APR 10 1998

ENGINEERING DATA TRANSMITTAL

Page 1 of 1
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B Plant Canyon Sample, TK-21-1 Analytical Results for the Final Report

Franciska H. Steen

Waste Management of Hanford, Inc., Richland, WA 99352
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ANALYTICAL SERVICES

**B PLANT CANYON SAMPLE, TK21-1
ANALYTICAL RESULTS FOR THE FINAL REPORT**

Project Coordinator: Franciska H. Steen

**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

**B PLANT CANYON SAMPLE, TK-21-1
ANALYTICAL RESULTS FOR THE FINAL REPORT**

This document is the analytical laboratory report for the TK-21-1 sample collected from the B Plant Canyon on February 18, 1998. The sample was analyzed in accordance with the *Sampling and Analysis Plan for B Plant Solutions* (SAP) (Simmons, 1997) in support of the B Plant decommissioning project. Samples were analyzed to provide data both to describe the material which would remain in the tanks after the B Plant transition is complete and to determine Tank Farm compatibility. The analytical results are included in the data summary table (Table 1).

Appearance and Sample Handling

Attachment 1 is a cross reference to relate the tank farm identification numbers to the 222-S Laboratory LabCore/LIMS sample numbers. The subsamples generated in the laboratory for analyses are identified in these diagrams with their sources shown. Table 2 summarizes appearance information and over-the-top (OTR) dose readings performed on the sample.

Table 2. Appearance and OTR for B Plant Canyon Sample TK-21-1						
Laboratory Id	Sample Amount	Color	Clarity	Organic Layer Extruded	Volume of Solids	OTR (mRad/hr)
S98B000059	125 mL	Colorless	Clear	None	None	5000

Analytical Results Summary

The data summary report (Table 1) compiles the analytical results and quality control (QC) data associated with the TK-21-1 sample.

Inorganic Analyses**Differential Scanning Calorimetry (DSC)**

The DSC analyses were performed in duplicate on direct subsamples. The exothermic energy based on dry weight of subsample was calculated for all subsamples. The average of the TGA results for each subsample was used in the dry weight correction for that subsample. There were no exotherms observed during the analysis of the TK-21-1 sample. Therefore the results for the sample and duplicate were 0.0 J/g.

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Since the sample results were zero, the calculation for the relative percent difference (RPD) is indeterminate because of the division by zero. However, due to the way the database performs calculations, zero divided by zero is reported as "0.0". The standard recovery for this analysis were within the required limits.

Thermogravimetric Analysis (TGA)

The TGA analyses were performed in duplicate on direct subsamples. The TGA result was determined by summing the weight loss steps which occurred below 250°C. The standard recovery and RPD for this analysis were within the required limits.

Specific Gravity (SpG)

The specific gravity analysis was performed in duplicate on direct subsamples. The results are provided in Table 1. The standard recovery and RPD for this analysis were within the required limits.

pH

The pH analysis was performed in duplicate on direct subsamples. The results are provided in Table 1. The standard recovery and RPD for this analysis were within the required limits.

Hydroxide (OH)

The TK-21-1 OH analysis was not performed. A value of pH = 1.3 (which represented the pH after the reagents were added) was entered to indicate the sample was too acidic (actual pH=0.7). A hydrogen ion (H⁺) determination was performed instead. The sample was analyzed in duplicate. The standard recovery was within the required limits.

Ion Chromatography (IC)

The IC analyses were performed in duplicate on direct subsamples. The required analytes were fluoride (F⁻), chloride (Cl⁻), nitrate (NO₃⁻), nitrite (NO₂⁻), phosphate (PO₄⁻³) and sulfate (SO₄⁻²). The standard recoveries, spike recoveries and RPDs for this analysis were within the required limits.

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Inductively Coupled Plasma Spectrophotometry (ICP)

The liquid subsamples were prepared in duplicate by an acid adjustment of the direct subsample. This is indicated by a "D" in the A# column in Table 1.

The liquid subsamples were also prepared in duplicate by an acid digestion of the direct subsample. This is indicated by a "B" in the A# column in Table 1. A matrix spike analysis was performed on this sample in accordance with the SAP.

The required analytes for both analyses were aluminum (Al), barium (Ba), chromium (Cr), iron (Fe), lead (Pb), manganese (Mn), nickel (Ni) and zirconium (Zr).

The standard recoveries and RPDs for these analyses were within the required limits.

Total Organic Carbon Persulfate (TOC)

Total organic carbon (TOC) analyses by furnace oxidation/coulometry were performed in duplicate on direct subsamples.

For all TOC analyses, an Analysis Report worksheet is included for each sample as raw data. Due to programming limitations with the instrument software, the sample size listed on the worksheet is incorrect. This value is not used in the final calculations and has no bearing on the results in Table 1. The blank is considered a reagent blank. The value was within the acceptance limits and all results were corrected for the concentration found in the blank.

The standard recovery and spike recovery for this analysis were within the required limits.

Total Inorganic/Organic Carbon (TIC)

Total inorganic carbon (TIC) analyses by persulfate oxidation/coulometry were performed in duplicate on direct subsamples.

For all TIC analyses, an Analysis Report worksheet is included for each sample as raw data. Due to programming limitations with the instrument software, the sample size listed on the worksheet is incorrect. This value is not used in the final calculations and has no bearing on the results in Table 1. The blank is considered a reagent blank. The value was within the acceptance limits and all results were corrected for the concentration found in the blank.

The standard recovery, spike recovery and RPD for this analysis were within the required limits.

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Uranium (U)

Uranium was performed in duplicate on direct subsamples. The result listed as Count Err% in Table 1 is actually the percent instrument uncertainty. The standard recovery, spike recovery and RPD for this analysis were within the required limits

Selenium (Se)

Samples were prepared in for analysis by performing an acid digest as indicated by an "G" in the A# column in table 1. The standard recovery, spike recovery and RPD for this analysis were within the required limits.

Radionuclide Analyses

Gamma Energy Analysis (GEA)

The gamma energy analysis was performed in duplicate on direct subsamples. The standard recovery and RPD for this analysis were within the required limits.

Strontium 90 (Sr-90)

The strontium analysis was performed in duplicate on direct subsamples. The standard recovery and RPD for this analysis were within the required limits.

Plutonium (Pu-239/240)

The plutonium analysis was performed in duplicate on direct subsamples. The standard recovery and RPD for this analysis were within the required limits.

Americium (Am-241)

The americium analysis was performed in duplicate on direct subsamples. The standard recovery and RPD for this analysis were within the required limits.

HNF-SD-WM-DP-301, REV.0**Procedures**

Table 3 lists the analytical procedures used for performing the sample analyses. Abbreviations for analyses are defined in the table notes.

Table 3. Analytical Procedures			
Analysis	Sample Portion	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. C-0
H+	Liquid	N/A	LA-211-102 Rev. D-0
OH	Liquid	N/A	LA-211-102 Rev. D-1
NH3	Liquid	N/A	LA-631-001 Rev. C-0
GFAA	Liquid	LA-505-158 Rev. E-0	LA-505-102 Rev. A-0
IC	Liquid	N/A	LA-533-105 Rev. E-0
ICP	Liquid	N/A	LA-505-161 Rev. C-2
TIC	Liquid	N/A	LA-342-100 Rev. F-1

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Table 3. Analytical Procedures

Analysis	Sample Portion	Preparation Procedure +	Analysis Procedure
TOC	Liquid	N/A	LA-344-105 Rev. E-0
U	Liquid	N/A	LA-925-009 Rev. A-1
GEA	Liquid	N/A	LA-548-121 Rev. F-0
Am241	Liquid	N/A	LA-953-104 Rev. B-0
Pu239	Liquid	N/A	LA-953-104 Rev. B-0
Sr90	Liquid	N/A	LA-220-101 Rev. E-3

Abbreviations:

N/A = not applicable (these are direct samples)
 DSC = differential scanning calorimetry
 TGA = thermogravimetric analysis
 Sp.G. = specific gravity
 IC = ion chromatography
 ICP = inductively coupled plasma
 TOC = total organic carbon
 TIC = total inorganic carbon
 NH3 = ammonia
 U = uranium
 GEA = gamma energy analysis
 Am241 = americium
 Pu239 = plutonium
 Sr90 = strontium
 GFAA = graphite furnace atomic absorption

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References

- Simmons, F. M., 1997, *Sampling and Analysis Plan (SAP) for B Plant Solutions*, HNF-SD-WM-EV-118, Rev. 0-A, Babcock & Wilcox Hanford Company, Richland, WA 99352.
- Meznarich, H. K., 1995, *222-S Laboratory Quality Assurance Plan*, WHC-SD-CP-QAPP-016, Rev. 1-A, Westinghouse Hanford Company, Richland, WA 99352

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SAMPLE DATA SUMMARY

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Table 1. Data Summary Report
TK-21-1 (1)

CORE NUMBER: n/a
SEGMENT #: n/a

SEGMENT PORTION: n/a

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S988000059			Volume % Settled Solids	%	n/a	n/a	<1.00e-01	n/a	n/a	n/a	n/a	1.00e-01	n/a
S988000061			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
S988000061			DSC Exotherm on Perkin Elmer	Joules/g	98.00	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S988000061			OH- by Pot. Titration	ug/mL	n/a	n/a	ph=1.3	ph=1.3	n/a	n/a	n/a	125.0	n/a
S988000061			pH Direct	pH	99.25	n/a	7.10e-01	7.10e-01	7.10e-01	0.00	n/a	1.00e-02	n/a
S988000061			Specific Gravity	Sp.G.	97.61	n/a	1.010	1.009	1.010	0.10	n/a	1.00e-02	n/a
S988000061			% Water by TGA on Perkin Elmer	%	100.1	n/a	99.26	98.72	98.99	0.55	n/a	n/a	n/a
S988000061			Tot. Organic Carbon by Coul.	ug/mL	95.67	1.000	1.31e+03	1.30e+03	1.30e+03	0.77	91.70	5.500	n/a
S988000061			TIC by Acid/Coulometry	ug/mL	100.3	4.800	7.300	8.500	7.900	15.2	98.90	5.000	n/a
S988000061			Fluoride-IC-Dionex 4000/4500	ug/mL	101.2	<1.20e-02	< 13.33	<1.33e1	n/a	n/a	104.7	13.33	n/a
S988000061			Chloride-IC-Dionex 4000/4500	ug/mL	101.9	<1.70e-02	36.65	41.20	38.92	11.8	97.25	18.89	n/a
S988000061			Nitrite-IC - Dionex 4000/4500	ug/mL	97.79	<1.08e-01	<1.20e+02	<1.20e2	n/a	n/a	98.71	120.0	n/a
S988000061			Nitrate by IC-Dionex 4000/4500	ug/mL	97.47	<1.39e-01	1.81e+04	1.78e+04	1.80e+04	1.67	95.62	154.4	n/a
S988000061			Phosphate-IC-Dionex 4000/4500	ug/mL	96.33	<1.20e-01	2.22e+02	210.0	216.2	5.56	97.25	133.3	n/a
S988000061			Sulfate by IC-Dionex 4000/4500	ug/mL	100.9	1.64e-01	3.61e+02	340.0	350.7	5.99	100.0	153.3	n/a
S988000062			Hydrogen Ion Analysis	moles/Liter	95.56	95.56	2.72e-01	2.66e-01	2.69e-01	2.23	n/a	2.50e-01	n/a
S988000062			Ammonia by ISE-Std Additions	ug/mL	96.57	<2.00e-01	2.49e+02	209.0	229.0	17.5	116.0	5.000	n/a
S988000062			Uranium by Phosphorescence	ug/mL	91.85	5.00e-03	4.87e-02	4.49e-02	4.68e-02	8.12	96.75	4.00e-03	1.26E+00
S988000062			Strontium-89/90 High Level	uCi/mL	107.2	2.00e-02	4.570	4.600	4.585	0.65	n/a	2.40e-02	3.03E+00
S988000062			Pu-239/240 by TRU-SPEC Resin	uCi/mL	89.63	<2.75e-05	4.01e-04	4.22e-04	4.11e-04	5.10	n/a	4.62e-05	2.48E+00
S988000062	D		Aluminum-ICP-Acid Dil.	ug/mL	99.60	<5.00e-02	4.770	4.700	4.735	1.48	n/a	2.50e-01	n/a
S988000062	D		Barium-ICP-Acid Dil.	ug/mL	97.40	<5.00e-02	1.980	1.960	1.970	1.02	n/a	2.50e-01	n/a
S988000062	D		Chromium-ICP-Acid Dil.	ug/mL	96.60	<1.00e-02	9.10e-01	9.09e-01	9.09e-01	0.11	n/a	5.00e-02	n/a
S988000062	D		Iron-ICP-Acid Dil.	ug/mL	100.6	<5.00e-02	18.20	18.20	18.20	0.00	n/a	2.50e-01	n/a
S988000062	D		Manganese-ICP-Acid Dil.	ug/mL	98.40	<1.00e-02	4.27e-01	4.26e-01	4.26e-01	0.23	n/a	5.00e-02	n/a
S988000062	D		Nickel-ICP-Acid Dil.	ug/mL	98.20	<2.00e-02	7.87e-01	7.87e-01	7.87e-01	0.00	n/a	1.00e-01	n/a
S988000062	D		Lead-ICP-Acid Dil.	ug/mL	98.00	<1.00e-01	5.56e-01	5.60e-01	5.58e-01	0.72	n/a	5.00e-01	n/a
S988000062	D		Zirconium-ICP-Acid Dil.	ug/mL	99.60	<1.00e-02	1.080	1.060	1.070	1.87	n/a	5.00e-02	n/a
S988000062			Cesium-137 by GEA	uCi/mL	101.7	<1.65e-03	1.71e+02	168.0	169.5	1.77	n/a	n/a	0.130
S988000062			Am-241 by Extraction	uCi/mL	109.7	<6.94e-05	3.68e-04	3.73e-04	3.71e-04	1.35	n/a	8.90e-05	2.71E+00
S988000085	G		Selenium by GFAA	ug/L	120.0	<1.000	<1	<1	n/a	n/a	110.0	1.000	n/a
S988000086	B		Aluminum-ICP-Acid Digest-Liq	ug/mL	98.40	8.10e-02	10.10	7.300	8.700	32.2	90.60	1.250	n/a
S988000086	B		Barium-ICP-Acid Digest-Liquid	ug/mL	99.20	<5.00e-02	2.200	2.140	2.170	2.76	94.40	1.250	n/a
S988000086	B		Chromium-ICP-Acid Digest-Liq	ug/mL	97.60	<1.00e-02	1.040	1.020	1.030	1.94	91.40	2.50e-01	n/a
S988000086	B		Iron-ICP-Acid Digest-Liquid	ug/mL	98.00	1.60e-01	19.80	27.20	23.50	31.5	91.20	1.250	n/a
S988000086	B		Manganese-ICP-Acid Digest-Liq	ug/mL	97.80	<1.00e-02	5.41e-01	5.62e-01	5.52e-01	3.81	91.60	2.50e-01	n/a
S988000086	B		Nickel-ICP-Acid Digest-Liquid	ug/mL	101.0	<2.00e-02	9.70e-01	8.68e-01	9.19e-01	11.1	94.40	5.00e-01	n/a
S988000086	B		Lead-ICP-Acid Digest-Liquid	ug/mL	96.00	<1.00e-01	< 2.500	<2.50e0	n/a	n/a	90.40	2.500	n/a
S988000086	B		Zirconium-ICP-Acid Digest-Liq	ug/mL	100.8	<1.00e-02	1.130	1.040	1.085	8.29	101.6	2.50e-01	n/a

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SAMPLE BREAKDOWN
ATTACHMENT 1

HNF-SD-WM-DP-301, REV. 0

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Attachment 1

B PLANT TK 21-1 SAMPLE BREAKDOWN

LABCORE Data Entry Template for Worklist# 22563

Analyst: RLC Instrument: NONE Book # _____Method: LA-519-151 Rev/Mod F-O

Worklist Comment: TK-21-1 21-1-021898 Breakdown lad

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
98000140	TK-21-1 (1)	1 SAMPLE	S98B000059	0	@BRKDOWN1 DOSERATE	LIQUID	N/A	5000		mrad/hour
98000140	TK-21-1 (1)	1 SAMPLE	S98B000059	0	@BRKDOWN1 SEALNUM	LIQUID	N/A	N/A		
98000140	TK-21-1 (1)	1 SAMPLE	S98B000059	0	@BRKDOWN1 ETCHNUM	LIQUID	N/A	N/A		
98000140	TK-21-1 (1)	1 SAMPLE	S98B000059	0	@BRKDOWN1 APPEAR02	LIQUID	N/A	Clear		
98000140	TK-21-1 (1)	1 SAMPLE	S98B000059	0	@BRKDOWN1 SAMPANT2	LIQUID	N/A	100		mls ^{2/28/98}
98000140	TK-21-1 (1)	1 SAMPLE	S98B000059	0	@BRKDOWN1 STLSD01	LIQUID	N/A	5.170		% 2.10%
98000140	TK-21-1 (1)	1 SAMPLE	S98B000059	0	@BRKDOWN1 COLOR-01	LIQUID	N/A	Colorless		
98000140	TK-21-1 (1)	1 SAMPLE	S98B000059	0	@BRKDOWN1 ORGVOL02	LIQUID	N/A	None		ml

Final page for worklist # 22563

RLC 2-27-98
Analyst Signature Date

M. K. Wallom 2/28/98
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.

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REQUEST FOR SAMPLE ANALYSIS

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Project TK-21-1 (1)
in cell #3 group 98000140

REQUEST FOR SAMPLE ANALYSIS (RSA)

Group ID No. (For lab use only)

1. Sample Origin Tk-21-1 (B Plant, 221-B)	2. Date Sampled 02/18/98	4. Requestor's Name J. H. E. Rasmussen	6. TPCN KN604	7. Org. Code 16D00
3. Submitted By J. H. E. Rasmussen		5. Requestor's Phone/MSN/FAX 373-1128 S6-51 372-0050		

8. Customer ID No.	9. Laboratory Sample No.	10. Volume of Sample	11. Matrix of Sample	12. Requested Analyses	13. Expected Range
21-1-021898	98000140	100 ml	LA	Per HNF-SD-EV-118, Rev. 0-A @BKDOWN1	

14. Does sample have a MSDS?

- ☐ Yes HEHF assigned MSDS No. _____
- ☒ No Description of process that produced waste/sample:
Low level liquid waste from B Plant Canyon

15. Is this sample RCRA listed? ☒ Yes ☐ No

Applicable Listed Waste Codes:

- ☐ Yes ☒ No P Codes: (list) _____
- ☐ Yes ☒ No U Codes: (list) _____
- ☐ Yes ☒ No K Codes: (list) _____
- ☒ Yes ☐ No F Codes: (list) F001-F005

Applicable Characteristic Codes:

- ☐ Yes ☒ No D001: (how determined) Source Ignitable
- ☒ Yes ☐ No D002: (how determined) Analysis Corrosive
- ☐ Yes ☒ No D003: (how determined) Source Reactive
- ☐ Yes ☒ No Toxic: (list codes) Source

PCB: Does this waste/sample contain PCBs?

- ☐ Yes Over 500 ppm
- ☐ Yes Over 50 ppm
- ☐ Yes PCBs are suspected
- ☒ No PCBs are suspected

If YES, what is the source of the PCBs?

- ☐ Transformer, capacitor, or ballast
- ☐ Other, specify: _____
- ☐ Unknown

16. Sample Disposition

- ☐ Return to Customer
- ☐ Samples found to contain PCBs will be returned to the customer
- ☒ Dispose of per facility procedures with applied charges for analyses and disposal

Sample(s) Date/Rate of Contact

HPI Signature

17. QC Required ☒ Per 222-S Laboratory Quality Assurance Plan (HNF-SD-CP-QAPP-016)☐ Other (list reference document or attach) _____

18. Special Instructions (Special Storage Requirements, Reporting format, holding times, etc.)

Contact Jennifer Nuzum upon arrival.

19. Requested Turnaround Time

- ☐ 2 Weeks ☐ 4 Weeks
- ☒ Other Per SAP

20. Sample Received By:

2/18/98 2045
Date Time

21. Chain of Custody

- ☐ No ☒ Yes
- Number: _____

HNH-SD-WM-DP-301, REV. 0

SAMPLE PREPARATIONS

HNF-SD-WM-DP-301, REV. 0

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Worklist Version 2.1 05/15/95
03/02/98 14:25

HNF-SD-WM-DP-301 REV. 0

Page 1

LABCORE Data Entry Template for Worklist# 22670

Analyst: AVH Instrument: ACD01 Book # WHE-1A - 2.5 ml each
WHE-2 for STD
 Method: LA-505-158 Rev/Mod E O
WHE-1A > 1.25 ml each
WHE-2 > for spike
 Worklist Comment: B PLANT TANK 21 ACID DIGEST lad
DF = 20x

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK-PREP				ACID1602	LIQUID	1	1	N/A	DF
		2	STD-PREP				ACID1602	LIQUID	20	20	N/A	DF
98000140	TK-21-1 (1)	3	SAMPLE	9980000086	0	6	ACID1602	LIQUID	N/A	25		DF
			10 ml → 25 ml total volume									
98000140	TK-21-1 (1)	4	SAMPLE	9980000086	0	8	DOSE-02	LIQUID	N/A	60		mgad/hour
98000140	TK-21-1 (1)	5	DUP	9980000086	0	8	ACID1602	LIQUID	25	25	N/A	DF
			1.0 ml → 25 ml total volume									
98000140	TK-21-1 (1)	6	DUP	9980000086	0	8	DOSE-02	LIQUID	60	60	N/A	mgad/hour
98000140	TK-21-1 (1)	7	SPK	9980000086	0	8	ACID1602	LIQUID	NA	25	N/A	DF * see note
			1.0 ml → 25 ml total volume									
98000140	TK-21-1 (1)	8	SPK	9980000086	0	8	DOSE-02	LIQUID	NA	60	N/A	mgad/hour

Final page for worklist # 22670

Alte Hansen
 Analyst Signature Date

Ch. Olsen 3/25/98
 Analyst Signature Date

Validated
 3/25/98
 R.H. Fuller

Data Entry Comments: Used low sample size because only ~ 5 ml of
sample available

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

worklistprt Version 2.1 05/15/95
03/04/98 09:01

HNF-SD-WM-DP-301 REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 22752

Analyst: ADD Instrument: GAA01 Book # 58W10-A
 Method: LA-505-100 Rev/Mod A-0 * *Used 25mls to 25mls*
 Worklist Comment: B-PLANT TK-21-1 GFAA DIGEST lad *Note total volume (10x dilution) for both Std and Spike*

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			GFADIG01	LIQUID	<u>1</u>	<u>0.025</u>	<u>N/A</u>	DF
		2 STD-PREP			GFADIG01	LIQUID	<u>10</u>	<u>10</u>	<u>N/A</u>	DF
98000140	TK-21-1 (1)	3 SAMPLE <i>0.500ml → 25ml</i>	S98B000085	0	G	GFADIG01	LIQUID	<u>N/A</u>	<u>50</u>	DF
98000140	TK-21-1 (1)	4 SAMPLE	S98B000085	0	G	DOSE-02	LIQUID	<u>N/A</u>	<u>9</u>	mrads/hour
98000140	TK-21-1 (1)	5 DUP <i>0.500ml → 25ml</i>	S98B000085	0	G	GFADIG01	LIQUID	<u>50</u>	<u>50</u>	<u>N/A</u> DF
98000140	TK-21-1 (1)	6 DUP	S98B000085	0	G	DOSE-02	LIQUID	<u>9</u>	<u>7.5</u>	<u>N/A</u> mrads/hour
98000140	TK-21-1 (1)	7 SPK <i>0.500ml → 25ml</i>	S98B000085	0	G	GFADIG01	LIQUID	<u>NA</u>	<u>50</u>	<u>N/A</u> DF * <i>See note</i>
98000140	TK-21-1 (1)	8 SPK	S98B000085	0	G	DOSE-02	LIQUID	<u>NA</u>	<u>8.25</u>	<u>N/A</u> mrads/hour

Final page for worklist # 22752

Cathy Perin 4-2-98
 Analyst Signature Date

Tom DMS 4/3/98
 Analyst Signature Date

S98B000062 → S98B000085

Validated 4/3/98 uBand

Data Entry Comments:

APT Cindy Belew

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-301, REV. 0

INORGANIC ANALYSIS

HNF-SD-WM-DP-301, REV. 0

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Mar. 6. 1998

7:54AM

WHC 222S LAB ROOM 2F BACKSIDE

No. 1397 P. 1/4

worklistrpt Version 2.1 05/15/95
03/02/98 10:02

HNF-SD-WM-DP-301 REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 22662

Analyst: Ron Instrument: DSC0 3 Book # 12 N/AMethod: LA-514-114 Rev/Mod D-1

Worklist Comment: B Plant Tk21-1 DSC-03 skb

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-03	LIQUID	<u>28.45</u> <u>27.85</u>	<u>27.88</u> <u>3/6/98</u>	N/A	Joules/g
98000140	TK-21-1 (1)	2 SAMPLE	S98B000061	0	DSC-03	LIQUID	N/A	0		Joules/g
98000140	TK-21-1 (1)	3 DUP	S98B000061	0	DSC-03	LIQUID	0	0	N/A	Joules/g

Final page for worklist # 22662

Analyst Signature Ron Date 3/6/98Analyst Signature Susan Bee Date 3/6/98Validated 3/6/98 SS Machelor

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: IND030501 Thu Mar 5 19:05:45 1998

Sample Weight: 13.140 mg

STD 12N14-B

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

N2, EXOTHERM DOWN

TEMP: 140.0 °C TIMES: 0.0 min RATE: 10.0 °C/min

Temperature (°C)

RD MEYERS
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Mar 5 22:13:13 1998

HNF-SD-WM-DP-801 REV.0

Mar. 6 1998 7:54AM WMC 222S LAB ROOM 2F BACKSIDE

No. 1397 P. 2/4

Curve 1: DSC

File info: SAM030501 Thu Mar 5 23:15:17 1998

Sample Weight: 9.770 mg

S98B000061

N2 10C/min

TIME: 88.8 s

TIME: 0.0 min

RATE: 10.0 C/min

RD MEYERS

PERKIN-ELMER

7 Series Thermal Analysis System

Thu Mar 5 23:20:16 1998

HNF-SD-WM-DP-301 REV. 0

Mar. 6, 1998 7:55AM WHC 222S LAB ROOM 2F BACKSIDE

No. 1397 P. 3/4

Curve 1: DSC

File info: SAM030502 Fri Mar 6 00:22:14 1998

Sample Weight: 8.630 mg

S98B000061DUP

N2 10C/min

TIME: 35.0 g
TEMP: 500.0 °C

TIME: 0.0 min RATE: 10.0 °C/min

Temperature (°C)

RD MEYERS
PERKIN-ELMER
7 Series Thermal Analysis System
Fri Mar 6 01:58:52 1998

HNF-SD-WM-DP-301 REV. 0

Mar. 6, 1998 7:55AM WNC 222S LAB ROOM 2F BACKSIDE

No. 1397 P. 4/4

LABCORE Data Entry Template for Worklist# 23002

Analyst: ppb Instrument: DSC0 2 Book # NA

Method: LA-514-113 Rev/Mod PP 3/17/98

Worklist Comment: dsc02 for B-Plant liquid. seh

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
98000140	TK-21-1 (1)	1 SAMPLE	S98B000061	0	DSC-02	LIQUID	<u>N/A</u>	<u>0</u>		Joules/g Dry
98000140	TK-21-1 (1)	2 DUP	S98B000061	0	DSC-02	LIQUID	<u>0</u>	<u>0</u>	<u>N/A</u>	Joules/g Dry

Final page for worklist # 23002

PP Schelor 3/17/98
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.

worklistpt Version 2.1 05/15/95
03/02/98 09:09

HNF-SD-WM-DP-301 REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 22654Analyst: PM Instrument: TGA0 3 Book # 103NBAMethod: LA-514-114 Rev/Mod D-1

Worklist Comment: B Plant Tk21-1 .010mL TERLIQ skb

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-03	LIQUID	<u>59.0</u>	<u>59.07</u>	<u>N/A</u>	%
98000140	TK-21-1 (1)	2 SAMPLE	S98B000061 0		TGA-03	LIQUID	<u>N/A</u>	<u>99.26</u>		%
98000140	TK-21-1 (1)	3 DUP	S98B000061 0		TGA-03	LIQUID	<u>99.26</u>	<u>98.72</u>	<u>N/A</u>	%

Final page for worklist # 22654Analyst Signature: PM Date: 3/6/98Analyst Signature: Sum Bee Date: 3/6/98Validated 3/6/98 PM

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: TEMA030501 Thu Mar 5 19:30:18 1998

Sample Weight: 12.026 mg

103NB-A STD

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

10C/MIN N2

TEMP: 33.8 8

TIME: 0.0 min RATE: 10.0 C/min

RD MEYERS
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Mar 5 20:19:59 1998

HNF-SD-WM-DP-301 REV.0

Mar. 6 1998 7:53AM WHC 222S LAB ROOM 2F BACKSIDE No. 1396 P. 2/4

Curve 1: TGA

File info: SAM030502 Fri Mar 6 00:26:22 1998

Sample Weight: 8.540 mg

S98B000061DUP

10C/MIN N2
TEMP: 35.0 °C
TIME: 555.0 s
TIME: 0.0 min RATE: 10.0 C/min

Temperature (°C)

RD MEYERS
PERKIN-ELMER
7 Series Thermal Analysis System
Fri Mar 6 01:40:48 1998

HNF-SD-WM-DP-901 REV. 0

Mar. 6, 1998 7:53AM WNC 222S LAB ROOM 2F BACKSIDE

No. 1396 P. 3/4

HNF-SD-WM-DP-301 REV.0

Curve 1: TGA
 File info: SAM030501 Thu Mar 5 23:11:10 1998
 Sample Weight: 8.571 mg
 998B000061

RD MEYERS
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Thu Mar 5 23:31:10 1998

10C/MIN N2
 200.0 g
 0.0 min RATE1: 10.0 C/min
 TIME1:

LABCORE Data Entry Template for Worklist# 22648

Analyst: Ra Instrument: BA001 Book # 134N176

Method: LA-510-112 Rev/Mod D-1

Worklist Comment: B Plant Tk21-1 SPG-01 ZNCL2 std skb

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			SPG-01	LIQUID	<u>1.3779</u>	<u>1.345</u>	<u>N/A</u>	Sp.G.
98000140	TK-21-1 (1)	2 SAMPLE	S98B000061	0	SPG-01	LIQUID	<u>N/A</u>	<u>1.010</u>	<u>0.010</u>	Sp.G.
98000140	TK-21-1 (1)	3 DUP	S98B000061	0	SPG-01	LIQUID	<u>1.010</u>	<u>1.009</u>	<u>N/A</u>	Sp.G.

Final page for worklist # 22648

Analyst Signature Ra Date 3/3/98

Analyst Signature Erwin Ruc Date 3/04/98

Approved RW Schroeder 3/9/98

Data Entry Comments:

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		STANDARD	STANDARD
STANDARD	Gross Weight (W2)	1.9720	1.9525
Work List	Tare Weight (W1)	1.8709	1.8514
22648	Weight of Solution (W2-W1)	0.1011	0.1011
Test Code	Volume of Solution μL	75.1400	75.1400
SPG-01	Specific Gravity	1.3455	1.3455
Matrix	Specific Gravity (Average)	1.3455	
LIQUID			
Sample #			
STANDARD			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
RDM	Specific Gravity = $[(W2-W1) \times 1000 \mu\text{L}/\text{mL}] / [\text{Vol. of Solution } \mu\text{L} \times 1.000 \text{ g/mL}]$		
Date			
03/04/98	ν RESULT ν		
Time	Specific Gravity Average =	1.345	
04:30 AM			

Data Entry by:	Date:	03/04/98
Approved by:	Date:	3/9/98
Form 510112L1 Rev. 1.1		

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.8994	0.0000
Work List	Tare Weight (W1)	1.8235	0.0000
22648	Weight of Solution (W2-W1)	0.0759	0
Test Code	Volume of Solution μ L	75.1400	0.0000
SPG-01	Specific Gravity	1.0101	NA
Matrix			
LIQUID			
Sample #			
S98B000061			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
RDM	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
03/04/98	v RESULT v		
Time	Specific Gravity =	1.010	
04:30 AM			

Data Entry by:	Date:	03/04/98
Approved by:	Date:	3/7/98

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		DUP	REPLICATE
DUP	Gross Weight (W2)	1.9731	0.0000
Work List	Tare Weight (W1)	1.8973	0.0000
22648	Weight of Solution (W2-W1)	0.0758	0
Test Code	Volume of Solution μ L	75.1400	0.0000
SPG-01	Specific Gravity	1.0088	NA
Matrix			
LIQUID			
Sample #			
S98B000061			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
RDM	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
03/04/98	ν RESULT ν		
Time	Specific Gravity =	1.009	
04:30 AM			

Data Entry by:	Date:	03/04/98
Approved by:	Date:	3/9/98
Form 510112L1 Rev. 1.1		Page 1 of 1

LABCORE Data Entry Template for Worklist# 22647

Analyst:

Instrument: PH01 _____

Book # 16N19D

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

Worklist Comment: B Plant Tk21-1 PH-01 DIRECT std. skb

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STDPH			PH-01	LIQUID	<u>8.00</u>	<u>7.94</u>	<u>N/A</u>	pH
98000140	TK-21-1 (1)	2 SAMPLE	S98B000061 0		PH-01	LIQUID	<u>N/A</u>	<u>0.71</u>	<u>0.01</u>	pH
98000140	TK-21-1 (1)	3 DUP	S98B000061 0		PH-01	LIQUID	<u>0.71</u>	<u>0.71</u>	<u>N/A</u>	pH

Final page for worklist # 22647

3/3/98
Analyst Signature Date

3/04/98
Analyst Signature Date

Approved RW Schneider 3/9/98

Data Entry Comments:

LABCORE Data Entry Template for Worklist# 22652

Analyst: RK Instrument: PH01 Book # 10188-4

Method: LA-211-102 Rev/Mod _____

Worklist Comment: B Plant Tk21-1 OH-01 skb

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			OH-01	LIQUID	<u>N/A</u>	<u>PH=1.3</u>	<u>N/A</u>	ug/mL
		2 BLNK			OH-01	LIQUID	<u>N/A</u>	<u>PH=1.3</u>	<u>N/A</u>	ug/mL
98000140	TK-21-1 (1)	3 SAMPLE	S98B000061	0	OH-01	LIQUID	<u>N/A</u>	<u>PH=1.3</u>		ug/mL
98000140	TK-21-1 (1)	4 DUP	S98B000061	0	OH-01	LIQUID	<u>N/A</u>	<u>PH=1.3</u>	<u>N/A</u>	ug/mL

Final page for worklist # 22652

RK 3/5/98
Analyst Signature Date

[Signature] 3-5-98
Analyst Signature Date
Approved R. Schmitt 3/5/98

Data Entry Comments:

sample PH too low to run R. Nimm

date 98-03-05 time 16:40
 GET pH 12 # 284
 Id.#1 209
 Id.#2 1994
 pH(init) 5.80
 V/ml pH
 EP1 .008 4.78
 manual stop
 =====

date 98-03-05 time 16:40
 GET pH 12 # 284
 .10ml/div dPH=1/div
 start V .000 ml

date 98-03-05 time 16:46
 GET pH 12 # 285
 Id.#1 209
 Id.#2 1994
 pH(init) 11.70
 V/ml pH
 EP1 .253 9.90
 EP2 .322 7.57
 manual stop
 =====

date 98-03-05 time 16:46
 GET pH 12 # 285
 .10ml/div dPH=1/div
 start V .000 ml

5986000061
 C00= 1ml
 date 98-03-05 time 16:54
 GET pH 12 # 286
 Id.#1 61-1
 Id.#2 1994
 pH(init) 11.30
 manual stop
 =====

calibration data
 date 98-03-05
 pH(S) 1 7.00
 pH(S) 2 10.00
 T cal. 23.0 °C
 slope(ref) .983
 Ufas) -1.5 mV
 electr. input 1
 =====

LABCORE Data Entry Template for Worklist# 23253

Analyst: RL Instrument: PH01 Book # 9678-4

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

Worklist Comment: H+ION-01 FOR B PLANT TK-21-1 RUSH RTS

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			H+ION-01	LIQUID	<u>2.02</u>	<u>1.93</u>	<u>N/A</u>	moles/Liter
		2 BLNK			H+ION-01	LIQUID	<u>1</u>	<u>OK</u>	<u>N/A</u>	moles/Liter
98000140	TK-21-1 (1)	3 SAMPLE	S98B000062	0	H+ION-01	LIQUID	<u>N/A</u>	<u>2.72^{e1}</u>		moles/Liter
98000140	TK-21-1 (1)	4 DUP	S98B000062	0	H+ION-01	LIQUID	<u>2.72^{e-1}</u>	<u>2.66^{e-1}</u>	<u>N/A</u>	moles/Liter

Final page for worklist # 23253

Not King 4/2/98
Analyst Signature Date

St. Dub 4/6/98
Analyst Signature Date

Approved RW Schroeder 4/6/98

Data Entry Comments:

calibration data
 ate 98-04-02
 -H(S) 1 4.30
 -H(S) 2 7.00
 .cal. 23.5 °C
 -slope(ref) .988
 -slope 7.2 mV/
 electr. input 1
 =====

HNF-SD-WM-DP-301 REV. 0

Blank

6.80

std

C00= .050ml

date 98-04-02 time 09:28
 GET pH 11 # 297
 Id.#1 61-1
 Id.#2 .2012
 pH(init) 4.61
 V/ml pH
 EP1 .480 6.32
 manual stop
 =====

date 98-04-02 time 09:29
 GET pH 11 # 297
 .10ml/div dPH=1/div
 start V .000 ml

598B000062
 Id.#1 62
 C00= .100ml

date 98-04-02 time 09:51
 GET pH 11 # 299
 Id.#1 62
 Id.#2 .2012
 pH(init) 5.16
 V/ml pH
 EP1 .135 6.44
 manual stop
 =====

date 98-04-02 time 09:52
 GET pH 11 # 299
 .10ml/div dPH=1/div
 start V .000 ml

598B000062#4p

date 98-04-02 time 09:59
 GET pH 11 # 300
 Id.#1 62-2
 Id.#2 .2012
 pH(init) 5.19
 V/ml pH
 EP1 .132 6.42
 manual stop
 =====

date 98-04-02 time 10:00
 GET pH 11 # 300
 .10ml/div dPH=1/div
 start V .000 ml

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

PH-01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
rwk		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
04/02/98		
Time		
	$\text{Concentration of OH in Sample (Molarity)} \quad H^+$	STD
		1.93E+00
	OH in Sample in µg/mL (PPM)	3.28E+04

Data Entry by:	Date:	04/06/98
Approved by: <i>Rw. Schneider</i>	Date:	4/6/98
Form 211102 1 Rev. 1.3	Page 1 of 1	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		SAMPLE
Type	Sample Size (mL) SS	0.100
SAMPLE	Concentration of HNO3 (Molarity)	0.2012
Work List	HNO3 Titrant at OH end-point in mL	0.135
23253	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	2.72E-01
H+ION-01	OH in Sample in µg/mL (PPM)	4.62E+03
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S98B000062		
Instrument Code	Detection Limit (µg/mL)	1.25E+03
PH-01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
rwk		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
04/02/98		
Time		
		SAMPLE
Concentration of OH in Sample (Molarity) H^+		2.72E-01
OH in Sample in µg/mL (PPM)		4.62E+03

Data Entry by:

Approved by:

Form 211102_1 Rev. 1.3

Date: 04/06/98

Date: 4/6/98

Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		DUP
Type	Sample Size (mL) SS	0.100
DUP	Concentration of HNO3 (Molarity)	0.2012
Work List	HNO3 Titrant at OH end-point in mL	0.132
23253	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	2.66E-01
H+ION-01	OH in Sample in µg/mL (PPM)	4.51E+03
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S98B000062		
Instrument Code	Detection Limit (µg/mL)	1.25E+03
PH-01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
rwk		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
04/02/98		
Time		
		DUP
	Concentration of OH in Sample (Molarity) H^+	2.66E-01
	OH in Sample in µg/mL (PPM)	4.51E+03

Data Entry by:	Date:	04/06/98
Approved by:	Date:	4/6/98
Form 211102_1 Rev. 1.3		

LABCORE Data Entry Template for Worklist# 22661

Analyst: RWK Instrument: NH301 Book # 41N19D

Method: LA-631-001 Rev/Mod C-O

Worklist Comment: B Plant TK21-1 NH3-01 1mL NH3STD skb

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			NH3-01	LIQUID	<u>4.08e2</u>	<u>4.39e2</u>	<u>N/A</u>	ug/mL
		2 BLNK			NH3-01	LIQUID	<u>1</u>	<u><0.200</u>	<u>N/A</u>	ug/mL
98000140	TK-21-1 (1)	3 SAMPLE	S98B000062	0	NH3-01	LIQUID	<u>N/A</u>	<u>2.49e2</u>	<u>5.00</u>	ug/mL
98000140	TK-21-1 (1)	4 DUP	S98B000062	0	NH3-01	LIQUID	<u>2.49e2</u>	<u>2.09e2</u>	<u>N/A</u>	ug/mL
98000140	TK-21-1 (1)	5 SPK	S98B000062	0	NH3-01	LIQUID	<u>100</u>	<u>116</u>	<u>N/A</u>	ug/mL
		6 STD			NH3-01	LIQUID	<u>4.08e2</u>	<u>3.94e2</u>	<u>N/A</u>	ug/mL

Final page for worklist # 22661

SEE ATTACHED
Analyst Signature Date

R. Schneider 3/9/98
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# 22661

Analyst: 22 K Instrument: NH301 Book# 4/11/98

Method: LA-631-001 Rev/Mod _____

Worklist Comment: B Plant Tk21-1 NH3-01 1mL NH3STD skb

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			NH3-01	LIQUID		
2 BLNK			NH3-01	LIQUID		
3 SAMPLE	S98B000062 0		NH3-01	LIQUID	98000140	TK-21-1 (1)
Analytes Requested: NH3-01						
4 DUP	S98B000062 0		NH3-01	LIQUID		
5 SPK	S98B000062 0		NH3-01	LIQUID		
6 STD			NH3-01	LIQUID		

Final page for worklist # 22661

3/5/98
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

WORKBOOK PAGE: STD1

AMMONIA (NH3) : LA-631-001 (C-0)

LIQUIDS/SOLIDS

		STD
Type	Instrument Data (µg/mL)	ID 17.700
STD	Blank Result from the Instrument (µg/mL)	BR 0.1210
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 1.0
22661	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code	LCS Standard Book Number	LCS 41N19D
NH3-01	LCS Standard Concentration (µg/mL)	STD VAL 4.08E+02
Matrix		
LIQUID		
Batch Number		
98001000		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	NH3 CONC 4.39E+02
Sample #		
STANDARD	Method Detection Limit (µg/mL)	1.00
Instrument Code		
NH301		
Prepared By		
RCJ	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)	
Chemist		
RWS		
Analyst		
RWK	LCS Standard % Recovery = (NH3 CONC / STD VAL) * 100	
Date Complete		
03/05/98		
Analysis Date		
03/05/98		
Analysis Time	LCS Standard % Recovery	108%
03:00 PM		
Sample Point	NH3 Concentration (µg/mL)	4.39E+02
TK 21-1		

Analyst:		RWK Date: 03/05/98
Signature of Chemist:	<i>RW Schneider</i>	RWS Date: 3/9/98
SAMPLE.WB1 REV XX	37810NML	

WORKBOOK PAGE: BLANK2

AMMONIA (NH3) : LA-631-001 (C-0)

LIQUIDS/SOLIDS

Type	Instrument Data (µg/mL)	ID	BLNK
BLNK	Blank Result from the Instrument (µg/mL)	BR	0.121
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.1210
22661	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code			
NH3-01			
Matrix			
LIQUID			
Batch Number			
98001000			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	< 1.00E+00
Sample #			< 0.200
BLANK	Method Detection Limit (µg/mL)		
Instrument Code			
NH301			
Prepared By			
RCJ	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)		
Chemist			
RWS			
Analyst			
RWK			
Date Complete			
03/05/98			
Analysis Date			
03/05/98			
Analysis Time			
03:00 PM			
Sample Point	NH3 Concentration (µg/mL)		< 0.200
TK 21-1			< 1.00E+00

2.00 x 25/25 = 5.00
 0.200
 3/9/98
 RWS
 3/9/98

(ID-BR)
 RWS
 3/9/98

RWS
 3/9/98

Analyst:	RWS	Date:	03/05/98
Signature of Chemist:	RWS	Date:	3/9/98

SAMPLE.WB1 REV XX

37810NML

WORKBOOK PAGE: SAM3

AMMONIA (NH3) : LA-631-001 (C-0)

LIQUIDS/SOLIDS

		SAMPLE
Type	Instrument Data (µg/mL)	ID 10.100
SAMPLE	Blank Result from the Instrument (µg/mL)	BR 0.1210
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 1.0
22661	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code		
NH3-01		
Matrix		
LIQUID		
Batch Number		
98001000		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	NH3 CONC 2.49E+02
Sample #		
S98B000062	Method Detection Limit (µg/mL)	$2.00 \times \frac{25}{1} = 5.00$ 1.00
Instrument Code	RWS 3/9/98	
NH301		
Prepared By		
RCJ	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)	
Chemist		
RWS		
Analyst		
RWK		
Date Complete		
03/05/98		
Analysis Date		
03/05/98		
Analysis Time		
03:00 PM		
Sample Point	NH3 Concentration (µg/mL)	2.49E+02
TK 21-1		

Analyst:	RWK Date: 03/05/98
Signature of Chemist:	RWS Date: 3/9/98
SAMPLE.WB1 REV XX	

57810NML

WORKBOOK PAGE: DUP4

AMMONIA (NH3) : LA-631-001 (C-0)

LIQUIDS/SOLIDS

DUP

Type	Instrument Data (µg/mL)	ID	8.490
DUP	Blank Result from the Instrument (µg/mL)	BR	0.1210
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	1.0
22661	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code			
NH3-01			
Matrix			
LIQUID			
Batch Number	Sample Concentration (µg/mL)	SAM CONC	2.49E+02
98001000			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	2.09E+02
Sample #			
S98B000062	Method Detection Limit (µg/mL)	1.00	
Instrument Code	.200 x 25/1 = 3.00 RWS 3/9/98		
NH301	RPD (DUP & SAM) = Absolute Val. ((NH3 CONC - SAM CONC) / ((NH3 CONC + SAM CONC) / 2)) * 10		
Prepared By			
RCJ	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)		
Chemist			
RWS			
Analyst			
RWK			
Date Complete			
03/05/98			
Analysis Date			
03/05/98			
Analysis Time			
03:00 PM	RPD (DUP & SAM)	18%	
Sample Point	NH3 Concentration (µg/mL)	2.09E+02	
TK 21-1			

Analyst:	RWK	Date:	03/05/98
Signature of Chemist:	<i>RWS</i>	Date:	3/9/98
SAMPLE.WB1 REV XX	37810NML		

WORKBOOK PAGE: SPIKE5

AMMONIA (NH3) : LA-631-001 (C-0)

LIQUIDS/SOLIDS

		SPK
Type	Instrument Data (µg/mL)	ID 23.000
SPK	Blank Result from the Instrument (µg/mL)	BR 0.1210
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 1.0
22661	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code	Spike Book Number	SPK 41N19D
NH3-01	Spike Value (µg/mL)	SPK VAL 4.08E+02
Matrix	Vol of Spike Standard Used (mL)	VOL SPK 0.680
LIQUID		
Batch Number		
98001000		
Rerun	Sample Instrument Data (µg/mL)	SAM ID 10.1
0	Sample Volume of Sample (mL)	SAM VSAM 1.0
Sample Prep	Sample Final Volume (mL)	SAM FVOL 25.0
N/A	NH3 Concentration (µg/mL)	NH3 CONC 5.72E+02
Sample #		
S98B000062	Method Detection Limit (µg/mL)	1.00
Instrument Code		
NH301		
Prepared By		
RCJ	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)	
Chemist		
RWS	QC ACTUAL = SPK VAL * Vol SPK	
Analyst	QC FOUND = (((ID-BR) * FVOL) - (SAM ID - BR) * SAM FVOL * (VSAM / SAM VSAM))	
RWK	Spike % Recovery =	
Date Complete	(((ID-BR) * FVOL) - (SAM ID - BR) * SAM FVOL * (VSAM / SAM VSAM)) / (SPK VAL * VOL SPK) * 100	
03/05/98		
Analysis Date	QC ACTUAL (µg)	2.77e2 4.08E+02
03/05/98	QC FOUND (µg)	3.23e2 4.23E+02
Analysis Time	Spike % Recovery	116%
03:00 PM		
Sample Point	NH3 Concentration (µg/mL)	5.72E+02
TK 21-1		

Analyst:	RWK Date: 03/05/98
Signature of Chemist:	RWS Date: 3/7/98
SAMPLE.WB1 REV XX	37810NML

WORKBOOK PAGE: ST_END6

AMMONIA (NH3) : LA-631-001 (C-0)

LIQUIDS/SOLIDS

		STD
Type	Instrument Data (µg/mL)	ID 15.900
STD	Blank Result from the Instrument (µg/mL)	BR 0.1210
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 1.0
22661	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code	LCS Standard Book Number	LCS 41N19D
NH3-01	LCS Standard Concentration (µg/mL)	STD VAL 4.08E+02
Matrix		
LIQUID		
Batch Number		
98001000		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	NH3 CONC 3.94E+02
Sample #		
ENDING STANDAR	Method Detection Limit (µg/mL)	$2.00 \times 25 = 5.00$ 4.00
Instrument Code		RWS 3/9/98
NH301		
Prepared By		
RCJ	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)	
Chemist		
RWS		
Analyst		
RWK	LCS Standard % Recovery = (NH3 CONC / STD VAL) * 100	
Date Complete		
03/05/98		
Analysis Date		
03/05/98		
Analysis Time	LCS Standard % Recovery	97%
03:00 PM		
Sample Point	NH3 Concentration (µg/mL)	3.94E+02
TK 21-1		

Analyst:	RWK	Date:	03/05/98
Signature of Chemist:	<i>Rw Schneider</i>	RWS	Date: 3/9/98
SAMPLE.WB1 REV XX	37810NML		

SAMPLE VOL= 25.000 AT 09:07, 03-05-98
ENTERED

EMF= 59.6 mV AT 09:09, 03-05-98

EMF= 58.9 mV AT 09:09, 03-05-98

EMF= 58.7 mV AT 09:10, 03-05-98

EMF= 58.6 mV AT 09:10, 03-05-98

EMF= 58.7 mV AT 09:11, 03-05-98
ENTEREDSTD CONC= 1000 AT 09:11, 03-05-98
ENTEREDSTD VOL= .25000 AT 09:11, 03-05-98
ENTERED

EMF= 47.7 mV AT 09:13, 03-05-98

EMF= 47.5 mV AT 09:14, 03-05-98

EMF= 47.3 mV AT 09:14, 03-05-98

EMF= 47.2 mV AT 09:14, 03-05-98

EMF= 47.2 mV AT 09:15, 03-05-98
ENTEREDSTD VOL= 2.5000 AT 09:16, 03-05-98
ENTERED

EMF= 10.0 mV AT 09:19, 03-05-98

EMF= 9.7 mV AT 09:19, 03-05-98

EMF= 9.5 mV AT 09:20, 03-05-98

EMF= 9.5 mV AT 09:20, 03-05-98
ENTERED1:NH3 SLOPE=-60.6 mV/DEC
AT 09:20, 03-05-98

1:NH3 CONC= 17.7

~~DOUBLE KNOWN ADDITION SELECTED~~

AT 07:39, 03-05-98

SAMPLE VOL= 25.000 AT 07:40, 03-05-98
ENTERED

EMF= 180.4 mV AT 07:55, 03-05-98

EMF= 182.2 mV AT 07:57, 03-05-98

EMF= 182.7 mV AT 07:57, 03-05-98

EMF= 183.1 mV AT 07:58, 03-05-98

EMF= 183.3 mV AT 07:58, 03-05-98

EMF= 183.7 mV AT 07:58, 03-05-98

EMF= 183.9 mV AT 07:59, 03-05-98

EMF= 184.3 mV AT 07:59, 03-05-98

EMF= 184.4 mV AT 07:59, 03-05-98
ENTEREDSTD CONC= 1000 AT 08:00, 03-05-98
ENTEREDSTD VOL= .25000 AT 08:00, 03-05-98
ENTERED

EMF= 71.6 mV AT 08:04, 03-05-98

EMF= 71.1 mV AT 08:04, 03-05-98

EMF= 71.0 mV AT 08:05, 03-05-98

EMF= 70.6 mV AT 08:05, 03-05-98

EMF= 70.5 mV AT 08:05, 03-05-98

EMF= 70.4 mV AT 08:06, 03-05-98
ENTEREDSTD VOL= 2.5000 AT 08:06, 03-05-98
ENTERED

EMF= 11.9 mV AT 08:10, 03-05-98

EMF= 11.6 mV AT 08:10, 03-05-98

EMF= 11.3 mV AT 08:11, 03-05-98

EMF= 11.2 mV AT 08:11, 03-05-98
ENTERED1:NH3 SLOPE=-59.5 mV/DEC
AT 08:11, 03-05-98

DOUBLE KNOWN ADDITION SELECTED
AT 10:49, 03-05-98

SAMPLE VOL= 25.000 AT 10:50, 03-05-98
ENTERED

EMF= 77.2 mV AT 10:54, 03-05-98

EMF= 77.1 mV AT 10:55, 03-05-98

EMF= 76.6 mV AT 10:55, 03-05-98

EMF= 76.7 mV AT 10:56, 03-05-98

EMF= 76.8 mV AT 10:56, 03-05-98
ENTERED

STD CONC= 1000 AT 10:56, 03-05-98
ENTERED

STD VOL= .25000 AT 10:57, 03-05-98
ENTERED

EMF= 60.1 mV AT 10:59, 03-05-98

EMF= 59.3 mV AT 10:59, 03-05-98

EMF= 59.1 mV AT 11:00, 03-05-98

EMF= 58.9 mV AT 11:00, 03-05-98

EMF= 58.9 mV AT 11:00, 03-05-98
ENTERED

STD VOL= 2.5000 AT 11:01, 03-05-98
ENTERED

EMF= 15.0 mV AT 11:04, 03-05-98

EMF= 14.6 mV AT 11:04, 03-05-98

EMF= 14.4 mV AT 11:05, 03-05-98

EMF= 14.3 mV AT 11:05, 03-05-98
ENTERED

1:NH3 SLOPE=-60.6 mV/DEC
AT 11:05, 03-05-98

1:NH3 CONC= 10.1

598B000062
1ml

DOUBLE KNOWN ADDITION SELECTED
AT 11:15, 03-05-98

SAMPLE VOL= 25.000 AT 11:15, 03-05-98
ENTERED

EMF= 82.8 mV AT 11:16, 03-05-98

EMF= 82.3 mV AT 11:16, 03-05-98

EMF= 82.1 mV AT 11:17, 03-05-98

EMF= 81.9 mV AT 11:17, 03-05-98

EMF= 81.8 mV AT 11:17, 03-05-98
ENTERED

STD CONC= 1000 AT 11:17, 03-05-98
ENTERED

STD VOL= .25000 AT 11:18, 03-05-98
ENTERED

EMF= 62.3 mV AT 11:20, 03-05-98

EMF= 62.1 mV AT 11:21, 03-05-98

EMF= 61.9 mV AT 11:21, 03-05-98

EMF= 61.9 mV AT 11:22, 03-05-98

EMF= 61.7 mV AT 11:22, 03-05-98

EMF= 61.8 mV AT 11:22, 03-05-98
ENTERED

STD VOL= 2.5000 AT 11:23, 03-05-98
ENTERED

EMF= 16.7 mV AT 11:26, 03-05-98

EMF= 16.2 mV AT 11:26, 03-05-98

EMF= 16.4 mV AT 11:27, 03-05-98
ENTERED

EMF= 15.9 mV AT 11:27, 03-05-98

EMF= 15.9 mV AT 11:27, 03-05-98
ENTERED

1: NHE SLOPE=-59.9 mV/DEC
AT 11:28, 03-05-98

598800062
1 ml
D410

DOUBLE KNOWN ADDITION SELECTED

AT 11:35, 03-05-98

SAMPLE VOL= 25.000 AT 11:35, 03-05-98
ENTERED

EMF= 59.0 mV AT 11:36, 03-05-98

EMF= 59.2 mV AT 11:37, 03-05-98

EMF= 59.2 mV AT 11:37, 03-05-98
ENTERED

STD CONC= 1000 AT 11:38, 03-05-98
ENTERED

STD VOL= .25000 AT 11:38, 03-05-98
ENTERED

EMF= 50.1 mV AT 11:40, 03-05-98

EMF= 49.8 mV AT 11:41, 03-05-98

EMF= 49.7 mV AT 11:41, 03-05-98

EMF= 49.2 mV AT 11:42, 03-05-98

EMF= 49.5 mV AT 11:42, 03-05-98

EMF= 49.5 mV AT 11:42, 03-05-98

EMF= 49.5 mV AT 11:43, 03-05-98
ENTERED

STD VOL= 2.5000 AT 11:43, 03-05-98
ENTERED

EMF= 14.5 mV AT 11:46, 03-05-98

EMF= 14.1 mV AT 11:46, 03-05-98

EMF= 13.8 mV AT 11:47, 03-05-98

EMF= 13.6 mV AT 11:48, 03-05-98

EMF= 13.6 mV AT 11:48, 03-05-98
ENTERED

1:NH3 SLOPE=-63.6 mV/DEC
AT 11:48, 03-05-98

1:NH3 CONC= 23.0

Spike

598000062

*1mL S.S.
.680^{ml} spike*

DOUBLE KNOWN ADDITION SELECTED

AT 12:00, 03-05-98

SAMPLE VOL= 25.000 AT 12:00, 03-05-98
ENTERED

EMF= 68.1 mV AT 12:03, 03-05-98

EMF= 67.0 mV AT 12:03, 03-05-98

EMF= 66.4 mV AT 12:04, 03-05-98

EMF= 66.2 mV AT 12:04, 03-05-98

EMF= 65.9 mV AT 12:04, 03-05-98

EMF= 65.7 mV AT 12:05, 03-05-98

EMF= 65.8 mV AT 12:05, 03-05-98

EMF= 65.5 mV AT 12:06, 03-05-98

EMF= 65.5 mV AT 12:06, 03-05-98

ENTERED

STD CONC= 1000 AT 12:07, 03-05-98

ENTERED

STD VOL= .25000 AT 12:07, 03-05-98

ENTERED

EMF= 54.2 mV AT 12:09, 03-05-98

EMF= 53.8 mV AT 12:09, 03-05-98

EMF= 53.5 mV AT 12:10, 03-05-98

EMF= 53.4 mV AT 12:10, 03-05-98

EMF= 53.3 mV AT 12:10, 03-05-98

EMF= 53.3 mV AT 12:11, 03-05-98

ENTERED

STD VOL= 2.5000 AT 12:11, 03-05-98

ENTERED

EMF= 15.9 mV AT 12:14, 03-05-98

EMF= 15.5 mV AT 12:14, 03-05-98

EMF= 15.4 mV AT 12:15, 03-05-98

EMF= 15.3 mV AT 12:16, 03-05-98

EMF= 15.3 mV AT 12:17, 03-05-98

ENTERED

1:NH3 SLOPE=-58.9 mV/DEC

AT 12:17, 03-05-98

*Ending
Std*

LABCORE Completed Worklist Report for Worklist# 22649

Analyst: vlm

Instrument: IC01

Book# 118N207

Method: 14-533-125 Rev/Mod E-0

Worklist Comment: B Plant Tk21-1 IC-01 .100mL-10mL DIONEX IV skb

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 CCB	0	②IC-QC F	QC	1	<1.20e-2		ug/mL
1 CCB	0	②IC-QC CL	QC	1	<1.70e-2		ug/mL
1 CCB	0	②IC-QC NO2	QC	1	<1.05e-1		ug/mL
1 CCB	0	②IC-QC BR	QC	1	<1.25e-1		ug/mL
1 CCB	0	②IC-QC NO3	QC	1	<1.39e-1		ug/mL
1 CCB	0	②IC-QC P04	QC	1	<1.20e-1		ug/mL
1 CCB	0	②IC-QC S04	QC	1	1.64e-01	0.164	ug/mL
1 CCB	0	②IC-QC OXALATE2	QC	1	<1.05e-1		ug/mL
2 CCV	0	②IC-QC F	QC	5.90e1	5.37e+01	101.186 % Recovery	
2 CCV	0	②IC-QC CL	QC	8.00e1	8.15e+01	101.875 % Recovery	
2 CCV	0	②IC-QC NO2	QC	5.42e2	5.30e+02	97.786 % Recovery	
2 CCV	0	②IC-QC BR	QC	5.89e2	5.87e+02	99.660 % Recovery	
2 CCV	0	②IC-QC NO3	QC	5.94e2	5.79e+02	97.475 % Recovery	
2 CCV	0	②IC-QC P04	QC	5.45e2	5.25e+02	96.330 % Recovery	
2 CCV	0	②IC-QC S04	QC	6.32e2	6.38e+02	100.949 % Recovery	
2 CCV	0	②IC-QC OXALATE2	QC	5.31e2	5.26e+02	99.058 % Recovery	
3 SAMPLE	S98B000061 0	②IC-01 F-02	LIQUID	N/A	<1.33e+01	13.330	ug/mL
3 SAMPLE	S98B000061 0	②IC-01 CL-02	LIQUID	N/A	3.665e+01	18.890	ug/mL
3 SAMPLE	S98B000061 0	②IC-01 NO2-02	LIQUID	N/A	<1.200e+02	120.000	ug/mL
3 SAMPLE	S98B000061 0	②IC-01 BR-02	LIQUID	N/A	<1.389e+02	138.900	ug/mL
3 SAMPLE	S98B000061 0	②IC-01 NO3-02	LIQUID	N/A	1.810e+04	184.400	ug/mL
3 SAMPLE	S98B000061 0	②IC-01 P04-02	LIQUID	N/A	2.223e+02	133.300	ug/mL
3 SAMPLE	S98B000061 0	②IC-01 S04-02	LIQUID	N/A	3.614e+02	153.300	ug/mL
3 SAMPLE	S98B000061 0	②IC-01 OXALATE2	LIQUID	N/A	1.256e+03	116.700	ug/mL
4 DUP	S98B000061 0	②IC-01 F-02	LIQUID	<1.33e1	<1.33e1		RPD
4 DUP	S98B000061 0	②IC-01 CL-02	LIQUID	3.66e+01	4.12e+01	11.825	RPD
4 DUP	S98B000061 0	②IC-01 NO2-02	LIQUID	<1.20e2	<1.20e2		RPD
4 DUP	S98B000061 0	②IC-01 BR-02	LIQUID	<1.39e2	<1.39e2		RPD
4 DUP	S98B000061 0	②IC-01 NO3-02	LIQUID	1.81e+04	1.78e+04	1.674	RPD
4 DUP	S98B000061 0	②IC-01 P04-02	LIQUID	2.22e+02	2.10e+02	5.556	RPD
4 DUP	S98B000061 0	②IC-01 S04-02	LIQUID	3.61e+02	3.40e+02	5.991	RPD
4 DUP	S98B000061 0	②IC-01 OXALATE2	LIQUID	1.26e+03	1.25e+03	0.797	RPD
5 SPK	S98B000061 0	②IC-01 F-02	LIQUID	5.90e1	6.18e+01	104.746 % Recovery	
5 SPK	S98B000061 0	②IC-01 CL-02	LIQUID	8.00e1	7.78e+01	97.250 % Recovery	
5 SPK	S98B000061 0	②IC-01 NO2-02	LIQUID	5.42e2	5.35e+02	98.708 % Recovery	
5 SPK	S98B000061 0	②IC-01 BR-02	LIQUID	5.89e2	5.87e+02	99.660 % Recovery	
5 SPK	S98B000061 0	②IC-01 NO3-02	LIQUID	5.94e2	5.68e+02	95.623 % Recovery	
5 SPK	S98B000061 0	②IC-01 P04-02	LIQUID	5.45e2	5.30e+02	97.248 % Recovery	
5 SPK	S98B000061 0	②IC-01 S04-02	LIQUID	6.32e2	6.32e+02	100.000 % Recovery	
5 SPK	S98B000061 0	②IC-01 OXALATE2	LIQUID	5.31e2	5.21e+02	98.117 % Recovery	

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

LABCORE Completed Worklist Report for Worklist# 22649

Seq	Type	Sample#	RA	Test	Matrix	Actual	Found	DL or Yield	Unit
-----	------	---------	----	------	--------	--------	-------	-------------	------

Final page for worklist# 22649

RLHlab 3/4/98
Analyst Signature Date

Analyst Signature Date

James M. Lugo 3/4/98
Reviewer Signature Date

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

03/02/98 07:31

HNF-SD-WM-DP-301 REV. 0

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A-0004-1

LABCORE Data Entry Template for Worklist# 22649

Analyst: VLM Instrument: IC0 IC01 Book# 11820
N20-0
03-03-98Method: LA-533-105 Rev/Mod E-0

Worklist Comment: B Plant Tk21-1 IC-01 .100mL-10mL DIGNEX IV skb

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	CCB				@IC-QC	QC		
2	CCV				@IC-QC	QC		
3	SAMPLE	S98B000061 0			@IC-01	LIQUID	98000140	TK-21-1 (1)
		Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
4	DUP	S98B000061 0			@IC-01	LIQUID		
5	SPK	S98B000061 0			@IC-01	LIQUID		

Final page for worklist # 22649

Valerie Mason 03-03-98
Analyst Signature Date_____
Analyst Signature DateData Entry Comments:

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

Sample Name: CCB Date: 03/03/1998 13:59:14
 Data File : C:\DX\DATA\98030301.D05 HNF-SD-WM-DP-301 REV. 0
 Method : C:\DX\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 5 Detector: CDM-1
 Analyst : *Valeur & Massie* Column: AG4A/AS4A anion column

83-83-99

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
-------------	--------	----------	--------	------	-------	------	------	--------

External	1	1	3000	5Hz	0.00	10.00		30
----------	---	---	------	-----	------	-------	--	----

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.13		0.000	23	136	1	
2	5.97	sulfate	0.164	80	1267	1	1.82
Totals			0.164	103	1403		

File: 98030301.D05 Sample: CCB

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

Sample Name: CCV 118N20-D Date: 03/03/1998 14:19:51
 Data File : C:\DX\DATA\98030301.D06
 Method : C:\DX\METHOD\KIT.MET HNF-SD-WM-DP-301 REV. 0
 ACI Address: 1 System: 1 Inject#: 6 Detector: CDM-1
 Analyst : *Valerie M. Moore* Column: AG4A/AS4A anion column
85-83-94

Calibration Volume Dilution Points Rate Start Stop Area Reject

External 1 101 3000 5Hz 0.00 10.00 30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.85		0.000	104	479	2	
2	1.01	fluoride	59.738	2325	11229	2	0.33
3	1.38		0.000	15	62	1	
4	1.54	chloride	81.511	2207	10168	1	0.00
5	1.84	nitrite	530.103	8696	46487	1	-1.43
6	2.77	bromide	587.486	5561	34011	1	1.97
7	3.14	nitrate	579.381	6035	43981	1	-1.57
8	4.53	phosphate	524.821	1600	19439	1	1.19
9	5.97	sulfate	637.779	5018	64122	1	1.82
10	7.79	oxalate	526.074	2103	39998	1	2.10
Totals			3526.893	33664	269976		

File: 98030301.D06 Sample: CCV 118N20-D

Sample Name: S98B000061 Date: 03/03/1998 15:08:40
 Data File : C:\DX\DATA\98030301.D09
 Method : C:\DX\METHOD\KIT.MBT HNF-SD-WM-DP-301 REV. 0
 ACI Address: 1 System: 1 Inject#: 9 Detector: CDM-1
 Analyst : *Valerie Masse* Column: AG4A/AS4A anion column

03-03-98

Calibration Volume Dilution Points Rate Start Stop Area Reject

External 1 1111 3000 5Hz 0.00 10.00 30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
2	1.13		0.000	88	478	1	
3	1.37		0.000	31	188	2	
4	1.53	chloride	36.654	60	259	2	-0.43
5	3.09	nitrate	18099.384	16197	130009	1	-3.03
6	4.56	phosphate	222.311	21	243	1	1.79
7	5.97	sulfate	361.371	204	2893	1	1.82
8	7.84	oxalate	1255.645	456	7876	1	2.80

Totals 19975.366 17056 141945

File: 98030301.D09 Sample: S98B000061

Sample Name: S98B000061 DUP Date: 03/03/1998 15:19:40
 Data File : C:\DX\DATA\98030301.D10
 Method : C:\DX\METHOD\KIT.MET HNF-SD-WM-DP-301 REV.0
 ACI Address: 1 System: 1 Inject#: 10 Detector: CDM-1
 Analyst : *Valerie Mason* Column: AG4A/AS4A anion column

03-03-98

Calibration Volume Dilution Points Rate Start Stop Area Reject

External 1 1111 3000 5Hz 0.00 10.00 30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.13		0.000	77	517	1	
2	1.38		0.000	25	137	1	
3	1.54	chloride	41.161	75	310	1	0.00
4	3.09	nitrate	17804.350	16103	127789	1	-3.03
5	4.53	phosphate	209.928	20	201	1	1.19
6	5.97	sulfate	340.364	190	2703	1	1.82
7	7.84	oxalate	1252.560	453	7854	1	2.80
Totals			19648.362	16943	139511		

File: 98030301.D10 Sample: S98B000061 DUP

Sample Name: S98B000061 SPIKE Date: 03/03/1998 15:31:08
 Data File : C:\DX\DATA\98030301.D11
 Method : C:\DX\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 11
 Analyst : *Valerie M. Davis* Column: AG4A/AS4A anion column
 Detector: CDM-1

03-03-98

Calibration Volume Dilution Points Rate Start Stop Area Reject

External 1 1111 3000 5Hz 0.00 10.00 30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.85		0.000	87	387	2	
2	1.01	fluoride	624.646	2205	10653	2	0.33
3	1.37		0.000	14	57	1	
4	1.53	chloride	822.235	2016	9299	1	-0.43
5	1.83	nitrite	5401.891	7973	42955	1	-1.79
6	2.76	bromide	5930.580	5252	31093	1	1.72
7	3.07	nitrate	23840.392	21074	173812	1	-3.66
8	4.53	phosphate	5573.956	1535	18741	1	1.19
9	5.92	sulfate	6748.472	4398	61631	1	0.91
10	7.79	oxalate	6520.033	2589	45218	1	2.10
Totals			55462.205	47144	393845		

File: 98030301.D11 Sample: S98B000061 SPIKE

LABCORE Data Entry Template for Worklist# 22780

Analyst: vlm Instrument: ICPQ12 Book# 70B48B

Method: LA-505-151/161 Rev/Mod C-2

Worklist Comment: ICP TK 21-1 (B PLANT)

S Type	Sample#	R A	Test	Matrix	Group#	Project
1	ICV		@ICP-QC	QC		
2	ICB		@ICP-QC	QC		
3	LLS		@ICP-QC	QC		
4	ICSA		@ICP-QC	QC		
5	ICSAB		@ICP-QC	QC		
6	SAMPLE	S98B000062 0 D	@ICP-D01	LIQUID	98000140	TK-21-1 (1)
Analytes Requested: AG-D-01 , AL-D-01 , AS-D-01 , B-D-01 , BA-D-01 , BE-D-01 , BI-D-01 , CA-D-01 , CD-D-01 , CE-D-01 , CO-D-01 , CR-D-01 , CU-D-01 , FE-D-01 , K-D-01 , LA-D-01 , LI-D-01 , MG-D-01 , MN-D-01 , MO-D-01 , NA-D-01 , ND-D-01 , NI-D-01 , P-D-01 , PB-D-01 , S-D-01 , SB-D-01 , SE-D-01 , SI-D-01 , SM-D-01 , SR-D-01 , TI-D-01 , TL-D-01 , U-D-01 , V-D-01 , ZN-D-01 , ZR-D-01						
7	DUP	S98B000062 0 D	@ICP-D01	LIQUID		
8	ICSA		@ICP-QC	QC		
9	ICSAB		@ICP-QC	QC		
10	CCV		@ICP-QC	QC		
11	CCB		@ICP-QC	QC		

Final page for worklist # 22780

Valerie Massie 03-06-98
Analyst Signature Date

Revised + Validated by:
Saul M. Paving 3/5/98
Analyst Signature Date

Data Entry Comments:

HNF-SD-WM-DP-301 REV. 0

Thu 03-05-98 03:23:35 PM

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Analysis Report

Summary

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	10 ppm std	980305B	ICP2	03/05/98	12:53	X	IR	
2	ICV	980305B	ICP2	03/05/98	12:57	VLM	Q	CONC
3	ICB	980305B	ICP2	03/05/98	13:01	VLM	Q	CONC
4	LLS	980305B	ICP2	03/05/98	13:03	VLM	Q	CONC
5	ICSA	980305B	ICP2	03/05/98	13:07	VLM	Q	CONC
6	ICSAB	980305B	ICP2	03/05/98	13:10	VLM	Q	CONC
7	S98T000057 L	980305B	ICP2	03/05/98	13:18	VLM	S	CONC
8	S98T000057	980305B	ICP2	03/05/98	13:22	VLM	S	CONC
9	S98T000057	980305B	ICP2	03/05/98	13:25	VLM	S	CONC
10	S98T000057-D	980305B	ICP2	03/05/98	13:28	VLM	S	CONC
11	S98T000057 A	980305B	ICP2	03/05/98	13:34	VLM	S	CONC
12	S98T000057 X	980305B	ICP2	03/05/98	13:38	VLM	S	CONC
13	S98T000057 AX	980305B	ICP2	03/05/98	13:43	VLM	S	CONC
14	S98T000057 D	980305B	ICP2	03/05/98	13:47	VLM	S	CONC
15	CCV	980305B	ICP2	03/05/98	13:51	VLM	Q	CONC
16	CCB	980305B	ICP2	03/05/98	13:55	VLM	Q	CONC
17	S98T000058	980305B	ICP2	03/05/98	14:00	VLM	S	CONC
18	S98T000058 D	980305B	ICP2	03/05/98	14:04	VLM	S	CONC
19	S98T000059	980305B	ICP2	03/05/98	14:08	VLM	S	CONC
20	S98T000059 D	980305B	ICP2	03/05/98	14:11	VLM	S	CONC
21	S98T000167	980305B	ICP2	03/05/98	14:15	VLM	S	CONC
22	S98T000167 D	980305B	ICP2	03/05/98	14:18	VLM	S	CONC
23	CCV	980305B	ICP2	03/05/98	14:22	VLM	Q	CONC
24	CCB	980305B	ICP2	03/05/98	14:26	VLM	Q	CONC
25	S98T000180 L	980305B	ICP2	03/05/98	14:31	VLM	S	CONC
26	S98T000180	980305B	ICP2	03/05/98	14:40	VLM	S	CONC
27	S98T000180 D	980305B	ICP2	03/05/98	14:45	VLM	S	CONC
28	S98T000180 A	980305B	ICP2	03/05/98	14:49	VLM	S	CONC
29	S98T000180 X	980305B	ICP2	03/05/98	14:53	VLM	S	CONC
30	S98T000180 AX	980305B	ICP2	03/05/98	14:57	VLM	S	CONC
31	S98B000062	980305B	ICP2	03/05/98	15:01	VLM	S	CONC
32	S98B000062 D	980305B	ICP2	03/05/98	15:04	VLM	S	CONC
33	ICSA	980305B	ICP2	03/05/98	15:07	VLM	Q	CONC
34	ICSAB	980305B	ICP2	03/05/98	15:11	VLM	Q	CONC
35	CCV	980305B	ICP2	03/05/98	15:15	VLM	Q	CONC

Valerie Z. Massie 03-05-98

Hy-102

.5-.55 -1

.05-.10 -1

S98T000057 - 58, 167, 180

S98B000062 2-1-1

File # 0980056.TXT

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

HNF-SD-WM-PP-301 REV.0

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Analysis Report

Averages

#	Sample Name	Ag	Al	As	B	Ba	Be
1	10 ppm std	5.46526	2.05419	4.21673	1.56913	20.1123	16.2895
2	ICV	4.9428	4.9806	5.0613	4.9968	4.8665	4.9784
3	ICB	.00036	.00306	.00283	.00851	.00010	.00000
4	LLS	.02115	.10693	.20166	.10556	.09837	.01054
5	ICSA	.00326	244.37	-.05600	-.00468	.00226	.00024
6	ICBAB	.95262	246.70	-.03964	-.00412	.46462	.47967
7	S98T000057 L	.56660	19.551	.14598	2.2165	.00308	.00315
8	S98T000057	.56647	15.871	.92362	1.7048	.01467	.00649
9	S98T000057	.60490	19.284	.03354	2.0371	.00314	.00228
10	S98T000057 D	.23951	6.4850	.23706	.80338	.02621	-.00984
11	S98T000057 A	12.382	39.464	21.204	22.233	19.494	20.181
12	S98T000057 X	2.2080	20.289	-.24246	1.7891	-.01213	.03195
13	S98T000057 AX	1.663.1	2033.1	2013.1	2003.5	2045.5	2018.8
14	S98T000057 D	.60151	19.230	.52234	2.1992	.00242	.00128
15	CCV	4.9534	5.0715	5.0789	5.1015	4.9981	5.0720
16	CCB	.00155	.01043	.00297	.00680	.00005	.00016
17	S98T000058	.56680	19.215	.01060	2.0201	.00240	.00477
18	S98T000058 D	.58674	19.311	.24550	2.0033	.00311	.00223
19	S98T000059	.58287	19.028	.16111	2.0202	.00037	.00145
20	S98T000059 D	.59745	18.809	.28790	2.0714	.00518	.00385
21	S98T000167	.57925	18.704	.04597	2.0287	.00393	.00144
22	S98T000167 D	.56156	18.732	.17915	1.9522	.00399	.00228
23	CCV	4.9453	4.9756	5.0524	4.9738	4.8497	4.9931
24	CCB	-.00109	-.00443	.00155	.00340	-.00002	.00000
25	S98T000180 L	7.4526	45.466	8.2302	9.0953	1.5921	1.3149
26	S98T000180	7.5097	39.222	1.0441	9.2686	1.4946	.01569
27	S98T000180 D	7.1806	33.091	.68551	9.2628	1.30899	.02384
28	S98T000180 A	204.15	236.39	208.02	209.74	193.83	202.04
29	S98T000180 X	6.4602	37.050	1.0542	17.221	25471	21485
30	S98T000180 AX	19879.	19855.	19844.	19653.	19944.	19872.
31	S98B000062	.15004	4.7716	.04225	2.8171	1.9767	.00041
32	S98B000062 D	.14716	4.6981	-.02383	2.8043	1.9610	.00122
33	ICSA	.00169	246.84	-.05484	-.00202	.00209	.00028
34	ICBAB	.95608	247.93	-.06282	-.00241	.46568	.48197
35	CCV	4.9472	5.0097	5.0809	5.0330	4.9344	5.0573

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	10 ppm std	1.38919	5.90759	13.7333	2.03633	6.3042	8.5228
2	ICV	4.9248	4.9795	5.0125	4.9318	5.1122	4.8326
3	ICB	.01348	.00173	-.00004	.00099	-.00126	-.00107
4	LLS	.21934	.21861	.00964	.19442	.04237	.02034
5	ICSA	.02052	251.24	.00135	.00206	.00159	-.01600
6	ICBAB	.01280	252.31	.93716	-.00146	.46697	.44545
7	S98T000057 L	.93338	.82905	.07924	.50675	-.11336	22.712
8	S98T000057	.10070	1.4888	.16014	.51041	.04500	18.067
9	S98T000057	.19794	.85252	.12937	.04414	-.00139	22.363
10	S98T000057 D	1.1476	.90375	.14139	1.7582	.49540	8.0121
11	S98T000057 A	19.317	20.632	19.966	20.126	20.149	41.522
12	S98T000057 X	-.14751	-.13043	.02199	-.13047	-.06637	22.509
13	S98T000057 AX	2006.3	2004.5	1972.2	2037.5	1980.8	1999.2
14	S98T000057 D	.13362	.62314	.12778	-.14426	-.01839	22.036

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Analysis Report

Averages

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#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
15	CCV	4.9343	5.0554	5.0278	5.0475	5.1173	4.8438
16	CCB	-.00018	-.00094	-.00059	-.00221	-.00233	-.00111
17	S98T000058	-.22891	.60847	.10984	-.17083	-.03746	22.219
18	S98T000058 D	-.17231	.62133	.12534	-.15651	-.01813	22.494
19	S98T000059	.22110	.63708	.11913	-.20868	-.00348	22.153
20	S98T000059 D	-.50258	.74685	.13213	.10966	-.00324	22.060
21	S98T000167	.10416	.58156	.12708	-.07182	.00522	21.847
22	S98T000167 D	-.11485	.51673	.12219	-.16274	-.01377	22.130
23	CCV	4.9099	5.0820	5.0248	4.9177	5.1064	4.8396
24	CCB	.01218	-.00295	-.00130	-.01036	.00011	-.00124
25	S98T000180 L	13.517	13.050	-.14999	-.18906	-.00483	59.346
26	S98T000180	1.6420	18.406	.49262	1.0690	-.29793	60.572
27	S98T000180 D	-.51338	2.2325	.19222	-.16874	-.02182	60.808
28	S98T000180 A	196.26	216.53	204.95	199.32	207.19	257.49
29	S98T000180 X	7.3111	-6.1336	-.20139	-16.609	-.53596	59.109
30	S98T000180 AX	20038.	20242.	19892.	19923.	19953.	19939.
31	S98B000062	-.06373	2.8857	.01047	.00123	.00646	.91046
32	S98B000062 D	.03711	2.9060	.01273	.02413	.00280	.90907
33	ICSA	-.00778	257.14	.00059	.00045	-.00106	-.01778
34	ICCSAB	-.02097	257.53	.94899	-.00343	.46940	.44898
35	CCV	4.9218	5.0806	5.0411	4.9952	5.1175	4.8532

#	Sample Name	Cu	Fe	K	La	Li	Mg
1	10 ppm std	3.492	9.00619	.12609	15.5359	6.0412	2.1388
2	ICV	4.9048	5.0306	.50850	4.9110	4.9006	4.8582
3	ICB	-.00039	.00365	.02461	.00008	.00044	-.00231
4	LLS	.01811	.09334	.61264	.10182	.02134	.19598
5	ICSA	-.01127	.95.360	.10805	-.00398	.00221	242.17
6	ICCSAB	.48281	95.344	.16943	-.00552	.97142	243.77
7	S98T000057 L	.20077	1.0064	.341.79	-.05061	.84072	.05533
8	S98T000057	.16742	.05219	280.23	.08440	.67031	.86942
9	S98T000057	.18010	.02326	337.92	.00096	.82969	.09191
10	S98T000057 D	.25906	-.22538	150.30	.25719	.66320	1.2304
11	S98T000057 A	20.308	20.153	367.38	20.032	21.198	19.447
12	S98T000057 X	.17372	2.4631	359.73	-.18194	.61993	-.59105
13	S98T000057 AX	2055.7	2002.8	2417.2	2037.1	2092.8	2016.2
14	S98T000057 D	.15700	.14959	335.62	-.00239	.81407	.03783
15	CCV	5.0386	5.1038	5.2986	5.0350	5.1404	4.9341
16	CCB	.00000	.00423	.12413	.00029	-.00044	-.00123
17	S98T000058	.16283	-.01243	335.39	-.04020	.83856	-.13711
18	S98T000058 D	.15139	-.03203	333.62	-.02120	.81855	.05909
19	S98T000059	.15807	-.02496	329.01	-.02481	.81193	-.05084
20	S98T000059 D	.15152	.06157	327.50	.02080	.81633	.05441
21	S98T000167	.13702	-.05150	324.81	.00330	.80084	-.00170
22	S98T000167 D	.14556	-.03813	327.38	-.01807	.81857	-.00186
23	CCV	4.8988	5.0721	4.8049	4.8999	4.8648	4.8550
24	CCB	-.00044	.00309	.19384	-.00147	.00055	-.00954
25	S98T000180 L	-1.3925	15.042	542.33	8.8122	.41279	12.334
26	S98T000180	-1.2000	12.266	462.76	7.9412	.14486	10.120
27	S98T000180 D	-1.4993	-2.6655	489.06	1.2107	.03347	1.9568
28	S98T000180 A	197.43	207.45	726.07	201.77	194.69	202.32
29	S98T000180 X	-2.1716	15.759	437.15	-1.3446	1.0807	-7.8806

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#	Sample Name	Cu	Fe	K	La	Li	Mg
30	S98T000180 AX	20112.	19991.	19837.	19931.	19790.	19895.
31	S98B000062	.24791	18.246	2.2496	.42512	.00166	.81213
32	S98B000062_D	.24658	18.182	2.2976	.42378	.00331	.78848
33	ICSA	-.01199	96.834	.18671	-.00529	.00287	244.65
34	ICSA B	.48286	97.047	.08367	-.00657	.96190	245.36
35	CCV	4.9740	5.0810	5.1759	4.9875	4.9692	4.8728
#	Sample Name	Mn	Mo	Na	Nd	Ni	P
1	10 ppm std	24.0404	4.98259	1.72033	9.88106	6.661	4.01553
2	ICV	4.9176	5.0804	5.0971	4.9164	4.9107	5.0545
3	ICB	.00030	.00335	.00036	.00015	.00058	.01038
4	LLS	.01964	.10114	.18709	.20171	.03832	.40394
5	ICSA	-.00674	-.01348	191.61	.00258	-.00659	.02436
6	ICSA B	.44256	-.01561	194.34	.00084	.92982	.03632
7	S98T000057 L	.00290	.38625	7439.0	.04217	.37609	185.02
8	S98T000057_D	.00796	.25842	5793.1	.09838	.53064	149.97
9	S98T000057	-.00344	.24105	7283.8	.03296	.65808	187.68
10	S98T000057-A	.11806	.31371	2435.7	1.4598	.82213	63.232
11	S98T000057-D	18.994	20.610	7562.5	20.110	20.178	209.76
12	S98T000057-X	-.08615	.27159	7822.8	.18042	.71926	184.47
13	S98T000057-AX	1984.2	1994.8	9908.4	2048.4	1979.8	2199.3
14	S98T000057-D	-.01372	.28542	7378.9	-.05556	.63563	191.58
15	CCV	4.9170	5.1043	5.2982	5.0439	4.9552	5.0616
16	CCB	-.00004	.00213	.01237	-.00267	-.00149	.00466
17	S98T000058	-.00220	.24382	7261.6	-.07833	.64815	184.19
18	S98T000058 D	-.00337	.22320	7278.3	-.05334	.69199	189.31
19	S98T000059	-.00589	.22537	7189.2	.01906	.70003	187.57
20	S98T000059 D	-.00283	.25528	7048.9	-.01335	.60573	187.41
21	S98T000167	.00121	.26577	6960.0	.00132	.62391	184.69
22	S98T000167_D	.00180	.23895	7049.7	-.01793	.59404	185.57
23	CCV	4.8867	5.0829	5.0494	4.8964	4.9181	5.0263
24	CCB	.00019	.00188	-.00036	-.00160	-.00060	.00883
25	S98T000180 L	9.7492	2.3742	13432.	.57193	7.5928	216.40
26	S98T000180	7.3974	1.4361	13478.	2.1039	6.0835	221.38
27	S98T000180 D	1.3309	1.4950	13714.	.12289	5.2400	217.52
28	S98T000180-A	197.40	208.13	13486.	199.58	205.74	423.56
29	S98T000180-X	1.2602	2.2492	13541.	-.4.1271	-3.3600	206.62
30	S98T000180-AX	19790.	20003.	33282.	19930.	19774.	19931.
31	S98B000062	.42699	.02048	1032.4	.14683	.78716	24.784
32	S98B000062_D	.42569	.02455	1024.8	.15559	.78664	24.454
33	ICSA	-.00689	-.01270	192.92	-.00133	-.00108	.01666
34	ICSA B	.44463	-.01416	193.12	-.00088	.92385	.03011
35	CCV	4.9064	5.1086	5.1207	4.9861	4.9355	5.0486
#	Sample Name	Pb	S	Sb	Se	Sm	Sr
1	10 ppm std	6.0384	7.018	3.00373	2.41066	1.90486	15.2879
2	ICV	4.9028	5.0746	4.7649	4.8041	4.9033	5.0043
3	ICB	.00164	-.00021	.00022	.01718	.00329	.00000
4	LLS	.20495	.19931	.10116	.21230	.20617	.02041
5	ICSA	.02783	-.00141	-.00860	.40378	-.01531	-.00269

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#	Sample Name	Pb	S	Sb	Se	Sm	Sr
6	IGSAB	.96635	-.00737	-.00950	.02231	-.01942	-.00264
7	S98T000057 L	-.52576	118.47	-.12834	1.4149	-.15385	-.00168
8	S98T000057 <i>8 3/4/98</i>	.11533	94.345	.17443	1.3874	.07305	.00727
9	S98T000057	.01556	118.40	.01287	1.0369	-.11147	-.00161
10	S98T000057-D <i>8 3/4/98</i>	2.5764	39.515	.34566	3.4732	4.7612	.06763
11	S98T000057 A	19.041	137.21	19.530	22.188	19.774	20.413
12	S98T000057 X	-1.0850	118.39	.25689	-2.1171	-3.7440	-.05284
13	S98T000057 AX	1943.0	2118.2	1996.4	2024.4	2054.1	2039.0
14	S98T000057 D	-.11855	111.23	.14782	3.0183	-.59793	-.00702
15	CCV	4.8813	5.0873	4.8109	4.8776	5.0519	5.1404
16	CCB	-.00888	-.00617	-.00114	.00185	-.00734	-.00017
17	S98T000058	-.11806	117.48	-.07039	.82778	-.16727	-.00158
18	S98T000058 D	-.13027	116.91	.12263	1.8996	-.13533	-.00171
19	S98T000059	-.00756	115.31	.01495	1.4428	-.19234	-.00340
20	S98T000059 D	-.03828	114.98	.13481	2.0339	-.07823	.00002
21	S98T000167	-.21301	113.69	.23769	1.8729	-.02329	.00093
22	S98T000167 D	-.16155	115.99	-.00262	1.3584	.01474	.00181
23	CCV	4.9023	5.1032	4.7802	4.8494	4.8994	5.0074
24	CCB	-.00604	.00068	-.00595	.01602	.00378	.00000
25	S98T000180 L	-9.0971	341.31	-1.1415	19.416	-3.0522	.56079
26	S98T000180	-.68354	354.44	-.43164	2.5603	-1.4940	.63828
27	S98T000180 D	-.58982	353.13	.01297	2.1531	-2.4975	.07722
28	S98T000180 A	198.98	557.85	193.80	205.23	197.12	202.35
29	S98T000180 X	-14.058	299.58	-5.0189	32.589	-7.7258	-.05254
30	S98T000180 AX	19698	20332	19988	19922	19958	19969
31	S98B000062	.55616	79.973	-.01262	.13203	-.02722	.13825
32	S98B000062 D	.55971	79.545	.00179	.12606	-.00370	.13780
33	IGSA	.01516	-.00566	-.00310	.02258	-.01327	-.00271
34	IGSAB	.96803	-.01268	.00232	.02269	-.01941	-.00268
35	CCV	4.8820	5.0806	4.7948	4.8558	4.9886	5.0930

#	Sample Name	Ti	Tl	U	V	Zn	Zr
1	10 ppm std	3.12339	2.2174	10.7185	4.08926	13.8834	2.15573
2	ICV	4.8714	4.8217	9.7890	5.1024	5.3442	4.9831
3	ICB	-.00043	.01944	.01114	.00014	.00016	.00044
4	LLS	.01990	.38862	.51910	.10209	.02269	.02093
5	IGSA	.00084	-.03361	.09232	-.00059	-.00271	-.00428
6	IGSAB	.00126	-.04481	.07965	.47062	.98140	-.00510
7	S98T000057 L	-.00919	-.62405	18.779	-.00166	.08243	.00281
8	S98T000057 <i>8 3/4/98</i>	.02398	-.19078	15.892	.03254	.10770	-.01788
9	S98T000057	.00014	.05893	17.975	-.01001	.09630	-.03415
10	S98T000057-D <i>8 3/4/98</i>	25420	15696	24.635	.93854	.05170	.64590
11	S98T000057 A	19.797	19.434	58.470	20.430	21.213	19.956
12	S98T000057 X	-.04759	18250	5.3778	-.90621	.12069	-.56618
13	S98T000057 AX	2012.3	1996.0	4141.7	2018.0	1962.1	2021.6
14	S98T000057 D	-.01498	-.08210	20.053	-.10281	.08263	-.08706
15	CCV	4.9554	4.8461	10.071	5.1510	5.3024	5.0541
16	CCB	-.00104	.00001	-.02646	-.00195	.00021	-.00122
17	S98T000058	-.00868	.03593	17.741	-.01263	.10960	-.02090
18	S98T000058 D	-.00535	-.22094	19.223	-.00851	.10985	-.03031
19	S98T000059	-.00912	-.03779	18.592	-.02740	.08608	-.04117
20	S98T000059 D	.00393	.03368	19.228	-.00243	.09190	-.03115

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#	Sample Name	Ti	Tl	U	V	Zn	Zr
21	S98T000167	-.00055	-.08122	18.892	.00512	.08036	-.01530
22	S98T000167_D	-.01324	-.27536	18.814	.01854	.08307	-.00934
23	CCV	4.8922	4.7874	9.7722	5.1036	5.3469	4.9757
24	CCB	-.00002	.00609	.01171	-.00066	-.00007	.00109
25	S98T000180 L	-.05343	3.2179	600.66	-1.2843	1.3079	.21112
26	S98T000180	-.06500	-1.5073	615.44	-.27295	.69158	.31844
27	S98T000180_D	.01374	3.6896	616.84	-.59660	.22264	-.71431
28	S98T000180_A	197.44	195.60	1004.6	206.66	218.75	200.29
29	S98T000180_X	-.71139	-12.061	599.60	2.4330	.64353	.07008
30	S98T000180_AX	19950.	19837.	40730.	20170.	19930.	20041.
31	S98B000062	.04178	.05545	.01266	.00300	1.2870	1.0846
32	S98B000062_D	.04070	.04171	.12889	.00176	1.2815	1.0576
33	ICSA	.00065	-.03509	.05045	.00023	-.00256	-.00401
34	ICSAAB	.00086	-.04181	.03995	.47355	.98775	-.00481
35	CCV	4.9353	4.8505	9.9445	5.1433	5.3223	5.0333

#	Sample Name	Eu	Si	Th	Y
1	10 ppm std				
2	ICV	.00605	4.9160	.18095	.00697
3	ICB	.00031	.00746	-.00205	.00000
4	LIS	.00078	.12276	.00437	.00040
5	ICSA	.01740	-.00432	.01649	.00709
6	ICSAAB	.02016	-.00946	.01296	.00702
7	S98T000057 L	.03904	31.045	.16897	-.02365
8	S98T000057	.00711	23.926	.56219	.00108
9	S98T000057	-.01751	29.591	.25773	-.00920
10	S98T000057_D	.42882	11.904	-.14862	.25136
11	S98T000057_A	-.01443	49.149	1.0516	.00180
12	S98T000057_X	-.34248	31.160	.88060	-.25314
13	S98T000057_AX	1.9136	2055.7	78.794	2.7081
14	S98T000057_D	-.05506	28.907	.11326	-.03517
15	CCV	.00494	4.9152	.19007	.00653
16	CCB	-.00061	.00253	.00434	-.00061
17	S98T000058	-.01307	28.896	.16873	-.01224
18	S98T000058_D	-.01565	29.004	.10988	-.01287
19	S98T000059	-.02672	28.634	.17916	-.01574
20	S98T000059_D	-.01034	28.630	.28735	-.00973
21	S98T000167	-.00556	28.915	.16114	-.00489
22	S98T000167_D	-.00451	29.374	.16617	-.00172
23	CCV	.00575	4.8989	.18909	.00721
24	CCB	.00024	.00557	-.00643	-.00016
25	S98T000180 L	-.40736	35.380	11.613	-.41285
26	S98T000180	-.27383	27.412	9.9580	-.10399
27	S98T000180_D	-.37973	23.881	8.6750	-.18337
28	S98T000180_A	.13499	222.11	16.345	.28211
29	S98T000180_X	-.55766	39.112	9.4559	-.72754
30	S98T000180_AX	20.539	20157.	792.16	28.227
31	S98B000062	.00167	10.674	.05673	.00352
32	S98B000062_D	.00355	10.625	.05997	.00504
33	ICSA	.00743	-.00404	.01561	.00742
34	ICSAAB	.01081	-.00734	.01629	.00719
35	CCV	.00551	4.9069	.19110	.00674

LABCORE Data Entry Template for Worklist# 23185

Analyst: JK 560 Instrument: ICP01 2 32798 Book# 718482

Method: LA-505-151/161 Rev/Mod C-2

Worklist Comment: ICP B PLANT 21-1 (LIQUID ACID DIGEST)

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 ICV			@ICP-QC	QC		
2 ICB			@ICP-QC	QC		
3 PREPSTD TJA			@ICP-B01	LIQUID		
4 PREPBLK TJA			@ICP-B01	LIQUID		
5 SAMPLE	S98B000086 0 B		@ICP-B01	LIQUID	98000140 TK-21-1 (1)	
Analytes Requested: AG-B-01, AL-B-01, AS-B-01, B-B-01, BA-B-01, BE-B-01, BI-B-01, CA-B-01, CD-B-01, CE-B-01, CO-B-01, CR-B-01, CU-B-01, FE-B-01, K-B-01, LA-B-01, LI-B-01, MG-B-01, MN-B-01, MO-B-01, NA-B-01, ND-B-01, NI-B-01, P-B-01, PE-B-01, S-B-01, SB-B-01, SE-B-01, SI-B-01, SM-B-01, SR-B-01, TI-B-01, TL-B-01, U-B-01, V-B-01, ZN-B-01, ZR-B-01						
6 DUP	S98B000086 0 B		@ICP-B01	LIQUID		
7 SPK	S98B000086 0 B		@ICP-B01	LIQUID		
8 CCV			@ICP-QC	QC		
9 CCB			@ICP-QC	QC		

Final page for worklist # 23185

JK 560 03-27-98
Analyst Signature Date
Prepstd TJA direct 1
PrepBLK TJA direct 1
S98B000086 direct 1
S98B000086-D direct 1
S98B000086-5 direct 1

Revised + Validated by:
Paul R. Parag 3/27/98
Analyst Signature Date

Data Entry Comments:

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	980327B	ICP2	03/27/98	09:08	DKS	Q	CONC
2	ICB	980327B	ICP2	03/27/98	09:11	DKS	Q	CONC
3	PREPSTDJTJA	980327B	ICP2	03/27/98	09:14	DKS	Q	CONC
4	PREPBLKTJA	980327B	ICP2	03/27/98	09:17	DKS	Q	CONC
5	S98B000086	980327B	ICP2	03/27/98	09:21	DKS	S	CONC
6	S98B000086 D	980327B	ICP2	03/27/98	09:24	DKS	S	CONC
7	S98B000086 _S	980327B	ICP2	03/27/98	09:27	DKS	S	CONC
8	CCV	980327B	ICP2	03/27/98	09:31	DKS	Q	CONC
9	CCB	980327B	ICP2	03/27/98	09:34	DKS	Q	CONC

JX *[Signature]*
03-27-98

Worklist 23185

B plant 21-1

598B000086

598B000086

$$al = \frac{0.40254 \mu g}{ml} \times 25 = 1.01241 \frac{\mu g}{ml}$$

$$al = \frac{4.9346 - 0.40254}{5} \times 100 = 90.6\%$$

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

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#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	4.9731	4.9431	5.1977	5.1089	5.0333	5.1237
2	ICB	.00061	.00061	.00432	-.00042	-.00003	-.00003
3	PREPSTD TJJA	.98151	4.9246	4.9869	5.0579	4.9556	5.2660
4	PREPBLKTJJA	.00096	Q.08110	.00308	.02786	.00300	.00004
5	S98B000086	.00721	.40254	-.00476	1.4646	.08784	.00008
6	S98B000086 D	.00806	.29201	-.00042	.57913	.08572	.00016
7	S98B000086_S	.39895	4.9346	4.7565	5.1930	4.8070	4.9184
8	CCV	5.0141	4.9566	5.1670	5.1194	5.0194	5.1097
9	CCB	.00134	-.00378	.00194	.00758	.00003	.00016

#	Sample Name	Bi	Ca	Gd	Ce	Co	Cr
1	ICV	4.9872	5.1118	5.0613	5.0813	5.1406	4.8831
2	ICB	.02575	-.00252	-.00129	-.00544	.00010	.00071
3	PREPSTD TJJA	4.9131	5.6211	4.9424	5.0103	4.8879	4.8789
4	PREPBLKTJJA	.01016	Q.63497	-.00131	-.00706	.00103	.00352
5	S98B000086	.03295	2.5553	-.00069	-.00368	.00285	.04167
6	S98B000086 D	-.00794	1.0988	-.00025	.00100	.00156	.04072
7	S98B000086_S	4.6002	8.5047	4.6585	4.7833	4.5970	4.6156
8	CCV	5.0343	5.1826	5.0727	5.0659	5.1689	4.9237
9	CCB	.00712	.00134	-.00034	-.00032	-.00064	.00073

#	Sample Name	Cu	Eu	Fe	K	La	Li
1	ICV	4.8134	.00627	4.9274	4.8689	5.0654	5.0555
2	ICB	.00077	-.00039	-.00064	-.07776	-.00094	-.00010
3	PREPSTD TJJA	4.6818	.00729	4.8983	4.7661	4.9973	4.9084
4	PREPBLKTJJA	.00727	-.00065	Q.16014	-.09970	-.00133	-.00082
5	S98B000086	.01864	.00172	.79095	-.05268	.01706	.00103
6	S98B000086 D	.01700	-.00025	1.0885	.02402	.01728	-.00051
7	S98B000086_S	4.4897	.01046	5.3488	4.6624	4.7817	4.7643
8	CCV	4.7798	.00740	4.9500	4.7994	5.0247	5.0483
9	CCB	.00037	.00007	.00019	-.04703	-.00079	.00031

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	5.1149	4.9397	5.1068	5.1775	4.9433	4.9929
2	ICB	-.00640	.00000	.00745	.00527	.00028	-.00092
3	PREPSTD TJJA	5.0776	4.8916	4.9474	5.7595	4.8815	5.0509
4	PREPBLKTJJA	.06985	.00177	.00606	Q.37088	.00125	.00255
5	S98B000086	.17717	.02163	.00415	46.164	.00949	.03880
6	S98B000086 D	.22698	.02249	.00280	44.158	.00898	.03472
7	S98B000086_S	4.9612	4.6022	4.9519	49.063	4.6609	4.7597
8	CCV	5.1311	4.9791	5.1258	5.1483	4.9021	4.9946
9	CCB	.00235	.00013	.00827	-.00104	.00036	-.00031

Analysis Report

Averages

Fri 03-27-98 09:37:32 AM

page 3

#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	5.1232	4.9265	5.0063	4.8453	4.7270	4.8840
2	ICB	.00714	.00361	.00802	-.00319	.01161	.00015
3	PREPSTDTJA	5.1302	4.7963	5.0071	4.8950	4.6906	5.5974
4	PREPBLKTJA	.03018	.00676	Q.11133	.00124	.00827	Q.12645
5	S98B000086	1.0693	.04556	3.2032	.00391	.00852	1.1832
6	S98B000086 D	1.0866	.02998	3.1771	-.00148	.01432	.77778
7	S98B000086 S	6.1519	4.5222	8.1543	4.9295	4.4308	6.2302
8	CCV	5.1671	4.9722	5.0481	4.8736	4.7701	4.9223
9	CCB	.00539	-.00483	-.00172	.00513	.02404	.00206

#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	4.9230	5.1313	.22490	4.9675	4.8293	9.8161
2	ICB	-.00342	.00000	.00090	-.00020	.01038	-.00974
3	PREPSTDTJA	4.8454	5.0541	.21900	4.5335	4.7800	9.4964
4	PREPBLKTJA	-.01816	.00074	.00295	.00424	.00904	-.06143
5	S98B000086	-.01822	.00815	.00318	.00445	.00838	-.05265
6	S98B000086 D	-.01536	.00770	.00730	.00362	-.00838	-.05046
7	S98B000086 S	4.6337	4.8236	.21776	4.5719	4.4734	9.0998
8	CCV	4.8794	5.0972	.22957	4.9582	4.8542	9.7415
9	CCB	-.00035	.00000	.00485	.00022	.00640	.00279

#	Sample Name	V	Y	Zn	Zr
1	ICV	5.1334	.00711	5.0410	5.0182
2	ICB	-.00015	.00000	-.00003	-.00097
3	PREPSTDTJA	4.9826	.00725	4.6529	5.0431
4	PREPBLKTJA	-.00307	-.00075	Q.28688	-.00112
5	S98B000086	-.00279	-.00036	.17688	.04504
6	S98B000086 D	-.00218	-.00032	.14782	.04141
7	S98B000086 S	4.7022	.00694	4.4756	5.1230
8	CCV	5.1490	.00769	5.1076	5.0062
9	CCB	.00013	.00015	.00057	-.00036

JK *[Signature]*
03-27-98

MNF-SD-WM-DP-301 REV. 0

LABCORE Completed Worklist Report for Worklist# 22651

Analyst: rdm

Instrument: CARB2

Book# 25N12B TIC
26NRD TOC

Method: LA342-100 Rev/Mod F-1

Worklist Comment: B Plant TK21-1 TICTOC1 .200mL TOC 1mL TIC skb

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0	0	@TICTOC1 TIC-02	LIQUID	1	4.80E+0	4.800	ug/mL
1 BLNK	0	0	@TICTOC1 TOC-02	LIQUID	1	3.20E+0	3.200	ug/mL
2 STD	0	0	@TICTOC1 TIC-02	LIQUID	6.02E+02	6.04E+2	100.332 % Recovery	
2 STD	0	0	@TICTOC1 TOC-02	LIQUID	3.00E+03	2.76E+3	92.000 % Recovery	
3 SAMPLE	S98B000061	0	@TICTOC1 TIC-02	LIQUID	N/A	7.30E+00	5.000	ug/mL
3 SAMPLE	S98B000061	0	@TICTOC1 TOC-02	LIQUID	N/A	1.23E+03	40.000	ug/mL
4 DUP	S98B000061	0	@TICTOC1 TIC-02	LIQUID	7.30E+0	8.50E+0	15.130 RPD	
4 DUP	S98B000061	0	@TICTOC1 TOC-02	LIQUID	1.23E+3	1.14E+3	7.595 RPD	
5 SPK	S98B000061	0	@TICTOC1 TIC-02	LIQUID	1.00E+02	9.89E+01	98.900 % Recovery	
5 SPK	S98B000061	0	@TICTOC1 TOC-02	LIQUID	1.00E+02	8.77E+01	87.700 % Recovery	

Final page for worklist# 22651

Analyst Signature

Date

Susan Bee
Analyst Signature

3/04/98
Date

R.W. Schroeder
Reviewer Signature

3/9/98
Date

*TOC results are included as part of the analysis.
(Included for informational purposes only.)*
Step
4/16/98

LABCORE Data Entry Template for Worklist# 22651

Analyst: Com Instrument: CARB2 Book# 25N12B
26N12D

Method: LA-342-100 Rev/Mod _____

Worklist Comment: B Plant Tk21-1 TICTOC1 .200mL TOC 1mL TIC skb

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK			@TICTOC1	LIQUID		
2 STD			@TICTOC1	LIQUID		
3 SAMPLE	S98B000061 0		@TICTOC1	LIQUID	98000140	TK-21-1 (1)
	Analytes Requested: TIC-02 , TOC-02					
4 DUP	S98B000061 0		@TICTOC1	LIQUID		
5 SPK	S98B000061 0		@TICTOC1	LIQUID		

Final page for worklist # 22651

Analyst Signature Com Date 3/4/98

Analyst Signature _____ Date _____

Data Entry Comments:

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

HNF-SD-WM-DP-301 REV. 0

Sample: BASE

Date: 03/03/98

Time: 19:16:06

Sample Size = 1 uL

Dil Factor = 1

Blank ID # = BASE

Blank Value = N/A

Analyst : RD MEYERS

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	0.40	25.00
3	1.50	0.70	42.86
4	2.00	1.20	41.67
5	2.50	1.60	25.00
6	3.00	2.00	20.00
7	3.50	2.20	9.09
8	4.00	2.60	15.38
9	4.50	2.80	7.14
10	5.00	3.10	9.68
11	5.50	3.30	6.06
12	6.00	3.60	8.33
13	6.50	3.80	5.26
14	7.00	4.20	9.52
15	7.50	4.40	4.55
16	8.00	4.60	4.35
17	8.50	4.90	6.12
18	9.00	5.10	3.92
19	9.50	5.40	5.56
20	10.00	5.50	1.82
21	10.50	5.80	5.17
22	11.00	6.10	4.92

BLANK VALUE = 6.1 micrograms carbon

BLANK FACTOR = 6.1 / 10.99597 =

+5.5E-01 ug/min Carbon

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

Sample Run By:

RD MEYERS

3/4/98

00000

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

Sample: BASE

Date: 03/03/98

Time: 19:29:52

Sample Size = 1 uL
Dil Factor = 1
Blank ID # = BASE
Blank Value = N/AAnalyst : RD MEYERS
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.20	0.00
2	1.01	2.00	90.00
3	1.51	6.10	67.21
4	2.00	9.30	34.41
5	2.50	11.80	21.19
6	3.00	13.50	12.59
7	3.50	14.20	4.93
8	4.00	14.70	3.40
9	4.50	15.80	6.96
10	5.00	16.60	4.82
11	5.50	17.60	5.68
12	6.00	18.20	3.30
13	6.50	18.90	3.70
14	7.00	19.30	2.07
15	7.50	19.90	3.02
16	8.00	20.30	1.97
17	8.50	20.80	2.40
18	9.00	21.00	0.95
19	9.50	21.30	1.41
20	10.00	21.60	1.39
21	10.50	21.90	1.37
22	11.00	22.20	1.35

BLANK VALUE = 22.2 micrograms carbon

BLANK FACTOR = 22.2 / 10.99695 =

+2.02E+00 ug/min Carbon

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

Sample Run By:

RD MEYERS

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 25N12-B

Date: 03/03/98

Time: 19:57:09

Sample Size = 1 uL

Analyst : RD MEYERS

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = .55 ug/minute C

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.40	0.00
2	1.00	1.70	76.47
3	1.50	29.10	94.16
4	2.00	173.70	83.25
5	2.50	348.50	50.16
6	3.00	477.20	26.97
7	3.50	550.90	13.38
8	4.00	585.00	5.83
9	4.50	598.60	2.27
10	5.00	603.30	0.78
11	5.50	605.40	0.35
12	6.00	606.20	0.13
13	6.50	606.60	0.07
14	7.00	607.10	0.08
15	7.50	607.70	0.10
16	8.00	608.00	0.05
17	8.50	608.40	0.07
18	9.00	608.70	0.05
19	9.50	609.20	0.08
20	10.00	609.50	0.05
21	10.50	609.80	0.05
22	11.00	610.20	0.07

USER INPUT BLANK VALUE

BLANK VALUE = 6.048322 micrograms carbon

BLANK FACTOR = 6.048322 / 10.99695 = +5.5E-01 ug/min Carbon

SAMPLE RESULTS:

(610.2 - 6.047315) (1)/(1)	=	+6.042E+02	g/L Carbon
(610.2 - 6.047315) (1)/(1) (12)	=	+5.035E+01	Molar Carbon

Sample Run By:

RD MEYERS

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 26N12-D

Date: 03/03/98

Time: 20:14:37

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.02 ug/minute C

Analyst : RD MEYERS

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	33.00	99.70
3	1.50	162.90	79.74
4	2.00	365.20	55.39
5	2.50	498.00	26.67
6	3.00	544.90	8.61
7	3.50	558.60	2.45
8	4.00	562.60	0.71
9	4.50	565.00	0.42
10	5.00	566.30	0.23
11	5.50	567.20	0.16
12	6.00	568.10	0.16
13	6.50	568.70	0.11
14	7.00	569.40	0.12
15	7.50	569.90	0.09
16	8.00	570.70	0.14
17	8.50	571.20	0.09
18	9.00	571.40	0.04
19	9.50	571.80	0.07
20	10.00	572.40	0.10
21	10.50	572.70	0.05
22	11.00	573.20	0.09

USER INPUT BLANK VALUE

BLANK VALUE = 22.21383 micrograms carbon

BLANK FACTOR = 22.21383 / 10.99695 =

+2.0E+00

ug/min Carbon

SAMPLE RESULTS:

(573.2 - 22.21753) (1) / (1) =

+5.510E+02

g/L Carbon

(573.2 - 22.21753) (1) / (1) (12) =

+4.592E+01

Molar Carbon

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

Sample Run By:

RD MEYERS

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK

Date: 03/03/98

Time: 20:30:03

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .55 ug/minute C

Analyst : RD MEYERS

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	0.80	62.50
3	1.50	2.80	71.43
4	2.00	4.20	33.33
5	2.50	4.90	14.29
6	3.00	5.50	10.91
7	3.50	6.00	8.33
8	4.00	6.20	3.23
9	4.50	6.60	6.06
10	5.00	7.00	5.71
11	5.50	7.20	2.78
12	6.00	7.70	6.49
13	6.50	7.90	2.53
14	7.00	8.20	3.66
15	7.50	8.60	4.65
16	8.00	8.90	3.37
17	8.50	9.30	4.30
18	9.00	9.60	3.13
19	9.50	9.90	3.03
20	10.00	10.30	3.88
21	10.50	10.60	2.83
22	11.00	10.90	2.75

USER INPUT BLANK VALUE

BLANK VALUE = 6.048322 micrograms carbon

BLANK FACTOR = 6.048322 / 10.99695 = +5.5E-01 ug/min Carbon

SAMPLE RESULTS:

(10.9 - 6.049396) (1)/(1)	=	+4.85E+00	g/L Carbon
(10.9 - 6.049396) (1)/(1) (12)	=	+4.04E-01	Molar Carbon

Sample Run By:

RD MEYERS

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK

Date: 03/03/98

Time: 21:52:19

Sample Size = 1 uL

Analyst : RD MEYERS

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = 2.02 ug/minute C

% Difference = 10

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

1	0.51	0.30	0.00
2	1.00	2.70	88.89
3	1.50	6.70	59.70
4	2.00	11.10	39.64
5	2.50	14.50	23.45
6	3.00	15.50	6.45
7	3.50	16.30	4.91
8	4.00	17.10	4.68
9	4.50	18.20	6.04
10	5.00	19.10	4.71
11	5.50	19.90	4.02
12	6.00	20.60	3.40
13	6.50	21.30	3.29
14	7.00	21.80	2.29
15	7.50	22.40	2.68
16	8.00	22.80	1.75
17	8.50	23.20	1.72
18	9.00	23.80	2.52
19	9.50	24.10	1.24
20	10.00	24.50	1.63
21	10.50	25.00	2.00
22	11.00	25.40	1.57

USER INPUT BLANK VALUE

BLANK VALUE = 22.21383 micrograms carbon

BLANK FACTOR = 22.21383 / 10.99695 = +2.0E+00 ug/min Carbon

SAMPLE RESULTS:

(25.4 - 22.21556) (1)/(1) = +3.18E+00 g/L Carbon
 (25.4 - 22.21556) (1)/(1) (12) = +2.65E-01 Molar Carbon

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

Sample Run By:

RD MEYERS

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV. 2.0

Sample: S98B000061

Date: 03/03/98

Time: 22:31:44

Sample Size = 1 uL

Analyst : RD MEYERS

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = .55 ug/minute C

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
  1          0.51          0.50          0.00
  2          1.01          1.20         58.33
  3          1.51          3.30         63.64
  4          2.00          5.10         35.29
  5          2.50          6.20         17.74
  6          3.00          6.80          8.82
  7          3.50          7.10          4.23
  8          4.00          7.60          6.58
  9          4.50          8.00          5.00
 10          5.00          8.60          6.98
 11          5.50          8.90          3.37
 12          6.00          9.40          5.32
 13          6.50          9.80          4.08
 14          7.00         10.20          3.92
 15          7.50         10.70          4.67
 16          8.00         11.00          2.73
 17          8.50         11.50          4.35
 18          9.00         11.80          2.54
 19          9.50         12.20          3.28
 20         10.00         12.70          3.94
 21         10.50         13.00          2.31
 22         11.00         13.40          2.99

```

USER INPUT BLANK VALUE

BLANK VALUE = 6.048322 micrograms carbon

BLANK FACTOR = 6.048322 / 10.99695 = +5.5E-01 ug/min Carbon

SAMPLE RESULTS:

```

( 13.4 - 6.048389 ) (1)/(1) = +7.35E+00 g/L Carbon
( 13.4 - 6.048389 ) (1)/(1) (12) = +6.13E-01 Molar Carbon

```

Sample Run By:

RD MEYERS

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98B000061

Date: 03/03/98

Time: 22:44:31

Sample Size = 1 uL

Analyst : RD MEYERS

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = 2.02 ug/minute C

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	4.20	0.00
2	1.01	146.40	97.13
3	1.51	423.80	65.46
4	2.01	855.70	50.47
5	2.51	1116.80	23.38
6	3.01	1199.30	6.88
7	3.50	1224.30	2.04
8	4.00	1233.20	0.72
9	4.50	1236.70	0.28
10	5.00	1238.80	0.17
11	5.50	1240.70	0.15
12	6.00	1241.60	0.07
13	6.50	1242.70	0.09
14	7.00	1243.60	0.07
15	7.50	1244.40	0.06
16	8.00	1245.50	0.09
17	8.50	1246.00	0.04
18	9.00	1246.70	0.06
19	9.50	1247.40	0.06
20	10.00	1248.10	0.06
21	10.50	1248.60	0.04
22	11.00	1249.00	0.03

USER INPUT BLANK VALUE

BLANK VALUE = 22.21383 micrograms carbon

BLANK FACTOR = 22.21383 / 10.99695 = +2.0E+00 ug/min Carbon

SAMPLE RESULTS:

(1249 - 22.21581) (1)/(1) = +1.2268E+03 g/L Carbon
 (1249 - 22.21581) (1)/(1) (12) = +1.0223E+02 Molar Carbon
 <<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>

Sample Run By:

RD MEYERS

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98B000061DUP

Date: 03/03/98

Time: 23:08:54

Sample Size = 1 uL

Analyst : RD MEYERS

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = .55 ug/minute C

% Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference ==
1	0.51	0.40	0.00
2	1.01	1.40	71.43
3	1.50	3.70	62.16
4	2.00	5.20	28.85
5	2.50	6.20	16.13
6	3.00	7.10	12.68
7	3.51	7.50	5.33
8	4.00	8.00	6.25
9	4.50	8.70	8.05
10	5.00	9.00	3.33
11	5.50	9.50	5.26
12	6.00	10.10	5.94
13	6.50	10.50	3.81
14	7.00	11.00	4.55
15	7.50	11.60	5.17
16	8.00	11.90	2.52
17	8.50	12.40	4.03
18	9.00	12.90	3.88
19	9.50	13.30	3.01
20	10.00	13.70	2.92
21	10.50	14.10	2.84
22	11.00	14.60	3.42

USER INPUT BLANK VALUE

BLANK VALUE = 6.048322 micrograms carbon

BLANK FACTOR = 6.048322 / 10.99695 = +5.5E-01 ug/min Carbon

SAMPLE RESULTS:

(14.6 - 6.049798) (1)/(1)	=	+8.55E+00	g/L Carbon
(14.6 - 6.049798) (1)/(1) (12)	=	+7.13E-01	Molar Carbon

Sample Run By:

RD MEYERS

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98B000061D4P

Date: 03/03/98

Time: 23:22:56

Sample Size = 1 uL

Analyst : RD MEYERS

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = 2.02 ug/minute C

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
 1          0.51          2.00          0.00
 2          1.01         101.60         98.03
 3          1.51         350.70        71.03
 4          2.00         763.60        54.07
 5          2.50        1027.30        25.67
 6          3.00        1111.30         7.56
 7          3.50        1139.70         2.49
 8          4.00        1148.60         0.77
 9          4.50        1152.60         0.35
10          5.00        1154.80         0.19
11          5.50        1156.40         0.14
12          6.00        1157.80         0.12
13          6.50        1159.00         0.10
14          7.00        1159.90         0.08
15          7.50        1160.80         0.08
16          8.00        1161.90         0.09
17          8.50        1162.70         0.07
18          9.00        1163.50         0.07
19          9.50        1164.00         0.04
20         10.00        1164.60         0.05
21         10.50        1165.20         0.05
22         11.00        1166.00         0.07

```

USER INPUT BLANK VALUE

BLANK VALUE = 22.21383 micrograms carbon

BLANK FACTOR = 22.21383 / 10.99695 = +2.0E+00 ug/min Carbon

SAMPLE RESULTS:

```

( 1166 - 22.21038 ) (1)/(1) = +1.1438E+03 g/L Carbon
( 1166 - 22.21038 ) (1)/(1) (12) = +9.5316E+01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

```

Sample Run By:

RD MEYERS

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98B000061SPK Date: 03/03/98 Time: 23:40:12

Sample Size = 1 uL	Analyst : RD MEYERS
Dil Factor = 1	Min Readings = 22
Blank ID # =	Max Readings = 22
Blank Value = .55 ug/minute C	% Difference = 10

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

1	0.51	0.10	0.00
2	1.01	3.60	97.22
3	1.51	54.40	93.38
4	2.00	140.20	61.20
5	2.50	215.90	35.06
6	3.00	262.20	17.66
7	3.50	285.60	8.19
8	4.00	296.60	3.71
9	4.50	301.70	1.69
10	5.00	303.60	0.63
11	5.50	304.90	0.43
12	6.00	305.60	0.23
13	6.50	306.20	0.20
14	7.00	307.00	0.26
15	7.50	307.70	0.23
16	8.00	308.10	0.13
17	8.50	308.70	0.19
18	9.00	309.20	0.16
19	9.50	309.70	0.16
20	10.00	310.10	0.13
21	10.50	310.50	0.13
22	11.00	311.00	0.16

USER INPUT BLANK VALUE

BLANK VALUE = 6.048322 micrograms carbon

BLANK FACTOR = 6.048322 / 10.99695 = +5.5E-01 ug/min Carbon

SAMPLE RESULTS:

(311 - 6.047852) (1)/(1) =	+3.050E+02	g/L Carbon
(311 - 6.047852) (1)/(1) (12) =	+2.541E+01	Molar Carbon

Sample Run By:

RD MEYERS

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98B000061 ^{SPK} _{for spike} Date: 03/04/98 Time: 00:01:01

Sample Size = 1 uL Analyst : RD MEYERS
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = 2.02 ug/minute C % Difference = 10

== Reading ==	Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	3.50	0.00
2	1.00	150.00	97.67
3	1.50	487.10	69.21
4	2.00	991.70	50.88
5	2.50	1327.10	25.27
6	3.00	1442.90	8.03
7	3.50	1479.80	2.49
8	4.00	1492.70	0.86
9	4.50	1498.10	0.36
10	5.00	1500.70	0.17
11	5.50	1502.90	0.15
12	6.00	1503.90	0.07
13	6.50	1505.10	0.08
14	7.00	1506.20	0.07
15	7.50	1507.30	0.07
16	8.00	1507.90	0.04
17	8.50	1508.90	0.07
18	9.00	1509.50	0.04
19	9.50	1510.20	0.05
20	10.00	1510.90	0.05
21	10.50	1511.50	0.04
22	11.00	1512.00	0.03

USER INPUT BLANK VALUE

BLANK VALUE = 22.21383 micrograms carbon

BLANK FACTOR = 22.21383 / 10.99695 = +2.0E+00 ug/min Carbon

SAMPLE RESULTS:

(1512 - 22.21605) (1)/(1) = +1.4898E+03 g/L Carbon
 (1512 - 22.21605) (1)/(1) (12) = +1.2415E+02 Molar Carbon

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

Sample Run By:

RD MEYERS

00000

WORKBOOK PAGE: BLANK1

TIC/TOC : LA-342-100 (F-1)

LIQUIDS

			TIC	TOC
Type	Sample Size in mL	(SS)	1.0000	1.0000
BLNK	Dilution Factor	(DF)	1	1
Work List	µg of Carbon in Sample	(C1)	10.9	25.4
22651	µg of Carbon from Baseline	(C2)	6.1	22.2

Test Code
@TICTOC1
Matrix
LIQUID
Batch Number
98000990
Rerun
0
Sample Prep
N/A
Sample #
BLANK
Instrument Code
CARB2
Prepared By
SKB
Chemist
RWS
Analyst
RDM
Date Complete
03/04/98
Analysis Date
03/04/98
Analysis Time
04:30 AM
Sample Point
TK21-1

µg of Carbon = |C1-C2|

	TIC	TOC
Method Detection Limit in µg/mL	5	40
µg of Carbon	4.80E+00	3.20E+00

Data Entered By:

SKB

Date: 03/04/98

Signature of Chemist:

SKB

Date: 3/9/98

BLANK.WB1 REV 1.0

342100ML

WORKBOOK PAGE: STD2

TIC/TOC : LA-342-100 (F-1)

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	1.0000	0.2000
STD	Dilution Factor (DF)	1	1
Work List	Final Coulometer Reading in µg (C1)	610.2	573.2
22651	µg of Carbon from Baseline (C2)	6.1	22.2
Test Code	Standard Book Number	25N12B	26N12D
@TICTOC1	Standard Value (µg/ml)	602	3000

Matrix
LIQUIDBatch Number
98000990Rerun
0Sample Prep
N/ASample #
STANDARDInstrument Code
CARB2Prepared By
SKBChemist
RWSAnalyst
RDMDate Complete
03/04/98Analysis Date
03/04/98Analysis Time
04:30 AMSample Point
TK21-1

QC Actual in µg/mL = Standard Value (µg/mL)

QC Found in µg/mL = (C1 - C2) * DF / SS

QC Found in µg/mL for TIC = 5 if C1 < C2

QC Found in µg/mL for TOC = 40 if C1 < C2

% Recovery = QC Found / QC Actual * 100

		TIC	TOC
Analysis Time	Method Detection Limit in µg/mL	5	40
04:30 AM	QC Actual in µg/mL	6.02E+02	3.00E+03
Sample Point	QC Found in µg/mL	6.04E+02	2.76E+03
TK21-1	Percent Standard Recovery	100.3	91.8

Data Entered By:

Signature of Chemist:

STANDARD.WB1 REV 1.0

342100ML

SKB
ew Schrad

Date: 03/04/98

Date: 3/6/98

WORKBOOK PAGE: SAM3

TIC/TOC : LA-342-100 (F-1)

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	1.0000	1.0000
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	13.4	1249
22651	µg of Carbon from Baseline (C2)	6.1	22.2
Test Code			
@TIC/TOC1			
Matrix			
LIQUID			
Batch Number			
98000990			
Rerun	µg of Carbon/mL = (C1-C2) * DF / SS		
0	µg of Carbon/mL for TIC = 5 if C1 < C2		
Sample Prep	µg of Carbon/mL for TOC = 40 if C1 < C2		
N/A			
Sample #			
S98B000061			
Instrument Code			
CARB2			
Prepared By			
SKB			
Chemist			
RWS			
Analyst			
RDM			
Date Complete			
03/04/98			
Analysis Date			
03/04/98			
Analysis Time	Method Detection Limit in µg/mL	5	40
04:30 AM			
Sample Point	µg of Carbon/mL	7.30E+00	1.23E+03
TK21-1			

Data Entered By:	SKB	Date:	03/04/98
Signature of Chemist:	<i>RWS</i>	Date:	3/9/98

SAMPLE.WB1 REV 1.0

342100ML

WORKBOOK PAGE: DUP4

TIC/TOC : LA-342-100 (F-1)

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	1.0000	1.0000
DUP	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	14.6	1166
22651	µg of Carbon from Baseline (C2)	6.1	22.2
Test Code	Known µg of C from Original Sample	7.30E+0	1.23E+3
@TIC/TOC1			
Matrix			
LIQUID			
Batch Number			
98000990			
Rerun	µg of Carbon/mL = (C1-C2) * DF / SS		
0	µg of Carbon/mL for TIC = 5 if C1 < C2		
Sample Prep	µg of Carbon/mL for TOC = 40 if C1 < C2		
N/A			
Sample #			
S98B000061			
Instrument Code			
CARB2			
Prepared By			
SKB			
Chemist			
RWS			
Analyst			
RDM			
Date Complete			
03/04/98			
Analysis Date			
03/04/98			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
04:30 AM		5	40
Sample Point	µg of Carbon/mL	8.50E+00	1.14E+03
TK21-1			

Data Entered By:

SKB

Date: 03/04/98

Signature of Chemist:

RW Schroeder

Date: 3/9/98

SAMPLE.WB1 REV 1.0

342100ML

WORKBOOK PAGE: SPIKE5

TIC/TOC : LA-342-100 (F-1)

LIQUIDS

Type	Sample Vial Data	TIC	TOC
SPK	Sample Volume in mL (SS)	1.0000	1.0000
Work List	Final Coulometer Reading in µg (C1)	13.4	1249
22651	Spiked Vial Data		
Test Code	Sample Volume in mL (SPK SS)	1.0000	1.0000
@TICTOC1	Amount of Spike Std. in mL (SPK VOL)	0.500	0.100
Matrix	Final Coulometer Reading in µg (C2)	311	1512
LIQUID	Spike Book Number	25N12B	26N12D
Batch Number	Spike Standard Value in µg/mL (SPK CONC)	602	3000
98000990			
Rerun			
0			
Sample Prep			
N/A			
Sample #	Percent Spike Recovery = $(C2 - C1 * (SPK SS) / SS) / ((SPK CONC) * (SPK VOL)) * 1$		
S98B000061			
Instrument Code	QC Actual in µg/mL = Spike Value (µg/mL)		
CARB2	QC Found in µg/mL = (Percent Spike Recovery)*(QC Actual) / 100		
Prepared By			
SKB			
Chemist			
RWS			
Analyst			
RDM			
Date Complete			
03/04/98			
Analysis Date			
03/04/98			
Analysis Time			
04:30 AM	QC Actual in µg/mL	6.02E+02	3.00E+03
Sample Point	QC Found in µg/mL	5.95E+02	2.63E+03
TK21-1	Percent Spike Recovery	98.9	87.7

Data Entered By:	SKB	Date:	03/04/98
Signature of Chemist:	<i>Rw. Schroeder</i>	Date:	3/9/98

SPIKE.WB1 REV 1.1

342100ML

LABCORE Completed Worklist Report for Worklist# 22653

Analyst: pjm Instrument: TOC01 Book# 26N12D

Method: LA344-105 Rev/Mod E-0

Worklist Comment: B Plant Tk21-1 TOC-01 .200mL-2-.200mL TOCSTD skb

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0	TOC-01	LIQUID	1	1.00E+0	1.000	ug/mL
2 STD	0	TOC-01	LIQUID	3.00E+03	2.87E+3	95.667 % Recovery	
3 SAMPLE	S98B000061 0	TOC-01	LIQUID	N/A	1.31E+03	5.500	ug/mL
4 DUP	S98B000061 0	TOC-01	LIQUID	1.31E+3	1.30E+3	0.766 RPD	
5 SEK	S98B000061 0	TOC-01	LIQUID	1.00E+02	1.07E+02	91.7 % Recovery	

Final page for worklist# 22653

Analyst Signature _____ Date _____

Analyst Signature *[Signature]* Date 3-4-98

Reviewer Signature *[Signature]* Date 3/9/98

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

03/02/98 09:02
A-0004-1

HNF-SD-WM-DP-301 REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 22653Analyst: BM Instrument: CARB2 Book# 26N12DMethod: LA-344-105 Rev/Mod E-0

Worklist Comment: B Plant Tk21-1 TOC-01 .200mL-2-.200mL TOCSTD skb

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	BLNK				TOC-01	LIQUID		
2	STD				TOC-01	LIQUID		
3	SAMPLE	S98B000061 0			TOC-01	LIQUID	98000140	TK-21-1 (1)
		Analytes Requested: TOC-01						
4	DUP	S98B000061 0			TOC-01	LIQUID		
5	SPK	S98B000061 0			TOC-01	LIQUID		

Final page for worklist # 22653BM 3/4/98
Analyst Signature Date_____
Analyst Signature Date

Data Entry Comments:

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

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>> HNF-SD-WM-DP-301 REV. 0

Sample: BASE

Date: 03/04/98

Time: 08:26:13

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BASE

Blank Value = N/A

Analyst : PJ MCCOWN

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.60	0.00
2	1.01	0.70	14.29
3	1.51	1.00	30.00
4	2.01	1.30	23.08
5	2.51	1.70	23.53
6	3.01	1.70	0.00
7	3.51	1.90	10.53
8	4.01	2.00	5.00
9	4.51	2.10	4.76
10	5.01	2.20	4.55
11	5.51	2.20	0.00
12	6.01	2.30	4.35
13	6.51	2.40	4.17
14	7.01	2.40	0.00

BLANK VALUE = 2.4 micrograms carbon

BLANK FACTOR = 2.4 / 7.005829 = +3.4E-01 ug/min Carbon

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES ____ TO ____Sample Run By: PJ MCCOWN

00000

.200 mL .5M H₂SO₄ inject

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

HNF-SD-WM-DP-301 REV. 0

Sample: 26N12D

Date: 03/04/98

Time: 08:35:09

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BASE

Blank Value = .3425719 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	4.60	100.00
3	1.51	34.70	86.74
4	2.01	47.60	27.10
5	2.51	51.70	7.93
6	3.01	53.00	2.45
7	3.51	53.50	0.93
8	4.01	53.80	0.56
9	4.50	54.00	0.37
10	5.00	54.10	0.18
11	5.51	54.20	0.18
12	6.01	54.30	0.18
13	6.51	54.40	0.18
14	7.00	54.50	0.18

BLANK VALUE = 2.4 micrograms carbon

BLANK FACTOR = 2.4 / 7.005829 =

+3.4E-01 ug/min Carbon

SAMPLE RESULTS:

(54.5 - 2.399676) (11)/(200) =

+2.87E+00 g/L Carbon

(54.5 - 2.399676) (11)/(200) (12) =

+2.39E-01 Molar Carbon

Sample Run By:

PJ MCCOWN

00000

200 mL 26N12D in 2 mL 2M H₂SO₄
 200 mL inject

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

HNF-SD-WM-DP-801 REV. 0

Sample: BLNK

Date: 03/04/98

Time: 08:43:46

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BASE

Blank Value = .3425719 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	Analysis	Time	Coulometer	% Difference ==
1	0.51		0.00	0.00
2	1.01		0.00	0.00
3	1.51		0.30	100.00
4	2.01		0.40	25.00
5	2.51		0.60	33.33
6	3.01		0.60	0.00
7	3.51		0.70	14.29
8	4.01		0.90	22.22
9	4.51		1.00	10.00
10	5.01		1.00	0.00
11	5.51		1.10	9.09
12	6.01		1.20	8.33
13	6.51		1.30	7.69
14	7.00		1.40	7.14

BLANK VALUE = 2.4 micrograms carbon

BLANK FACTOR = 2.4 / 7.005829 =

+3.4E-01 ug/min Carbon

SAMPLE RESULTS:

(1.4 - 2.399655) (1)/(200) =

< 5.00 E-3 g/L Carbon

(1.4 - 2.399655) (1)/(200) (12) =

< 4.17 E-4 Molar Carbon

Sample Run By: PJ MCCOWN

PJ MCCOWN

00000

.200 mL x .5M H₂SO₄ inject

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

MNF-SD-WM-DP-301 REV. 0

Sample: S98B000061

Date: 03/04/98

Time: 10:15:22

Sample Size = 200 uL

Dil Factor = 1.1

Blank ID # = BASE

Blank Value = .3425719 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	43.50	99.54
3	1.50	164.20	73.51
4	2.01	214.20	23.34
5	2.51	230.20	6.95
6	3.01	235.60	2.29
7	3.51	237.60	0.84
8	4.01	238.70	0.46
9	4.50	239.30	0.25
10	5.00	239.90	0.25
11	5.50	240.20	0.12
12	6.00	240.60	0.17
13	6.50	240.90	0.12
14	7.00	241.20	0.12

BLANK VALUE = 2.4 micrograms carbon

BLANK FACTOR = 2.4 / 7.005829 =

+3.4E-01 ug/min Carbon

SAMPLE RESULTS:

(241.2 - 2.399028) (1.1) / (200) =

+1.313E+00 g/L Carbon

(241.2 - 2.399028) (1.1) / (200) (12) =

+1.095E-01 Molar Carbon

Sample Run By:

PJ MCCOWN

00000

2.0mL in .200mL .5M H₂SO₄

.200mL inject

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

HNF-SD-WM-DP-301 REV. 0

Sample: 61 DUP

Date: 03/04/98

Time: 10:24:42

Sample Size = 200 uL

Analyst : PJ MCCOWN

Dil Factor = 1.1

Min Readings = 14

Blank ID # = BASE

Max Readings = 14

Blank Value = .3425719 ug/minute C

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	27.90	98.92
3	1.51	144.40	80.68
4	2.01	207.20	30.31
5	2.51	226.80	8.64
6	3.01	233.20	2.74
7	3.51	235.20	0.85
8	4.01	236.20	0.42
9	4.50	237.00	0.34
10	5.00	237.50	0.21
11	5.50	237.90	0.17
12	6.00	238.40	0.21
13	6.50	238.80	0.17
14	7.00	239.20	0.17

BLANK VALUE = 2.4 micrograms carbon

BLANK FACTOR = 2.4 / 7.005829 =

+3.4E-01 ug/min Carbon

SAMPLE RESULTS:

(239.2 - 2.39932) (1.1)/(200) =

+1.302E+00 g/L Carbon

(239.2 - 2.39932) (1.1)/(200) (12) =

+1.085E-01 Molar Carbon

Sample Run By: RLM

PJ MCCOWN

00000

2.0 mL in 200 mL .5M H₂SO₄

.200 mL inject

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

MNF-SD-WM-DP-301 REV. 0

Sample: 61 SPK

Date: 03/04/98

Time: 10:35:13

Sample Size = 200 uL

Dil Factor = 2.5

Blank ID # = BASE

Blank Value = .3425719 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	Analysis	Time	Coulometer	% Difference ==
1	0.51		0.30	0.00
2	1.01		17.80	98.31
3	1.51		99.50	82.11
4	2.01		141.30	29.58
5	2.51		154.70	8.66
6	3.01		158.80	2.58
7	3.51		160.40	1.00
8	4.01		161.40	0.62
9	4.50		161.90	0.31
10	5.00		162.40	0.31
11	5.50		162.90	0.31
12	6.00		163.10	0.12
13	6.51		163.50	0.24
14	7.00		163.90	0.24

BLANK VALUE = 2.4 micrograms carbon

BLANK FACTOR = 2.4 / 7.005829 =

+3.4E-01 ug/min Carbon

SAMPLE RESULTS:

(163.9 - 2.399655) (2.5) / (200) =

+2.019E+00 g/L Carbon

(163.9 - 2.399655) (2.5) / (200) (12) =

+1.682E-01 Molar Carbon

Sample Run By: PJ

PJ MCCOWN

00000

.400mL in .200mL .5M H₂SO₄ + .400mL 23012D

.200mL inject

WORKBOOK PAGE: BLANK1

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

LIQUIDS

		BLNK
Type	Sample Volume in mL (SS)	0.200
BLNK	H2SO4 Volume in mL (VR)	0.000
Work List	Volume Injected in mL (VI)	0.200
22653	Dilution Factor (calculated) (DF)	1.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Blank (C1)	1.4
Matrix	µg of Carbon from Baseline (C2)	2.4
LIQUID		
Batch Number	98000992	µg of Carbon = C1-C2
Rerun	0	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI
Sample Prep	N/A	
Sample #	BLANK	
Instrument Code	TOC01	
Prepared By	RCJ	
Chemist	RWS	
Analyst	PJM	
Date Complete	03/04/98	
Analysis Date	03/04/98	
Analysis Time	08:25 AM	Method Detection Limit in µg/mL 5.00E+00
Sample Point	TK-21-1	µg of Carbon 1.00E+00

Data Entered By:	RCJ	Date:	03/04/98
Signature of Chemist:	<i>Dev Schmitt</i>	Date:	3/9/98

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
22653	Dilution Factor (calculated) (DF)	11.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon Found (C1)	54.5
Matrix	µg of Carbon from Baseline (C2)	2.4
LIQUID	Standard Book Number	26N12D
Batch Number	Standard Value (µg/ml)	3000
98000992		
Rerun		
0	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
Sample Prep		
N/A	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI	
Sample #		
STANDARD		
Instrument Code		
TOC01		
Prepared By		
RCJ		
Chemist		
RWS		
Analyst		
PJM		
Date Complete		
03/04/98		
Analysis Date		
03/04/98		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
08:25 AM	QC Actual in µg/mL	3.00E+03
Sample Point	QC Found in µg/mL	2.87E+03
TK-21-1	Percent Standard Recovery	95.5

Data Entered By:	RCJ	Date:	03/04/98
Signature of Chemist:	<i>RW Schneider</i>	Date:	3/9/98

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
22653	Dilution Factor (calculated) (DF)	1.100
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	241.2
Matrix	µg of Carbon from Baseline (C2)	2.4
LIQUID		
Batch Number		
98000992		
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 #		
S98B000061		
Instrument Code		
TOC01		
Prepared By		
RCJ		
Chemist		
RWS		
Analyst		
PJM		
Date Complete		
03/04/98		
Analysis Date		
03/04/98		
Analysis Time	Method Detection Limit in µg/mL	5.50E+00
08:25 AM		
Sample Point	µg of Carbon/mL	1.31E+03
TK-21-1		

Data Entered By:	RCJ	Date:	03/04/98
Signature of Chemist:	<i>Rw Schneider</i>	Date:	3/9/98

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
22653	Dilution Factor (calculated)	(DF) 1.100
Test Code	Digest Dilution Factor	(DDF) 1
TOC-01	ug of Carbon in Sample	(C1) 239.2
Matrix	ug of Carbon from Baseline	(C2) 2.4
LIQUID	Result from Sample Page	1.31E+3
Batch Number		
98000992		
Rerun	ug of Carbon/mL = (C1-C2) * DF * DDF / VI	
0		
Sample Prep	Method Detection Limit = 1 ug C * DF * DDF / VI	
N/A		
Sample #		
S98B000061		
Instrument Code		
TOC01		
Prepared By		
RCJ		
Chemist		
RWS		
Analyst		
PJM		
Date Complete		
03/04/98		
Analysis Date		
03/04/98		
Analysis Time	Method Detection Limit in ug/mL	5.50E+00
08:25 AM		
Sample Point	ug of Carbon/mL	1.30E+03
TK-21-1		

Data Entered By:	RCJ	Date:	03/04/98
Signature of Chemist:	<i>RCJ</i>	Date:	3/9/98

SAMPLE.WB1 REV 2.0

344105ML

WORKBOOK PAGE: SPIKES

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)	YES NO	RWS
Work List	H2SO4 Volume in mL (VR)	0.200	Sample Volume in mL (SPK SS)	0.400	
22653	Volume Injected in mL (VI)	0.200	H2SO4 Volume in mL (SPK VR)	0.200	
Test Code	µg of Carbon in Sample (C1)	241.2	Amount of Spike Std. in mL (SPK VOL)	0.400	
TOC-01	µg of Carbon from Baseline (C2)	2.4	Volume Injected in mL (SPK VI)	0.200	
Matrix			µg C in Sample + Spike (C3)	163.9	
LIQUID			Pre-Spike Dilution Factor (PDF)	1.0 4.40	RWS
Batch Number			Spike Book Number	23N12D	
98000992			Spike Value in µg/ml	769	
Rerun					
0	Spike Correction Factor (SPK CF) = (SPK SS + SPK VOL + SPK VR) / SPK VI				
Sample Prep	Sample Correction Factor (SAM CF) = (SS + VR) / (VI)				
N/A	Sample Size Correction Factor (SS CF) = (SPK SS) / (SS)				
Sample #	QC Actual in µg/mL = Spike Value (µg/mL)				
S98B000061	QC Found in µg/mL = [(C3 - C2)(SPK CF) - (C1-C2)(SAM CF)(SS CF)/(PDF)] / (SPK VOL)				
Instrument Code	Percent Spike Recovery = (QC Found) / (QC Actual) * 100				
TOC01					
Prepared By					
RCJ					
Chemist					
RWS					
Analyst					
PJM					
Date Complete					
03/04/98					
Analysis Date					
03/04/98					
Analysis Time					
08:25 AM	QC Actual in µg/mL	7.69E+02			
Sample Point	QC Found in µg/mL	7.05E2	8.25E+02 RWS		
TK-21-1	Percent Spike Recovery	91.7	407.2 3/9/98		

RWS
3/9/98

LABCORE Data Entry Template for Worklist# 23353

Analyst: Vlm Instrument: GFAA1 Book # 57WIDA

Method: LA-505-102 Rev/Mod A-0

Worklist Comment: 21-1 GFAA Se

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 ICV			GF-SE-01	LIQUID	<u>100</u>	<u>101</u>	N/A	ug/L
		2 BLNK-PREP			GF-SE-01	LIQUID	<u>1</u>	<u><1</u>	N/A	ug/L
		3 ICB			GF-SE-01	LIQUID	<u>1</u>	<u><1</u>	N/A	ug/L
		4 STD-PREP			GF-SE-01	LIQUID	<u>100</u>	<u>120</u>	<u>N/A</u>	ug/L
98000140	TK-21-1 (1)	5 SERDIL	S98B000085	0 G	GF-SE-01	LIQUID	<u><1</u>	<u>0</u>	N/A	ug/L
98000140	TK-21-1 (1)	6 SAMPLE	S98B000085	0 G	GF-SE-01	LIQUID	<u>N/A</u>	<u><1</u>	<u><1</u>	ug/L
98000140	TK-21-1 (1)	7 DUP.	S98B000085	0 G	GF-SE-01	LIQUID	<u><1</u>	<u><1</u>	N/A	ug/L
98000140	TK-21-1 (1)	8 SPK	S98B000085	0 G	GF-SE-01	LIQUID	<u>100</u>	<u>110</u>	N/A	ug/L
		9 CCV			GF-SE-01	LIQUID	<u>100</u>	<u>98</u>	N/A	ug/L
		10 CCB			GF-SE-01	LIQUID	<u>1</u>	<u><1</u>	N/A	ug/L

Final page for worklist # 23353

HLA for Valerie Massie
Analyst Signature Date 4-6-98

Reese Mip 4-7-98
Analyst Signature Date

Validated by HLA 4-7-98

Data Entry Comments:

Post-Spk of S98B000085 was 110%.

HNF-SD-WM-DP-801 REV. 0

Analytical Report

Date: 04/07/98

Hea for V. Massie 4-7-98

Element File: SE_MED.BEL

Element: Se

Wavelength: 196.0

Date: 04/06/98

Time: 15:50

Slit: 2.00 L

Data File: 21.1498.DAT

ID/Wt File: UNTITLED

Technique: HGA

Calib. Type: Linear

Energy: 68

Se ID: BLK

Seq. No.: 00001

A/S Pos.: 79

Date: 04/06/98

Replicate 1

Time: 15:52

Peak Area (A-s): 0.002

Peak Height (A): 0.004

Background Pk Area (A-s): 0.162

Background Pk Height (A): 0.074

Blank Corrected Pk Area (A-s): 0.000

Auto-zero performed.

Se ID: 56W10A 15

Seq. No.: 00002

A/S Pos.: 78

Date: 04/06/98

Replicate 1

Time: 15:55

Peak Area (A-s): 0.034

Peak Height (A): 0.031

Background Pk Area (A-s): 0.191

Background Pk Height (A): 0.091

Blank Corrected Pk Area (A-s): 0.031

Standard number 1 applied. [15.000]

Correlation coefficient: 1.00000

Slope: 0.0021

Se ID: 56W10A 30

Seq. No.: 00003

A/S Pos.: 78

Date: 04/06/98

Replicate 1

Time: 15:58

Peak Area (A-s): 0.064

Peak Height (A): 0.056

Background Pk Area (A-s): 0.187

Background Pk Height (A): 0.089

Blank Corrected Pk Area (A-s): 0.062

Standard number 2 applied. [30.000]

Correlation coefficient: 0.99994

Slope: 0.0021

Se ID: 56W10A 45

Seq. No.: 00004

A/S Pos.: 78

Date: 04/06/98

Replicate 1

Time: 16:01

Peak Area (A-s): 0.096

Peak Height (A): 0.086

Background Pk Area (A-s): 0.173

Background Pk Height (A): 0.082

Blank Corrected Pk Area (A-s): 0.093

Standard number 3 applied. [45.000]

Correlation coefficient: 0.99998

Slope: 0.0021

Se ID: 56W10A 75

Seq. No.: 00005

A/S Pos.: 78

Date: 04/06/98

Replicate 1

Time: 16:03

Peak Area (A-s): 0.155

Peak Height (A): 0.137

Background Pk Area (A-s): 0.178

Background Pk Height (A): 0.089

Blank Corrected Pk Area (A-s): 0.153

HNF-SD-WM-DP-301 REV. 0

Analytical Report

Date: 04/07/98

Standard number 4 applied. [75.000]

Correlation coefficient: 0.99983

Slope: 0.0021

Se ID: 56W10A 90

Seq. No.: 00006

A/S Pos.: 78

Date: 04/06/98

Replicate 1

Time: 16:06

Peak Area (A-s): 0.185

Peak Height (A): 0.157

Background Pk Area (A-s): 0.180

Background Pk Height (A): 0.084

Blank Corrected Pk Area (A-s): 0.183

Standard number 5 applied. [90.000]

Correlation coefficient: 0.99987

Slope: 0.0020

Se ID: 56W10A 120

Seq. No.: 00007

A/S Pos.: 78

Date: 04/06/98

Replicate 1

Time: 16:09

Peak Area (A-s): 0.229

Peak Height (A): 0.201

Background Pk Area (A-s): 0.164

Background Pk Height (A): 0.077

Blank Corrected Pk Area (A-s): 0.227

Standard number 6 applied. [120.000]

Correlation coefficient: 0.99682

Slope: 0.0020

Se ID: 56W10A 150

Seq. No.: 00008

A/S Pos.: 78

Date: 04/06/98

Replicate 1

Time: 16:12

Peak Area (A-s): 0.321

Peak Height (A): 0.268

Background Pk Area (A-s): 0.194

Background Pk Height (A): 0.093

Blank Corrected Pk Area (A-s): 0.318

Standard number 7 applied. [150.000]

Correlation coefficient: 0.99589

Slope: 0.0020

HNF-SD-WM-DP-901 REV. 0

Analytical Report

Date: 04/07/98

~~~~~  
 Se ID: AS Position 042 Seq. No.: 00009 A/S Pos.: 42 Date: 04/06/98

Replicate 1 Time: 16:17  
 Peak Area (A-s): 0.002 Peak Height (A): 0.004  
 Background Pk Area (A-s): 0.183 Background Pk Height (A): 0.081  
 Blank Corrected Pk Area (A-s): -0.000  
 Concentration (ug/L ): -0.

~~~~~  
 Se ID: AS Position 042 Seq. No.: 00010 A/S Pos.: 42 Date: 04/06/98

Replicate 1 Time: 16:21
 Peak Area (A-s): 0.002 Peak Height (A): 0.005
 Background Pk Area (A-s): 0.192 Background Pk Height (A): 0.082
 Blank Corrected Pk Area (A-s): 0.000
 Concentration (ug/L): 0.

~~~~~
 Se ID: AS Position 042 Seq. No.: 00011 A/S Pos.: 42 Date: 04/06/98

Replicate 1 Time: 16:24
 Peak Area (A-s): 0.002 Peak Height (A): 0.004
 Background Pk Area (A-s): 0.224 Background Pk Height (A): 0.085
 Blank Corrected Pk Area (A-s): -0.000
 Concentration (ug/L): -0.

HNF-SD-WM-DP-301 REV. 0

Analytical Report

Date: 04/07/98

Element File: SE_MED.GEL
 Date: 04/06/98
 Data File: 21_1498.DAT
 Technique: HGA

Element: Se
 Time: 16:33
 ID/Wt File: UNTITLED
 Calib. Type: Linear

Wavelength: 196.0
 Slit: 2.00 L
 Energy: 68

Se ID: BLANK

Seq. No.: 00012

A/S Pos.: 1

Date: 04/06/98

Replicate 1

Time: 16:35

Peak Area (A-s): 0.001

Peak Height (A): 0.004

Background Pk Area (A-s): 0.147

Background Pk Height (A): 0.071

Blank Corrected Pk Area (A-s): -0.001

Concentration (ug/L): -0.

Se ID: ICV 57W10A 100

Seq. No.: 00013

A/S Pos.: 2

Date: 04/06/98

Replicate 1

Time: 16:38

Peak Area (A-s): 0.210

Peak Height (A): 0.171

Background Pk Area (A-s): 0.192

Background Pk Height (A): 0.087

Blank Corrected Pk Area (A-s): 0.207

Concentration (ug/L): 99.

Replicate 2

Time: 16:41

Peak Area (A-s): 0.222

Peak Height (A): 0.177

Background Pk Area (A-s): 0.199

Background Pk Height (A): 0.098

Blank Corrected Pk Area (A-s): 0.220

Concentration (ug/L): 105.

Replicate 3

Time: 16:43

Peak Area (A-s): 0.210

Peak Height (A): 0.174

Background Pk Area (A-s): 0.188

Background Pk Height (A): 0.085

Blank Corrected Pk Area (A-s): 0.208

Concentration (ug/L): 99.

Mean Conc (ug/L):

101.

SD: 3.3

RSD(%): 3.27

 $\frac{101}{100} \times 100 = 101.0\%$

Se ID: ICB

Seq. No.: 00014

A/S Pos.: 3

Date: 04/06/98

Replicate 1

Time: 16:46

Peak Area (A-s): 0.002

Peak Height (A): 0.004

Background Pk Area (A-s): 0.140

Background Pk Height (A): 0.069

Blank Corrected Pk Area (A-s): -0.001

Concentration (ug/L): -0.

Replicate 2

Time: 16:49

Peak Area (A-s): 0.002

Peak Height (A): 0.004

Background Pk Area (A-s): 0.139

Background Pk Height (A): 0.069

Blank Corrected Pk Area (A-s): -0.000

Concentration (ug/L): -0.

Replicate 3

Time: 16:51

Peak Area (A-s): 0.003

Peak Height (A): 0.004

Background Pk Area (A-s): 0.134

Background Pk Height (A): 0.069

HNF-SD-WM-DP-301 REV. 0

ANALYTICAL REPORT

Date: 04/07/98

Blank Corrected Pk Area (A-s): 0.000
 Concentration (ug/L): 0.

Mean Conc (ug/L): -0. SD: 0.3 RSD(%): 619.8

Se ID: PREP BLK Seq. No.: 00015 A/S Pos.: 4 Date: 04/06/98

Replicate 1 Time: 16:54
 Peak Area (A-s): 0.002 Peak Height (A): 0.004
 Background Pk Area (A-s): 0.179 Background Pk Height (A): 0.069
 Blank Corrected Pk Area (A-s): 0.000
 Concentration (ug/L): 0.

Replicate 2 Time: 16:57
 Peak Area (A-s): 0.002 Peak Height (A): 0.004
 Background Pk Area (A-s): 0.181 Background Pk Height (A): 0.070
 Blank Corrected Pk Area (A-s): -0.000
 Concentration (ug/L): -0.

Replicate 3 Time: 17:00
 Peak Area (A-s): 0.003 Peak Height (A): 0.004
 Background Pk Area (A-s): 0.186 Background Pk Height (A): 0.071
 Blank Corrected Pk Area (A-s): 0.001
 Concentration (ug/L): 0.

Mean Conc (ug/L): 0. SD: 0.1 RSD(%): 170.5

Se ID: PREP STD 10 Seq. No.: 00016 A/S Pos.: 5 Date: 04/06/98

Replicate 1 Time: 17:02
 Peak Area (A-s): 0.029 Peak Height (A): 0.023
 Background Pk Area (A-s): 0.203 Background Pk Height (A): 0.073
 Blank Corrected Pk Area (A-s): 0.026
 Concentration (ug/L): 13.

Replicate 2 Time: 17:05
 Peak Area (A-s): 0.027 Peak Height (A): 0.021
 Background Pk Area (A-s): 0.197 Background Pk Height (A): 0.071
 Blank Corrected Pk Area (A-s): 0.025
 Concentration (ug/L): 12.

Replicate 3 Time: 17:08
 Peak Area (A-s): 0.029 Peak Height (A): 0.021
 Background Pk Area (A-s): 0.201 Background Pk Height (A): 0.073
 Blank Corrected Pk Area (A-s): 0.027
 Concentration (ug/L): 13.

Mean Conc (ug/L): $\frac{12.}{10} \times 100 = 120\%$ SD: 0.4 RSD(%): 3.25

Se ID: BLK Seq. No.: 00017 A/S Pos.: 79 Date: 04/06/98

Replicate 1 Time: 17:10
 Peak Area (A-s): 0.002 Peak Height (A): 0.004

HNF-SD-WM-DP-301 REV. 0

Analytical Report

Date: 04/07/98

Background Pk Area (A-s): 0.147
 Blank Corrected Pk Area (A-s): -0.000

Background Pk Height (A): 0.069

Auto-zero performed.

Se ID: 56W10A 105

Seq. No.: 00018

A/S Pos.: 78

Date: 04/06/98

Replicate 1

Time: 17:13

Peak Area (A-s): 0.224

Peak Height (A): 0.181

Background Pk Area (A-s): 0.199

Background Pk Height (A): 0.097

Blank Corrected Pk Area (A-s): 0.222

Reslope standard applied. [105.000]

Correlation coefficient: 0.99939

Slope: 0.0021

Se ID: S98B000085 SD

Seq. No.: 00019

A/S Pos.: 6

Date: 04/06/98

Replicate 1

Time: 17:16

Peak Area (A-s): 0.001

Peak Height (A): 0.003

Background Pk Area (A-s): 0.191

Background Pk Height (A): 0.085

Blank Corrected Pk Area (A-s): -0.001

Concentration (ug/L): -0.

Replicate 2

Time: 17:19

Peak Area (A-s): 0.003

Peak Height (A): 0.004

Background Pk Area (A-s): 0.191

Background Pk Height (A): 0.086

Blank Corrected Pk Area (A-s): 0.001

Concentration (ug/L): 0.

Replicate 3

Time: 17:21

Peak Area (A-s): 0.002

Peak Height (A): 0.004

Background Pk Area (A-s): 0.188

Background Pk Height (A): 0.083

Blank Corrected Pk Area (A-s): 0.000

Concentration (ug/L): 0.

HNF-SD-WM-DP-301 REV. 0

Analytical Report

Date: 04/07/98

Mean Conc (ug/L): 0. SD: 0.5 RSD(%): 4915

~~~~~  
Se ID: S98B000085 Seq. No.: 00020 A/S Pos.: 7 Date: 04/06/98

Replicate 1 Time: 17:24
Peak Area (A-s): 0.004 Peak Height (A): 0.004
Background Pk Area (A-s): 0.217 Background Pk Height (A): 0.082
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 1.

Replicate 2 Time: 17:27
Peak Area (A-s): 0.003 Peak Height (A): 0.005
Background Pk Area (A-s): 0.230 Background Pk Height (A): 0.086
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 1.

Replicate 3 Time: 17:29
Peak Area (A-s): 0.003 Peak Height (A): 0.005
Background Pk Area (A-s): 0.234 Background Pk Height (A): 0.087
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 1.

Mean Conc (ug/L): 1. SD: 0.1 RSD(%): 20.92

~~~~~  
Se ID: S98B000085 DUP Seq. No.: 00021 A/S Pos.: 8 Date: 04/06/98

Replicate 1 Time: 17:32
Peak Area (A-s): 0.003 Peak Height (A): 0.005
Background Pk Area (A-s): 0.219 Background Pk Height (A): 0.086
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 1.

Replicate 2 Time: 17:35
Peak Area (A-s): 0.002 Peak Height (A): 0.004
Background Pk Area (A-s): 0.219 Background Pk Height (A): 0.085
Blank Corrected Pk Area (A-s): -0.000
Concentration (ug/L): -0.

Replicate 3 Time: 17:38
Peak Area (A-s): 0.003 Peak Height (A): 0.004
Background Pk Area (A-s): 0.227 Background Pk Height (A): 0.088
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 1.

Mean Conc (ug/L): 0. SD: 0.4 RSD(%): 105.2

~~~~~
Se ID: S98B000085 SPK Seq. No.: 00022 A/S Pos.: 9 Date: 04/06/98

Replicate 1 Time: 17:40
Peak Area (A-s): 0.027 Peak Height (A): 0.020
Background Pk Area (A-s): 0.224 Background Pk Height (A): 0.090
Blank Corrected Pk Area (A-s): 0.025
Concentration (ug/L): 12.

HNF-SD-WM-DP-301 REV. 0

Analytical Report

Date: 04/07/98

Replicate 2
Peak Area (A-s): 0.027
Background Pk Area (A-s): 0.213
Blank Corrected Pk Area (A-s): 0.026
Concentration (ug/L): 12.

Time: 17:43
Peak Height (A): 0.020
Background Pk Height (A): 0.083

Replicate 3
Peak Area (A-s): 0.028
Background Pk Area (A-s): 0.207
Blank Corrected Pk Area (A-s): 0.026
Concentration (ug/L): 12.

Time: 17:46
Peak Height (A): 0.018
Background Pk Height (A): 0.083

Mean Conc (ug/L): $\frac{12.-1}{10} \times 100 = 110\%$ SD: 0.3 RSD(%): 2.63

Se ID: S98B000085 PS Seq. No.: 00023 A/S Pos.: 10 Date: 04/06/98

Replicate 1
Peak Area (A-s): 0.025
Background Pk Area (A-s): 0.252
Blank Corrected Pk Area (A-s): 0.023
Concentration (ug/L): 11.

Time: 17:49
Peak Height (A): 0.019
Background Pk Height (A): 0.095

Replicate 2
Peak Area (A-s): 0.025
Background Pk Area (A-s): 0.247
Blank Corrected Pk Area (A-s): 0.023
Concentration (ug/L): 11.

Time: 17:51
Peak Height (A): 0.019
Background Pk Height (A): 0.094

Replicate 3
Peak Area (A-s): 0.025
Background Pk Area (A-s): 0.252
Blank Corrected Pk Area (A-s): 0.023
Concentration (ug/L): 11.

Time: 17:54
Peak Height (A): 0.019
Background Pk Height (A): 0.097

Mean Conc (ug/L): $\frac{11.-1}{9.09} \times 100 = 110\%$ SD: 0.1 RSD(%): 1.34

Se ID: BLK Seq. No.: 00024 A/S Pos.: 79 Date: 04/06/98

Replicate 1
Peak Area (A-s): 0.002
Background Pk Area (A-s): 0.186
Blank Corrected Pk Area (A-s): -0.000

Time: 17:57
Peak Height (A): 0.004
Background Pk Height (A): 0.085

Auto-zero performed.

Se ID: 56W10A 105 Seq. No.: 00025 A/S Pos.: 78 Date: 04/06/98

Replicate 1
Peak Area (A-s): 0.233
Background Pk Area (A-s): 0.228
Blank Corrected Pk Area (A-s): 0.231

Time: 18:00
Peak Height (A): 0.184
Background Pk Height (A): 0.114

HMF-SD-WM-DP-301 REV. 0

Analytical Report

Date: 04/07/98

Reslope standard applied. [105.000]

Correlation coefficient: 0.99939

Slope: 0.0021

Se ID: CCV 57W10A 100 Seq. No.: 00026 A/S Pos.: 11 Date: 04/06/98

Replicate 1

Time: 18:02

Peak Area (A-s): 0.211

Peak Height (A): 0.174

Background Pk Area (A-s): 0.213

Background Pk Height (A): 0.109

Blank Corrected Pk Area (A-s): 0.209

Concentration (ug/L): 95.

Replicate 2

Time: 18:05

Peak Area (A-s): 0.214

Peak Height (A): 0.172

Background Pk Area (A-s): 0.210

Background Pk Height (A): 0.099

Blank Corrected Pk Area (A-s): 0.212

Concentration (ug/L): 96.

Replicate 3

Time: 18:08

Peak Area (A-s): 0.227

Peak Height (A): 0.185

Background Pk Area (A-s): 0.214

Background Pk Height (A): 0.107

Blank Corrected Pk Area (A-s): 0.226

Concentration (ug/L): 102.

Mean Conc (ug/L):

$$\frac{98}{100} \times 100 = 98.0\%$$

SD: 4.0

RSD(%): 4.06

Se ID: CCB

Seq. No.: 00027

A/S Pos.: 12

Date: 04/06/98

Replicate 1

Time: 18:11

Peak Area (A-s): 0.002

Peak Height (A): 0.003

Background Pk Area (A-s): 0.164

Background Pk Height (A): 0.077

Blank Corrected Pk Area (A-s): 0.001

Concentration (ug/L): 0.

Replicate 2

Time: 18:13

Peak Area (A-s): 0.002

Peak Height (A): 0.004

HNF-SD-WM-DP-301 REV. 0

Analytical Report

Date: 04/07/98

Background Pk Area (A-s): 0.163
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.

Background Pk Height (A): 0.076

Replicate 3
Peak Area (A-s): 0.003
Background Pk Area (A-s): 0.156
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 1.

Time: 18:16
Peak Height (A): 0.004
Background Pk Height (A): 0.076

Mean Conc (ug/L): 0.

SD: 0.3

RSD(%): 64.23

Se ID: CCB

Seq. No.: 00028

A/S Pos.: 13

Date: 04/06/98

Replicate 1
Peak Area (A-s): 0.003
Background Pk Area (A-s): 0.158
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 1.

Time: 18:19
Peak Height (A): 0.005
Background Pk Height (A): 0.073

Replicate 2
Peak Area (A-s): 0.004
Background Pk Area (A-s): 0.154
Blank Corrected Pk Area (A-s): 0.003
Concentration (ug/L): 1.

Time: 18:22
Peak Height (A): 0.004
Background Pk Height (A): 0.071

Replicate 3
Peak Area (A-s): 0.002
Background Pk Area (A-s): 0.149
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.

Time: 18:24
Peak Height (A): 0.004
Background Pk Height (A): 0.069

Mean Conc (ug/L): 1.

SD: 0.5

RSD(%): 68.83

Se ID: CCB

Seq. No.: 00029

A/S Pos.: 14

Date: 04/06/98

Replicate 1
Peak Area (A-s): 0.003
Background Pk Area (A-s): 0.153
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 1.

Time: 18:27
Peak Height (A): 0.004
Background Pk Height (A): 0.072

Replicate 2
Peak Area (A-s): 0.002
Background Pk Area (A-s): 0.147
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.

Time: 18:30
Peak Height (A): 0.004
Background Pk Height (A): 0.068

Replicate 3
Peak Area (A-s): 0.001
Background Pk Area (A-s): 0.146
Blank Corrected Pk Area (A-s): -0.000
Concentration (ug/L): -0.

Time: 18:33
Peak Height (A): 0.004
Background Pk Height (A): 0.067

LABCORE Completed Worklist Report for Worklist# 23340

Analyst: krm

Instrument: U01

Book# 13857

Method: LA925-09 Rev/Mod B-0

Worklist Comment: RERUN OF 22659 9@U-01 FOR TK-21-1 RTS

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	0U-01	U-02	LIQUID	6.26E-02	5.75E-02	91.853	% Recovery
1 STD	0	0U-01	U-02E	LIQUID	1	3.13E+00	3.130	Ratio
2 BLNK	0	0U-01	U-02	LIQUID	1	5.39E-3	0.005	ug/mL
2 BLNK	0	0U-01	U-02E	LIQUID	1	3.35E+00	3.350	Ratio
3 SAMPLE	S98B000062	0	0U-01	U-02	LIQUID	N/A	4.87E-02	3.70e-003 ug/mL
3 SAMPLE	S98B000062	0	0U-01	U-02E	LIQUID	N/A	1.26E+00	% Inst Error
4 DUP	S98B000062	0	0U-01	U-02	LIQUID	4.87E-2	4.49E-2	8.120 RPD
4 DUP	S98B000062	0	0U-01	U-02E	LIQUID	1	1.41E+00	1.410 Ratio
5 SPK	S98B000062	0	0U-01	U-02	LIQUID	4.92E+01	4.76E+01	96.748 % Recovery

Final page for worklist# 23340

Analyst Signature

Date

Analyst Signature

Date

Rw Schwede 4/8/98
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 23340

Analyst: KRM Instrument: U01 Book# 13857

Method: LA-925-009 Rev/Mod _____

Worklist Comment: RERUN OF 22659 9@U-01 FOR TK-21-1 RTS

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@U-01	LIQUID		
2	BLNK				@U-01	LIQUID		
3	SAMPLE	S98B000062 0			@U-01	LIQUID	98000140	TK-21-1 (1)
		Analytes Requested:			U-02	, U-02E		
4	DUP	S98B000062 0			@U-01	LIQUID		
5	SPK	S98B000062 0			@U-01	LIQUID		

Final page for worklist # 23340

Analyst Signature

Date

4-8-98

Analyst Signature

Date

4/8/98

Plus 2 Chromium 4/1/98

Data Entry Comments:

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

HNF-SD-WM-DP-801 REV. 0

Sample ID blank	Date/Time 04/08/98/05:33:57
Description blank	Cal Y=5.73E+09X0
Ref. Ratio 1.101	Intensity 291 (t= 39 us)
Laser Pulses 1000	Conc 5.38E-08 + 1.80E-07 G/L
Lifetime 345 + 9.955 us	Dilution Factor 1 mL/mL
R2 .9635	
Integrated 5892	FINAL RESULT 5.38E-08 + 1.80E-07 G/L
Range: LOW	

Sample ID STANDARD	Date/Time 04/08/98/06:03:20
Description 13337	Cal Y=7.59E+07X+428.441
Ref. Ratio 1.043	Intensity 4302 (t= 39 us)
Laser Pulses 1000	Conc 5.75E-03 + 1.80E-06 G/L
Lifetime 366 + 1.671 us	Dilution Factor 1 mL/mL
R2 .9991	
Integrated 94983	FINAL RESULT 5.75E-03 + 1.80E-06 G/L
Range: HIGH	

Sample ID 896B000062	Date/Time 04/08/98/05:37:16
Description SAMPLE	Cal Y=5.75E+09X0
Ref. Ratio 1.121	Intensity 2605 (t= 39 us)
Laser Pulses 1000	Conc 4.87E-07 + 6.13E-09 G/L
Lifetime 366 + 2.125 us	Dilution Factor 1 mL/mL
R2 .9985	
Integrated 55557	FINAL RESULT 4.87E-07 + 6.13E-09 G/L
Range: LOW	

Sample ID 598B000062	Date/Time 04/08/98/05:38:46
Description DUPLICATE	Cal Y=5.73E+09X0
Ref. Ratio 1.129	Intensity 2270 (t= 39 us)
Laser Pulses 1000	Conc 4.49E-07 + 6.33E-09 G/L
Lifetime 367 + 3.148 us	Dilution Factor 1 mL/mL
R2 .9958	
Integrated 51320	FINAL RESULT 4.49E-07 + 6.33E-09 G/L
Range: LOW	

Sample ID 898B000062	Date/Time 04/08/98/05:41:30
Description SPIKE	Cal Y=7.59E+07X+428.441
Ref. Ratio 1.111	Intensity 31683 (t= 39 us)
Laser Pulses 1000	Conc 4.76E-04 + 1.49E-03 G/L
Lifetime 362 + 1.574 us	Dilution Factor 1 mL/mL
R2 .9992	
Integrated 719289	FINAL RESULT 4.76E-04 + 1.49E-03 G/L
Range: HIGH	

WORKBOOK PAGE: STD1

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

Type		
STD		STANDARD
Work List	STANDARD BOOK #	13B57
23340	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	366.00
LIQUID	R2 VALUE	0.9991
Batch Number	RANGE (HIGH OR LOW)	HIGH
98001727	INSTRUMENT UNCERTAINTY (IU)	1.80E-06
Rerun	INSTRUMENT RESULT (IR)	5.75E-05
0	DETECTION LEVEL (µg/mL)	3.70E-05
Sample Prep		
N/A	RESULT (µg/mL)	5.75E-02
Sample #	VALUE OF STANDARD	6.26E-02
WK23340-STD	%RECOVERY	91.85
Instrument Code	RELATIVE % UNCERTAINTY	3.1
U01		
Prepared By		
MCB	Result = DF * PF * IR * 1000	
Chemist		
RWS	Detection Level = 3.70 E-05 * DF * PF * 1000	
Analyst		
KRM	% Recovery = Result / Value of Standard * 100	
Date Complete		
04/08/98	Relative % Uncertainty = IU / IR * 100	
Analysis Date		
04/08/98		
Analysis Time		
10:00 AM		
Sample Point		
TK-21-1		

Analyst:	KRM	Date:	08-Apr-98
Signature of Chemist:	<i>Rw Schneider</i>	RWS	Date: 4/8/98

STANDARD:WB1 REV 2.0

925009ML

WORKBOOK PAGE: BLANK2

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

Type	BLANK	
Work List	VOLUME OF SAMPLE (mL) (SS)	1.00
23340	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	345.00
LIQUID	R2 VALUE	0.9655
Batch Number	RANGE (HIGH OR LOW)	LOW
98001727	INSTRUMENT UNCERTAINTY (IU)	1.80E-09
Rerun	INSTRUMENT RESULT (IR)	5.38E-08
0	DETECTION LEVEL (ug/mL)	3.70E-03
Sample Prep		
N/A		
Sample #	RESULT (ug/mL)	5.38E-03
WL23340-BLANK	RELATIVE % UNCERTAINTY	3.3
Instrument Code		
U01		
Prepared By	Result = DF * PF * DDF * IR * 1000	
MCB		
Chemist	Detection Level = 3.70 E-08 * DF * PF * DDF * 1000	
RWS		
Analyst	Relative % Uncertainty = IU / IR * 100	
KRM		
Date Complete		
04/08/98		
Analysis Date		
04/08/98		
Analysis Time		
10:00 AM		
Sample Point		
TK-21-1		

Analyst:	KRM	Date:	08-Apr-98
Signature of Chemist:	<i>Rw Schrader</i>	RWS	Date: 4/8/98

BLANK.WB1 REV 2.0

925009ML

WORKBOOK PAGE: SAM3

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

Type		SAMPLE
SAMPLE		
Work List	VOLUME OF SAMPLE (mL) (SS)	1.00
23340	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	366.00
LIQUID	R2 VALUE	0.9985
Batch Number	RANGE (HIGH OR LOW)	LOW
98001727	INSTRUMENT UNCERTAINTY (IU)	6.13E-09
Rerun	INSTRUMENT RESULT (IR)	4.87E-07
0	DETECTION LEVEL (µg/mL)	3.70E-03
Sample Prep		
N/A	CONCENTRATION IN SOLUTION (g/L)	4.87E-05
Sample #	RESULT (µg/mL)	4.87E-02
S98B000062	RELATIVE % UNCERTAINTY	1.3
Instrument Code		
U01		
Prepared By	Result = $DF * PF * DDF * IR * 1000$	
MCS		
Chemist	Detection Level = $3.70 E-08 * DF * PF * DDF * 1000$	
RWS		
Analyst	Relative % Uncertainty = $IU / IR * 100$	
KRM		
Date Complete		
04/08/98		
Analysis Date		
04/08/98		
Analysis Time		
10:00 AM		
Sample Point		
TK-21-1		

Analyst:	KRM	Date: 08-Apr-98
Signature of Chemist:	RWS	Date: 4/8/98

SAMPLE.WB1 REV 2.0

925009ML

WORKBOOK PAGE: DUP4

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

Type		DUP
Work List	VOLUME OF SAMPLE (mL) (SS)	1.00
23340	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	367.00
LIQUID	R2 VALUE	0.9968
Batch Number	RANGE (HIGH OR LOW)	LOW
98001727	INSTRUMENT UNCERTAINTY (IU)	6.35E-09
Rerun	INSTRUMENT RESULT (IR)	4.49E-07
0	DETECTION LEVEL (µg/mL)	3.70E-03
Sample Prep		
N/A	CONCENTRATION IN SOLUTION (g/L)	4.49E-05
Sample #	RESULT (µg/mL)	4.49E-02
S98B000062	RELATIVE % UNCERTAINTY	1.4
Instrument Code		
U01		
Prepared By	Result = $DF * PF * DDF * IR * 1000$	
MCB		
Chemist	Detection Level = $3.70 E-08 * DF * PF * DDF * 1000$	
RWS		
Analyst	Relative % Uncertainty = $IU / IR * 100$	
KRM		
Date Complete		
04/08/98		
Analysis Date		
04/08/98		
Analysis Time		
10:00 AM		
Sample Point		
TK-21-1		

Analyst:	KRM	Date:	08-Apr-98
Signature of Chemist:	<i>Rw Schneider</i>	RWS	Date: 4/8/98

SAMPLE.WB1 REV 2.0

925009ML

WORKBOOK PAGE: SPIKE5

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

Type		SPIKE
SPK	SPIKE BOOK #	32B55
Work List	VOLUME OF SAMPLE + SPIKE (mL) (SS)	1.00
23340	DILUTION FACTOR OF SAMPLE + SPIKE (DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE + SPIKE (PF)	100.00
@U-01	DIGEST DILUTION FACTOR OF SAMPLE (DDF)	1.0000
Matrix	LIFETIME IN MICROSECONDS	362.00
LIQUID	R2 VALUE	0.9992
Batch Number	RANGE (HIGH OR LOW)	HIGH
98001727	INSTRUMENT RESULT (IR)	4.76E-04
Rerun	CONCENTRATION IN SOLUTION (g/L) (CONC)	4.76E-02
0	SPIKE VALUE (g/L) (SV)	4.92E-02
Sample Prep	INITIAL VOLUME OF SPIKE (mL) (IV)	0.10
N/A	ORIGINAL SAMPLE VOLUME BEFORE PREP (mL) (OSV)	0.10
Sample Number	CONCENTRATION IN SOLN (g/L) FROM SAMPLE FORM (SR)	4.87E-05

S98B000062			
Instrument Code			
U01	Concentration = IR * DF * PF		
Prepared By			
MCB	QC Actual (µg/mL) = SV (g/L) * 1000		
Chemist			
RWS	QC Found (µg/mL) = (CONC - SR) * OSV / IV * 1000		
Analyst			
KRM	% Recovery = QC FOUND / QC ACTUAL		
Date Complete			
04/08/98			
Analysis Date			
04/08/98	QC ACTUAL	=	4.92E+01 µg/mL
Analysis Time	QC FOUND	=	4.76E+01 µg/mL
10:00 AM	% SPIKE RECOVERY	=	96.6%
Sample Point			
TK-21-1			

Analyst:		KRM	Date:	08-Apr-98
Signature of Chemist:	<i>RWS</i>	RWS	Date:	4/8/98

SPIKE.WB1 REV 2.0

925009ML

HNF-SD-WM-DP-301, REV. 0

RADIOCHEMICAL ANALYSIS

HNF-SD-WM-DP-301, REV. 0

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HNF-SD-WM-DP-301 REV. 0

LABCORE Completed RadChem Report for Worklist#: 22655

Analyst: crj

Instrument: GEA02

Book# 86856

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

Worklist Comment: B Plant Tk21-1 1mL TINKFUS std skb

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	@GEA-01 CO60-02 LIQUID		5.474e-03	5.85e-03	103.215	% Recovery
1 STD	0	@GEA-01 CO60-02E LIQUID		1	2.86	2.860	% Ct Error
1 STD	0	@GEA-01 CS13702 LIQUID		5.476e-03	5.57e-03	101.717	% Recovery
1 STD	0	@GEA-01 CS13702E LIQUID		1	3.77	3.770	% Ct Error
2 BLNK	0	@GEA-01 CO60-02 LIQUID		1	<7.61e-4		uCi/mL
2 BLNK	0	@GEA-01 CS13702 LIQUID		1	<1.65e-3		uCi/mL
3 SAMPLE	S98B000062 0	@GEA-01 CO60-02 LIQUID		N/A	2.658e-03	265.8e-005	uCi/mL
3 SAMPLE	S98B000062 0	@GEA-01 CO60-02E LIQUID		N/A	n/a	0.0e+000	% Ct. Error
3 SAMPLE	S98B000062 0	@GEA-01 CS13702 LIQUID		N/A	1.710e+02	0.0e+000	uCi/mL
3 SAMPLE	S98B000062 0	@GEA-01 CS13702E LIQUID		N/A	0.130	0.0e+000	% Ct. Error
4 DUP	S98B000062 0	@GEA-01 CO60-02 LIQUID		<2.66e-3	<2.60e-3		RPD
4 DUP	S98B000062 0	@GEA-01 CO60-02E LIQUID		1	n/a		% Ct Error
4 DUP	S98B000062 0	@GEA-01 CS13702 LIQUID		1.71e+02	1.68e+02	1.770	RPD
4 DUP	S98B000062 0	@GEA-01 CS13702E LIQUID		1	0.130	0.130	% Ct Error

Comments Section:

Comments for sample# S98B000062 and test @GEA-01 .
DL=0 => n/a.

Final page for worklist# 22655

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Reviewer Signature _____ Date 3-4-98

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

LABCORE Data Entry Template for Worklist# 22655

Analyst: CRT Instrument: GEA00 2 Book# 86 B56

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

Worklist Comment: B Plant Tk21-1 1mL TINKFUS std skb

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@GEA-01	LIQUID		
2	BLNK				@GEA-01	LIQUID		
3	SAMPLE	S98B000062 0			@GEA-01	LIQUID	98000140	TK-21-1 (1)
					Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E			
4	DUP	S98B000062 0			@GEA-01	LIQUID		

Final page for worklist # 22655

CRT
Analyst Signature

3/3/98
Date

M. E. B.
Analyst Signature

3/4/98
Date

Data Entry Comments:


```

*****
* 222-S Laboratory Counting Room      3-MAR-1998 10:36:11.03      *
*****
>>>>>>>> SAMPLE INFORMATION <<<<<<<<<
Worklist #:          22655
Sample ID:           WL22655-STD
Sample Size:         1.00000E-03 L
Dilution Factor:    1.00000E+00

>>>>>>>> COUNT INFORMATION <<<<<<<<<
Detector ID:         GEA2
File Number:         dka300:[spec.GEA2]2g2291.cnf
Geometry:            42
Count Time:          0 00:50:00.00 sec
Real Time:           0 00:50:34.78 sec
Dead Time:           1.1%

>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<
Sample Count Time:   3-MAR-1998 09:44:59.60
Decayed to:          3-MAR-1998 09:44:59.60
Standard Deviations: 2
Analysis Library:     ENVGEA
Analyst:             SSEH
Background Subtract: DKA300:[SPEC.GEA2]2GBACK

>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<
Date of last energy calibration: 16-DEC-1997 11:02:19.60
Date of last efficiency calibration: 10-NOV-1997 10:04:32.95
*****

```

MNF-SD-WM-DP-301 REV. 0

Removed by:

C. J. Quinn

Verified by:

John Pelyca 4 Mar 98

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.58*	3829	1.46	1323.18	1316	15	3.8		CS-137	5.57
0	1173.02	2845	1.88	2346.21	2338	14	4.0		CO-60	5.64
0	1332.22	2570	1.97	2664.67	2655	19	4.1		CO-60	5.66

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

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CO-60	5.27Y	1.00	5.651E+00	5.651E+00	0.161E+00	2.86	
CS-137	30.00Y	1.00	5.570E+00	5.570E+00	0.210E+00	3.77	
Total Activity :			1.122E+01	1.122E+01			

Grand Total Activity : 1.122E+01 1.122E+01

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

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

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	213.	477.59	6.3061E-01
NA-22	43.	1274.53	7.0165E-02
NA-24	9.	1368.55	3.9036E-02
K-40	117.	1460.75	1.1856E+00
SC-46	128.	1120.55	1.0568E-01
CR-51	252.	320.08	4.8356E-01
MN-54	148.	834.83	8.9247E-02
CO-56	156.	846.76	9.2674E-02
CO-57	301.	122.06	4.1550E-02
CO-58	142.	810.78	8.5920E-02
FE-59	135.	1099.25	1.8851E-01
ZN-65	133.	1115.55	2.1102E-01
SE-75	292.	264.66	7.5811E-02
KR-85	192.	514.00	1.5309E+01
SR-85	192.	514.01	6.9195E-02
Y-88	5.	1836.06	3.9446E-02
Y-91	45.	1204.67	2.2962E+01
NB-94	158.	871.09	9.5561E-02
NB-95	104.	765.78	7.0380E-02
ZR-95	129.	756.73	1.4160E-01
ZRNB-95	106.	724.18	3.1116E-01
RU-103	190.	497.08	7.0429E-02
RURH-106	131.	621.93	1.3248E+00
AG-108m	101.	722.94	7.2744E-02
CD-109	250.	88.03	1.2773E+00
AG-110M	222.	657.76	9.3823E-02
SN-113	210.	391.69	8.4041E-02
TE-123m	348.	159.00	4.3696E-02
SB-124	125.	602.73	6.3907E-02
SB-125	223.	427.89	2.0450E-01
TE-125m	302.	109.27	1.3649E+01
I-129	274.	39.60	1.5378E+01
I-131	233.	364.48	6.5145E-02
XE-131m	292.	163.93	1.7330E+00
BA-133	221.	356.02	8.1226E-02
CS-134	145.	604.70	6.8955E-02
CS-136	133.	818.51	8.3882E-02
CS-138	11.	1435.86	8.9965E-02
CE-139	288.	165.85	4.2299E-02
BA-140	122.	537.31	2.2892E-01
LA-140	4.	1596.21	3.2836E-02
CE-141	347.	145.44	7.5656E-02
CE-144	279.	133.51	2.9950E-01
CEPR-144	279.	133.51	5.9848E-01
EU-152	312.	121.78	1.2791E-01
EU-154	297.	123.07	8.7316E-02
EU-155	262.	86.54	1.4802E-01
HF-181	220.	482.18	8.3013E-02
TA-182	251.	67.75	2.0561E-01
HG-203	279.	279.20	5.5721E-02
BI-207	136.	569.70	6.3179E-02

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
TL-208	297.	277.36	7.3725E-01
PB-210	266.	46.50	1.0433E+01
BI-212	119.	727.18	1.0784E+00
PB-212	355.	238.63	1.0333E-01
BI-214	171.	609.31	1.6332E-01
PB-214	251.	351.92	2.6537E-01
RA-224	340.	240.99	1.1218E+00
RA-226	342.	186.10	1.0899E+00
AC-228	187.	911.21	4.0292E-01
TH-228	272.	84.37	4.0949E+00
TH-229	252.	88.47	1.8591E-01
U-232	247.	57.78	7.3097E+01
PA-233	255.	312.17	1.2419E-01
UTH-233	299.	245.34	3.8460E+01
PA-234M	136.	1001.03	1.1837E+01
TH-234	295.	92.60	8.2304E-01
U-235	347.	185.71	6.6711E-02
NP-237	261.	86.48	3.9126E-01
U-237	278.	59.54	3.9995E-01
NP-238	145.	984.45	3.6519E-01
NP-239	261.	106.12	1.6175E-01
PU-239	299.	129.30	5.4139E+02
AM-241	278.	59.54	3.8363E-01
AM-243	283.	74.67	1.1487E-01

 * 222-S Laboratory Counting Room 3-MAR-1998 13:56:06.56
 *

>>>>>>> SAMPLE INFORMATION <<<<<<<<<
 Worklist #: 22655
 Sample ID: WL22655-BLK
 Sample Size: 1.00000E-03 L
 Dilution Factor: 4.10000E+01

HNF-SD-WM-DP-301 REV. 0

Removed by:

Luc Logan

>>>>>>> COUNT INFORMATION <<<<<<<<<
 Detector ID: GEA2
 File Number: ~~NI3AF-1.cnf~~ ^{ms} 292293.cnf2
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:31:08.86 sec
 Dead Time: 0.8%

Verified by:

John Relyea 4 Mar 98

>>>>>>> ANALYSIS INFORMATION <<<<<<<<<
 Sample Count Time: 3-MAR-1998 11:20:43.68
 Decayed to: 3-MAR-1998 11:20:43.68
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: SEH
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

>>>>>>> CALIBRATION INFORMATION <<<<<<<<<
 Date of last energy calibration: 16-DEC-1997 11:02:19.60
 Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw %Err	Fit	Nuclides	Activity uCi/L
0	33.74	227	2.69	67.43	63	10 39.8			
0	1446.10	20	1.35	2892.47	2888	9 58.5			
0	1460.51*	20	1.93	2921.31	2914	14206.1		K-40	6.07

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

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.28E+09Y	1.00	6.069E+00	6.069E+00	12.51E+00	206.12	
Total Activity :			6.069E+00	6.069E+00			

Grand Total Activity : 6.069E+00 6.069E+00

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

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

Sample ID : WL22655-BLK

Acquisition date : 3-MAR-1998 11:20:43

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	73.	477.59	5.1807E+00
NA-22	29.	1274.53	7.9906E-01
NA-24	26.	1368.55	8.5789E-01
SC-46	59.	1120.55	1.0023E+00
CR-51	149.	320.08	5.1390E+00
MN-54	44.	834.83	6.9351E-01
CO-56	40.	846.76	6.6654E-01
CO-57	204.	122.06	4.7071E-01
CO-58	51.	810.78	7.2333E-01
FE-59	36.	1099.25	1.3873E+00
CO-60	24.	1332.50	7.6118E-01
ZN-65	30.	1115.55	1.4533E+00
SE-75	168.	264.66	7.9566E-01
KR-85	106.	514.00	1.5788E+02
SR-85	106.	514.01	7.1328E-01
Y-88	9.	1836.06	6.9875E-01
Y-91	40.	1204.67	2.9657E+02
NB-94	35.	871.09	6.4030E-01
NB-95	38.	765.78	6.0641E-01
ZR-95	54.	756.73	1.2808E+00
ZRNB-95	62.	724.18	3.2980E+00
RU-103	78.	497.08	6.2962E-01
RURH-106	44.	621.93	1.0909E+01
AG-108m	57.	722.94	7.5979E-01
CD-109	183.	88.03	1.5043E+01
AG-110M	70.	657.76	7.4295E-01
SN-113	121.	391.69	8.8151E-01
TE-123m	194.	159.00	4.5078E-01
SB-124	61.	602.73	6.2408E-01
SB-125	115.	427.89	2.0371E+00
TE-125m	195.	109.27	1.5102E+02
I-129	144.	39.60	1.5442E+02
I-131	105.	364.48	6.1008E-01
XE-131m	214.	163.93	2.0421E+01
BA-133	140.	356.02	8.9309E-01
CS-134	61.	604.70	6.2682E-01
CS-136	41.	818.51	6.5831E-01
CS-137	299.	661.66	1.6516E+00
CS-138	17.	1435.86	3.0798E+00
CE-139	212.	165.85	4.9909E-01
BA-140	76.	537.31	2.5027E+00
LA-140	14.	1596.21	7.5686E-01
CE-141	184.	145.44	7.6243E-01
CE-144	184.	133.51	3.3528E+00
CEPR-144	184.	133.51	6.7019E+00
EU-152	198.	121.78	1.4042E+00
EU-154	205.	123.07	9.9857E-01
EU-155	215.	86.54	1.8399E+00
HF-181	82.	482.18	7.1132E-01
TA-182	184.	67.75	2.4250E+00
HG-203	154.	279.20	5.7294E-01

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BI-207	55.	569.70	5.6290E-01
TL-208	174.	277.36	7.7820E+00
PB-210	156.	46.50	1.1066E+02
BI-212	61.	727.18	1.0803E+01
PB-212	222.	238.63	1.1257E+00
BI-214	138.	609.31	2.0164E+00
PB-214	167.	351.92	6.6492E+00
RA-224	205.	240.99	1.2106E+01
RA-226	205.	186.10	1.1622E+01
AC-228	62.	911.21	3.2618E+00
TH-228	190.	84.37	4.7016E+01
TH-229	177.	88.47	2.1429E+00
U-232	122.	57.78	7.1356E+02
PA-233	143.	312.17	1.2885E+00
UTH-233	153.	245.34	3.8071E+02
PA-234M	44.	1001.03	9.5456E+01
TH-234	199.	92.60	9.3146E+00
U-235	208.	185.71	7.1239E-01
NP-237	216.	86.48	4.8844E+00
U-237	157.	59.54	4.1766E+00
NP-238	40.	984.45	2.7538E+00
NP-239	181.	106.12	1.8723E+00
PU-239	180.	129.30	5.7976E+03
AM-241	157.	59.54	3.9919E+00
AM-243	198.	74.67	1.3210E+00

 * 222-S Laboratory Counting Room 3-MAR-1998 20:47:28.85 *

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

Worklist #: 22655
 Sample ID: S98B000062-SAM
 Sample Size: 1.00000E-03 L
 Dilution Factor: 4.10000E+01

Removed by:

Tag L. Hunt

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

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2295.cnf
 Geometry: 43
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:42:48.06 sec
 Dead Time: 7.9%

Verified by:

John Relyea 4 Mar 88

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

Sample Count Time: 3-MAR-1998 18:04:05.75
 Decayed to: 3-MAR-1998 18:04:05.75
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: GL
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 16-DEC-1997 11:02:19.60
 Date of last efficiency calibration: 10-NOV-1997 10:09:16.15

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.39*	2336670	1.49	1322.82	1315	16	0.1		CS-137	1.708E+05
0	1322.34	265	1.77	2644.90	2638	13	16.2			

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

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CS-137	30.00Y	1.00	1.708E+05	1.708E+05	0.002E+05	0.13	
Total Activity :			1.708E+05	1.708E+05			

Grand Total Activity : 1.708E+05 1.708E+05

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	68657.	477.59	5.5337E+02
NA-22	33.	1274.53	3.0526E+00
NA-24	13.	1368.55	2.2535E+00
K-40	325.	1460.75	9.3656E+01
SC-46	87.	1120.55	4.3444E+00
CR-51	63774.	320.08	3.8478E+02
MN-54	104.	834.83	3.7770E+00
CO-56	103.	846.76	3.8092E+00
CO-57	71191.	122.06	3.4558E+01
CO-58	129.	810.78	4.0995E+00
FE-59	58.	1099.25	6.2573E+00
CO-60	22.	1332.50	2.6580E+00
ZN-65	68.	1115.55	7.6206E+00
SE-75	71256.	264.66	6.0190E+01
KR-85	35776.	514.00	1.0172E+04
SR-85	35772.	514.01	4.6013E+01
Y-88	7.	1836.06	2.1668E+00
Y-91	42.	1204.67	1.0908E+03
NB-94	96.	871.09	3.7641E+00
NB-95	155.	765.78	4.2754E+00
ZR-95	185.	756.73	8.4331E+00
ZRNB-95	235.	724.18	2.2811E+01
RU-103	43504.	497.08	5.1965E+01
RURH-106	15235.	621.93	6.8703E+02
AG-108m	243.	722.94	5.5483E+00
CD-109	59180.	88.03	1.0730E+03
AG-110M	68982.	657.76	8.0181E+01
SN-113	65064.	391.69	7.2905E+01
TE-123m	73458.	159.00	3.3767E+01
SB-124	15358.	602.73	3.4074E+01
SB-125	74743.	427.89	1.8403E+02
TE-125m	65528.	109.27	1.0952E+04
I-129	53297.	39.60	1.0271E+04
I-131	62945.	364.48	5.3267E+01
XE-131m	73330.	163.93	1.4544E+03
BA-133	62361.	356.02	6.7637E+01
CS-134	15374.	604.70	3.4237E+01
CS-136	126.	818.51	4.0932E+00
CS-138	15.	1435.86	1.1083E+01
CE-139	73786.	165.85	3.5745E+01
BA-140	26116.	537.31	1.6141E+02
LA-140	9.	1596.21	2.2153E+00
CE-141	73721.	145.44	5.9141E+01
CE-144	73576.	133.51	2.6146E+02
CEPR-144	73573.	133.51	5.2244E+02
EU-152	71153.	121.78	1.0462E+02
EU-154	71638.	123.07	7.3362E+01
EU-155	59083.	86.54	1.2153E+02
HF-181	55912.	482.18	6.4785E+01
TA-182	54249.	67.75	1.6349E+02
HG-203	69541.	279.20	4.4483E+01

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BI-207	16967.	569.70	3.4079E+01
TL-208	69467.	277.36	5.7060E+02
PB-210	52770.	46.50	7.4579E+03
BI-212	248.	727.18	7.6906E+01
PB-212	76867.	238.63	7.8035E+01
BI-214	15483.	609.31	7.5335E+01
PB-214	62534.	351.92	4.9670E+02
RA-224	76290.	240.99	8.6857E+02
RA-226	93524.	186.10	9.4466E+02
AC-228	134.	911.21	1.7129E+01
TH-228	58863.	84.37	3.2913E+03
TH-229	59301.	88.47	1.5568E+02
U-232	52537.	57.78	5.6460E+04
PA-233	64309.	312.17	9.8812E+01
UTH-233	75241.	245.34	3.1167E+04
PA-234M	51.	1001.03	3.7106E+02
TH-234	60553.	92.60	6.4552E+02
U-235	92178.	185.71	5.7047E+01
NP-237	59071.	86.48	3.2186E+02
U-237	52574.	59.54	2.9464E+02
NP-238	73.	984.45	1.3252E+01
NP-239	63419.	106.12	1.3870E+02
PU-239	72763.	129.30	4.5514E+05
AM-241	52575.	59.54	2.8150E+02
AM-243	56171.	74.67	8.8129E+01

 * 222-S Laboratory Counting Room 3-MAR-1998 23:34:59.65

>>>>>>> SAMPLE INFORMATION <<<<<<<<<
 Worklist #: 22655
 Sample ID: S98B000062-DUP
 Sample Size: 1.00000E-03 L
 Dilution Factor: 4.10000E+01

Removed by:

[Signature]

>>>>>>> COUNT INFORMATION <<<<<<<<<
 Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2296.cnf
 Geometry: 43
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:42:38.18 sec
 Dead Time: 7.8%

Verified by:

[Signature] 4 Mar 98

>>>>>>> ANALYSIS INFORMATION <<<<<<<<<
 Sample Count Time: 3-MAR-1998 20:51:43.58
 Decayed to: 3-MAR-1998 20:51:43.58
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: GL
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

>>>>>>> CALIBRATION INFORMATION <<<<<<<<<
 Date of last energy calibration: 16-DEC-1997 11:02:19.60
 Date of last efficiency calibration: 10-NOV-1997 10:09:16.15

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw %Err	Fit	Nuclides	Activity uCi/L
0	189.29	10853	5.84	378.53	371	19 22.6			
0	661.40*	2305457	1.49	1322.83	1315	16 0.1		CS-137	1.685E+05
0	1322.64	288	2.16	2645.52	2637	21 18.4			

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

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CS-137	30.00Y	1.00	1.685E+05	1.685E+05	0.002E+05	0.13	
Total Activity :			1.685E+05	1.685E+05			

Grand Total Activity : 1.685E+05 1.685E+05

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	67897.	477.59	5.5031E+02
NA-22	30.	1274.53	2.9294E+00
NA-24	17.	1368.55	2.5486E+00
K-40	292.	1460.75	8.8969E+01
SC-46	93.	1120.55	4.4953E+00
CR-51	62868.	320.08	3.8204E+02
MN-54	120.	834.83	4.0431E+00
CO-56	97.	846.76	3.6911E+00
CO-57	70267.	122.06	3.4333E+01
CO-58	97.	810.78	3.5860E+00
FE-59	48.	1099.25	5.7429E+00
CO-60	21.	1332.50	2.6015E+00
ZN-65	56.	1115.55	6.9687E+00
SE-75	70727.	264.66	5.9966E+01
KR-85	35328.	514.00	1.0109E+04
SR-85	35323.	514.01	4.5724E+01
Y-88	11.	1836.06	2.5805E+00
Y-91	48.	1204.67	1.1618E+03
NB-94	92.	871.09	3.6804E+00
NB-95	172.	765.78	4.4878E+00
ZR-95	153.	756.73	7.7008E+00
ZRNB-95	237.	724.18	2.2866E+01
RU-103	43177.	497.08	5.1770E+01
RURH-106	15012.	621.93	6.8199E+02
AG-108m	238.	722.94	5.4945E+00
CD-109	59032.	88.03	1.0717E+03
AG-110M	67423.	657.76	7.9272E+01
SN-113	64475.	391.69	7.2575E+01
TE-123m	72176.	159.00	3.3472E+01
SB-124	15444.	602.73	3.4168E+01
SB-125	73315.	427.89	1.8227E+02
TE-125m	64137.	109.27	1.0835E+04
I-129	52738.	39.60	1.0217E+04
I-131	61498.	364.48	5.2652E+01
XE-131m	72777.	163.93	1.4490E+03
BA-133	61650.	356.02	6.7252E+01
CS-134	15135.	604.70	3.3971E+01
CS-136	123.	818.51	4.0490E+00
CS-138	16.	1435.86	1.1592E+01
CE-139	72262.	165.85	3.5374E+01
BA-140	25618.	537.31	1.5987E+02
LA-140	12.	1596.21	2.4679E+00
CE-141	73042.	145.44	5.8869E+01
CE-144	72721.	133.51	2.5994E+02
CEPR-144	72721.	133.51	5.1941E+02
EU-152	70204.	121.78	1.0392E+02
EU-154	70297.	123.07	7.2674E+01
EU-155	58407.	86.54	1.2084E+02
HF-181	55188.	482.18	6.4365E+01
TA-182	53466.	67.75	1.6231E+02
HG-203	67611.	279.20	4.3863E+01

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BI-207	16941.	569.70	3.4053E+01
TL-208	68476.	277.36	5.6652E+02
PB-210	51790.	46.50	7.3885E+03
BI-212	231.	727.18	7.4349E+01
PB-212	76093.	238.63	7.7641E+01
BI-214	15081.	609.31	7.4355E+01
PB-214	61453.	351.92	4.9193E+02
RA-224	75695.	240.99	8.6518E+02
RA-226	91826.	186.10	9.3607E+02
AC-228	124.	911.21	1.6531E+01
TH-228	58060.	84.37	3.2689E+03
TH-229	59304.	88.47	1.5568E+02
U-232	51925.	57.78	5.6130E+04
PA-233	63566.	312.17	9.8240E+01
UTH-233	74033.	245.34	3.0916E+04
PA-234M	62.	1001.03	4.0635E+02
TH-234	59197.	92.60	6.3827E+02
U-235	90453.	185.71	5.6511E+01
NP-237	58391.	86.48	3.2001E+02
U-237	52168.	59.54	2.9350E+02
NP-238	63.	984.45	1.2402E+01
NP-239	62660.	106.12	1.3787E+02
PU-239	71719.	129.30	4.5187E+05
AM-241	52169.	59.54	2.8041E+02
AM-243	55300.	74.67	8.7445E+01

LABCORE Completed Worklist Report for Worklist# 22658

Analyst: scl Instrument: AB12 Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: B Plant Tk21-1 SR90-01 1mL TINKFUS skb

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		@SR90-01 SR90-01 LIQUID		2.35E-03	2.52E-3	107.234	% Recovery
1 STD	0		@SR90-01 SR90-01C LIQUID		100	8.57E+01	85.700	% Recovery
1 STD	0		@SR90-01 SR90-01E LIQUID		1.00	1.36E+00	1.360	% Ct. Error
2 BLNK	0		@SR90-01 SR90-01 LIQUID		1	1.97E-2	0.020	uCi/mL
2 BLNK	0		@SR90-01 SR90-01C LIQUID		100	8.30E+01	83.000	% Recovery
2 BLNK	0		@SR90-01 SR90-01E LIQUID		1.00	9.28E+01	92.800	uCi/mL
3 BLNK/BKG	0		@SR90-01 SR90-01 LIQUID		1	1.61E+00	1.610	BLNK/BKG
4 SAMPLE	S98B000062	0	@SR90-01 SR90-01 LIQUID	N/A		4.57E+00	2.38e-002	uCi/mL
4 SAMPLE	S98B000062	0	@SR90-01 SR90-01C LIQUID	N/A		7.97E+01		% Recovery
4 SAMPLE	S98B000062	0	@SR90-01 SR90-01E LIQUID	N/A		3.03E+00		% Ct. Error
5 DUP	S98B000062	0	@SR90-01 SR90-01 LIQUID		4.57E+0	4.60E+0	0.654	RPD
5 DUP	S98B000062	0	@SR90-01 SR90-01C LIQUID		100	8.17E+01	81.700	% Recovery
5 DUP	S98B000062	0	@SR90-01 SR90-01E LIQUID		1.00	2.98E+00	2.980	% Ct. Err

Final page for worklist# 22658

Analyst Signature _____ Date _____

Susan Bee 3/23/98
Analyst Signature _____ Date _____

ed Potts 4/7/98
Reviewer Signature _____ Date _____

LABCORE Data Entry Template for Worklist# 22658

Analyst: S. L. Instrument: AB00 Book# 86856

Method: LA-220-101 Rev/Mod E-3

Worklist Comment: B Plant Tk21-1 SR90-01 1mL TINKFUS skb

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	S98B000062 0		@SR90-01	LIQUID	98000140	TK-21-1 (1)
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E					
5 DUP	S98B000062 0		@SR90-01	LIQUID		

Final page for worklist # 22658

Sue Lan 3-3-98
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5) LIQUIDS

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5) LIQUIDS					STANDARD
Type	DETECTOR NUMBER	12	CARRIER ADDED in mL (CVA)	1.000	
STD	TOTAL COUNTS (TC)	20796	GROSS WEIGHT (W2)	7.6090	
Work List	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT (W1)	7.5233	
22658	BACKGROUND in cpm (BKG)	3.1	NET WEIGHT (W3)	0.0857	
Test Code	SAMPLE VOLUME in mL (SS)	1.000	DELTA TIME (HOURS) (DT)	2.92	
@SR90-01	DILUTION FACTOR (DF)	1			
Matrix	DIGEST DILUTION FACTOR (DDF)	1			
LIQUID	SAMPLE COUNT RATE (Rs)	2076.50	Sr-90 EFFICIENCY FACTO (C1)	0.4180	
Batch Number	CRITICAL LEVEL (Lc)	1.06	Y-90 EFFICIENCY FACTOR (C2)	0.4660	
98000997	TIME OF SEPARATION (ST)	10:20	Rmax	N/A	
Rerun	DATE OF SEPARATION (SD)	03/03/98	DETECTION LIMIT (Ld)	2.21	
0	TIME OF COUNT (TOC)	13:15	Sr-89/90 CONC. in µCi/L	2.5239E+00	
Sample Prep	DATE OF COUNT (DOC)	03/03/98			
N/A	STANDARD BOOK #	86B56			
Sample #	STANDARD VALUE in µCi/mL	2.3548E-03			
STANDARD					
Instrument Code					
WB27811					
Prepared By	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
SKB	Sr-89/90 CONC in µCi/mL REPLACE RS WITH RMAX IF RS<=Lc AND RS>=0 OR REPLACE RS WITH Lc IF RS<0				
Chemist	RS*DF*DDF*1000/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT))))*SS*REC*2220000)				
SAC	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))				
Analyst	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)				
SCL	Percent Carrier Recovery = (Net Weight / Expected weight) * 100				
Date Complete	NOTE: Expected weight = CVA * 0.1				
03/03/98	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
Analysis Date	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
03/03/98	Sr-89/90 CONCENTRATION	2.52E-03	µCi/mL	DETECTION LEVEL 2.69E-06 µCi/L	
Analysis Time					
01:00 PM	RELATIVE COUNTING ERROR	1.4%			
Sample Point					
TK21-1	PERCENT CARRIER RECOVERY	85.7%			

Analyst:	SCL	Date:	03-Mar-98
Signature of Chemist:	SAC	Date:	

HNF-SD-WM-DP-301 REV. 0

WORKBOOK PAGE: BLANK2

LA-220-101 / E-3 Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

					BLNK	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA) 1.000	
BLNK	TOTAL COUNTS	(TC)	50	GROSS WEIGHT	(W2) 7.6184	
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1) 7.5354	
22658	BACKGROUND in cpm	(BKG)	3.1	NET WEIGHT	(W3) 0.0830	
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT) 3.08	
@SR90-01	DILUTION FACTOR	DF	4141			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	1.90	SR-90 EFFICIENCY FACTOR	(C1) 0.4180	
Batch Number	CRITICAL LEVEL	(Lc)	1.06	Y-90 EFFICIENCY FACTOR	(C2) 0.4660	
98000997	TIME OF SEPARATION	(ST)	10:20	Rmax	N/A	
Rerun	DATE OF SEPARATION	(SD)	03/03/98	DETECTION LIMIT	(Ld) 2.21	
0	TIME OF COUNT	(TOC)	13:25	Sr-89/90 CONC in µCi/L	1.9711E+01	
Sample Prep	DATE OF COUNT	(DOC)	03/03/98			
N/A						
Sample #						
BLANK						
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)					
SKB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
SCL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
03/03/98						
Analysis Date						
03/03/98	Sr-89/90 CONCENTRATION	1.97E-02		µCi/mL	DETECTION LEVEL 2.30E-02 µCi/mL	
Analysis Time						
01:00 PM	RELATIVE COUNTING ERROR	92.8%				
Sample Point						
TK21-1	PERCENT CARRIER RECOVERY	83.0%				

Analyst:	SCL	Date:	03-Mar-98
Signature of Chemist:	SAC	Date:	

BLANK.WB1 REV 2.0

22010NML

WORKBOOK PAGE: SAM4

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

					SAMPLE	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	4270	GROSS WEIGHT	(W2)	7.6143
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.5346
22658	BACKGROUND in cpm	(BKG)	3.1	NET WEIGHT	(W3)	0.0797
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)	3.33
@SR90-01	DILUTION FACTOR	DF	4141			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	423.90	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.06	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
98000997	TIME OF SEPARATION	(ST)	10:20	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	03/03/98	DETECTION LIMIT	(Ld)	2.21
0	TIME OF COUNT	(TOC)	13:40	Sr-89/90 CONC in µCi/L 4.5669E+03		
Sample Prep	DATE OF COUNT	(DOC)	03/03/98			
N/A						
Sample #						
S98B000062						
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)					
SKB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
SCL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
03/03/98						
Analysis Date						
03/03/98	Sr-89/90 CONCENTRATION		4.57E+00	µCi/mL	DETECTION LEVEL	
Analysis Time						
01:00 PM	RELATIVE COUNTING ERROR		3.0%	2.38E-02		
Sample Point						
TK21-1	PERCENT CARRIER RECOVERY		79.7%	µCi/mL		

Analyst:	SCL	Date:	03-Mar-98
Signature of Chemist:	SAC	Date:	

SAMPLE.WB1 REV 2.0

22010NML

WORKBOOK PAGE: DUP5

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

					DUP	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS	(TC)	4413	GROSS WEIGHT	(W2)	7.6253
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.5436
22658	BACKGROUND in cpm	(BKG)	3.1	NET WEIGHT	(W3)	0.0817
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)	3.50
@SR90-01	DILUTION FACTOR	DF	4141			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	438.20	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.06	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
98000997	TIME OF SEPARATION	(ST)	10:20	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	03/03/98	DETECTION LIMIT	(Ld)	2.21
0	TIME OF COUNT	(TOC)	13:50	Sr-89/90 CONC in µCi/L 4.5969E+03		
Sample Prep	DATE OF COUNT	(DOC)	03/03/98			
N/A						
Sample #						
S98B000062						
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)					
SKB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
SCL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
03/03/98						
Analysis Date						DETECTION LEVEL 2.32E-02 µCi/mL
03/03/98	Sr-89/90 CONCENTRATION	4.60E+00	µCi/mL			
Analysis Time						
01:00 PM	RELATIVE COUNTING ERROR	3.0%				
Sample Point						
TK21-1	PERCENT CARRIER RECOVERY	81.7%				

Analyst:	SCL	Date:	03-Mar-98
Signature of Chemist:	SAC	Date:	

SAMPLE.WB1 REV 2.0

22010NML

LABCORE Completed Worklist Report for Worklist# 22657

Analyst: jmv

Instrument: AB15

Book# 75B56

Method: LA-953-104 Rev/Mod B-8

Worklist Comment: B Plant Tk21-1 AM24101 1mL TINKFUS .200 Tracer skb

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	@AM24101 AM24101 LIQUID		1.03E-04	1.13E-4	109.709 % Recovery	
1 STD	0	@AM24101 AM24101T LIQUID		100.	7.89E+01	78.900 % Recovery	
1 STD	0	@AM24101 AM24101E LIQUID		1.0	1.95E+00	1.950 % Ct Error	
2 BLNK	0	@AM24101 AM24101 LIQUID		1	<6.94E-5	uCi/mL	
2 BLNK	0	@AM24101 AM24101T LIQUID		100.0	8.01E+01	80.100 % Recovery	
2 BLNK	0	@AM24101 AM24101E LIQUID		1.0	9.81E+00	9.810 % Ct Error	
3 SAMPLE	S98B000062 0	@AM24101 AM24101 LIQUID		N/A	3.68E-04	8.90e-005 uCi/mL	
3 SAMPLE	S98B000062 0	@AM24101 AM24101E LIQUID		N/A	2.71E+00	% Ct. Error	
3 SAMPLE	S98B000062 0	@AM24101 AM24101T LIQUID		N/A	8.14E+01	% Recovery	
4 DUP	S98B000062 0	@AM24101 AM24101 LIQUID		3.68E-4	3.73E-4	1.350 RPD	
4 DUP	S98B000062 0	@AM24101 AM24101T LIQUID		100.0	8.57E+01	85.700 % Recovery	
4 DUP	S98B000062 0	@AM24101 AM24101E LIQUID		1.0	2.72E+00	2.720 % Ct Error	

Final page for worklist# 22657

Analyst Signature

Date

Susan Bee
Analyst Signature

3/05/98
Date

John Relyea
Reviewer Signature

5 Mar 98
Date

PJCD

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

LABCORE Data Entry Template for Worklist# 22657

Analyst: bm Instrument: AM01 Book# 75856

Method: LA-953-104 Rev/Mod _____

Worklist Comment: B Plant Tk21-1 AM24101 1mL TINKFUS .200 Tracer skb

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@AM24101	LIQUID		
2 BLNK			@AM24101	LIQUID		
3 SAMPLE	S98B000062 0		@AM24101	LIQUID	98000140	TK-21-1 (1)
Analytes Requested: AM24101 , AM24101E, AM24101T						
4 DUP	S98B000062 0		@AM24101	LIQUID		

Final page for worklist # 22657

bm
Analyst Signature

3-3-98
Date

Analyst Signature

Date

Data Entry Comments:

WORKBOOK PAGE: STD1

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

LIQUID

STD

Type	Date Counted	MAR-04-98	Am 241 AEA Frac. (C241)	0.467
STD	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.384
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
22657	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	3688
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	140B43	Background in cpm (Bkg)	0.03
Matrix	Am-243 Tracer Value (dpm/mL)	1034	Am 241 cpm	46.77
LIQUID	Detector Number	15	Am 243 cpm	38.45
Batch Number	Detector Efficiency (DetEff)	0.2894	Cm 243/244 cpm	0
98000996	Standard Book No	75B56	AEA Count Time (min)	480
Rerun:	Standard Value in $\mu\text{Ci/mL}$	1.030E-04	Am 241 $\mu\text{Ci/L}$ =	1.1329E-01
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 1.5381E-02
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))			
STANDARD	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
Instrument Code				
AM01	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100			
Prepared By	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV.			
SKB				
Chemist				
JFR	Am 241 $\mu\text{Ci/mL}$ =	1.13E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$	
Analyst	Relative Counting Error =	1.9%		
JMV				
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241
03/05/98	Cm 243/244 $\mu\text{Ci/mL}$	< 1.54E-05		1.54E-05
Analysis Date	Relative Counting Error =	100.0%		Cm 243/244
03/04/98	Am 243 Tracer Recovery =	78.9%		1.54E-05
Analysis Time				
10:15 AM				
Sample Point				
TK21-1				

Analyst:	JMV	Date:	03/05/98
Signature of Chemist:	JFR	Date:	5 Mar 98
STANDARD.WB1 REV 1.2	953103ML		

WORKBOOK PAGE: BLANK2

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

LIQUID / SO

BLNK

Type	Date Counted	MAR-04-98	Am 241 AEA Frac. (C241)	0.019	
BLNK	Sample Volume in mL (SS)	0.100	Am 243 AEA Frac. (C243)	0.838	
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0	
22657	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1716	
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30	
@AM24101	Tracer Book No.	140B43	Background in cpm (Bkg)	0.03	
Matrix	Am-243 Tracer Value (dpm/mL)	1034	Am 241 cpm	0.85	
LIQUID	Detector Number	15	Am 243 cpm	37.63	
Batch Number	Detector Efficiency (DetEff)	0.2894	Cm 243/244 cpm	0	
98000996			AEA Count Time (min)	480	
Re-run			Am 241 $\mu\text{Ci/L}$ =	< 6.9432E-02	
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 6.9432E-02	
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))				
BLANK	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				
AM01	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.				
SKB	JFR	Am 241 $\mu\text{Ci/mL}$ =	< 6.94E-05	DETECTION LEVELS in $\mu\text{Ci/mL}$ Am 241 6.94E-05 Cm 243/244 6.94E-05	
Chemist	Analyst	Relative Counting Error =	9.8%		
JMV	Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			
	03/05/98	Cm 243/244 $\mu\text{Ci/mL}$	< 6.94E-05		
	Analysis Date	Relative Counting Error =	100.0%		
	03/04/98	Am 243 Tracer Recovery =	80.1%		
Analysis Time					
10:15 AM					
Sample Point					
TK21-1					

Analyst:	JMV	Date:	03/05/98
Signature of Chemist:	JFR	Date:	5 Mar 98

BLANK.WB1 REV 1.2

953103ML

30-Dec-1899

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

LIQUID / SO

SAMPLE

Type	Date Counted	MAR-04-98	Am 241 AEA Frac. (C241)	0.254	
SAMPLE	Sample Volume in mL (SS)	0.100	Am 243 AEA Frac. (C243)	0.843	
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0	
22657	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	2273	
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30	
@AM24101	Tracer Book No.	140B43	Background in cpm (Bkg)	0.03	
Matrix	Am-243 Tracer Value (dpm/mL)	1034	Am 241 cpm	15.21	
LIQUID	Detector Number	15	Am 243 cpm	38.46	
Batch Number	Detector Efficiency (DetEff)	0.2894	Cm 243/244 cpm	0	
98000996			AEA Count Time (min)	480	
Rerun			Am 241 $\mu\text{Ci/L}$ =	3.6798E-01	
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 8.9020E-02	
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))				
S98B000062	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
Instrument Code					
AM01	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100				
Prepared By	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV				
SKB					
Chemist					
JFR	Am 241 $\mu\text{Ci/mL}$ =	3.68E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$		
Analyst	Relative Counting Error =	2.7%			
JMV					
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.				
03/05/98	Cm 243/244 $\mu\text{Ci/mL}$ <	8.90E-05	Am 241	8.90E-05	
Analysis Date	Relative Counting Error =	100.0%	Cm 243/244	8.90E-05	
03/04/98	Am 243 Tracer Recovery =	81.4%			
Analysis Time					
10:15 AM					
Sample Point					
TK21-1					

Analyst:	JMV	Date:	03/05/98
Signature of Chemist:	JFR	Date:	5 Mar 98
SAMPLE.WB1 REV 1.2	953103ML		

WORKBOOK PAGE: DUP4

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

LIQUID / SO

DUP

Type	Date Counted	MAR-04-98	Am 241 AEA Frac. (C241)	0.258
DUP	Sample Volume in mL (SS)	0.100	Am 243 AEA Frac. (C243)	0.645
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
22657	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	2387
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	140B43	Background in cpm (Bkg)	0.03
Matrix	Am-243 Tracer Value (dpm/mL)	1034	Am 241 cpm	15.09
LIQUID	Detector Number	15	Am 243 cpm	37.72
Batch Number	Detector Efficiency (DetEff)	0.2894	Cm 243/244 cpm	0
98000996			AEA Count Time (min)	480
Rerun			Am 241 $\mu\text{Ci/L}$ =	3.7261E-01
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 8.4242E-02
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))			
S98B000062	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
Instrument Code				
AM01	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min)))] * 1.96 * 100			
Prepared By	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV			
SKB				
Chemist				
JFR	Am 241 $\mu\text{Ci/mL}$ = 3.73E-04		DETECTION LEVELS	
Analyst	Relative Counting Error = 2.7%		in $\mu\text{Ci/mL}$	
JMV			Am 241	
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.		8.42E-05	
03/05/98	Cm 243/244 $\mu\text{Ci/mL}$ < 8.42E-05		Cm 243/244	
Analysis Date	Relative Counting Error = 100.0%		8.42E-05	
03/04/98	Am 243 Tracer Recovery = 85.7%			
Analysis Time				
10:15 AM				
Sample Point				
TK21-1				

Analyst:	JMV	Date:	03/05/98
Signature of Chemist:	JFR	Date:	5 Mar 98
SAMPLE.WB1 REV 1.2	953103ML		

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

DATA REDUCTION REPORT

SAMPLE
 WL22657-STD
 File ID: 1a1029.CNF

Counted on: 3/ 4/98 @13:28
 Detector: AEA1
 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	149.9	149.9	478.406	478.406	12.000	4.097	6.000	3.466
2	134.3	134.3	445.674	445.672	10.000	4.037	5.000	3.207
3	1937.8	1937.8	302.045	302.045	12.000	4.613	6.000	3.462
4	1797.8	1797.8	256.287	256.287	10.000	3.295	5.000	2.528

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid		FWHM	Count Rate	%err c/m @95	d/m	Activity uCi/ea
			Exp.	Obs. Diff.					
1		0.034		6.293	0.02	3.35	4.9	13.7	0.616E-05
2		0.030		6.142	0.02	3.04	5.1	12.4	0.559E-05
3	Pu238 Am241	0.467	5.487	5.481	0.0060	46.77	1.3	264.9	0.119E-03
4	Am243	0.384	5.479	5.481	-0.002	38.45	1.4	202.9	0.914E-04
			-----		-----				
Totals:			0.916	<--valid peaks only-->		91.61			

DETECTOR CALIBRATION

Energy(MEV) = 4.092 + (0.0046)*Channel
 Energy range (MeV): 4.092 TO 6.447
 Efficiency = 0.2452 CPM/CPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	48027.0	100.000
Smoothed	48026.9	100.000
Composite fit	43974.4	91.562
Residuals	4052.6	8.438

Analyzed by:

SEH

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 11909.5

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Raw	Data	Dump	for	AEA	Spectrum:	1a1029.CNF	MNF-SD-WM-DP-301	REV. 0		
1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
21	0.	0.	0.	0.	0.	1.	2.	0.	0.	2.
31	1.	1.	1.	0.	1.	1.	1.	1.	0.	5.
41	1.	0.	2.	2.	0.	1.	1.	3.	1.	2.
51	1.	0.	0.	0.	2.	1.	0.	4.	1.	1.
61	2.	2.	2.	1.	2.	1.	0.	1.	1.	1.
71	0.	3.	0.	2.	0.	2.	0.	0.	1.	0.
81	3.	1.	2.	1.	0.	2.	2.	2.	0.	2.
91	2.	3.	3.	2.	1.	0.	2.	0.	0.	1.
101	0.	1.	1.	2.	0.	0.	3.	3.	5.	0.
111	0.	1.	1.	1.	3.	4.	4.	3.	1.	0.
121	3.	2.	4.	0.	4.	0.	1.	3.	2.	1.
131	2.	1.	2.	0.	1.	1.	2.	0.	4.	2.
141	3.	3.	1.	2.	3.	3.	2.	1.	3.	5.
151	5.	3.	3.	2.	2.	1.	4.	3.	3.	1.
161	1.	3.	2.	1.	4.	4.	3.	2.	3.	3.
171	2.	4.	5.	2.	9.	3.	7.	3.	4.	3.
181	2.	5.	7.	2.	5.	8.	2.	8.	5.	3.
191	3.	5.	8.	5.	1.	5.	9.	11.	9.	5.
201	10.	12.	8.	8.	9.	8.	16.	7.	9.	10.
211	14.	9.	8.	18.	17.	16.	11.	16.	9.	15.
221	22.	24.	21.	21.	21.	25.	23.	21.	25.	29.
231	43.	41.	49.	62.	68.	72.	98.	92.	85.	88.
241	138.	160.	202.	217.	280.	368.	396.	500.	527.	539.
251	729.	828.	1188.	1495.	1955.	2289.	2265.	1791.	1070.	492.
261	300.	178.	186.	151.	147.	127.	158.	150.	131.	125.
271	98.	78.	80.	53.	46.	44.	51.	54.	57.	74.
281	81.	110.	95.	116.	118.	132.	147.	193.	255.	287.
291	351.	419.	490.	565.	621.	746.	870.	1098.	1374.	1756.
301	2192.	2461.	2304.	1683.	1108.	705.	579.	444.	379.	333.
311	282.	255.	191.	155.	122.	64.	29.	24.	9.	11.
321	14.	10.	13.	8.	5.	8.	8.	2.	13.	9.
331	6.	9.	7.	12.	8.	9.	8.	6.	4.	5.
341	3.	3.	2.	3.	0.	4.	8.	1.	1.	5.
351	2.	5.	4.	4.	4.	7.	7.	4.	6.	3.
361	2.	1.	6.	3.	4.	2.	3.	2.	2.	2.
371	2.	2.	3.	4.	3.	3.	1.	2.	5.	1.
381	3.	1.	3.	2.	3.	3.	3.	1.	8.	0.
391	6.	7.	2.	2.	4.	3.	4.	0.	3.	0.
401	2.	3.	6.	1.	3.	3.	1.	1.	5.	2.
411	2.	2.	2.	1.	1.	0.	2.	7.	9.	10.
421	5.	6.	8.	5.	1.	6.	8.	10.	7.	10.
431	9.	18.	15.	18.	20.	23.	27.	31.	44.	59.
441	73.	91.	105.	143.	157.	169.	143.	110.	76.	33.
451	22.	13.	11.	19.	20.	15.	12.	11.	3.	7.
461	3.	7.	7.	16.	16.	17.	22.	22.	33.	24.
471	35.	52.	69.	64.	119.	117.	174.	188.	181.	152.
481	116.	52.	50.	33.	20.	15.	13.	4.	2.	2.
491	1.	0.	0.	0.	0.	0.	2.	0.	0.	1.
511	0.	0.								

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

DATA REDUCTION REPORT

SAMPLE
 WL22657-BLK
 File ID: 2a2029.CNF

Counted on: 3/ 4/98 @13:29
 Detector: AEA2
 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	123.3	123.3	443.351	443.351	12.000	4.198	6.000	3.005
2	12.3	12.3	300.785	300.785	10.000	8.848	5.000	1.264
3	1562.6	1562.6	255.739	255.739	10.000	3.984	5.000	2.602

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	Cm242	0.065	6.101	6.117	-0.016	0.02	2.92	5.2	15.7	0.707E-05
2	Am241	0.019	5.479	5.461	0.018	0.04	0.85	9.7	3.6	0.161E-05
	Pu238		5.487	5.461	0.026				4.7	0.210E-05
3	Am243	0.838	5.266	5.254	0.012	0.02	37.63	1.5	151.0	0.680E-04
Totals:		0.922	<--invalid peaks only-->			41.40				

DETECTOR CALIBRATION

Energy(MEV) = 4.077 + (0.0046)*Channel
 Energy range (MeV): 4.077 TO 6.433
 Efficiency = 0.2518 CPM/DEP
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	21559.0	100.000
Smoothed	21558.9	100.000
Composite fit	19874.8	92.188
Residuals	1684.2	7.812

Analyzed by:

SEH

Spectrum 2a2029.CNF HNF-SD-WM-DP-301 REV. 0
1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 8592.8

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Raw Data Dump for AEA Spectrum:	2a2029.CNF									
1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
21	0.	0.	2.	0.	0.	0.	0.	0.	0.	1.
31	0.	1.	1.	0.	2.	0.	2.	1.	0.	0.
41	0.	0.	0.	0.	2.	0.	0.	0.	1.	0.
51	1.	1.	0.	1.	0.	0.	0.	4.	2.	1.
61	1.	1.	1.	1.	1.	0.	1.	0.	0.	0.
71	1.	0.	0.	0.	2.	4.	0.	0.	1.	1.
81	0.	2.	0.	1.	0.	0.	0.	1.	0.	0.
91	3.	0.	1.	2.	0.	0.	0.	0.	0.	1.
101	1.	1.	0.	3.	0.	0.	1.	2.	0.	2.
111	1.	0.	0.	3.	1.	0.	2.	1.	0.	1.
121	0.	0.	2.	2.	1.	0.	0.	0.	3.	2.
131	1.	1.	1.	1.	2.	0.	1.	0.	1.	3.
141	0.	0.	2.	0.	1.	1.	3.	2.	0.	2.
151	1.	3.	1.	4.	0.	3.	2.	2.	2.	2.
161	0.	3.	1.	1.	1.	2.	1.	1.	1.	2.
171	1.	2.	2.	4.	2.	0.	5.	4.	5.	0.
181	2.	0.	2.	2.	3.	2.	4.	3.	2.	1.
191	2.	1.	5.	5.	3.	7.	4.	5.	4.	6.
201	4.	7.	6.	5.	6.	5.	4.	3.	9.	8.
211	7.	12.	5.	11.	8.	12.	3.	21.	14.	12.
221	21.	18.	32.	25.	23.	22.	36.	26.	26.	32.
231	43.	36.	66.	72.	78.	68.	85.	95.	120.	127.
241	180.	185.	212.	318.	331.	389.	483.	521.	594.	707.
251	862.	993.	1285.	1555.	1857.	1896.	1778.	1292.	861.	444.
261	256.	178.	130.	127.	119.	103.	129.	98.	89.	80.
271	67.	47.	45.	13.	19.	10.	2.	10.	6.	2.
281	13.	10.	4.	4.	5.	6.	4.	6.	10.	4.
291	5.	10.	8.	3.	9.	6.	11.	12.	9.	11.
301	16.	14.	9.	7.	2.	3.	4.	6.	6.	6.
311	3.	6.	2.	2.	1.	1.	5.	1.	3.	3.
321	0.	0.	0.	3.	1.	1.	0.	0.	2.	1.
331	1.	4.	1.	1.	0.	2.	0.	1.	0.	0.
341	0.	1.	1.	1.	3.	2.	0.	3.	4.	0.
351	2.	2.	4.	1.	0.	3.	0.	2.	1.	1.
361	1.	1.	0.	0.	1.	1.	2.	2.	1.	1.
371	1.	0.	2.	1.	1.	0.	1.	4.	0.	0.
381	0.	1.	0.	3.	0.	0.	0.	0.	0.	1.
391	0.	2.	0.	1.	0.	1.	3.	3.	2.	2.
401	3.	0.	2.	2.	2.	0.	0.	1.	5.	2.
411	2.	1.	1.	4.	5.	2.	3.	4.	3.	3.
421	4.	6.	4.	9.	12.	8.	9.	17.	9.	11.
431	15.	15.	22.	31.	40.	39.	47.	55.	69.	90.
441	116.	136.	148.	152.	120.	98.	56.	27.	17.	16.
451	11.	10.	8.	13.	5.	2.	2.	0.	2.	2.
461	0.	0.	1.	0.	0.	0.	1.	0.	1.	1.
471	0.	2.	1.	0.	1.	0.	0.	2.	1.	0.
481	0.	0.	0.	0.	0.	0.	1.	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
 S98B62-SAM
 File ID: 3a3128.CNF

Counted on: 3/ 4/98 @13:29
 Detector: AEA3
 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?	15.2	15.2	466.334	466.334	14.000	4.686	7.000	2.679
2	42.3	42.3	433.841	433.834	12.000	4.872	6.000	3.378
3	568.8	568.8	300.447	300.447	12.000	5.565	6.000	3.691
4	1607.7	1607.7	254.398	254.398	12.000	3.928	6.000	2.582

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid		Count Rate	%err c/m	d/m	Activity uCi/ea
			Exp.	Obs. Diff.	FWHM	@95		
1		????	6.242		0.40	14.1		
2	Cm242	0.018	6.101	6.093	0.0080.02	1.06	8.7	24.0 0.108E-04
3	Pu238 Am241	0.254	5.487	5.479	0.0080.03	15.21	2.3	352.2 0.159E-03
			5.479	5.479	0.000			269.8 0.122E-03
4	Am243	0.643	5.266	5.267	-0.0010.02	38.46	1.4	647.5 0.292E-03
Totals:		0.915	<--valid peaks only-->			54.74		

DETECTOR CALIBRATION

Energy(MEV) = 4.097 + (0.0046)*Channel
 Energy range (MeV): 4.097 TO 6.452
 Efficiency = 0.0600 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	28714.0	100.000
Smoothed	28714.0	100.000
Composite fit	26470.6	92.187
Residuals	2243.4	7.813

Analyzed by:

SEH

Spectrum 3a3128.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 9956.8

Raw	Data	Dump	for	AEA	Spectrum:	3a3128.CNF	HNF-SD-WM-DP-301	REV. 0
1	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	1.	1.	0.	0.	0.	1.	1.
31	0.	0.	0.	0.	0.	1.	1.	0.
41	0.	0.	1.	0.	0.	0.	0.	0.
51	0.	0.	1.	1.	3.	0.	0.	0.
61	2.	1.	0.	0.	1.	0.	2.	2.
71	0.	2.	2.	0.	1.	0.	0.	0.
81	1.	1.	0.	1.	2.	3.	1.	0.
91	1.	0.	2.	0.	1.	2.	2.	1.
101	1.	0.	2.	0.	0.	1.	3.	1.
111	1.	2.	2.	1.	1.	0.	1.	2.
121	0.	1.	2.	2.	1.	0.	5.	3.
131	2.	1.	3.	1.	3.	1.	1.	1.
141	2.	3.	3.	1.	2.	2.	2.	2.
151	2.	0.	4.	2.	0.	0.	2.	1.
161	3.	3.	2.	3.	3.	3.	2.	2.
171	4.	2.	3.	2.	1.	2.	5.	2.
181	4.	4.	3.	2.	5.	4.	2.	1.
191	5.	5.	6.	3.	4.	3.	6.	5.
201	7.	7.	7.	9.	9.	8.	8.	12.
211	11.	8.	12.	8.	15.	20.	13.	15.
221	16.	27.	18.	27.	31.	23.	30.	40.
231	52.	81.	73.	81.	81.	88.	108.	109.
241	212.	253.	302.	348.	424.	489.	589.	634.
251	1115.	1406.	1662.	2010.	1953.	1647.	1160.	698.
261	162.	143.	127.	105.	117.	125.	116.	102.
271	52.	34.	21.	32.	19.	24.	23.	25.
281	31.	39.	42.	46.	53.	65.	93.	95.
291	150.	183.	211.	243.	283.	316.	407.	536.
301	708.	566.	451.	298.	199.	144.	154.	141.
311	63.	46.	26.	27.	17.	8.	8.	4.
321	4.	0.	6.	6.	2.	3.	8.	3.
331	7.	5.	2.	7.	3.	4.	4.	3.
341	3.	6.	2.	2.	4.	3.	3.	2.
351	2.	0.	1.	2.	2.	3.	4.	4.
361	4.	1.	4.	5.	3.	7.	8.	12.
371	9.	6.	5.	2.	3.	1.	1.	2.
381	2.	1.	2.	0.	1.	5.	1.	2.
391	1.	3.	1.	2.	1.	3.	2.	1.
401	3.	1.	0.	2.	5.	5.	0.	2.
411	3.	3.	3.	2.	4.	1.	1.	5.
421	4.	10.	9.	4.	12.	15.	14.	18.
431	34.	42.	51.	52.	46.	37.	27.	18.
441	6.	7.	9.	10.	2.	5.	1.	3.
451	5.	1.	3.	3.	7.	4.	3.	4.
461	7.	7.	12.	14.	11.	23.	15.	14.
471	6.	7.	2.	1.	1.	2.	2.	0.
481	0.	1.	0.	1.	0.	0.	0.	0.
491	0.	0.	0.	1.	0.	0.	0.	0.
511	1.	0.						

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

DATA REDUCTION REPORT

SAMPLE
 S98B62-DUP
 File ID: 4a4126.CNF

Counted on: 3/ 4/98 @13:29
 Detector: AEA4
 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	583.5	583.5	301.301	301.301	12.000	4.933	6.000	3.195
2	1613.3	1613.3	255.361	255.361	10.000	3.596	5.000	2.338

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			FWHM	Count Rate	%err c/m @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.					
1	Pu238 Am241	0.258	5.487	5.474	0.0130.02	15.09	2.3	89.0	0.401E-04	
2	Am243	0.645	5.266	5.262	0.0040.02	37.72	1.5	161.9	0.729E-04	
Totals:			0.903	<--valid peaks only-->			52.81			

DETECTOR CALIBRATION

Energy(MEV) = $4.088 + (0.0046) \times \text{Channel}$
 Energy range (MeV): 4.088 TO 6.443
 Efficiency = 0.2354 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	28065.0	100.000
Smoothed	28058.4	99.976
Composite fit	25353.8	90.340
Residuals	2711.2	9.660

Analyzed by: SEH

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 9171.4

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2.
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Raw Data Dump for AEA Spectrum: 4a4126.CNF HNF-SD-WM-DP-901 REV. 0										
1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	2.	1.
21	1.	0.	1.	0.	1.	3.	0.	2.	0.	0.
31	2.	1.	1.	0.	1.	0.	0.	0.	0.	1.
41	2.	3.	0.	1.	0.	0.	0.	1.	0.	1.
51	1.	1.	0.	1.	1.	0.	1.	3.	2.	0.
61	1.	0.	3.	0.	2.	1.	0.	0.	1.	0.
71	1.	2.	3.	1.	1.	0.	4.	1.	1.	1.
81	2.	3.	0.	0.	4.	1.	2.	2.	1.	3.
91	0.	1.	2.	1.	1.	2.	0.	0.	2.	1.
101	0.	3.	2.	2.	4.	1.	2.	1.	1.	1.
111	1.	1.	0.	0.	2.	1.	0.	3.	1.	4.
121	1.	2.	1.	0.	1.	0.	0.	1.	0.	2.
131	2.	2.	2.	0.	0.	2.	2.	1.	2.	1.
141	2.	2.	0.	0.	4.	1.	2.	1.	3.	4.
151	1.	0.	1.	0.	1.	5.	4.	0.	1.	5.
161	4.	2.	3.	2.	2.	2.	2.	3.	4.	6.
171	3.	3.	3.	1.	1.	4.	2.	3.	8.	7.
181	2.	2.	1.	2.	2.	2.	1.	1.	2.	11.
191	6.	3.	2.	4.	4.	4.	5.	6.	2.	7.
201	5.	5.	10.	10.	2.	11.	10.	10.	6.	10.
211	7.	16.	8.	16.	15.	16.	12.	16.	20.	21.
221	19.	23.	20.	25.	23.	28.	35.	33.	40.	43.
231	51.	52.	56.	72.	94.	104.	100.	123.	107.	136.
241	196.	234.	269.	291.	340.	426.	472.	595.	641.	776.
251	863.	1103.	1410.	1756.	1937.	2006.	1733.	1112.	508.	280.
261	179.	139.	106.	137.	137.	125.	139.	109.	79.	68.
271	69.	57.	48.	32.	27.	27.	32.	18.	30.	46.
281	37.	38.	49.	54.	60.	66.	50.	65.	111.	118.
291	139.	157.	201.	222.	222.	305.	343.	387.	512.	635.
301	737.	677.	591.	393.	261.	185.	141.	102.	127.	74.
311	73.	59.	52.	44.	14.	15.	3.	3.	4.	6.
321	4.	2.	6.	4.	3.	4.	3.	6.	2.	2.
331	0.	3.	5.	5.	4.	3.	2.	1.	1.	4.
341	2.	2.	2.	2.	1.	3.	1.	3.	4.	1.
351	2.	2.	2.	3.	2.	4.	4.	5.	8.	8.
361	4.	8.	4.	7.	11.	3.	8.	8.	7.	9.
371	10.	7.	2.	2.	3.	3.	0.	0.	0.	2.
381	0.	0.	3.	1.	1.	1.	4.	1.	1.	2.
391	0.	0.	2.	1.	0.	3.	0.	1.	3.	1.
401	2.	2.	2.	2.	4.	2.	4.	2.	2.	0.
411	2.	1.	1.	2.	3.	4.	2.	3.	7.	7.
421	4.	1.	2.	2.	0.	0.	1.	1.	3.	2.
431	3.	2.	1.	0.	2.	3.	2.	1.	3.	1.
441	1.	1.	1.	1.	0.	0.	1.	0.	1.	2.
451	0.	2.	1.	0.	2.	2.	0.	0.	2.	1.
461	1.	1.	1.	0.	4.	1.	1.	1.	0.	0.
471	1.	1.	0.	1.	0.	0.	0.	0.	0.	0.
481	2.	1.	0.	2.	2.	0.	1.	1.	0.	1.
491	2.	1.	1.	1.	2.	2.	2.	2.	2.	3.
511	10.	0.								

LABCORE Completed Worklist Report for Worklist# 22656

Analyst: jmv

Instrument: AB14

Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: B Plant Tk21-1 PU23901 1mL TINKFUS .100 tracer skb

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	@PU23901 PU23901 LIQUID		1.09E-04	9.77E-5	89.633 % Recovery	
1 STD	0	@PU23901 PU23901E LIQUID		1.00	1.95E+00	1.950 % Ct Error	
1 STD	0	@PU23901 PU23901T LIQUID		100	9.01E+01	90.100 % Recovery	
2 BLNK	0	@PU23901 PU23901 LIQUID		1	<2.75E-5	uCi/mL	
2 BLNK	0	@PU23901 PU23901T LIQUID		100	1.02E+02	102.000 % Recovery	
2 BLNK	0	@PU23901 PU23901E LIQUID		1.00	1.00E+02	100.000 uCi/mL	
3 SAMPLE	S98B000062 0	@PU23901 PU23901 LIQUID	N/A		4.01E-04	4.62E-005 uCi/mL	
3 SAMPLE	S98B000062 0	@PU23901 PU23901T LIQUID	N/A		9.53E+01	% Recovery	
3 SAMPLE	S98B000062 0	@PU23901 PU23901E LIQUID	N/A		2.48E+00	% Ct. Error	
4 DUP	S98B000062 0	@PU23901 PU23901 LIQUID		4.01E-4	4.22E-4	5.103 RPD	
4 DUP	S98B000062 0	@PU23901 PU23901T LIQUID		100	9.33E+01	93.300 % Recovery	
4 DUP	S98B000062 0	@PU23901 PU23901E LIQUID		1.00	2.50E+00	2.500 % Ct Error	

Final page for worklist# 22656

Analyst Signature _____ Date _____

Susan Bee 3/05/98
Analyst Signature Date

John Pelyea 5 Mar 98
Reviewer Signature Date
PJCD

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

LABCORE Data Entry Template for Worklist# 22656

Analyst: SMV Instrument: PU01 Book# 73856

Method: LA-953-104 Rev/Mod _____

Worklist Comment: B Plant Tk21-1 PU23901 1mL TINKFUS .100 tracer skb

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@PU23901	LIQUID		
2 BLNK			@PU23901	LIQUID		
3 SAMPLE	S98B000062 0		@PU23901	LIQUID	98000140	TK-21-1 (1)
	Analytes Requested: PU23901 , PU23901E, PU23901T					
4 DUP	S98B000062 0		@PU23901	LIQUID		

Final page for worklist # 22656

Sam Van Sant 3-3-98
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

WORKBOOK PAGE: STD1

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

LIQUID

				STD
Type	DATE COUNTED	MAR-04-98	Pu 236 AEA FRAC (C236)	0.417
STD	SAMPLE VOLUME in mL SS	1.000	Pu 238 AEA FRAC (C238)	0.000
Work List	SAMPLE DILUTION FACTOR DF	1.000	Pu 239 AEA FRAC (C239)	0.477
22656	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS	3577
Test Code	DIGEST DILUTION FACTOR DDF	1.000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cpm (Bkg)	0.030
Matrix	DETECTOR NUMBER	14	Pu 236 cpm	39.370
LIQUID	EFFICIENCY FACTOR EFF	0.291	Pu 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE	11/15/96	Pu 239 cpm	44.960
98000995	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME	480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)	1896.262	Pu 239/240 µCi/L	9.7707E-02
0	PU-238 TRACER VALUE (dpm/mL)	0.000		
Sample Prep	STANDARD BOOK NO	75B56		
N/A	STANDARD VALUE in µCi/mL	1.090E-04		
Sample #				
STANDARD				
Instrument Code	Decay Time = Date Counted - Tracer Preparation Date			
PU01	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(ln2 * Decay Time/1040.95)}]			
Prepared By	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 1/EFF * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV			
SKB	Pu 239/240 µCi/L = (C239) / (Pu 236 Decay Corr'd Value) * (SPKV) / (1000mL/L) * (DF) * (DDF) / [(C236) * (SS) * (2220000 dpm/µCi)]			
Chemist	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)			
JFR	Pu 238 µCi/L = [(Pu 238 dpm) * (DF) * (DDF) * (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) * (2220000 dpm/µCi) * (D g/L) * (SS)]			
Analyst	Relative Counting Error = Square Root of [(1 / (Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100			
JMV				
Date Complete	Pu 239/240 µCi/mL	9.77E-05	DETECTION LEVELS in µCi/mL Pu 239/240 6.82E-06	
Analysis Date	Relative Counting Error =	2.0%		
03/04/98				
Analysis Time				
10:20 AM				
Sample Point				
TK21-1	Pu 236 Tracer Recovery =	90.1%		

Analyst:	JMV	Date:	05-Mar-98
Signature of Chemist:	JFR	Date:	5 Mar 98

STANDARD.WB1 REV 1.0

943128ML

HNF-SD-WM-DP-901 REV. 0

WORKBOOK PAGE: BLANK2

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

LI

BLNK

Type	DATE COUNTED	MAR-04-98	PU 236 AEA FRAC (C236)	0.933
BLNK	SAMPLE VOLUME in mL SS	0.100	PU 238 AEA FRAC (C238)	0.000
Work List	SAMPLE DILUTION FACTOR DF	1.000	PU 239 AEA FRAC (C239)	0.000
22656	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS	1816
Test Code	DIGEST DILUTION FACTOR DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cp (Bkg)	0.030
Matrix	DETECTOR NUMBER	14	PU 236 cpm	38.590
LIQUID	EFFICIENCY FACTOR EFF	0.2910	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE	11/15/96	PU 239 cpm	0.000
98000995	TRACER PREPARATION VALUE (dpm/mL)	2600.00	AEA COUNT TIME	480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)	1896.26	Pu 239/240 $\mu\text{Ci/L}$ =	< 2.747E-02
0	PU-238 TRACER VALUE (dpm/m)	0.00		

Sample Prep
N/A
Sample #
BLANK
Instrument Code
PU01
Prepared By
SKB
Chemist
JFR
Analyst
JMV
Date Complete

Decay Time = Date Counted - Tracer Preparation Date

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

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

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

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

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

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

03/05/98	Pu 239/240 $\mu\text{Ci/mL}$	< 2.75E-05	DETECTION LEVELS in $\mu\text{Ci/mL}$
Analysis Date	Relative Counting Error =	100.0%	
03/04/98			Pu 239/240
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.		2.75E-05
10:20 AM	Pu 238 $\mu\text{Ci/mL}$	< 2.75E-05	Pu 238
Sample Point	Relative Counting Error =	100.0%	2.75E-05
TK21-1	Pu 236 Tracer Recovery =	102.3%	

Analyst:	JMV	Date:	05-Mar-98
Signature of Chemist:	JFR	Date:	5 Mar 98

BLANK.WB1 REV 1.0

943128ML

WORKBOOK PAGE: SAM3

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

LIQUID /

SAMPLE

Type	DATE COUNTED	MAR-04-98	Pu 236 AEA FRAC (C236)	0.582	
SAMPLE	SAMPLE VOLUME in mL	SS	0.100	Pu 238 AEA FRAC (C238)	0.095
Work List	SAMPLE DILUTION FACTOR	DF	1.000	Pu 239 AEA FRAC (C239)	0.273
22656	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	2713
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cpm (Bkg)	0.030	
Matrix	DETECTOR NUMBER	14	Pu 236 cpm	40.800	
LIQUID	EFFICIENCY FACTOR	EFF	0.291	Pu 238 cpm	6.660
Batch Number	TRACER PREPARATION DATE	11/15/96	Pu 239 cpm	19.170	
98000995	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME	480	
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)	1896.262	Pu 239/240 $\mu\text{Ci/L}$	4.0067E-01	
0	PU-238 TRACER VALUE (dpm/mL)	0.000			
Sample Prep					
N/A					
Sample #	Decay Time = Date Counted - Tracer Preparation Date				
S98B000062	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value $^{*}[\text{e to the power of } \{(-\ln 2 * \text{Decay Time}/1040.95)\}]$				
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) $^{*} \text{C236}^{*}100/(\text{Pu-236 Decay Corr'd Value}^{*} \text{SPKV}^{*} \text{EFF})$				
PU01	Pu 239/240 $\mu\text{Ci/L}$ = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/ μCi)]				
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg $^{*} 1/\text{EFF}^{*} \text{C238}] - (\text{Pu-238 Tracer Value}^{*} \text{SPKV}^{*} \text{Pu 236 Tracer Recovery} / 100)$				
SKB	Pu 238 $\mu\text{Ci/L}$ = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery / 100)(2220000 dpm/ μCi)(D g/L)(SS)]				
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					
JMV					
Date Complete					
03/05/98	Pu 239/240 $\mu\text{Ci/mL}$	4.01E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$		
Analysis Date	Relative Counting Error =	2.5%			
03/04/98					
Analysis Time			Pu 239/240		
10:20 AM	Pu 238 $\mu\text{Ci/mL}$	1.39E-04	4.62E-05		
Sample Point	Relative Counting Error =	3.7%	Pu 238		
TK21-1	Pu 236 Tracer Recovery =	95.3%	4.62E-05		

Analyst:	JMV	Date:	05-Mar-98
Signature of Chemist:	<i>John Relyea</i>	JFR	Date: <i>5 Mar 98</i>

SAMPLE WB1 REV 1.0

943128ML

WORKBOOK PAGE: DUP4

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

LIQUID /

DUP

Type	DATE COUNTED	MAR-04-98	Pu 238 AEA FRAC (C238)	0.571
DUP	SAMPLE VOLUME in mL	SS	0.100	Pu 238 AEA FRAC (C238) 0.092
Work List	SAMPLE DILUTION FACTOR	DF	1.000	Pu 238 AEA FRAC (C239) 0.282
22656	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS 2705
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN) 30
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cpm (Bkg)	0.030
Matrix	DETECTOR NUMBER	14	Pu 238 cpm	38.610
LIQUID	EFFICIENCY FACTOR	EFF	0.291	Pu 238 cpm 6.190
Batch Number	TRACER PREPARATION DATE	11/15/96	Pu 239 cpm	19.050
98000995	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME	480
Return	Pu-238 DECAY CORR'D VALUE (dpm/mL)	1896.262	Pu 239/240 μ Ci/L	4.2185E-01
0	Pu-238 TRACER VALUE (dpm/mL)	0.000		
Sample Prep				
N/A				
Sample #	Decay Time = Date Counted - Tracer Preparation Date			
S98B000062	Pu-238 Decay Corr'd Value = Pu-238 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.95)}]			
Instrument Code	Pu 238 Tracer Recovery = (Total AT Counts / TC - Bkg) * C238 * 100 / (Pu-238 Decay Corr'd Value * SPKV * EFF)			
PU01	Pu 239/240 μ Ci/L = (C239) * (Pu 238 Decay Corr'd Value) * (SPKV) * (1000 mL/L) * (DF) * (DDF) / [(C238) * (SS) * (D g/L) * (2220000 dpm/ μ Ci)]			
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 238 Tracer Recovery / 100)			
SKB	Pu 238 μ Ci/L = [(Pu 238 dpm) * (DF) * (DDF) * (1000 mL/L)] / [(Pu-238 Tracer Recovery / 100) * (2220000 dpm/ μ Ci) * (D g/L) * (SS)]			
Chemist	Relative Counting Error = Square Root of [(1/(Pu 238 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100			
JFR				
Analyst				
JMV				
Date Complete				
03/05/98	Pu 239/240 μ Ci/mL	4.22E-04	DETECTION LEVELS in μ Ci/mL	
Analysis Date	Relative Counting Error	= 2.5%		
03/04/98			Pu 239/240	
Analysis Time			4.81E-05	
10:20 AM	Pu 238 μ Ci/mL	1.38E-04	Pu 238	
Sample Point	Relative Counting Error	= 3.9%	4.81E-05	
TK21-1	Pu 238 Tracer Recovery	= 93.3%		

Analyst:	JMV	Date:	05-Mar-98
Signature of Chemist:	JFR	Date:	5 Mar 98

SAMPLE.WB1 REV 1.0

943128ML

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

DATA REDUCTION REPORT

SAMPLE
WL22656-STD
File ID: 5a5088.CNF

Counted on: 3/ 4/98 @13:30
Detector: AEA5
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	107.1	107.1	478.625	478.625	20.000	13.080	10.000	8.769
2	1277.7	1277.7	362.389	362.389	10.000	3.297	5.000	1.211
3?	22.3	22.3	303.059	302.643	12.000	3.491	6.000	1.176
4	50.5	50.5	287.787	287.641	8.000	2.586	4.000	1.606
5?	14.7	14.7	270.456	269.611	10.000	3.294	5.000	0.712
6	30.5	30.5	253.060	252.339	8.000	0.041	4.000	0.003
7	1746.0	1746.0	229.118	229.114	12.000	3.402	6.000	1.733

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		0.042		6.290		0.06	4.00	4.5	16.5	0.745E-05
2	Pu236	0.417	5.755	5.755	0.0000	0.02	39.37	1.4	166.1	0.748E-04
3		????		5.481			0.73	11.9		
4	Th228	0.012	5.400	5.412	-0.0120	0.01	1.10	9.8	6.4	0.289E-05
5		????		5.329			0.66	13.5		
6	Am243	0.032	5.266	5.249	0.0170	0.00	2.99	5.4	12.5	0.562E-05
7	Pu239	0.477	5.147	5.142	0.0050	0.02	44.96	1.4	186.0	0.838E-04
	Pu240		5.144	5.142	0.002				186.0	0.838E-04

Totals: 0.980 <--valid peaks only--> 92.41

DETECTOR CALIBRATION

Energy(MEV) = 4.088 + (0.0046)*Channel
Energy range (MeV): 4.088 TO 6.444
Efficiency = 0.2418 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	45285.0	100.000
Smoothed	45282.3	99.994
Composite fit	45030.6	99.438
Residuals	254.4	0.562

Analyzed by: HNF-SD-WM-DP-301 REV. 0
SEH

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 11890.2

Raw, Data Dump for AEA Spectrum: 5a5088.CNF	HNF-SD-WM-DP-301 REV. 0									
1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
21	2.	0.	0.	0.	0.	0.	0.	0.	0.	1.
31	0.	1.	0.	0.	0.	0.	1.	2.	0.	0.
41	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
51	0.	1.	1.	0.	0.	2.	0.	1.	1.	0.
61	0.	0.	2.	0.	1.	0.	1.	2.	0.	1.
71	0.	1.	1.	0.	3.	0.	0.	2.	2.	0.
81	0.	0.	1.	0.	0.	0.	0.	1.	1.	0.
91	0.	2.	0.	2.	1.	0.	0.	2.	1.	1.
101	1.	2.	0.	1.	0.	0.	1.	0.	1.	2.
111	2.	1.	1.	5.	0.	0.	1.	0.	0.	2.
121	1.	0.	0.	0.	0.	1.	5.	1.	1.	0.
131	0.	1.	3.	3.	2.	0.	5.	4.	2.	2.
141	2.	1.	4.	3.	3.	2.	2.	2.	1.	2.
151	4.	4.	0.	3.	3.	3.	2.	1.	1.	5.
161	5.	6.	4.	4.	4.	3.	5.	9.	2.	8.
171	6.	8.	8.	6.	7.	10.	16.	11.	11.	12.
181	11.	17.	14.	14.	19.	19.	11.	21.	27.	22.
191	30.	32.	25.	41.	41.	34.	48.	40.	65.	62.
201	60.	66.	71.	95.	92.	88.	100.	127.	124.	161.
211	172.	191.	233.	247.	311.	350.	446.	457.	597.	649.
221	705.	784.	850.	991.	1198.	1427.	1712.	1896.	2084.	2037.
231	1775.	1225.	622.	250.	64.	21.	20.	13.	7.	11.
241	12.	10.	14.	7.	5.	11.	9.	12.	8.	9.
251	8.	13.	13.	18.	9.	10.	10.	8.	5.	11.
261	10.	11.	21.	9.	9.	11.	15.	21.	17.	22.
271	21.	19.	16.	14.	6.	13.	13.	11.	13.	15.
281	34.	30.	26.	45.	41.	51.	61.	76.	61.	49.
291	23.	15.	13.	16.	13.	14.	17.	8.	7.	17.
301	21.	22.	28.	16.	26.	12.	12.	8.	15.	9.
311	10.	11.	14.	11.	17.	11.	11.	11.	15.	17.
321	14.	15.	25.	29.	17.	17.	25.	29.	38.	33.
331	39.	54.	40.	58.	49.	63.	60.	87.	88.	106.
341	115.	144.	154.	184.	180.	214.	292.	313.	352.	469.
351	554.	628.	690.	729.	761.	715.	757.	787.	947.	1078.
361	1328.	1429.	1536.	1403.	957.	507.	171.	44.	13.	18.
371	16.	13.	13.	10.	10.	7.	6.	10.	5.	8.
381	7.	3.	13.	7.	5.	6.	4.	8.	5.	7.
391	4.	4.	5.	4.	5.	2.	4.	6.	7.	7.
401	7.	8.	8.	8.	4.	2.	3.	6.	3.	7.
411	3.	4.	4.	3.	2.	1.	4.	4.	5.	5.
421	4.	3.	1.	3.	5.	5.	4.	3.	7.	2.
431	2.	4.	1.	1.	6.	3.	1.	1.	2.	6.
441	3.	5.	3.	1.	3.	6.	0.	3.	4.	1.
451	3.	5.	0.	12.	8.	7.	3.	7.	8.	7.
461	14.	15.	15.	14.	20.	23.	19.	25.	47.	51.
471	52.	54.	78.	92.	97.	97.	108.	120.	125.	105.
481	95.	88.	62.	57.	37.	53.	55.	46.	57.	49.
491	12.	22.	6.	9.	2.	3.	3.	5.	5.	3.
511	1.	0.								

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

DATA REDUCTION REPORT

SAMPLE
WL22656-BLK
File ID: 6a6069.CNF

Counted on: 3/ 4/98 @13:30
Detector: AEA6
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	1288.6	1288.6	359.246	359.246	10.000	3.034	5.000	1.138
2	50.7	50.7	284.608	284.588	10.000	3.995	5.000	2.543
3	15.4	15.4	267.146	266.644	12.000	3.420	6.000	1.132

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count Rate c/m	%err @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.				
1	Pu236	0.933	5.755	5.741	0.0140.01	38.59	1.4	167.7	0.755E-04
2	Th228	0.030	5.400	5.398	0.0020.02	1.23	8.2	7.4	0.333E-05
3		0.012		5.315	0.02	0.51	15.4	2.2	0.979E-06

Totals: 0.975 <--valid peaks only--> 40.34

DETECTOR CALIBRATION

Energy (MEV) = 4.089 + (0.0046)*Channel
Energy range (MeV): 4.089 TO 6.444
Efficiency = 0.2348 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	19867.0	100.000
Smoothed	19860.1	99.965
Composite fit	19364.1	97.469
Residuals	502.9	2.531

Analyzed by:

SEH

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 7944.5

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Raw Data Dump for AEA Spectrum: 6a6069.CNF						HNF-SD-WM-DP-301 REV. 0				
1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	1.	1.	0.	0.	0.	1.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	1.	1.	0.	1.	0.	0.	0.	0.	0.
61	1.	0.	1.	0.	0.	1.	0.	0.	0.	0.
71	1.	0.	0.	1.	0.	0.	0.	1.	1.	1.
81	0.	0.	0.	1.	0.	2.	1.	0.	1.	0.
91	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
101	0.	0.	0.	2.	1.	0.	0.	0.	2.	0.
111	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
121	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
131	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
141	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
151	0.	1.	0.	0.	1.	1.	0.	0.	0.	2.
161	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
171	0.	0.	1.	0.	0.	1.	2.	1.	0.	1.
181	0.	1.	0.	1.	0.	0.	1.	0.	1.	0.
191	2.	1.	1.	0.	0.	1.	0.	0.	0.	1.
201	1.	0.	2.	3.	0.	0.	0.	0.	0.	1.
211	1.	3.	1.	4.	0.	5.	1.	7.	1.	2.
221	3.	7.	6.	4.	4.	9.	7.	6.	3.	1.
231	1.	3.	2.	2.	1.	4.	3.	1.	4.	0.
241	4.	1.	0.	1.	2.	6.	5.	5.	5.	6.
251	7.	9.	8.	5.	7.	6.	2.	5.	10.	7.
261	8.	10.	9.	14.	21.	14.	23.	25.	11.	14.
271	12.	17.	7.	7.	14.	15.	16.	14.	40.	16.
281	31.	54.	53.	57.	62.	57.	41.	30.	12.	6.
291	5.	5.	4.	3.	14.	14.	11.	12.	17.	16.
301	13.	11.	24.	9.	8.	4.	12.	8.	7.	13.
311	9.	13.	7.	13.	12.	21.	20.	16.	19.	22.
321	19.	30.	32.	19.	31.	35.	45.	36.	49.	55.
331	64.	45.	69.	57.	84.	91.	100.	133.	129.	130.
341	196.	225.	198.	266.	289.	352.	455.	554.	659.	760.
351	761.	755.	653.	712.	779.	924.	1145.	1315.	1509.	1586.
361	1363.	851.	367.	88.	16.	13.	15.	10.	6.	3.
371	10.	5.	7.	5.	4.	6.	6.	5.	9.	3.
381	4.	5.	6.	7.	4.	2.	2.	7.	8.	6.
391	5.	1.	2.	5.	3.	5.	4.	3.	3.	5.
401	1.	1.	1.	6.	3.	6.	3.	0.	4.	0.
411	1.	1.	1.	3.	6.	5.	5.	1.	0.	2.
421	2.	2.	1.	4.	3.	0.	1.	2.	0.	5.
431	2.	4.	0.	1.	2.	2.	1.	2.	2.	0.
441	1.	3.	2.	0.	3.	0.	2.	3.	0.	1.
451	2.	1.	1.	2.	0.	2.	2.	2.	3.	0.
461	2.	1.	2.	7.	2.	4.	6.	5.	5.	6.
471	6.	3.	13.	2.	7.	6.	5.	2.	2.	3.
481	1.	5.	4.	1.	1.	7.	5.	3.	0.	2.
491	2.	5.	3.	1.	7.	7.	3.	4.	1.	6.
511	2.	0.								

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

DATA REDUCTION REPORT

SAMPLE
S98B62-SAM
File ID: 7a7109.CNF

Counted on: 3/ 4/98 @13:37
Detector: AEA7
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	15.3	15.3	497.540	497.540	14.000	6.689	7.000	1.135
2	59.0	59.0	448.709	448.688	12.000	4.369	6.000	2.470
3	1307.2	1307.2	361.200	361.200	8.000	3.135	4.000	1.113
4	160.7	160.7	303.297	303.260	10.000	3.125	5.000	0.740
5?	8.4	8.4	255.787	253.724	28.000	49.252	14.000	20.244
6	701.6	701.6	228.648	228.641	12.000	4.009	6.000	1.970

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		0.013		6.378		0.03	0.90	9.4	3.7	0.165E-05
2		0.022		6.154		0.02	1.55	7.5	6.3	0.285E-05
3	Pu236	0.582	5.755	5.751	0.0040	0.01	40.80	1.4	170.3	0.767E-04
4	Pu238	0.095	5.487	5.485	0.0020	0.01	6.66	3.5	37.9	0.170E-04
	Am241		5.479	5.485	-0.006				29.0	0.131E-04
5		????		5.257			0.60	29.3		
6	Pu239	0.273	5.147	5.141	0.0060	0.02	19.17	2.1	78.4	0.353E-04
	Pu240		5.144	5.141	0.003				78.4	0.353E-04

Totals: 0.985 <--valid peaks only--> 69.07

DETECTOR CALIBRATION

Energy(MEV) = 4.090 + (0.0046)*Channel
Energy range (MeV): 4.090 TO 6.445
Efficiency = 0.2444 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	33666.0	100.000
Smoothed	33659.7	99.981
Composite fit	33442.4	99.336
Residuals	223.6	0.664

Analyzed by:

SEH

Display Max.: 6865.1

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Raw Data Dump for AEA Spectrum: 7a7109.CNF										
1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	1.	0.	0.	0.	1.	0.	2.	0.	2.	0.
31	0.	0.	0.	0.	0.	0.	1.	0.	2.	0.
41	0.	0.	1.	0.	0.	0.	1.	0.	0.	0.
51	0.	1.	1.	0.	0.	1.	0.	1.	0.	0.
61	0.	0.	2.	1.	1.	0.	0.	1.	2.	1.
71	2.	2.	0.	0.	0.	0.	0.	0.	2.	0.
81	1.	0.	0.	3.	0.	0.	0.	1.	0.	2.
91	1.	0.	0.	0.	1.	2.	0.	0.	1.	0.
101	1.	0.	0.	1.	0.	1.	1.	1.	1.	2.
111	1.	1.	0.	1.	1.	1.	0.	4.	2.	1.
121	0.	0.	0.	0.	0.	2.	0.	2.	0.	1.
131	0.	2.	1.	2.	1.	0.	1.	0.	1.	1.
141	0.	2.	5.	1.	5.	4.	3.	4.	0.	4.
151	1.	2.	0.	1.	1.	3.	2.	2.	4.	2.
161	5.	3.	5.	5.	3.	4.	4.	5.	6.	7.
171	4.	3.	8.	1.	8.	6.	6.	5.	4.	3.
181	9.	11.	7.	12.	9.	9.	7.	12.	11.	15.
191	15.	23.	19.	21.	20.	19.	22.	36.	29.	39.
201	27.	37.	37.	55.	38.	52.	55.	61.	81.	69.
211	93.	86.	111.	117.	144.	156.	191.	210.	260.	257.
221	280.	323.	419.	405.	503.	588.	783.	763.	848.	742.
231	645.	380.	248.	142.	51.	17.	12.	6.	6.	7.
241	6.	8.	7.	10.	8.	6.	9.	9.	7.	8.
251	11.	10.	15.	8.	18.	9.	16.	12.	7.	10.
261	8.	10.	9.	14.	15.	16.	22.	29.	22.	25.
271	25.	29.	18.	16.	22.	19.	19.	26.	34.	47.
281	37.	54.	45.	54.	74.	85.	80.	80.	91.	71.
291	69.	54.	71.	85.	98.	96.	105.	100.	133.	134.
301	137.	157.	193.	195.	184.	112.	51.	24.	19.	10.
311	12.	13.	21.	17.	19.	18.	21.	21.	34.	27.
321	20.	23.	28.	40.	34.	29.	43.	42.	41.	56.
331	68.	53.	82.	81.	55.	73.	108.	111.	115.	125.
341	125.	194.	218.	211.	260.	309.	316.	398.	487.	578.
351	676.	750.	788.	744.	653.	724.	781.	962.	1222.	1364.
361	1485.	1637.	1332.	898.	377.	107.	19.	17.	14.	14.
371	6.	10.	12.	10.	5.	7.	5.	12.	6.	4.
381	6.	4.	4.	5.	1.	10.	3.	5.	3.	6.
391	5.	4.	5.	3.	3.	5.	4.	4.	5.	1.
401	3.	3.	3.	2.	1.	3.	2.	6.	3.	2.
411	1.	3.	4.	2.	2.	2.	2.	3.	4.	4.
421	3.	1.	4.	8.	5.	6.	7.	3.	2.	6.
431	8.	8.	10.	9.	4.	11.	10.	16.	17.	24.
441	17.	37.	30.	43.	36.	57.	57.	64.	77.	64.
451	52.	28.	27.	22.	9.	9.	2.	4.	3.	4.
461	2.	1.	2.	2.	1.	4.	6.	5.	4.	2.
471	5.	5.	11.	9.	10.	7.	9.	5.	4.	6.
481	7.	2.	6.	4.	8.	9.	7.	11.	18.	10.
491	13.	10.	20.	11.	14.	14.	13.	20.	13.	14.
511	2.	0.								

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

DATA REDUCTION REPORT

SAMPLE
 S98B62-DUP
 File ID: 8a8066.CNF

Counted on: 3/ 4/98 @13:38
 Detector: AEA8
 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	14.1	14.1	491.307	491.307	12.000	12.092	6.000	1.677
2	50.1	50.1	442.618	442.561	12.000	4.560	6.000	2.282
3	1356.2	1356.2	361.418	361.418	10.000	2.977	5.000	1.204
4?	81.4	81.4	317.456	317.456	6.000	0.000	3.000	2.765
5	167.2	167.2	303.317	303.299	8.000	2.947	4.000	0.804
6?	7.6	7.6	269.412	267.875	10.000	1.655	5.000	2.492
7?	7.2	7.2	256.437	253.273	28.000	26.579	14.000	14.554
8	726.2	726.2	228.654	228.651	10.000	3.890	5.000	2.046

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		0.015		6.347		0.06	1.04	8.8	4.5	0.202E-05
2	Cm242	0.021	6.101	6.123	-0.022	0.02	1.40	8.1	8.2	0.369E-05
3	Pu236	0.571	5.755	5.750	0.005	0.01	38.61	1.4	170.3	0.767E-04
4		????		5.548			0.00	1000.		
5	Pu238	0.092	5.487	5.482	0.005	0.01	6.19	3.6	37.2	0.167E-04
	Am241		5.479	5.482	-0.003				28.5	0.128E-04
6		????		5.320			0.10	73.7		
7		????		5.252			0.38	30.3		
8	Pu239	0.282	5.147	5.139	0.008	0.02	19.05	2.1	82.3	0.371E-04
	Pu240		5.144	5.139	0.005				82.3	0.371E-04

Totals: 0.980 <--valid peaks only--> 66.29

DETECTOR CALIBRATION

Energy(MEV) = 4.087 + (0.0046)*Channel
 Energy range (MeV): 4.087 TO 6.443
 Efficiency = 0.2314 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	32478.0	100.000

Smoothed
Composite fit
Residuals

32472.7
32057.3
420.7

99.984
98.705
1.295

NNF-SD-WM-DP-301 REV. 0

Analyzed by:

SEH

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 6674.9

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Raw	Data	Dump	for	AEA	Spectrum:	8a8066.CNF				
1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	1.	0.	0.	0.	1.	0.	0.	0.	0.
31	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
41	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.
51	1.	0.	0.	1.	0.	0.	1.	0.	1.	0.
61	1.	0.	1.	0.	2.	0.	0.	0.	0.	0.
71	0.	1.	0.	1.	0.	0.	0.	0.	0.	1.
81	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
91	2.	0.	0.	2.	0.	0.	0.	0.	0.	0.
101	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
111	1.	0.	1.	0.	0.	0.	2.	1.	0.	1.
121	0.	1.	3.	2.	2.	0.	1.	0.	0.	1.
131	0.	1.	0.	0.	2.	0.	2.	0.	0.	0.
141	0.	1.	0.	0.	4.	1.	3.	1.	2.	1.
151	2.	0.	2.	0.	0.	1.	1.	0.	2.	2.
161	0.	0.	3.	3.	3.	2.	1.	2.	4.	4.
171	1.	2.	1.	3.	3.	3.	5.	4.	5.	6.
181	5.	9.	3.	11.	7.	5.	6.	5.	4.	7.
191	17.	8.	12.	18.	13.	12.	11.	27.	14.	21.
201	23.	30.	20.	31.	34.	43.	48.	47.	46.	71.
211	66.	81.	84.	109.	125.	164.	174.	183.	219.	276.
221	268.	351.	417.	444.	545.	678.	759.	804.	832.	824.
231	663.	374.	206.	110.	61.	14.	9.	5.	8.	5.
241	6.	10.	8.	11.	5.	5.	7.	6.	6.	9.
251	7.	10.	12.	14.	8.	9.	13.	11.	11.	4.
261	10.	7.	10.	11.	13.	21.	18.	22.	28.	16.
271	20.	22.	11.	16.	19.	17.	12.	17.	24.	37.
281	29.	23.	40.	59.	63.	72.	92.	88.	83.	72.
291	51.	70.	74.	90.	94.	89.	101.	107.	102.	130.
301	149.	166.	192.	205.	193.	110.	50.	17.	10.	5.
311	6.	4.	10.	9.	12.	9.	20.	18.	12.	16.
321	12.	14.	13.	26.	17.	22.	28.	28.	33.	31.
331	48.	48.	34.	55.	61.	52.	62.	91.	73.	111.
341	101.	111.	147.	166.	215.	265.	301.	369.	437.	517.
351	626.	754.	710.	740.	644.	684.	812.	947.	1093.	1343.
361	1605.	1679.	1488.	964.	442.	134.	31.	13.	8.	15.
371	13.	11.	8.	6.	4.	9.	6.	6.	12.	8.
381	8.	6.	2.	8.	13.	11.	5.	3.	2.	3.
391	5.	5.	6.	2.	7.	6.	9.	3.	7.	2.
401	4.	1.	7.	4.	2.	2.	3.	1.	2.	0.
411	5.	6.	2.	5.	4.	7.	6.	2.	2.	2.
421	1.	4.	4.	6.	3.	7.	11.	6.	9.	10.
431	10.	15.	19.	29.	19.	28.	39.	47.	48.	58.
441	50.	58.	57.	53.	55.	36.	24.	6.	7.	0.
451	3.	4.	2.	1.	1.	2.	3.	3.	5.	5.
461	5.	1.	6.	2.	4.	8.	3.	4.	1.	4.
471	6.	10.	7.	12.	8.	10.	11.	8.	8.	12.
481	12.	17.	12.	12.	15.	7.	9.	14.	18.	14.
491	13.	13.	17.	13.	11.	8.	7.	5.	5.	2.
511	5.	0.								

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