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Waste Compatibility Safety Issues and Final Results for Tank 241-AP-103 Grab Samples

Jennifer L. Nuzum

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ANALYTICAL SERVICES

**WASTE COMPATIBILITY SAFETY ISSUES AND
FINAL RESULTS FOR TANK 241-AP-103
GRAB SAMPLES**

Project Coordinator: JENNIFER L. NUZUM

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

by

222-S Laboratory
Waste Management of Hanford, Inc.
P.O. Box 700
Richland, Washington

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NARRATIVE

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222-S ANALYTICAL SERVICES

WASTE COMPATIBILITY SAFETY ISSUES AND FINAL RESULTS
FOR TANK 241-AP-103 GRAB SAMPLESSummary

Three grab samples (3AP-97-2, 3AP-97-3, and 3AP-97-4) were taken from Riser 1 of Tank 241-AP-103 on August 21, 1997, and received by 222-S Laboratory on August 22, 1997. These samples were analyzed in accordance with *Compatibility Grab Sampling and Analysis Plan for Fiscal Year 1997* (TSAP) (Field, 1997) and *Data Quality Objectives for Tank Farms Waste Compatibility Program* (Mulkey et. al., 1995) (DQO) in support of the Waste Compatibility Program. No notifications were required based on sample results.

Appearance and Sample Breakdown

Attachment 1 illustrates subsamples 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.

Table 1. Appearance and OTR for 241-AP-103 Liquid Grab Samples

Customer ID	Lab ID	Color	Clarity	Organic Layer	Solids	OTR (MRAD/HR)
3AP-97-2	S97T001992	Light Yellow	Clear	None	Trace	150
3AP-97-3	S97T001993	Light Yellow	Clear	None	Trace	150
3AP-97-4	S97T001994	Light Yellow	Clear	None	Trace	150

Analytical Results

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

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

Compatibility Program Concerns

Differential Scanning Calorimetry (DSC) - Energetics Decision Rule

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

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

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

Results with respect to waste compatibility corrosion rules are presented in Table 3. This table presents NO₃-, OH-, and NO₂- results in $\mu\text{g/mL}$ and molarity (M) units. The spreadsheet compares results to the concentration ranges specified in DQO. A "YES" will appear in the appropriate space for a condition that is met. Based on the NO₃- concentration, only one of three sets of conditions must be met for OH- and NO₂- concentrations. A "NO" appearing in the space is indicative of a condition not met. All conditions for corrosion control were satisfied.

Plutonium (239/240Pu) - Criticality Decision Rule

All 239/240Pu results were below the lower criticality prevention limit of 0.001 g/L stated in DQO. There were no exceptions to the QC parameters stated in TSAP for these subsamples.

Uranium (U) - Criticality Decision Rule

U analysis was performed to evaluate criticality safety for waste transfers. Reconciling the U concentration with the 239Pu equivalents will be provided by the Tank Waste Remediation Systems (TWRS) Technical Basis Group, and are not considered in this report.

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.

Specific Gravity (Sp.G)

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 chloride (Cl⁻), fluoride (F⁻), phosphate (PO₄⁻), sulfate (SO₄⁻), nitrate (NO₃⁻), and nitrite (NO₂⁻) were reviewed for QC in accordance with TSAP. Results are included in Table 2. All other analyte results are presented in Appendix A. These results are opportunistic, and do not have customer defined QC parameters. Any anomalies associated with the results are not discussed.

The F⁻ spike recovery for the subsample of 3AP-97-2 (S97T002009) was 135.3%, respectively. This elevated recovery was due to organic acid interference. No reruns were requested.

Inductively Coupled Plasma Spectrophotometry (ICP)

Only aluminum (Al), Iron (Fe), and sodium (Na) were reviewed for QC in accordance with TSAP. Results are included in Table 2. All other analyte results are presented in Appendix A. These results are opportunistic, and do not have customer defined QC parameters. Any anomalies associated with the results are not discussed.

The Na spike recovery shown in Table 2 for the subsample of 3AP-97-2 (S97T002009) is invalid because the spike concentration (1 ppm) is too low in comparison to the sample concentration (less than 25%). A second spike with an analyte level of 10 ppm was performed, and the resulting spike recovery was 97.1%. This calculation can be found in the raw data.

Total Inorganic Carbon (TIC)/Total Organic Carbon (TOC)

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)

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

Gamma Energy Analysis (GEA)

Only Cesium-137 (Cs137) results were reviewed for QC in accordance with TSAP. Results are included in Table 2. All other analyte results are presented in Appendix A. These results are opportunistic, and do not have customer defined QC parameters. Any anomalies associated with the results are not discussed. There were no exceptions to the QC parameters stated in TSAP for these subsamples.

Procedures

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

Table 4. Analytical Procedures

Analysis	Matrix	Preparation Procedure +	Analysis Procedure
DSC	Liquid	N/A	LA-514-114 Rev. D-1
TGA	Liquid	N/A	LA-514-114 Rev. D-1
Sp.G.	Liquid	N/A	LA-510-112 Rev. D-1
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. C-2
TOC	Liquid	N/A	LA-344-105 Rev. E-0
TIC	Liquid	N/A	LA-342-100 Rev. E-0
239/240Pu	Liquid	N/A	LA-953-104 Rev. B-0
241Am	Liquid	N/A	LA-953-104 Rev. B-0

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GEA	Liquid	N/A	LA-548-121 Rev. F-0
⁹⁰ Sr	Liquid	N/A	LA-220-101 Rev. D-1
U	Liquid	N/A	LA-925-009 Rev. B-0

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
^{239/240} Pu	plutonium 239/240
²⁴¹ Am	americium 241
GEA	gamma energy analysis
⁹⁰ Sr	strontium-90
U	uranium

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References

Field, J.G., 1997, *Compatibility Grab Sampling and Analysis Plan for Fiscal Year 1997*, WHC-SD-WM-TSAP-115, Revision 0-H, Lockheed Martin Hanford Corporation, Richland, WA 99352.

Mulkey, C.M. et. al., 1997, *Data Quality Objectives for Tank Waste Compatibility Program*, WHC-SD-WM-DQO-001, Revision 2, Lockheed Martin Hanford Corporation, Richland, WA 99352.

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ATTACHMENT 1
AP-103 SAMPLE BREAKDOWN

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Attachment 1

AP-103 GRAB SAMPLE BREAKDOWN

Riser 1
644 inches

90 degrees E
3AP-97-2
S97T001992

S97T002009

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

S97T002010

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

210 degrees SW
3AP-97-3
S97T001993

S97T002011

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

S97T002012

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

330 degrees NW
3AP-97-4
S97T001994

S97T002013

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

S97T002014

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

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SAMPLE DATA SUMMARY

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Table 2. Data Summary Table
AP-103 GRAB1

CORE NUMBER: n/a
SEGMENT #: 3AP-97-2

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S97T002009			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S97T002009			DSC Exotherm on Perkin Elmer	Joules/g	93.50	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S97T002009			OH- by Pot. Titration	ug/mL	98.19	<42.00	2.27e+02	214.0	220.5	5.90	n/a	125.0	n/a
S97T002009			pH Direct	pH	100.2	n/a	11.02	10.98	11.00	0.36	n/a	1.00e-02	n/a
S97T002009			Specific Gravity	Sp.G.	100.0	n/a	1.008	1.008	1.008	0.00	n/a	1.00e-03	n/a
S97T002009			% Water by TGA on Perkin Elmer	%	98.47	n/a	97.49	97.82	97.66	0.34	n/a	n/a	n/a
S97T002009			TIC by Acid/Coulometry	ug/mL	100.5	1.900	1.33e+03	1.34e+03	1.34e+03	0.75	98.01	5.000	n/a
S97T002009			Tot. Organic Carbon by Coul.	ug/mL	102.0	2.00e-01	61.60	64.90	63.25	5.22	97.20	5.500	n/a
S97T002009			Uranium by Phosphorescence	ug/mL	105.4	<3.70e-03	23.30	23.70	23.50	1.70	95.73	4.00e-03	3.04e+00
S97T002009			U-Phosphorescence Inst. Error	% Inst Error	3.06	n/a	3.040	3.050	3.045	3.05	n/a	n/a	n/a
S97T002009	D		Aluminium-ICP-Acid Dil.	ug/mL	97.20	<5.00e-02	58.10	57.40	57.75	1.21	88.30	1.050	n/a
S97T002009	D		Iron-ICP-Acid Dil.	ug/mL	92.20	<5.00e-02	< 1.050	<1.05e0	n/a	n/a	83.40	1.050	n/a
S97T002009	D		Sodium-ICP-Acid Dil.	ug/mL	102.6	<1.00e-01	7.07e+03	6.94e+03	7.00e+03	1.86	-1.100e2	2.100	n/a
S97T002009			Fluoride-IC-Dionex 4000/4500	ug/mL	106.9	<1.20e-02	1.04e+02	101.0	102.4	2.93	135.3	1.212	n/a
S97T002009			Chloride-IC-Dionex 4000/4500	ug/mL	98.62	<1.70e-02	79.92	78.50	79.21	1.77	113.5	1.717	n/a
S97T002009			Nitrite-IC - Dionex 4000/4500	ug/mL	104.1	<1.08e-01	1.62e+03	1.64e+03	1.63e+03	1.23	119.2	10.91	n/a
S97T002009			Nitrate by IC-Dionex 4000/4500	ug/mL	98.15	<1.39e-01	3.67e+03	3.67e+03	3.67e+03	0.00	101.3	14.04	n/a
S97T002009			Phosphate-IC-Dionex 4000/4500	ug/mL	101.7	<1.20e-01	85.12	90.60	87.86	6.26	107.0	12.12	n/a
S97T002009			Sulfate by IC-Dionex 4000/4500	ug/mL	101.9	<1.38e-01	4.90e+02	496.0	493.02	1.22	112.0	13.94	n/a
S97T002010			Strontium-B2/90 Hlg Level	uc1/mL	108.4	1.41e-04	7.85e-03	7.56e-03	7.71e-03	3.76	n/a	3.06e-04	8.05E+00
S97T002010			Pu-239/240 by TRU-SPEC Resin	uc1/mL	94.50	<2.94e-06	3.80e-06	3.59e-06	3.70e-06	5.68	n/a	3.00e-06	6.60E+00
S97T002010			Cesium-137 by GEA	uc1/mL	116.8	<6.63e-05	6.400	6.440	6.420	0.62	n/a	n/a	0.260
S97T002010			Am-241 by Extraction	uc1/mL	102.9	<7.06e-06	<8.05e-06	<5.73E-6	n/a	n/a	n/a	8.05e-06	1.00E+02

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Table 2. Data Summary Table
AP-103 GRAB1

CORE NUMBER: n/a
SEGMENT #: 3AP-97-3

SEGMENT PORTION: Supernate

Sample#	R	AF	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S97T002011			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S97T002011			DSC Exotherm on Perkin Elmer	Joules/g	93.50	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S97T002011			OH- by Pot. Titration	ug/mL	98.19	<42.00	2.41e+02	231.0	236.0	4.24	n/a	125.0	n/a
S97T002011			pH Direct	pH	100.2	n/a	10.87	10.92	10.89	0.46	n/a	1.00e-02	n/a
S97T002011			Specific Gravity	Sp.G.	100.0	n/a	1.023	1.014	1.018	0.88	n/a	1.00e-03	n/a
S97T002011			% Water by TGA on Perkin Elmer	%	98.47	n/a	98.09	97.42	97.75	0.69	n/a	n/a	n/a
S97T002011			TIC by Acid/Coulometry	ug/mL	100.5	1.900	1.34e+03	1.33e+03	1.34e+03	0.75	n/a	5.000	n/a
S97T002011			Tot. Organic Carbon by Coul.	ug/mL	102.0	2.00e-01	64.40	66.60	65.50	3.36	n/a	5.500	n/a
S97T002011			Uranium by Phosphorescence	ug/mL	105.4	<3.70e-03	22.30	23.50	22.90	5.24	n/a	4.00e-03	3.05E+00
S97T002011			U-Phosphorescence Inst. Error	% Inst Error	3.06	n/a	3.050	3.060	3.055	3.06	n/a	n/a	n/a
S97T002011	D		Aluminium-ICP-Acid Dil.	ug/mL	97.20	<5.00e-02	60.40	59.40	59.90	1.67	n/a	1.050	n/a
S97T002011	D		Iron-ICP-Acid Dil.	ug/mL	92.20	<5.00e-02	< 1.050	<1.05e0	n/a	n/a	n/a	1.050	n/a
S97T002011	D		Sodium-ICP-Acid Dil.	ug/mL	102.6	<1.00e-01	7.01e+03	6.88e+03	6.94e+03	1.87	n/a	2.100	n/a
S97T002011			Fluoride-IC-Dionex 4000/4500	ug/mL	106.9	<1.20e-02	1.07e+02	99.40	103.3	7.36	n/a	1.212	n/a
S97T002011			Chloride-IC-Dionex 4000/4500	ug/mL	98.62	<1.70e-02	82.16	82.40	82.28	0.24	n/a	1.717	n/a
S97T002011			Nitrite-IC - Dionex 4000/4500	ug/mL	104.1	<1.08e-01	1.69e+03	1.58e+03	1.63e+03	6.73	n/a	10.91	n/a
S97T002011			Nitrate by IC-Dionex 4000/4500	ug/mL	98.15	<1.39e-01	3.77e+03	3.58e+03	3.68e+03	5.17	n/a	14.04	n/a
S97T002011			Phosphate-IC-Dionex 4000/4500	ug/mL	101.7	<1.20e-01	93.82	95.40	94.61	1.69	n/a	12.12	n/a
S97T002011			Sulfate by IC-Dionex 4000/4500	ug/mL	101.9	<1.38e-01	5.12e+02	475.0	493.4	7.50	n/a	13.94	n/a
S97T002012			Strontium-89/90 High Level	uCi/mL	108.4	1.41e-04	9.77e-03	1.04e-02	1.01e-02	6.25	n/a	2.91e-04	6.93E+00
S97T002012			Pu-239/240 by TRU-SPEC Resin	uCi/mL	94.50	<2.94e-06	4.57e-06	5.00e-06	4.79e-06	8.99	n/a	3.12e-06	5.96E+00
S97T002012			Cesium-137 by GEA	uCi/mL	116.8	<6.63e-05	6.660	6.540	6.600	1.82	n/a	n/a	0.360
S97T002012			Am-241 by Extraction	uCi/mL	102.9	<7.06e-06	<7.39e-06	<7.69E-6	n/a	n/a	n/a	7.39e-06	1.00E+02

Table 2. Data Summary Table
AP-103 GRAB1

CORE NUMBER: n/a
SEGMENT #: 3AP-97-4

SEGMENT PORTION: Supernate

Sample#	R	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S97T002013		DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S97T002013		DSC Exotherm on Perkin Elmer	Joules/g	101.4	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S97T002013		OH- by Pot. Titration	ug/mL	98.19	<42.00	2.58e+02	244.0	251.0	5.58	n/a	125.0	n/a
S97T002013		pH Direct	pH	100.2	n/a	11.03	10.97	11.00	0.55	n/a	1.00e-02	n/a
S97T002013		Specific Gravity	Sp.G.	100.0	n/a	1.016	1.020	1.018	0.39	n/a	1.00e-03	n/a
S97T002013		% Water by TGA on Perkin Elmer	%	100.6	n/a	97.57	97.94	97.75	0.38	n/a	n/a	n/a
S97T002013		TIC by Acid/Coulometry	ug/mL	100.5	1.900	1.33e+03	1.36e+03	1.34e+03	2.23	n/a	5.000	n/a
S97T002013		Tot. Organic Carbon by Coul.	ug/mL	102.0	2.00e-01	63.80	65.50	64.65	2.63	n/a	5.500	n/a
S97T002013		Uranium by Phosphorescence	ug/mL	105.4	<3.70e-03	22.40	20.70	21.55	7.89	n/a	4.00e-03	3.05E+00
S97T002013		U-Phosphorescence Inst. Error	% Inst Error	3.06	n/a	3.050	3.040	3.045	3.04	n/a	n/a	n/a
S97T002013	D	Aluminium-ICP-Acid Dil.	ug/mL	97.20	<5.00e-02	66.40	65.90	66.15	0.76	n/a	1.050	n/a
S97T002013	D	Iron-ICP-Acid Dil.	ug/mL	92.20	<5.00e-02	< 1.050	<1.05e0	n/a	n/a	n/a	1.050	n/a
S97T002013	D	Sodium-ICP-Acid Dil.	ug/mL	102.6	<1.00e-01	7.01e+03	6.99e+03	7.00e+03	0.29	n/a	2.100	n/a
S97T002013		Fluoride-IC-Dionex 4000/4500	ug/mL	106.9	<1.20e-02	1.02e+02	103.0	102.5	0.98	n/a	1.212	n/a
S97T002013		Chloride-IC-Dionex 4000/4500	ug/mL	98.62	<1.70e-02	83.03	79.30	81.16	4.56	n/a	1.717	n/a
S97T002013		Nitrite-IC - Dionex 4000/4500	ug/mL	104.1	<1.08e-01	1.63e+03	1.61e+03	1.62e+03	1.23	n/a	10.91	n/a
S97T002013		Nitrate by IC-Dionex 4000/4500	ug/mL	98.15	<1.39e-01	3.64e+03	3.64e+03	3.64e+03	0.00	n/a	14.04	n/a
S97T002013		Phosphate-IC-Dionex 4000/4500	ug/mL	101.7	<1.20e-01	92.37	91.20	91.78	1.31	n/a	12.12	n/a
S97T002013		Sulfate by IC-Dionex 4000/4500	ug/mL	101.9	<1.38e-01	4.84e+02	485.0	484.4	0.21	n/a	13.94	n/a
S97T002014		Strontium-89/90 High Level	uCi/mL	108.4	1.41e-04	7.80e-03	7.68e-03	7.74e-03	1.55	n/a	2.83e-04	7.72E+00
S97T002014		Pu-239/240 by TRU-SPEC Resin	uCi/mL	94.50	<2.94e-06	4.45e-06	4.47e-06	4.46e-06	0.49	n/a	3.10e-06	5.98E+00
S97T002014		Cesium-137 by GEA	uCi/mL	116.8	<6.63e-05	6.420	6.520	6.470	1.55	n/a	n/a	0.200
S97T002014		Am-241 by Extraction	uCi/mL	102.9	<7.06e-06	<7.90e-06	<6.47E-6	n/a	n/a	n/a	7.90e-06	1.00E+02

HNF-SD-WM-DP-262, REV. 0

HNF-SD-WM-DP-262, REV. 0

CHAIN OF CUSTODY FORMS

HNF-SD-WM-DP-262, REV. 0

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CHAIN-OF-CUSTODY RECORD FOR CPO

1 Sample Number 3AP-97-4		2 Supervisor/Sampler R.J. Penznik		9 Seal Intact Upon Release? ☒ Yes ☐ No	
3 Tank 4P-103		4 Riser 1 @ 330° NW		5 Cask/Pig Serial No. G-9	
6 Shipment Description:		7 Sampling Data		10 Seal Intact Upon Receipt? ☒ Yes ☐ No	
A. Work Package Number ES-97-00226/0		Lithium Bromide ☐ Y ☒ N Amount NA Concentration NA X-Ray ☐ Y ☒ N Partial Sample ☐ Y ☒ N Retrieved Partial Sample Stroke Length NA		11 Seal Number AND Cask/Pig SERIAL Number consistent with this record? (Block 5 & 6b) ☒ Yes ☐ No	
B. Cask/Pig Seal Number 12363				12 Laboratory Comments:	
C. Date Sample Collected 8-21-97					
D. Time Sample Collected 1048 hrs					
8 Field Comments:					
<div style="position: absolute; right: 0; top: 0; transform: rotate(90deg);"> HNF-SD-WM-DP-262, REV. 0 </div>					
9 Relinquished By (Sign and PRINT)		14 Received By (Sign and PRINT)		15 Date/Time	
<i>Robert J Penznik</i>		<i>James R. Chambers</i>		1130 8-22-97	
10 Relinquished By (Sign and PRINT)		18 Received By (Sign and PRINT)		19 Date/Time	
<i>James R. Chambers</i>		<i>Richard Chambers</i>		1207 8-22-97	
11 Relinquished By (Sign and PRINT)		22 Received By (Sign and PRINT)		23 Date/Time	
12 Relinquished By (Sign and PRINT)		26 Received By (Sign and PRINT)		27 Date/Time	
13 Relinquished By (Sign and PRINT)		28 Received By (Sign and PRINT)		28 Receiver Comments	

AUG. 22, 1997 10:01AM WHC 222S LAB ROOM 2F BACKSIDE

No. 61111 P. 2/2

CHAIN-OF-CUSTODY RECORD FOR CPO

Sample Number 3AP-97-3		(2) Supervisor/Sampler R.J. PRAZNIK		(9) Seal Intact Upon Release? ☒ Yes ☐ No	
Tank P-103		(4) Riser 1 @ 210° SW		(10) Seal Intact Upon Receipt? ☒ Yes ☐ No	
(5) Cask/Pig Serial No. B-8A		(7) Sampling Data		(11) Seal Number AND Cask/Pig SERIAL Number consistent with this record? (Block 5 & 6b) ☒ Yes ☐ No	
Shipment Description:		Y N - Lithium Bromide ☐ ☒ Amount NA Concentration M - X-Ray ☐ ☒ - Partial Sample ☐ ☒ - Retrieved Partial Sample Stroke Length NA		(12) Laboratory Comments:	
A. Work Package Number ES-97-002266/b					
B. Cask/Pig Seal Number 12362					
C. Date Sample Collected 8-21-97					
D. Time Sample Collected 1119 hrs					
Field Comments:					
3) Relinquished By (Sign and PRINT) Robert J PRAZNIK		(14) Received By (Sign and PRINT) Hustolo G. Smith / Enstrom & Associates Inc.		(15) Date/Time 08/21/97 1100	
7) Relinquished By (Sign and PRINT) Hustolo G. Smith / Enstrom & Associates Inc.		(18) Received By (Sign and PRINT) R. L. Chambers / R. L. Chambers		(19) Date/Time 8-22-97	
1) Relinquished By (Sign and PRINT)		(22) Received By (Sign and PRINT)		(23) Date/Time	
5) Relinquished By (Sign and PRINT)		(26) Received By (Sign and PRINT)		(27) Date/Time	
				(28) Receiver Comments	

HN-SD-WM-DP-262, REV. 0

HNF-SD-WM-DP-262, REV. 0

WASTE COMPATIBILITY CORROSION RULES

HNF-SD-WM-DP-262, 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] ...
				<= 1.0 M?	0.010 M <= [OH] <= 5.0 M?	0.011 M <= [NO2] <= 5.5 M	
S97T002009	NO3	3.67E+03	0.059	YES	YES	YES	
	OH	2.27E+02	0.013				
	NO2	1.62E+03	0.035	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] ...
				<= 1.0 M?	0.010 M <= [OH] <= 5.0 M?	0.011 M <= [NO2] <= 5.5 M	
S97T002011	NO3	3.77E+03	0.061	YES	YES	YES	
	OH	2.41E+02	0.014				
	NO2	1.69E+03	0.037	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] ...
				<= 1.0 M?	0.010 M <= [OH] <= 5.0 M?	0.011 M <= [NO2] <= 5.5 M	
S97T002013	NO3	3.64E+03	0.059	YES	YES	YES	
	OH	2.58E+02	0.015				
	NO2	1.63E+03	0.035	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?

HMF-SD-WM-DA-262, Rev 0

HNF-SD-WM-DP-262, REV. 0

INORGANIC ANALYSIS

HNF-SD-WM-DP-262, REV. 0

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LABCORE Data Entry Template for Worklist# 20108

Analyst: DPB Instrument: DSC0 3 Book # 12/1/4-B

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

Worklist Comment: AP-103 DSC, RUN UNDER N2. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-03	LIQUID	<u>28.45</u>	<u>26.60</u>	<u>N/A</u>	Joules/g
97000600	AP-103 GRAB1	2	SAMPLE	S97T002009	0		DSC-03	LIQUID	<u>N/A</u>	<u>0</u>		Joules/g
97000600	AP-103 GRAB1	3	DUP	S97T002009	0		DSC-03	LIQUID	<u>0</u>	<u>0</u>	<u>N/A</u>	Joules/g
97000600	AP-103 GRAB1	4	SAMPLE	S97T002011	0		DSC-03	LIQUID	<u>N/A</u>	<u>0</u>		Joules/g
97000600	AP-103 GRAB1	5	DUP	S97T002011	0		DSC-03	LIQUID	<u>0</u>	<u>0</u>	<u>N/A</u>	Joules/g

Final page for worklist # 20108

Analyst Signature

Date

Analyst Signature

Date

Data Entry Comments:

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

Curve 1: DSC

File info: IND090101 Mon Sep 1 07:12:08 1997

Sample Weight: 21.070 mg

12N14-B

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 29 TO 32

N2, EXOTHERM DOWN

TEMP: 142.0 °C TIME: 0.0 min RATE: 10.0 °C/min

Temperature (°C)

DP BROMLEY
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Sep 1 09:35:57 1997

DP Bromley

HNF-SD-WM-DP-262, REV. 0

Curve 1: DSC
 File Info: SAM090101 Mon Sep 1 10:32:25 1997
 Sample Weight: 10.190 mg
 S971002009SAM

HNF-SD-WM-DP-262, REV. 0

N2 10C/min
 THERM: 25.0 8 TIME: 0.0 min RATE: 10.0 C/min
 DP BROWLEY
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Mon Sep 1 10:35:47 1997

Curve 1: DSC
 File Info: SAM090102 Mon Sep 1 11:30:05 1997
 Sample Weight: 10.380 mg
 S97T002009DUP

Curve 1: DSC
 File info: SAM090103 Mon Sep 1 15: 09: 40 1997
 Sample Weight: 9.540 mg
 SS7T002011SAM

N2 10C/min
 TEMPERATURE 85.0 °C
 TIME: 0.0 min RATE: 10.0 C/min
 DP BROMLEY
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Mon Sep 1 16:13:08 1997

Curve 1: DSC
 File info: SAM090104 Mon Sep 1 17:04:05 1997
 Sample Weight: 10.110 mg
 S97T002011DUP

N2 100/min
 TEMPERATURE 500.0 °C
 TIME: 0.0 min RATE: 10.0 °C/min
 DP BROMLEY
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Mon Sep 1 17:13:45 1997

Sep. 5. 1997 9:47AM

WHC 222S LAB ROOM 2F BACKSIDE

No. 6658 P. 1/4

worklistrpt Version 2.1 05/15/95
09/03/97 09:24

HNF-SD-WM-DP-262, REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 20145

Analyst: ADP Instrument: DSC0 3 Book # 12N14-BMethod: LA-514-114 Rev/Mod D-1

Worklist Comment: AP-103 Grab rerun due to RPD. Run under N2. -ppb

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-03	LIQUID	<u>28.45</u>	<u>28.85X</u>	<u>N/A</u>	Joules/g
97000600	AP-103 GRAB1	2 SAMPLE	S97T002013	0	DSC-03	LIQUID	<u>N/A</u>	<u>0</u>		Joules/g
97000600	AP-103 GRAB1	3 DUP	S97T002013	0	DSC-03	LIQUID	<u>0</u>	<u>0</u>	<u>N/A</u>	Joules/g

Final page for worklist # 20145

Analyst Signature

Date

Analyst Signature

Date

Data Entry Comments:

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

HNF-SD-WM-DP-262, REV. 0

Curve 1: DSC

File info: SAM090408 Fri Sep 5 02:57:22 1997.

Sample Weight: 19.540 mg

S97T002013 DUP

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 25 TO 27.

N2 10C/min
TEMP1: 35.0 °C
TEMP2: 550.0 °C
TIME1: 0.0 min
RATE1: 10.0 C/min

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Fri Sep 5 03:03:24 1997

35

Curve 1: DSC

File info: SAM090407 Fri Sep 5 01:51:14 1997

Sample Weight: 12.390 mg

S97T002013 SAM

TEMP1: 35.0 °C
TEMP2: 500.0 °C

TIMES: 0.0 min RATE: 10.0 °C/min

Temperature (°C)

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Fri Sep 5 02:07:35 1997

HNf-SD-WM-DP-262, REV. 0

Curve 1: DSC
File Info: IND090403 Thu Sep 4 21:42:28 1997
Sample Weight: 21.070 mg
12N14-B

N2, EXOTHERM DOWN
TIME: 148.8 s RATE: 10.0 °C/min

LABCORE Data Entry Template for Worklist# 20146

Analyst: ppb Instrument: DSC0 2 Book # NAMethod: LA-514-113 Rev Mod 9/4/97

Worklist Comment: AP-103 Grab liquid. -ppb

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
97000600	AP-103 GRAB1	1 SAMPLE	S97T002009	0	DSC-02	LIQUID	<u>N/A</u>	<u>0</u>		Joules/g Dry
97000600	AP-103 GRAB1	2 DUP	S97T002009	0	DSC-02	LIQUID	<u>0</u>	<u>0</u>	<u>N/A</u>	Joules/g Dry
97000600	AP-103 GRAB1	3 SAMPLE	S97T002011	0	DSC-02	LIQUID	<u>N/A</u>	<u>0</u>		Joules/g Dry
97000600	AP-103 GRAB1	4 DUP	S97T002011	0	DSC-02	LIQUID	<u>0</u>	<u>0</u>	<u>N/A</u>	Joules/g Dry
97000600	AP-103 GRAB1	5 SAMPLE	S97T002013	0	DSC-02	LIQUID	<u>N/A</u>	<u>0</u>		Joules/g Dry
97000600	AP-103 GRAB1	6 DUP	S97T002013	0	DSC-02	LIQUID	<u>0</u>	<u>0</u>	<u>N/A</u>	Joules/g Dry

Final page for worklist # 20146

Q McHester 9/4/97
 Analyst Signature Date

 Analyst Signature Date

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist# 20106

Analyst: DPB Instrument: TGA0 3 Book # 1031VP-4

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

Worklist Comment: AP-103 TGA, RUN UNDER N2. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-03	LIQUID	<u>59.0</u>	<u>58.10</u>	<u>N/A</u>	%
97000600	AP-103 GRAB1	2	SAMPLE	S97T002009	0		TGA-03	LIQUID	<u>N/A</u>	<u>97.49</u>		%
97000600	AP-103 GRAB1	3	DUP	S97T002009	0		TGA-03	LIQUID	<u>97.49</u>	<u>97.82</u>	<u>N/A</u>	%
97000600	AP-103 GRAB1	4	SAMPLE	S97T002011	0		TGA-03	LIQUID	<u>N/A</u>	<u>98.09</u>		%
97000600	AP-103 GRAB1	5	DUP	S97T002011	0		TGA-03	LIQUID	<u>98.09</u>	<u>97.42</u>	<u>N/A</u>	%

Final page for worklist # 20106

Analyst Signature

Date

Analyst Signature

Date

Validated 9/3/97 Brachel

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: TER090101 Mon Sep 1 07:21:21 1997

Sample Weight: 23.755 mg

STD 103NB-A

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 40 TO 44.

10C/MIN N2

TEMP: 355.8 °C

TIME: 0.0 min RATE: 10.0 C/min

Temperature (°C)

DP BROMLEY
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Sep 1 09:30:53 1997

David P. Bromley

HN-SD-WM-DP-262, REV. 0

Curve 1: TGA

File info: SAM090101 Mon Sep 1 10:35:01 1997

Sample Weight: 11.286 mg

SS97T002009SAM

10C/MIN N2

TIME: 38.8 C 0.0 min RATE: 10.0 C/min

DP BROMLEY
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Sep 1 10:36:28 1997

HNF-SD-WM-DP-262, REV. 0

Curve 1: TGA

File info: SAM090102 Mon Sep 1 14:24:02 1997

Sample Weight: 11.490 mg

S97T002009DUP

10C/MIN N2
TEMP: 35.0 C
TIME: 0.0 min RATE: 10.0 C/min

DP BROMLEY
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Sep 1 14:24:24 1997

HNF-SD-WM-DP-262, REV. 0

Curve 1: TGA

File info: SAM090103 Mon Sep 1 15:30:38 1997

Sample Weight: 10.176 mg

S97T002011SAM

10C/MIN N2

TEMP: 35.0 °C TIME: 0.0 min RATE: 10.0 C/min

Temperature (°C)

DP BROMLEY
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Sep 2 14:52:58 1997

HNF-SD-MM-DP-262, REV. 0

Curve 1: TGA

File info: SAM090104 Mon Sep 1 17:11:50 1997

Sample Weight: 11.005 mg

S97T002011DUP

10C/MIN N2
TEMP: 35.0 C
TIME: 0.0 min RATE: 10.0 G/min

DP BROMLEY
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Sep 1 17:12:09 1997

HNF-SD-WM-DP-262, REV.0

LABCORE Data Entry Template for Worklist# 20107

Analyst: SAU Instrument: TGA0 3 Book # 103N8A

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

Worklist Comment: AP-103 TGA, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-03	LIQUID	<u>59.0</u>	<u>59.34</u>	<u>N/A</u>	%
97000600	AP-103 GRAB1	2 SAMPLE	S97T002013	0	TGA-03	LIQUID	<u>N/A</u>	<u>97.57</u>		%
97000600	AP-103 GRAB1	3 DUP	S97T002013	0	TGA-03	LIQUID	<u>97.57</u>	<u>97.94</u>	<u>N/A</u>	%

Final page for worklist # 20107

A. Lumbel
Analyst Signature
08-30-97
Date

Shirley
Analyst Signature
9-2-97
Date

Validated 8/3/97 J. Macleod

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: T6A

File info: TER083001 Sat Aug 30 07:32:28 1997

Sample Weight: 19.871 mg

STD 103N8-A

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 46 TO 47

EA Lambel 08-30-97

HN-SD-WM-DP-262, REV. 0

10C/MIN N2

TEMP1: 355.0 °C

TIME1:

0.0 min

RATE1:

10.0 °C/min

Temperature (°C)

EA LAMBEL

PERKIN-ELMER

7 Series Thermal Analysis System

Sat Aug 30 07:41:26 1997

Curve 1: TGA

File info: SAM083002 Sat Aug 30 10:34:14 1997

Sample Weight: 19.356 mg

S97T002013 DUP

10C/MIN N2

TEMP: 33.0 C
TEMP: 500.0 C

TIME1: 0.0 min RATE1: 10.0 C/min

EA LABEL
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Aug 30 14:54:00 1997

HNF-SD-WM-DP-262, REV. 0

LABCORE Data Entry Template for Worklist# 20110

Analyst: ADP Instrument: BA001 Book # 133N16-14Method: LA-510-112 Rev/Mod D-1

Worklist Comment: AP-103 SPG. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			SPG-01	LIQUID	<u>1.398</u>	<u>1.398</u>	<u>N/A</u>	Sp.G.
97000600	AP-103 GRAB1	2 SAMPLE	S97T002009	0	SPG-01	LIQUID	<u>N/A</u>	<u>1.008</u>	<u>0.010</u>	Sp.G.
97000600	AP-103 GRAB1	3 DUP	S97T002009	0	SPG-01	LIQUID	<u>1.008</u>	<u>1.008</u>	<u>N/A</u>	Sp.G.
97000600	AP-103 GRAB1	4 SAMPLE	S97T002011	0	SPG-01	LIQUID	<u>N/A</u>	<u>1.023</u>	<u>0.010</u>	Sp.G.
97000600	AP-103 GRAB1	5 DUP	S97T002011	0	SPG-01	LIQUID	<u>1.023</u>	<u>1.014</u>	<u>N/A</u>	Sp.G.
97000600	AP-103 GRAB1	6 SAMPLE	S97T002013	0	SPG-01	LIQUID	<u>N/A</u>	<u>1.016</u>	<u>0.010</u>	Sp.G.
97000600	AP-103 GRAB1	7 DUP	S97T002013	0	SPG-01	LIQUID	<u>1.016</u>	<u>1.020</u>	<u>N/A</u>	Sp.G.

Final page for worklist# 20110

 Analyst Signature 9-4-97 Date

 Analyst Signature 9-4-97 Date

 Approved 9/4/97

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.

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (D-1)

Type		STD	^{Dup} REPLICATE
STD	Gross Weight (W2)	1.4371	1.4163
Work List	Tare Weight (W1)	1.3320	1.3107
20110	Weight of Solution (W2-W1)	0.1051	0.1056
Test Code	Volume of Solution μ L	75.3800	75.3800
SPG-01	Specific Gravity	1.3943	1.4009
Matrix	Specific Gravity (Average)	1.3976	
LIQUID			
Sample #			
STD# 133N16A			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
ADP	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
09/04/97	v RESULT v		
Time	Specific Gravity Average =	1.398	

Data Entry by:

Date:

09/04/97

Approved by:

Date:

9/4/97

Form 510112L1 Rev. 1.1

Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (D-1)

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.4178	1.4252
Work List	Tare Weight (W1)	1.3418	1.3492
20110	Weight of Solution (W2-W1)	0.076	0.076
Test Code	Volume of Solution μ L	75.3800	75.3800
SPG-01	Specific Gravity	1.0082	1.0082
Matrix	Specific Gravity (Average)	1.0082	
LIQUID			
Sample #			
S97T002009			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
ADP	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
09/04/97	v RESULT v		
Time	Specific Gravity Average =	1.008	

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lem
9/4/97

Data Entry by:

Date: 09/04/97

Approved by:

Date: 9/4/97

Form 510112L1 Rev. 1.1

Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (D-1)

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.5086	1.4391
Work List	Tare Weight (W1)	1.4315	1.3627
20110	Weight of Solution (W2-W1)	0.0771	0.0764
Test Code	Volume of Solution μ L	75.3800	75.3800
SPG-01	Specific Gravity	1.0228	1.0135
Matrix	Specific Gravity (Average)	1.0182	
LIQUID			
Sample #			
S97T002011			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
ADP	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
09/04/97	v RESULT v		
Time	Specific Gravity Average =	1.018	

Data Entry by:	<i>Frank Smith</i>	Date:	09/04/97
Approved by:	<i>Ben Schroeder</i>	Date:	9/4/97

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (D-1)

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.4177	1.5057
Work List	Tare Weight (W1)	1.3411	1.4288
20110	Weight of Solution (W2-W1)	0.0766	0.0769
Test Code	Volume of Solution μ L	75.3800	75.3800
SPG-01	Specific Gravity	1.0162	1.0202
Matrix	Specific Gravity (Average)	1.0182	
LIQUID			
Sample #			
S97T002013			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
ADP	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
09/04/97	v RESULT v		
Time	Specific Gravity Average =	1.018	

Dup 9/4/97
cem

Data Entry by:

Date: 09/04/97

Approved by:

Date: 9/4/97

Form 510112L1 Rev. 1.1

Page 1 of 1

LABCORE Data Entry Template for Worklist# 20101

Analyst: D.C.D. Instrument: PH01 Book # 1849-D

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

Worklist Comment: AP-103 PH, RUN DIRECT. RCJ

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
97000600	AP-103 GRAB1	2	SAMPLE	S97T002009	0		PH-01	LIQUID	<u>N/A</u>	<u>11.02</u>	<u>0.01</u>	pH
97000600	AP-103 GRAB1	3	DUP	S97T002009	0		PH-01	LIQUID	<u>11.02</u>	<u>10.98</u>	<u>N/A</u>	pH
97000600	AP-103 GRAB1	4	SAMPLE	S97T002011	0		PH-01	LIQUID	<u>N/A</u>	<u>10.87</u>	<u>0.01</u>	pH
97000600	AP-103 GRAB1	5	DUP	S97T002011	0		PH-01	LIQUID	<u>10.87</u>	<u>10.92</u>	<u>N/A</u>	pH
97000600	AP-103 GRAB1	6	SAMPLE	S97T002013	0		PH-01	LIQUID	<u>N/A</u>	<u>11.03</u>	<u>0.01</u>	pH
97000600	AP-103 GRAB1	7	DUP	S97T002013	0		PH-01	LIQUID	<u>11.03</u>	<u>10.97</u>	<u>N/A</u>	pH

Final page for worklist # 20101

9-2-97
Analyst Signature Date

9-2-97
Analyst Signature Date

Approved RW Schroeder 9/3/97

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# 20100

Analyst: KRM Instrument: PH01 Book # 101N8A

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

Worklist Comment: AP-103 OH, STD SS=0.050ML. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				OH-01	LIQUID	<u>1.66e⁺</u>	<u>1.63e⁺</u>	<u>N/A</u>	ug/mL
		2	BLNK				OH-01	LIQUID	<u>1</u>	<u><2.50e⁺</u>	<u><42</u>	ug/mL
97000600	AP-103 GRAB1	3	SAMPLE	S97T002009	0		OH-01	LIQUID	<u>N/A</u>	<u>2.27e⁺</u>	<u>1.25e⁺</u>	ug/mL
97000600	AP-103 GRAB1	4	DUP	S97T002009	0		OH-01	LIQUID	<u>2.27e⁺</u>	<u>2.14e⁺</u>	<u>N/A</u>	ug/mL
97000600	AP-103 GRAB1	5	SAMPLE	S97T002011	0		OH-01	LIQUID	<u>N/A</u>	<u>2.41e⁺</u>	<u>1.25e⁺</u>	ug/mL
97000600	AP-103 GRAB1	6	DUP	S97T002011	0		OH-01	LIQUID	<u>2.41e⁺</u>	<u>2.31e⁺</u>	<u>N/A</u>	ug/mL
97000600	AP-103 GRAB1	7	SAMPLE	S97T002013	0		OH-01	LIQUID	<u>N/A</u>	<u>2.58e⁺</u>	<u>1.25e⁺</u>	ug/mL
97000600	AP-103 GRAB1	8	DUP	S97T002013	0		OH-01	LIQUID	<u>2.58e⁺</u>	<u>2.44e⁺</u>	<u>N/A</u>	ug/mL

Final page for worklist # 20100

Analyst Signature Date 9-2-97

Analyst Signature Date 9-3-97

Approved RW Schrad 9/3/97

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.

597T002013 Nap

1.0 ml

```

date 97-09-02 time 22:54
GET pH      12 # 26
Id.#1      11
Id.#2      .1994
pH(init)   11.07
V/ml       9.56
pH
EP1        .072
stop volt. reached
=====

```

```

date 97-09-02 time 22:55
GET pH      12 # 26
Id.#1      11
Id.#2      .1994
pH(init)   11.07
V/ml       9.56
pH
EP1        .072
stop volt. reached
=====

```

597T002013

1.0 ml

```

date 97-09-02 time 22:48
GET pH      12 # 25
Id.#1      11
Id.#2      .1994
pH(init)   11.11
V/ml       9.53
pH
EP1        .076
stop volt. reached
=====

```

```

date 97-09-02 time 22:49
GET pH      12 # 25
Id.#1      11
Id.#2      .1994
pH(init)   11.11
V/ml       9.53
pH
EP1        .076
stop volt. reached
=====

```

597T002011 Nap

1.0 ml

```

date 97-09-02 time 22:42
GET pH      12 # 24
Id.#1      11
Id.#2      .1994
pH(init)   11.04
V/ml       9.61
pH
EP1        .088
stop volt. reached
=====

```

```

date 97-09-02 time 22:42
GET pH      12 # 24
Id.#1      11
Id.#2      .1994
pH(init)   11.04
V/ml       9.61
pH
EP1        .088
stop volt. reached
=====

```

597T002011

1.0 ml

```

date 97-09-02 time 22:37
GET pH      12 # 23
Id.#1      11
Id.#2      .1994
pH(init)   11.05
V/ml       9.68
pH
EP1        .071
EP2        .323
stop volt. reached
=====

```

```

date 97-09-02 time 22:37
GET pH      12 # 23
Id.#1      11
Id.#2      .1994
pH(init)   11.05
V/ml       9.68
pH
EP1        .071
EP2        .323
stop volt. reached
=====

```

547T 002009

1 ml

date 97-09-02 time 22:23
 GET pH 12 # 21
 Id.#1 11
 Id.#2 .1994
 pH(init) 11.04
 EP1 .067 pH 9.59
 EP2 .096 pH 8.34
 EP3 .134 pH 7.62
 stop volt.reached
 =====

date 97-09-02 time 22:23
 GET pH 12 # 21
 .10ml/div dH=1/div
 start V .000 ml

547T 002009 Dup

1 ml

date 97-09-02 time 22:30
 GET pH 12 # 22
 Id.#1 11
 Id.#2 .1994
 pH(init) 11.01
 EP1 .063 pH 9.48
 stop volt.reached
 =====

date 97-09-02 time 22:30
 GET pH 12 # 22
 .10ml/div dH=1/div
 start V .000 ml

BLK

date 97-09-02 time 18:48
 GET pH 12 # 18
 Id.#1 346
 Id.#2 .1994
 pH(init) 5.74
 EP1 .009 pH 4.61
 stop volt.reached
 =====

date 97-09-02 time 18:49
 GET pH 12 # 18
 .10ml/div dH=1/div
 start V .000 ml

STD .05 ml
10/108A

date 97-09-02 time 18:44
 GET pH 12 # 17
 Id.#1 346
 Id.#2 .1994
 pH(init) 11.66
 EP1 .241 pH 9.84
 EP2 .312 pH 6.85
 stop volt.reached
 =====

date 97-09-02 time 18:45
 GET pH 12 # 17
 .10ml/div dH=1/div
 start V .000 ml

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)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.241
20100	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	9.61E-01
OH-01	OH in Sample in µg/mL (PPM)	1.63E+04
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
STD# 101N8A		
Instrument Code	Detection Limit (µg/mL)	2.50E+03
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
KRM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
09/02/97		
Time		STD
	Concentration of OH in Sample (Molarity)	9.61E-01
	OH in Sample in µg/mL (PPM)	1.63E+04

Data Entry by: *Jim Smith* Date: 09/03/97
 Approved by: *BW Schroeder* Date: 9/3/97
 Form 211102_1 Rev. 1.3 Page 1 of 1

OH (AUTO) : LA-211-102 (C-0)		BLANK
Type	Sample Size (mL) SS	3.00 -0.050
BLANK	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.009
20100	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	3.59E-02
OH-01	OH in Sample in µg/mL (PPM)	<42 6.10E+02
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
Instrument Code	Detection Limit (µg/mL)	42 2.50E+03
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
KRM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
09/02/97		
Time		BLANK
	Concentration of OH in Sample (Molarity)	3.59E-02
	OH in Sample in µg/mL (PPM)	<42 <2500
The Result is < Detection Limit		

Data Entry by: Stacy Smith Date: 09/03/97
 Approved by: RW Schroeder Date: 9/3/97
 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	1.000
SAMPLE	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.067
20100	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.34E-02
OH-01	OH in Sample in µg/mL (PPM)	2.27E+02
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S97T002009		
Instrument Code	Detection Limit (µg/mL)	1.25E+02
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
KRM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
09/02/97		
Time		
	Concentration of OH in Sample (Molarity)	1.34E-02
	OH in Sample in µg/mL (PPM)	2.27E+02

Data Entry by:

Date: 09/03/97

Approved by:

Date: 9/3/97

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)

		SAMPLE-DUP
Type	Sample Size (mL) SS	1.000
SAMPLE-DUP	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.063
20100	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.26E-02
OH-01	OH in Sample in µg/mL (PPM)	2.14E+02
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S97T002009		
Instrument Code	Detection Limit (µg/mL)	1.25E+02
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
KRM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
09/02/97		
Time		
		SAMPLE-DUP
	Concentration of OH in Sample (Molarity)	1.26E-02
	OH in Sample in µg/mL (PPM)	2.14E+02

Data Entry by:

Date:

09/03/97

Approved by:

Date:

9/3/97

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	1.000
SAMPLE	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.071
20100	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.42E-02
OH-01	OH in Sample in µg/mL (PPM)	2.41E+02
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S97T002011		
Instrument Code	Detection Limit (µg/mL)	1.25E+02
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
KRM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
09/02/97		
Time		SAMPLE
	Concentration of OH in Sample (Molarity)	1.42E-02
	OH in Sample in µg/mL (PPM)	2.41E+02

Data Entry by:

Date: 09/03/97

Approved by:

Date: 9/3/97

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-DUP
Type	Sample Size (mL) SS	1.000
SAMPLE-DUP	Concentration of HNO ₃ (Molarity)	0.1994
Work List	HNO ₃ Titrant at OH end-point in mL	0.068
20100	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.36E-02
OH-01	OH in Sample in µg/mL (PPM)	2.31E+02
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S97T002011		
Instrument Code	Detection Limit (µg/mL)	1.25E+02
PH01		
Analyst	OH Molarity = ((mL HNO ₃)*(M HNO ₃))/Sample Size in mL*Dilution Factor	
KRM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
09/02/97		
Time		
	Concentration of OH in Sample (Molarity)	1.36E-02
	OH in Sample in µg/mL (PPM)	2.31E+02

Data Entry by:	<i>Jim Smith</i>	Date:	09/03/97
Approved by:	<i>R.W. Schroeder</i>	Date:	9/3/97

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		SAMPLE
Type	Sample Size (mL) SS	1.000
SAMPLE	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.076
20100	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.52E-02
OH-01	OH in Sample in µg/mL (PPM)	2.58E+02
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S97T002013		
Instrument Code	Detection Limit (µg/mL)	1.25E+02
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
KRM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
09/02/97		
Time		
		SAMPLE
Concentration of OH in Sample (Molarity)		1.52E-02
OH in Sample in µg/mL (PPM)		2.58E+02

Data Entry by:

Date: 09/03/97

Approved by:

Date: 9/3/97

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-DUP
Type	Sample Size (mL) SS	1.000
SAMPLE-DUP	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.072
20100	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.44E-02
OH-01	OH in Sample in µg/mL (PPM)	2.44E+02
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S97T002013		
Instrument Code	Detection Limit (µg/mL)	1.25E+02
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
KRM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
09/02/97		
Time		
		SAMPLE-DUP
	Concentration of OH in Sample (Molarity)	1.44E-02
	OH in Sample in µg/mL (PPM)	2.44E+02

Data Entry by:

Approved by:

Form 211102_1 Rev. 1.3

Date: 09/03/97

Date: 9/3/97

Page 1 of 1

LABCORE Completed Worklist Report for Worklist# 20104

Analyst: adp

Instrument: IC02

Book# 954204

Method: 1A533-105 Rev/Mod D-1

Worklist Comment: AP-103 IC. RCJ

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	CCB	0	①IC-QC	F	QC	1	<1.20e-2	ug/mL
1	CCB	0	①IC-QC	CL	QC	1	<1.70e-2	ug/mL
1	CCB	0	①IC-QC	NO2	QC	1	<1.08e-1	ug/mL
1	CCB	0	①IC-QC	BR	QC	1	<1.25e-1	ug/mL
1	CCB	0	①IC-QC	NO3	QC	1	<1.39e-1	ug/mL
1	CCB	0	①IC-QC	P04	QC	1	<1.20e-1	ug/mL
1	CCB	0	①IC-QC	SO4	QC	1	<1.28e-1	ug/mL
1	CCB	0	①IC-QC	OXALATE2	QC	1	<1.05e-1	ug/mL
2	CCV	0	①IC-QC	F	QC	5.90e01	6.31e+01	106.949 % Recovery
2	CCV	0	①IC-QC	CL	QC	8.00e01	7.89e+01	98.625 % Recovery
2	CCV	0	①IC-QC	NO2	QC	5.43e02	5.65e+02	104.052 % Recovery
2	CCV	0	①IC-QC	BR	QC	5.69e02	5.69e+02	96.604 % Recovery
2	CCV	0	①IC-QC	NO3	QC	5.94e02	5.93e+02	98.148 % Recovery
2	CCV	0	①IC-QC	P04	QC	5.45e02	5.54e+02	101.651 % Recovery
2	CCV	0	①IC-QC	SO4	QC	6.32e02	6.44e+02	101.899 % Recovery
2	CCV	0	①IC-QC	OXALATE2	QC	5.33e02	5.49e+02	103.002 % Recovery
3	SAMPLE	S97T002009	0	①IC-01	F-02	LIQUID	N/A	1.038e+02
3	SAMPLE	S97T002009	0	①IC-01	CL-02	LIQUID	N/A	7.992e+01
3	SAMPLE	S97T002009	0	①IC-01	NO2-02	LIQUID	N/A	1.618e+03
3	SAMPLE	S97T002009	0	①IC-01	BR-02	LIQUID	N/A	1.262e+01
3	SAMPLE	S97T002009	0	①IC-01	NO3-02	LIQUID	N/A	3.666e+03
3	SAMPLE	S97T002009	0	①IC-01	P04-02	LIQUID	N/A	8.512e+01
3	SAMPLE	S97T002009	0	①IC-01	SO4-02	LIQUID	N/A	4.905e+02
3	SAMPLE	S97T002009	0	①IC-01	OXALATE2	LIQUID	N/A	1.061e+01
4	DUP	S97T002009	0	①IC-01	F-02	LIQUID	1.04e+02	1.01e+02
4	DUP	S97T002009	0	①IC-01	CL-02	LIQUID	7.99e+01	7.85e+01
4	DUP	S97T002009	0	①IC-01	NO2-02	LIQUID	1.62e+03	1.64e+03
4	DUP	S97T002009	0	①IC-01	BR-02	LIQUID	<1.26e1	<1.26e1
4	DUP	S97T002009	0	①IC-01	NO3-02	LIQUID	3.67e+03	3.67e+03
4	DUP	S97T002009	0	①IC-01	P04-02	LIQUID	8.51e+01	9.06e+01
4	DUP	S97T002009	0	①IC-01	SO4-02	LIQUID	4.90e+02	4.96e+02
4	DUP	S97T002009	0	①IC-01	OXALATE2	LIQUID	<1.06e1	<1.06e1
5	SPK	S97T002009	0	①IC-01	F-02	LIQUID	5.90e01	7.98e+01
5	SPK	S97T002009	0	①IC-01	CL-02	LIQUID	8.00e01	9.08e+01
5	SPK	S97T002009	0	①IC-01	NO2-02	LIQUID	5.43e02	6.47e+02
5	SPK	S97T002009	0	①IC-01	BR-02	LIQUID	5.69e02	5.90e+02
5	SPK	S97T002009	0	①IC-01	NO3-02	LIQUID	5.94e02	6.02e+02
5	SPK	S97T002009	0	①IC-01	P04-02	LIQUID	5.45e02	5.83e+02
5	SPK	S97T002009	0	①IC-01	SO4-02	LIQUID	6.32e02	7.08e+02
5	SPK	S97T002009	0	①IC-01	OXALATE2	LIQUID	5.33e02	5.76e+02
6	SAMPLE	S97T002011	0	①IC-01	F-02	LIQUID	N/A	1.073e+02

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

LABCORE Completed Worklist Report for Worklist# 20104

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
6 SAMPLE	S97T002011	0	QIC-01 CL-02	LIQUID	N/A	8.216e+01	1.717	ug/mL
6 SAMPLE	S97T002011	0	QIC-01 NO2-02	LIQUID	N/A	1.688e+03	10.910	ug/mL
6 SAMPLE	S97T002011	0	QIC-01 BR-02	LIQUID	N/A	1.262e+01	12.620	ug/mL
6 SAMPLE	S97T002011	0	QIC-01 NO3-02	LIQUID	N/A	3.773e+03	14.040	ug/mL
6 SAMPLE	S97T002011	0	QIC-01 PO4-02	LIQUID	N/A	9.382e+01	12.120	ug/mL
6 SAMPLE	S97T002011	0	QIC-01 SO4-02	LIQUID	N/A	5.117e+02	13.940	ug/mL
6 SAMPLE	S97T002011	0	QIC-01 OXALATE2	LIQUID	N/A	1.061e+01	10.610	ug/mL
7 DUP	S97T002011	0	QIC-01 F-02	LIQUID	1.07e+02	9.94e+01	7.364	RPD
7 DUP	S97T002011	0	QIC-01 CL-02	LIQUID	8.22e+01	8.24e+01	0.243	RPD
7 DUP	S97T002011	0	QIC-01 NO2-02	LIQUID	1.69e+03	1.58e+03	6.728	RPD
7 DUP	S97T002011	0	QIC-01 BR-02	LIQUID	<1.26e1	<1.26e1		RPD
7 DUP	S97T002011	0	QIC-01 NO3-02	LIQUID	3.77e+03	3.58e+03	5.170	RPD
7 DUP	S97T002011	0	QIC-01 PO4-02	LIQUID	9.38e+01	9.54e+01	1.631	RPD
7 DUP	S97T002011	0	QIC-01 SO4-02	LIQUID	5.12e+02	4.75e+02	7.497	RPD
7 DUP	S97T002011	0	QIC-01 OXALATE2	LIQUID	<1.06e1	2.79e+01		RPD
8 SAMPLE	S97T002013	0	QIC-01 F-02	LIQUID	N/A	1.021e+02	1.212	ug/mL
8 SAMPLE	S97T002013	0	QIC-01 CL-02	LIQUID	N/A	8.203e+01	1.717	ug/mL
8 SAMPLE	S97T002013	0	QIC-01 NO2-02	LIQUID	N/A	1.634e+03	10.910	ug/mL
8 SAMPLE	S97T002013	0	QIC-01 BR-02	LIQUID	N/A	1.262e+01	12.620	ug/mL
8 SAMPLE	S97T002013	0	QIC-01 NO3-02	LIQUID	N/A	3.639e+03	14.040	ug/mL
8 SAMPLE	S97T002013	0	QIC-01 PO4-02	LIQUID	N/A	9.237e+01	12.120	ug/mL
8 SAMPLE	S97T002013	0	QIC-01 SO4-02	LIQUID	N/A	4.838e+02	13.940	ug/mL
8 SAMPLE	S97T002013	0	QIC-01 OXALATE2	LIQUID	N/A	1.061e+01	10.610	ug/mL
9 DUP	S97T002013	0	QIC-01 F-02	LIQUID	1.02e+02	1.03e+02	0.976	RPD
9 DUP	S97T002013	0	QIC-01 CL-02	LIQUID	8.20e+01	7.93e+01	4.559	RPD
9 DUP	S97T002013	0	QIC-01 NO2-02	LIQUID	1.63e+03	1.61e+03	1.235	RPD
9 DUP	S97T002013	0	QIC-01 BR-02	LIQUID	<1.26e1	<1.26e1		RPD
9 DUP	S97T002013	0	QIC-01 NO3-02	LIQUID	3.64e+03	3.64e+03	0.000	RPD
9 DUP	S97T002013	0	QIC-01 PO4-02	LIQUID	9.24e+01	9.12e+01	1.307	RPD
9 DUP	S97T002013	0	QIC-01 SO4-02	LIQUID	4.84e+02	4.85e+02	0.206	RPD
9 DUP	S97T002013	0	QIC-01 OXALATE2	LIQUID	<1.06e1	<1.06e1		RPD

Final page for worklist# 20104

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

James M. Lyle 9/9/97
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 20104

Analyst: ASD Instrument: IC0 2 Book# 95N20-A

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

Worklist Comment: AP-103 IC. RCJ

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 CCB			@IC-QC	QC		
2 CCV			@IC-QC	QC		
3 SAMPLE	S97T002009 0		@IC-01	LIQUID	97000600	AP-103 GRAB1
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
4 DUP	S97T002009 0		@IC-01	LIQUID		
5 SPK	S97T002009 0		@IC-01	LIQUID		
6 SAMPLE	S97T002011 0		@IC-01	LIQUID	97000600	AP-103 GRAB1
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
7 DUP	S97T002011 0		@IC-01	LIQUID		
8 SAMPLE	S97T002013 0		@IC-01	LIQUID	97000600	AP-103 GRAB1
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
9 DUP	S97T002013 0		@IC-01	LIQUID		

Final page for worklist # 20104

[Signature] 8-30-97

Analyst Signature Date

Analyst Signature Date

uploaded 9-4-97

John W. Well

20104AUG.SSV

Validated 9/8/97 JM Luge

Data Entry Comments:

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

Sample Name: BLANK Date: 08/30/1997 07:22:33
 Data File : C:\DX\DATA\97082831.D01
 Method : C:\DX\METHOD\ANIONS.MET
 ACI Address: 1 System: 1 Inject#: 1 Detector: CDM-1
 Analyst : *James L. Lyle* Column: AG4A/AS4A anion column

Calibration Volume Dilution Points Rate Start Stop Area Reject
 External 1 1 3300 5Hz 0.00 11.00 50

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.60	chloride	-0.021	54	236	1	-1.23
2	3.45		0.000	41	274	1	
3	6.13	sulfate	0.099	96	1428	1	-5.74
Totals			0.079	191	1937		

File: 97082831.D01 Sample: BLANK

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
 COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 68 TO 76.

Sample Name: STD 95N20-A Date: 08/30/1997 07:39:10
 Data File: C:\DX\DATA\97082831.D02
 Method: C:\DX\METHOD\ANIONS.MET
 ACI Address: 1 System: 1 Inject#: 2 Detector: CDM-1
 Analyst: *Anthony Smith* Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	101	3300	5Hz	0.00	11.00		50

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.88		0.000	79	327	2	
2	1.03	fluoride	63.135	107.01	12164	2	-0.65
3	1.59	chloride	78.867	98.58	11671	1	-2.06
4	1.92	nitrite	564.878	103.64	54297	1	-3.68
5	2.95	bromide	569.337	96.66	37803	1	0.45
6	3.36	nitrate	583.009	98.15	50000	1	2.86
7	4.69	phosphate	553.821	104.62	23543	1	-3.30
8	6.08	sulfate	644.203	101.93	72467	1	-6.56
9	8.00	oxalate	548.993	103.60	46008	1	-6.83
Totals			3606.243	35482	308279		

File: 97082831.D02 Sample: STD 95N20-A

Sample Name: S97T002009 SAM Date: 08/30/1997 08:12:17
 Data File : C:\DX\DATA\97082831.D04
 Method : C:\DX\METHOD\ANIONS.MET
 ACI Address: 1 System: 1 Inject#: 4 Detector: CDM-1
 Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	101	3300	5Hz	0.00	11.00		50

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.88		0.000	487	2143	2	
2	1.03	fluoride	103.844	3766	20242	2	-0.65
3	1.58	chloride	79.923	2301	11823	1	-2.47
4	1.91	nitrite	1618.483	27187	160195	1	-4.01
5	3.22	nitrate	3665.713	35467	348794	1	-1.43
6	4.69	phosphate	85.120	280	3469	1	-3.30
7	6.08	sulfate	490.477	3673	54991	1	-6.56
8	8.05	oxalate	-1.529	28	1187	1	-6.21

Totals 6042.031 73188 602844

SS 100-10

File: 97082831.D04 Sample: S97T002009 SAM

Sample Name: S97T002009 DUP Date: 08/30/1997 09:39:51
 Data File : C:\DX\DATA\97082831.D05
 Method : C:\DX\METHOD\ANIONS.MET
 ACI Address: 1 System: 1 Inject#: 5 Detector: CDM-1
 Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	101	3300	5Hz	0.00	11.00		50

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.88		0.000	500	2146	2	
2	1.03	fluoride	100.646	3776	19600	2	-0.65
3	1.58	chloride	78.527	2403	11622	1	-2.47
4	1.91	nitrite	1644.980	28178	162918	1	-4.35
5	3.19	nitrate	3667.954	36226	349039	1	-2.24
6	4.72	phosphate	90.635	290	3701	1	-2.75
7	6.08	sulfate	495.519	3672	55561	1	-6.56
Totals			6078.261	75045	604587		

SS .100 -10

File: 97082831.D05 Sample: S97T002009 DUP

Data Reprocessed On 09/04/1997 13:58:08

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Sample Name: S97T002009 SPK                      Date: 08/30/1997 10:09:52
Data File  : E:\DATA\97082831.D07
Method     : C:\DX\METHOD\ANIONS.MET
ACI Address: 1 System: 1 Inject#: 7                Detector: CDM-1
Analyst    :                      Column: AG4A/AS4A anion column
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Calibration Volume Dilution Points Rate Start Stop Area Reject
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External          1          101    3300  5Hz   0.00 11.00      50
=====

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.88		0.000	566	2355	2	
2	1.02	fluoride	183.662	6438	36724	2	-1.29
3	1.57	chloride	170.746	5048	25185	1	-3.29
4	1.90	nitrite	2265.443	37770	227546	1	-4.68
5	2.89	bromide	590.186	6715	39233	1	-1.81
6	3.16	nitrate	4268.099	41903	416610	1	-3.27
7	4.67	phosphate	668.264	2207	28554	1	-3.85
8	6.03	sulfate	1198.088	9079	136898	1	-0.06
9	8.00	oxalate	576.254	2405	48251	1	-6.83
Totals			9920.742	112130	961356		

File: 97082831.D07 Sample: S97T002009 SPK

Sample Name: S97T002011 SAM Date: 08/30/1997 10:23:46
 Data File: C:\DX\DATA\97082831.D09
 Method: C:\DX\METHOD\ANIONS.MET
 ACI Address: 1 System: 1 Inject#: 9 Detector: CDM-1
 Analyst: Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	101	3300	5Hz	0.00	11.00		50

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.88		0.000	509	2214	2	
2	1.03	fluoride	107.336	3950	20945	2	-0.65
3	1.57	chloride	82.160	2400	12145	1	-2.88
4	1.90	nitrite	1687.885	28609	167332	1	-4.68
5	3.18	nitrate	3772.890	37158	360569	1	-2.65
6	4.69	phosphate	93.820	296	3835	1	-3.30
7	6.08	sulfate	511.746	3866	57398	1	-6.56
Totals			6255.836	76788	624439		

SS .100-10

File: 97082831.D09 Sample: S97T002011 SAM

Sample Name: S97T002011 DUP Date: 08/30/1997 10:46:22
 Data File : C:\DX\DATA\97082831.D10
 Method : C:\DX\METHOD\ANIONS.MET
 ACI Address: 1 System: 1 Inject#: 10 Detector: CDM-1
 Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	101	3300	5Hz	0.00	11.00		50

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.88		0.000	461	1999	2	
2	1.03	fluoride	99.384	3660	19347	2	-0.65
3	1.57	chloride	82.381	2341	12177	1	-2.88
4	1.91	nitrite	1577.407	26892	155982	1	-4.35
5	3.19	nitrate	3582.755	35176	339761	1	-2.45
6	4.69	phosphate	95.417	286	3902	1	-3.30
7	6.08	sulfate	474.871	3614	53226	1	-6.56
8	9.12	oxalate	27.832	43	3555	1	6.21
Totals			5940.047	72472	589948		

File: 97082831.D10 Sample: S97T002011 DUP

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Sample Name: S97T002013 SAM	Date: 08/30/1997 10:58:53
Data File : C:\DX\DATA\97082831.D11	
Method : C:\DX\METHOD\ANIONS.MET	
ACI Address: 1 System: 1 Inject#: 11	Detector: CDM-1
Analyst :	Column: AG4A/AS4A anion column

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Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	101	3300	5Hz	0.00	11.00		50

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.88		0.000	467	1988	2	
2	1.03	fluoride	102.097	3739	19892	2	-0.65
3	1.57	chloride	83.031	2343	12270	1	-2.88
4	1.91	nitrite	1634.156	27579	161805	1	-4.35
5	3.19	nitrate	3639.254	35707	345905	1	-2.45
6	4.69	phosphate	92.374	296	3774	1	-3.30
7	6.08	sulfate	483.795	3661	54235	1	-6.56

Totals	6034.707	73791	599870
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File: 97082831.D11 Sample: S97T002013 SAM

Sample Name: S97T002013 DUP Date: 08/30/1997 11:11:37
 Data File : C:\DX\DATA\97082831.D12
 Method : C:\DX\METHOD\ANIONS.MET
 ACI Address: 1 System: 1 Inject#: 12 Detector: CDM-1
 Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	101	3300	5Hz	0.00	11.00		50

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.88		0.000	478	2048	2	
2	1.03	fluoride	102.503	3783	19973	2	-0.65
3	1.57	chloride	79.322	2355	11736	1	-2.88
4	1.90	nitrite	1613.355	27551	159669	1	-4.68
5	3.18	nitrate	3638.916	35621	345868	1	-2.65
6	4.69	phosphate	91.174	293	3724	1	-3.30
7	6.08	sulfate	485.499	3651	54428	1	-6.56
Totals			6010.769	73732	597446		

SS 100-10

File: 97082831.D12 Sample: S97T002013 DUP

LABCORE Data Entry Template for Worklist# 20154

Analyst:

JK JetoInstrument: ICP01 2-3-97Book# 688480Method: LA-505-151/161 Rev/Mod C-2

Worklist Comment: ICP AP-103 (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	SERDIL	S97T002009 0 D	@ICP-D01	LIQUID		
7	SAMPLE	S97T002009 0 D	@ICP-D01	LIQUID	97000600 AP-103 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						
8	DUP	S97T002009 0 D	@ICP-D01	LIQUID		
9	SPK	S97T002009 0 D	@ICP-D01	LIQUID		
10	CCV	^{ICV} <u>SPK</u> (u p p s) <u>JK 2-3-97</u>	@ICP-QC	QC		
11	CCB		@ICP-QC	QC		
12	SAMPLE	S97T002011 0 D	@ICP-D01	LIQUID	97000600 AP-103 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						

Data Entry Comments:

LABCORE Data Entry Template for Worklist# 20154

S Type	Sample#	R A	Test	Matrix	Group#	Project
13 DUP	S97T002011 0 D	@ICP-D01	LIQUID			
14 SAMPLE	S97T002013 0 D	@ICP-D01	LIQUID	97000600 AP-103 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					
15 DUP	S97T002013 0 D	@ICP-D01	LIQUID			
16 ICSA		@ICP-QC	QC			
17 ICSAB		@ICP-QC	QC			
18 CCV		@ICP-QC	QC			
19 CCB		@ICP-QC	QC			

Final page for worklist # 20154

[Signature] 09-03-97
Analyst Signature Date

Reviewed + Validated by:
[Signature] 9/3/97
Analyst Signature Date

S97T002009-L	.5-10-2-8, DF 105	
S97T002009	.5-10	21
S97T002009-D	.5-10	21
S97T002009-G	.5-10	21, .5 mL sample + 2.1 mL STS + 7.9 mL H ₂ O ₃
S97T002009-X	.5-10-1-9	210
S97T002009-QX	.5-10-1-9	210, 1 mL sample + 1 mL conc. H ₂ SO ₄ + 35 + 7 mL H ₂ O ₃
S97T002011	.5-10, DF	21
S97T002011-D	.5-10	21
S97T002013	.5-10	21
S97T002013-D	.5-10	21

Data Entry Comments:

Al =

$$Al = \left(\frac{76.59}{21} \right) - \left(\frac{58.21}{21} \right) \times 100 = 88.3\%$$

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

HNF-SD-WM-DP-262, REV. 0

Analysis Report

Summary

Wed 09-03-97 10:49:46 AM

page 1

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	970903A	ICP2	09/03/97	09:01	DKS	Q	CONC
2	ICB	970903A	ICP2	09/03/97	09:04	DKS	Q	CONC
3	LLS	970903A	ICP2	09/03/97	09:07	DKS	Q	CONC
4	ICSA	970903A	ICP2	09/03/97	09:10	DKS	Q	CONC
5	ICSAB	970903A	ICP2	09/03/97	09:13	DKS	Q	CONC
6	S97T002009-L	970903A	ICP2	09/03/97	09:18	DKS	S	CONC
7	S97T002009	970903A	ICP2	09/03/97	09:22	DKS	S	CONC
8	S97T002009-L	970903A	ICP2	09/03/97	09:31	DKS	S	CONC
9	S97T002009	970903A	ICP2	09/03/97	09:35	DKS	S	CONC
10	S97T002009-D	970903A	ICP2	09/03/97	09:38	DKS	S	CONC
11	S97T002009-A	970903A	ICP2	09/03/97	09:43	DKS	S	CONC
12	CCV	970903A	ICP2	09/03/97	10:04	DKS	Q	CONC
13	CCB	970903A	ICP2	09/03/97	10:07	DKS	S	CONC
14	S97T002009-X	970903A	ICP2	09/03/97	10:11	DKS	Q	CONC
15	S97T002009-AX	970903A	ICP2	09/03/97	10:15	DKS	S	CONC
16	S97T002011	970903A	ICP2	09/03/97	10:18	DKS	S	CONC
17	S97T002011-D	970903A	ICP2	09/03/97	10:23	DKS	S	CONC
18	S97T002013	970903A	ICP2	09/03/97	10:28	DKS	S	CONC
19	S97T002013-D	970903A	ICP2	09/03/97	10:32	DKS	S	CONC
20	ICSA	970903A	ICP2	09/03/97	10:36	DKS	Q	CONC
21	ICSAB	970903A	ICP2	09/03/97	10:40	DKS	Q	CONC
22	CCV_1	970903A	ICP2	09/03/97	10:43	DKS	Q	CONC
23	CCB_1	970903A	ICP2	09/03/97	10:46	DKS	Q	CONC

Ap-103 Grab
 09-03-97 5977002009
 5977002011
 5977002013

Post spike:

$$Na = \frac{\left(\frac{9398}{210}\right) - \left(\frac{7358}{210}\right)}{10} \times 100 = 97.1\%$$

$$S = \frac{\left(\frac{2153}{210}\right) - \left(\frac{165.5}{210}\right)}{10} \times 100 = 94.6\%$$

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 79 TO 83.

HNF-SD-WM-DP-262, REV. 0

Analysis Report

Averages

Wed 09-03-97 10:49:46 AM

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#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	4.845	4.859	5.179	5.050	4.922	5.042
2	ICB	.0005	.0105	.0087	.0058	.0001	-.0000
3	LLS	.0233	.1113	.2280	.1073	.1004	.0104
4	ICSA	.0038	.239.4	-.0609	.0015	.0004	.0001
5	ICSA B	.9571	.239.8	-.0354	-.0013	.4687	.4774
6	S97T002009 L	.4313	.34.85	1.492	7.232	.0688	.0141
7	S97T002009	.5535	.58.11	.5559	6.710	.1052	.0668
8	S97T002009 L	.6778	.61.53	1.957	6.884	.1172	.0119
9	S97T002009	.5291	.58.05	.7258	6.700	.1032	.0021
10	S97T002009 D	.5172	.57.41	.5825	6.486	.1033	.0003
11	S97T002009 A	.18.26	.76.59	.22.07	.26.30	.19.08	.18.91
12	CCV	4.774	4.794	5.084	5.007	4.843	5.005
13	CCB	.0016	.0233	.0149	.0044	.0001	.0002
14	S97T002009 X	.5694	.62.17	3.040	7.444	.1174	.0166
15	S97T002009 AX	.1902	.2001	.2003	.2067	.1994	.1984
16	S97T002011	.5700	.60.39	.5097	7.138	.0078	.0065
17	S97T002011 D	.5353	.59.40	.2192	6.914	.0072	-.0033
18	S97T002013	.5531	.66.43	.7891	7.077	.0189	-.0006
19	S97T002013 D	.5369	.65.87	.8241	7.128	.0181	.0021
20	ICSA	.0079	.236.7	-.0155	-.0003	.0004	.0003
21	ICSA B	.9576	.235.7	-.0197	.0013	.4611	.4748
22	CCV 1	4.882	4.789	5.157	4.989	4.883	5.017
23	CCB 1	.0022	.0136	.0169	.0073	.0002	.0003

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	ICV	5.138	4.858	4.958	4.898	5.076	4.912
2	ICB	-.0311	-.0002	.0003	.0041	-.0004	-.0001
3	LLS	Q.1425	.1933	.0118	.2080	.0442	.0220
4	ICSA	-.0187	.249.1	.0046	.0188	.0026	-.0014
5	ICSA B	-.0214	.249.7	.9358	.0069	.4635	.4661
6	S97T002009 L	.2687	.5803	.1234	.1412	.1688	.2.078
7	S97T002009	-.2819	-.8142	.0604	.0775	.0212	3.659
8	S97T002009 L	-.5653	-.3751	.0543	1.028	.0747	3.863
9	S97T002009	-.0930	1.060	.0731	.0570	.0045	3.651
10	S97T002009 D	-.0898	.6252	.0778	.0453	.0492	3.670
11	S97T002009 A	19.75	20.02	19.45	19.14	19.94	23.13
12	CCV	5.061	4.847	4.886	4.823	5.016	4.861
13	CCB	-.0048	.0021	.0008	.0096	.0023	.0013
14	S97T002009 X	-4.022	-1.474	.1075	.1551	.3953	4.102
15	S97T002009 AX	.2061	.2029	.1977	.1994	.2051	.1995
16	S97T002011	.1370	.7072	.0905	.0376	.0686	3.641
17	S97T002011 D	-.0736	.7204	.0352	.0117	.0770	3.643
18	S97T002013	-.2489	.7107	.1021	.1394	.0660	3.705
19	S97T002013 D	-.1714	.5973	.0596	-.0696	.0464	3.619
20	ICSA	-.0237	.253.1	.0022	.0103	.0004	-.0017
21	ICSA B	-.0278	.255.8	.9393	.0112	.4723	.4692
22	CCV 1	5.162	5.059	4.982	4.835	5.112	4.982
23	CCB 1	.0009	.0038	.0015	.0029	-.0005	.0002

HNF-SD-WM-DP-262, REV. 0

Analysis Report

Averages

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#	Sample Name	Cu	Eu	Fe	K	La	Li
1	ICV	5.070	.0053	4.607	5.015	4.969	4.891
2	ICB	-.0008	-.0001	.0006	.0926	.0007	-.0002
3	LLS	.0179	.0008	.0930	.4880	.1042	.0213
4	ICSA	-.0091	.0052	91.58	.1114	-.0023	.0024
5	ICSAB	.4496	.0079	91.63	.1320	-.0035	1.020
6	S97T002009_L	.0512	-.0122	-.2662	308.2	-.0778	-.0438
7	S97T002009_A	-.1139	-.0205	-.5633	545.0	.0310	-.0409
8	S97T002009_L	.2297	.0189	-.5113	572.5	.1628	.0764
9	S97T002009_A	.1319	-.0101	-.5599	535.6	.0165	.0476
10	S97T002009_D	.1072	-.0084	-.5944	535.2	.0259	.0497
11	S97T002099_A	19.76	.0027	17.52	534.5	19.53	19.20
12	CCV	5.004	.0053	4.567	4.762	4.894	4.867
13	CCB	.0006	.0005	.0010	.0639	.0013	.0008
14	S97T002009_X	.2695	.0915	-.8113	548.8	.1361	.1319
15	S97T002009_AX	1909.	2.184	1852.	2516.	1985.	1980.
16	S97T002011_	-.1268	-.0194	-.4420	536.2	.0369	.0453
17	S97T002011_D	.1181	-.0128	-.5928	524.1	.0292	.0542
18	S97T002013_	.1184	-.0086	-.5678	532.2	.0245	.0541
19	S97T002013_D	.1241	-.0203	-.5977	526.7	.0087	.0453
20	ICSA	-.0089	-.0036	91.83	.2316	-.0032	.0034
21	ICSAB	.4368	-.0068	91.90	.1397	-.0026	.9737
22	CCV_1	4.961	.0065	4.637	4.759	4.908	4.732
23	CCB_1	.0002	.0010	-.0003	-.0051	.0006	.0011

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	4.974	4.843	5.038	5.132	4.964	4.910
2	ICB	.0000	.0000	.0028	.0158	-.0036	-.0054
3	LLS	.2189	.0200	.1026	.1883	.1997	.0420
4	ICSA	.248.3	-.0057	-.0097	191.9	-.0018	-.0057
5	ICSAB	248.4	.4419	-.0100	192.8	-.0019	.9180
6	S97T002009_L	.2076	-.0236	.0470	4158	-.1580	-.7676
7	S97T002009_A	.0275	-.0672	.4261	7175	-.0435	-.0091
8	S97T002009_L	.7002	.0119	.5047	7272.	-.1254	-.1740
9	S97T002009_A	.0801	-.0049	.3711	7068.	-.0544	.0070
10	S97T002009_D	.1625	-.0005	.4070	6945.	-.0102	.0946
11	S97T002099_A	18.73	18.74	20.39	7045.	19.43	18.98
12	CCV	4.902	4.781	4.956	5.074	4.879	4.860
13	CCB	.0046	.0003	.0028	.0014	-.0003	-.0005
14	S97T002009_X	-.8902	.0355	.5253	7358.	-.0052	-1.820
15	S97T002009_AX	2065.	1976.	2045.	9398.	1935.	1972.
16	S97T002011_	.2269	-.0027	.4969	7010.	-.0487	.0117
17	S97T002011_D	.0365	-.0020	.3834	6880.	.0203	-.0378
18	S97T002013_	.1083	-.0008	.4149	7007.	-.0395	-.0013
19	S97T002013_D	.0374	-.0057	.4071	6987.	-.0367	.0659
20	ICSA	245.7	-.0052	-.0100	187.4	-.0024	-.0111
21	ICSAB	244.6	.4440	-.0110	185.7	-.0011	.9050
22	CCV_1	4.908	4.884	5.054	4.979	4.871	4.971
23	CCB_1	.0043	.0003	.0043	-.0000	-.0008	-.0006

Analysis Report

Averages

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#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	5.004	4.903	4.879	4.786	4.639	5.024
2	ICB	-.0098	-.0061	.0015	.0051	.0044	.0025
3	LLS	.3996	.2262	.2142	.1157	.1997	Q.1306
4	ICSA	.0234	.0195	-.0208	.0118	.0094	.0108
5	ICSAB	-.0132	.9881	-.0281	.0174	.0125	.0066
6	S97T002009 L	16.77	.8972	92.17	1.155	.1480	2.036
7	S97T002009	32.03	.0442	159.0	.2686	2.282	5.680
8	S97T002009 L	29.14	.3527	166.5	1.318	3.295	6.214
9	S97T002009	31.62	.1949	158.9	.1014	2.087	5.623
10	S97T002009 D	31.14	.2914	155.2	.2966	2.827	5.700
11	S97T002009 A	52.03	19.25	174.5	19.06	25.04	25.88
12	CCV	4.870	4.834	4.792	4.727	4.593	4.952
13	CCB	-.0152	.0140	-.0029	-.0010	.0112	.0041
14	S97T002009 X	29.97	4.897	165.5	1.513	4.224	7.785
15	S97T002009 AX	2056	.1992	2153	2063	1962	2119
16	S97T002011	31.50	.4295	154.6	.3095	2.970	7.357
17	S97T002011 D	31.43	.0309	154.3	.1760	3.101	7.167
18	S97T002013	33.12	.3162	156.8	.4632	2.923	7.180
19	S97T002013 D	32.72	.2180	153.3	.3369	3.428	7.019
20	ICSA	.0167	.0162	-.0417	.0115	.0302	.0157
21	ICSAB	.0004	1.023	-.0320	.0081	.0262	.0152
22	CCV 1	4.956	4.954	4.917	4.775	4.698	5.052
23	CCB 1	-.0065	.0095	.0026	.0109	.0266	.0074

#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	4.885	4.902	.1542	4.901	4.793	9.632
2	ICB	-.0014	.0000	-.0003	.0002	-.0210	-.0065
3	LLS	.2055	.0204	.0048	.0214	.4112	.5195
4	ICSA	-.0053	.0018	-.0034	.0018	.0512	.0436
5	ICSAB	-.0098	.0018	-.0032	.0016	.0042	.0202
6	S97T002009 L	-.2317	.0034	.3590	.0427	.6254	12.76
7	S97T002009	-.1539	.0077	.0548	.0059	.0716	26.01
8	S97T002009 L	.5477	.0158	.6941	.0621	-1.696	26.62
9	S97T002009	-.1222	.0077	.0914	.0063	-.6259	25.61
10	S97T002009 D	.0328	.0103	-.0406	.0150	-.4071	26.91
11	S97T002009 A	18.99	19.24	.5741	19.33	18.17	65.34
12	CCV	4.812	4.838	.1537	4.840	4.694	9.515
13	CCB	.0042	.0001	.0076	.0005	-.0198	.0181
14	S97T002009 X	.6611	.0157	.6726	.1813	-2.839	29.03
15	S97T002009 AX	1927	1976	64.52	2048	1935	3930
16	S97T002011	-.1560	.0103	.0624	.0007	-.4342	26.81
17	S97T002011 D	-.0350	.0103	-.0973	.0051	-.0637	26.85
18	S97T002013	.0165	.0103	-.0616	.0052	-.4605	27.02
19	S97T002013 D	-.0873	.0094	-.0600	.0099	-.1337	26.98
20	ICSA	-.0006	.0017	.0043	.0021	.0475	.0062
21	ICSAB	.0024	.0016	.0015	.0023	.0372	-.0065
22	CCV 1	4.797	4.853	.1459	4.884	4.743	9.462
23	CCB 1	.0117	.0002	.0011	.0009	-.0240	.0440

Analysis Report

Averages

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#	Sample Name	V	Y	Zn	Zr
1	ICV	5.028	.0069	4.873	4.917
2	ICB	-.0002	-.0001	-.0014	-.0003
3	LIS	.1051	.0009	.0200	.0212
4	ICSA	.0004	.0074	.0064	-.0020
5	ICSAB	.4605	.0072	.9276	-.0027
6	S97T002009 L	-.0613	-.0136	-.1172	-.0716
7	S97T002009	-.0172	-.0076	-.0169	-.0189
8	S97T002009 L	.1185	.0298	.0057	-.0403
9	S97T002009	-.0091	-.0059	.0245	-.0145
10	S97T002009 D	.0039	.0034	.0061	.0009
11	S97T002099 A	19.92	.0265	19.33	19.34
12	CCV	4.971	.0068	4.811	4.847
13	CCB	.0008	.0004	.0009	-.0003
14	S97T002009 X	.3204	.0864	-.0505	-.0753
15	S97T002009 AX	2040.	2.739	1941.	2031.
16	S97T002011	-.0039	-.0065	-.0178	-.0133
17	S97T002011 D	.0042	.0001	-.0391	-.0016
18	S97T002013	.0075	.0017	-.0014	.0024
19	S97T002013 D	-.0074	-.0065	-.0005	-.0181
20	ICSA	.0022	.0078	.0059	-.0016
21	ICSAB	.4643	.0081	.9400	-.0012
22	CCV 1	5.051	.0077	4.951	4.898
23	CCB 1	.0026	.0008	-.0007	.0012

09-03-97

LABCORE Completed Worklist Report for Worklist# 20103

Analyst: slh

Instrument: TOC01

Book# 26N12C

Method: LA34A105 Rev/Mod E-O

Worklist Comment: AP-103 TOC. RCJ

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0		TOC-01	LIQUID	1	2.00E-1	0.200	ug/mL
2 STD	0		TOC-01	LIQUID	3.00E+03	3.06E+3	102.000	% Recovery
3 SAMPLE	S97T002009	0	TOC-01	LIQUID	N/A	6.16E+01	5.500	ug/mL
4 DUP	S97T002009	0	TOC-01	LIQUID	6.16E+1	6.49E+1	5.217	RPD
5 SPK	S97T002009	0	TOC-01	LIQUID	1.00E+02	9.72E+01	97.200	% Recovery
6 SAMPLE	S97T002011	0	TOC-01	LIQUID	N/A	6.44E+01	5.500	ug/mL
7 DUP	S97T002011	0	TOC-01	LIQUID	6.44E+1	6.66E+1	3.359	RPD
8 SAMPLE	S97T002013	0	TOC-01	LIQUID	N/A	6.38E+01	5.500	ug/mL
9 DUP	S97T002013	0	TOC-01	LIQUID	6.38E+1	6.55E+1	2.630	RPD

Final page for worklist# 20103

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

RW Schoedley
Reviewer Signature _____ Date _____

LABCORE Data Entry Template for Worklist# 20103

Analyst: SLH Instrument: TOC01 _____ Book# 26N12-C

Method: LA-344-105 Rev/Mod _____

Worklist Comment: AP-103 TOC. RCJ

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK			TOC-01	LIQUID		
2 STD			TOC-01	LIQUID		
3 SAMPLE	S97T002009 0		TOC-01	LIQUID	97000600	AP-103 GRAB1
Analytes Requested: TOC-01						
4 DUP	S97T002009 0		TOC-01	LIQUID		
5 SPK	S97T002009 0		TOC-01	LIQUID		
6 SAMPLE	S97T002011 0		TOC-01	LIQUID	97000600	AP-103 GRAB1
Analytes Requested: TOC-01						
7 DUP	S97T002011 0		TOC-01	LIQUID		
8 SAMPLE	S97T002013 0		TOC-01	LIQUID	97000600	AP-103 GRAB1
Analytes Requested: TOC-01						
9 DUP	S97T002013 0		TOC-01	LIQUID		

Final page for worklist # 20103

Jandra Hines Boatright
Analyst Signature Date

Lyndi Mark 9-4-97
Analyst Signature Date

Data Entry Comments:

SPK 23 N12-C

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

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD

Date: 08/31/97

Time: 14:20:52

Sample Size = 200 uL

Dil Factor = 11

Blank ID # =

Blank Value = .5853825 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	35.00	99.43
3	1.51	47.40	26.16
4	2.01	52.20	9.20
5	2.51	54.50	4.22
6	3.01	55.90	2.50
7	3.51	56.80	1.58
8	4.01	57.60	1.39
9	4.50	58.10	0.86
10	5.00	58.40	0.51
11	5.50	58.80	0.68
12	6.00	59.00	0.34
13	6.50	59.40	0.67
14	7.00	59.70	0.50

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+5.9E-01 ug/min Carbon

SAMPLE RESULTS:

(59.7 - 4.1) (11) / (200) =

+3.06E+00 g/L Carbon

(59.7 - 4.1) (11) / (200) (12) =

+2.55E-01 Molar Carbon

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 86 TO 104.

Sample Run By:

SL HOOD

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASE

Date: 08/31/97

Time: 14:09:41

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BASE

Blank Value = N/A

Analyst : SL HOOD

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	0.80	62.50
3	1.51	1.20	33.33
4	2.01	1.50	20.00
5	2.51	1.80	16.67
6	3.01	2.10	14.29
7	3.51	2.30	8.70
8	4.01	2.60	11.54
9	4.50	2.90	10.34
10	5.00	3.10	6.45
11	5.50	3.40	8.82
12	6.00	3.60	5.56
13	6.50	3.90	7.69
14	7.00	4.10	4.88

BLANK VALUE = 4.1 micrograms carbon

BLANK FACTOR = $4.1 / 7.003967 =$

+5.9E-01

ug/min Carbon

Sample Run By:

SL HOOD

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK

Date: 08/31/97

Time: 14:40:17

Sample Size = 200 uL

Dil Factor = 1

Blank ID # =

Blank Value = .5853825 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	0.80	75.00
3	1.51	1.30	38.46
4	2.01	1.50	13.33
5	2.51	1.80	16.67
6	3.01	2.10	14.29
7	3.51	2.30	8.70
8	4.01	2.50	8.00
9	4.51	2.80	10.71
10	5.01	3.00	6.67
11	5.51	3.30	9.09
12	6.01	3.50	5.71
13	6.51	3.70	5.41
14	7.00	3.90	5.13

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+5.9E-01 ug/min Carbon

SAMPLE RESULTS:

(3.9 - 4.1005) (1) / (200) =

< 5.00 E-3 g/L Carbon

(3.9 - 4.1005) (1) / (200) (12) =

< 4.17 E-4 Molar Carbon

Sample Run By:

SL HOOD

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T02009

Date: 08/31/97

Time: 14:52:54

Sample Size = 200 uL

Dil Factor = 1.1

Blank ID # =

Blank Value = .5853825 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	6.80	97.06
3	1.51	9.80	30.61
4	2.01	10.80	9.26
5	2.51	11.60	6.90
6	3.01	12.30	5.69
7	3.51	12.80	3.91
8	4.01	13.20	3.03
9	4.51	13.60	2.94
10	5.01	14.10	3.55
11	5.51	14.30	1.40
12	6.01	14.70	2.72
13	6.50	15.00	2.00
14	7.00	15.30	1.96

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+5.9E-01 ug/min Carbon

SAMPLE RESULTS:

(15.3 - 4.1005) (1.1)/(200) =

+6.16E-02 g/L Carbon

(15.3 - 4.1005) (1.1)/(200) (12) =

+5.13E-03 Molar Carbon

Sample Run By:

SL HOOD

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T02009 DUP

Date: 08/31/97

Time: 15:03:32

Sample Size = 200 uL

Dil Factor = 1.1

Blank ID # =

Blank Value = .5853825 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	7.10	97.18
3	1.51	9.80	27.55
4	2.01	11.10	11.71
5	2.51	11.90	6.72
6	3.01	12.70	6.30
7	3.51	13.10	3.05
8	4.01	13.70	4.38
9	4.51	14.00	2.14
10	5.01	14.50	3.45
11	5.51	14.80	2.03
12	6.01	15.20	2.63
13	6.51	15.50	1.94
14	7.00	15.90	2.52

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+5.9E-01 ug/min Carbon

SAMPLE RESULTS:

(15.9 - 4.1005) (1.1)/(200) =

+6.49E-02 g/L Carbon

(15.9 - 4.1005) (1.1)/(200) (12) =

+5.41E-03 Molar Carbon

Sample Run By:

SL HOOD

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T02009 SPK

Date: 08/31/97

Time: 15:16:02

Sample Size = 200 uL

Dil Factor = 2.5

Blank ID # =

Blank Value = .5853825 ug/minute C

Analyst : SL HOOD

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	38.00	98.95
3	1.51	53.10	28.44
4	2.01	58.60	9.39
5	2.51	61.50	4.72
6	3.01	63.10	2.54
7	3.51	64.20	1.71
8	4.01	65.00	1.23
9	4.51	65.50	0.76
10	5.01	66.10	0.91
11	5.51	66.50	0.60
12	6.01	66.90	0.60
13	6.51	67.20	0.45
14	7.01	67.60	0.59

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0. =

+5.9E-01 ug/min Carbon

SAMPLE RESULTS:

(67.6 - 4.101108) (2.5) / (200) =

+7.94E-01 g/L Carbon

(67.6 - 4.101108) (2.5) / (200) (12) =

+6.61E-02 Molar Carbon

Sample Run By:

SL HOOD

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T02011

Date: 08/31/97

Time: 15:25:44

Sample Size = 200 uL

Dil Factor = 1.1

Blank ID # =

Blank Value = .5853825 ug/minute C

Analyst : SL HOOD

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	7.00	98.57
3	1.51	9.70	27.84
4	2.01	11.00	11.82
5	2.51	11.90	7.56
6	3.01	12.50	4.80
7	3.51	13.10	4.58
8	4.01	13.60	3.68
9	4.51	14.00	2.86
10	5.01	14.40	2.78
11	5.51	14.70	2.04
12	6.01	15.10	2.65
13	6.51	15.60	3.21
14	7.00	15.80	1.27

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+5.9E-01 ug/min Carbon

SAMPLE RESULTS:

(15.8 - 4.100536) (1.1)/(200) =

+6.43E-02 g/L Carbon

(15.8 - 4.100536) (1.1)/(200) (12) =

+5.36E-03 Molar Carbon

Sample Run By:

SL HOOD

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T02011 DUP

Date: 08/31/97

Time: 15:38:21

Sample Size = 200 uL

Dil Factor = 1.1

Blank ID # =

Blank Value = .5853825 ug/minute C

Analyst : SL HOOD

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference
1	0.51	0.30	0.00
2	1.01	7.20	95.83
3	1.51	9.90	27.27
4	2.01	11.30	12.39
5	2.51	12.10	6.61
6	3.01	12.70	4.72
7	3.51	13.30	4.51
8	4.01	13.80	3.62
9	4.51	14.20	2.82
10	5.01	14.80	4.05
11	5.51	15.10	1.99
12	6.01	15.50	2.58
13	6.50	15.80	1.90
14	7.00	16.20	2.47

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+5.9E-01 ug/min Carbon

SAMPLE RESULTS:

(16.2 - 4.1005) (1.1)/(200) =

+6.65E-02 g/L Carbon

(16.2 - 4.1005) (1.1)/(200) (12) =

+5.55E-03 Molar Carbon

Sample Run By:

SL HOOD

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T02013

Date: 08/31/97

Time: 15:47:28

Sample Size = 200 uL

Dil Factor = 1.1

Blank ID # =

Blank Value = .5853825 ug/minute C

Analyst : SL HOOD

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	7.00	95.71
3	1.51	9.60	27.08
4	2.01	10.80	11.11
5	2.51	11.70	7.69
6	3.01	12.40	5.65
7	3.51	13.00	4.62
8	4.01	13.40	2.99
9	4.50	13.80	2.90
10	5.01	14.30	3.50
11	5.51	14.70	2.72
12	6.01	15.00	2.00
13	6.50	15.40	2.60
14	7.00	15.70	1.91

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+5.9E-01 ug/min Carbon

SAMPLE RESULTS:

(15.7 - 4.1005) (1.1)/(200) =

+6.38E-02 g/L Carbon

(15.7 - 4.1005) (1.1)/(200) (12) =

+5.32E-03 Molar Carbon

Sample Run By:

SL HOOD

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T02013 DUP

Date: 08/31/97

Time: 15:58:41

Sample Size = 200 uL

Dil Factor = 1.1

Blank ID # =

Blank Value = .5853825 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	6.80	97.06
3	1.51	9.60	29.17
4	2.01	10.90	11.93
5	2.51	11.90	8.40
6	3.01	12.50	4.80
7	3.51	13.20	5.30
8	4.01	13.60	2.94
9	4.51	14.00	2.86
10	5.01	14.40	2.78
11	5.51	14.80	2.70
12	6.01	15.70	5.73
13	6.51	15.70	0.00
14	7.00	16.00	1.88

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+5.9E-01 ug/min Carbon

SAMPLE RESULTS:

(16 - 4.100536) (1.1)/(200) =

+6.54E-02 g/L Carbon

(16 - 4.100536) (1.1)/(200) (12) =

+5.45E-03 Molar Carbon

Sample Run By:

SL HOOD

00000

WORKBOOK PAGE: BLANK1

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

LIQUIDS

		BLNK
Type	Sample Volume in mL (SS)	2.000
BLNK	H2SO4 Volume in mL (VR)	0.000
Work List	Volume Injected in mL (VI)	0.200
20103	Dilution Factor (calculated) (DF)	1.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Blank (C1)	3.9
Matrix	µg of Carbon from Baseline (C2)	4.1
LIQUID		
Batch Number		
97004254	µg of Carbon = C1-C2	
Rerun		
0	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI	
Sample Prep		
N/A		
Sample #		
Instrument Code		
TOC01		
Prepared By		
LCM		
Chemist		
RWS		
Analyst		
SLH		
Date Complete		
09/04/97		
Analysis Date		
08/31/97		
Analysis Time	Method Detection Limit in µg/mL	5.00E+00
04:00 PM		
Sample Point	µg of Carbon	2.00E-01
AP-103		

Data Entered By:	LCM	Date:	09/04/97
Signature of Chemist:	<i>RLW Schaefer</i>	Date:	9/8/97

BLANK.WB1 REV 2.0

344105ML

WORKBOOK PAGE: STD2

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

LIQUIDS

		STD
Type	Sample Volume in mL (SS)	0.200
STD	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
20103	Dilution Factor (calculated) (DF)	11.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon Found (C1)	59.7
Matrix	µg of Carbon from Baseline (C2)	4.1
LIQUID	Standard Book Number	26N12C
Batch Number	Standard Value (µg/ml)	3000
97004254		
Rerun		
0	$\mu\text{g of Carbon/mL} = (C1-C2) * DF * DDF / VI$	
Sample Prep		
N/A	Method Detection Limit (µg/mL) = $1 \mu\text{g C} * DF * DDF / VI$	
Sample #		
Instrument Code		
TOC01		
Prepared By		
LCM		
Chemist		
RWS		
Analyst		
SLH		
Date Complete		
09/04/97		
Analysis Date		
08/31/97		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
04:00 PM	QC Actual in µg/mL	3.00E+03
Sample Point	QC Found in µg/mL	3.06E+03
AP-103	Percent Standard Recovery	101.9

Data Entered By:	LCM	Date:	09/04/97
Signature of Chemist:	<i>RW Schwed</i>	Date:	9/8/97

STANDARD.WB1 REV 2.0

344105ML

WORKBOOK PAGE: SAM3

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

LIQUIDS

LIQUIDS		SAMPLE
Type	Sample Volume in mL (SS)	2.000
SAMPLE	H2SO4 Volume in mL (VR)	0.200
Work List	Volume Injected in mL (VI)	0.200
20103	Dilution Factor (calculated) (DF)	1.100
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	15.3
Matrix	µg of Carbon from Baseline (C2)	4.1
LIQUID		
Batch Number		
97004254		
Rerun	$\mu\text{g of Carbon/mL} = (C1-C2) * DF * DDF / VI$	
0		
Sample Prep	Method Detection Limit = $1 \mu\text{g C} * DF * DDF / VI$	
N/A		
Sample #		
S97T002009		
Instrument Code		
TOC01		
Prepared By		
LCM		
Chemist		
RWS		
Analyst		
SLH		
Date Complete		
09/04/97		
Analysis Date		
08/31/97		
Analysis Time	Method Detection Limit in µg/mL	5.50E+00
04:00 PM		
Sample Point	µg of Carbon/mL	6.16E+01
AP-103		

Data Entered By:	LCM	Date:	09/04/97
Signature of Chemist:	<i>RW Schroeder</i>	Date:	9/8/97

SAMPLE.WB1 REV 2.0

344105ML

WORKBOOK PAGE: DUP4

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

LIQUIDS

		DUP
Type	Sample Volume in mL (SS)	2.000
DUP	H2SO4 Volume in mL (VR)	0.200
Work List	Volume Injected in mL (VI)	0.200
20103	Dilution Factor (calculated) (DF)	1.100
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	15.9
Matrix	µg of Carbon from Baseline (C2)	4.1
LIQUID	Result from Sample Page	6.16E+1
Batch Number		
97004254		
Rerun	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
0		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S97T002009		
Instrument Code		
TOC01		
Prepared By		
LCM		
Chemist		
RWS		
Analyst		
SLH		
Date Complete		
09/04/97		
Analysis Date		
08/31/97		
Analysis Time	Method Detection Limit in µg/mL	5.50E+00
04:00 PM		
Sample Point	µg of Carbon/mL	6.49E+01
AP-103		

Data Entered By:

LCM

Date: 09/04/97

Signature of Chemist:

RWS

Date: 9/8/97

SAMPLE.WB1 REV 2.0

344105ML

WORKBOOK PAGE: SPIKE5

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

LIQUIDS

LIQUIDS			SPIKE	
Type	Sample Vial Data		Spiked Vial Data	
SPK	Sample Volume in mL (SS)	2.000	Was the sample dilution used? (yes/no)	NO
Work List	H2SO4 Volume in mL (VR)	0.200	Sample Volume in mL (SPK SS)	0.400
20103	Volume Injected in mL (VI)	0.200	H2SO4 Volume in mL (SPK VR)	0.200
Test Code	µg of Carbon in Sample (C1)	15.3	Amount of Spike Std. in mL (SPK VOL)	0.400
TOC-01	µg of Carbon from Baseline (C2)	4.1	Volume Injected in mL (SPK VI)	0.200
Matrix			µg C in Sample + Spike (C3)	67.6
LIQUID			Pre-Spike Dilution Factor (PDF)	1.00
Batch Number			Spike Book Number	23N12C
97004254			Spike Value in µg/ml	753
Rerun				
0	Spike Correction Factor (SPK CF) = (SPK SS + SPK VOL + SPK VR) / SPK VI			
Sample Prep	Sample Correction Factor (SAM CF) = (SS + VR) / (VI)			
N/A	Sample Size Correction Factor (SS CF) = (SPK SS) / (SS)			
Sample #				
S97T002009	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)			
TOC01	Percent Spike Recovery = (QC Found) / (QC Actual) * 100			
Prepared By				
LCM				
Chemist				
RWS				
Analyst				
SLH				
Date Complete				
09/04/97				
Analysis Date				
08/31/97				
Analysis Time				
04:00 PM	QC Actual in µg/mL		7.53E+02	
Sample Point	QC Found in µg/mL		7.32E+02	
AP-103	Percent Spike Recovery		97.2	

Data Entered By:	LCM	Date:	09/04/97
Signature of Chemist:	<i>DW Schneider</i>	Date:	9/8/97

SPIKE.WB1 REV 2.0

344105ML

WORKBOOK PAGE: SAM6

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

LIQUIDS

		SAMPLE
Type	Sample Volume in mL (SS)	2.000
SAMPLE	H2SO4 Volume in mL (VR)	0.200
Work List	Volume Injected in mL (VI)	0.200
20103	Dilution Factor (calculated) (DF)	1.100
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	15.8
Matrix	µg of Carbon from Baseline (C2)	4.1
LIQUID		
Batch Number		
97004254		
Rerun	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
0		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S97T002011		
Instrument Code		
TOC01		
Prepared By		
LCM		
Chemist		
RWS		
Analyst		
SLH		
Date Complete		
09/04/97		
Analysis Date		
08/31/97		
Analysis Time	Method Detection Limit in µg/mL	5.50E+00
04:00 PM		
Sample Point	µg of Carbon/mL	6.44E+01
AP-103		

Data Entered By:	LCM	Date:	09/04/97
Signature of Chemist:		Date:	9/8/97

SAMPLE.WB1 REV 2.0

344105ML

WORKBOOK PAGE: DUP7

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

LIQUIDS

		DUP
Type	Sample Volume in mL (SS)	2.000
DUP	H2SO4 Volume in mL (VR)	0.200
Work List	Volume Injected in mL (VI)	0.200
20103	Dilution Factor (calculated) (DF)	1.100
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	16.2
Matrix	µg of Carbon from Baseline (C2)	4.1
LIQUID	Result from Sample Page	6.44E+1
Batch Number		
97004254		
Rerun	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
0		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S97T002011		
Instrument Code		
TOC01		
Prepared By		
LCM		
Chemist		
RWS		
Analyst		
SLH		
Date Complete		
09/04/97		
Analysis Date		
08/31/97		
Analysis Time	Method Detection Limit in µg/mL	5.50E+00
04:00 PM		
Sample Point	µg of Carbon/mL	6.66E+01
AP-103		

Data Entered By:

LCM

Date:

09/04/97

Signature of Chemist:

RWS

Date:

9/8/97

SAMPLE.WB1 REV 2.0

344105ML

WORKBOOK PAGE: SAM8

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

LIQUIDS

		SAMPLE
Type	Sample Volume in mL (SS)	2.000
SAMPLE	H2SO4 Volume in mL (VR)	0.200
Work List	Volume Injected in mL (VI)	0.200
20103	Dilution Factor (calculated) (DF)	1.100
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	15.7
Matrix	µg of Carbon from Baseline (C2)	4.1
LIQUID		
Batch Number		
97004254		
Rerun	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
0		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S97T002013		
Instrument Code		
TOC01		
Prepared By		
LCM		
Chemist		
RWS		
Analyst		
SLH		
Date Complete		
09/04/97		
Analysis Date		
08/31/97		
Analysis Time	Method Detection Limit in µg/mL	5.50E+00
04:00 PM		
Sample Point	µg of Carbon/mL	6.38E+01
AP-103		

Data Entered By:

LCM

Date: 09/04/97

Signature of Chemist:

RWS

Date: 9/8/97

SAMPLE.WB1 REV 2.0

344105ML

WORKBOOK PAGE: DUP9

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

LIQUIDS

		DUP
Type	Sample Volume in mL (SS)	2.000
DUP	H2SO4 Volume in mL (VR)	0.200
Work List	Volume Injected in mL (VI)	0.200
20103	Dilution Factor (calculated) (DF)	1.100
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	16
Matrix	µg of Carbon from Baseline (C2)	4.1
LIQUID	Result from Sample Page	6.38E+1
Batch Number		
97004254		
Rerun	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
0		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S97T002013		
Instrument Code		
TOC01		
Prepared By		
LCM		
Chemist		
RWS		
Analyst		
SLH		
Date Complete		
09/04/97		
Analysis Date		
08/31/97		
Analysis Time	Method Detection Limit in µg/mL	5.50E+00
04:00 PM		
Sample Point	µg of Carbon/mL	6.55E+01
AP-103		

Data Entered By:

LCM

Date:

09/04/97

Signature of Chemist:

RW Schaefer

Date:

9/8/97

SAMPLE.WB1 REV 2.0

344105ML

LABCORE Completed Worklist Report for Worklist# 20102

Analyst: pjm

Instrument: TIC01

Book# 25N12B

Method: LA342-100 Rev/Mod E-2

Worklist Comment: AP-103 TIC. RCJ

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0	TIC-02	LIQUID	1	1.90	1.900	ug/mL
2 STD	0	TIC-02	LIQUID	6.02e02	6.05e2	100.498 % Recovery	
3 SAMPLE	S97T002009 0	TIC-02	LIQUID	N/A	1.33e3	5.000	ug/mL
4 DUP	S97T002009 0	TIC-02	LIQUID	1.33e3	1.34e3	0.749 RPD	
5 SPK	S97T002009 0	TIC-02	LIQUID	100	98.01	98.010 % Recovery	
6 SAMPLE	S97T002011 0	TIC-02	LIQUID	N/A	1.34e3	5.000	ug/mL
7 DUP	S97T002011 0	TIC-02	LIQUID	1.34e3	1.33e3	0.749 RPD	
8 SAMPLE	S97T002013 0	TIC-02	LIQUID	N/A	1.33e3	5.000	ug/mL
9 DUP	S97T002013 0	TIC-02	LIQUID	1.33e3	1.36e3	2.230 RPD	

Final page for worklist# 20102

Analyst Signature _____ Date _____

Susan Bee 8/30/97
Analyst Signature Date

R.W. Schroeder 9/3/97
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 20102

Analyst: RLM Instrument: TIC01 _____ Book# 25N12B

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

Worklist Comment: AP-103 TIC. RCJ

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK			TIC-02	LIQUID		
2 STD			TIC-02	LIQUID		
3 SAMPLE	S97T002009 0		TIC-02	LIQUID	97000600	AP-103 GRAB1
	Analytes Requested: TIC-02					
4 DUP	S97T002009 0		TIC-02	LIQUID		
5 SPK	S97T002009 0		TIC-02	LIQUID		
6 SAMPLE	S97T002011 0		TIC-02	LIQUID	97000600	AP-103 GRAB1
	Analytes Requested: TIC-02					
7 DUP	S97T002011 0		TIC-02	LIQUID		
8 SAMPLE	S97T002013 0		TIC-02	LIQUID	97000600	AP-103 GRAB1
	Analytes Requested: TIC-02					
9 DUP	S97T002013 0		TIC-02	LIQUID		

Final page for worklist # 20102

RLM 8/29/97
Analyst Signature Date

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: 25N12B STD-2

Date: 08/29/97

Time: 22:01:59

Sample Size = 1000 uL

Dil Factor = 1

Blank ID # = BASE-2

Blank Value = .3429249 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.08	0.00	0.00
2	0.51	0.30	100.00
3	1.01	0.50	40.00
4	1.50	1.00	50.00
5	2.00	23.70	95.78
6	2.50	126.60	81.28
7	3.00	275.30	54.01
8	3.50	404.50	31.94
9	4.00	490.10	17.47
10	4.50	544.00	9.91
11	5.00	575.60	5.49
12	5.50	591.10	2.62
13	6.00	598.20	1.19
14	6.50	601.80	0.60
15	7.00	604.10	0.38
16	7.50	605.30	0.20
17	8.00	606.30	0.16
18	8.50	607.00	0.12
19	9.00	607.70	0.12
20	9.50	608.00	0.05
21	10.00	608.50	0.08
22	10.50	608.90	0.07

BLANK VALUE = 3.6 micrograms carbon

BLANK FACTOR = 3.6 / 10.49792 =

+3.4E-01 ug/min Carbon

SAMPLE RESULTS:

(608.9 - 3.6) (1)/(1000) =

+6.053E-01 g/L Carbon

(608.9 - 3.6) (1)/(1000).(12) =

+5.044E-02 Molar Carbon

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 104 TO 125.Sample Run By: PJ McCown 8/29/97

PJ MCCOWN

00000

1.0mL 25N12B

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASE-2

Date: 08/29/97

Time: 21:48:07

Sample Size = 1 uL

Dil Factor = 1

Blank ID # = BASE-2

Blank Value = N/A

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.08	0.00	0.00
2	0.51	0.20	100.00
3	1.00	0.30	33.33
4	1.50	0.40	25.00
5	2.00	0.60	33.33
6	2.50	0.70	14.29
7	3.00	0.90	22.22
8	3.50	1.00	10.00
9	4.00	1.20	16.67
10	4.50	1.40	14.29
11	5.00	1.50	6.67
12	5.50	1.70	11.76
13	6.00	1.90	10.53
14	6.50	2.00	5.00
15	7.00	2.20	9.09
16	7.50	2.40	8.33
17	8.00	2.60	7.69
18	8.50	2.70	3.70
19	9.00	2.90	6.90
20	9.50	3.10	6.45
21	10.00	3.30	6.06
22	10.50	3.60	8.33

BLANK VALUE = 3.6 micrograms carbon

BLANK FACTOR = 3.6 / 10.49792 =

+3.4E-01 ug/min Carbon

Sample Run By:

PJ MCCOWN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLANK-2

Date: 08/29/97

Time: 22:23:58

Sample Size = 1 uL

Dil Factor = 1

Blank ID # = BASE-2

Blank Value = .3429249 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
 1          0.08          0.00          0.00
 2          0.51          0.30         100.00
 3          1.01          0.50         40.00
 4          1.51          0.80         37.50
 5          2.00          1.10         27.27
 6          2.50          1.40         21.43
 7          3.00          1.70         17.65
 8          3.50          1.90         10.53
 9          4.00          2.20         13.64
10          4.50          2.50         12.00
11          5.00          2.70          7.41
12          5.50          3.00         10.00
13          6.00          3.30          9.09
14          6.50          3.50          5.71
15          7.00          3.80          7.89
16          7.50          4.00          5.00
17          8.00          4.30          6.98
18          8.50          4.50          4.44
19          9.00          4.70          4.26
20          9.50          5.00          6.00
21         10.00          5.30          5.66
22         10.50          5.50          3.64

```

BLANK VALUE = 3.6 micrograms carbon

BLANK FACTOR = 3.6 / 10.49792 =

+3.4E-01 ug/min Carbon

SAMPLE RESULTS:

(5.5 - 3.600377) (1)/(1) =

+1.9E+00 g/L Carbon

(5.5 - 3.600377) (1)/(1)(12) =

+1.6E-01 Molar Carbon

Sample Run By:

PJ MCCOWN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T002009-2 Date: 08/29/97 Time: 22:47:42

Sample Size = ~~1- μ L~~ ^{200 μ L} 200 μ L

Dil Factor = 1

Blank ID # = BASE-2

Blank Value = .3429249 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.08	0.00	0.00
2	0.51	0.30	100.00
3	1.00	0.60	50.00
4	1.50	1.20	50.00
5	2.00	12.30	90.24
6	2.50	54.00	77.22
7	3.00	113.80	52.55
8	3.50	171.20	33.53
9	4.00	213.50	19.81
10	4.50	239.90	11.00
11	5.00	253.70	5.44
12	5.50	260.10	2.46
13	6.00	263.60	1.33
14	6.50	265.70	0.79
15	7.00	266.80	0.41
16	7.50	267.80	0.37
17	8.00	268.30	0.19
18	8.50	268.90	0.22
19	9.00	269.30	0.15
20	9.50	269.60	0.11
21	10.00	270.00	0.15
22	10.50	270.30	0.11

BLANK VALUE = 3.6 micrograms carbon:

BLANK FACTOR = 3.6 / 10.49792 = +3.4E-01 ug/min Carbon

SAMPLE RESULTS:

(270.3 - 3.600419) (1) / (1) ^{200 μ L} _{10/2/97} =

^{1.33 E+00} _{10/2/97} g/L Carbon
+2.222E+01 Molar Carbon

Sample Run By: PJ MCCOWN

PJ MCCOWN

00000

.200 mL

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 2009 DUP-2

Date: 08/29/97

Time: 23:03:39

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BASE-2

Blank Value = .3429249 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
  1           0.08           0.00           0.00
  2           0.51           0.40          100.00
  3           1.01           0.60          33.33
  4           1.50           0.90          33.33
  5           2.00           7.90          88.61
  6           2.50          46.80          83.12
  7           3.00          107.60         56.51
  8           3.50          165.10         34.83
  9           4.00          209.20         21.08
 10           4.50          237.40         11.88
 11           5.00          252.50          5.98
 12           5.50          259.90          2.85
 13           6.00          263.90          1.52
 14           6.50          266.20          0.86
 15           7.00          267.40          0.45
 16           7.50          268.50          0.41
 17           8.00          269.00          0.19
 18           8.50          269.60          0.22
 19           9.00          269.90          0.11
 20           9.50          270.40          0.18
 21          10.00          270.70          0.11
 22          10.50          271.10          0.15

```

BLANK VALUE = 3.6 micrograms carbon

BLANK FACTOR = 3.6 / 10.49792 =

+3.4E-01 ug/min Carbon

SAMPLE RESULTS:

(271.1 - 3.600084) (1)/(200) =

+1.337E+00 g/L Carbon

(271.1 - 3.600084) (1)/(200) (12) =

+1.115E-01 Molar Carbon

Sample Run By: PJ

PJ MCCOWN

00000

. 200 uL

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 2009 SPK-2

Date: 08/29/97

Time: 23:17:03

Sample Size = 200 uL

Analyst : PJ MCCOWN

Dil Factor = 1

Min Readings = 22

Blank ID # = BASE-2

Max Readings = 22

Blank Value = .3429249 ug/minute C

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.08	0.00	0.00
2	0.51	0.30	100.00
3	1.00	0.70	57.14
4	1.50	1.00	30.00
5	2.00	11.00	90.91
6	2.50	75.70	85.47
7	3.00	191.50	60.47
8	3.50	312.50	38.72
9	4.00	407.10	23.24
10	4.50	472.80	13.90
11	5.00	515.00	8.19
12	5.50	538.70	4.40
13	6.00	550.20	2.09
14	6.50	555.80	1.01
15	7.00	559.00	0.57
16	7.50	560.70	0.30
17	8.00	562.00	0.23
18	8.50	563.00	0.18
19	9.00	563.50	0.09
20	9.50	564.20	0.12
21	10.00	564.70	0.09
22	10.50	565.10	0.07

BLANK VALUE = 3.6 micrograms carbon

BLANK FACTOR = 3.6 / 10.49792 =

+3.4E-01

ug/min Carbon

SAMPLE RESULTS:

(565.1 - 3.600084) (1)/(200) =

+2.807E+00 g/L Carbon

(565.1 - 3.600084) (1)/(200) (12) =

+2.340E-01 Molar Carbon

Sample Run By: PJ

PJ MCCOWN

00000

.200ML

+ .500ML 25N/2B

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T002011-2

Date: 08/29/97

Time: 23:30:57

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BASE-2

Blank Value = .3429249 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.08	0.00	0.00
2	0.51	0.50	100.00
3	1.01	0.80	37.50
4	1.50	1.50	46.67
5	2.04	14.80	89.86
6	2.54	63.00	76.51
7	3.04	125.80	49.92
8	3.54	181.00	30.50
9	4.04	220.50	17.91
10	4.54	243.80	9.56
11	5.04	255.40	4.54
12	5.54	261.40	2.30
13	6.04	264.40	1.13
14	6.54	266.00	0.60
15	7.04	267.40	0.52
16	7.54	268.10	0.26
17	8.04	268.70	0.22
18	8.54	269.20	0.19
19	9.03	269.70	0.19
20	9.53	270.10	0.15
21	10.03	270.70	0.22
22	10.53	270.90	0.07

BLANK VALUE = 3.6 micrograms carbon

BLANK FACTOR = 3.6 / 10.49792 =

+3.4E-01 ug/min Carbon

SAMPLE RESULTS:

(270.9 - 3.612307) (1)/(200) =

+1.336E+00 g/L Carbon

(270.9 - 3.612307) (1)/(200) (12) =

+1.114E-01 Molar Carbon

Sample Run By: PJM

PJ MCCOWN

00000

.200ML

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 2011 DUP-2

Date: 08/29/97

Time: 23:43:52

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BASE-2

Blank Value = .3429249 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.08	0.00	0.00
2	0.51	0.40	100.00
3	1.01	0.80	50.00
4	1.51	1.50	46.67
5	2.01	15.00	90.00
6	2.50	63.90	76.53
7	3.00	127.20	49.76
8	3.50	182.60	30.34
9	4.00	222.30	17.86
10	4.50	244.60	9.12
11	5.00	255.90	4.42
12	5.50	261.30	2.07
13	6.00	264.10	1.06
14	6.50	265.90	0.68
15	7.00	267.00	0.41
16	7.50	267.80	0.30
17	8.00	268.40	0.22
18	8.50	268.80	0.15
19	9.00	269.30	0.19
20	9.50	269.90	0.22
21	10.00	270.20	0.11
22	10.50	270.50	0.11

BLANK VALUE = 3.6 micrograms carbon

BLANK FACTOR = 3.6 / 10.49792 =

+3.4E-01 ug/min Carbon

SAMPLE RESULTS:

(270.5 - 3.600712) (1) / (200) =

+1.334E+00 g/L Carbon

(270.5 - 3.600712) (1) / (200) (12) =

+1.112E-01 Molar Carbon

Sample Run By: PJ McCown

PJ MCCOWN

00000

.200 mL

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T002013-2

Date: 08/29/97

Time: 23:56:41

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BASE-2

Blank Value = .3429249 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.08	0.00	0.00
2	0.51	0.50	100.00
3	1.01	0.80	37.50
4	1.51	1.60	50.00
5	2.00	14.60	89.04
6	2.50	61.10	76.10
7	3.00	122.90	50.28
8	3.50	177.80	30.88
9	4.00	217.70	18.33
10	4.50	241.30	9.78
11	5.00	253.10	4.66
12	5.50	259.10	2.32
13	6.00	262.00	1.11
14	6.50	263.80	0.68
15	7.00	265.00	0.45
16	7.50	265.80	0.30
17	8.00	266.40	0.23
18	8.50	266.90	0.19
19	9.00	267.50	0.22
20	9.50	267.90	0.15
21	10.00	268.30	0.15
22	10.50	268.70	0.15

BLANK VALUE = 3.6 micrograms carbon

BLANK FACTOR = 3.6 / 10.49792 =

+3.4E-01 ug/min Carbon

SAMPLE RESULTS:

(268.7 - 3.600712) (1)/(200) =

+1.325E+00 g/L Carbon

(268.7 - 3.600712) (1)/(200) (12) =

+1.105E-01 Molar Carbon

Sample Run By: PJ

PJ MCCOWN

00000

.200 mL

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 2013 DUP-2

Date: 08/30/97

Time: 00:09:39

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BASE-2

Blank Value = .3429249 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.08	0.00	0.00
2	0.51	0.50	100.00
3	1.01	0.80	37.50
4	1.50	1.40	42.86
5	%-1438.00	13.90	89.93
6	%-1437.50	60.10	76.87
7	%-1437.00	122.80	51.06
8	%-1436.50	180.50	31.97
9	%-1436.00	222.70	18.95
10	%-1435.50	247.50	10.02
11	%-1435.00	259.60	4.66
12	%-1434.50	265.60	2.26
13	%-1434.00	268.60	1.12
14	%-1433.50	270.60	0.74
15	%-1433.00	271.70	0.40
16	%-1432.50	272.50	0.29
17	%-1432.00	273.20	0.26
18	%-1431.50	273.80	0.22
19	%-1431.00	274.20	0.15
20	%-1430.50	274.60	0.15
21	%-1430.00	275.00	0.15
22	%-1429.50	275.40	0.15

BLANK VALUE = 3.6 micrograms carbon

BLANK FACTOR = 3.6 / 10.49792 =

+3.4E-01 ug/min Carbon

SAMPLE RESULTS: 3.6 ug/min

(275.4 --490.2115) (1)/(200) =

1.36E+00 gm/10/2/97

+3.828E+00 g/L Carbon

+3.190E-01 Molar Carbon

Sample Run By: *PJ McCown*

PJ MCCOWN

00000

-200mL

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)	5.5	0
20102	µg of Carbon from Baseline (C2)	3.6	0
Test Code			
TIC-02			
Matrix			
LIQUID			
Batch Number			
Rerun	µg of Carbon = C1-C2		
Sample Prep			
Sample #			
BLANK			
Instrument Code			
TIC01			
Prepared By			
SKB			
Chemist			
RWS			
Analyst			
PJM			
Date Complete			
08/30/97			
Analysis Date			
08/30/97			
Analysis Time	Method Detection Limit in µg/mL	5	40
09:48 PM			
Sample Point	µg of Carbon	1.90E+00	
AP-103			

Data Entered By:

SKB

Date: 08/30/97

Signature of Chemist:

Rw Schneider

Date: 9/3/97

BLANK.WB1 REV 1.0

342100ML

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	1.0000	0.0000
STANDARD	Dilution Factor (DF)	1	1
Work List	Final Coulometer Reading in μg (C1)	608.9	n/a
20102	μg of Carbon from Baseline (C2)	3.6	n/a
Test Code	Standard Book Number	25N12B	n/a
TIC-02	Standard Value ($\mu\text{g}/\text{ml}$)	602	ERR
Matrix			
LIQUID			
Batch Number			
Rerun			
	QC Actual in $\mu\text{g}/\text{mL}$ = Standard Value ($\mu\text{g}/\text{mL}$)		
Sample Prep	QC Found in $\mu\text{g}/\text{mL}$ = $(C1 - C2) * DF / SS$		
	QC Found in $\mu\text{g}/\text{mL}$ for TIC = 5 if $C1 < C2$		
Sample #	QC Found in $\mu\text{g}/\text{mL}$ for TOC = 40 if $C1 < C2$		
STD			
Instrument Code	% Recovery = QC Found / QC Actual * 100		
TIC01			
Prepared By			
SKB			
Chemist			
RWS			
Analyst			
PJM			
Date Complete			
08/30/97			
Analysis Date			
08/30/97			
Analysis Time	Method Detection Limit in $\mu\text{g}/\text{mL}$	5	40
09:48 PM	QC Actual in $\mu\text{g}/\text{mL}$	6.02E+02	ERR
Sample Point	QC Found in $\mu\text{g}/\text{mL}$	6.05E+02	
AP-103	Percent Standard Recovery	100.5	ERR

Data Entered By:

SKB

Date: 08/30/97

Signature of Chemist:

RW Schneider

Date: 9/3/97

STANDARD.WB1 REV 1.0

342100ML

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.2000	0.0000
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	270.3	n/a
20102	µg of Carbon from Baseline (C2)	3.6	n/a
Test Code			
TIC-02			
Matrix			
LIQUID			
Batch Number			
Rerun	µg of Carbon/mL = (C1-C2) * DF / SS		
	µg of Carbon/mL for TIC = 5 if C1 < C2		
Sample Prep	µg of Carbon/mL for TOC = 40 if C1 < C2		
Sample #			
S97T002009			
Instrument Code			
TIC01			
Prepared By			
SKB			
Chemist			
RWS			
Analyst			
PJM			
Date Complete			
08/30/97			
Analysis Date			
08/30/97			
Analysis Time	Method Detection Limit in µg/mL	5	40
09:48 PM			
Sample Point	µg of Carbon/mL	1.33E+03	
AP-103			

Data Entered By:

SKB

Date: 08/30/97

Signature of Chemist:

Rw Schroeder

Date: 9/3/97

SAMPLE.WB1 REV 1.0

342100ML

TIC/TOC : LA-342-100 (E-0) HNF-SD-WM-DP-262, REV. 0

		TIC	TOC
Type	Sample Size in mL (SS)	0.2000	0.0000
DUP	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	271.1	n/a
20102	µg of Carbon from Baseline (C2)	3.6	n/a
Test Code	Known µg of C from Original Sample	270.30	n/a
TIC-02			
Matrix			
LIQUID			
Batch Number			
Rerun	µg of Carbon/mL = (C1-C2) * DF / SS		
	µg of Carbon/mL for TIC = 5 if C1 < C2		
Sample Prep	µg of Carbon/mL for TOC = 40 if C1 < C2		
Sample #			
S97T002009 DUP			
Instrument Code			
TIC01			
Prepared By			
SKB			
Chemist			
RWS			
Analyst			
PJM			
Date Complete			
08/30/97			
Analysis Date			
08/30/97			
Analysis Time	Method Detection Limit in µg/mL	5	40
09:48 PM			
Sample Point	µg of Carbon/mL	1.34E+03	
AP-103			

Data Entered By:	SKB	Date:	08/30/97
Signature of Chemist:	<i>RW Schroeder</i>	Date:	9/3/97

DUP.WB1 REV 1.0

342100ML

120

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)	270.3	n/a
20102	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)	565.1	n/a
LIQUID	Spike Book Number	25N12B	
Batch Number	Spike Standard Value in µg/ml (SPK CONC)	602	
Rerun			
Sample Prep			
Sample #	Percent Spike Recovery = $(C2 - C1 * (SPK SS) / SS) / ((SPK CONC) * (SPK VOL)) *$		
S97T002009 SPK			
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			
SKB			
Chemist			
RWS			
Analyst			
PJM			
Date Complete			
08/30/97			
Analysis Date			
08/30/97			
Analysis Time		TIC	TOC
09:48 PM	QC Actual in µg/mL	6.02E+02	
Sample Point	QC Found in µg/mL	5.90E+02	
AP-103	Percent Spike Recovery	97.9	

Data Entered By:

SKB

Date: 08/30/97

Signature of Chemist:

RWS

Date: 9/3/97

SPIKE.WB1 REV 1.1

342100ML

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

LIQUIDS

Type	Sample Size in mL (SS)	TIC	TOC
SAMPLE	Dilution Factor (DF)	0.2000	0.0000
Work List	µg of Carbon in Sample (C1)	1	1
20102	µg of Carbon from Baseline (C2)	270.9	n/a
Test Code		3.6	n/a
TIC-02			
Matrix			
LIQUID			
Batch Number			
Rerun	µg of Carbon/mL = (C1-C2) * DF / SS		
Sample Prep	µg of Carbon/mL for TIC = 5 if C1 < C2		
	µg of Carbon/mL for TOC = 40 if C1 < C2		
Sample #			
S97T002011			
Instrument Code			
TIC01			
Prepared By			
SKB			
Chemist			
RWS			
Analyst			
PJM			
Date Complete			
08/30/97			
Analysis Date			
08/30/97			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
09:48 PM		5	40
Sample Point	µg of Carbon/mL		
AP-103		1.34E+03	

Data Entered By:	SKB	Date:	08/30/97
Signature of Chemist:	<i>RWS</i>	Date:	9/3/97

SAMPLE WB1 REV 1.0

342100ML

122

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.2000	0.0000
DUP	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	270.5	n/a
20102	µg of Carbon from Baseline (C2)	3.6	n/a
Test Code	Known µg of C from Original Sample	270.90	
TIC-02			
Matrix			
LIQUID			
Batch Number			
Rerun	µg of Carbon/mL = (C1-C2) * DF / SS		
	µg of Carbon/mL for TIC = 5 if C1 < C2		
Sample Prep	µg of Carbon/mL for TOC = 40 if C1 < C2		
Sample #			
S97T002011 DUP			
Instrument Code			
TIC01			
Prepared By			
SKB			
Chemist			
RWS			
Analyst			
PJM			
Date Complete			
08/30/97			
Analysis Date			
08/30/97			
Analysis Time	Method Detection Limit in µg/mL	5	40
09:48 PM			
Sample Point	µg of Carbon/mL	1.33E+03	
AP-103			

Data Entered By:

SKB

Date: 08/30/97

Signature of Chemist:

R. Schneider

Date: 9/3/97

DUP.WB1 REV 1.0

342100ML

123

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.2000	0.0000
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	268.7	n/a
20102	µg of Carbon from Baseline (C2)	3.6	n/a
Test Code			
TIC-02			
Matrix			
LIQUID			
Batch Number			
Rerun	µg of Carbon/mL = (C1-C2) * DF / SS		
	µg of Carbon/mL for TIC = 5 if C1 < C2		
Sample Prep	µg of Carbon/mL for TOC = 40 if C1 < C2		
Sample #			
S97T002013			
Instrument Code			
TIC01			
Prepared By			
SKB			
Chemist			
RWS			
Analyst			
PJM			
Date Complete			
08/30/97			
Analysis Date			
08/30/97			
Analysis Time	Method Detection Limit in µg/mL	5	40
09:48 PM			
Sample Point	µg of Carbon/mL	1.33E+03	
AP-103			

Data Entered By:

SKB

Date: 08/30/97

Signature of Chemist:

RW Schneider

Date: 9/3/97

SAMPLE.WB1 REV 1.0

342100ML

124

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.2000	0.0000
DUP	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	275.4	n/a
20102	µg of Carbon from Baseline (C2)	3.6	n/a
Test Code	Known µg of C from Original Sample	268.70	
TIC-02			
Matrix			
LIQUID			
Batch Number			
Rerun	µg of Carbon/mL = (C1-C2) * DF / SS		
	µg of Carbon/mL for TIC = 5 if C1 < C2		
Sample Prep	µg of Carbon/mL for TOC = 40 if C1 < C2		
Sample #			
S97T002013 DUP			
Instrument Code			
TIC01			
Prepared By			
SKB			
Chemist			
RWS			
Analyst			
PJM			
Date Complete			
08/30/97			
Analysis Date			
08/30/97			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
09:48 PM		5	40
Sample Point	µg of Carbon/mL	1.36E+03	
AP-103			

Data Entered By:	SKB	Date:	08/30/97
Signature of Chemist:	<i>RWS</i>	Date:	9/3/97

DUP.WB1 REV 1.0

342100ML

125

HNF-SD-WM-DP-262, REV. 0

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HNF-SD-WM-DP-262, REV. 0

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LABCORE Completed RadChem Report for Worklist#: 20425

Analyst: crj

Instrument: U01

Book# 13857

Method: LA925-009 Rev/Mod B-0

Worklist Comment: AP-103 GRAB U, .1-10ML SAMPLE PREP. SPK SS=0.1ML. RCJ

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	0U-01	U-02	LIQUID	6.26E-02	6.60E-02	105.431	% Recovery
1 STD	0	0U-01	U-02E	LIQUID	1	3.06E+00	3.060	Ratio
2 BLNK	0	0U-01	U-02	LIQUID	1	<3.70E-3		ug/mL
2 BLNK	0	0U-01	U-02E	LIQUID	1	N/A		Ratio
3 SAMPLE	S97T002009	0	0U-01	U-02	LIQUID	N/A	2.33E+01	370.0e-005 ug/mL
3 SAMPLE	S97T002009	0	0U-01	U-02E	LIQUID	N/A	3.04E+00	0.0e+000 % Inst Error
4 DUP	S97T002009	0	0U-01	U-02	LIQUID	2.33E+1	2.37E+1	1.702 RPD
4 DUP	S97T002009	0	0U-01	U-02E	LIQUID	1	3.05E+00	3.050 Ratio
5 SPK	S97T002009	0	0U-01	U-02	LIQUID	4.92E+01	6.11E+01	124.445 % Recovery
6 SAMPLE	S97T002011	0	0U-01	U-02	LIQUID	N/A	2.23E+01	370.0e-005 ug/mL
6 SAMPLE	S97T002011	0	0U-01	U-02E	LIQUID	N/A	3.05E+00	0.0e+000 % Inst Error
7 DUP	S97T002011	0	0U-01	U-02	LIQUID	2.23E+1	2.35E+1	5.240 RPD
7 DUP	S97T002011	0	0U-01	U-02E	LIQUID	1	3.06E+00	3.060 Ratio
8 SAMPLE	S97T002013	0	0U-01	U-02	LIQUID	N/A	2.24E+01	370.0e-005 ug/mL
8 SAMPLE	S97T002013	0	0U-01	U-02E	LIQUID	N/A	3.05E+00	0.0e+000 % Inst Error
9 DUP	S97T002013	0	0U-01	U-02	LIQUID	2.24E+1	2.07E+1	7.889 RPD
9 DUP	S97T002013	0	0U-01	U-02E	LIQUID	1	3.04E+00	3.040 Ratio

Final page for worklist# 20425

Analyst Signature

Date

Analyst Signature

Date

RW Schroeder
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 20425

Analyst: CRS Instrument: U01 Book# 13BS7

Method: LA-925-009 Rev/Mod A-1

Worklist Comment: AP-103 GRAB U, .1-10ML SAMPLE PREP. SPK SS=0.1ML. RCJ

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@U-01	LIQUID		
2	BLNK				@U-01	LIQUID		
3	SAMPLE	S97T002009 0			@U-01	LIQUID	97000600	AP-103 GRAB1
		Analytes Requested:		U-02		, U-02E		
4	DUP	S97T002009 0			@U-01	LIQUID		
5	SPK	S97T002009 0			@U-01	LIQUID		
6	SAMPLE	S97T002011 0			@U-01	LIQUID	97000600	AP-103 GRAB1
		Analytes Requested:		U-02		, U-02E		
7	DUP	S97T002011 0			@U-01	LIQUID		
8	SAMPLE	S97T002013 0			@U-01	LIQUID	97000600	AP-103 GRAB1
		Analytes Requested:		U-02		, U-02E		
9	DUP	S97T002013 0			@U-01	LIQUID		

Final page for worklist # 20425

CRS
Analyst Signature

9/26/97
Date

CRS
Analyst Signature

9/26/97
Date

Data Entry Comments:

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

Sample ID ENVSTD 13B57	Date/Time 09/26/97/12:06:54
Description STANDARD	Cal Y=9.43E+07X-9.74E+02
Ref. Ratio 1.101	Intensity 4379 (t= 39 us)
Laser Pulses 1000	Conc 6.60E-05 + 2.02E-06 g/L
Lifetime 259 + .696 us	Dilution Factor 1 mL/mL
R2 .9997	
Integrated 78389	FINAL RESULT 6.60E-05 + 2.02E-06 g/L
Range: HIGH	

Sample ID BLANK	Date/Time 09/26/97/12:10:18
Description BLK	Cal Y=6.51E+09X+4.88E-04
Ref. Ratio 1.099	Intensity -619 (t= 39 us)
Laser Pulses 1000	Conc + g/L
Lifetime + us	Dilution Factor X mL/mL
R2	
Integrated 0	FINAL RESULT
Range: LOW	
Sample <= Blank	

Sample ID S97T002009	Date/Time 09/26/97/12:12:34
Description SAM	Cal Y=9.43E+07X-9.74E+02
Ref. Ratio 1.132	Intensity 17023 (t= 39 us)
Laser Pulses 1000	Conc 2.33E-04 + 7.09E-06 g/L
Lifetime 237 + .278 us	Dilution Factor 1 mL/mL
R2 .9999	
Integrated 288123	FINAL RESULT 2.33E-04 + 7.09E-06 g/L
Range: HIGH	

Sample ID S97T002009	Date/Time 09/26/97/12:14:17
Description DUP	Cal Y=9.43E+07X-9.74E+02
Ref. Ratio 1.128	Intensity 18001 (t= 39 us)
Laser Pulses 1000	Conc 2.37E-04 + 7.23E-06 g/L
Lifetime 272 + .451 us	Dilution Factor 1 mL/mL
R2 .9999	
Integrated 334041	FINAL RESULT 2.37E-04 + 7.23E-06 g/L
Range: HIGH	

Sample ID S97T002009 Date/Time 09/26/97/12:16:05
Description SPK Cal Y=9.43E+07X-9.74E+02
Ref. Ratio 1.119 Intensity 56137 (t= 39 us)
Laser Pulses 1000 Conc 7.04E-04 + 2.15E-05 g/L
Lifetime 278 + .744 us Dilution Factor 1 mL/mL
R2 .9997
Integrated 1039428
Range: HIGH

FINAL RESULT 7.04E-04 + 2.15E-05 g/L

Sample ID S97T002011 Date/Time 09/26/97/12:18:09
Description SAM Cal Y=9.43E+07X-9.74E+02
Ref. Ratio 1.149 Intensity 16297 (t= 39 us)
Laser Pulses 1000 Conc 2.23E-04 + 6.81E-06 g/L
Lifetime 229 + .367 us Dilution Factor 1 mL/mL
R2 .9999
Integrated 267132
Range: HIGH

FINAL RESULT 2.23E-04 + 6.81E-06 g/L

Sample ID S97T002011 Date/Time 09/26/97/12:21:09
Description DUP Cal Y=9.43E+07X-9.74E+02
Ref. Ratio 1.1 Intensity 17866 (t= 39 us)
Laser Pulses 1000 Conc 2.35E-04 + 7.18E-06 g/L
Lifetime 294 + .779 us Dilution Factor 1 mL/mL
R2 .9997
Integrated 353125
Range: HIGH

FINAL RESULT 2.35E-04 + 7.18E-06 g/L

Sample ID S97T002013 Date/Time 09/26/97/12:24:14
Description SAM Cal Y=9.43E+07X-9.74E+02
Ref. Ratio 1.082 Intensity 16252 (t= 39 us)
Laser Pulses 1000 Conc 2.24E-04 + 6.84E-06 g/L
Lifetime 246 + .481 us Dilution Factor 1 mL/mL
R2 .9998
Integrated 286634
Range: HIGH

FINAL RESULT 2.24E-04 + 6.84E-06 g/L

Sample ID S97T002013 Date/Time 09/26/97/12:26:19
Description DUP Cal Y=9.43E+07X-9.74E+02
Ref. Ratio 1.102 Intensity 15614 (t= 39 us)
Laser Pulses 1000 Conc 2.07E-04 + 6.29E-06 g/L
Lifetime 288 + .415 us Dilution Factor 1 mL/mL
R2 .9999
Integrated 303819
Range: HIGH

FINAL RESULT 2.07E-04 + 6.29E-06 g/L

WORKBOOK PAGE: STD1

Uranium by Phosphorescence: LA-925-009 (B-0) LIQUID/SOLID

Type		
STD	STANDARD	
WorkList	STANDARD BOOK #	13B57
20425	VOLUME OF SAMPLE (mL)	(SS) 1.00
Test Code	DILUTION FACTOR OF SAMPLE	(DF) 1.00
@U-01	PREPARATION FACTOR OF SAMPLE	(PF) 1.00
Matrix	LIFETIME IN MICROSECONDS	259.00
LIQUID	R2 VALUE	0.9997
Batch Number	RANGE (HIGH OR LOW)	HIGH
97004595	INSTRUMENT UNCERTAINTY	(IU) 2.02E-06
Retun	INSTRUMENT RESULT	(IR) 6.60E-05
0	DETECTION LEVEL (µg/mL)	3.70E-05
Sample Prep		
N/A	RESULT (µg/mL)	6.60E-02
Sample	VALUE OF STANDARD	6.26E-02
WL20425	%RECOVERY	105.43
Instrument Code	RELATIVE % UNCERTAINTY	3.1
U01		
Prepared By	Result = DF * PF * IR * 1000	
CJO		
Chemist	Detection Level = 3.70 E-05 * DF * PF * 1000	
RWS		
Analyst	% Recovery = Result / Value of Standard * 100	
CRJ		
Date Complete	Relative % Uncertainty = IU / IR * 100	
09/26/97		
Analysis Date		
09/26/97		
Analysis Time		
01:00 PM		
Sample Point		
AP-103 GRAB 1		

Analyst:	CRJ	Date: 26-Sep-97
Signature of Chemist:	<i>R.W. Schroeder</i> RWS	Date: 9/29/97
STANDARD.WB1 REV 2.0	925009ML	

WORKBOOK PAGE: BLANK2

Uranium by Phosphorescence: LA-925-009 (B-0) LIQUID/SOLID

Type	BLANK	
BLNK		
Work List	VOLUME OF SAMPLE (mL) (SS)	1.00
20425	DILUTION FACTOR OF SAMPLE (DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE (PF)	100.00
@U-01	DIGEST DILUTION FACTOR (DDF)	1.0000
Matrix	LIFETIME IN MICROSECONDS	0.00
LIQUID	R2 VALUE	0.0000
Batch Number	RANGE (HIGH OR LOW)	LOW
97004595	INSTRUMENT UNCERTAINTY (IU)	0.00E+00
Rerun	INSTRUMENT RESULT (IR)	0.00E+00
0	DETECTION LEVEL (µg/mL)	3.70E-03
Sample Prep		
N/A		
Sample #	RESULT (µg/mL) <	3.70E-03
WL20425-BLK	RELATIVE % UNCERTAINTY	N/A
Instrument Code		
U01		
Prepared By	Result = DF * PF * DDF * IR * 1000	
CJO		
Chemist	Detection Level = 3.70 E-08 * DF * PF * DDF * 1000	
RWS		
Analyst	Relative % Uncertainty = IU / IR * 100	
CRJ		
Date Complete		
09/26/97		
Analysis Date		
09/26/97		
Analysis Time		
01:00 PM		
Sample Point		
AP-103 GRAB 1		

Analyst:	CRJ	Date: 26-Sep-97
Signature of Chemist:	<i>RWS</i>	Date: 9/29/97

BLANK.WB1 REV 2.0

925009ML

WORKBOOK PAGE: SAM3

Uranium by Phosphorescence: LA-925-009 (B-0) LIQUID/SOLID

Type		
SAMPLE		SAMPLE
Worklist	VOLUME OF SAMPLE (mL) (SS)	1.00
20425	DILUTION FACTOR OF SAMPLE (DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE (PF)	100.00
@U-01	DIGEST DILUTION FACTOR (DDF)	1.0000
Matrix	LIFETIME IN MICROSECONDS	237.00
LIQUID	R2 VALUE	0.9999
Batch Number	RANGE (HIGH OR LOW)	HIGH
97004595	INSTRUMENT UNCERTAINTY (IU)	7.09E-06
Rerun	INSTRUMENT RESULT (IR)	2.33E-04
0	DETECTION LEVEL (µg/mL)	3.70E-03
Sample Prep		
N/A	CONCENTRATION IN SOLUTION (g/L)	2.33E-02
Sample #	RESULT (µg/mL)	2.33E+01
S97T002009	RELATIVE % UNCERTAINTY	3.0
Instrument Code		
U01		
Prepared By	Result = $DF * PF * DDF * IR * 1000$	
CJO		
Chemist	Detection Level = $3.70 \text{ E-}08 * DF * PF * DDF * 1000$	
RWS		
Analyst	Relative % Uncertainty = $IU / IR * 100$	
CRJ		
Date Complete		
09/26/97		
Analysis Date		
09/26/97		
Analysis Time		
01:00 PM		
Sample Point		
AP-103 GRAB 1		

Analyst:	CRJ	Date: 26-Sep-97
Signature of Chemist:	RWS	Date: 9/29/97

SAMPLE.WB1 REV 2.0

925009ML

WORKBOOK PAGE: DUP4

Uranium by Phosphorescence: LA-925-009 (B-0) LIQUID/SOLID

Type		
DUP	DUP	
WorkList	VOLUME OF SAMPLE (mL) (SS)	1.00
20425	DILUTION FACTOR OF SAMPLE (DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE (PF)	100.00
@U-01	DIGEST DILUTION FACTOR (DDF)	1.0000
Matrix	LIFETIME IN MICROSECONDS	272.00
LIQUID	R2 VALUE	0.9999
Batch Number	RANGE (HIGH OR LOW)	HIGH
97004595	INSTRUMENT UNCERTAINTY (IU)	7.23E-06
Rerun	INSTRUMENT RESULT (IR)	2.37E-04
0	DETECTION LEVEL (µg/mL)	3.70E-03
Sample Prep		
N/A	CONCENTRATION IN SOLUTION (g/L)	2.37E-02
Sample #	RESULT (µg/mL)	2.37E+01
S97T002009	RELATIVE % UNCERTAINTY	3.1
Instrument Code		
U01		
Prepared By	Result = DF * PF * DDF * IR * 1000	
CJO		
Chemist	Detection Level = 3.70 E-08 * DF * PF * DDF * 1000	
RWS		
Analyst	Relative % Uncertainty = IU / IR * 100	
CRJ		
Date Complete		
09/26/97		
Analysis Date		
09/26/97		
Analysis Time		
01:00 PM		
Sample Point		
AP-103 GRAB 1		

Analyst:	CRJ	Date: 26-Sep-97
Signature of Chemist:	RWS	Date: 9/29/97

SAMPLE.WB1 REV 2.0

925009ML

WORKBOOK PAGE: SPIKES

Uranium by Phosphorescence: LA-925-009 (B-0) LIQUID/SOLID

Type	SPIKE
SPK	SPIKE BOOK #
Work List	32B55
20425	VOLUME OF SAMPLE + SPIKE (mL) (SS) 1.00
Test Code	DILUTION FACTOR OF SAMPLE + SPIKE (DF) 1.00
@U-01	PREPARATION FACTOR OF SAMPLE + SPIKE (PF) 100.00
Matrix	DIGEST DILUTION FACTOR OF SAMPLE (DDF) 1.0000
LIQUID	LIFETIME IN MICROSECONDS 278.00
Batch Number	R2 VALUE 0.9997
97004595	RANGE (HIGH OR LOW) HIGH
Refers	INSTRUMENT RESULT (IR) 7.04E-04
0	CONCENTRATION IN SOLUTION (g/L) (CONC) 7.04E-02
Sample Prep	SPIKE VALUE (g/L) (SV) 4.92E-02
N/A	INITIAL VOLUME OF SPIKE (mL) (IV) 0.10
Sample Number	ORIGINAL SAMPLE VOLUME BEFORE PREP (mL) (OSV) 0.10
S97T002009	CONCENTRATION IN SOLN (g/L) FROM SAMPLE FORM (SR) 2.33E-02
Instrument Code	
U01	Concentration = IR * DF * PF
Prepared By	
CJO	QC Actual (µg/mL) = SV (g/L) * 1000
Chemist	
RWS	QC Found (µg/mL) = (CONC - SR) * OSV / IV * 1000
Analyst	
CRJ	% Recovery = QC FOUND / QC ACTUAL
Date Complete	
09/26/97	
Analysis Date	
09/26/97	
Analysis Time	
01:00 PM	
Sample Point	
AP-103 GRAB 1	

QC ACTUAL	=	4.92E+01	µg/mL
QC FOUND	=	4.71E+01	µg/mL
% SPIKE RECOVERY	=	95.7%	

Analyst:	<i>RWS</i>	CRJ	Date:	26-Sep-97
Signature of Chemist:	<i>RWS</i>	RWS	Date:	9/29/97

SPIKE.WB1 REV 2.0

925009ML

WORKBOOK PAGE: SAM6

Uranium by Phosphorescence: LA-925-009 (B-0) LIQUID/SOLID

TYPE	SAMPLE	
Work List	VOLUME OF SAMPLE (mL) (SS)	1.00
20425	DILUTION FACTOR OF SAMPLE (DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE (PF)	100.00
@U-01	DIGEST DILUTION FACTOR (DDF)	1.0000
Matrix	LIFETIME IN MICROSECONDS	229.00
LIQUID	R2 VALUE	0.9999
Batch Number	RANGE (HIGH OR LOW)	HIGH
97004595	INSTRUMENT UNCERTAINTY (IU)	6.81E-06
Retrun	INSTRUMENT RESULT (IR)	2.23E-04
0	DETECTION LEVEL (µg/mL)	3.70E-03
Sample Prep		
N/A	CONCENTRATION IN SOLUTION (g/L)	2.23E-02
Sample #	RESULT (µg/mL)	2.23E+01
S97T002011	RELATIVE % UNCERTAINTY	3.1
Instrument Code		
U01		
Prepared By	Result = DF * PF * DDF * IR * 1000	
CJO		
Chemist	Detection Level = 3.70 E-08 * DF * PF * DDF * 1000	
RWS		
Analyst	Relative % Uncertainty = IU / IR * 100	
CRJ		
Date Complete		
09/26/97		
Analysis Date		
09/26/97		
Analysis Time		
01:00 PM		
Sample Point		
AP-103 GRAB 1		

Analyst:	CRJ	Date: 26-Sep-97
Signature of Chemist:	<i>RWS</i>	Date: 9/29/97

SAMPLE.WB1 REV 2.0

925009ML

WORKBOOK PAGE: DUP7

Uranium by Phosphorescence: LA-925-009 (B-0) LIQUID/SOLID

Type		
DUP	DUP	
Work List	VOLUME OF SAMPLE (mL) (SS)	1.00
20425	DILUTION FACTOR OF SAMPLE (DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE (PF)	100.00
@U-01	DIGEST DILUTION FACTOR (DDF)	1.0000
Matrix	LIFETIME IN MICROSECONDS	294.00
LIQUID	R2 VALUE	0.9997
Batch Number	RANGE (HIGH OR LOW)	HIGH
97004595	INSTRUMENT UNCERTAINTY (IU)	7.18E-06
Retain	INSTRUMENT RESULT (IR)	2.35E-04
0	DETECTION LEVEL (µg/mL)	3.70E-03
Sample Prep		
N/A	CONCENTRATION IN SOLUTION (g/L)	2.35E-02
Sample #	RESULT (µg/mL)	2.35E+01
S97T002011	RELATIVE % UNCERTAINTY	3.1
Instrument Code		
U01		
Prepared By	Result = DF * PF * DDF * IR * 1000	
CJO		
Chemist	Detection Level = 3.70 E-08 * DF * PF * DDF * 1000	
RWS		
Analyst	Relative % Uncertainty = IU / IR * 100	
CRJ		
Date Complete		
09/26/97		
Analysis Date		
09/26/97		
Analysis Time		
01:00 PM		
Sample Point		
AP-103 GRAB 1		

Analyst:	CRJ	Date: 26-Sep-97
Signature of Chemist:	RWS	Date: 9/29/97

SAMPLE.WB1 REV 2.0

925009ML

WORKBOOK PAGE: SAM8

Uranium by Phosphorescence: LA-925-009 (B-0) LIQUID/SOLID

Type	SAMPLE	
Work List	VOLUME OF SAMPLE (mL)	(SS) 1.00
20425	DILUTION FACTOR OF SAMPLE	(DF) 1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF) 100.00
@U-01	DIGEST DILUTION FACTOR	(DDF) 1.0000
Matrix	LIFETIME IN MICROSECONDS	246.00
LIQUID	R2 VALUE	0.9998
Batch Number	RANGE (HIGH OR LOW)	HIGH
97004595	INSTRUMENT UNCERTAINTY	(IU) 6.84E-06
Rerun	INSTRUMENT RESULT	(IR) 2.24E-04
0	DETECTION LEVEL (µg/mL)	3.70E-03
Sample Prep		
N/A	CONCENTRATION IN SOLUTION (g/L)	2.24E-02
Sample #	RESULT (µg/mL)	2.24E+01
S97T002013	RELATIVE % UNCERTAINTY	3.1
Instrument Code		
U01		
Prepared By	Result = DF * PF * DDF * IR * 1000	
CJO		
Chemist	Detection Level = 3.70 E-08 * DF * PF * DDF * 1000	
RWS		
Analyst	Relative % Uncertainty = IU / IR * 100	
CRJ		
Date Complete		
09/26/97		
Analysis Date		
09/26/97		
Analysis Time		
01:00 PM		
Sample Point		
AP-103 GRAB 1		

Analyst:	CRJ	Date: 26-Sep-97
Signature of Chemist:	<i>RWS</i>	Date: 9/29/97
SAMPLE:WB1 REV 2.0		
925009ML		

WORKBOOK PAGE: DUP9

Uranium by Phosphorescence: LA-925-009 (B-0) LIQUID/SOLID

Type	DUP	
Work List	VOLUME OF SAMPLE (mL)	(SS) 1.00
20425	DILUTION FACTOR OF SAMPLE	(DF) 1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF) 100.00
@U-01	DIGEST DILUTION FACTOR	(DDF) 1.0000
Matrix	LIFETIME IN MICROSECONDS	288.00
LIQUID	R2 VALUE	0.9999
Batch Number	RANGE (HIGH OR LOW)	HIGH
97004595	INSTRUMENT UNCERTAINTY	(IU) 6.29E-06
ReRun	INSTRUMENT RESULT	(IR) 2.07E-04
0	DETECTION LEVEL (µg/mL)	3.70E-03
Sample Prep		
N/A	CONCENTRATION IN SOLUTION (g/L)	2.07E-02
Sample #	RESULT (µg/mL)	2.07E+01
S97T002013	RELATIVE % UNCERTAINTY	3.0
Instrument Code		
U01		
Prepared By	Result = DF * PF * DDF * IR * 1000	
CJO		
Chemist	Detection Level = 3.70 E-06 * DF * PF * DDF * 1000	
RWS		
Analyst	Relative % Uncertainty = IU / IR * 100	
CRJ		
Date Complete		
09/26/97		
Analysis Date		
09/26/97		
Analysis Time		
01:00 PM		
Sample Point		
AP-103 GRAB 1		

Analyst:	CRJ	Date: 26-Sep-97
Signature of Chemist:	<i>RWS</i>	Date: 9/29/97

SAMPLE.WB1 REV 2.0

925009ML

HNH-SD-WM-DP-262, REV. 0

RADIOCHEMICAL ANALYSIS

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LABCORE Completed RadChem Report for Worklist#: 20096

Analyst: pjm

Instrument: GEA01

Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: AP103, @GEA-01 STD:1.0mL Sam Size: See traveler. skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	@GEA-01	C060-02	L1QUID	6.189e-03	7.32e-03	118.274	% Recovery
1 STD	0	@GEA-01	C060-02E	L1QUID	1	2.52	2.520	% Ct Error
1 STD	0	@GEA-01	CS13702	L1QUID	5.762e-03	6.73e-03	116.800	% Recovery
1 STD	0	@GEA-01	CS13702E	L1QUID	1	3.07	3.070	% Ct Error
2 BLNK	0	@GEA-01	C060-02	L1QUID	1	<5.36e-5		uCi/mL
2 BLNK	0	@GEA-01	CS13702	L1QUID	1	<6.63e-5		uCi/mL
3 SAMPLE	S97T002010	0	@GEA-01	C060-02	L1QUID	N/A	630.7e+006	uCi/mL
3 SAMPLE	S97T002010	0	@GEA-01	C060-02E	L1QUID	N/A	0.0e+000	% Ct. Error
3 SAMPLE	S97T002010	0	@GEA-01	CS13702	L1QUID	N/A	6.400e+00	0.0e+000 uCi/mL
3 SAMPLE	S97T002010	0	@GEA-01	CS13702E	L1QUID	N/A	0.260	0.0e+000 % Ct. Error
4 DUP	S97T002010	0	@GEA-01	C060-02	L1QUID	<6.31e-4	<5.88e-4	RPD
4 DUP	S97T002010	0	@GEA-01	C060-02E	L1QUID	1	n/a	% Ct Error
4 DUP	S97T002010	0	@GEA-01	CS13702	L1QUID	6.40e+00	6.44e+00	0.623 RPD
4 DUP	S97T002010	0	@GEA-01	CS13702E	L1QUID	1	0.260	% Ct Error
5 SAMPLE	S97T002012	0	@GEA-01	C060-02	L1QUID	N/A	1.283e-03	128.3e-005 uCi/mL
5 SAMPLE	S97T002012	0	@GEA-01	C060-02E	L1QUID	N/A	n/a	0.0e+000 % Ct. Error
5 SAMPLE	S97T002012	0	@GEA-01	CS13702	L1QUID	N/A	6.660e+00	0.0e+000 uCi/mL
5 SAMPLE	S97T002012	0	@GEA-01	CS13702E	L1QUID	N/A	0.360	0.0e+000 % Ct. Error
6 DUP	S97T002012	0	@GEA-01	C060-02	L1QUID	<1.28e-3	<3.68e-4	RPD
6 DUP	S97T002012	0	@GEA-01	C060-02E	L1QUID	1	n/a	% Ct Error
6 DUP	S97T002012	0	@GEA-01	CS13702	L1QUID	6.66e+00	6.54e+00	1.818 RPD
6 DUP	S97T002012	0	@GEA-01	CS13702E	L1QUID	1	0.190	% Ct Error
7 SAMPLE	S97T002014	0	@GEA-01	C060-02	L1QUID	N/A	3.772e-04	377.2e-006 uCi/mL
7 SAMPLE	S97T002014	0	@GEA-01	C060-02E	L1QUID	N/A	n/a	0.0e+000 % Ct. Error
7 SAMPLE	S97T002014	0	@GEA-01	CS13702	L1QUID	N/A	6.420e+00	0.0e+000 uCi/mL
7 SAMPLE	S97T002014	0	@GEA-01	CS13702E	L1QUID	N/A	0.200	0.0e+000 % Ct. Error
8 DUP	S97T002014	0	@GEA-01	C060-02	L1QUID	<3.77e-4	<3.86e-4	RPD
8 DUP	S97T002014	0	@GEA-01	C060-02E	L1QUID	1	n/a	% Ct Error
8 DUP	S97T002014	0	@GEA-01	CS13702	L1QUID	6.42e+00	6.52e+00	1.546 RPD
8 DUP	S97T002014	0	@GEA-01	CS13702E	L1QUID	1	0.190	% Ct Error

Comments Section:

Comments for sample# S97T002010 and test @GEA-01 .
DL=0 => n/a.Comments for sample# S97T002012 and test @GEA-01 .
DL=0 => n/a.

Comments for sample# S97T002014 and test @GEA-01 .

LABCORE Completed RadChem Report for Worklist#: 20096

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

Final page for worklist# 20096

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

10/2/97
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 20096

Analyst: RLM Instrument: GEA00 #7 Book# 75B56

Method: LA-548-I21 Rev/Mod FO

Worklist Comment: AP103, @GEA-01 STD:1.0mL Sam Size: See traveler. skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@GEA-01	LIQUID		
2 BLNK			@GEA-01	LIQUID		
3 SAMPLE	S97T002010 0		@GEA-01	LIQUID	97000600	AP-103 GRAB1
Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
4 DUP	S97T002010 0		@GEA-01	LIQUID		
5 SAMPLE	S97T002012 0		@GEA-01	LIQUID	97000600	AP-103 GRAB1
Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
6 DUP	S97T002012 0		@GEA-01	LIQUID		
7 SAMPLE	S97T002014 0		@GEA-01	LIQUID	97000600	AP-103 GRAB1
Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
8 DUP	S97T002014 0		@GEA-01	LIQUID		

Final page for worklist # 20096

RLM 9/1/97
Analyst Signature Date

Shirley E. Hogan 9-2-97
Analyst Signature Date

Data Entry Comments:

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


```

*****
* 222-S Laboratory Counting Room      1-SEP-1997 05:13:21.83
*****
>>>>>>>> SAMPLE INFORMATION <<<<<<<<<
Worklist #:          20096
Sample ID:           WL20096-STD
Sample Size:         1.00000E-03 L
Dilution Factor:    1.00000E+00
HNF-SD-WM-DP-262, REV. 0
Removed by:
New Light

>>>>>>>> COUNT INFORMATION <<<<<<<<<
Detector ID:         GEA1
File Number:         dka300:[spec.GEA1]1g1050.cnf
Geometry:            41
Count Time:          0 00:50:00.00 sec
Real Time:           0 00:50:15.68 sec
Dead Time:           0.5%
Verified by:
R Jones 9/2/97

>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<
Sample Count Time:   1-SEP-1997 04:22:27.56
Decayed to:          1-SEP-1997 04:22:27.56
Standard Deviations: 2
Analysis Library:    ENVGEA
Analyst:             VR
Background Subtract: DKA300:[SPEC.GEA1]1GBACK

>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<
Date of last energy calibration: 20-MAR-1996 09:10:33.62
Date of last efficiency calibration: 20-MAR-1996 09:10:52.48
*****

```

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	12.25	75	1.14	25.15	23	7115.7				
0	31.78	1032	1.06	64.21	60	9 12.6				
0	36.20	324	1.11	73.04	69	10 37.4				
0	59.64	185	1.31	119.93	116	8 59.4			AM-241	0.128
0	661.47*	5559	1.40	1323.58	1316	13 3.1			CS-137	6.73
0	1172.83	4303	1.80	2346.56	2337	20 3.6			CO-60	7.41
0	1332.06	3803	1.90	2665.15	2655	18 3.5			CO-60	7.25
0	1406.94	14	1.48	2814.97	2812	7 88.6				
0	1764.51*	16	1.75	3530.52	3524	15116.5				

Total number of lines in spectrum 9
Number of unidentified lines 3
Number of lines tentatively identified by NID 6 66.67%

HNF-SD-WM-DP-262, REV.0

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	2-Sigma Error	%Error	Flags
			Uncorrected	Decay Corr					
			uCi/L	uCi/L					
CO-60	5.27Y	1.00	7.325E+00	7.325E+00	0.185E+00	2.52			
CS-137	30.00Y	1.00	6.730E+00	6.730E+00	0.207E+00	3.07			
AM-241	432.20Y	1.00	1.283E-01	1.283E-01	0.762E-01	59.37			<i>Ref</i>
Total Activity :			1.418E+01	1.418E+01					

Grand Total Activity : 1.418E+01 1.418E+01

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

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

Minimum Detectable Activity Report

Sample ID : WL20096-STD

Acquisition date : 1-SEP-1997 04:22:27

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	432.	477.59	7.3185E-01
NA-22	40.	1274.53	5.9213E-02
NA-24	24.	1368.55	5.0697E-02
K-40	573.	1460.75	2.1891E+00
CR-51	494.	320.08	5.6045E-01
MN-54	269.	834.83	1.0082E-01
CO-56	287.	846.76	1.0554E-01
CO-57	758.	122.06	4.2387E-02
CO-58	245.	810.78	9.4414E-02
FE-59	251.	1099.25	2.1988E-01
SE-75	585.	264.66	8.9564E-02
SR-85	393.	514.01	8.0631E-02
Y-88	8.	1836.06	3.9122E-02
NB-94	254.	871.09	1.0213E-01
ZRNB-95	271.	724.18	2.0346E-01
RU-103	351.	497.08	7.8055E-02
RURH-106	236.	621.93	1.4565E+00
AG-108m	260.	722.94	9.5721E-02
CD-109	640.	88.03	8.3876E-01
AG-110M	421.	657.76	1.0642E-01
SN-113	485.	391.69	1.0441E-01
TE-123m	713.	159.00	4.8087E-02
SB-124	260.	602.73	7.5150E-02
SB-125	449.	427.89	2.3728E-01
TE-125m	740.	109.27	1.2222E+01
I-129	509.	39.60	4.1173E-01
I-131	456.	364.48	7.5046E-02
CS-134	265.	604.70	7.6172E-02
BA-140	292.	537.31	2.8637E-01
LA-140	9.	1596.21	3.8444E-02
CEPR-144	793.	133.51	6.9868E-01
EU-152	31.	1408.01	2.7400E-01
EU-154	40.	1274.51	1.7185E-01
EU-155	715.	105.31	1.5360E-01
HG-203	529.	279.20	6.3966E-02
TL-208	550.	277.36	8.3644E-01
BI-212	259.	727.18	1.3137E+00
PB-212	748.	238.63	1.2489E-01
BI-214	405.	609.31	2.0529E-01
PB-214	585.	351.92	3.3247E-01
RA-224	630.	240.99	1.2752E+00
RA-226	784.	186.10	1.3329E+00
AC-228	359.	911.21	4.7188E-01
TH-228	791.	84.37	2.6325E+00
TH-229	617.	88.47	1.2053E-01
PA-233	502.	312.17	1.4439E-01
UTH-233	640.	245.34	4.8166E+01
PA-234M	245.	1001.03	1.9211E-01
TH-234	704.	63.29	6.9220E-01
U-235	785.	185.71	8.1084E-02
NP-237	729.	86.48	2.5938E-01

Minimum Detectable Activity Report (continued)

Sample ID : WL20096-STD

Acquisition date : 1-SEP-1997 04:22:27

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-239	729.	106.12	1.4873E-01
PU-239	777.	129.30	5.8982E+02
AM-243	744.	74.67	5.3201E-02

Total number of lines in spectrum	4	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	0	0.00%

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

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

Minimum Detectable Activity Report

Sample ID : WL#20096-BLK

Acquisition date : 1-SEP-1997 06:28:20

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	309.	477.59	4.1486E-01
NA-22	89.	1274.53	5.7234E-02
NA-24	49.	1368.55	4.8631E-02
K-40	1705.	1460.75	2.4920E+00
CR-51	621.	320.08	4.1831E-01
MN-54	183.	834.83	5.5923E-02
CO-56	176.	846.76	5.5593E-02
CO-57	1504.	122.06	3.9570E-02
CO-58	150.	810.78	4.9713E-02
FE-59	132.	1099.25	1.0808E-01
CO-60	72.	1332.50	5.3648E-02
SE-75	804.	264.66	6.9763E-02
SR-85	371.	514.01	5.2316E-02
Y-88	21.	1836.06	3.9170E-02
NB-94	134.	871.09	5.0018E-02
ZRNB-95	215.	724.18	1.2132E-01
RU-103	270.	497.08	4.5877E-02
RURH-106	227.	621.93	9.5167E-01
AG-108m	193.	722.94	5.5282E-02
CD-109	1270.	88.03	7.8239E-01
AG-110M	199.	657.76	4.9346E-02
SN-113	394.	391.69	6.2929E-02
TE-123m	1425.	159.00	4.5037E-02
SB-124	258.	602.73	4.9966E-02
SB-125	370.	427.89	1.4400E-01
TE-125m	1447.	109.27	1.1328E+01
I-129	787.	39.60	3.3948E-01
I-131	504.	364.48	5.2699E-02
CS-134	257.	604.70	5.0076E-02
CS-137	292.	661.66	6.6284E-02
BA-140	250.	537.31	1.7744E-01
LA-140	40.	1596.21	5.0228E-02
CEPR-144	1523.	133.51	6.4175E-01
EU-152	56.	1408.01	2.3908E-01
EU-154	89.	1274.51	1.6619E-01
EU-155	1391.	105.31	1.4192E-01
HG-203	762.	279.20	5.0992E-02
TL-208	766.	277.36	6.5564E-01
BI-212	234.	727.18	8.3324E-01
PB-212	1246.	238.63	1.0700E-01
BI-214	649.	609.31	1.7224E-01
PB-214	814.	351.92	5.7927E-01
RA-224	1040.	240.99	1.0940E+00
RA-226	1320.	186.10	1.1477E+00
AC-228	372.	911.21	3.2006E-01
TH-228	1435.	84.37	2.3517E+00
TH-229	1266.	88.47	1.1426E-01
PA-233	618.	312.17	1.0665E-01
UTH-233	897.	245.34	3.7897E+01
PA-234M	147.	1001.03	1.0034E-01
TH-234	1199.	63.29	5.9919E-01

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
U-235	1335.	185.71	7.0150E-02
NP-237	1291.	86.48	2.2886E-01
NP-239	1417.	106.12	1.3884E-01
PU-239	1504.	129.30	5.4387E+02
AM-241	1144.	59.54	7.3920E-02
AM-243	1564.	74.67	5.1101E-02

 * 222-S Laboratory Counting Room 1-SEP-1997 13:16:33.54

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

Worklist #: 20096
 Sample ID: S97T2010-SAM
 Sample Size: 5.00000E-04 L
 Dilution Factor: 1.00000E+00

Removed by:

Newlight

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

Detector ID: GEAL
 File Number: dka300:[spec.GEAL]1g1053.cnf
 Geometry: 43
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:33:24.67 sec
 Dead Time: 2.2%

Verified by:

Spencer 9/7/97

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

Sample Count Time: 1-SEP-1997 10:42:30.17
 Decayed to: 1-SEP-1997 10:42:30.17
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: NEW
 Background Subtract: DKA300:[SPEC.GEAL]1GBACK

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

Date of last energy calibration: 20-MAR-1996 09:10:33.62
 Date of last efficiency calibration: 20-MAR-1996 09:13:20.37

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	12.13	433	0.61	24.92	23	6	83.7			
0	21.60	3268	1.08	43.85	40	8	15.4			
10	29.98	19158	2.16	60.60	52	27	5.4	2.90E+02	I-129 ^{no 39 peak}	16.1
10	31.76	95445	1.04	64.17	52	27	0.8			
10	36.07	32245	1.68	72.78	52	27	2.2			
1	72.61*	3522	1.01	145.85	142	12	11.7	2.43E+00		
1	74.75*	6650	0.94	150.13	142	12	6.5		AM-243 - ^{no 43 peak}	28.2
0	84.50*	3516	1.07	169.64	166	8	14.7		TH-228	714.
									TH-229	58.3
0	87.24*	844	0.82	175.11	173	7	53.3		NP-237	17.5
									CD-109	60.2
									TH-229	8.79
0	624.88	283	2.37	1250.38	1247	8	65.8			
0	661.40*	645743	1.43	1323.43	1315	16	0.3		CS-137	6.398E+03
0	1315.24	38	0.86	2631.49	2623	13	95.1			

^{Pb}
 } X-rays

Summary of Nuclide Activity

Sample ID : S97T2010-SAM

Acquisition date : 1-SEP-1997 10:42:30

Total number of lines in spectrum 12
 Number of unidentified lines 7
 Number of lines tentatively identified by NID 5 41.67%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr	2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected uCi/L	Decay Corr uCi/L				
CD-109	462.90D	1.00	6.017E+01	6.017E+01	3.208E+01	53.31	RAJ	
I-129	5.73E+09D	1.00	1.615E+01	1.615E+01	0.088E+01	5.45	RAJ	
CS-137	30.00Y	1.00	6.398E+03	6.398E+03	0.016E+03	0.26		
TH-228	1.91Y	1.00	7.141E+02	7.142E+02	1.053E+02	14.74	RAJ	
TH-229	7340.00Y	1.00	8.794E+00	8.794E+00	4.688E+00	53.31	RAJ	
NP-237	2.14E+06Y	1.00	1.751E+01	1.751E+01	0.934E+01	53.31	RAJ	
AM-243	7380.00Y	1.00	2.824E+01	2.824E+01	0.183E+01	6.48	RAJ	
Total Activity :			7.243E+03	7.243E+03				

Grand Total Activity : 7.243E+03 7.243E+03

Flags: "K" = Keyline not found

"E" = Manually edited

"M" = Manually accepted

"A" = Nuclide specific abn. limit

Sample ID : S97T2010-SAM

Acquisition date : 1-SEP-1997 10:42:30

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	20015.	477.59	4.0195E+01
NA-22	100.	1274.53	6.5712E-01
NA-24	64.	1368.55	5.9025E-01
K-40	1777.	1460.75	2.7275E+01
CR-51	16094.	320.08	2.5372E+01
MN-54	155.	834.83	6.1224E-01
CO-56	156.	846.76	6.2202E-01
CO-57	17392.	122.06	1.8617E+00
CO-58	169.	810.78	6.2871E-01
FE-59	137.	1099.25	1.2311E+00
CO-60	86.	1332.50	6.3074E-01
SE-75	15978.	264.66	3.7011E+00
SR-85	10289.	514.01	3.3348E+00
Y-88	26.	1836.06	4.7826E-01
NB-94	143.	871.09	6.0833E-01
ZRNB-95	200.	724.18	1.4229E+00
RU-103	12684.	497.08	3.7846E+00
RURH-106	3413.	621.93	4.4305E+01
AG-108m	187.	722.94	6.6157E-01
AG-110M	24137.	657.76	6.4400E+00
SN-113	18963.	391.69	5.2311E+00
TE-123m	18092.	159.00	2.0489E+00
SB-124	3601.	602.73	2.2466E+00
SB-125	22039.	427.89	1.3355E+01
TE-125m	15818.	109.27	5.3728E+02
I-131	17152.	364.48	3.6782E+00
CS-134	3683.	604.70	2.2814E+00
BA-140	7480.	537.31	1.1700E+01
LA-140	33.	1596.21	4.9480E-01
CEPR-144	17105.	133.51	2.8905E+01
EU-152	59.	1408.01	2.6193E+00
EU-154	100.	1274.51	1.9102E+00
EU-155	15476.	105.31	6.8687E+00
HG-203	15664.	279.20	2.7498E+00
TL-208	15816.	277.36	3.5450E+01
BI-212	273.	727.18	1.0908E+01
PB-212	17962.	238.63	4.8670E+00
BI-214	3843.	609.31	5.1099E+00
PB-214	16971.	351.92	3.2325E+01
RA-224	17648.	240.99	5.3902E+01
RA-226	27925.	186.10	6.5026E+01
AC-228	385.	911.21	3.7981E+00
PA-233	16024.	312.17	6.4649E+00
UTH-233	17044.	245.34	1.9712E+03
PA-234M	164.	1001.03	1.2096E+00
TH-234	13748.	63.29	2.9721E+01
U-235	27420.	185.71	3.9184E+00
NP-239	15557.	106.12	6.6598E+00
PU-239	17446.	129.30	2.5150E+04
AM-241	13430.	59.54	3.5741E+00

 * 222-S Laboratory Counting Room 1-SEP-1997 16:12:50.15 *

>>>>>>> SAMPLE INFORMATION <<<<<<<<<
 Worklist #: 20096
 Sample ID: S97T2010-DUP
 Sample Size: 5.00000E-04 L
 Dilution Factor: 1.00000E+00

HNF-SD-WM-DP-262, REV. 0

Removed by:

New Light

>>>>>>> COUNT INFORMATION <<<<<<<<<
 Detector ID: GEAL
 File Number: dka300:[spec.GEAL]lg1055.cnf
 Geometry: 43
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:33:27.13 sec
 Dead Time: 2.2%

Verified by:

R. Jones 7/2/97

>>>>>>> ANALYSIS INFORMATION <<<<<<<<<
 Sample Count Time: 1-SEP-1997 13:38:46.71
 Decayed to: 1-SEP-1997 13:38:46.71
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: NEW
 Background Subtract: DKA300:[SPEC.GEAL]1GBACK

>>>>>>> CALIBRATION INFORMATION <<<<<<<<<
 Date of last energy calibration: 20-MAR-1996 09:10:33.62
 Date of last efficiency calibration: 20-MAR-1996 09:13:20.37

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	12.12	360	0.55	24.90	23	5	87.8			
0	21.55	2985	1.09	43.75	40	8	16.9			
7	29.47	14458	1.62	59.58	52	28	5.9	3.29E+02	I-129	12.2
7	31.77	99001	1.06	64.18	52	28	0.8			
7	36.10	31678	1.65	72.85	52	28	2.2			
1	72.62*	3782	1.00	145.87	142	12	10.9	1.98E+00		
1	74.76*	6746	0.94	150.16	142	12	6.4		AM-243	28.6
4	84.58*	3993	1.19	169.79	165	14	11.6	7.78E-01	TH-228	811.
									TH-229	66.3
4	87.15*	1666	1.23	174.94	165	14	27.3		NP-237	34.6
									CD-109	119.
									TH-229	17.4
0	661.39*	650190	1.42	1323.42	1315	16	0.3		CS-137	6.442E+03

Summary of Nuclide Activity

Sample ID : S97T2010-DUP

Acquisition date : 1-SEP-1997 13:38:46

Total number of lines in spectrum 10
 Number of unidentified lines 5
 Number of lines tentatively identified by NID 5 50.00%

Nuclide Type :

Nuclide	Hlflife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CD-109	462.90D	1.00	1.188E+02	1.188E+02	0.324E+02	27.29	not
I-129	5.73E+09D	1.00	1.219E+01	1.219E+01	0.072E+01	5.91	not
CS-137	30.00Y	1.00	6.442E+03	6.442E+03	0.016E+03	0.26	
TH-228	1.91Y	1.00	8.111E+02	8.112E+02	0.941E+02	11.60	not
TH-229	7340.00Y	1.00	1.737E+01	1.737E+01	0.474E+01	27.29	not
NP-237	2.14E+06Y	1.00	3.458E+01	3.458E+01	0.944E+01	27.29	not
AM-243	7380.00Y	1.00	2.864E+01	2.864E+01	0.183E+01	6.38	not
Total Activity :			7.464E+03	7.464E+03			

Grand Total Activity : 7.464E+03 7.464E+03

Flags: "K" = Keyline not found

"E" = Manually edited

"M" = Manually accepted

"A" = Nuclide specific abn. limit

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	19810.	477.59	3.9988E+01
NA-22	95.	1274.53	6.4176E-01
NA-24	67.	1368.55	6.0575E-01
K-40	1776.	1460.75	2.7268E+01
CR-51	16112.	320.08	2.5387E+01
MN-54	165.	834.83	6.3218E-01
CO-56	135.	846.76	5.7976E-01
CO-57	17434.	122.06	1.8640E+00
CO-58	173.	810.78	6.3558E-01
FE-59	135.	1099.25	1.2206E+00
CO-60	74.	1332.50	5.8811E-01
SE-75	15898.	264.66	3.6918E+00
SR-85	10346.	514.01	3.3439E+00
Y-88	20.	1836.06	4.2115E-01
NB-94	154.	871.09	6.3122E-01
ZRNB-95	188.	724.18	1.3840E+00
RU-103	12867.	497.08	3.8116E+00
RURH-106	3400.	621.93	4.4224E+01
AG-108m	190.	722.94	6.6745E-01
AG-110M	24552.	657.76	6.4949E+00
SN-113	18821.	391.69	5.2115E+00
TE-123m	18610.	159.00	2.0779E+00
SB-124	3838.	602.73	2.3186E+00
SB-125	22267.	427.89	1.3424E+01
TE-125m	16236.	109.27	5.4429E+02
I-131	17463.	364.48	3.7112E+00
CS-134	3801.	604.70	2.3174E+00
BA-140	7319.	537.31	1.1574E+01
LA-140	34.	1596.21	5.0240E-01
CEPR-144	17226.	133.51	2.9007E+01
EU-152	73.	1408.01	2.9030E+00
EU-154	95.	1274.51	1.8644E+00
EU-155	15352.	105.31	6.8414E+00
HG-203	15791.	279.20	2.7609E+00
TL-208	15814.	277.36	3.5447E+01
BI-212	235.	727.18	1.0138E+01
PB-212	18399.	238.63	4.9257E+00
BI-214	4026.	609.31	5.2290E+00
PB-214	17278.	351.92	3.2623E+01
RA-224	17773.	240.99	5.4093E+01
RA-226	27851.	186.10	6.4940E+01
AC-228	367.	911.21	3.7104E+00
PA-233	15972.	312.17	6.4544E+00
UTH-233	17054.	245.34	1.9718E+03
PA-234M	147.	1001.03	1.1467E+00
TH-234	13740.	63.29	2.9713E+01
U-235	27514.	185.71	3.9250E+00
NP-239	15437.	106.12	6.6342E+00
PU-239	17429.	129.30	2.5137E+04
AM-241	13458.	59.54	3.5778E+00

 * 222-S Laboratory Counting Room 1-SEP-1997 19:06:25.68 *

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

Worklist #: 20096
 Sample ID: S97T2012-SAM
 Sample Size: 2.50000E-04 L
 Dilution Factor: 1.00000E+00

Removed by:

R

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

Detector ID: GEAL
 File Number: dka300:[spec.GEAL]lg1056.cnf
 Geometry: 43
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:32:02.66 sec
 Dead Time: 1.3%

Verified by:

RA Jones 9/2/97

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

Sample Count Time: 1-SEP-1997 16:33:43.51
 Decayed to: 1-SEP-1997 16:33:43.51
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: NEW
 Background Subtract: DKA300:[SPEC.GEAL]1GBACK

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

Date of last energy calibration: 20-MAR-1996 09:10:33.62
 Date of last efficiency calibration: 20-MAR-1996 09:13:20.37

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	12.49	334	1.26	25.64	24	6	81.2			
0	21.56	1445	1.19	43.77	40	9	28.5			
10	30.00	10394	2.16	60.65	52	28	7.4	1.56E+02	I-129	17.5
10	31.79	51592	1.02	64.22	52	28	1.1			
10	36.10	17845	1.70	72.84	52	28	2.9			
2	72.63*	1713	0.99	145.89	142	12	18.0	9.78E-01		
2	74.75*	3135	0.91	150.14	142	12	9.1			
0	84.58*	1618	1.12	169.79	166	7	21.6		AM-243	26.6
0	661.41*	336320	1.42	1323.45	1315	16	0.4		TH-228	657.
0	726.61*	98	1.53	1453.88	1446	15	76.3		CS-137	6.664E+03
0	1380.72	156	10.24	2762.51	2747	36	39.8			
0	1661.31	31	3.12	3323.99	3317	15	58.8			

no 39pk

no 43pk

AM-243
 TH-228
 CS-137

17.5

26.6

657.

6.664E+03

Pb
 X-ray

159

Summary of Nuclide Activity

Sample ID : S97T2012-SAM

Acquisition date : 1-SEP-1997 16:33:43

Total number of lines in spectrum 12
 Number of unidentified lines 7
 Number of lines tentatively identified by NID 5 41.67%

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
I-129	5.73E+09D	1.00	1.752E+01	1.752E+01	0.130E+01	7.41	RAJ
CS-137	30.00Y	1.00	6.664E+03	6.664E+03	0.024E+03	0.36	
TH-228	1.91Y	1.00	6.573E+02	6.574E+02	1.417E+02	21.56	RAJ
AM-243	7380.00Y	1.00	2.662E+01	2.662E+01	0.242E+01	9.08	RAJ
Total Activity :			7.366E+03	7.366E+03			

Grand Total Activity : 7.366E+03 7.366E+03

Flags: "K" = Keyline not found

"M" = Manually accepted

"E" = Manually edited

"A" = Nuclide specific abn. limit

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	10531.	477.59	5.8403E+01
NA-22	92.	1274.53	1.2633E+00
NA-24	50.	1368.55	1.0521E+00
K-40	1739.	1460.75	5.3971E+01
CR-51	8478.	320.08	3.6894E+01
MN-54	163.	834.83	1.2543E+00
CO-56	163.	846.76	1.2698E+00
CO-57	9639.	122.06	2.7762E+00
CO-58	164.	810.78	1.2396E+00
FE-59	137.	1099.25	2.4618E+00
CO-60	89.	1332.50	1.2834E+00
SE-75	8504.	264.66	5.4094E+00
SR-85	5537.	514.01	4.9029E+00
Y-88	26.	1836.06	9.5438E-01
NB-94	148.	871.09	1.2368E+00
ZRNB-95	209.	724.18	2.9066E+00
RU-103	6632.	497.08	5.4840E+00
RURH-106	1846.	621.93	6.5402E+01
AG-108m	193.	722.94	1.3457E+00
CD-109	8626.	88.03	6.1973E+01
AG-110M	12169.	657.76	9.1593E+00
SN-113	9933.	391.69	7.5840E+00
TE-123m	10096.	159.00	3.0657E+00
SB-124	1962.	602.73	3.3281E+00
SB-125	11665.	427.89	1.9461E+01
TE-125m	9026.	109.27	8.1290E+02
I-131	9144.	364.48	5.3799E+00
CS-134	1873.	604.70	3.2664E+00
BA-140	4039.	537.31	1.7235E+01
LA-140	34.	1596.21	1.0028E+00
CEPR-144	9695.	133.51	4.3587E+01
EU-152	90.	1408.01	6.3940E+00
EU-154	92.	1274.51	3.6733E+00
EU-155	8651.	105.31	1.0287E+01
HG-203	8426.	279.20	4.0405E+00
TL-208	8529.	277.36	5.2151E+01
BI-212	269.	727.18	2.1652E+01
PB-212	9950.	238.63	7.2556E+00
BI-214	2270.	609.31	7.8770E+00
PB-214	9476.	351.92	4.7985E+01
RA-224	9519.	240.99	7.9293E+01
RA-226	15046.	186.10	9.5583E+01
AC-228	391.	911.21	7.6541E+00
TH-229	8478.	88.47	8.9797E+00
PA-233	8432.	312.17	9.3954E+00
UTH-233	9442.	245.34	2.9389E+03
PA-234M	124.	1001.03	2.1139E+00
TH-234	7459.	63.29	4.3860E+01
U-235	14818.	185.71	5.7682E+00
NP-237	9206.	86.48	1.8628E+01
NP-239	8583.	106.12	9.9083E+00

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PU-239	9458.	129.30	3.7093E+04
AM-241	7417.	59.54	5.3212E+00

Total number of lines in spectrum 11
Number of unidentified lines 5
Number of lines tentatively identified by NID 6 54.55%

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	1.00	7.075E+00	7.075E+00	8.231E+00	116.35	RAJ
CS-137	30.00Y	1.00	6.535E+03	6.535E+03	0.013E+03	0.19	
TH-228	1.91Y	1.00	1.434E+02	1.435E+02	0.647E+02	45.11	
AM-243	7380.00Y	1.00	6.964E+00	6.964E+00	1.221E+00	17.53	RAJ
Total Activity :			6.693E+03	6.693E+03			

Grand Total Activity : 6.693E+03 6.693E+03

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

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

Minimum Detectable Activity Report
Sample ID : S97T20012-DUP

Acquisition date : 1-SEP-1997 19:12:40

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	34602.	477.59	3.1544E+01
NA-22	102.	1274.53	3.8615E-01
NA-24	61.	1368.55	3.3799E-01
CR-51	27264.	320.08	1.9937E+01
MN-54	182.	834.83	3.8471E-01
CO-56	143.	846.76	3.4634E-01
CO-57	25651.	122.06	1.3092E+00
CO-58	162.	810.78	3.5836E-01
FE-59	130.	1099.25	6.9405E-01
CO-60	86.	1332.50	3.6813E-01
SE-75	26750.	264.66	2.8874E+00
SR-85	17269.	514.01	2.5685E+00
Y-88	22.	1836.06	2.6656E-01
NB-94	178.	871.09	3.9244E-01
ZRNB-95	213.	724.18	8.5918E-01
RU-103	21150.	497.08	2.9108E+00
RURH-106	5411.	621.93	3.2812E+01
AG-108m	218.	722.94	4.1662E-01
CD-109	21938.	88.03	2.8470E+01
AG-110M	42223.	657.76	5.0007E+00
SN-113	31898.	391.69	4.0811E+00
TE-123m	26927.	159.00	1.4711E+00
SB-124	5683.	602.73	1.6629E+00
SB-125	37263.	427.89	1.0415E+01
TE-125m	23719.	109.27	3.7927E+02
I-129	19035.	39.60	9.0170E+00
I-131	29214.	364.48	2.8929E+00
CS-134	5674.	604.70	1.6684E+00
BA-140	12132.	537.31	8.8377E+00
LA-140	40.	1596.21	3.2029E-01
CEPR-144	25495.	133.51	2.0536E+01
EU-152	74.	1408.01	1.7076E+00
EU-154	102.	1274.51	1.1224E+00
EU-155	22602.	105.31	4.7811E+00
HG-203	26914.	279.20	2.1750E+00
TL-208	26846.	277.36	2.7868E+01
BI-212	285.	727.18	6.5078E+00
PB-212	27988.	238.63	3.6537E+00
BI-214	5949.	609.31	3.7443E+00
PB-214	28682.	351.92	2.5631E+01
RA-224	27449.	240.99	4.0445E+01
RA-226	44023.	186.10	4.8535E+01
AC-228	391.	911.21	2.2189E+00
TH-229	21729.	88.47	4.1403E+00
PA-233	27551.	312.17	5.1182E+00
UTH-233	27025.	245.34	1.4940E+03
PA-234M	154.	1001.03	6.7810E-01
TH-234	20397.	63.29	2.1890E+01
U-235	43051.	185.71	2.9183E+00
NP-237	22460.	86.48	8.3903E+00
NP-239	22673.	106.12	4.6326E+00

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PU-239	25671.	129.30	1.7720E+04
AM-241	19913.	59.54	2.6790E+00

 * 222-S Laboratory Counting Room 2-SEP-1997 00:26:46.13 *

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

Worklist #: 20096
 Sample ID: S97T2014-SAM
 Sample Size: 2.50000E-04 L
 Dilution Factor: 1.00000E+00

Removed by:

R

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

Detector ID: GEAL
 File Number: dka300:[spec.GEAL]lg1058.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:35:13.46 sec
 Dead Time: 3.4%

Verified by:

Raymer 9/2/97

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

Sample Count Time: 1-SEP-1997 21:50:55.02
 Decayed to: 1-SEP-1997 21:50:55.02
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: VR
 Background Subtract: DKA300:[SPEC.GEAL]1GBACK

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

Date of last energy calibration: 20-MAR-1996 09:10:33.62
 Date of last efficiency calibration: 20-MAR-1996 09:12:15.61

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	12.07	630	0.75	24.79	23	5	62.4			
0	21.53	6433	1.13	43.72	40	8	9.8			
0	31.68	178722	1.05	64.00	59	10	0.8			
0	36.20	48255	1.00	73.05	69	9	1.8			
3	72.62*	1775	1.03	145.88	143	11	27.0	5.90E-01		
3	74.72*	2803	0.90	150.07	143	11	15.2		AM-243	6.97 <i>3 Pb</i>
0	84.47*	1663	1.12	169.57	167	7	33.0		TH-228	195.3 <i>α-rays</i>
0	661.42*	1103126	1.44	1323.47	1315	16	0.2		CS-137	6.420E+03
0	795.25*	119	1.85	1591.18	1586	12	54.8			
0	1322.74	47	1.02	2646.50	2640	12	92.4			
0	1730.59	21	0.88	3462.64	3452	17	128.5			
0	1856.84	15	0.67	3715.30	3705	12	106.4			

Summary of Nuclide Activity

Sample ID : S97T2014-SAM

Acquisition date : 1-SEP-1997 21:50:55

Total number of lines in spectrum 12
 Number of unidentified lines 8
 Number of lines tentatively identified by NID 4 33.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	2-Sigma Error	%Error	Flags
			Uncorrected	Decay Corr					
			uCi/L	uCi/L					
CS-137	30.00Y	1.00	6.420E+03	6.420E+03	0.013E+03	0.20			
TH-228	1.91Y	1.00	1.955E+02	1.955E+02	0.644E+02	32.97	2.12		
AM-243	7380.00Y	1.00	6.973E+00	6.973E+00	1.060E+00	15.20	2.12		
Total Activity :			6.623E+03	6.623E+03					

Grand Total Activity : 6.623E+03 6.623E+03

Flags: "K" = Keyline not found

"E" = Manually edited

"M" = Manually accepted

"A" = Nuclide specific abn. limit

Minimum Detectable Activity Report

Sample ID : S97T2014-SAM

Acquisition date : 1-SEP-1997 21:50:55

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	33877.	477.59	3.1213E+01
NA-22	85.	1274.53	3.5505E-01
NA-24	59.	1368.55	3.3290E-01
K-40	1806.	1460.75	1.6156E+01
CR-51	26974.	320.08	1.9831E+01
MN-54	188.	834.83	3.9095E-01
CO-56	158.	846.76	3.6334E-01
CO-57	25123.	122.06	1.2957E+00
CO-58	177.	810.78	3.7478E-01
FE-59	148.	1099.25	7.3898E-01
CO-60	91.	1332.50	3.7717E-01
SE-75	26497.	264.66	2.8737E+00
SR-85	17071.	514.01	2.5538E+00
Y-88	29.	1836.06	3.0363E-01
NB-94	163.	871.09	3.7615E-01
ZRNB-95	241.	724.18	9.1039E-01
RU-103	20565.	497.08	2.8704E+00
RURH-106	5221.	621.93	3.2234E+01
AG-108m	249.	722.94	4.4469E-01
CD-109	22138.	88.03	2.8599E+01
AG-110M	41492.	657.76	4.9573E+00
SN-113	30948.	391.69	4.0201E+00
TE-123m	26350.	159.00	1.4553E+00
SB-124	5784.	602.73	1.6774E+00
SB-125	36401.	427.89	1.0294E+01
TE-125m	23417.	109.27	3.7685E+02
I-129	18635.	39.60	8.9222E+00
I-131	29120.	364.48	2.8883E+00
CS-134	5821.	604.70	1.6898E+00
BA-140	11865.	537.31	8.7402E+00
LA-140	38.	1596.21	3.1070E-01
CEPR-144	25116.	133.51	2.0383E+01
EU-152	73.	1408.01	1.7027E+00
EU-154	85.	1274.51	1.0300E+00
EU-155	22489.	105.31	4.7692E+00
HG-203	26819.	279.20	2.1712E+00
TL-208	26565.	277.36	2.7722E+01
BI-212	285.	727.18	6.5065E+00
PB-212	27282.	238.63	3.6075E+00
BI-214	5865.	609.31	3.7181E+00
PB-214	28467.	351.92	2.5524E+01
RA-224	26870.	240.99	4.0018E+01
RA-226	43148.	186.10	4.8052E+01
AC-228	386.	911.21	2.2051E+00
TH-229	21975.	88.47	4.1635E+00
PA-233	26953.	312.17	5.0625E+00
UTH-233	26515.	245.34	1.4799E+03
PA-234M	149.	1001.03	6.6871E-01
TH-234	19890.	63.29	2.1618E+01
U-235	42373.	185.71	2.8953E+00
NP-237	22445.	86.48	8.3875E+00

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-239	22627.	106.12	4.6278E+00
PU-239	25228.	129.30	1.7567E+04
AM-241	19971.	59.54	2.6830E+00

 * 222-S Laboratory Counting Room 2-SEP-1997 03:06:52.16 *

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

Worklist #: 20096
 Sample ID: S97T2014-DUP
 Sample Size: 2.50000E-04 L
 Dilution Factor: 1.00000E+00

Removed by:

RE

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

Detector ID: GEAL
 File Number: dka300:[spec.GEAL]lg1059.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:35:19.06 sec
 Dead Time: 3.4%

Verified by:

RE Jones

9/2/97

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

Sample Count Time: 2-SEP-1997 00:30:54.74
 Decayed to: 2-SEP-1997 00:30:54.74
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: VR
 Background Subtract: DKA300:[SPEC.GEAL]1GBACK

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

Date of last energy calibration: 20-MAR-1996 09:10:33.62
 Date of last efficiency calibration: 20-MAR-1996 09:12:15.61

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	12.40	887	0.61	25.45	23	6	51.2			
0	21.56	5684	1.12	43.77	40	8	11.3			
0	31.67	182587	1.05	64.00	59	10	0.7			
0	36.19	49873	1.03	73.03	69	9	1.7			
3	72.64*	1920	1.25	145.92	142	12	28.3	2.85E+00		
3	74.71*	3287	0.96	150.05	142	12	14.9		AM-243	8.18
0	84.51*	970	0.79	169.64	168	6	50.6		TH-228	114.
0	661.42*	1119970	1.44	1323.47	1315	16	0.2		CS-137	6.518E+03
0	692.81	82	1.80	1386.26	1382	10	97.7			
0	795.39*	168	2.18	1591.46	1585	13	39.2			

Summary of Nuclide Activity

Sample ID : S97T2014-DUP

Acquisition date : 2-SEP-1997 00:30:54

Total number of lines in spectrum 10
 Number of unidentified lines 5
 Number of lines tentatively identified by NID 5 50.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	2-Sigma Error	%Error	Flags
			Uncorrected	Decay Corr					
			uCi/L	uCi/L					
CS-137	30.00Y	1.00	6.518E+03	6.518E+03	0.013E+03	0.19			
TH-228	1.91Y	1.00	1.140E+02	1.140E+02	0.577E+02	50.63			RAJ
AM-243	7380.00Y	1.00	8.175E+00	8.175E+00	1.217E+00	14.89			RAJ
Total Activity :			6.640E+03	6.640E+03					

Grand Total Activity : 6.640E+03 6.640E+03

Flags: "K" = Keyline not found

"E" = Manually edited

"M" = Manually accepted

"A" = Nuclide specific abn. limit

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	34043.	477.59	3.1289E+01
NA-22	104.	1274.53	3.8957E-01
NA-24	57.	1368.55	3.2859E-01
K-40	1795.	1460.75	1.6108E+01
CR-51	27383.	320.08	1.9980E+01
MN-54	155.	834.83	3.5607E-01
CO-56	169.	846.76	3.7584E-01
CO-57	25854.	122.06	1.3144E+00
CO-58	159.	810.78	3.5596E-01
FE-59	140.	1099.25	7.1961E-01
CO-60	95.	1332.50	3.8596E-01
SE-75	26712.	264.66	2.8853E+00
SR-85	17195.	514.01	2.5630E+00
Y-88	18.	1836.06	2.4308E-01
NB-94	154.	871.09	3.6607E-01
ZRNB-95	196.	724.18	8.2445E-01
RU-103	21155.	497.08	2.9112E+00
RURH-106	5445.	621.93	3.2915E+01
AG-108m	211.	722.94	4.1087E-01
CD-109	22227.	88.03	2.8656E+01
AG-110M	42255.	657.76	5.0026E+00
SN-113	31460.	391.69	4.0531E+00
TE-123m	26647.	159.00	1.4635E+00
SB-124	5810.	602.73	1.6811E+00
SB-125	37460.	427.89	1.0442E+01
TE-125m	23813.	109.27	3.8001E+02
I-129	19099.	39.60	9.0320E+00
I-131	29235.	364.48	2.8940E+00
CS-134	5740.	604.70	1.6781E+00
BA-140	12143.	537.31	8.8418E+00
LA-140	28.	1596.21	2.7055E-01
CEPR-144	25302.	133.51	2.0458E+01
EU-152	78.	1408.01	1.7559E+00
EU-154	104.	1274.51	1.1331E+00
EU-155	22733.	105.31	4.7949E+00
HG-203	26930.	279.20	2.1757E+00
TL-208	26800.	277.36	2.7844E+01
BI-212	265.	727.18	6.2806E+00
PB-212	27724.	238.63	3.6364E+00
BI-214	6036.	609.31	3.7714E+00
PB-214	28493.	351.92	2.5549E+01
RA-224	27271.	240.99	4.0315E+01
RA-226	44020.	186.10	4.8533E+01
AC-228	366.	911.21	2.1497E+00
TH-229	21969.	88.47	4.1630E+00
PA-233	27187.	312.17	5.0843E+00
UTH-233	26746.	245.34	1.4863E+03
PA-234M	147.	1001.03	6.6525E-01
TH-234	20251.	63.29	2.1812E+01
U-235	43107.	185.71	2.9202E+00
NP-237	22728.	86.48	8.4399E+00

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-239	22801.	106.12	4.6455E+00
PU-239	25328.	129.30	1.7602E+04
AM-241	19960.	59.54	2.6822E+00

HNF-SD-WM-DP-262, REV. 0

LABCORE Completed RadChem Report for Worklist#: 20098

Analyst: dpb

Instrument: AB12

Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: AP103, @SR90-01 S.S. by Ludlum. STD: 1.0mL skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		@SR90-01 SR90-01 LIQUID		2.38E-03	2.58E-3	108.403	% Recovery
1 STD	0		@SR90-01 SR90-01C LIQUID		100	8.75E+01	87.500	% Recovery
1 STD	0		@SR90-01 SR90-01E LIQUID		1.00	1.28E+00	1.280	% Ct. Err
2 BLNK	0		@SR90-01 SR90-01 LIQUID		1	1.41E-4	14.100E-005	uCi/mL
2 BLNK	0		@SR90-01 SR90-01C LIQUID		100	8.95E+01	88.500	% Recovery
2 BLNK	0		@SR90-01 SR90-01E LIQUID		1.00	1.52E+02	152.000	uCi/mL
3 BLNK/BKG	0		@SR90-01 SR90-01 LIQUID		1	1.30E+00	1.300	BLNK/BKG
4 SAMPLE	S97T002010	0	@SR90-01 SR90-01 LIQUID	N/A		7.85E-03	306.0E-006	uCi/mL
4 SAMPLE	S97T002010	0	@SR90-01 SR90-01C LIQUID	N/A		8.20E+01	0.0E+000	% Recovery
4 SAMPLE	S97T002010	0	@SR90-01 SR90-01E LIQUID	N/A		8.05E+00	0.0E+000	% Ct. Error
5 DUP	S97T002010	0	@SR90-01 SR90-01 LIQUID		7.85E-3	7.56E-3	3.764	RPD
5 DUP	S97T002010	0	@SR90-01 SR90-01C LIQUID		100	7.98E+01	79.800	% Recovery
5 DUP	S97T002010	0	@SR90-01 SR90-01E LIQUID		1.00	8.34E+00	8.340	% Cnt. Err
6 SAMPLE	S97T002012	0	@SR90-01 SR90-01 LIQUID	N/A		9.77E-03	291.0E-006	uCi/mL
6 SAMPLE	S97T002012	0	@SR90-01 SR90-01C LIQUID	N/A		8.61E+01	0.0E+000	% Recovery
6 SAMPLE	S97T002012	0	@SR90-01 SR90-01E LIQUID	N/A		6.93E+00	0.0E+000	% Ct. Error
7 DUP	S97T002012	0	@SR90-01 SR90-01 LIQUID		9.77E-3	1.04E-2	6.247	RPD
7 DUP	S97T002012	0	@SR90-01 SR90-01C LIQUID		100	8.66E+01	86.600	% Recovery
7 DUP	S97T002012	0	@SR90-01 SR90-01E LIQUID		1.00	6.62E+00	6.620	% Cnt. Err
8 SAMPLE	S97T002014	0	@SR90-01 SR90-01 LIQUID	N/A		7.80E-03	283.0E-006	uCi/mL
8 SAMPLE	S97T002014	0	@SR90-01 SR90-01C LIQUID	N/A		8.63E+01	0.0E+000	% Recovery
8 SAMPLE	S97T002014	0	@SR90-01 SR90-01E LIQUID	N/A		7.72E+00	0.0E+000	% Ct. Error
9 DUP	S97T002014	0	@SR90-01 SR90-01 LIQUID		7.80E-3	7.68E-3	1.550	RPD
9 DUP	S97T002014	0	@SR90-01 SR90-01C LIQUID		100	8.84E+01	88.400	% Recovery
9 DUP	S97T002014	0	@SR90-01 SR90-01E LIQUID		1.00	7.63E+00	7.630	% Cnt. Err

Final page for worklist# 20098

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Reviewer Signature _____ Date 30 Oct 97

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

LABCORE Data Entry Template for Worklist# 20098

Analyst: DPB Instrument: AB00 12 Book# 86 B56

Method: LA-220-101 Rev/Mod _____

Worklist Comment: AP103, @SR90-01 S.S. by Ludlum. STD: 1.0mL skm

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	S97T002010 0		@SR90-01	LIQUID	97000600	AP-103 GRAB1
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E					
5 DUP	S97T002010 0		@SR90-01	LIQUID		
6 SAMPLE	S97T002012 0		@SR90-01	LIQUID	97000600	AP-103 GRAB1
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E					
7 DUP	S97T002012 0		@SR90-01	LIQUID		
8 SAMPLE	S97T002014 0		@SR90-01	LIQUID	97000600	AP-103 GRAB1
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E					
9 DUP	S97T002014 0		@SR90-01	LIQUID		

Final page for worklist # 20098

Analyst Signature

Date

Analyst Signature

Date

Data Entry Comments:

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

WORKBOOK PAGE: STD1

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

				STANDARD	
Type	DETECTOR NUMBER	12	CARRIER ADDED in mL (CVA)	1.000	
STD	TOTAL COUNTS (TC)	23735	GROSS WEIGHT (W2)	7.6047	
Worklist	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT (W1)	7.5172	
20098	BACKGROUND in cpm (BKG)	4.4	NET WEIGHT (W3)	0.0875	
Test Code	SAMPLE VOLUME in mL (SS)	1.000	DELTA TIME (HOURS) (DT)	11.58	
@SR90-01	DILUTION FACTOR (DF)	1			
Matrix	DIGEST DILUTION FACTOR DDF	1			
LIQUID	SAMPLE COUNT RATE (Rs)	2369.10	SR-90 EFFICIENCY FACTO (C1)	0.4180	
Batch Number	CRITICAL LEVEL (Lc)	1.26	Y-90 EFFICIENCY FACTOR (C2)	0.4660	
97004248	TIME OF SEPARATION (ST)	14:15	Rmax	N/A	
Rerun	DATE OF SEPARATION (SD)	09/02/97	DETECTION LIMIT (Ld)	2.62	
0	TIME OF COUNT (TOC)	01:50	Sr-89/90 CONC. in $\mu\text{Ci/L}$	2.5797E+00	
Sample Prep	DATE OF COUNT (DOC)	09/03/97			
N/A	STANDARD BOOK #	86B56			
Sample #	STANDARD VALUE in $\mu\text{Ci/mL}$	2.3830E-03			
WL20098					
Instrument Code					
WB27811	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
Prepared By	Sr-89/90 CONC in $\mu\text{Ci/mL}$ REPLACE RS WITH RMAX IF RS=Lc AND RS>=0 OR REPLACE RS WITH Lc IF RS=0				
SEH	RS*DF*DDF*1000/((C1+C2*(1-e to the power of ((-natural log 2)/(64.2*DT)))*SS*REC*2220000)				
Chemist	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))				
SAC	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)				
Analyst	Percent Carrier Recovery = (Net Weight / Expected weight) * 100				
DPB	NOTE: Expected weight = CVA * 0.1				
Date Complete	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
09/03/97	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
Analysis Date					
09/02/97	Sr-89/90 CONCENTRATION	2.58E-03	$\mu\text{Ci/mL}$	DETECTION LEVEL 2.85E-06 $\mu\text{Ci/L}$	
Analysis Time					
09:00 PM	RELATIVE COUNTING ERROR	1.3%			
Sample Point					
AP-103 GRAB1	PERCENT CARRIER RECOVERY	87.5%			

Analyst:	DPB	Date:	03-Sep-97
Signature of Chemist:	SAC	Date:	3 Sep 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	12	CARRIER ADDED in mL	(CVA)	1.000
BLNK	TOTAL COUNTS (TC)	57	GROSS WEIGHT	(W2)	7.6044
WorkList	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT	(W1)	7.5159
20098	BACKGROUND in cpm (BKG)	4.4	NET WEIGHT	(W3)	0.0885
TestCode	SAMPLE VOLUME in mL (SS)	1.000	DELTA TIME (HOURS)	(DT)	11.75
@SR90-01	DILUTION FACTOR (DF)	101			
Matrix	DIGEST DILUTION FACTOR (DDF)	1			
LIQUID	SAMPLE COUNT RATE (Rs)	1.30	SR-90 EFFICIENCY FACTOR (C1)		0.4180
BatchNumber	CRITICAL LEVEL (Lc)	1.26	Y-90 EFFICIENCY FACTOR (C2)		0.4660
97004248	TIME OF SEPARATION (ST)	14:15	Rmax		N/A
ReRun	DATE OF SEPARATION (SD)	09/02/97	DETECTION LIMIT (Ld)		2.62
0	TIME OF COUNT (TOC)	02:00	Sr-89/90 CONC in µCi/L		1.4113E-01
Sample Prep	DATE OF COUNT (DOC)	09/03/97			
N/A					
Sample #					
WL20098					
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0				
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))**SS*REC*2220000)				
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				
DPB	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
09/03/97					
Analysis Date					
09/02/97	Sr-89/90 CONCENTRATION	1.41E-04	µCi/mL	DETECTION LEVEL	
Analysis Time					
09:00 PM	RELATIVE COUNTING ERROR	151.5%	2.84E-04 µCi/mL		
Sample Point					
AP-103 GRAB1	PERCENT CARRIER RECOVERY	88.5%			

Analyst:	DPB	Date:	03-Sep-97
Signature of Chemist:	SAC	Date:	3 Sep 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		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	715	GROSS WEIGHT	(W2)	7.5960
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.5140
20098	BACKGROUND in cpm	(BKG)	4.4	NET WEIGHT	(W3)	0.0820
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)	11.92
@SR90-01	DILUTION FACTOR	DF	101			
Math	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	67.10	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.26	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
97004248	TIME OF SEPARATION	(ST)	14:15	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	09/02/97	DETECTION LIMIT	(Ld)	2.62
0	TIME OF COUNT	(TOC)	02:10	Sr-89/90 CONC in µCi/L		7.8499E+00
Sample Prep	DATE OF COUNT	(DOC)	09/03/97			
N/A						
Sample #						
S97T002010						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)					
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					
DPB	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
09/03/97						
Analysis Date						DETECTION LEVEL
09/02/97	Sr-89/90 CONCENTRATION	7.85E-03			µCi/mL	
Analysis Time						
09:00 PM	RELATIVE COUNTING ERROR	8.0%			3.06E-04	
Sample Point						µCi/mL
AP-103 GRAB1	PERCENT CARRIER RECOVERY	82.0%				

Analyst:	DPB	Date:	03-Sep-97
Signature of Chemist:	SAC	Date:	03-Sep-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		12	CARRIER ADDED in mL	(CVA) 1.000
DUP	TOTAL COUNTS	(TC)	674	GROSS WEIGHT	(W2) 7.5936
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1) 7.5138
20098	BACKGROUND in cpm	(BKG)	4.4	NET WEIGHT	(W3) 0.0798
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT) 12.08
@SR90-01	DILUTION FACTOR	DF	101		
Matrix	DIGEST DILUTION FACTOR	(DDF)	1		
LIQUID	SAMPLE COUNT RATE	(Rs)	63.00	SR-90 EFFICIENCY FACTOR	(C1) 0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.26	Y-90 EFFICIENCY FACTOR	(C2) 0.4660
97004248	TIME OF SEPARATION	(ST)	14:15	Rmax	N/A
Rerun	DATE OF SEPARATION	(SD)	09/02/97	DETECTION LIMIT	(Ld) 2.62
0	TIME OF COUNT	(TOC)	02:20	Sr-89/90 CONC in µCi/L	7.5616E+00
Sample Prep	DATE OF COUNT	(DOC)	09/03/97		
N/A					
Sample #					
S97T002010					
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0				
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/(64.2*DT))))*SS*REC*2220000)				
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				
DPB	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
Data Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
09/03/97					
Analysis Date					DETECTION LEVEL 3.14E-04 µCi/mL
09/02/97	Sr-89/90 CONCENTRATION	7.56E-03	µCi/mL		
Analysis Time					
09:00 PM	RELATIVE COUNTING ERROR	8.3%			
Sample Point					
AP-103 GRAB1	PERCENT CARRIER RECOVERY	79.8%			

Analyst:	DPB	Date:	03-Sep-97
Signature of Chemist:	SAC	Date:	5 Sep 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		12	CARRIER ADDED in mL	(CVA) 1.000
SAMPLE	TOTAL COUNTS	(TC)	924	GROSS WEIGHT	(W2) 7.5926
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1) 7.5065
20098	BACKGROUND in cpm	(BKG)	4.4	NET WEIGHT	(W3) 0.0861
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT) 12.25
@SR90-01	DILUTION FACTOR	DF	101		
Matrix	DIGEST DILUTION FACTOR	(DDF)	1		
LIQUID	SAMPLE COUNT RATE	(Rs)	88.00	SR-90 EFFICIENCY FACTOR	(C1) 0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.26	Y-90 EFFICIENCY FACTOR	(C2) 0.4660
97004248	TIME OF SEPARATION	(ST)	14:15	Rmax	N/A
ReRun	DATE OF SEPARATION	(SD)	09/02/97	DETECTION LIMIT	(Ld) 2.62
0	TIME OF COUNT	(TOC)	02:30	Sr-89/90 CONC in µCi/L	9.7743E+00
Sample Prep	DATE OF COUNT	(DOC)	09/03/97		
N/A					
Sample #					
S97T002012					
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0				
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT))))*SS*REC*2220000				
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				
DPB	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
09/03/97					
Analysis Date					DETECTION LEVEL
09/02/97	Sr-89/90 CONCENTRATION	9.77E-03	µCi/mL		
Analysis Time					
09:00 PM	RELATIVE COUNTING ERROR	6.9%		2.91E-04	
Sample Point					µCi/mL
AP-103 GRAB1	PERCENT CARRIER RECOVERY	86.1%			

Analyst:	DPB	Date:	03-Sep-97
Signature of Chemist:	SAC	Date:	3 Sept 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		12	CARRIER ADDED in mL	(CVA) 1.000
DUP	TOTAL COUNTS	(TC)	1002	GROSS WEIGHT	(W2) 7.6040
Work Unit	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1) 7.5174
20098	BACKGROUND in cpm	(BKG)	4.4	NET WEIGHT	(W3) 0.0866
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT) 14.08
@SR90-01	DILUTION FACTOR	DF	101		
Matrix	DIGEST DILUTION FACTOR	(DDF)	1		
LIQUID	SAMPLE COUNT RATE	(Rs)	95.80	SR-90 EFFICIENCY FACTOR	(C1) 0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.26	Y-90 EFFICIENCY FACTOR	(C2) 0.4660
97004248	TIME OF SEPARATION	(ST)	14:15	Rmax	N/A
ReRun	DATE OF SEPARATION	(SD)	09/02/97	DETECTION LIMIT	(Ld) 2.62
0	TIME OF COUNT	(TOC)	04:20	Sr-89/90 CONC in µCi/L	1.0404E+01
Sample Prep	DATE OF COUNT	(DOC)	09/03/97		
N/A					
Sample #					
S97T002012					
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0				
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT))) * SS*REC*2220000)				
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				
DPB	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
Date/Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
09/03/97					
Analysis Date					DETECTION LEVEL 2.84E-04 µCi/mL
09/02/97	Sr-89/90 CONCENTRATION	1.04E-02	µCi/mL		
Analysis time					
09:00 PM	RELATIVE COUNTING ERROR	6.6%			
Sample Point					
AP-103 GRAB1	PERCENT CARRIER RECOVERY	86.6%			

Analyst:	DPB	Date:	03-Sep-97
Signature of Chemist:	SAC	Date:	3 Sep 97

SAMPLE.WB1 REV 2.0

22010NML

WORKBOOK PAGE: SAM8

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

					SAMPLE
Sample Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA) 1.000
SAMPLE	TOTAL COUNTS	(TC)	767	GROSS WEIGHT	(W2) 7.5926
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1) 7.5063
20098	BACKGROUND in cpm	(BKG)	4.4	NET WEIGHT	(W3) 0.0863
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT) 15.17
@SR90-01	DILUTION FACTOR	DF	101		
Matrix	DIGEST DILUTION FACTOR	(DDF)	1		
LIQUID	SAMPLE COUNT RATE	(Rs)	72.30	SR-90 EFFICIENCY FACTOR	(C1) 0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.26	Y-90 EFFICIENCY FACTOR	(C2) 0.4660
97004248	TIME OF SEPARATION	(ST)	14:16	Rmax	N/A
Rerun	DATE OF SEPARATION	(SD)	09/02/97	DETECTION LIMIT	(Ld) 2.62
0	TIME OF COUNT	(TOC)	05:25	Sr-89/90 CONC in µCi/L	7.8043E+00
Sample Prep	DATE OF COUNT	(DOC)	09/03/97		
N/A					
Sample #					
S97T002014					
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0				
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT))))*SS*REC*2220000)				
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				
DPB	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
09/03/97					
Analysis Date					DETECTION LEVEL 2.83E-04 µCi/mL
09/02/97	Sr-89/90 CONCENTRATION	7.80E-03	µCi/mL		
Analysis Time					
09:00 PM	RELATIVE COUNTING ERROR	7.7%			
Sample Point					
AP-103 GRAB1	PERCENT CARRIER RECOVERY	86.3%			

Analyst:	DPB	Date:	03-Sep-97
Signature of Chemist:	SAC	Date:	3-Sep-97

SAMPLE.WB1 REV 2.0

22010NML

WORKBOOK PAGE: DUP9

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

					DUP
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA) 1.000
DUP	TOTAL COUNTS	(TC)	783	GROSS WEIGHT	(W2) 7.5621
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1) 7.4737
20098	BACKGROUND in cpm	(BKG)	4.4	NET WEIGHT	(W3) 0.0884
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT) 16.78
@SR90-01	DILUTION FACTOR	DF	101		
Matrix	DIGEST DILUTION FACTOR	(DDF)	1		
LIQUID	SAMPLE COUNT RATE	(Rs)	73.90	SR-90 EFFICIENCY FACTOR	(C1) 0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.26	Y-90 EFFICIENCY FACTOR	(C2) 0.4660
97004248	TIME OF SEPARATION	(ST)	14:15	Rmax	N/A
Rerun	DATE OF SEPARATION	(SD)	09/02/97	DETECTION LIMIT	(Ld) 2.62
0	TIME OF COUNT	(TOC)	07:02	Sr-89/90 CONC in µCi/L	7.6798E+00
Sample Prep	DATE OF COUNT	(DOC)	09/03/97		
N/A					
Sample #					
S97T002014					
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0				
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/(64.2*DT))))*SS*REC*2220000)				
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				
DPB	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
09/03/97					
Analysis Date					
09/02/97	Sr-89/90 CONCENTRATION	7.68E-03	µCi/mL	DETECTION LEVEL 2.72E-04 µCi/mL	
Analysis Time					
09:00 PM	RELATIVE COUNTING ERROR	7.6%			
Sample Point					
AP-103 GRAB1	PERCENT CARRIER RECOVERY	88.4%			

Analyst:	DPB	Date:	03-Sep-97
Signature of Chemist:	SAC	Date:	3 Sept 97

SAMPLE:WB1 REV 2.0

22010NML

LABCORE Completed RadChem Report for Worklist#: 20094

Analyst: rwk

Instrument: AB18

Book# 658 JAR
75B56

Method: LA-953-104 Rev/Mod B-φ

Worklist Comment: AP103, @AM24101 S.S. by Ludlum. STD: 1.0mL skm

Seq Type	Sample#	RA	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	0	@AM24101 AM24101	LIQUID	1.03E-04	1.06E-4	102.513	% Recovery
1 STD	0	0	@AM24101 AM24101T	LIQUID	100.	9.10E+01	91.000	% Recovery
1 STD	0	0	@AM24101 AM24101E	LIQUID	1.0	1.67E+00	1.670	% Ct Error
2 BLNK	0	0	@AM24101 AM24101	LIQUID	1	<7.06E-6		uCi/mL
2 BLNK	0	0	@AM24101 AM24101T	LIQUID	100.0	8.09E+01	80.900	% Recovery
2 BLNK	0	0	@AM24101 AM24101E	LIQUID	1.0	1.00E+02	100.000	% Ct Error
3 SAMPLE	S97T002010	0	@AM24101 AM24101	LIQUID	N/A	<8.05E-06	805.0e-008	uCi/mL
3 SAMPLE	S97T002010	0	@AM24101 AM24101E	LIQUID	N/A	1.00E+02	0.0e+000	% Ct. Error
3 SAMPLE	S97T002010	0	@AM24101 AM24101T	LIQUID	N/A	7.41E+01	0.0e+000	% Recovery
4 DUP	S97T002010	0	@AM24101 AM24101	LIQUID	<8.05E-6	<5.73E-6		RPD
4 DUP	S97T002010	0	@AM24101 AM24101T	LIQUID	100.0	8.84E+01	88.400	% Recovery
4 DUP	S97T002010	0	@AM24101 AM24101E	LIQUID	1.0	1.00E+02	100.000	% Ct Error
5 SAMPLE	S97T002012	0	@AM24101 AM24101	LIQUID	N/A	<7.39E-06	739.0e-008	uCi/mL
5 SAMPLE	S97T002012	0	@AM24101 AM24101E	LIQUID	N/A	1.00E+02	0.0e+000	% Ct. Error
5 SAMPLE	S97T002012	0	@AM24101 AM24101T	LIQUID	N/A	7.79E+01	0.0e+000	% Recovery
6 DUP	S97T002012	0	@AM24101 AM24101	LIQUID	<7.39E-6	<7.69E-6		RPD
6 DUP	S97T002012	0	@AM24101 AM24101T	LIQUID	100.0	7.37E+01	73.700	% Recovery
6 DUP	S97T002012	0	@AM24101 AM24101E	LIQUID	1.0	1.00E+02	100.000	% Ct Error
7 SAMPLE	S97T002014	0	@AM24101 AM24101	LIQUID	N/A	<7.90E-06	790.0e-008	uCi/mL
7 SAMPLE	S97T002014	0	@AM24101 AM24101E	LIQUID	N/A	1.00E+02	0.0e+000	% Ct. Error
7 SAMPLE	S97T002014	0	@AM24101 AM24101T	LIQUID	N/A	7.47E+01	0.0e+000	% Recovery
8 DUP	S97T002014	0	@AM24101 AM24101	LIQUID	<7.90E-6	<6.47E-6		RPD
8 DUP	S97T002014	0	@AM24101 AM24101T	LIQUID	100.0	8.31E+01	83.100	% Recovery
8 DUP	S97T002014	0	@AM24101 AM24101E	LIQUID	1.0	1.00E+02	100.000	% Ct Error

Final page for worklist# 20094

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

Date

Validated

LABCORE Data Entry Template for Worklist# 20094

Analyst: KK Instrument: AM01 18 Book# 75456

Method: LA-953-104 Rev/Mod B-D

Worklist Comment: AP103, @AM24101 S.S. by Ludlum. STD: 1.0mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@AM24101	LIQUID		
2 BLNK			@AM24101	LIQUID		
3 SAMPLE	S97T002010 0		@AM24101	LIQUID	97000600	AP-103 GRAB1
	Analytes Requested: AM24101 , AM24101E, AM24101T					
4 DUP	S97T002010 0		@AM24101	LIQUID		
5 SAMPLE	S97T002012 0		@AM24101	LIQUID	97000600	AP-103 GRAB1
	Analytes Requested: AM24101 , AM24101E, AM24101T					
6 DUP	S97T002012 0		@AM24101	LIQUID		
7 SAMPLE	S97T002014 0		@AM24101	LIQUID	97000600	AP-103 GRAB1
	Analytes Requested: AM24101 , AM24101E, AM24101T					
8 DUP	S97T002014 0		@AM24101	LIQUID		

Final page for worklist # 20094

Nob Kinn 8/31/97
Analyst Signature Date

Lue E. Kinn 9-2-97
Analyst Signature Date
Sylvia Z. Kinn 9-3-97

Data Entry Comments:

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

WORKBOOK PAGE: STD1

Am 241 and Cm 243/244: LA-953-103 (B-0) or LA-953-104(B-0)

LIQUID

STD

Type	Date Counted	AUG-31-97	Am 241 AEA Frac. (C241)	0.479
STD	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.441
WorkList	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
20094	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	3619
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	134B43	Background in cpm (Bkg)	0.2
Matrix	Am-243 Tracer Value (dpm/mL)	1087	Am 241 cpm	47.77
LIQUID	Detector Number	18	Am 243 cpm	43.91
Batch Number	Detector Efficiency (DetEff)	0.2686	Cm 243/244 cpm	0
97004244	Standard Book No	75B56	AEA Count Time (min)	480
ReRun	Standard Value in $\mu\text{Ci/mL}$	1.030E-04	Am 241 $\mu\text{Ci/L}$ =	1.0637E-01
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 1.2207E-02

Sample Prep	N/A
Sample Number	WL20094
Instrument Code	WB27809
Prepared By	SEH
Chemist	JFR
Analyst	RWK
Data Complete	09/02/97
Analysis Date	08/31/97
Analysis Time	04:40 AM
Sample Point	AP-103 GRAB1

Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))
 Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))
 Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100
 Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

JFR	Am 241 $\mu\text{Ci/mL}$ =	1.06E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$
Analyst	Relative Counting Error =	1.9%	
RWK			Am 241
Data Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.		1.22E-05
09/02/97	Cm 243/244 $\mu\text{Ci/mL}$	< 1.22E-05	Cm 243/244
Analysis Date	Relative Counting Error =	100.0%	1.22E-05
08/31/97	Am 243 Tracer Recovery =	91.0%	

Analyst:	RWK	Date:	09/02/97
Signature of Chemist:	JFR	Date:	4 Sept 97
STANDARD.WB1 REV 1.2	953103ML		

WORKBOOK PAGE: BLANK2

Am 241 and Cm 243/244: LA-953-103 (B-0) or LA-953-104(B-0)

LIQUID / SOLI

BLNK

Type	Date Counted	AUG-31-97	Am 241 AEA Frac. (C241)	0
BLNK	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.858
WorkList	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
20094	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1657
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	134B43	Background in cpm (Bkg)	0.2
Main	Am-243 Tracer Value (dpm/mL)	1087	Am 241 cpm	0
LIQUID	Detector Number	18	Am 243 cpm	42.51
Batch Number	Detector Efficiency (DetEff)	0.2686	Cm 243/244 cpm	0
97004244			AEA Count Time (min)	480
Rerun			Am 241 $\mu\text{Ci/L}$ =	< 7.0574E-03
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 7.0574E-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))			
WL 20094	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			
WB27809	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 $\mu\text{Ci/mL}$ =	< 7.06E-06	DETECTION LEVELS in $\mu\text{Ci/mL}$	
Chemist	Relative Counting Error =	100.0%		
RWK				
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			
09/02/97	Cm 243/244 $\mu\text{Ci/mL}$	< 7.06E-06	Am 241	
Analysis Date	Relative Counting Error =	100.0%	Cm 243/244	
08/31/97	Am 243 Tracer Recovery =	80.9%	7.06E-06	
Analysis time				
04:40 AM				
Sample Point				
AP-103 GRAB1				

Analyst:	RWK	Date:	09/02/97
Signature of Chemist:	JFR	Date:	4 Sept 97
BLANK.WB1 REV 1.2	953103ML		

WORKBOOK PAGE: SAM3

Am 241 and Cm 243/244: LA-953-103 (B-0) or LA-953-104(B-0)

LIQUID / SOLI

SAMPLE

Type	Date Counted	AUG-31-97	Am 241 AEA Frac. (C241)	0
SAMPLE	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.82
WorkList	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
20094	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1590
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	134B43	Background in cpm (Bkg)	0.2
Matrix	Am-243 Tracer Value (dpm/mL)	1087	Am 241 cpm	0
LIQUID	Detector Number	18	Am 243 cpm	42.45
Batch Number	Detector Efficiency (DetEff)	0.2686	Cm 243/244 cpm	0
97004244			AEA Count Time (min)	480
Rerun			Am 241 $\mu\text{Ci/L}$ =	< 8.0534E-03
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 8.0534E-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))			
S97T002010	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			
WB27809	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	JFR	Am 241 $\mu\text{Ci/mL}$ =	< 8.05E-06	DETECTION LEVELS in $\mu\text{Ci/mL}$
Chemist		Relative Counting Error =	100.0%	
Analyst	RWK			
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			
09/02/97		Cm 243/244 $\mu\text{Ci/mL}$	< 8.05E-06	Am 241
Analysis Date		Relative Counting Error =	100.0%	8.05E-06
08/31/97		Am 243 Tracer Recovery =	74.1%	Cm 243/244
Analysis Time				8.05E-06
04:40 AM				
Sample Point				
AP-103 GRAB1				

Analyst:	RWK	Date:	09/02/97
Signature of Chemist:	JFR	Date:	4 Sept 97
SAMPLE.WB1 REV 1.2	953103ML		

WORKBOOK PAGE: DUP4

Am 241 and Cm 243/244: LA-953-103 (B-0) or LA-953-104(B-0)**LIQUID / SOLI****DUP**

Type	Date Counted	AUG-31-97	Am 241 AEA Frac. (C241)	0
DUP	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.966
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
20094	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1609
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	134B43	Background in cpm (Bkg)	0.2
Matrix	Am-243 Tracer Value (dpm/mL)	1087	Am 241 cpm	0
LIQUID	Detector Number	18	Am 243 cpm	45.18
Batch Number	Detector Efficiency (DetEff)	0.2686	Cm 243/244 cpm	0
97004244			AEA Count Time (min)	480
Rerun			Am 241 $\mu\text{Ci/L}$ =	< 5.7342E-03
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 5.7342E-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))			
S977002010	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			
WB27809	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 $\mu\text{Ci/mL}$ =	< 5.73E-06	DETECTION LEVELS in $\mu\text{Ci/mL}$	
Analyst	Relative Counting Error =	100.0%		
RWK				
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			
09/02/97	Cm 243/244 $\mu\text{Ci/mL}$	< 5.73E-06	Am 241	
Analysis Date	Relative Counting Error =	100.0%	5.73E-06	
08/31/97	Am 243 Tracer Recovery =	88.4%	Cm 243/244	
Analysis Time			5.73E-06	
04:40 AM				
Sample Point				
AP-103 GRAB1				

Analyst:	RWK	Date:	09/02/97
Signature of Chemist:	JFR	Date:	4 Sept 97
SAMPLE WB1 REV 1.2	953103ML		

WORKBOOK PAGE: SAM5

Am 241 and Cm 243/244: LA-953-103 (B-0) or LA-953-104(B-0))

LIQUID / SOLI

		LIQUID / SOLI		SAMPLE
Type	Date Counted	AUG-31-97	Am 241 AEA Frac. (C241)	0
SAMPLE	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.851
WorkList	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
20094	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1609
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	134B43	Background in cpm (Bkg)	0.2
Matrix	Am-243 Tracer Value (dpm/mL)	1087	Am 241 cpm	0
LIQUID	Detector Number	18	Am 243 cpm	41.04
Batch Number	Detector Efficiency (DetEff)	0.2686	Cm 243/244 cpm	0
97004244			AEA Count Time (min)	480
RefUnit			Am 241 $\mu\text{Ci/L}$ =	< 7.3887E-03
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 7.3887E-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))			
S97T002012	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
Instrument Code	WB27809			
Prepared By	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100			
SEH	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV			
Chemist	NOTE: Am-241 Result is a LESS THAN Value.			
JFR	Am 241 $\mu\text{Ci/mL}$ =	< 7.39E-06	DETECTION LEVELS in $\mu\text{Ci/mL}$	
Analyst	Relative Counting Error =	100.0%		
RWK			Am 241	
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			
09/02/97	Cm 243/244 $\mu\text{Ci/mL}$	< 7.39E-06	7.39E-06	
Analysis Date	Relative Counting Error =	100.0%	Cm 243/244	
08/31/97	Am 243 Tracer Recovery =	77.9%	7.39E-06	
Analysis Time				
04:40 AM				
Sample Point				
AP-103 GRAB1				

Analyst:	RWK	Date:	09/02/97
Signature of Chemist:	JFR	Date:	4 Sept 97
SAMPLE.WB1 REV 1.2 953103ML			

WORKBOOK PAGE: DUP6

Am 241 and Cm 243/244: LA-953-103 (B-0) or LA-953-104(B-0)

LIQUID / SOLI

DUP

Type	Date Counted	AUG-31-97	Am 241 AEA Frac. (C241)	0
DUP	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.864
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
20094	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1501
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	134B43	Background in cpm (Bkg)	0.2
Matrix	Am-243 Tracer Value (dpm/mL)	1087	Am 241 cpm	0
LIQUID	Detector Number	18	Am 243 cpm	43.04
Batch Number	Detector Efficiency (DetEff)	0.2686	Cm 243/244 cpm	0
97004244			AEA Count Time (min)	480
Rerun			Am 241 µCi/L =	< 7.6859E-03
0			Cm 243/244 µCi/L =	< 7.6859E-03
Sample Prep				
N/A				
Sample Number	Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))			
S97T002012	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			
WB27809	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 =	< 7.69E-06	DETECTION LEVELS in µCi/mL	
Chemist	Relative Counting Error =	100.0%		
Analyst				
RWK	NOTE: Cm-243/244 Result is a LESS THAN Value.			
Date Complete	Cm 243/244 µCi/mL	< 7.69E-06	Am 241	
09/02/97	Relative Counting Error =	100.0%	7.69E-06	
Analysis Date	Am 243 Tracer Recovery =	73.7%	Cm 243/244	
08/31/97			7.69E-06	
Analysis Time				
04:40 AM				
Sample Point				
AP-103 GRAB1				

Analyst:	RWK	Date:	09/02/97
Signature of Chemist:	JFR	Date:	4 Sept 97

SAMPLE.WB1 REV 1.2

953103

WORKBOOK PAGE: SAM7

Am 241 and Cm 243/244: LA-953-103 (B-0) or LA-953-104(B-0)

LIQUID / SOLI

SAMPLE

Type	Date Counted	AUG-31-97	Am 241 AEA Frac. (C241)	0
SAMPLE	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.83
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
20094	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1582
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	134B43	Background in cpm (Bkg)	0.2
Matrix	Am-243 Tracer Value (dpm/mL)	1087	Am 241 cpm	0
LIQUID	Detector Number	18	Am 243 cpm	39.8
Batch Number	Detector Efficiency (DetEff)	0.2686	Cm 243/244 cpm	0
97004244			AEA Count Time (min)	480
Rerun			Am 241 $\mu\text{Ci/L}$ =	< 7.9004E-03
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 7.9004E-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))			
S97T002014	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			
WB27809				
Prepared By	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV			
SEH				
Chemist	NOTE: Am-241 Result is a LESS THAN Value.			
JFR	Am 241 $\mu\text{Ci/mL}$ = < 7.90E-06		DETECTION LEVELS in $\mu\text{Ci/mL}$	
Analyst	Relative Counting Error = 100.0%		Am 241	
RWK			7.90E-06	
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.		Cm 243/244	
09/02/97	Cm 243/244 $\mu\text{Ci/mL}$ = < 7.90E-06		7.90E-06	
Analysis Date	Relative Counting Error = 100.0%			
08/31/97	Am 243 Tracer Recovery = 74.7%			
Analysis Time				
04:40 AM				
Sample Point				
AP-103 GRAB1				

Analyst:	RWK	Date:	09/02/97
Signature of Chemist:	JFR	Date:	4 Sept 97

SAMPLE.WB1 REV 1.2

953103ML

WORKBOOK PAGE: DUP8

Am 241 and Cm 243/244: LA-953-103 (B-0) or LA-953-104(B-0)

LIQUID / SOLI

DUP

Type	Date Counted	AUG-31-97	Am 241 AEA Frac. (C241)	0
DUP	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.91
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
20094	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1606
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	134B43	Background in cpm (Bkg)	0.2
Matrix	Am-243 Tracer Value (dpm/mL)	1087	Am 241 cpm	0
LIQUID	Detector Number	18	Am 243 cpm	46.82
Batch Number	Detector Efficiency (DetEff)	0.2686	Cm 243/244 cpm	0
97004244			AEA Count Time (min)	480
Rein			Am 241 $\mu\text{Ci/L}$ =	< 6.4738E-03
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 6.4738E-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))			
S97T002014	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			
WB27809	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 $\mu\text{Ci/mL}$ =	< 6.47E-06	DETECTION LEVELS	
Analyst	Relative Counting Error =	100.0%	in $\mu\text{Ci/mL}$	
RWK			Am 241	
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.		6.47E-06	
09/02/97	Cm 243/244 $\mu\text{Ci/mL}$	< 6.47E-06	Cm 243/244	
Analysis Date	Relative Counting Error =	100.0%	6.47E-06	
08/31/97	Am 243 Tracer Recovery =	83.1%		
Analysis Time				
04:40 AM				
Sample Point				
AP-103 GRAB1				

Analyst:	RWK	Date:	09/02/97
Signature of Chemist:	JFR	Date:	4 Sept 97
SAMPLE.WB1 REV 1.2	953103ML		

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 WL20094-STD
 File ID: 21a2164.CNF

Counted on: 8/31/97 @11:10
 Detector: AEA21
 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	934.2	934.2	595.056	595.056	24.000	14.265	12.000	2.963
2	848.7	848.7	504.392	504.119	24.000	11.637	12.000	2.277
3	28.9	28.9	342.311	339.674	112.000	402.254	56.000	134.147
4	12.4	12.4	268.953	267.630	28.000	10.479	14.000	0.832
5?	7.5	7.5	210.145	209.194	24.000	24.496	12.000	1.647

PEAK RESULTS

Peak Error Limit: 30%

Peak ID Isotope	AEA		Peak Centroid			Count %err		d/m	Activity uCi/ea
	Frac	Exp.	Obs.	Diff.	FWHM	Rate	c/m @95		
1 Th228	0.479	5.400	5.446	-.046	0.03	47.77	1.3	283.2	0.128E-03
2	0.441		5.237		0.03	43.91	1.4	184.8	0.832E-04
3 Np237	0.041	4.769	4.859	-.090	0.93	4.07	14.1	19.7	0.887E-05
Pu242		4.891	4.859	0.032				17.1	0.772E-05
4	0.013		4.693		0.02	1.25	10.7	5.3	0.238E-05
5	????		4.558			0.86	14.8		
Totals:	0.974	<--valid peaks only-->				97.01			

DETECTOR CALIBRATION

Energy(MEV) = 4.077 + (0.0023)*Channel
 Energy range (MeV): 4.077 TO 6.433
 Efficiency = 0.2376 CPM/DPM
 (Data reduction compression factor: 2.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	47833.0	100.000
Smoothed	47833.8	100.002
Composite fit	46977.3	98.211
Residuals	855.7	1.789

Analyzed by: _____

MB

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Raw Data Dump for AEA Spectrum: 21a2164.CNF									
1	0.	0.	3.	2.	6.	10.	8.	6.	5.
11	10.	7.	5.	2.	5.	9.	9.	11.	8.
21	7.	4.	8.	12.	9.	8.	4.	11.	8.
31	6.	8.	6.	11.	8.	4.	8.	7.	6.
41	5.	7.	8.	10.	5.	8.	8.	4.	8.
51	8.	9.	9.	9.	5.	10.	7.	11.	8.
61	8.	6.	10.	12.	10.	10.	8.	15.	9.
71	4.	10.	11.	17.	8.	9.	9.	9.	12.
81	16.	6.	13.	4.	10.	10.	13.	11.	11.
91	5.	19.	11.	17.	8.	19.	5.	14.	9.
101	17.	12.	13.	18.	18.	18.	14.	13.	13.
111	19.	16.	14.	15.	13.	21.	16.	13.	18.
121	22.	16.	17.	21.	20.	15.	22.	16.	17.
131	27.	19.	26.	29.	31.	26.	15.	25.	27.
141	22.	18.	24.	21.	24.	14.	28.	24.	23.
151	35.	27.	25.	26.	23.	31.	32.	32.	24.
161	40.	31.	32.	37.	33.	38.	41.	37.	40.
171	46.	41.	35.	40.	37.	34.	44.	45.	40.
181	53.	52.	56.	44.	51.	65.	61.	58.	51.
191	66.	54.	58.	57.	68.	58.	71.	64.	84.
201	82.	96.	94.	99.	97.	94.	114.	101.	97.
211	98.	103.	115.	161.	125.	133.	136.	172.	164.
221	167.	191.	166.	207.	255.	242.	240.	218.	258.
231	319.	306.	327.	363.	344.	399.	443.	452.	476.
241	609.	641.	624.	676.	720.	763.	771.	837.	900.
251	938.	953.	1008.	939.	858.	616.	392.	251.	222.
261	179.	197.	187.	175.	212.	190.	209.	163.	218.
271	194.	208.	246.	223.	269.	267.	275.	305.	350.
281	384.	413.	434.	458.	509.	545.	601.	607.	649.
291	750.	775.	887.	842.	925.	913.	929.	1010.	989.
301	692.	480.	312.	217.	178.	151.	126.	104.	85.
311	45.	33.	11.	9.	3.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	1.	0.	0.	0.	0.	0.	0.
341	2.	0.	3.	2.	2.	3.	0.	0.	0.
351	1.	0.	2.	0.	1.	0.	0.	1.	2.
361	0.	0.	1.	0.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	1.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	1.	0.	0.	1.	0.
441	1.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	1.	1.	1.	1.	0.	1.	3.	0.	1.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.							

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 WL20094-BLNK
 File ID: 22a2258.CNF

Counted on: 8/31/97 @11:10
 Detector: AEA22
 Geometry number: 1
 Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	666.6	666.6	503.058	503.780	32.000	16.308	16.000	2.551
2	8.3	8.3	82.566	82.566	700.000	2.000	350.000	0.200

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	Am243	0.858	5.266	5.243	0.0230.04	42.51	1.4	177.2	0.798E-04
2		????		4.274		0.45	13.4		
Totals:		0.858	<--valid peaks only-->			42.51			

DETECTOR CALIBRATION

Energy(MEV) = 4.084 + (0.0023)*Channel
 Energy range (MeV): 4.084 TO 6.440
 Efficiency = 0.2423 CPM/DPM
 (Data reduction compression factor: 2.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	23780.0	100.000
Smoothed	23781.9	100.008
Composite fit	20621.7	86.719
Residuals	3158.3	13.281

Analyzed by: _____
 MB

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 4907.8

2
2
2
2
2[illegible]

Raw	Data	Dump	for	AEA	Spectrum:	22a2258.CNF				
1	0.	0.	2.	4.	5.	3.	7.	9.	6.	7.
11	8.	4.	5.	6.	4.	5.	7.	4.	6.	4.
21	4.	4.	7.	3.	6.	8.	9.	6.	10.	4.
31	6.	5.	10.	7.	8.	10.	4.	6.	12.	4.
41	8.	9.	7.	13.	5.	3.	5.	6.	9.	7.
51	7.	8.	9.	9.	8.	9.	9.	12.	5.	8.
61	11.	14.	21.	8.	7.	13.	8.	12.	10.	8.
71	14.	14.	8.	14.	12.	8.	12.	16.	11.	10.
81	10.	8.	7.	14.	21.	14.	9.	6.	17.	14.
91	10.	11.	13.	13.	15.	12.	9.	15.	16.	9.
101	17.	20.	9.	14.	16.	13.	16.	21.	14.	25.
111	18.	13.	20.	17.	23.	21.	13.	16.	13.	16.
121	27.	22.	28.	24.	15.	19.	15.	22.	23.	18.
131	23.	25.	21.	30.	25.	32.	36.	15.	27.	31.
141	24.	25.	26.	36.	27.	31.	35.	35.	34.	31.
151	29.	32.	30.	30.	24.	33.	36.	29.	38.	44.
161	28.	30.	41.	29.	46.	40.	50.	47.	51.	49.
171	51.	46.	55.	50.	49.	65.	67.	56.	67.	48.
181	46.	55.	72.	53.	61.	73.	68.	76.	83.	83.
191	81.	97.	73.	88.	97.	79.	102.	89.	77.	91.
201	117.	109.	98.	100.	117.	121.	127.	110.	157.	129.
211	142.	140.	138.	167.	147.	142.	178.	157.	175.	195.
221	202.	196.	203.	202.	216.	249.	238.	221.	247.	272.
231	273.	270.	293.	338.	353.	338.	383.	423.	391.	427.
241	435.	464.	511.	562.	528.	593.	596.	609.	626.	706.
251	687.	686.	684.	716.	606.	387.	246.	130.	88.	69.
261	59.	48.	57.	53.	58.	43.	32.	18.	22.	12.
271	11.	4.	3.	2.	0.	1.	3.	3.	2.	0.
281	1.	0.	3.	0.	3.	1.	4.	4.	0.	5.
291	1.	4.	2.	5.	5.	3.	8.	5.	8.	3.
301	2.	3.	1.	4.	0.	1.	0.	2.	0.	2.
311	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	2.	0.	0.	0.	0.	0.	0.	2.
341	1.	0.	0.	0.	1.	2.	2.	0.	1.	0.
351	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
361	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
431	0.	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.	1.
461	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
471	0.	0.	1.	2.	0.	1.	1.	0.	1.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
 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. 2.10

DATA REDUCTION REPORT

SAMPLE
 S97T2010-SAM
 File ID: 23a2357.CNF

Counted on: 8/31/97 @11:10
 Detector: AEA23
 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	687.1	687.1	505.919	505.919	28.000	12.807	14.000	2.007
2	21.9	21.9	232.109	231.221	384.000	2.000	192.000	0.200
3?	3.9	3.9	194.080	192.537	12.000	1.768	6.000	0.766
4	7.4	7.4	108.057	107.565	24.000	41.677	12.000	1.477

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Exp.	Obs.	Diff.	FWHM	Count Rate	%err c/m @95	d/m	Activity uCi/ea
1	Am243	0.820	5.266	5.248	0.018	0.03	42.45	1.4	167.6	0.755E-04
2		0.033		4.616		0.00	1.69	7.1	6.6	0.298E-05
3		????		4.527			0.09	113.		
4	U 238	0.015	4.184	4.332	-0.148	0.10	0.79	13.3	4.0	0.181E-05
	U 235		4.386	4.332	0.054				5.4	0.245E-05

Totals: 0.869 <--valid peaks only--> 44.94

DETECTOR CALIBRATION

Energy(MEV) = 4.084 + (0.0023)*Channel
 Energy range (MeV): 4.084 TO 6.440
 Efficiency = 0.2558 CPM/DPM
 (Data reduction compression factor: 2.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	24839.0	100.000
Smoothed	24843.5	100.018
Composite fit	21614.9	87.020
Residuals	3224.1	12.980

Analyzed by:

MB

[illegible]

Raw	Data	Dump	for	AEA	Spectrum:	23a2357.CNF	HNF-SD-WM-DP-262, REV. 0			
1	0.	0.	5.	5.	7.	11.	1.	3.	7.	3.
11	4.	8.	6.	11.	8.	6.	6.	6.	9.	5.
21	5.	4.	6.	7.	8.	6.	6.	17.	9.	9.
31	11.	8.	7.	13.	8.	10.	8.	5.	5.	7.
41	15.	9.	4.	12.	9.	10.	14.	8.	10.	13.
51	9.	7.	12.	13.	14.	9.	9.	7.	6.	8.
61	10.	14.	7.	4.	12.	9.	12.	12.	10.	10.
71	13.	12.	13.	15.	12.	10.	18.	13.	22.	11.
81	14.	6.	12.	10.	20.	11.	9.	14.	11.	10.
91	14.	19.	12.	15.	17.	17.	22.	16.	20.	12.
101	9.	12.	17.	16.	22.	30.	14.	21.	13.	17.
111	19.	18.	17.	25.	22.	17.	22.	22.	19.	21.
121	12.	22.	16.	37.	22.	17.	18.	20.	31.	25.
131	19.	29.	40.	28.	31.	19.	28.	29.	34.	28.
141	30.	32.	41.	27.	22.	33.	31.	46.	25.	35.
151	36.	31.	42.	39.	31.	35.	41.	41.	50.	39.
161	49.	42.	43.	43.	53.	40.	59.	54.	46.	53.
171	55.	53.	57.	56.	49.	56.	65.	66.	63.	71.
181	47.	76.	55.	79.	60.	81.	79.	78.	88.	77.
191	85.	88.	80.	86.	78.	103.	102.	87.	85.	109.
201	83.	117.	120.	115.	113.	108.	131.	128.	118.	128.
211	154.	147.	151.	162.	146.	160.	192.	186.	168.	178.
221	173.	203.	180.	234.	190.	242.	236.	236.	256.	268.
231	290.	281.	323.	305.	316.	334.	355.	399.	409.	434.
241	412.	448.	514.	471.	540.	560.	565.	602.	605.	635.
251	680.	694.	745.	718.	682.	600.	465.	242.	140.	80.
261	81.	79.	52.	71.	37.	36.	39.	30.	25.	27.
271	17.	12.	13.	5.	2.	3.	3.	4.	5.	2.
281	4.	3.	7.	5.	3.	6.	2.	3.	5.	8.
291	5.	4.	2.	7.	8.	10.	10.	11.	7.	4.
301	5.	4.	3.	4.	4.	0.	1.	1.	1.	0.
311	0.	1.	1.	1.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	1.	0.	0.	0.	0.	0.	0.	1.	0.	0.
341	1.	0.	0.	1.	1.	1.	0.	0.	1.	1.
351	0.	0.	1.	0.	1.	0.	1.	0.	1.	1.
361	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
371	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	2.	1.	0.
481	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S97T2010-DUP
 File ID: 24a2453.CNF

Counted on: 8/31/97 @11:11
 Detector: AEA24
 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	569.0	569.0	504.049	504.049	20.000	10.392	10.000	1.162
2	11.3	11.3	230.827	230.365	68.000	212.299	34.000	73.398
3?	4.2	4.2	197.555	197.555	20.000	0.014	10.000	0.001

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	Am243	0.966	5.266	5.245	0.0210.02	45.18	1.3	183.8	0.828E-04
2	Np237	0.025	4.640	4.615	0.0250.49	1.16	16.9	78.0	0.351E-04
3		????		4.540		0.35	25.2		
Totals:		0.991	<--valid peaks only-->			46.34			

DETECTOR CALIBRATION

Energy(MEV) = 4.085 + (0.0023)*Channel
 Energy range (MeV): 4.085 TO 6.441
 Efficiency = 0.2483 CPM/DPM
 (Data reduction compression factor: 2.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	22449.0	100.000
Smoothed	22452.0	100.014
Composite fit	22410.7	99.829
Residuals	38.3	0.171

Analyzed by:

MB

[illegible]

Raw Data Dump for AEA Spectrum: 24a2453.CNF									
1	0.	0.	5.	4.	3.	3.	6.	7.	5.
11	5.	5.	9.	1.	5.	4.	6.	5.	8.
21	7.	1.	5.	10.	8.	8.	4.	8.	8.
31	8.	6.	11.	8.	6.	6.	2.	8.	9.
41	3.	8.	5.	4.	8.	7.	5.	9.	9.
51	12.	8.	4.	8.	9.	11.	5.	14.	12.
61	10.	7.	9.	10.	9.	6.	12.	4.	9.
71	9.	8.	12.	10.	8.	8.	8.	7.	13.
81	9.	4.	14.	9.	11.	9.	9.	6.	8.
91	14.	15.	18.	11.	14.	13.	11.	19.	14.
101	11.	15.	10.	11.	15.	21.	8.	14.	10.
111	12.	21.	8.	22.	22.	27.	15.	13.	16.
121	18.	18.	14.	20.	19.	18.	26.	18.	20.
131	17.	15.	21.	18.	22.	18.	31.	18.	33.
141	30.	24.	22.	23.	27.	26.	26.	27.	28.
151	25.	34.	27.	32.	35.	29.	35.	33.	41.
161	35.	43.	38.	29.	41.	36.	35.	42.	48.
171	49.	57.	50.	65.	49.	68.	48.	57.	50.
181	58.	71.	67.	62.	66.	77.	65.	73.	81.
191	70.	83.	81.	84.	88.	98.	93.	94.	81.
201	119.	104.	103.	118.	120.	125.	121.	124.	131.
211	158.	183.	163.	165.	138.	164.	170.	199.	213.
221	228.	218.	228.	224.	218.	242.	267.	267.	266.
231	274.	338.	319.	333.	317.	382.	375.	349.	430.
241	428.	408.	499.	461.	501.	492.	509.	532.	542.
251	582.	588.	637.	590.	451.	282.	151.	93.	48.
261	49.	40.	33.	35.	40.	20.	36.	14.	15.
271	6.	2.	3.	3.	1.	3.	6.	8.	6.
281	4.	2.	4.	5.	6.	5.	9.	10.	4.
291	4.	13.	10.	10.	8.	7.	8.	7.	14.
301	3.	2.	4.	4.	4.	0.	2.	2.	0.
311	0.	0.	0.	0.	0.	1.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	1.
331	0.	0.	0.	0.	0.	1.	2.	0.	1.
341	0.	2.	0.	0.	1.	0.	0.	0.	0.
351	0.	0.	0.	0.	0.	1.	1.	0.	1.
361	2.	0.	0.	1.	0.	1.	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.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	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.	0.
471	1.	0.	0.	0.	0.	0.	0.	0.	0.
481	1.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.							

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S97T002012-SAM-A
 File ID: 13a1325.CNF

Counted on: 8/31/97 @19:58
 Detector: AEA13
 Geometry number: 1
 Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	767.3	767.3	255.297	255.297	14.000	6.070	7.000	1.144
2	15.6	15.6	117.234	117.109	208.000	1.000	104.000	0.100
3?	3.5	3.5	93.516	93.005	4.000	0.539	2.000	0.855
4?	4.5	4.5	78.620	78.080	6.000	3.091	3.000	0.442

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Exp.	Peak Centroid Obs.	Diff.	FWHM	Count Rate	%err c/m @95	d/m	Activity uCi/ea
1	Am243	0.851	5.266	5.250	0.0160.03	41.04	1.4	179.2	0.807E-04	
2		0.025		4.614	0.00	1.21	8.3	5.2	0.235E-05	
3		????		4.503		0.03	228.			
4		????		4.434		0.27	29.4			
Totals:		0.876	<--valid peaks only-->				42.25			

DETECTOR CALIBRATION

Energy(MEV) = 4.075 + (0.0046)*Channel
 Energy range (MeV): 4.075 TO 6.431
 Efficiency = 0.2313 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	23148.0	100.000
Smoothed	23153.9	100.025
Composite fit	20424.1	88.233
Residuals	2723.9	11.767

Analyzed by: _____

VR

208

Raw Data Dump for AEA Spectrum: 13a1325.CNF									
1	0.	0.	6.	0.	6.	1.	3.	3.	4.
11	9.	4.	3.	4.	3.	5.	6.	5.	3.
21	3.	5.	3.	4.	5.	6.	3.	4.	6.
31	3.	3.	9.	5.	3.	1.	2.	6.	11.
41	5.	3.	3.	12.	7.	6.	3.	5.	3.
51	6.	8.	6.	8.	5.	4.	11.	7.	7.
61	12.	4.	4.	7.	7.	8.	8.	5.	10.
71	8.	9.	6.	12.	1.	12.	9.	6.	14.
81	5.	8.	7.	9.	6.	9.	8.	6.	6.
91	12.	11.	8.	19.	9.	8.	8.	8.	7.
101	5.	11.	11.	14.	15.	11.	9.	11.	20.
111	8.	7.	9.	13.	16.	10.	24.	16.	9.
121	15.	10.	11.	13.	12.	15.	16.	10.	8.
131	12.	25.	17.	18.	14.	21.	15.	14.	23.
141	19.	19.	14.	21.	16.	19.	16.	21.	27.
151	30.	34.	30.	19.	16.	25.	25.	20.	19.
161	24.	25.	28.	35.	30.	28.	30.	26.	39.
171	43.	36.	28.	30.	34.	39.	34.	55.	42.
181	52.	42.	36.	44.	45.	60.	58.	67.	46.
191	46.	65.	64.	71.	73.	57.	67.	73.	77.
201	70.	77.	74.	68.	66.	86.	78.	115.	90.
211	112.	104.	114.	109.	117.	127.	116.	123.	153.
221	125.	135.	149.	150.	154.	152.	187.	212.	209.
231	233.	230.	242.	258.	295.	295.	308.	316.	327.
241	372.	380.	446.	472.	547.	562.	529.	615.	624.
251	677.	706.	713.	794.	850.	768.	794.	767.	531.
261	160.	111.	78.	58.	64.	61.	46.	57.	54.
271	36.	24.	16.	16.	7.	3.	2.	0.	3.
281	3.	2.	8.	2.	1.	1.	1.	0.	8.
291	3.	6.	3.	4.	5.	3.	2.	6.	4.
301	6.	3.	7.	2.	4.	1.	3.	1.	0.
311	1.	1.	0.	1.	0.	0.	1.	0.	0.
321	0.	0.	0.	0.	0.	0.	1.	0.	1.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	1.	0.	0.	3.	0.	1.	2.	0.	1.
351	0.	0.	0.	0.	0.	0.	0.	0.	1.
361	0.	0.	0.	0.	0.	0.	0.	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.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	1.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	1.	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.	1.	1.
471	0.	0.	0.	0.	0.	0.	1.	2.	1.
481	2.	1.	1.	0.	0.	0.	0.	0.	0.
491	0.	1.	0.	0.	0.	0.	1.	0.	0.
511	0.	0.							

222-S Analytical Laboratory
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
S97T002012-DUP-A
File ID: 14a1460.CNF

Counted on: 8/31/97 @19:57
Detector: AEA14
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	657.5	657.5	254.730	254.730	12.000	6.293	6.000	0.913
2	21.0	21.0	142.637	142.179	122.000	1.000	61.000	0.100
3	6.9	6.9	118.860	118.301	16.000	16.367	8.000	0.506

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	Am243	0.864	5.266	5.254	0.012	0.03	43.04	1.4	186.1	0.838E-04
2		0.033		4.736		0.00	1.66	7.9	7.1	0.320E-05
3	Np237	0.024	4.640	4.626	0.014	0.08	1.20	13.2	85.8	0.387E-04
Totals:		0.922	<--valid peaks only-->				45.90			

DETECTOR CALIBRATION

Energy (MEV) = $4.082 + (0.0046) \times \text{Channel}$
 Energy range (MeV): 4.082 TO 6.437
 Efficiency = 0.2336 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	23902.0	100.000
Smoothed	23907.3	100.022
Composite fit	22034.2	92.186
Residuals	1867.8	7.814

Analyzed by: _____

VR

[illegible]

Raw Data Dump for AEA Spectrum:	14a1460.CNF								
1	0.	0.	4.	7.	6.	7.	5.	3.	6.
11	6.	2.	5.	7.	13.	7.	8.	4.	9.
21	3.	7.	5.	2.	8.	9.	5.	7.	6.
31	6.	12.	3.	6.	7.	9.	5.	9.	6.
41	7.	6.	9.	6.	9.	9.	13.	9.	14.
51	9.	6.	12.	7.	10.	3.	9.	7.	6.
61	7.	14.	7.	6.	11.	9.	12.	8.	8.
71	14.	8.	18.	13.	12.	17.	7.	12.	15.
81	7.	14.	10.	10.	11.	12.	15.	11.	13.
91	10.	7.	13.	16.	12.	17.	14.	14.	18.
101	16.	18.	18.	12.	10.	20.	16.	19.	18.
111	15.	18.	17.	18.	14.	13.	13.	29.	15.
121	19.	12.	13.	27.	21.	21.	24.	25.	14.
131	28.	23.	22.	34.	18.	22.	21.	28.	19.
141	32.	31.	29.	30.	28.	22.	25.	31.	36.
151	32.	34.	32.	30.	31.	26.	31.	42.	40.
161	39.	45.	37.	46.	48.	26.	49.	35.	48.
171	44.	46.	54.	47.	46.	48.	55.	46.	53.
181	57.	72.	68.	48.	66.	49.	75.	80.	76.
191	80.	54.	75.	76.	84.	80.	75.	95.	76.
201	111.	81.	91.	79.	112.	112.	105.	119.	131.
211	115.	103.	144.	137.	139.	132.	149.	144.	165.
221	178.	187.	195.	200.	199.	202.	238.	222.	242.
231	258.	254.	263.	307.	308.	274.	361.	339.	358.
241	405.	387.	465.	476.	500.	520.	564.	607.	577.
251	639.	637.	634.	677.	678.	684.	703.	526.	344.
261	118.	92.	68.	60.	34.	45.	42.	37.	38.
271	16.	18.	17.	16.	5.	2.	3.	4.	2.
281	3.	3.	2.	4.	2.	1.	1.	2.	2.
291	1.	10.	5.	2.	8.	3.	4.	5.	2.
301	5.	7.	6.	3.	1.	1.	2.	3.	0.
311	2.	1.	0.	0.	0.	0.	0.	1.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	1.	1.	1.	1.	1.
351	0.	0.	1.	0.	0.	0.	0.	0.	0.
361	1.	0.	0.	0.	0.	0.	0.	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.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	1.	0.	1.	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.	1.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	2.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.							

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S97T002014-SAM-A
 File ID: 15a1521.CNF

Counted on: 8/31/97 @19:56
 Detector: AEA15
 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	737.7	737.7	254.225	254.225	12.000	5.716	6.000	1.053
2	20.1	20.1	131.878	131.776	162.000	1.000	81.000	0.100

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid		Count Rate	%err @95	d/m	Activity uCi/ea		
		Exp.	Obs.	Diff.	c/m					
1	Am243	0.830	5.266	5.268	-0.002	0.03	39.80	1.4	168.2	0.758E-04
2		0.033		4.692		0.00	1.58	7.3	6.6	0.298E-05
Totals:		0.863	<--valid peaks only-->				41.38			

DETECTOR CALIBRATION

Energy(MEV) = 4.073 + (0.0047)*Channel
 Energy range (MeV): 4.073 TO 6.479
 Efficiency = 0.2390 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	23019.0	100.000
Smoothed	23023.8	100.021
Composite fit	19863.5	86.292
Residuals	3155.5	13.708

Analyzed by:

VR

Spectrum 15a1521.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 5472.4

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Raw Data Dump for ABA Spectrum: 15a1521.CNF

1	0.	0.	4.	4.	5.	3.	6.	4.	1.	7.
11	5.	4.	6.	5.	5.	4.	7.	2.	5.	4.
21	5.	2.	5.	6.	5.	4.	3.	7.	3.	4.
31	5.	3.	7.	6.	4.	2.	8.	4.	4.	4.
41	9.	4.	6.	6.	13.	5.	5.	7.	5.	9.
51	3.	8.	8.	3.	3.	6.	5.	9.	3.	10.
61	13.	3.	6.	7.	12.	12.	12.	9.	5.	8.
71	10.	7.	12.	7.	7.	12.	9.	10.	12.	8.
81	10.	6.	8.	10.	16.	20.	9.	11.	12.	11.
91	9.	12.	7.	10.	9.	14.	5.	14.	10.	18.
101	12.	19.	11.	12.	9.	15.	7.	11.	10.	7.
111	13.	14.	16.	19.	20.	11.	17.	24.	11.	15.
121	18.	12.	18.	19.	16.	18.	21.	18.	12.	17.
131	20.	23.	21.	15.	17.	20.	9.	23.	32.	13.
141	25.	23.	28.	18.	18.	28.	24.	23.	37.	35.
151	28.	27.	23.	31.	19.	26.	41.	24.	30.	33.
161	19.	35.	27.	31.	37.	37.	37.	34.	45.	38.
171	35.	31.	35.	39.	41.	59.	52.	52.	42.	55.
181	53.	46.	48.	45.	67.	55.	58.	67.	57.	65.
191	53.	71.	69.	59.	73.	66.	78.	74.	87.	91.
201	91.	82.	98.	98.	93.	94.	89.	92.	105.	95.
211	100.	111.	123.	125.	133.	143.	123.	119.	153.	166.
221	157.	136.	145.	176.	212.	178.	200.	212.	213.	213.
231	218.	253.	247.	289.	275.	314.	328.	375.	371.	396.
241	384.	384.	448.	478.	510.	501.	586.	633.	653.	645.
251	697.	702.	757.	751.	786.	812.	640.	444.	280.	149.
261	98.	72.	56.	58.	45.	47.	33.	43.	34.	14.
271	23.	14.	5.	5.	4.	1.	1.	3.	1.	2.
281	3.	5.	2.	2.	4.	4.	2.	4.	1.	6.
291	6.	3.	7.	6.	5.	3.	7.	7.	7.	3.
301	5.	6.	3.	4.	6.	1.	3.	2.	1.	2.
311	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
321	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	1.	1.	0.	0.	0.	1.
351	1.	0.	0.	0.	0.	0.	0.	1.	0.	1.
361	0.	1.	0.	0.	0.	0.	1.	0.	0.	2.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	1.	0.	1.	0.	0.	1.	0.	0.	0.
481	1.	0.	1.	0.	0.	0.	0.	1.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
S97T002014-DUP-A
File ID: 16a1644.CNF

Counted on: 8/31/97 @19:54
Detector: AEA16
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	620.0	620.0	253.724	253.724	12.000	7.360	6.000	0.909
2	20.1	20.1	132.885	132.618	82.000	290.526	41.000	97.205
3?	4.6	4.6	97.080	96.315	4.000	0.458	2.000	0.175

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate	%err c/m @95	d/m	Activity uCi/ea
1	Am243	0.910	5.266	5.248	0.018	0.03	46.82	1.3	192.3	0.866E-04
2	Np237	0.066	4.640	4.691	-0.051	1.34	3.41	12.3	231.1	0.104E-03
3	Np237	0.066	4.769	4.691	0.078				15.9	0.718E-05
3	????		4.524				0.11	78.7		
Totals:		0.976	<--valid peaks only-->				50.23			

DETECTOR CALIBRATION

Energy(MEV) = 4.081 + (0.0046)*Channel
Energy range (MeV): 4.081 TO 6.436
Efficiency = 0.2459 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	24708.0	100.000
Smoothed	24709.2	100.005
Composite fit	24160.7	97.785
Residuals	547.3	2.215

Analyzed by: _____

VR

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 4763.7

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Raw Data Dump for AEA Spectrum: 16a1644.CNF									
1	0.	0.	1.	4.	5.	9.	6.	7.	8.
11	6.	4.	6.	6.	6.	5.	5.	4.	3.
21	5.	5.	5.	8.	9.	6.	6.	7.	11.
31	6.	6.	10.	5.	7.	4.	8.	12.	7.
41	12.	5.	10.	7.	10.	11.	4.	12.	8.
51	6.	6.	7.	5.	8.	5.	13.	10.	5.
61	6.	10.	11.	5.	13.	13.	7.	8.	16.
71	6.	9.	8.	14.	22.	11.	5.	11.	12.
81	10.	6.	8.	8.	7.	9.	16.	11.	15.
91	25.	11.	10.	12.	17.	17.	21.	18.	16.
101	18.	11.	19.	19.	15.	18.	18.	17.	19.
111	10.	17.	29.	19.	17.	29.	17.	18.	16.
121	19.	21.	17.	21.	21.	14.	25.	18.	31.
131	20.	40.	31.	31.	28.	13.	34.	29.	32.
141	27.	25.	27.	27.	31.	32.	30.	33.	27.
151	32.	39.	31.	44.	35.	42.	47.	33.	38.
161	50.	53.	34.	42.	41.	42.	48.	41.	48.
171	55.	44.	55.	51.	51.	57.	50.	65.	44.
181	56.	73.	75.	78.	60.	73.	61.	74.	86.
191	72.	95.	76.	86.	93.	88.	96.	90.	96.
201	105.	115.	114.	116.	115.	125.	107.	131.	131.
211	142.	161.	138.	145.	169.	167.	170.	175.	198.
221	214.	230.	195.	199.	221.	266.	245.	249.	262.
231	276.	324.	321.	349.	301.	350.	325.	373.	376.
241	412.	429.	461.	506.	525.	529.	583.	619.	538.
251	588.	630.	652.	613.	662.	624.	562.	431.	248.
261	93.	74.	68.	48.	56.	50.	50.	40.	30.
271	19.	15.	10.	5.	2.	2.	1.	5.	1.
281	4.	2.	5.	1.	3.	3.	0.	3.	2.
291	4.	2.	1.	2.	4.	3.	5.	4.	4.
301	8.	9.	3.	3.	1.	3.	2.	1.	1.
311	1.	1.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	1.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	1.	0.	0.	0.	0.
341	0.	0.	1.	0.	0.	1.	2.	0.	0.
351	0.	0.	0.	0.	1.	1.	1.	1.	0.
361	1.	0.	0.	0.	0.	0.	0.	0.	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.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	1.	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	1.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	1.	1.	1.	0.	1.
481	0.	0.	0.	0.	0.	1.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.							1.

LABCORE Completed Worklist Report for Worklist# 20095

Analyst: rwk Instrument: AB14 Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: AP103, @PU23901 S.S. by Ludlum. Std: 1.0mL skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		@PU23901 PU23901 LIQUID		1.09E-04	1.03E-4	94.495 % Recovery	
1 STD	0		@PU23901 PU23901E LIQUID		1.00	1.77E+00	1.770 % Ct Error	
1 STD	0		@PU23901 PU23901T LIQUID		100	9.86E+01	98.600 % Recovery	
2 BLNK	0		@PU23901 PU23901 LIQUID		1	<2.94E-6		uCi/mL
2 BLNK	0		@PU23901 PU23901T LIQUID		100	1.03E+02	103.000 % Recovery	
2 BLNK	0		@PU23901 PU23901E LIQUID		1.00	1.00E+02	100.000 uCi/mL	
3 SAMPLE	S97T002010	0	@PU23901 PU23901 LIQUID		N/A	3.80E-06	3.00E-006	uCi/mL
3 SAMPLE	S97T002010	0	@PU23901 PU23901T LIQUID		N/A	1.03E+02		% Recovery
3 SAMPLE	S97T002010	0	@PU23901 PU23901E LIQUID		N/A	6.60E+00		% Ct. Error
4 DUP	S97T002010	0	@PU23901 PU23901 LIQUID		3.80E-6	3.59E-6	5.683 RPD	
4 DUP	S97T002010	0	@PU23901 PU23901T LIQUID		100	9.51E+01	95.100 % Recovery	
4 DUP	S97T002010	0	@PU23901 PU23901E LIQUID		1.00	6.33E+00	6.330 % Ct Error	
5 SAMPLE	S97T002012	0	@PU23901 PU23901 LIQUID		N/A	4.57E-06	3.12E-006	uCi/mL
5 SAMPLE	S97T002012	0	@PU23901 PU23901T LIQUID		N/A	9.99E+01		% Recovery
5 SAMPLE	S97T002012	0	@PU23901 PU23901E LIQUID		N/A	5.96E+00		% Ct. Error
6 DUP	S97T002012	0	@PU23901 PU23901 LIQUID		4.57E-6	5.00E-6	8.986 RPD	
6 DUP	S97T002012	0	@PU23901 PU23901T LIQUID		100	9.22E+01	92.200 % Recovery	
6 DUP	S97T002012	0	@PU23901 PU23901E LIQUID		1.00	5.71E+00	5.710 % Ct Error	
7 SAMPLE	S97T002014	0	@PU23901 PU23901 LIQUID		N/A	4.448E-06	3.10E-006	uCi/mL
7 SAMPLE	S97T002014	0	@PU23901 PU23901T LIQUID		N/A	1.012E+02		% Recovery
7 SAMPLE	S97T002014	0	@PU23901 PU23901E LIQUID		N/A	5.98E+00		% Ct. Error
8 DUP	S97T002014	0	@PU23901 PU23901 LIQUID		4.448E-6	4.47E-6	0.493 RPD	
8 DUP	S97T002014	0	@PU23901 PU23901T LIQUID		100	1.00E+02	100.000 % Recovery	
8 DUP	S97T002014	0	@PU23901 PU23901E LIQUID		1.00	5.79E+00	5.790 % Ct Error	

Final page for worklist# 20095

Analyst Signature _____ Date _____ Analyst Signature _____ Date _____

John Relyea 3 Sept 97
Reviewer Signature _____ Date _____
Validated

LABCORE Data Entry Template for Worklist# 20095

Analyst: NH Instrument: PU01 14 Book# 75B56

Method: LA-953-104 Rev/Mod _____

Worklist Comment: AP103, @PU23901 S.S. by Ludlum. Std: 1.0mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@PU23901	LIQUID		
2 BLNK			@PU23901	LIQUID		
3 SAMPLE	S97T002010 0		@PU23901	LIQUID	97000600	AP-103 GRAB1
Analytes Requested: PU23901 , PU23901E, PU23901T						
4 DUP	S97T002010 0		@PU23901	LIQUID		
5 SAMPLE	S97T002012 0		@PU23901	LIQUID	97000600	AP-103 GRAB1
Analytes Requested: PU23901 , PU23901E, PU23901T						
6 DUP	S97T002012 0		@PU23901	LIQUID		
7 SAMPLE	S97T002014 0		@PU23901	LIQUID	97000600	AP-103 GRAB1
Analytes Requested: PU23901 , PU23901E, PU23901T						
8 DUP	S97T002014 0		@PU23901	LIQUID		

Final page for worklist # 20095

NH
Analyst Signature

8/31/97
Date

Joe E. Hogan
Analyst Signature

9-2-97
Date

Data Entry Comments:

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

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(B-0)

LIQUID

STD

Type	DATE COUNTED	AUG-31-97	Pu 238 AEA FRAC (C236)	0.473
STD	SAMPLE VOLUME in mL	SS	1.000	0.000
Work List	SAMPLE DILUTION FACTOR	DF	1.000	0.502
20095	TRACER VOLUME in mL	SPKV	0.100	3910
Test Code	DIGEST DILUTION FACTOR	DDF	1.000	30
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cpm (Bkg)	0.200
Matrix	DETECTOR NUMBER	14	Pu 238 cpm	49.470
LIQUID	EFFICIENCY FACTOR	EFF	0.291	0.000
Batch Number	TRACER PREPARATION DATE	11/15/96	Pu 238 cpm	52.470
97004245	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME	480
Return	Pu-238 DECAY CORR'D VALUE (dpm/mL)	2144.856	Pu 239/240 μ Ci/L	1.0254E-01
0	Pu-238 TRACER VALUE (dpm/mL)	0.000		
Sample Prep	STANDARD BOOK NO	75B56		
N/A	STANDARD VALUE in μ Ci/mL	1.090E-04		
Sample #				
WL20095				
Instrument Code	Decay Time = Date Counted - Tracer Preparation Date			
WB27807	Pu-238 Decay Corr'd Value = Pu-238 Preparation Value * [e to the power of {(-ln2 * Decay Time)/1040.95}]			
Prepared By	Pu 238 Tracer Recovery = (Total AT Counts / TC - Bkg) * 1/EFF * C236 * 100 / Pu-238 Decay Corr'd Value * SPKV			
SEH	Pu 239/240 μ Ci/L = (C239) / (Pu 238 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-238 Tracer Recovery / 100) (2220000 dpm/ μ Ci) (D g/L) (SS)]			
Analyst	Relative Counting Error = Square Root of [(1 / (Pu 238 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100			
RVK				
Date Complete				
09/02/97	Pu 239/240 μ Ci/mL	1.03E-04	DETECTION LEVELS	
Analysis Date	Relative Counting Error =	1.8%	in μ Ci/mL	
08/31/97			Pu 239/240	
Analysis Time			6.21E-06	
04:40 AM				
Sample Point				
AP-103 GRAB1	Pu 238 Tracer Recovery =	98.6%		

Analyst:	RWK	Date:	02-Sep-97
Signature of Chemist:	JFR	Date:	3 Sept 97
STANDARD, WB1 REV 1.0	943128ML		

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(B-0)**LIQ****BLNK**

Type	DATE COUNTED	AUG-31-97	PU 236 AEA FRAC (C236)	0.985	
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
20095	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	1966
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	128B43		BACKGROUND in cpm (Bkg)	0.200
Matrix	DETECTOR NUMBER	14		PU 236 cpm	50.540
LIQUID	EFFICIENCY FACTOR	EFF	0.2910	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE	11/15/96		PU 239 cpm	0.000
97004245	TRACER PREPARATION VALUE (dpm/mL)	2600.00		AEA COUNT TIME	480
Re-run	PU-236 DECAY CORR'D VALUE (dpm/mL)	2144.86		Pu 239/240 $\mu\text{Ci/L}$ =	< 2.943E-03
0	PU-238 TRACER VALUE (dpm/mL)	0.00			

Sample Prep

N/A

Sample #

Decay Time = Date Counted - Tracer Preparation Date

WL20095

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * $[e \text{ to the power of } \{(-\ln 2 * \text{Decay Time}/1040.95)\}]$

Instrument Code

Pu 236 Tracer Recovery = $(\text{Total AT Counts} / \text{TC} - \text{Bkg}) * \text{C236} * 100 / (\text{Pu-236 Decay Corr'd Value} * \text{SPKV} * \text{EFF})$

WB27807

Pu 239/240 $\mu\text{Ci/L}$ = $(\text{C239} / (\text{Pu 236 Decay Corr'd Value} * (\text{SPKV} / (1000 \text{ mL/L}) * (\text{DF}) * (\text{DDF}) / ((\text{C236}) * (\text{SS}) * (\text{D g/L}) * (2220000 \text{ dpm}/\mu\text{Ci})))$

Prepared By

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

SEH

Pu 238 $\mu\text{Ci/L}$ = $[(\text{Pu 238 dpm}) * (\text{DF}) * (\text{DDF}) / (1000 \text{ mL/L})] / [(\text{Pu-236 Tracer Recovery} / 100) * (2220000 \text{ dpm}/\mu\text{Ci}) * (\text{D g/L}) * (\text{SS})]$

Chemist

Relative Counting Error = Square Root of $[(1 / (\text{Pu 236 cpm} * \text{min})) + (1 / (\text{Pu 238 or 239/240 cpm} * \text{min}))] * 1.96 * 100$

JFR

Analyst

RWK

Date Complete

09/02/97

Pu 239/240 $\mu\text{Ci/mL}$ < 2.94E-06

DETECTION

Analysis Date

Relative Counting Error = 100.0%

LEVELS

08/31/97

in $\mu\text{Ci/mL}$

Analysis Time

NOTE: Pu 238 Result is a LESS THAN Value.

Pu 239/240

04:40 AM

Pu 238 $\mu\text{Ci/mL}$ < 2.94E-06

2.94E-06

Sample Point

Relative Counting Error = 100.0%

Pu 238

AP-103 GRAB1

Pu 236 Tracer Recovery = 103.1%

2.94E-06

Analyst:	RWK	Date:	02-Sep-97
Signature of Chemist:	JFR	Date:	3 Sept 97

BLANK.WB1 REV 1.0

943128ML

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(B-0)
LIQUID / SOLI

				SAMPLE
Type	DATE COUNTED	AUG-31-97	PU 236 AEA FRAC (C236)	0.967
SAMPLE	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)	0.038
20095	TRACER VOLUME in mL	SPKV 0.100	TOTAL AT COUNTS	2004
Test Code	DIGEST DILUTION FACTOR	DDF 1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cpm (Bkg)	0.200
Matrix	DETECTOR NUMBER	14	PU 236 cpm	48.880
LIQUID	EFFICIENCY FACTOR	EFF 0.291	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE	11/15/96	PU 239 cpm	1.910
97004245	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME	480
Refun	PU-236 DECAY CORR'D VALUE (dpm/mL)	2144.856	Pu 239/240 μ Ci/L =	3.7967E-03
0	PU-238 TRACER VALUE (dpm/mL)	0.000		

Sample Prep

N/A

Sample

Decay Time = Date Counted - Tracer Preparation Date

S97T002010

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-236 Tracer Recovery / 100)(2220000 dpm/ μ Ci)(D g/L)(SS)]

Chemist

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

JFR

Analyst

RWK

Date Complete

09/02/97

Pu 239/240 μ Ci/mL 3.80E-06

Analysis Date

Relative Counting Error = 6.6%

08/31/97

Analysis Time

NOTE: Pu 238 Result is a LESS THAN Value.

04:40 AM

Pu 238 μ Ci/mL < 3.00E-06

Sample Point

Relative Counting Error = 100.0%

AP-103 GRAB1

Pu 236 Tracer Recovery = 103.2%

DETECTION

LEVELS

in μ Ci/mL

Pu 239/240

3.00E-06

Pu 238

3.00E-06

Analyst:	RWK	Date:	02-Sep-97
Signature of Chemist:	JFR	Date:	3 Sept 97

SAMPLE WB1 REV 1.0

943128ML

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(B-0)

LIQUID / SOLI

DUP

Type	DATE COUNTED		AUG-31-97	PU 236 AEA FRAC (C236)	0.943
DUP	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)	0.035
20095	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	1894
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO		128B43	BACKGROUND in cpm (Bkg)	0.200
Matrix	DETECTOR NUMBER		14	PU 236 cpm	55.740
LIQUID	EFFICIENCY FACTOR	EFF	0.291	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE		11/15/96	PU 239 cpm	2.070
97004245	TRACER PREPARATION VALUE (dpm/mL)		2600.000	AEA COUNT TIME	480
Return	PU-236 DECAY CORR'D VALUE (dpm/mL)		2144.856	Pu 239/240 μ Ci/L =	3.5859E-03
0	PU-238 TRACER VALUE (dpm/mL)		0.000		

Sample Prep

N/A

Sample

Decay Time = Date Counted - Tracer Preparation Date

S97T002010

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

RWK

Data Complete

09/02/97

Pu 239/240 μ Ci/mL 3.59E-06

Analysis Date

Relative Counting Error = 6.3%

08/31/97

Analysis Time

NOTE: Pu 238 Result is a LESS THAN Value.

04:40 AM

Pu 238 μ Ci/mL < 3.23E-06

Sample Point

Relative Counting Error = 100.0%

AP-103 GRAB1

Pu 236 Tracer Recovery = 95.1%

DETECTION

LEVELS

in μ Ci/mL

Pu 239/240

3.23E-06

Pu 238

3.23E-06

Analyst:

RWK

Date:

02-Sep-97

Signature of Chemist:

John Relyea

JFR

Date:

3 Sept 97

SAMPLE.WB1 REV 1.0

943128ML

WORKBOOK PAGE: SAM5

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(B-0)

LIQUID / SOLI

SAMPLE

Type	DATE COUNTED	AUG-31-97	Pu 236 AEA FRAC (C236)	0.931
SAMPLE	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)	0.044
20095	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS	2016
Test Code	DIGEST DILUTION FACTOR DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cpm (Bkg)	0.200
Matrix	DETECTOR NUMBER	14	Pu 236 cpm	49.430
LIQUID	EFFICIENCY FACTOR EFF	0.291	Pu 238 cpm	0.740
Batch Number	TRACER PREPARATION DATE	11/15/96	Pu 239 cpm	2.360
97004245	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME	480
Retun	PU-236 DECAY CORR'D VALUE (dpm/mL)	2144.856	Pu 239/240 $\mu\text{Ci/L}$ =	4.5661E-03
0	PU-238 TRACER VALUE (dpm/mL)	0.000		

Sample Prep

N/A

Sample #

Decay Time = Date Counted - Tracer Preparation Date

S97T002012

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) / (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 $\mu\text{Ci/L}$ = [(Pu 238 dpm) * (DF) * (DDF) * (1000 mL/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

RWK

Date Complete

09/02/97

Pu 239/240 $\mu\text{Ci/mL}$ 4.57E-06

Analysis Date

Relative Counting Error = 6.0%

08/31/97

NOTE: Pu 238 Result is a LESS THAN Value.

Analysis Time

04:40 AM

Pu 238 $\mu\text{Ci/mL}$ < 3.12E-06

Sample Point

Relative Counting Error = 10.5%

AP-103 GRAB1

Pu 236 Tracer Recovery = 99.9%

DETECTION

LEVELS

in $\mu\text{Ci/mL}$

Pu 239/240

3.12E-06

Pu 238

3.12E-06

Analyst:

RWK

Date:

02-Sep-97

Signature of Chemist:

John Redger

JFR

Date:

3 Sept 97

SAMPLE.WB1 REV 1.0

943128ML

WORKBOOK PAGE: DUP6

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(B-0)**LIQUID / SOLI****DUP**

Type	DATE COUNTED	AUG-31-97	Pu 236 AEA FRAC (C236)	0.909
DUP	SAMPLE VOLUME in mL	SS	1.000 Pu 238 AEA FRAC (C238)	0.014
WorkList	SAMPLE DILUTION FACTOR	DF	1.000 Pu 239 AEA FRAC (C239)	0.047
20095	TRACER VOLUME in mL	SPKV	0.100 TOTAL AT COUNTS	1906
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000 AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cpm (Bkg)	0.200
Matrix	DETECTOR NUMBER	14	Pu 236 cpm	50.070
LIQUID	EFFICIENCY FACTOR	EFF	0.291 Pu 238 cpm	0.780
Batch Number	TRACER PREPARATION DATE	11/15/96	Pu 239 cpm	2.580
97004245	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME	480
Remun	PU-236 DECAY CORR'D VALUE (dpm/mL)	2144.856	Pu 239/240 $\mu\text{Ci/L}$ =	4.9955E-03
0	PU-238 TRACER VALUE (dpm/mL)	0.000		

Sample/Rep

N/A

Sample

Decay Time = Date Counted - Tracer Preparation Date

S97T002012

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) / (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 $\mu\text{Ci/L}$ = [(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

RWK

Date Complete

09/02/97

Analysis Date

08/31/97

Analysis Time

04:40 AM

Sample Point

AP-103 GRAB1

Pu 239/240 $\mu\text{Ci/mL}$ 5.00E-06

Relative Counting Error = 5.7%

DETECTION

LEVELS

in $\mu\text{Ci/mL}$

NOTE: Pu 238 Result is a LESS THAN Value.

Pu 238 $\mu\text{Ci/mL}$ < 3.46E-06

Relative Counting Error = 10.2%

Pu 236 Tracer Recovery = 92.2%

Pu 239/240

3.46E-06

Pu 238

3.46E-06

Analyst:

RWK

Date:

02-Sep-97

Signature of Chemist:

JFR

Date:

3 Sept 97

SAMPLE.WB1 REV 1.0

943128ML

WORKBOOK PAGE: SAM7

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(B-0))

LIQUID / SOLI

				SAMPLE	
Type	DATE COUNTED	AUG-31-97	Pu 236 AEA FRAC (C236)		0.934
SAMPLE	SAMPLE VOLUME in mL	SS	1.000	Pu 238 AEA FRAC (C238)	0.010
Work List	SAMPLE DILUTION FACTOR	DF	1.000	Pu 239 AEA FRAC (C239)	0.043
20095	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	2034
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cpm (Bkg)		0.200
Matrix	DETECTOR NUMBER	14	Pu 236 cpm		60.730
LIQUID	EFFICIENCY FACTOR	EFF	0.291	Pu 238 cpm	0.560
Batch Number	TRACER PREPARATION DATE	11/15/96	Pu 239 cpm		2.340
97004245	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME		480
Remix	Pu-236 DECAY CORR'D VALUE (dpm/mL)	2144.856	Pu 239/240 μ Ci/L =		4.4480E-03
0	Pu-238 TRACER VALUE (dpm/mL)	0.000			
Sample Prep					
N/A					
Sample #	Decay Time = Date Counted - Tracer Preparation Date				
S97T002014	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 * C236] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)				
SEH	Pu 238 μ Ci/L = [(Pu 238 dpm) (DF) (DDF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000 dpm/ μ Ci) (D g/L) (SS)]				
Chemist	Relative Counting Error = Square Root of [(1 / (Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100				
JFR					
Analyst					
RWK					
Date Complete					
08/02/97	Pu 239/240 μ Ci/mL	4.45E-06	DETECTION LEVELS in μ Ci/mL		
Analysis Date	Relative Counting Error =	6.0%			
08/31/97			Pu 239/240		
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.				
04:40 AM	Pu 238 μ Ci/mL	< 3.10E-06	3.10E-06		
Sample Point	Relative Counting Error =	12.1%	Pu 238		
AP-103 GRAB1	Pu 236 Tracer Recovery =	101.2%	3.10E-06		

Analyst:	RWK	Date:	02-Sep-97
Signature of Chemist:	JFR	Date:	3 Sept 97

SAMPLE.WB1 REV 1.0

943128ML

WORKBOOK PAGE: DUP8

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(B-0)

LIQUID / SOLI

DUP

Type	DATE COUNTED	AUG-31-97	Pu 236 AEA FRAC (C236)	0.930
DUP	SAMPLE VOLUME in mL	SS	1.000 Pu 238 AEA FRAC (C238)	0.011
Work List	SAMPLE DILUTION FACTOR	DF	1.000 Pu 239 AEA FRAC (C239)	0.043
20095	TRACER VOLUME in mL	SPKV	0.100 TOTAL AT COUNTS	2020
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000 AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cpm (Bkg)	0.200
Matrix	DETECTOR NUMBER	14	Pu 236 cpm	53.570
LIQUID	EFFICIENCY FACTOR	EFF	0.291 Pu 238 cpm	0.630
Batch Number	TRACER PREPARATION DATE	11/15/96	Pu 239 cpm	2.500
97004245	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME	480
ReRun	PU-236 DECAY CORR'D VALUE (dpm/mL)	2144.856	Pu 239/240 µCi/L =	4.4672E-03
0	PU-238 TRACER VALUE (dpm/mL)	0.000		

Sample Prep

N/A

Sample #

S97T002014

Instrument Code

WB27807

Prepared By

SEH

Chemist

JFR

Analyst

RWK

Date Complete

09/02/97

Analysis Date

08/31/97

Analysis Time

04:40 AM

Sample Point

AP-103 GRAB1

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {-ln2 * Decay Time/1040.95}]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)

Pu 239/240 µCi/L = (C239) / (Pu 236 Decay Corr'd Value) * (SPKV) / (1000 mL/L) * (DF) * (DDF) / [(C236) * (SS) * (D g/L) * (2220000 dpm/µCi)]

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

Pu 238 µCi/L = [(Pu 238 dpm) * (DF) * (DDF) / (1000 mL/L)] / [(Pu-236 Tracer Recovery / 100) * (2220000 dpm/µCi) * (D g/L) * (SS)]

Relative Counting Error = Square Root of [(1 / (Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

09/02/97	Pu 239/240 µCi/mL	4.47E-06	DETECTION LEVELS in µCi/mL
Analysis Date	Relative Counting Error =	5.8%	
08/31/97	NOTE: Pu 238 Result is a LESS THAN Value.		
Analysis Time	Pu 238 µCi/mL	< 3.12E-06	
04:40 AM	Relative Counting Error =	11.3%	
Sample Point	Pu 236 Tracer Recovery =	100.0%	Pu 238 3.12E-06
AP-103 GRAB1			

Analyst:

RWK

Date:

02-Sep-97

Signature of Chemist:

JFR

Date:

3 Sept 97

SAMPLE.WB1 REV 1.0

943128ML

222-S Analytical Laboratory
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
WL20095-STD
File ID: 13a1323.CNF

Counted on: 8/31/97 @11: 6
Detector: AEA13
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1280.0	1280.0	362.334	362.334	10.000	3.748	5.000	1.011
2?	15.8	15.8	304.817	303.479	12.000	0.000	6.000	4.895
3	45.0	45.0	288.904	288.771	10.000	3.958	5.000	1.143
4	10.7	10.7	257.665	257.291	12.000	22.517	6.000	2.350
5	1666.7	1666.7	229.854	229.852	12.000	3.732	6.000	1.376

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.473	Exp.	Obs.	Diff.	FWHM			
		0.473	5.755	5.744	0.011	0.02	49.47	1.3	201.8 0.909E-04
2		????		5.473			0.00	1000.	
3	Th228	0.016	5.400	5.405	-.005	0.02	1.67	7.7	9.4 0.425E-05
4	Pu239	0.010	5.147	5.261	-.114	0.10	1.05	12.4	4.2 0.189E-05
	Am243		5.266	5.261	0.005				4.2 0.191E-05
5	Pu239	0.502	5.147	5.134	0.013	0.02	52.47	1.2	209.8 0.945E-04
	Pu240		5.144	5.134	0.010				209.8 0.945E-04

Totals:		1.001	<--valid peaks only-->			104.66			

DETECTOR CALIBRATION

Energy(MEV) = 4.077 + (0.0046)*Channel
Energy range (MeV): 4.077 TO 6.432
Efficiency = 0.2501 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	50194.0	100.000
Smoothed	50196.4	100.005
Composite fit	50241.8	100.095
Residuals	-47.8	-0.095

Analyzed by: _____

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 11522.9

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1	0.	0.	2.	1.	2.	1.	0.	1.	1.	3.
11	0.	0.	0.	1.	0.	2.	1.	1.	1.	0.
21	1.	0.	2.	1.	4.	5.	0.	2.	2.	2.
31	3.	4.	2.	1.	3.	4.	3.	0.	2.	4.
41	2.	3.	1.	2.	1.	2.	1.	2.	2.	2.
51	1.	1.	0.	3.	2.	2.	0.	1.	4.	4.
61	2.	4.	1.	4.	4.	4.	4.	4.	2.	5.
71	4.	3.	1.	5.	5.	2.	1.	1.	2.	4.
81	3.	4.	3.	5.	2.	3.	5.	3.	3.	2.
91	1.	2.	1.	3.	1.	2.	1.	1.	5.	4.
101	3.	1.	1.	3.	3.	3.	3.	3.	3.	3.
111	3.	3.	3.	5.	5.	5.	6.	2.	3.	2.
121	4.	3.	6.	5.	2.	3.	8.	10.	4.	9.
131	3.	10.	3.	6.	9.	4.	7.	4.	8.	4.
141	5.	8.	9.	4.	6.	9.	7.	10.	12.	9.
151	3.	4.	8.	14.	12.	4.	15.	10.	7.	12.
161	14.	12.	7.	9.	14.	17.	12.	10.	12.	15.
171	11.	9.	24.	21.	25.	17.	17.	21.	37.	26.
181	31.	33.	36.	32.	29.	28.	29.	52.	41.	42.
191	49.	66.	53.	52.	60.	75.	64.	73.	67.	92.
201	107.	97.	132.	125.	142.	150.	175.	177.	227.	256.
211	252.	300.	343.	362.	397.	487.	526.	611.	610.	778.
221	799.	891.	958.	1081.	1165.	1308.	1524.	1530.	1825.	1948.
231	1805.	1620.	1085.	592.	217.	35.	8.	4.	7.	3.
241	11.	6.	6.	3.	8.	3.	6.	6.	6.	4.
251	9.	6.	6.	6.	9.	11.	19.	17.	12.	10.
261	8.	8.	16.	16.	9.	17.	20.	12.	15.	23.
271	23.	19.	26.	20.	19.	16.	20.	21.	25.	25.
281	20.	32.	37.	35.	39.	34.	48.	42.	65.	60.
291	40.	28.	18.	16.	13.	24.	14.	22.	13.	14.
301	20.	17.	25.	23.	31.	25.	22.	15.	18.	14.
311	12.	23.	24.	27.	29.	28.	26.	28.	31.	29.
321	28.	34.	35.	39.	47.	57.	49.	50.	74.	56.
331	82.	82.	84.	108.	102.	127.	130.	149.	143.	166.
341	203.	223.	231.	282.	318.	316.	418.	452.	559.	630.
351	656.	792.	839.	899.	961.	869.	923.	986.	1100.	1183.
361	1263.	1412.	1419.	1424.	1066.	643.	214.	56.	8.	1.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
431	0.	0.	0.	0.	1.	0.	0.	0.	0.	1.
441	0.	0.	0.	0.	0.	2.	0.	1.	0.	0.
451	0.	1.	0.	1.	0.	1.	1.	0.	0.	1.
461	0.	0.	1.	1.	1.	0.	1.	1.	0.	1.
471	6.	3.	2.	4.	0.	0.	4.	2.	2.	2.
481	1.	1.	2.	0.	0.	0.	1.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
511	0.	0.								

222-S Analytical Laboratory
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
WL20095-BLNK
File ID: 14a1458.CNF

Counted on: 8/31/97 @11: 6
Detector: AEA14
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1295.1	1295.1	358.230	358.230	12.000	4.009	6.000	1.082
2?	13.9	13.9	300.317	297.760	8.000	0.000	4.000	3.686
3	42.3	42.3	284.302	284.144	12.000	4.049	6.000	0.963

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Exp.	Peak Centroid Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea
1	Pu236	0.985	5.755	5.742	0.013	0.02	50.54	1.3	202.5	0.912E-04
2	????			5.464			0.00	1000.		
3	Th228	0.035	5.400	5.402	-0.002	0.02	1.81	7.3	10.0	0.450E-05
Totals:		1.020	<--valid peaks only-->				52.34			

DETECTOR CALIBRATION

Energy(MEV) = 4.095 + (0.0046)*Channel
 Energy range (MeV): 4.095 TO 6.450
 Efficiency = 0.2547 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	24639.0	100.000
Smoothed	24640.2	100.005
Composite fit	25127.1	101.981
Residuals	-488.1	-1.981

Analyzed by:

MB

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 9238.2

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Raw Data Dump for AEA Spectrum:	14a1458.CNF								
1	0.	0.	0.	1.	1.	0.	0.	1.	0.
11	0.	1.	2.	0.	0.	0.	1.	0.	3.
21	0.	0.	3.	2.	0.	0.	1.	2.	2.
31	0.	0.	0.	1.	2.	0.	0.	1.	0.
41	2.	1.	0.	1.	1.	0.	2.	0.	0.
51	0.	0.	0.	0.	2.	0.	0.	0.	2.
61	2.	2.	2.	3.	4.	4.	6.	3.	6.
71	1.	2.	0.	0.	1.	0.	2.	0.	1.
81	0.	1.	0.	2.	0.	0.	1.	0.	1.
91	0.	0.	0.	1.	1.	2.	0.	1.	0.
101	1.	0.	0.	0.	0.	1.	0.	0.	1.
111	1.	0.	0.	1.	0.	0.	0.	0.	0.
121	1.	0.	0.	3.	1.	0.	0.	0.	2.
131	2.	1.	0.	0.	1.	0.	1.	2.	0.
141	1.	1.	1.	1.	1.	2.	3.	2.	1.
151	0.	0.	0.	0.	2.	1.	1.	2.	0.
161	0.	0.	0.	1.	1.	0.	1.	1.	2.
171	0.	1.	2.	1.	3.	0.	2.	3.	2.
181	1.	1.	2.	2.	0.	1.	0.	1.	2.
191	1.	0.	1.	0.	1.	1.	4.	1.	2.
201	4.	1.	1.	1.	5.	1.	3.	3.	6.
211	0.	1.	3.	3.	1.	1.	3.	3.	4.
221	1.	7.	0.	4.	2.	6.	1.	2.	4.
231	2.	2.	1.	6.	4.	3.	2.	5.	4.
241	6.	6.	3.	4.	2.	7.	6.	13.	5.
251	9.	8.	8.	11.	12.	9.	11.	18.	18.
261	17.	8.	18.	15.	15.	22.	21.	19.	19.
271	25.	18.	21.	24.	24.	23.	27.	37.	31.
281	28.	48.	47.	58.	48.	55.	34.	29.	13.
291	7.	16.	8.	14.	11.	16.	18.	21.	23.
301	16.	23.	19.	16.	20.	16.	19.	20.	17.
311	28.	24.	19.	19.	24.	28.	35.	40.	43.
321	50.	57.	52.	60.	62.	68.	74.	77.	99.
331	100.	123.	133.	165.	165.	206.	209.	227.	275.
341	325.	373.	427.	462.	569.	624.	731.	783.	914.
351	987.	979.	966.	1058.	1133.	1170.	1298.	1424.	1479.
361	1086.	678.	255.	62.	13.	0.	0.	0.	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.	0.	1.	0.
401	0.	0.	0.	0.	0.	1.	0.	0.	0.
411	0.	1.	0.	0.	0.	1.	0.	0.	0.
421	0.	0.	1.	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.	2.	0.	0.	0.
461	0.	0.	0.	4.	2.	0.	0.	4.	0.
471	3.	4.	7.	4.	2.	0.	0.	0.	1.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	1.	0.	0.	0.	0.	1.	0.	0.	1.
511	0.	0.							2.

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S97T2010-SAM
 File ID: 15a1519.CNF

Counted on: 8/31/97 @11: 6
 Detector: AEA15
 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	1059.5	1059.5	360.451	360.451	10.000	4.053	5.000	0.868
2?	13.4	13.4	303.185	301.253	26.000	3.267	13.000	13.166
3	38.9	38.9	287.492	287.119	10.000	4.237	5.000	1.019
4	44.8	44.8	228.419	228.347	12.000	6.792	6.000	1.849

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count Rate	%err c/m @95	d/m	Activity uCi/ea
1	Pu236	0.967	Exp. 5.755	Obs. 5.766	Diff. -.0110.02	48.88	1.3	201.4	0.907E-04
	Cm243		5.779	5.766	0.013			270.4	0.122E-03
2	Th228	????		5.487		0.24	58.8		
3	Th228	0.033	5.400	5.421	-.0210.02	1.66	9.1	9.4	0.425E-05
4	Pu239	0.038	5.147	5.145	0.0020.03	1.91	6.7	7.7	0.347E-05
	Pu240		5.144	5.145	-.001			7.7	0.347E-05

Totals: 1.037 <--valid peaks only--> 52.45

DETECTOR CALIBRATION

Energy(MEV) = 4.071 + (0.0047)*Channel

Energy range (MeV): 4.071 TO 6.478

Efficiency = 0.2476 CPM/DFM

(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	24267.0	100.000
Smoothed	24267.0	100.000
Composite fit	25291.7	104.223
Residuals	-1024.7	-4.223

Analyzed by:

MB

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 7034.5

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Raw Data	Dump for	AEA Spectrum:	15a1519.CNF	HNF-SD-WM-DP-262, REV. 0
1	0.	0.	0.	0.
11	0.	2.	1.	0.
21	0.	1.	0.	1.
31	1.	1.	0.	2.
41	0.	0.	1.	1.
51	0.	1.	2.	1.
61	0.	3.	1.	2.
71	3.	2.	2.	0.
81	0.	0.	1.	1.
91	1.	0.	1.	2.
101	3.	0.	1.	0.
111	2.	1.	0.	2.
121	0.	0.	1.	3.
131	1.	1.	1.	2.
141	4.	2.	1.	1.
151	3.	6.	2.	3.
161	1.	2.	2.	3.
171	0.	0.	2.	0.
181	1.	4.	1.	4.
191	3.	4.	4.	4.
201	12.	7.	8.	6.
211	17.	17.	17.	22.
221	30.	26.	36.	52.
231	46.	35.	26.	16.
241	5.	7.	9.	7.
251	12.	14.	6.	16.
261	10.	10.	19.	16.
271	32.	17.	22.	21.
281	29.	40.	40.	34.
291	39.	27.	28.	28.
301	39.	51.	49.	51.
311	38.	38.	41.	49.
321	81.	77.	67.	82.
331	133.	139.	143.	128.
341	284.	329.	355.	379.
351	759.	778.	905.	817.
361	1183.	1168.	935.	623.
371	0.	0.	0.	0.
381	0.	1.	0.	0.
391	0.	0.	0.	0.
401	1.	0.	0.	0.
411	0.	0.	0.	0.
421	0.	2.	0.	0.
431	0.	0.	0.	0.
441	0.	0.	0.	0.
451	0.	0.	0.	0.
461	0.	0.	0.	0.
471	1.	2.	2.	2.
481	0.	0.	0.	0.
491	0.	0.	0.	0.
511	0.	0.	0.	0.

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S97T2010-DUP
 File ID: 16a1642.CNF

Counted on: 8/31/97 @11: 7
 Detector: AEA16
 Geometry number: 1
 Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1282.2	1282.2	360.633	360.633	12.000	4.582	6.000	1.091
2?	22.0	22.0	303.364	303.364	26.000	3.739	13.000	13.219
3	46.2	46.2	287.389	287.022	12.000	7.760	6.000	1.676
4?	5.8	5.8	258.453	257.406	4.000	1.025	2.000	0.725
5	48.2	48.2	227.428	227.368	14.000	7.446	7.000	2.057

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Exp.	Centroid Obs.	Diff.	FWHM	Count Rate	%err c/m	d/m	Activity uCi/ea
1	Pu236	0.943	5.755	5.737	0.018	0.02	55.74	1.2	209.4	0.943E-04
2		????		5.474			0.42	34.1		
3	Th228	0.040	5.400	5.399	0.001	0.04	2.34	7.3	12.1	0.546E-05
4		????		5.262			0.09	74.1		
5	Pu239	0.035	5.147	5.124	0.023	0.03	2.07	6.4	7.6	0.344E-05
	Pu240		5.144	5.124	0.020				7.6	0.344E-05
Totals:		1.018	<--valid peaks only-->				60.15			

DETECTOR CALIBRATION

Energy(MEV) = 4.078 + (0.0046)*Channel
 Energy range (MeV): 4.078 TO 6.434
 Efficiency = 0.2717 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	28371.0	100.000
Smoothed	28372.4	100.005
Composite fit	29124.9	102.657
Residuals	-753.9	-2.657

Analyzed by:

MB

8776.7

[illegible]

Raw Data Dump for AEA Spectrum: 16a1642.CNF

HNF-SD-WM-DP-262, REV. 0

1	0.	0.	0.	1.	1.	0.	0.	1.	0.	0.
11	0.	1.	1.	0.	1.	1.	1.	2.	0.	0.
21	0.	0.	0.	1.	1.	0.	1.	0.	1.	0.
31	1.	1.	0.	0.	1.	0.	0.	2.	0.	1.
41	0.	1.	0.	0.	0.	1.	1.	2.	0.	1.
51	1.	0.	0.	0.	0.	0.	0.	5.	2.	2.
61	2.	0.	0.	3.	2.	0.	1.	6.	0.	4.
71	3.	1.	4.	3.	0.	1.	3.	0.	0.	0.
81	1.	1.	0.	0.	0.	2.	1.	2.	3.	0.
91	0.	0.	0.	1.	1.	1.	1.	1.	1.	0.
101	1.	2.	1.	3.	1.	2.	1.	2.	1.	2.
111	2.	1.	1.	0.	2.	2.	2.	3.	2.	0.
121	1.	3.	2.	1.	1.	2.	0.	0.	0.	1.
131	1.	0.	4.	6.	3.	2.	3.	0.	4.	2.
141	4.	5.	5.	2.	3.	2.	6.	3.	4.	2.
151	2.	7.	4.	5.	1.	5.	4.	6.	4.	2.
161	2.	2.	2.	3.	2.	1.	0.	0.	0.	4.
171	2.	4.	4.	2.	4.	3.	2.	2.	4.	1.
181	4.	4.	5.	4.	5.	2.	1.	4.	3.	4.
191	2.	3.	4.	15.	3.	4.	4.	6.	5.	7.
201	6.	7.	5.	12.	8.	13.	11.	15.	14.	16.
211	15.	17.	19.	20.	32.	13.	29.	31.	39.	23.
221	42.	41.	37.	41.	50.	48.	53.	59.	49.	41.
231	35.	42.	28.	15.	11.	5.	5.	5.	4.	4.
241	4.	4.	3.	6.	10.	3.	11.	10.	5.	7.
251	6.	9.	11.	19.	11.	13.	12.	19.	20.	9.
261	14.	14.	12.	15.	21.	21.	23.	34.	22.	22.
271	22.	15.	22.	36.	21.	42.	33.	40.	49.	38.
281	34.	43.	41.	53.	54.	60.	56.	70.	52.	55.
291	36.	32.	32.	34.	28.	43.	37.	29.	51.	38.
301	44.	46.	42.	50.	52.	37.	31.	27.	15.	29.
311	29.	31.	28.	31.	40.	34.	41.	48.	50.	39.
321	56.	54.	59.	67.	65.	78.	72.	99.	77.	110.
331	125.	125.	139.	156.	181.	196.	202.	201.	230.	282.
341	289.	346.	400.	400.	455.	532.	557.	680.	750.	813.
351	908.	1044.	1009.	1104.	1034.	1053.	1158.	1212.	1257.	1350.
361	1356.	1381.	1272.	970.	542.	183.	38.	10.	0.	1.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
421	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
451	0.	0.	0.	1.	1.	0.	0.	1.	1.	3.
461	1.	2.	2.	0.	0.	0.	2.	3.	0.	0.
471	2.	2.	0.	3.	1.	1.	4.	0.	1.	1.
481	2.	0.	0.	0.	0.	1.	0.	0.	0.	0.
491	0.	1.	0.	0.	0.	0.	1.	0.	1.	0.
511	0.	0.								

222-S Analytical Laboratory
 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. 2.10

DATA REDUCTION REPORT

SAMPLE
 S97T2012-SAM
 File ID: 17a1775.CNF

Counted on: 8/31/97 @11: 7
 Detector: AEA17
 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	1311.1	1311.1	721.233	721.233	24.000	8.531	12.000	2.461
2	29.6	29.6	606.470	600.197	32.000	12.465	16.000	16.674
3?	28.6	28.6	602.809	602.809	20.000	0.000	10.000	9.215
4	43.1	43.1	574.832	573.959	28.000	11.507	14.000	2.910
5	58.9	58.9	458.317	458.273	24.000	11.217	12.000	3.169

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count Rate	%err c/m @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.				
1	Pu236	0.931	5.755	5.738	0.0170.02	49.43	1.3	207.1	0.933E-04
2	Pu238	0.014	5.487	5.459	0.0280.03	0.74	15.9	4.2	0.190E-05
	Am241		5.479	5.459	0.020			3.2	0.146E-05
3		????		5.465		0.00	1000.		
4	Th228	0.035	5.400	5.399	0.0010.03	1.87	7.8	10.8	0.486E-05
5	Pu239	0.044	5.147	5.133	0.0140.03	2.36	5.9	9.7	0.437E-05
	Pu240		5.144	5.133	0.011			9.7	0.437E-05
Totals:			1.024	<--valid peaks only-->			54.40		

DETECTOR CALIBRATION

Energy(MEV) = 4.079 + (0.0023)*Channel
 Energy range (MeV): 4.079 TO 6.434
 Efficiency = 0.2435 CPM/DPM
 (Data reduction compression factor: 2.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	25489.0	100.000
Smoothed	25489.8	100.003
Composite fit	26110.7	102.439
Residuals	-621.7	-2.439

Analyzed by: _____

Spectrum 17a1775.CNF

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

Display Max.:

8508.0

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Raw Data Dump for AEA Spectrum: 17a1775.CNF

1	0.	0.	2.	1.	0.	0.	0.	1.	0.	0.
11	0.	1.	0.	1.	2.	0.	0.	1.	2.	1.
21	4.	1.	0.	1.	1.	1.	0.	2.	2.	0.
31	0.	1.	0.	0.	0.	0.	0.	0.	0.	2.
41	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
51	1.	2.	0.	1.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	1.	0.	0.	0.	0.	1.
71	0.	0.	0.	0.	0.	2.	0.	1.	1.	0.
81	1.	0.	0.	0.	0.	0.	1.	1.	0.	0.
91	0.	1.	1.	0.	1.	2.	1.	0.	1.	1.
101	1.	0.	0.	2.	0.	2.	1.	0.	0.	1.
111	1.	1.	0.	0.	2.	0.	2.	0.	0.	0.
121	2.	1.	0.	0.	0.	0.	1.	0.	2.	1.
131	0.	2.	0.	0.	4.	0.	4.	2.	2.	1.
141	4.	2.	6.	2.	6.	5.	1.	3.	5.	4.
151	3.	3.	4.	2.	4.	3.	3.	5.	1.	1.
161	1.	1.	3.	0.	1.	1.	1.	2.	1.	1.
171	1.	3.	0.	1.	2.	1.	1.	1.	1.	1.
181	1.	2.	2.	2.	1.	1.	3.	3.	2.	2.
191	0.	6.	4.	2.	3.	2.	5.	5.	2.	1.
201	9.	5.	2.	8.	10.	8.	9.	9.	12.	10.
211	9.	18.	20.	15.	32.	20.	27.	32.	42.	30.
221	44.	38.	52.	56.	49.	45.	51.	71.	56.	71.
231	58.	53.	29.	24.	13.	13.	7.	6.	3.	6.
241	4.	1.	3.	3.	3.	8.	5.	5.	6.	6.
251	10.	6.	5.	7.	10.	12.	4.	9.	8.	7.
261	5.	7.	18.	11.	13.	20.	14.	19.	20.	26.
271	18.	19.	10.	14.	18.	22.	19.	25.	26.	22.
281	30.	31.	44.	45.	47.	45.	57.	50.	50.	39.
291	36.	33.	28.	33.	38.	34.	34.	35.	39.	44.
301	46.	40.	35.	39.	53.	37.	22.	17.	12.	14.
311	12.	7.	8.	17.	17.	13.	19.	25.	21.	27.
321	30.	21.	34.	31.	36.	41.	42.	50.	57.	71.
331	64.	73.	73.	103.	103.	117.	133.	153.	149.	192.
341	225.	240.	304.	326.	400.	437.	542.	578.	691.	688.
351	817.	929.	975.	1015.	1010.	1020.	1046.	1240.	1329.	1365.
361	1420.	1443.	1276.	865.	447.	187.	25.	6.	1.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	1.	1.	0.	0.	1.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
451	0.	0.	0.	0.	0.	0.	1.	2.	0.	0.
461	0.	1.	1.	0.	1.	4.	1.	0.	0.	1.
471	0.	2.	1.	2.	1.	0.	4.	1.	1.	1.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
S97T2012-DUP
File ID: 18a1876.CNF

Counted on: 8/31/97 @11: 9
Detector: AEA18
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	1169.6	1169.6	714.078	714.078	28.000	12.213	14.000	3.192
2	31.8	31.8	600.317	600.317	56.000	12.247	28.000	28.579
3	45.8	45.8	570.853	570.153	36.000	17.035	18.000	3.691
4	60.0	60.0	450.354	450.241	32.000	15.383	16.000	4.287

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	Ra224	0.909	5.686	5.728	-0.042	50.07	1.3	221.9	0.100E-03
	Pu236		5.755	5.728	0.027			212.9	0.959E-04
2	Pu238	0.014	5.487	5.466	0.021	0.78	18.3	4.5	0.204E-05
	Am241		5.479	5.466	0.013			3.5	0.156E-05
3	Th228	0.043	5.400	5.397	0.003	2.35	7.2	13.8	0.621E-05
4	Pu239	0.047	5.147	5.121	0.026	2.58	5.7	10.8	0.485E-05
	Pu240		5.144	5.121	0.023			10.8	0.485E-05
Totals:			1.012	<--valid peaks only-->			55.78		

DETECTOR CALIBRATION

Energy (MeV) = 4.085 + (0.0023)*Channel
Energy range (MeV): 4.085 TO 6.441
Efficiency = 0.2400 CPM/DPM
(Data reduction compression factor: 2.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	26451.0	100.000
Smoothed	26450.9	100.000
Composite fit	26775.6	101.227
Residuals	-324.6	-1.227

Analyzed by:

MB

Spectrum 18a1876.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 8729.2

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Raw Data Dump for AEA Spectrum: 18a1876.CNF

1	0.	0.	0.	0.	0.	0.	3.	1.	1.
11	1.	1.	1.	0.	0.	2.	0.	0.	4.
21	0.	1.	0.	1.	0.	1.	0.	0.	1.
31	0.	0.	0.	1.	0.	3.	0.	1.	0.
41	1.	1.	0.	1.	0.	0.	0.	3.	2.
51	0.	1.	0.	3.	0.	0.	0.	2.	3.
61	1.	1.	0.	1.	1.	0.	2.	1.	0.
71	1.	1.	1.	0.	1.	0.	0.	0.	1.
81	0.	0.	0.	1.	0.	1.	1.	1.	1.
91	2.	4.	2.	3.	1.	0.	2.	1.	0.
101	0.	4.	2.	5.	0.	1.	2.	2.	0.
111	2.	2.	0.	0.	0.	0.	2.	1.	0.
121	1.	1.	2.	0.	5.	2.	2.	0.	1.
131	2.	8.	1.	10.	1.	3.	3.	5.	1.
141	5.	4.	3.	5.	6.	7.	3.	5.	7.
151	1.	4.	6.	1.	2.	8.	3.	2.	2.
161	1.	1.	2.	1.	1.	0.	0.	7.	2.
171	1.	4.	1.	4.	1.	4.	3.	2.	1.
181	1.	8.	5.	2.	2.	4.	4.	2.	6.
191	2.	4.	3.	6.	6.	4.	12.	5.	7.
201	8.	8.	13.	10.	23.	22.	14.	16.	28.
211	17.	33.	30.	30.	32.	33.	44.	45.	41.
221	42.	48.	64.	60.	75.	65.	50.	62.	43.
231	22.	15.	21.	10.	8.	7.	3.	8.	2.
241	7.	3.	6.	2.	8.	7.	5.	6.	12.
251	8.	9.	17.	10.	10.	8.	5.	9.	18.
261	17.	15.	20.	17.	26.	21.	17.	23.	26.
271	23.	15.	13.	28.	21.	28.	31.	28.	49.
281	45.	47.	50.	58.	56.	58.	57.	48.	36.
291	39.	44.	42.	37.	42.	46.	52.	37.	44.
301	48.	51.	32.	40.	22.	28.	20.	19.	13.
311	25.	29.	40.	26.	25.	34.	48.	46.	26.
321	62.	54.	65.	65.	81.	83.	82.	82.	107.
331	146.	156.	154.	153.	196.	220.	255.	291.	260.
341	394.	464.	467.	558.	629.	686.	797.	850.	886.
351	957.	1001.	1035.	1068.	1092.	1320.	1225.	1254.	1182.
361	775.	489.	306.	158.	61.	39.	15.	7.	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.	1.	0.	0.	0.	0.
401	1.	0.	0.	0.	0.	0.	0.	0.	0.
411	1.	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.	1.	0.	0.	0.	0.	0.	0.	1.
461	1.	1.	1.	1.	3.	1.	4.	7.	4.
471	5.	2.	2.	3.	1.	2.	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.							

222-S Analytical Laboratory
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. 2.10

DATA REDUCTION REPORT

SAMPLE
S97T2014-SAM
File ID: 19a1977.CNF

Counted on: 8/31/97 @11: 9
Detector: AEA19
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1211.4	1211.4	719.595	719.595	24.000	9.150	12.000	2.298
2?	24.1	24.1	605.885	601.468	48.000	10.533	24.000	24.490
3	40.8	40.8	573.092	571.771	28.000	15.017	14.000	3.285
4	59.1	59.1	458.164	458.104	24.000	9.296	12.000	2.538

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Exp.	Centroid Obs.	Diff.	FWHM	Count Rate	%err c/m @95	d/m	Activity uCi/ea
1		0.934	5.731	5.731	0.02	50.73	1.3	230.6	0.104E-03	
2	Am241	0.010	5.479	5.460	0.019	0.02	0.55	24.7	2.7	0.120E-05
3	Th228	0.037	5.400	5.391	0.009	0.03	2.03	7.8	13.0	0.586E-05
4	Pu239	0.043	5.147	5.130	0.017	0.02	2.34	6.0	10.7	0.480E-05
	Pu240		5.144	5.130	0.014				10.7	0.480E-05

Totals: 1.025 <--valid peaks only--> 55.66

DETECTOR CALIBRATION

Energy(MEV) = 4.076 + (0.0023)*Channel
Energy range (MeV): 4.076 TO 6.431
Efficiency = 0.2200 CPM/DPM
(Data reduction compression factor: 2.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	26075.0	100.000
Smoothed	26075.7	100.003
Composite fit	26716.9	102.462
Residuals	-641.9	-2.462

Analyzed by:

MB

Spectrum 19a1977.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 8554.5

[illegible]

Raw Data	Dump	for AEA	Spectrum:	19a1977.CNF					
1	0.	0.	0.	0.	1.	0.	1.	3.	0.
11	2.	3.	0.	1.	0.	0.	0.	1.	0.
21	1.	2.	1.	3.	1.	1.	0.	0.	0.
31	1.	1.	0.	0.	0.	1.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	1.
51	0.	1.	0.	1.	1.	0.	0.	0.	0.
61	1.	0.	0.	0.	2.	0.	1.	1.	2.
71	0.	2.	0.	1.	0.	0.	0.	1.	0.
81	0.	0.	0.	0.	1.	0.	0.	1.	1.
91	0.	0.	1.	1.	0.	1.	1.	2.	0.
101	0.	0.	0.	0.	1.	1.	2.	2.	1.
111	0.	1.	0.	1.	2.	1.	2.	0.	3.
121	1.	2.	5.	1.	2.	1.	3.	2.	4.
131	3.	3.	3.	1.	5.	2.	2.	1.	2.
141	2.	3.	2.	4.	3.	8.	4.	5.	6.
151	3.	2.	6.	6.	2.	4.	2.	5.	3.
161	1.	3.	1.	2.	1.	2.	1.	0.	1.
171	2.	2.	1.	1.	2.	0.	1.	1.	5.
181	2.	2.	2.	2.	4.	3.	1.	1.	4.
191	3.	3.	7.	2.	5.	7.	6.	1.	7.
201	9.	7.	8.	4.	13.	13.	14.	11.	12.
211	11.	13.	21.	12.	21.	25.	25.	22.	33.
221	28.	52.	50.	62.	63.	54.	55.	57.	66.
231	65.	49.	24.	13.	13.	9.	4.	4.	8.
241	3.	3.	6.	7.	7.	6.	1.	6.	5.
251	7.	4.	10.	15.	13.	10.	15.	7.	13.
261	13.	17.	22.	14.	14.	19.	20.	19.	22.
271	19.	19.	17.	20.	17.	22.	27.	29.	27.
281	38.	40.	47.	49.	52.	57.	44.	49.	53.
291	32.	23.	29.	41.	41.	33.	32.	31.	41.
301	33.	51.	40.	56.	39.	32.	24.	16.	17.
311	22.	16.	17.	23.	22.	31.	35.	33.	31.
321	43.	50.	61.	45.	55.	57.	79.	72.	105.
331	103.	101.	136.	131.	157.	162.	165.	219.	216.
341	308.	313.	374.	378.	459.	527.	591.	651.	683.
351	902.	1018.	994.	1010.	999.	1074.	1175.	1124.	1298.
361	1288.	1186.	1035.	587.	189.	45.	1.	0.	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.	1.	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.	1.	0.	0.	0.	1.	0.	0.	0.
431	1.	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.	2.	0.
461	0.	1.	1.	1.	1.	0.	1.	0.	0.
471	1.	5.	6.	0.	3.	2.	2.	2.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.							

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S97T2014-DUP
 File ID: 20a2074.CNF

Counted on: 8/31/97 @11:10
 Detector: AEA20
 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	1321.7	1321.7	716.483	716.483	24.000	9.568	12.000	2.547
2	29.1	29.1	602.101	600.349	20.000	4.412	10.000	2.547
3	44.6	44.6	570.423	569.327	24.000	13.152	12.000	2.853
4	74.6	74.6	454.061	454.010	24.000	9.881	12.000	3.627

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count	%err	d/m	Activity
			Exp.	Obs.	Diff.	FWHM	Rate c/m @95		uCi/ea
1	Ra224	0.930	5.686	5.730	-0.0440.02	53.57	1.2	229.2	0.103E-03
2	Am241	0.011	5.479	5.463	0.0160.01	0.63	18.6	2.7	0.122E-05
3	Th228	0.038	5.400	5.391	0.0090.03	2.19	7.3	12.4	0.558E-05
4	Pu239	0.043	5.147	5.126	0.0210.02	2.50	5.8	10.0	0.452E-05
	Pu240		5.144	5.126	0.018			10.0	0.452E-05

Totals: 1.022 <--valid peaks only--> 58.89

DETECTOR CALIBRATION

Energy(MEV) = 4.082 + (0.0023)*Channel
 Energy range (MeV): 4.082 TO 6.437
 Efficiency = 0.2487 CPM/DPM
 (Data reduction compression factor: 2.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	27662.0	100.000
Smoothed	27665.2	100.011
Composite fit	28269.0	102.194
Residuals	-607.0	-2.194

Analyzed by:

MB

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Raw Data	Dump	for	AEA	Spectrum:	20a2074.CNF				
1	0.	0.	1.	0.	3.	0.	0.	1.	0.
11	1.	1.	0.	1.	1.	1.	2.	0.	0.
21	1.	0.	0.	1.	0.	0.	0.	0.	1.
31	0.	0.	2.	1.	1.	1.	1.	1.	3.
41	0.	0.	2.	0.	0.	0.	0.	0.	0.
51	0.	1.	0.	1.	2.	2.	0.	0.	1.
61	2.	1.	0.	0.	0.	2.	2.	1.	0.
71	0.	1.	1.	1.	2.	1.	0.	0.	1.
81	1.	0.	2.	0.	0.	0.	0.	1.	0.
91	3.	1.	0.	1.	0.	1.	0.	3.	0.
101	0.	1.	3.	0.	0.	2.	1.	1.	2.
111	1.	3.	4.	1.	1.	1.	1.	2.	1.
121	1.	2.	0.	1.	0.	1.	2.	1.	1.
131	3.	3.	2.	1.	3.	5.	3.	4.	4.
141	2.	4.	5.	5.	4.	2.	6.	4.	4.
151	3.	1.	6.	1.	3.	2.	3.	3.	2.
161	0.	2.	1.	1.	2.	1.	0.	1.	0.
171	1.	1.	1.	3.	3.	1.	2.	3.	4.
181	1.	1.	1.	3.	5.	1.	5.	4.	4.
191	3.	5.	5.	3.	5.	5.	7.	6.	7.
201	5.	2.	8.	7.	10.	21.	8.	16.	14.
211	20.	15.	19.	18.	32.	27.	35.	35.	37.
221	46.	54.	61.	72.	67.	75.	92.	83.	67.
231	44.	31.	15.	8.	0.	8.	3.	6.	6.
241	5.	5.	3.	5.	6.	7.	8.	3.	3.
251	9.	9.	9.	8.	18.	16.	16.	9.	8.
261	23.	16.	26.	20.	15.	16.	24.	14.	21.
271	24.	14.	21.	29.	24.	39.	40.	24.	39.
281	36.	46.	66.	51.	56.	59.	64.	41.	28.
291	21.	33.	41.	33.	34.	39.	43.	37.	41.
301	52.	47.	51.	42.	26.	20.	12.	13.	21.
311	27.	28.	28.	24.	23.	31.	31.	36.	39.
321	41.	55.	48.	53.	59.	60.	76.	69.	92.
331	111.	104.	127.	135.	171.	217.	197.	240.	257.
341	365.	368.	462.	516.	538.	666.	751.	818.	925.
351	1094.	1060.	1098.	1073.	1223.	1250.	1342.	1442.	1428.
361	1252.	860.	441.	151.	28.	1.	0.	0.	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.	0.	0.	0.
401	0.	0.	1.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	1.	0.	0.	0.	0.
421	0.	1.	0.	0.	0.	0.	0.	1.	0.
431	0.	0.	1.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	1.	0.	0.
451	0.	1.	0.	1.	0.	0.	1.	0.	0.
461	3.	1.	0.	2.	0.	1.	1.	2.	3.
471	4.	3.	3.	4.	3.	2.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.							

HNF-SD-WM-DP-262, REV. 0

APPENDIX A : OPPORTUNISTIC ANALYTE RESULTS

HNF-SD-WM-DP-262, REV. 0

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Appendix A. Opportunistic Analytes
AP-103 GRAB1

CORE NUMBER: n/a
SEGMENT #: 3AP-97-2

SEGMENT PORTION: Supernate

Sample#	R	AF	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S971002009	D		Silver-ICP-Acid Dil.	ug/mL	97.00	<1.00e-02	5.29e-01	5.17e-01	5.23e-01	2.29	84.40	2.10e-01	n/a
S971002009	D		Arsenic-ICP-Acid Dil.	ug/mL	103.6	<1.00e-01	< 2.100	<2.10e0	n/a	n/a	105.0	2.100	n/a
S971002009	D		Boron-ICP-Acid Dil.	ug/mL	101.0	<5.00e-02	6.700	6.490	6.595	3.18	93.40	1.050	n/a
S971002009	D		Barium-ICP-Acid Dil.	ug/mL	98.40	<5.00e-02	< 1.050	<1.05e0	n/a	n/a	90.90	1.050	n/a
S971002009	D		Beryllium-ICP-Acid Dil.	ug/mL	100.8	<5.00e-03	<1.05e-01	<1.05e-1	n/a	n/a	94.80	1.05e-01	n/a
S971002009	D		Bismuth-ICP-Acid Dil.	ug/mL	102.8	<1.00e-01	< 2.100	<2.10e0	n/a	n/a	94.00	2.100	n/a
S971002009	D		Calcium-ICP-Acid Dil.	ug/mL	97.20	<1.00e-01	< 2.100	<2.10e0	n/a	n/a	95.30	2.100	n/a
S971002009	D		Cadmium-ICP-Acid Dil.	ug/mL	99.20	<5.00e-03	<1.05e-01	<1.05e-1	n/a	n/a	92.60	1.05e-01	n/a
S971002009	D		Cerium-ICP-Acid Dil.	ug/mL	98.00	<1.00e-01	< 2.100	<2.10e0	n/a	n/a	91.20	2.100	n/a
S971002009	D		Cobalt-ICP-Acid Dil.	ug/mL	101.6	<2.00e-02	<4.20e-01	<4.20e-1	n/a	n/a	95.00	4.20e-01	n/a
S971002009	D		Chromium-ICP-Acid Dil.	ug/mL	98.20	<1.00e-02	3.650	3.670	3.660	0.55	92.70	2.10e-01	n/a
S971002009	D		Copper-ICP-Acid Dil.	ug/mL	101.4	<1.00e-02	<2.10e-01	<2.10e-1	n/a	n/a	94.10	2.10e-01	n/a
S971002009	D		Potassium-ICP-Acid Dil.	ug/mL	100.2	<5.00e-01	5.36e+02	535.0	535.5	0.19	89.90	10.50	n/a
S971002009	D		Lanthanum-ICP-Acid Dil.	ug/mL	99.40	<5.00e-02	< 1.050	<1.05e0	n/a	n/a	93.00	1.050	n/a
S971002009	D		Lithium-ICP-Acid Dil.	ug/mL	97.80	<1.00e-02	<2.10e-01	<2.10e-1	n/a	n/a	91.40	2.10e-01	n/a
S971002009	D		Magnesium-ICP-Acid Dil.	ug/mL	99.40	<1.00e-01	< 2.100	<2.10e0	n/a	n/a	89.20	2.100	n/a
S971002009	D		Manganese-ICP-Acid Dil.	ug/mL	96.80	<1.00e-02	<2.10e-01	<2.10e-1	n/a	n/a	89.30	2.10e-01	n/a
S971002009	D		Molybdenum-ICP-Acid Dil.	ug/mL	100.8	<5.00e-02	< 1.050	<1.05e0	n/a	n/a	97.10	1.050	n/a
S971002009	D		Neodymium-ICP-Acid Dil.	ug/mL	99.20	<1.00e-01	< 2.100	<2.10e0	n/a	n/a	92.50	2.100	n/a
S971002009	D		Nickel-ICP-Acid Dil.	ug/mL	98.20	<2.00e-02	<4.20e-01	<4.20e-1	n/a	n/a	90.40	4.20e-01	n/a
S971002009	D		Phosphorus-ICP-Acid Dil.	ug/mL	100.0	<2.00e-01	31.60	31.10	31.35	1.59	97.20	4.200	n/a
S971002009	D		Lead-ICP-Acid Dil.	ug/mL	98.00	<1.00e-01	< 2.100	<2.10e0	n/a	n/a	91.70	2.100	n/a
S971002009	D		Sulfur-ICP-Acid Dil.	ug/mL	97.60	<1.00e-01	1.59e+02	155.0	157.0	2.55	74.30	2.100	n/a
S971002009	D		Antimony-ICP-Acid Dil.	ug/mL	95.80	<6.00e-02	< 1.260	<1.26e0	n/a	n/a	90.80	1.260	n/a
S971002009	D		Selenium-ICP-Acid Dil.	ug/mL	92.80	<1.00e-01	< 2.100	2.830	n/a	n/a	119.0	2.100	n/a
S971002009	D		Silicon-ICP-Acid Dil.	ug/mL	100.4	<5.00e-02	5.620	5.700	5.660	1.41	96.50	1.050	n/a
S971002009	D		Samarium-ICP-Acid Dil.	ug/mL	97.80	<1.00e-01	< 2.100	<2.10e0	n/a	n/a	90.40	2.100	n/a
S971002009	D		Strontium-ICP-Acid Dil.	ug/mL	98.00	<1.00e-02	<2.10e-01	<2.10e-1	n/a	n/a	91.60	2.10e-01	n/a
S971002009	D		Titanium-ICP-Acid Dil.	ug/mL	98.00	<1.00e-02	<2.10e-01	<2.10e-1	n/a	n/a	92.00	2.10e-01	n/a
S971002009	D		Thallium-ICP-Acid Dil.	ug/mL	95.80	<2.00e-01	< 4.200	<4.20e0	n/a	n/a	86.50	4.200	n/a
S971002009	D		Uranium-ICP-Acid Dil.	ug/mL	96.30	<5.00e-02	< 25.60	26.90	26.25	4.95	94.50	10.50	n/a
S971002009	D		Vanadium-ICP-Acid Dil.	ug/mL	100.6	<5.00e-02	< 1.050	<1.05e0	n/a	n/a	94.90	1.050	n/a
S971002009	D		Zinc-ICP-Acid Dil.	ug/mL	97.40	<1.00e-02	<2.10e-01	<2.10e-1	n/a	n/a	92.00	2.10e-01	n/a
S971002009	D		Zirconium-ICP-Acid Dil.	ug/mL	98.40	<1.00e-02	<2.10e-01	<2.10e-1	n/a	n/a	92.10	2.10e-01	n/a
S971002009			Bromide by Ion Chromatograph	ug/mL	96.60	<1.25e-01	< 12.62	<1.26e1	n/a	n/a	100.2	12.62	n/a
S971002009			Oxalate-IC-Dionex 4000/450	ug/mL	103.0	<1.05e-01	< 10.61	<1.06e1	n/a	n/a	108.1	10.61	n/a
S971002010			Cobalt-60 by GEA	uCi/mL	118.3	<5.36e-05	<6.31e-04	<5.88e-4	n/a	n/a	n/a	1.00e-03	n/a

HNF-SD-WM-DP-262, REV. 0

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CORE NUMBER: n/a
SEGMENT #: 3AP-97-3

SEGMENT POSITION: Supernate

Sample#	R#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S971002017		Silver-ICP-Acid DIL.	ug/mL	97.00	<1.00E-02	5.35E-01	5.35E-01	5.35E-01	6.33	n/a	2.10E-01	n/a
S971002017		Arsenic-ICP-Acid DIL.	ug/mL	103.6	<1.00E-01	2.100	2.100	2.100	n/a	n/a	2.100	n/a
S971002017		Boron-ICP-Acid DIL.	ug/mL	101.0	<5.00E-02	7.140	6.910	7.025	3.27	n/a	1.050	n/a
S971002017		Barium-ICP-Acid DIL.	ug/mL	96.40	<5.00E-02	1.050	1.050	n/a	n/a	n/a	1.050	n/a
S971002017		Beryllium-ICP-Acid DIL.	ug/mL	100.8	<1.00E-03	1.05E-01	1.05E-01	n/a	n/a	n/a	1.05E-01	n/a
S971002017		Bismuth-ICP-Acid DIL.	ug/mL	102.8	<1.00E-01	2.100	2.100	2.100	n/a	n/a	2.100	n/a
S971002017		Calcium-ICP-Acid DIL.	ug/mL	97.20	<1.00E-01	2.100	2.100	n/a	n/a	n/a	2.100	n/a
S971002017		Cadmium-ICP-Acid DIL.	ug/mL	99.20	<5.00E-03	1.05E-01	1.05E-01	n/a	n/a	n/a	1.05E-01	n/a
S971002017		Cerium-ICP-Acid DIL.	ug/mL	98.00	<1.00E-02	2.100	2.100	n/a	n/a	n/a	2.100	n/a
S971002017		Cobalt-ICP-Acid DIL.	ug/mL	101.6	<2.00E-02	4.20E-01	4.20E-01	n/a	n/a	n/a	4.20E-01	n/a
S971002017		Chromium-ICP-Acid DIL.	ug/mL	98.20	<1.00E-02	3.640	3.640	3.640	0.00	n/a	2.10E-01	n/a
S971002017		Copper-ICP-Acid DIL.	ug/mL	101.4	<1.00E-02	2.10E-01	2.10E-01	n/a	n/a	n/a	2.10E-01	n/a
S971002017		Potassium-ICP-Acid DIL.	ug/mL	100.2	<5.00E-01	5.35E+02	524.0	530.0	2.26	n/a	10.50	n/a
S971002017		Lanthanum-ICP-Acid DIL.	ug/mL	99.40	<5.00E-02	1.050	1.050	n/a	n/a	n/a	1.050	n/a
S971002017		Lithium-ICP-Acid DIL.	ug/mL	97.80	<2.10E-01	2.10E-01	2.10E-01	n/a	n/a	n/a	2.10E-01	n/a
S971002017		Magnesium-ICP-Acid DIL.	ug/mL	99.40	<1.00E-01	2.100	2.100	n/a	n/a	n/a	2.100	n/a
S971002017		Manganese-ICP-Acid DIL.	ug/mL	96.80	<2.10E-02	2.10E-01	2.10E-01	n/a	n/a	n/a	2.10E-01	n/a
S971002017		Molybdenum-ICP-Acid DIL.	ug/mL	100.8	<5.00E-02	1.050	1.050	n/a	n/a	n/a	1.050	n/a
S971002017		Neodymium-ICP-Acid DIL.	ug/mL	99.20	<1.00E-01	2.100	2.100	n/a	n/a	n/a	2.100	n/a
S971002017		Nickel-ICP-Acid DIL.	ug/mL	98.20	<2.00E-02	4.20E-01	4.20E-01	n/a	n/a	n/a	4.20E-01	n/a
S971002017		Phosphorus-ICP-Acid DIL.	ug/mL	100.0	<2.00E-01	31.40	31.40	n/a	n/a	n/a	2.100	n/a
S971002017		Lead-ICP-Acid DIL.	ug/mL	98.00	<1.00E-01	2.100	2.100	n/a	n/a	n/a	2.100	n/a
S971002017		Selenium-ICP-Acid DIL.	ug/mL	97.60	<1.00E-01	1.55E+02	154.0	154.5	0.65	n/a	2.100	n/a
S971002017		Antimony-ICP-Acid DIL.	ug/mL	95.80	<6.00E-02	1.260	1.260	n/a	n/a	n/a	1.260	n/a
S971002017		Selenium-ICP-Acid DIL.	ug/mL	92.80	<1.00E-01	2.970	3.100	3.035	4.28	n/a	2.100	n/a
S971002017		Silicon-ICP-Acid DIL.	ug/mL	100.4	<5.00E-02	7.360	7.170	7.265	2.62	n/a	1.050	n/a
S971002017		Samarium-ICP-Acid DIL.	ug/mL	97.80	<1.00E-01	2.100	2.100	n/a	n/a	n/a	2.100	n/a
S971002017		Strontium-ICP-Acid DIL.	ug/mL	98.00	<1.00E-02	2.10E-01	2.10E-01	n/a	n/a	n/a	2.10E-01	n/a
S971002017		Thallium-ICP-Acid DIL.	ug/mL	95.80	<2.00E-01	4.200	4.20E0	n/a	n/a	n/a	4.200	n/a
S971002017		Uranium-ICP-Acid DIL.	ug/mL	96.30	<5.00E-01	26.80	26.80	26.80	0.00	n/a	10.50	n/a
S971002017		Vanadium-ICP-Acid DIL.	ug/mL	100.6	<5.00E-02	1.050	1.050	n/a	n/a	n/a	1.050	n/a
S971002017		Zinc-ICP-Acid DIL.	ug/mL	97.40	<1.00E-02	2.10E-01	2.10E-01	n/a	n/a	n/a	2.10E-01	n/a
S971002017		Zirconium-ICP-Acid DIL.	ug/mL	98.40	<1.00E-02	2.10E-01	2.10E-01	n/a	n/a	n/a	2.10E-01	n/a
S971002017		Bromide by Ion Chromatograph	ug/mL	96.60	<1.05E-01	12.62	12.62	n/a	n/a	n/a	10.61	n/a
S971002017		Oxalate-ICP-Acid DIL.	ug/mL	103.0	<1.05E-01	10.61	10.61	n/a	n/a	n/a	10.61	n/a
S971002017		Cobalt-60 by GEA	uCi/mL	118.3	<5.36E-05	1.28E-03	1.28E-03	1.28E-03	4.68E-4	n/a	1.00E-03	n/a

Appendix A. Opportunistic Analyses
AP-103 GRAB1

Appendix A. Opportunistic Analytes
AP-103 GRAB1

CORE NUMBER: n/a
SEGMENT #: 3AP-97-4

SEGMENT PORTION: Supernate

Sample#	R	AF	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S97T002013	D		Silver-ICP-Acid Dil.	ug/mL	97.00	<1.00e-02	5.53e-01	5.37e-01	5.45e-01	2.94	n/a	2.10e-01	n/a
S97T002013	D		Arsenic-ICP-Acid Dil.	ug/mL	103.6	<1.00e-01	< 2.100	<2.10e0	n/a	n/a	n/a	2.100	n/a
S97T002013	D		Boron-ICP-Acid Dil.	ug/mL	101.0	<5.00e-02	7.080	7.130	7.105	0.70	n/a	1.050	n/a
S97T002013	D		Barium-ICP-Acid Dil.	ug/mL	98.40	<5.00e-02	< 1.050	<1.05e0	n/a	n/a	n/a	1.050	n/a
S97T002013	D		Beryllium-ICP-Acid Dil.	ug/mL	100.8	<5.00e-03	<1.05e-01	<1.05e-1	n/a	n/a	n/a	1.05e-01	n/a
S97T002013	D		Bismuth-ICP-Acid Dil.	ug/mL	102.8	<1.00e-01	< 2.100	<2.10e0	n/a	n/a	n/a	2.100	n/a
S97T002013	D		Calcium-ICP-Acid Dil.	ug/mL	97.20	<1.00e-01	< 2.100	<2.10e0	n/a	n/a	n/a	2.100	n/a
S97T002013	D		Cadmium-ICP-Acid Dil.	ug/mL	99.20	<5.00e-03	<1.05e-01	<1.05e-1	n/a	n/a	n/a	1.05e-01	n/a
S97T002013	D		Cerium-ICP-Acid Dil.	ug/mL	98.00	<1.00e-01	< 2.100	<2.10e0	n/a	n/a	n/a	2.100	n/a
S97T002013	D		Cobalt-ICP-Acid Dil.	ug/mL	101.6	<2.00e-02	<4.20e-01	<4.20e-1	n/a	n/a	n/a	4.20e-01	n/a
S97T002013	D		Chromium-ICP-Acid Dil.	ug/mL	98.20	<1.00e-02	3.710	3.620	3.665	2.46	n/a	2.10e-01	n/a
S97T002013	D		Copper-ICP-Acid Dil.	ug/mL	101.4	<1.00e-02	<2.10e-01	<2.10e-1	n/a	n/a	n/a	2.10e-01	n/a
S97T002013	D		Potassium-ICP-Acid Dil.	ug/mL	100.2	<5.00e-01	5.32e+02	527.0	529.5	0.94	n/a	10.50	n/a
S97T002013	D		Lanthanum-ICP-Acid Dil.	ug/mL	99.40	<5.00e-02	< 1.050	<1.05e0	n/a	n/a	n/a	1.050	n/a
S97T002013	D		Lithium-ICP-Acid Dil.	ug/mL	97.80	<1.00e-02	<2.10e-01	<2.10e-1	n/a	n/a	n/a	2.10e-01	n/a
S97T002013	D		Magnesium-ICP-Acid Dil.	ug/mL	99.40	<1.00e-01	< 2.100	<2.10e0	n/a	n/a	n/a	2.100	n/a
S97T002013	D		Manganese-ICP-Acid Dil.	ug/mL	96.80	<1.00e-02	<2.10e-01	<2.10e-1	n/a	n/a	n/a	2.10e-01	n/a
S97T002013	D		Molybdenum-ICP-Acid Dil.	ug/mL	100.8	<5.00e-02	< 1.050	<1.05e0	n/a	n/a	n/a	1.050	n/a
S97T002013	D		Neodymium-ICP-Acid Dil.	ug/mL	99.20	<1.00e-01	< 2.100	<2.10e0	n/a	n/a	n/a	2.100	n/a
S97T002013	D		Nickel-ICP-Acid Dil.	ug/mL	98.20	<2.00e-02	<4.20e-01	<4.20e-1	n/a	n/a	n/a	4.20e-01	n/a
S97T002013	D		Phosphorus-ICP-Acid Dil.	ug/mL	100.0	<2.00e-01	33.10	32.70	32.90	1.22	n/a	4.200	n/a
S97T002013	D		Lead-ICP-Acid Dil.	ug/mL	98.00	<1.00e-01	< 2.100	<2.10e0	n/a	n/a	n/a	2.100	n/a
S97T002013	D		Sulfur-ICP-Acid Dil.	ug/mL	97.60	<1.00e-01	1.57e+02	155.0	155.0	2.58	n/a	2.100	n/a
S97T002013	D		Antimony-ICP-Acid Dil.	ug/mL	95.80	<6.00e-02	< 1.260	<1.26e0	n/a	n/a	n/a	1.260	n/a
S97T002013	D		Selenium-ICP-Acid Dil.	ug/mL	92.80	<1.00e-01	2.920	3.430	3.175	16.1	n/a	2.100	n/a
S97T002013	D		Silicon-ICP-Acid Dil.	ug/mL	100.4	<5.00e-02	7.180	7.020	7.100	2.25	n/a	1.050	n/a
S97T002013	D		Samarium-ICP-Acid Dil.	ug/mL	97.80	<1.00e-01	< 2.100	<2.10e0	n/a	n/a	n/a	2.100	n/a
S97T002013	D		Strontium-ICP-Acid Dil.	ug/mL	98.00	<1.00e-02	<2.10e-01	<2.10e-1	n/a	n/a	n/a	2.10e-01	n/a
S97T002013	D		Titanium-ICP-Acid Dil.	ug/mL	98.00	<1.00e-02	<2.10e-01	<2.10e-1	n/a	n/a	n/a	2.10e-01	n/a
S97T002013	D		Thallium-ICP-Acid Dil.	ug/mL	95.80	<2.00e-01	< 4.200	<4.20e0	n/a	n/a	n/a	4.200	n/a
S97T002013	D		Uranium-ICP-Acid Dil.	ug/mL	96.30	<5.00e-01	< 27.00	27.00	27.00	0.00	n/a	10.50	n/a
S97T002013	D		Vanadium-ICP-Acid Dil.	ug/mL	100.6	<5.00e-02	< 1.050	<1.05e0	n/a	n/a	n/a	1.050	n/a
S97T002013	D		Zinc-ICP-Acid Dil.	ug/mL	97.40	<1.00e-02	<2.10e-01	<2.10e-1	n/a	n/a	n/a	2.10e-01	n/a
S97T002013	D		Zirconium-ICP-Acid Dil.	ug/mL	98.40	<1.00e-02	<2.10e-01	<2.10e-1	n/a	n/a	n/a	2.10e-01	n/a
S97T002013	D		Bromide by Ion Chromatograph	ug/mL	96.60	<1.25e-01	< 12.62	<1.26e1	n/a	n/a	n/a	12.62	n/a
S97T002013	D		Oxalate-IC-dionex 4000/450	ug/mL	103.0	<1.05e-01	< 10.61	<1.06e1	n/a	n/a	n/a	10.61	n/a
S97T002014	D		Cobalt-60 by GEA	uCi/mL	118.3	<5.36e-05	<3.77e-04	<3.86e-4	n/a	n/a	n/a	3.77e-04	n/a

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