0001	.0006
12	S96T005666 L	2.095	75.59	5.304	1.763	.0123	.2939
13	S96T005666	2.090	71.21	-.1024	.3131	.0203	.0537
14	S96T005666 D	2.082	70.29	-.7131	1.011	.0209	.0446
15	S96T005666 A	91.95	167.6	102.2	97.95	96.79	100.1
16	S96T005666 X	4.167	78.99	2.649	.3134	.0113	.2962
17	S96T005666 AX	.5616	.5745	.6128	.5778	.5892	.6084
18	ICSA	.0078	236.7	.0329	.0061	.0004	.0008
19	ICSAB	.9363	239.5	-.0215	.0002	.4588	.4588
20	CCV	4.941	4.841	5.175	4.955	4.910	5.125
21	CCB	.0012	.0071	-.0102	.0054	.0002	.0008

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	ICV	5.046	4.986	5.026	5.039	5.058	5.078
2	ICB	-.0009	.0022	.0001	-.0004	.0004	.0004
3	LLS	.1719	.2048	.0103	.2027	.0427	.0213
4	ICSA	.0075	246.0	.0013	.0099	.0012	.0095
5	ICSAB	-.0249	250.0	.9424	.0055	.4728	.4840
6	S96T005663	.114.7	.5891	-.0807	.3655	.2562	121.0
7	S96T005663 D	.115.1	.4614	-.0776	.1338	.2563	120.9
8	S96T005665	.109.2	.4264	-.0718	.1783	.2583	119.5
9	S96T005665 D	.115.6	.6942	.1307	.7661	-.0194	119.6
10	CCV	5.037	5.109	5.048	4.901	5.076	5.098
11	CCB	-.0159	.0012	-.0006	-.0045	.0007	-.0002
12	S96T005666 L	.108.1	1.339	-.1880	.6389	.1489	119.6
13	S96T005666	.105.9	.4183	-.0308	-.5653	.0314	119.3
14	S96T005666 D	.112.2	.2840	.0678	-.4473	.1916	118.2
15	S96T005666 A	.208.7	102.1	100.6	100.5	100.8	221.3
16	S96T005666 X	.126.7	1.891	-.4885	.2752	.8046	120.8
17	S96T005666 AX	.6095	.5949	.5899	.5858	10.38	6058
18	ICSA	-.0165	247.4	.0025	.0104	.0007	.0108
19	ICSAB	-.0068	252.0	.9151	.0153	.4583	.4699
20	CCV	4.993	4.999	5.001	4.923	5.038	5.043
21	CCB	-.0168	.0052	-.0004	-.0015	-.0010	.0019

Analysis Report

Averages

Mon 12-09-96 02:16:00 PM

page 3

#	Sample Name	Cu	Eu	Fe	K	La	Li
1	ICV	5.209	-.0015	5.043	5.038	5.107	5.063
2	ICB	.0002	.0001	.0003	-.1853	.0004	-.0001
3	LLS	.0202	.0008	.0904	.3906	.1043	.0211
4	ICSA	-.0099	-.0338	93.57	-.0138	-.0037	.0018
5	ICSAB	.4836	-.0373	93.88	.0348	-.0040	1.013
6	S96T005663	.0647	.0574	28.13	59.59	.0854	.0922
7	S96T005663 D	.0648	.0648	28.00	50.40	.0772	.0806
8	S96T005665	-.0511	.1391	27.64	51.88	.0430	.1736
9	S96T005665 D	-.0080	.1930	27.71	48.45	.2340	.2550
10	CCV	5.028	.0000	4.987	4.672	4.961	4.804
11	CCB	-.0005	.0017	-.0008	-.0889	-.0001	.0021
12	S96T005666 L	-.4119	.4481	22.77	43.24	.3099	.6383
13	S96T005666	-.0720	.0930	27.52	47.39	-.0601	.1154
14	S96T005666 D	-.1195	.1079	27.10	19.26	-.0264	.1853
15	S96T005666 A	100.5	.0873	127.5	146.7	100.2	97.64
16	S96T005666 X	-.3348	.3826	29.61	62.56	.5855	.1366
17	S96T005666 AX	-2.222	1.723	5874.	5814.	5930.	5846.
18	ICSA	-.0090	-.0433	91.97	-.1961	-.0042	.0033
19	ICSAB	.4556	-.0446	93.16	.0952	-.0033	.9760
20	CCV	5.138	-.0009	4.954	4.702	4.991	4.981
21	CCB	.0002	.0006	.0011	-.0639	.0000	.0005

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	4.864	4.925	5.045	4.874	5.093	5.008
2	ICB	.0062	.0004	.0018	-.0017	.0041	.0020
3	LLS	.2043	.0202	.0989	.2090	.2021	.0395
4	ICSA	253.8	-.0062	-.0035	196.0	.0109	-.0031
5	ICSAB	253.7	.4478	-.0096	193.9	.0095	.9529
6	S96T005663	1.074	.1032	.4738	31620.	.0810	.0573
7	S96T005663 D	.1865	.0997	.0660	31260.	.2570	.1331
8	S96T005665	-.0612	.1323	.4016	30130.	.2342	-.4250
9	S96T005665 D	.5770	.1616	.1995	29820.	.1895	.4973
10	CCV	4.720	4.912	5.048	4.632	4.914	5.034
11	CCB	-.0026	.0012	.0012	.0114	-.0010	-.0040
12	S96T005666 L	1.449	.3875	1.973	30460.	-.0007	1.372
13	S96T005666	-.3035	.1334	.2524	30320.	.0183	.5994
14	S96T005666 D	-.4264	.1394	.1239	30000.	-.0328	.2965
15	S96T005666 A	94.51	96.26	102.0	30500.	98.77	100.9
16	S96T005666 X	1.933	.2863	1.346	30890.	-.4993	-1.223
17	S96T005666 AX	5904.	5849.	5811.	35850.	5883.	5827.
18	ICSA	245.7	-.0046	-.0092	184.5	.0069	-.0108
19	ICSAB	247.8	.4354	-.0046	187.2	.0091	.8870
20	CCV	4.760	4.879	5.020	4.714	4.964	4.988
21	CCB	.0055	.0007	-.0004	.0055	.0018	-.0039

Analysis Report Averages Mon 12-09-96 02:16:00 PM page 4

#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	5.057	4.999	4.971	4.778	4.865	4.839
2	ICB	.0189	.0025	-.0036	.0158	.0298	.0008
3	LLS	.4113	.2103	.2054	.1112	.2337	.1643
4	ICSA	.0430	.0334	-.0154	.0067	-.0282	-.0088
5	ICSAB	.0340	1.012	-.0396	.0165	.0143	-.0040
6	S96T005663	.4647	.0601	1043.	.1347	2.852	4.008
7	S96T005663_D	.4673.	-.5903	1043.	.8237	3.325	4.379
8	S96T005665	.4542.	.3700	1021.	.9302	3.027	4.642
9	S96T005665_D	.4534.	-.8578	1021.	.7196	3.932	5.023
10	CCV	4.893	5.076	4.931	4.767	4.820	4.844
11	CCB	.0108	.0001	-.0115	.0050	.0470	.0103
12	S96T005666_L	.4511.	3.290	1008.	6.410	25.38	7.683
13	S96T005666	.4472.	-.3986	1014.	.6224	3.772	4.181
14	S96T005666_D	.4484.	-.4208	1009.	1.600	4.682	4.871
15	S96T005666_A	.4707.	101.1	1129.	97.16	98.53	101.8
16	S96T005666_X	.4565.	-3.097	1017.	8.733	21.25	7.562
17	S96T005666_AX	10250.	6052.	6891.	5874.	5721.	5952.
18	ICSA	.0380	.0544	-.0357	.0126	.0112	.0066
19	ICSAB	.0533	.9975	-.0401	.0223	.0317	.0053
20	CCV	4.993	5.018	4.954	4.765	4.817	4.805
21	CCB	.0230	.0000	-.0035	.0080	.0459	.0037

#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	4.951	4.956	.0380	4.904	4.909	9.658
2	ICB	.0039	.0001	.0056	.0010	.0034	.0097
3	LLS	.2122	.0204	-.0018	.0211	.4510	.5273
4	ICSA	-.0048	.0021	-.0045	.0007	.0336	-.0281
5	ICSAB	.0049	.0022	-.0026	.0020	.1045	-.0176
6	S96T005663	.8709	1.268	.1883	.0432	1.763	18.33
7	S96T005663_D	1.093	1.263	.1969	.1193	1.764	18.79
8	S96T005665	2.149	1.263	.0458	.0930	2.961	22.60
9	S96T005665_D	3.024	1.268	.4369	.1196	2.739	25.60
10	CCV	4.799	4.810	.0450	4.835	4.845	9.359
11	CCB	.0248	.0005	-.0063	.0002	.0156	.1004
12	S96T005666_L	8.378	1.330	.9348	-.0090	9.400	48.44
13	S96T005666	1.677	1.247	-.2345	.0419	3.398	20.09
14	S96T005666_D	2.071	1.236	.3536	.0185	2.025	21.92
15	S96T005666_A	98.02	97.56	1.464	97.32	103.1	209.5
16	S96T005666_X	7.679	1.330	1.223	-.0041	13.48	39.04
17	S96T005666_AX	5747.	5758.	29.36	5362.	5676.	502.4
18	ICSA	.0158	.0021	-.0023	.0023	.0461	-.0043
19	ICSAB	.0160	.0020	-.0012	.0015	.0679	-.0112
20	CCV	4.831	4.842	.0452	4.922	4.858	9.461
21	CCB	.0100	.0002	-.0005	.0010	.0380	.0338

Analysis Report

Averages

Mon 12-09-96 02:16:00 PM

page 5

HNF-SD-WM-DP-224, REV. 0

#	Sample Name	V	Y	Zn	Zr
1	ICV	5.037	.0065	5.055	4.942
2	ICB	.0005	.0001	.0012	-.0001
3	ILS	.1057	.0007	.0220	.0213
4	ICSA	.0002	.0068	.0045	-.0027
5	ICSAB	.4737	.0071	.9612	-.0019
6	S96T005663	.1738	.0160	.0768	.7379
7	S96T005663_D	.2124	.0237	-.0038	.7366
8	S96T005665	.4779	.0933	-.0193	.9637
9	S96T005665_D	.6466	.1079	.0272	1.004
10	CCV	4.999	.0076	5.104	4.859
11	CCB	.0054	.0010	.0017	.0040
12	S96T005666_L	1.459	.3356	1.750	1.526
13	S96T005666	.3472	.0548	.0695	.8776
14	S96T005666_D	.3817	.0778	.1017	.8686
15	S96T005666_A	100.3	.2039	102.3	98.19
16	S96T005666_X	1.076	.1247	.3695	1.393
17	S96T005666_AX	6.314	8.642	-18.58	5902.
18	ICSA	.0040	.0075	.0058	-.0003
19	ICSAB	.4591	.0078	.9304	.0001
20	CCV	4.997	.0066	5.047	4.861
21	CCB	.0019	.0002	.0009	.0014

LABCORE Completed Worklist Report for Worklist# 14504

Analyst: srm

Instrument: TOC01

Book# TOC SH 24N12E
TOC Spk 23N12B

Method: LA-344-105 Rev/Mod D-1

Worklist Comment: TOC-01 244-TX GRAB SAMPLES

RTS!

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0	TOC-01	LIQUID	1	4.00E-1	0.400	ug/mL
2 STD	0	TOC-01	LIQUID	3.00E+03	3.10E+3	103.333	% Recovery
3 SAMPLE	S96T005663 0	TOC-01	LIQUID	N/A	1.09E+02	5.500	ug/mL
4 DUP	S96T005663 0	TOC-01	LIQUID	1.09E+2	1.03E+2	5.660	RPD
5 SAMPLE	S96T005665 0	TOC-01	LIQUID	N/A	1.52E+02	5.500	ug/mL
6 DUP	S96T005665 0	TOC-01	LIQUID	1.52E+2	1.66E+2	8.805	RPD
7 SAMPLE	S96T005666 0	TOC-01	LIQUID	N/A	1.74E+02	5.500	ug/mL
8 DUP	S96T005666 0	TOC-01	LIQUID	1.74E+2	1.73E+2	0.576	RPD
9 SPK	S96T005666 0	TOC-01	LIQUID	1.00E+02	9.50E+01	95.000	% Recovery

Final page for worklist# 14504

see attached
Analyst Signature _____ Date _____

RTS 12/12/96
Analyst Signature _____ Date _____

validated into Labcore by John M. Cluckey 12/16/96
Reviewer Signature _____ Date _____

LABCORE Data Entry Template for Worklist# 14504

Analyst: SRM Instrument: TOC01 ☒ Book# 24N12-E

Method: LA-344-105 Rev/Mod D-1

Worklist Comment: TOC-01 244-TX GRAB SAMPLES RTS!

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK			TOC-01	LIQUID		
2 STD			TOC-01	LIQUID		
3 SAMPLE	S96T005663 0		TOC-01	LIQUID	96001429	244-TX GRAB
Analytes Requested: TOC-01						
4 DUP	S96T005663 0		TOC-01	LIQUID		
5 SAMPLE	S96T005665 0		TOC-01	LIQUID	96001429	244-TX GRAB
Analytes Requested: TOC-01						
6 DUP	S96T005665 0		TOC-01	LIQUID		
7 SAMPLE	S96T005666 0		TOC-01	LIQUID	96001429	244-TX GRAB
Analytes Requested: TOC-01						
8 DUP	S96T005666 0		TOC-01	LIQUID		
9 SPK	S96T005666 0		TOC-01	LIQUID		

Final page for worklist # 14504

S. Navio 12.11.96
Analyst Signature Date

Analyst Signature Date

SAMPLE
Zinc - .200 H₂SO₄ - .200 INJ.
(Zn)

SPIKE
500 - .500 - .200 INJ
DILUTE SPIKE STD

Data Entry Comments:

SPIKE # 23N12-B

TOC (Total Organic Carbon)
LA-344-105 (D-1)
12/14/96
INSTRUMENT CODE
ANALYSIS TIME
DATE
INITIALS
SRM
14504

WORKLIST #

ANALYST

ANALYSIS TIME

DATE

INITIALS

SRM

12-11-96

SRM

14504

☒ BASELINE BLANK	☐ SAMPLE DUPLICATE	☐ SPIKE PREP BLANK
STD # =		
SAMPLE VOL (mL)	2.0	
H2O VOL ADDED TO SAMPLE	0.2 mL 2M H2SO4	
ALLOT OF MIXED SAMPLE TO BE SPIKED		
SPIKE VOL (mL)		
H2O VOL ADDED TO SAMPLE+SPIKE	22.2 uL	

☐ BASELINE BLANK	☒ SAMPLE DUPLICATE	☒ SPIKE PREP BLANK
STD # =		
SAMPLE VOL (mL)	2.0	
H2O VOL ADDED TO SAMPLE	0.2 mL 2M H2SO4	
ALLOT OF MIXED SAMPLE TO BE SPIKED		
SPIKE VOL (mL)		
H2O VOL ADDED TO SAMPLE+SPIKE	31.2 uL	

☐ BASELINE BLANK	☒ SAMPLE DUPLICATE	☐ SPIKE PREP BLANK
STD # =		
SAMPLE VOL (mL)	2.0	
H2O VOL ADDED TO SAMPLE	0.2 mL 2M H2SO4	
ALLOT OF MIXED SAMPLE TO BE SPIKED		
SPIKE VOL (mL)		
H2O VOL ADDED TO SAMPLE+SPIKE	33.7 uL	

☐ BASELINE BLANK	☒ SAMPLE DUPLICATE	☐ SPIKE PREP BLANK
STD # =		
SAMPLE VOL (mL)	2.0	
H2O VOL ADDED TO SAMPLE	0.2 mL 2M H2SO4	
ALLOT OF MIXED SAMPLE TO BE SPIKED		
SPIKE VOL (mL)		
H2O VOL ADDED TO SAMPLE+SPIKE	35.2 uL	

INF-SD-WM-DB-224, REV. 0

CONT.
WORKLIST
#

TOC (TOTAL ORGANIC CARBON): LA-344-105 (D-1)

ANALYST
INITIALS

ANALYSIS
DATE

INSTRUMENT
CODE

ANALYSIS
TIME

14504

ERM

12-11-96

☐ BASELINE
BLANK

☐ SAMPLE
DUPLICATE

☐ SPIKE
PREP BLANK

SAMPLE # = 9161005666 STD # =

SAMPLE VOL (mL) 2.0 0.2 mL 2M H2SO4

H2SO4 VOL ADDED to SAMPLE

ALLOUT of SPARGED SAMPLE to be SPIKED

SPIKE VOL (mL)

H2SO4 VOL ADDED to SAMPLE+SPIKE

☐ BASELINE
BLANK

☐ SAMPLE
DUPLICATE

☒ SPIKE
PREP BLANK

SAMPLE # = 9161005666 SPK STD # =

SAMPLE VOL (mL) 500

H2SO4 VOL ADDED to SAMPLE

ALLOUT of SPARGED SAMPLE to be SPIKED

SPIKE VOL (mL) 500

H2SO4 VOL ADDED to SAMPLE+SPIKE

☐ BASELINE
BLANK

☐ SAMPLE
DUPLICATE

☐ SPIKE
PREP BLANK

SAMPLE # = STD # =

SAMPLE VOL (mL)

H2SO4 VOL ADDED to SAMPLE

ALLOUT of SPARGED SAMPLE to be SPIKED

SPIKE VOL (mL)

H2SO4 VOL ADDED to SAMPLE+SPIKE

☐ BASELINE
BLANK

☐ SAMPLE
DUPLICATE

☐ SPIKE
PREP BLANK

SAMPLE # = STD # =

SAMPLE VOL (mL)

H2SO4 VOL ADDED to SAMPLE

ALLOUT of SPARGED SAMPLE to be SPIKED

SPIKE VOL (mL)

H2SO4 VOL ADDED to SAMPLE+SPIKE

☐ BASELINE
BLANK

☐ SAMPLE
DUPLICATE

☐ SPIKE
PREP BLANK

SAMPLE # = STD # =

SAMPLE VOL (mL)

H2SO4 VOL ADDED to SAMPLE

ALLOUT of SPARGED SAMPLE to be SPIKED

SPIKE VOL (mL)

H2SO4 VOL ADDED to SAMPLE+SPIKE

☐ BASELINE
BLANK

☐ SAMPLE
DUPLICATE

☐ SPIKE
PREP BLANK

SAMPLE # = STD # =

SAMPLE VOL (mL)

H2SO4 VOL ADDED to SAMPLE

ALLOUT of SPARGED SAMPLE to be SPIKED

SPIKE VOL (mL)

H2SO4 VOL ADDED to SAMPLE+SPIKE

☐ BASELINE
BLANK

☐ SAMPLE
DUPLICATE

☐ SPIKE
PREP BLANK

SAMPLE # = STD # =

SAMPLE VOL (mL)

H2SO4 VOL ADDED to SAMPLE

ALLOUT of SPARGED SAMPLE to be SPIKED

SPIKE VOL (mL)

H2SO4 VOL ADDED to SAMPLE+SPIKE

☐ BASELINE
BLANK

☐ SAMPLE
DUPLICATE

☐ SPIKE
PREP BLANK

SAMPLE # = STD # =

SAMPLE VOL (mL)

H2SO4 VOL ADDED to SAMPLE

ALLOUT of SPARGED SAMPLE to be SPIKED

SPIKE VOL (mL)

H2SO4 VOL ADDED to SAMPLE+SPIKE

HN-SD-WM-DP-224, REV. 6

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASE

Date: 12/11/96

Time: 10:45:58

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BASE

Blank Value = N/A

Analyst : SR MORRIS

Min Readings = 10

Max Readings = 10

% Difference = 10

== Reading ==	Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	0.70	57.14
3	1.50	1.10	36.36
4	2.00	1.40	21.43
5	2.50	1.70	17.65
6	3.00	2.10	19.05
7	3.50	2.50	16.00
8	4.00	2.80	10.71
9	4.50	3.10	9.68
10	5.00	3.50	11.43

BLANK VALUE = 3.5 micrograms carbon

BLANK FACTOR = 3.5 / 5.004639 =

+7.0E-01 ug/min Carbon

Sample Run By:

SR Morris
SR MORRIS

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK

Date: 12/11/96

Time: 10:40:22

Sample Size = 200 uL

Dil Factor = 1

Blank ID # =

Blank Value = 0 ug/minute C

Analyst : SR MORRIS

Min Readings = 10

Max Readings = 10

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.30	0.00
2	1.01	0.80	62.50
3	1.50	1.20	33.33
4	2.00	1.60	25.00
5	2.50	2.00	20.00
6	3.00	2.40	16.67
7	3.50	2.80	14.29
8	4.00	3.10	9.68
9	4.50	3.50	11.43
10	5.00	3.90	10.26

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+0.0E+00 ug/min Carbon

SAMPLE RESULTS:

(3.9 - 0) (1) / (200) =

+2.0E-02 g/L Carbon

(3.9 - 0) (1) / (200) (12) =

+1.6E-03 Molar Carbon

<<<< WARNING- PERCENT DIFFERENCE EXCEEDS 10 PERCENT >>>>

Sample Run By:

S. Morris
SR MORRIS

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD

Date: 12/11/96

Time: 11:21:11

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BASE

Blank Value = .6993512 ug/minute C

Analyst : SR MORRIS

Min Readings = 10

Max Readings = 10

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	0.30	0.00
2	1.01	22.30	98.65
3	1.51	47.30	52.85
4	2.00	54.90	13.84
5	2.50	57.10	3.85
6	3.00	58.00	1.55
7	3.50	58.70	1.19
8	4.00	59.10	0.68
9	4.50	59.50	0.67
10	5.00	59.90	0.67

BLANK VALUE = 3.5 micrograms carbon

BLANK FACTOR = 3.5 / 5.004639 =

+7.0E-01 ug/min Carbon

SAMPLE RESULTS:

(59.9 - 3.5) (11) / (200) =

+3.10E+00 g/L Carbon

(59.9 - 3.5) (11) / (200) (12) =

+2.59E-01 Molar Carbon

Sample Run By:

S. Morris 12.11.96

SR MORRIS

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 5663

Date: 12/11/96

Time: 11:36:47

Sample Size = 200 uL

Dil Factor = 1.1

Blank ID # = BASE

Blank Value = .6993512 ug/minute C

Analyst : SR MORRIS

Min Readings = 10

Max Readings = 10

% Difference = 10

== Reading ==	Analysis	Time	==== Coulometer	==== % Difference ==
1	0.51		0.20	0.00
2	1.01		7.40	97.30
3	1.51		15.60	52.56
4	2.01		18.90	17.46
5	2.51		20.40	7.35
6	3.01		21.30	4.23
7	3.51		22.00	3.18
8	4.01		22.50	2.22
9	4.51		22.90	1.75
10	5.01		23.40	2.14

BLANK VALUE = 3.5 micrograms carbon

BLANK FACTOR = 3.5 / 5.004639 =

+7.0E-01 ug/min Carbon

SAMPLE RESULTS:

(23.4 - 3.500598) (1.1) / (200) =

+1.09E-01 g/L Carbon

(23.4 - 3.500598) (1.1) / (200) (12) =

+9.12E-03 Molar Carbon

Sample Run By:


 SR MORRIS

00000

NF-SD-WM-DP-224, REV 1
 TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
 TICTOC REV 2.0

Sample: 5663 DUP

Date: 12/11/96

Time: 11:44:01

Sample Size = 200 uL

Dil Factor = 1.1

Blank ID # = BASE

Blank Value = .6993512 ug/minute C

Analyst : SR MORRIS

Min Readings = 10

Max Readings = 10

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.10	0.00
2	1.01	8.10	98.77
3	1.51	14.10	42.55
4	2.01	16.90	16.57
5	2.51	18.50	8.65
6	3.01	19.60	5.61
7	3.51	20.40	3.92
8	4.01	21.10	3.32
9	4.51	21.70	2.76
10	5.01	22.20	2.25

BLANK VALUE = 3.5 micrograms carbon

BLANK FACTOR = 3.5 / 5.004639 =

+7.0E-01 ug/min Carbon

SAMPLE RESULTS:

(22.2 - 3.50064) (1.1) / (200) =

+1.03E-01 g/L Carbon

(22.2 - 3.50064) (1.1) / (200) (12) =

+8.57E-03 Molar Carbon

Sample Run By:

S. Morris
 SR MORRIS

12.11.96
 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 5665

Date: 12/11/96

Time: 11:51:03

Sample Size = 200 uL

Dil Factor = 1.1

Blank ID # = BASE

Blank Value = .6993512 ug/minute C

Analyst : SR MORRIS

Min Readings = 10

Max Readings = 10

% Difference = 10

== Reading ==	Analysis	Time	==== Coulometer	==== % Difference ==
1	0.51		0.30	0.00
2	1.01		12.50	97.60
3	1.51		20.20	38.12
4	2.01		23.80	15.13
5	2.51		25.90	8.11
6	3.01		27.50	5.82
7	3.51		28.70	4.18
8	4.01		29.70	3.37
9	4.50		30.50	2.62
10	5.00		31.20	2.24

BLANK VALUE = 3.5 micrograms carbon

BLANK FACTOR = 3.5 / 5.004639 =

+7.0E-01 ug/min Carbon

SAMPLE RESULTS:

(31.2 - 3.500043) (1.1) / (200) =

+1.52E-01 g/L Carbon

(31.2 - 3.500043) (1.1) / (200) (12) =

+1.27E-02 Molar Carbon

Sample Run By:

SR Morris

12-10-96

SR MORRIS

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 5665 DUP

Date: 12/11/96

Time: 11:56:34

Sample Size = 200 uL

Dil Factor = 1.1

Blank ID # = BASE

Blank Value = .6993512 ug/minute C

Analyst : SR MORRIS

Min Readings = 10

Max Readings = 10

% Difference = 10

== Reading ==	Analysis	Time	==== Coulometer	==== % Difference ==
1	0.51		0.70	0.00
2	1.01		9.80	92.86
3	1.51		18.10	45.86
4	2.00		22.40	19.20
5	2.51		25.60	12.50
6	3.01		28.10	8.90
7	3.51		29.90	6.02
8	4.01		31.40	4.78
9	4.50		32.70	3.98
10	5.00		33.70	2.97

BLANK VALUE = 3.5 micrograms carbon

BLANK FACTOR = 3.5 / 5.004639 =

+7.0E-01 ug/min Carbon

SAMPLE RESULTS:

(33.7 - 3.500043) (1.1)/(200) =

+1.66E-01 g/L Carbon

(33.7 - 3.500043) (1.1)/(200) (12) =

+1.38E-02 Molar Carbon

Sample Run By:

SR Morris 12.11.96
SR MORRIS 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 5666

Date: 12/11/96

Time: 12:02:17

Sample Size = 200 uL

Analyst : SR MORRIS

Dil Factor = 1.1

Min Readings = 10

Blank ID # = BASE

Max Readings = 10

Blank Value = .6993512 ug/minute C

% Difference = 10

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==

1	0.51	0.70	0.00
2	1.01	14.50	95.17
3	1.51	21.30	31.92
4	2.01	24.80	14.11
5	2.51	27.50	9.82
6	3.01	29.60	7.09
7	3.51	31.30	5.43
8	4.01	32.80	4.57
9	4.51	34.00	3.53
10	5.01	35.20	3.41

BLANK VALUE = 3.5 micrograms carbon

BLANK FACTOR = $3.5 / 5.004639 =$

+7.0E-01 ug/min Carbon

SAMPLE RESULTS:

(35.2 - 3.50064) (1.1) / (200) =

+1.74E-01 g/L Carbon

(35.2 - 3.50064) (1.1) / (200) (12) =

+1.45E-02 Molar Carbon

Sample Run By:

S. Morris 12.11.96
SR MORRIS 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 5666 DUP

Date: 12/11/96

Time: 12:07:49

Sample Size = 200 uL

Dil Factor = 1.1

Blank ID # = BASE

Blank Value = .6993512 ug/minute C

Analyst : SR MORRIS

Min Readings = 10

Max Readings = 10

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.70	0.00
2	1.01	10.10	93.07
3	1.51	16.80	39.88
4	2.01	21.10	20.38
5	2.51	24.80	14.92
6	3.01	27.50	9.82
7	3.51	29.80	7.72
8	4.01	31.70	5.99
9	4.51	33.50	5.37
10	5.01	34.90	4.01

BLANK VALUE = 3.5 micrograms carbon

BLANK FACTOR = 3.5 / 5.004639 =

+7.0E-01 ug/min Carbon

SAMPLE RESULTS:

(34.9 - 3.50064) (1.1) / (200) =

+1.73E-01 g/L Carbon

(34.9 - 3.50064) (1.1) / (200) (12) =

+1.44E-02 Molar Carbon

Sample Run By:

*S. Morris**12.11.96*

SR MORRIS

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 5666 SPK

Date: 12/11/96

Time: 12:14:34

Sample Size = ~~200 uL~~ ^{0.500 mL sample}
Dil Factor = 1 ^{12/11/96} ^{0.500 mL 234128}
Blank ID # = BASE
Blank Value = .6993512 ug/minute C
Analyst : SR MORRIS
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading ==	Analysis	Time	==== Coulometer	==== % Difference ==
1	0.51		1.00	0.00
2	1.01		11.50	91.30
3	1.51		59.10	80.54
4	2.01		70.20	15.81
5	2.51		76.80	8.59
6	3.01		81.40	5.65
7	3.51		84.80	4.01
8	4.01		87.30	2.86
9	4.51		89.30	2.24
10	5.01		90.90	1.76

BLANK VALUE = 3.5 micrograms carbon

BLANK FACTOR = 3.5 / 5.004639 = +7.0E-01 ug/min Carbon

SAMPLE RESULTS:

(90.9 - 3.500726) (1) / (200) = +4.37E-01 g/L Carbon
(90.9 - 3.500726) (1) / (200) (12) = +3.64E-02 Molar Carbon

Sample Run By:

S. Morris
SR MORRIS

12.11.96
00000

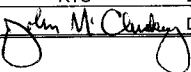
WORKBOOK PAGE: BLANK1

TOC : LA-344-105 (D-1)

LIQUIDS

		BLNK
Sample Volume in mL	(SS)	0.200
H2SO4 Volume in mL	(VR)	0.000
Volume Injected in mL	(VI)	0.200
Dilution Factor (calculated)	(DF)	1.000
Digest Dilution Factor	(DDF)	1
µg of Carbon in Blank	(C1)	3.9
µg of Carbon from Baseline	(C2)	3.5

LIQUID	
96011059	µg of Carbon = C1-C2
0	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI
N/A	
BLNK	
Instrument Code	
TOC01	
Prepared By	
RTS	
Chemist	
RWS	
Analyst	
SRM	
Date Collected	
12/12/96	
Analysis Date	
12/11/96	
Analysis Time	Method Detection Limit in µg/mL 5.00E+00
Sample Point	µg of Carbon 4.00E-01
244-TX GRAB	

Data Entered By:	RTS	Date:	12/12/96
Signature of Chemist:		Date:	12/16/96

BLANK.WB1 REV 2.0

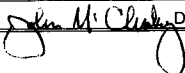
344105ML

WORKBOOK PAGE: STD2

TOC : LA-344-105 (D-1)

LIQUIDS

LIQUIDS		STD
Type	Sample Volume in mL (SS)	0.200
STD	H2SO4 Volume in mL (VR)	2.000
Volume	Volume Injected in mL (VI)	0.200
14504	Dilution Factor (calculated) (DF)	11.000
Digest	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon Found (C1)	59.9
Matrix	µg of Carbon from Baseline (C2)	3.5
LIQUID	Standard Book Number	24N12E
Standard Value	Standard Value (µg/ml)	3000
96011059		
Rerun		
0	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
Sample Prep		
N/A	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI	
Sample #		
STD		
Instrument		
TOC01		
Preparation		
RTS		
Chemist		
RWS		
Analyst		
SRM		
Date Complete		
12/12/96		
Analysis Date		
12/11/96		
Analysis Limit	Method Detection Limit in µg/mL	5.50E+01
	QC Actual in µg/mL	3.00E+03
Sample Point	QC Found in µg/mL	3.10E+03
244-TX GRAB	Percent Standard Recovery	103.4

Data Entered By:	RTS	Date:	12/12/96
Signature of Chemist:		Date:	12/16/96

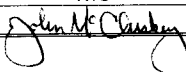
STANDARD.WB1 REV 2.0 344105ML

WORKBOOK PAGE: SAM3

TOC : LA-344-105 (D-1)

LIQUIDS

		SAMPLE
Type	Sample Volume in mL (SS)	2.000
SAMPLE	H2SO4 Volume in mL (VR)	0.200
Work List	Volume Injected in mL (VI)	0.200
14504	Dilution Factor (calculated) (DF)	1.100
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	23.4
Matrix	µg of Carbon from Baseline (C2)	3.5
LIQUID		
Batch Number		
96011059		
Recur	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
0		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S96T005663		
Instrument		
TOC01		
Prepared by		
RTS		
Chemist		
RWS		
Analyst		
SRM		
Date Complete		
12/12/96		
Analysis Date		
12/11/96		
Analysis Limit	Method Detection Limit in µg/mL	5.50E+00
Sample Result	µg of Carbon/mL	1.09E+02
244-TX GRAB		

Data Entered By:	RTS	Date:	12/12/96
Signature of Chemist:		Date:	12/14/96

SAMPLE.WB1 REV 2.0

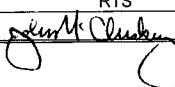
344105ML

WORKBOOK PAGE: DUP4

TOC : LA-344-105 (D-1)

LIQUIDS

		DUP
Type	Sample Volume in mL (SS)	2.000
DUP	H2SO4 Volume in mL (VR)	0.200
Work List	Volume Injected in mL (VI)	0.200
14504	Dilution Factor (calculated) (DF)	1.100
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	22.2
Matrix	µg of Carbon from Baseline (C2)	3.5
LIQUID	Result from Sample Page	1.09E+2
Barcode Number		
96011059		
Return	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
0		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S96T005663		
Instrument Code		
TOC01		
Prepared By		
RTS		
Chemist		
RWS		
Analyst		
SRM		
Date Complete		
12/12/96		
Analysis Date		
12/11/96		
Analysis Unit	Method Detection Limit in µg/mL	5.50E+00
Sample Point	µg of Carbon/mL	1.03E+02
244-TX GRAB		

Data Entered By:	RTS	Date:	12/12/96
Signature of Chemist:		Date:	12/14/96

SAMPLE.WB1 REV 2.0

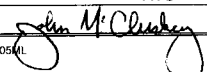
344105ML

WORKBOOK PAGE: SAM5

TOC : LA-344-105 (D-1)

LIQUIDS

		SAMPLE
Type	Sample Volume in mL	(SS) 2.000
SAMPLE	H2SO4 Volume in mL	(VR) 0.200
Work List	Volume Injected in mL	(VI) 0.200
14504	Dilution Factor (calculated)	(DF) 1.100
Test Code	Digest Dilution Factor	(DDF) 1
TOC-01	µg of Carbon in Sample	(C1) 31.2
Matrix	µg of Carbon from Baseline	(C2) 3.5
LIQUID		
Batch Number		
96011059		
Regrin	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
0		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S96T005665		
Instrument Code		
TOC01		
Prepared By		
RTS		
Chemist		
RWS		
Analyst		
SRM		
Date Complete		
12/12/96		
Analysis Date		
12/11/96		
Analysis Time	Method Detection Limit in µg/mL	5.50E+00
Sample Point	µg of Carbon/mL	1.52E+02
244-TX GRAB		

Data Entered By:	RTS	Date:	12/12/96
Signature of Chemist:		Date:	12/16/96

SAMPLE.WB1 REV 2.0

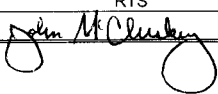
344105.ML

WORKBOOK PAGE: DUP6

TOC : LA-344-105 (D-1)

LIQUIDS

		DUP
Type	Sample Volume in mL (SS)	2.000
DUP	H2SO4 Volume in mL (VR)	0.200
Work List	Volume Injected in mL (VI)	0.200
14504	Dilution Factor (calculated) (DF)	1.100
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	33.7
Matrix	µg of Carbon from Baseline (C2)	3.5
LIQUID	Result from Sample Page	1.52E+2
Batch Number		
96011059		
Rerun	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
0		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S96T005665		
Instrument Code		
TOC01		
Prepared By		
RTS		
Chemist		
RWS		
Analyst		
SRM		
Date Complete		
12/12/96		
Analysis Date		
12/11/96		
Analysis Time	Method Detection Limit in µg/mL	5.50E+00
Sample Point	µg of Carbon/mL	1.66E+02
244-TX GRAB		

Data Entered By:	RTS	Date:	12/12/96
Signature of Chemist:		Date:	12/14/96

SAMPLE.WB1 REV 2.0

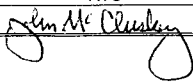
344105ML

WORKBOOK PAGE: SAM7

TOC : LA-344-105 (D-1)

LIQUIDS

		SAMPLE
Type	Sample Volume in mL (SS)	2.000
SAMPLE	H2SO4 Volume in mL (VR)	0.200
Work List	Volume Injected in mL (VI)	0.200
14504	Dilution Factor (calculated) (DF)	1.100
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	35.2
Matrix	µg of Carbon from Baseline (C2)	3.5
LIQUID		
Batch Number		
96011059		
Rerun	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
0		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S96T005666		
Instrument Code		
TOC01		
Prepared By		
RTS		
Chemist		
RWS		
Analyst		
SRM		
Date Complete		
12/12/96		
Analysis Date		
12/11/96		
Analysis Time	Method Detection Limit in µg/mL	5.50E+00
Sample Point	µg of Carbon/mL	1.74E+02
244-TX GRAB		

Data Entered By:	RTS	Date:	12/12/96
Signature of Chemist:		Date:	12/14/96

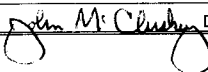
SAMPLE.WB1 REV 2.0

344105ML

WORKBOOK PAGE: DUP8

TOC : LA-344-105 (D-1)
LIQUIDS

		DUP
Type	Sample Volume in mL (SS)	2.000
DUP	H2SO4 Volume in mL (VR)	0.200
Work List	Volume Injected in mL (VI)	0.200
14504	Dilution Factor (calculated) (DF)	1.100
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	34.9
Matrix	µg of Carbon from Baseline (C2)	3.5
LIQUID	Result from Sample Page	1.74E+2
Batch Number		
96011059		
Retun	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
0		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S96T005666		
Instrument Code		
TOC01		
Prepared By		
RTS		
Chemist		
RWS		
Analyst		
SRM		
Date Complete		
12/12/96		
Analysis Date		
12/11/96		
Analysis Time	Method Detection Limit in µg/mL	5.50E+00
Sample Point	µg of Carbon/mL	1.73E+02
244-TX GRAB		

Data Entered By:	RTS	Date:	12/12/96
Signature of Chemist:		Date:	12/16/96

SAMPLE.WB1 REV 2.0

344105ML

WORKBOOK PAGE: SPIKE9

TOC : LA-344-105 (D-1)

LIQUIDS

Type	Sample Vial Data		Spiked Vial Data		SPIKE
SPK	Sample Volume in mL (SS)	2.000	Was the sample dilution used? (yes/no)	YES	
Work List	H2SO4 Volume in mL (VR)	0.200	Sample Volume in mL (SPK SS)	0.500	
14504	Volume Injected in mL (VI)	0.200	H2SO4 Volume in mL (SPK VR)	0.000	
Test Code	µg of Carbon in Sample (C1)	35.2	Amount of Spike Std. in mL (SPK VOL)	0.500	
TOC-01	µg of Carbon from Baseline (C2)	3.5	Volume Injected in mL (SPK VI)	0.200	
Matrix			µg C in Sample + Spike (C3)	90.9	
LIQUID			Pre-Spike Dilution Factor (PDF)	1.10	
Batch Number			Spike Book Number	23N12B	
96011059			Spike Value in µg/ml	753	
Rerun					
0	Spike Correction Factor (SPK CF) = (SPK SS + SPK VOL + SPK VR) / SPK VI				
Sample Prep	Sample Correction Factor (SAM CF) = (SS + VR) / (VI)				
N/A	Sample Size Correction Factor (SS CF) = (SPK SS) / (SS)				
Sample #	QC Actual in µg/mL = Spike Value (µg/mL)				
S96T005666	QC Found in µg/mL = [(C3 - C2)(SPK CF) - (C1-C2)(SAM CF)(SS CF)/(PDF)] / (SPK VOL)				
Instrument Code	Percent Spike Recovery = (QC Found) / (QC Actual) * 100				
TOC01					
Prepared By					
RTS					
Chemist					
RWS					
Analyst					
SRM					
Date Complete					
12/12/96					
Analysis Date					
12/11/96					
Analysis Time					
	QC Actual in µg/mL				7.53E+02
Sample Point	QC Found in µg/mL				7.16E+02
244-TX GRAB	Percent Spike Recovery				95.0

John McClellan 12/16/96

LABCORE Data Entry Template for Worklist# 14502

Analyst: _____ Instrument: TIC01 _____ Book # _____

Method: LA-342-100 Rev/Mod ED

Worklist Comment: TIC-02 FOR 244-TX GRAB SAMPLE RTS!

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK			TIC-02	LIQUID	<u>1</u>	<u>1.0</u>	<u>Rev</u>	<u>11/7/96</u>
		2 STD			TIC-02	LIQUID	<u>6.62^{cc}</u>	<u>6.03^{cc}</u>	<u>N/A</u>	<u>ug/mL</u>
96001429	244-TX GRAB	3 SAMPLE	S96T005663	0	TIC-02	LIQUID	<u>N/A</u>	<u>3.82^{cc}</u>	<u>5</u>	<u>ug/mL</u>
96001429	244-TX GRAB	4 DUP	S96T005663	0	TIC-02	LIQUID	<u>3.82^{cc}</u>	<u>3.34^{cc}</u>	<u>N/A</u>	<u>ug/mL</u>

Final page for worklist # 14502

See Attached Std
Analyst Signature _____ Date _____

Ed Jones 11-6-96
Analyst Signature _____ Date _____

Rol Schneider 11/7/96

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# 14502

Analyst: JLS2 Instrument: TIC01 #2 Book# 22W12F

Method: LA-342-100 Rev/Mod E-0

Worklist Comment: TIC-02 FOR 244-TX GRAB SAMPLES

RTS!

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK			TIC-02	LIQUID		
2 STD			TIC-02	LIQUID		
3 SAMPLE	S96T005663 0		TIC-02	LIQUID	96001429	244-TX GRAB
Analytes Requested: TIC-02						
4 DUP	S96T005663 0		TIC-02	LIQUID		
5 SAMPLE	S96T005665 0		TIC-02	LIQUID	96001429	244-TX GRAB
Analytes Requested: TIC-02						
6 DUP	S96T005665 0		TIC-02	LIQUID		
7 SAMPLE	S96T005666 0		TIC-02	LIQUID	96001429	244-TX GRAB
Analytes Requested: TIC-02						
8 DUP	S96T005666 0		TIC-02	LIQUID		
9 SPK	S96T005666 0		TIC-02	LIQUID		

Final page for worklist # 14502

Sacchar Steele 11/4/96
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

Condormeter solution turned green
on sample 5665. unable to complete.

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

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: 2-BASELINE

Date: 11/04/96

Time: 11:02:07

Sample Size = 1 uL
 Dil Factor = 1
 Blank ID # = 2-BASELINE
 Blank Value = N/A

Analyst : JL STEELE
 Min Readings = 22
 Max Readings = 22
 % Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	1.10	72.73
3	1.51	1.50	26.67
4	2.00	1.80	16.67
5	2.50	2.20	18.18
6	3.00	2.30	4.35
7	3.50	2.40	4.17
8	4.00	2.60	7.69
9	4.50	2.70	3.70
10	5.00	2.80	3.57
11	5.50	3.00	6.67
12	6.00	3.10	3.23
13	6.50	3.30	6.06
14	7.00	3.40	2.94
15	7.50	3.50	2.86
16	8.00	3.60	2.78
17	8.50	3.80	5.26
18	9.00	3.90	2.56
19	9.50	4.00	2.50
20	10.00	4.20	4.76
21	10.50	4.30	2.33
22	11.00	4.40	2.27

BLANK VALUE = 4.4 micrograms carbon

BLANK FACTOR = 4.4 / 10.99884 =

+4.0E-01

ug/min Carbon

Sample Run By:

JL STEELE

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 2-STD 22N12F

Date: 11/04/96

Time: 11:15:28

Sample Size = 1 uL *iml*
 Dil Factor = 1
 Blank ID # =
 Blank Value = .4 ug/minute C

Analyst : JL STEELE
 Min Readings = 22
 Max Readings = 22
 % Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	0.00	0.00
2	1.01	11.90	100.00
3	1.50	120.60	90.13
4	2.00	281.10	57.10
5	2.50	420.80	33.20
6	3.01	512.60	17.91
7	3.50	566.60	9.53
8	4.00	592.10	4.31
9	4.50	601.00	1.48
10	5.00	604.20	0.53
11	5.50	605.20	0.17
12	6.00	605.80	0.10
13	6.50	606.10	0.05
14	7.00	606.40	0.05
15	7.50	606.50	0.02
16	8.00	606.70	0.03
17	8.50	606.90	0.03
18	9.00	607.10	0.03
19	9.50	607.20	0.02
20	10.00	607.40	0.03
21	10.50	607.50	0.02
22	11.00	607.70	0.03

USER INPUT BLANK VALUE

BLANK VALUE = 4.399536 micrograms carbon

BLANK FACTOR = 4.399536 / 10.99884 = +4.0E-01 ug/min Carbon

SAMPLE RESULTS:

(607.7 - 4.399536) (1) / (1) = +6.033E+02 g/L Carbon
 (607.7 - 4.399536) (1) / (1) (12) = +5.028E+01 Molar Carbon

Sample Run By:

JL Steele
JL STEELE

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 2-BLANK

Date: 11/04/96

Time: 11:28:28

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .4 ug/minute C

Analyst : JL STEELE

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	1.20	91.67
3	1.51	2.30	47.83
4	2.00	2.80	17.86
5	2.50	3.10	9.68
6	3.00	3.30	6.06
7	3.50	3.40	2.94
8	4.00	3.60	5.56
9	4.50	3.80	5.26
10	5.00	3.90	2.56
11	5.50	4.00	2.50
12	6.00	4.10	2.44
13	6.50	4.30	4.65
14	7.00	4.40	2.27
15	7.50	4.60	4.35
16	8.00	4.70	2.13
17	8.50	4.80	2.08
18	9.00	4.90	2.04
19	9.50	5.10	3.92
20	10.00	5.20	1.92
21	10.50	5.30	1.89
22	11.00	5.40	1.85

USER INPUT BLANK VALUE

BLANK VALUE = 4.399536 micrograms carbon

BLANK FACTOR = 4.399536 / 10.99884 = +4.0E-01 ug/min Carbon

SAMPLE RESULTS:

(5.4 - 4.398804) (1)/(1)	=	+1.0E+00	g/L Carbon
(5.4 - 4.398804) (1)/(1) (12)	=	+8.3E-02	Molar Carbon

Sample Run By:

JL STEELE

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 2-S96T005663

Date: 11/04/96

Time: 11:55:54

Sample Size = 1 uL *500 uL*
Dil Factor = 1
Blank ID # =
Blank Value = .4 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==	Analysis Time	==== Coulometer ==	% Difference ==
1	0.51	1.20	0.00
2	1.01	4.50	73.33
3	1.50	23.80	81.09
4	2.00	44.80	46.88
5	2.50	58.00	22.76
6	3.00	65.50	11.45
7	3.50	74.90	12.55
8	4.00	88.90	15.75
9	4.50	103.70	14.27
10	5.00	115.70	10.37
11	5.50	126.40	8.47
12	6.00	136.30	7.26
13	6.50	144.40	5.61
14	7.00	152.30	5.19
15	7.50	159.10	4.27
16	8.00	165.50	3.87
17	8.50	171.30	3.39
18	9.00	176.70	3.06
19	9.50	181.90	2.86
20	10.00	186.70	2.57
21	10.50	190.90	2.20
22	11.00	195.20	2.20

USER INPUT BLANK VALUE

BLANK VALUE = 4.399536 micrograms carbon

BLANK FACTOR = 4.399536 / 10.99884 = +4.0E-01 ug/min Carbon

SAMPLE RESULTS:

(195.2 - 4.399121) (1)/(1) = +1.908E+02 g/L Carbon
(195.2 - 4.399121) (1)/(12) = +1.590E+01 Molar Carbon

Sample Run By:

JL Steele
JL STEELE

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 2-5663 DUP

Date: 11/04/96

Time: 13:41:31

Sample Size = 1 uL *500ml*
Dil Factor = 1
Blank ID # =
Blank Value = .4 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	3.60	0.00
2	1.01	9.30	61.29
3	1.50	31.40	70.38
4	2.00	55.30	43.22
5	2.50	70.00	21.00
6	3.00	80.70	13.26
7	3.50	90.20	10.53
8	4.00	98.90	8.80
9	4.50	106.50	7.14
10	5.00	113.90	6.50
11	5.50	120.40	5.40
12	6.00	126.40	4.75
13	6.50	132.80	4.82
14	7.00	138.00	3.77
15	7.50	143.50	3.83
16	8.00	147.80	2.91
17	8.50	152.10	2.83
18	9.00	156.40	2.75
19	9.50	160.50	2.55
20	10.00	164.20	2.25
21	10.50	167.80	2.15
22	11.00	171.20	1.99

USER INPUT BLANK VALUE

BLANK VALUE = 4.399536 micrograms carbon

BLANK FACTOR = 4.399536 / 10.99884 = +4.0E-01 ug/min Carbon

SAMPLE RESULTS:

(171.2 - 4.399536) (1) / (1) = +1.668E+02 g/L Carbon
(171.2 - 4.399536) (1) / (1) (12) = +1.390E+01 Molar Carbon

Sample Run By:

JL STEELE

00000

TIC/TOC : LA-342-100 (E-0)

LIQUIDS

		TIC	TOC
	Sample Size in mL (SS)	0.0000	
BLANK	Dilution Factor (DF)	1	1
	µg of Carbon in Sample (C1)	5.4	
44501-14502	µg of Carbon from Baseline (C2)	4.4	

RWS
11/7/96

TIC-02

LIQUID

µg of Carbon = |C1-C2|

BLNK

TIC01

RTS

RWS

JLS2

11/06/96

11/04/96

Method Detection Limit in µg/mL

TIC

TOC

5

40

µg of Carbon

1.00E+00

244-TX GRAB

Data Entered By:	RTS	Date:	11/06/96
Signature of Chemist:	<i>RWS</i>	Date:	11/7/96

BLANK WB1 REV 1.0

342100ML

TIC/TOC : LA-342-100 (E-0)

LIQUIDS

		TIC	TOC
STANDARD	Sample Size in mL (SS)	1.0000	
	Dilution Factor (DF)	1	1
	Final Coulometer Reading in μg (C1)	607.7	
14502	μg of Carbon from Baseline (C2)	4.4	
	Standard Book Number	22N12F	
TIC-02	Standard Value ($\mu\text{g}/\text{mL}$)	602	

LIQUID

QC Actual in $\mu\text{g}/\text{mL}$ = Standard Value ($\mu\text{g}/\text{mL}$)QC Found in $\mu\text{g}/\text{mL}$ = (C1 - C2) * DF / SSQC Found in $\mu\text{g}/\text{mL}$ for TIC = 5 if C1 < C2QC Found in $\mu\text{g}/\text{mL}$ for TOC = 40 if C1 < C2

STD

% Recovery = QC Found / QC Actual * 100

TIC01

RTS

RWS

JLS2

11/06/96

11/04/96

NOTE: FOR TOC: The Reported Result is < 40.

		TIC	TOC
	Method Detection Limit in $\mu\text{g}/\text{mL}$	5	40
	QC Actual in $\mu\text{g}/\text{mL}$	6.02E+02	
	QC Found in $\mu\text{g}/\text{mL}$ See Note: <	6.03E+02	
244-TX GRAB	Percent Standard Recovery	100.2	

Data Entered By:

RTS

Date: 11/06/96

Signature of Chemist:

Date: 11/7/96

STANDARD.WB1 REV 1.0

342100ML

TIC/TOC : LA-342-100 (E-0)

LIQUIDS

		TIC	TOC
	Sample Size in mL (SS)	0.5000	
SAMPLE	Dilution Factor (DF)	1	1
	µg of Carbon in Sample (C1)	195.2	
14502	µg of Carbon from Baseline (C2)	4.4	
TIC-02			

LIQUID

$\mu\text{g of Carbon/mL} = (C1 - C2) * DF / SS$
 $\mu\text{g of Carbon/mL for TIC} = 5 \text{ if } C1 < C2$
 $\mu\text{g of Carbon/mL for TOC} = 40 \text{ if } C1 < C2$

S96T005663

TIC01

RTS

RWS

JLS2

11/06/96

NOTE: FOR TOC: The Reported Result is < 40.

11/04/96

Method Detection Limit in µg/mL

TIC

TOC

5

40

µg of Carbon/mL

Note:

<

3.82E+02

244-TX GRAB

Data Entered By:

RTS

Date: 11/06/96

Signature of Chemist:

RW Schroeder

Date: 11/7/96

SAMPLE.WB1 REV 1.0

342100ML

126

TIC/TOC : LA-342-100 (E-0)

LIQUIDS

		TIC	TOC
	Sample Size in mL (SS)	0.5000	
DUP	Dilution Factor (DF)	1	1
	µg of Carbon in Sample (C1)	171.2	
14502	µg of Carbon from Baseline (C2)	4.4	
	Known µg of C from Original Sample		
TIC-02			

LIQUID

$\mu\text{g of Carbon/mL} = (C1-C2) * DF / SS$
 $\mu\text{g of Carbon/mL for TIC} = 5 \text{ if } C1 < C2$
 $\mu\text{g of Carbon/mL for TOC} = 40 \text{ if } C1 < C2$

S96T005663

TIC01

RTS

RWS

JLS2

11/06/96

NOTE: FOR TOC: The Reported Result is < 40.

11/04/96

Method Detection Limit in µg/mL

TIC

TOC

5

40

µg of Carbon/mL

Note:

<

3.34E+02

244-TX GRAB

Data Entered By:

RTS

Date: 11/06/96

Signature of Chemist:

342100ML

Date: 11/7/96

DUP.WB1 REV 1.0

127

worklistrpt Version 2.1 05/15/95
11/06/96 10:02

INF-SD-WM-DP-224, REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 14755

Analyst:

JS

Instrument: CARB2

Book # 22N12F

Method: LA-342-100 Rev/Mod

Worklist Comment: 244--TX GRAB SAMPLES FOR TIC-02 REWORK (GREEN SOLUTION) RTS

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK				TIC-02	LIQUID	<u>1</u>	<u><5</u>	<u>N/A</u>	ug/ml
		2	STD				TIC-02	LIQUID	<u>602</u>	<u>606</u>	<u>N/A</u>	ug/ml
96001429	244-TX GRAB	3	SAMPLE	S96T005665	0		TIC-02	LIQUID	<u>N/A</u>	<u>3.79^{E2}</u>	<u>5</u>	ug/ml
96001429	244-TX GRAB	4	DUP	S96T005665	0		TIC-02	LIQUID	<u>3.79^{E2}</u>	<u>3.78^{E2}</u>	<u>N/A</u>	ug/ml
96001429	244-TX GRAB	5	SAMPLE	S96T005666	0		TIC-02	LIQUID	<u>N/A</u>	<u>1.77^{E2}</u>	<u>5</u>	ug/ml
96001429	244-TX GRAB	6	DUP	S96T005666	0		TIC-02	LIQUID	<u>1.77^{E2}</u>	<u>1.81^{E2}</u>	<u>N/A</u>	ug/ml
96001429	244-TX GRAB	7	SPK	S96T005666	0		TIC-02	LIQUID	<u>100</u>	<u>107.2</u>	<u>N/A</u>	ug/ml

Final page for worklist # 14755

JS
Analyst Signature

11-12-96
Date

Dany Hammett
Analyst Signature

11-13-96
Date

Approved R.W. Schroeder
11/14/96

Data Entry Comments:

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

TIC/TOC: LA-342-100 (E-0)

WORKLIST
#

ANALYST
INITIALS

ANALYSIS
DATE

ANALYSIS
TIME

INSTRUMENT
CODE

14753

JS

11-12-96

CARB #1

☒ BASELINE
BLANK

☐ SAMPLE
DUPLICATE

☐ SPIKE
TRIPPLICATE

SAMPLE # =

STD # =

SAMPLE WEIGHT (g) _____
SPIKE/STANDARD VOLUME (mL) _____ TIC: _____ TOC: _____

FINAL COULOMETER READING (u TIC: _____ TOC: _____

☐ BASELINE
BLANK

☐ SAMPLE
DUPLICATE

☐ SPIKE
TRIPPLICATE

SAMPLE # =

STD # = 22N12F

SAMPLE WEIGHT (g) _____
SPIKE/STANDARD VOLUME (mL) _____ TIC: _____ TOC: _____

FINAL COULOMETER READING (u TIC: _____ TOC: _____

☒ BASELINE
BLANK

☐ SAMPLE
DUPLICATE

☐ SPIKE
TRIPPLICATE

SAMPLE # =

STD # =

SAMPLE WEIGHT (g) _____
SPIKE/STANDARD VOLUME (mL) _____ TIC: _____ TOC: _____

FINAL COULOMETER READING (u TIC: _____ TOC: _____

☐ BASELINE
BLANK

☒ SAMPLE
DUPLICATE

☐ SPIKE
TRIPPLICATE

SAMPLE # =

STD # =

SAMPLE WEIGHT (g) _____
SPIKE/STANDARD VOLUME (mL) _____ TIC: _____ TOC: _____

FINAL COULOMETER READING (u TIC: _____ TOC: _____

☐ BASELINE
BLANK

☒ SAMPLE
DUPLICATE

☐ SPIKE
TRIPPLICATE

SAMPLE # =

STD # =

SAMPLE WEIGHT (g) _____
SPIKE/STANDARD VOLUME (mL) _____ TIC: _____ TOC: _____

FINAL COULOMETER READING (u TIC: _____ TOC: _____

☐ BASELINE
BLANK

☐ SAMPLE
DUPLICATE

☒ SPIKE
TRIPPLICATE

SAMPLE # =

STD # =

SAMPLE WEIGHT (g) _____
SPIKE/STANDARD VOLUME (mL) _____ TIC: _____ TOC: _____

FINAL COULOMETER READING (u TIC: _____ TOC: _____

☐ BASELINE
BLANK

☒ SAMPLE
DUPLICATE

☐ SPIKE
TRIPPLICATE

SAMPLE # =

STD # =

SAMPLE WEIGHT (g) _____
SPIKE/STANDARD VOLUME (mL) _____ TIC: _____ TOC: _____

FINAL COULOMETER READING (u TIC: _____ TOC: _____

☐ BASELINE
BLANK

☒ SAMPLE
DUPLICATE

☐ SPIKE
TRIPPLICATE

SAMPLE # =

STD # =

SAMPLE WEIGHT (g) _____
SPIKE/STANDARD VOLUME (mL) _____ TIC: _____ TOC: _____

FINAL COULOMETER READING (u TIC: _____ TOC: _____

TIC/TOC: LA-342-100 (E-0)

WORKLIST

ANALYST

ANALYSIS

ANALYSIS

INSTRUMENT

INITIALS

TIME

CODE

14755

JDS

11-12-95

CAPS#1

☐ BASELINE
BLANK

☐ SAMPLE
DUPLICATE

☒ SPIKE
TRIPPLICATE

SAMPLE # = 5967005666 STD # = 22N12F

SAMPLE WEIGHT (g) 750

SPRINK STANDARD VOLUME (mL) 750

TIC: 500.760

FINAL COULOMETER READING (u TIC) TOC: TOC:

☐ BASELINE
BLANK

☐ SAMPLE
DUPLICATE

☐ SPIKE
TRIPPLICATE

SAMPLE # =

STD # =

SAMPLE WEIGHT (g)

SPRINK STANDARD VOLUME (mL)

TIC: TOC: TOC:

FINAL COULOMETER READING (u TIC) TOC: TOC:

☐ BASELINE
BLANK

☐ SAMPLE
DUPLICATE

☐ SPIKE
TRIPPLICATE

SAMPLE # =

STD # =

SAMPLE WEIGHT (g)

SPRINK STANDARD VOLUME (mL)

TIC: TOC: TOC:

FINAL COULOMETER READING (u TIC) TOC: TOC:

☐ BASELINE
BLANK

☐ SAMPLE
DUPLICATE

☐ SPIKE
TRIPPLICATE

SAMPLE # =

STD # =

SAMPLE WEIGHT (g)

SPRINK STANDARD VOLUME (mL)

TIC: TOC: TOC:

FINAL COULOMETER READING (u TIC) TOC: TOC:

☐ BASELINE
BLANK

☐ SAMPLE
DUPLICATE

☐ SPIKE
TRIPPLICATE

SAMPLE # =

STD # =

SAMPLE WEIGHT (g)

SPRINK STANDARD VOLUME (mL)

TIC: TOC: TOC:

FINAL COULOMETER READING (u TIC) TOC: TOC:

☐ BASELINE
BLANK

☐ SAMPLE
DUPLICATE

☐ SPIKE
TRIPPLICATE

SAMPLE # =

STD # =

SAMPLE WEIGHT (g)

SPRINK STANDARD VOLUME (mL)

TIC: TOC: TOC:

FINAL COULOMETER READING (u TIC) TOC: TOC:

☐ BASELINE
BLANK

☐ SAMPLE
DUPLICATE

☐ SPIKE
TRIPPLICATE

SAMPLE # =

STD # =

SAMPLE WEIGHT (g)

SPRINK STANDARD VOLUME (mL)

TIC: TOC: TOC:

FINAL COULOMETER READING (u TIC) TOC: TOC:

☐ BASELINE
BLANK

☐ SAMPLE
DUPLICATE

☐ SPIKE
TRIPPLICATE

SAMPLE # =

STD # =

SAMPLE WEIGHT (g)

SPRINK STANDARD VOLUME (mL)

TIC: TOC: TOC:

FINAL COULOMETER READING (u TIC) TOC: TOC:

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASE

Date: 11/12/96

Time: 19:47:35

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

Analyst : JD SPELLMAN
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	1.10	63.64
3	1.51	1.70	35.29
4	2.00	2.20	22.73
5	2.50	2.70	18.52
6	3.00	3.30	18.18
7	3.50	4.00	17.50
8	4.00	4.20	4.76
9	4.50	4.50	6.67
10	5.00	4.80	6.25
11	5.50	5.00	4.00
12	6.00	5.30	5.66
13	6.50	5.60	5.36
14	7.00	5.90	5.08
15	7.50	6.20	4.84
16	8.00	6.50	4.62
17	8.50	6.70	2.99
18	9.00	7.10	5.63
19	9.50	7.40	4.05
20	10.00	7.60	2.63
21	10.50	7.90	3.80
22	11.00	8.20	3.66

BLANK VALUE = 8.2 micrograms carbon
BLANK FACTOR = 8.2 / 10.99878 =

+7.5E-01 ug/min Carbon

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 131 TO 146.

Sample Run By:

JD Spellman 11/14/96
JD SPELLMAN For JD Spellman
00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 22N12F

Date: 11/12/96

Time: 20:00:05

Sample Size = 1 uL

Analyst : JD SPELLMAN

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = .75 ug/minute C

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	4.60	89.13
3	1.50	75.80	93.93
4	2.00	227.10	66.62
5	2.51	389.10	41.63
6	3.00	504.90	22.94
7	3.50	565.10	10.65
8	4.00	590.80	4.35
9	4.50	601.60	1.80
10	5.00	605.90	0.71
11	5.50	607.60	0.28
12	6.00	608.60	0.16
13	6.50	609.40	0.13
14	7.00	609.90	0.08
15	7.50	610.40	0.08
16	8.00	610.90	0.08
17	8.50	611.50	0.10
18	9.00	612.00	0.08
19	9.50	612.40	0.07
20	10.00	612.80	0.07
21	10.50	613.30	0.08
22	11.00	613.70	0.07

USER INPUT BLANK VALUE

BLANK VALUE = 8.249084 micrograms carbon

BLANK FACTOR = 8.249084 / 10.99878 = +7.5E-01 ug/min Carbon

SAMPLE RESULTS:

(613.7 - 8.248444) (1) / (1) =

+6.055E+02 g/L Carbon

(613.7 - 8.248444) (1) / (1) (12) =

+5.045E+01 Molar Carbon

Sample Run By:

JD SPELLMAN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK

Date: 11/12/96

Time: 20:29:12

Sample Size = 1 uL

Analyst : JD SPELLMAN

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = .75 ug/minute C

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.70	0.00
2	1.01	1.20	41.67
3	1.51	1.70	29.41
4	2.00	2.10	19.05
5	2.50	2.50	16.00
6	3.00	3.00	16.67
7	3.50	3.40	11.76
8	4.00	3.80	10.53
9	4.50	4.10	7.32
10	5.00	4.50	8.89
11	5.50	4.90	8.16
12	6.00	5.30	7.55
13	6.50	5.70	7.02
14	7.00	6.00	5.00
15	7.50	6.40	6.25
16	8.00	6.70	4.48
17	8.50	7.10	5.63
18	9.00	7.40	4.05
19	9.50	7.80	5.13
20	10.00	8.20	4.88
21	10.50	8.50	3.53
22	11.00	8.80	3.41

USER INPUT BLANK VALUE

BLANK VALUE = 8.249084 micrograms carbon

BLANK FACTOR = 8.249084 / 10.99878 = +7.5E-01 ug/min Carbon

SAMPLE RESULTS:

(8.8 - 8.249084) (1)/(1) =

+5.5E-01 g/L Carbon

(8.8 - 8.249084) (1)/(1) (12) =

+4.6E-02 Molar Carbon

Sample Run By:

JD SPELLMAN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

500

Sample: S96T005665

Date: 11/12/96

Time: 22:31:58

Sample Size = 1 uL

Analyst : JD SPELLMAN

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = .75 ug/minute C

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	2.40	91.67
3	1.51	15.60	84.62
4	2.01	37.20	58.06
5	2.51	59.70	37.69
6	3.01	79.80	25.19
7	3.51	96.90	17.65
8	4.01	111.20	12.86
9	4.50	123.50	9.96
10	5.00	133.80	7.70
11	5.50	143.00	6.43
12	6.00	150.70	5.11
13	6.50	157.70	4.44
14	7.00	163.80	3.72
15	7.50	169.20	3.19
16	8.00	174.40	2.98
17	8.50	179.00	2.57
18	9.00	183.10	2.24
19	9.50	187.10	2.14
20	10.00	190.70	1.89
21	10.50	194.40	1.90
22	11.00	197.80	1.72

USER INPUT BLANK VALUE

BLANK VALUE = 8.249084 micrograms carbon

BLANK FACTOR = 8.249084 / 10.99878 = +7.5E-01 ug/min Carbon

SAMPLE RESULTS:

(197.8 - 8.251923) (1) / (1) =

+1.895E+02 g/L Carbon

(197.8 - 8.251923) (1) / (1) (12) =

+1.580E+01 Molar Carbon

Sample Run By:

JD SPELLMAN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
 TICTOC REV 2.0

500m/

Sample: S96T005665TRP Date: 11/12/96 Time: 23:46:24

Sample Size = 1 uL Analyst : JD SPELLMAN
 Dil Factor = 1 Min Readings = 22
 Blank ID # = Max Readings = 22
 Blank Value = .75 ug/minute C % Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.90	0.00
2	1.01	3.20	71.88
3	1.51	16.60	80.72
4	2.01	44.10	62.36
5	2.51	71.10	37.97
6	3.01	92.70	23.30
7	3.51	109.20	15.11
8	4.00	121.90	10.42
9	4.50	133.50	8.69
10	5.00	142.90	6.58
11	5.50	150.90	5.30
12	6.00	158.60	4.85
13	6.50	164.80	3.76
14	7.00	170.80	3.51
15	7.50	176.30	3.12
16	8.00	181.30	2.76
17	8.50	186.00	2.53
18	9.00	187.30	0.69
19	9.50	190.10	1.47
20	10.00	194.00	2.01
21	10.50	194.00	0.00
22	11.00	197.00	1.52

USER INPUT BLANK VALUE

BLANK VALUE = 8.249084 micrograms carbon

BLANK FACTOR = 8.249084 / 10.99878 = +7.5E-01 ug/min Carbon

SAMPLE RESULTS:

(197 - 8.249817) (1)/(1) = +1.888E+02 g/L Carbon
 (197 - 8.249817) (1)/(1) (12) = +1.573E+01 Molar Carbon

Sample Run By:

JD SPELLMAN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

750ml

Sample: S96T005666

Date: 11/13/96

Time: 01:23:13

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .75 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==

1	0.51	2.50	0.00
2	1.01	31.70	92.11
3	1.51	72.00	55.97
4	2.00	97.40	26.08
5	2.50	108.90	10.56
6	3.00	113.60	4.14
7	3.50	117.10	2.99
8	4.00	119.20	1.76
9	4.50	121.80	2.13
10	5.00	123.70	1.54
11	5.50	126.00	1.83
12	6.00	127.90	1.49
13	6.50	129.90	1.54
14	7.00	131.30	1.07
15	7.50	133.00	1.28
16	8.00	134.00	0.75
17	8.50	135.60	1.18
18	9.00	136.50	0.66
19	9.50	137.80	0.94
20	10.00	138.70	0.65
21	10.50	140.00	0.93
22	11.00	140.60	0.43

USER INPUT BLANK VALUE

BLANK VALUE = 8.248444 micrograms carbon

BLANK FACTOR = 8.248444 / 10.99792 = +7.5E-01 ug/min Carbon

SAMPLE RESULTS:

(140.6 - 8.247803) (1)/(1) = +1.324E+02 g/L Carbon
(140.6 - 8.247803) (1)/(1) (12) = +1.103E+01 Molar Carbon

Sample Run By:

JD SPELLMAN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

750ml

Sample: S96T005666DUP

Date: 11/13/96

Time: 01:37:59

Sample Size = 1 uL

Analyst : JD SPELLMAN

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = .75 ug/minute C

% Difference = 10

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==

1	0.51	0.00	0.00
2	1.01	19.60	100.00
3	1.51	63.90	69.33
4	2.01	95.80	33.30
5	2.50	110.60	13.38
6	3.00	117.50	5.87
7	3.50	121.00	2.89
8	4.00	123.60	2.10
9	4.50	125.90	1.83
10	5.00	128.10	1.72
11	5.50	129.90	1.39
12	6.00	131.70	1.37
13	6.50	133.30	1.20
14	7.00	135.10	1.33
15	7.50	136.30	0.88
16	8.00	137.50	0.87
17	8.50	138.70	0.87
18	9.00	140.00	0.93
19	9.50	140.90	0.64
20	10.00	141.80	0.63
21	10.50	143.10	0.91
22	11.00	143.80	0.49

USER INPUT BLANK VALUE

BLANK VALUE = 8.248444 micrograms carbon

BLANK FACTOR = 8.248444 / 10.99792 = +7.5E-01 ug/min Carbon

SAMPLE RESULTS:

(143.8 - 8.249119) (1) / (1) = +1.356E+02 g/L Carbon
 (143.8 - 8.249119) (1) / (1) (12) = +1.130E+01 Molar Carbon

Sample Run By:

JD SPELLMAN

00000

NF-SD-WM-DP-224, REV. 11

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

.750 uL + .500 TICSPK 22N12F

Sample: S96T005666SPK

Date: 11/13/96

Time: 01:51:15

Sample Size = 1 uL

Analyst : JD SPELLMAN

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = .75 ug/minute C

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
 1          0.51          0.90          0.00
 2          1.01          57.40         98.43
 3          1.51         210.10        72.68
 4          2.01         327.00        35.75
 5          2.51         384.00        14.84
 6          3.00         408.70         6.04
 7          3.50         419.20         2.50
 8          4.00         425.40         1.46
 9          4.50         430.00         1.07
10          5.00         434.80         1.10
11          5.50         438.30         0.80
12          6.00         442.00         0.84
13          6.50         444.80         0.63
14          7.00         448.10         0.74
15          7.50         450.30         0.49
16          8.00         452.60         0.51
17          8.50         454.70         0.46
18          9.00         456.90         0.48
19          9.50         458.50         0.35
20         10.00         459.90         0.30
21         10.50         461.60         0.37
22         11.00         463.30         0.37

```

USER INPUT BLANK VALUE

BLANK VALUE = 8.248444 micrograms carbon

BLANK FACTOR = 8.248444 / 10.99792 = +7.5E-01 ug/min Carbon

SAMPLE RESULTS:

```

( 463.3 - 8.249119 ) (1)/(1) = +4.551E+02 g/L Carbon
( 463.3 - 8.249119 ) (1)/(1) (12) = +3.792E+01 Molar Carbon

```

Sample Run By:

JD SPELLMAN

00000

Ran too small
of a sample size
so I needed
Trip

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

HNF-SD-WM-DP-224, REV. 0

Sample: S96T005665DUP

Date: 11/12/96

Time: 23:30:03

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .75 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==

1	0.51	0.40	0.00
2	1.01	8.30	95.18
3	1.51	26.60	68.80
4	2.00	42.80	37.85
5	2.50	52.60	18.63
6	3.01	59.00	10.85
7	3.50	61.60	4.22
8	4.00	63.30	2.69
9	4.50	64.80	2.31
10	5.00	66.20	2.11
11	5.50	67.40	1.78
12	6.00	68.40	1.46
13	6.50	69.50	1.58
14	7.00	70.70	1.70
15	7.50	71.50	1.12
16	8.00	72.50	1.38
17	8.50	73.50	1.36
18	9.00	74.20	0.94
19	9.50	75.10	1.20
20	10.00	75.80	0.92
21	10.50	76.70	1.17
22	11.00	77.50	1.03

USER INPUT BLANK VALUE

BLANK VALUE = 8.248444 micrograms carbon

BLANK FACTOR = 8.248444 / 10.99792 = +7.5E-01 ug/min Carbon

SAMPLE RESULTS:

(77.5 - 8.249725) (1) / (1) = +6.93E+01 g/L Carbon
 (77.5 - 8.249725) (1) / (1) (12) = +5.77E+00 Molar Carbon

Sample Run By:

JD SPELLMAN

00000

Extra data.
139

This data not reported due to obvious shortcircuiting.
 RW Schmitt 11/14/96

TIC/TOC : LA-342-100 (E-0)

LIQUIDS

		TIC	TOC
	Sample Size in mL (SS)	1.0000	
BLANK	Dilution Factor (DF)	1	1
	µg of Carbon in Sample (C1)	8.8	
14755	µg of Carbon from Baseline (C2)	8.2	
LIQUID			
	µg of Carbon = C1-C2		
BLNK			
CARB2			
GJH			
RWS			
JDS			
11/13/96			
11/13/96			
	Method Detection Limit in µg/mL	5	40
01:51 AM			
	µg of Carbon	6.00E-01	
244-TX GRAB			

Data Entered By: <i>[Signature]</i>	GJH	Date: 11/13/96
Signature of Chemist: <i>[Signature]</i>		Date: 11/14/96

BLANK.WB1 REV 1.0

342100ML

140

TIC/TOC : LA-342-100 (E-0)

LIQUIDS

		TIC	TOC
	Sample Size in mL (SS)	1.0000	
STANDARD	Dilution Factor (DF)	1	1
	Final Coulometer Reading in μg (C1)	613.7	
14755	μg of Carbon from Baseline (C2)	8.2	
	Standard Book Number	22N12F	
	Standard Value ($\mu\text{g}/\text{mL}$)	602	

LIQUID

STD

CARB2

GJH

RWS

JDS

11/13/96

11/13/96

01:51 AM

244-TX GRAB

QC Actual in $\mu\text{g}/\text{mL}$ = Standard Value ($\mu\text{g}/\text{mL}$)

QC Found in $\mu\text{g}/\text{mL}$ = (C1 - C2) * DF / SS

QC Found in $\mu\text{g}/\text{mL}$ for TIC = 5 if C1 < C2

QC Found in $\mu\text{g}/\text{mL}$ for TOC = 40 if C1 < C2

% Recovery = QC Found / QC Actual * 100

NOTE: FOR TOC: The Reported Result is < 40.

		TIC	TOC
	Method Detection Limit in $\mu\text{g}/\text{mL}$	5	40
	QC Actual in $\mu\text{g}/\text{mL}$	6.02E+02	
	QC Found in $\mu\text{g}/\text{mL}$ See Note: <	6.06E+02	
	Percent Standard Recovery	100.6	

Data Entered By: <i>Dan L...</i>	GJH	Date: 11/13/96
Signature of Chemist: <i>Dan L...</i>		Date: 11/14/96

STANDARD.WB1 REV 1.0

342100ML

141

TIC/TOC : LA-342-100 (E-0)

LIQUIDS

		TIC	TOC
SAMPLE	Sample Size in mL (SS)	0.5000	
	Dilution Factor (DF)		
	µg of Carbon in Sample (C1)	197.8	
14755	µg of Carbon from Baseline (C2)	8.2	

LIQUID

$\mu\text{g of Carbon/mL} = (C1 - C2) * DF / SS$
 $\mu\text{g of Carbon/mL for TIC} = 5 \text{ if } C1 < C2$
 $\mu\text{g of Carbon/mL for TOC} = 40 \text{ if } C1 < C2$

S96T005665

CARB2

GJH

RWS

JDS

11/13/96

NOTE: FOR TOC: The Reported Result is < 40.

11/13/96

Method Detection Limit in µg/mL

TIC

TOC

5

40

01:51 AM

µg of Carbon/mL

Note:

<

3.79E+02

244-TX GRAB

Data Entered By:

GJH

Date: 11/13/96

Signature of Chemist:

Date: 11/14/96

SAMPLE.WB1 REV 1.0

342100ML

142

TIC/TOC : LA-342-100 (E-0)

LIQUIDS

		TIC	TOC
DUP	Sample Size in mL (SS)	0.5000	
	Dilution Factor (DF)		
14755	µg of Carbon in Sample (C1)	197	
	µg of Carbon from Baseline (C2)	8.2	
	Known µg of C from Original Sample		

LIQUID

$\mu\text{g of Carbon/mL} = (C1 - C2) * DF / SS$
 $\mu\text{g of Carbon/mL for TIC} = 5 \text{ if } C1 < C2$
 $\mu\text{g of Carbon/mL for TOC} = 40 \text{ if } C1 < C2$

S96T005665

CARB2

GJH

RWS

JDS

11/13/96

NOTE: FOR TOC: The Reported Result is < 40.

11/13/96

Method Detection Limit in µg/mL

TIC

TOC

5

40

01:51 AM

µg of Carbon/mL

Note:

<

3.78E+02

244-TX GRAB

Data Entered By:

GJH

Date: 11/13/96

Signature of Chemist:

Date: 11/14/96

DUP.WB1 REV 1.0

342100ML

143

TIC/TOC : LA-342-100 (E-0)

LIQUIDS

		TIC	TOC
SAMPLE	Sample Size in mL (SS)	0.7500	
	Dilution Factor (DF)		1
	µg of Carbon in Sample (C1)	140.6	
14755	µg of Carbon from Baseline (C2)	8.2	

LIQUID
S96T005666
CARB2
GJH
RWS
JDS
11/13/96
11/13/96
01:51 AM
244-TX GRAB

$\mu\text{g of Carbon/mL} = (C1 - C2) * DF / SS$
 $\mu\text{g of Carbon/mL for TIC} = 5 \text{ if } C1 < C2$
 $\mu\text{g of Carbon/mL for TOC} = 40 \text{ if } C1 < C2$

NOTE: FOR TOC: The Reported Result is < 40.

	TIC	TOC
Method Detection Limit in µg/mL	5	40
µg of Carbon/mL Note: <	1.77E+02	

Data Entered By: <i>Dan Hammett</i>	GJH	Date: 11/13/96
Signature of Chemist: <i>RWS</i>		Date: 11/14/96

SAMPLE.WB1 REV 1.0

342100ML

144

I:\342100\14755.WB1

13-Nov-96 03:34:08 AM

TIC/TOC : LA-342-100 (E-0)

LIQUIDS

		TIC	TOC
DUP	Sample Size in mL (SS)	0.7500	
	Dilution Factor (DF)		
14755	µg of Carbon in Sample (C1)	143.8	
	µg of Carbon from Baseline (C2)	8.2	
	Known µg of C from Original Sample		

LIQUID

$\mu\text{g of Carbon/mL} = (C1 - C2) * DF / SS$
 $\mu\text{g of Carbon/mL for TIC} = 5 \text{ if } C1 < C2$
 $\mu\text{g of Carbon/mL for TOC} = 40 \text{ if } C1 < C2$

S96T005666

CARB2

GJH

RWS

JDS

11/13/96

NOTE: FOR TOC: The Reported Result is < 40.

11/13/96

Method Detection Limit in µg/mL

TIC

TOC

5

40

01:51 AM

µg of Carbon/mL

Note:

<

1.81E+02

244-TX GRAB

Data Entered By:

GJH

Date: 11/13/96

Signature of Chemist:

Date: 11/14/96

DUP.WB1 REV 1.0

342100ML

145

I:\342100\14755.WB1

13-Nov-96 03:36:37 AM

TIC/TOC : LA-342-100 (E-0)

LIQUIDS/SOLIDS

Sample Vial Data		TIC	TOC
SPIKE	Sample Volume in mL (SS)	0.7500	
	Final Coulometer Reading in μg (C1)	140.6	
14755	Spiked Vial Data		
	Sample Volume in mL (SPK SS)	0.7500	
	Amount of Spike Std. in mL (SPK VOL)	0.500	
	Final Coulometer Reading in μg (C2)	463.3	
	Spike Book Number	22N12F	
	Spike Standard Value in $\mu\text{g/ml}$ (SPK CONC)	602	

$$\text{Percent Spike Recovery} = (C2 - C1 * (\text{SPK SS}) / \text{SS}) / ((\text{SPK CONC}) * (\text{SPK VOL})) * 100$$

S96TOO5666

$$\text{QC Actual in } \mu\text{g/mL} = \text{Spike Value } (\mu\text{g/mL})$$

CARB2

$$\text{QC Found in } \mu\text{g/mL} = (\text{Percent Spike Recovery}) * (\text{QC Actual}) / 100$$

GJH

RWS

JDS

11/13/96

11/13/96

		TIC	TOC
01:51 AM	QC Actual in $\mu\text{g/mL}$	6.02E+02	
	QC Found in $\mu\text{g/mL}$	6.45E+02	
244-TX GRAB	Percent Spike Recovery	107.2	

Data Entered By: <i>[Signature]</i>	GJH	Date: 11/13/96
Signature of Chemist: <i>[Signature]</i>		Date: 11/14/96

SPIKE.WB1 REV 1.1

342100ML

146

RADIOCHEMICAL ANALYSIS

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LABCORE Completed RadChem Report for Worklist#: 14450

Analyst: scl Instrument: GEA02 Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: TX-244 GEA. RCJ

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	0	0GEA-01 C060-02	LIQUID	7.842e-03	7.80e-03	99.464	% Recovery
1 STD	0	0	0GEA-01 C060-02E	LIQUID	1	2.52	2.520	% Ct Error
1 STD	0	0	0GEA-01 CS13702	LIQUID	7.698e-03	7.54e-03	97.948	% Recovery
1 STD	0	0	0GEA-01 CS13702E	LIQUID	1	3.58	3.580	% Ct Error
2 BLNK	0	0	0GEA-01 C060-02	LIQUID	1	<3.20e-5		uCi/mL
2 BLNK	0	0	0GEA-01 CS13702	LIQUID	1	<7.00e-5		uCi/mL
3 SAMPLE	S96T005663	0	0GEA-01 C060-02	LIQUID	N/A	3.661e-05	366.1e-007	uCi/mL
3 SAMPLE	S96T005663	0	0GEA-01 C060-02E	LIQUID	N/A	n/a	0.0e+000	% Ct. Error
3 SAMPLE	S96T005663	0	0GEA-01 CS13702	LIQUID	N/A	3.560e-02	0.0e+000	uCi/mL
3 SAMPLE	S96T005663	0	0GEA-01 CS13702E	LIQUID	N/A	1.28	0.0e+000	% Ct. Error
4 DUP	S96T005663	0	0GEA-01 C060-02	LIQUID	<3.66e-5	<4.26e-5		RPD
4 DUP	S96T005663	0	0GEA-01 C060-02E	LIQUID	1	n/a		% Ct Error
4 DUP	S96T005663	0	0GEA-01 CS13702	LIQUID	3.56e-02	3.59e-02	0.839	RPD
4 DUP	S96T005663	0	0GEA-01 CS13702E	LIQUID	1	1.28	1.280	% Ct Error
5 SAMPLE	S96T005665	0	0GEA-01 C060-02	LIQUID	N/A	4.053e-05	405.3e-007	uCi/mL
5 SAMPLE	S96T005665	0	0GEA-01 C060-02E	LIQUID	N/A	n/a	0.0e+000	% Ct. Error
5 SAMPLE	S96T005665	0	0GEA-01 CS13702	LIQUID	N/A	3.560e-02	0.0e+000	uCi/mL
5 SAMPLE	S96T005665	0	0GEA-01 CS13702E	LIQUID	N/A	1.29	0.0e+000	% Ct. Error
6 DUP	S96T005665	0	0GEA-01 C060-02	LIQUID	<4.05e-5	<4.53e-5		RPD
6 DUP	S96T005665	0	0GEA-01 C060-02E	LIQUID	1	n/a		% Ct Error
6 DUP	S96T005665	0	0GEA-01 CS13702	LIQUID	3.56e-02	3.57e-02	0.281	RPD
6 DUP	S96T005665	0	0GEA-01 CS13702E	LIQUID	1	1.29	1.290	% Ct Error
7 SAMPLE	S96T005666	0	0GEA-01 C060-02	LIQUID	N/A	2.926e-05	292.6e-007	uCi/mL
7 SAMPLE	S96T005666	0	0GEA-01 C060-02E	LIQUID	N/A	n/a	0.0e+000	% Ct. Error
7 SAMPLE	S96T005666	0	0GEA-01 CS13702	LIQUID	N/A	3.610e-02	0.0e+000	uCi/mL
7 SAMPLE	S96T005666	0	0GEA-01 CS13702E	LIQUID	N/A	1.28	0.0e+000	% Ct. Error
8 DUP	S96T005666	0	0GEA-01 C060-02	LIQUID	<2.93e-5	<3.37e-5		RPD
8 DUP	S96T005666	0	0GEA-01 C060-02E	LIQUID	1	n/a		% Ct Error
8 DUP	S96T005666	0	0GEA-01 CS13702	LIQUID	3.61e-02	3.49e-02	3.380	RPD
8 DUP	S96T005666	0	0GEA-01 CS13702E	LIQUID	1	1.30	1.300	% Ct Error

Comments Section:

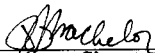
Comments for sample# S96T005663 and test @GEA-01 .
DL=0 => n/a.

Comments for sample# S96T005665 and test @GEA-01 .
DL=0 => n/a.

Comments for sample# S96T005666 and test @GEA-01 .

LABCORE Completed RadChem Report for Worklist#: 14450

Seq	Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
DL=0 => n/a.									

Final page for worklist# 14450_____
Analyst Signature_____
Date_____
Analyst Signature_____
Date

Reviewer Signature12/5/96

Date

LABCORE Data Entry Template for Worklist# 14450

Analyst: S.L Instrument: GEA00 #2 Book# 62856

Method: LA-548-121 Rev/Mod E-0

Worklist Comment: TX-244 GEA. RCJ

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@GEA-01	LIQUID		
2 BLNK			@GEA-01	LIQUID		
3 SAMPLE	S96T005663 0		@GEA-01	LIQUID	96001429	244-TX GRAB
Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
4 DUP	S96T005663 0		@GEA-01	LIQUID		
5 SAMPLE	S96T005665 0		@GEA-01	LIQUID	96001429	244-TX GRAB
Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
6 DUP	S96T005665 0		@GEA-01	LIQUID		
7 SAMPLE	S96T005666 0		@GEA-01	LIQUID	96001429	244-TX GRAB
Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
8 DUP	S96T005666 0		@GEA-01	LIQUID		

Final page for worklist # 14450

Sue Yan 12-3-96
Analyst Signature Date

M. B. Brown 12/14/96
Analyst Signature Date

Data Entry Comments:

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

R

88 Rachel 12/4/96

152

Sample ID : WL14450-STD

Acquisition date : 3-DEC-1996 17:12:17

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	1332.06	3594	1.94	2664.27	2655	19	3.5		CO-60	7.82
0	1396.66	23	0.78	2793.52	2790	9	71.8			
0	1407.65*	162	1.87	2815.52	2809	14	18.1		EU-152	1.77
0	1493.09	47	2.19	2986.47	2979	17	40.8			
0	1596.20	88	1.56	3192.81	3185	17	30.1			

Total number of lines in spectrum 25
Number of unidentified lines 6
Number of lines tentatively identified by NID 19 76.00%

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
GO-57	271.80D	1.000	1.277E+02	1.277E+02	0.561E+02	43.93	Manually edited
CO-60	5.27Y	1.000	7.802E+00	7.802E+00	0.197E+00	2.52	
CS-137	30.00Y	1.000	7.536E+00	7.536E+00	0.270E+00	3.58	
EU-152	13.54Y	1.000	1.848E+00	1.848E+00	0.198E+00	10.74	
EU-154	8.59Y	1.000	1.207E+01	1.207E+01	0.037E+01	3.08	
Total Activity :			1.570E+02	1.570E+02			

Grand Total Activity : 1.570E+02 1.570E+02

Flags: "K" = Keyline not found
"E" = Manually edited

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

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	579.	477.59	9.7643E-01
NA-22	2107.	1274.53	4.4809E-01
NA-24	22.	1368.55	4.9062E-02
K-40	104.	1460.75	1.0382E+00
CR-51	619.	320.08	7.5299E-01
MN-54	361.	834.83	1.2726E-01
CO-56	399.	846.76	1.3547E-01
CO-58	352.	810.78	1.2323E-01
FE-59	277.	1099.25	2.5327E-01
SE-75	739.	264.66	1.2416E-01
SR-85	500.	514.01	1.0422E-01
Y-88	7.	1836.06	3.4853E-02
NB-94	1121.	871.09	2.3256E-01
ZRNB-95	2112.	724.18	6.2436E-01
RU-103	483.	497.08	1.0504E-01
RURH-106	399.	621.93	2.1031E+00
AG-108m	2167.	722.94	3.0391E-01
CD-109	1301.	88.03	2.7692E+00
AG-110M	597.	657.76	1.4135E-01
SN-113	574.	391.69	1.3184E-01
TE-123m	785.	159.00	6.2694E-02
SB-124	403.	602.73	1.0459E-01
SB-125	528.	427.89	2.9685E-01
TE-125m	1191.	109.27	2.5578E+01
I-131	599.	364.48	1.0089E-01
CS-134	390.	604.70	1.0338E-01
BA-140	430.	537.31	3.9464E-01
LA-140	98.	1596.21	1.2194E-01
CEPR-144	824.	133.51	9.5934E-01
EU-155	1272.	105.31	3.5508E-01
HG-203	694.	279.20	8.9539E-02
TL-208	662.	277.36	1.1233E+00
BI-212	360.	727.18	1.6992E+00
PB-212	848.	238.63	1.6619E-01
BI-214	407.	609.31	2.3128E-01
PB-214	576.	351.92	3.9006E-01
RA-224	778.	240.99	1.7668E+00
RA-226	826.	186.10	1.6767E+00
AC-228	356.	911.21	5.1162E-01
TH-228	1248.	84.37	8.3268E+00
TH-229	1272.	88.47	3.9696E-01
PA-233	621.	312.17	1.9336E-01
UTH-233	1306.	245.34	8.5715E+01
PA-234M	580.	1001.03	3.2151E-01
TH-234	760.	63.29	3.7859E+00
U-235	806.	185.71	1.0069E-01
NP-237	1387.	86.48	8.5808E-01
NP-239	1274.	106.12	3.3717E-01
PU-239	790.	129.30	8.2074E+02
AM-241	748.	59.54	5.9782E-01
AM-243	897.	74.67	1.9190E-01

```

*****
* 222-S Laboratory Counting Room      3-DEC-1996 19:32:51.36
*****
>>>>>>>> SAMPLE INFORMATION <<<<<<<<<
Worklist #:          14450
Sample ID:           WL14450-BLK
Sample Size:         1.00000E-03 L
Dilution Factor:    1.00000E+00
HNF-SD-WM-DP-224, REV. 0
Removed by:
R

>>>>>>>> COUNT INFORMATION <<<<<<<<<
Detector ID:         GEA2
File Number:         dka300:[spec.GEA2]2g2066.cnf
Geometry:            42
Count Time:          0 00:50:00.00 sec
Real Time:           0 00:50:00.45 sec
Dead Time:           0.0%
Verified by:
B. Rachelor 12/4/96

>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<
Sample Count Time:   3-DEC-1996 18:42:10.10
Decayed to:          3-DEC-1996 18:42:10.10
Standard Deviations: 2
Analysis Library:     ENVGEA
Analyst:              VR
Background Subtract: DKA300:[SPEC.GEA2]2GBACK

>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<
Date of last energy calibration: 21-MAR-1994 09:31:55.15
Date of last efficiency calibration: 21-MAR-1994 09:43:42.61
*****

Post-NID Peak Search Report
***** No peaks found *****

```

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found
"E" = Manually edited

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

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	35.	477.59	2.3851E-01
NA-22	11.	1274.53	3.2310E-02
NA-24	5.	1368.55	2.2437E-02
K-40	103.	1460.75	1.0365E+00
CR-51	34.	320.08	1.7689E-01
MN-54	14.	834.83	2.4751E-02
CO-56	16.	846.76	2.7128E-02
CO-57	65.	122.06	1.7974E-02
CO-58	12.	810.78	2.2651E-02
FE-59	12.	1099.25	5.3471E-02
CO-60	10.	1332.50	3.1996E-02
SE-75	60.	264.66	3.5357E-02
SR-85	48.	514.01	3.2250E-02
Y-88	2.	1836.06	1.7014E-02
NB-94	15.	871.09	2.6823E-02
ZRNB-95	24.	724.18	6.6027E-02
RU-103	19.	497.08	2.1094E-02
RURH-106	22.	621.93	4.9408E-01
AG-108m	18.	722.94	2.7636E-02
CD-109	69.	88.03	6.3871E-01
AG-110M	23.	657.76	2.7728E-02
SN-113	36.	391.69	3.2813E-02
TE-123m	67.	159.00	1.8292E-02
SB-124	26.	602.73	2.6703E-02
SB-125	43.	427.89	8.5094E-02
TE-125m	59.	109.27	5.7020E+00
I-131	38.	364.48	2.5477E-02
CS-134	27.	604.70	2.7293E-02
CS-137	118.	661.66	7.0005E-02
BA-140	31.	537.31	1.0561E-01
LA-140	5.	1596.21	2.6757E-02
CEPR-144	79.	133.51	2.9743E-01
EU-152	7.	1408.01	1.3401E-01
EU-154	11.	1274.51	9.4043E-02
EU-155	70.	105.31	8.3519E-02
HG-203	56.	279.20	2.5420E-02
TL-208	62.	277.36	3.4509E-01
BI-212	26.	727.18	4.5251E-01
PB-212	78.	238.63	5.0423E-02
BI-214	39.	609.31	7.1462E-02
PB-214	68.	351.92	1.3374E-01
RA-224	75.	240.99	5.4870E-01
RA-226	86.	186.10	5.4020E-01
AC-228	24.	911.21	1.3408E-01
TH-228	85.	84.37	2.1710E+00
TH-229	75.	88.47	9.6352E-02
PA-233	65.	312.17	6.2492E-02
UTH-233	62.	245.34	1.8650E+01
PA-234M	18.	1001.03	5.7109E-02
TH-234	63.	63.29	1.0872E+00
U-235	88.	185.71	3.3243E-02

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-237	63.	86.48	1.8308E-01
NP-239	70.	106.12	7.9047E-02
PU-239	67.	129.30	2.3904E+02
AM-241	66.	59.54	1.7793E-01
AM-243	66.	74.67	5.1989E-02

 * 222-S Laboratory Counting Room 3-DEC-1996 20:26:39.12 *

>>>>>>> SAMPLE INFORMATION <<<<<<<<<

Worklist #: 14450
 Sample ID: S96T5663-SAM
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.00000E+00

Removed by:

R

>>>>>>> COUNT INFORMATION <<<<<<<<<

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2067.cnf
 Geometry: 42
 Count Time: 0 00:50:00.00 sec
 Real Time: 0 00:50:03.86 sec
 Dead Time: 0.1%

Verified by:

S. Rachel 12/4/96

>>>>>>> ANALYSIS INFORMATION <<<<<<<<<

Sample Count Time: 3-DEC-1996 19:35:56.57
 Decayed to: 3-DEC-1996 19:35:56.57
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: VR
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

>>>>>>> CALIBRATION INFORMATION <<<<<<<<<

Date of last energy calibration: 21-MAR-1994 09:31:55.15
 Date of last efficiency calibration: 21-MAR-1994 09:43:42.61

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.39*	25656	1.53	1322.81	1314	17	1.3		CS-137	35.6
0	1460.40*	10	2.56	2921.07	2911	21227.2			K-40	0.214

Total number of lines in spectrum 2
Number of unidentified lines 0
Number of lines tentatively identified by NID 2 100.00%

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
K-40	1.28E+09Y	1.000	2.145E-01	2.145E-01	4.873E-01	227.19	1.28
CS-137	30.00Y	1.000	3.560E+01	3.560E+01	0.046E+01	1.28	
Total Activity :			3.582E+01	3.582E+01			

Grand Total Activity : 3.582E+01 3.582E+01

Flags: "K" = Keyline not found
"E" = Manually edited

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

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	781.	477.59	1.1339E+00
NA-22	5.	1274.53	2.2387E-02
NA-24	11.	1368.55	3.4196E-02
CR-51	678.	320.08	7.8807E-01
MN-54	15.	834.83	2.6046E-02
CO-56	12.	846.76	2.3498E-02
CO-57	821.	122.06	6.4087E-02
CO-58	11.	810.78	2.1656E-02
FE-59	9.	1099.25	4.5054E-02
CO-60	13.	1332.50	3.6614E-02
SE-75	791.	264.66	1.2848E-01
SR-85	451.	514.01	9.8973E-02
Y-88	2.	1836.06	1.8630E-02
NB-94	19.	871.09	3.0381E-02
ZRNB-95	19.	724.18	5.9396E-02
RU-103	545.	497.08	1.1150E-01
RURH-106	191.	621.93	1.4553E+00
AG-108m	21.	722.94	2.9795E-02
CD-109	735.	88.03	2.0818E+00
AG-110M	1083.	657.76	1.9031E-01
SN-113	766.	391.69	1.5226E-01
TE-123m	847.	159.00	6.5104E-02
SB-124	192.	602.73	7.2087E-02
SB-125	906.	427.89	3.8871E-01
TE-125m	811.	109.27	2.1103E+01
I-131	703.	364.48	1.0926E-01
CS-134	183.	604.70	7.0740E-02
BA-140	329.	537.31	3.4515E-01
LA-140	4.	1596.21	2.3744E-02
CEPR-144	863.	133.51	9.8189E-01
EU-152	10.	1408.01	1.6018E-01
EU-154	5.	1274.51	6.5039E-02
EU-155	793.	105.31	2.8026E-01
HG-203	729.	279.20	9.1794E-02
TL-208	781.	277.36	1.2203E+00
BI-212	21.	727.18	4.1438E-01
PB-212	919.	238.63	1.7299E-01
BI-214	208.	609.31	1.6524E-01
PB-214	726.	351.92	4.3798E-01
RA-224	946.	240.99	1.9483E+00
RA-226	1101.	186.10	1.9353E+00
AC-228	23.	911.21	1.3071E-01
TH-228	739.	84.37	6.4080E+00
TH-229	738.	88.47	3.0236E-01
PA-233	695.	312.17	2.0453E-01
UTH-233	886.	245.34	7.0630E+01
PA-234M	12.	1001.03	4.6211E-02
TH-234	679.	63.29	3.5773E+00
U-235	1081.	185.71	1.1657E-01
NP-237	760.	86.48	6.3524E-01
NP-239	793.	106.12	2.6600E-01

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PU-239	873.	129.30	8.6253E+02
AM-241	723.	59.54	5.8784E-01
AM-243	688.	74.67	1.6809E-01

>>>>>>> SAMPLE INFORMATION <<<<<<<<<

Worklist #: 14450
 Sample ID: S96T5663-DUP
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.00000E+00

HNF-SD-WM-DP-224, REV 1

Removed by:

R

>>>>>>> COUNT INFORMATION <<<<<<<<<

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2068.cnf
 Geometry: 42
 Count Time: 0 00:50:00.00 sec
 Real Time: 0 00:50:03.87 sec
 Dead Time: 0.1%

Verified by:

Q. Machelon 12/4/96

>>>>>>> ANALYSIS INFORMATION <<<<<<<<<

Sample Count Time: 3-DEC-1996 20:28:47.75
 Decayed to: 3-DEC-1996 20:28:47.75
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: VR
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

>>>>>>> CALIBRATION INFORMATION <<<<<<<<<

Date of last energy calibration: 21-MAR-1994 09:31:55.15
 Date of last efficiency calibration: 21-MAR-1994 09:43:42.61

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.39*	25875	1.52	1322.79	1314	17	1.3		CS-137	35.9

Summary of Nuclide Activity
Sample ID : S96T5663-DUP

Page : 2
Acquisition date : 3-DEC-1996 20:28:47

Total number of lines in spectrum	1	HNF-SD-WM-DP-224, REV. 0
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	3.591E+01	3.591E+01	0.046E+01	1.28	
Total Activity :			3.591E+01	3.591E+01			

Grand Total Activity : 3.591E+01 3.591E+01

Flags: "K" = Keyline not found
"E" = Manually edited

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

Minimum Detectable Activity Report
Sample ID : S96T5663-DUP

Acquisition date : 3-DEC-1996 20:28:47

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	839.	477.59	1.1752E+00
NA-22	12.	1274.53	3.3130E-02
NA-24	10.	1368.55	3.3208E-02
K-40	100.	1460.75	1.0220E+00
CR-51	729.	320.08	8.1722E-01
MN-54	18.	834.83	2.8048E-02
CO-56	15.	846.76	2.6251E-02
CO-57	902.	122.06	6.7137E-02
CO-58	20.	810.78	2.9742E-02
FE-59	11.	1099.25	5.1565E-02
CO-60	18.	1332.50	4.2600E-02
SE-75	809.	264.66	1.2995E-01
SR-85	477.	514.01	1.0175E-01
Y-88	2.	1836.06	1.7014E-02
NB-94	11.	871.09	2.2729E-02
ZRNB-95	15.	724.18	5.3467E-02
RU-103	507.	497.08	1.0754E-01
RURH-106	191.	621.93	1.4564E+00
AG-108m	16.	722.94	2.5772E-02
CD-109	740.	88.03	2.0889E+00
AG-110M	1138.	657.76	1.9508E-01
SN-113	765.	391.69	1.5218E-01
TE-123m	809.	159.00	6.3632E-02
SB-124	192.	602.73	7.2169E-02
SB-125	860.	427.89	3.7876E-01
TE-125m	764.	109.27	2.0481E+01
I-131	718.	364.48	1.1047E-01
CS-134	195.	604.70	7.3033E-02
BA-140	310.	537.31	3.3545E-01
LA-140	3.	1596.21	2.1367E-02
CEPR-144	837.	133.51	9.6669E-01
EU-152	6.	1408.01	1.2407E-01
EU-154	12.	1274.51	9.6253E-02
EU-155	751.	105.31	2.7272E-01
HG-203	806.	279.20	9.6481E-02
TL-208	783.	277.36	1.2224E+00
BI-212	20.	727.18	3.9658E-01
PB-212	888.	238.63	1.7004E-01
BI-214	231.	609.31	1.7419E-01
PB-214	758.	351.92	4.4726E-01
RA-224	906.	240.99	1.9064E+00
RA-226	1084.	186.10	1.9205E+00
AC-228	25.	911.21	1.3623E-01
TH-228	750.	84.37	6.4574E+00
TH-229	760.	88.47	3.0678E-01
PA-233	732.	312.17	2.0992E-01
UTH-233	904.	245.34	7.1321E+01
PA-234M	19.	1001.03	5.8778E-02
TH-234	669.	63.29	3.5517E+00
U-235	1076.	185.71	1.1631E-01
NP-237	748.	86.48	6.3000E-01

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-239	746.	106.12	2.5798E-01
PU-239	827.	129.30	8.3951E+02
AM-241	712.	59.54	5.8327E-01
AM-243	789.	74.67	1.7996E-01

 * 222-S Laboratory Counting Room 3-DEC-1996 22:42:33.35 *

>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
 Worklist #: 14450
 Sample ID: S96T5665-SAM
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.00000E+00

INF-SD-WM-DP-224, REV 1

Removed by:

R

>>>>>>> COUNT INFORMATION <<<<<<<<<<
 Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2069.cnf
 Geometry: 42
 Count Time: 0 00:50:00.00 sec
 Real Time: 0 00:50:03.89 sec
 Dead Time: 0.1%

Verified by:

Rachelor 12/4/96

>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
 Sample Count Time: 3-DEC-1996 21:51:49.09
 Decayed to: 3-DEC-1996 21:51:49.09
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: VR
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration: 21-MAR-1994 09:31:55.15
 Date of last efficiency calibration: 21-MAR-1994 09:43:42.61

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.39*	25677	1.55	1322.81	1314	18	1.3		CS-137	35.6
0	1460.52*	16	1.56	2921.31	2915	151	63.5		K-40	0.343

Total number of lines in spectrum 2
Number of unidentified lines 0
Number of lines tentatively identified by NID 2 100.00%

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
K-40	1.28E+09Y	1.000	3.430E-01	3.430E-01	5.610E-01	163.53	100.00
CS-137	30.00Y	1.000	3.563E+01	3.563E+01	0.046E+01	1.29	
Total Activity :			3.598E+01	3.598E+01			

Grand Total Activity : 3.598E+01 3.598E+01

Flags: "K" = Keyline not found
"E" = Manually edited

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

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	857.	477.59	1.1878E+00
NA-22	10.	1274.53	3.1055E-02
NA-24	8.	1368.55	2.8921E-02
CR-51	717.	320.08	8.1009E-01
MN-54	22.	834.83	3.1393E-02
CO-56	12.	846.76	2.3507E-02
CO-57	901.	122.06	6.7110E-02
CO-58	21.	810.78	3.0011E-02
FE-59	11.	1099.25	5.1387E-02
CO-60	16.	1332.50	4.0532E-02
SE-75	808.	264.66	1.2982E-01
SR-85	448.	514.01	9.8617E-02
Y-88	3.	1836.06	2.2817E-02
NB-94	12.	871.09	2.3814E-02
ZRNB-95	20.	724.18	6.0975E-02
RU-103	534.	497.08	1.1040E-01
RURH-106	208.	621.93	1.5209E+00
AG-108m	21.	722.94	3.0091E-02
CD-109	707.	88.03	2.0408E+00
AG-110M	1121.	657.76	1.9363E-01
SN-113	735.	391.69	1.4924E-01
TE-123m	839.	159.00	6.4805E-02
SB-124	182.	602.73	7.0263E-02
SB-125	910.	427.89	3.8949E-01
TE-125m	805.	109.27	2.1028E+01
I-131	770.	364.48	1.1440E-01
CS-134	182.	604.70	7.0558E-02
BA-140	336.	537.31	3.4885E-01
LA-140	6.	1596.21	3.0218E-02
CEPR-144	841.	133.51	9.6933E-01
EU-152	6.	1408.01	1.2472E-01
EU-154	10.	1274.51	9.0759E-02
EU-155	747.	105.31	2.7203E-01
HG-203	838.	279.20	9.8401E-02
TL-208	801.	277.36	1.2359E+00
BI-212	21.	727.18	4.0934E-01
PB-212	928.	238.63	1.7382E-01
BI-214	210.	609.31	1.6601E-01
PB-214	725.	351.92	4.3757E-01
RA-224	922.	240.99	1.9228E+00
RA-226	1086.	186.10	1.9228E+00
AC-228	26.	911.21	1.3946E-01
TH-228	740.	84.37	6.4152E+00
TH-229	732.	88.47	3.0101E-01
PA-233	695.	312.17	2.0464E-01
UTH-233	866.	245.34	6.9826E+01
PA-234M	14.	1001.03	4.9252E-02
TH-234	701.	63.29	3.6364E+00
U-235	1086.	185.71	1.1686E-01
NP-237	716.	86.48	6.1667E-01
NP-239	716.	106.12	2.5284E-01

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PU-239	873.	129.30	8.6273E+02
AM-241	685.	59.54	5.7234E-01
AM-243	725.	74.67	1.7256E-01

```

*****
* 222-S Laboratory Counting Room      3-DEC-1996 23:37:02.02
*****
>>>>>>>> SAMPLE INFORMATION <<<<<<<<<
Worklist #:          14450
Sample ID:           S96T5665-DUP
Sample Size:         1.00000E-03 L
Dilution Factor:    1.00000E+00

Removed by:
      R

>>>>>>>> COUNT INFORMATION <<<<<<<<<
Detector ID:         GEA2
File Number:         dka300:[spec.GEA2]2g2070.cnf
Geometry:            42
Count Time:          0 00:50:00.00 sec
Real Time:           0 00:50:03.87 sec
Dead Time:           0.1%

Verified by:
      [Signature] 12/4/96

>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<
Sample Count Time:   3-DEC-1996 22:46:21.56
Decayed to:          3-DEC-1996 22:46:21.56
Standard Deviations: 2
Analysis Library:    ENVGEA
Analyst:             VR
Background Subtract: DKA300:[SPEC.GEA2]2GBACK

>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<
Date of last energy calibration: 21-MAR-1994 09:31:55.15
Date of last efficiency calibration: 21-MAR-1994 09:43:42.61
*****

```

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.40*	25722	1.54	1322.82	1314	17	1.3		CS-137	35.7

Summary of Nuclide Activity
Sample ID : S96T5665-DUP

INF-SD-WM-DP-224, REV. 0 Page : 2
Acquisition date : 3-DEC-1996 22:46:21

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	3.569E+01	3.569E+01	0.046E+01	1.29	
Total Activity :			3.569E+01	3.569E+01			

Grand Total Activity : 3.569E+01 3.569E+01

Flags: "K" = Keyline not found
"E" = Manually edited

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

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	851.	477.59	1.1835E+00
NA-22	7.	1274.53	2.6217E-02
NA-24	3.	1368.55	1.8150E-02
K-40	103.	1460.75	1.0335E+00
CR-51	716.	320.08	8.0957E-01
MN-54	15.	834.83	2.6017E-02
CO-56	13.	846.76	2.4493E-02
CO-57	841.	122.06	6.4854E-02
CO-58	12.	810.78	2.2631E-02
FE-59	15.	1099.25	5.9716E-02
CO-60	20.	1332.50	4.5303E-02
SE-75	876.	264.66	1.3519E-01
SR-85	485.	514.01	1.0255E-01
Y-88	2.	1836.06	1.6742E-02
NB-94	16.	871.09	2.8182E-02
ZRNB-95	20.	724.18	6.0131E-02
RU-103	536.	497.08	1.1056E-01
RURH-106	182.	621.93	1.4209E+00
AG-108m	25.	722.94	3.2531E-02
CD-109	713.	88.03	2.0499E+00
AG-110M	1130.	657.76	1.9440E-01
SN-113	778.	391.69	1.5351E-01
TE-123m	834.	159.00	6.4624E-02
SB-124	199.	602.73	7.3498E-02
SB-125	845.	427.89	3.7532E-01
TE-125m	757.	109.27	2.0399E+01
I-131	726.	364.48	1.1110E-01
CS-134	204.	604.70	7.4823E-02
BA-140	332.	537.31	3.4691E-01
LA-140	1.	1596.21	1.0355E-02
CEPR-144	888.	133.51	9.9581E-01
EU-152	9.	1408.01	1.5249E-01
EU-154	7.	1274.51	7.6380E-02
EU-155	758.	105.31	2.7402E-01
HG-203	781.	279.20	9.4970E-02
TL-208	784.	277.36	1.2229E+00
BI-212	24.	727.18	4.3517E-01
PB-212	889.	238.63	1.7018E-01
BI-214	227.	609.31	1.7269E-01
PB-214	694.	351.92	4.2820E-01
RA-224	901.	240.99	1.9014E+00
RA-226	1022.	186.10	1.8652E+00
AC-228	24.	911.21	1.3291E-01
TH-228	784.	84.37	6.6010E+00
TH-229	729.	88.47	3.0044E-01
PA-233	716.	312.17	2.0764E-01
UTH-233	840.	245.34	6.8754E+01
PA-234M	14.	1001.03	5.0479E-02
TH-234	649.	63.29	3.4983E+00
U-235	1011.	185.71	1.1275E-01
NP-237	718.	86.48	6.1731E-01

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-239	776.	106.12	2.6312E-01
PU-239	844.	129.30	8.4837E+02
AM-241	697.	59.54	5.7740E-01
AM-243	744.	74.67	1.7483E-01

 * 222-S Laboratory Counting Room 4-DEC-1996 00:35:30.75 *

>>>>>>> SAMPLE INFORMATION <<<<<<<<<

INF-SD-WM-DP-224, REV 1

Worklist #: 14450
 Sample ID: S96T5666-SAM
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.00000E+00

Removed by:

R

>>>>>>> COUNT INFORMATION <<<<<<<<<

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2071.cnf
 Geometry: 42
 Count Time: 0 00:50:00.00 sec
 Real Time: 0 00:50:03.89 sec
 Dead Time: 0.1%

Verified by:

D. Brachator 12/4/96

>>>>>>> ANALYSIS INFORMATION <<<<<<<<<

Sample Count Time: 3-DEC-1996 23:44:49.27
 Decayed to: 3-DEC-1996 23:44:49.27
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: VR
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

>>>>>>> CALIBRATION INFORMATION <<<<<<<<<

Date of last energy calibration: 21-MAR-1994 09:31:55.15
 Date of last efficiency calibration: 21-MAR-1994 09:43:42.61

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.39*	26020	1.55	1322.81	1314	18	1.3		CS-137	36.1
0	1164.88	22	4.00	2329.82	2323	15	42.6			

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	3.611E+01	3.611E+01	0.046E+01	1.28	
Total Activity :			3.611E+01	3.611E+01			

Grand Total Activity : 3.611E+01 3.611E+01

Flags: "K" = Keyline not found
"E" = Manually edited

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

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	849.	477.59	1.1822E+00
NA-22	9.	1274.53	2.8568E-02
NA-24	7.	1368.55	2.7810E-02
K-40	94.	1460.75	9.8709E-01
CR-51	725.	320.08	8.1468E-01
MN-54	12.	834.83	2.3551E-02
CO-56	12.	846.76	2.3489E-02
CO-57	817.	122.06	6.3914E-02
CO-58	23.	810.78	3.1353E-02
FE-59	18.	1099.25	6.5268E-02
CO-60	8.	1332.50	2.9261E-02
SE-75	805.	264.66	1.2965E-01
SR-85	442.	514.01	9.7945E-02
Y-88	1.	1836.06	1.3173E-02
NB-94	17.	871.09	2.8781E-02
ZRNB-95	17.	724.18	5.5633E-02
RU-103	555.	497.08	1.1259E-01
RURH-106	181.	621.93	1.4158E+00
AG-108m	18.	722.94	2.7374E-02
CD-109	761.	88.03	2.1178E+00
AG-110M	1127.	657.76	1.9417E-01
SN-113	768.	391.69	1.5252E-01
TE-123m	865.	159.00	6.5815E-02
SB-124	186.	602.73	7.1113E-02
SB-125	898.	427.89	3.8706E-01
TE-125m	824.	109.27	2.1275E+01
I-131	693.	364.48	1.0849E-01
CS-134	175.	604.70	6.9205E-02
BA-140	332.	537.31	3.4677E-01
LA-140	2.	1596.21	1.7729E-02
CEPR-144	890.	133.51	9.9702E-01
EU-152	5.	1408.01	1.1326E-01
EU-154	9.	1274.51	8.2804E-02
EU-155	813.	105.31	2.8389E-01
HG-203	786.	279.20	9.5266E-02
TL-208	788.	277.36	1.2258E+00
BI-212	16.	727.18	3.5740E-01
PB-212	943.	238.63	1.7522E-01
BI-214	230.	609.31	1.7395E-01
PB-214	770.	351.92	4.5082E-01
RA-224	936.	240.99	1.9372E+00
RA-226	1082.	186.10	1.9190E+00
AC-228	30.	911.21	1.4860E-01
TH-228	711.	84.37	6.2840E+00
TH-229	777.	88.47	3.1016E-01
PA-233	770.	312.17	2.1529E-01
UTH-233	900.	245.34	7.1182E+01
PA-234M	13.	1001.03	4.8835E-02
TH-234	715.	63.29	3.6721E+00
U-235	1057.	185.71	1.1529E-01
NP-237	719.	86.48	6.1778E-01

Sample ID : S96T5666-SAM

Acquisition date : 3-DEC-1996 23:44:49

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-239	802.	106.12	2.6747E-01
PU-239	871.	129.30	8.6188E+02
AM-241	706.	59.54	5.8086E-01
AM-243	722.	74.67	1.7217E-01

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	3.490E+01	3.490E+01	0.046E+01	1.30	
Total Activity :			3.490E+01	3.490E+01			

Grand Total Activity :	3.490E+01	3.490E+01
------------------------	-----------	-----------

Flags: "K" = Keyline not found
"E" = Manually edited

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

Minimum Detectable Activity Report
Sample ID : S96T56666-DUP

Acquisition date : 4-DEC-1996 01:12:54

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	808.	477.59	1.1532E+00
NA-22	9.	1274.53	2.9779E-02
NA-24	9.	1368.55	3.0722E-02
K-40	109.	1460.75	1.0643E+00
CR-51	717.	320.08	8.1015E-01
MN-54	20.	834.83	2.9929E-02
CO-56	19.	846.76	2.9570E-02
CO-57	820.	122.06	6.4023E-02
CO-58	19.	810.78	2.8536E-02
FE-59	11.	1099.25	5.1387E-02
CO-60	11.	1332.50	3.3702E-02
SE-75	804.	264.66	1.2953E-01
SR-85	440.	514.01	9.7739E-02
Y-88	1.	1836.06	1.2819E-02
NB-94	13.	871.09	2.4601E-02
ZRNB-95	24.	724.18	6.6376E-02
RU-103	503.	497.08	1.0720E-01
RURH-106	183.	621.93	1.4253E+00
AG-108m	25.	722.94	3.2589E-02
CD-109	742.	88.03	2.0920E+00
AG-110M	1074.	657.76	1.8954E-01
SN-113	728.	391.69	1.4850E-01
TE-123m	915.	159.00	6.7675E-02
SB-124	228.	602.73	7.8718E-02
SB-125	855.	427.89	3.7752E-01
TE-125m	787.	109.27	2.0796E+01
I-131	730.	364.48	1.1135E-01
CS-134	203.	604.70	7.4585E-02
BA-140	301.	537.31	3.3042E-01
LA-140	5.	1596.21	2.8563E-02
CEPR-144	816.	133.51	9.5460E-01
EU-152	6.	1408.01	1.2407E-01
EU-154	9.	1274.51	8.6331E-02
EU-155	770.	105.31	2.7619E-01
HG-203	769.	279.20	9.4251E-02
TL-208	791.	277.36	1.2283E+00
BI-212	34.	727.18	5.2232E-01
PB-212	864.	238.63	1.6769E-01
BI-214	189.	609.31	1.5764E-01
PB-214	694.	351.92	4.2798E-01
RA-224	891.	240.99	1.8902E+00
RA-226	1052.	186.10	1.8921E+00
AC-228	20.	911.21	1.2261E-01
TH-228	753.	84.37	6.4689E+00
TH-229	748.	88.47	3.0431E-01
PA-233	716.	312.17	2.0770E-01
UTH-233	844.	245.34	6.8914E+01
PA-234M	16.	1001.03	5.3041E-02
TH-234	630.	63.29	3.4460E+00
U-235	1041.	185.71	1.1438E-01
NP-237	770.	86.48	6.3913E-01

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-239	772.	106.12	2.6244E-01
PU-239	856.	129.30	8.5421E+02
AM-241	687.	59.54	5.7316E-01
AM-243	770.	74.67	1.7779E-01

LABCORE Completed RadChem Report for Worklist#: 14472

Analyst: rga Instrument: AB12 Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: TX-244 SR, DETERMINE SS USING LUDLUM. RCJ

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		SR90-01 SR90-01 LIQUID		1.39E-03	1.30E-3	93.525	% Recovery
1 STD	0		SR90-01 SR90-01C LIQUID		100	9.06E+01	90.600	% Recovery
1 STD	0		SR90-01 SR90-01E LIQUID		1.00	1.85E+00	1.850	% Ct. Error
2 BLNK	0		SR90-01 SR90-01 LIQUID		1	2.56E-5	25.600E-006	uCi/mL
2 BLNK	0		SR90-01 SR90-01C LIQUID		100	9.12E+01	91.200	% Recovery
2 BLNK	0		SR90-01 SR90-01E LIQUID		1.00	3.90E+01	39.000	uCi/mL
3 BLNK/BKG	0		SR90-01 SR90-01 LIQUID		1	2.65E+00	2.650	BLNK/BKG
4 SAMPLE	S96T005663	0	SR90-01 SR90-01 LIQUID	N/A		1.50E-02	105.0E-007	uCi/mL
4 SAMPLE	S96T005663	0	SR90-01 SR90-01C LIQUID	N/A		9.16E+01	0.0E+000	% Recovery
4 SAMPLE	S96T005663	0	SR90-01 SR90-01E LIQUID	N/A		1.08E+00	0.0E+000	% Ct. Error
5 DUP	S96T005663	0	SR90-01 SR90-01 LIQUID		1.50E-2	1.50E-2	0.000	RPD
5 DUP	S96T005663	0	SR90-01 SR90-01C LIQUID		100	9.26E+01	92.600	% Recovery
5 DUP	S96T005663	0	SR90-01 SR90-01E LIQUID		1.00	1.07E+00	1.070	% Cnt Err
6 SAMPLE	S96T005665	0	SR90-01 SR90-01 LIQUID	N/A		1.56E-02	109.0E-007	uCi/mL
6 SAMPLE	S96T005665	0	SR90-01 SR90-01C LIQUID	N/A		8.75E+01	0.0E+000	% Recovery
6 SAMPLE	S96T005665	0	SR90-01 SR90-01E LIQUID	N/A		1.08E+00	0.0E+000	% Ct. Error
7 DUP	S96T005665	0	SR90-01 SR90-01 LIQUID		1.56E-2	1.59E-2	1.905	RPD
7 DUP	S96T005665	0	SR90-01 SR90-01C LIQUID		100	9.08E+01	90.800	% Recovery
7 DUP	S96T005665	0	SR90-01 SR90-01E LIQUID		1.00	1.05E+00	1.050	% Cnt Err
8 SAMPLE	S96T005666	0	SR90-01 SR90-01 LIQUID	N/A		1.55E-02	103.0E-007	uCi/mL
8 SAMPLE	S96T005666	0	SR90-01 SR90-01C LIQUID	N/A		9.19E+01	0.0E+000	% Recovery
8 SAMPLE	S96T005666	0	SR90-01 SR90-01E LIQUID	N/A		1.05E+00	0.0E+000	% Ct. Error
9 DUP	S96T005666	0	SR90-01 SR90-01 LIQUID		1.55E-2	1.58E-2	1.917	RPD
9 DUP	S96T005666	0	SR90-01 SR90-01C LIQUID		100	9.24E+01	92.400	% Recovery
9 DUP	S96T005666	0	SR90-01 SR90-01E LIQUID		1.00	1.04E+00	1.040	% Cnt Err

Final page for worklist# 14472

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____


Reviewer Signature _____ Date 12 Dec 96

10/30/96 11:13
A-0004-1

Page: 1

LABCORE Data Entry Template for Worklist# 14472

Analyst: RBA Instrument: AB00 12 Book# 62356Method: LA-220-101 Rev/Mod D-1

Worklist Comment: TX-244 SR, DETERMINE SS USING LUDLUM. RCJ

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	S96T005663 0		@SR90-01	LIQUID	96001429 244-TX	GRAB
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
5 DUP	S96T005663 0		@SR90-01	LIQUID		
6 SAMPLE	S96T005665 0		@SR90-01	LIQUID	96001429 244-TX	GRAB
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
7 DUP	S96T005665 0		@SR90-01	LIQUID		
8 SAMPLE	S96T005666 0		@SR90-01	LIQUID	96001429 244-TX	GRAB
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
9 DUP	S96T005666 0		@SR90-01	LIQUID		

Final page for worklist # 14472

Analyst Signature

Date

12-10-96

Analyst Signature

Date

12/11/96
Sue Hogan 12/11/96

Data Entry Comments:

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

WORKBOOK PAGE: STD1

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

				STANDARD
	DETECTOR NUMBER	12	CARRIER ADDED in mL (CVA)	1.000
STD	TOTAL COUNTS (TC)	11330	GROSS WEIGHT (W2)	7.7116
	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT (W1)	7.6210
14472	BACKGROUND in cpm (BKG)	3.4	NET WEIGHT (W3)	0.0906
	SAMPLE VOLUME in mL (SS)	1.000	DELTA TIME (HOURS) (DT)	2.50
@SR90-01	DILUTION FACTOR (DF)	1		
	DIGEST DILUTION FACTOR DDF	1		
LIQUID	SAMPLE COUNT RATE (Rs)	1129.60	SR-90 EFFICIENCY FACTO (C1)	0.4180
	CRITICAL LEVEL (Lc)	1.11	Y-90 EFFICIENCY FACTOR (C2)	0.4660
96011027	TIME OF SEPARATION (ST)	23:30	Rmax	N/A
	DATE OF SEPARATION (SD)	12/10/96	DETECTION LIMIT (Ld)	2.31
0	TIME OF COUNT (TOC)	02:00	Sr-89/90 CONC. in $\mu\text{Ci/L}$	1.3049E+00
	DATE OF COUNT (DOC)	12/11/96		
N/A	STANDARD BOOK #	62B56		
	STANDARD VALUE in $\mu\text{Ci/mL}$	1.3948E-03		
WL14472-STD				
WB27811	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)			
	Sr-89/90 CONC in $\mu\text{Ci/mL}$ REPLACE RS WITH RMAX IF RS<=Lc AND RS>=0 OR REPLACE RS WITH Lc IF RS<0			
MCB	RS*DF*DDF*1000/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))**SS*REC*2220000)			
	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))			
SAC	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)			
	Percent Carrier Recovery = (Net Weight / Expected weight) * 100			
RGa	NOTE: Expected weight = CVA * 0.1			
	Detection Levels and Less Than Values are determined from Procedure LA-508-002.			
12/11/96	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100			
12/10/96	Sr-89/90 CONCENTRATION	1.30E-03	$\mu\text{Ci/mL}$	DETECTION LEVEL 2.67E-06 $\mu\text{Ci/L}$
11:30 PM	RELATIVE COUNTING ERROR	1.8%		
244-TX GRAB	PERCENT CARRIER RECOVERY	90.6%		

Analyst:	RGa	Date:	11-Dec-96
Signature of Chemist: <i>10 Catta</i>	SAC	Date:	DEC 12 1996

STANDARD.WB1 REV 2.0

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WORKBOOK PAGE: BLANK2

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

LA-220-101 / D-1				SR-99/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)		BLNK
BLNK	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
	TOTAL COUNTS	(TC)	90	GROSS WEIGHT	(W2)	7.6826
	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.5914
14472	BACKGROUND in cpm	(BKG)	3.4	NET WEIGHT	(W3)	0.0912
	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (HOURS)	(DT)	2.70
@SR90-01	DILUTION FACTOR	DF	1			
	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	5.60	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
	CRITICAL LEVEL	(Lc)	1.11	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96011027	TIME OF SEPARATION	(ST)	23:30	Rmax		N/A
	DATE OF SEPARATION	(SD)	12/10/96	DETECTION LIMIT	(Ld)	2.31
0	TIME OF COUNT	(TOC)	02:12	Sr-89/90 CONC in µCi/L		2.5647E-02
	DATE OF COUNT	(DOC)	12/11/96			
N/A						
WL14472-BLNK						
WB27811	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)					
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
	NOTE: Expected weight = CVA * 0.1					
RGA	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
12/11/96						
12/10/96	Sr-89/90 CONCENTRATION	2.56E-05	µCi/mL		DETECTION LEVEL 1.06E-05 µCi/mL	
11:30 PM	RELATIVE COUNTING ERROR	39.0%				
244-TX GRAB	PERCENT CARRIER RECOVERY	91.2%				

Analyst:		RGA	Date:	11-Dec-96
Signature of Chemist:		SAC	Date:	DEC 12 1996

BLANK.WB1 REV 2.0

22010NML

WORKBOOK PAGE: SAM4

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

Sr-89/90 : LA-220-01 (D-1), 202 (E-3), 104 (D-1)						SAMPLE
	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	33085	GROSS WEIGHT	(W2)	7.7343
	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.6427
14472	BACKGROUND in cpm	(BKG)	3.4	NET WEIGHT	(W3)	0.0916
	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (HOURS)	(DT)	3.12
@SR90-01	DILUTION FACTOR	DF	1			
	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	3305.10	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
	CRITICAL LEVEL	(Lc)	1.11	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96011027	TIME OF SEPARATION	(ST)	23:30	Rmax		N/A
	DATE OF SEPARATION	(SD)	12/10/96	DETECTION LIMIT	(Ld)	2.31
0	TIME OF COUNT	(TOC)	02:37	Sr-89/90 CONC in µCi/L		1.5000E+01
	DATE OF COUNT	(DOC)	12/11/96			
N/A						
S96T005663						
WB27811	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT))))*SS*REC*2220000					
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
	NOTE: Expected weight = CVA * 0.1					
RGA	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
12/11/96						
12/10/96	Sr-89/90 CONCENTRATION		1.50E-02	µCi/mL	DETECTION LEVEL	
11:30 PM	RELATIVE COUNTING ERROR		1.1%			
244-TX GRAB	PERCENT CARRIER RECOVERY		91.6%			
						1.05E-05 µCi/mL

Analyst:	RGA	Date:	11-Dec-96
Signature of Chemist: <i>[Signature]</i>	SAC	Date:	DEC 12 1996

SAMPLE.WB1 REV 2.0

22010NML

WORKBOOK PAGE: DUP5

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

Sr-89/90 : LA-220-01 (D-1), 102 (E-3), 104 (D-1)						DUP
DUP	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
	TOTAL COUNTS	(TC)	33586	GROSS WEIGHT	(W2)	7.7476
	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.6550
14472	BACKGROUND in cpm	(BKG)	3.4	NET WEIGHT	(W3)	0.0926
	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (HOURS)	(DT)	3.42
@SR90-01	DILUTION FACTOR	DF	1			
	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	3355.20	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
	CRITICAL LEVEL	(Lc)	1.11	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96011027	TIME OF SEPARATION	(ST)	23:30	Rmax		N/A
	DATE OF SEPARATION	(SD)	12/10/96	DETECTION LIMIT	(Ld)	2.31
0	TIME OF COUNT	(TOC)	02:55	Sr-89/90 CONC in µCi/L		1.5012E+01
	DATE OF COUNT	(DOC)	12/11/96			
N/A						
S96T005663						
WB27811	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)					
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
	NOTE: Expected weight = CVA * 0.1					
RGA	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
12/11/96						DETECTION LEVEL 1.03E-05 µCi/mL
12/10/96	Sr-89/90 CONCENTRATION		1.50E-02	µCi/mL		
11:30 PM	RELATIVE COUNTING ERROR		1.1%			
244-TX GRAB	PERCENT CARRIER RECOVERY		92.6%			

Analyst:		RGA	Date:	11-Dec-96
Signature of Chemist:		SAC	Date:	Dec 12 1996
SAMPLE:WB1 REV 2.0		22010NML		

WORKBOOK PAGE: SAM6

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)						SAMPLE
	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	33019	GROSS WEIGHT	(W2)	7.7765
	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.6890
14472	BACKGROUND in cpm	(BKG)	3.4	NET WEIGHT	(W3)	0.0875
	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (HOURS)	(DT)	3.67
@SR90-01	DILUTION FACTOR	DF	1			
	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	3298.50	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
	CRITICAL LEVEL	(Lc)	1.11	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96011027	TIME OF SEPARATION	(ST)	23:30	Rmax		N/A
	DATE OF SEPARATION	(SD)	12/10/96	DETECTION LIMIT	(Ld)	2.31
0	TIME OF COUNT	(TOC)	03:10	Sr-89/90 CONC in µCi/L		1.5575E+01
	DATE OF COUNT	(DOC)	12/11/96			
N/A						
S96T005665						
	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					
	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))					
	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
	NOTE: Expected weight = CVA * 0.1					
RGA	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
12/11/96						
12/10/96	Sr-89/90 CONCENTRATION		1.56E-02	µCi/mL	DETECTION LEVEL	
11:30 PM	RELATIVE COUNTING ERROR		1.1%		1.09E-05 µCi/mL	
244-TX GRAB	PERCENT CARRIER RECOVERY		87.5%			

Analyst:	RGA	Date:	11-Dec-96
Signature of Chemist:	SAC	Date:	DEC 12 1996

SAMPLE:WB1 REV 2.0

22010NML

WORKBOOK PAGE: DUP7

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)						DUP
	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS	(TC)	35124	GROSS WEIGHT	(W2)	7.7392
	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.6484
14472	BACKGROUND in cpm	(BKG)	3.4	NET WEIGHT	(W3)	0.0908
	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (HOURS)	(DT)	3.83
@SR90-01	DILUTION FACTOR	DF	1			
	DIGEST DILUTION FACTOR (DDF)		1			
LIQUID	SAMPLE COUNT RATE	(Rs)	3509.00	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
	CRITICAL LEVEL	(Lc)	1.11	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96011027	TIME OF SEPARATION	(ST)	23:30	Rmax		N/A
	DATE OF SEPARATION	(SD)	12/10/96	DETECTION LIMIT	(Ld)	2.31
0	TIME OF COUNT	(TOC)	03:20	Sr-89/90 CONC in µCi/L		1.5938E+01
	DATE OF COUNT	(DOC)	12/11/96			
N/A						
S96T005665						
WB27811	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/(64.2*DT)))*SS*REC*2220000)					
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
	NOTE: Expected weight = CVA * 0.1					
RGAs	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
12/11/96						
12/10/96	Sr-89/90 CONCENTRATION		1.59E-02		µCi/mL	DETECTION LEVEL
11:30 PM	RELATIVE COUNTING ERROR		1.0%			1.05E-05 µCi/mL
244-TX GRAB	PERCENT CARRIER RECOVERY		90.8%			

Analyst:	RGA	Date:	11-Dec-96
Signature of Chemist:	SAC	Date:	DEC 12 1996

SAMPLE.WB1 REV 2.0

22010NML

WORKBOOK PAGE: SAM8

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)						SAMPLE
	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	34621	GROSS WEIGHT	(W2)	7.7525
	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.6606
14472	BACKGROUND in cpm	(BKG)	3.4	NET WEIGHT	(W3)	0.0919
	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (HOURS)	(DT)	4.08
@SR90-01	DILUTION FACTOR	DF	1			
	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	3458.70	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
	CRITICAL LEVEL	(Lc)	1.11	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96011027	TIME OF SEPARATION	(ST)	23:30	Rmax		N/A
	DATE OF SEPARATION	(SD)	12/10/96	DETECTION LIMIT	(Ld)	2.31
0	TIME OF COUNT	(TOC)	03:35	Sr-89/90 CONC in µCi/L		1.5479E+01
	DATE OF COUNT	(DOC)	12/11/96			
N/A						
S96T005666						
	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 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))					
	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
	NOTE: Expected weight = CVA * 0.1					
RGa	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
12/11/96						DETECTION LEVEL 1.03E-05 µCi/mL
12/10/96	Sr-89/90 CONCENTRATION		1.55E-02	µCi/mL		
11:30 PM	RELATIVE COUNTING ERROR		1.1%			
244-TX GRAB	PERCENT CARRIER RECOVERY		91.9%			

Analyst:	RGA	Date:	11-Dec-96
Signature of Chemist: 	SAC	Date:	DEC 12 1996
SAMPLE.WB1 REV 2.0	22010NML		

WORKBOOK PAGE: DUP9

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)						DUP
	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS	(TC)	35497	GROSS WEIGHT	(W2)	7.7454
	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.6530
14472	BACKGROUND in cpm	(BKG)	3.4	NET WEIGHT	(W3)	0.0924
	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (HOURS)	(DT)	4.25
@SR90-01	DILUTION FACTOR	DF	1			
	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	3546.30	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
	CRITICAL LEVEL	(Lc)	1.11	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96011027	TIME OF SEPARATION	(ST)	23:30	Rmax		N/A
	DATE OF SEPARATION	(SD)	12/10/96	DETECTION LIMIT	(Ld)	2.31
0	TIME OF COUNT	(TOC)	03:45	Sr-89/90 CONC in µCi/L 1.5756E+01		
	DATE OF COUNT	(DOC)	12/11/96			
N/A						
S96T005666						
	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 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))					
	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
	NOTE: Expected weight = CVA * 0.1					
RG	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
12/11/96						
12/10/96	Sr-89/90 CONCENTRATION		1.58E-02	µCi/mL	DETECTION LEVEL	
11:30 PM	RELATIVE COUNTING ERROR		1.0%		1.03E-05 µCi/mL	
244-TX GRAB	PERCENT CARRIER RECOVERY		92.4%			

Analyst:	RG	Date:	11-Dec-96
Signature of Chemist:	SAC	Date:	DEC 12 1996

SAMPLE:WB1 REV 2.0

22010NML

LABCORE Completed RadChem Report for Worklist#: 14466

Analyst: jmv

Instrument: AB14

Book# 62 B56

Method: LA-953703 Rev/Mod B

Worklist Comment: TX-244 AM, DETERMINE SS USING LUDLUM. RCJ

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	QAM24101 AM24101	LIQUID	1.19E-04	1.06E-4	89.076	% Recovery
1 STD		0	QAM24101 AM24101T	LIQUID	100.	8.46E+01	84.600	% Recovery
1 STD		0	QAM24101 AM24101E	LIQUID	1.0	1.63E+00	1.630	% Ct Error
2 BLNK		0	QAM24101 AM24101	LIQUID	1	<5.99E-6		uCi/mL
2 BLNK		0	QAM24101 AM24101T	LIQUID	100.0	8.38E+01	83.800	% Recovery
2 BLNK		0	QAM24101 AM24101E	LIQUID	1.0	1.00E+02	100.000	% Ct Error
3 SAMPLE	S96T005663	0	QAM24101 AM24101	LIQUID	N/A	9.73E-05	138.0e-007	uCi/mL
3 SAMPLE	S96T005663	0	QAM24101 AM24101E	LIQUID	N/A	1.94E+00	0.0e+000	% Ct. Error
3 SAMPLE	S96T005663	0	QAM24101 AM24101T	LIQUID	N/A	6.90E+01	0.0e+000	% Recovery
4 DUP	S96T005663	0	QAM24101 AM24101	LIQUID	9.73E-5	5.71E-5	52.073 RPD	
4 DUP	S96T005663	0	QAM24101 AM24101T	LIQUID	100.0	9.01E+01	80.300	% Recovery
4 DUP	S96T005663	0	QAM24101 AM24101E	LIQUID	1.0	1.88E+00	1.880	% Ct Error
5 SAMPLE	S96T005665	0	QAM24101 AM24101	LIQUID	N/A	5.56E-05	103.0e-007	uCi/mL
5 SAMPLE	S96T005665	0	QAM24101 AM24101E	LIQUID	N/A	1.98E+00	0.0e+000	% Ct. Error
5 SAMPLE	S96T005665	0	QAM24101 AM24101T	LIQUID	N/A	8.10E+01	0.0e+000	% Recovery
6 DUP	S96T005665	0	QAM24101 AM24101	LIQUID	5.56E-5	5.81E-5	4.398 RPD	
6 DUP	S96T005665	0	QAM24101 AM24101T	LIQUID	100.0	8.46E+01	84.600	% Recovery
6 DUP	S96T005665	0	QAM24101 AM24101E	LIQUID	1.0	2.00E+00	2.000	% Ct Error
7 SAMPLE	S96T005666	0	QAM24101 AM24101	LIQUID	N/A	5.75E-05	102.0e-007	uCi/mL
7 SAMPLE	S96T005666	0	QAM24101 AM24101E	LIQUID	N/A	2.13E+00	0.0e+000	% Ct. Error
7 SAMPLE	S96T005666	0	QAM24101 AM24101T	LIQUID	N/A	8.14E+01	0.0e+000	% Recovery
8 DUP	S96T005666	0	QAM24101 AM24101	LIQUID	5.75E-5	5.67E-5	1.401 RPD	
8 DUP	S96T005666	0	QAM24101 AM24101T	LIQUID	100.0	8.03E+01	80.300	% Recovery
8 DUP	S96T005666	0	QAM24101 AM24101E	LIQUID	1.0	1.94E+00	1.940	% Ct Error

Rerun

Final page for worklist# 14466

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

Date

John Relyea 9 Dec 96
S96T005663 rejected for rerun on #15466
S96T005665 + S96T005666 validated

10/30/96 10:38

A-0004-1

Page: 1

LABCORE Data Entry Template for Worklist# 14466Analyst: JMV Instrument: AM01 14 Book# 62856Method: LA-953-103 Rev/Mod h0

Worklist Comment: TX-244 AM, DETERMINE SS USING LUDLUM. RCJ

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@AM24101	LIQUID		
2 BLNK			@AM24101	LIQUID		
3 SAMPLE	S96T005663 0		@AM24101	LIQUID	96001429	244-TX GRAB
Analytes Requested: AM24101 , AM24101E, AM24101T						
4 DUP	S96T005663 0		@AM24101	LIQUID		
5 SAMPLE	S96T005665 0		@AM24101	LIQUID	96001429	244-TX GRAB
Analytes Requested: AM24101 , AM24101E, AM24101T						
6 DUP	S96T005665 0		@AM24101	LIQUID		
7 SAMPLE	S96T005666 0		@AM24101	LIQUID	96001429	244-TX GRAB
Analytes Requested: AM24101 , AM24101E, AM24101T						
8 DUP	S96T005666 0		@AM24101	LIQUID		

Final page for worklist # 14466Analyst Signature JMV Date 12-2-96Analyst Signature CJ Orin Date 12/5/96
Sue Hogan 12/6/96

Data Entry Comments:

Data Collection Sheet for Americium and Plutonium

Matrix (SOLID, LIQUID) (EAC) 4-0-0-0-0-0-0

Analysis Date 12-3-90
 Analysis Time 1515

Tracer: Book # 125843

Worksheet # 14466
 Analyst DMV
 Project # 1515

Sample Type	Sample Number	Grams Digested	Dilutions/Total Sample Volume, ml	Sample Volume Analyzed, ml	Tracer Volume, ml	Sample Tray #	Detector Number	Alpha Counts	Count Time Minutes	Background cpm	AEA Spectra #
Standard	Book # <u>125843</u>			<u>1ml</u>	<u>200</u>	<u>1</u>	<u>14</u>	<u>3484</u>	<u>30</u>	<u>1</u>	<u>55482</u>
Blank	<u>51663</u>			<u>1ml</u>		<u>2</u>		<u>1635</u>			<u>616803</u>
Blank	<u>51663</u>			<u>1ml</u>		<u>3</u>		<u>2549</u>			<u>77558770</u>
Blank	<u>51663</u>					<u>4</u>		<u>2727</u>			<u>87877</u>
Blank	<u>51663</u>					<u>5</u>		<u>2614</u>			<u>99587</u>
Blank	<u>51665</u>					<u>6</u>		<u>2659</u>			<u>101094</u>
Blank	<u>51665</u>					<u>7</u>		<u>2618</u>			<u>111187</u>
Blank	<u>51666</u>					<u>8</u>		<u>2547</u>			<u>121249</u>

WORKBOOK PAGE: STD1

Am 241 and Cm 243/244: LA-953-103 (B-0)

LIQUID

				STD	
STD	Date Counted	DEC-04-96	Am 241 AEA Frac.	(C241)	0.501
	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac.	(C243)	0.436
	Sample D.F. (DF)	1	Cm 243/244 AEA Frac.	(Cm)	0
14466	Tracer Volume in mL (SPKV)	0.200	Total AT Counts		3484
	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)		30
@AM24101	Tracer Book No.	125B43	Background in cpm (Bkg)		0.1
	Am-243 Tracer Value (dpm/mL)	1027	Am 241 cpm		64.71
LIQUID	Detector Number	14	Am 243 cpm		56.29
	Detector Efficiency (DetEff)	0.2910	Cm 243/244 cpm		0
96011021	Standard Book No	62B56	AEA Count Time (min)		480
	Standard Value in $\mu\text{Ci/mL}$	1.186E-04	Am 241 $\mu\text{Ci/L}$ =		1.0632E-01
0			Cm 243/244 $\mu\text{Ci/L}$ =	<	1.2536E-02
N/A					
WL14466	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
WB27807	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100				
	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV				
CJO					
JLF	Am 241 $\mu\text{Ci/mL}$ =	1.06E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$		
	Relative Counting Error =	1.6%			
JMV	NOTE: Cm-243/244 Result is a LESS THAN Value.				
12/05/96	Cm 243/244 $\mu\text{Ci/mL}$	< 1.25E-05	Am 241		
	Relative Counting Error =	100.0%	1.25E-05		
12/03/96	Am 243 Tracer Recovery =	84.6%	Cm 243/244		
			1.25E-05		
03:15 PM					
244-TX GRAB					

Analyst:	JMV	Date:	12/05/96
Signature of Chemist:	JLF	Date:	9 Dec 96

STANDARD WB1 REV 1.2

953103ML

WORKBOOK PAGE: BLANK2

Am 241 and Cm 243/244: LA-953-103 (B-0)

LIQUID / SOLID

Am 241 and Cm 243/244: LA-953-103 (B-0)				LIQUID / SOLID	BLNK
	Date Counted	DEC-04-96	Am 241 AEA Frac. (C241)		0
BLNK	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)		0.921
	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)		0
14466	Tracer Volume in mL (SPKV)	0.200	Total AT Counts		1635
	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)		30
@AM24101	Tracer Book No.	125B43	Background In cpm (Bkg)		0.1
	Am-243 Tracer Value (dpm/mL)	1027	Am 241 cpm		0
LIQUID	Detector Number	14	Am 243 cpm		54.85
	Detector Efficiency (DetEff)	0.2910	Cm 243/244 cpm		0
96011021	AEA Count Time (min)				480
	Am 241 $\mu\text{Ci/L}$ =			<	5.9923E-03
0	Cm 243/244 $\mu\text{Ci/L}$ =			<	5.9923E-03
N/A					
WL14466	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
WB27807	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100				
	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV				
CJO	NOTE: Am-241 Result is a LESS THAN Value.				
JLF	Am 241 $\mu\text{Ci/mL}$ =	< 5.99E-06	DETECTION LEVELS in $\mu\text{Ci/mL}$		
JMV	Relative Counting Error =	100.0%			
	NOTE: Cm-243/244 Result is a LESS THAN Value.				
12/05/96	Cm 243/244 $\mu\text{Ci/mL}$	< 5.99E-06	Am 241	5.99E-06	
	Relative Counting Error =	100.0%	Cm 243/244	5.99E-06	
12/03/96	Am 243 Tracer Recovery =	83.8%			
03:15 PM					
244-TX GRAB					

Analyst:	JMV	Date:	12/05/96
Signature of Chemist:	JLF	Date:	9 Dec 96

BLANK.WB1 REV 1.2 953103ML

WORKBOOK PAGE: SAM3

Am 241 and Cm 243/244: LA-953-103 (B-0)

LIQUID / SOLID

Am 241 and Cm 243/244: LA-953-103 (B-O)

LIQUID / SOLID

				SAMPLE
	Date Counted	DEC-04-96	Am 241 AEA Frac. (C241)	0.511
SAMPLE	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.486
	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
14466	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	2549
	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	125B43	Background in cpm (Bkg)	0.1
	Am-243 Tracer Value (dpm/mL)	1027	Am 241 cpm	43.64
LIQUID	Detector Number	14	Am 243 cpm	41.51
	Detector Efficiency (DetEff)	0.2910	Cm 243/244 cpm	0
96011021	AEA Count Time (min)			480
	Am 241 $\mu\text{Ci/L}$ =			9.7282E-02
0	Cm 243/244 $\mu\text{Ci/L}$ =			< 1.3794E-02
N/A				
	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
S96T005663	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
WB27807	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min))] + [(1 / (Am-241 or Cm-243/244 cpm * min))]] * 1.96 * 100			
	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV			
CJO				
JLF	Am 241 $\mu\text{Ci/mL}$ =	9.73E-05	DETECTION LEVELS in $\mu\text{Ci/mL}$	
JMV	Relative Counting Error =	1.9%		
	NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241
12/06/96	Cm 243/244 $\mu\text{Ci/mL}$	< 1.38E-05	1.38E-05	
	Relative Counting Error =	100.0%	Cm 243/244	
12/03/96	Am 243 Tracer Recovery =	69.0%	1.38E-05	
03:15 PM				
244-TX GRAB				

Analyst:	JMV	Date:	12/05/96
Signature of Chemist:	JLF	Date:	2 Dec 96
SAMPLE WB1 REV 1.2	953103ML		

WORKBOOK PAGE: DUP4

Am 241 and Cm 243/244: LA-953-103 (B-0)

LIQUID / SOLID

Am 241 and Cm 243/244: LA-953-103 (B-0)				LIQUID / SOLID		DUP
	Date Counted	DEC-04-96	Am 241 AEA Frac.	(C241)		0.366
DUP	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac.	(C243)		0.593
	Sample D.F. (DF)	1	Cm 243/244 AEA Frac.	(Cm)		0
14466	Tracer Volume in mL (SPKV)	0.200	Total AT Counts			2727
	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)			30
@AM24101	Tracer Book No.	125B43	Background in cpm (Bkg)			0.1
	Am-243 Tracer Value (dpm/mL)	1027	Am 241 cpm			36.67
LIQUID	Detector Number	14	Am 243 cpm			59.41
	Detector Efficiency (DetEff)	0.2910	Cm 243/244 cpm			0
96011021			AEA Count Time (min)			480
			Am 241 $\mu\text{Ci/L}$ =			5.7105E-02
0			Cm 243/244 $\mu\text{Ci/L}$ =			< 8.6600E-03
N/A						
S96T005663	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (222000dpm/ μCi))					
	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (222000dpm/ μCi))					
WB27807	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))]] * 1.96 * 100					
CJO	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV					
JLF	Am 241 $\mu\text{Ci/mL}$ =	5.71E-05	DETECTION LEVELS in $\mu\text{Ci/mL}$			
JMV	Relative Counting Error =	1.9%				
	NOTE: Cm-243/244 Result is a LESS THAN Value.					
12/05/96	Cm 243/244 $\mu\text{Ci/mL}$	< 8.66E-06	Am 241 8.66E-06			
	Relative Counting Error =	100.0%	Cm 243/244 8.66E-06			
12/03/96	Am 243 Tracer Recovery =	90.1%				
03:15 PM						
244-TX GRAB						

Analyst:	JMV	Date:	12/05/96
Signature of Chemist:	JLF	Date:	9/10/96

SAMPLE.WB1 REV 1.2

953103ML

WORKBOOK PAGE: SAM5

Am 241 and Cm 243/244: LA-953-103 (B-0)

Am 241 and Cm 243/244: LA-953-103 (B-0)				LIQUID / SOLID		SAMPLE
	Date Counted	DEC-04-96	Am 241 AEA Frac. (C241)		0.334	
SAMPLE	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)		0.556	
	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)		0	
14466	Tracer Volume in mL (SPKV)	0.200	Total AT Counts		2614	
	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)		30	
@AM24101	Tracer Book No.	125B43	Background in cpm (Bkg)		0.1	
	Am-243 Tracer Value (dpm/mL)	1027	Am 241 cpm		32.6	
LIQUID	Detector Number	14	Am 243 cpm		54.27	
	Detector Efficiency (DetEff)	0.2910	Cm 243/244 cpm		0	
96011021			AEA Count Time (min)		480	
			Am 241 $\mu\text{Ci/L}$ =		5.5580E-02	
0			Cm 243/244 $\mu\text{Ci/L}$ =		< 1.0277E-02	
N/A						
S96T005665	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))					
	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))					
WB27807	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100					
CJO	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV					
JLF	Am 241 $\mu\text{Ci/mL}$ =	5.56E-05	DETECTION LEVELS in $\mu\text{Ci/mL}$			
JMV	Relative Counting Error =	2.0%				
12/05/96	NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241		
	Cm 243/244 $\mu\text{Ci/mL}$	< 1.03E-05		1.03E-05		
12/03/96	Relative Counting Error =	100.0%		Cm 243/244		
	Am 243 Tracer Recovery =	81.0%		1.03E-05		
03:15 PM						
244-TX GRAB						

Analyst:	JMV	Date:	12/05/96
Signature of Chemist:	JLF	Date:	9 Dec 96
SAMPLE.WB1 REV 1.2	953103ML		

WORKBOOK PAGE: DUP6

Am 241 and Cm 243/244: LA-953-103 (B-0)

LIQUID / SOLID

Am 241 and Cm 243/244: LA-953-103 (B-0)

			LIQUID / SOLID	DUP
DUP	Date Counted	DEC-04-96	Am 241 AEA Frac. (C241)	0.355
	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.565
	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
14466	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	2689
	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	125B43	Background in cpm (Bkg)	0.1
	Am-243 Tracer Value (dpm/mL)	1027	Am 241 cpm	32.72
LIQUID	Detector Number	14	Am 243 cpm	52.03
	Detector Efficiency (DetEff)	0.2910	Cm 243/244 cpm	0
96011021			AEA Count Time (min)	480
			Am 241 $\mu\text{Ci/L}$ =	5.8134E-02
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 9.6745E-03
N/A				
S96T005665	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
WB27807	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100			
CJO	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV			
JLF	Am 241 $\mu\text{Ci/mL}$ =	5.81E-05	DETECTION LEVELS in $\mu\text{Ci/mL}$	
JMV	Relative Counting Error =	2.0%		
	NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241
12/05/96	Cm 243/244 $\mu\text{Ci/mL}$	< 9.67E-06		9.67E-06
	Relative Counting Error =	100.0%	Cm 243/244	
12/03/96	Am 243 Tracer Recovery =	84.6%		9.67E-06
03:15 PM				
244-TX GRAB				

Analyst:	JMV	Date:	12/05/96
Signature of Chemist:	JLF	Date:	9 Dec 96
SAMPLE.WB1 REV 1.2	953103ML		

WORKBOOK PAGE: SAM7

Am 241 and Cm 243/244: LA-953-103 (B-0)

LIQUID / SOLID

SAMPLE

	Date Counted	DEC-04-96	Am 241 AEA Frac. (C241)	0.347
SAMPLE	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.558
	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
14466	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	2818
	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	125B43	Background in cpm (Bkg)	0.1
	Am-243 Tracer Value (dpm/mL)	1027	Am 241 cpm	28.48
LIQUID	Detector Number	14	Am 243 cpm	45.82
	Detector Efficiency (DetEff)	0.2910	Cm 243/244 cpm	0
96011021			AEA Count Time (min)	480
			Am 241 $\mu\text{Ci/L}$ =	5.7536E-02
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 1.0188E-02
N/A				

Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))

Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))

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

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

JLF	Am 241 $\mu\text{Ci/mL}$ =	5.75E-05	DETECTION LEVELS in $\mu\text{Ci/mL}$
JMV	Relative Counting Error =	2.1%	
	NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241
12/05/96	Cm 243/244 $\mu\text{Ci/mL}$	< 1.02E-05	1.02E-05
	Relative Counting Error =	100.0%	Cm 243/244
12/03/96	Am 243 Tracer Recovery =	81.4%	1.02E-05

03:15 PM

244-TX GRAB

Analyst:	JMV	Date:	12/05/96
Signature of Chemist:	JLF	Date:	9 Dec 96
SAMPLE.WB1 REV 1.2	953103ML		

WORKBOOK PAGE: DUP8

Am 241 and Cm 243/244: LA-953-103 (B-0)

Am 241 and Cm 243/244: LA-953-103 (B-0)				LIQUID / SOLID		DUP
DUP	Date Counted	DEC-04-96	Am 241 AEA Frac.	(C241)		0.347
	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac.	(C243)		0.566
	Sample D.F. (DF)	1	Cm 243/244 AEA Frac.	(Cm)		0
14466	Tracer Volume in mL (SPKV)	0.200	Total AT Counts			2547
	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)			30
@AM24101	Tracer Book No.	125B43	Background in cpm (Bkg)			0.1
	Am-243 Tracer Value (dpm/mL)	1027	Am 241 cpm			34.4
LIQUID	Detector Number	14	Am 243 cpm			56.07
	Detector Efficiency (DetEff)	0.2910	Cm 243/244 cpm			0
96011021			AEA Count Time (min)			480
			Am 241 $\mu\text{Ci/L}$ =			5.6723E-02
0			Cm 243/244 $\mu\text{Ci/L}$ =			< 1.0178E-02
N/A						
S96T005666	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))					
	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))					
WB27807	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100					
	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV					
CJO						
JLF	Am 241 $\mu\text{Ci/mL}$ =	5.67E-05	DETECTION LEVELS in $\mu\text{Ci/mL}$			
JMV	Relative Counting Error =	1.9%				
	NOTE: Cm-243/244 Result is a LESS THAN Value.					
12/05/96	Cm 243/244 $\mu\text{Ci/mL}$	< 1.02E-05	Am 241 1.02E-05			
	Relative Counting Error =	100.0%	Cm 243/244 1.02E-05			
12/03/96	Am 243 Tracer Recovery =	80.3%				
03:15 PM						
244-TX GRAB						

Analyst:	JMV	Date:	12/05/96
Signature of Chemist:	JLF	Date:	9 Dec 96
SAMPLE.WB1 REV 1.2	953103ML		

Westinghouse Hanford Co.
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
WL14466-STD
File ID: 5a5982.CNF

Counted on: 12/ 4/96 @11:33
Detector: AEA5
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1515.2	1515.2	302.547	302.547	18.000	11.129	9.000	3.763
2	1362.8	1362.8	256.460	256.407	14.000	9.438	7.000	3.114
3?	14.5	14.5	147.664	147.658	180.000	1.000	90.000	0.100

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	Am241	0.501	5.479	5.475	0.0040.05	64.71	1.1	177.4	
	Pu238		5.487	5.475	0.012			231.6	
2	Am243	0.436	5.270	5.263	0.0070.04	56.29	1.2	146.5	
3		????		4.763		1.15	8.3		
Totals:		0.937	<--valid peaks only-->			121.00			

DETECTOR CALIBRATION

Energy(MEV) = 4.083 + (0.0046)*Channel
Energy range (MeV): 4.083 TO 6.439
Efficiency = 0.3881 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	61967.0	100.000
Smoothed	61967.0	100.000
Composite fit	58643.6	94.637
Residuals	3323.4	5.363

Analyzed by: _____

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www.ck12.org

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Raw Data Dump for AEA Spectrum: 5a5982.CNF INF-SD-WM-DP-224, REV. F

1	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	4.	1.	0.	0.	0.	4.	4.	2.
21	3.	1.	4.	3.	4.	1.	2.	4.	1.
31	3.	2.	2.	0.	2.	1.	2.	2.	1.
41	4.	4.	2.	1.	7.	2.	3.	2.	1.
51	3.	1.	4.	2.	2.	3.	2.	7.	3.
61	3.	4.	4.	3.	1.	7.	3.	6.	3.
71	5.	5.	7.	5.	6.	4.	5.	5.	8.
81	2.	1.	6.	8.	4.	5.	1.	5.	4.
91	7.	7.	5.	3.	6.	7.	11.	5.	10.
101	11.	5.	3.	10.	7.	2.	6.	5.	8.
111	10.	10.	3.	6.	8.	4.	9.	11.	7.
121	8.	10.	8.	7.	9.	9.	7.	12.	6.
131	4.	8.	9.	11.	9.	12.	13.	12.	13.
141	13.	12.	10.	9.	8.	16.	15.	16.	20.
151	9.	6.	5.	8.	14.	9.	16.	17.	12.
161	21.	13.	12.	17.	13.	16.	17.	22.	29.
171	21.	24.	18.	27.	17.	25.	16.	16.	32.
181	29.	26.	23.	29.	23.	31.	35.	29.	34.
191	30.	28.	37.	36.	35.	42.	44.	36.	41.
201	52.	45.	39.	72.	54.	55.	63.	57.	64.
211	71.	73.	83.	97.	95.	92.	113.	102.	106.
221	106.	132.	116.	128.	136.	161.	145.	189.	202.
231	195.	206.	238.	230.	254.	265.	290.	298.	355.
241	428.	433.	452.	562.	539.	610.	689.	759.	852.
251	1016.	1163.	1241.	1377.	1478.	1513.	1524.	1403.	1285.
261	869.	702.	524.	410.	345.	304.	298.	250.	245.
271	239.	214.	233.	221.	211.	211.	226.	214.	269.
281	295.	306.	330.	328.	360.	393.	427.	456.	550.
291	602.	689.	807.	777.	881.	1024.	1121.	1297.	1362.
301	1583.	1679.	1626.	1561.	1404.	1255.	1008.	902.	755.
311	430.	352.	276.	244.	188.	151.	108.	67.	37.
321	22.	5.	10.	1.	3.	3.	2.	0.	2.
331	1.	1.	3.	0.	1.	0.	2.	2.	2.
341	0.	2.	1.	4.	1.	3.	1.	1.	2.
351	3.	1.	6.	2.	4.	1.	2.	3.	0.
361	1.	5.	0.	1.	0.	0.	1.	0.	1.
371	0.	0.	0.	2.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	1.	0.	0.	0.	0.	0.
441	0.	1.	0.	0.	0.	1.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	2.	0.	0.	0.	0.	1.	2.
481	1.	4.	2.	1.	0.	2.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.							

Westinghouse Hanford CONF SD WM DP 224 REV. 2
 G E N E R A L A L P H A E N E R G Y A N A L Y S I S
 Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
 WL14466-BLNK
 File ID: 6a6803.CNF

Counted on: 12/ 4/96 @11:34
 Detector: AEA6
 Geometry number: 1
 Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1237.1	1237.1	253.426	253.426	18.000	10.783	9.000	3.300
2	11.3	11.3	158.540	158.472	134.000	1.000	67.000	0.100

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid		Count		%err	d/m	Activity uCi/ea	
		Exp.	Obs.	Diff.	FWHM	Rate	c/m @95			
1	Am243	0.921	5.270	5.262	0.008	0.05	54.85	1.2	633.9	0.286E-03
2		0.015		4.816	0.00		0.89	9.6	10.2	0.461E-05
Totals:		0.936	<--valid peaks only-->				55.75			

DETECTOR CALIBRATION

Energy(MEV) = 4.071 + (0.0047)*Channel
 Energy range (MeV): 4.071 TO 6.477
 Efficiency = 0.0874 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	28586.0	100.000
Smoothed	28586.6	100.002
Composite fit	26762.3	93.620
Residuals	1823.7	6.380

Analyzed by: _____

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Raw Data	Dump	for AEA	Spectrum:	6a6803.CNF						
1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	1.	0.	2.	0.	0.	0.	1.	2.	0.	3.
21	1.	0.	0.	3.	1.	2.	0.	1.	1.	0.
31	2.	0.	0.	3.	1.	1.	0.	1.	1.	2.
41	3.	3.	2.	4.	1.	1.	0.	1.	1.	5.
51	2.	1.	3.	1.	1.	0.	0.	1.	3.	0.
61	2.	3.	1.	1.	2.	2.	2.	3.	3.	3.
71	4.	2.	1.	5.	2.	0.	2.	1.	4.	3.
81	6.	4.	6.	3.	4.	3.	4.	3.	1.	4.
91	2.	0.	3.	1.	3.	3.	2.	3.	1.	5.
101	4.	1.	1.	5.	2.	4.	2.	3.	5.	1.
111	2.	3.	6.	5.	4.	3.	4.	1.	2.	4.
121	4.	7.	4.	4.	5.	1.	7.	2.	7.	9.
131	6.	4.	3.	14.	3.	5.	10.	10.	6.	9.
141	3.	8.	2.	12.	5.	5.	8.	5.	9.	11.
151	7.	12.	5.	6.	10.	11.	6.	16.	12.	12.
161	8.	4.	12.	11.	9.	8.	15.	14.	14.	8.
171	12.	10.	19.	14.	14.	16.	20.	21.	19.	23.
181	29.	16.	28.	24.	25.	25.	27.	23.	30.	32.
191	36.	38.	34.	27.	33.	39.	43.	32.	40.	47.
201	44.	59.	50.	48.	59.	61.	58.	64.	82.	69.
211	64.	80.	74.	82.	95.	103.	116.	82.	128.	108.
221	126.	135.	146.	149.	161.	173.	186.	171.	184.	249.
231	231.	260.	261.	302.	326.	325.	344.	396.	374.	440.
241	510.	568.	592.	668.	735.	806.	878.	938.	1047.	1162.
251	1190.	1357.	1360.	1312.	1223.	1153.	1079.	894.	710.	557.
261	411.	291.	240.	181.	136.	126.	109.	86.	95.	57.
271	49.	34.	20.	27.	17.	6.	10.	3.	1.	0.
281	3.	1.	0.	0.	1.	1.	1.	3.	3.	1.
291	2.	1.	1.	4.	1.	1.	4.	2.	3.	1.
301	2.	2.	0.	3.	0.	0.	1.	2.	0.	0.
311	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	1.	0.	0.	0.	1.	1.	0.	0.	0.	0.
341	0.	0.	1.	0.	0.	2.	0.	0.	1.	0.
351	1.	0.	1.	2.	0.	0.	0.	1.	1.	2.
361	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	1.	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.	1.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.
 G E N E R A L A L P H A E N E R G Y A N A L Y S I S
 Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
 S96T5663-SAM
 File ID: 7a770.CNF

Counted on: 12/ 4/96 @11:34
 Detector: AEA7
 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	464.2	464.2	304.084	304.084	32.000	41.235	16.000	5.513
2	644.9	644.9	258.617	256.473	34.000	36.296	17.000	11.895

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.					
1	Am241	0.511	5.479	5.464	0.0150.19	43.64	1.4	120.4	0.542E-04	
	Pu238		5.487	5.464	0.023			157.2	0.708E-04	
2	Pu239	0.486	5.147	5.245	-0.0980.17	41.51	1.7	107.7	0.485E-04	
	Am243		5.270	5.245	0.025			108.8	0.490E-04	
Totals:			0.997	<--valid peaks only-->			85.15			

DETECTOR CALIBRATION

Energy(MEV) = 4.065 + (0.0046)*Channel
 Energy range (MeV): 4.065 TO 6.420
 Efficiency = 0.3855 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	40996.0	100.000
Smoothed	40996.4	100.001
Composite fit	40873.2	99.700
Residuals	122.8	0.300

Analyzed by: _____

MB

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 5655.8

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Raw Data	Dump for AEA Spectrum:	7a770.CNF	NF-SD-WM-DP-224, REV						
1	0.	0.	0.	0.	0.	0.	0.	0.	1.
11	0.	0.	2.	0.	2.	0.	3.	2.	2.
21	1.	0.	1.	1.	1.	1.	1.	2.	1.
31	3.	2.	2.	3.	0.	1.	4.	0.	0.
41	1.	3.	1.	1.	1.	0.	0.	1.	1.
51	0.	1.	3.	1.	0.	3.	3.	1.	0.
61	2.	4.	2.	0.	4.	2.	2.	1.	3.
71	2.	0.	1.	2.	0.	0.	2.	4.	3.
81	1.	2.	4.	2.	2.	3.	2.	3.	1.
91	2.	2.	0.	1.	1.	3.	1.	1.	0.
101	2.	1.	3.	1.	1.	3.	0.	6.	4.
111	2.	6.	1.	3.	3.	6.	0.	2.	2.
121	3.	2.	6.	2.	2.	2.	0.	6.	1.
131	0.	6.	4.	7.	6.	1.	4.	1.	1.
141	5.	4.	4.	4.	6.	4.	6.	4.	7.
151	6.	2.	2.	4.	8.	4.	4.	8.	5.
161	4.	6.	3.	14.	4.	4.	5.	4.	3.
171	4.	5.	5.	7.	2.	4.	11.	7.	12.
181	8.	8.	11.	4.	7.	9.	7.	5.	8.
191	8.	15.	12.	17.	15.	10.	16.	16.	10.
201	15.	19.	18.	15.	25.	23.	20.	23.	24.
211	42.	33.	32.	34.	46.	45.	45.	50.	48.
221	70.	66.	69.	76.	77.	99.	125.	101.	120.
231	154.	174.	175.	195.	236.	263.	245.	298.	318.
241	379.	401.	450.	449.	507.	556.	564.	625.	649.
251	679.	688.	733.	736.	781.	745.	717.	729.	769.
261	736.	712.	647.	607.	585.	557.	520.	530.	454.
271	399.	385.	328.	347.	340.	308.	301.	246.	249.
281	241.	221.	206.	244.	251.	270.	276.	303.	277.
291	299.	339.	344.	371.	387.	415.	407.	424.	471.
301	485.	452.	444.	477.	492.	465.	407.	387.	414.
311	367.	333.	359.	308.	261.	245.	255.	244.	188.
321	155.	125.	139.	97.	100.	73.	87.	65.	47.
331	36.	32.	22.	27.	19.	19.	19.	13.	14.
341	12.	6.	8.	6.	5.	3.	6.	2.	8.
351	7.	4.	2.	4.	6.	0.	3.	4.	3.
361	2.	4.	1.	3.	2.	3.	1.	0.	2.
371	0.	0.	0.	1.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	1.	0.	0.	1.
391	1.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	1.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	1.
421	0.	1.	1.	0.	2.	0.	0.	1.	1.
431	0.	1.	0.	2.	0.	1.	0.	0.	0.
441	1.	2.	0.	1.	0.	1.	2.	0.	1.
451	0.	1.	0.	1.	0.	0.	1.	0.	0.
461	0.	0.	0.	1.	0.	0.	1.	0.	1.
471	0.	0.	0.	0.	1.	1.	0.	0.	0.
481	0.	0.	0.	0.	0.	1.	0.	0.	0.
491	1.	0.	0.	0.	0.	1.	1.	0.	0.
511	3.	0.							

Westinghouse Hanford Co.
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T5663-DUP
File ID: 8a8771.CNF

Counted on: 12/ 4/96 @11:35
Detector: AEA8
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	786.9	786.9	302.886	302.886	18.000	13.156	9.000	4.057
2	1304.0	1304.0	256.590	256.534	20.000	12.784	10.000	4.076

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea	
			Exp.	Obs.	Diff.						
1	Am241	0.366	5.479	5.469	0.0100	0.06	36.67	1.5	87.1	0.393E-04	
	Pu238		5.487	5.469	0.018				113.8	0.512E-04	
2	Pu239	0.593	5.147	5.256	-0.1090	0.06	59.41	1.2	132.7	0.598E-04	
	Am243		5.270	5.256	0.014				134.0	0.604E-04	
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Totals:			0.959	<--valid peaks only-->			96.08				

DETECTOR CALIBRATION

Energy(MEV) = 4.076 + (0.0046)*Channel
Energy range (MeV): 4.076 TO 6.431
Efficiency = 0.4477 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	48096.0	100.000
Smoothed	48096.0	100.000
Composite fit	46129.3	95.911
Residuals	1966.7	4.089

Analyzed by: _____
MB

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 8746.4

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Raw	Data	Dump	for	AEA	Spectrum:	8a8771.CNF					
1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
11	2.	2.	1.	1.	1.	3.	2.	0.	1.	2.	
21	0.	1.	1.	1.	2.	3.	5.	1.	1.	0.	
31	0.	3.	0.	0.	2.	3.	4.	0.	5.	0.	
41	2.	0.	7.	1.	2.	3.	2.	0.	1.	1.	
51	5.	0.	3.	1.	0.	2.	1.	1.	0.	2.	
61	4.	4.	1.	2.	3.	3.	0.	1.	0.	3.	
71	4.	1.	2.	3.	5.	1.	0.	1.	2.	3.	
81	4.	3.	5.	4.	1.	4.	3.	6.	2.	5.	
91	5.	1.	1.	3.	4.	4.	4.	1.	2.	4.	
101	4.	1.	4.	2.	1.	4.	3.	7.	5.	3.	
111	4.	7.	5.	1.	4.	3.	3.	4.	3.	6.	
121	5.	11.	6.	2.	4.	6.	3.	2.	9.	8.	
131	5.	9.	6.	8.	6.	5.	3.	9.	10.	0.	
141	4.	8.	5.	11.	8.	5.	6.	6.	7.	6.	
151	9.	1.	8.	10.	8.	13.	5.	6.	10.	16.	
161	6.	9.	11.	15.	10.	12.	14.	9.	9.	6.	
171	20.	9.	16.	15.	16.	16.	13.	17.	14.	14.	
181	10.	20.	17.	10.	20.	24.	23.	24.	21.	25.	
191	27.	22.	27.	27.	31.	24.	20.	39.	35.	31.	
201	35.	41.	46.	34.	40.	51.	52.	66.	53.	51.	
211	64.	66.	57.	59.	88.	89.	92.	82.	83.	97.	
221	101.	124.	117.	116.	125.	124.	142.	135.	155.	177.	
231	191.	218.	191.	230.	244.	271.	280.	326.	356.	344.	
241	378.	440.	493.	512.	598.	645.	730.	835.	877.	942.	
251	1077.	1152.	1202.	1341.	1379.	1447.	1391.	1333.	1281.	1135.	
261	1026.	843.	728.	616.	448.	411.	307.	273.	226.	196.	
271	193.	173.	152.	149.	116.	146.	132.	130.	145.	127.	
281	131.	175.	173.	191.	198.	219.	209.	260.	301.	337.	
291	361.	417.	460.	474.	555.	564.	613.	656.	746.	729.	
301	803.	779.	871.	840.	705.	687.	631.	563.	453.	342.	
311	309.	271.	186.	156.	134.	89.	72.	55.	26.	23.	
321	17.	12.	7.	4.	2.	1.	1.	2.	0.	0.	
331	0.	0.	0.	1.	1.	1.	0.	0.	0.	1.	
341	0.	0.	1.	0.	2.	0.	1.	5.	1.	1.	
351	1.	3.	3.	1.	2.	0.	0.	2.	1.	1.	
361	1.	1.	3.	2.	3.	2.	2.	0.	0.	2.	
371	0.	1.	1.	0.	1.	1.	0.	1.	0.	0.	
381	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
401	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.	
411	0.	0.	1.	0.	0.	0.	1.	0.	0.	0.	
421	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.	
431	2.	0.	0.	2.	1.	3.	1.	0.	0.	0.	
441	2.	1.	0.	0.	1.	0.	1.	1.	0.	0.	
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
471	0.	0.	0.	0.	0.	0.	0.	1.	1.	2.	
481	0.	2.	1.	0.	1.	1.	0.	0.	2.	1.	
491	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.	
511	0.	0.									

Westinghouse Hanford Co.
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T5665-SAM
File ID: 9a9587.CNF

Counted on: 12/ 4/96 @11:35
Detector: AEA9
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	718.9	718.9	305.315	305.315	16.000	8.928	8.000	2.404
2	1262.5	1262.5	259.539	259.507	12.000	6.184	6.000	1.611
3	21.7	21.7	149.475	149.438	190.000	1.000	95.000	0.100
4?	1.7	1.7	134.716	134.036	4.000	0.096	2.000	1.902

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count Rate	%err c/m @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff. FWHM				
1	Am241	0.334	5.479	5.471	0.0080.04	32.60	1.6	93.5	0.421E-04
	Pu238		5.487	5.471	0.016			122.1	0.550E-04
2	Am243	0.556	5.270	5.260	0.0100.03	54.27	1.2	147.8	0.666E-04
3	Np237	0.018	4.769	4.754	0.0150.00	1.72	6.9	5.3	0.240E-05
4		????		4.683		0.01	1797.		
Totals:			0.907	<--valid peaks only-->		88.59			

DETECTOR CALIBRATION
Energy(MEV) = 4.067 + (0.0046)*Channel
Energy range (MeV): 4.067 TO 6.422
Efficiency = 0.3709 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	46896.0	100.000
Smoothed	46903.6	100.016
Composite fit	42532.7	90.696
Residuals	4363.3	9.304

Analyzed by: _____

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Raw	Data	Dump	for	AEA	Spectrum:	9a9587.CNF	4NF-SD-WM-DP-224, REV 4
1	0.	0.	3.	7.	5.	1.	5.
11	1.	2.	4.	2.	1.	2.	0.
21	9.	5.	3.	3.	1.	6.	1.
31	4.	0.	2.	4.	5.	3.	5.
41	4.	4.	5.	5.	8.	3.	5.
51	6.	8.	8.	7.	4.	11.	6.
61	4.	8.	5.	8.	5.	4.	3.
71	11.	6.	4.	3.	6.	8.	5.
81	3.	5.	5.	7.	8.	6.	5.
91	9.	6.	9.	6.	8.	5.	6.
101	8.	8.	10.	5.	9.	6.	5.
111	10.	5.	7.	9.	5.	10.	9.
121	10.	8.	9.	12.	19.	9.	15.
131	4.	8.	16.	22.	13.	21.	11.
141	13.	16.	11.	17.	32.	17.	16.
151	25.	15.	15.	19.	25.	21.	16.
161	28.	23.	18.	31.	22.	32.	19.
171	22.	32.	36.	38.	34.	48.	32.
181	58.	44.	37.	45.	50.	40.	46.
191	48.	57.	42.	50.	55.	63.	68.
201	75.	71.	72.	73.	79.	72.	99.
211	95.	135.	109.	123.	113.	127.	146.
221	161.	130.	155.	162.	158.	177.	192.
231	234.	231.	265.	252.	288.	300.	319.
241	408.	450.	417.	450.	492.	489.	591.
251	758.	812.	869.	986.	970.	1081.	1113.
261	1371.	1118.	840.	596.	432.	276.	252.
271	189.	188.	205.	170.	194.	154.	152.
281	159.	184.	177.	189.	208.	215.	180.
291	247.	296.	351.	327.	349.	394.	440.
301	552.	610.	733.	735.	803.	800.	712.
311	283.	260.	190.	164.	129.	117.	85.
321	14.	6.	0.	0.	0.	0.	2.
331	0.	1.	0.	0.	0.	0.	1.
341	1.	0.	1.	1.	1.	2.	3.
351	6.	3.	2.	1.	4.	3.	1.
361	4.	1.	3.	1.	1.	2.	4.
371	0.	0.	2.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	1.	2.
411	0.	0.	1.	0.	0.	0.	2.
421	0.	1.	3.	0.	0.	1.	1.
431	2.	0.	1.	2.	1.	1.	1.
441	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	1.	0.	1.
471	0.	0.	0.	2.	4.	1.	2.
481	2.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.
511	0.	0.	0.	0.	0.	0.	0.

Westinghouse Hanford Co.
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T5665-DUP
File ID: 10a1094.CNF

Counted on: 12/ 4/96 @11:36
Detector: AEA10
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	995.4	995.4	303.705	303.705	14.000	7.425	7.000	3.554
2	1729.3	1729.3	258.052	258.049	12.000	5.038	6.000	2.291

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	0.355	5.487	5.473	0.0140.03	32.72	1.6	188.3	0.848E-04
	Am241		5.479	5.473	0.006			144.2	0.650E-04
2	Am243	0.565	5.270	5.263	0.0070.02	52.03	1.2	217.7	0.981E-04
Totals:			0.920	<--valid peaks only-->			84.75		

DETECTOR CALIBRATION

Energy(MEV) = 4.076 + (0.0046)*Channel
Energy range (MeV): 4.076 TO 6.431
Efficiency = 0.2414 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	44204.0	100.000
Smoothed	44206.5	100.006
Composite fit	40683.0	92.035
Residuals	3521.0	7.965

Analyzed by: _____

MB

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Raw	Data	Dump	for	AEA	Spectrum:	10a1094.CNF	4NF-SD-WM-DP-224, REV. 1		
1	0.	0.	1.	1.	2.	0.	1.	0.	0.
11	1.	0.	2.	1.	1.	1.	1.	2.	3.
21	1.	1.	3.	1.	2.	2.	3.	1.	1.
31	1.	0.	4.	1.	2.	2.	3.	3.	0.
41	0.	2.	4.	6.	5.	3.	0.	2.	0.
51	0.	1.	4.	3.	0.	4.	3.	3.	2.
61	1.	2.	1.	1.	3.	2.	6.	3.	3.
71	3.	3.	1.	2.	2.	0.	3.	1.	3.
81	1.	2.	1.	4.	3.	2.	6.	3.	0.
91	4.	2.	1.	5.	2.	5.	4.	6.	4.
101	1.	5.	5.	4.	3.	3.	3.	7.	4.
111	4.	9.	4.	2.	2.	5.	3.	3.	4.
121	1.	5.	6.	6.	4.	4.	7.	2.	3.
131	9.	6.	9.	5.	7.	2.	5.	9.	6.
141	4.	1.	5.	6.	2.	6.	6.	3.	7.
151	3.	10.	10.	8.	8.	6.	7.	4.	8.
161	12.	11.	9.	11.	9.	7.	7.	8.	8.
171	8.	14.	12.	6.	12.	12.	8.	10.	15.
181	12.	14.	16.	19.	16.	15.	14.	15.	15.
191	24.	18.	20.	20.	24.	30.	21.	22.	28.
201	21.	28.	32.	23.	24.	23.	31.	30.	28.
211	30.	47.	40.	37.	38.	42.	36.	61.	49.
221	66.	48.	77.	47.	79.	78.	79.	97.	111.
231	118.	115.	146.	134.	156.	151.	175.	206.	235.
241	251.	299.	328.	369.	391.	507.	519.	575.	675.
251	866.	897.	1111.	1322.	1351.	1702.	1958.	1971.	1980.
261	1234.	715.	435.	312.	234.	218.	203.	194.	182.
271	143.	137.	110.	121.	86.	85.	89.	83.	64.
281	73.	81.	96.	116.	151.	146.	157.	147.	199.
291	239.	323.	328.	368.	441.	501.	472.	593.	621.
301	936.	1046.	1151.	1123.	1070.	894.	720.	550.	336.
311	262.	238.	179.	149.	116.	77.	73.	33.	19.
321	2.	1.	0.	0.	0.	0.	1.	0.	0.
331	0.	0.	0.	0.	1.	0.	0.	0.	0.
341	0.	0.	0.	1.	0.	2.	2.	3.	1.
351	2.	2.	0.	2.	0.	1.	1.	0.	0.
361	1.	2.	2.	1.	1.	0.	1.	0.	0.
371	0.	0.	0.	1.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	1.	0.	0.	0.
411	0.	0.	0.	0.	1.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	1.	0.
431	0.	1.	0.	0.	1.	2.	0.	0.	1.
441	2.	1.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	1.	0.	0.	0.	0.	0.	0.
461	0.	0.	2.	0.	0.	0.	1.	0.	1.
471	0.	0.	0.	1.	0.	0.	1.	1.	0.
481	1.	1.	1.	1.	2.	0.	1.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.							

Westinghouse Hanford Co.
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T5666-SAM
File ID: 11a1197.CNF

Counted on: 12/ 4/96 @11:36
Detector: AEA11
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	880.1	880.1	304.862	304.862	14.000	6.892	7.000	3.242
2	1559.8	1559.8	259.010	259.006	12.000	4.949	6.000	2.345
3	18.1	18.1	182.910	182.889	106.000	1.000	53.000	0.100
4?	0.0	0.1	169.548	169.548	0.000	0.100	0.000	0.100

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA		Peak Centroid			Count Rate	%err @95	d/m	Activity uCi/ea
		Frac	Exp.	Obs.	Diff.	FWHM				
1	Pu238	0.347	5.487	5.474	0.0130.03		28.48	1.7	110.5	0.498E-04
	Am241		5.479	5.474	0.005				84.6	0.381E-04
2	Am243	0.558	5.270	5.263	0.0070.02		45.82	1.3	129.3	0.582E-04
3	Pu242	0.018	4.891	4.913	-.0220.00		1.45	7.4	4.0	0.182E-05
4		????		4.852			0.00	9790.		

Totals: 0.922 <--valid peaks only--> 75.74

DETECTOR CALIBRATION

Energy(MEV) = 4.072 + (0.0046)*Channel
Energy range (MeV): 4.072 TO 6.427
Efficiency = 0.3580 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	39424.0	100.000
Smoothed	39425.3	100.003
Composite fit	36357.1	92.221
Residuals	3066.9	7.779

Analyzed by: _____

MB

Spectrum 11a1197.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 10013.9

INF-SD-WM-DP-224, REV. 5.0

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Westinghouse Hanford Co.
G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T5666-DUP
File ID: 12a1269.CNF

Counted on: 12/ 4/96 @11:36
Detector: AEA12
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	835.8	835.8	302.285	302.285	16.000	9.829	8.000	3.344
2	1402.0	1402.0	256.373	256.348	16.000	7.906	8.000	2.549
3	22.7	22.7	160.721	160.675	128.000	1.000	64.000	0.100
4?	2.4	2.4	131.463	130.550	8.000	0.846	4.000	0.408

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.					
1	Am241	0.347	5.479	5.473	0.0060	0.05	34.40	1.5	137.4	0.619E-04
	Pu238		5.487	5.473	0.014				179.4	0.808E-04
2	Am243	0.566	5.270	5.261	0.0090	0.04	56.07	1.2	212.7	0.958E-04
3		0.018		4.821		0.00	1.81	6.7	6.8	0.306E-05
4		????		4.683			0.05	170.		
Totals:			0.931 <--valid peaks only-->				92.27			

DETECTOR CALIBRATION

Energy(MEV) = 4.082 + (0.0046)*Channel
Energy range (MeV): 4.082 TO 6.437
Efficiency = 0.2663 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	47556.0	100.000
Smoothed	47557.4	100.003
Composite fit	44320.6	93.197
Residuals	3235.4	6.803

Analyzed by: _____

MB

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 9008.9

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Raw Data	Dump	for	AEA Spectrum:	12a1269.CNF	INF-SD-WM-DP-224, REV. 6					
1	0.	0.	2.	4.	0.	0.	4.	4.	3.	3.
11	3.	4.	2.	2.	4.	3.	3.	3.	1.	2.
21	4.	1.	1.	1.	3.	3.	2.	4.	2.	4.
31	4.	3.	1.	3.	2.	0.	6.	4.	2.	4.
41	3.	3.	2.	3.	4.	8.	4.	3.	2.	4.
51	6.	6.	9.	5.	6.	5.	6.	3.	4.	3.
61	3.	6.	7.	6.	8.	2.	6.	1.	9.	8.
71	4.	3.	8.	6.	7.	6.	4.	4.	8.	8.
81	5.	1.	5.	6.	7.	9.	9.	5.	8.	5.
91	14.	3.	6.	3.	4.	6.	8.	5.	8.	7.
101	9.	5.	13.	9.	8.	3.	1.	7.	5.	8.
111	8.	10.	11.	7.	7.	7.	6.	11.	5.	10.
121	11.	8.	7.	4.	14.	11.	9.	11.	13.	10.
131	15.	12.	14.	11.	5.	13.	11.	17.	8.	11.
141	16.	6.	10.	17.	16.	9.	14.	16.	16.	17.
151	16.	19.	21.	12.	14.	19.	15.	17.	16.	23.
161	26.	16.	20.	12.	20.	18.	24.	20.	19.	24.
171	29.	29.	20.	15.	32.	28.	29.	27.	41.	29.
181	25.	39.	32.	30.	29.	33.	39.	33.	48.	36.
191	37.	45.	43.	49.	40.	46.	42.	38.	58.	42.
201	42.	58.	51.	68.	64.	68.	69.	84.	71.	75.
211	78.	89.	80.	90.	103.	101.	101.	92.	118.	102.
221	122.	97.	126.	141.	128.	157.	174.	174.	185.	195.
231	198.	227.	211.	221.	240.	276.	312.	309.	333.	341.
241	406.	455.	522.	535.	607.	610.	699.	814.	851.	972.
251	1062.	1155.	1262.	1369.	1499.	1572.	1553.	1406.	1304.	1044.
261	744.	588.	389.	313.	232.	236.	189.	202.	175.	180.
271	159.	164.	154.	148.	152.	120.	111.	120.	137.	139.
281	139.	169.	204.	181.	189.	192.	249.	232.	259.	319.
291	387.	365.	449.	494.	502.	541.	604.	708.	724.	848.
301	875.	946.	879.	847.	746.	597.	492.	356.	319.	261.
311	257.	158.	155.	124.	81.	54.	40.	26.	13.	10.
321	6.	5.	0.	0.	1.	0.	1.	0.	0.	0.
331	0.	0.	0.	2.	0.	1.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	1.	0.	5.	3.	2.
351	1.	2.	0.	0.	1.	0.	2.	0.	1.	0.
361	0.	0.	1.	0.	0.	0.	1.	0.	1.	0.
371	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	1.	0.	0.	1.	0.	0.	1.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
411	0.	1.	0.	0.	0.	0.	0.	0.	1.	0.
421	0.	0.	1.	0.	1.	2.	1.	0.	0.	2.
431	2.	2.	0.	0.	2.	0.	1.	2.	2.	1.
441	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
471	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
481	1.	4.	1.	1.	1.	3.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

LABCORE Completed RadChem Report for Worklist#: 15466

Analyst: jmv

Instrument: AB15

Book#

Method: Rev/Mod

Worklist Comment: Rerun from WL#14466; use 1.0 ml sample size. jfr 9 Dec 96.

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	0AM24101 AM24101 LIQUID		1.19E-04	1.05E-4	88.235	% Recovery
1 STD	0	0AM24101 AM24101T LIQUID		100.	9.08E+01	90.800	% Recovery
1 STD	0	0AM24101 AM24101E LIQUID		1.0	1.60E+00	1.600	% Ct Error
2 BLNK	0	0AM24101 AM24101 LIQUID		1	<6.75E-6		uCi/mL
2 BLNK	0	0AM24101 AM24101T LIQUID		100.0	7.75E+01	77.500	% Recovery
2 BLNK	0	0AM24101 AM24101E LIQUID		1.0	1.00E+02	100.000	% Ct Error
3 SAMPLE	S96T005663 0	0AM24101 AM24101 LIQUID	N/A		9.98E-05	142.0e-007	uCi/mL
3 SAMPLE	S96T005663 0	0AM24101 AM24101E LIQUID	N/A		1.93E+00	0.0e+000	% Ct. Error
3 SAMPLE	S96T005663 0	0AM24101 AM24101T LIQUID	N/A		6.89E+01	0.0e+000	% Recovery
4 DUP	S96T005663 0	0AM24101 AM24101 LIQUID		9.98E-5	5.40E-5	59.558	RPD
4 DUP	S96T005663 0	0AM24101 AM24101T LIQUID		100.0	8.86E+01	88.600	% Recovery
4 DUP	S96T005663 0	0AM24101 AM24101E LIQUID		1.0	1.98E+00	1.980	% Ct Error

Final page for worklist# 15466

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

Date

sample not homogeneous, liquid.

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

LABCORE Data Entry Template for Worklist# 15466

Analyst: DMV Instrument: AM01 Book# 62 B 56

Method: LA-953-103 Rev/Mod B-4

Worklist Comment: Rerun from WL#14466; use 1.0 ml sample size. jfr 9 Dec 96.

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@AM24101	LIQUID		
2 BLNK			@AM24101	LIQUID		
3 SAMPLE	S96T005663 0		@AM24101	LIQUID	96001429	244-TX GRAB
	Analytes Requested: AM24101 , AM24101E, AM24101T					
4 DUP	S96T005663 0		@AM24101	LIQUID		

Final page for worklist # 15466

James L. Se 12-12-96
Analyst Signature Date

Sharon L. White 12-13-96
Analyst Signature Date
12/13/96

Data Entry Comments:

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

ANALYSIS DATE: 12.12.2016

MATRIX: SOLID LIQUID EACH

ANALYSIS TIME: 14.25

TRACER BK.# 125B43

(at elevator)

[illegible]

WORKBOOK PAGE: STD1

Am 241 and Cm 243/244: LA-953-103 (B-0)

LIQUID

Am 241 and Cm 243/244: LA-953-103 (B-0)				LIQUID		STD
	Date Counted		DEC-13-96	Am 241 AEA Frac.	(C241)	0.49
STD	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)	0.431
	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0
15466	Tracer Volume in mL	(SPKV)	0.200	Total AT Counts		3942
	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)	0.2
	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm		66.77
LIQUID	Detector Number		15	Am 243 cpm		58.78
	Detector Efficiency	(DetEff)	0.3032	Cm 243/244 cpm		0
96012079	Standard Book No		62B56	AEA Count Time	(min)	480
	Standard Value in $\mu\text{Ci/mL}$		1.186E-04	Am 241 $\mu\text{Ci/L}$ =		1.0519E-01
0				Cm 243/244 $\mu\text{Ci/L}$ =		< 1.1821E-02
N/A						
WL15466	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))					
	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))					
WB26872	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100					
	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV					
SLH2						
JFR	Am 241 $\mu\text{Ci/mL}$	=	1.05E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$		
	Relative Counting Error	=	1.6%			
JMV	NOTE: Cm-243/244 Result is a LESS THAN Value.					
12/13/96	Cm 243/244 $\mu\text{Ci/mL}$		< 1.18E-05		Am 241 1.18E-05	
	Relative Counting Error	=	100.0%		Cm 243/244 1.18E-05	
12/12/96	Am 243 Tracer Recovery	=	90.8%			
02:45 PM						
244-TX GRAB						

Analyst:	JMV	Date:	12/13/96
Signature of Chemist:	JFR	Date:	16 Dec 96

STANDARD.WB1 REV 1.2

953103ML

WORKBOOK PAGE: BLANK2

Am 241 and Cm 243/244: LA-953-103 (B-0)

LIQUID / SOLID

Am 241 and Cm 243/244: LA-953-103 (B-0)			LIQUID / SOLID		BLNK
	Date Counted	DEC-13-96	Am 241 AEA Frac.	(C241)	0
	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac.	(C243)	0.884
	Sample D.F. (DF)	1	Cm 243/244 AEA Frac.	(Cm)	0
15466	Tracer Volume in mL (SPKV)	0.200	Total AT Counts		1645
	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)		30
@AM24101	Tracer Book No.	125B43	Background in cpm (Bkg)		0.2
	Am-243 Tracer Value (dpm/mL)	1027	Am 241 cpm		0
LIQUID	Detector Number	15	Am 243 cpm		53.79
	Detector Efficiency (DetEff)	0.3032	Cm 243/244 cpm		0
96012079			AEA Count Time (min)		480
0			Am 241 $\mu\text{Ci/L}$ =	<	6.7482E-03
N/A			Cm 243/244 $\mu\text{Ci/L}$ =	<	6.7482E-03
WL15466	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
WB26872	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100				
SLH2	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV				
	NOTE: Am-241 Result is a LESS THAN Value.				
JFR	Am 241 $\mu\text{Ci/mL}$ =	< 6.75E-06	DETECTION LEVELS in $\mu\text{Ci/mL}$		
	Relative Counting Error =	100.0%			
JMV			Am 241		
12/13/96	Cm 243/244 $\mu\text{Ci/mL}$	< 6.75E-06	6.75E-06		
	Relative Counting Error =	100.0%	Cm 243/244		
12/12/96	Am 243 Tracer Recovery =	77.5%	6.75E-06		
02:45 PM					
244-TX GRAB					

Analyst:	JMV	Date:	12/13/96
Signature of Chemist:	JFR	Date:	16 Dec 96
BLANK.WB1 REV 1.2	953103ML		

WORKBOOK PAGE: SAM3

Am 241 and Cm 243/244: LA-953-103 (B-0)

LIQUID / SOLID

Am 241 and Cm 243/244: LA-953-103 (B-0)

				SAMPLE
	Date Counted	DEC-13-96	Am 241 AEA Frac. (C241)	0.508
SAMPLE	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.471
	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
15466	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	2741
	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	125B43	Background in cpm (Bkg)	0.2
	Am-243 Tracer Value (dpm/mL)	1027	Am 241 cpm	44.68
LIQUID	Detector Number	15	Am 243 cpm	41.41
	Detector Efficiency (DetEff)	0.3032	Cm 243/244 cpm	0
96012079			AEA Count Time (min)	480
			Am 241 $\mu\text{Ci/L}$ =	9.9791E-02
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 1.4245E-02
N/A				
	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
S96T005663	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
WB26872	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100			
SCH2	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV			
JFR	Am 241 $\mu\text{Ci/mL}$ =	9.98E-05	DETECTION LEVELS in $\mu\text{Ci/mL}$	
JMV	Relative Counting Error =	1.9%		
	NOTE: Cm-243/244 Result is a LESS THAN Value.			
12/13/96	Cm 243/244 $\mu\text{Ci/mL}$	< 1.42E-05	Am 241	1.42E-05
	Relative Counting Error =	100.0%	Cm 243/244	1.42E-05
12/12/96	Am 243 Tracer Recovery =	68.9%		
02:45 PM				
244-TX GRAB				

Analyst:	JMV	Date:	12/13/96
Signature of Chemist:	JFR	Date:	16 Dec 96
SAMPLE WB1 REV 1.2	853103ML		

WORKBOOK PAGE: DUP4

Am 241 and Cm 243/244: LA-953-103 (B-0)

LIQUID / SOLID

				DUP
DUP	Date Counted	DEC-13-96	Am 241 AEA Frac. (C241)	0.348
	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.596
	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
15466	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	2783
	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	125B43	Background in cpm (Bkg)	0.2
	Am-243 Tracer Value (dpm/mL)	1027	Am 241 cpm	32.18
LIQUID	Detector Number	15	Am 243 cpm	55.12
	Detector Efficiency (DetEff)	0.3032	Cm 243/244 cpm	0
96012079			AEA Count Time (min)	480
			Am 241 µCi/L =	5.4023E-02
0			Cm 243/244 µCi/L =	< 8.7619E-03
N/A				

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

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

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

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

JFR	Am 241 µCi/mL =	5.40E-05	DETECTION LEVELS in µCi/mL
JMV	Relative Counting Error =	2.0%	
	NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241
12/13/96	Cm 243/244 µCi/mL	< 8.76E-06	8.76E-06
	Relative Counting Error =	100.0%	Cm 243/244
12/12/96	Am 243 Tracer Recovery =	88.6%	8.76E-06

Analyst:	JMV	Date:	12/13/96
Signature of Chemist:	JFR	Date:	16 Dec 96
SAMPLE.WB1 REV 1.2	953103ML		

Westinghouse Hanford Co.
G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
WL15466-STD
File ID: 5a5000.CNF

Counted on: 12/13/96 @ 0:49
Detector: AEA5
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	1635.1	1635.1	301.729	301.729	16.000	9.969	8.000	3.481
2	1477.5	1477.5	255.761	255.719	14.000	7.912	7.000	2.578
3	49.5	49.5	190.660	190.417	66.000	252.769	33.000	24.447

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.	FWHM				
1	Am241	0.490	5.479	5.475	0.0040	0.05	66.77	1.1	184.0	0.829E-04
	Pu238		5.487	5.475	0.012				240.3	0.108E-03
2	Am243	0.431	5.270	5.263	0.0070	0.04	58.78	1.2	153.8	0.693E-04
3	Np237	0.066	4.769	4.963	-.1941	1.16	8.94	8.7	26.6	0.120E-04
	Pu242		4.891	4.963	-.072				23.2	0.104E-04
Totals:			0.987	<--valid peaks only-->			134.49			

DETECTOR CALIBRATION

Energy(MEV) = 4.087 + (0.0046)*Channel
Energy range (MeV): 4.087 TO 6.442
Efficiency = 0.3860 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	65405.0	100.000
Smoothed	65405.0	100.000
Composite fit	64556.9	98.703
Residuals	848.1	1.297

Analyzed by:

AKH

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 11910.2

HNF-SD-WM-DP-224, REV. 0

[illegible]

Raw	Data	Dump	for	AEA	Spectrum:	5a5000.CNF	HNF-SD-WM-DP-224, REV. 0	HNF-SD-WM-DP-224, REV. 0	HNF-SD-WM-DP-224, REV. 0	HNF-SD-WM-DP-224, REV. 0
1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	4.	4.	3.	3.	1.	7.	3.	2.	1.	3.
21	7.	5.	8.	2.	2.	5.	5.	8.	5.	3.
31	5.	5.	5.	0.	4.	7.	8.	3.	4.	7.
41	4.	6.	4.	8.	3.	4.	3.	7.	5.	3.
51	3.	7.	5.	6.	9.	10.	8.	2.	8.	4.
61	8.	6.	4.	12.	8.	1.	11.	4.	9.	7.
71	5.	4.	7.	2.	11.	7.	8.	7.	3.	2.
81	10.	5.	8.	10.	11.	7.	8.	5.	5.	10.
91	7.	7.	12.	5.	11.	12.	5.	6.	11.	6.
101	10.	8.	12.	13.	7.	15.	9.	11.	11.	8.
111	14.	14.	5.	12.	8.	13.	15.	10.	10.	15.
121	16.	15.	17.	11.	7.	13.	12.	9.	9.	15.
131	16.	17.	14.	18.	19.	18.	16.	14.	23.	13.
141	22.	21.	13.	15.	14.	24.	16.	20.	15.	21.
151	27.	19.	15.	19.	17.	21.	25.	26.	27.	21.
161	27.	24.	25.	27.	35.	22.	30.	29.	27.	33.
171	32.	22.	38.	24.	32.	31.	36.	41.	32.	39.
181	34.	42.	40.	25.	34.	34.	54.	35.	51.	60.
191	55.	48.	38.	53.	46.	49.	52.	57.	63.	68.
201	62.	58.	75.	60.	69.	65.	58.	74.	70.	94.
211	71.	99.	80.	103.	88.	108.	114.	102.	117.	115.
221	135.	136.	126.	139.	143.	155.	170.	185.	173.	211.
231	263.	230.	226.	278.	305.	298.	358.	351.	373.	377.
241	456.	514.	523.	616.	630.	725.	801.	873.	999.	1097.
251	1171.	1339.	1359.	1551.	1678.	1629.	1576.	1491.	1125.	917.
261	667.	462.	374.	317.	290.	281.	247.	246.	274.	237.
271	203.	243.	208.	219.	212.	194.	222.	236.	243.	258.
281	309.	289.	338.	379.	359.	427.	503.	542.	570.	648.
291	685.	772.	894.	1006.	1103.	1216.	1283.	1386.	1553.	1756.
301	1792.	1763.	1710.	1600.	1299.	1072.	860.	651.	548.	442.
311	360.	335.	253.	223.	145.	98.	70.	43.	18.	8.
321	3.	5.	3.	2.	2.	2.	3.	0.	0.	1.
331	0.	1.	0.	0.	0.	1.	1.	2.	1.	2.
341	2.	0.	2.	1.	2.	3.	6.	1.	1.	2.
351	1.	3.	4.	5.	0.	1.	2.	4.	2.	1.
361	3.	1.	1.	0.	0.	1.	0.	1.	1.	0.
371	0.	1.	1.	0.	0.	1.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
391	0.	0.	1.	0.	0.	0.	0.	1.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	1.	1.	0.	1.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	1.	1.	0.	0.	1.	0.	1.	0.	1.	1.
481	0.	1.	0.	2.	1.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

DATA REDUCTION REPORT

SAMPLE
 WL15466-BLK
 File ID: 6a6819.CNF

Counted on: 12/13/96 @ 0:50
 Detector: AEA6
 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	1144.9	1144.9	253.474	253.474	18.000	10.747	9.000	2.930
2	13.1	13.1	128.544	128.530	210.000	1.000	105.000	0.100

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count	%err	Activity
			Exp.	Obs.	Diff.	FWHM	Rate c/m	@95
1	Am243	0.884	5.270	5.267	0.0030	0.05	53.79	1.2
2	Np237	0.017	4.640	4.680	-0.0400	0.00	1.03	8.8
Totals:		0.901	<--valid peaks only-->				54.81	

DETECTOR CALIBRATION

Energy(MEV) = 4.076 + (0.0047)*Channel
 Energy range (MeV): 4.076 TO 6.482
 Efficiency = 0.0855 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	29218.0	100.000
Smoothed	29217.6	99.999
Composite fit	26311.7	90.053
Residuals	2906.3	9.947

Analyzed by: _____
 AKH

Spectrum 6a6819.CNF
1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 8526.9

Display Max.: 8526.9

INF-SD-WM-DP-224, REV. 3

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Raw Data	Dump for AEA	Spectrum:	6a6819.CNF	INF-SD-WM-DP-224, REV
1	0.	0.	0.	0.
11	1.	3.	3.	4.
21	1.	2.	3.	1.
31	8.	3.	5.	3.
41	3.	2.	4.	7.
51	5.	2.	2.	5.
61	3.	6.	3.	2.
71	2.	2.	5.	6.
81	5.	5.	2.	2.
91	8.	6.	2.	8.
101	3.	7.	6.	5.
111	9.	11.	8.	7.
121	14.	17.	10.	9.
131	10.	8.	5.	15.
141	21.	10.	13.	14.
151	20.	21.	16.	20.
161	19.	28.	20.	25.
171	33.	23.	32.	44.
181	41.	41.	37.	36.
191	56.	53.	44.	53.
201	51.	61.	58.	86.
211	83.	102.	109.	133.
221	148.	160.	170.	220.
231	241.	288.	284.	385.
241	472.	539.	565.	895.
251	1140.	1241.	1245.	761.
261	395.	308.	232.	83.
271	51.	33.	27.	1.
281	0.	2.	1.	2.
291	4.	3.	4.	0.
301	2.	5.	0.	0.
311	0.	1.	0.	0.
321	0.	0.	0.	0.
331	0.	0.	0.	0.
341	0.	2.	0.	1.
351	4.	1.	4.	1.
361	1.	4.	1.	3.
371	1.	0.	0.	0.
381	0.	0.	0.	0.
391	0.	0.	0.	0.
401	0.	0.	0.	0.
411	0.	0.	0.	0.
421	0.	0.	0.	1.
431	0.	0.	0.	0.
441	0.	0.	1.	0.
451	0.	0.	0.	0.
461	0.	0.	0.	0.
471	0.	0.	0.	0.
481	0.	2.	0.	0.
491	0.	0.	0.	0.
511	0.	0.	0.	0.

Westinghouse Hanford Co.
 G E N E R A L A L P H A E N E R G Y A N A L Y S I S
 Rev. 2.02

HNF-SD-WM-DP-224, REV

DATA REDUCTION REPORT

SAMPLE
 S96T005663-SAM
 File ID: 7a7585.CNF

Counted on: 12/13/96 @ 0:51
 Detector: AEA7
 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	410.2	410.2	302.961	302.961	34.000	41.183	17.000	4.281
2	603.1	603.1	257.180	256.496	28.000	30.975	14.000	6.859
3	10.8	10.8	177.482	177.482	20.000	27.780	10.000	1.965

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.	FWHM				
1	Am241	0.508	5.479	5.485	-0.006	0.19	44.68	1.3	207.1	0.933E-04
	Pu238		5.487	5.485	0.002				270.4	0.122E-03
2	Pu239	0.471	5.147	5.267	-0.120	0.15	41.41	1.7	180.4	0.813E-04
	Am243		5.270	5.267	0.003				182.2	0.821E-04
3	Np237	0.016	4.769	4.895	-0.126	0.13	1.42	13.9	7.1	0.321E-05
	Pu242		4.891	4.895	-0.004				6.2	0.279E-05

Totals:			0.995	<--valid peaks only-->				87.50		

DETECTOR CALIBRATION

Energy(MEV) = 4.061 + (0.0047)*Channel
 Energy range (MeV): 4.061 TO 6.468
 Efficiency = 0.2295 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	42196.0	100.000
Smoothed	42196.1	100.000
Composite fit	42004.9	99.547
Residuals	191.1	0.453

Analyzed by: _____

AKH

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

Display Max.: 5399.9

[illegible]

Raw Data	Dump for	AEA Spectrum:	7a7585.CNF	INF-SD-WM-DP-224, REV. 0
1	0.	0.	0.	0.
11	3.	2.	3.	2.
21	3.	2.	3.	5.
31	5.	3.	4.	6.
41	2.	4.	0.	3.
51	2.	6.	3.	8.
61	6.	4.	5.	6.
71	2.	7.	4.	6.
81	6.	3.	6.	3.
91	9.	5.	5.	6.
101	8.	11.	9.	4.
111	3.	8.	6.	11.
121	9.	11.	3.	9.
131	11.	13.	10.	6.
141	7.	11.	12.	11.
151	13.	14.	16.	9.
161	16.	26.	8.	14.
171	20.	19.	16.	15.
181	26.	25.	17.	14.
191	40.	35.	19.	20.
201	58.	40.	28.	17.
211	87.	68.	31.	30.
221	113.	81.	30.	22.
231	235.	81.	32.	37.
241	412.	81.	44.	43.
251	667.	85.	73.	37.
261	657.	92.	52.	39.
271	395.	109.	59.	72.
281	263.	100.	73.	64.
291	313.	103.	72.	142.
301	396.	109.	92.	192.
311	353.	176.	162.	374.
321	108.	279.	363.	692.
331	18.	333.	566.	572.
341	4.	423.	637.	686.
351	0.	440.	718.	439.
361	2.	502.	471.	226.
371	0.	558.	273.	280.
381	0.	566.	264.	359.
391	0.	572.	279.	382.
401	0.	585.	288.	368.
411	0.	598.	297.	122.
421	0.	608.	397.	47.
431	0.	609.	426.	3.
441	0.	608.	414.	3.
451	1.	608.	412.	3.
461	0.	608.	412.	3.
471	0.	608.	412.	3.
481	0.	608.	412.	3.
491	0.	608.	412.	3.
501	0.	608.	412.	3.
511	1.	608.	412.	3.

Westinghouse Hanford Co.
G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T005663-DUP
File ID: 8a8787.CNF

Counted on: 12/13/96 @ 0:52
Detector: AEA8
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	659.0	659.0	301.768	301.768	22.000	13.801	11.000	3.950
2	1092.7	1092.7	255.789	255.704	18.000	13.823	9.000	3.699

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.					
1	Am241	0.348	5.479	5.495	-0.016	0.06	32.18	1.6	96.1	0.433E-04
	Pu238		5.487	5.495	-0.008				125.5	0.565E-04
2	Am243	0.596	5.270	5.278	-0.008	0.06	55.12	1.2	156.4	0.704E-04
Totals:			0.943	<--valid peaks only-->			87.31			

DETECTOR CALIBRATION

Energy (MEV) = 4.076 + (0.0047)*Channel
Energy range (MeV): 4.076 TO 6.483
Efficiency = 0.3561 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	44430.0	100.000
Smoothed	44430.0	100.000
Composite fit	41912.1	94.333
Residuals	2517.9	5.667

Analyzed by: _____

AKH

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

Display Max.: 7948.4

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Raw	Data	Dump	for	AEA	Spectrum:	8a8787.CNF	CNF-SD-WM-DP-224, REV
1	0.	0.	0.	0.	0.	0.	0.
11	4.	3.	4.	1.	4.	2.	3.
21	3.	1.	2.	3.	2.	2.	4.
31	2.	4.	6.	1.	6.	1.	3.
41	1.	3.	3.	5.	4.	7.	2.
51	8.	3.	2.	3.	2.	3.	1.
61	3.	5.	2.	0.	3.	5.	7.
71	5.	2.	2.	1.	2.	7.	1.
81	7.	4.	6.	6.	7.	3.	2.
91	5.	6.	2.	5.	2.	4.	7.
101	4.	5.	9.	3.	5.	4.	7.
111	5.	6.	11.	6.	8.	3.	3.
121	6.	14.	7.	7.	7.	7.	12.
131	7.	6.	7.	11.	12.	8.	7.
141	11.	5.	8.	10.	11.	8.	11.
151	11.	10.	16.	23.	7.	15.	20.
161	18.	16.	14.	19.	19.	14.	23.
171	26.	16.	22.	18.	21.	35.	19.
181	25.	29.	23.	27.	21.	37.	31.
191	34.	31.	38.	36.	34.	43.	44.
201	60.	73.	50.	67.	64.	74.	70.
211	76.	74.	71.	95.	88.	91.	99.
221	136.	125.	115.	154.	157.	167.	154.
231	232.	230.	240.	259.	272.	280.	331.
241	438.	447.	513.	558.	632.	672.	746.
251	996.	1073.	1084.	1144.	1190.	1191.	1102.
261	761.	659.	548.	487.	389.	300.	241.
271	159.	144.	128.	146.	141.	147.	135.
281	144.	169.	172.	183.	221.	232.	215.
291	339.	358.	390.	433.	466.	523.	602.
301	740.	688.	675.	624.	598.	518.	449.
311	212.	160.	136.	105.	90.	45.	38.
321	16.	8.	9.	4.	2.	1.	1.
331	0.	1.	1.	2.	1.	2.	1.
341	1.	0.	2.	1.	1.	1.	3.
351	1.	1.	0.	3.	2.	2.	2.
361	1.	0.	3.	0.	2.	2.	0.
371	0.	0.	1.	0.	2.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.
411	1.	0.	0.	0.	0.	0.	0.
421	0.	0.	1.	1.	0.	0.	0.
431	2.	1.	1.	1.	0.	0.	0.
441	0.	0.	0.	1.	0.	1.	1.
451	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	1.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	4.	1.	0.
491	0.	0.	0.	0.	0.	0.	0.
511	0.	0.					

LABCORE Completed RadChem Report for Worklist#: 14468

Analyst: jmv

Instrument: AB14

Book# 62856

Method: LA-913-128 Rev/Mod B-1

Worklist Comment: TX-244 PU, DETERMINE SS USING LUDLUM. RCJ

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	@PU23901 PU23901 LIQUID		1.49E-04	1.40E-4	93.960	% Recovery
1 STD	0	@PU23901 PU23901E LIQUID		1.00	1.46E+00	1.460	% Ct Error
1 STD	0	@PU23901 PU23901T LIQUID		100	8.98E+01	89.800	% Recovery
2 BLNK	0	@PU23901 PU23901 LIQUID		1	<3.50E-6		uCi/mL
2 BLNK	0	@PU23901 PU23901T LIQUID		100	9.03E+01	90.300	% Recovery
2 BLNK	0	@PU23901 PU23901E LIQUID		1.00	1.00E+02	100.000	uCi/mL
3 SAMPLE	S96T005663 0	@PU23901 PU23901 LIQUID	N/A		4.37E-05	547.0e-008	uCi/mL
3 SAMPLE	S96T005663 0	@PU23901 PU23901T LIQUID	N/A		8.15E+01	0.0e+000	% Recovery
3 SAMPLE	S96T005663 0	@PU23901 PU23901E LIQUID	N/A		2.18E+00	0.0e+000	% Ct. Error
4 DUP	S96T005663 0	@PU23901 PU23901 LIQUID		4.37E-5	4.42E-5	1.138	RPD
4 DUP	S96T005663 0	@PU23901 PU23901T LIQUID		100	8.84E+01	88.400	% Recovery
4 DUP	S96T005663 0	@PU23901 PU23901E LIQUID		1.00	2.06E+00	2.060	% Ct Error
5 SAMPLE	S96T005665 0	@PU23901 PU23901 LIQUID	N/A		4.62E-05	582.0e-008	uCi/mL
5 SAMPLE	S96T005665 0	@PU23901 PU23901T LIQUID	N/A		7.66E+01	0.0e+000	% Recovery
5 SAMPLE	S96T005665 0	@PU23901 PU23901E LIQUID	N/A		2.33E+00	0.0e+000	% Ct. Error
6 DUP	S96T005665 0	@PU23901 PU23901 LIQUID		4.62E-5	4.61E-5	0.217	RPD
6 DUP	S96T005665 0	@PU23901 PU23901T LIQUID		100	8.13E+01	81.300	% Recovery
6 DUP	S96T005665 0	@PU23901 PU23901E LIQUID		1.00	2.18E+00	2.180	% Ct Error
7 SAMPLE	S96T005666 0	@PU23901 PU23901 LIQUID	N/A		6.05E-05	544.0e-008	uCi/mL
7 SAMPLE	S96T005666 0	@PU23901 PU23901T LIQUID	N/A		9.27E+01	0.0e+000	% Recovery
7 SAMPLE	S96T005666 0	@PU23901 PU23901E LIQUID	N/A		1.82E+00	0.0e+000	% Ct. Error
8 DUP	S96T005666 0	@PU23901 PU23901 LIQUID		6.05E-5	5.97E-5	1.331	RPD
8 DUP	S96T005666 0	@PU23901 PU23901T LIQUID		100	9.07E+01	90.700	% Recovery
8 DUP	S96T005666 0	@PU23901 PU23901E LIQUID		1.00	2.06E+00	2.060	% Ct Error

Final page for worklist# 14468

Analyst Signature

Date

Analyst Signature

Date

John Reber
Reviewer Signature Date 9 Dec 96
Validated

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

LABCORE Data Entry Template for Worklist# 14468

Analyst: Jmw Instrument: PU01 #14 Book# 62856

Method: LA-943-128 Rev/Mod _____

Worklist Comment: TX-244 PU, DETERMINE SS USING LUDLUM. RCJ

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@PU23901	LIQUID		
2 BLNK			@PU23901	LIQUID		
3 SAMPLE	S96T005663 0		@PU23901	LIQUID	96001429	244-TX GRAB
Analytes Requested: PU23901 , PU23901E, PU23901T						
4 DUP	S96T005663 0		@PU23901	LIQUID		
5 SAMPLE	S96T005665 0		@PU23901	LIQUID	96001429	244-TX GRAB
Analytes Requested: PU23901 , PU23901E, PU23901T						
6 DUP	S96T005665 0		@PU23901	LIQUID		
7 SAMPLE	S96T005666 0		@PU23901	LIQUID	96001429	244-TX GRAB
Analytes Requested: PU23901 , PU23901E, PU23901T						
8 DUP	S96T005666 0		@PU23901	LIQUID		

Final page for worklist # 14468

Jermolov 12-2-96
Analyst Signature Date

C. J. Quinn 12/5/96
Analyst Signature Date
M. B. Quinn 12/6/96

Data Entry Comments:

Data Collection Sheet for Americium and Plutonium

Matrix (SOLID, LIQUID, GASEOUS, OTHER) _____

Analysis Date 12-11-96

Analysis Time 1435

Tracer Book # 126843

Worksheet # 114168

Analyst JMV

Printed Name

Sample Type	Sample Number	Grams Digested	Dilutions: Total Sample Volume, ml	Sample Volume Analyzed, ml	Tracer Volume, ml	Sample Tray #	Detector Number	Alpha Counts	Count Time, Minutes	Background, cpm	AEA Spectra #
Standard	62856			1ml	100	1	14	4421	30	.10	5984
Blank						2		1845			6805
Blank	5167					3		2351			8773
Blank	5163					4		2554			9589
Blank	5165					5		2211			1096
Blank	5165					6		2356			1199
Blank	5166					7		3020			1271
Blank	5166					8		2810			1344

250

R-12.4%
12.5%
12.5%
12.5%

12-12 stopped counting
12-13-96 12
started Lister

INF-SD-WM-DP-224, REV. 0

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (B-0)**LIQUID**

				STD
	DATE COUNTED		DEC-04-96	Pu 236 AEA FRAC (C236) 0.397
STD	SAMPLE VOLUME in mL	SS	1.000	Pu 238 AEA FRAC (C238) 0.000
	SAMPLE DILUTION FACTOR	DF	1.000	Pu 239 AEA FRAC (C239) 0.553
14468	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS 4421
	DIGEST DILUTION FACTOR	DDF	1.000	AT COUNT TIME (MIN) 30
@PU23901	TRACER BOOK NO		126B43	BACKGROUND in cpm (Bkg) 0.100
	DETECTOR NUMBER		14	Pu 236 cpm 64.170
LIQUID	EFFICIENCY FACTOR	EFF	0.291	Pu 238 cpm 0.000
	TRACER PREPARATION DATE		07/12/96	Pu 239 cpm 89.340
96011024	TRACER PREPARATION VALUE (dpm/mL)		2464.000	AEA COUNT TIME 480
	PU-236 DECAY CORR'D VALUE (dpm/mL)		2237.219	Pu 239/240 μ Ci/L 1.4038E-01
0	PU-238 TRACER VALUE (dpm/mL)		0.000	
	STANDARD BOOK NO		62B56	
N/A	STANDARD VALUE in μ Ci/mL		1.485E-04	
WL14468	Decay Time = Date Counted - Tracer Preparation Date			
WB27807	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.95)}]			
	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 1/EFF * C238*100/Pu-236 Decay Corr'd Value * SPKV			
CJO	Pu 239/240 μ Ci/L = (C239)/(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(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)			
JFR	Pu 238 μ Ci/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-238 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			
JMV				
12/05/96	Pu 239/240 μ Ci/mL	1.40E-04	DETECTION LEVELS in μCi/mL Pu 239/240 8.48E-06	
12/04/96	Relative Counting Error =	1.5%		
02:35 PM				
244-TX GRAB	Pu 236 Tracer Recovery =	89.8%		

Analyst:	JMV	Date:	05-Dec-96
Signature of Chemist:	<i>John Relyea</i>	JFR	Date: <i>7 Dec 96</i>
STANDARD WB1 REV 1.0	943128ML		

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-128 (B-0)**LIQUID / SOLID**

	DATE COUNTED	DEC-04-96	PU 236 AEA FRAC (C236)	BLNK
BLNK	SAMPLE VOLUME in mL SS	1.000	PU 238 AEA FRAC (C238)	0.000
	SAMPLE DILUTION FACTOR DF	1.000	PU 239 AEA FRAC (C239)	0.000
14468	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS	1845
	DIGEST DILUTION FACTOR DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	126B43	BACKGROUND in cp (Bkg)	0.100
	DETECTOR NUMBER	14	PU 236 cpm	65.700
LIQUID	EFFICIENCY FACTOR EFF	0.2910	PU 238 cpm	0.000
	TRACER PREPARATION DATE	07/12/96	PU 239 cpm	0.000
96011024	TRACER PREPARATION VALUE (dpm/mL)	2464.00	AEA COUNT TIME	480
	PU-236 DECAY CORR'D VALUE (dpm/mL)	2237.22	Pu 239/240 $\mu\text{Ci/L}$ =	< 3.500E-03
0	PU-238 TRACER VALUE (dpm/mL)	0.00		
N/A				
WL14468	Decay Time = Date Counted - Tracer Preparation Date			
	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of $\{-\ln 2 * \text{Decay Time}/1040.95\}$]			
WB27507	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)			
OJO	Pu 238 $\mu\text{Ci/L}$ = [(Pu 238 dpm) (DF) (DDF) (1000mL/L)] / [(Pu-238 Tracer Recovery / 100) (2220000 dpm/ μCi) (D g/L) (SS)]			
	Relative Counting Error = Square Root of $\{[1 / (\text{Pu 236 cpm} * \text{min})] + [1 / (\text{Pu 238 or 239/240 cpm} * \text{min})]\} * 1.96 * 100$			
JFR				
JMV				
12/01/96	Pu 239/240 $\mu\text{Ci/mL}$	< 3.50E-06	DETECTION LEVELS in $\mu\text{Ci/mL}$	
12/04/96	Relative Counting Error	= 100.0%		
02:35 PM	NOTE: Pu 238 Result is a LESS THAN Value.			
	Pu 238 $\mu\text{Ci/mL}$	< 3.50E-06		
	Relative Counting Error	= 100.0%	Pu 238	
244-TX GRAB	Pu 236 Tracer Recovery	= 90.3%	3.50E-06	

Analyst:	JMV	Date:	05-Dec-96
Signature of Chemist:	<i>John Reilly</i>	Date:	7 Dec 96

BLANK.WB1 REV 1.0

943128ML

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-128 (B-0)**LIQUID / SOLID**

				SAMPLE
	DATE COUNTED	DEC-04-96	PU 236 AEA FRAC (C236)	0.678
SAMPLE	SAMPLE VOLUME in mL	SS	1.000 PU 238 AEA FRAC (C238)	0.014
	SAMPLE DILUTION FACTOR	DF	1.000 PU 239 AEA FRAC (C239)	0.294
14468	TRACER VOLUME in mL	SPKV	0.100 TOTAL AT COUNTS	2351
	DIGEST DILUTION FACTOR	DDF	1.0000 AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	126B43	BACKGROUND in cpm (Bkg)	0.100
	DETECTOR NUMBER	14	PU 236 cpm	55.840
LIQUID	EFFICIENCY FACTOR	EFF	0.291 PU 238 cpm	1.160
	TRACER PREPARATION DATE	07/12/96	PU 239 cpm	24.200
96011024	TRACER PREPARATION VALUE (dpm/mL)	2464.000	AEA COUNT TIME	480
	PU-236 DECAY CORR'D VALUE (dpm/mL)	2237.219	Pu 239/240 µCi/L	4.3699E-02
0	PU-238 TRACER VALUE (dpm/mL)	0.000		

N/A

Decay Time = Date Counted - Tracer Preparation Date

S96T005663

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)

WB27807

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

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

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

CJO

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

JFR

JMV

12/05/96

Pu 239/240 µCi/mL 4.37E-05

Relative Counting Error = 2.2%

DETECTION

LEVELS

in µCi/mL

12/04/96

NOTE: Pu 238 Result is a LESS THAN Value.

Pu 239/240

02:35 PM

Pu 238 µCi/mL < 5.47E-06

5.47E-06

Relative Counting Error = 8.4%

Pu 238

244-TX GRAB

Pu 236 Tracer Recovery = 81.5%

5.47E-06

Analyst:	JMV	Date:	05-Dec-96
Signature of Chemist:	JFR	Date:	9 Dec 96

SAMPLE WB1 REV 1.0

943128ML

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-128 (B-0)

LIQUID / SOLID

Pu 238 and 239/240 : LA-943-128 (B-0)				LIQUID / SOLID		DUP
	DATE COUNTED		DEC-04-96	Pu 236 AEA FRAC	(C236)	0.677
DUP	SAMPLE VOLUME in mL	SS	1.000	Pu 238 AEA FRAC	(C238)	0.016
	SAMPLE DILUTION FACTOR	DF	1.000	Pu 239 AEA FRAC	(C239)	0.297
14468	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		2554
	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		126B43	BACKGROUND in cpm	(Bkg)	0.100
	DETECTOR NUMBER		14	Pu 236 cpm		61.740
LIQUID	EFFICIENCY FACTOR	EFF	0.291	Pu 238 cpm		1.420
	TRACER PREPARATION DATE		07/12/96	Pu 239 cpm		27.110
96011024	TRACER PREPARATION VALUE (dpm/mL)		2464.000	AEA COUNT TIME		480
	PU-236 DECAY CORR'D VALUE (dpm/mL)		2237.219	Pu 239/240 μ Ci/L		4.4210E-02
0	PU-238 TRACER VALUE (dpm/mL)		0.000			
N/A						
	Decay Time = Date Counted - Tracer Preparation Date					
S96T005663	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)					
WB27867	Pu 239/240 μ Ci/L = (C239) / (Pu 236 Decay Corr'd Value) * (SPKV) / (1000 mL) * (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)					
CJO	Pu 238 μ Ci/L = [(Pu 238 dpm) * (DF) * (DDF) / (1000 mL)] / [(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					
JFR						
JMV						
12/05/96	Pu 239/240 μ Ci/mL		4.42E-05	DETECTION LEVELS in μ Ci/mL		
120456	Relative Counting Error	=	2.1%			
	NOTE: Pu 238 Result is a LESS THAN Value.					
02:35 PM	Pu 238 μ Ci/mL		< 5.05E-06			
	Relative Counting Error	=	7.6%			
244-TX GRAB	Pu 236 Tracer Recovery	=	88.4%	Pu 239/240 5.05E-06 Pu 238 5.05E-06		

Analyst:	JMV	Date:	05-Dec-96
Signature of Chemist:	JFR	Date:	9 Dec 96

SAMPLE WB1 REV 1.0

943128ML

WORKBOOK PAGE: SAM5

Pu 238 and 239/240 : LA-943-128 (B-0)

LIQUID / SOLID

				SAMPLE
	DATE COUNTED	DEC-04-96	PU 236 AEA FRAC (C236)	0.678
SAMPLE	SAMPLE VOLUME in mL	SS	1.000 PU 238 AEA FRAC (C238)	0.012
	SAMPLE DILUTION FACTOR	DF	1.000 PU 239 AEA FRAC (C239)	0.311
14468	TRACER VOLUME in mL	SPKV	0.100 TOTAL AT COUNTS	2211
	DIGEST DILUTION FACTOR	DDF	1.0000 AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	126B43	BACKGROUND in cpm (Bkg)	0.100
	DETECTOR NUMBER	14	PU 236 cpm	46.710
LIQUID	EFFICIENCY FACTOR	EFF	0.291 PU 238 cpm	0.800
	TRACER PREPARATION DATE	07/12/96	PU 239 cpm	21.410
96011024	TRACER PREPARATION VALUE (dpm/mL)	2464.000	AEA COUNT TIME	480
	PU-236 DECAY CORR'D VALUE (dpm/mL)	2237.219	Pu 239/240 μ Ci/L	4.6226E-02
0	PU-238 TRACER VALUE (dpm/mL)	0.000		
N/A				
	Decay Time = Date Counted - Tracer Preparation Date			
S96T005665	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)			
WB17807	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)			
CJO	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			
JFR				
JMV				
12/05/96	Pu 239/240 μ Ci/mL	4.62E-05	DETECTION LEVELS in μ Ci/mL	
	Relative Counting Error	= 2.3%		
12/04/96	NOTE: Pu 238 Result is a LESS THAN Value.		Pu 239/240	
02:35 PM	Pu 238 μ Ci/mL	< 5.82E-06	5.82E-06	
	Relative Counting Error	= 10.1%	Pu 238	
244-TX GRA5	Pu 236 Tracer Recovery	= 76.6%	5.82E-06	

Analyst:	JMV	Date:	05-Dec-96
Signature of Chemist:	JFR	Date:	7 Dec 96
SAMPLE.WB1 REV 1.0 943128ML			

WORKBOOK PAGE: DUP6

Pu 238 and 239/240 : LA-943-128 (B-0)**LIQUID / SOLID**

Pu 238 and 239/240 : LA-943-128 (B-0)				LIQUID / SOLID		DUP
	DATE COUNTED		DEC-04-96	PU 236 AEA FRAC	(C236)	0.675
DUP	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC	(C238)	0.011
	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.309
14468	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		2356
	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		126B43	BACKGROUND in cpm	(Bkg)	0.100
	DETECTOR NUMBER		14	PU 236 cpm		53.510
LIQUID	EFFICIENCY FACTOR	EFF	0.291	PU 238 cpm		0.840
	TRACER PREPARATION DATE		07/12/96	PU 239 cpm		24.490
96011024	TRACER PREPARATION VALUE (dpm/mL)		2464.000	AEA COUNT TIME		480
	PU-238 DECAY CORR'D VALUE (dpm/mL)		2237.219	Pu 239/240 μ Ci/L		4.6133E-02
0	PU-238 TRACER VALUE (dpm/mL)		0.000			
N/A						
Decay Time = Date Counted - Tracer Preparation Date						
S96T005665	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)					
WB27807	Pu 239/240 μ Ci/L = (C239) / (Pu 236 Decay Corr'd Value) * (SPKV) / (1000 mL) * (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)					
CJO	Pu 238 μ Ci/L = [(Pu 238 dpm) * (DF) * (DDF) / (1000 mL)] / [(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					
JFR						
JMV						
12/05/96	Pu 239/240 μ Ci/mL		4.61E-05	DETECTION LEVELS in μ Ci/mL		
12/04/96	Relative Counting Error	=	2.2%			
	NOTE: Pu 238 Result is a LESS THAN Value.					
02:35 PM	Pu 238 μ Ci/mL		< 5.51E-06	Pu 239/240 5.51E-06		
	Relative Counting Error	=	9.8%	Pu 238		
244-TX GRAB	Pu 236 Tracer Recovery	=	81.3%	5.51E-06		

Analyst:	JMV	Date:	05-Dec-96
Signature of Chemist:	JFR	Date:	9 Dec 96
SAMPLE.WB1 REV 1.0	943128ML		

WORKBOOK PAGE: SAM7

Pu 238 and 239/240 : LA-943-128 (B-0)

LIQUID / SOLID

				SAMPLE
	DATE COUNTED	DEC-04-96	PU 236 AEA FRAC (C236)	0.600
SAMPLE	SAMPLE VOLUME in mL	SS	1.000 PU 238 AEA FRAC (C238)	0.018
	SAMPLE DILUTION FACTOR	DF	1.000 PU 239 AEA FRAC (C239)	0.360
14468	TRACER VOLUME in mL	SPKV	0.100 TOTAL AT COUNTS	3020
	DIGEST DILUTION FACTOR	DDF	1.0000 AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	126B43	BACKGROUND in cpm (Bkg)	0.100
	DETECTOR NUMBER	14	PU 236 cpm	64.770
LIQUID	EFFICIENCY FACTOR	EFF	0.291 PU 238 cpm	1.890
	TRACER PREPARATION DATE	07/12/96	PU 239 cpm	38.850
96011024	TRACER PREPARATION VALUE (dpm/mL)	2464.000	AEA COUNT TIME	480
	PU-236 DECAY CORR'D VALUE (dpm/mL)	2237.219	Pu 239/240 μ Ci/L	6.0465E-02
0	PU-238 TRACER VALUE (dpm/mL)	0.000		
N/A				
S96T005666	Decay Time = Date Counted - Tracer Preparation Date			
WS27B07	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)			
CJO	Pu 239/240 μ Ci/L = (C239)/(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(22200000 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)(22200000 dpm/ μ Ci)(D g/L)(SS)]			
JFR	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100			
JMV				
12/05/96	Pu 239/240 μ Ci/mL	6.05E-05	DETECTION LEVELS in μ Ci/mL	
12/04/96	Relative Counting Error	= 1.8%		
02:38 PM	NOTE: Pu 238 Result is a LESS THAN Value.		Pu 239/240	
	Pu 238 μ Ci/mL	< 5.44E-06	5.44E-06	
	Relative Counting Error	= 6.6%	Pu 238	
244-TX GRAB	Pu 236 Tracer Recovery	= 92.7%	5.44E-06	

Analyst:	JMV	Date:	05-Dec-96
Signature of Chemist:	JFR	Date:	9 Dec 96
SAMPLE.WB1 REV 1.0	943128ML		

WORKBOOK PAGE: DUP8

Pu 238 and 239/240 : LA-943-128 (B-0)

LIQUID / SOLID

				DUP
	DATE COUNTED	DEC-04-96	PU 236 AEA FRAC (C236)	0.631
DUP	SAMPLE VOLUME in mL SS	1.000	PU 238 AEA FRAC (C238)	0.000
	SAMPLE DILUTION FACTOR DF	1.000	PU 239 AEA FRAC (C239)	0.374
14468	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS	2810
	DIGEST DILUTION FACTOR DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	126B43	BACKGROUND in cpm (Bkg)	0.100
	DETECTOR NUMBER	14	PU 236 cpm	50.600
LIQUID	EFFICIENCY FACTOR EFF	0.291	PU 238 cpm	0.000
	TRACER PREPARATION DATE	07/12/96	PU 239 cpm	29.980
96011024	TRACER PREPARATION VALUE (dpm/mL)	2464.000	AEA COUNT TIME	480
	PU-236 DECAY CORR'D VALUE (dpm/mL)	2237.219	Pu 239/240 μ Ci/L	5.9731E-02
0	PU-238 TRACER VALUE (dpm/mL)	0.000		
N/A				
	Decay Time = Date Counted - Tracer Preparation Date			
S96T005666	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)			
WS27807	Pu 239/240 μ Ci/L = (C239) (Pu 238 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)			
CJO	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			
JFR				
JMV				
12/05/96	Pu 239/240 μ Ci/mL	5.97E-05	DETECTION LEVELS in μ Ci/mL	
	Relative Counting Error =	2.1%		
12/04/96	NOTE: Pu 238 Result is a LESS THAN Value.		Pu 239/240	
02:38 PM	Pu 238 μ Ci/mL	< 5.28E-06	5.28E-06	
	Relative Counting Error =	100.0%	Pu 238	
244-TX GRAB	Pu 236 Tracer Recovery =	90.7%	5.28E-06	

Analyst:	JMV	Date:	05-Dec-96
Signature of Chemist:	JFR	Date:	9 Dec 96
SAMPLE.WB1 REV 1.0	943128ML		

Westinghouse Hanford Co.
G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
WL14468-STD-PU
File ID: 5a5984.CNF

Counted on: 12/ 4/96 @20:18
Detector: AEA5
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	1538.2	1538.2	362.560	362.560	14.000	6.559	7.000	1.826
2	36.4	36.4	288.968	288.507	34.000	48.202	17.000	21.673
3?	14.4	14.4	260.886	260.003	28.000	73.720	14.000	23.848
4	2384.3	2384.3	229.766	229.762	14.000	6.283	7.000	2.072

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.					
1	Ra224	0.397	5.686	5.743	-0.0570.03	64.17	1.1	151.6	0.683E-04	
	Pu236		5.755	5.743	0.012			145.5	0.655E-04	
2	Th228	0.016	5.400	5.403	-0.0030.22	2.54	8.7	8.0	0.359E-05	
	Am241		5.479	5.403	0.076			6.0	0.271E-05	
3		????		5.272		1.25	15.2			
4	Pu239	0.553	5.147	5.133	0.0140.03	89.34	0.9	198.4	0.894E-04	
	Pu240		5.144	5.133	0.011			198.4	0.894E-04	
Totals:			0.966	<--valid peaks only-->			156.06			

DETECTOR CALIBRATION
Energy(MEV) = 4.076 + (0.0046)*Channel
Energy range (MeV): 4.076 TO 6.431
Efficiency = 0.4502 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	77584.0	100.000
Smoothed	77584.0	100.000
Composite fit	75518.6	97.338
Residuals	2065.4	2.662

Analyzed by: _____

VR

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 17366.9

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Raw	Data	Dump	for	AEA	Spectrum:	5a5984.CNF	INF-SD-WM-DP-224, REV. 1		
1	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	1.	1.	2.	1.	4.	1.	1.	2.	0.
21	2.	1.	1.	3.	1.	0.	1.	0.	0.
31	3.	2.	0.	1.	2.	3.	3.	3.	2.
41	2.	2.	1.	2.	3.	4.	0.	2.	0.
51	3.	1.	2.	3.	1.	3.	0.	2.	1.
61	0.	1.	4.	3.	2.	2.	4.	1.	1.
71	4.	2.	0.	5.	1.	2.	1.	1.	3.
81	1.	8.	2.	2.	0.	2.	1.	4.	5.
91	1.	4.	5.	5.	5.	6.	5.	5.	5.
101	2.	3.	4.	8.	2.	3.	3.	7.	7.
111	4.	3.	4.	4.	5.	5.	8.	3.	2.
121	5.	6.	4.	8.	9.	7.	14.	6.	12.
131	8.	9.	9.	14.	6.	11.	8.	12.	9.
141	8.	8.	14.	14.	16.	16.	13.	21.	14.
151	16.	20.	9.	24.	24.	24.	19.	19.	25.
161	34.	28.	37.	24.	34.	33.	37.	37.	36.
171	44.	46.	46.	56.	51.	55.	45.	52.	56.
181	56.	90.	75.	81.	85.	89.	91.	104.	90.
191	143.	109.	124.	122.	164.	150.	174.	168.	181.
201	209.	238.	253.	279.	317.	323.	328.	360.	420.
211	478.	535.	594.	644.	712.	772.	855.	934.	1042.
221	1258.	1407.	1543.	1736.	1939.	2114.	2312.	2483.	2524.
231	2520.	2329.	1918.	1362.	961.	625.	372.	194.	104.
241	19.	19.	12.	8.	13.	9.	4.	12.	16.
251	8.	11.	12.	12.	12.	10.	11.	17.	15.
261	23.	20.	8.	15.	13.	15.	11.	18.	17.
271	25.	26.	17.	11.	24.	22.	23.	24.	25.
281	31.	38.	37.	30.	35.	43.	44.	43.	36.
291	41.	30.	29.	30.	30.	24.	47.	31.	34.
301	41.	38.	36.	49.	39.	35.	42.	36.	41.
311	47.	57.	49.	48.	51.	34.	69.	58.	61.
321	81.	72.	69.	82.	80.	105.	98.	101.	106.
331	105.	139.	165.	176.	148.	204.	187.	205.	222.
341	295.	300.	356.	373.	405.	405.	537.	514.	648.
351	791.	897.	949.	1009.	1112.	1216.	1219.	1300.	1321.
361	1530.	1630.	1703.	1613.	1397.	1152.	888.	601.	381.
371	124.	57.	37.	17.	5.	2.	2.	1.	2.
381	0.	1.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	1.	0.
401	0.	0.	0.	0.	0.	0.	2.	0.	0.
411	0.	1.	0.	0.	0.	0.	0.	1.	0.
421	0.	0.	1.	0.	1.	1.	1.	0.	0.
431	0.	0.	0.	0.	3.	0.	1.	0.	1.
441	0.	0.	1.	0.	0.	0.	1.	0.	0.
451	0.	0.	0.	1.	1.	1.	1.	0.	2.
461	0.	0.	0.	1.	0.	2.	4.	4.	3.
471	3.	5.	3.	3.	2.	8.	2.	4.	0.
481	5.	0.	2.	1.	1.	1.	1.	1.	0.
491	0.	0.	0.	0.	0.	1.	0.	0.	0.
511	0.	0.							

12

CNF-SD-WM-DP-224, REV 0
Westinghouse Hanford Co.
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
WL14468-BLK-PU
File ID: 6a6805.CNF

Counted on: 12/ 4/96 @20:18
Detector: AEA6
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	1546.6	1546.6	359.227	359.227	18.000	9.466	9.000	2.955
2	31.6	31.6	285.003	284.804	16.000	21.184	8.000	4.593

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count Rate	%err c/m @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.				
1	Cm243	0.957	5.779	5.743	0.0360.04	65.70	1.1	182.3	0.821E-04
	Pu236		5.755	5.743	0.012			135.8	0.612E-04
2	Th228	0.029	5.400	5.401	-0.0010.10	1.97	7.5	5.6	0.254E-05
	Am241		5.479	5.401	0.078			4.3	0.192E-05

Totals:			0.986	<--valid peaks only-->			67.67		

DETECTOR CALIBRATION
Energy(MEV) = 4.091 + (0.0046)*Channel
Energy range (MeV): 4.091 TO 6.446
Efficiency = 0.4936 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	32961.0	100.000
Smoothed	32966.9	100.018
Composite fit	32486.6	98.561
Residuals	474.4	1.439

Analyzed by: _____
VR

Spectrum 6a6805.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 11076.0

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Raw	Data	Dump	for	AEA	Spectrum:	6a6805.CNF					
1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
21	0.	0.	0.	2.	0.	0.	0.	1.	0.	2.	1.
31	0.	0.	1.	1.	2.	0.	1.	1.	0.	0.	0.
41	0.	1.	0.	0.	0.	1.	0.	0.	0.	0.	0.
51	0.	1.	0.	1.	0.	0.	0.	1.	1.	0.	0.
61	0.	1.	0.	0.	0.	2.	0.	0.	0.	0.	0.
71	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
81	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
91	1.	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.
101	1.	0.	0.	0.	0.	0.	2.	1.	0.	0.	2.
111	0.	1.	1.	0.	0.	0.	1.	1.	1.	0.	0.
121	0.	0.	1.	2.	1.	0.	1.	1.	1.	0.	0.
131	0.	2.	0.	1.	1.	1.	0.	0.	1.	0.	3.
141	0.	1.	0.	0.	2.	0.	1.	1.	1.	0.	1.
151	1.	1.	0.	1.	1.	0.	0.	0.	0.	0.	0.
161	0.	1.	2.	0.	1.	0.	0.	0.	0.	1.	0.
171	0.	1.	3.	2.	0.	0.	0.	0.	0.	1.	0.
181	0.	1.	0.	1.	4.	2.	1.	0.	1.	1.	3.
191	1.	1.	2.	1.	2.	1.	0.	1.	1.	1.	0.
201	1.	4.	1.	1.	0.	3.	1.	5.	1.	1.	2.
211	1.	4.	2.	1.	2.	1.	2.	3.	5.	4.	4.
221	4.	3.	6.	4.	3.	9.	2.	9.	7.	8.	8.
231	6.	3.	4.	2.	6.	0.	2.	3.	3.	3.	3.
241	3.	4.	4.	3.	6.	4.	6.	6.	5.	4.	4.
251	1.	7.	10.	5.	11.	7.	6.	15.	5.	9.	9.
261	8.	11.	10.	15.	16.	17.	10.	17.	14.	17.	17.
271	18.	17.	17.	17.	20.	21.	13.	26.	20.	27.	27.
281	32.	24.	41.	39.	31.	41.	35.	25.	32.	24.	24.
291	19.	24.	14.	12.	22.	25.	17.	25.	16.	27.	27.
301	30.	27.	24.	29.	32.	28.	30.	32.	33.	29.	29.
311	32.	38.	36.	38.	39.	37.	45.	45.	63.	68.	68.
321	66.	59.	85.	95.	75.	79.	85.	107.	127.	129.	129.
331	150.	164.	139.	178.	200.	237.	226.	238.	270.	293.	293.
341	332.	386.	438.	502.	541.	657.	713.	780.	871.	964.	964.
351	994.	1092.	1147.	1360.	1394.	1408.	1613.	1639.	1674.	1566.	1566.
361	1598.	1430.	1287.	1032.	823.	616.	410.	279.	174.	81.	81.
371	45.	20.	10.	3.	0.	1.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	2.	1.	1.	0.	0.	1.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.
431	0.	2.	1.	2.	1.	0.	1.	0.	1.	0.	0.
441	0.	1.	0.	0.	1.	1.	0.	1.	0.	0.	0.
451	1.	0.	1.	0.	0.	0.	1.	1.	1.	0.	0.
461	0.	0.	1.	0.	0.	1.	0.	2.	4.	1.	1.
471	3.	2.	4.	2.	1.	5.	3.	2.	3.	5.	5.
481	3.	1.	3.	1.	1.	1.	1.	0.	1.	0.	0.
491	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	1.	0.									

Westinghouse Hanford Co.
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T5663-SAM-PU
File ID: 8a8773.CNF

Counted on: 12/ 4/96 @20:19
Detector: AEA8
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	1337.9	1337.9	364.150	364.150	18.000	9.769	9.000	3.214
2	22.8	22.8	307.855	304.580	22.000	12.826	11.000	3.271
3	626.0	626.0	231.660	231.659	16.000	10.177	8.000	4.114

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.					
1	Cm243	0.678	5.779	5.747	0.0320	0.04	55.84	1.2	305.0	0.137E-03
	Pu236		5.755	5.747	0.008				227.2	0.102E-03
2	Am241	0.014	5.479	5.473	0.0060	0.06	1.16	11.8	4.9	0.221E-05
	Pu238		5.487	5.473	0.014				6.4	0.288E-05
3	Pu239	0.294	5.147	5.137	0.0100	0.05	24.20	1.8	96.5	0.435E-04
	Pu240		5.144	5.137	0.007				96.5	0.435E-04
Totals:			0.986	<--valid peaks only-->			81.19			

DETECTOR CALIBRATION

Energy(MEV) = 4.072 + (0.0046)*Channel
Energy range (MeV): 4.072 TO 6.427
Efficiency = 0.2508 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	39542.0	100.000
Smoothed	39542.0	100.000
Composite fit	38980.0	98.579
Residuals	562.0	1.421

Analyzed by: _____

VR

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 9963.0

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Raw Data	Dump for AEA Spectrum:	8a8773.CNF								
1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	3.	1.	0.	0.	0.	2.
21	0.	0.	2.	0.	2.	1.	1.	3.	0.	2.
31	0.	0.	0.	1.	0.	0.	1.	0.	0.	1.
41	1.	1.	0.	2.	0.	1.	0.	1.	0.	0.
51	3.	2.	0.	1.	0.	3.	0.	2.	1.	2.
61	0.	0.	2.	1.	0.	0.	0.	1.	2.	0.
71	1.	2.	1.	1.	3.	1.	0.	1.	0.	1.
81	1.	1.	2.	2.	3.	2.	0.	1.	2.	0.
91	1.	0.	0.	2.	0.	1.	2.	2.	1.	5.
101	0.	1.	0.	0.	1.	2.	0.	0.	3.	0.
111	1.	0.	3.	1.	1.	0.	1.	0.	2.	3.
121	1.	2.	1.	2.	4.	0.	1.	1.	1.	1.
131	2.	6.	1.	3.	2.	1.	3.	1.	1.	4.
141	6.	2.	4.	2.	5.	3.	1.	4.	1.	3.
151	1.	6.	2.	5.	2.	2.	4.	3.	4.	5.
161	2.	5.	5.	6.	3.	5.	2.	10.	7.	2.
171	4.	7.	11.	4.	8.	4.	5.	9.	6.	12.
181	7.	16.	14.	11.	15.	9.	12.	23.	13.	24.
191	20.	16.	23.	23.	26.	23.	44.	28.	26.	34.
201	36.	35.	40.	40.	51.	55.	69.	65.	71.	77.
211	76.	84.	78.	118.	120.	132.	158.	189.	219.	208.
221	264.	307.	292.	392.	426.	472.	475.	583.	598.	688.
231	674.	698.	603.	608.	557.	445.	384.	320.	244.	160.
241	119.	80.	48.	24.	18.	9.	4.	3.	8.	4.
251	2.	4.	3.	1.	6.	3.	8.	6.	6.	3.
261	1.	5.	2.	3.	5.	4.	7.	2.	3.	4.
271	3.	5.	6.	3.	6.	9.	3.	2.	1.	2.
281	5.	4.	7.	12.	7.	10.	8.	11.	11.	11.
291	15.	12.	12.	22.	14.	24.	11.	16.	22.	21.
301	30.	29.	30.	31.	36.	26.	29.	33.	37.	25.
311	26.	25.	34.	21.	22.	24.	25.	20.	27.	32.
321	38.	31.	28.	42.	40.	37.	48.	47.	65.	58.
331	59.	82.	82.	104.	104.	100.	91.	117.	125.	135.
341	142.	151.	200.	211.	256.	275.	318.	329.	388.	503.
351	531.	626.	656.	764.	799.	886.	1016.	1009.	1183.	1247.
361	1228.	1337.	1394.	1440.	1407.	1352.	1190.	1002.	906.	688.
371	551.	366.	243.	159.	123.	63.	33.	16.	6.	5.
381	1.	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.	1.	0.	0.	0.	0.
441	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	1.	0.	1.	0.	0.	1.	1.	0.	0.	0.
481	1.	0.	0.	1.	1.	1.	1.	2.	0.	0.
491	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.
 G E N E R A L A L P H A E N E R G Y A N A L Y S I S
 Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
 S96T5663-DUP-PU
 File ID: 9a9589.CNF

Counted on: 12/ 4/96 @20:20
 Detector: AEA9
 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	1748.2	1748.2	364.018	364.018	12.000	5.214	6.000	1.777
2	23.7	23.7	308.976	307.701	12.000	4.161	6.000	0.643
3	840.4	840.4	232.585	232.584	12.000	5.338	6.000	2.170

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.	FWHM				
1	Pu236	0.677	5.755	5.744	0.0110	0.02	61.74	1.1	164.8	0.742E-04
2	Pu238	0.016	5.487	5.485	0.0020	0.02	1.42	9.2	5.1	0.232E-05
	Am241		5.479	5.485	-0.006				3.9	0.177E-05
3	Pu239	0.297	5.147	5.139	0.0080	0.02	27.11	1.7	70.9	0.319E-04
	Pu240		5.144	5.139	0.005				70.9	0.319E-04
Totals:			0.989	<--valid peaks only-->			90.27			

DETECTOR CALIBRATION

Energy(MEV) = 4.070 + (0.0046)*Channel
 Energy range (MeV): 4.070 TO 6.425
 Efficiency = 0.3823 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	43807.0	100.000
Smoothed	43807.5	100.001
Composite fit	43335.8	98.924
Residuals	471.2	1.076

Analyzed by: VR

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 12354.3

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1	0.	0.	0.	1.	0.	0.	0.	0.	1.
11	0.	0.	0.	0.	1.	1.	0.	3.	0.
21	4.	3.	1.	3.	1.	3.	4.	4.	1.
31	0.	0.	1.	0.	1.	0.	0.	0.	0.
41	1.	2.	1.	0.	2.	0.	0.	0.	1.
51	2.	3.	1.	1.	0.	1.	2.	2.	2.
61	2.	1.	4.	1.	4.	1.	0.	0.	1.
71	1.	0.	1.	1.	0.	1.	1.	0.	0.
81	0.	2.	0.	2.	1.	1.	0.	0.	0.
91	1.	2.	0.	0.	3.	1.	0.	0.	0.
101	2.	1.	0.	2.	1.	1.	0.	1.	1.
111	0.	1.	0.	2.	1.	1.	1.	2.	2.
121	1.	3.	1.	0.	1.	4.	0.	2.	0.
131	2.	1.	0.	4.	1.	1.	0.	1.	1.
141	1.	4.	4.	7.	3.	2.	4.	4.	2.
151	0.	8.	4.	3.	2.	1.	4.	5.	4.
161	5.	1.	1.	4.	7.	9.	1.	2.	9.
171	5.	8.	9.	6.	0.	11.	11.	8.	10.
181	8.	14.	13.	11.	10.	18.	14.	13.	22.
191	19.	22.	22.	31.	25.	32.	24.	28.	28.
201	51.	45.	39.	43.	58.	52.	59.	51.	61.
211	98.	92.	130.	130.	138.	167.	176.	173.	211.
221	249.	323.	342.	441.	458.	503.	543.	637.	725.
231	861.	932.	961.	873.	753.	599.	422.	238.	123.
241	20.	13.	6.	4.	1.	2.	2.	3.	2.
251	2.	2.	3.	3.	2.	3.	3.	4.	6.
261	5.	4.	3.	2.	5.	3.	3.	1.	7.
271	6.	7.	4.	4.	5.	2.	4.	4.	5.
281	8.	8.	7.	10.	10.	8.	13.	11.	7.
291	19.	17.	17.	18.	18.	17.	18.	15.	28.
301	20.	28.	24.	42.	24.	28.	34.	40.	31.
311	37.	26.	29.	17.	16.	8.	28.	17.	31.
321	34.	31.	34.	42.	42.	47.	58.	44.	55.
331	59.	77.	91.	92.	98.	104.	123.	139.	170.
341	167.	179.	190.	217.	271.	289.	365.	375.	497.
351	595.	715.	710.	883.	1025.	1118.	1235.	1193.	1286.
361	1604.	1688.	1865.	1960.	1872.	1716.	1430.	991.	593.
371	143.	57.	12.	3.	2.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	1.	0.	0.	1.	0.	0.	1.
431	0.	0.	1.	0.	1.	0.	0.	1.	0.
441	1.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	1.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	1.	0.	1.
471	0.	1.	2.	3.	3.	2.	0.	1.	1.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.							

Westinghouse Hanford Co.
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T5665-SAM-PU
File ID: 10a1096.CNF

Counted on: 12/ 4/96 @20:21
Detector: AEA10
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	1334.2	1334.2	363.553	363.553	12.000	4.344	6.000	1.413
2	19.1	19.1	305.181	304.213	10.000	3.997	5.000	0.967
3	696.4	696.4	231.051	231.051	12.000	4.386	6.000	1.789

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	0.678	5.755	5.742	0.0130.02	46.71	1.3	612.6	0.276E-03
2	Pu238	0.012	5.487	5.469	0.0180.02	0.80	12.6	14.4	0.647E-05
	Am241		5.479	5.469	0.010			11.0	0.496E-05
3	Pu239	0.311	5.147	5.133	0.0140.02	21.41	1.9	275.2	0.124E-03
	Pu240		5.144	5.133	0.011			275.2	0.124E-03

Totals: 1.000 <--valid peaks only--> 68.92

DETECTOR CALIBRATION

Energy(MEV) = 4.070 + (0.0046)*Channel
Energy range (MeV): 4.070 TO 6.425
Efficiency = 0.0778 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	33086.0	100.000
Smoothed	33087.5	100.004
Composite fit	33085.2	99.997
Residuals	0.8	0.003

Analyzed by: _____

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Raw Data Dump for AEA Spectrum: 10a1096.CNF

1	0.	0.	0.	2.	1.	1.	0.	1.	1.	0.
11	1.	0.	0.	2.	0.	0.	0.	1.	0.	1.
21	1.	0.	0.	0.	1.	1.	0.	1.	0.	0.
31	2.	0.	2.	0.	1.	0.	0.	0.	1.	2.
41	1.	0.	0.	0.	0.	1.	0.	0.	0.	0.
51	0.	0.	0.	0.	2.	0.	0.	1.	1.	1.
61	0.	1.	0.	0.	1.	2.	2.	0.	1.	1.
71	0.	3.	1.	2.	2.	0.	1.	1.	0.	2.
81	2.	0.	0.	1.	0.	1.	0.	0.	3.	0.
91	1.	0.	0.	2.	2.	0.	0.	0.	1.	2.
101	1.	1.	1.	0.	4.	0.	0.	2.	0.	0.
111	0.	0.	1.	0.	0.	0.	1.	1.	1.	0.
121	0.	1.	2.	2.	4.	1.	1.	0.	2.	2.
131	0.	3.	0.	4.	2.	1.	1.	0.	3.	2.
141	0.	2.	1.	2.	1.	6.	3.	3.	1.	2.
151	5.	1.	2.	1.	1.	1.	3.	2.	2.	2.
161	1.	3.	3.	1.	1.	6.	3.	3.	3.	2.
171	4.	5.	3.	5.	3.	4.	6.	8.	3.	6.
181	8.	11.	3.	4.	5.	7.	10.	15.	9.	6.
191	14.	14.	18.	12.	28.	16.	28.	26.	20.	22.
201	23.	34.	29.	32.	44.	54.	48.	48.	69.	74.
211	79.	94.	93.	102.	112.	139.	158.	194.	222.	236.
221	264.	334.	354.	392.	452.	451.	535.	634.	673.	761.
231	791.	757.	713.	524.	314.	166.	86.	38.	14.	4.
241	1.	0.	1.	1.	1.	6.	2.	3.	4.	2.
251	6.	2.	2.	3.	4.	1.	3.	5.	3.	4.
261	1.	3.	2.	2.	3.	1.	3.	3.	4.	4.
271	2.	3.	5.	4.	2.	2.	4.	1.	5.	4.
281	2.	4.	4.	5.	8.	8.	5.	5.	12.	7.
291	7.	12.	24.	11.	14.	23.	15.	16.	19.	23.
301	23.	23.	29.	21.	32.	25.	31.	17.	16.	20.
311	12.	13.	12.	11.	14.	12.	14.	14.	15.	22.
321	21.	25.	33.	33.	29.	29.	39.	43.	35.	51.
331	53.	51.	68.	57.	74.	71.	68.	91.	96.	96.
341	121.	146.	164.	178.	207.	252.	308.	326.	376.	450.
351	535.	572.	699.	822.	868.	908.	902.	965.	1065.	1094.
361	1204.	1356.	1363.	1535.	1400.	1239.	838.	451.	223.	66.
371	8.	4.	2.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	2.	0.
431	1.	2.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
461	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.
471	0.	0.	0.	0.	2.	0.	2.	1.	0.	2.
481	4.	2.	1.	1.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

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Westinghouse Hanford Co.
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T5665-DUP-PU
File ID: 11a1199.CNF

Counted on: 12/ 4/96 @20:22
Detector: AEA11
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	1568.8	1568.8	364.427	364.427	12.000	4.563	6.000	1.575
2	24.1	24.1	306.469	306.037	12.000	3.658	6.000	1.135
3	803.9	803.9	232.323	232.323	12.000	4.540	6.000	1.912

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.	FWHM				
1	Pu236	0.675	5.755	5.760	-0.0050	0.02	53.51	1.2	143.9	0.648E-04
	Cm243		5.779	5.760	0.019				193.2	0.870E-04
2	Pu238	0.011	5.487	5.491	-0.0040	0.02	0.84	12.1	3.1	0.139E-05
	Am241		5.479	5.491	-0.012				2.4	0.106E-05
3	Pu239	0.309	5.147	5.152	-0.0050	0.02	24.49	1.8	64.5	0.291E-04
	Pu240		5.144	5.152	-0.008				64.5	0.291E-04

Totals:		0.994	<--valid peaks only-->				78.84			

DETECTOR CALIBRATION

Energy(MEV) = 4.083 + (0.0046)*Channel
Energy range (MeV): 4.083 TO 6.439
Efficiency = 0.3795 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	38061.0	100.000
Smoothed	38061.2	100.001
Composite fit	37845.7	99.434
Residuals	215.3	0.566

Analyzed by: _____

VR

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 11014.6

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Raw	Data	Dump	for	AEA	Spectrum:	11a1199.CNF	INF-SD-WM-DP-224_REV		
1	0.	0.	1.	1.	0.	1.	0.	0.	1.
11	1.	1.	1.	0.	1.	0.	0.	0.	0.
21	1.	3.	1.	0.	1.	1.	2.	0.	1.
31	2.	0.	1.	0.	0.	1.	0.	1.	1.
41	0.	0.	1.	0.	0.	0.	1.	0.	0.
51	0.	1.	1.	1.	2.	0.	1.	0.	0.
61	0.	0.	4.	1.	1.	2.	4.	0.	3.
71	2.	0.	3.	1.	1.	2.	1.	2.	0.
81	0.	2.	2.	0.	1.	1.	0.	0.	4.
91	0.	0.	0.	2.	1.	0.	0.	0.	2.
101	0.	0.	1.	1.	0.	1.	1.	0.	0.
111	1.	2.	0.	0.	2.	0.	2.	1.	0.
121	1.	0.	1.	0.	0.	1.	0.	2.	3.
131	1.	1.	3.	1.	0.	2.	0.	0.	1.
141	4.	1.	4.	2.	2.	2.	1.	3.	3.
151	2.	1.	3.	3.	1.	3.	3.	2.	1.
161	4.	4.	1.	3.	3.	3.	2.	4.	4.
171	3.	5.	2.	2.	2.	10.	6.	11.	9.
181	4.	7.	5.	6.	6.	3.	3.	12.	8.
191	21.	16.	16.	21.	19.	14.	21.	22.	26.
201	30.	32.	30.	41.	42.	49.	41.	52.	62.
211	90.	91.	89.	108.	105.	128.	142.	170.	225.
221	271.	274.	323.	397.	429.	474.	565.	596.	743.
231	788.	925.	924.	814.	664.	435.	251.	149.	64.
241	7.	5.	1.	1.	1.	2.	0.	0.	3.
251	2.	3.	3.	2.	2.	7.	5.	6.	6.
261	2.	0.	5.	2.	4.	2.	4.	4.	2.
271	1.	7.	2.	0.	4.	4.	4.	4.	3.
281	2.	4.	1.	6.	6.	3.	10.	4.	10.
291	7.	10.	10.	15.	13.	13.	17.	12.	23.
301	26.	17.	20.	32.	32.	35.	35.	33.	25.
311	16.	8.	15.	18.	19.	16.	17.	32.	14.
321	31.	27.	27.	22.	31.	30.	36.	46.	42.
331	63.	61.	58.	59.	75.	61.	74.	85.	104.
341	128.	134.	155.	176.	202.	240.	269.	297.	380.
351	548.	596.	675.	820.	895.	944.	1001.	1033.	1123.
361	1266.	1452.	1632.	1704.	1781.	1656.	1393.	896.	578.
371	101.	29.	3.	1.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	1.	0.	0.
421	0.	0.	0.	0.	0.	1.	1.	0.	0.
431	0.	0.	0.	0.	1.	0.	0.	0.	1.
441	0.	0.	0.	1.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	1.	0.	0.	2.	0.	0.	0.
471	1.	0.	0.	0.	0.	1.	1.	0.	2.
481	1.	2.	0.	1.	0.	0.	2.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.							

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 G E N E R A L A L P H A E N E R G Y A N A L Y S I S
 Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
 S96T5666-SAM-PU
 File ID: 12a1271.CNF

Counted on: 12/ 4/96 @20:23
 Detector: AEA12
 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	1708.3	1708.3	362.687	362.687	14.000	5.974	7.000	1.893
2	30.0	30.0	305.494	301.714	28.000	18.238	14.000	3.607
3	1123.8	1123.8	230.202	230.201	14.000	6.008	7.000	2.258

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	0.600	5.755	5.748	0.0070.03	64.77	1.1	764.9	0.345E-03
2	Am241	0.018	5.479	5.467	0.0120.08	1.89	9.4	23.3	0.105E-04
	Pu238		5.487	5.467	0.020			30.4	0.137E-04
3	Pu239	0.360	5.147	5.139	0.0080.03	38.85	1.4	449.6	0.203E-03
	Pu240		5.144	5.139	0.005			449.6	0.203E-03
Totals:			0.977	<--valid peaks only-->			105.51		

DETECTOR CALIBRATION

Energy(MEV) = 4.080 + (0.0046)*Channel
 Energy range (MeV): 4.080 TO 6.435
 Efficiency = 0.0864 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	51848.0	100.000
Smoothed	51848.6	100.001
Composite fit	50647.9	97.685
Residuals	1200.1	2.315

Analyzed by: _____

VR

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 11470.5

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Raw	Data	Dump	for	AEA	Spectrum:	12a1271.CNF	INF-SD-WM-OP-224.REV
1	0.	0.	1.	3.	0.	1.	0.
11	0.	1.	1.	0.	0.	2.	1.
21	1.	0.	0.	0.	1.	2.	0.
31	1.	0.	2.	0.	0.	0.	0.
41	1.	2.	1.	1.	0.	1.	0.
51	0.	0.	0.	1.	1.	0.	2.
61	1.	0.	0.	0.	1.	0.	0.
71	0.	4.	3.	1.	3.	2.	1.
81	0.	2.	3.	1.	0.	0.	1.
91	1.	3.	2.	0.	1.	0.	0.
101	0.	0.	1.	0.	0.	3.	1.
111	2.	3.	3.	0.	2.	3.	0.
121	2.	4.	3.	2.	1.	3.	1.
131	3.	0.	2.	4.	4.	4.	5.
141	4.	3.	11.	4.	3.	3.	7.
151	5.	9.	2.	5.	12.	7.	8.
161	10.	5.	8.	6.	11.	15.	9.
171	14.	12.	10.	13.	23.	25.	23.
181	27.	32.	23.	28.	26.	37.	24.
191	41.	46.	38.	61.	52.	57.	57.
201	67.	79.	91.	98.	98.	102.	116.
211	170.	199.	209.	261.	281.	297.	318.
221	585.	590.	618.	713.	795.	936.	1018.
231	1226.	1159.	932.	774.	532.	315.	186.
241	13.	8.	8.	3.	4.	4.	2.
251	2.	7.	2.	8.	9.	11.	6.
261	4.	5.	5.	2.	3.	4.	4.
271	9.	5.	12.	7.	11.	7.	10.
281	19.	7.	13.	16.	15.	19.	12.
291	28.	20.	27.	23.	32.	24.	33.
301	36.	44.	34.	46.	36.	50.	42.
311	41.	29.	26.	36.	31.	29.	53.
321	53.	68.	65.	66.	68.	87.	101.
331	98.	99.	125.	140.	157.	133.	157.
341	227.	264.	296.	309.	345.	399.	477.
351	800.	911.	1022.	1073.	1134.	1155.	1285.
361	1687.	1861.	1916.	1769.	1575.	1357.	968.
371	83.	28.	12.	9.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	1.	0.	0.
401	0.	0.	1.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	1.
421	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	1.	1.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.
461	0.	1.	0.	0.	0.	1.	0.
471	0.	0.	0.	0.	1.	1.	4.
481	0.	1.	0.	0.	0.	0.	1.
491	0.	0.	0.	0.	0.	0.	1.
511	0.	0.					

Westinghouse Hanford Co.
 G E N E R A L A L P H A E N E R G Y A N A L Y S I S
 Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
 S96T5666-DUP-PU
 File ID: 13a1344.CNF

Counted on: 12/ 4/96 @22:38
 Detector:
 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	1445.2	1445.2	360.341	360.341	10.000	3.722	5.000	1.160
2?	14.6	14.6	303.240	301.681	12.000	2.536	6.000	0.641
3	975.1	975.1	228.016	228.016	12.000	4.356	6.000	1.772

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.	FWHM				
1	Pu236	0.631	5.755	5.755	0.0000	0.02	50.60	1.3	1798.9	0.810E-03
2	????			5.479			0.56	16.8		
3	Pu239	0.374	5.147	5.133	0.0140	0.02	29.98	1.6	1044.5	0.471E-03
	Pu240		5.144	5.133	0.011				1044.5	0.471E-03

Totals:		1.005	<--valid peaks only-->				80.57			

DETECTOR CALIBRATION

Energy(MEV) = 4.061 + (0.0047)*Channel
 Energy range (MeV): 4.061 TO 6.468
 Efficiency = 0.0287 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	38472.0	100.000
Smoothed	38473.9	100.005
Composite fit	38946.8	101.234
Residuals	-474.8	-1.234

Analyzed by: _____

VR

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

Display Max.:

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Raw	Data	Dump	for	AEA	Spectrum:	13a1344.CNF	NF-SD-WM-DP-224, REV			
1	0.	0.	1.	2.	1.	0.	0.	0.	0.	2.
11	0.	1.	0.	0.	0.	3.	3.	3.	1.	1.
21	1.	4.	2.	0.	2.	1.	1.	0.	0.	0.
31	0.	0.	0.	2.	0.	1.	1.	1.	0.	1.
41	0.	0.	0.	0.	0.	2.	0.	0.	1.	0.
51	0.	0.	2.	0.	1.	0.	0.	0.	0.	0.
61	2.	0.	0.	0.	0.	0.	2.	3.	1.	1.
71	1.	4.	1.	1.	0.	0.	0.	0.	0.	2.
81	1.	0.	1.	0.	0.	0.	0.	1.	0.	0.
91	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	1.	2.	0.	1.	1.	1.	0.	0.	0.	2.
111	1.	1.	0.	0.	1.	0.	3.	3.	1.	0.
121	0.	2.	2.	1.	2.	2.	0.	2.	3.	1.
131	1.	1.	1.	3.	0.	2.	4.	1.	2.	1.
141	0.	0.	6.	1.	5.	2.	5.	1.	3.	4.
151	2.	1.	2.	1.	4.	1.	1.	1.	0.	2.
161	4.	2.	2.	2.	3.	3.	6.	4.	8.	3.
171	9.	3.	7.	1.	3.	7.	7.	9.	9.	8.
181	11.	5.	14.	17.	13.	23.	17.	17.	16.	27.
191	15.	22.	28.	38.	21.	27.	40.	43.	46.	35.
201	42.	55.	58.	68.	83.	99.	112.	104.	106.	144.
211	151.	176.	190.	242.	273.	279.	354.	424.	442.	467.
221	554.	590.	681.	765.	825.	981.	1061.	1129.	1032.	961.
231	793.	491.	184.	82.	42.	9.	5.	3.	0.	2.
241	2.	2.	2.	0.	4.	1.	2.	1.	1.	3.
251	1.	3.	2.	6.	2.	2.	1.	3.	3.	2.
261	2.	2.	5.	4.	1.	2.	1.	7.	2.	3.
271	5.	0.	4.	4.	1.	3.	7.	6.	6.	1.
281	3.	10.	5.	3.	5.	7.	7.	10.	11.	7.
291	12.	14.	21.	16.	24.	11.	24.	22.	15.	19.
301	32.	23.	23.	25.	35.	15.	10.	13.	16.	6.
311	12.	15.	18.	21.	15.	12.	16.	19.	21.	25.
321	19.	34.	33.	28.	38.	46.	60.	60.	56.	57.
331	69.	73.	96.	94.	89.	143.	115.	153.	175.	167.
341	205.	245.	270.	304.	382.	484.	523.	568.	708.	803.
351	859.	965.	945.	964.	1027.	1093.	1167.	1314.	1484.	1524.
361	1692.	1513.	1227.	721.	262.	57.	9.	1.	1.	0.
371	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.
431	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
441	0.	0.	1.	0.	0.	0.	1.	0.	0.	1.
451	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	1.	3.	0.
471	1.	0.	1.	0.	1.	2.	1.	1.	2.	0.
481	1.	2.	0.	0.	1.	0.	0.	1.	0.	0.
491	0.	0.	0.	0.	0.	0.	1.	0.	3.	0.
511	0.	0.								

DISTRIBUTION SHEET

To	From	Page 1 of 21 c.B. 2/5/97
Distribution	Data Assessment and Interpretation	Date 02-04-97
Project Title/Work Order		EDT No.
Vapor Sampling and Analysis Plan (WHC-SD-WM-TP-522)		ECN No. 635432

Name	MSIN	Text With All Attach.	Text Only	Attach./Appendix Only	EDT/ECN Only
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Office of Environmental Restoration
and Waste Management EM-563
12800 Middlebrook Road
Germantown, MD 20874

J. A. Poppitti		X
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DISTRIBUTION SHEET

To Distribution	From Production Planning & Control	Page 1 of 1		
		Date: 02/04/97		
Project Title/Work Order HNF-SD-WM-DP-224, Rev. 0, "60-Day Waste Compatibility Safety Issues and Final Results for TX-244 Grab Samples"		EDT NO.: EDT-620386		
		ECN NO.: N/A		
Name	MSIN	Text With all Attach	EDT/ECN ONLY	

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C. M. Seidel	T6-04	X	
LTIC	T6-03		X

SGN Eurisys Services Corp.

B. A. Higley	H5-27		X
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Defense Nuclear Federal Safety Board

Rich Tontodonato		X	
625 Indiana Ave. N. W.			
Washington D.C. 20004			

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