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Waste Compatibility Safety Issues and Final Results for Tank 241-SY-102 Grab Samples

Jennifer L. Nuzum

Waste Management of Hanford, Inc., Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-96RL13200

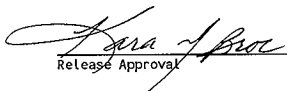
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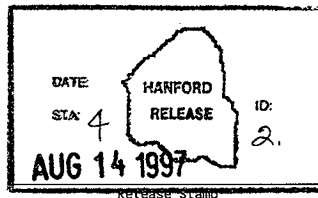
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ANALYTICAL SERVICES

**WASTE COMPATIBILITY SAFETY ISSUES AND FINAL
RESULTS FOR TANK 241-SY-102 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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NARRATIVE

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222-S ANALYTICAL SERVICES

**WASTE COMPATIBILITY SAFETY ISSUES AND FINAL RESULTS
FOR TANK 241-SY-102 GRAB SAMPLES**

Summary

Three grab samples (2SY-96-1, 2SY-96-2, and 2SY-96-3) were taken from Riser 1A of Tank 241-SY-102 on January 14, 1997, and received by 222-S Laboratory on January 14, 1997. These samples were analyzed in accordance with *Compatibility Grab Sampling and Analysis Plan* (TSAP) (Sasaki, 1996) and *Data Quality Objectives for Tank Farms Waste Compatibility Program* (DQO) (Fowler, 1995) in support of the Waste Compatibility Program. No notifications were required based on sample results. Acetone analysis was not performed in accordance with *Cancellation of Acetone Analysis for Tank 241-SY-102 Grab Samples* (Schreiber, 1997).

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. For each sample, two 20 mL subsamples were created for inorganic and radiochemical analyses. Sample 2SY-96-3 was a dark brown sludge containing 99% solids. There was an insufficient amount of supernate to perform all analyses. Since there was not suitable separation between the solids and supernate, results are suspect. Results for 2SY-96-3 subsamples (S97T000027 and S97T000029) are included in the Data Summary Table (Table 2) for information only, and are not discussed in the narrative, nor are they reported with respect to the Waste Compatibility Program.

Table 1. Appearance and OTR for 241-SY-102 Liquid Grab Samples

Customer ID	Lab ID	Color	Clarity	Organic Layer	% Solids	OTR (MRAD/HR)
2SY-96-1	S97T000011	Yellow	Clear	None	<5%	75
2SY-96-2	S97T000012	Dark Yellow	Clear	None	<5%	200
2SY-96-3	S97T000013	Dark Brown	Opaque	None	99%	1000

Analytical Results

Table 2 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

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. There were no exceptions to the quality control (QC) parameters stated in TSAP for these samples.

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. All conditions for corrosion control were satisfied. 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 two supernate subsamples was equal to 1.07. 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-, PO4-, SO4-, NO3-, and NO2-) were considered in this report. Other opportunistic analyte results are included in Table 2. These analytes do not have customer defined QC parameters and are not discussed.

Relative percent difference (RPD) between sample and duplicate for Subsample 2SY-96-2 (S97T000026) was 24.1% for the SO4- analyte. Poor precision is caused by sample heterogeneity. NO3- spike recovery for the same subsample was low. The spike should be considered invalid because the amount of spike added was insignificant in comparison to the sample NO3- concentration. Rerun analysis was not requested.

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.

Total Organic Carbon (TOC)

Subsample 2SY-96-1 (S97T000024) was analyzed in triplicate. The results are shown in Table 4. Spike recovery for Subsample 2SY-96-2 (S97T000026) was above the QC parameters stated in TSAP. This elevated spike recovery was due to matrix interference, and rerun analysis was not requested.

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Table 4. Triplicate Results for Total Organic Carbon

Sample ID	Sample Result ($\mu\text{g/mL}$)	Duplicate Result ($\mu\text{g/mL}$)	Triplicate Result ($\mu\text{g/mL}$)	Mean ($\mu\text{g/mL}$)
S97T000024	2.90E+02	4.72E+02	3.32E+02	3.65E+03

Total Inorganic Carbon (TIC)

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

Radionuclide Analyses

Americium (241Am)

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

Strontium 90 (90Sr)

RPD between sample and duplicate for Subsample 2SY-102-1 (S97T000025) was 49.5%. This value is consistent with previous analyses, and is caused by sample heterogeneity. Continuing reruns were not requested.

Gamma Energy Analysis (GEA)

Cesium 137 results only were considered in this report. Cobalt 60 results were included in Table 2 as opportunistic. There were no exceptions to the QC parameters stated in TSAP for these subsamples.

Ammonia Analysis (NH3)

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

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Procedures

Table 5 lists the analytical procedures used for performing sample analyses. Abbreviations for analyses are defined in the table notes.

Table 5. Analytical Procedures

Analysis	Matrix	Preparation Procedure +	Analysis Procedure
DSC	Liquid	N/A	LA-514-114 Rev. D-0 LA-514-113 Rev. C-1
TGA	Liquid	N/A	LA-560-112 Rev. C-0
Sp.G.	Liquid	N/A	LA-510-112 Rev. C-3
pH	Liquid	N/A	LA-212-106 Rev. B-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
241Am	Liquid	N/A	LA-953-103 Rev. B-0

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GEA	Liquid	N/A	LA-548-121 Rev. E-0
90Sr	Liquid	N/A	LA-220-101 Rev. D-1
NH3	Liquid	N/A	LA-631-001 Rev. B-2

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
NH3	ammonia

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References

Sasaki, L.M., 1996, *Compatibility Grab Sampling and Analysis Plan for Fiscal Year 1997*, WHC-SD-WM-TSAP-115, Revision 0-C, 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.

Schreiber, R.D., 1997, *Cancellation of Acetone Analysis for Tank 241-SY-102 Grab Samples*, Internal Memorandum 74610-97-037, Lockheed Martin Hanford Corporation, Richland, WA 99352.

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SY-102 SAMPLE BREAKDOWN (ATTACHMENT 1)

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Attachment 1

SY-102 GRAB SAMPLE BREAKDOWN

Riser 1A

1" Below
Zipcord
Measurement

635 in.

565 in.

2SY-96-1

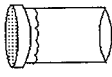
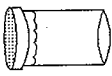
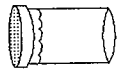
2SY-96-2

2SY-96-3

S97T000011

S97T000012

S97T000013



S97T000024

S97T000025

S97T000026

S97T000028

S97T000027

S97T000029



DSC
TGA
TOC
TIC
ICP: Al, Fe, Na
IC: anions
pH
OH
Sp.G

GEA: Cs-137
Pu-239/240
Sr-90
Am-241

DSC
TGA
TOC
TIC
ICP: Al, Fe, Na
IC: anions
pH
OH
Sp.G

GEA: Cs-137
Pu-239/240
Sr-90
Am-241

DSC
TGA
TOC
TIC
ICP: Al, Fe, Na
IC: anions
pH
OH
Sp.G

GEA: Cs-137
Pu-239/240
Sr-90
Am-241

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SAMPLE DATA SUMMARY

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Table 2. Data Summary Table
SY-102 GRAB1

CORE NUMBER: n/a
SEGMENT #: 23Y-96-1

SEGMENT PORTION: Supernate

Sample#	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec	Det Limit	Count Err%
S97T000024		DSC Exotherm on Perkin Elmer	Joules/g	100.3	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S97T000024		Ammonia by ISE-std Additions	ug/mL	88.60	<1.000	< 1.000	1.500	n/a	106.2	n/a	1,000	n/a
S97T000024		OH- by Pot. Titration	ug/mL	100.2	<42.00	1.68e+03	1.64e+03	1.64e+03	4.26	n/a	500.0	n/a
S97T000024		pH Direct	pH	100.2	n/a	12.08	12.10	12.09	0.17	n/a	1.00e-02	n/a
S97T000024		Specific Gravity	Sp.G.	99.71	n/a	1.077	1.087	1.082	0.92	n/a	1.00e-02	n/a
S97T000024		% Water by TGA on Perkin Elmer	%	99.19	n/a	88.37	88.37	88.49	0.27	n/a	n/a	n/a
S97T000024		TIC by Acid/Coulometry	ug/mL	100.2	9.400	<1.40e+3	1.57e+03	n/a	n/a	n/a	5,000	n/a
S97T000024		Tot. Organic Carbon by Coul.	ug/mL	100.2	0.00e+00	2.90e+02	472.0	381.0	47.8	n/a	7,500	n/a
S97T000024		D Silver-ICP-Acid Dtl.	ug/mL	98.00	<1.00e-02	2.390	2.510	2.450	4.90	n/a	1,010	n/a
S97T000024		D Aluminum-ICP-Acid Dtl.	ug/mL	98.20	<5.00e-02	1.97e+03	1.96e+03	1.96e+03	0.51	n/a	5,050	n/a
S97T000024		D Arsenic-ICP-Acid Dtl.	ug/mL	103.8	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T000024		D Boron-ICP-Acid Dtl.	ug/mL	101.2	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	n/a	5,050	n/a
S97T000024		D Barium-ICP-Acid Dtl.	ug/mL	99.80	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	n/a	5,050	n/a
S97T000024		D Beryllium-ICP-Acid Dtl.	ug/mL	102.0	<5.00e-03	<5.05e-01	<5.05e-1	n/a	n/a	n/a	5,05e-01	n/a
S97T000024		D Bismuth-ICP-Acid Dtl.	ug/mL	101.2	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T000024		D Calcium-ICP-Acid Dtl.	ug/mL	98.40	<5.00e-03	<5.05e-01	<5.05e-1	n/a	n/a	n/a	5,05e-01	n/a
S97T000024		D Cadmium-ICP-Acid Dtl.	ug/mL	99.40	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T000024		D Cerium-ICP-Acid Dtl.	ug/mL	99.00	<1.00e-02	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T000024		D Cobalt-ICP-Acid Dtl.	ug/mL	100.5	<1.00e-02	< 10.10	<1.01e1	368.5	0.27	n/a	2,020	n/a
S97T000024		D Chromium-ICP-Acid Dtl.	ug/mL	97.00	<1.00e-02	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T000024		D Copper-ICP-Acid Dtl.	ug/mL	104.4	<1.00e-02	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T000024		D Iron-ICP-Acid Dtl.	ug/mL	95.80	<5.00e-02	< 5.050	<5.05e0	799.5	1.88	n/a	5,050	n/a
S97T000024		D Potassium-ICP-Acid Dtl.	ug/mL	101.2	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	n/a	5,050	n/a
S97T000024		D Lanthanum-ICP-Acid Dtl.	ug/mL	99.20	<1.00e-02	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T000024		D Lithium-ICP-Acid Dtl.	ug/mL	99.80	<1.00e-02	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T000024		D Magnesium-ICP-Acid Dtl.	ug/mL	97.00	<1.00e-02	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T000024		D Manganese-ICP-Acid Dtl.	ug/mL	101.4	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	n/a	5,050	n/a
S97T000024		D Nickel-ICP-Acid Dtl.	ug/mL	102.0	<1.00e-02	< 10.10	<1.01e1	3.48e+02	0.57	n/a	10.10	n/a
S97T000024		D Sodium-ICP-Acid Dtl.	ug/mL	100.4	<1.00e-02	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T000024		D Nitrogen-ICP-Acid Dtl.	ug/mL	99.00	<2.00e-02	< 2.020	<2.02e0	n/a	n/a	n/a	2,020	n/a
S97T000024		D Phosphorus-ICP-Acid Dtl.	ug/mL	101.2	<2.00e-01	< 2.020	<2.02e0	3.19e+03	0.00	n/a	20.20	n/a
S97T000024		D Selenium-ICP-Acid Dtl.	ug/mL	96.80	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T000024		D Sodium-ICP-Acid Dtl.	ug/mL	99.60	<5.00e-02	< 5.050	<5.05e0	749.0	0.53	n/a	10.10	n/a
S97T000024		D Strontium-ICP-Acid Dtl.	ug/mL	95.60	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	n/a	6,060	n/a
S97T000024		D Silicon-ICP-Acid Dtl.	ug/mL	95.00	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T000024		D Sulfur-ICP-Acid Dtl.	ug/mL	96.40	<5.00e-02	< 5.050	<5.05e0	8.240	1.70	n/a	5,050	n/a
S97T000024		D Tellurium-ICP-Acid Dtl.	ug/mL	99.60	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T000024		D Vanadium-ICP-Acid Dtl.	ug/mL	99.60	<1.00e-02	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T000024		D Zinc-ICP-Acid Dtl.	ug/mL	98.60	<2.00e-02	< 2.020	<2.02e1	n/a	n/a	n/a	20.20	n/a
S97T000024		D Thallium-ICP-Acid Dtl.	ug/mL	95.40	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	n/a	50.50	n/a
S97T000024		D Vanadium-ICP-Acid Dtl.	ug/mL	97.40	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	n/a	5,050	n/a
S97T000024		D Zinc-ICP-Acid Dtl.	ug/mL	100.8	<1.00e-02	< 10.10	<1.01e0	n/a	n/a	n/a	10.10	n/a

Sample#	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S97U000024	D	Zirconium-109-Acid Dil.	ug/mL	100.0	<1.00e-02	<1.010	<1.0160	n/a	n/a	n/a	1.010	n/a
S97U000024		Fluoride-1C-Dionex 4000/4500	ug/mL	95.29	<1.20e-02	1.00e+03	1.07e+03	1.08e+03	2.76	n/a	61.81	n/a
S97U000024		Chloride-1C-Dionex 4000/4500	ug/mL	100.5	<1.70e-02	8.05e+02	886.0	835.4	7.50	n/a	87.57	n/a
S97U000024		Nitrite-1C - Dionex 4000/4500	ug/mL	108.1	<1.00e-01	6.40e+03	6.48e+03	6.44e+03	1.24	n/a	356.3	n/a
S97U000024		Bromide by Ion Chromatograph	ug/mL	94.40	<1.20e-01	<6.44e+02	<6.4482	n/a	n/a	n/a	643.9	n/a
S97U000024		Nitrate by IC-Dionex 4000/4500	ug/mL	99.16	3.04e-01	4.23e+04	4.29e+04	4.27e+04	0.94	n/a	718.0	n/a
S97U000024		Phosphate-1C-Dionex 4000/4500	ug/mL	98.90	<1.20e-01	8.20e+03	9.02e+03	8.91e+03	2.47	n/a	618.1	n/a
S97U000024		Sulfate by IC-Dionex 4000/4500	ug/mL	99.84	<1.50e-01	2.40e+03	2.51e+03	2.45e+03	4.48	n/a	710.8	n/a
S97U000024		Oxalate-1C-Dionex 4000/4500	ug/mL	99.62	<1.00e-01	<5.41e+02	<5.4162	n/a	n/a	n/a	340.9	n/a
S97U000025		Strontium-89/90 High Level	uCi/mL	98.81	<2.39e-04	9.29e-04	1.34e-03	1.22e-03	49.5	n/a	4.34e-04	3.59E+01
S97U000025		Pu-239/240 by TRU-SPEC Resin	uCi/mL	99.65	<4.24e-06	<3.81e-06	<4.21E-6	n/a	n/a	n/a	3.81e-06	7.89E+00
S97U000025		Cobalt-60 by GEA	uCi/mL	99.69	<5.53e-03	<3.04e-04	<3.22e-4	n/a	n/a	n/a	3.04e-04	n/a
S97U000025		Cesium-137 by GEA	uCi/mL	102.0	<5.62e-03	12.30	12.20	12.25	0.82	n/a	n/a	0.170
S97U000025		Am-241 by Extraction	uCi/mL	85.71	<7.16e-06	<6.87e-06	<6.17E-6	n/a	n/a	n/a	6.87e-06	5.46E+00

Table 2. Data Summary Table
SY-102 GRAB1

CORE NUMBER: n/a
SEGMENT #: 23Y-96-2

SEGMENT PORTION: Supernate

Sample#	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S977000026		DSC Exotherm on Perkin Elmer	Joules/g	100.3	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S977000026		Ammonia by ISE-std Additions	ug/mL	88.60	<1.00	74.80	n/a	n/a	n/a	n/a	1.000	n/a
S977000026		OH- by Pot. Titration	ug/mL	100.2	<42.00	7.98e+03	7.77e+03	7.88e+03	2.67	n/a	2.50e+03	n/a
S977000026		pH Direct	pH	102.2	n/a	11.96	11.92	11.94	0.34	n/a	1.00e-02	n/a
S977000026		Specific Gravity	Sp.-G.	99.71	n/a	1.071	1.083	1.077	1.11	n/a	1.00e-02	n/a
S977000026		% Water by TGA on Perkin Elmer	%	99.19	n/a	85.83	85.94	85.88	0.13	n/a	n/a	n/a
S977000026		TIC by GC/Combustion	ug/mL	99.17	3.00e-01	1.48e+03	1.51e+03	1.50e+03	2.01	100.7	5.000	n/a
S977000026		Tot. Organic Carbon by Coul.	ug/mL	102.0	0.00e+00	1.03e+03	1.01e+03	1.02e+03	3.06	378.0	10.000	n/a
S977000026		D Silver-ICP-Acid Dtl.	ug/mL	98.20	<1.00e-02	3.430	3.300	3.365	3.66	95.70	2.010	n/a
S977000026		D Aluminum-ICP-Acid Dtl.	ug/mL	98.20	<1.00e-02	5.12e+03	5.09e+03	5.10e+03	0.59	95.10	10.000	n/a
S977000026		D Arsenic-ICP-Acid Dtl.	ug/mL	103.8	<1.00e-01	< 20.10	<2.01e1	n/a	n/a	101.0	20.10	n/a
S977000026		D Boron-ICP-Acid Dtl.	ug/mL	101.2	<1.00e-02	< 10.10	<1.01e1	n/a	n/a	101.0	10.10	n/a
S977000026		D Barium-ICP-Acid Dtl.	ug/mL	99.80	<1.00e-02	< 10.10	<1.01e1	n/a	n/a	98.50	10.10	n/a
S977000026		D Beryllium-ICP-Acid Dtl.	ug/mL	102.0	<1.00e-03	< 10.10	<1.01e1	n/a	n/a	101.0	10.10	n/a
S977000026		D Bismuth-ICP-Acid Dtl.	ug/mL	101.2	<1.00e-01	< 20.10	<2.01e1	n/a	n/a	105.0	20.10	n/a
S977000026		D Calcium-ICP-Acid Dtl.	ug/mL	98.40	<1.00e-01	< 20.10	<2.01e1	n/a	n/a	99.10	20.10	n/a
S977000026		D Cadmium-ICP-Acid Dtl.	ug/mL	99.40	<1.00e-01	< 20.10	<2.01e1	1.385	3.65	99.30	20.10	n/a
S977000026		D Cerium-ICP-Acid Dtl.	ug/mL	100.6	<1.00e-01	< 20.10	<2.01e1	n/a	n/a	99.30	20.10	n/a
S977000026		D Cobalt-ICP-Acid Dtl.	ug/mL	100.6	<1.00e-02	9.45e+02	9.37e+02	942.2	1.17	94.40	2.010	n/a
S977000026		D Chromium-ICP-Acid Dtl.	ug/mL	102.0	<1.00e-02	< 20.10	<2.01e1	n/a	n/a	99.00	20.10	n/a
S977000026		D Copper-ICP-Acid Dtl.	ug/mL	95.80	<1.00e-02	< 10.10	<1.01e1	n/a	n/a	99.00	10.10	n/a
S977000026		D Iron-ICP-Acid Dtl.	ug/mL	95.80	<1.00e-01	2.33e+03	2.07e+03	2.10e+03	2.85	94.80	100.0	n/a
S977000026		D Potassium-ICP-Acid Dtl.	ug/mL	101.2	<1.00e-02	< 10.10	<1.01e1	n/a	n/a	101.0	10.10	n/a
S977000026		D Lanthanum-ICP-Acid Dtl.	ug/mL	99.20	<1.00e-02	< 20.10	<2.01e1	n/a	n/a	98.90	2.010	n/a
S977000026		D Lithium-ICP-Acid Dtl.	ug/mL	99.80	<1.00e-02	< 20.10	<2.01e1	n/a	n/a	98.20	20.10	n/a
S977000026		D Magnesium-ICP-Acid Dtl.	ug/mL	97.00	<1.00e-02	< 20.10	<2.01e1	n/a	n/a	94.70	2.010	n/a
S977000026		D Manganese-ICP-Acid Dtl.	ug/mL	101.4	<1.00e-02	< 20.10	<2.01e1	11.26	5.36	101.0	10.10	n/a
S977000026		D Nickel-ICP-Acid Dtl.	ug/mL	102.0	<1.00e-02	4.70e+04	4.68e+04	4.69e+04	0.43	97.40	20.10	n/a
S977000026		D Sodium-ICP-Acid Dtl.	ug/mL	100.4	<1.00e-01	< 20.10	<2.01e1	n/a	n/a	100.0	20.10	n/a
S977000026		D Strontium-ICP-Acid Dtl.	ug/mL	99.00	<1.00e-02	< 20.10	<2.01e1	n/a	n/a	97.50	4.020	n/a
S977000026		D Vanadium-ICP-Acid Dtl.	ug/mL	96.80	<1.00e-01	1.36e+03	1.34e+03	1.35e+03	1.48	90.30	40.20	n/a
S977000026		D Zinc-ICP-Acid Dtl.	ug/mL	96.80	<1.00e-02	< 20.10	<2.01e1	n/a	n/a	95.40	20.10	n/a
S977000026		D Selenium-ICP-Acid Dtl.	ug/mL	96.60	<1.00e-01	5.63e+02	5.61e+02	561.5	0.18	99.20	20.10	n/a
S977000026		D Tellurium-ICP-Acid Dtl.	ug/mL	95.00	<1.00e-02	< 12.10	<1.21e1	n/a	n/a	96.50	12.10	n/a
S977000026		D Silicon-ICP-Acid Dtl.	ug/mL	96.60	<1.00e-02	< 20.10	<2.01e1	n/a	n/a	102.0	20.10	n/a
S977000026		D Sulfur-ICP-Acid Dtl.	ug/mL	96.60	<1.00e-02	< 17.70	<1.77e1	17.20	5.81	97.20	10.10	n/a
S977000026		D Tantalum-ICP-Acid Dtl.	ug/mL	99.60	<1.00e-01	< 20.10	<2.01e1	n/a	n/a	98.40	20.10	n/a
S977000026		D Samarium-ICP-Acid Dtl.	ug/mL	99.60	<1.00e-02	< 20.10	<2.01e1	n/a	n/a	99.10	2.010	n/a
S977000026		D Thallium-ICP-Acid Dtl.	ug/mL	98.60	<1.00e-02	< 40.20	<4.02e1	n/a	n/a	98.40	2.010	n/a
S977000026		D Tin-ICP-Acid Dtl.	ug/mL	95.40	<1.00e-02	< 20.10	<2.01e1	n/a	n/a	92.50	40.20	n/a
S977000026		D Vanadium-ICP-Acid Dtl.	ug/mL	97.60	<1.00e-01	<1.00e+02	<1.00e2	n/a	n/a	103.0	100.0	n/a
S977000026		D Uranium-ICP-Acid Dtl.	ug/mL	100.8	<1.00e-02	< 10.10	<1.01e1	n/a	n/a	100.0	10.10	n/a
S977000026		D Zinc-ICP-Acid Dtl.	ug/mL	101.6	<1.00e-02	< 20.10	<2.01e1	n/a	n/a	102.0	2.010	n/a

Sample#	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S97T000026	D	Zirconium-10P-Acid Dil.	ug/mL	100.0	<1.00e-02	< 2.010	<2.010e0	n/a	n/a	99.50	2.010	n/a
S97T000026		Fluoride-IC-Dionex 4000/4500	ug/mL	95.25	<1.20e-02	6.47e+02	546.0	596.5	16.9	95.25	25.45	n/a
S97T000026		Chloride-IC-Dionex 4000/4500	ug/mL	100.5	<1.70e-02	1.40e+03	1.46e+03	1.43e+03	4.20	87.59	36.06	n/a
S97T000026		Nitrite-IC - Dionex 4000/4500	ug/mL	108.1	<1.08e-01	1.46e+04	1.45e+04	1.45e+04	0.69	96.13	229.1	n/a
S97T000026		Bromide by Ion Chromatograph	ug/mL	94.40	<1.23e-01	<2.65e2	<2.65e2	n/a	n/a	95.76	265.1	n/a
S97T000026		Nitrate by IC-Dionex 4000/4500	ug/mL	99.16	3.04e-01	4.87e+04	4.78e+04	4.82e+04	1.87	52.36	294.8	n/a
S97T000026		Phosphate-IC-Dionex 4000/4500	ug/mL	98.90	<1.20e-01	4.02e+03	3.96e+03	3.99e+03	1.50	94.30	254.5	n/a
S97T000026		Sulfate by IC-Dionex 4000/4500	ug/mL	99.84	<1.38e-01	1.79e+03	2.28e+03	2.03e+03	24.1	95.09	292.7	n/a
S97T000026		Oxalate-IC-Dionex 4000/450	ug/mL	99.62	<1.03e-01	<2.23e+02	<2.23e2	n/a	n/a	94.37	222.7	n/a
S97T000028		Strontium-89/90 High Level	uCi/mL	98.81	<2.39e-04	7.66e-03	7.26e-03	7.46e-03	5.36	n/a	4.38e-04	8.76e+00
S97T000028		Pu-239/240 by TRU-SPEC ResIn	uCi/mL	99.66	<4.24e-06	1.53e-05	1.51e-05	1.52e-05	1.32	n/a	4.63e-06	3.19e+00
S97T000028		Cobalt-60 by GEA	uCi/mL	99.69	<5.53e-05	<8.86e-04	<1.09e-3	n/a	n/a	n/a	1.00e-03	n/a
S97T000028		Cesium-137 by GEA	uCi/mL	102.0	<5.62e-05	37.00	36.50	36.75	1.36	n/a	n/a	0.160
S97T000028		Am-241 by Extraction	uCi/mL	85.71	<7.16e-06	<9.16e-06	<7.36E-6	n/a	n/a	n/a	9.16e-06	7.85e+00

CORE NUMBER: n/a
SEGMENT #: 281-96-3

Table 2. Data Summary Table
S1-102 GRAB1

SEGMENT PORTION: Supernate

Sample#	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S971000027		DSC Exotherm using Mettler	Joules/g	107.6	n/a	0.50e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S971000027		OH- By Pot. Titration	ug/mL	102.2	<42.00	7.58e+03	8.59e+03	8.28e+03	7.56	n/a	1.25e+03	n/a
S971000027		pH Direct	pH	100.2	n/a	12.39	12.42	12.41	0.24	n/a	1.00e-02	n/a
S971000027		Specific Gravity	Sp.G.	99.71	n/a	n/a	n/a	n/a	n/a	n/a	1.00e-03	n/a
S971000027		% water by tit using Mettler	%	99.19	n/a	72.02	72.51	72.27	0.68	n/a	n/a	n/a
S971000027		TIC By Acid/Coulometry	ug/mL	102.2	9.400	4.72e+03	4.49e+03	4.34e+03	0.91	n/a	5.000	n/a
S971000027		Fluoride-IC-Dionex 4000/4500	ug/mL	102.0	0.00e+00	5.65e+03	4.64e+03	5.14e+03	0.96	n/a	5.00	n/a
S971000027		Fluoride-IC-Dionex 4000/4500	ug/mL	95.25	<1.20e-02	4.32e+02	1.453.0	1.452.3	0.22	n/a	23.43	n/a
S971000027		Chloride-IC-Dionex 4000/4500	ug/mL	100.3	<1.00e-02	1.10e+03	1.55e+03	1.32e+03	0.69	n/a	56.06	n/a
S971000027		Nitrite-IC-Dionex 4000/4500	ug/mL	108.1	<1.00e-01	1.25e+01	1.55e+01	1.54e+01	0.63	n/a	262.1	n/a
S971000027		Bromide by Ion Chromatograph	ug/mL	94.40	<1.20e-01	2.55e+02	3.25e+02	3.79e+02	0.78	n/a	262.1	n/a
S971000027		Nitrate by IC-Dionex 4000/4500	ug/mL	94.06	<1.20e-01	3.78e+01	3.78e+01	3.79e+01	0.58	n/a	262.1	n/a
S971000027		Phosphate by IC-Dionex 4000/4500	ug/mL	93.40	<1.20e-01	4.73e+01	4.73e+01	4.73e+01	1.58	n/a	262.1	n/a
S971000027		Sulfate by IC-Dionex 4000/4500	ug/mL	93.83	<1.20e-01	5.79e+01	5.79e+01	5.79e+01	6.56	n/a	262.1	n/a
S971000027		Oxalate by IC-Dionex 4000/4500	ug/mL	99.49	<1.00e-01	3.100	3.250	3.250	4.72	n/a	2.90e-02	3.82e+00
S971000029		Strontium by ICP-AES	ug/mL	107.1	<5.53e-05	5.31e-03	1.05e-03	7.93e-03	65.7	n/a	n/a	57.1
S971000029		Cobalt by ICP-AES	ug/mL	99.49	<5.53e-05	5.31e-03	1.05e-03	7.93e-03	65.7	n/a	n/a	57.1
S971000029		Cesium-137 by GEA	ug/mL	102.0	<5.62e-05	24.50	24.20	24.35	1.23	n/a	n/a	0.400

HNF-SD-WM-DP-227, REV. 0

CHAIN OF CUSTODY FORMS

HNF-SD-WM-DP-227, REV. 0

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CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

Shipment Number 200F-08-TF (2) Sample Number 234-96-2 (3) Supervisor R. J. Penzvik
 Tank 102-SY (5) Riser 1A (6) Cask/PIG Shipping Container Serial Number 6003 E
 (8) Shipment Description

(7) FIELD	(31) LABORATORY
Over Top Dose Rate <u><0.5</u>	A. Work Package Number <u>WS-96-002440</u>
Side Dose Rate <u><0.5</u>	B. Cask/PIG Seal Number <u>2027</u>
Bottom Dose Rate <u><0.5</u>	C. Date and Time Sample <u>1-14-97 / 1318hr</u>
Smearable Contamination <u><20</u>	D. Expected Liquid Content <u>100%</u>
(Alpha)	E. Expected Solid Content <u>0%</u>
(Beta-Gamma)	F. Dose Rate Through Drill String (Auger/On Contact) (RDS) <u>220 mkr</u>
(Signature) <u>[Signature]</u>	G. Expected Sample Length (Auger) Volume (RDS) <u>125 ml</u>

ACT* [Signature] RCT* [Signature]

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

INF-SD-WM-DR-227, REV. 0

(1) Field Comments

(32) Laboratory Comments

(1) Point of Origin <u>02-SY 1A</u>	(12) Destination <u>202-S</u>	(13) Sample Name (Sign and PRINT) <u>James Sickels</u>	(14) Date/Time <u>1-14-97</u>	(15) Sender Comments
(16) Inaugured By (Sign and PRINT) <u>James Sickels</u>	(17) Received By (Sign and PRINT) <u>James Sickels</u>	(18) Date/Time <u>1-14-97</u>	(19) Date/Time <u>1-14-97</u>	(20) Receiver Comments
(21) Reinquished By (Sign and PRINT) <u>James Sickels</u>	(22) Received By (Sign and PRINT) <u>James Sickels</u>	(23) Date/Time <u>1-14-97</u>	(24) Date/Time <u>1-14-97</u>	(24) Receiver Comments
(25) Reinquished By (Sign and PRINT) <u>James Sickels</u>	(26) Received By (Sign and PRINT) <u>James Sickels</u>	(27) Date/Time <u>1-14-97</u>	(28) Date/Time <u>1-14-97</u>	(28) Receiver Comments

(30) Seal Date Consistent with this Record?

Shipment No.
Yes ☒ No ☐

(29) Seal Intact Upon Receipt?
Yes ☒ No ☐

(29) Seal Intact Upon Release?
Yes ☒ No ☐

(19) Seal Intact Upon Release?
Yes ☒ No ☐

Sample No.
Yes ☒ No ☐

BC-9001-328 (01/96)

Shipment No. Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

(29) Seal Intact Upon Release? Yes ☒ No ☐

(19) Seal Intact Upon Release? Yes ☒ No ☐

Sample No. Yes ☒ No ☐

Shipment No. Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

(29) Seal Intact Upon Release? Yes ☒ No ☐

(19) Seal Intact Upon Release? Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

(29) Seal Intact Upon Release? Yes ☒ No ☐

(19) Seal Intact Upon Release? Yes ☒ No ☐

Sample No. Yes ☒ No ☐

Shipment No. Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

(29) Seal Intact Upon Release? Yes ☒ No ☐

(19) Seal Intact Upon Release? Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

(29) Seal Intact Upon Release? Yes ☒ No ☐

(19) Seal Intact Upon Release? Yes ☒ No ☐

Sample No. Yes ☒ No ☐

Shipment No. Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

(29) Seal Intact Upon Release? Yes ☒ No ☐

(19) Seal Intact Upon Release? Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

(29) Seal Intact Upon Release? Yes ☒ No ☐

(19) Seal Intact Upon Release? Yes ☒ No ☐

Sample No. Yes ☒ No ☐

Shipment No. Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

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Sample No. Yes ☒ No ☐

Shipment No. Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

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Sample No. Yes ☒ No ☐

Shipment No. Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

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(19) Seal Intact Upon Release? Yes ☒ No ☐

Sample No. Yes ☒ No ☐

Shipment No. Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

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(19) Seal Intact Upon Release? Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

(29) Seal Intact Upon Release? Yes ☒ No ☐

(19) Seal Intact Upon Release? Yes ☒ No ☐

Sample No. Yes ☒ No ☐

Shipment No. Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

(29) Seal Intact Upon Release? Yes ☒ No ☐

(19) Seal Intact Upon Release? Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

(29) Seal Intact Upon Release? Yes ☒ No ☐

(19) Seal Intact Upon Release? Yes ☒ No ☐

Sample No. Yes ☒ No ☐

Shipment No. Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

(29) Seal Intact Upon Release? Yes ☒ No ☐

(19) Seal Intact Upon Release? Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

(29) Seal Intact Upon Release? Yes ☒ No ☐

(19) Seal Intact Upon Release? Yes ☒ No ☐

Sample No. Yes ☒ No ☐

Shipment No. Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

(29) Seal Intact Upon Release? Yes ☒ No ☐

(19) Seal Intact Upon Release? Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

(29) Seal Intact Upon Release? Yes ☒ No ☐

(19) Seal Intact Upon Release? Yes ☒ No ☐

Sample No. Yes ☒ No ☐

Shipment No. Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

(29) Seal Intact Upon Release? Yes ☒ No ☐

(19) Seal Intact Upon Release? Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

(29) Seal Intact Upon Release? Yes ☒ No ☐

(19) Seal Intact Upon Release? Yes ☒ No ☐

Sample No. Yes ☒ No ☐

Shipment No. Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

(29) Seal Intact Upon Release? Yes ☒ No ☐

(19) Seal Intact Upon Release? Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

(29) Seal Intact Upon Release? Yes ☒ No ☐

(19) Seal Intact Upon Release? Yes ☒ No ☐

Sample No. Yes ☒ No ☐

Shipment No. Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

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(19) Seal Intact Upon Release? Yes ☒ No ☐

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(19) Seal Intact Upon Release? Yes ☒ No ☐

Sample No. Yes ☒ No ☐

Shipment No. Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

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Sample No. Yes ☒ No ☐

Shipment No. Yes ☒ No ☐

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(19) Seal Intact Upon Release? Yes ☒ No ☐

Sample No. Yes ☒ No ☐

Shipment No. Yes ☒ No ☐

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(19) Seal Intact Upon Release? Yes ☒ No ☐

Sample No. Yes ☒ No ☐

Shipment No. Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

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(19) Seal Intact Upon Release? Yes ☒ No ☐

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(19) Seal Intact Upon Release? Yes ☒ No ☐

Sample No. Yes ☒ No ☐

Shipment No. Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

(29) Seal Intact Upon Release? Yes ☒ No ☐

(19) Seal Intact Upon Release? Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

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(19) Seal Intact Upon Release? Yes ☒ No ☐

Sample No. Yes ☒ No ☐

Shipment No. Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

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(19) Seal Intact Upon Release? Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

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(19) Seal Intact Upon Release? Yes ☒ No ☐

Sample No. Yes ☒ No ☐

Shipment No. Yes ☒ No ☐

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(19) Seal Intact Upon Release? Yes ☒ No ☐

Sample No. Yes ☒ No ☐

Shipment No. Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

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(19) Seal Intact Upon Release? Yes ☒ No ☐

Sample No. Yes ☒ No ☐

Shipment No. Yes ☒ No ☐

(29) Seal Intact Upon Receipt? Yes ☒ No ☐

(29) Seal Intact Upon Release? Yes ☒ No ☐

(19) Seal Intact Upon Release? Yes ☒ No ☐

CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

Jan. 15, 1997 7:59AM WHC 222S LAB ROOM 2F BACKSIDE No. 8854 P. 2/3

Shipment Number 200 E-08-1E (2) Sample Number 254-96-3 (3) Supervisor R. J. Braznik
 Tank 102-54 (5) Riser 1A (6) Cask/PIG Shipping Container Serial Number 6003 B

(17) FIELD		(31) LABORATORY		(8) Shipment Description	
Over Top Dose Rate	<u><0.5</u>			A. Work Package Number	<u>WS-96-00264/</u>
Side Dose Rate	<u>0.7</u>			B. Cask/PIG Seal Number	<u>2029</u>
Bottom Dose Rate	<u><0.5</u>			C. Date and Time Sample	<u>1-14-97 / 1326hr</u>
Shearable Contamination	<u><20</u>	(Alpha)		Removed from Tank	<u>90%</u>
	<u><1K</u>	(Beta-Gamma)		D. Expected Liquid Content	<u>10% *</u>
	<u>See Boyd</u>	(Signature)		E. Expected Solid Content	<u>450 ml/hr</u>
PCT: <u>See Boyd</u>				F. Dose Rate Through Drill String (Auger/On Contact GRAB)	<u>125 ml</u>
PCT: <u>Joe Walley</u>				G. Expected Sample Length (Auger/Volume GRAB)	

HNF-SD-WM-DP-227, REV. 0

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

(0) Field Comments		(32) Laboratory Comments	
* SUSPENDED SOLIDS			
(1) Point of Origin	(12) Destination	(14) Date/Time	(15) Sender Comments
<u>54 102 riser 1A</u>	<u>8854-S</u>	<u>1-14-97</u>	
(2) Released by (Sign and PRINT)	(13) Received by (Sign and PRINT)	(19) Date/Time	(20) Receiver Comments
<u>James Sicks</u>	<u>James Sicks</u>	<u>1-14-97 / 1435</u>	
(3) Released by (Sign and PRINT)	(16) Received by (Sign and PRINT)	(23) Date/Time	(24) Receiver Comments
<u>James Sicks</u>	<u>James Sicks</u>	<u>1-14-97 / 1532</u>	
(4) Released by (Sign and PRINT)	(17) Received by (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments
<u>James Sicks</u>	<u>James Sicks</u>		
(5) Relinquished by (Sign and PRINT)	(18) Received by (Sign and PRINT)	(30) Seal Date Consistent with this Record?	
		Seal No. <u>Yes</u> ☒ No ☐	Sample No. <u>Yes</u> ☒ No ☐
(16) Seal Intact Upon Release?	(29) Seal Intact Upon Receipt?		
<u>Yes</u> ☒ No ☐	<u>Yes</u> ☒ No ☐		

WASTE COMPATIBILITY CORROSION RULES
TABLE 3

HNF-SD-WM-DP-227, REV. 0

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TABLE 3. WASTE COMPATIBILITY CORROSION RULES

Sample ID	Analyte	Result (ug/mL)	Result (M)	Is [NO3] ...	Is [OH] ...	Is [NO2] ...	Is [OH] * [NO2] ...
S97T000024	NO3	4.25E+04	0.685	<= 1.0 M?	0.010 M <= [OH] <= 5.0 M?	0.011 M <= [NO2] <= 5.5 M	
	OH	1.68E+03	0.099	YES	YES	YES	
	NO2	6.40E+03	0.139	1.0 M < [NO3] <= 3.0 M? 0.1 M * [NO3] <= [OH] < 10 M			>= 0.4 * [NO3]?
				3.0 M < [NO3] <= 5.5 M?	0.3 <= [OH] < 10 M?		>= 1.2 M?

Sample ID	Analyte	Result (ug/mL)	Result (M)	Is [NO3] ...	Is [OH] ...	Is [NO2] ...	Is [OH] * [NO2] ...
S97T000026	NO3	4.87E+04	0.765	<= 1.0 M?	0.010 M <= [OH] <= 5.0 M?	0.011 M <= [NO2] <= 5.5 M	
	OH	7.98E+03	0.469	YES	YES	YES	
	NO2	1.46E+04	0.317	1.0 M < [NO3] <= 3.0 M? 0.1 M * [NO3] <= [OH] < 10 M			>= 0.4 * [NO3]?
				3.0 M < [NO3] <= 5.5 M?	0.3 <= [OH] < 10 M?		>= 1.2 M?

INORGANIC ANALYSES

HNH-SD-WM-DP-227, REV. 0

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LABCORE Data Entry Template for Worklist# 16284

Analyst: SMF Instrument: DSC0 3 Book # 12N14B

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

Worklist Comment: Run under Nitrogen. new

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-03	LIQUID	<u>28.45</u>	<u>28.54</u>	<u>N/A</u>	Joules/g
97000022	SY-102 GRAB1	2 SAMPLE	S97T000024	0	DSC-03	LIQUID	<u>N/A</u>	<u>Ø</u>		Joules/g
97000022	SY-102 GRAB1	3 DUP	S97T000024	0	DSC-03	LIQUID	<u>Ø</u>	<u>Ø</u>	<u>N/A</u>	Joules/g
97000022	SY-102 GRAB1	4 SAMPLE	S97T000026	0	DSC-03	LIQUID	<u>N/A</u>	<u>Ø</u>		Joules/g
97000022	SY-102 GRAB1	5 DUP	S97T000026	0	DSC-03	LIQUID	<u>Ø</u>	<u>Ø</u>	<u>N/A</u>	Joules/g

Final page for worklist # 16284

See attached for signatures 1-29-97
Analyst Signature Date

 1-29-97
Analyst Signature Date

Verified/Validated by
Blandina
Valenzuela 1-30-97

Data Entry Comments:

LABCORE Data Entry Template for Worklist# 16284

Analyst: SME Instrument: DSC0 _____ Book # 12014-B

Method: LA-514-113 Rev/Mod _____

Worklist Comment: Run under Nitrogen. new

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-01	LIQUID	_____	_____	N/A	Joules/g
97000022	SY-102 GRAB1	2 SAMPLE	S97T000024	0	DSC-01	LIQUID	N/A	_____	_____	Joules/g
97000022	SY-102 GRAB1	3 DUP	S97T000024	0	DSC-01	LIQUID	_____	_____	N/A	Joules/g
97000022	SY-102 GRAB1	4 SAMPLE	S97T000026	0	DSC-01	LIQUID	N/A	_____	_____	Joules/g
97000022	SY-102 GRAB1	5 DUP	S97T000026	0	DSC-01	LIQUID	_____	_____	N/A	Joules/g

Final page for worklist # 16284

Analyst Signature

Date

Analyst Signature

Date

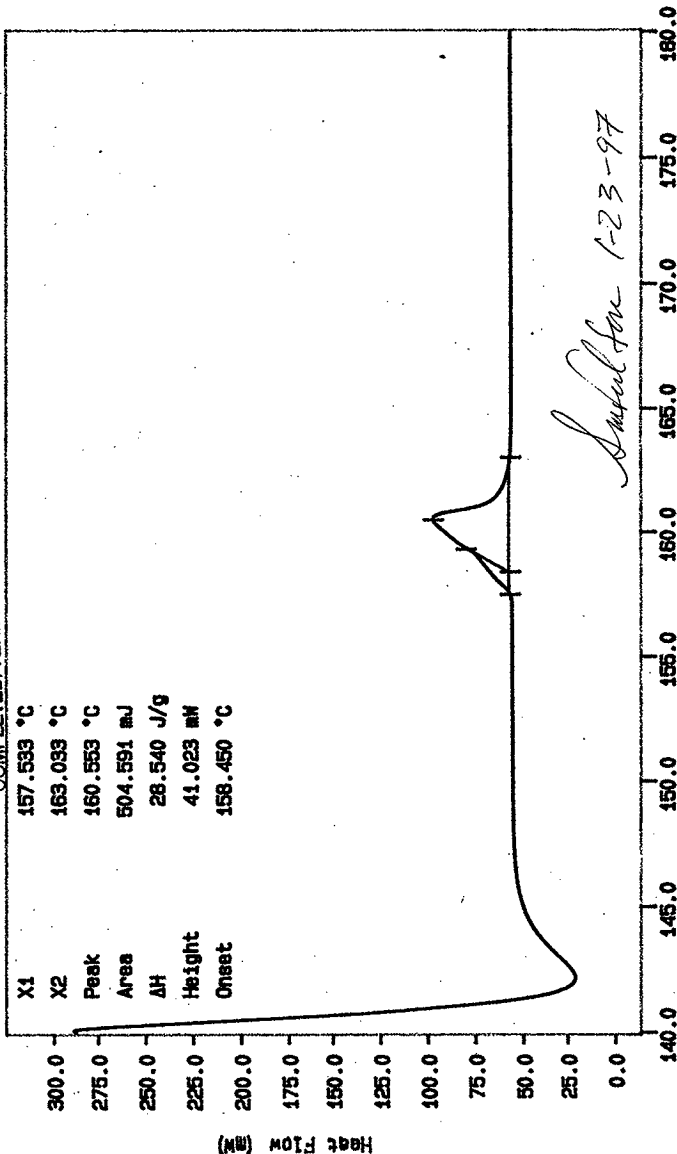
DSC-03 instrument was
used. 1-29-97 Blandina
Valenzuela

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.

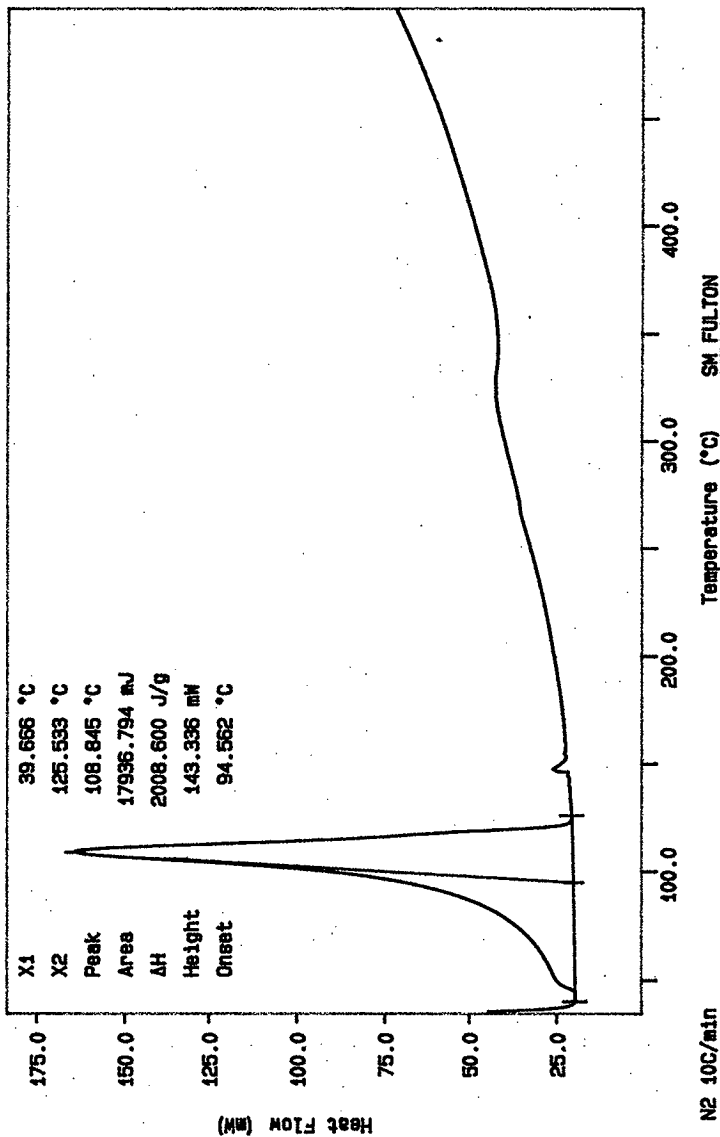
Curve 1: DSC
 File Info: IND012301 Thu Jan 23 05:27:02 1997
 Sample Weight: 17.680 mg
 STD 12N14-B

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
 COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 32 TO 36.



N2, EXOTHERM DOWN
 TEMPERATURE 140.8 °C
 0.0 min RATE: 10.0 °C/min
 SM FULTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Thu Jan 23 05:30:05 1997

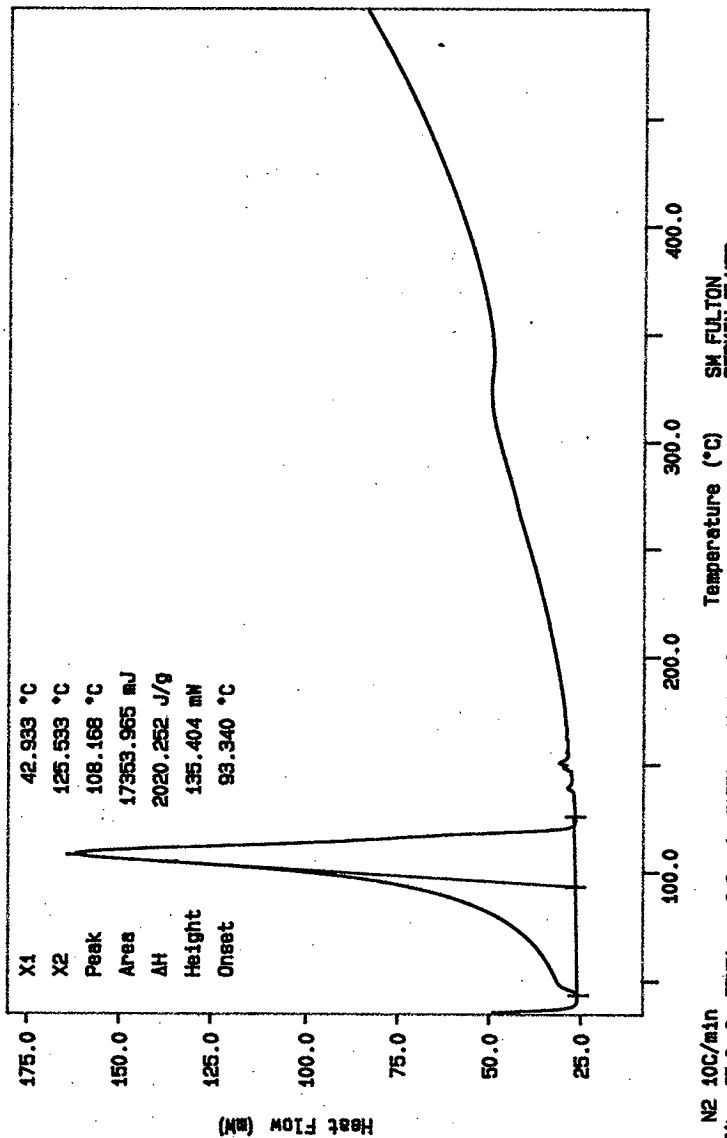
Curve 1: DSC
 File Info: SAM012301 Thu Jan 23 08:40:38 1997
 Sample Weight: 8.930 mg
 S97T000024



SM FULTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Thu Jan 23 08:51:44 1997

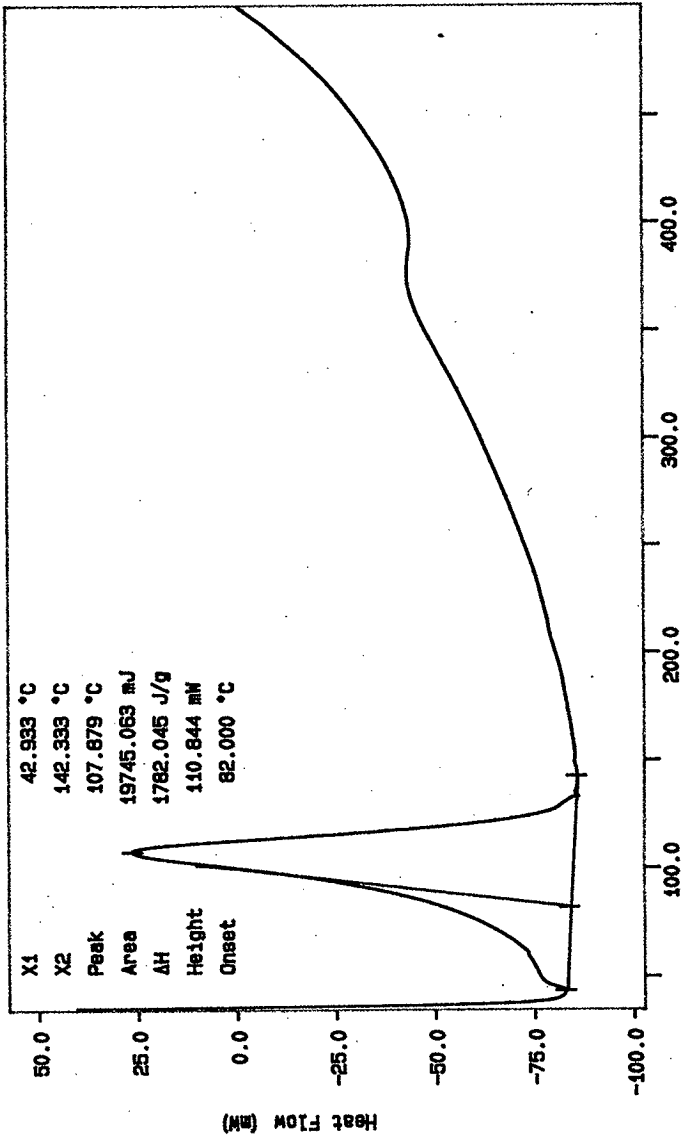
N2 10C/min
 Temp: 35.8 °C
 Time: 00:08
 Rate: 0.0 min RATE: 10.0 C/min

Curve 1: DSC
 File Info: SAM012302 Thu Jan 23 10: 04: 25 1997
 Sample Weight: 8.590 mg
 S97T000024 DUP



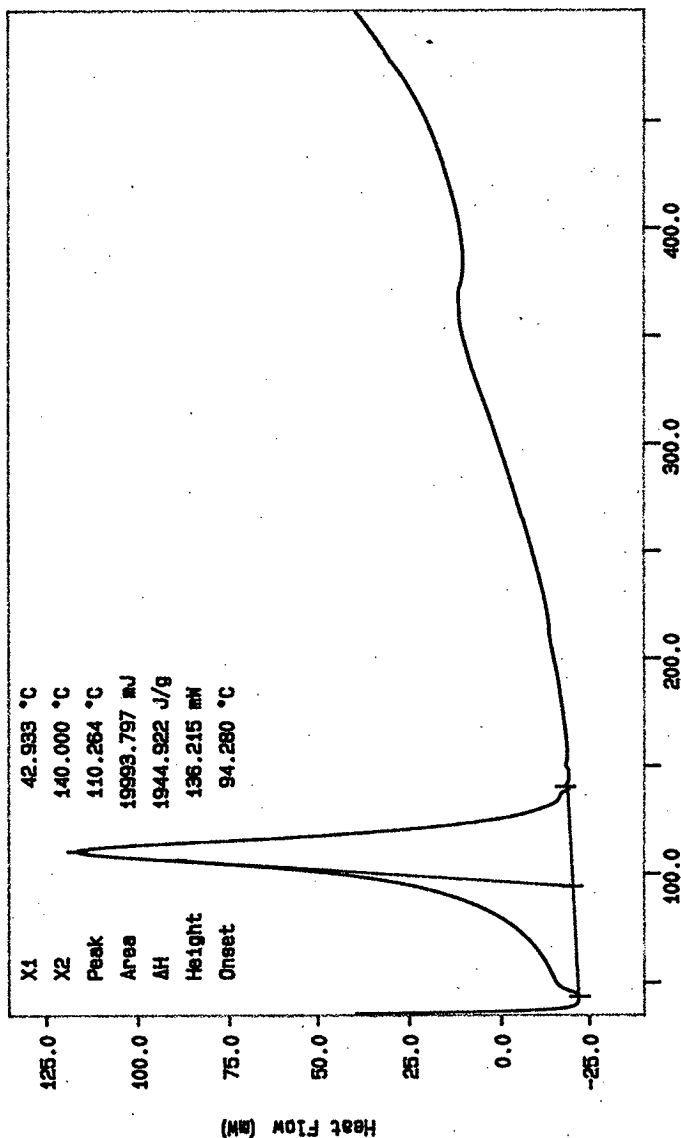
N2 10C/min
 TEMPERATURE 350.8 °C
 TIME 11: 00.0 min RATE: 10.0 °C/min
 SM FULTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Thu Jan 23 13: 00: 24 1997

Curve 1: DSC
 File Infor: SAN012303 Thu Jan 23 13:53:12 1997
 Sample Weight: 11.080 mg
 S97T0000276
 1-23-97 BAY



N2 10C/min
 Temp: 255.8 °C
 Time: 255.8 s
 SM FULTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Thu Jan 23 14:10:52 1997

Curve 1: DSC
 File info: SA012304 Thu Jan 23 12:37 1997
 Sample Weight: 10.280 mg
 S97T000027% DUP
 1-28-97 BY: [illegible]



N2 10C/min
 Temp: 25.0 °C
 Time: 00.0 s
 0.0 min RATE: 10.0 C/min
 SM FULTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Thu Jan 23 17:46:19 1997

LABCORE Data Entry Template for Worklist# 16285

Analyst: SME Instrument: DSC0 1 Book # 12N14-B

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

Worklist Comment: Run under Nitrogen. new

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-01	LIQUID	<u>28.45</u>	<u>30.6</u>	<u>N/A</u>	Joules/g
97000022	SY-102 GRAB1	2 SAMPLE	S97T000027	0	DSC-01	LIQUID	<u>N/A</u>	<u>Ø</u>		Joules/g
97000022	SY-102 GRAB1	3 DUP	S97T000027	0	DSC-01	LIQUID	<u>Ø</u>	<u>Ø</u>	<u>N/A</u>	Joules/g

Final page for worklist # 16285

Suzie M. Dulfen 1-23-97
Analyst Signature Date

RL Duf 1-29-97
Analyst Signature Date

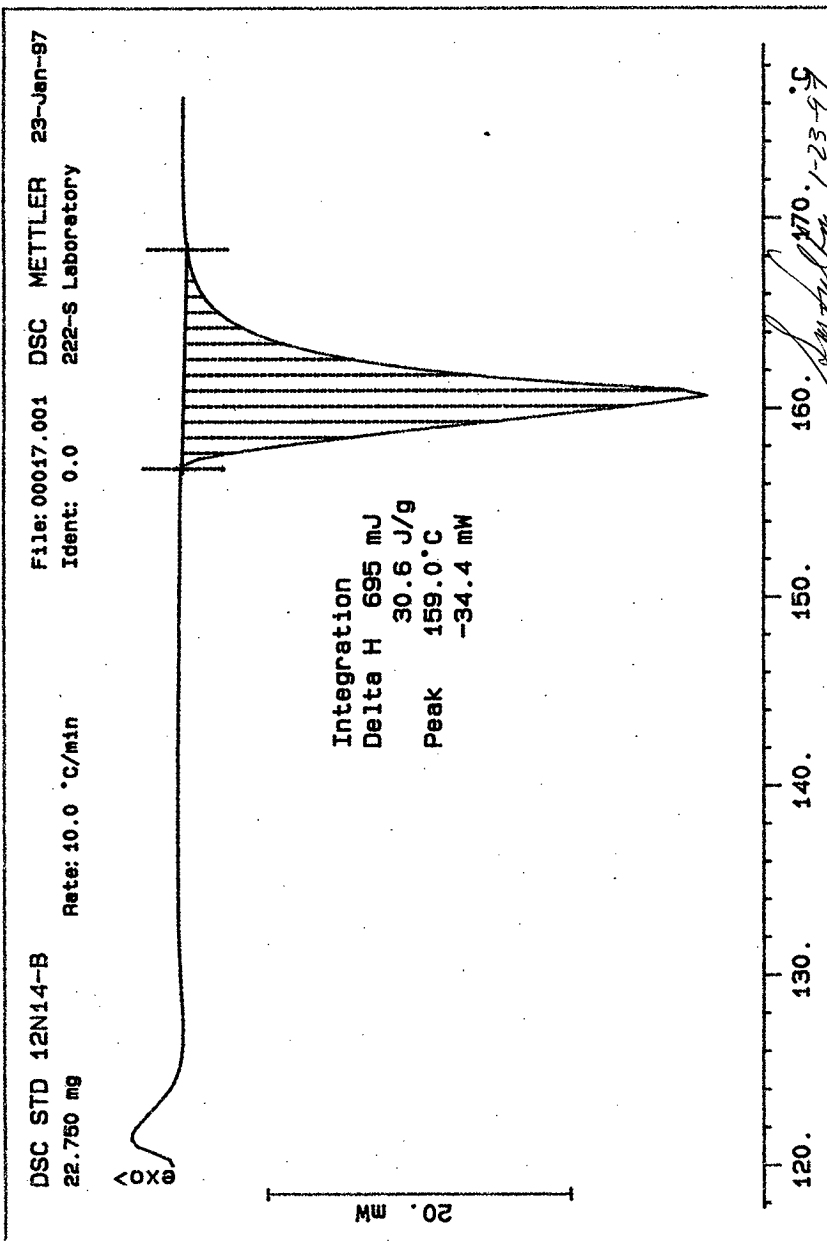
Verified/Validated by
Blandina
Valenzuela 1-30-97

Data Entry Comments:

SAM S97T000027 is a dark brown slurry with
tiny particles (claylike)

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

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 38 TO 40.



SAFT000027 SKF 1-25-97

S077000024 N2

File: 00019.001 DSC METTLER 23-Jan-97

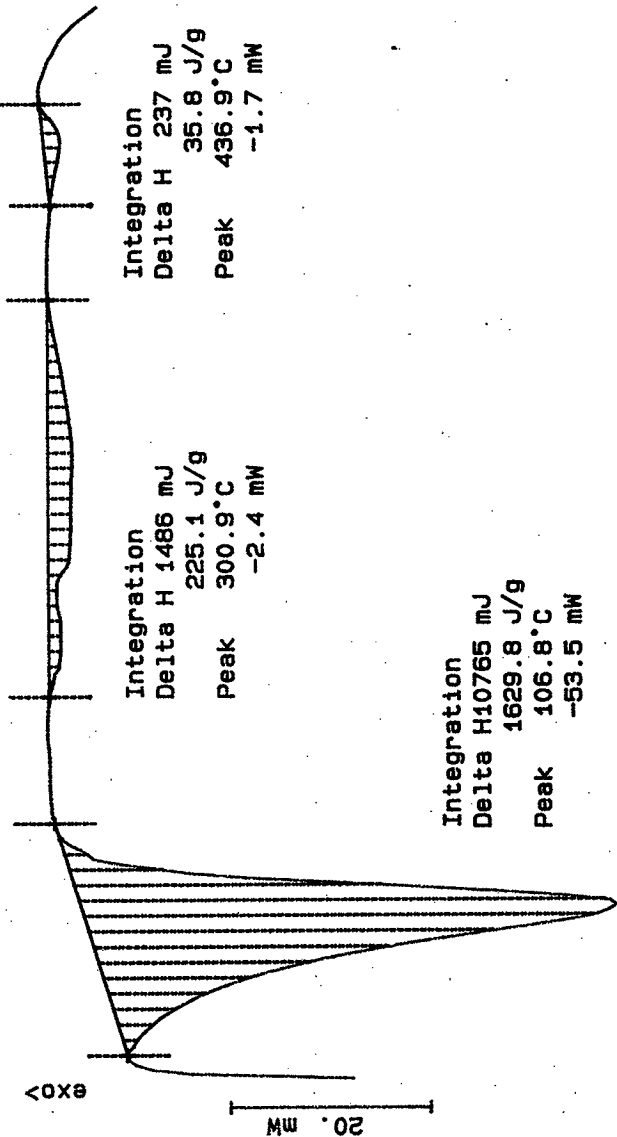
6.605 mg

Rate: 10.0 °C/min

Ident: 0.0

222-S Laboratory

exo v



20. mW

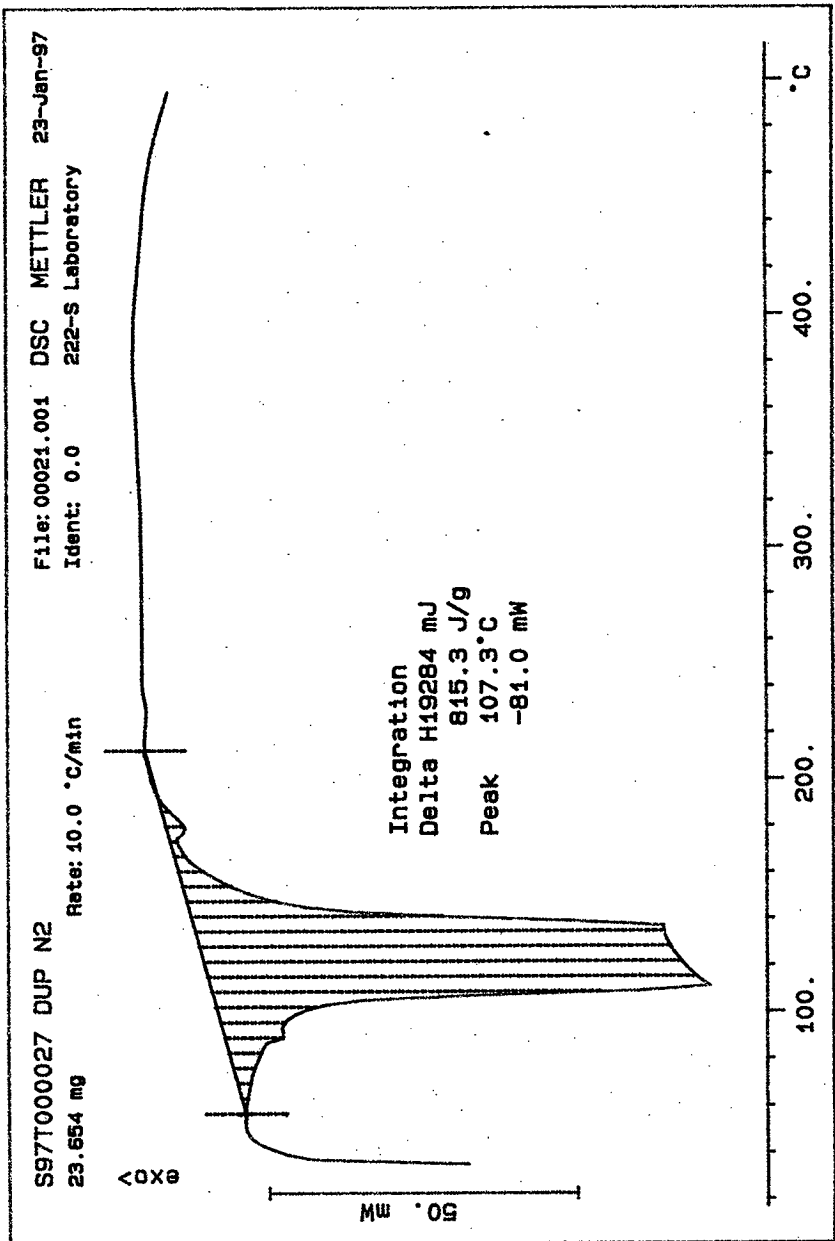
100.

200.

300.

400.

°C



worklistrpt Version 2.1 05/15/95
01/29/97 10:53

Page: 1

LABCORE Data Entry Template for Worklist# 16282

Analyst: SMF Instrument: TGA0 3 Book # 97N8A

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

Worklist Comment: Run under Nitrogen. new

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-03	LIQUID	<u>59.4</u>	<u>58.92</u>	<u>N/A</u>	%
97000022	SY-102 GRAB1	2 SAMPLE	S97T000024	0	TGA-03	LIQUID	<u>N/A</u>	<u>88.61</u>		%
97000022	SY-102 GRAB1	3 DUP	S97T000024	0	TGA-03	LIQUID	<u>88.61</u>	<u>88.37</u>	<u>N/A</u>	%
97000022	SY-102 GRAB1	4 SAMPLE	S97T000026	0	TGA-03	LIQUID	<u>N/A</u>	<u>85.83</u>		%
97000022	SY-102 GRAB1	5 DUP	S97T000026	0	TGA-03	LIQUID	<u>85.83</u>	<u>85.94</u>	<u>N/A</u>	%

Final page for worklist # 16282

See attached for signatures 1-29-97
Analyst Signature Date

RL-Blk 1-29-97
Analyst Signature Date

Validated by
Blandina
Valenzuela 1-30-97

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# 16282

Analyst: SMF Instrument: TGA0 Book # 97N8-A

Method: LA-560-112 Rev/Mod _____

Worklist Comment: Run under Nitrogen. new

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-01	LIQUID			N/A	%
97000022	SY-102 GRAB1	2	SAMPLE	S97T000024	0		TGA-01	LIQUID	N/A			%
97000022	SY-102 GRAB1	3	DUP	S97T000024	0		TGA-01	LIQUID			N/A	%
97000022	SY-102 GRAB1	4	SAMPLE	S97T000026	0		TGA-01	LIQUID	N/A			%
97000022	SY-102 GRAB1	5	DUP	S97T000026	0		TGA-01	LIQUID			N/A	%

Final page for worklist # 16282

Lusie M. Jultex 1-23-97
Analyst Signature Date

Analyst Signature Date

TGA-03 instrument
was used.

1-29-97

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: TER012301 Thu Jan 23 05: 53: 59 1997

Sample Weight: 15.973 mg

TGA STD 97NB-A

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 43 TO 47.

X1	21.627 °C
X2	289.729 °C
Y1	99.977 Wt. %
Y2	41.062 Wt. %
ΔY	-58.915 Wt. %

Weight (Wt. %)

100.0

90.0

80.0

70.0

60.0

50.0

40.0

50.0

100.0

150.0

200.0

250.0

Temperature (°C)

N2 10C/MIN

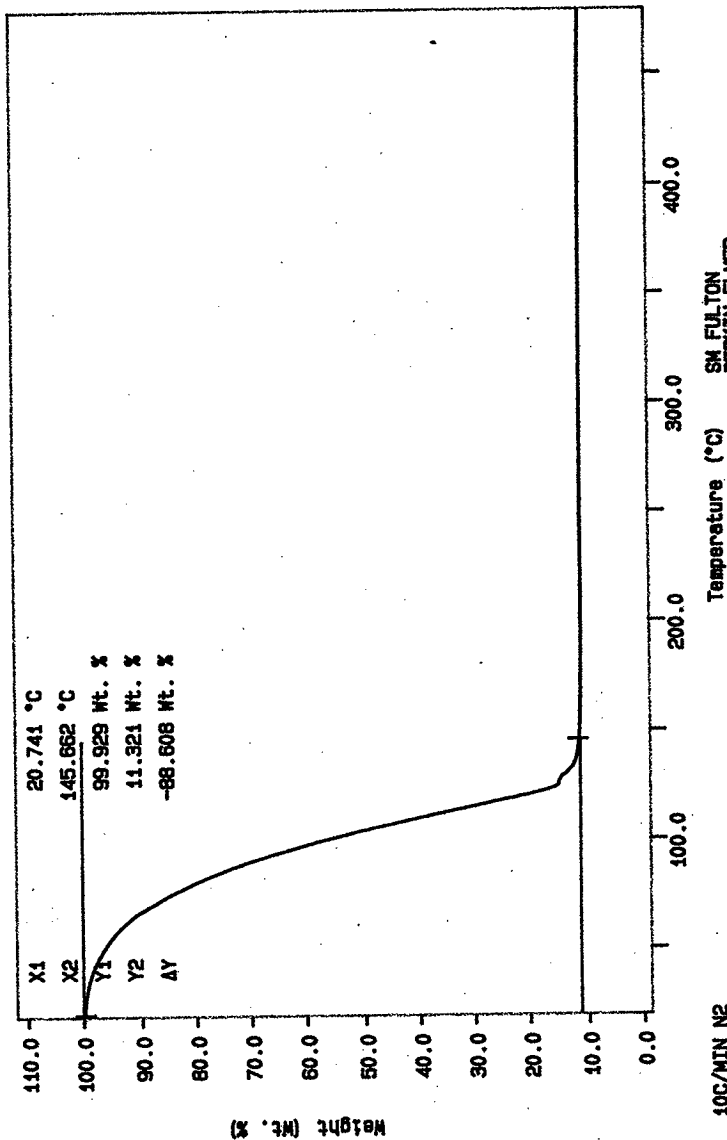
TIME: 365.8 S

0.0 MIN RATE: 10.0 C/MIN

San Fulton 1-23-97

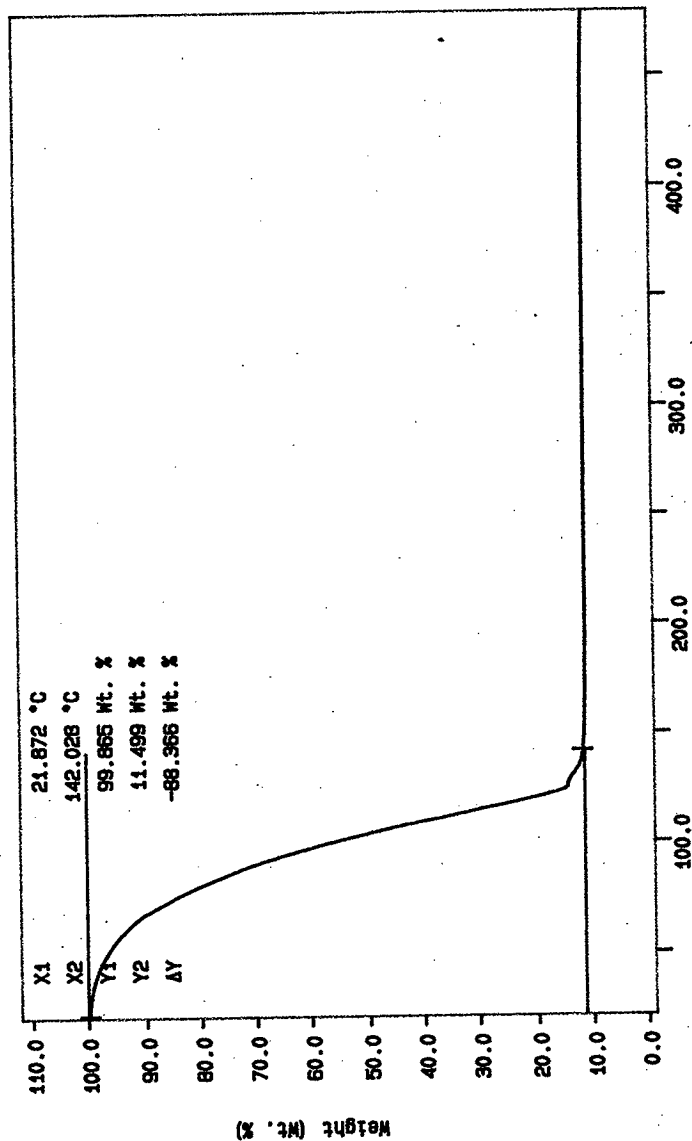
SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Jan 23 05: 50 1997

Curve 1: TGA
 File info: SAM012301 Thu Jan 23 08:42:41 1997
 Sample Weight: 10.050 mg
 S97T000024



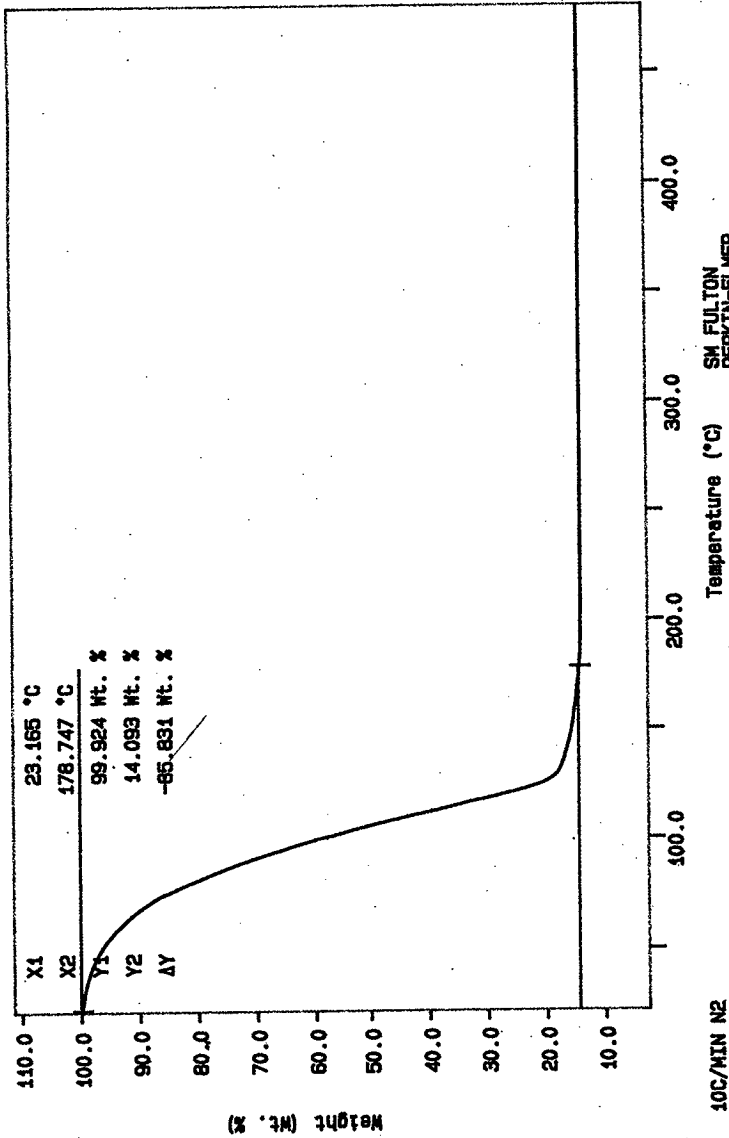
10C/MIN N2
 TIME: 00:08
 0.0 min RATE: 10.0 C/min
 SM FLUION
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Thu Jan 23 08:43:1997

Curve 1: TGA
 File Info: SANO12302 Thu Jan 23 10:06:48 1997
 Sample Weight: 10.097 mg
 S97T000024 DUP



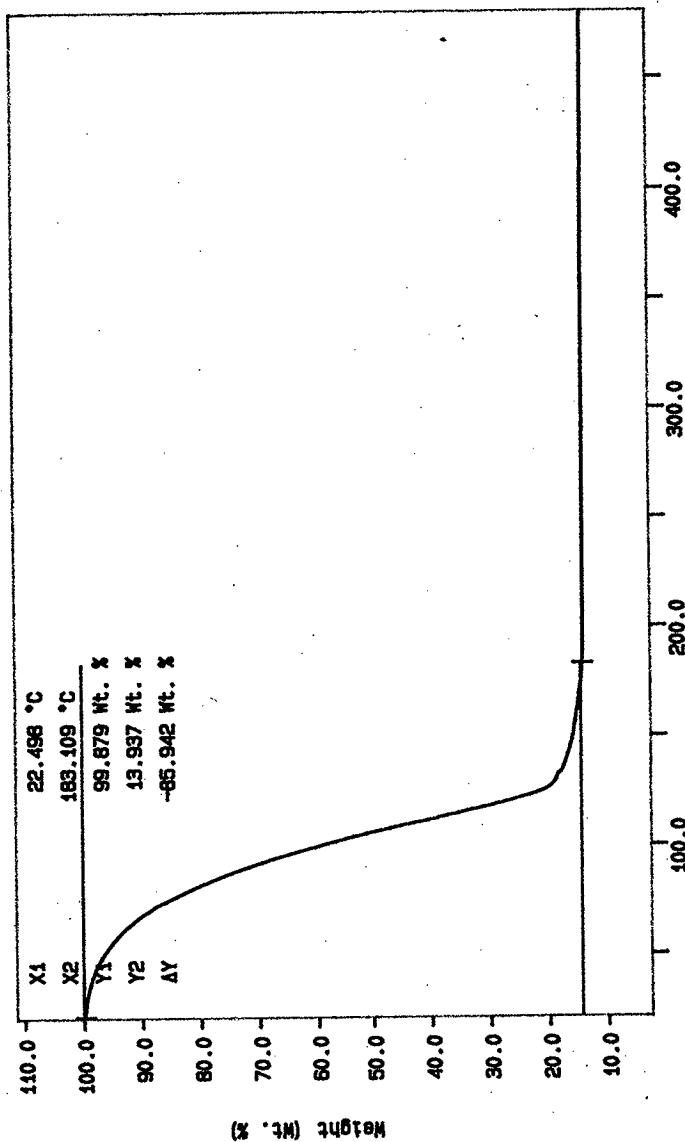
10C/MIN N2
 0.0 min RATE: 10.0 g/min
 TIME: 00:08
 SM FULTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Thu Jan 23 12:53:28 1997

Curve 1: TGA
 File info: SAM012303 Thu Jan 23 13:54:47 1997
 Sample Weight: 10.635 mg
 S97T000026



10C/MIN N2
 TGA: 500.0 g
 THERM: 500.0 g
 TIME: 0.0 min RATE: 10.0 C/min
 SM FULTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Thu Jan 23 14:02:09 1997

Curve 1: TGA
 File Info: SAM012304 Thu Jan 23 15: 40 1997
 Sample Weight: 10.108 mg
 S97T000026 DUP



10C/MIN N2
 TEMPE 35.8 g
 TIME 000.0 g
 0.0 min RATE: 10.0 g/min
 Temperature (°C)
 SM FULTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Thu Jan 23 17: 15: 43 1997

LABCORE Data Entry Template for Worklist# 16283

Analyst: SMF Instrument: TGA0 1 Book # 9708-A

Method: LA-560-112 Rev/Mod C-0

Worklist Comment: Run under Nitrogen.

new

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-01	LIQUID	<u>59.4</u>	<u>58.92</u>	<u>N/A</u>	%
97000022	SY-102 GRAB1	2 SAMPLE	S97T000027	0	TGA-01	LIQUID	<u>N/A</u>	<u>72.02</u>		%
97000022	SY-102 GRAB1	3 DUP	S97T000027	0	TGA-01	LIQUID	<u>72.02</u>	<u>72.51</u>	<u>N/A</u>	%

Final page for worklist # 16283

Susie M. Sullivan 1-23-97
Analyst Signature Date

Reptel 1-27-97
Analyst Signature Date

Verified/Validated by

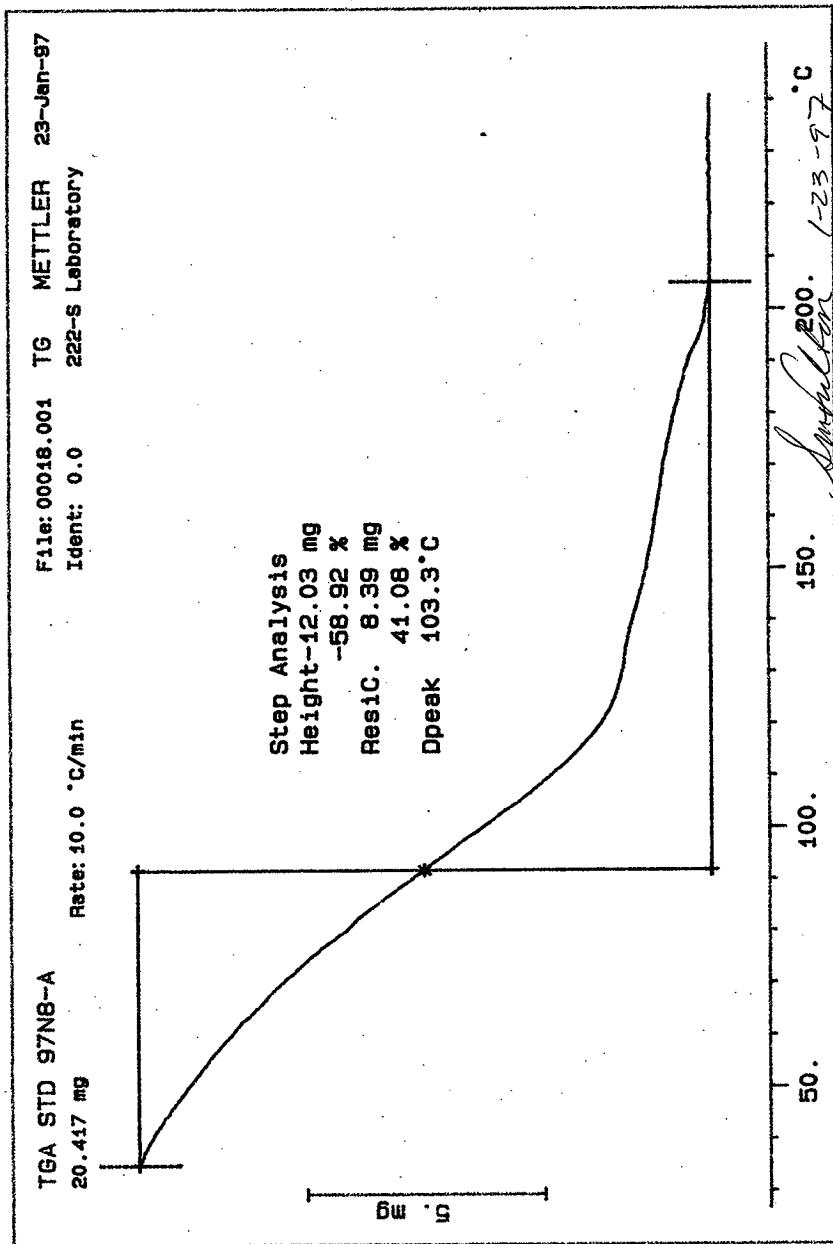
Blandina

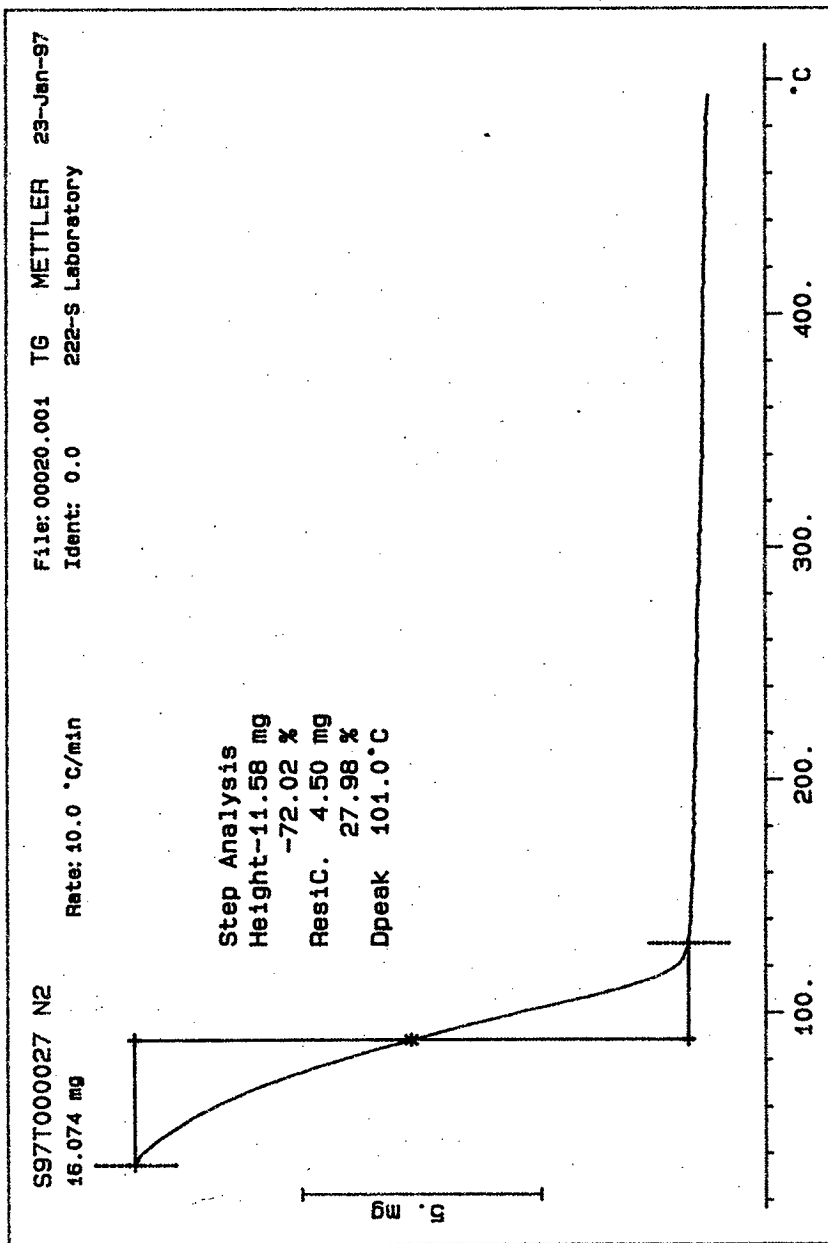
Valenzuela 1-30-97

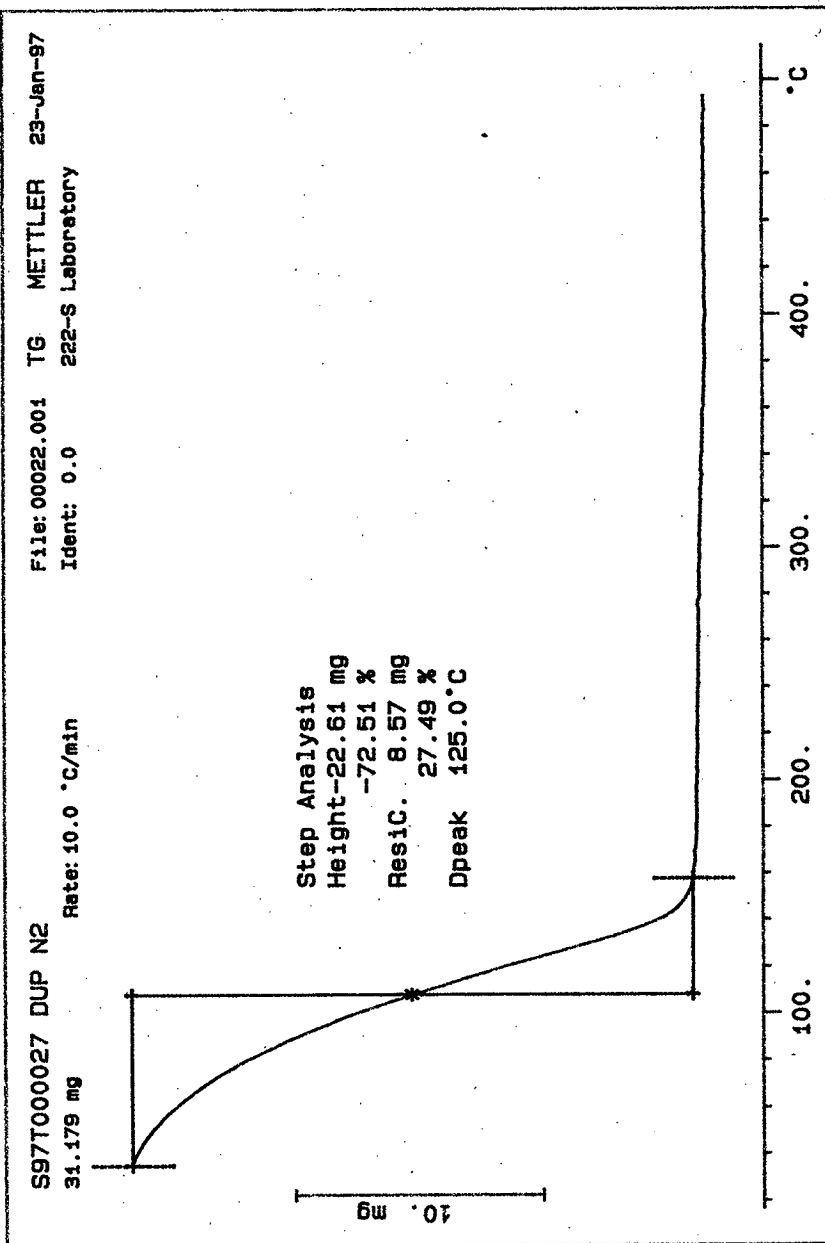
Data Entry Comments:

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

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 49 TO 51.







LABCORE Completed Worklist Report for Worklist# 16291

Analyst: dcd

Instrument: BA001

Book# _____

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

Worklist Comment: SY-102 Grab. Use CAL PIPETTE.

new

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	SPG-01	LIQUID	1.398	1.394	99.714 % Recovery	
2 SAMPLE	S97T000024	0	SPG-01	LIQUID	N/A	1.077	1.00e-002 Sp.G.	
3 DUF	S97T000024	0	SPG-01	LIQUID	1.077	1.087	0.924 RPD	
4 SAMPLE	S97T000026	0	SPG-01	LIQUID	N/A	1.071	1.00e-002 Sp.G.	
5 DUF	S97T000026	0	SPG-01	LIQUID	1.071	1.083	1.114 RPD	
6 SAMPLE	S97T000027	0	SPG-01	LIQUID	N/A	n/a	1.00e-003 Sp.G.	
7 DUF	S97T000027	0	SPG-01	LIQUID	n/a	n/a	RPD	

Comments Section:

Comments for sample# S97T000027 and test SPG-01 .

S97T000027 is a thick brown paste. Sample is too thick too
obtain an accurate spg weight. new

Final page for worklist# 16291

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

RWS
Reviewer Signature Date 1/24/97

Customer requested SPG-02 test for S97T000027.

RWS 1/27/97

worklistrpt Version 2.1 05/15/95
01/22/97 10:46

Page: 1

LABCORE Data Entry Template for Worklist# 16291

Analyst: Dcd Instrument: BA001 Book # 133N16-A

Method: LA-510-112 Rev/Mod _____

Worklist Comment: SY-102 Grab. Use CAL PIPETTE. new

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			SPG-01	LIQUID	<u>1.398</u>	<u>1.394</u>		
								<u>1.394</u>		
								<u>1.077</u>		
97000022	SY-102 GRAB1	2 SAMPLE	S97T000024	0	SPG-01	LIQUID	<u>N/A</u>	<u>1.0767</u>	<u>0.010</u>	Sp.G.
							<u>1.077</u>	<u>1.087</u>		
97000022	SY-102 GRAB1	3 DUP	S97T000024	0	SPG-01	LIQUID	<u>1.0767</u>	<u>1.0773</u>	<u>N/A</u>	Sp.G.
								<u>1.077</u>		
97000022	SY-102 GRAB1	4 SAMPLE	S97T000026	0	SPG-01	LIQUID	<u>N/A</u>	<u>1.0713</u>	<u>0.010</u>	Sp.G.
							<u>1.077</u>	<u>1.083</u>		
97000022	SY-102 GRAB1	5 DUP	S97T000026	0	SPG-01	LIQUID	<u>1.0713</u>	<u>1.0833</u>	<u>N/A</u>	Sp.G.
97000022	SY-102 GRAB1	6 SAMPLE	S97T000027	0	SPG-01	LIQUID	<u>N/A</u>	<u>N/A</u>		Sp.G.
97000022	SY-102 GRAB1	7 DUP	S97T000027	0	SPG-01	LIQUID	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	Sp.G.

Final page for worklist # 16291

Daniel D. Dunham 1-22-97
Analyst Signature Date

Newlight 1/23/97
Analyst Signature Date

Data Entry Comments:

S97T000027 is a thick brown paste.
Sample is too thick too obtain an
accurate spg weight. dcd

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		STD	REPLICATE
STD	Gross Weight (W2)	1.9556	1.9471
Work List	Tare Weight (W1)	1.8503	1.8429
16291	Weight of Solution (W2-W1)	0.1053	0.1042
Test Code	Volume of Solution μ L	75.1400	75.1400
SPG-01	Specific Gravity	1.4014	1.3867
Matrix	Specific Gravity (Average)	1.3941	
LIQUID			
Sample #			
133N16A			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
DCD	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L}/\text{mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
01/22/97	$\sqrt{\text{RESULT}}$		
Time	Specific Gravity Average =	1.394	
11:30 PM			

Data Entry by: <i>PC Wright</i>	Date: 01/23/97
Approved by: <i>RW Schuch</i>	Date: 1/24/97

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		SAMPLE/DUPLICA	REPLICATE
SAMPLE/DUPLICATE	Gross Weight (W2)	1.9451	1.9906
Work List	Tare Weight (W1)	1.8642	1.9089
16291	Weight of Solution (W2-W1)	0.0809	0.0817
Test Code	Volume of Solution μ L	75.1400	75.1400
SPG-01	Specific Gravity	1.0767	1.0873
Matrix	Specific Gravity (Average)	1.0820	
LIQUID			
Sample #			
S97T000024			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
DCD	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
01/22/97	v RESULT v		
Time	Specific Gravity Average =	1.082	
11:30 PM			

Data Entry by: <i>Ne Wright</i>	Date: 01/23/97
Approved by: <i>RW Schroeder</i>	Date: 1/24/97
Form 510112L1 Rev. 1.1	Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		SAMPLE/DUPLICA	REPLICATE
SAMPLE/DUPLICATE	Gross Weight (W2)	1.8976	1.9273
Work List	Tare Weight (W1)	1.8171	1.8459
16291	Weight of Solution (W2-W1)	0.0805	0.0814
Test Code	Volume of Solution μ L	75.1400	75.1400
SPG-01	Specific Gravity	1.0713	1.0833
Matrix	Specific Gravity (Average)	1.0773	
LIQUID			
Sample #			
S97T000026			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
DCD	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
01/22/97	v RESULT v		
Time	Specific Gravity Average =	1.077	
11:30 PM			

Data Entry by: <i>RW Schmedt</i>	Date: 01/23/97
Approved by: <i>RW Schmedt</i>	Date: 1/24/97

LABCORE Data Entry Template for Worklist# 16290

Analyst: DCD Instrument: PH01 Book # 18N19-D

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

Worklist Comment: SY-102 Grab. Std: DIRECT. new

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STDPH				PH-01	LIQUID	<u>8.00</u>	<u>8.02</u>	<u>N/A</u>	pH
97000022	SY-102 GRAB1	2	SAMPLE	S97T000024	0		PH-01	LIQUID	<u>N/A</u>	<u>12.08</u>	<u>0.01</u>	pH
97000022	SY-102 GRAB1	3	DUP	S97T000024	0		PH-01	LIQUID	<u>12.08</u>	<u>12.10</u>	<u>N/A</u>	pH
97000022	SY-102 GRAB1	4	SAMPLE	S97T000026	0		PH-01	LIQUID	<u>N/A</u>	<u>11.96</u>	<u>0.01</u>	pH
97000022	SY-102 GRAB1	5	DUP	S97T000026	0		PH-01	LIQUID	<u>11.96</u>	<u>11.92</u>	<u>N/A</u>	pH
97000022	SY-102 GRAB1	6	SAMPLE	S97T000027	0		PH-01	LIQUID	<u>N/A</u>	<u>12.39</u>	<u>0.01</u>	pH
97000022	SY-102 GRAB1	7	DUP	S97T000027	0		PH-01	LIQUID	<u>12.39</u>	<u>12.42</u>	<u>N/A</u>	pH

Final page for worklist # 16290

David C. Dunham 1-22-97
Analyst Signature Date

AC Wright 1/23/97
Analyst Signature Date

Approved RA Schach 1/24/97

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 Completed Worklist Report for Worklist# 16289

Analyst: slh Instrument: PH01 Book# _____

Method: LA342-100 Rev/Mod C
gr 1/27/97 E-O

Worklist Comment: SY-102 Grab. Std: 0.050ml. new

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0		OH-01	LIQUID	1	<42		ug/mL
2 STD	0		OH-01	LIQUID	1.664e4	1.70e4	102.163 % Recovery	
3 SAMPLE	S97T000024	0	OH-01	LIQUID	N/A	1.68e3	500.000	ug/mL
4 DUP	S97T000024	0	OH-01	LIQUID	1.68e3	1.61e3	4.255 RPD	
5 SAMPLE	S97T000026	0	OH-01	LIQUID	N/A	7.98e3	2500.000	ug/mL
6 DUP	S97T000026	0	OH-01	LIQUID	7.98e3	7.77e3	2.667 RPD	
7 SAMPLE	S97T000027	0	OH-01	LIQUID	N/A	7.98e3	1250.000	ug/mL
8 DUP	S97T000027	0	OH-01	LIQUID	7.98e3	8.59e3	7.363 RPD	

Final page for worklist# 16289

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Ralt W Schneider 1/27/97
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 16289

Analyst: SLT Instrument: PH01 Book # 79N8

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

Worklist Comment: SY-102 Grab. Std: 0.050ml. new

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK			OH-01	LIQUID	<u>1</u>	<u>2.42</u>	<u>N/A</u>	ug/mL
		2 STD			OH-01	LIQUID	<u>1.664e⁴</u>	<u>1.70e⁴</u>	<u>N/A</u>	ug/mL
97000022	SY-102 GRAB1	3 SAMPLE	S97T000024	0	OH-01	LIQUID	<u>N/A</u>	<u>1.68e³</u>	<u>5.00e²</u>	ug/mL
97000022	SY-102 GRAB1	4 DUP	S97T000024	0	OH-01	LIQUID	<u>1.68e³</u>	<u>1.61e³</u>	<u>N/A</u>	ug/mL
97000022	SY-102 GRAB1	5 SAMPLE	S97T000026	0	OH-01	LIQUID	<u>N/A</u>	<u>7.98e³</u>	<u>2.50e³</u>	ug/mL
97000022	SY-102 GRAB1	6 DUP	S97T000026	0	OH-01	LIQUID	<u>7.98e³</u>	<u>7.77e³</u>	<u>N/A</u>	ug/mL
97000022	SY-102 GRAB1	7 SAMPLE	S97T000027	0	OH-01	LIQUID	<u>N/A</u>	<u>7.98e³</u>	<u>1.25e³</u>	ug/mL
97000022	SY-102 GRAB1	8 DUP	S97T000027	0	OH-01	LIQUID	<u>7.98e³</u>	<u>7.43e³</u>	<u>8.59e³</u>	ug/mL

Final page for worklist # 16289

Analyst Signature

Date

1-23-97

Analyst Signature

Date

1/27/97

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.

BK #16289

①

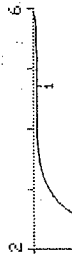
79N8

STD

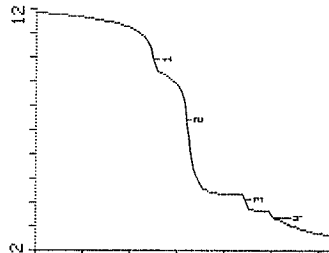
.050ml

date 97-01-23 time 04:26
 GET pH 12 # 38
 Id.#1 5587 Bld sub
 Id.#2 .2005 1-25-97
 pH(init) 5.95
 W/ml
 EP1 .093 pH 4.72
 stop volt.reached
 =====

date 97-01-23 time 04:05
 GET pH 12 # 36
 .10ml/div dEH=1/div
 start V .000 ml



date 97-01-23 time 04:26
 GET pH 12 # 38
 .10ml/div dEH=1/div
 start V .000 ml

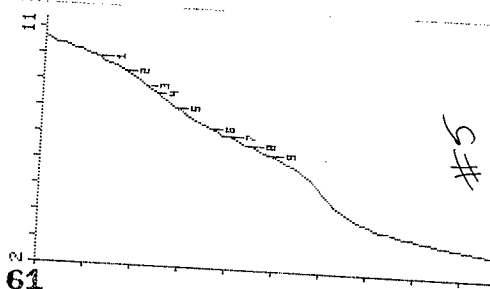


597024
DUP
12/7/97

⑤ .250 ml

date 97-01-23 time 05:28
GET pH 12 # 43
Id.#1 0024-TRP
Id.#2 .2005
pH(init) 10.62
W/ml
pH
EP1 .118 9.90
EP2 .174 9.39
EP3 .217 8.89
EP4 .244 8.58
EP5 .383 8.37
EP6 .357 7.35
EP7 .399 7.05
EP8 .438 6.74
EP9 .488 6.42
stop V reached
=====

date 97-01-23 time 05:29
GET pH 12 # 43
Id.#1 0024-TRP
Id.#2 .2005
pH(init) 10.62
W/ml
pH
EP1 .118 9.90
EP2 .174 9.39
EP3 .217 8.89
EP4 .244 8.58
EP5 .383 8.37
EP6 .357 7.35
EP7 .399 7.05
EP8 .438 6.74
EP9 .488 6.42
stop V reached
=====



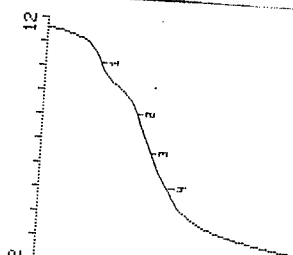
#5

597026
DUP
12/7/97

⑥ .050 ml

date 97-01-23 time 05:38
GET pH 12 # 44
Id.#1 0026
Id.#2 .2005
pH(init) 11.55
W/ml
pH
EP1 .117 10.24
EP2 .200 8.16
EP3 .234 6.59
EP4 .272 5.11
stop volt. reached
=====

date 97-01-23 time 05:38
GET pH 12 # 44
Id.#1 0026
Id.#2 .2005
pH(init) 11.55
W/ml
pH
EP1 .117 10.24
EP2 .200 8.16
EP3 .234 6.59
EP4 .272 5.11
stop volt. reached
=====



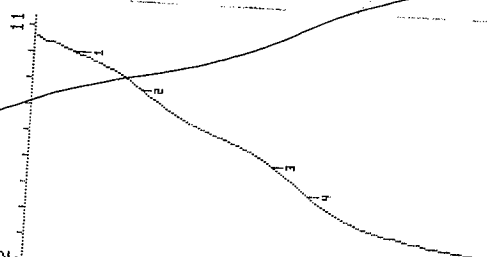
#6

597024 Dup
DUP
12/7/97

⑦ .250 ml

date 97-01-23 time 05:11
GET pH 12 # 42
Id.#1 0024 Dup
Id.#2 .2005
pH(init) 10.59
W/ml
pH
EP1 .081 10.09
EP2 .231 8.77
EP3 .516 6.89
EP4 .596 5.00
stop V reached
=====

date 97-01-23 time 05:12
GET pH 12 # 42
Id.#1 0024 Dup
Id.#2 .2005
pH(init) 10.59
W/ml
pH
EP1 .081 10.09
EP2 .231 8.77
EP3 .516 6.89
EP4 .596 5.00
stop V reached
=====



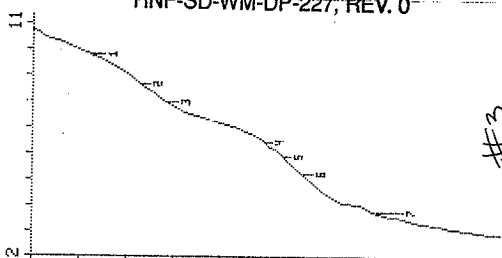
#4

597024
DUP
12/7/97

⑧ .250 ml

date 97-01-23 time 04:58
GET pH 12 # 41
Id.#1 597024
Id.#2 .2005
pH(init) 10.73
W/ml
pH
EP1 .123 9.79
EP2 .228 8.70
EP3 .283 8.01
EP4 .491 6.49
EP5 .532 5.91
EP6 .572 5.26
EP7 .730 3.78
stop V reached
=====

date 97-01-23 time 04:58
GET pH 12 # 41
Id.#1 597024
Id.#2 .2005
pH(init) 10.73
W/ml
pH
EP1 .123 9.79
EP2 .228 8.70
EP3 .283 8.01
EP4 .491 6.49
EP5 .532 5.91
EP6 .572 5.26
EP7 .730 3.78
stop V reached
=====



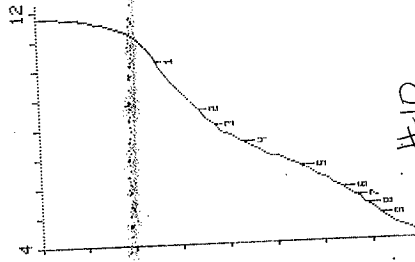
#3

S97TD 27 TRP

10 .100ml

date 97-01-23 time 06:28
GET pH 12 # 48
Id.#1 0027 TRP
Id.#2 .2005
pH(init) 11.75
W/ml
EPI 10.22
EP2 8.57
EP3 8.04
EP4 7.46
EP5 8.59
EP6 5.83
EP7 5.52
EP8 5.22
EP9 4.91
manual stop
=====

date 97-01-23 time 06:29
GET pH 12 # 48
Id.#1 0027 TRP
Id.#2 .2005
pH(init) 11.75
W/ml
EPI 10.22
EP2 8.57
EP3 8.04
EP4 7.46
EP5 8.59
EP6 5.83
EP7 5.52
EP8 5.22
EP9 4.91
manual stop
=====



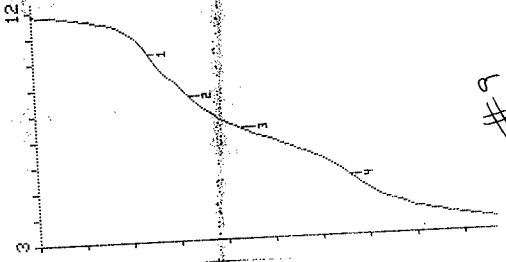
#10

S97TD 27

9 .100ml

date 97-01-23 time 06:15
GET pH 12 # 47
Id.#1 0027 Duf
Id.#2 .2005
pH(init) 11.82
W/ml
EPI 10.25
EP2 8.60
EP3 7.30
EP4 5.31
stop V reached
=====

date 97-01-23 time 06:15
GET pH 12 # 47
Id.#1 0027 Duf
Id.#2 .2005
pH(init) 11.82
W/ml
EPI 10.25
EP2 8.60
EP3 7.30
EP4 5.31
stop V reached
=====



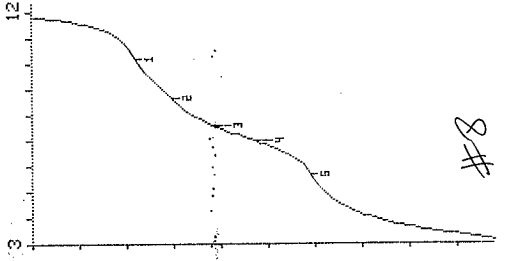
#9

S97TD 27

8 .100ml

date 97-01-23 time 06:02
GET pH 12 # 46
Id.#1 0027
Id.#2 .2005
pH(init) 11.80
W/ml
EPI 10.23
EP2 8.68
EP3 7.59
EP4 6.98
EP5 5.67
stop V reached
=====

date 97-01-23 time 06:02
GET pH 12 # 46
Id.#1 0027
Id.#2 .2005
pH(init) 11.80
W/ml
EPI 10.23
EP2 8.68
EP3 7.59
EP4 6.98
EP5 5.67
stop V reached
=====



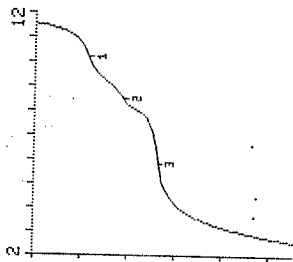
#8

S97TD 26 Duf

7 .050ml

date 97-01-23 time 05:48
GET pH 12 # 45
Id.#1 0026 Duf
Id.#2 .2005
pH(init) 11.52
W/ml
EPI 10.20
EP2 8.52
EP3 5.84
stop volt.reached
=====

date 97-01-23 time 05:48
GET pH 12 # 45
Id.#1 0026 Duf
Id.#2 .2005
pH(init) 11.52
W/ml
EPI 10.20
EP2 8.52
EP3 5.84
stop volt.reached
=====



#7

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

OH (AUTO) : LA-211-102 (C-0)		BLK
Type	Sample Size (mL) SS	3.000
BLK	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.008
16289	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	5.35E-04
OH-01	OH in Sample in µg/mL (PPM)	9.09E+00
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
BLANK		
Instrument Code	Detection Limit (µg/mL)	4.17E+01
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
SLH		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
01/23/96		
Time		BLK
05:30 AM	Concentration of OH in Sample (Molarity)	5.35E-04
	OH in Sample in µg/mL (PPM)	<42

The Result is < Detection Limit

Data Entry by: <i>Nea Juy</i>	Date: 01/24/97
Approved by: <i>Rw Schneider</i>	Date: 1/27/97
Form 211102_1 Rev. 1.3	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		STD
Type	Sample Size (mL) SS	0.050
STD	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.249
16289	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	9.98E-01
OH-01	OH in Sample in µg/mL (PPM)	1.70E+04
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
79N8		
Instrument Code	Detection Limit (µg/mL)	2.50E+03
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
SLH		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
01/23/96		
Time	STD	
05:30 AM	Concentration of OH in Sample (Molarity)	9.98E-01
	OH in Sample in µg/mL (PPM)	1.70E+04

Data Entry by: <i>AC Wright</i>	Date: 01/24/97
Approved by: <i>RW Johnson</i>	Date: 1/27/97

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

OH (AUTO) : LA-211-102 (C-0)		SAMPLE
Type	Sample Size (mL) SS	0.250
SAMPLE	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.123
16289	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	9.86E-02
OH-01	OH in Sample in µg/mL (PPM)	1.68E+03
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S97T000024		
Instrument Code	Detection Limit (µg/mL)	5.00E+02
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
SLH		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
01/23/96		
Time		SAMPLE
05:30 AM	Concentration of OH in Sample (Molarity)	9.86E-02
	OH in Sample in µg/mL (PPM)	1.68E+03

Data Entry by: <i>no sight</i>	Date: 01/24/97
Approved by: <i>EW Schmidt</i>	Date: 1/27/97

Form 211102_1 Rev. 1.3 Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Duplicate 8/13/97 MD

Type	Sample Size (mL) SS	0.250
TRIPLICATE Duplicate	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.118
16289	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	9.46E-02
OH-01	OH in Sample in µg/mL (PPM)	1.61E+03
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S97T000024		
Instrument Code	Detection Limit (µg/mL)	5.00E+02
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
SLH		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
01/23/96		
Time		
05:30 AM	Concentration of OH in Sample (Molarity)	9.46E-02
	OH in Sample in µg/mL (PPM)	1.61E+03

Duplicate LA 8/13/97

Data Entry by: <i>Neusight</i>	Date: 01/24/97
Approved by: <i>gzw Schwed</i>	Date: 1/27/97
Form 211102_1 Rev. 1.3	Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

OH (AUTO) : LA-211-102 (C-0)		SAMPLE
Type	Sample Size (mL) SS	0.050
SAMPLE	Concentration of HNO ₃ (Molarity)	0.2005
Work List	HNO ₃ Titrant at OH end-point in mL	0.117
16289	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	4.69E-01
OH-01	OH in Sample in µg/mL (PPM)	7.98E+03
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S97T000026		
Instrument Code	Detection Limit (µg/mL)	2.50E+03
PH01		
Analyst	OH Molarity = ((mL HNO ₃)*(M HNO ₃))/Sample Size in mL*Dilution Factor	
SLH		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
01/23/96		
Time		SAMPLE
05:30 AM	Concentration of OH in Sample (Molarity)	4.69E-01
	OH in Sample in µg/mL (PPM)	7.98E+03

Data Entry by: <i>RS Wright</i>	Date: 01/24/97
Approved by: <i>RW Schmidt</i>	Date: 1/27/97

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

OH (AUTO) : LA-211-102 (C-0)		DUPLICATE
Type	Sample Size (mL) SS	0.050
DUPLICATE	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.114
16289	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	4.57E-01
OH-01	OH in Sample in µg/mL (PPM)	7.77E+03
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S97T000026		
Instrument Code	Detection Limit (µg/mL)	2.50E+03
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
SLH		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
01/23/96		
Time		DUPLICATE
05:30 AM	Concentration of OH in Sample (Molarity)	4.57E-01
	OH in Sample in µg/mL (PPM)	7.77E+03

Data Entry by: <i>NE Juyt</i>	Date: 01/24/97
Approved by: <i>RW Schroeder</i>	Date: 1/27/97

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

OH (AUTO) : LA-211-102 (C-0)		DUPLICATE
Type	Sample Size (mL) SS	0.100
DUPLICATE Sample	Concentration of HNO3 (Molarity)	0.2005
Worklist	HNO3 Titrant at OH end-point in mL	0.234
16289	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	4.69E-01
OH-01	OH in Sample in µg/mL (PPM)	7.98E+03
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S97T000027		
Instrument Code	Detection Limit (µg/mL)	1.25E+03
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
SLH		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
01/23/96		
Time		DUPLICATE
05:30 AM	Concentration of OH in Sample (Molarity)	4.69E-01
	OH in Sample in µg/mL (PPM)	7.98E+03

Data Entry by: <i>newly</i>	Date: 01/24/97
Approved by: <i>DW Schreder</i>	Date: 1/27/97

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

OH (AUTO) : LA-211-102 (C-0)		TRIPLICATE
Type	Sample Size (mL) SS	0.100
TRIPLICATE dup.	Concentration of HNO ₃ (Molarity)	0.2005
Work List	HNO ₃ Titrant at OH end-point in mL	0.252
16289	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	5.05E-01
OH-01	OH in Sample in µg/mL (PPM)	8.59E+03
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S97T000027		
Instrument Code	Detection Limit (µg/mL)	1.25E+03
PH01		
Analyst	OH Molarity = ((mL HNO ₃)*(M HNO ₃))/Sample Size in mL*Dilution Factor	
SLH		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
01/23/96		
Time		TRIPLICATE
05:30 AM	Concentration of OH in Sample (Molarity)	5.05E-01
	OH in Sample in µg/mL (PPM)	8.59E+03

Data Entry by: <i>newright</i>	Date: 01/24/97
Approved by: <i>newright</i>	Date: 1/27/97

LABCORE Completed Worklist Report for Worklist# 16679

Analyst: raw Instrument: NH301

Book# 19N19I (Std)
25N19D (1000 ppm)

Method: LA-631-001 Rev/Mod B-2

Worklist Comment: NH3-01 NH3STD 1ML LMH

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0	NH3-01	LIQUID	1	<1.00E+0	1.00	ug/mL
2 STD	0	NH3-01	LIQUID	3.86E+02	3.80E+2	98.446 % Recovery	
3 SAMPLE	S97T000024 0	NH3-01	LIQUID	N/A	1.00E+00	1.000	ug/mL
4 DUP	S97T000024 0	NH3-01	LIQUID	<1.00E+0	1.50E+0	40 % RD	04/10/97
5 SPK	S97T000024 0	NH3-01	LIQUID	3.86E+02	4.10E+02	106.218 % Recovery	
6 SAMPLE	S97T000026 0	NH3-01	LIQUID	N/A	7.48E+01	1.000	ug/mL
7 STD	0	NH3-01	LIQUID	3.86E+02	3.42E+2	88.601 % Recovery	

Final page for worklist# 16679

see attached
Analyst Signature Date

PHOTOS 4-9-97
Analyst Signature Date

validated into Labcore by John Mc Cluskey 04/10/97
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 16679

Analyst: PAW **Instrument:** NH301 **Book #** 19N19T STD
Method: LA-631-001 Rev/Mod B-2 25N19 D 5000 ppm
Worklist Comment: NH3-01 NH3STD 1ML LMH

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK				NH3-01	LIQUID			N/A	ug/mL
		2	STD				NH3-01	LIQUID			N/A	ug/mL
97000022	SY-102 GRAB1	3	SAMPLE	S97T000024	0		NH3-01	LIQUID	N/A			ug/mL
97000022	SY-102 GRAB1	4	DUP	S97T000024	0		NH3-01	LIQUID			N/A	ug/mL
97000022	SY-102 GRAB1	5	SPK	S97T000024	0		NH3-01	LIQUID			N/A	ug/mL
97000022	SY-102 GRAB1	6	SAMPLE	S97T000026	0		NH3-01	LIQUID	N/A			ug/mL
		7	STD				NH3-01	LIQUID			N/A	ug/mL

Final page for worklist # 16679

R. Newland
Analyst Signature

4-1-97
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.

DOUBLE KNOWN ADDITION SELECTED
AT 13:47, 04-01-97

SAMPLE VOL= 25.000 AT 13:48, 04-01-97
ENTERED

EMF= 48.7 mV AT 13:49, 04-01-97

EMF= 49.0 mV AT 13:49, 04-01-97

EMF= 49.2 mV AT 13:49, 04-01-97
ENTERED

STD CONC= 1000 AT 13:49, 04-01-97
ENTERED

STD VOL= .25000 AT 13:49, 04-01-97
ENTERED

EMF= 37.0 mV AT 13:50, 04-01-97

EMF= 36.9 mV AT 13:51, 04-01-97

EMF= 36.9 mV AT 13:51, 04-01-97
ENTERED

STD VOL= 2.5000 AT 13:51, 04-01-97
ENTERED

EMF=-2.0 mV AT 13:52, 04-01-97

EMF=-2.1 mV AT 13:53, 04-01-97

EMF=-2.0 mV AT 13:53, 04-01-97
ENTERED

1:NH3 SLOPE=-60.9 mV/DEC
AT 13:53, 04-01-97

1:NH3 CONC= 16.5

DOUBLE KNOWN ADDITION SELECTED
AT 13:54, 04-01-97

STD

SAMPLE VOL= 25.000 AT 13:54, 04-01-97
ENTERED

EMF= 111.3 mV AT 13:57, 04-01-97

EMF= 111.9 mV AT 13:58, 04-01-97

EMF= 112.1 mV AT 13:58, 04-01-97
ENTERED

STD CONC= 1000 AT 13:58, 04-01-97
ENTERED

STD VOL= .25000 AT 13:58, 04-01-97
ENTERED

EMF= 57.2 mV AT 14:00, 04-01-97

EMF= 57.1 mV AT 14:00, 04-01-97

EMF= 57.1 mV AT 14:00, 04-01-97
ENTERED

STD VOL= 2.5000 AT 14:01, 04-01-97
ENTERED

EMF= 1.1 mV AT 14:02, 04-01-97

EMF= 0.9 mV AT 14:02, 04-01-97
ENTERED

1:NH3 SLOPE=-59.0 mV/DEC
AT 14:02, 04-01-97

1:NH3 CONC= 1.31

DOUBLE KNOWN ADDITION SELECTED
AT 14:02, 04-01-97

BLK

SAMPLE VOL= 25.000 AT 14:08, 04-01-97
ENTERED

EMF= 115.1 mV AT 14:11, 04-01-97

EMF= 115.3 mV AT 14:12, 04-01-97

EMF= 115.3 mV AT 14:12, 04-01-97
ENTERED

STD CONC= 1000 AT 14:12, 04-01-97
ENTERED

STD VOL= .25000 AT 14:12, 04-01-97
ENTERED

EMF= 57.6 mV AT 14:13, 04-01-97

EMF= 57.4 mV AT 14:14, 04-01-97

EMF= 57.3 mV AT 14:14, 04-01-97
ENTERED

STD VOL= 2.5000 AT 14:14, 04-01-97
ENTERED

EMF= 0.9 mV AT 14:15, 04-01-97

EMF= 0.8 mV AT 14:16, 04-01-97
ENTERED

1:NH3 SLOPE=-59.0 mV/DEC
AT 14:16, 04-01-97

1:NH3 CONC= 1.15

DOUBLE KNOWN ADDITION SELECTED
AT 14:17, 04-01-97

2A

SAMPLE VOL= 25.000 AT 14:17, 04-01-97
ENTERED

EMF= 111.4 mV AT 14:20, 04-01-97

EMF= 111.7 mV AT 14:20, 04-01-97

EMF= 111.6 mV AT 14:20, 04-01-97
ENTERED

STD CONC= 1000 AT 14:20, 04-01-97
ENTERED

STD VOL= .25000 AT 14:20, 04-01-97
ENTERED

EMF= 57.8 mV AT 14:22, 04-01-97

EMF= 57.6 mV AT 14:22, 04-01-97

EMF= 57.4 mV AT 14:22, 04-01-97
ENTERED

STD VOL= 2.5000 AT 14:23, 04-01-97
ENTERED

EMF= 1.2 mV AT 14:24, 04-01-97

EMF= 1.1 mV AT 14:24, 04-01-97
ENTERED

1:NH3 SLOPE=-59.3 mV/DEC
AT 14:24, 04-01-97

1:NH3 CONC= 1.37

DOUBLE KNOWN ADDITION SELECTED
AT 14:25, 04-01-97

2A 111

SAMPLE VOL= 25.000 AT 14:25, 04-01-97
ENTERED

EMF= 48.2 mV AT 14:27, 04-01-97

EMF= 48.3 mV AT 14:27, 04-01-97

EMF= 48.3 mV AT 14:27, 04-01-97
ENTERED

STD CONC= 1000 AT 14:27, 04-01-97
ENTERED

STD VOL= .25000 AT 14:27, 04-01-97
ENTERED

EMF= 36.6 mV AT 14:28, 04-01-97

EMF= 36.5 mV AT 14:29, 04-01-97

EMF= 36.6 mV AT 14:30, 04-01-97
ENTERED

STD VOL= 2.5000 AT 14:30, 04-01-97
ENTERED

EMF=-1.7 mV AT 14:31, 04-01-97

EMF=-1.7 mV AT 14:31, 04-01-97
ENTERED

1:NH3 SLOPE=-61.5 mV/DEC
AT 14:31, 04-01-97

1:NH3 CONC= 17.7

DOUBLE KNOWN ADDITION SELECTED
AT 14:32, 04-01-97

24 SPK

SAMPLE VOL= 25.000 AT 14:33, 04-01-97
ENTERED

EMF= 81.2 mV AT 14:34, 04-01-97

EMF= 82.0 mV AT 14:35, 04-01-97

EMF= 82.2 mV AT 14:36, 04-01-97

EMF= 82.2 mV AT 14:36, 04-01-97

EMF= 82.4 mV AT 14:36, 04-01-97

EMF= 82.4 mV AT 14:36, 04-01-97
ENTERED

STD CONC= 1000 AT 14:37, 04-01-97
ENTERED

STD VOL= .25000 AT 14:37, 04-01-97
ENTERED

EMF= 51.8 mV AT 14:38, 04-01-97

EMF= 51.7 mV AT 14:39, 04-01-97

EMF= 51.7 mV AT 14:40, 04-01-97

EMF= 51.7 mV AT 14:40, 04-01-97
ENTERED

STD VOL= 2.5000 AT 14:40, 04-01-97
ENTERED

EMF= 0.6 mV AT 14:42, 04-01-97

EMF= 0.6 mV AT 14:42, 04-01-97
ENTERED

1:NH3 SLOPE=-59.3 mV/DEC
AT 14:42, 04-01-97

1:NH3 CONC= 4.30

26

DOUBLE KNOWN ADDITION SELECTED
AT 13:00, 04-01-97

SAMPLE VOL= 25.000 AT 13:01, 04-01-97
ENTERED

EMF= 51.2 mV AT 13:02, 04-01-97

EMF= 51.1 mV AT 13:02, 04-01-97

EMF= 51.1 mV AT 13:02, 04-01-97
ENTERED

STD CONC= 1000 AT 13:03, 04-01-97
ENTERED

STD VOL= .25000 AT 13:03, 04-01-97
ENTERED

EMF= 38.3 mV AT 13:03, 04-01-97

EMF= 38.1 mV AT 13:04, 04-01-97

EMF= 38.1 mV AT 13:04, 04-01-97
ENTERED

STD VOL= 2.5000 AT 13:04, 04-01-97
ENTERED

EMF=-1.1 mV AT 13:06, 04-01-97

EMF=-1.1 mV AT 13:06, 04-01-97

EMF=-1.2 mV AT 13:06, 04-01-97
ENTERED

1:NH3 SLOPE=-59.7 mV/DEC
AT 13:06, 04-01-97

1:NH3 CONC= 15.0

End
MD

WORKBOOK PAGE: STD2

AMMONIA (NH3) : LA-631-001 (B-2)**LIQUIDS/SOLIDS**

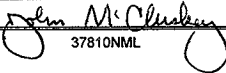
		STD
Type	Instrument Data (µg/mL)	ID 16.500
STD	Blank Result from the Instrument (µg/mL)	BR 1.3100
Vol. List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 1.0
163.9	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code	LCS Standard Book Number	LCS 19N191
NH3-01	LCS Standard Concentration (µg/mL)	STD VAL 3.86E+02
Matrix		
Batch Number		
97000554		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	NH3 CONC 3.80E+02
Sample #		
STD	Method Detection Limit (µg/mL)	1.00
Test Code		
NH3-01		
Prepared By		
RTS	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)	
Chemist		
JMM		
Analyst		
RAW	LCS Standard % Recovery = (NH3 CONC / STD VAL) * 100	
Date Completed		
04/09/97		
Analysis Date		
04/01/97		
Analysis Time	LCS Standard % Recovery	98%
Sample Point	NH3 Concentration (µg/mL)	3.80E+02
SY-102		

Analyst:	RAW Date: 04/09/97
Signature of Chemist:	JMM Date: 04/10/97
SAMPLE.WB1 REV XX	37810NML

WORKBOOK PAGE: BLANK1

AMMONIA (NH3) : LA-631-001 (B-2)**LIQUIDS/SOLIDS**

		BLNK
Type	Instrument Data (µg/mL)	ID 1.310
BLNK	Blank Result from the Instrument (µg/mL)	BR 1.3100
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 25.0
16679	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code		
NH3-01		
Matrix		
LIQUID		
Batch Number		
97000554		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	NH3 CONC < 1.00E+00
Sample		
BLNK	Method Detection Limit (µg/mL)	1.00
Instrument Code		
NH301		
Prepared By		
RTS	NH3 Concentration (µg/mL) = (BR) * (FVOL / VSAM)	
Chemist		
JMM		
Analyst		
RAW		
Date Complete		
04/09/97		
Analysis Date		
04/01/97		
Analysis Time		
Sample Point	NH3 Concentration (µg/mL)	< 1.00E+00
SY-102		

Analyst:	RAW Date: 04/09/97
Signature of Chemist:	JMM Date: 04/10/97
	
37810NML	

SAMPLE.WB1 REV XX

WORKBOOK PAGE: SAM3

AMMONIA (NH3) : LA-631-001 (B-2)**LIQUIDS/SOLIDS**

		SAMPLE
Type	Instrument Data (µg/mL)	ID 1.150
SAMPLE	Blank Result from the Instrument (µg/mL)	BR 1.3100
Work Lists	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 1.0
16679	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code		
NH301		
Matrix		
LIQUID		
Batch Number		
97000554		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	NH3 CONC < 1.00E+00
Sample #		
S97T000024	Method Detection Limit (µg/mL)	1.00
Instrument Code		
NH301		
Prepared By		
RTS	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)	
Chemist		
JMM		
Analyst		
RAW		
Date Completed		
04/09/97		
Analysis Date		
04/01/97		
Analysis Time		
Sample Point	NH3 Concentration (µg/mL)	< 1.00E+00
SY-102		

Analyst:	RAW Date: 04/09/97
Signature of Chemist:	JMM Date: 04/10/97
SAMPLE.WB1 REV XX	37810NML

WORKBOOK PAGE: DUP4

AMMONIA (NH3) : LA-631-001 (B-2)**LIQUIDS/SOLIDS**

		DUP
Type	Instrument Data (µg/mL)	ID 1.370
DUP	Blank Result from the Instrument (µg/mL)	BR 1.3100
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 1.0
16679	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code		
Matrix		
LIQUID		
Batch Number	Sample Concentration (µg/mL)	SAM CONC < 1.00E+00
97000554		
Retain		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	NH3 CONC 1.50E+00
Sample #		
S97T000024	Method Detection Limit (µg/mL)	1.00
Instrument Code		
NH301	RPD (DUP & SAM) = Absolute Val. ((NH3 CONC - SAM CONC) / ((NH3 CONC + SAM CONC) / 2)) * 10	
Prepared By		
RTS	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)	
Chemist		
JMM		
Analyst		
RAW		
Date Complete		
04/09/97		
Analysis Date		
04/01/97		
Analysis Time		
	RPD (DUP & SAM)	40%
Sample Point	NH3 Concentration (µg/mL)	1.50E+00
SY-102		

Analyst:

RAW Date: 04/09/97

Signature of Chemist:

JMM Date: 04/10/97

SAMPLE.WB1 REV XX

37810NML

WORKBOOK PAGE: SPIKE5

AMMONIA (NH3) : LA-631-001 (B-2)

LIQUIDS/SOLIDS

		SPK
Type	Instrument Data (µg/mL)	ID 17.700
SPK	Blank Result from the Instrument (µg/mL)	BR 1.3100
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 1.0
16679	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code	Spike Book Number	SPK 19N191
	Spike Value (µg/mL)	SPK VAL 3.86E+02
Matrix	Vol of Spike Standard Used (mL)	VOL SPK 1.000
LIQUID		
Batch Number		
97000554		
Rerun	Sample Instrument Data (µg/mL)	SAM ID 1.15
0	Sample Volume of Sample (mL)	SAM VSAM 1.0
Sample Prep	Sample Final Volume (mL)	SAM FVOL 25.0
N/A	NH3 Concentration (µg/mL)	NH3 CONC 4.10E+02
Sample		
S97T000024	Method Detection Limit (µg/mL)	1.00
Instrument Code		
NH301		
Prepared By		
RTS	NH3 Concentration (µg/mL) = ((ID-BR) * (FVOL / VSAM))	
Chemist		
JMM	QC ACTUAL = SPK VAL	
Analyst	QC FOUND = (((ID-BR) * FVOL) - (SAM ID - BR) * SAM FVOL * (VSAM / SAM VSAM))	
RAW	Spike % Recovery =	
Date Complete	(((ID-BR) * FVOL) - (SAM ID - BR) * SAM FVOL * (VSAM / SAM VSAM)) / (SPK VAL * VOL SPK) * 100	
04/09/97		
Analysis Date	QC ACTUAL (µg)	3.86E+02
04/01/97	QC FOUND (µg)	4.14E+02
Analysis Time	Spike % Recovery	107%
Sample Point	NH3 Concentration (µg/mL)	4.10E+02
SY-102		

Analyst:

RAW Date: 04/09/97

Signature of Chemist:

JMM Date: 04/10/97

SAMPLE.WB1 REV XX

3781NML

WORKBOOK PAGE: SAM6

AMMONIA (NH3) : LA-631-001 (B-2)

LIQUIDS/SOLIDS

		SAMPLE
Type	Instrument Data (µg/mL)	ID 4.300
SAMPLE	Blank Result from the Instrument (µg/mL)	BR 1.3100
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 1.0
16679	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code		
Matrix		
LIQ ID		
Batch Number		
97000554		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	NH3 CONC 7.48E+01
Sample #		
S97T000026	Method Detection Limit (µg/mL)	1.00
Instrument Code		
NH301		
Prepared By		
RTS	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)	
Chemist		
J.L.J.		
Analyst		
RAW		
Date Complete		
04/09/97		
Analysis Date		
04/01/97		
Analysis Time		
Sample Point	NH3 Concentration (µg/mL)	7.48E+01
SY-102		

Analyst:	RAW Date: 04/09/97
Signature of Chemist:	JMM Date: 04/10/97
SAMPLE.WB1 REV XX	37810NML

WORKBOOK PAGE: ST_END7

AMMONIA (NH3) : LA-631-001 (B-2)

LIQUIDS/SOLIDS

		STD
Type	Instrument Data (µg/mL)	ID 15.000
STD	Blank Result from the Instrument (µg/mL)	BR 1.3100
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 1.0
16679	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code	LCS Standard Book Number	LCS 19N191
	LCS Standard Concentration (µg/mL)	STD VAL 3.86E+02
Matrix		
Batch Number		
97000554		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	NH3 CONC 3.42E+02
Sample #		
	Method Detection Limit (µg/mL)	1.00
Instrument Code		
NH301		
Prepared By		
RTS	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)	
Chemist		
JMM		
Analyst		
RAW	LCS Standard % Recovery = (NH3 CONC / STD VAL) * 100	
Date Complete		
04/09/97		
Analysis Date		
04/01/97		
Analysis Time	LCS Standard % Recovery	89%
Sample Point		
SY-102	NH3 Concentration (µg/mL)	3.42E+02

Analyst:

RAW Date: 04/09/97

Signature of Chemist:

JMM Date: 04/10/97

SAMPLE.WB1 REV XX

37810NML

worklistdata Version 1.0 05/15/96
01/28/97 10:24

LABCORE Completed Worklist Report for Worklist# 16288

Analyst: eal

Instrument: IC02

Book# 36 N20DMethod: LA5331D5 Rev/Mod D-1

Worklist Comment: Run per procedure.

new

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	3.04e-01	0.304	ug/mL
1	CCB	0	⊗IC-QC P04	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	<1.05e-1		ug/mL
2	CCV	0	⊗IC-QC F	QC	5.9000e1	5.62e+01	95.254 %	Recovery
2	CCV	0	⊗IC-QC CL	QC	7.9000e1	7.94e+01	100.506 %	Recovery
2	CCV	0	⊗IC-QC NO2	QC	5.4200e2	5.86e+02	108.118 %	Recovery
2	CCV	0	⊗IC-QC BR	QC	5.8900e2	5.56e+02	94.397 %	Recovery
2	CCV	0	⊗IC-QC NO3	QC	5.9400e2	5.89e+02	99.158 %	Recovery
2	CCV	0	⊗IC-QC P04	QC	5.4400e2	5.38e+02	98.897 %	Recovery
2	CCV	0	⊗IC-QC SO4	QC	6.3100e2	6.30e+02	99.842 %	Recovery
2	CCV	0	⊗IC-QC OXALATE2	QC	5.3300e2	5.31e+02	99.625 %	Recovery
3	SAMPLE	S97T000024	⊗IC-01 F-02	LIQUID	N/A	1.097e+03		61.810 ug/mL
3	SAMPLE	S97T000024	⊗IC-01 CL-02	LIQUID	N/A	8.047e+02		87.570 ug/mL
3	SAMPLE	S97T000024	⊗IC-01 NO2-02	LIQUID	N/A	6.405e+03		556.300 ug/mL
3	SAMPLE	S97T000024	⊗IC-01 BR-02	LIQUID	N/A	6.439e+02		643.900 ug/mL
3	SAMPLE	S97T000024	⊗IC-01 NO3-02	LIQUID	N/A	4.254e+04		716.000 ug/mL
3	SAMPLE	S97T000024	⊗IC-01 P04-02	LIQUID	N/A	8.802e+03		618.100 ug/mL
3	SAMPLE	S97T000024	⊗IC-01 SO4-02	LIQUID	N/A	2.399e+03		710.800 ug/mL
3	SAMPLE	S97T000024	⊗IC-01 OXALATE2	LIQUID	N/A	5.409e+02		540.900 ug/mL
4	DUP	S97T000024	⊗IC-01 F-02	LIQUID	1.10e+03	1.07e+03		2.765 RPD
4	DUP	S97T000024	⊗IC-01 CL-02	LIQUID	8.05e+02	8.66e+02		7.301 RPD
4	DUP	S97T000024	⊗IC-01 NO2-02	LIQUID	6.40e+03	6.48e+03		1.242 RPD
4	DUP	S97T000024	⊗IC-01 BR-02	LIQUID	<6.44e2	<6.44e2		RPD
4	DUP	S97T000024	⊗IC-01 NO3-02	LIQUID	4.25e+04	4.29e+04		0.937 RPD
4	DUP	S97T000024	⊗IC-01 P04-02	LIQUID	8.80e+03	9.02e+03		2.469 RPD
4	DUP	S97T000024	⊗IC-01 SO4-02	LIQUID	2.40e+03	2.51e+03		4.481 RPD
4	DUP	S97T000024	⊗IC-01 OXALATE2	LIQUID	<5.41e2	<5.41e2		RPD
5	SAMPLE	S97T000026	⊗IC-01 F-02	LIQUID	N/A	6.471e+02		25.450 ug/mL
5	SAMPLE	S97T000026	⊗IC-01 CL-02	LIQUID	N/A	1.405e+03		36.060 ug/mL
5	SAMPLE	S97T000026	⊗IC-01 NO2-02	LIQUID	N/A	1.459e+04		229.100 ug/mL
5	SAMPLE	S97T000026	⊗IC-01 BR-02	LIQUID	N/A	2.651e+02		265.100 ug/mL
5	SAMPLE	S97T000026	⊗IC-01 NO3-02	LIQUID	N/A	4.869e+04		294.800 ug/mL
5	SAMPLE	S97T000026	⊗IC-01 P04-02	LIQUID	N/A	4.018e+03		254.500 ug/mL
5	SAMPLE	S97T000026	⊗IC-01 SO4-02	LIQUID	N/A	1.788e+03		292.700 ug/mL
5	SAMPLE	S97T000026	⊗IC-01 OXALATE2	LIQUID	N/A	2.227e+02		222.700 ug/mL
6	DUP	S97T000026	⊗IC-01 F-02	LIQUID	6.47e+02	5.46e+02		16.932 RPD

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

worklistdata Version 1.0 05/15/96
01/28/97 10:24

Page: 2

LABCORE Completed Worklist Report for Worklist# 16288

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
6 DUP	S97T000026	0	⊗IC-01 CL-02	LIQUID	1.40e+03	1.46e+03	4.196 RPD	
6 DUP	S97T000026	0	⊗IC-01 NO2-02	LIQUID	1.46e+04	1.45e+04	0.687 RPD	
6 DUP	S97T000026	0	⊗IC-01 BR-02	LIQUID	<2.65e2	<2.65e2	RPD	
6 DUP	S97T000026	0	⊗IC-01 NO3-02	LIQUID	4.87e+04	4.78e+04	1.865 RPD	
6 DUP	S97T000026	0	⊗IC-01 PO4-02	LIQUID	4.02e+03	3.96e+03	1.504 RPD	
6 DUP	S97T000026	0	⊗IC-01 SO4-02	LIQUID	1.79e+03	2.28e+03	24.079 RPD	
6 DUP	S97T000026	0	⊗IC-01 OXALATE2	LIQUID	<2.23e2	<2.23e2	RPD	
7 SPK	S97T000026	0	⊗IC-01 F-02	LIQUID	5.9000e1	5.62e+01	95.254 % Recovery	
7 SPK	S97T000026	0	⊗IC-01 CL-02	LIQUID	7.9000e1	6.92e+01	87.595 % Recovery	
7 SPK	S97T000026	0	⊗IC-01 NO2-02	LIQUID	5.4200e2	5.21e+02	96.125 % Recovery	
7 SPK	S97T000026	0	⊗IC-01 BR-02	LIQUID	5.8900e2	5.64e+02	95.756 % Recovery	
7 SPK	S97T000026	0	⊗IC-01 NO3-02	LIQUID	5.9400e2	3.11e+02	52.357 % Recovery	
7 SPK	S97T000026	0	⊗IC-01 PO4-02	LIQUID	5.4400e2	5.13e+02	94.301 % Recovery	
7 SPK	S97T000026	0	⊗IC-01 SO4-02	LIQUID	6.3100e2	6.00e+02	95.087 % Recovery	
7 SPK	S97T000026	0	⊗IC-01 OXALATE2	LIQUID	5.3300e2	5.03e+02	94.371 % Recovery	
8 SAMPLE	S97T000027	0	⊗IC-01 F-02	LIQUID	N/A	4.516e+02	25.450 ug/mL	
8 SAMPLE	S97T000027	0	⊗IC-01 CL-02	LIQUID	N/A	1.105e+03	36.060 ug/mL	
8 SAMPLE	S97T000027	0	⊗IC-01 NO2-02	LIQUID	N/A	1.537e+04	229.100 ug/mL	
8 SAMPLE	S97T000027	0	⊗IC-01 BR-02	LIQUID	N/A	2.651e+02	265.100 ug/mL	
8 SAMPLE	S97T000027	0	⊗IC-01 NO3-02	LIQUID	N/A	3.783e+04	294.800 ug/mL	
8 SAMPLE	S97T000027	0	⊗IC-01 PO4-02	LIQUID	N/A	4.396e+03	254.500 ug/mL	
8 SAMPLE	S97T000027	0	⊗IC-01 SO4-02	LIQUID	N/A	2.188e+03	292.700 ug/mL	
8 SAMPLE	S97T000027	0	⊗IC-01 OXALATE2	LIQUID	N/A	5.790e+02	222.700 ug/mL	
9 DUP	S97T000027	0	⊗IC-01 F-02	LIQUID	4.52e+02	4.53e+02	0.221 RPD	
9 DUP	S97T000027	0	⊗IC-01 CL-02	LIQUID	1.10e+03	1.13e+03	2.691 RPD	
9 DUP	S97T000027	0	⊗IC-01 NO2-02	LIQUID	1.54e+04	1.55e+04	0.647 RPD	
9 DUP	S97T000027	0	⊗IC-01 BR-02	LIQUID	<2.65e2	<2.65e2	RPD	
9 DUP	S97T000027	0	⊗IC-01 NO3-02	LIQUID	3.78e+04	3.79e+04	0.264 RPD	
9 DUP	S97T000027	0	⊗IC-01 PO4-02	LIQUID	4.40e+03	4.47e+03	1.578 RPD	
9 DUP	S97T000027	0	⊗IC-01 SO4-02	LIQUID	2.19e+03	2.34e+03	6.623 RPD	
9 DUP	S97T000027	0	⊗IC-01 OXALATE2	LIQUID	5.79e+02	5.53e+02	4.594 RPD	

Final page for worklist# 16288

Analyst Signature Date

Analyst Signature Date

Heather Anastro 1-28-97
Reviewer Signature Date

Validated 1-28-97 HLG

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

LABCORE Data Entry Template for Worklist# 16288

Analyst: EAL Instrument: IC0 J002 Book# 36N20.D

Method: LA-533-105 Rev/Mod D1

Worklist Comment: Run per procedure. new

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 CCB			@IC-QC	QC		
2 CCV			@IC-QC	QC		
3 SAMPLE	S97T000024 0		@IC-01	LIQUID	97000022 SY-102 GRAB1	
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
4 DUP	S97T000026 0		@IC-01	LIQUID		
5 SAMPLE	S97T000026 0		@IC-01	LIQUID	97000022 SY-102 GRAB1	
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
6 DUP	S97T000026 0		@IC-01	LIQUID		
7 SPK	S97T000026 0		@IC-01	LIQUID		
8 SAMPLE	S97T000027 0		@IC-01	LIQUID	97000022 SY-102 GRAB1	
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
9 DUP	S97T000027 0		@IC-01	LIQUID		

Final page for worklist # 16288

Ana L. Hea
Analyst Signature Date 1-28-97

Analyst Signature Date

16288JA.CSV uploaded 1-28-97 Hea
validated 1-28-97 Hea

Data Entry Comments:

S97T000027 had solids in it,
just the liquid was sampled. JMF

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

Data Reprocessed On 01/28/1997 09:56:34

Sample Name: INST. BLANK

Date: 01/23/1997 02:38:36

Data File : E:\DATA\97012211.D11

Method : C:\DX\METHOD\ANIONS.MET

ACI Address: 1 System: 1 Inject#: 11

Detector: CDM-1

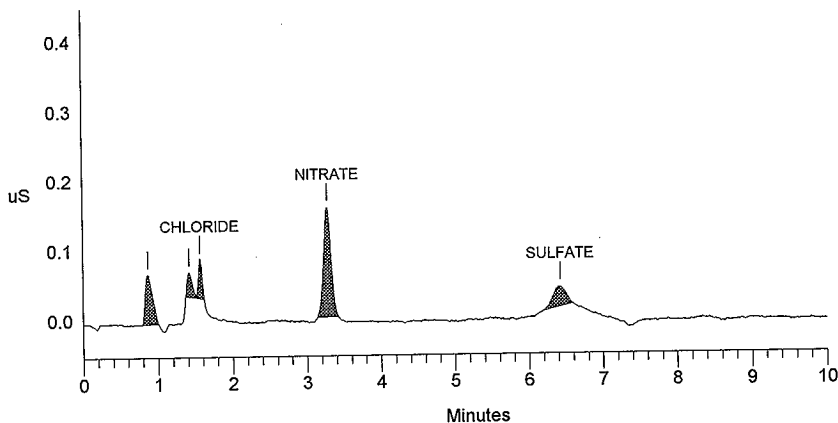
Analyst *Julie D. for EAL* Column:

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	0.87		0.000	71	480	1	
2	1.42		0.000	34	156	2	
3	1.56	CHLORIDE	0.008	54	187	2	0.00
4	3.28	NITRATE	0.304	156	1098	1	0.10
5	6.42	SULFATE	0.113	29	358	1	4.79
Totals			0.425	344	2279		

File: 97012211.D11 Sample: INST. BLANK

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 90 TO 98

Sample Name: 36N20-D STD.

Date: 01/22/1997 22:59:01

Data File : C:\DX\DATA\97012211.D02

Method : C:\DX\METHOD\ANIONS.MET.

ACI Address: 1 System: 1 Inject#: 2

Detector: CDM-1

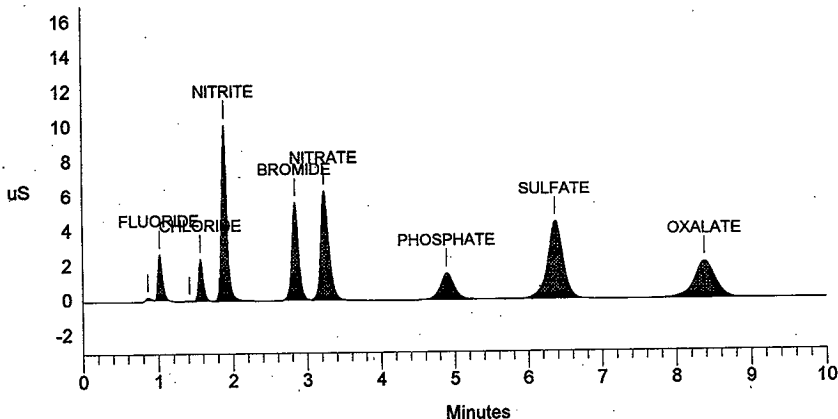
Analyst : Column:

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	0.86		0.000	136	612	2	
2	1.02	FLUORIDE	56.207	2633	10945	2	0.33
3	1.42		0.000	43	219	2	
4	1.57	CHLORIDE	79.409	2426	10391	2	0.43
5	1.89	NITRITE	585.610	10170	50781	1	-0.70
6	2.84	BROMIDE	555.727	5645	34728	2	2.40
7	3.24	NITRATE	588.889	6312	47706	2	4.75
8	4.90	PHOSPHATE	538.138	1533	19937	1	5.53
9	6.37	SULFATE	630.064	4478	64934	1	3.92
10	8.38	OXALATE	530.697	2121	41619	1	4.66
Totals			3564.741	35498	281873		

File: 97012211.D02 Sample: 36N20-D STD.



Sample Name: S97T000024

Date: 01/22/1997 23:10:50

Data File : C:\DX\DATA\97012211.D03

Method : C:\DX\METHOD\ANIONS.MET

ACI Address: 1 System: 1 Inject#: 3

Detector: CDM-1

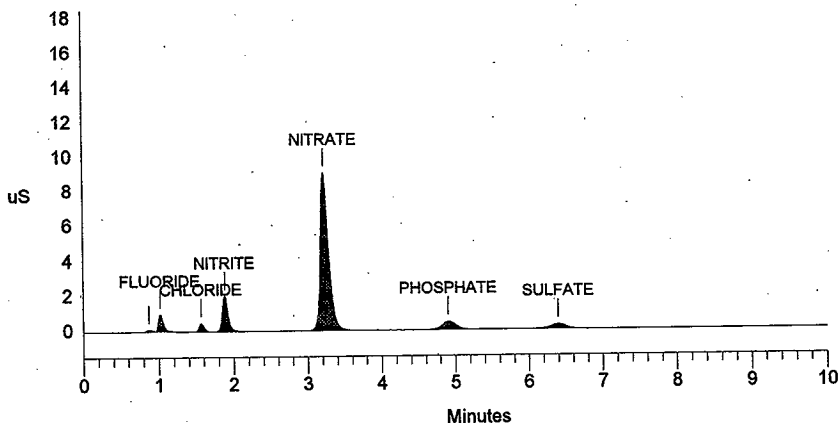
Analyst : Column:

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	5151	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	0.87		0.000	85	390	2	
2	1.02	FLUORIDE	1096.719	952	4111	2	-0.33
3	1.56	CHLORIDE	804.691	476	2106	1	0.00
4	1.88	NITRITE	6405.237	2022	10343	1	-1.05
5	3.22	NITRATE	42539.178	9071	68597	1	4.31
6	4.90	PHOSPHATE	8801.757	470	5992	1	5.68
7	6.40	SULFATE	2399.064	281	4020	1	4.35
Totals			62046.646	13358	95560		

File: 97012211.D03 Sample: S97T000024



Sample Name: S97T000024 DUP

Date: 01/22/1997 23:25:22

Data File : C:\DX\DATA\97012211.D04

Method : C:\DX\METHOD\ANIONS.MET

ACI Address: 1 System: 1 Inject#: 4

Detector: CDM-1

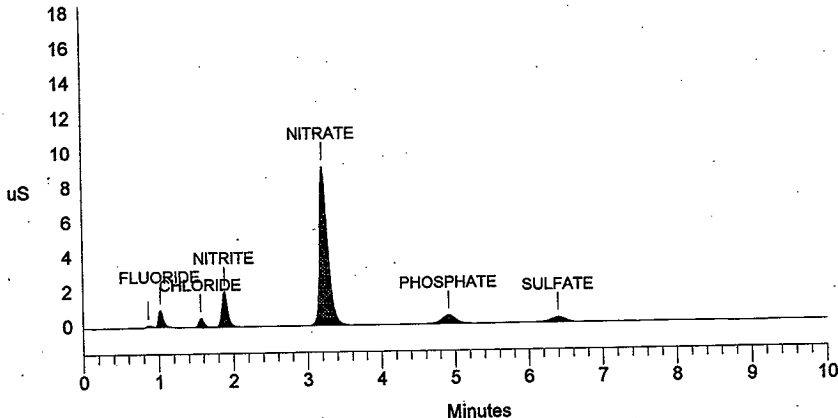
Analyst : Column:

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	5151	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	0.86		0.000	83	374	2	
2	1.02	FLUORIDE	1073.237	956	4020	2	0.33
3	1.56	CHLORIDE	866.048	500	2261	1	0.00
4	1.88	NITRITE	6482.721	2028	10476	1	-1.05
5	3.22	NITRATE	42914.226	9168	69228	1	4.10
6	4.91	PHOSPHATE	9017.254	477	6151	1	5.82
7	6.40	SULFATE	2510.839	292	4246	1	4.35
Totals			62864.326	13504	96757		

File: 97012211.D04 Sample: S97T000024 DUP



Sample Name: S97T000026

Date: 01/23/1997 01:39:35

Data File : C:\DX\DATA\97012211.D06

Method : C:\DX\METHOD\ANIONS.MET

ACI Address: 1 System: 1 Inject#: 6

Detector: CDM-1

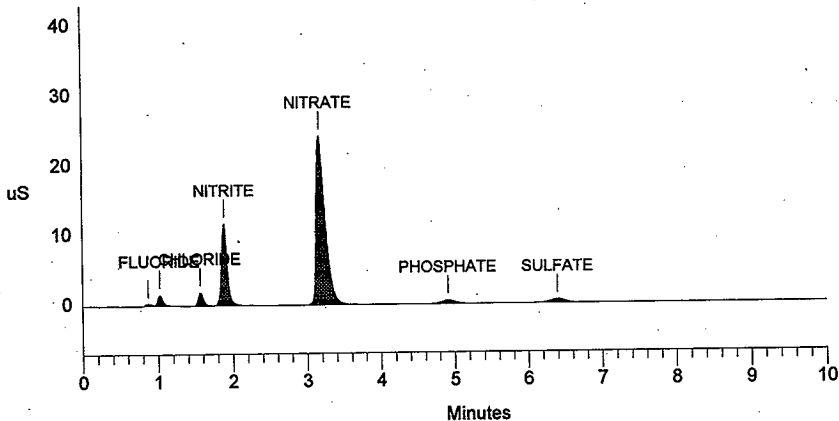
Analyst : Column:

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	0.87		0.000	230	1103	2	
2	1.02	FLUORIDE	647.056	1462	5938	2	0.33
3	1.56	CHLORIDE	1404.946	1881	8748	2	0.00
4	1.89	NITRITE	14587.311	11714	60414	2	-0.70
5	3.17	NITRATE	48689.117	24257	201186	1	2.59
6	4.91	PHOSPHATE	4017.957	515	6699	1	5.82
7	6.40	SULFATE	1787.926	537	7939	1	4.35
Totals			71134.314	40595	292027		

File: 97012211.D06 Sample: S97T000026



Sample Name: S97T000026 DUP
 Date: 01/23/1997 01:52:16
 Data File : C:\DX\DATA\97012211.D07
 Method : C:\DX\METHOD\ANIONS.MET
 ACI Address: 1 System: 1 Inject#: 7
 Analyst : Column:

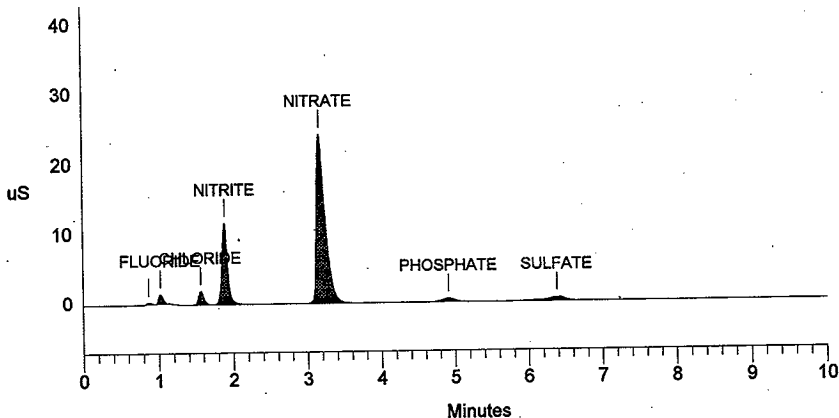
Detector: CDM-1

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	0.87		0.000	208	949	1	
2	1.02	FLUORIDE	545.572	1303	4989	1	0.33
3	1.56	CHLORIDE	1456.309	1909	9069	1	0.00
4	1.89	NITRITE	14534.866	11704	60193	1	-0.70
5	3.16	NITRATE	47835.104	24291	197400	1	2.37
6	4.91	PHOSPHATE	3959.326	515	6593	1	5.82
7	6.38	SULFATE	2283.849	580	10372	1	4.13
Totals			70615.025	40510	289566		

File: 97012211.D07 Sample: S97T000026 DUP



Sample Name: S97T000026 SPIKE

Date: 01/23/1997 02:03:23

Data File : C:\DX\DATA\97012211.D08

Method : C:\DX\METHOD\ANIONS.MET

ACI Address: 1 System: 1 Inject#: 8

Detector: CDM-1

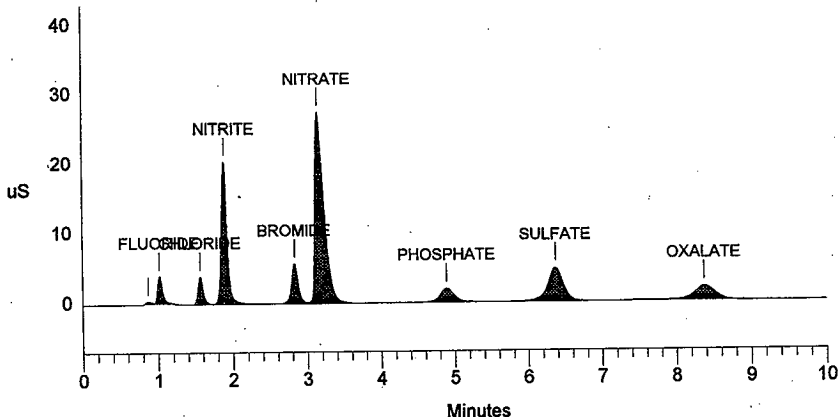
Analyst : Column:

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	0.87		0.000	253	1142	2	
2	1.02	FLUORIDE	1782.217	3780	16636	2	-0.33
3	1.56	CHLORIDE	2802.394	3862	17574	2	0.00
4	1.89	NITRITE	25102.953	20326	104910	2	-0.70
5	2.83	BROMIDE	11395.591	5625	33875	2	1.92
6	3.15	NITRATE	54970.628	27408	229330	2	1.94
7	4.89	PHOSPHATE	14386.086	1962	25644	1	5.39
8	6.37	SULFATE	13918.586	4754	68415	1	3.92
9	8.37	OXALATE	10158.439	1987	37872	1	4.49
Totals			134516.895	69959	535397		

File: 97012211.D08 Sample: S97T000026 SPIKE



Sample Name: S97T000027

Date: 01/23/1997 02:15:16

Data File : C:\DX\DATA\97012211.D09

Method : C:\DX\METHOD\ANIONS.MET

ACI Address: 1 System: 1 Inject#: 9

Detector: CDM-1

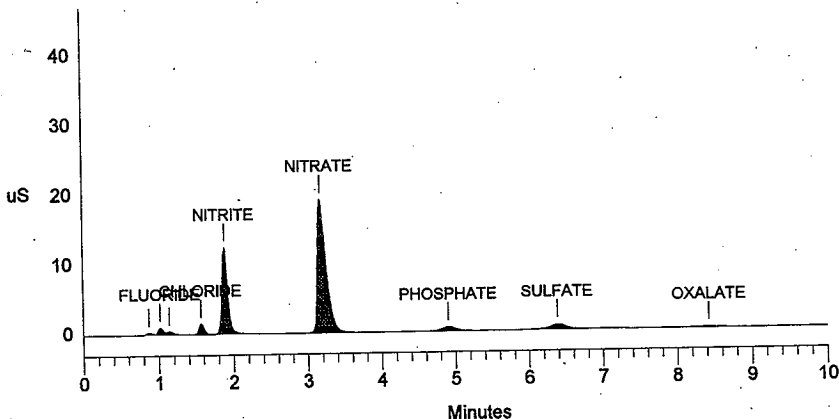
Analyst : Column:

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	0.87		0.000	175	896	2	
2	1.02	FLUORIDE	451.643	944	4111	2	-0.33
3	1.14		0.000	440	2621	2	
4	1.56	CHLORIDE	1104.610	1502	6879	2	0.00
5	1.88	NITRITE	15370.304	12409	63713	2	-1.05
6	3.18	NITRATE	37834.767	19195	153745	1	2.80
7	4.90	PHOSPHATE	4396.259	571	7379	1	5.68
8	6.38	SULFATE	2188.107	696	9902	1	4.13
9	8.42	OXALATE	578.994	96	1674	1	5.16
Totals			61924.684	36028	250919		

File: 97012211.D09 Sample: S97T000027



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=====
Sample Name: S97T000027 DUP                      Date: 01/23/1997 02:26:20
Data File  : C:\DX\DATA\97012211.D10
Method     : C:\DX\METHOD\ANIONS.MET
ACI Address: 1 System: 1 Inject#: 10              Detector: CDM-1
Analyst    :                                     Column:
=====

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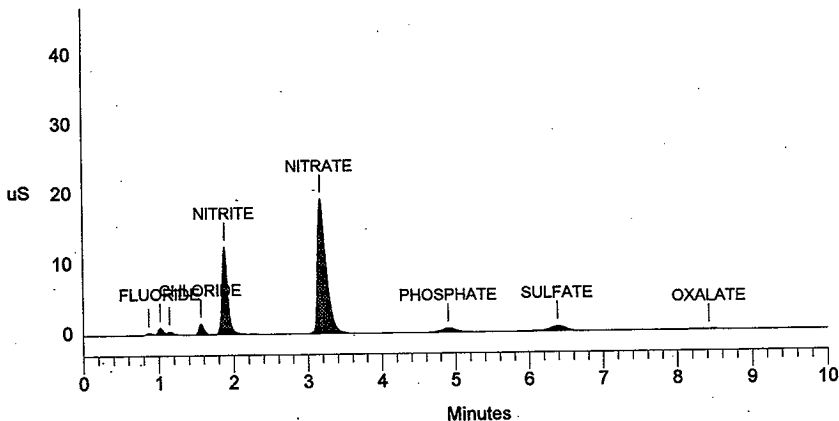
=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          2121    3000 5Hz   0.00 10.00          50
=====

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.87		0.000	171	836	2	
2	1.02	FLUORIDE	452.663	946	4121	2	-0.33
3	1.14		0.000	452	2523	2	
4	1.56	CHLORIDE	1125.444	1534	7008	2	0.00
5	1.88	NITRITE	15522.483	12468	64354	2	-1.05
6	3.18	NITRATE	37912.212	19219	154078	1	2.80
7	4.90	PHOSPHATE	4469.596	573	7511	1	5.68
8	6.38	SULFATE	2339.205	719	10644	1	4.13
9	8.42	OXALATE	553.302	93	1578	1	5.16
Totals			62374.904	36177	252653		

File: 97012211.D10 Sample: S97T000027 DUP



01/23/97 10:35
A-0004-1

File: 990117D.TYT

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LABCORE Data Entry Template for Worklist# 16306

Analyst: MSK Instrument: ICP01 117-97 Book# 658482Method: LA-505-151/161 Rev/Mod B-1

Worklist Comment: SY-102 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	S97T000024	0 D	@ICP-D01 LIQUID	97000022	SY-102 GRAB1
	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 , 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	S97T000024	0 D	@ICP-D01 LIQUID		
8	SERDIL	S97T000026	0 D	@ICP-D01 LIQUID		
9	SAMPLE	S97T000026	0 D	@ICP-D01 LIQUID	97000022	SY-102 GRAB1
	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 , 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					
10	DUP	S97T000026	0 D	@ICP-D01 LIQUID		
11	SPK 1ppm	S97T000026	0 D	@ICP-D01 LIQUID		
12	CEV			@ICP-QC QC		

Data Entry Comments:

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

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01/23/97 10:35
A-0004-1

Page: 2

LABCORE Data Entry Template for Worklist# 16306

S Type	Sample#	R A Test	Matrix	Group#	Project
13 CCB		ICP-QC QC			1-27-97
14 SAMPLE	S97T000027 0-D	ICP-D01 LIQUID		97000022 SY-102 GRAB1	
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					
<i>Sample looks like buddy water.</i>					
15 DUP	S97T000027 0-D	ICP-D01 LIQUID			1-27-97
16 ICSA		ICP-QC QC			
17 ICSAB		ICP-QC QC			
18 CCV		ICP-QC QC			
19 CCB		ICP-QC QC			

Final page for worklist # 16306

[Signature] 01-27-97
Analyst Signature **Date**
S97T000027 , 1.10 , DF 101
S97T000027 , 1.10 , 101
S97T000027-L , 0.510-2.8 , DF 1005
S97T000027 , 0.5-10 , 205-101 , 1-27-97
S97T000027 , 0.5-10 , 201
S97T000027-G , 0.5-10 , 201 , 0.5 ml sample + 2.01 ml SST5 + 7.99 ml HNO3
S97T000027-Ax , 0.5-10-1-9 , 2010 , 1 ml sample + 1 ml each with 1+2 + 7 ml HNO3

Reviewed by:
[Signature] 1/28/97
Analyst Signature **Date**

Data Entry Comments: *Spoke memory calculation:*

$$Cl = \left(\frac{5315}{201} \right) - \left(\frac{5124}{201} \right) \times 100 = 95.0 \%$$

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

HNF-SD-WM-DP-227, REV. 0

Analysis Report

Summary

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page 1

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	970127D	ICP2	01/27/97	13:22	DKS	Q	CONC
2	ICB	970127D	ICP2	01/27/97	13:25	DKS	Q	CONC
3	LLS	970127D	ICP2	01/27/97	13:28	DKS	Q	CONC
4	ICSA	970127D	ICP2	01/27/97	13:31	DKS	Q	CONC
5	ICSAB	970127D	ICP2	01/27/97	13:34	DKS	Q	CONC
6	S97T000024	970127D	ICP2	01/27/97	13:40	DKS	S	CONC
7	S97T000024_D	970127D	ICP2	01/27/97	13:44	DKS	S	CONC
8	CCV	970127D	ICP2	01/27/97	13:49	DKS	Q	CONC
9	CCB	970127D	ICP2	01/27/97	13:53	DKS	Q	CONC
10	S97T000026_L	970127D	ICP2	01/27/97	13:57	DKS	S	CONC
11	S97T000026	970127D	ICP2	01/27/97	14:00	DKS	S	CONC
12	S97T000026_D	970127D	ICP2	01/27/97	14:03	DKS	S	CONC
13	S97T000026_A	970127D	ICP2	01/27/97	14:06	DKS	S	CONC
14	S97T000026_AX	970127D	ICP2	01/27/97	14:11	DKS	S	CONC
15	ICSA	970127D	ICP2	01/27/97	14:16	DKS	Q	CONC
16	ICSAB	970127D	ICP2	01/27/97	14:19	DKS	Q	CONC
17	CCV_1	970127D	ICP2	01/27/97	14:23	DKS	Q	CONC
18	CCB_1	970127D	ICP2	01/27/97	14:26	DKS	Q	CONC

JK 

01-27-97

SY-102

Worklist # 16306

S97T000024

S97T000026

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 101 TO 104.

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Analysis Report

Averages

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#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	4.902	4.908	5.190	5.062	4.993	5.104
2	ICB	.0003	.0088	.0123	.0014	-.0001	.0003
3	LLS	.0220	.1112	.2094	.1034	.1010	.0104
4	ICSA	.0016	242.8	-.0281	.0031	.0003	.0002
5	ICSAB	.9627	242.6	-.0513	-.0007	.4798	.4798
6	S97T000024	2.386	1966.	-1.832	4.090	-.0148	.0165
7	S97T000024_D	2.509	1962.	-1.221	4.187	.0076	.0035
8	CCV	4.903	4.894	5.196	5.051	4.984	5.085
9	CCB	-.0006	.0066	.0120	-.0033	-.0001	.0001
10	S97T000026_L	3.068	5192.	-6.637	12.91	-.0668	.2565
11	S97T000026	3.433	5124.	-7.220	9.959	.0068	.0846
12	S97T000026_D	3.303	5094.	-5.680	10.05	.0134	.0674
13	S97T000026_A	191.8	5315.	203.7	209.6	198.0	202.7
14	S97T000026_AX	19870.	24710.	20840.	19940.	20610.	20780.
15	ICSA	.0119	242.6	-.0270	.0005	.0004	.0004
16	ICSAB	.9626	242.2	-.0442	-.0031	.4810	.4770
17	CCV_1	4.914	4.901	5.174	5.050	5.018	5.059
18	CCB_1	.0003	.0091	.0131	.0033	-.0000	.0003

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	ICV	5.062	4.917	4.967	4.951	5.027	4.951
2	ICB	.0048	-.0001	.0014	-.0060	-.0001	.0005
3	LLS	.2390	.2573	.0116	.2022	.0420	.0212
4	ICSA	.0026	247.9	-.0003	.0139	.0001	.0085
5	ICSAB	.0161	248.4	.9343	.0087	.4650	.4809
6	S97T000024	5.405	2.182	.3044	-1.271	.3212	368.7
7	S97T000024_D	3.546	2.500	.2993	.0830	.2232	368.0
8	CCV	5.088	4.922	4.960	4.936	5.016	4.949
9	CCB	.0138	-.0008	.0001	-.0086	-.0011	-.0003
10	S97T000026_L	33.95	3.217	1.751	-5.308	.1008	960.6
11	S97T000026	10.23	6.056	1.342	-.3657	.1745	948.2
12	S97T000026_D	12.06	4.263	1.387	-.8136	.2950	936.9
13	S97T000026_A	211.1	203.6	200.3	199.5	201.1	1138.
14	S97T000026_AX	20420.	20090.	19910.	20280.	31.13	21030.
15	ICSA	.0402	249.2	.0005	.0121	-.0005	.0084
16	ICSAB	-.0009	248.8	.9342	.0087	.4660	.4813
17	CCV_1	5.048	4.950	4.971	4.940	5.034	4.961
18	CCB_1	.0235	.0018	.0004	-.0004	-.0007	.0005

#	Sample Name	Cu	Eu	Fe	K	La	Li
1	ICV	5.320	-.0021	4.979	4.793	5.064	4.965
2	ICB	.0007	-.0008	-.0023	-.0966	-.0009	-.0010
3	LLS	.0218	-.0002	.1030	Q.6518	.1039	.0205
4	ICSA	-.0096	-.0212	93.04	.4494	-.0047	.0019
5	ICSAB	.4838	-.0191	92.92	.1665	-.0044	1.029
6	S97T000024	.2130	-.0980	.3139	807.2	-.1065	-.0715
7	S97T000024_D	.2571	-.0799	.4398	792.1	.0871	-.0244
8	CCV	5.306	-.0016	4.954	4.829	5.051	4.952
9	CCB	-.0002	-.0008	-.0031	-.0404	-.0003	-.0008

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Analysis Report

Averages

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#	Sample Name	Cu	Eu	Fe	K	La	Li
10	S97T000026_L	1.055	1.403	-1.753	2154.	-1.758	-1.639
11	S97T000026_	.3197	1.749	1.704	2127.	-.0652	-.1653
12	S97T000026_D	.2338	.2055	1.255	2071.	-.0502	-.3060
13	S97T000026_A	211.8	.2318	199.1	2318.	203.6	198.8
14	S97T000026_AX	-8.489	.318	19930.	21510.	20600.	20600.
15	ICSA	-.0100	-.0227	92.95	.3842	-.0051	.0021
16	ICSA_B	.4818	-.0195	92.69	.2248	-.0052	1.027
17	CCV 1	5.292	-.0011	4.947	4.882	5.053	4.931
18	CCB_1	.0000	-.0004	-.0018	.0660	-.0002	-.0002

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	4.994	4.853	5.071	5.104	5.015	4.947
2	ICB	.0039	-.0002	-.0023	-.0066	-.0007	.0066
3	LLS	.2122	.0194	.0987	.2023	.2011	.0455
4	ICSA	252.4	-.0069	-.0077	194.9	.0019	-.0066
5	ICSA_B	251.7	.4419	-.0105	195.2	.0035	.9132
6	S97T000024	-.2891	-.0438	3.798	34920.	-.2129	.2418
7	S97T000024_D	.3841	-.0410	3.815	34700.	-.0142	.4628
8	CCV	4.976	4.854	5.064	5.070	5.017	4.955
9	CCB	.0049	-.0002	-.0035	-.0062	.0012	-.0072
10	S97T000026_L	2.950	-.3286	12.26	47620.	-.3364	-3.208
11	S97T000026_	.8944	-.0447	11.46	47010.	-.4018	-1.692
12	S97T000026_D	.0505	-.0875	10.94	46770.	.3570	-.3265
13	S97T000026_A	197.4	190.3	215.3	47210.	201.9	195.9
14	S97T000026_AX	20320.	19870.	19740.	67250.	20490.	19830.
15	ICSA	252.4	-.0065	-.0112	194.1	.0025	-.0008
16	ICSA_B	251.2	.4418	-.0081	194.3	.0046	.9157
17	CCV 1	4.959	4.864	5.090	5.059	5.003	4.937
18	CCB_1	.0043	-.0000	-.0004	-.0029	-.0000	-.0037

#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	5.063	4.843	4.977	4.831	4.750	4.830
2	ICB	-.0081	-.0139	-.0070	-.0003	.0196	-.0059
3	LLS	.4115	.1886	.2041	.1060	.2338	.1282
4	ICSA	.0029	.0044	-.0367	-.0095	-.0158	-.0130
5	ICSA_B	.0210	.9663	-.0399	-.0061	-.0134	-.0114
6	S97T000024	3186.	-2.669	747.2	-.7030	5.049	8.172
7	S97T000024_D	3186.	-3.309	751.0	-.6933	5.890	8.307
8	CCV	5.088	4.849	4.964	4.793	4.753	4.831
9	CCB	-.0207	-.0190	-.0104	.0032	.0301	-.0100
10	S97T000026_L	1348.	-10.20	573.2	1.295	31.82	9.213
11	S97T000026_	1358.	-1.103	561.7	-1.117	9.864	17.72
12	S97T000026_D	1341.	-5.996	561.0	.6508	7.349	16.72
13	S97T000026_A	1539.	191.8	761.1	194.1	204.2	213.0
14	S97T000026_AX	22080.	20450.	20710.	20020.	19530.	20070.
15	ICSA	-.0020	.0216	-.0443	.0202	-.0083	-.0105
16	ICSA_B	-.0024	.9781	-.0330	-.0010	-.0188	-.0123
17	CCV 1	4.995	4.887	4.967	4.844	4.729	4.832
18	CCB_1	.0042	-.0056	.0074	.0017	.0293	-.0064

HNF-SD-WM-DP-227, REV. 0

Analysis Report

Averages

Mon 01-27-97 02:29:39 PM

page 4

#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	4.979	4.976	.0512	4.933	4.769	9.761
2	ICB	-.0090	-.0002	.0032	-.0002	-.0171	-.0454
3	LLS	.2035	.0204	.0015	.0200	.3868	.4923
4	ICSA	-.0066	.0018	.0117	.0007	-.0190	.0158
5	ICSAB	-.0072	.0018	.0169	.0008	-.0184	-.0044
6	S97T000024	-1.150	.0916	.0904	-.0328	-2.186	14.54
7	S97T000024_D	-.7689	.0966	.3845	.0164	-2.940	15.53
8	CCV	4.954	4.961	.0536	4.915	4.799	9.728
9	CCB	-.0090	-.0003	.0021	-.0005	-.0288	-.0444
10	S97T000026_L	-15.83	.1572	4.205	.7276	-26.29	-36.38
11	S97T000026	-1.286	.4396	.6433	.0850	-1.681	21.45
12	S97T000026_D	-2.687	.4397	.6010	.0351	-3.484	21.42
13	S97T000026_A	197.7	199.1	2.251	197.9	185.9	413.2
14	S97T000026_AX	20040.	20010.	96.36	18290.	19050.	1496.
15	ICSA	-.0026	.0018	.0090	.0007	-.0031	.0206
16	ICSAB	-.0073	.0018	.0107	.0007	.0210	.0145
17	CCV_1	4.960	4.954	.0456	4.929	4.758	9.721
18	CCB_1	-.0026	-.0001	.0011	-.0005	-.0293	-.0200

#	Sample Name	V	Y	Zn	Zr
1	ICV	5.041	.0054	5.080	4.996
2	ICB	-.0025	-.0007	.0007	-.0023
3	LLS	.1019	.0001	.0237	.0206
4	ICSA	-.0020	.0064	.0046	-.0053
5	ICSAB	.4686	.0064	.9536	-.0054
6	S97T000024	-.2328	-.0933	.2140	-.2308
7	S97T000024_D	-.1256	-.0779	.1150	-.1839
8	CCV	5.036	.0057	5.083	4.985
9	CCB	-.0025	-.0007	.0005	-.0022
10	S97T000026_L	-3.607	-1.009	1.182	-3.073
11	S97T000026	-.2014	-.1352	.9866	-.2812
12	S97T000026_D	-3.462	-.2140	.6604	-.4873
13	S97T000026_A	201.4	.1080	205.4	200.0
14	S97T000026_AX	12.16	28.52	-63.25	20390.
15	ICSA	-.0009	.0068	.0047	-.0044
16	ICSAB	.4681	.0067	.9541	-.0053
17	CCV_1	5.042	.0056	5.097	4.993
18	CCB_1	-.0011	-.0004	.0005	-.0008



01-27-97

LABCORE Completed Worklist Report for Worklist# 16287

Analyst: knt

Instrument: TOC01

Book# 24A112F

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

Worklist Comment: SY-102 Grab. Std: TOCSTD 0.200ml. REWORKED BY RTS

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0	TOC-01	LIQUID	1	0	0.000	ug/mL
2 STD	0	TOC-01	LIQUID	3.00e03	3.06E3	102.000 % Recovery	
3 SAMPLE	S97T000024 0	TOC-01	LIQUID	N/A	2.90E2	7.500	ug/mL
4 DUP	S97T000024 0	TOC-01	LIQUID	2.90E2	4.72E2	47.769	RPD
5 TRIPL	S97T000024 0	TOC-01	LIQUID	2.90E2	3.32E2	13.505	RPD
6 SAMPLE	S97T000026 0	TOC-01	LIQUID	N/A	1.03E3	10.000	ug/mL
7 DUP	S97T000026 0	TOC-01	LIQUID	1.03E3	1.01E3	1.961	RPD
8 SPK	S97T000026 0	TOC-01	LIQUID	100	378.0	378.000 % Recovery	
9 SAMPLE	S97T000027 0	TOC-01	LIQUID	N/A	5.65E3	55.000	ug/mL
10 DUP	S97T000027 0	TOC-01	LIQUID	5.65E3	4.64E3	19.631	RPD
11 TRIPL	S97T000027 0	TOC-01	LIQUID	5.65E3	6.59E3	15.359	RPD

Final page for worklist# 16287

See attached
Analyst Signature Date

See attached
Analyst Signature Date

validated into Labcore by John McCluskey 02/05/97
Reviewer Signature Date

Note: Spike failure accepted due to three reasons

- 1) liquid sample was muddy (therefore nonhomogenous) and I believe a rerun would also fail spike recovery
- 2) Std, blank, and baseline were perfect
- 3) Sample and dup are near identical, therefore acceptable

jmm 02/05/97

LABCORE Data Entry Template for Worklist# 16287

Analyst: KNT Instrument: TOC01 _____ Book # 24N12F

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

Worklist Comment: SY-102 Grab. Std: TOCSTD 0.200ml. REWORKED BY RTS

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK			TOC-01	LIQUID	<u>1</u>	<u>0</u>	N/A	ug/mL
		2 STD			TOC-01	LIQUID	<u>3.00^{e3}</u>	<u>3.06^{e3}</u>	N/A	ug/mL
97000022	SY-102 GRAB1	3 SAMPLE	S97T000024	0	TOC-01	LIQUID	<u>N/A</u>	<u>2.90^{e2}</u>	<u>7.50</u>	ug/mL
97000022	SY-102 GRAB1	4 DUP	S97T000024	0	TOC-01	LIQUID	<u>2.90^{e2}</u>	<u>4.72^{e2}</u>	N/A	ug/mL
97000022	SY-102 GRAB1	5 TRIPL	S97T000024	0	TOC-01	LIQUID	<u>2.90^{e2}</u>	<u>3.32^{e2}</u>	N/A	ug/mL
97000022	SY-102 GRAB1	6 SAMPLE	S97T000026	0	TOC-01	LIQUID	<u>N/A</u>	<u>1.03^{e3}</u>	<u>1.00^{e+1}</u>	ug/mL
97000022	SY-102 GRAB1	7 DUP	S97T000026	0	TOC-01	LIQUID	<u>1.03^{e3}</u>	<u>1.01^{e3}</u>	N/A	ug/mL
97000022	SY-102 GRAB1	8 SPK	S97T000026	0	TOC-01	LIQUID	<u>100</u>	<u>378.0</u>	N/A	ug/mL
97000022	SY-102 GRAB1	9 SAMPLE	S97T000027	0	TOC-01	LIQUID	<u>N/A</u>	<u>5.65^{e3}</u>	<u>5.50^{e1}</u>	ug/mL
97000022	SY-102 GRAB1	10 DUP	S97T000027	0	TOC-01	LIQUID	<u>5.65^{e3}</u>	<u>4.64^{e3}</u>	N/A	ug/mL
97000022	SY-102 GRAB1	11 TRIPL	S97T000027	0	TOC-01	LIQUID	<u>5.65^{e3}</u>	<u>6.59^{e3}</u>	N/A	ug/mL

Final page for worklist # 16287

RTS KNT + Lomas 1-27-97
Analyst Signature Date
2-4-97

RTS 2-4-97
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.

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASE

Date: 01/27/97

Time: 02:20:49

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BASE

Blank Value = N/A

Analyst : KN THOMAS

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	0.20	0.00
2	1.01	0.30	33.33
3	1.51	0.50	40.00
4	2.00	0.70	28.57
5	2.50	1.00	30.00
6	3.00	1.30	23.08
7	3.50	1.50	13.33
8	4.00	1.70	11.76
9	4.50	1.90	10.53
10	5.00	2.00	5.00
11	5.50	2.20	9.09
12	6.00	2.30	4.35
13	6.50	2.50	8.00
14	7.00	2.60	3.85

BLANK VALUE = 2.6 micrograms carbon

BLANK FACTOR = 2.6 / 7.003998 =

+3.7E-01

ug/min Carbon

Sample Run By:

Lue' Dwyer for K Thomas

KN THOMAS

00000

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 107 TO 129.

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 24N12-F

Date: 01/27/97

Time: 02:41:11

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BASE

Blank Value = .3712166 ug/minute C

Analyst : KN THOMAS

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	0.80	87.50
3	1.50	22.50	96.44
4	2.00	41.20	45.39
5	2.50	49.50	16.77
6	3.00	53.50	7.48
7	3.51	55.30	3.25
8	4.00	56.40	1.95
9	4.50	56.90	0.88
10	5.00	57.30	0.70
11	5.50	57.70	0.69
12	6.00	57.90	0.35
13	6.50	58.00	0.17
14	7.00	58.30	0.51

BLANK VALUE = 2.6 micrograms carbon

BLANK FACTOR = 2.6 / 7.003998 =

+3.7E-01 ug/min Carbon

SAMPLE RESULTS:

(58.3 - 2.599938) (11)/(200) =

+3.06E+00 g/L Carbon

(58.3 - 2.599938) (11)/(200) (12) =

+2.55E-01 Molar Carbon

Sample Run By:

KN THOMAS

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BLNK

Date: 01/27/97

Time: 03:04:08

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BLNK

Blank Value = N/A

Analyst : KN THOMAS

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	0.10	0.00
2	1.01	0.20	50.00
3	1.51	0.50	60.00
4	2.01	0.80	37.50
5	2.51	1.10	27.27
6	3.01	1.30	15.38
7	3.51	1.50	13.33
8	4.01	1.60	6.25
9	4.51	1.80	11.11
10	5.01	2.00	10.00
11	5.51	2.20	9.09
12	6.00	2.30	4.35
13	6.50	2.50	8.00
14	7.00	2.60	3.85

BLANK VALUE = 2.6 micrograms carbon

BLANK FACTOR = 2.6 / 7.00383 =

+3.7E-01

ug/min Carbon

Sample Run By:

KN THOMAS

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T000024

Date: 01/27/97

Time: 05:09:56

Sample Size = 200 uL

Dil Factor = 1.5

Blank ID # = BLNK

Blank Value = .3712254 ug/minute C

Analyst : KN THOMAS

Min Readings = 14

Max Readings = 14

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.00	0.00
2	1.01	3.30	100.00
3	1.51	22.10	85.07
4	2.01	28.40	22.18
5	2.51	31.80	10.69
6	3.01	34.50	7.83
7	3.51	36.20	4.70
8	4.01	37.50	3.47
9	4.51	38.50	2.60
10	5.01	39.40	2.28
11	5.51	39.90	1.25
12	6.01	40.40	1.24
13	6.50	40.90	1.22
14	7.00	41.20	0.73

BLANK VALUE = 2.6 micrograms carbon
BLANK FACTOR = 2.6 / 7.00383 =

+3.7E-01 ug/min Carbon

SAMPLE RESULTS:

(41.2 - 2.600368) (1.5) / (200) =
(41.2 - 2.600368) (1.5) / (200) (12) =

+2.89E-01 g/L Carbon
+2.41E-02 Molar Carbon

Sample Run By:

KN THOMAS

00000

P

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T000024DUP

Date: 01/27/97

Time: 05:19:09

Sample Size = 200 uL

Dil Factor = 1.5

Blank ID # = BLNK

Blank Value = .3712254 ug/minute C

Analyst : KN THOMAS

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	0.30	0.00
2	1.01	5.20	94.23
3	1.51	36.10	85.60
4	2.01	45.20	20.13
5	2.51	50.50	10.50
6	3.01	54.40	7.17
7	3.51	57.10	4.73
8	4.01	59.10	3.38
9	4.50	60.80	2.80
10	5.00	62.10	2.09
11	5.50	63.30	1.90
12	6.00	64.20	1.40
13	6.50	64.90	1.08
14	7.00	65.60	1.07

BLANK VALUE = 2.6 micrograms carbon

BLANK FACTOR = 2.6 / 7.00383 =

+3.7E-01 ug/min Carbon

SAMPLE RESULTS:

(65.6 - 2.600062) (1.5) / (200) =

+4.72E-01 g/L Carbon

(65.6 - 2.600062) (1.5) / (200) (12) =

+3.94E-02 Molar Carbon

Sample Run By:

KN THOMAS

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T00024 TRP Date: 01/27/97 Time: 17:29:10

Sample Size = 200 uL Analyst : SL HOOD
Dil Factor = 1.5 Min Readings = 14
Blank ID # = BLK Max Readings = 14
Blank Value = 1.727374 ug/minute C % Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	5.60	96.43
3	1.51	23.50	76.17
4	2.01	30.00	21.67
5	2.51	34.30	12.54
6	3.01	37.10	7.55
7	3.51	39.50	6.08
8	4.01	41.20	4.13
9	4.50	42.40	2.83
10	5.00	43.70	2.97
11	5.50	44.50	1.80
12	6.00	45.50	2.20
13	6.51	46.30	1.73
14	7.00	46.90	1.28

BLANK VALUE = 12.1 micrograms carbon

BLANK FACTOR = 12.1 / 7.004852 = +1.7E+00 ug/min Carbon

SAMPLE RESULTS:

(46.9 - 12.09984) (1.5)/(200) = +2.61E-01 g/L Carbon
 (46.9 - 12.09984) (1.5)/(200) (12) = +2.18E-02 Molar Carbon
 <<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>

Sample Run By:

SL HOOD

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T000026

Date: 01/27/97

Time: 05:57:48

Sample Size = 200 uL

Dil Factor = 2

Blank ID # = BLK

Blank Value = 1.727374 ug/minute C

Analyst : KN THOMAS

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	Analysis	Time	Coulometer	% Difference
1	0.51		0.30	0.00
2	1.01		9.70	96.91
3	1.51		60.10	83.86
4	2.01		76.80	21.74
5	2.51		85.60	10.28
6	3.01		91.50	6.45
7	3.51		95.90	4.59
8	4.00		98.80	2.94
9	4.50		101.00	2.18
10	5.00		102.40	1.37
11	5.50		103.70	1.25
12	6.00		104.70	0.96
13	6.50		105.40	0.66
14	7.00		106.00	0.57

BLANK VALUE = 12.1 micrograms carbon

BLANK FACTOR = 12.1 / 7.004852 = +1.7E+00 ug/min Carbon

SAMPLE RESULTS:

(106 - 12.09989) (2)/(200) = +9.390E-01 g/L Carbon
 (106 - 12.09989) (2)/(200) (12) = +7.825E-02 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

KN THOMAS

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T00026 DUP Date: 01/27/97 Time: 08:22:08

Sample Size = 200 uL	Analyst : KN THOMAS
Dil Factor = 2	Min Readings = 14
Blank ID # = BLK	Max Readings = 14
Blank Value = 1.727374 ug/minute C	% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	2.80	92.86
3	1.51	54.30	94.84
4	2.01	73.30	25.92
5	2.51	82.50	11.15
6	3.01	88.70	6.99
7	3.51	93.10	4.73
8	4.01	96.10	3.12
9	4.51	98.40	2.34
10	5.01	100.00	1.60
11	5.51	101.40	1.38
12	6.01	102.30	0.88
13	6.51	103.00	0.68
14	7.00	103.80	0.77

BLANK VALUE = 12.1 micrograms carbon

BLANK FACTOR = 12.1 / 7.004852 = +1.7E+00 ug/min Carbon

SAMPLE RESULTS:

(103.8 - 12.09989) (2) / (200) =	+9.170E-01	g/L Carbon
(103.8 - 12.09989) (2) / (200) (12) =	+7.642E-02	Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>		

Sample Run By:

KN THOMAS

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T00026 SPK Date: 01/27/97 Time: 13:35:43

Sample Size = 200 uL	Analyst : SL HOOD
Dil Factor = 2.5	Min Readings = 14
Blank ID # = BLK	Max Readings = 14
Blank Value = 1.727374 ug/minute C	% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	25.10	99.20
3	1.51	168.20	85.08
4	2.01	222.20	24.30
5	2.51	255.50	13.03
6	3.01	276.00	7.43
7	3.51	288.30	4.27
8	4.01	297.00	2.93
9	4.50	302.70	1.88
10	5.00	306.10	1.11
11	5.50	308.70	0.84
12	6.00	310.60	0.61
13	6.51	312.00	0.45
14	7.00	313.00	0.32

BLANK VALUE = 12.1 micrograms carbon

BLANK FACTOR = 12.1 / 7.004852 = +1.7E+00 ug/min Carbon

SAMPLE RESULTS:

(313 - 12.09995) (2.5)/(200)	=	+3.761E+00	g/L Carbon
(313 - 12.09995) (2.5)/(200) (12)	=	+3.134E-01	Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>			

Sample Run By: SL HOOD 00000

HNF-SD-WM-DP-227, REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT TICTOC REV 2.0

Sample: S97T0027

Date: 01/27/97

Time: 14:38:12

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BLK

Blank Value = 1.727374 ug/minute C

Analyst : SL HOOD

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	Analysis	Time	Coulometer	% Difference
1	0.51		0.20	0.00
2	1.01		14.90	98.66
3	1.51		64.80	77.01
4	2.01		79.50	18.49
5	2.51		87.50	9.14
6	3.01		92.90	5.81
7	3.51		96.70	3.93
8	4.01		99.20	2.52
9	4.51		101.10	1.88
10	5.01		102.40	1.27
11	5.51		103.30	0.87
12	6.01		104.10	0.77
13	6.51		104.80	0.67
14	7.00		105.30	0.47

BLANK VALUE = 12.1 micrograms carbon

BLANK FACTOR = 12.1 / 7.004852 = +1.7E+00 ug/min Carbon

SAMPLE RESULTS:

(105.3 - 12.09995) (11)/(200) = +5.126E+00 g/L Carbon
(105.3 - 12.09995) (11)/(200) (12) = +4.272E-01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

SL HOOD

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T000270uP Date: 01/27/97 Time: 15:37:56

Sample Size = 200 uL Analyst : SL HOOD
Dil Factor = 11 Min Readings = 14
Blank ID # = BLK Max Readings = 14
Blank Value = 1.727374 ug/minute C % Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	13.10	99.24
3	1.51	51.60	74.61
4	2.01	64.10	19.50
5	2.51	71.20	9.97
6	3.00	76.00	6.32
7	3.50	79.00	3.80
8	4.00	81.20	2.71
9	4.50	82.70	1.81
10	5.00	84.00	1.55
11	5.50	85.00	1.18
12	6.00	85.80	0.93
13	6.50	86.30	0.58
14	7.00	86.90	0.69

BLANK VALUE = 12.1 micrograms carbon
BLANK FACTOR = 12.1 / 7.004852 = +1.7E+00 ug/min Carbon

SAMPLE RESULTS:

(86.9 - 12.09678) (11)/(200) = +4.11E+00 g/L Carbon
(86.9 - 12.09678) (11)/(200) (12) = +3.43E-01 Molar Carbon
<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>

Sample Run By: SL HOOD 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T00027 TRP Date: 01/27/97 Time: 16:51:33

Sample Size = 200 uL Analyst : SL HOOD
Dil Factor = 11 Min Readings = 14
Blank ID # = BLK Max Readings = 14
Blank Value = 1.727374 ug/minute C % Difference = 10

== Reading ==	Analysis	Time	==== Coulometer	==== % Difference ==
1	0.51		0.30	0.00
2	1.01		19.60	98.47
3	1.51		73.30	73.26
4	2.00		91.70	20.07
5	2.50		101.50	9.66
6	3.00		108.40	6.37
7	3.50		112.90	3.99
8	4.00		115.60	2.34
9	4.50		117.80	1.87
10	5.00		119.20	1.17
11	5.50		120.30	0.91
12	6.00		121.20	0.74
13	6.50		121.90	0.57
14	7.00		122.50	0.49

BLANK VALUE = 12.1 micrograms carbon

BLANK FACTOR = 12.1 / 7.004852 = +1.7E+00 ug/min Carbon

SAMPLE RESULTS:

(122.5 - 12.09678) (11)/(200) = +6.072E+00 g/L Carbon
(122.5 - 12.09678) (11)/(200) (12) = +5.060E-01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By: SL HOOD 00000

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

LIQUIDS

		BLANK
Type	Sample Volume in mL (SS)	1.000
BLANK	H2SO4 Volume in mL (VR)	0.000
Work List	Volume Injected in mL (VI)	0.200
16287	Dilution Factor (calculated) (DF)	1.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Blank (C1)	2.6
Matrix	µg of Carbon from Baseline (C2)	2.6
Liquid		
Batch Number		
N/A	µg of Carbon = C1-C2	
Rerun		
N/A	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI	
Sample Prep		
N/A		
Sample #		
Blank		
Instrument Code		
CARB1		
Prepared By		
LMH		
Chemist		
JMM		
Analyst		
KNT		
Date Complete		
02/03/97		
Analysis Date		
01/27/97		
Analysis Time	Method Detection Limit in µg/mL	5.00E+00
05:30 PM		
Sample Point	µg of Carbon	0.00E+00
SY-102 GRAB1		

Data Entered By:

LMH

Date:

02/03/97

Signature of Chemist:

Date:

02/03/97

BLANK.WB1 REV 2.0

344105ML

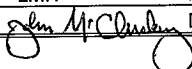
TOC : LA-344-105 (D-1)

LIQUIDS

		STANDARD
Type	Sample Volume in mL (SS)	0.200
STANDARD	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
16287	Dilution Factor (calculated) (DF)	11.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon Found (C1)	58.3
Matrix	µg of Carbon from Baseline (C2)	2.6
LIQUID	Standard Book Number	24N12F
Batch Number	Standard Value (µg/ml)	3000
N/A		
Rerun		
N/A		
Sample Prep		
N/A		
Sample #		
Instrument Code		
CARB1		
Prepared By		
LMH		
Chemist		
RWS		
Analyst		
KNT		
Date Complete		
01/28/97		
Analysis Date		
01/27/97		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
05:30 PM	QC Actual in µg/mL	3.00E+03
Sample Point	QC Found in µg/mL	3.06E+03
SY-102 GRAB1	Percent Standard Recovery	102.1

µg of Carbon/mL = (C1-C2) * DF * DDF / VI

Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI

Data Entered By:	LMH	Date:	01/28/97
Signature of Chemist:		Date:	02/03/97

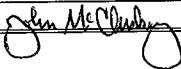
STANDARD.WB1 REV 2.0

344105ML

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

LIQUIDS

		SAMPLE
Type	Sample Volume in mL (SS)	1.000
SAMPLE	H2SO4 Volume in mL (VR)	0.500
Work List	Volume Injected in mL (VI)	0.200
16287	Dilution Factor (calculated) (DF)	1.500
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	41.2
Matrix	µg of Carbon from Baseline (C2)	2.6
LIQUID		
Batch Number		
N/A		
Rerun	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
N/A		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S97T000024-SAM		
Instrument Code		
CARB1		
Prepared By		
LMH		
Chemist		
RWS		
Analyst		
KNT		
Date Complete		
01/28/97		
Analysis Date		
01/27/97		
Analysis Time	Method Detection Limit in µg/mL	7.50E+00
05:30 PM		
Sample Point	µg of Carbon/mL	2.90E+02
SY-102GRAB1		

Data Entered By:	LMH	Date:	01/28/97
Signature of Chemist:		Date:	02/03/97

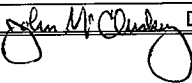
SAMPLE.WB1 REV 2.0

344105ML

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

LIQUIDS

		DUP
Type	Sample Volume in mL (SS)	1.000
DUP	H2SO4 Volume in mL (VR)	0.500
Work List	Volume Injected in mL (VI)	0.200
16287	Dilution Factor (calculated) (DF)	1.500
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	65.6
Matrix	µg of Carbon from Baseline (C2)	2.6
LIQUID	Result from Sample Page	
Batch Number		
N/A		
Rerun	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
N/A		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S97T000024-DUP		
Instrument Code		
CARB1		
Prepared By		
LMH		
Chemist		
RWS		
Analyst		
KNT		
Date Complete		
01/28/97		
Analysis Date		
01/27/97		
Analysis Time	Method Detection Limit in µg/mL	7.50E+00
05:30 PM		
Sample Point	µg of Carbon/mL	4.72E+02
SY-102 GRAB1		

Data Entered By:	LMH	Date:	01/28/97
Signature of Chemist:		Date:	02/03/97

DUP.WB1 REV 2.0

344105ML

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

LIQUIDS

		TRIPL
Type	Sample Volume in mL (SS)	1.000
TRIPL	H2SO4 Volume in mL (VR)	0.500
Work List	Volume Injected in mL (VI)	0.200
16287	Dilution Factor (calculated) (DF)	1.500
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	46.9
Matrix	µg of Carbon from Baseline (C2)	2.6
LIQUID	Result from Sample Page	2.90E+02
Batch Number	Result from Duplicate Page	4.72E+02
Rerun	$\mu\text{g of Carbon/mL} = (C1-C2) * DF * DDF / VI$	
Sample Prep	Method Detection Limit = $1 \mu\text{g C} * DF * DDF / VI$	
Sample #		
S97T000024		
Instrument Code		
TOC01		
Prepared By		
RTS		
Chemist		
JMM		
Analyst		
KNT		
Date Complete		
01/28/97		
Analysis Date		
01/27/97		
Analysis Time	Method Detection Limit in µg/mL	7.50E+00
Sample Point	µg of Carbon/mL	3.32E+02
SY-102 GRAB1		

Data Entered By:	RTS	Date:	01/28/97
Signature of Chemist:	<i>John McQuarrie</i>	Date:	02/03/97

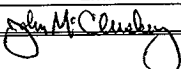
TRIPL.WB1 REV 1.0

344105ML

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

LIQUIDS

		SAMPLE
Type	Sample Volume in mL (SS)	0.500
SAMPLE	H2SO4 Volume in mL (VR)	0.500
Work List	Volume Injected in mL (VI)	0.200
16287	Dilution Factor (calculated) (DF)	2.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	106
Matrix	µg of Carbon from Baseline (C2)	2.6
LIQUID		
Batch Number		
N/A		
Rerun	$\mu\text{g of Carbon/mL} = (C1-C2) * DF * DDF / VI$	
N/A		
Sample Prep	Method Detection Limit = $1 \mu\text{g C} * DF * DDF / VI$	
N/A		
Sample #		
S97T000026-SAM		
Instrument Code		
CARB1		
Prepared By		
LMH		
Chemist		
RWS		
Analyst		
KNT		
Date Complete		
01/28/97		
Analysis Date		
01/27/97		
Analysis Time	Method Detection Limit in µg/mL	1.00E+01
05:30 PM		
Sample Point	µg of Carbon/mL	1.03E+03
SY-102GRAB1		

Data Entered By:	LMH	Date:	01/28/97
Signature of Chemist:		Date:	02/03/97

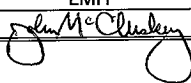
SAMPLE.WB1 REV 2.0

344105ML

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

LIQUIDS

		DUP
Type	Sample Volume in mL (SS)	0.500
DUP	H2SO4 Volume in mL (VR)	0.500
Work List	Volume Injected in mL (VI)	0.200
16287	Dilution Factor (calculated) (DF)	2.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	103.8
Matrix	µg of Carbon from Baseline (C2)	2.6
LIQUID	Result from Sample Page	
Batch Number		
N/A		
Rerun	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
N/A		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S97T000026-DUP		
Instrument Code		
CARB1		
Prepared By		
LMH		
Chemist		
RWS		
Analyst		
KNT		
Date Complete		
01/28/97		
Analysis Date		
01/27/97		
Analysis Time	Method Detection Limit in µg/mL	1.00E+01
05:30 PM		
Sample Point	µg of Carbon/mL	1.01E+03
SY-102 GRAB1		

Data Entered By:	LMH	Date:	01/28/97
Signature of Chemist:		Date:	02/03/97

DUP.WB1 REV 2.0

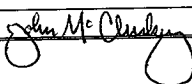
344105ML

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

LIQUIDS

SPIKE

Type	Sample Vial Data		Spiked Vial Data	
SPIKE	Sample Volume in mL (SS)	0.500	Was the sample dilution used? (yes/no)	No
Work List	H2SO4 Volume in mL (VR)	0.500	Sample Volume in mL (SPK SS)	0.400
16287	Volume Injected in mL (VI)	0.200	H2SO4 Volume in mL (SPK VR)	0.200
Test Code	µg of Carbon in Sample (C1)	106	Amount of Spike Std. in mL (SPK VOL)	0.400
TOC-01	µg of Carbon from Baseline (C2)	2.6	Volume Injected in mL (SPK VI)	0.200
Matrix			µg C in Sample + Spike (C3)	313
Liquid			Pre-Spike Dilution Factor (PDF)	1.00
Batch Number			Spike Book Number	23N12C
N/A			Spike Value in µg/ml	753
Rerun				
N/A	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 #				
S97T000026	QC Actual in µg/mL = Spike Value (µg/mL)			
Instrument Code	QC Found in µg/mL = [(C3 - C2)(SPK CF) - (C1-C2)(SAM CF)(SS CF)/(PDF)] / (SPK VOL)			
CARB1	Percent Spike Recovery = (QC Found) / (QC Actual) * 100			
Prepared By				
LMH				
Chemist				
JMM				
Analyst				
KNT				
Date Complete				
02/03/97				
Analysis Date				
01/27/97				
Analysis Time				
05:30 PM	QC Actual in µg/mL		7.53E+02	
Sample Point	QC Found in µg/mL		2.85E+03	
SY-102 GRAB1	Percent Spike Recovery		378.0	

Data Entered By:	LMH	Date:	02/03/97
Signature of Chemist:		Date:	02/03/97

SPIKE.WB1 REV 2.0

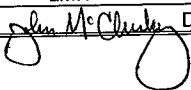
344105ML

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

LIQUIDS

SAMPLE

Type	Sample Volume in mL (SS)	0.200
SAMPLE	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
16287	Dilution Factor (calculated) (DF)	11.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	105.3
Matrix	µg of Carbon from Baseline (C2)	2.6
LIQUID		
Batch Number		
N/A		
Rerun	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
N/A		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S97T000027-SAM		
Instrument Code		
CARB1		
Prepared By		
LMH		
Chemist		
RWS		
Analyst		
KNT		
Date Complete		
01/28/97		
Analysis Date		
01/27/97		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
05:30 PM		
Sample Point	µg of Carbon/mL	5.65E+03
SY-102GRAB1		

Data Entered By:	LMH	Date:	01/28/97
Signature of Chemist:		Date:	02/03/97

SAMPLE.WB1 REV 2.0

344105ML

127

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

LIQUIDS

		DUP
Type	Sample Volume in mL (SS)	0.200
DUP	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
16287	Dilution Factor (calculated) (DF)	11.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	86.9
Matrix	µg of Carbon from Baseline (C2)	2.6
LIQUID	Result from Sample Page	5.65E+03
Batch Number		
Rerun	$\mu\text{g of Carbon/mL} = (C1-C2) * DF * DDF / VI$	
Sample Prep	Method Detection Limit = $1 \mu\text{g C} * DF * DDF / VI$	
Sample #		
S97T000027		
Instrument Code		
TOC01		
Prepared By		
RTS		
Chemist		
JMM		
Analyst		
KNT		
Date Complete		
01/28/97		
Analysis Date		
01/27/97		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
Sample Point	µg of Carbon/mL	4.64E+03
SY-102 GRAB1		

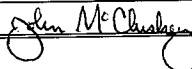
Data Entered By:

RTS

Date:

01/28/97

Signature of Chemist:



Date:

02/04/97

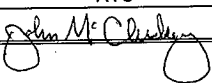
TRIPL.WB1 REV 1.0

344105ML

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

LIQUIDS

		TRIPL
Type	Sample Volume in mL	(SS) 0.200
TRIPL	H2SO4 Volume in mL	(VR) 2.000
Work List	Volume Injected in mL	(VI) 0.200
16287	Dilution Factor (calculated)	(DF) 11.000
Test Code	Digest Dilution Factor	(DDF) 1
TOC-01	µg of Carbon in Sample	(C1) 122.5
Matrix	µg of Carbon from Baseline	(C2) 2.6
LIQUID	Result from Sample Page	5.65E+03
Batch Number	Result from Duplicate Page	4.643+03
Rerun	$\mu\text{g of Carbon/mL} = (C1-C2) * DF * DDF / VI$	
Sample Prep	Method Detection Limit = $1 \mu\text{g C} * DF * DDF / VI$	
Sample #		
S97T000027		
Instrument Code		
TOC01		
Prepared By		
RTS		
Chemist		
JMM		
Analyst		
KNT		
Date Complete		
01/28/97		
Analysis Date		
01/27/97		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
Sample Point	µg of Carbon/mL	6.59E+03
SY-102 GRAB1		

Data Entered By:	RTS	Date:	01/28/97
Signature of Chemist:		Date:	02/04/97

TRIPL.WB1 REV 1.0

344105ML

LABCORE Completed Worklist Report for Worklist# 16286

Analyst: dgg

Instrument: TIC01

Book# _____

Method: LA - 342-100 Rev/Mod E-Ø

Worklist Comment: SY-102 Grab. Std: TICSTD 1.0ml.

new

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0	TIC-02	LIQUID	1	9.4	9.400	ug/mL
2 STD	0	TIC-02	LIQUID	6.02e02	603.2	100.199 % Recovery	
3 SAMPLE	S97T000024 0	TIC-02	LIQUID	N/A	<1.46e+3	5.000	ug/mL
4 DUP	S97T000024 0	TIC-02	LIQUID	<1.46e+3	1.51e+3		RPD
6 DUP	S97T000026 0	TIC-02	LIQUID	371.4	439.3	16.751	RPD
7 SPK	S97T000026 0	TIC-02	LIQUID	6.02e02	562.7	93.472 % Recovery	
8 SAMPLE	S97T000027 0	TIC-02	LIQUID	N/A	4.12e+3	5.000	ug/mL
9 DUP	S97T000027 0	TIC-02	LIQUID	4.19e+3	4.49e+3	6.912	RPD

Comments Section:

Comments for sample# S97T000024 and test TIC-02 .

HAD A PROBLEM WITH CELL TURNING GREEN AND USED SMALLER
SAMPLE SIZES AS A RESULT. SAMPLE COLOR IS A YELLOW LIQUID.

Comments for sample# S97T000027 and test TIC-02 .

SAMPLE IS A BROWN SLUDGE AND COULD NOT PIPETTE.

Final page for worklist# 16286

Analyst Signature _____

Date _____

Analyst Signature _____

Date _____

 8/14/97
Reviewer Signature Date

S97T000026 rejected due to poor QC.
Sample was reanalyzed on worklist
16384.

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.0000	0.0000
BLANK	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	9.4	31.8
16286	µg of Carbon from Baseline (C2)	10	37.5
Test Code			
TIC-02			
Matrix			
LIQUID			
Batch Number			
N/A			
Rerun	µg of Carbon = [C1-C2]		
N/A			
Sample Prep			
N/A			
Sample #			
WL16286-BLK			
Instrument Code			
CARB1			
Prepared By			
LMH			
Chemist			
RWS			
Analyst			
DGG			
Date Complete			
01/26/97			
Analysis Date			
01/25/97			
Analysis Time	Method Detection Limit in µg/mL	5	40
05:00 PM			
Sample Point	µg of Carbon	6.00E-01	5.70E+00
SY-102/GRAB1			

Data Entered By:	LMH	Date:	01/26/97
Signature of Chemist:	<i>RWS</i>	Date:	1/27/97

BLANK.WB1 REV 1.0

342100ML

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	1.0000	0.2000
STANDARD	Dilution Factor (DF)	1	1
Work List	Final Coulometer Reading in μg (C1)	603.2	612.2
16286	μg of Carbon from Baseline (C2)	10	37.5
Test Code	Standard Book Number	25N12A	24N12F
TIC-02	Standard Value ($\mu\text{g}/\text{mL}$)	602	3000

Matrix
LIQUID
Batch Number
N/A
Rerun
N/A
Sample Prep
N/A
Sample #
WL16286-STD
Instrument Code
CARB1
Prepared By
LMH
Chemist
RWS
Analyst
DGG
Date Complete
01/26/97
Analysis Date
01/25/97
Analysis Time
05:00 PM
Sample Point
SY-102/GRAB1

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

TIC	TOC
5	40
6.02E+02	3.00E+03
5.93E+02	2.87E+03
98.5	95.8

Data Entered By:

Signature of Chemist:

LMH

Date: 01/26/97

Date: 1/27/97

STANDARD.WB1 REV 1.0

342100ML

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.2000	0.2000
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	301.6	N/A
16286	µg of Carbon from Baseline (C2)	10	N/A
Test Code			
TIC-02			
Matrix			
LIQUID			
Batch Number			
N/A			
Rerun	µg of Carbon/mL = (C1-C2) * DF / SS		
N/A	µg of Carbon/mL for TIC = 5 if C1 < C2		
Sample Prep	µg of Carbon/mL for TOC = 40 if C1 < C2		
N/A			
Sample #			
S97T000024-SAM			
Instrument Code			
CARB1			
Prepared By			
LMHS			
Chemist			
RWS			
Analyst			
DGG			
Date Complete			
01/26/97			
Analysis Date	NOTE: FOR TOC: The Reported Result is < 40.		
01/25/97			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
05:00 PM		5	40
Sample Point	µg of Carbon/mL Note: <	1.46E+03	0.00E+00
SY-102/GRAB			

Data Entered By:

LMH

Date: 01/26/97

Signature of Chemist:

RWS

Date: 1/27/97

SAMPLE.WB1 REV 1.0

342100ML

133

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.2000	N/A
DUP	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	311.1	N/A
16286	µg of Carbon from Baseline (C2)	10	N/A
Test Code	Known µg of C from Original Sample		
TIC-02			
Matrix			
LIQUID			
Batch Number			
N/A			
Rerun	µg of Carbon/mL = (C1-C2) * DF / SS		
N/A	µg of Carbon/mL for TIC = 5 if C1 < C2		
Sample Prep	µg of Carbon/mL for TOC = 40 if C1 < C2		
N/A			
Sample #			
S97T000024-DUP			
Instrument Code			
CARB1			
Prepared By			
LMH			
Chemist			
RWS			
Analyst			
DGG			
Date Complete			
01/26/97			
Analysis Date	ERR *****	ERR	
01/26/97			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
05:00 PM		5	40
Sample Point	ERR *****	1.51E+03	ERR
SY-102/GRAB1			

Data Entered By:	LMH	Date:	01/26/97
Signature of Chemist:	<i>RWS</i>	Date:	1/27/97

DUP.WB1 REV 1.0

342100ML

134

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.2000	N/A
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	371.4	N/A
16286	µg of Carbon from Baseline (C2)	10	N/A
Test Code			
TIC-02			
Matrix			
LIQUID			
Batch Number			
N/A			
Rerun	µg of Carbon/mL = (C1-C2) * DF / SS		
N/A	µg of Carbon/mL for TIC = 5 if C1 < C2		
Sample Prep	µg of Carbon/mL for TOC = 40 if C1 < C2		
N/A			
Sample #			
S97T000026-SAM			
Instrument Code			
CARB1			
Prepared By			
LMH			
Chemist			
RWS			
Analyst			
DGG			
Date Complete			
01/26/97			
Analysis Date	ERR *****	ERR	
01/26/97			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
05:00 PM		5	40
Sample Point	ERR *****	1.81E+03	ERR
SY-102/GRAB1			

Data Entered By:	LMH	Date:	01/26/97
Signature of Chemist:	<i>DW Schuch</i>	Date:	1/27/97

SAMPLE.WB1 REV 1.0

342100ML

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

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.2000	N/A
DUP	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	439.3	N/A
16286	µg of Carbon from Baseline (C2)	10	N/A
Test Code	Known µg of C from Original Sample		
TIC-02			
Matrix			
SOLID			
Batch Number			
N/A			
Rerun	µg of Carbon/g = (C1-C2) * DF / SS		
N/A	µg of Carbon/g for TIC = 5 if C1 < C2		
Sample Prep	µg of Carbon/g for TOC = 40 if C1 < C2		
N/A			
Sample #			
S97T000026-DUP			
Instrument Code			
CARB1			
Prepared By			
LMH			
Chemist			
RWS			
Analyst			
DGG			
Date Complete			
01/26/97			
Analysis Date	ERR *****	ERR	
01/26/97			
Analysis Time	Method Detection Limit in ug/g	TIC	TOC
05:00 PM		5	40
Sample Point	ERR *****	2.15E+03	ERR
SY-102/GRAB1			

Data Entered By:	LMH	Date:	01/26/97
Signature of Chemist:	<i>RWS</i>	Date:	1/27/97

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

LIQUIDS

Type	Sample Vial Data	TIC	TOC
SPIKE	Sample Volume in mL (SS)	0.2000	N/A
Work List	Final Coulometer Reading in µg (C1)	371.4	N/A
16286	Spiked Vial Data		
Test Code	Sample Volume in mL (SPK SS)	0.2000	N/A
TIC-02	Amount of Spike Std. in mL (SPK VOL)	0.500	N/A
Matrix	Final Coulometer Reading in µg (C2)	562.7	N/A
LIQUID	Spike Book Number	25N12A	N/A
Batch Number	Spike Standard Value in µg/ml (SPK CONC)	602	ERR
N/A			
Rerun			
N/A			
Sample Prep			
N/A			
Sample #	Percent Spike Recovery = (C2 - C1 * (SPK SS) / SS) / ((SPK CONC) * (SPK VOL)) *		
S97T000026-SPK			
Instrument Code	QC Actual in µg/mL = Spike Value (µg/mL)		
CARB1	QC Found in µg/mL = (Percent Spike Recovery)*(QC Actual) / 100		
Prepared By			
LMH			
Chemist			
RWS			
Analyst			
DGG			
Date Complete			
01/02/97			
Analysis Date			
01/26/97			
Analysis Time			
05:00 PM	QC Actual in µg/mL	6.02E+02	ERR
Sample Point	QC Found in µg/mL	3.83E+02	ERR
SY-102/GRAB	Percent Spike Recovery	63.6	ERR

Data Entered By: LMH Date: 01/02/97
 Signature of Chemist: *RWS* Date: 1/27/97

SPIKE.WB1 REV 1.1

342100ML

137

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

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.0677	N/A
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	293.9	N/A
16286	µg of Carbon from Baseline (C2)	10	N/A
Test Code			
TIC-02			
Matrix			
SOLID			
Batch Number			
N/A			
Rerun	µg of Carbon/g = (C1-C2) * DF / SS		
N/A	µg of Carbon/g for TIC = 5 if C1 < C2		
Sample Prep	µg of Carbon/g for TOC = 40 if C1 < C2		
N/A			
Sample #			
S97T000027-SAM			
Instrument Code			
CARB1			
Prepared By			
LMH			
Chemist			
RWS			
Analyst			
DGG			
Date Complete			
01/26/97			
Analysis Date	ERR *****	ERR	
01/26/97			
Analysis Time	Method Detection Limit in ug/g	TIC	TOC
05:00 PM		5	40
Sample Point	ERR *****	4.19E+03	ERR
SY-102/GRAB1			

Data Entered By:	LMH	Date:	01/26/97
Signature of Chemist:	<i>RWS</i>	Date:	1/27/97

SAMPLE.WB1 REV 1.0

342100ML

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

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.0666	N/A
DUP	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	309.3	N/A
16286	µg of Carbon from Baseline (C2)	10	N/A
Test Code	Known µg of C from Original Sample		
TIC-02			
Matrix			
SOLID			
Batch Number			
N/A			
Rerun	µg of Carbon/g = (C1-C2) * DF / SS		
N/A	µg of Carbon/g for TIC = 5 if C1 < C2		
Sample Prep	µg of Carbon/g for TOC = 40 if C1 < C2		
N/A			
Sample #			
S97T000027-DUP			
Instrument Code			
CARB1			
Prepared By			
LMH			
Chemist			
RWS			
Analyst			
DGG			
Date Complete			
01/26/97			
Analysis Date	ERR *****	ERR	
01/26/97			
Analysis Time	Method Detection Limit in ug/g	TIC	TOC
05:00 PM		5	40
Sample Point	ERR *****	4.49E+03	ERR
SY-102/GRAB1			

Data Entered By:

LMH

Date: 01/26/97

Signature of Chemist:

RWS

Date: 1/27/97

DUP.WB1 REV 1.0

342100ML

139

LABCORE Data Entry Template for Worklist# 16286

Analyst: DBS Instrument: TIC01 _____ Book# TIC 25N12-A
Method: LA-342-100 Rev/Mod E-0 TIC 24N12-F

Worklist Comment: SY-102 Grab. Std: TICSTD 1.0ml. new

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK			TIC-02	LIQUID		
2 STD			TIC-02	LIQUID		
3 SAMPLE	S97T000024 0		TIC-02	LIQUID	97000022	SY-102 GRAB1
	Analytes Requested: TIC-02					
4 DUP	S97T000024 0		TIC-02	LIQUID		
5 SAMPLE	S97T000026 0		TIC-02	LIQUID	97000022	SY-102 GRAB1
	Analytes Requested: TIC-02					
6 DUP	S97T000026 0		TIC-02	LIQUID		
7 SPK	S97T000026 0		TIC-02	LIQUID		
8 SAMPLE	S97T000027 0		TIC-02	LIQUID	97000022	SY-102 GRAB1
	Analytes Requested: TIC-02					
9 DUP	S97T000027 0		TIC-02	LIQUID		

Final page for worklist # 16286

1-25-97 DBS
Analyst Signature Date

[Signature] 1-27-97
Analyst Signature Date

Data Entry Comments:

had a bad problem with cell turning
green. went to smaller sample sizes.
Sample #s S97T000024 + 26 are yellow LIQ, S97T000027 is a brown sludge &
S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code. CANNOT pipette.

#2

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASELINE

Date: 01/25/97

Time: 09:22:47

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

Analyst : DG GRIFFIN
 Min Readings = 22
 Max Readings = 22
 % Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	0.80	50.00
3	1.51	1.30	38.46
4	2.00	1.90	31.58
5	2.50	2.50	24.00
6	3.00	3.00	16.67
7	3.50	3.50	14.29
8	4.00	4.00	12.50
9	4.50	4.50	11.11
10	5.00	5.00	10.00
11	5.50	5.40	7.41
12	6.00	5.80	6.90
13	6.50	6.20	6.45
14	7.00	6.70	7.46
15	7.50	7.10	5.63
16	8.00	7.60	6.58
17	8.50	8.00	5.00
18	9.00	8.50	5.88
19	9.50	8.80	3.41
20	10.00	9.30	5.38
21	10.50	9.60	3.13
22	11.00	10.00	4.00

BLANK VALUE = 10 micrograms carbon

BLANK FACTOR = 10 / 10.99884 =

+9.09E-01 ug/min Carbon

Sample Run By:

DG Griffin 1/27/97
 For DG Griffin
 DG GRIFFIN 00000

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
 COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 141 TO 153.

#2

HNF-SD-WM-DP-227, REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASELINE

Date: 01/25/97

Time: 09:42:45

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

Analyst : DG GRIFFIN
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.20	0.00
2	1.01	0.70	71.43
3	1.50	3.40	79.41
4	2.00	10.50	67.62
5	2.50	17.70	40.68
6	3.00	23.30	24.03
7	3.50	27.10	14.02
8	4.00	28.70	5.57
9	4.50	30.00	4.33
10	5.00	30.70	2.28
11	5.50	31.40	2.23
12	6.00	32.40	3.09
13	6.50	33.20	2.41
14	7.00	33.70	1.48
15	7.50	34.30	1.75
16	8.00	34.70	1.15
17	8.50	35.30	1.70
18	9.00	35.70	1.12
19	9.50	36.10	1.11
20	10.00	36.60	1.37
21	10.50	37.10	1.35
22	11.00	37.50	1.07

BLANK VALUE = 37.5 micrograms carbon

BLANK FACTOR = 37.5 / 10.99799 =

+3.41E+00 ug/min Carbon

<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

DG GRIFFIN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD 25N12-A Date: 01/25/97 Time: 10:38:45

Sample Size = 1000 uL

Dil Factor = 1

Blank ID # =

Blank Value = .909 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	0.60	100.00
3	1.51	18.00	96.67
4	2.00	111.00	83.78
5	2.50	258.90	57.13
6	3.00	397.00	34.79
7	3.50	493.50	19.55
8	4.00	551.50	10.52
9	4.50	582.90	5.39
10	5.00	593.30	1.75
11	5.50	596.90	0.60
12	6.00	598.00	0.18
13	6.50	598.90	0.15
14	7.00	599.40	0.08
15	7.50	599.90	0.08
16	8.00	600.50	0.10
17	8.50	601.00	0.08
18	9.00	601.40	0.07
19	9.50	601.90	0.08
20	10.00	602.30	0.07
21	10.50	602.80	0.08
22	11.00	603.20	0.07

USER INPUT BLANK VALUE

BLANK VALUE = 9.997169 micrograms carbon

BLANK FACTOR = 9.997169 / 10.99799 = +9.1E-01 ug/min Carbon

SAMPLE RESULTS:

(603.2 - 9.996225) (1)/(1000) = +5.932E-01 g/L Carbon
(603.2 - 9.996225) (1)/(1000) (12) = +4.943E-02 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD 24N12-F

Date: 01/25/97

Time: 10:53:15

Sample Size = ~~1-^{0.8A}ul~~ 200ul
Dil Factor = 1
Blank ID # =
Blank Value = 3.41 ug/minute C

Analyst : DG GRIFFIN
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference
1	0.51	0.20	0.00
2	1.01	0.70	71.43
3	1.50	4.20	83.33
4	2.00	22.50	81.33
5	2.51	98.20	77.09
6	3.01	275.60	64.37
7	3.51	462.20	40.37
8	4.00	548.60	15.75
9	4.50	587.60	6.64
10	5.00	600.00	2.07
11	5.50	603.80	0.63
12	6.00	605.40	0.26
13	6.50	606.60	0.20
14	7.00	607.50	0.15
15	7.50	608.30	0.13
16	8.00	609.00	0.11
17	8.50	609.50	0.08
18	9.00	610.10	0.10
19	9.50	610.70	0.10
20	10.00	611.30	0.10
21	10.50	611.70	0.07
22	11.00	612.20	0.08

USER INPUT BLANK VALUE

BLANK VALUE = 37.50313 micrograms carbon

BLANK FACTOR = 37.50313 / 10.99799 = +3.4E+00 ug/min Carbon

SAMPLE RESULTS:

(612.2 - 37.50272) (1) / ²⁰⁰~~(1)~~ 0.60 =
^{2.8735E+L}
^{36E+5} 5.747E+02

(612.2 - 37.50272) (1) / (1) (12) =

+4.789E+01 g/L Carbon

<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>

Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLANK

Date: 01/25/97

Time: 11:14:00

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .909 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference
1	0.51	0.30	0.00
2	1.01	0.70	57.14
3	1.51	1.30	46.15
4	2.00	1.70	23.53
5	2.50	2.30	26.09
6	3.00	2.80	17.86
7	3.50	3.20	12.50
8	4.00	3.70	13.51
9	4.50	4.10	9.76
10	5.00	4.60	10.87
11	5.50	4.90	6.12
12	6.00	5.30	7.55
13	6.50	5.70	7.02
14	7.00	6.10	6.56
15	7.50	6.50	6.15
16	8.00	6.90	5.80
17	8.50	7.30	5.48
18	9.00	7.70	5.19
19	9.50	8.20	6.10
20	10.00	8.60	4.65
21	10.50	8.90	3.37
22	11.00	9.40	5.32

USER INPUT BLANK VALUE

BLANK VALUE = 9.997169 micrograms carbon

BLANK FACTOR = 9.997169 / 10.99799 = +9.1E-01 ug/min Carbon

SAMPLE RESULTS:

(9.4 - 9.997946) (1)/(1) =

< 5.00 E-3 g/L Carbon

(9.4 - 9.997946) (1)/(1)(12) =

< 4.17 E-4 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLANK

Date: 01/25/97

Time: 11:55:45

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.41 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
  1          0.51          1.40          0.00
  2          1.01          2.20         36.36
  3          1.51          7.50         70.67
  4          2.00         15.00        50.00
  5          2.50         20.30        26.11
  6          3.00         22.80        10.96
  7          3.51         23.90         4.60
  8          4.00         24.70         3.24
  9          4.50         25.50         3.14
 10          5.00         26.00         1.92
 11          5.50         26.50         1.89
 12          6.00         27.00         1.85
 13          6.50         27.60         2.17
 14          7.00         27.90         1.08
 15          7.50         28.50         2.11
 16          8.00         28.90         1.38
 17          8.50         29.40         1.70
 18          9.00         29.90         1.67
 19          9.50         30.40         1.64
 20         10.00         30.90         1.62
 21         10.50         31.30         1.28
 22         11.00         31.80         1.57

```

USER INPUT BLANK VALUE

BLANK VALUE = 37.50313 micrograms carbon

BLANK FACTOR = 37.50313 / 10.99799 = +3.4E+00 ug/min Carbon

SAMPLE RESULTS:

```

( 31.8 - 37.50334 ) (1)/(1) = < 5.00 E-3 g/L Carbon
( 31.8 - 37.50334 ) (1)/(1) (12) = < 4.17 E-4 Molar Carbon
<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>

```

Sample Run By:

DG GRIFFIN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T000024

Date: 01/25/97

Time: 13:38:57

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .909 ug/minute C

Analyst : DG GRIFFIN

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	21.60	94.91
4	2.00	96.50	77.62
5	2.50	178.70	46.00
6	3.00	233.10	23.34
7	3.50	263.40	11.50
8	4.00	275.30	4.32
9	4.50	280.70	1.92
10	5.00	284.30	1.27
11	5.50	286.60	0.80
12	6.00	288.70	0.73
13	6.50	290.60	0.65
14	7.00	292.40	0.62
15	7.50	293.70	0.44
16	8.00	295.00	0.44
17	8.50	296.50	0.51
18	9.00	297.60	0.37
19	9.50	298.60	0.33
20	10.00	299.60	0.33
21	10.50	300.80	0.40
22	11.00	301.60	0.27

USER INPUT BLANK VALUE

BLANK VALUE = 9.997169 micrograms carbon

BLANK FACTOR = 9.997169 / 10.99799 = +9.1E-01 ug/min Carbon

SAMPLE RESULTS:

(301.6 - 9.995504) (1)/(1) = +2.916E+02 g/L Carbon
 (301.6 - 9.995504) (1)/(1) (12) = +2.430E+01 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T000024DUP

Date: 01/25/97

Time: 13:54:08

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .909 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference
1	0.51	1.00	0.00
2	1.01	2.00	50.00
3	1.50	21.60	90.74
4	2.00	97.00	77.73
5	2.50	180.10	46.14
6	3.00	235.90	23.65
7	3.50	266.40	11.45
8	4.00	279.20	4.58
9	4.50	285.30	2.14
10	5.00	289.10	1.31
11	5.50	292.50	1.16
12	6.00	294.80	0.78
13	6.50	296.80	0.67
14	7.00	299.00	0.74
15	7.50	301.10	0.70
16	8.00	302.80	0.56
17	8.50	304.20	0.46
18	9.00	306.00	0.59
19	9.50	307.00	0.33
20	10.00	308.40	0.45
21	10.50	309.90	0.48
22	11.00	311.10	0.39

USER INPUT BLANK VALUE

BLANK VALUE = 9.997169 micrograms carbon

BLANK FACTOR = 9.997169 / 10.99799 = +9.1E-01 ug/min Carbon

SAMPLE RESULTS:

(311.1 - 9.998667) (1)/(1)	=	+3.011E+02	g/L Carbon
(311.1 - 9.998667) (1)/(1) (12)	=	+2.509E+01	Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T000026

Date: 01/25/97

Time: 14:10:10

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .909 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.70	0.00
2	1.01	1.70	58.82
3	1.50	25.10	93.23
4	2.00	100.70	75.07
5	2.50	185.00	45.57
6	3.00	248.90	25.67
7	3.50	289.20	13.93
8	4.00	309.70	6.62
9	4.50	320.30	3.31
10	5.00	327.90	2.32
11	5.50	334.40	1.94
12	6.00	339.30	1.44
13	6.50	344.50	1.51
14	7.00	348.90	1.26
15	7.50	352.80	1.11
16	8.00	356.10	0.93
17	8.50	359.50	0.95
18	9.00	362.30	0.77
19	9.50	364.30	0.55
20	10.00	366.80	0.68
21	10.50	369.10	0.62
22	11.00	371.40	0.62

USER INPUT BLANK VALUE

BLANK VALUE = 9.997169 micrograms carbon

BLANK FACTOR = 9.997169 / 10.99799 = +9.1E-01 ug/min Carbon

SAMPLE RESULTS:

(371.4 - 9.996282) (1)/(1)	=	+3.614E+02	g/L Carbon
(371.4 - 9.996282) (1)/(1) (12)	=	+3.012E+01	Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T000026DUP

Date: 01/25/97

Time: 15:12:10

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .909 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	1.00	0.00
2	1.01	7.00	85.71
3	1.51	75.10	90.68
4	2.01	173.10	56.61
5	2.50	243.00	28.77
6	3.00	284.40	14.56
7	3.50	309.10	7.99
8	4.00	326.50	5.33
9	4.50	341.50	4.39
10	5.00	354.50	3.67
11	5.50	366.50	3.27
12	6.00	376.60	2.68
13	6.50	385.80	2.38
14	7.00	394.00	2.08
15	7.50	401.50	1.87
16	8.00	408.60	1.74
17	8.50	414.30	1.38
18	9.00	420.50	1.47
19	9.50	425.50	1.18
20	10.00	430.40	1.14
21	10.50	435.00	1.06
22	11.00	439.30	0.98

USER INPUT BLANK VALUE

BLANK VALUE = 9.997169 micrograms carbon

BLANK FACTOR = 9.997169 / 10.99799 = +9.1E-01 ug/min Carbon

SAMPLE RESULTS:

(439.3 - 9.998722) (1)/(1)	=	+4.293E+02	g/L Carbon
(439.3 - 9.998722) (1)/(1) (12)	=	+3.578E+01	Molar Carbon

Sample Run By:

DG GRIFFIN

00000

#2

HNF-SD-WM-DP-227, REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T000026SPK

Date: 01/25/97

Time: 15:51:57

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .909 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference
1	0.51	3.70	0.00
2	1.01	6.90	46.38
3	1.51	19.20	64.06
4	2.00	106.00	81.89
5	2.50	240.10	55.85
6	3.00	354.00	32.18
7	3.50	425.40	16.78
8	4.00	465.30	8.58
9	4.50	484.20	3.90
10	5.00	494.90	2.16
11	5.50	502.70	1.55
12	6.00	509.70	1.37
13	6.50	516.30	1.28
14	7.00	522.10	1.11
15	7.50	527.70	1.06
16	8.00	533.30	1.05
17	8.50	538.80	1.02
18	9.00	543.60	0.88
19	9.50	548.70	0.93
20	10.00	553.50	0.87
21	10.50	558.20	0.84
22	11.00	562.70	0.80

USER INPUT BLANK VALUE

BLANK VALUE = 9.997169 micrograms carbon

BLANK FACTOR = 9.997169 / 10.99799 = +9.1E-01 ug/min Carbon

SAMPLE RESULTS:

(562.7 - 9.997003) (1)/(1)	=	+5.527E+02	g/L Carbon
(562.7 - 9.997003) (1)/(1)(12)	=	+4.606E+01	Molar Carbon

Sample Run By:

DG GRIFFIN

00000

HNF-SD-WM-DP-227, REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T000027

Date: 01/25/97

Time: 16:12:15

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .909 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
  1          0.51          4.00          0.00
  2          1.01          7.10         43.66
  3          1.51         14.30         50.35
  4          2.00         50.00         71.40
  5          2.50        103.40         51.64
  6          3.00        153.70         32.73
  7          3.50        189.70         18.98
  8          4.00       211.70         10.39
  9          4.50       224.50          5.70
 10          5.00       233.20          3.73
 11          5.50       240.50          3.04
 12          6.00       246.40          2.39
 13          6.50       251.90          2.18
 14          7.00       257.30          2.10
 15          7.50       262.40          1.94
 16          8.00       267.30          1.83
 17          8.50       271.70          1.62
 18          9.00       276.50          1.74
 19          9.50       280.80          1.53
 20         10.00       284.90          1.44
 21         10.50       289.20          1.49
 22         11.00       293.90          1.60

```

USER INPUT BLANK VALUE

BLANK VALUE = 9.997169 micrograms carbon

BLANK FACTOR = 9.997169 / 10.99799 = +9.1E-01 ug/min Carbon

SAMPLE RESULTS:

```

( 293.9 - 9.995338 ) (1)/(1) = +2.839E+02 g/L Carbon
( 293.9 - 9.995338 ) (1)/(1)(12) = +2.366E+01 Molar Carbon

```

Sample Run By:

DG GRIFFIN

00000

#2

HNF-SD-WM-DP-227, REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT TICTOC REV 2.0

Sample: S97T000027DUP

Date: 01/25/97

Time: 16:51:32

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .909 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	3.10	0.00
2	1.01	6.30	50.79
3	1.51	13.80	54.35
4	2.00	52.20	73.56
5	2.50	113.40	53.97
6	3.00	170.90	33.65
7	3.50	212.50	19.58
8	4.00	236.90	10.30
9	4.50	250.40	5.39
10	5.00	259.30	3.43
11	5.50	265.80	2.45
12	6.00	271.00	1.92
13	6.50	275.60	1.67
14	7.00	280.50	1.75
15	7.50	284.20	1.30
16	8.00	288.30	1.42
17	8.50	291.80	1.20
18	9.00	295.80	1.35
19	9.50	299.20	1.14
20	10.00	302.60	1.12
21	10.50	306.00	1.11
22	11.00	309.30	1.07

USER INPUT BLANK VALUE

BLANK VALUE = 9.997169 micrograms carbon

BLANK FACTOR = 9.997169 / 10.99799 = +9.1E-01 ug/min Carbon

SAMPLE RESULTS:

(309.3 - 9.997169) (1) / (1)	=	+2.993E+02	g/L Carbon
(309.3 - 9.997169) (1) / (1) (12)	=	+2.494E+01	Molar Carbon

Sample Run By:

DG GRIFFIN

00000

LABCORE Completed Worklist Report for Worklist# 16384

Analyst: slh Instrument: TIC01 Book# TIC 25N12A

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

Worklist Comment: SY-102 Grab. Run per procedure. Std: 1.0ml. new

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0	TIC-02	LIQUID	1	3.00e-1	0.100	ug/mL
2 STD	0	TIC-02	LIQUID	6.02e02	5.97e2	99.169 % Recovery	
3 SAMPLE	S97T000026 0	TIC-02	LIQUID	N/A	1.48e3	5.000	ug/mL
4 DUP	S97T000026 0	TIC-02	LIQUID	1.48e3	1.51e3	2.007 RPD	
5 SPR	S97T000026 0	TIC-02	LIQUID	100	100.7	100.700 % Recovery	

Comments Section:

Comments for sample# S97T000026 and test TIC-02
HAD TO GO TO SMALLER SAMPLE SIZES DUE TO CELL TURNING GREEN
AND COLOR OF SAMPLE WAS YELLOW LIQUID.

Final page for worklist# 16384

See attached
Analyst Signature _____ Date _____

See attached
Analyst Signature _____ Date _____

Validated into Labcore by John McCluskey 02/05/97
Reviewer Signature _____ Date _____

LABCORE Data Entry Template for Worklist# 16384

Analyst: slh Instrument: TIC01 Book # Tic 25A12A

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

Worklist Comment: SY-102 Grab. Run per procedure. Std: 1.0ml. new

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK			TIC-02	LIQUID		<u>3.08^{e1}</u>	<u>N/A</u>	ug/mL
		2 STD			TIC-02	LIQUID	<u>6.02^{e2}</u>	<u>5.97^{e2}</u>	<u>N/A</u>	ug/mL
97000022	SY-102 GRAB1	3 SAMPLE	S97T000026	0	TIC-02	LIQUID	<u>N/A</u>	<u>1.48^{e3}</u>		ug/mL
97000022	SY-102 GRAB1	4 DUP	S97T000026	0	TIC-02	LIQUID	<u>1.48^{e3}</u>	<u>1.51^{e3}</u>	<u>N/A</u>	ug/mL
97000022	SY-102 GRAB1	5 SPK	S97T000026	0	TIC-02	LIQUID	<u>100</u>	<u>100.7</u>	<u>N/A</u>	ug/mL

Final page for worklist # 16384

See Attached Print
Analyst Signature Date

slh 5-3-97
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.

01/28/97 09:47
A-0004-1

HNFS-D-WM-DP-227, REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 16384

Analyst: SLH Instrument: TIC01 _____ Book# TIC 25N12-A
DOC 24N12 F 31H
Method: LA-342-100 Rev/Mod E-0 1-29-97

Worklist Comment: SY-102 Grab. Run per procedure. Std: 1.0ml. new

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK			TIC-02	LIQUID		
2 STD			TIC-02	LIQUID		
3 SAMPLE	S97T000026 0		TIC-02	LIQUID	97000022	SY-102 GRAB1
	Analytes Requested: TIC-02					
4 DUP	S97T000026 0		TIC-02	LIQUID		
5 SPK	S97T000026 0		TIC-02	LIQUID		

Final page for worklist # 16384

Sandra Wood Beahm
Analyst Signature Date
1-29-97

Analyst Signature Date

Data Entry Comments:

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

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD 2

Date: 01/29/97

Time: 11:02:18

Sample Size = 1000 uL

Analyst : SL HOOD

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = .9 ug/minute C

% Difference = 10

== Reading ==	Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	1.10	81.82
3	1.50	1.70	35.29
4	2.00	2.50	32.00
5	2.50	19.30	87.05
6	3.00	79.20	75.63
7	3.50	178.10	55.53
8	4.00	294.30	39.48
9	4.50	398.50	26.15
10	5.00	481.30	17.20
11	5.50	536.30	10.26
12	6.00	568.90	5.73
13	6.50	587.10	3.10
14	7.00	595.70	1.44
15	7.50	600.00	0.72
16	8.00	602.40	0.40
17	8.50	603.80	0.23
18	9.00	604.70	0.15
19	9.50	605.30	0.10
20	10.00	606.00	0.12
21	10.50	606.50	0.08
22	11.00	607.00	0.08

USER INPUT BLANK VALUE

BLANK VALUE = 9.899835 micrograms carbon

BLANK FACTOR = 9.899835 / 10.99982 = +9.0E-01 ug/min Carbon

SAMPLE RESULTS:

(607 - 9.898077) (1)/(1000)	=	+5.971E-01	g/L Carbon
(607 - 9.898077) (1)/(1000) (12)	=	+4.976E-02	Molar Carbon

Sample Run By:

SL HOOD

00002

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 157 TO 167

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASE 2

Date: 01/29/97

Time: 08:10:24

Sample Size = 1 uL

Analyst : SL HOOD

Dil Factor = 1

Min Readings = 22

Blank ID # = BASE 2

Max Readings = 22

Blank Value = N/A

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	0.50	80.00
3	1.51	1.20	58.33
4	2.01	2.00	40.00
5	2.50	2.90	31.03
6	3.00	3.40	14.71
7	3.50	3.90	12.82
8	4.00	4.30	9.30
9	4.50	4.80	10.42
10	5.00	5.20	7.69
11	5.50	5.50	5.45
12	6.00	5.90	6.78
13	6.50	6.30	6.35
14	7.00	6.70	5.97
15	7.50	7.10	5.63
16	8.00	7.50	5.33
17	8.50	7.90	5.06
18	9.00	8.40	5.95
19	9.50	8.70	3.45
20	10.00	9.00	3.33
21	10.50	9.50	5.26
22	11.00	9.90	4.04

BLANK VALUE = 9.9 micrograms carbon

BLANK FACTOR = 9.9 / 10.99969 =

+9.0E-01

ug/min Carbon

Sample Run By:

SL HOOD

00002

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK 2

Date: 01/29/97

Time: 12:48:33

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .9 ug/minute C

Analyst : SL HOOD

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.00	0.00
2	1.01	0.30	100.00
3	1.50	1.10	72.73
4	2.00	1.60	31.25
5	2.50	2.30	30.43
6	3.00	2.70	14.81
7	3.50	3.40	20.59
8	4.00	3.70	8.11
9	4.50	4.40	15.91
10	5.00	4.80	8.33
11	5.50	5.20	7.69
12	6.00	5.70	8.77
13	6.50	6.10	6.56
14	7.00	6.50	6.15
15	7.50	6.90	5.80
16	8.00	7.30	5.48
17	8.50	7.80	6.41
18	9.00	8.10	3.70
19	9.50	8.40	3.57
20	10.00	8.90	5.62
21	10.50	9.30	4.30
22	11.00	9.60	3.13

USER INPUT BLANK VALUE

BLANK VALUE = 9.899835 micrograms carbon

BLANK FACTOR = 9.899835 / 10.99982 = +9.0E-01 ug/min Carbon

SAMPLE RESULTS:

(9.6 - 9.896429) (1)/(1) =

< 5.00 E-3 g/L Carbon

(9.6 - 9.896429) (1)/(1) (12) =

< 4.17 E-4 Molar Carbon

Sample Run By:

SL HOOD

00002

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T00026

Date: 01/29/97

Time: 13:08:15

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .9 ug/minute C

Analyst : SL HOOD

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Time	Coulometer	% Difference ==
1	0.51	0.00	0.00
2	1.01	0.00	0.00
3	1.51	0.00	0.00
4	2.01	0.00	0.00
5	2.51	0.80	100.00
6	3.00	13.70	94.16
7	3.50	38.60	64.51
8	4.00	68.70	43.81
9	4.50	98.80	30.47
10	5.00	121.90	18.95
11	5.50	135.50	10.04
12	6.00	144.40	6.16
13	6.50	148.90	3.02
14	7.00	151.80	1.91
15	7.50	153.60	1.17
16	8.00	154.60	0.65
17	8.50	155.20	0.39
18	9.00	155.70	0.32
19	9.50	156.30	0.38
20	10.00	156.80	0.32
21	10.50	157.30	0.32
22	11.00	158.10	0.51

USER INPUT BLANK VALUE

BLANK VALUE = 9.899835 micrograms carbon

BLANK FACTOR = 9.899835 / 10.99982 = +9.0E-01 ug/min Carbon

SAMPLE RESULTS:

(158.1 - 9.898956) (1)/(1) =

+1.482E+02 g/L Carbon

(158.1 - 9.898956) (1)/(1) (12) =

+1.235E+01 Molar Carbon

Sample Run By:

SL HOOD

00002

55 .100 ml -
.1099g

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T0026 DUP

Date: 01/29/97

Time: 13:24:58

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .9 ug/minute C

Analyst : SL HOOD

Min Readings = 22

Max Readings = 22

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
 1          0.51          0.00          0.00
 2          1.01          0.00          0.00
 3          1.51          0.00          0.00
 4          2.00          0.00          0.00
 5          2.50          1.10         100.00
 6          3.00          13.90         92.09
 7          3.50          40.60         65.76
 8          4.00          72.50         44.00
 9          4.50         100.40         27.79
10          5.00         122.50         18.04
11          5.50         138.10         11.30
12          6.00         146.70          5.86
13          6.50         152.00          3.49
14          7.00         154.40          1.55
15          7.50         156.10          1.09
16          8.00         157.40          0.83
17          8.50         158.30          0.57
18          9.00         158.80          0.31
19          9.50         159.40          0.38
20         10.00         159.90          0.31
21         10.50         160.60          0.44
22         11.00         161.00          0.25

```

USER INPUT BLANK VALUE

BLANK VALUE = 9.899835 micrograms carbon

BLANK FACTOR = 9.899835 / 10.99982 = +9.0E-01 ug/min Carbon

SAMPLE RESULTS:

(161 - 9.898956) (1)/(1) =

+1.511E+02 g/L Carbon

(161 - 9.898956) (1)/(1)(12) =

+1.259E+01 Molar Carbon

Sample Run By:

SL HOOD

00002

SS .100ml =
.1097g

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T0026 SPK

Date: 01/29/97

Time: 13:37:43

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .9 ug/minute C

Analyst : SL HOOD

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	0.00	0.00
3	1.51	0.00	0.00
4	2.00	0.10	100.00
5	2.50	9.00	98.89
6	3.00	53.30	83.11
7	3.50	135.60	60.69
8	4.00	232.30	41.63
9	4.50	314.30	26.09
10	5.00	375.20	16.23
11	5.50	413.80	9.33
12	6.00	435.00	4.87
13	6.50	446.20	2.51
14	7.00	451.80	1.24
15	7.50	454.80	0.66
16	8.00	456.30	0.33
17	8.50	457.70	0.31
18	9.00	458.40	0.15
19	9.50	459.30	0.20
20	10.00	459.90	0.13
21	10.50	460.70	0.17
22	11.00	461.20	0.11

USER INPUT BLANK VALUE

BLANK VALUE = 9.899835 micrograms carbon

BLANK FACTOR = 9.899835 / 10.99982 = +9.0E-01 ug/min Carbon

SAMPLE RESULTS:

(461.2 - 9.897308) (1)/(1) =

+4.513E+02 g/L Carbon

(461.2 - 9.897308) (1)/(1) (12) =

+3.761E+01 Molar Carbon

Sample Run By:

SL HOOD

00002

SS .100 =
.1104g

.500 ml 25712-A

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.0000	
BLANK	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	9.6	
16384	µg of Carbon from Baseline (C2)	9.9	
Test Code			
TIC-02			
Matrix			
LIQUID			
Batch Number			
Rerun	µg of Carbon = C1-C2		
Sample Prep			
Sample #			
BLNK			
Instrument Code			
TIC01			
Prepared By			
RTS			
Chemist			
RWS			
Analyst			
SLH			
Date Complete			
02/03/97			
Analysis Date			
01/29/97			
Analysis Time	Method Detection Limit in µg/mL	TIC 5	TOC 40
Sample Point	µg of Carbon	3.00E-01	
SY-102			

Data Entered By:	RTS	Date:	02/03/97
Signature of Chemist:	<i>John M. Clarkson</i>	Date:	02/05/97

BLANK.WB1 REV 1.0

342100ML

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

LIQUIDS

Type	Sample Size in mL (SS)	TIC	TOC
STANDARD	Dilution Factor (DF)	1.0000	
Work List	Final Coulometer Reading in µg (C1)	1	1
16384	µg of Carbon from Baseline (C2)	607	
Test Code	Standard Book Number	9.9	
TIC-02	Standard Value (µg/ml)	25N12A	
Matrix		602	
LIQUID			
Batch Number			
Rerun			
Sample Prep	QC Actual in µg/mL = Standard Value (µg/mL)		
	QC Found in µg/mL = (C1 - C2) * DF / SS		
Sample #	QC Found in µg/mL for TIC = 5 if C1 < C2		
STD	QC Found in µg/mL for TOC = 40 if C1 < C2		
Instrument Code	% Recovery = QC Found / QC Actual * 100		
TIC01			
Prepared By			
RTS			
Chemist			
RWS			
Analyst			
SLH			
Date Complete			
02/03/97			
Analysis Date	NOTE: FOR TOC: The Reported Result is < 40.		
01/29/97			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
	QC Actual in µg/mL	5	40
Sample Point	QC Found in µg/mL See Note: <	6.02E+02	
SY-102	Percent Standard Recovery	5.97E+02	
		99.2	

Data Entered By:	RTS	Date: 02/03/97
Signature of Chemist:	<i>John M. Clush</i>	Date: 02/05/97

STANDARD.WB1 REV 1.0

342100ML

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

LIQUIDS

Type	Sample Size in mL	(SS)	TIC	TOC
SAMPLE	Dilution Factor	(DF)	0.1000	
Work List	µg of Carbon in Sample	(C1)	1	1
16384	µg of Carbon from Baseline	(C2)	158.1	
Test Code			9.9	
TIC-02				
Matrix				

LIQUID

Batch Number

Rerun

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

Sample/Prep

Sample #

S97T000026

Instrument Code

TIC01

Prepared By

RTS

Chemist

RWS

Analyst

SLH

Date Complete

02/03/97

Analysis Date

01/29/97

Analysis Time

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

Method Detection Limit in µg/mL

TIC

TOC

5

40

Sample Point

µg of Carbon/mL

Note:

< 1.48E+03

SY-102 GRAB

Data Entered By:	RTS	Date:	02/03/97
Signature of Chemist:	<i>John M. Cleverley</i>	Date:	02/05/97

SAMPLE.WB1 REV 1.0

342100ML

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

LIQUIDS

Type	Sample Size in mL	(SS)	TIC	TOC
SAMPLE/DUP	Dilution Factor	(DF)	0.1000	
Work List	µg of Carbon in Sample	(C1)	1	1
16384	µg of Carbon from Baseline	(C2)	161	
Test Code			9.9	
TIC-02				
Matrix				

LIQUID

Batch Number

Rerun

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

Sample Prep

Sample #

S97T000026

Instrument Code

TIC01

Prepared By

RTS

Chemist

RWS

Analyst

SLH

Date Complete

02/03/97

Analysis Date

01/29/97

Analysis Time

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

Method Detection Limit in µg/mL

TIC

TOC

5

40

Sample Point

µg of Carbon/mL

Note:

< 1.51E+03

SY-102 GRAB

Data Entered By:	RTS	Date:	02/03/97
Signature of Chemist:	<i>John McCloskey</i>	Date:	02/05/97

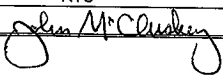
SAMPLE.WB1 REV 1.0

342100ML

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

LIQUIDS

Type	Sample Vial Data	TIC	TOC
SPIKE	Sample Volume in mL (SS)	0.1000	
Work List	Final Coulometer Reading in µg (C1)	158.1	
16384	Spiked Vial Data		
Test Code	Sample Volume in mL (SPK SS)	0.1000	
TIC-02	Amount of Spike Std. in mL (SPK VOL)	0.500	
Matrix	Final Coulometer Reading in µg (C2)	461.2	
LIQUID	Spike Book Number	25N12A	
Batch Number	Spike Standard Value in µg/ml (SPK CONC)	602	
Rerun			
Sample Prep			
Sample #	Percent Spike Recovery = (C2 - C1 * (SPK SS) / SS) / ((SPK CONC) * (SPK VOL)) * 10		
S97T000026			
Instrument Code	QC Actual in µg/mL = Spike Value (µg/mL)		
TIC01	QC Found in µg/mL = (Percent Spike Recovery)*(QC Actual) / 100		
Prepared By			
RTS			
Chemist			
RWS			
Analyst			
SLH			
Date Complete			
02/03/97			
Analysis Date			
01/29/97			
Analysis Time			
	QC Actual in µg/mL	6.02E+02	
Sample Point	QC Found in µg/mL	6.06E+02	
SY-102 GRAB	Percent Spike Recovery	100.7	

Data Entered By:	RTS	Date:	02/03/97
Signature of Chemist:		Date:	02/05/97

SPIE.WB1 REV 1.1

342100ML

HNF-SD-WM-DP-227, REV. 0

RADIOCHEMICAL ANALYSES

HNF-SD-WM-DP-227, REV. 0

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LABCORE Completed RadChem Report for Worklist#: 16280

Analyst: rga Instrument: GEA03 Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: Sample size is on traveler. Std (TNKFUS) 1.0ml. new

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	0	0GEA-01	C060-02	LIQUID	6.691e-03	6.67e-03	99.686 % Recovery
1 STD	0	0	0GEA-01	C060-02E	LIQUID	1	2.36	2.360 % Ct Error
1 STD	0	0	0GEA-01	CS13702	LIQUID	5.842e-03	5.96e-03	102.020 % Recovery
1 STD	0	0	0GEA-01	CS13702E	LIQUID	1	3.07	3.070 % Ct Error
2 BLNK	0	0	0GEA-01	C060-02	LIQUID	1	<5.53e-5	uCi/mL
2 BLNK	0	0	0GEA-01	CS13702	LIQUID	1	<5.62e-5	uCi/mL
3 SAMPLE	S97T000025	0	0GEA-01	C060-02	LIQUID	N/A	< 3.043e-04	504.3e-006 uCi/mL
3 SAMPLE	S97T000025	0	0GEA-01	C060-02E	LIQUID	N/A	n/a	0.0e+000 % Ct. Error
3 SAMPLE	S97T000025	0	0GEA-01	CS13702	LIQUID	N/A	1.230e+01	0.0e+000 uCi/mL
3 SAMPLE	S97T000025	0	0GEA-01	CS13702E	LIQUID	N/A	0.170	0.0e+000 % Ct. Error
4 DUP	S97T000025	0	0GEA-01	C060-02	LIQUID	<3.04e-4	<3.22e-4	RPD
4 DUP	S97T000025	0	0GEA-01	C060-02E	LIQUID	1	n/a	% Ct Error
4 DUP	S97T000025	0	0GEA-01	CS13702	LIQUID	1.23e+01	1.22e+01	0.816 RPD
4 DUP	S97T000025	0	0GEA-01	CS13702E	LIQUID	1	0.170	0.170 % Ct Error
5 SAMPLE	S97T000028	0	0GEA-01	C060-02	LIQUID	N/A	< 8.855e-04	885.5e-006 uCi/mL
5 SAMPLE	S97T000028	0	0GEA-01	C060-02E	LIQUID	N/A	n/a	0.0e+000 % Ct. Error
5 SAMPLE	S97T000028	0	0GEA-01	CS13702	LIQUID	N/A	3.700e+01	0.0e+000 uCi/mL
5 SAMPLE	S97T000028	0	0GEA-01	CS13702E	LIQUID	N/A	0.160	0.0e+000 % Ct. Error
6 DUP	S97T000028	0	0GEA-01	C060-02	LIQUID	<8.86e-4	<1.05e-3	RPD
6 DUP	S97T000028	0	0GEA-01	C060-02E	LIQUID	1	n/a	% Ct Error
6 DUP	S97T000028	0	0GEA-01	CS13702	LIQUID	3.70e+01	3.65e+01	1.361 RPD
6 DUP	S97T000028	0	0GEA-01	CS13702E	LIQUID	1	0.170	0.170 % Ct Error
7 SAMPLE	S97T000029	0	0GEA-01	C060-02	LIQUID	N/A	5.310e-03	0.0e+000 uCi/mL
7 SAMPLE	S97T000029	0	0GEA-01	C060-02E	LIQUID	N/A	37.1	0.0e+000 % Ct. Error
7 SAMPLE	S97T000029	0	0GEA-01	CS13702	LIQUID	N/A	2.450e+01	0.0e+000 uCi/mL
7 SAMPLE	S97T000029	0	0GEA-01	CS13702E	LIQUID	N/A	0.400	0.0e+000 % Ct. Error
8 DUP	S97T000029	0	0GEA-01	C060-02	LIQUID	5.31e-03	1.05e-02	65.655 RPD
8 DUP	S97T000029	0	0GEA-01	C060-02E	LIQUID	1	20.8	20.800 % Ct Error
8 DUP	S97T000029	0	0GEA-01	CS13702	LIQUID	2.45e+01	2.42e+01	1.232 RPD
8 DUP	S97T000029	0	0GEA-01	CS13702E	LIQUID	1	0.400	0.400 % Ct Error

Final page for worklist# 16280

Analyst Signature	Date	Analyst Signature	Date
	1/30/97		
Reviewer Signature	Date		

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

LABCORE Data Entry Template for Worklist# 16280

Analyst: RGA Instrument: GEA00 #3 Book# 25556

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

Worklist Comment: Sample size is on traveler. Std (TNKFUS) 1.0ml. new

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@GEA-01	LIQUID		
2 BLNK			@GEA-01	LIQUID		
3 SAMPLE	S97T000025 0		@GEA-01	LIQUID	97000022	SY-102 GRAB1
Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
4 DUP	S97T000025 0		@GEA-01	LIQUID		
5 SAMPLE	S97T000028 0		@GEA-01	LIQUID	97000022	SY-102 GRAB1
Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
6 DUP	S97T000028 0		@GEA-01	LIQUID		
7 SAMPLE	S97T000029 0		@GEA-01	LIQUID	97000022	SY-102 GRAB1
Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
8 DUP	S97T000029 0		@GEA-01	LIQUID		

Final page for worklist # 16280


Analyst Signature Date 1-24-97


Analyst Signature Date 1/29/97

Data Entry Comments:

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

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CO-60	5.27Y	1.000	6.671E+00	6.671E+00	0.157E+00	2.36	
CS-137	30.00Y	1.000	5.963E+00	5.963E+00	0.183E+00	3.07	
Total Activity :			1.263E+01	1.263E+01			

Grand Total Activity : 1.263E+01 1.263E+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	304.	477.59	5.7400E-01
NA-22	45.	1274.53	5.2738E-02
NA-24	16.	1368.55	3.4174E-02
K-40	135.	1460.75	9.5202E-01
CR-51	336.	320.08	4.5412E-01
MN-54	219.	834.83	8.0835E-02
CO-56	215.	846.76	8.1200E-02
CO-57	385.	122.06	3.3973E-02
CO-58	201.	810.78	7.5957E-02
FE-59	244.	1099.25	1.9140E-01
SE-75	388.	264.66	7.3125E-02
SR-85	224.	514.01	5.6343E-02
Y-88	8.	1836.06	2.9353E-02
NB-94	251.	871.09	8.9887E-02
ZRNB-95	178.	724.18	1.4789E-01
RU-103	255.	497.08	6.1748E-02
RURH-106	183.	621.93	1.1580E+00
AG-108m	162.	722.94	6.7801E-02
CD-109	348.	88.03	1.0683E+00
AG-110M	308.	657.76	8.2690E-02
SN-113	289.	391.69	7.7258E-02
TE-123m	410.	159.00	3.6041E-02
SB-124	158.	602.73	5.3210E-02
SB-125	331.	427.89	1.9316E-01
TE-125m	371.	109.27	1.0857E+01
I-131	313.	364.48	6.0134E-02
CS-134	170.	604.70	5.5365E-02
BA-140	218.	537.31	2.2726E-01
LA-140	9.	1596.21	2.9603E-02
CEPR-144	377.	133.51	5.0856E-01
EU-152	16.	1408.01	1.6477E-01
EU-154	45.	1274.51	1.5302E-01
EU-155	376.	105.31	1.4588E-01
HG-203	388.	279.20	5.4587E-02
TL-208	413.	277.36	7.2324E-01
BI-212	174.	727.18	9.6460E-01
PB-212	467.	238.63	9.9855E-02
BI-214	223.	609.31	1.3922E-01
PB-214	343.	351.92	2.4752E-01
RA-224	478.	240.99	1.1210E+00
RA-226	445.	186.10	9.8767E-01
AC-228	263.	911.21	3.5904E-01
TH-228	351.	84.37	3.3076E+00
TH-229	341.	88.47	1.5346E-01
PA-233	364.	312.17	1.2122E-01
UTH-233	399.	245.34	3.8408E+01
PA-234M	245.	1001.03	1.6944E-01
TH-234	305.	63.29	2.0758E+00
U-235	439.	185.71	5.9625E-02
NP-237	367.	86.48	3.2953E-01
NP-239	367.	106.12	1.3689E-01

Minimum Detectable Activity Report (continued)

Sample ID : WL16280-STD

Acquisition date : 27-JAN-1997 08:22:06

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PU-239	412.	129.30	4.6264E+02
AM-241	332.	59.54	3.8219E-01
AM-243	362.	74.67	9.3836E-02

 * 222-S Laboratory Counting Room 27-JAN-1997 10:23:24.27

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

HNFS-SD-WM-DP-227, REV. 0

Worklist #: 16280
 Sample ID: WL16280-BLNK
 Sample Size: 5.00000E-04 L
 Dilution Factor: 1.00000E+00

Removed by:

C. J. Owen

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

Detector ID: GEA3
 File Number: dka300:[spec.GEA3]3g3464.cnf
 Geometry: 42
 Count Time: 0 00:50:00.00 sec
 Real Time: 0 00:50:00.43 sec
 Dead Time: 0.0%

Verified by:

Rachel 1/28/97

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

Sample Count Time: 27-JAN-1997 09:32:45.18
 Decayed to: 27-JAN-1997 09:32:45.18
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: CJO
 Background Subtract: DKA300:[SPEC.GEA3]3GBACK

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

Date of last energy calibration: 11-MAR-1994 11:47:01.11
 Date of last efficiency calibration: 15-MAR-1994 10:28:40.20

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	611.05	70	6.74	1222.28	1212	24	47.3			
0	645.56	15	1.09	1291.30	1289	6	63.2			
0	661.66*	25	1.46	1323.50	1317	13115.2			CS-137	5.620E-02

Total number of lines in spectrum 3 HNF-SD-WM-DP-227, REV. 0
Number of unidentified lines 2
Number of lines tentatively identified by NID 1 33.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CS-137	30.00Y	1.000	5.620E-02	5.620E-02	6.475E-02	115.2%	12/29/97
Total Activity :			5.620E-02	5.620E-02			

Grand Total Activity : 5.620E-02 5.620E-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	34.	477.59	3.8273E-01
NA-22	8.	1274.53	4.4921E-02
NA-24	8.	1368.55	4.7352E-02
K-40	144.	1460.75	1.9634E+00
CR-51	45.	320.08	3.3414E-01
MN-54	18.	834.83	4.6541E-02
CO-56	21.	846.76	5.0472E-02
CO-57	65.	122.06	2.7801E-02
CO-58	13.	810.78	3.8239E-02
FE-59	16.	1099.25	9.8728E-02
CO-60	12.	1332.50	5.5309E-02
SE-75	55.	264.66	5.5142E-02
SR-85	48.	514.01	5.2294E-02
Y-88	1.	1836.06	2.0984E-02
NB-94	14.	871.09	4.2951E-02
ZRNB-95	18.	724.18	9.3948E-02
RU-103	21.	497.08	3.5792E-02
RURH-106	29.	621.93	9.1780E-01
AG-108m	18.	722.94	4.4700E-02
CD-109	63.	88.03	9.1132E-01
AG-110M	26.	657.76	4.7927E-02
SN-113	43.	391.69	5.9844E-02
TE-123m	97.	159.00	3.5051E-02
SB-124	24.	602.73	4.1895E-02
SB-125	42.	427.89	1.3699E-01
TE-125m	62.	109.27	8.9054E+00
I-131	58.	364.48	5.1715E-02
CS-134	17.	604.70	3.4603E-02
BA-140	33.	537.31	1.7551E-01
LA-140	3.	1596.21	3.2218E-02
CEFR-144	80.	133.51	4.6679E-01
EU-152	8.	1408.01	2.2643E-01
EU-154	8.	1274.51	1.3083E-01
EU-155	82.	105.31	1.3652E-01
HG-203	58.	279.20	4.2140E-02
TL-208	54.	277.36	5.2363E-01
BI-212	19.	727.18	6.3941E-01
PB-212	83.	238.63	8.4282E-02
BI-214	57.	609.31	1.4030E-01
PB-214	51.	351.92	1.9163E-01
RA-224	74.	240.99	8.8511E-01
RA-226	83.	186.10	8.5538E-01
AC-228	36.	911.21	2.6667E-01
TH-228	76.	84.37	3.0729E+00
TH-229	64.	88.47	1.3286E-01
PA-233	62.	312.17	1.0035E-01
UTH-233	65.	245.34	3.1009E+01
PA-234M	11.	1001.03	7.1992E-02
TH-234	57.	63.29	1.7879E+00
U-235	83.	185.71	5.1812E-02
NP-237	70.	86.48	2.8838E-01

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-239	79.	106.12	1.2712E-01
PU-239	76.	129.30	3.9621E+02
AM-241	54.	59.54	3.0949E-01
AM-243	54.	74.67	7.2491E-02

 * 222-S Laboratory Counting Room 27-JAN-1997 11:21:49.97

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

Worklist #: 16280
 Sample ID: S97T0025-SAM
 Sample Size: 5.00000E-04 L
 Dilution Factor: 1.00000E+00

Removed by:

S. J. Chien

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

Detector ID: GEA3
 File Number: dka300:[spec.GEA3]3g3448.cnf
 Geometry: 43
 Count Time: 0 00:50:00.00 sec
 Real Time: 0 00:53:09.75 sec
 Dead Time: 5.9%

Verified by:

S. J. Chien 1/28/97

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

Sample Count Time: 27-JAN-1997 10:27:58.67
 Decayed to: 27-JAN-1997 10:27:58.67
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: CJO
 Background Subtract: DKA300:[SPEC.GEA3]3GBACK

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

Date of last energy calibration: 11-MAR-1994 11:47:01.11
 Date of last efficiency calibration: 15-MAR-1994 10:11:20.05

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.61*	1393595	1.70	1323.40	1315	17	0.2		CS-137	1.228E+04
0	1322.24	473	2.80	2644.85	2637	19	20.7			

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	1.228E+04	1.228E+04	0.002E+04	0.17	
Total Activity :			1.228E+04	1.228E+04			

Grand Total Activity :	1.228E+04	1.228E+04
------------------------	-----------	-----------

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

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

Minimum Detectable Activity Report

Sample ID : S97T0025-SAM

Acquisition date : 27-JAN-1997 10:27:58

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	42821.	477.59	5.4836E+01
NA-22	200.	1274.53	8.2662E-01
NA-24	15.	1368.55	2.4105E-01
K-40	130.	1460.75	6.8871E+00
CR-51	37504.	320.08	3.8664E+01
MN-54	1223.	834.83	1.4847E+00
CO-56	1170.	846.76	1.4711E+00
CO-57	39003.	122.06	2.7794E+00
CO-58	1290.	810.78	1.4957E+00
FE-59	416.	1099.25	1.8791E+00
CO-60	25.	1332.50	3.0431E-01
SE-75	41964.	264.66	6.2336E+00
SR-85	21996.	514.01	4.5188E+00
Y-88	4.	1836.06	1.5154E-01
NB-94	975.	871.09	1.3762E+00
ZRNB-95	1854.	724.18	3.7128E+00
RU-103	26788.	497.08	5.1152E+00
RURH-106	8630.	621.93	6.2507E+01
AG-108m	1907.	722.94	1.8094E+00
CD-109	32345.	88.03	8.8824E+01
AG-110M	37793.	657.76	7.1441E+00
SN-113	38425.	391.69	6.9916E+00
TE-123m	40816.	159.00	3.0936E+00
SB-124	8715.	602.73	3.1192E+00
SB-125	44410.	427.89	1.7663E+01
TE-125m	35237.	109.27	8.7286E+02
I-131	36607.	364.48	5.1332E+00
CS-134	8759.	604.70	3.1397E+00
BA-140	16166.	537.31	1.5787E+01
LA-140	6.	1596.21	1.7724E-01
CEPR-144	40703.	133.51	4.3237E+01
EU-152	17.	1408.01	1.2360E+00
EU-154	200.	1274.51	2.4025E+00
EU-155	34342.	105.31	1.1599E+01
HG-203	40595.	279.20	4.5610E+00
TL-208	40756.	277.36	5.8727E+01
BI-212	1852.	727.18	2.4472E+01
PB-212	44710.	238.63	8.0794E+00
BI-214	8723.	609.31	6.8610E+00
PB-214	36677.	351.92	2.0965E+01
RA-224	44494.	240.99	8.9371E+01
RA-226	54024.	186.10	9.5464E+01
AC-228	853.	911.21	5.0096E+00
TH-228	31990.	84.37	2.7309E+02
TH-229	32292.	88.47	1.2855E+01
PA-233	37795.	312.17	9.9793E+00
UTH-233	44314.	245.34	3.3348E+03
PA-234M	540.	1001.03	1.9194E+00
TH-234	29098.	63.29	1.6348E+02
U-235	53260.	185.71	5.7620E+00
NP-237	32126.	86.48	2.6639E+01

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-239	34327.	106.12	1.1003E+01
PU-239	40605.	129.30	3.7414E+04
AM-241	28367.	59.54	2.6642E+01
AM-243	30701.	74.67	7.4381E+00

 * 222-S Laboratory Counting Room 27-JAN-1997 12:36:08.65

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

Worklist #: 16280
 Sample ID: S97T025-DUP
 Sample Size: 5.00000E-04 L
 Dilution Factor: 1.00000E+00

Removed by:

Em. Buela

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

Detector ID: GEA3
 File Number: NI3AC:l.cnf-323449.cnf
 Geometry: 43
 Count Time: 0 00:50:00.00 sec
 Real Time: 0 00:53:08.58 sec
 Dead Time: 5.9%

Verified by:

AAH 1/28/97

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

Sample Count Time: 27-JAN-1997 11:35:32.21
 Decayed to: 27-JAN-1997 11:35:32.21
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: EMB
 Background Subtract: DKA300:[SPEC.GEA3]3GBACK

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

Date of last energy calibration: 11-MAR-1994 11:47:01.11
 Date of last efficiency calibration: 15-MAR-1994 10:11:20.05

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.61*	1386482	1.70	1323.40	1315	17	0.2		CS-137	1.222E+04
0	1322.21	531	2.72	2644.79	2637	22	19.3			

Summary of Nuclide Activity

Sample ID : S97T025-DUP

Acquisition date : 27-JAN-1997 11:35:32

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	1.222E+04	1.222E+04	0.002E+04	0.17	
Total Activity :			1.222E+04	1.222E+04			

Grand Total Activity :	1.222E+04	1.222E+04
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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	42671.	477.59	5.4740E+01
NA-22	198.	1274.53	8.2255E-01
NA-24	17.	1368.55	2.5698E-01
K-40	155.	1460.75	7.5187E+00
CR-51	37057.	320.08	3.8433E+01
MN-54	1223.	834.83	1.4849E+00
CO-56	1129.	846.76	1.4450E+00
CO-57	38590.	122.06	2.7647E+00
CO-58	1319.	810.78	1.5128E+00
FE-59	434.	1099.25	1.9209E+00
CO-60	28.	1332.50	3.2248E-01
SE-75	41137.	264.66	6.1719E+00
SR-85	22214.	514.01	4.5411E+00
Y-88	7.	1836.06	2.0105E-01
NB-94	1015.	871.09	1.4042E+00
ZRNB-95	1871.	724.18	3.7301E+00
RU-103	27036.	497.08	5.1388E+00
RURH-106	8261.	621.93	6.1157E+01
AG-108m	1865.	722.94	1.7891E+00
CD-109	31937.	88.03	8.8263E+01
AG-110M	37745.	657.76	7.1396E+00
SN-113	38250.	391.69	6.9757E+00
TE-123m	40496.	159.00	3.0815E+00
SB-124	8545.	602.73	3.0886E+00
SB-125	44250.	427.89	1.7631E+01
TE-125m	34795.	109.27	8.6737E+02
I-131	36433.	364.48	5.1210E+00
CS-134	8582.	604.70	3.1078E+00
BA-140	15721.	537.31	1.5568E+01
LA-140	8.	1596.21	2.0466E-01
CEPR-144	40632.	133.51	4.3199E+01
EU-152	13.	1408.01	1.0794E+00
EU-154	198.	1274.51	2.3921E+00
EU-155	34295.	105.31	1.1592E+01
HG-203	40383.	279.20	4.5490E+00
TL-208	40332.	277.36	5.8421E+01
BI-212	1833.	727.18	2.4344E+01
PB-212	44822.	238.63	8.0895E+00
BI-214	8642.	609.31	6.8291E+00
PB-214	36464.	351.92	2.0900E+01
RA-224	44840.	240.99	8.9718E+01
RA-226	54371.	186.10	9.5771E+01
AC-228	784.	911.21	4.8046E+00
TH-228	31941.	84.37	2.7288E+02
TH-229	31870.	88.47	1.2771E+01
PA-233	37371.	312.17	9.9232E+00
UTH-233	43933.	245.34	3.3204E+03
PA-234M	576.	1001.03	1.9816E+00
TH-234	28600.	63.29	1.6208E+02
U-235	53713.	185.71	5.7864E+00
NP-237	31982.	86.48	2.6579E+01

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-239	34417.	106.12	1.1017E+01
PU-239	40254.	129.30	3.7252E+04
AM-241	28193.	59.54	2.6561E+01
AM-243	30572.	74.67	7.4225E+00

* 222-S Laboratory Counting Room 27-JAN-1997 13:33:40.70

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

Worklist #: 16280
Sample ID: S97T028-SAM
Sample Size: 1.00000E-03 L
Dilution Factor: 2.10000E+01

HNF-SD-WM-DP-227, REV. 0

Removed by:

Cf. Opina

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

Detector ID: GEA3
File Number: dka300:[spec.GEA3]3g3450.cnf
Geometry: 42
Count Time: 0 00:50:00.00 sec
Real Time: 0 00:53:21.73 sec
Dead Time: 6.3%

Verified by:

BFH 1/28/97

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

Sample Count Time: 27-JAN-1997 12:39:39.06
Decayed to: 27-JAN-1997 12:39:39.06
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst: EMB
Background Subtract: DKA300:[SPEC.GEA3]3GBACK

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

Date of last energy calibration: 11-MAR-1994 11:47:01.11
Date of last efficiency calibration: 15-MAR-1994 10:28:40.20

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.61*	1558165	1.71	1323.41	1315	17	0.2		CS-137	3.698E+04
0	1322.02	662	2.68	2644.40	2635	22	18.2			
0	1460.86*	19	2.48	2922.20	2912	18150.7			K-40	6.97

Summary of Nuclide Activity
Sample ID : S97T028-SAM

Acquisition date : 27-JAN-1997 12:39:39

Total number of lines in spectrum 3
Number of unidentified lines 1
Number of lines tentatively identified by NID 2 66.67%

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	6.967E+00	6.967E+00	10.50E+00	150.71	Key 888
CS-137	30.00Y	1.000	3.698E+04	3.698E+04	0.006E+04	0.16	1/2/97
Total Activity :			3.699E+04	3.699E+04			

Grand Total Activity : 3.699E+04 3.699E+04

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

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

Minimum Detectable Activity Report
Sample ID : S97T028-SAM

Acquisition date : 27-JAN-1997 12:39:39

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	48144.	477.59	1.5180E+02
NA-22	228.	1274.53	2.4903E+00
NA-24	25.	1368.55	8.8577E-01
CR-51	37790.	320.08	1.0121E+02
MN-54	1380.	834.83	4.2659E+00
CO-56	1335.	846.76	4.2481E+00
CO-57	38348.	122.06	7.1170E+00
CO-58	1582.	810.78	4.4775E+00
FE-59	506.	1099.25	5.7900E+00
CO-60	27.	1332.50	8.8554E-01
SE-75	41339.	264.66	1.5859E+01
SR-85	24072.	514.01	1.2272E+01
Y-88	4.	1836.06	4.4067E-01
NB-94	1215.	871.09	4.1539E+00
ZRNB-95	2240.	724.18	1.1007E+01
RU-103	29666.	497.08	1.3992E+01
RURH-106	9153.	621.93	1.7216E+02
AG-108m	2234.	722.94	5.2816E+00
CD-109	33176.	88.03	2.1920E+02
AG-110M	42443.	657.76	2.0380E+01
SN-113	40905.	391.69	1.9309E+01
TE-123m	39836.	159.00	7.4625E+00
SB-124	9612.	602.73	8.7140E+00
SB-125	48173.	427.89	4.8919E+01
TE-125m	35134.	109.27	2.2179E+03
I-131	38405.	364.48	1.3991E+01
CS-134	9545.	604.70	8.7238E+00
BA-140	17586.	537.31	4.2870E+01
LA-140	4.	1596.21	4.1464E-01
CEPR-144	39424.	133.51	1.0914E+02
EU-152	16.	1408.01	3.3986E+00
EU-154	229.	1274.51	7.2390E+00
EU-155	34592.	105.31	2.9391E+01
HG-203	39591.	279.20	1.1573E+01
TL-208	39793.	277.36	1.4905E+02
BI-212	2174.	727.18	7.1501E+01
PB-212	45911.	238.63	2.0785E+01
BI-214	9431.	609.31	1.9014E+01
PB-214	37950.	351.92	5.6574E+01
RA-224	45238.	240.99	2.2912E+02
RA-226	52879.	186.10	2.2611E+02
AC-228	983.	911.21	1.4587E+01
TH-228	32832.	84.37	6.7156E+02
TH-229	33322.	88.47	3.1839E+01
PA-233	37724.	312.17	2.5905E+01
UTH-233	44765.	245.34	8.5419E+03
PA-234M	663.	1001.03	5.8545E+00
TH-234	30650.	63.29	4.3704E+02
U-235	52303.	185.71	1.3667E+01
NP-237	32996.	86.48	6.5655E+01
NP-239	34574.	106.12	2.7927E+01

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PU-239	39162.	129.30	9.4666E+04
AM-241	30583.	59.54	7.7039E+01
AM-243	32020.	74.67	1.8528E+01

Summary of Nuclide Activity

Sample ID : S97T28-DUP

Acquisition date : 27-JAN-1997 13:51:23

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	3.651E+04	3.651E+04	0.006E+04	0.17	
Total Activity :			3.651E+04	3.651E+04			

Grand Total Activity :	3.651E+04	3.651E+04
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Flags: "K" = Keyline not found
 "E" = Manually edited

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

Minimum Detectable Activity Report
Sample ID : S97T28-DUP

Acquisition date : 27-JAN-1997 13:51:23

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	47186.	477.59	1.5028E+02
NA-22	233.	1274.53	2.5185E+00
NA-24	23.	1368.55	8.5064E-01
K-40	145.	1460.75	2.0720E+01
CR-51	36756.	320.08	9.9817E+01
MN-54	1404.	834.83	4.3027E+00
CO-56	1327.	846.76	4.2366E+00
CO-57	37762.	122.06	7.0624E+00
CO-58	1534.	810.78	4.4102E+00
FE-59	487.	1099.25	5.6835E+00
CO-60	38.	1332.50	1.0505E+00
SE-75	40539.	264.66	1.5704E+01
SR-85	23759.	514.01	1.2192E+01
Y-88	1.	1836.06	2.2033E-01
NB-94	1153.	871.09	4.0469E+00
ZRNB-95	2144.	724.18	1.0770E+01
RU-103	29143.	497.08	1.3868E+01
RURH-106	9004.	621.93	1.7075E+02
AG-108m	2143.	722.94	5.1730E+00
CD-109	32624.	88.03	2.1736E+02
AG-110M	41558.	657.76	2.0166E+01
SN-113	40656.	391.69	1.9250E+01
TE-123m	38800.	159.00	7.3648E+00
SB-124	9546.	602.73	8.6843E+00
SB-125	47597.	427.89	4.8625E+01
TE-125m	34781.	109.27	2.2068E+03
I-131	37824.	364.48	1.3884E+01
CS-134	9621.	604.70	8.7588E+00
BA-140	17387.	537.31	4.2626E+01
LA-140	5.	1596.21	4.4779E-01
CEPR-144	39079.	133.51	1.0866E+02
EU-152	20.	1408.01	3.7791E+00
EU-154	233.	1274.51	7.3137E+00
EU-155	34070.	105.31	2.9169E+01
HG-203	38859.	279.20	1.1466E+01
TL-208	39069.	277.36	1.4769E+02
BI-212	2143.	727.18	7.0991E+01
PB-212	45419.	238.63	2.0673E+01
BI-214	9283.	609.31	1.8864E+01
PB-214	37242.	351.92	5.6015E+01
RA-224	44785.	240.99	2.2797E+02
RA-226	52459.	186.10	2.2521E+02
AC-228	979.	911.21	1.4555E+01
TH-228	32238.	84.37	6.6546E+02
TH-229	32747.	88.47	3.1563E+01
PA-233	36874.	312.17	2.5611E+01
UTH-233	44031.	245.34	8.4715E+03
PA-234M	670.	1001.03	5.8887E+00
TH-234	30361.	63.29	4.3497E+02
U-235	51911.	185.71	1.3616E+01
NP-237	32509.	86.48	6.5169E+01

Minimum Detectable Activity Report (continued)

Sample ID : S97T28-DUP

Acquisition date : 27-JAN-1997 13:51:23

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-239	34115.	106.12	2.7740E+01
PU-239	38251.	129.30	9.3558E+04
AM-241	30198.	59.54	7.6553E+01
AM-243	31239.	74.67	1.8301E+01

* 222-S Laboratory Counting Room 27-JAN-1997 16:03:17.89 *

Removed by:

Em Barla

Verified by:

Bachelor 1/28/97

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

////////// CALIBRATION INFORMATION //////////////////////////////////////
Date of last energy calibration: 11-MAR-1994 11:47:01.11

Date of last efficiency calibration: 15-MAR-1994 10:28:40.20

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	59.34	13520	1.26	119.22	114	10	3.3		AM-241	5.123E+03
0	104.95	228	0.95	210.39	209	5	92.0			
0	122.89	733	1.61	246.27	243	8	43.4			
									CO-57	22.9
									EU-154	48.5
0	661.60*	258248	1.69	1323.38	1315	17	0.4		CS-137	2.452E+04
0	723.67	162	1.84	1447.50	1441	16	33.1		EU-154	70.7
0	873.22	64	2.05	1746.61	1743	9	44.4		EU-154	54.6
3	996.48	57	2.35	1993.16	1988	34	41.2	1.22E+00	EU-154	63.2
3	1004.87	75	2.35	2009.93	1988	34	40.6		EU-154	48.7
0	1173.75	47	2.41	2347.77	2343	15	63.0		CO-60	6.25
0	1274.38	140	2.15	2549.10	2542	16	16.9		EU-154	57.7
0	1332.34	34	2.29	2665.05	2661	10	45.5		CO-60	5.00
0	1460.60*	16	1.96	2921.68	2912	19	164.7		K-40	23.8

Total number of lines in spectrum 12
Number of unidentified lines 0
Number of lines tentatively identified by NID 12 100.00%

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	2.380E+01	2.380E+01	3.921E+01	164.70	En 1/28
GO-57	271.80D	1.000	2.290E+01	2.290E+01	0.993E+01	43.38	En 1/28
CO-60	5.27Y	1.000	5.311E+00	5.311E+00	1.968E+00	37.06	
CS-137	30.00Y	1.000	2.452E+04	2.452E+04	0.001E+05	0.40	
EU-154	8.59Y	1.000	5.788E+01	5.788E+01	0.744E+01	12.85	
AM-241	432.20Y	1.000	5.123E+03	5.123E+03	0.169E+03	3.30	
Total Activity :			2.975E+04	2.975E+04			

Grand Total Activity : 2.975E+04 2.975E+04

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

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

Minimum Detectable Activity Report
 Sample ID : S97T029-SAM

Acquisition date : 27-JAN-1997 15:11:58

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	7755.	477.59	2.4370E+02
NA-22	135.	1274.53	7.6709E+00
NA-24	9.	1368.55	2.1126E+00
CR-51	6108.	320.08	1.6276E+02
MN-54	76.	834.83	4.0004E+00
CO-56	63.	846.76	3.6857E+00
CO-58	64.	810.78	3.6085E+00
FE-59	22.	1099.25	4.8508E+00
SE-75	6925.	264.66	2.5963E+01
SR-85	3904.	514.01	1.9770E+01
Y-88	3.	1836.06	1.5265E+00
NB-94	92.	871.09	4.5599E+00
ZRNB-95	202.	724.18	1.3235E+01
RU-103	4771.	497.08	2.2446E+01
RURH-106	1409.	621.93	2.7022E+02
AG-108m	211.	722.94	6.4877E+00
CD-109	5800.	88.03	3.6662E+02
AG-110M	6863.	657.76	3.2781E+01
SN-113	6813.	391.69	3.1521E+01
TE-123m	6753.	159.00	1.2290E+01
SB-124	1470.	602.73	1.3632E+01
SB-125	7724.	427.89	7.8353E+01
TE-125m	6162.	109.27	3.7153E+03
I-131	6317.	364.48	2.2695E+01
CS-134	1447.	604.70	1.3589E+01
BA-140	2819.	537.31	6.8657E+01
LA-140	7.	1596.21	2.1932E+00
CEPR-144	6839.	133.51	1.8183E+02
EU-152	6.	1408.01	8.2519E+00
EU-155	6333.	105.31	5.0304E+01
HG-203	6481.	279.20	1.8730E+01
TL-208	6627.	277.36	2.4330E+02
BI-212	86.	727.18	5.6788E+01
PB-212	7800.	238.63	3.4269E+01
BI-214	1431.	609.31	2.9627E+01
PB-214	6270.	351.92	8.9392E+01
RA-224	7763.	240.99	3.7958E+02
RA-226	9063.	186.10	3.7443E+02
AC-228	76.	911.21	1.6222E+01
TH-228	6032.	84.37	1.1514E+03
TH-229	5768.	88.47	5.2987E+01
PA-233	5933.	312.17	4.1093E+01
UTH-233	7534.	245.34	1.4017E+04
PA-234M	43.	1001.03	5.9888E+00
TH-234	5512.	63.29	7.4133E+02
U-235	8923.	185.71	2.2581E+01
NP-237	6068.	86.48	1.1262E+02
NP-239	6268.	106.12	4.7550E+01
PU-239	6870.	129.30	1.5860E+05
AM-243	5555.	74.67	3.0870E+01

 * 222-S Laboratory Counting Room 27-JAN-1997 16:58:54.17 *

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

Worklist #: 16280
 Sample ID: S97T029-DUP
 Sample Size: 2.50000E-04 L
 Dilution Factor: 2.10000E+01

Removed by:

Em Buech

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

Detector ID: GEA3
 File Number: dka300:[spec.GEA3]3g3454.cnf
 Geometry: 42
 Count Time: 0 00:50:00.00 sec
 Real Time: 0 00:50:32.14 sec
 Dead Time: 1.1%

Verified by:

AFH 1/28/97

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

Sample Count Time: 27-JAN-1997 16:07:43.21
 Decayed to: 27-JAN-1997 16:07:43.21
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: EMB
 Background Subtract: DKA300:[SPEC.GEA3]3GBACK

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

Date of last energy calibration: 11-MAR-1994 11:47:01.11
 Date of last efficiency calibration: 15-MAR-1994 10:28:40.20

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	59.30	12308	1.23	119.15	114	11	3.8		AM-241	4.664E+03
0	122.80	560	1.07	246.09	243	7	50.6		CO-57	17.5
									EU-154	37.1
0	661.59*	255072	1.69	1323.36	1315	17	0.4		CS-137	2.422E+04
0	723.16	135	1.24	1446.48	1441	11	29.4		EU-154	58.7
0	872.64	49	1.24	1745.45	1741	11	66.6		EU-154	41.7
0	995.68	52	1.60	1991.55	1985	15	62.3		EU-154	58.3
0	1004.41	68	2.40	2009.03	2003	13	50.3		EU-154	43.7
0	1119.95*	20	1.78	2240.14	2235	10	91.8			
0	1173.24	70	1.39	2346.75	2341	12	33.8		CO-60	9.34
0	1274.44	123	1.26	2549.22	2542	14	28.0		EU-154	50.6
0	1332.42	78	1.52	2665.21	2660	10	26.1		CO-60	11.5

Total number of lines in spectrum 11
Number of unidentified lines 0
Number of lines tentatively identified by NID 11 100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CO-57	271.80D	1.000	1.751E+01	1.751E+01	0.886E+01	50.62	223 1/28/97
CO-60	5.27Y	1.000	1.049E+01	1.049E+01	0.218E+01	20.77	
CS-137	30.00Y	1.000	2.422E+04	2.422E+04	0.001E+05	0.40	
EU-154	8.59Y	1.000	5.116E+01	5.116E+01	0.896E+01	17.51	
AM-241	432.20Y	1.000	4.664E+03	4.664E+03	0.176E+03	3.77	
Total Activity :			2.896E+04	2.896E+04			

Grand Total Activity : 2.896E+04 2.896E+04

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	7523.	477.59	2.4003E+02
NA-22	151.	1274.53	8.0952E+00
NA-24	6.	1368.55	1.7578E+00
K-40	119.	1460.75	7.4959E+01
CR-51	6096.	320.08	1.6260E+02
MN-54	52.	834.83	3.3120E+00
CO-56	68.	846.76	3.8384E+00
CO-58	64.	810.78	3.6034E+00
FE-59	31.	1099.25	5.7755E+00
SE-75	6828.	264.66	2.5781E+01
SR-85	3804.	514.01	1.9515E+01
Y-88	2.	1836.06	1.2464E+00
NB-94	97.	871.09	4.6839E+00
ZRNB-95	186.	724.18	1.2680E+01
RU-103	4704.	497.08	2.2287E+01
RURH-106	1381.	621.93	2.6747E+02
AG-108m	195.	722.94	6.2366E+00
CD-109	5817.	88.03	3.6713E+02
AG-110M	6923.	657.76	3.2924E+01
SN-113	6599.	391.69	3.1023E+01
TE-123m	6709.	159.00	1.2250E+01
SB-124	1382.	602.73	1.3216E+01
SB-125	7778.	427.89	7.8627E+01
TE-125m	6090.	109.27	3.6935E+03
I-131	6213.	364.48	2.2507E+01
CS-134	1373.	604.70	1.3234E+01
BA-140	2773.	537.31	6.8084E+01
LA-140	6.	1596.21	2.0305E+00
CEPR-144	6688.	133.51	1.7981E+02
EU-152	14.	1408.01	1.2591E+01
EU-155	6206.	105.31	4.9796E+01
HG-203	6511.	279.20	1.8773E+01
TL-208	6438.	277.36	2.3981E+02
BI-212	74.	727.18	5.2605E+01
PB-212	7572.	238.63	3.3764E+01
BI-214	1356.	609.31	2.8841E+01
PB-214	6271.	351.92	8.9398E+01
RA-224	7500.	240.99	3.7309E+02
RA-226	9063.	186.10	3.7443E+02
AC-228	56.	911.21	1.3933E+01
TH-228	5790.	84.37	1.1281E+03
TH-229	5743.	88.47	5.2874E+01
PA-233	6025.	312.17	4.1411E+01
UTH-233	7400.	245.34	1.3892E+04
PA-234M	54.	1001.03	6.7029E+00
TH-234	5226.	63.29	7.2187E+02
U-235	8986.	185.71	2.2660E+01
NP-237	6018.	86.48	1.1216E+02
NP-239	6218.	106.12	4.7357E+01
PU-239	6754.	129.30	1.5725E+05
AM-243	5489.	74.67	3.0683E+01

LABCORE Completed RadChem Report for Worklist#: 16361

Analyst: scl

Instrument: AB10

Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: RR#2 SY-102. Use 0.100-10-1mL. sac

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	@SR90-01 SR90-01 LIQUID		1.68E-03	1.66E-3	98.810	% Recovery
1 STD	0	@SR90-01 SR90-01C LIQUID		100	9.07E+01	90.700	% Recovery
1 STD	0	@SR90-01 SR90-01E LIQUID		1.00	1.65E+00	1.650	% Ct. Err
2 BLNK	0	@SR90-01 SR90-01 LIQUID		1	<2.39E-4		uCi/mL
2 BLNK	0	@SR90-01 SR90-01C LIQUID		100	8.88E+01	88.800	% Recovery
2 BLNK	0	@SR90-01 SR90-01E LIQUID		1.00	5.00E+02	500.000	uCi/mL
3 BLNK/BKG	0	@SR90-01 SR90-01 LIQUID		1	1.02E+00	1.020	BLNK/BKG
4 SAMPLE	S97T000025 0	@SR90-01 SR90-01 LIQUID	N/A		9.29E-04	434.0e-006	uCi/mL
4 SAMPLE	S97T000025 0	@SR90-01 SR90-01C LIQUID	N/A		8.94E+01	0.0e+000	% Recovery
4 SAMPLE	S97T000025 0	@SR90-01 SR90-01E LIQUID	N/A		3.99E+01	0.0e+000	% Ct. Error
5 DUP	S97T000025 0	@SR90-01 SR90-01 LIQUID		9.29E-4	1.54E-3	49.494	RPD
5 DUP	S97T000025 0	@SR90-01 SR90-01C LIQUID		100	9.05E+01	90.500	% Recovery
5 DUP	S97T000025 0	@SR90-01 SR90-01E LIQUID		1.00	2.61E+01	26.100	% Ct. Err
6 SAMPLE	S97T000028 0	@SR90-01 SR90-01 LIQUID	N/A		7.66E-03	438.0e-006	uCi/mL
6 SAMPLE	S97T000028 0	@SR90-01 SR90-01C LIQUID	N/A		8.81E+01	0.0e+000	% Recovery
6 SAMPLE	S97T000028 0	@SR90-01 SR90-01E LIQUID	N/A		8.76E+00	0.0e+000	% Ct. Error
7 DUP	S97T000028 0	@SR90-01 SR90-01 LIQUID		7.66E-3	7.26E-3	5.352	RPD
7 DUP	S97T000028 0	@SR90-01 SR90-01C LIQUID		100	8.78E+01	87.800	% Recovery
7 DUP	S97T000028 0	@SR90-01 SR90-01E LIQUID		1.00	9.06E+00	9.060	% Ct. Err

Final page for worklist# 16361

Analyst Signature

Date

Analyst Signature

Date

[Signature] 29 Jan 97
Reviewer Signature Date

Results for sample T25 will be accepted. All previous runs also had high RPDs. Counting uncertainty is high. Additional analyses are not warranted. sac

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

LABCORE Data Entry Template for Worklist# 16361

Analyst: S. Lai Instrument: AB00 Book# 25056

Method: LA-220-101 Rev/Mod 0-1

Worklist Comment: RR#2 SY-102. Use 0.100-10-1mL. sac

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	S97T000025 0		@SR90-01	LIQUID	97000022	SY-102 GRAB1
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
5 DUP	S97T000025 0		@SR90-01	LIQUID		
6 SAMPLE	S97T000028 0		@SR90-01	LIQUID	97000022	SY-102 GRAB1
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
7 DUP	S97T000028 0		@SR90-01	LIQUID		

Final page for worklist # 16361

Sue Lai 1-28-97
Analyst Signature Date

Sue Hogan 1-28-97
Analyst Signature Date
Sue Hogan 1-28-97

Data Entry Comments:

WORKBOOK PAGE: STD1

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

				STANDARD
Type	DETECTOR NUMBER	10	CARRIER ADDED In mL (CVA)	1.000
STD	TOTAL COUNTS (TC)	14309	GROSS WEIGHT (W2)	7.7175
Work List	COUNT TIME In MINUTES (CT)	10	TARE WEIGHT (W1)	7.6268
16361	BACKGROUND In cpm (BKG)	8.7	NET WEIGHT (W3)	0.0907
Test Code	SAMPLE VOLUME In mL (SS)	1.000	DELTA TIME (HOURS) (DT)	4.37
@SR90-01	DILUTION FACTOR (DF)	1		
Matrix	DIGEST DILUTION FACTOR DDF	1		
LIQUID	SAMPLE COUNT RATE (Rs)	1422.20	SR-90 EFFICIENCY FACTO (C1)	0.4051
Batch Number	CRITICAL LEVEL (Lc)	1.78	Y-90 EFFICIENCY FACTOR (C2)	0.4503
97000221	TIME OF SEPARATION (ST)	08:38	Rmax	N/A
Rerun	DATE OF SEPARATION (SD)	01/28/97	DETECTION LIMIT (Ld)	3.64
0	TIME OF COUNT (TOC)	13:00	Sr-89/90 CONC. In µCi/L	1.6587E+00
Sample Prep	DATE OF COUNT (DOC)	01/28/97		
N/A	STANDARD BOOK #	75B56		
Sample #	STANDARD VALUE In µCi/mL	1.6645E-03		
WL16361				
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)			
WB26870	Sr-89/90 CONC in µCi/mL REPLACE RS WITH RMAX IF RS<=Lc AND RS==0 OR REPLACE RS WITH Lc IF RS<0			
Prepared By	RS*DF*DDF*1000/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)			
SEH	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))			
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)			
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100			
Analyst	NOTE: Expected weight = CVA * 0.1			
SCL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.			
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100			
01/28/97				
Analysis Data	Sr-89/90 CONCENTRATION 1.66E-03 µCi/mL			DETECTION LEVEL
01/28/97				
Analysis Time				
11:30 AM	RELATIVE COUNTING ERROR 1.7%			4.25E-06 µCi/L
Sample Point				
SY-102 GRAB1	PERCENT CARRIER RECOVERY 90.7%			

Analyst:	SCL	Date:	28-Jan-97
Signature of Chemist:	<i>DD Carter</i>	Date:	27 Jan 97

STANDARD.WB1 REV 2.0

22010NML

WORKBOOK PAGE: BLANK2

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

					BLNK
Type	DETECTOR NUMBER		10	CARRIER ADDED In mL	(CVA) 1.000
BLNK	TOTAL COUNTS	(TC)	89	GROSS WEIGHT	(W2) 7.7397
Work List	COUNT TIME In MINUTES	(CT)	10	TARE WEIGHT	(W1) 7.6509
16361	BACKGROUND In cpm	(BKG)	8.7	NET WEIGHT	(W3) 0.0888
Test Code	SAMPLE VOLUME In mL	(SS)	1.000	DELTA TIME (HOURS)	(DT) 4.53
@SR90-01	DILUTION FACTOR	DF	101		
Matrix	DIGEST DILUTION FACTOR	(DDF)	1		
LIQUID	SAMPLE COUNT RATE	(Rs)	0.20	SR-90 EFFICIENCY FACTOR	(C1) 0.4051
Batch Number	CRITICAL LEVEL	(Lc)	1.78	Y-90 EFFICIENCY FACTOR	(C2) 0.4503
97000221	TIME OF SEPARATION	(ST)	08:38	Rmax	1.99
Rerun	DATE OF SEPARATION	(SD)	01/28/97	DETECTION LIMIT	(Ld) 3.64
0	TIME OF COUNT	(TOC)	13:10	Sr-89/90 CONC In µCi/L	< 2.3927E-01
Sample Prep	DATE OF COUNT	(DOC)	01/28/97		
N/A					
Sample #					
WL16361					
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
WB26870	Sr-89/90 CONC In µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0				
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT))))*SS*REC*2220000				
SEH	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))				
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96				
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100				
Analyst	NOTE: Expected weight = CVA * 0.1				
SCL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
01/28/97					
Analysis Date					DETECTION LEVEL 4.38E-04 µCi/mL
01/28/97	Sr-89/90 CONCENTRATION	< 2.39E-04	µCi/mL		
Analysis Time	LESS THAN Value was Determined from Rmax.				
11:30 AM	RELATIVE COUNTING ERROR	500.0%			
Sample Point					
SV-102 GRAB1	PERCENT CARRIER RECOVERY	88.8%			

Analyst:	SCL	Date:	28-Jan-97
Signature of Chemist:	SAC	Date:	29 Jan 97
BLANK.WB1 REV 2.0	22010NML		

WORKBOOK PAGE: SAM4

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

					SAMPLE	
Type	DETECTOR NUMBER		10	CARRIER ADDED In mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	165	GROSS WEIGHT	(W2)	7.7368
Work List	COUNT TIME In MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.8474
16361	BACKGROUND In cpm	(BKG)	8.7	NET WEIGHT	(W3)	0.0894
Test Code	SAMPLE VOLUME In mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)	4.70
@SR90-01	DILUTION FACTOR	DF	101			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	7.80	SR-90 EFFICIENCY FACTOR	(C1)	0.4051
Batch Number	CRITICAL LEVEL	(Lc)	1.78	Y-90 EFFICIENCY FACTOR	(C2)	0.4503
97000221	TIME OF SEPARATION	(ST)	08:38	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	01/28/97	DETECTION LIMIT	(Ld)	3.64
0	TIME OF COUNT	(TOC)	13:20	Sr-89/90 CONC In µCi/L		9.2878E-01
Sample Prep	DATE OF COUNT	(DOC)	01/28/97			
N/A						
Sample #						
S97T00025						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB26870	Sr-89/90 CONC In µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT))))*SS*REC*2220000)					
SEH	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
SCL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
01/25/97						
Analysis Date						DETECTION LEVEL
01/28/97	Sr-89/90 CONCENTRATION	9.28E-04	µCi/mL			
Analysis Time						
11:30 AM	RELATIVE COUNTING ERROR	39.9%				
Sample Point						4.34E-04
SY-102 GRAB1	PERCENT CARRIER RECOVERY	89.4%				µCi/mL

Analyst:	SCL	Date:	28-Jan-97
Signature of Chemist:		SAC	Date: 28 Jan 97
SAMPLE.WB1 REV 2.0		22010NML	

WORKBOOK PAGE: DUP5

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

						DUP
Type	DETECTOR NUMBER		10	CARRIER ADDED In mL	(CVA)	1.000
DUP	TOTAL COUNTS	(TC)	218	GROSS WEIGHT	(W2)	7.7150
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.6245
16361	BACKGROUND In cpm	(BKG)	8.7	NET WEIGHT	(W3)	0.0905
Test Code	SAMPLE VOLUME In mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)	5.03
@SR90-01	DILUTION FACTOR	DF	101			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	13.10	SR-90 EFFICIENCY FACTOR	(C1)	0.4051
Batch Number	CRITICAL LEVEL	(Lc)	1.78	Y-90 EFFICIENCY FACTOR	(C2)	0.4503
97000221	TIME OF SEPARATION	(ST)	08:38	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	01/28/97	DETECTION LIMIT	(Ld)	3.64
0	TIME OF COUNT	(TOC)	13:40	Sr-89/90 CONC In $\mu\text{Ci/L}$		1.5354E+00
Sample Prep	DATE OF COUNT	(DOC)	01/28/97			
N/A						
Sample #						
S97T000025						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB26870	Sr-89/90 CONC In $\mu\text{Ci/L}$ Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT))))*SS*REC*2220000)					
SEH	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net WWeight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
SCL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
01/28/97						
Analysis Date						DETECTION LEVEL
01/28/97	Sr-89/90 CONCENTRATION	1.54E-03			$\mu\text{Ci/mL}$	
Analysis Time						
11:30 AM	RELATIVE COUNTING ERROR	26.1%				
Sample Point						4.27E-04
SY-102 GRAB1	PERCENT CARRIER RECOVERY	90.5%				$\mu\text{Ci/mL}$

Analyst:	SCL	Date:	28-Jan-97
Signature of Chemist:	SAC	Date:	29 Jan 97
SAMPLE.WB1 REV 2.0		22010NML	

WORKBOOK PAGE: SAM6

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

						SAMPLE	
Type	DETECTOR NUMBER		10	CARRIER ADDED In mL	(CVA)	1.000	
SAMPLE	TOTAL COUNTS	(TC)	724	GROSS WEIGHT	(W2)	7.7458	
Work List	COUNT TIME In MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.6578	
16361	BACKGROUND In cpm	(BKG)	8.7	NET WEIGHT	(W3)	0.0881	
Test Code	SAMPLE VOLUME In mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)	5.12	
@SR90-01	DILUTION FACTOR	DF	101				
Matrix	DIGEST DILUTION FACTOR	(DDF)	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	63.70	SR-90 EFFICIENCY FACTOR	(C1)	0.4051	
Batch Number	CRITICAL LEVEL	(Lc)	1.78	Y-90 EFFICIENCY FACTOR	(C2)	0.4503	
97000221	TIME OF SEPARATION	(ST)	08:43	Rmax		N/A	
Recm	DATE OF SEPARATION	(SD)	01/28/97	DETECTION LIMIT	(Ld)	3.64	
0	TIME OF COUNT	(TOC)	13:50	Sr-89/90 CONC In µCi/L		7.6625E+00	
Sample Prep	DATE OF COUNT	(DOC)	01/28/97				
N/A							
Sample #							
S97T000028							
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)						
WB26870	Sr-89/90 CONC In µCi/L Replace RS with RMAX if RS<Lc and RS>=0 or Replace RS with Lc if RS<0						
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT))))*SS*REC*2220000)						
SEH	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))						
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96						
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100						
Analyst	NOTE: Expected weight = CVA * 0.1						
SCL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.						
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100						
01/28/97							
Analysis Date							DETECTION LEVEL
01/28/97	Sr-89/90 CONCENTRATION		7.66E-03		µCi/mL		
Analysis Time							
11:30 AM	RELATIVE COUNTING ERROR		8.8%				
Sample Point							4.38E-04 µCi/mL
SY-102 GRAB1	PERCENT CARRIER RECOVERY		88.1%				

Analyst:	SCL	Date:	28-Jan-97
Signature of Chemist:	<i>alicato</i>	SAC	Date: 29 Jan 97

SAMPLE.WB1 REV 2.0

22010NML

WORKBOOK PAGE: DUP7

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

						DUP
Type	DETECTOR NUMBER		10	CARRIER ADDED In mL	(CVA)	1.000
DUP	TOTAL COUNTS	(TC)	690	GROSS WEIGHT	(W2)	7.7109
Work List	COUNT TIME In MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.6231
16361	BACKGROUND In cpm	(BKG)	8.7	NET WEIGHT	(W3)	0.0878
Test Code	SAMPLE VOLUME In mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)	5.37
@SR90-01	DILUTION FACTOR	DF	101			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	60.30	SR-90 EFFICIENCY FACTOR	(C1)	0.4051
Batch Number	CRITICAL LEVEL	(Lc)	1.78	Y-90 EFFICIENCY FACTOR	(C2)	0.4503
97000221	TIME OF SEPARATION	(ST)	08:43	Rmax		N/A
Re-run	DATE OF SEPARATION	(SD)	01/28/97	DETECTION LIMIT	(Ld)	3.64
0	TIME OF COUNT	(TOC)	14:05	Sr-89/90 CONC In µCi/L		7.2589E+00
Sample Prep	DATE OF COUNT	(DOC)	01/28/97			
N/A						
Sample #						
S97T000028						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB26870	Sr-89/90 CONC In µCi/L Replace RS with RMAX if RS<Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*DF*DDF/((C1+C2)*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)					
SEH	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
SCL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
01/28/97						
Analysis Date	Sr-89/90 CONCENTRATION					7.26E-03
01/28/97						µCi/mL
Analysis Time	RELATIVE COUNTING ERROR					9.1%
11:30 AM						4.39E-04
Sample Point	PERCENT CARRIER RECOVERY					87.8%
SY-102 GRAB1						µCi/mL

Analyst:	SCL	Date:	28-Jan-97
Signature of Chemist:	SAC	Date:	29 Jan 97

SAMPLE.VB1 REV 2.0

22010NML

LABCORE Completed RadChem Report for Worklist#: 16278

Analyst: jmv

Instrument: AB15

Book# _____

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

Worklist Comment: Determine sample size using ludlum.Std:(TNKFUS) 1.0ML. new

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		@AM24101 AM24101	LIQUID	1.19E-04	1.02E-4	85.714	% Recovery
1 STD	0		@AM24101 AM24101T	LIQUID	100.	9.05E+01	90.500	% Recovery
1 STD	0		@AM24101 AM24101E	LIQUID	1.0	1.73E+00	1.730	% Ct Error
2 BLNK	0		@AM24101 AM24101	LIQUID	1	<7.16E-6		uCi/mL
2 BLNK	0		@AM24101 AM24101T	LIQUID	100.0	7.53E+01	75.300	% Recovery
2 BLNK	0		@AM24101 AM24101E	LIQUID	1.0	5.14E+00	5.140	% Ct Error
3 SAMPLE	S97T000025	0	@AM24101 AM24101	LIQUID	N/A	6.87E-06	687.0e-008	uCi/mL
3 SAMPLE	S97T000025	0	@AM24101 AM24101E	LIQUID	N/A	5.46E+00	0.0e+000	% Ct. Error
3 SAMPLE	S97T000025	0	@AM24101 AM24101T	LIQUID	N/A	7.90E+01	0.0e+000	% Recovery
4 DUP	S97T000025	0	@AM24101 AM24101	LIQUID	<6.87E-6	<6.17E-6		RPD
4 DUP	S97T000025	0	@AM24101 AM24101T	LIQUID	100.0	8.58E+01	85.800	% Recovery
4 DUP	S97T000025	0	@AM24101 AM24101E	LIQUID	1.0	6.44E+00	6.440	% Ct Error
5 SAMPLE	S97T000028	0	@AM24101 AM24101	LIQUID	N/A	5.16E-06	516.0e-008	uCi/mL
5 SAMPLE	S97T000028	0	@AM24101 AM24101E	LIQUID	N/A	7.85E+00	0.0e+000	% Ct. Error
5 SAMPLE	S97T000028	0	@AM24101 AM24101T	LIQUID	N/A	6.50E+01	0.0e+000	% Recovery
6 DUP	S97T000028	0	@AM24101 AM24101	LIQUID	<9.16E-6	<7.36E-6		RPD
6 DUP	S97T000028	0	@AM24101 AM24101T	LIQUID	100.0	7.25E+01	72.500	% Recovery
6 DUP	S97T000028	0	@AM24101 AM24101E	LIQUID	1.0	7.51E+00	7.510	% Ct Error

Final page for worklist# 16278

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

John Relyea 28 Jan 97
 Reviewer Signature _____ Date _____
Validated

01/27/97 08:30
A-0004-1

LABCORE Data Entry Template for Worklist# 16278

Analyst: _____ Instrument: AM01 _____ Book# _____

Method: LA-953-103 Rev/Mod _____

Worklist Comment: Determine sample size using ludlum.Std:(TNKFUS) 1.0ML. new

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@AM24101	LIQUID		
2 BLNK			@AM24101	LIQUID		
3 SAMPLE	S97T000025 0		@AM24101	LIQUID	97000022	SY-102 GRAB1
	Analytes Requested: AM24101 , AM24101E, AM24101T					
4 DUP	S97T000025 0		@AM24101	LIQUID		
5 SAMPLE	S97T000028 0		@AM24101	LIQUID	97000022	SY-102 GRAB1
	Analytes Requested: AM24101 , AM24101E, AM24101T					
6 DUP	S97T000028 0		@AM24101	LIQUID		

Final page for worklist # 16278

Analyst Signature Date_____
Analyst Signature Date

Data Entry Comments:

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

01/22/97 09:46
A-0004-1

LABCORE Data Entry Template for Worklist# 16278

Analyst: DW Instrument: AM01 #15 Book# 62856

Method: LA-953-103 Rev/Mod _____

Worklist Comment: Determine sample size using ludlum.Std:(TNKFUS) 1.0ML. new

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@AM24101	LIQUID		
2 BLNK			@AM24101	LIQUID		
3 SAMPLE	S97T000025 0		@AM24101	LIQUID	97000022 SY-102 GRAB1	1m1
Analytes Requested: AM24101 , AM24101E, AM24101T						
4 DUP	S97T000025 0		@AM24101	LIQUID		
5 SAMPLE	S97T000028 0		@AM24101	LIQUID	97000022 SY-102 GRAB1	1m1
Analytes Requested: AM24101 , AM24101E, AM24101T						
6 DUP	S97T000028 0		@AM24101	LIQUID		
7 SAMPLE	S97T000029 0		@AM24101	LIQUID	97000022 SY-102 GRAB1	1-10-10-10
Analytes Requested: AM24101 , AM24101E, AM24101T						
8 DUP	S97T000029 0		@AM24101	LIQUID		

Final page for worklist # 16278

Jeremy S. T.
Analyst Signature Date 1-24-97

Analyst Signature Date

Data Entry Comments: S97T 29 WEEDS Digest

WORKBOOK PAGE: STD1

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

LIQUID

				STD
Type	Date Counted	JAN-25-97	Am 241 AEA Frac. (C241)	0.494
STD	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.448
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
16278	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	3778
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
AM24101	Tracer Book No.	125B43	Background in cpm (Bkg)	0.1
Matrix	Am-243 Tracer Value (dpm/mL)	1027	Am 241 cpm	56.42
LIQUID	Detector Number	15	Am 243 cpm	51.13
Batch Number	Detector Efficiency (DetEff)	0.3032	Cm 243/244 cpm	0
97000130	Standard Book No	62B56	AEA Count Time (min)	480
Refin	Standard Value in µCi/mL	1.186E-04	Am 241 µCi/L =	1.020E-01
0			Cm 243/244 µCi/L =	< 1.1408E-02
Sample Prep				
N/A				
Sample Number	Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))			
WL16278	Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))			
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))]] * 1.96 * 100			
WB26872	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV			
Prepared By				
SEH				
Chemist				
JFR	Am 241 µCi/mL =	1.02E-04	DETECTION LEVELS in µCi/mL	
Analyst	Relative Counting Error =	1.7%		
JMV			Am 241	
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.		1.14E-05	
01/27/97	Cm 243/244 µCi/mL	< 1.14E-05	Cm 243/244	
Analysis Date	Relative Counting Error =	100.0%	1.14E-05	
01/24/97	Am 243 Tracer Recovery =	90.5%		
Analysis Time				
10:05 PM				
Sample Point				
SY-102 GRAB1				

Analyst:	JMV	Date:	01/27/97
Signature of Chemist:	<i>John Pelyez</i>	JFR	28 Jan 97

STANDARD.WB1 REV 1.2

953103ML

WORKBOOK PAGE: BLANK2

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

LIQUID / SOLID

WORKBOOK PAGE: BLANKZ

Am 241 and Cm 243/244: LA-95-103 (B-0)			LIQUID / SOLID		BLNK
Type	Date Counted	JAN-25-97	Am 241 AEA Frac.	(C241)	0.062
BLNK	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac.	(C243)	0.859
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac.	(Cm)	0
16278	Tracer Volume in mL (SPKV)	0.200	Total AT Counts		1640
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)		30
@AM24101	Tracer Book No.	125B43	Background in cpm (Bkg)		0.1
Matrix	Am-243 Tracer Value (dpm/mL)	1027	Am 241 cpm		3.24
LIQUID	Detector Number	15	Am 243 cpm		45.34
Batch Number	Detector Efficiency (DetEff)	0.3032	Cm 243/244 cpm		0
97000130			AEA Count Time (min)		480
Rerun			Am 241 $\mu\text{Ci/L}$ =	<	7.1554E-03
0			Cm 243/244 $\mu\text{Ci/L}$ =	<	7.1554E-03
Sample Prep					
N/A					
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
WL16278	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100				
WB26872	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV				
Prepared By					
SEH					
Chemist	NOTE: Am-241 Result is a LESS THAN Value.				
JFR	Am 241 $\mu\text{Ci/mL}$ =	< 7.16E-06	DETECTION LEVELS in $\mu\text{Ci/mL}$		
Analyst	Relative Counting Error =	5.1%			
JMV					
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.				
01/27/97	Cm 243/244 $\mu\text{Ci/mL}$	< 7.16E-06	Am 241		
Analysis Date	Relative Counting Error =	100.0%	7.16E-06		
01/24/97	Am 243 Tracer Recovery =	75.3%	Cm 243/244		
Analysis Time					
10:05 PM					
Sample Point					
SY-102 GRAB1					

Analyst:	JMV	Date:	01/27/97
Signature of Chemist:	JFR	Date:	28 Jan 97

BLANK.WB1 REV 1.2

953103ML

WORKBOOK PAGE: SAM3

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

LIQUID / SOLID

WORKBOOK PAGE: 5AMS

Am 241 and Cm 243/244: LA-953-103 (B-0)			LIQUID / SOLID		SAMPLE
Type	Date Counted		JAN-25-97	Am 241 AEA Frac. (C241)	0.046
SAMPLE	Sample Volume in mL (SS)		1.000	Am 243 AEA Frac. (C243)	0.853
Work List	Sample D.F. (DF)		1	Cm 243/244 AEA Frac. (Cm)	0
16278	Tracer Volume in mL (SPKV)		0.200	Total AT Counts	1733
Test Code	Digest D.F. (DDF)		1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.		125B43	Background in cpm (Bkg)	0.1
Matrix	Am-243 Tracer Value (dpm/mL)		1027	Am 241 cpm	2.83
LIQUID	Detector Number		15	Am 243 cpm	52.02
Batch Number	Detector Efficiency (DetEff)		0.3032	Cm 243/244 cpm	0
97000130				AEA Count Time (min)	480
Return				Am 241 $\mu\text{Ci/L}$ =	< 6.8663E-03
0				Cm 243/244 $\mu\text{Ci/L}$ =	< 6.8663E-03
Sample Prep					
N/A					
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
S97T000025	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100				
WB26672	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV				
Prepared By					
SEH					
Chemist	NOTE: Am-241 Result is a LESS THAN Value.				
JFR	Am 241 $\mu\text{Ci/mL}$ =	< 6.87E-06	DETECTION LEVELS in $\mu\text{Ci/mL}$		
Analyst	Relative Counting Error =	5.5%			
JMV					
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.				
01/27/97	Cm 243/244 $\mu\text{Ci/mL}$	< 6.87E-06	Am 241		
Analysis Date	Relative Counting Error =	100.0%	6.87E-06		
01/24/97	Am 243 Tracer Recovery =	79.0%	Cm 243/244		
Analysis Time	6.87E-06				
10:05 PM					
Sample Point					
SY-102 GRAB1					

Analyst:	JMV	Date:	01/27/97
Signature of Chemist:	JFR	Date:	28 Jan 97

SAMPLE.WB1 REV 1.2

953103ML

WORKBOOK PAGE: DUP4

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

LIQUID / SOLID

WORKBOOK PAGE: DUP4

Am 241 and Cm 243/244: LA-95-103 (B-0)			LIQUID / SOLID		DUP
Type	Date Counted	JAN-25-97	Am 241 AEA Frac.	(C241)	0.046
DUP	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac.	(C243)	0.875
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac.	(Cm)	0
16278	Tracer Volume in mL (SPKV)	0.200	Total AT Counts		1834
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)		30
@AM24101	Tracer Book No.	125B43	Background in cpm (Bkg)		0.1
Matrix	Am-243 Tracer Value (dpm/mL)	1027	Am 241 cpm		2.03
LIQUID	Detector Number	15	Am 243 cpm		38.34
Batch Number	Detector Efficiency (DetEff)	0.3032	Cm 243/244 cpm		0
97000130			AEA Count Time (min)		480
Rerun			Am 241 $\mu\text{Ci/L}$ =	<	6.1654E-03
0			Cm 243/244 $\mu\text{Ci/L}$ =	<	6.1654E-03
Sample Prep					
N/A					
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
S97T000025	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100				
WB26872	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV				
Prepared By					
SEH					
Chemist	NOTE: Am-241 Result is a LESS THAN Value.				
JFR	Am 241 $\mu\text{Ci/mL}$ =	< 6.17E-06	DETECTION LEVELS in $\mu\text{Ci/mL}$		
Analyst	Relative Counting Error =	6.4%			
JMV			Am 241 6.17E-06 Cm 243/244 6.17E-06		
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.				
01/27/97	Cm 243/244 $\mu\text{Ci/mL}$	< 6.17E-06			
Analysis Date	Relative Counting Error =	100.0%			
01/24/97	Am 243 Tracer Recovery =	85.8%			
Analysis Time					
10:05 PM					
Sample Point					
SY-102 GRAB1					

Analyst:	JMV	Date:	01/27/97
Signature of Chemist:	<i>John Relyea</i>	Date:	28 Jan 97

SAMPLE.WB1 REV 1.2

953103ML

WORKBOOK PAGE: SAM5

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

LIQUID / SOLID

WORKBOOK PAGE: SAM5

Am 241 and Cm 243/244: LA-953-103 (B-O)			LIQUID / SOLID		SAMPLE
Type	Date Counted	JAN-25-97	Am 241 AEA Frac.	(C241)	0.024
SAMPLE	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac.	(C243)	0.777
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac.	(Cm)	0
16278	Tracer Volume in mL (SPKV)	0.200	Total AT Counts		1586
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)		30
@AM24101	Tracer Book No.	125B43	Background in cpm (Bkg)		0.1
Matrix	Am-243 Tracer Value (dpm/mL)	1027	Am 241 cpm		1.34
LIQUID	Detector Number	15	Am 243 cpm		43.49
Batch Number	Detector Efficiency (DetEff)	0.3032	Cm 243/244 cpm		0
97000130			AEA Count Time (min)		480
Rerun			Am 241 $\mu\text{Ci/L}$ =	<	9.1594E-03
0			Cm 243/244 $\mu\text{Ci/L}$ =	<	9.1594E-03
Sample Prep					
N/A					
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
S97T000028	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100				
WB26872	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV				
Prepared By					
SEH	NOTE: Am-241 Result is a LESS THAN Value.				
Chemist	Am 241 $\mu\text{Ci/mL}$ =		DETECTION LEVELS in $\mu\text{Ci/mL}$		
JFR	< 9.16E-06				
Analyst	Relative Counting Error =		Am 241 9.16E-06		
JMV	7.8%				
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.		Cm 243/244 9.16E-06		
01/27/97	Cm 243/244 $\mu\text{Ci/mL}$ < 9.16E-06				
Analysis Date	Relative Counting Error =		Am 243 Tracer Recovery =		
01/24/97	100.0%				
Analysis Time	65.0%				
10:05 PM					
Sample Point					
SY-102 GRAB1					

Analyst:	JMV	Date:	01/27/97
Signature of Chemist:	JFR	Date:	28 Jan 97
SAMPLE.WB1 REV 1.2	953103ML		

WORKBOOK PAGE: DUP6

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

LIQUID / SOLID

				DUP
Type	Date Counted	JAN-25-97	Am 241 AEA Frac. (C241)	0.026
DUP	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.867
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	30
16278	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1565
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	125B43	Background In cpm (Bkg)	0.1
Matrix	Am-243 Tracer Value (dpm/mL)	1027	Am 241 cpm	1.46
LIQUID	Detector Number	15	Am 243 cpm	49.29
Batch Number	Detector Efficiency (DetEff)	0.3032	Cm 243/244 cpm	0
97000130			AEA Count Time (min)	480
Rerun			Am 241 µCi/L	< 7.3612E-03
0			Cm 243/244 µCi/L	3.2015E+00
Sample Prep				
N/A				
Sample Number	Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))			
S97T000028	Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))			
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100			
WB26672	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV			
Prepared By	NOTE: Am-241 Result is a LESS THAN Value.			
SEH	Am 241 µCi/mL =	< 7.36E-06	DETECTION LEVELS in µCi/mL	
Chemist	Analyst	Relative Counting Error =		
JFR	JMV		Am 241	
Date Complete			7.36E-06	
01/27/97	Cm 243/244 µCi/mL	3.20E-03	Cm 243/244	
Analysis Date	Relative Counting Error =	100.0%	7.36E-06	
01/24/97	Am 243 Tracer Recovery =	72.5%		
Analysis Time				
10:05 PM				
Sample Point				
SV-102 GRAB1				

Analyst:	JMV	Date:	01/27/97
Signature of Chemist:	JFR	Date:	28 Jan 97
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
WL16278-STD-AM
File ID: 7a7670.CNF

Counted on: 1/25/97 @14:19
Detector: AEA7
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	1352.8	1352.8	301.061	301.061	18.000	12.143	9.000	4.642
2	1215.0	1215.0	255.174	255.132	18.000	11.260	9.000	3.971
3	21.1	21.1	170.289	170.197	110.000	1.000	55.000	0.100
4?	1.0	0.1	154.677	153.639	6.000	0.100	3.000	0.100

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid		FWHM	Count Rate	%err c/m	@95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.					
1	Am241	0.494	5.479	5.475	0.004	0.06	56.42	1.2	181.6	0.818E-04
	Pu238		5.487	5.475	0.012				237.1	0.107E-03
2	Am243	0.448	5.270	5.264	0.006	0.05	51.13	1.3	156.3	0.704E-04
3	Pu242	0.015	4.891	4.874	0.017	0.00	1.68	6.9	5.1	0.229E-05
4		????		4.797			0.00	*****		
Totals:			0.957	<--valid peaks only-->			109.24			

DETECTOR CALIBRATION

Energy (MEV) = 4.091 + (0.0046) * Channel
Energy range (MeV): 4.091 TO 6.446
Efficiency = 0.3305 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	54817.0	100.000
Smoothed	54817.0	100.000
Composite fit	52441.9	95.667
Residuals	2375.1	4.333

Analyzed by: _____

VR

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 10104.5

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Raw Data Dump for AEA Spectrum: 7a7670.CNF										
1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	1.	1.	2.	4.	2.	2.
21	3.	2.	3.	0.	3.	3.	7.	3.	3.	2.
31	3.	2.	2.	5.	4.	1.	2.	4.	3.	5.
41	2.	4.	1.	2.	6.	1.	7.	2.	3.	0.
51	4.	5.	3.	7.	5.	1.	2.	6.	4.	3.
61	4.	6.	10.	4.	0.	4.	2.	2.	8.	4.
71	6.	1.	9.	2.	4.	4.	7.	4.	3.	7.
81	8.	3.	3.	3.	3.	3.	8.	4.	6.	4.
91	5.	2.	7.	10.	11.	7.	4.	7.	5.	9.
101	5.	4.	6.	6.	3.	7.	10.	6.	10.	3.
111	5.	9.	6.	7.	6.	8.	9.	4.	9.	16.
121	11.	7.	2.	7.	10.	11.	3.	5.	8.	13.
131	6.	6.	10.	7.	5.	8.	10.	17.	4.	6.
141	7.	14.	8.	9.	10.	11.	12.	13.	14.	8.
151	14.	10.	16.	17.	16.	13.	10.	20.	14.	19.
161	16.	13.	13.	16.	13.	13.	24.	20.	15.	22.
171	18.	21.	13.	18.	15.	23.	16.	17.	29.	19.
181	24.	25.	27.	28.	21.	20.	27.	27.	33.	34.
191	32.	38.	23.	32.	42.	50.	45.	37.	35.	44.
201	54.	39.	49.	50.	47.	52.	58.	44.	60.	56.
211	58.	69.	58.	71.	67.	67.	85.	92.	104.	90.
221	95.	99.	102.	112.	120.	118.	146.	163.	137.	152.
231	180.	203.	174.	188.	240.	231.	250.	317.	284.	333.
241	354.	408.	431.	516.	569.	637.	667.	771.	924.	990.
251	1060.	1180.	1204.	1326.	1341.	1319.	1182.	1098.	990.	780.
261	674.	520.	420.	327.	282.	281.	261.	230.	175.	175.
271	167.	184.	161.	196.	181.	209.	147.	200.	194.	222.
281	226.	227.	245.	259.	313.	362.	401.	487.	519.	565.
291	636.	712.	786.	848.	1002.	1108.	1191.	1325.	1372.	1483.
301	1447.	1436.	1328.	1200.	1061.	862.	723.	631.	490.	422.
311	339.	277.	183.	176.	117.	98.	61.	31.	26.	17.
321	13.	8.	6.	2.	1.	0.	2.	2.	1.	0.
331	0.	1.	1.	0.	1.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	2.	1.	2.	0.	2.
351	3.	1.	1.	0.	0.	1.	0.	2.	1.	1.
361	0.	0.	2.	1.	0.	0.	0.	1.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	1.	0.	0.	0.	0.	0.	1.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	1.	0.	0.	0.	1.	0.	0.	0.	0.
481	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	2.	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
 WL16278-BLK-AM
 File ID: 8a8870.CNF

Counted on: 1/25/97 @14:19
 Detector: AEA8
 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	11.5	11.5	301.085	301.085	22.000	14.772	11.000	0.373
2	1003.9	1003.9	256.750	256.747	18.000	11.626	9.000	3.568
3	25.5	25.5	186.600	186.140	70.000	417.867	35.000	126.370
4?	0.0	0.1	167.650	167.650	0.000	0.100	0.000	0.100
5?	0.0	0.1	152.439	152.439	0.000	0.100	0.000	0.100

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM Rate c/m	Count @95	%err	d/m	Activity uCi/ea	
1	Am241	0.062	5.479	5.486	-0.0070.07	3.24	5.0		13.6	0.611E-05	
	Pu238		5.487	5.486	0.001				17.7	0.798E-05	
2	Am243	0.859	5.270	5.277	-0.0070.05	45.34	1.4		180.1	0.811E-04	
3	Np237	0.098	4.769	4.945	-1.1761.96	5.19	12.6		23.4	0.106E-04	
	Pu242		4.891	4.945	-0.054				20.4	0.919E-05	
4		????		4.858		0.00	*****				
5		????		4.787		0.00	*****				
Totals:			1.019	<--valid peaks only-->				53.77			

DETECTOR CALIBRATION

Energy(MEV) = 4.070 + (0.0047)*Channel
 Energy range (MeV): 4.070 TO 6.477
 Efficiency = 0.2543 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	25321.0	100.000
Smoothed	25321.0	100.000
Composite fit	25810.8	101.935
Residuals	-489.8	-1.935

Analyzed by: _____

VR

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 6682.1

[illegible]

Raw Data Dump for AEA Spectrum:	8a8870.CNF								
1	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	3.	5.	2.	3.	4.
21	2.	4.	2.	2.	0.	0.	2.	1.	3.
31	7.	5.	3.	1.	3.	4.	2.	1.	1.
41	2.	6.	4.	3.	2.	3.	5.	6.	3.
51	4.	3.	3.	2.	6.	5.	6.	1.	5.
61	4.	3.	1.	2.	10.	2.	8.	3.	7.
71	5.	6.	6.	3.	3.	4.	4.	6.	4.
81	9.	3.	5.	3.	8.	7.	10.	5.	9.
91	3.	3.	3.	3.	7.	5.	4.	8.	10.
101	7.	5.	5.	5.	5.	10.	8.	10.	4.
111	5.	12.	8.	5.	8.	9.	4.	7.	8.
121	9.	5.	8.	4.	13.	10.	6.	8.	8.
131	14.	9.	8.	15.	11.	8.	6.	12.	10.
141	15.	9.	13.	12.	10.	11.	15.	6.	11.
151	16.	8.	14.	16.	11.	9.	11.	14.	13.
161	12.	19.	17.	16.	18.	18.	19.	19.	20.
171	13.	16.	17.	13.	23.	24.	29.	25.	21.
181	30.	27.	21.	25.	27.	32.	36.	24.	27.
191	25.	29.	35.	44.	42.	35.	32.	49.	48.
201	53.	39.	46.	50.	57.	61.	54.	47.	57.
211	66.	74.	64.	83.	69.	72.	79.	90.	88.
221	90.	102.	92.	92.	120.	115.	122.	123.	120.
231	174.	180.	171.	166.	196.	226.	235.	245.	286.
241	306.	332.	389.	375.	453.	499.	569.	586.	655.
251	816.	896.	959.	1035.	1033.	1077.	1059.	1069.	987.
261	777.	670.	525.	445.	290.	242.	202.	148.	114.
271	78.	60.	61.	47.	39.	28.	24.	12.	15.
281	4.	2.	3.	4.	7.	5.	7.	3.	3.
291	5.	1.	3.	8.	4.	7.	7.	6.	13.
301	16.	9.	12.	11.	4.	7.	13.	8.	5.
311	3.	3.	1.	2.	0.	1.	0.	0.	0.
321	0.	0.	0.	1.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	1.	1.	0.	0.
341	0.	2.	1.	0.	0.	1.	1.	1.	0.
351	2.	1.	0.	0.	2.	0.	0.	1.	0.
361	1.	0.	1.	0.	1.	1.	1.	0.	0.
371	0.	0.	1.	0.	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.	1.	0.	0.	0.	0.	0.	0.	1.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	1.
471	0.	0.	0.	0.	1.	0.	0.	0.	0.
481	0.	0.	1.	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
 S97T25-SAM-AM
 File ID: 9a9682.CNF

Counted on: 1/25/97 @14:20
 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	79.4	79.4	303.021	303.021	14.000	7.326	7.000	2.869
2	1674.0	1674.0	256.970	256.969	12.000	5.421	6.000	2.397

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	Pu238	0.046	5.487	5.474	0.013	0.03	2.83	5.3	10.4	0.468E-05
	Am241		5.479	5.474	0.005				8.0	0.359E-05
2	Am243	0.853	5.270	5.262	0.008	0.02	52.02	1.2	138.9	0.626E-04
Totals:			0.899	<--valid peaks only-->			54.85			

DETECTOR CALIBRATION

Energy(MEV) = 4.080 + (0.0046)*Channel
 Energy range (MeV): 4.080 TO 6.435
 Efficiency = 0.3783 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	29278.0	100.000
Smoothed	29278.0	100.000
Composite fit	26331.7	89.937
Residuals	2946.3	10.063

Analyzed by: _____

VR

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 9000.1

[illegible]

Raw Data Dump for AEA Spectrum: 9a9682.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	2.	3.	1.	2.
21	1.	2.	1.	1.	1.	0.	0.	1.	0.
31	1.	0.	2.	4.	1.	4.	2.	4.	1.
41	0.	1.	1.	3.	1.	0.	0.	4.	0.
51	4.	6.	1.	4.	1.	5.	2.	2.	5.
61	2.	5.	2.	2.	7.	1.	4.	1.	4.
71	2.	2.	0.	1.	5.	3.	1.	5.	3.
81	1.	3.	0.	2.	2.	4.	1.	3.	1.
91	4.	2.	2.	7.	4.	1.	2.	3.	2.
101	3.	3.	2.	0.	2.	2.	1.	7.	6.
111	3.	5.	3.	2.	2.	6.	3.	4.	5.
121	5.	3.	3.	2.	2.	4.	4.	3.	2.
131	4.	2.	2.	11.	2.	6.	7.	6.	4.
141	2.	6.	9.	7.	7.	7.	5.	7.	5.
151	11.	3.	9.	7.	4.	13.	6.	6.	10.
161	8.	5.	9.	10.	6.	10.	10.	11.	7.
171	13.	11.	10.	9.	10.	13.	8.	10.	6.
181	14.	14.	20.	15.	17.	13.	10.	21.	15.
191	20.	16.	21.	18.	17.	20.	22.	16.	19.
201	24.	22.	20.	26.	20.	37.	22.	21.	26.
211	42.	34.	38.	42.	49.	51.	57.	57.	49.
221	67.	84.	84.	80.	79.	103.	99.	109.	101.
231	137.	148.	140.	152.	214.	203.	211.	228.	230.
241	297.	304.	340.	408.	509.	554.	639.	700.	766.
251	960.	1136.	1214.	1458.	1666.	1761.	1951.	1899.	1544.
261	814.	511.	353.	243.	201.	178.	146.	130.	133.
271	121.	79.	55.	51.	39.	20.	26.	8.	16.
281	8.	8.	12.	14.	10.	12.	17.	15.	23.
291	22.	30.	31.	30.	40.	44.	44.	64.	61.
301	64.	94.	89.	93.	69.	63.	40.	30.	26.
311	11.	20.	16.	12.	7.	5.	4.	1.	0.
321	0.	1.	0.	0.	1.	0.	2.	1.	1.
331	1.	0.	1.	1.	0.	1.	1.	0.	1.
341	1.	0.	3.	1.	1.	5.	3.	1.	4.
351	6.	2.	3.	2.	2.	5.	3.	2.	4.
361	4.	8.	1.	3.	3.	0.	3.	1.	1.
371	0.	0.	1.	0.	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.	1.	0.	0.	0.	0.
421	0.	0.	1.	0.	0.	1.	0.	0.	0.
431	0.	1.	1.	0.	0.	0.	1.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	1.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	1.	0.	0.	2.	0.	2.
471	1.	1.	1.	1.	0.	0.	1.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.							

Westinghouse Hanford Co.
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
S97T25-DUP-AM
File ID: 10a1085.CNF

Counted on: 1/25/97 @14:21
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	64.2	64.2	304.478	304.478	12.000	5.873	6.000	2.615
2	1365.1	1365.1	258.391	258.391	12.000	4.627	6.000	2.322

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	Pu238	0.046	5.487	5.475	0.012	0.03	2.03	6.3	11.6	0.524E-05
	Am241		5.479	5.475	0.004				8.9	0.401E-05
2	Am243	0.875	5.270	5.263	0.007	0.02	38.34	1.4	159.4	0.718E-04
Totals:			0.921	<--valid peaks only-->			40.37			

DETECTOR CALIBRATION

Energy(MEV) = $4.074 + (0.0046) \cdot \text{Channel}$
 Energy range (MeV): 4.074 TO 6.429
 Efficiency = 0.2429 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	21035.0	100.000
Smoothed	21035.0	100.000
Composite fit	19377.9	92.122
Residuals	1657.1	7.878

Analyzed by:

VR

Raw Data Dump for AEA Spectrum:	10a1085.CNF									
1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	2.	1.	2.	2.	0.
21	1.	1.	0.	2.	1.	1.	1.	1.	2.	2.
31	0.	1.	0.	1.	2.	1.	0.	1.	1.	0.
41	0.	2.	2.	0.	0.	1.	1.	1.	1.	1.
51	1.	2.	0.	1.	0.	0.	0.	2.	0.	1.
61	1.	0.	0.	1.	0.	3.	0.	2.	2.	1.
71	1.	1.	2.	2.	0.	1.	2.	2.	1.	1.
81	1.	0.	0.	2.	0.	0.	3.	0.	0.	2.
91	1.	4.	1.	2.	0.	2.	2.	2.	1.	3.
101	1.	1.	1.	2.	0.	1.	2.	0.	2.	0.
111	5.	0.	3.	2.	1.	1.	1.	1.	3.	1.
121	2.	2.	0.	0.	2.	2.	2.	1.	2.	0.
131	1.	1.	0.	5.	5.	2.	1.	4.	1.	2.
141	1.	1.	2.	3.	4.	2.	2.	1.	4.	1.
151	3.	5.	7.	4.	3.	7.	3.	4.	2.	4.
161	5.	4.	3.	6.	4.	1.	7.	5.	1.	6.
171	3.	6.	5.	3.	4.	0.	4.	10.	6.	6.
181	3.	4.	6.	8.	2.	7.	6.	8.	5.	3.
191	8.	7.	5.	4.	6.	14.	7.	7.	4.	6.
201	5.	12.	9.	14.	8.	7.	12.	17.	17.	20.
211	19.	18.	13.	21.	20.	20.	22.	27.	20.	22.
221	20.	37.	28.	39.	36.	40.	42.	33.	38.	52.
231	46.	60.	62.	64.	88.	112.	99.	115.	151.	144.
241	147.	181.	204.	246.	257.	297.	354.	412.	488.	557.
251	612.	657.	805.	915.	1106.	1253.	1443.	1594.	1621.	1390.
261	1133.	703.	408.	243.	143.	96.	100.	81.	91.	71.
271	84.	66.	66.	51.	26.	28.	13.	9.	5.	5.
281	3.	2.	1.	7.	10.	7.	5.	7.	13.	8.
291	19.	22.	20.	30.	25.	31.	24.	34.	33.	38.
301	64.	61.	76.	66.	67.	79.	53.	38.	18.	16.
311	16.	12.	10.	5.	9.	8.	4.	2.	1.	0.
321	0.	0.	1.	2.	0.	1.	0.	0.	0.	1.
331	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
341	1.	1.	1.	1.	1.	1.	1.	5.	2.	2.
351	1.	1.	1.	2.	0.	1.	1.	2.	1.	3.
361	2.	3.	2.	3.	2.	2.	0.	1.	2.	2.
371	0.	0.	0.	1.	0.	1.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	2.	0.	0.	0.	0.	0.	0.	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.	0.	0.	3.	1.	2.	0.	0.	0.	1.
481	0.	2.	0.	2.	1.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

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

DATA REDUCTION REPORT

SAMPLE
S97T28-AM
File ID: 11a1110.CNF

Counted on: 1/25/97 @14:21
Detector: AEA11
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	27.3	27.3	300.254	300.254	14.000	8.593	7.000	2.007
2	1087.9	1087.9	254.265	254.263	12.000	6.484	6.000	1.931
3	19.5	19.5	125.496	125.493	200.000	1.000	100.000	0.100
4?	3.4	3.4	113.122	112.321	6.000	0.426	3.000	0.340

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	0.024	5.479	5.457	0.022	0.04	1.34	7.7	17.1	0.769E-05
	Pu238		5.487	5.457	0.030				22.3	0.100E-04
2	Am243	0.777	5.270	5.245	0.025	0.03	43.49	1.4	527.4	0.238E-03
3	Np237	0.027	4.640	4.653	-0.013	0.00	1.52	7.2	304.9	0.137E-03
4		????		4.592			0.04	221.		

Totals: 0.828 <--valid peaks only--> 46.35

DETECTOR CALIBRATION

Energy (MEV) = 4.076 + (0.0046)*Channel
Energy range (MeV): 4.076 TO 6.431
Efficiency = 0.0833 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	26860.0	100.000
Smoothed	26860.0	100.000
Composite fit	22273.7	82.925
Residuals	4586.3	17.075

Analyzed by: _____

VR

7792.8

232

Raw Data Dump for AEA Spectrum: 11a1110.CNF									
1	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	5.	7.	3.	7.
21	4.	0.	2.	3.	3.	5.	5.	4.	6.
31	4.	6.	4.	7.	10.	5.	7.	6.	5.
41	4.	5.	4.	6.	3.	5.	4.	7.	4.
51	9.	10.	9.	5.	14.	6.	11.	7.	10.
61	10.	6.	8.	12.	6.	5.	9.	10.	9.
71	10.	9.	8.	11.	9.	5.	14.	10.	11.
81	14.	16.	4.	6.	14.	10.	11.	14.	5.
91	7.	14.	14.	6.	10.	11.	12.	12.	10.
101	10.	16.	11.	14.	6.	10.	16.	16.	14.
111	10.	20.	22.	14.	14.	17.	14.	13.	9.
121	8.	15.	12.	14.	19.	21.	13.	15.	10.
131	18.	18.	11.	29.	19.	12.	19.	18.	25.
141	28.	17.	16.	20.	26.	28.	18.	28.	29.
151	26.	22.	30.	31.	28.	19.	25.	27.	34.
161	25.	40.	21.	21.	28.	31.	37.	33.	36.
171	31.	37.	35.	28.	34.	35.	30.	34.	40.
181	43.	34.	49.	53.	52.	48.	46.	53.	54.
191	53.	34.	59.	66.	59.	60.	60.	71.	75.
201	68.	82.	68.	72.	87.	76.	76.	91.	87.
211	84.	92.	93.	98.	98.	105.	134.	113.	130.
221	135.	151.	168.	150.	138.	149.	182.	166.	177.
231	186.	228.	206.	249.	260.	274.	288.	322.	354.
241	419.	441.	464.	594.	560.	635.	699.	720.	830.
251	938.	1073.	1197.	1174.	1186.	1134.	989.	689.	457.
261	210.	148.	140.	100.	101.	104.	102.	75.	57.
271	34.	19.	28.	20.	4.	5.	5.	5.	7.
281	7.	4.	9.	9.	9.	9.	12.	10.	15.
291	11.	24.	26.	22.	20.	21.	36.	27.	25.
301	32.	27.	23.	22.	11.	8.	15.	2.	8.
311	2.	0.	3.	2.	3.	0.	0.	0.	1.
321	0.	0.	0.	0.	0.	1.	1.	0.	0.
331	1.	0.	1.	0.	0.	2.	0.	0.	1.
341	0.	1.	0.	1.	0.	3.	3.	1.	2.
351	1.	0.	1.	1.	0.	0.	4.	0.	3.
361	0.	1.	2.	0.	0.	0.	0.	0.	1.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	1.	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.	1.	0.	0.	0.
431	0.	0.	1.	0.	0.	0.	0.	1.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	1.
471	1.	0.	0.	1.	0.	0.	1.	1.	1.
481	0.	0.	0.	1.	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
 S97T28-DUP-AM
 File ID: 12a1258.CNF

Counted on: 1/25/97 @14:22
 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	28.9	28.9	307.196	307.196	12.000	7.860	6.000	1.707
2	1233.6	1233.6	259.959	259.956	14.000	7.529	7.000	2.379

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Exp.	Centroid Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea	
1	Pu238	0.026	5.487	5.487	0.0000.04		1.46	7.4	5.1	0.231E-05	
	Am241		5.479	5.487	-.008				3.9	0.177E-05	
2	Am243	0.867	5.270	5.270	0.0000.03		49.29	1.3	125.9	0.567E-04	
Totals:		0.892	<--valid peaks only-->				50.75				

DETECTOR CALIBRATION

Energy(MEV) = 4.074 + (0.0046)*Channel
 Energy range (MeV): 4.074 TO 6.429
 Efficiency = 0.3954 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	27301.0	100.000
Smoothed	27302.7	100.006
Composite fit	24362.6	89.237
Residuals	2938.4	10.763

Analyzed by: _____

VR

1 Legend:

$$\text{Raw} = \dots$$

Modeled Peaks = 1, 2, ..., etc

Display Max.:

8874.7

Raw Data Dump for AEA Spectrum: 12a1258.CNF

1	0.	0.	1.	1.	1.	0.	0.	0.	1.
11	1.	0.	0.	0.	0.	2.	2.	2.	0.
21	1.	0.	0.	3.	3.	2.	1.	2.	3.
31	2.	0.	0.	0.	2.	1.	6.	4.	1.
41	4.	2.	2.	3.	3.	1.	2.	1.	0.
51	2.	5.	3.	3.	4.	7.	5.	3.	4.
61	1.	3.	2.	2.	0.	5.	2.	4.	0.
71	9.	6.	1.	3.	4.	5.	1.	7.	5.
81	6.	2.	8.	2.	1.	5.	1.	5.	5.
91	2.	3.	3.	1.	1.	4.	4.	2.	2.
101	3.	4.	3.	2.	6.	3.	3.	2.	3.
111	3.	4.	11.	4.	6.	9.	5.	7.	2.
121	3.	3.	7.	9.	10.	7.	8.	4.	4.
131	3.	5.	7.	10.	4.	6.	5.	7.	5.
141	7.	7.	7.	8.	13.	5.	8.	13.	9.
151	6.	8.	12.	9.	7.	7.	6.	15.	10.
161	10.	13.	10.	12.	10.	8.	14.	13.	11.
171	17.	17.	22.	12.	25.	24.	14.	22.	21.
181	21.	24.	25.	22.	21.	21.	26.	21.	21.
191	24.	20.	23.	28.	30.	36.	29.	38.	37.
201	42.	37.	48.	49.	51.	40.	63.	36.	48.
211	53.	55.	44.	49.	81.	73.	62.	70.	82.
221	79.	70.	105.	99.	113.	119.	113.	120.	114.
231	124.	134.	134.	189.	166.	190.	219.	214.	232.
241	261.	267.	313.	305.	384.	404.	450.	481.	547.
251	747.	723.	770.	971.	985.	1136.	1168.	1182.	1309.
261	1309.	1203.	1016.	765.	550.	399.	291.	210.	164.
271	113.	104.	125.	70.	71.	66.	49.	48.	30.
281	17.	7.	4.	9.	4.	4.	4.	6.	6.
291	14.	11.	13.	15.	16.	15.	14.	19.	8.
301	22.	35.	21.	39.	18.	35.	24.	35.	27.
311	23.	14.	10.	7.	6.	7.	3.	1.	7.
321	3.	0.	1.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	1.	0.	0.	0.	0.	0.
341	2.	0.	2.	0.	0.	0.	0.	1.	0.
351	3.	2.	3.	0.	2.	0.	2.	2.	0.
361	0.	3.	0.	2.	2.	2.	0.	1.	0.
371	0.	0.	1.	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.	1.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	1.	0.	0.	0.
421	0.	0.	1.	0.	0.	0.	0.	0.	1.
431	0.	0.	0.	0.	1.	0.	0.	0.	2.
441	1.	0.	1.	1.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	1.	0.	0.	0.	0.	1.	1.	0.	0.
481	0.	0.	0.	1.	0.	3.	1.	1.	1.
491	1.	0.	0.	0.	0.	0.	0.	0.	0.
511	1.	0.							

LABCORE Completed Worklist Report for Worklist# 16279

Analyst: jmv

Instrument: AB14

Book# _____

Method: LA-943-1B Rev/Mod B-0

Worklist Comment: Determine sample size using ludlum.Std:(TNKFUS) 1.0ml. new

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		@PU23901 PU23901	L I Q U I D	1.49E-04	1.485E-4	99.664 % Recovery	
1 STD	0		@PU23901 PU23901E	L I Q U I D	1.00	1.7	1.700 % Ct Error	
1 STD	0		@PU23901 PU23901T	L I Q U I D	100	8.20E+01	82.000 % Recovery	
2 BLNK	0		@PU23901 PU23901	L I Q U I D	1	<4.24E-6		uCi/mL
2 BLNK	0		@PU23901 PU23901T	L I Q U I D	100	8.35E+01	83.500 % Recovery	
2 BLNK	0		@PU23901 PU23901E	L I Q U I D	1.00	1.00E+02	100.000	uCi/mL
3 SAMPLE	S97T000025	0	@PU23901 PU23901	L I Q U I D	N/A	3.81E-06	3.81E-006	uCi/mL
3 SAMPLE	S97T000025	0	@PU23901 PU23901T	L I Q U I D	N/A	9.37E+01		% Recovery
3 SAMPLE	S97T000025	0	@PU23901 PU23901E	L I Q U I D	N/A	7.89E+00		% Ct. Error
4 DUP	S97T000025	0	@PU23901 PU23901	L I Q U I D	<3.81E-6	<4.21E-6		RPD
4 DUP	S97T000025	0	@PU23901 PU23901T	L I Q U I D	100	8.48E+01	84.800 % Recovery	
4 DUP	S97T000025	0	@PU23901 PU23901E	L I Q U I D	1.00	8.13E+00	8.130 % Ct Error	
5 SAMPLE	S97T000028	0	@PU23901 PU23901	L I Q U I D	N/A	1.53E-05	4.63E-006	uCi/mL
5 SAMPLE	S97T000028	0	@PU23901 PU23901T	L I Q U I D	N/A	8.68E+01		% Recovery
5 SAMPLE	S97T000028	0	@PU23901 PU23901E	L I Q U I D	N/A	3.19E+00		% Ct. Error
6 DUP	S97T000028	0	@PU23901 PU23901	L I Q U I D	1.53E-5	1.51E-5	1.316	RPD
6 DUP	S97T000028	0	@PU23901 PU23901T	L I Q U I D	100	9.20E+01	92.000 % Recovery	
6 DUP	S97T000028	0	@PU23901 PU23901E	L I Q U I D	1.00	3.11E+00	3.110 % Ct Error	

Final page for worklist# 16279

Analyst Signature

Date

Analyst Signature

Date

John Relyea 28 Jan 97
Reviewer Signature Date
Validated

01/27/97 13:34

A-0004-1

LABCORE Data Entry Template for Worklist# 16279

Analyst: _____ Instrument: PU01 _____ Book# _____

Method: LA-943-128 Rev/Mod _____

Worklist Comment: Determine sample size using ludlum.Std:(TNKFUS) 1.0ml. new

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@PU23901	LIQUID		
2 BLNK			@PU23901	LIQUID		
3 SAMPLE	S97T000025 0		@PU23901	LIQUID	97000022	SY-102 GRAB1
Analytes Requested: PU23901 , PU23901E, PU23901T						
4 DUP	S97T000025 0		@PU23901	LIQUID		
5 SAMPLE	S97T000028 0		@PU23901	LIQUID	97000022	SY-102 GRAB1
Analytes Requested: PU23901 , PU23901E, PU23901T						
6 DUP	S97T000028 0		@PU23901	LIQUID		

Final page for worklist # 16279

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Data Entry Comments:

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

01/22/97 09:47
A-0004-1

Page: 1

LABCORE Data Entry Template for Worklist# 16279Analyst: JMV Instrument: PU01 #14 Book# 162854

Method: LA-943-128 Rev/Mod _____

Worklist Comment: Determine sample size using ludlum.Std:(TNKFUS) 1.0ml. new

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@PU23901	LIQUID		
2 BLNK			@PU23901	LIQUID		
3 SAMPLE	S97T000025 0		@PU23901	LIQUID	97000022	SY-102 GRAB1
Analytes Requested: PU23901 , PU23901E, PU23901T						
4 DUP	S97T000025 0		@PU23901	LIQUID		
5 SAMPLE	S97T000028 0		@PU23901	LIQUID	97000022	SY-102 GRAB1
Analytes Requested: PU23901 , PU23901E, PU23901T						
6 DUP	S97T000028 0		@PU23901	LIQUID		
7 SAMPLE	S97T000029 0		@PU23901	LIQUID	97000022	SY-102 GRAB1
Analytes Requested: PU23901 , PU23901E, PU23901T						
8 DUP	S97T000029 0		@PU23901	LIQUID		

Final page for worklist # 16279

JMV 1-24-97
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

897T 29NeedsDigest

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

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (B-0)**LIQUID**

				STD
Type	DATE COUNTED	JAN-25-97	Pu 238 AEA FRAC (C238)	0.416
STD	SAMPLE VOLUME in mL	SS 1.000	Pu 238 AEA FRAC (C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF 1.000	Pu 239 AEA FRAC (C239)	0.540
16279	TRACER VOLUME in mL	SPKV 0.100	TOTAL AT COUNTS	4274
Test Code	DIGEST DILUTION FACTOR	DDF 1.000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cpm (Bkg)	0.300
Matrix	DETECTOR NUMBER	14	Pu 236 cpm	51.060
LIQUID	EFFICIENCY FACTOR	EFF 0.291	Pu 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE	11/15/96	Pu 239 cpm	66.240
87000237	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME	480
Return	PU-236 DECAY CORR'D VALUE (dpm/mL)	2479.939	Pu 239/240 μ Ci/L	1.4501E-01
0	PU-238 TRACER VALUE (dpm/mL)	0.000		
Sample Prep	STANDARD BOOK NO	62B56		
N/A	STANDARD VALUE in μ Ci/mL	1.485E-04		
Sample #				
WL16279				
Instrument Code	Decay Time = Date Counted - Tracer Preparation Date			
WB27807	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.95)}]			
Prepared By	Pu-236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 1/EFF * C238*100/Pu-236 Decay Corr'd Value * SPKV			
SEH	Pu 239/240 μ Ci/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)/(1000mL/L)(DF)(DDF) / [(C236)(SS)(2220000 dpm/ μ Ci)]			
Chemist	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 238 Tracer Recovery / 100)			
JFR	Pu 238 μ Ci/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/ μ Ci)(D g/L)(SS)]			
Analyst	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min))] + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100			
JMV				
Date Complete				
01/27/97	Pu 239/240 μ Ci/mL	1.45E-04	DETECTION LEVELS in μ Ci/mL	
Analysis Date	Relative Counting Error	= 1.7%		
01/25/97				
Analysis Time			Pu 239/240 9.83E-06	
10:05 PM				
Sample Point				
SY-102 GRAB1	Pu 236 Tracer Recovery	= 82.0%		

Analyst:	JMV	Date:	27-Jan-97
Signature of Chemist:	JFR	Date:	28 Jan 97
STANDARD.WB1 REV 1.0	943128ML		

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-128 (B-0)

LIQUID / SOLID

WORKBOOK PAGE: BLANK2			LIQUID / SOLID		BLNK
Pu 238 and 239/240 : LA-943-128 (B-0)					
Type	DATE COUNTED		JAN-25-97	PU 236 AEA FRAC (C236)	0.947
BLNK	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC (C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC (C239)	0.000
16279	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	1919
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO		128B43	BACKGROUND in cp (Bkg)	0.300
Matrix	DETECTOR NUMBER		14	PU 236 cpm	46.940
LIQUID	EFFICIENCY FACTOR	EFF	0.2910	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE		11/15/96	PU 239 cpm	0.000
97000237	TRACER PREPARATION VALUE (dpm/mL)		2600.00	AEA COUNT TIME	480
Rertin	PU-236 DECAY CORR'D VALUE (dpm/mL)		2479.94	Pu 239/240 $\mu\text{Ci/L}$ =	< 4.236E-03
0	PU-238 TRACER VALUE (dpm/mL)		0.00		
Sample Prep					
N/A					
Sample #	Decay Time = Date Counted - Tracer Preparation Date				
WL16279	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.95)}]				
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)				
WB27807	Pu 239/240 $\mu\text{Ci/L}$ = (C239) / (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) (DDF) / [(C236) (SS) (D g/L) (2220000 dpm/ μCi) (D g/L) (SS)]				
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)				
SEH	Pu 238 $\mu\text{Ci/L}$ = [(Pu 238 dpm) (DF) (DDF) (1000mL/L)] / [(Pu-238 Tracer Recovery / 100) (2220000 dpm/ μCi) (D g/L) (SS)]				
Chemist	Relative Counting Error = Square Root of [(1/ (Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100				
JFR					
Analyst					
JMV					
Date Complete					
01/27/97	Pu 239/240 $\mu\text{Ci/mL}$	< 4.24E-06	DETECTION LEVELS in $\mu\text{Ci/mL}$		
Analysis Date	Relative Counting Error	= 100.0%			
01/25/97			Pu 239/240		
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.				
10:05 PM	Pu 238 $\mu\text{Ci/mL}$	< 4.24E-06	4.24E-06		
Sample Point	Relative Counting Error	= 100.0%	Pu 238		
SY-102 CRAB1	Pu 236 Tracer Recovery	= 83.5%	4.24E-06		

Analyst:	JMV	Date:	27-Jan-97
Signature of Chemist:	JFR	Date:	28 Jan 97

BLANK.WB1 REV 1.0

943128ML

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-128 (B-0)

LIQUID / SOLID

				SAMPLE
Type	DATE COUNTED	JAN-25-97	PU 236 AEA FRAC (C236)	0.938
SAMPLE	SAMPLE VOLUME in mL	SS 1.000	PU 238 AEA FRAC (C238)	0.014
Work Unit	SAMPLE DILUTION FACTOR	DF 1.000	PU 239 AEA FRAC (C239)	0.026
16279	TRACER VOLUME in mL	SPKV 0.100	TOTAL AT COUNTS	2171
Test Code	DIGEST DILUTION FACTOR	DDF 1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cpm (Bkg)	0.300
Matrix	DETECTOR NUMBER	14	PU 236 cpm	48.540
LIQUID	EFFICIENCY FACTOR	EFF 0.291	PU 238 cpm	0.700
Batch Number	TRACER PREPARATION DATE	11/15/96	PU 239 cpm	1.320
97000237	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME	480
Barium	PU-236 DECAY CORR'D VALUE (dpm/mL)	2479.939	Pu 239/240 μ Ci/L =	< 3.8142E-03
0	PU-238 TRACER VALUE (dpm/mL)	0.000		

Sample Prep	
N/A	
Sample #	Decay Time = Date Counted - Tracer Preparation Date
S97T000025	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.95)}]
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)
WB27807	Pu 239/240 μ Ci/L = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) (DDF) / [(C236) (SS) (D g/L) (2220000 dpm/ μ Ci)]
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)
SEH	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)]
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
JFR	
Analyst	
JMV	
Date Complete	
01/27/97	Pu 239/240 μ Ci/mL < 3.81E-06
Analysis Date	Relative Counting Error = 7.9%
01/25/97	
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.
10:05 PM	Pu 238 μ Ci/mL < 3.81E-06
Sample Point	Relative Counting Error = 10.8%
SY-102 GRAB1	Pu 236 Tracer Recovery = 93.7%
	DETECTION LEVELS in μ Ci/mL
	Pu 239/240 3.81E-06
	Pu 238 3.81E-06

Analyst:	JMV	Date:	27-Jan-97
Signature of Chemist:	JFR	Date:	27 Jan 97
SAMPLE.WB1 REV 1.0	943128ML		

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-128 (B-0)

LIQUID / SOLID

DUP

Type	DATE COUNTED	JAN-25-97	PU 236 AEA FRAC (C236)	0.938
DUP	SAMPLE VOLUME in mL	SS 1.000	PU 238 AEA FRAC (C238)	0.014
Work List	SAMPLE DILUTION FACTOR	DF 1.000	PU 239 AEA FRAC (C239)	0.022
16279	TRACER VOLUME in mL	SPKV 0.100	TOTAL AT COUNTS	1967
Test Code	DIGEST DILUTION FACTOR	DDF 1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cpm (Bkg)	0.300
Matrix	DETECTOR NUMBER	14	PU 236 cpm	62.480
LIQUID	EFFICIENCY FACTOR	EFF 0.291	PU 238 cpm	0.910
Batch Number	TRACER PREPARATION DATE	11/15/96	PU 239 cpm	1.240
97000237	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME	480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)	2479.939	Pu 239/240 µCi/L =	< 4.2116E-03
0	PU-238 TRACER VALUE (dpm/mL)	0.000		

Sample Prep

N/A

Sample #

Decay Time = Date Counted - Tracer Preparation Date

S97T000025

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {-ln2 * Decay Time/1040.95}]

Instrument Code

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)

WB27807

Pu 239/240 µCi/L = (C239) * (Pu 236 Decay Corr'd Value) * (SPKV) * (1000 mL/L) * (DF) * (DDF) / [(C236) * (SS) * (D g/L) * (2220000 dpm/µCi)]

Prepared By

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

SEH

Pu 238 µCi/L = [(Pu 238 dpm) * (DF) * (DDF) * (1000 mL/L)] / [(Pu-236 Tracer Recovery / 100) * (2220000 dpm/µCi) * (D g/L) * (SS)]

Chemist

Relative Counting Error = Square Root of [(1 / (Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

JFR

Analyst

JMV

Date Complete

01/27/97

Pu 239/240 µCi/mL < 4.21E-06

Analysis Date

Relative Counting Error = 8.1%

01/25/97

Analysis Time

NOTE: Pu 238 Result is a LESS THAN Value.

10:05 PM

Pu 238 µCi/mL < 4.21E-06

Sample Point

Relative Counting Error = 10.0%

SY-102 GRAB1

Pu 236 Tracer Recovery = 84.8%

DETECTION

LEVELS

in µCi/mL

Pu 239/240

4.21E-06

Pu 238

4.21E-06

Analyst:

JMV

Date: 27-Jan-97

Signature of Chemist:

JFR

Date: 28 Jan 97

SAMPLE.WB1 REV 1.0

943128ML

WORKBOOK PAGE: SAM5

Pu 238 and 239/240 : LA-943-128 (B-0)

LIQUID / SOLID

				SAMPLE
Type	DATE COUNTED	JAN-25-97	PU 236 AEA FRAC (C236)	0.834
SAMPLE	SAMPLE VOLUME in mL	SS 1.000	PU 238 AEA FRAC (C238)	0.022
Work List	SAMPLE DILUTION FACTOR	DF 1.000	PU 239 AEA FRAC (C239)	0.114
16279	TRACER VOLUME in mL	SPKV 0.100	TOTAL AT COUNTS	2261
Test Code	DIGEST DILUTION FACTOR	DDF 1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cpm (Bkg)	0.300
Matrix	DETECTOR NUMBER	14	PU 236 cpm	65.260
LIQUID	EFFICIENCY FACTOR	EFF 0.291	PU 238 cpm	1.740
Batch Number	TRACER PREPARATION DATE	11/15/96	PU 239 cpm	8.950
97000237	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME	480
Re-run	PU-236 DECAY CORR'D VALUE (dpm/mL)	2479.939	Pu 239/240 μ Ci/L	1.5270E-02
0	PU-238 TRACER VALUE (dpm/mL)	0.000		

Sample Prep	
N/A	
Sample #	Decay Time = Date Counted - Tracer Preparation Date
S97T000028	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.95)}]
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)
WB27807	Pu 239/240 μ Ci/L = (C239) * (Pu 236 Decay Corr'd Value) * (SPKV) * (1000mL/L) * (DF) * (DDF) / [(C236) * (SS) * (D g/L) * (2220000 dpm/ μ Ci)]
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)
SEH	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)]
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
JFR	
Analyst	
JMV	
Date Complete	

Date Complete	Pu 239/240 μ Ci/mL	1.53E-05	DETECTION LEVELS in μ Ci/mL
01/27/97	Relative Counting Error =	3.2%	
Analysis Date			
01/25/97	NOTE: Pu 238 Result is a LESS THAN Value.		Pu 239/240
Analysis Time	Pu 238 μ Ci/mL	< 4.63E-06	4.63E-06
10:04 PM	Relative Counting Error =	6.9%	Pu 238
Sample Point	Pu 236 Tracer Recovery =	86.8%	4.63E-06
SY-102 GRAB1			

Analyst:	JMV	Date:	27-Jan-97
Signature of Chemist:	<i>John Relyea</i>	Date:	25 Jan 97
SAMPLE.WB1 REV 1.0	943128ML		

WORKBOOK PAGE: DUP6

Pu 238 and 239/240 : LA-943-128 (B-0)

LIQUID / SOLID

				DUP
Type	DATE COUNTED	JAN-25-97	PU 236 AEA FRAC (C238)	0.837
DUP	SAMPLE VOLUME in mL	SS	1.000 PU 238 AEA FRAC (C238)	0.016
Work List	SAMPLE DILUTION FACTOR	DF	1.000 PU 239 AEA FRAC (C239)	0.113
16279	TRACER VOLUME in mL	SPKV	0.100 TOTAL AT COUNTS	2388
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000 AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cpm (Bkg)	0.300
Matrix	DETECTOR NUMBER	14	PU 236 cpm	69.670
LIQUID	EFFICIENCY FACTOR	EFF	0.291 PU 238 cpm	1.260
Batch Number	TRACER PREPARATION DATE	11/15/96	PU 239 cpm	9.380
97000237	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME	480
Runin	PU-236 DECAY CORR'D VALUE (dpm/mL)	2479.939	Pu 239/240 μ Ci/L	1.5081E-02
0	PU-238 TRACER VALUE (dpm/mL)	0.000		

Sample Prep

N/A

Sample #

Decay Time = Date Counted - Tracer Preparation Date

S97T000028

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.95)}]

Instrument Code

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)

WB27807

Pu 239/240 μ Ci/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C238)(SS)(D g/L)(2220000 dpm/ μ Ci)]

Prepared By

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

SEH

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

Chemist

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

JFR

Analyst

JMV

Date Complete

01/27/97

Pu 239/240 μ Ci/mL 1.51E-05

Analysis Date

Relative Counting Error = 3.1%

01/25/97

Analysis Time

NOTE: Pu 238 Result is a LESS THAN Value.

10:05 PM

Pu 238 μ Ci/mL < 4.35E-06

Sample Point

Relative Counting Error = 8.0%

SY-102 GRAB1

Pu 236 Tracer Recovery = 92.0%

DETECTION
LEVELS
in μ Ci/mL

Pu 239/240

4.35E-06

Pu 238

4.35E-06

Analyst:	JMV	Date:	27-Jan-97
Signature of Chemist:	JFR	Date:	28 Jan 97

SAMPLE.WB1 REV 1.0

943128ML

Westinghouse Hanford Co.
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
WL16279-STD-PU
File ID: 13a1333.CNF

Counted on: 1/25/97 @14:23
Detector:
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	1949.5	1949.5	361.803	361.803	10.000	2.622	5.000	1.168
2?	18.5	18.5	302.653	302.431	32.000	9.359	16.000	16.207
3?	40.2	40.2	287.593	287.484	8.000	2.926	4.000	2.010
4?	13.7	13.7	270.425	270.113	10.000	2.585	5.000	0.728
5	2853.0	2853.0	229.390	229.390	10.000	2.980	5.000	1.749

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate	%err	d/m	Activity uCi/ea
1	Pu236	0.416	5.755	5.738	0.017	0.01	51.06	1.3	2894.5	0.130E-02
2		????		5.465			0.56	14.3		
3		????		5.396			0.86	10.4		
4		????		5.316			0.49	14.6		
5	Pu239	0.540	5.147	5.129	0.018	0.01	66.24	1.1	3680.2	0.166E-02
	Pu240		5.144	5.129	0.015				3680.2	0.166E-02
Totals:		0.956	<--valid peaks only-->				117.30			

DETECTOR CALIBRATION

Energy (MeV) = 4.074 + (0.0046)*Channel
Energy range (MeV): 4.074 TO 6.429
Efficiency = 0.0180 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	58897.0	100.000
Smoothed	58895.2	99.997
Composite fit	57232.3	97.174
Residuals	1664.7	2.826

Analyzed by:

VR

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 18577.3

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Raw Data Dump for AEA Spectrum:	13a1333.CNF								
1	0.	0.	0.	0.	0.	1.	0.	0.	0.
11	0.	0.	0.	0.	1.	0.	1.	0.	0.
21	2.	3.	0.	2.	2.	1.	0.	2.	1.
31	1.	0.	1.	0.	0.	0.	2.	1.	0.
41	1.	2.	2.	1.	1.	3.	0.	4.	3.
51	0.	2.	0.	3.	2.	0.	1.	1.	2.
61	2.	2.	2.	8.	5.	7.	5.	10.	9.
71	7.	2.	5.	4.	2.	3.	1.	0.	1.
81	0.	2.	1.	0.	1.	2.	0.	0.	0.
91	1.	2.	1.	3.	1.	0.	3.	2.	2.
101	0.	3.	2.	1.	1.	5.	2.	2.	3.
111	1.	5.	3.	1.	1.	1.	1.	0.	3.
121	1.	0.	1.	4.	3.	2.	2.	3.	3.
131	1.	4.	1.	0.	1.	4.	1.	1.	3.
141	3.	2.	2.	3.	4.	1.	1.	2.	3.
151	5.	0.	1.	4.	3.	7.	5.	5.	10.
161	3.	6.	6.	7.	4.	3.	8.	3.	9.
171	6.	6.	13.	6.	7.	7.	13.	8.	12.
181	11.	14.	11.	22.	12.	12.	23.	11.	25.
191	31.	36.	34.	39.	30.	34.	39.	42.	50.
201	50.	61.	86.	74.	82.	104.	119.	120.	145.
211	189.	211.	254.	314.	390.	437.	538.	636.	789.
221	930.	1001.	1099.	1371.	1632.	2021.	2497.	3015.	3442.
231	3113.	2108.	875.	258.	46.	7.	4.	1.	3.
241	2.	1.	3.	2.	3.	2.	1.	2.	2.
251	7.	1.	5.	6.	9.	9.	5.	4.	5.
261	6.	1.	6.	6.	10.	10.	7.	11.	13.
271	24.	9.	12.	6.	9.	7.	9.	6.	6.
281	16.	20.	22.	34.	32.	47.	36.	52.	51.
291	14.	9.	12.	7.	15.	7.	11.	12.	15.
301	18.	21.	21.	19.	16.	15.	9.	6.	7.
311	6.	8.	8.	12.	13.	15.	12.	11.	11.
321	18.	12.	11.	25.	30.	21.	37.	28.	42.
331	51.	50.	51.	58.	54.	61.	80.	71.	107.
341	120.	127.	168.	194.	229.	280.	343.	426.	526.
351	794.	952.	1032.	984.	830.	807.	1033.	1203.	1429.
361	2120.	2454.	2292.	1689.	731.	196.	35.	6.	0.
371	1.	0.	0.	0.	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.	1.	0.	1.	0.	1.
421	1.	0.	1.	0.	0.	0.	0.	0.	0.
431	1.	2.	1.	1.	0.	0.	0.	0.	0.
441	1.	0.	0.	0.	0.	0.	1.	0.	0.
451	0.	1.	1.	0.	0.	0.	0.	0.	2.
461	1.	0.	1.	0.	2.	1.	3.	1.	2.
471	9.	4.	2.	5.	6.	7.	3.	4.	6.
481	2.	1.	0.	0.	0.	0.	0.	1.	0.
491	0.	1.	0.	0.	0.	1.	3.	1.	0.
511	0.	0.							

Westinghouse Hanford Co.
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
WL16279-BLK-PU
File ID: 14a1416.CNF

Counted on: 1/25/97 @14:25
Detector:
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	1746.3	1746.3	361.840	361.840	10.000	2.713	5.000	1.171
2?	41.5	41.5	297.799	297.569	12.000	0.000	6.000	5.529
3	41.5	41.5	287.231	287.222	12.000	4.790	6.000	3.839
4?	15.3	15.3	270.519	270.240	10.000	2.672	5.000	0.993

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.947	5.755	5.738	0.017	0.01	46.94	1.3	2661.2	0.120E-02
2		????		5.443			0.00	1000.		
3	Th228	0.020	5.400	5.395	0.005	0.02	1.00	9.1	78.1	0.352E-04
4		????		5.317			0.45	15.2		
Totals:		0.967	<--valid peaks only-->				47.94			

DETECTOR CALIBRATION

Energy(MEV) = 4.074 + (0.0046)*Channel
Energy range (MeV): 4.074 TO 6.429
Efficiency = 0.0180 CPM/DFM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	23803.0	100.000
Smoothed	23802.0	99.996
Composite fit	23229.3	97.590
Residuals	573.7	2.410

Analyzed by:

VR

Spectrum 14a1416.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 8833.5

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Raw Data	Dump	for AEA	Spectrum:	14a1416.CNF					
1	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	1.	0.	0.	1.	0.	1.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	1.	1.	0.
31	0.	1.	0.	0.	0.	1.	0.	0.	1.
41	0.	0.	0.	0.	1.	0.	1.	2.	0.
51	1.	0.	0.	1.	0.	0.	1.	1.	2.
61	3.	1.	5.	5.	2.	2.	6.	6.	4.
71	0.	3.	2.	4.	4.	1.	2.	0.	0.
81	0.	0.	0.	0.	0.	0.	0.	0.	2.
91	0.	0.	1.	0.	0.	0.	0.	1.	0.
101	4.	0.	0.	0.	0.	1.	1.	1.	0.
111	0.	0.	0.	0.	1.	0.	0.	0.	3.
121	0.	1.	0.	0.	0.	1.	0.	1.	0.
131	0.	0.	0.	1.	1.	0.	1.	0.	0.
141	0.	0.	0.	2.	1.	1.	0.	1.	0.
151	1.	0.	1.	1.	0.	0.	1.	2.	0.
161	1.	0.	1.	2.	0.	2.	1.	0.	0.
171	4.	1.	0.	1.	0.	2.	0.	0.	1.
181	1.	0.	1.	1.	0.	2.	1.	0.	0.
191	2.	0.	0.	2.	0.	0.	0.	2.	1.
201	2.	2.	0.	1.	1.	0.	1.	2.	0.
211	1.	3.	1.	2.	2.	4.	4.	2.	3.
221	1.	4.	5.	6.	2.	6.	9.	5.	10.
231	7.	11.	7.	1.	2.	4.	0.	1.	2.
241	4.	1.	1.	4.	2.	3.	0.	0.	2.
251	4.	7.	7.	6.	7.	7.	4.	8.	3.
261	5.	5.	4.	8.	11.	7.	8.	15.	21.
271	21.	20.	11.	9.	8.	5.	6.	6.	6.
281	22.	16.	22.	28.	39.	46.	52.	49.	45.
291	15.	12.	5.	6.	8.	11.	7.	19.	15.
301	8.	13.	8.	16.	14.	13.	13.	9.	6.
311	13.	16.	10.	8.	9.	16.	13.	17.	18.
321	23.	18.	21.	30.	30.	25.	29.	46.	44.
331	51.	61.	56.	63.	70.	80.	86.	98.	99.
341	127.	128.	163.	223.	221.	264.	308.	395.	494.
351	721.	836.	947.	876.	842.	757.	849.	1004.	1369.
361	1902.	2192.	1997.	1587.	757.	212.	29.	1.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	1.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	1.	0.	0.	0.
421	1.	0.	0.	1.	1.	0.	0.	0.	1.
431	0.	0.	0.	0.	0.	0.	1.	0.	0.
441	0.	3.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	1.	0.	0.	0.	0.	1.
461	0.	0.	0.	0.	3.	0.	2.	3.	0.
471	5.	3.	3.	7.	6.	4.	2.	6.	3.
481	0.	1.	1.	1.	0.	0.	0.	0.	0.
491	1.	0.	0.	0.	0.	1.	0.	1.	1.
511	1.	0.							

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

DATA REDUCTION REPORT

SAMPLE
S97T25-SAM-PU
File ID: 15a1525.CNF

Counted on: 1/25/97 @14:26
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	1763.4	1763.4	361.946	361.946	10.000	3.008	5.000	1.292
2	17.3	17.3	303.218	302.958	14.000	5.162	7.000	1.406
3	34.2	34.2	288.085	287.941	10.000	2.405	5.000	2.030
4?	8.1	8.1	268.959	268.563	8.000	4.205	4.000	0.666
5	50.6	50.6	230.171	230.149	12.000	3.877	6.000	2.061

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count Rate c/m	%err @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.				
1	Pu236	0.938	5.755	5.739	0.0160.01	48.54	1.3	2751.8	0.124E-02
2	Pu238	0.014	5.487	5.468	0.0190.02	0.70	11.9	54.1	0.244E-04
	Am241		5.479	5.468	0.011			41.4	0.187E-04
3	Th228	0.012	5.400	5.398	0.0020.01	0.64	13.9	50.0	0.225E-04
4	????			5.309		0.47	15.4		
5	Pu239	0.026	5.147	5.133	0.0140.02	1.32	8.2	73.3	0.330E-04
	Pu240		5.144	5.133	0.011			73.3	0.330E-04
Totals:			0.990	<--valid peaks only-->			51.20		

DETECTOR CALIBRATION

Energy(MEV) = 4.074 + (0.0046)*Channel
Energy range (MeV): 4.074 TO 6.429
Efficiency = 0.0180 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	24828.0	100.000
Smoothed	24828.1	100.000
Composite fit	24804.3	99.904
Residuals	23.7	0.096

Analyzed by: _____

VR

Spectrum 15a1525.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 9325.2

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Raw Data	Dump	for	AEA	Spectrum:	15a1525.CNF				
1	0.	0.	0.	0.	0.	0.	1.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	1.	1.
21	0.	0.	2.	0.	0.	0.	0.	0.	0.
31	0.	0.	1.	0.	1.	0.	0.	0.	0.
41	1.	1.	0.	0.	0.	0.	0.	1.	1.
51	0.	3.	0.	0.	3.	1.	0.	2.	1.
61	2.	1.	1.	3.	6.	6.	6.	5.	8.
71	1.	3.	5.	4.	3.	1.	0.	0.	0.
81	0.	0.	0.	0.	0.	0.	1.	0.	0.
91	0.	0.	1.	0.	0.	0.	1.	0.	0.
101	0.	0.	0.	0.	0.	1.	1.	1.	0.
111	1.	0.	1.	0.	0.	0.	0.	1.	0.
121	0.	0.	0.	1.	1.	0.	3.	0.	0.
131	1.	0.	0.	0.	2.	2.	0.	0.	1.
141	0.	1.	0.	1.	0.	2.	1.	1.	2.
151	1.	0.	2.	2.	0.	1.	0.	3.	2.
161	1.	0.	1.	0.	1.	1.	2.	1.	1.
171	0.	0.	3.	3.	1.	0.	0.	1.	1.
181	1.	0.	3.	1.	2.	1.	0.	0.	1.
191	0.	1.	0.	3.	3.	2.	1.	1.	0.
201	2.	1.	3.	1.	1.	2.	2.	5.	1.
211	3.	4.	8.	9.	8.	9.	13.	11.	13.
221	17.	22.	22.	23.	25.	37.	55.	44.	64.
231	52.	57.	40.	27.	10.	6.	3.	3.	0.
241	1.	0.	1.	4.	1.	0.	7.	4.	5.
251	3.	1.	4.	8.	4.	4.	12.	8.	8.
261	7.	5.	4.	5.	9.	5.	16.	6.	10.
271	8.	7.	6.	5.	9.	5.	4.	8.	13.
281	13.	14.	14.	25.	36.	28.	53.	45.	58.
291	22.	19.	5.	10.	11.	9.	8.	11.	13.
301	11.	28.	19.	17.	19.	15.	17.	7.	5.
311	5.	8.	5.	6.	9.	6.	12.	12.	10.
321	7.	11.	14.	18.	23.	19.	18.	29.	32.
331	42.	33.	47.	50.	52.	63.	66.	68.	71.
341	100.	137.	171.	189.	186.	279.	296.	367.	468.
351	703.	822.	936.	938.	878.	889.	919.	1132.	1378.
361	1899.	2112.	2070.	1682.	952.	348.	106.	11.	1.
371	1.	0.	0.	0.	1.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	1.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	1.	0.	0.
411	0.	0.	0.	1.	0.	0.	0.	0.	0.
421	1.	0.	0.	0.	0.	1.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	1.
441	0.	0.	1.	0.	0.	0.	1.	0.	0.
451	0.	0.	0.	2.	1.	0.	1.	0.	0.
461	0.	0.	0.	2.	1.	3.	4.	0.	4.
471	4.	3.	3.	7.	5.	4.	6.	2.	3.
481	1.	0.	1.	2.	3.	0.	1.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	1.	0.							

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

DATA REDUCTION REPORT

SAMPLE
 S97T25-DUP-PU
 File ID: 16a1658.CNF

Counted on: 1/25/97 @14:26
 Detector:
 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	1987.2	1987.2	361.909	361.909	10.000	2.691	5.000	1.193
2	15.5	15.5	304.049	303.715	10.000	5.308	5.000	1.014
3	33.0	33.0	286.791	286.602	10.000	2.920	5.000	2.668
4?	9.6	9.6	268.580	268.277	10.000	3.442	5.000	0.707
5	53.0	53.0	228.550	228.529	12.000	3.398	6.000	2.111

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	0.938	5.755	5.739	0.0160.01	52.48	1.2	2975.2	0.134E-02
2	Pu238	0.014	5.487	5.471	0.0160.02	0.81	11.0	62.3	0.281E-04
	Am241		5.479	5.471	0.008			47.7	0.215E-04
3	Th228	0.011	5.400	5.392	0.0080.01	0.64	14.7	50.1	0.226E-04
4	????			5.308		0.45	16.6		
5	Pu240	0.022	5.144	5.125	0.0190.02	1.24	8.3	69.0	0.311E-04
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Totals:			0.986	<--valid peaks only-->		55.17			

DETECTOR CALIBRATION

Energy(MEV) = 4.074 + (0.0046)*Channel

Energy range (MeV): 4.074 TO 6.429

Efficiency = 0.0180 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	26851.0	100.000
Smoothed	26850.8	99.999
Composite fit	26697.6	99.429
Residuals	153.4	0.571

Analyzed by: _____

VR

Spectrum 16a1658.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 10137.8

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Raw Data	Dump	for AEA Spectrum:	16a1658.CNF	HNF-SD-WM-DP-227, REV.0
11	0.	0.	0.	0.
21	0.	0.	0.	0.
31	0.	1.	0.	0.
41	0.	0.	0.	1.
51	0.	2.	1.	0.
61	0.	0.	0.	0.
71	1.	0.	0.	1.
81	1.	1.	3.	1.
91	6.	4.	3.	6.
101	1.	0.	1.	1.
111	1.	0.	1.	0.
121	0.	0.	0.	0.
131	0.	0.	0.	0.
141	0.	0.	0.	0.
151	2.	0.	1.	1.
161	2.	0.	1.	1.
171	0.	0.	1.	0.
181	0.	0.	1.	0.
191	1.	1.	0.	2.
201	0.	3.	2.	2.
211	2.	2.	5.	3.
221	5.	4.	3.	9.
231	21.	22.	23.	26.
241	48.	28.	7.	8.
251	6.	2.	2.	5.
261	3.	7.	5.	9.
271	4.	4.	8.	10.
281	8.	6.	10.	12.
291	25.	26.	26.	48.
301	9.	7.	11.	6.
311	19.	16.	15.	19.
321	11.	5.	17.	7.
331	23.	21.	23.	16.
341	33.	44.	56.	42.
351	128.	133.	172.	209.
361	815.	958.	1024.	996.
371	2173.	2462.	2372.	1799.
381	0.	0.	0.	0.
391	0.	0.	0.	0.
401	0.	0.	0.	0.
411	0.	0.	0.	0.
421	0.	0.	0.	0.
431	1.	1.	0.	0.
441	0.	0.	0.	0.
451	0.	1.	0.	0.
461	0.	0.	0.	0.
471	3.	5.	5.	0.
481	0.	1.	0.	0.
491	0.	1.	0.	0.
511	0.	0.	0.	0.

Westinghouse Hanford Co.
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
S97T28-SAM-PU
File ID: 5a5087.CNF

Counted on: 1/25/97 @14:10
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	1711.0	1711.0	362.757	362.757	16.000	8.947	8.000	3.405
2	32.4	32.4	308.302	307.098	32.000	28.239	16.000	16.066
3	31.6	31.6	289.645	288.748	12.000	6.906	6.000	1.537
4	243.4	243.4	230.547	230.538	18.000	8.788	9.000	3.608

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	Cm243	0.834	5.779	5.752	0.027	0.04	65.26	1.1	200.8 0.905E-04
	Pu236		5.755	5.752	0.003				149.6 0.674E-04
2	Am241	0.022	5.479	5.496	-0.017	0.13	1.74	11.4	4.2 0.187E-05
	Pu238		5.487	5.496	-0.009				5.4 0.244E-05
3	Th228	0.020	5.400	5.412	-0.012	0.03	1.53	8.9	4.9 0.219E-05
4	Pu239	0.114	5.147	5.144	0.003	0.04	8.95	3.0	20.1 0.905E-05
	Pu240		5.144	5.144	0.000				20.1 0.905E-05
Totals:			0.990	<--invalid peaks only-->			77.48		

DETECTOR CALIBRATION

Energy(MEV) = 4.083 + (0.0046)*Channel
Energy range (MeV): 4.083 TO 6.439
Efficiency = 0.4451 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	37570.0	100.000
Smoothed	37570.0	100.000
Composite fit	37195.2	99.002
Residuals	374.8	0.998

Analyzed by: _____

VR

Spectrum 5a5087.CNF

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

Display Max.: 12169.2

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Raw Data Dump for AEA Spectrum:	5a5087.CNF	HNF-SD-WM-DP-227, REV. 0							
1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	1.	0.	0.	3.	0.
21	0.	0.	0.	2.	0.	2.	0.	1.	0.
31	0.	0.	0.	0.	0.	0.	1.	0.	1.
41	0.	0.	0.	1.	2.	0.	0.	3.	0.
51	0.	0.	0.	1.	1.	0.	0.	1.	0.
61	0.	0.	1.	0.	0.	0.	1.	0.	1.
71	1.	0.	0.	0.	0.	1.	0.	0.	1.
81	2.	0.	0.	0.	0.	1.	1.	0.	1.
91	1.	0.	0.	1.	0.	1.	0.	1.	2.
101	1.	0.	0.	0.	1.	0.	0.	1.	0.
111	1.	1.	0.	0.	0.	0.	0.	2.	1.
121	0.	0.	0.	0.	1.	0.	1.	3.	3.
131	1.	1.	1.	6.	3.	0.	1.	3.	1.
141	1.	2.	1.	3.	2.	2.	3.	1.	3.
151	2.	3.	1.	0.	4.	2.	1.	7.	2.
161	5.	1.	3.	3.	3.	1.	1.	5.	1.
171	3.	6.	1.	3.	5.	3.	1.	3.	9.
181	6.	4.	3.	8.	14.	2.	3.	7.	2.
191	11.	9.	10.	5.	4.	5.	8.	11.	14.
201	9.	17.	13.	21.	19.	17.	15.	24.	32.
211	23.	35.	55.	51.	59.	59.	65.	77.	98.
221	103.	111.	140.	159.	164.	206.	209.	255.	269.
231	258.	254.	234.	201.	162.	121.	114.	63.	54.
241	25.	15.	6.	4.	8.	5.	4.	3.	8.
251	10.	9.	3.	8.	4.	16.	8.	5.	9.
261	8.	3.	15.	10.	5.	13.	13.	7.	4.
271	15.	14.	18.	19.	21.	12.	24.	15.	13.
281	18.	21.	27.	23.	31.	32.	41.	44.	37.
291	39.	39.	25.	26.	34.	33.	28.	28.	31.
301	27.	29.	29.	49.	32.	32.	34.	42.	35.
311	28.	34.	37.	29.	33.	32.	35.	39.	35.
321	43.	38.	42.	50.	50.	48.	52.	55.	78.
331	92.	87.	93.	104.	94.	125.	123.	136.	150.
341	188.	178.	246.	239.	306.	303.	356.	413.	522.
351	700.	767.	845.	1056.	1099.	1160.	1221.	1423.	1534.
361	1749.	1915.	1839.	1776.	1646.	1422.	1268.	945.	686.
371	394.	248.	113.	93.	38.	18.	6.	4.	2.
381	1.	1.	3.	0.	1.	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.	1.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	1.	1.	1.	0.	0.
431	0.	0.	0.	0.	1.	0.	2.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	1.
451	0.	0.	0.	0.	0.	0.	0.	1.	0.
461	0.	0.	1.	0.	0.	0.	1.	1.	3.
471	5.	2.	3.	1.	2.	3.	1.	6.	4.
481	2.	2.	3.	1.	0.	2.	2.	1.	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
 S97T28-DUP-PU
 File ID: 6a6906.CNF

Counted on: 1/25/97 @14:17
 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	1804.4	1804.4	362.144	362.144	16.000	7.893	8.000	2.724
2	34.1	34.1	304.396	303.710	18.000	13.135	9.000	9.356
3	38.7	38.7	289.274	288.462	12.000	5.294	6.000	1.295
4	274.1	274.1	229.676	229.671	14.000	7.362	7.000	3.168

PEAK RESULTS
 Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count Rate	%err c/m	%err @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.	FWHM				
1	Cm243	0.837	5.779	5.746	0.0330.04	69.67	1.1	196.2	0.884E-04	
	Pu236		5.755	5.746	0.009			146.2	0.658E-04	
2	Am241	0.015	5.479	5.477	0.0020.06	1.26	11.5	2.8	0.125E-05	
	Pu238		5.487	5.477	0.010			3.6	0.163E-05	
3	Th228	0.020	5.400	5.407	-0.0070.02	1.69	8.2	4.9	0.220E-05	
4	Pu239	0.113	5.147	5.137	0.0100.03	9.38	2.9	19.3	0.869E-05	
	Pu240		5.144	5.137	0.007			19.3	0.869E-05	
Totals:			0.985	<--valid peaks only-->			82.00			

DETECTOR CALIBRATION
 Energy(MEV) = 4.080 + (0.0046)*Channel
 Energy range (MeV): 4.080 TO 6.435
 Efficiency = 0.4864 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	39968.0	100.000
Smoothed	39974.4	100.016
Composite fit	39365.4	98.492
Residuals	602.6	1.508

Analyzed by:

VR

Spectrum 6a6906.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 12204.3

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3
3
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3
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```


Raw Data Dump for AEA Spectrum: 6a6906.CNF						HNF-SD-WM-DP-227, REV. 0			
1	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	0.	0.
21	0.	0.	1.	1.	2.	1.	1.	1.	0.
31	2.	0.	1.	1.	0.	1.	2.	0.	0.
41	0.	0.	1.	0.	0.	2.	0.	2.	1.
51	2.	0.	1.	0.	1.	0.	0.	0.	0.
61	0.	1.	1.	0.	0.	0.	0.	1.	2.
71	1.	1.	1.	1.	0.	0.	1.	1.	0.
81	2.	0.	0.	0.	1.	1.	0.	3.	0.
91	2.	1.	2.	2.	1.	1.	1.	0.	0.
101	0.	1.	1.	0.	3.	0.	0.	1.	3.
111	4.	1.	1.	0.	1.	2.	0.	0.	1.
121	2.	0.	0.	1.	1.	1.	2.	2.	5.
131	0.	1.	2.	0.	2.	2.	1.	0.	0.
141	0.	3.	1.	2.	3.	4.	7.	1.	5.
151	2.	3.	5.	6.	3.	4.	7.	1.	4.
161	4.	6.	2.	2.	3.	2.	8.	2.	9.
171	2.	1.	7.	2.	6.	3.	4.	3.	8.
181	6.	2.	3.	1.	3.	8.	7.	7.	6.
191	6.	10.	6.	11.	11.	21.	14.	18.	15.
201	14.	27.	12.	17.	27.	21.	32.	30.	33.
211	40.	36.	32.	63.	52.	54.	76.	99.	116.
221	118.	150.	156.	194.	230.	201.	266.	306.	296.
231	301.	246.	221.	167.	132.	88.	67.	39.	28.
241	8.	9.	9.	3.	8.	7.	2.	5.	9.
251	6.	7.	7.	7.	11.	5.	12.	10.	7.
261	8.	11.	9.	10.	13.	16.	6.	12.	13.
271	14.	21.	15.	17.	18.	16.	12.	15.	24.
281	23.	29.	33.	34.	44.	37.	50.	32.	55.
291	35.	44.	31.	27.	29.	25.	30.	39.	37.
301	22.	46.	38.	51.	38.	49.	31.	38.	32.
311	36.	28.	28.	26.	32.	27.	27.	39.	43.
321	45.	43.	54.	54.	59.	63.	66.	74.	63.
331	94.	101.	121.	143.	133.	143.	163.	190.	175.
341	253.	224.	291.	346.	368.	412.	495.	559.	645.
351	850.	936.	1082.	1104.	1199.	1305.	1441.	1591.	1688.
361	1953.	1953.	1883.	1846.	1613.	1319.	1007.	777.	544.
371	183.	110.	60.	26.	14.	5.	4.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	1.	0.	0.	0.	0.	0.	0.	1.	0.
411	1.	1.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	1.	2.	1.	1.	0.
431	0.	0.	1.	0.	0.	0.	0.	0.	1.
441	0.	0.	1.	0.	0.	0.	0.	0.	0.
451	0.	0.	1.	0.	0.	0.	1.	0.	0.
461	1.	0.	0.	0.	1.	0.	0.	0.	2.
471	1.	2.	2.	2.	4.	3.	2.	2.	3.
481	5.	1.	2.	2.	3.	1.	1.	0.	1.
491	1.	1.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.							

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