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FINAL REPORT FOR TANK 241AN102 GRAB SAMPLES
2AN-95-1 THRU 2AN-95-6 & 102-AN-1 THRU 102-AN-4
[SEC 1 OF 2 PAGE 1 TO 473]

Pages: 486

This document was too large to scan as a whole document, therefore it required breaking into smaller sections.

Document number: SD-WM-DP-165

Section 1 of 2

Title: Final Report for Tank 24/AN102, Grab
Samples 2AN-95-1 Through 2AN-95-6 &
102AN-1 Through 102-AN-4

Date: 3-21-96 Revision: A000

Originator: Esch RA
Co: _____

Recipient: _____
Co: _____

References: _____

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Page 1 of 2

1. ECN 629020

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OM Manual	☐	Operational Safety Requirement	☐	ICRS Procedure	☐
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Environmental Report	☐	Inspection Plan	☐		☐
Environmental Permit	☐	Inventory Adjustment Request	☐		☐

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ADDITIONAL

FINAL REPORT FOR TANK 241-AN-102, GRAB SAMPLES 2AN-95-1 THROUGH 2AN-95-6 AND 102-AN-1 THROUGH 102-AN-4.

Ruth A. Esch
Westinghouse Hanford Company, Richland, WA 99352
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Page 1

FINAL REPORT FOR TANK 241-AN-102, GRAB SAMPLES 2AN-95-1 THROUGH 2AN-95-6 AND 102-AN-1 THROUGH 102-AN-4

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**Westinghouse
Hanford Company**

P.O. Box 1970 Richland, WA 99352

WHC-SD-WM-DP-165, REV. 1

ANALYTICAL SERVICES

**FINAL REPORT FOR TANK 241-AN-102, GRAB
SAMPLES 2AN-95-1 THROUGH 2AN-95-6
AND 102-AN-1 THROUGH 102-AN-4**

Project Coordinator: Ruth A. Esch

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

by

**Westinghouse Hanford Company
Box 1970**

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This document consists of two sections.

Part I consists of pages 1 through 695, plus pages 254.1, 254.1, and 2, 13, 19, 38, 125, 136, 157, 168, 172, 245, 257, 266 and 417 were intentionally left blank.

Part II consists of pages 2-1 through 2-153, and pages 2-4, 2-18, 2-24, 2-37, and 2-40 have been intentionally left blank.

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NARRATIVE

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FINAL REPORT FOR TANK 241-AN-102
GRAB SAMPLES 2AN-95-1 THROUGH 2AN-95-6 AND 102-AN-1 THROUGH 102-AN-4

Summary

Ten grab samples (2AN-95-1, 2AN-95-2, 2AN-95-3, 2AN-95-4A, 2AN-95-5A, 102-AN-1, 102-AN-2, 102-AN-3(A), 102-AN-3(B), and 102-AN-4) and one field blank (2AN-95-6) were taken from tank 241-AN-102. In support of the Safety Screening program, as specified in the Tank 241-AN-102 Grab Sampling and Analysis Plan (TSAP) (reference 1) and the Tank Safety Screening Data Quality Objective (DQO) (reference 2), total organic carbon (TOC) and cyanide (CN) were performed as secondary analyses because the differential scanning calorimetry (DSC) results exceeded the notification limit. The TOC and CN results were compared to the safety screening limits at a confidence level of 95%. In addition, in support of the Waste Compatibility program, as specified in the TSAP and the Data Quality Objectives for Tank Farms Waste Compatibility Program (reference 3), waste compatibility analyses were performed on the three supernate samples and the field blank from the latest sampling event.

The results presented in the 45 Day and in this report show that the waste in Tank 241-AN-102 has energetics greater than 480 J/g (dry) and TOC greater than 3 wt%. However, with a moisture content greater than 17 weight percent, the tank may be considered "conditionally" safe in accordance with the Data Quality Objective to Support Resolution of the Organic Complexant Safety Issue (reference 4).

Safety Screening Concerns

The measured concentration for the TOC analyses were all below the notification limit of 30,000 $\mu\text{g/mL}$ (30,000 $\mu\text{g/g}$ for solids) stated for both the safety screening and waste compatibility programs. However, the upper limit of the 95% confidence interval lies above this value. Since the measured TOC results were less than 3 weight percent (30,000 $\mu\text{g/g}$) for the solid portion of sludge samples 2AN-95-4A and 2AN-95-5A, the CN analyses were also performed on these samples. The CN results for both samples were below the notification limit of 39,000 $\mu\text{g/g}$.

Waste Compatibility Concerns

For criticality concerns, the $^{239/240}\text{Pu}$ results were all well below the prevention limit of 0.013 g/L (0.8 $\mu\text{Ci/mL}$) specified in the Tank Waste Compatibility DQO. However, the potential for flammable gas accumulation should be evaluated since the weighted mean specific gravity (Sp.G.) for the supernate samples was greater than the 1.41 limit specified.

Waste Compatibility energetics decisions are based on the ratio of exothermic energy to endothermic energy. For all subsamples analyzed, this ratio was less than 1, as required.

The hydroxide results for the three samples analyzed were all below the acceptable concentration ranges required for corrosion control. Appropriate notifications were made.

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The accuracy and precision criteria were satisfied for all seven of the samples analyzed for secondary safety screening analytes, and for the three samples and field blank analyzed for compatibility analytes.

Scope

This document is the final report deliverable for the tank 241-AN-102 grab samples. The samples were subsampled and analyzed in accordance with the TSAP. Included in this report are the results for the Safety Screening Program secondary analyses and Waste Compatibility analyses, with the exception of DSC, thermogravimetric analysis (TGA) and total alpha (AT) results which were presented in the 45 Day report (Part II of this document). The raw data for all analyses, with the exception of DSC and TGA, are also included in this report.

Analytical Results

Attachments

Attachment 1 is provided as a cross-reference for relating the tank farm customer ID numbers with the 222-S Laboratory sample numbers. The subsamples that were generated in the laboratory for analysis are also identified in these diagrams.

A summary of the analytical results is presented in Table 1 (pages 20 - 30).

Since the sample results for aluminum (Al) and sodium (Na) by inductively coupled plasma (ICP) exceeded the added spike concentrations by more than a factor of four, the matrix spike recovery results should not be used. The accuracy of these analyses was assessed by evaluating the serial dilution results. These results are identified in the raw data with an "L" appended to the sample number. The samples were analyzed both undiluted and with a 5-fold serial dilution. For acceptable performance, the relative percent difference (RPD) between the serial dilution and the undiluted results must be $\leq 10\%$. The results provided in Table 2 (page 31) indicate that the accuracy of the analyses was acceptable.

Following the data summary tables is a section which contains the Data Verification and Deliverable (DVD) summary report for radionuclide analyses. This report summarizes the total alpha activity results and provides data qualifiers and total propagated uncertainty (TPU) values for results. The TPU values are based on the uncertainties inherent in each step of the analysis process. They are used to determine "reasonable" RPD values which may be used to accept valid data that do not meet the TSAP acceptance criteria. A report guide is provided on pages 80 - 94 to assist in understanding this summary report.

Safety Screening Secondary Analysis Results Summary

Total Organic Carbon (TOC)

The safety screening program requires that TOC be analyzed for any sample that exhibited a DSC exotherm greater than 480 J/g to determine whether or not the organic safety program DQO should be applied. Nine of the fourteen subsamples submitted for DSC analysis had exotherms that exceeded 480 J/g on a dry weight basis. TOC analysis was performed on ten subsamples. One supernate (102-AN-4) that did not have the DSC result exceed the action limit was also analyzed for TOC. The results ranged from 2.48×10^4 to 2.79×10^4 $\mu\text{g C/mL}$ for the supernate samples, 2.41×10^4 to 2.59×10^4 $\mu\text{g C/mL}$ for the supernate decanted from the solid portion of the sludges, and 1.97×10^4 to 2.70×10^4 $\mu\text{g C/g}$ for the solid portion of the sludges.

The 95% upper confidence limits were calculated for each sample and are presented in Table 3. The results for the field blank were below the detection limit, therefore the 95% upper confidence limit was not determined. Although the measured values for the TOC are below the action limits, the upper limit for the 95% confidence interval falls above the action limit of 30,000 $\mu\text{g C/mL}$ for five of the eight liquid samples analyzed, and above 30,000 $\mu\text{g C/g}$ for one of the two solids analyzed.

The results listed in the table are wet-weight TOC results. The decision rules in the organic DQO are based on a limit of 3 wt% TOC on a dry-weight basis. Clearly it can be seen that if the TOC results exceed 3 wt% on a wet-weight basis, with an average moisture content of 47 percent moisture, the dry-weight calculated results will also exceed 3 wt%. However, the organic DQO decision rules state that if the moisture concentration is greater than 17 wt%, the tank may be considered "conditionally" safe, and that monitoring may be required to ensure that the waste will not dry out during interim storage.

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Table 3: Comparison of TOC Results at a Confidence Level of 95%

CUSTOMER ID	SAMPLE RESULT	DUPLICATE RESULT	MEAN	STANDARD DEVIATION	95% UPPER CONFIDENCE LIMIT (MEAN)
SUPERNATES	$\mu\text{g C/mL}$	$\mu\text{g C/mL}$	$\mu\text{g C/mL}$		$\mu\text{g C/mL}$
102-AN-1	2.69e+4	2.62e+4	2.66e+4	495	2.88e+4
102-AN-2	2.57e+4	2.75e+4	2.66e+4	1273	3.23e+4
102-AN-4	2.57e+4	2.51e+4	2.54e+4	424	2.73e+4
2AN-95-1	2.79e+4	2.57e+4	2.68e+4	1556	3.37e+4
2AN-95-2	2.48e+4	2.65e+4	2.57e+4	1202	3.10e+4
2AN-95-3	2.65e+4	2.51e+4	2.58e+4	990	3.02e+4
SLUDGES					
Decanted Supernates	$\mu\text{g C/mL}$	$\mu\text{g C/mL}$	$\mu\text{g C/mL}$		$\mu\text{g C/mL}$
2AN-95-4A	2.41e+4	2.59e+4	2.50e+4	1273	3.07e+4
2AN-95-5A	2.43e+4	2.51e+4	2.47e+4	566	2.72e+4
Centrifuged Solids	$\mu\text{g C/g}$	$\mu\text{g C/g}$	$\mu\text{g C/g}$		$\mu\text{g C/g}$
2AN-95-4A	2.60e+4	2.70e+4	2.65e+4	707	2.97e+4
2AN-95-5A	1.97e+4	2.26e+4	2.12e+4	2051	3.03e+4

Cyanide (CN)

For the solid portion of the sludge samples the TOC results were below 3 weight percent of TOC. Therefore, CN analysis was required to determine whether or not the ferrocyanide safety program DQO should be applied. The results for the two samples ranged from 20.3 to 21.7 $\mu\text{g/g}$.

The 95% upper confidence limits were calculated for each sample and are presented in Table 4. The results show that the CN concentration is well below (three orders of magnitude lower than) the action limit of 39,000 $\mu\text{g/g}$.

Table 4: Comparison of CN Results at a Confidence Level of 95%

CUSTOMER ID	SAMPLE RESULT	DUPLICATE RESULT	MEAN	STANDARD DEVIATION	95% UPPER CONFIDENCE LIMIT (MEAN)
SLUDGES					
Centrifuged Solids	$\mu\text{g/g}$	$\mu\text{g/g}$	$\mu\text{g/g}$		$\mu\text{g/g}$
2AN-95-4A	21.7	20.3	21.0	0.990	25.4
2AN-95-5A	20.7	20.9	20.8	0.141	21.4

Compatibility Study Results SummaryCriticality Decision RulePlutonium ($^{239/240}\text{Pu}$)

$^{239/240}\text{Pu}$ concentration was measured for supernate samples 2AN-95-1, 2AN-95-2, 2AN-95-3 and the field blank (2AN-95-6) to evaluate criticality safety for waste transfers. The results for the supernates ranged of 5.19e-3 to 6.58e-3 $\mu\text{Ci/mL}$. The field blank result was less than the detection limit of 2.89e-5 $\mu\text{Ci/mL}$. These results are two orders of magnitude below the criticality prevention limit of 0.80 $\mu\text{Ci/mL}$ stated in the compatibility DQO.

Americium (^{241}Am)

^{241}Am was also analyzed. The results ranged from 1.08e-1 to 1.67e-1 $\mu\text{Ci/mL}$. The field blank result was less than the detection limit of 4.64e-4 $\mu\text{Ci/mL}$.

Flammable Gas Accumulation Decision Rule

Specific Gravity (Sp.G.)

The Sp.G. of the waste is currently used for determination of the potential to cause an accumulation of flammable gases. The flammable gas decision rule requires that the weighted mean Sp.G. not exceed 1.41. All six supernate samples were submitted for Sp.G. analysis. The results ranged from 1.37 to 1.51. The weighted mean Sp.G. = 1.416. This result exceeds the 1.41 limit to allow waste transfer.

Energetics Decision Rule

Differential Scanning Calorimetry (DSC)

For waste compatibility energetics decision concerns, the exotherm/endotherm ratio must be less than one (1). This requirement is satisfied for all samples. The actual exotherm and endotherm results and the calculated ratios are presented Table 5 (pages 32 - 33).

Corrosion Decision Rule

Nitrate (NO_3^-), Hydroxide (OH^-) and Nitrite (NO_2^-)

The results with respect to the waste compatibility corrosion rules are presented in Table 6 (pages 34 - 36). This table presents the NO_3^- , OH^- , and NO_2^- results in $\mu\text{g/mL}$ and molarity (M) units. The spreadsheet compares the results to the concentration ranges specified in the waste compatibility DQO. A "YES" will appear in the appropriate space for the condition that is met. Only one of three sets of conditions must be met for OH^- and NO_2^- based on the range that the NO_3^- concentration falls in. If "NO" appears in the space under a condition, that condition is not met and a notification is required. The concentration of OH^- ranged from $3.08\text{e}+03$ to $3.31\text{e}+03$ $\mu\text{g/mL}$ (0.181 to 0.195 M). These results are below the expected range in all cases.

Deviations

Due to the absence of solids in the supernate samples, the volume percent solids by centrifugation test was not performed on those samples.

The TSAP indicated that CN^- analysis was required on both the liquid and solid matrices if DSC results exceeded the notification limit. However, the tank coordinator (J. Jo) directed that the CN^- analysis only be performed on the solid matrix since the results for the solid matrix were three orders of magnitude below the notification limit, and the CN^- was expected to be in the solid material for this tank.

For the field blank, sample 2AN-95-6 (S95T003962), the OH^- result for the sample is reported as "pH=6.67" and the duplicate is reported as "n/a". The reason for this is that the OH^- test cannot be run if the pH is less than 10. The reported pH of 6.67 is that measured after the addition of barium chloride (BaCl_2). The pH measured on the sample was 9.02 without the addition of BaCl_2 .

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There were several analytes that were detected in the field blank at levels above the method detection limit. For chloride, nitrate, sulfate, chromium, and strontium (^{90}Sr), the concentration detected was at least three orders of magnitude less than those measured in the samples. This low level may be considered insignificant. For silicon, the concentration detected ($3.22 \mu\text{g/mL}$) was greater than the detection limit calculated for the field blank ($0.05 \mu\text{g/mL}$). However, this concentration is approximately six times less than the detection limit calculated for the samples ($20.10 \mu\text{g/mL}$) which were analyzed at a higher dilution due to higher concentrations of some of the analytes. Therefore, the concentration may still be considered insignificant.

The pH results ranged from 13.28 to 13.35 for the samples. Results for pH that are greater than 12.5 are suspect and should be considered estimates because the highest calibration buffer available is 12.5 and pH electrode performance degrades at high pH. The average pH for the field blank, 2AN-95-6, was 9.02.

In the ion chromatography (IC) analysis, there was an organic acid in sample 2AN-95-1 that gave a response which interfered with the fluoride (F^-) results. The spike recovery of 155.1% for this sample was believed to be due to the interferant, therefore no rerun was requested. For sample 2AN-95-3 (S96T003869), the spike recovery for the NO_3^- was 136.7%, and that for the NO_2^- was 127.5%. In general, spike recoveries are unreliable when the concentration of analyte in the sample exceeds that of the spike added by at least a factor of four, as is the case here. In these situations, even the apparently good spike recoveries may, in fact, be only coincidental. The samples were not reanalyzed.

Also for the IC analysis, one batch had a detectable level F^- in the method blank. The concentration was considered insignificant (three orders of magnitude less than the sample results), and no rerun was performed.

For the ^{90}Sr analysis, a detectable level of ^{90}Sr was found in the method blank, indicated by a "B" qualifier for the sample results in the DVD report. Although this indicates contamination, the concentration level was insignificant with respect to the sample results (at least three orders of magnitude lower), therefore the analysis was not rerun.

Procedures

Table 7 lists the analytical procedures used for performing the sample analyses. Abbreviations for analyses are defined in the table notes.

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Table 7: Analytical Procedures

Analysis	Sample Portion	Preparation Procedure +	Analysis Procedure
DSC	Supernate & Solids	N/A	LA-514-114 Rev. C-1 LA-514-113 Rev. C-1
TGA	Supernate & Solids	N/A	LA-514-114 Rev. C-1 LA-560-112 Rev. B-1
Sp.G.	Supernate	N/A	LA-510-112 Rev. C-3
pH	Supernate	N/A	LA-212-106 Rev. A-0
OH	Supernate	N/A	LA-211-102 Rev. C-0
CN	Solids	N/A	LA-695-102 Rev. E-0
IC: Cl^- , F^- , PO_4^{3-} , SO_4^{2-} , NO_3^- , NO_2^-	Supernate	N/A	LA-533-105 Rev. D-1
ICP: Al, Cr, Fe, Mn, Na, Ni, Si, U	Supernate	N/A	LA-505-161 Rev. B-0
TOC *	Supernate Sludge	N/A N/A	LA-344-105 Rev. C-0 LA-342-100 Rev. C-0
TIC *	Supernate	N/A	LA-622-102 Rev. C-0
AT	Supernate Sludge	N/A LA-549-141 Rev. E-0	LA-508-101 Rev. D-2 LA-508-101 Rev. D-2
GEA: ^{137}Cs	Supernate	N/A	LA-548-121 Rev. D-1
^{90}Sr	Supernate	N/A	LA-220-101 Rev. D-1
^{241}Am	Supernate	N/A	LA-953-103 Rev. A-4
$^{239/240}\text{Pu}$ *	Supernate	N/A	LA-943-127 Rev. B-1 LA-943-128 Rev. A-0

WHC-SD-WM-DP-165 REV. 1

Notes:

* Deviations: TIC: procedure LA-344-105, listed in the referenced TSAP, is incorrect.

TOC: procedures LA-344-100 and LA-622-102 listed in the TSAP are incorrect.

239/240Pu: procedure LA-943-127, listed in the TSAP, was used for the analysis of samples S95T003871 and S95T003872. On February 1, 1996 the laboratory began using procedure LA-943-128. This new procedure was used to analyze samples S95T003870 and S95T003963. The use of an extraction resin rather than the anion resin (as used in the former procedure) results in better tracer recovery and, therefore, better accuracy. The latter procedure will be used from now on.

+ - Preparation procedure is for fusion digest on solid.

Abbreviations:

N/A = not applicable (direct samples)
DSC = differential scanning calorimetry
TGA = thermogravimetric analysis
Sp.G. = specific gravity
OH = hydroxide
CN = cyanide
IC = ion chromatography
ICP = inductively coupled plasma
TOC = total organic carbon
TIC = total inorganic carbon
AT = total alpha
GEA = gamma energy analysis

Reference

1. WHC-SD-WM-TSAP-065, Rev. 1, "Tank 241-AN-102 Grab Sampling and Analysis Plan", dated December 6, 1995, Westinghouse Hanford Company, Richland, WA 99352.
2. WHC-SD-WM-SP-004, Rev. 2, "Tank Safety Screening Data Quality Objective", dated August 31, 1995, Westinghouse Hanford Company, Richland, WA 99352.
3. WHC-SD-WM-DQO-001, Rev. 1, "Data Quality Objectives for Tank Farms Waste Compatibility Program", dated April 24, 1995, Westinghouse Hanford Company, Richland, WA 99352.
4. WHC-SD-WM-DQO-006, Rev. 2, "Data Quality Objective to Support Resolution of the Organic Complexant Safety Issue", dated September 8, 1995, Westinghouse Hanford Company, Richland, WA 99352.

WHC-SD-WM-DP-165, REV. 1

ATTACHMENT 1

AN-102 GRAB SAMPLE BREAKDOWN

WHC-SD-WM-DP-165, REV. 1

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Attachment 1 (1 of 4)

AN-102 GRAB SAMPLE BREAKDOWN

Riser 22A

October 21, 1994 Sampling Event

622 in.
102-AN-4
S95T003926

S95T003984

DSC
TGA
AT
Sp.G.

666 in.
102-AN-3(A)
S96T000001

%Settled Solids

Centrifuge

Solid

Liquid

S96T000003

DSC, TGA
Bulk Density
Vol % Solids

S96T000005

AT
DSC
TGA
Bulk Density

Fusion
Digest

S96T000007

AT

WHC-SD-WM-DP-165, REV. 1

Attachment 1 (2 of 4)

AN-102 GRAB SAMPLE BREAKDOWN

Riser 22A

February 15, 1995 Sampling Event

388 in.
102-AN-1
S95T003924

↓

S95T003982

DSC
TGA
AT
Sp. G.

576 in.
102-AN-2
S95T003925

↓

S95T003983

DSC
TGA
AT
Sp. G.

603 in.
102-AN-3(B)
S96T000002

%Settled Solids

Centrifuge

Solid

Liquid

S96T000004

DSC, TGA
Bulk Density
Vol % Solids

S96T000006

AT
DSC
TGA
Bulk Density

Fusion
Digest

S96T000008

AT

WHC-SD-WM-DP-165, REV. 1

Attachment 1 (3 of 4)

AN-102 GRAB SAMPLE BREAKDOWN

Riser 21A

November 30, 1995 Sampling Event

WHC-SD-WM-DP-165, REV. 1

Attachment 1 (4 of 4)

AN-102 GRAB SAMPLE BREAKDOWN

Riser 21A

December 14, 1995 Sampling Event

WHC-SD-WM-DP-165, REV. 1

SAMPLE DATA SUMMARY

WHC-SD-WM-DP-165, REV. 1

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Table 1: Final Results for Tank 241-AN-102
AN-102 GRAB

RISER: 21A
SEGMENT #: 2AN-95-1

SEGMENT PORTION: Supernate

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003867		Tot. Organic Carbon by Coul.	ug/mL	95.00	1.800	2.79e+04	2.570e4	2.680e4	8.21	94.10	305.0	n/a
S95T003867		Tot. Inorg. Carbon by Coul.	ug/mL	98.83	3.00e-01	1.22e+04	1.250e4	1.240e4	2.43	98.10	105.0	n/a
S95T003867		Specific Gravity	Sp.G.	100.9	n/a	1.388	1.382e0	1.385e0	0.43	n/a	1.000e-3	n/a
S95T003867		pH Direct	pH	n/a	n/a	13.33	1.332e1	1.332e1	0.08	n/a	1.000e-2	n/a
S95T003867		OH- by Pot. Titration	ug/mL	97.36	<42.00	3.31e+03	3.080e3	3.200e3	7.20	n/a	625.0	n/a
S95T003867	D	Aluminium-ICP-Acid Dil.	ug/mL	96.60	<5.000e-2	1.52e+04	1.480e4	1.500e4	2.67	n/a	20.10	n/a
S95T003867	D	Chromium-ICP-Acid Dil.	ug/mL	100.6	<1.000e-2	3.27e+02	2.970e2	3.120e2	9.62	90.50	4.010	n/a
S95T003867	D	Iron-ICP-Acid Dil.	ug/mL	99.80	<5.000e-2	65.70	4.730e1	5.650e1	32.6	91.40	20.10	n/a
S95T003867	D	Manganese-ICP-Acid Dil.	ug/mL	97.40	<1.000e-2	68.30	2.400e1	4.615e1	96.0	85.50	4.010	n/a
S95T003867	D	Sodium-ICP-Acid Dil.	ug/mL	98.00	<1.000e-1	2.21e+05	2.160e5	2.180e5	2.29	n/a	40.10	n/a
S95T003867	D	Nickel-ICP-Acid Dil.	ug/mL	98.40	<2.000e-2	4.03e+02	3.810e2	3.920e2	5.61	93.60	8.020	n/a
S95T003867	D	Silicon-ICP-Acid Dil.	ug/mL	96.40	<5.000e-2	20.90	<2.00e1	n/a	n/a	94.10	20.10	n/a
S95T003867	D	Uranium-ICP-Acid Dil.	ug/mL	95.10	<5.000e-1	<2.00e+02	<2.00e2	n/a	n/a	112.8	200.0	n/a
S95T003867		Sulfate by IC-Dionex4000i/4500	ug/mL	92.55	<1.360e-1	1.05e+04	1.220e4	1.130e4	15.0	91.80	1.390e3	n/a
S95T003867		Phosphate-IC-Dionex 4000i/4500	ug/mL	96.15	<1.190e-1	3.53e+03	4.150e3	3.840e3	16.1	94.10	1.220e3	n/a
S95T003867		Nitrate-IC - Dionex 4000i/4500	ug/mL	94.95	<1.400e-1	1.63e+05	1.930e5	1.780e5	16.9	108.2	1.430e3	n/a
S95T003867		Nitrite-IC - Dionex 4000i/4500	ug/mL	93.82	<1.070e-1	6.04e+04	7.140e4	6.590e4	16.7	101.9	1.090e3	n/a
S95T003867		Fluoride-IC-Dionex 4000i/4500	ug/mL	89.83	<1.300e-2	<1.33e+02	<1.33e2	n/a	n/a	155.1	132.6	n/a
S95T003867		Chloride-IC-Dionex 4000i/4500	ug/mL	95.32	<1.700e-2	2.98e+03	3.320e3	3.150e3	10.8	90.50	173.4	n/a
S95T003870		Strontium-89/90 High Level	uCi/mL	92.74	7.90e-02	71.30	7.510e1	7.320e1	5.19	n/a	1.000e-2	4.72E-01
S95T003870		Pu-239/240 by TRU-SPEC Resin	uCi/mL	100.8	<6.150e-5	6.52e-03	6.580e-3	6.550e-3	0.92	n/a	3.210e-4	1.66E+00
S95T003870		Cesium-137 by GEA	uCi/mL	96.84	<7.110e-3	3.22e+02	3.230e2	3.225e2	0.31	n/a	7.000e-3	.14
S95T003870		Cobalt-60 by GEA	uCi/mL	96.15	<3.030e-3	1.43e-01	1.510e-1	1.470e-1	5.44	n/a	3.000e-3	10.27
S95T003870		Am-241 by Extraction	uCi/mL	90.88	<4.760e-3	1.67e-01	1.630e-1	1.650e-1	2.42	n/a	1.500e-2	9.61E-01

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Table 1: Final Results for Tank 241-AN-102
AN-102 GRAB

RISER: 21A
SEGMENT #: 2AN-95-2

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003868			Tot. Organic Carbon by Coul.	ug/mL	95.00	1.800	2.48e+04	2.650e4	2.560e4	6.63	n/a	305.0	n/a
S95T003868			Tot. Inorg. Carbon by Coul.	ug/mL	98.83	3.00e-01	1.31e+04	1.350e4	1.330e4	3.01	n/a	105.0	n/a
S95T003868			Specific Gravity	Sp.G.	100.9	n/a	1.432	1.402e0	1.417e0	2.12	n/a	1.000e-3	n/a
S95T003868			pH Direct	pH	n/a	n/a	13.35	1.334e1	1.334e1	0.07	n/a	1.000e-2	n/a
S95T003868			OH- by Pot. Titration	ug/mL	98.80	<42.00	3.31e+03	3.240e3	3.280e3	2.14	n/a	1.250e3	n/a
S95T003868	D		Aluminium-ICP-Acid Dil.	ug/mL	96.60	<5.000e-2	1.44e+04	1.480e4	1.460e4	2.74	n/a	20.10	n/a
S95T003868	D		Chromium-ICP-Acid Dil.	ug/mL	100.6	<1.000e-2	2.83e+02	2.870e2	2.850e2	1.40	n/a	4.010	n/a
S95T003868	D		Iron-ICP-Acid Dil.	ug/mL	99.80	<5.000e-2	41.00	3.990e1	4.045e1	2.72	n/a	20.10	n/a
S95T003868	D		Manganese-ICP-Acid Dil.	ug/mL	97.40	<1.000e-2	21.30	2.020e1	2.075e1	5.30	n/a	4.010	n/a
S95T003868	D		Sodium-ICP-Acid Dil.	ug/mL	98.00	<1.000e-1	2.11e+05	2.160e5	2.140e5	2.34	n/a	40.10	n/a
S95T003868	D		Nickel-ICP-Acid Dil.	ug/mL	98.40	<2.000e-2	3.81e+02	3.810e2	3.810e2	0.00	n/a	8.020	n/a
S95T003868	D		Silicon-ICP-Acid Dil.	ug/mL	96.40	<5.000e-2	< 20.00	<2.00e1	n/a	n/a	n/a	20.10	n/a
S95T003868	D		Uranium-ICP-Acid Dil.	ug/mL	95.10	<5.000e-1	<2.00e+02	<2.00e2	n/a	n/a	n/a	200.0	n/a
S95T003868			Sulfate by IC-Dionex4000i/4500	ug/mL	92.55	<1.360e-1	1.68e+04	1.740e4	1.710e4	3.51	n/a	1.390e3	n/a
S95T003868			Phosphate-IC-Dionex 4000i/4500	ug/mL	96.15	<1.190e-1	6.22e+03	5.990e3	6.110e3	3.77	n/a	1.220e3	n/a
S95T003868			Nitrate-IC - Dionex 4000i/4500	ug/mL	94.95	<1.400e-1	2.83e+05	2.990e5	2.910e5	5.50	n/a	1.430e3	n/a
S95T003868			Nitrite-IC - Dionex 4000i/4500	ug/mL	93.82	<1.070e-1	1.04e+05	1.100e5	1.070e5	2.42	n/a	1.090e3	n/a
S95T003868			Fluoride-IC-Dionex 4000i/4500	ug/mL	89.83	<1.300e-2	<1.33e+02	<1.33e2	n/a	n/a	n/a	132.6	n/a
S95T003868			Chloride-IC-Dionex 4000i/4500	ug/mL	95.32	<1.700e-2	4.72e+03	4.880e3	4.800e3	3.33	n/a	173.4	n/a
S95T003871			Strontium-89/90 High Level	uCi/mL	92.74	7.90e-02	74.40	7.390e1	7.415e1	0.67	n/a	1.000e-2	4.61E-01
S95T003871			Pu-239/240 by TRU-SPEC Resin	uCi/mL	99.22	<8.530e-4	5.19e-03	5.240e-3	5.220e-3	0.96	n/a	1.000e-3	2.76E+00
S95T003871			Cesium-137 by GEA	uCi/mL	96.84	<7.110e-3	3.13e+02	3.120e2	3.125e2	0.32	n/a	7.000e-3	.14
S95T003871			Cobalt-60 by GEA	uCi/mL	96.15	<3.030e-3	1.48e-01	1.570e-1	1.520e-1	5.90	n/a	3.000e-3	9.19
S95T003871			Am-241 by Extraction	uCi/mL	82.41	<1.790e-3	1.23e-01	1.080e-1	1.150e-1	13.0	n/a	8.000e-3	8.78E-01

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RISER: 21A
SEGMENT #: 2AN-95-3

SEGMENT PORTION: Supernate

Table 1: Final Results for Tank 241-AN-102
AN-102 GRAB

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003869		Tot. Organic Carbon by Coul.	ug/mL	95.00	1.800	2.65e+04	2.510e4	2.580e4	5.43	n/a	305.0	n/a
S95T003869		Tot. Inorg. Carbon by Coul.	ug/mL	98.83	3.00e-01	1.30e+04	1.340e4	1.320e4	3.03	n/a	105.0	n/a
S95T003869		Specific Gravity	Sp.G.	100.9	n/a	1.394	1.383e0	1.389e0	0.79	n/a	1.000e-3	n/a
S95T003869		pH Direct	pH	n/a	n/a	13.28	1.330e1	1.329e1	0.15	n/a	1.000e-2	n/a
S95T003869		OH- by Pot. Titration	ug/mL	98.80	<42.00	3.10e+03	3.310e3	3.200e3	6.55	n/a	1.250e3	n/a
S95T003869	D	Aluminium-ICP-Acid Dil.	ug/mL	96.60	<5.000e-2	1.63e+04	1.600e4	1.620e4	1.86	n/a	20.10	n/a
S95T003869	D	Chromium-ICP-Acid Dil.	ug/mL	100.6	<1.000e-2	5.36e+02	3.200e2	3.280e2	4.88	n/a	4.010	n/a
S95T003869	D	Iron-ICP-Acid Dil.	ug/mL	99.80	<5.000e-2	61.30	5.040e1	5.585e1	19.5	n/a	20.10	n/a
S95T003869	D	Manganese-ICP-Acid Dil.	ug/mL	97.40	<1.000e-2	66.80	3.400e1	5.040e1	65.1	n/a	4.010	n/a
S95T003869	D	Sodium-ICP-Acid Dil.	ug/mL	98.00	<1.000e-1	2.37e+05	2.340e5	2.360e5	1.27	n/a	40.10	n/a
S95T003869	D	Nickel-ICP-Acid Dil.	ug/mL	98.40	<2.000e-2	4.29e+02	4.220e2	4.255e2	1.65	n/a	8.020	n/a
S95T003869	D	Silicon-ICP-Acid Dil.	ug/mL	96.40	<5.000e-2	20.10	<2.00e1	n/a	n/a	n/a	20.10	n/a
S95T003869	D	Uranium-ICP-Acid Dil.	ug/mL	95.10	<5.000e-1	<2.00e+02	<2.00e2	n/a	n/a	n/a	200.0	n/a
S95T003869		Sulfate by IC-Dionex 4000i/4500	ug/mL	97.15	<1.360e-1	1.27e+04	1.280e4	1.280e4	0.78	100.0	563.2	n/a
S95T003869		Phosphate-IC-Dionex 4000i/4500	ug/mL	95.79	<1.190e-1	4.22e+03	4.170e3	4.200e3	1.19	92.70	496.9	n/a
S95T003869		Nitrate-IC - Dionex 4000i/4500	ug/mL	98.05	2.37e-01	1.96e+05	1.970e5	1.960e5	0.51	133.8	579.7	n/a
S95T003869		Nitrite-IC - Dionex 4000i/4500	ug/mL	93.82	<1.070e-1	7.32e+04	7.270e4	7.290e4	0.69	124.3	443.1	n/a
S95T003869		Fluoride-IC-Dionex 4000i/4500	ug/mL	92.37	1.70e-02	1.45e+03	1.450e3	1.450e3	0.00	88.80	53.83	n/a
S95T003869		Chloride-IC-Dionex 4000i/4500	ug/mL	95.06	<1.700e-2	3.46e+03	3.610e3	3.530e3	4.24	95.60	70.40	n/a
S95T003872		Strontium-89/90 High Level	uCi/mL	92.74	7.90e-02	78.20	7.940e1	7.880e1	1.52	n/a	1.000e-2	4.52E-01
S95T003872		Pu-239/240 by TRU-SPEC Resin	uCi/mL	99.22	<8.530e-4	5.68e-03	5.710e-3	5.700e-3	0.53	n/a	1.000e-3	2.57E+00
S95T003872		Cesium-137 by GEA	uCi/mL	96.84	<7.110e-3	3.23e+02	3.280e2	3.25e2	1.54	n/a	7.000e-3	14
S95T003872		Cobalt-60 by GEA	uCi/mL	96.15	<3.030e-3	1.42e-01	1.440e-1	1.430e-1	1.40	n/a	3.000e-3	10.5
S95T003872		Am-241 by Extraction	uCi/mL	82.41	<1.790e-3	1.29e-01	1.350e-1	1.320e-1	4.55	n/a	9.000e-3	8.41E-01

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Table 1: Final Results for Tank 241-AN-102
AN-102 GRAB

RISER: 21A
SEGMENT #: 2AN-95-4A

SEGMENT PORTION: Decanted Supernate (Liquid Grab Sludge)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T004133			TOC by Persulfate/Coulometry	ug/mL	94.33	5.00e-01	2.41e+04	2.590e4	2.500e4	7.20	n/a	40.00	n/a

Sludge (from Liquid Grab Sample): Sludge (from Liquid Grab Sample)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003959			Volume % Solids	%	n/a	n/a	53.60	n/a	n/a	n/a	n/a	n/a	n/a
S95T004137			TOC by Persulfate/Coulometry	ug/g	95.70	1.500	2.60e+04	2.700e4	2.650e4	3.77	101.0	40.00	n/a
S95T004137			Cyanide EDTA Addition	ug/g	101.0	<3.800e-2	21.70	2.030e1	2.100e1	6.67	92.00	2.400	n/a

RISER: 21A
SEGMENT #: 2AN-95-5A

Table 1: Final Results for Tank 241-AN-102
AN-102 GRAB

SEGMENT PORTION: Decanted Supernate (Liquid Grab Sludge)

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T004135		TOC by Persulfate/Coulometry	ug/mL	94.33	5.00e-01	2.43e+04	2.510e4	2.470e4	3.24	n/a	40.00	n/a

Sludge (from Liquid Grab Sample): Sludge (from Liquid Grab Sample)												
Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003960		Volume % Solids	%	n/a	n/a	46.60	n/a	n/a	n/a	n/a	n/a	n/a
S95T004139		TOC by Persulfate/Coulometry	ug/g	95.70	1.500	1.97e+04	2.260e4	2.120e4	13.7	n/a	80.00	n/a
S95T004139		Cyanide EDTA Addition	ug/g	101.0	<3.800e-2	20.70	2.090e1	2.080e1	0.96	87.80	1.980	n/a

WHC-SD-WM-DP-165, REV. 1

Table 1: Final Results for Tank 241-AN-102
AN-102 GRAB

RISER: 21A
SEGMENT #: 2AN-95-6

SEGMENT PORTION: Field Blank

Sample#	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S951003962		Tot. Organic Carbon by Coul.	ug/mL	95.00	1.800	< 5.500	<5.50	n/a	n/a	n/a	5.000	n/a
S951003962		Tot. Inorg. Carbon by Coul.	ug/mL	97.51	3.00e-01	< 5.000	<5.00E+0	n/a	n/a	n/a	5.000	n/a
S951003962		Specific Gravity	Sp.g.	100.9	n/a	9.94e-01	1.015e0	1.004e0	2.09	n/a	1.000e-3	n/a
S951003962		pH Direct	pH	n/a	n/a	9.030	9.010e0	9.020e0	0.22	n/a	1.000e-3	n/a
S951003962		OH- by Pot. Titration	ug/mL	97.36	<42.00	pH=6.67	n/a	n/a	n/a	n/a	5.500	n/a
S951003962	D	Aluminum-ICP-Acid Dil.	ug/mL	96.60	<5.000e-2	5.15e-02	6.080e-2	5.610e-2	16.6	n/a	5.000e-2	n/a
S951003962	D	Chromium-ICP-Acid Dil.	ug/mL	100.6	<1.000e-2	1.27e-02	1.350e-2	1.310e-2	6.11	n/a	1.000e-2	n/a
S951003962	D	Iron-ICP-Acid Dil.	ug/mL	99.80	<5.000e-2	<5.00e-2	<5.00e-2	n/a	n/a	n/a	5.000e-2	n/a
S951003962	D	Manganese-ICP-Acid Dil.	ug/mL	97.40	<1.000e-2	<1.00e-02	<1.00e-2	n/a	n/a	n/a	1.000e-2	n/a
S951003962	D	Sodium-ICP-Acid Dil.	ug/mL	98.00	<1.000e-1	2.300	2.320e0	2.310e0	0.87	n/a	1.000e-1	n/a
S951003962	D	Nickel-ICP-Acid Dil.	ug/mL	98.40	<2.000e-2	<2.00e-02	<2.00e-2	n/a	n/a	n/a	2.000e-2	n/a
S951003962	D	Silicon-ICP-Acid Dil.	ug/mL	96.40	<5.000e-2	3.200	3.240e0	3.220e0	1.24	n/a	5.000e-2	n/a
S951003962	D	Uranium-ICP-Acid Dil.	ug/mL	95.10	<5.000e-1	<5.00e-01	<5.00e-1	n/a	n/a	n/a	5.000e-1	n/a
S951003962		Sulfate by IC-Dionex40001/4500	ug/mL	97.15	<1.360e-1	3.671	3.660e0	3.566e0	5.89	n/a	1.496	n/a
S951003962		Phosphate-IC-Dionex 40001/4500	ug/mL	95.79	<1.190e-1	< 1.32e0	<1.32e0	n/a	n/a	n/a	1.320	n/a
S951003962		Nitrate-IC - Dionex 40001/4500	ug/mL	98.05	2.37e-01	6.178	6.450e0	6.314e0	4.28	n/a	1.540	n/a
S951003962		Nitrite-IC - Dionex 40001/4500	ug/mL	93.82	<1.070e-1	< 1.177	<1.18e0	n/a	n/a	n/a	1.177	n/a
S951003962		Fluoride-IC-Dionex 40001/4500	ug/mL	92.37	1.70e-02	<1.43e-01	<1.43e-1	n/a	n/a	n/a	1.430e-1	n/a
S951003962		Chloride-IC-Dionex 40001/4500	ug/mL	95.06	<1.700e-2	1.369	1.280e0	1.325e0	6.79	n/a	1.870e-1	n/a
S951003963		Strontium-89/90 High Level	uci/mL	93.55	4.14e-07	3.07e-05	3.200e-5	3.140e-5	4.15	n/a	5.040e-7	5.21E+00
S951003963		Pu-239/240 by TRU-SPEC Resin	uci/mL	100.8	<6.150e-5	<2.89e-05	<3.06E-5	n/a	n/a	n/a	2.890e-5	1.00E+02
S951003963		Cesium-137 by GEA	uci/mL	96.84	<7.110e-3	<8.05e-05	<7.93e-5	n/a	n/a	n/a	7.000e-3	n/a
S951003963		Cobalt-60 by GEA	uci/mL	96.15	<3.030e-3	<2.76e-05	<3.04e-5	n/a	n/a	n/a	3.000e-3	n/a
S951003963		Am-241 by Extraction	uci/mL	83.39	<4.230e-4	<4.64e-04	<4.59E-4	n/a	n/a	n/a	4.640e-4	1.00E+02

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A-0002-1

Table 1: Final Results for Tank 241-AN-102
AN-102 GRAB

RISER: 22A
SEGMENT #: 102-AN-1

SEGMENT PORTION: Supernate

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003982		Tot. Organic Carbon by Coul.	ug/mL	101.0	1.500	2.69e+04	2.620e4	2.660e4	2.64	n/a	305.0	n/a
S95T003982		Specific Gravity	Sp.G.	100.2	n/a	1.440	1.430e0	1.435e0	0.70	n/a	1.000e-3	n/a

Table 1: Final Results for Tank 241-AN-102
AN-102 GRAB

RISE: 22A
SEGMENT #: 102-AN-2

SEGMENT PORTION: Supernate

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
S95T003983		Tot. Organic Carbon by Coul.	ug/mL	101.0	1.500	2.57e+04	2.750e4	2.660e4	6.77	n/a	305.0		n/a
S95T003983		Specific Gravity	Sp.G.	100.2	n/a	1.390	1.510e0	1.450e0	8.28	n/a	1.000e-3		n/a

RISE: 22A
SEGMENT #: 102-AN-4

Table 1: Final Results for Tank 241-AN-102
AN-102 GRAB

SEGMENT PORTION: Supernate

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T0039B4		Tot. Organic Carbon by Coul.	ug/ml	101.0	1.500	2.57e+04	2.510e4	2.540e4	2.36	97.60	305.0	n/a
S95T0039B4		Specific Gravity	Sp.G.	100.2	n/a	1.370	1.480e0	1.425e0	7.72	n/a	1.000e-3	n/a

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A-0002-1

RISER: 22A
SEGMENT #: 102-AN-3(A)

Table 1: Final Results for Tank 241-AN-102
AN-102 GRAB

SEGMENT PORTION: Sludge (from Liquid Grab Sample)

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S961000003		Volume % Solids	%	n/a	n/a	61.20	n/a	n/a	n/a	n/a	n/a	n/a

RISER: 22A
SEGMENT #: 102-AN-3(B)

Table 1: Final Results for Tank 241-AN-102
AN-102 GRAB

SEGMENT PORTION: Sludge (from Liquid Grab Sample)

Sample#	R/A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S961000004		Volume % Solids	%	n/a	n/a	50.00	n/a	n/a	n/a	n/a	n/a	n/a

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Table 2

ICP Serial Dilution Results for Tank 241-AN-102
Waste Compatibility Study

Riser 21A November 30, 1995 Sampling Event

Sample ID	Analyte	Sample Result (µg/mL) Undiluted	Serial Dilution Result (µg/mL)	RPD
S95T003867				
(2AN-95-1)	Al	1.52E+04	1.54E+04	1.3
	Na	2.21E+05	2.27E+05	2.7
S96T003868				
(2AN-95-2)	Al	1.44E+04	1.47E+04	2.1
	Na	2.11E+05	2.17E+05	2.8
S95T003869				
(2AN-95-3)	Al	1.63E+04	1.67E+04	2.4
	Na	2.37E+05	2.45E+05	3.3

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

Table 5 (1 of 2)

Additional DSC Results for Tank 241-AN-102
Waste Compatibility Study

Riser 22A October 21, 1994 Sampling Event

Sample ID		Exothermic Energy (Joules/g)	Temp (° C)	Endothermic Energy (Joules/g)	Temp (° C)	Energy Ratio *
S95T003984						
(102-AN-4)	Samp	223.20	437.2	863.4	127.6	0.26
	Dup	197.1	437.1	883.8	128.5	0.22
S96T000003						
(102-AN-3(A))	Samp	0.0	n/a	978.7	125.5	0.00
Solid	Dup	0.0	n/a	935.5	123.9	0.00
S96T000005						
(102-AN-3(A))	Samp	237.0	439.9	1112.2	129.7	0.21
Liquid	Dup	230.2	439.7	926.1	126.6	0.25

Energy Ratio = Exothermic Energy / Endothermic Energy

* - This ratio must be < 1 for Compatibility Energetics

Riser 22A February 15, 1995 Sampling Event

Sample ID		Exothermic Energy (Joules/g)	Temp (° C)	Endothermic Energy (Joules/g)	Temp (° C)	Energy Ratio *
S95T003982						
(102-AN-1)	Samp	284.2	437.8	900.1	133.8	0.32
	Dup	317.4	435.9	1075.4	137.8	0.30
S96T003983						
(102-AN-2)	Samp	361.3	441.3	1628.8	123.1	0.22
	Dup	281.0	435.0	1373.5	126.7	0.20
S96T000004						
(102-AN-3(B))	Samp	0.0	n/a	1034.6	118.3	0.00
Solid	Dup	0.0	n/a	945.7	110.5	0.00
S96T000006						
(102-AN-3(B))	Samp	0.0	n/a	1712.8	112.9	0.00
Liquid	Dup	27.47	431.8	1162.0	121.3	0.02

Energy Ratio = Exothermic Energy / Endothermic Energy

* - This ratio must be < 1 for Compatibility Energetics

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Table 5 (2 of 2)

Additional DSC Results for Tank 241-AN-102
Waste Compatibility Study

Riser 21A November 30, 1995 Sampling Event

Sample ID		Exothermic Energy (Joules/g)	Temp (° C)	Endothermic Energy (Joules/g)	Temp (° C)	Energy Ratio *
S95T003867						
(2AN-95-1)	Samp	283.9	435.7	922.9	130.5	0.31
	Dup	284.0	437.8	968.2	133.8	0.29
S96T003868						
(2AN-95-2)	Samp	616.1	305.3	914.9	133.8	0.67
	Dup	557.8	297.5	783.7	139.9	0.71
S95T003869						
(2AN-95-3)	Samp	277.2	427.8	1149.3	128.2	0.24
	Dup	282.6	428.0	1209.8	125.0	0.23

Energy Ratio = Exothermic Energy / Endothermic Energy

* - This ratio must be < 1 for Compatibility Energetics

Riser 21A December 14, 1995 Sampling Event

Sample ID		Exothermic Energy (Joules/g)	Temp (° C)	Endothermic Energy (Joules/g)	Temp (° C)	Energy Ratio *
S95T004137						
(2AN-95-4A)	Samp	279.6	405.4	991.8	130.2	0.28
Solid	Dup	262.5	404.3	1008.7	131.6	0.26
S95T004133						
(2AN-95-4A)	Samp	258.0	316.9	1178.6	125.6	0.22
Liquid	Dup	252.1	317.2	1175.3	125.8	0.21
S95T004139						
(2AN-95-5A)	Samp	283.2	428.7	1037.1	131.7	0.27
Solid	Dup	327.5	429.2	1029.0	128.6	0.32
S95T004135						
(2AN-95-5A)	Samp	279.7	315.7	1147.7	128.4	0.24
Liquid	Dup	300.30	319.7	1082.3	125.6	0.28

Energy Ratio = Exothermic Energy / Endothermic Energy

* - This ratio must be < 1 for Compatibility Energetics

Table 6 (1 of 3)

WASTE COMPATIBILITY CORROSION RULES

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Table 6 (2 of 3)

WASTE COMPATIBILITY CORROSION RULES

Sample ID	Analyte	Result (ug/mL)	Result (M)	[NO ₃]	[OH]	[NO ₂]	[NO ₃]
				$\leq 1.0 \text{ M?}$	$0.010 \text{ M} \leq [\text{OH}] \leq 5.0 \text{ M?}$	$0.011 \text{ M} \leq [\text{NO}_2] \leq 5.5 \text{ M}$	
S96T003868 2AN-95-2	NO ₃	2.83E+05	4.565				
	OH	3.31E+03	0.195				
	NO ₂	1.04E+05	2.261	$1.0 \text{ M} < [\text{NO}_3] \leq 3.0 \text{ M?}$	$0.1 \text{ M} * [\text{NO}_3] \leq [\text{OH}] < 10 \text{ M?}$		$\geq 0.4 * [\text{NO}_3]?$
				$3.0 \text{ M} < [\text{NO}_3] \leq 5.5 \text{ M?}$	$0.3 \leq [\text{OH}] < 10 \text{ M?}$		$\geq 1.2 \text{ M?}$
				YES	NO		YES

Sample ID	Analyte	Result (ug/mL)	Result (M)	[NO ₃]	[OH]	[NO ₂]	[NO ₃]
				$\leq 1.0 \text{ M?}$	$0.010 \text{ M} \leq [\text{OH}] \leq 5.0 \text{ M?}$	$0.011 \text{ M} \leq [\text{NO}_2] \leq 5.5 \text{ M}$	
S96T003868 2AN-95-2 DUP	NO ₃	2.99E+05	4.823				
	OH	3.24E+03	0.191				
	NO ₂	1.01E+05	2.196	$1.0 \text{ M} < [\text{NO}_3] \leq 3.0 \text{ M?}$	$0.1 \text{ M} * [\text{NO}_3] \leq [\text{OH}] < 10 \text{ M?}$		$\geq 0.4 * [\text{NO}_3]?$
				$3.0 \text{ M} < [\text{NO}_3] \leq 5.5 \text{ M?}$	$0.3 \leq [\text{OH}] < 10 \text{ M?}$		$\geq 1.2 \text{ M?}$
				YES	NO		YES

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Table 6 (3 of 3)

WASTE COMPATIBILITY CORROSION RULES

Sample ID	Analyte	Result (ug/mL)	Result (M)	[NO3]	[OH]	[NO2]	[OH] * [NO3]
				$\leq 1.0 \text{ M?}$	$0.010 \text{ M} \leq [\text{OH}] \leq 5.0 \text{ M?}$	$0.011 \text{ M} \leq [\text{NO2}] \leq 5.5 \text{ M}$	
S95T003869 2AN-95-3	NO3	1.96E+05	3.161				
	OH	3.10E+03	0.182				
	NO2	7.32E+04	1.591	$1.0 \text{ M} < [\text{NO3}] \leq 3.0 \text{ M?}$	$0.1 \text{ M} * [\text{NO3}] \leq [\text{OH}] < 10 \text{ M?}$		$\geq 0.4 * [\text{NO3}]?$
				$3.0 \text{ M} < [\text{NO3}] \leq 5.5 \text{ M?}$	$0.3 \leq [\text{OH}] < 10 \text{ M?}$		$\geq 1.2 \text{ M?}$
				YES	NO		YES

Sample ID	Analyte	Result (ug/mL)	Result (M)	[NO3]	[OH]	[NO2]	[OH] * [NO3]
				$\leq 1.0 \text{ M?}$	$0.010 \text{ M} \leq [\text{OH}] \leq 5.0 \text{ M?}$	$0.011 \text{ M} \leq [\text{NO2}] \leq 5.5 \text{ M}$	
S95T003869 2AN-95-3 DUP	NO3	1.97E+05	3.177				
	OH	3.31E+03	0.195				
	NO2	7.27E+04	1.580	$1.0 \text{ M} < [\text{NO3}] \leq 3.0 \text{ M?}$	$0.1 \text{ M} * [\text{NO3}] \leq [\text{OH}] < 10 \text{ M?}$		$\geq 0.4 * [\text{NO3}]?$
				$3.0 \text{ M} < [\text{NO3}] \leq 5.5 \text{ M?}$	$0.3 \leq [\text{OH}] < 10 \text{ M?}$		$\geq 1.2 \text{ M?}$
				YES	NO		YES

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RADIOCHEMISTRY SAMPLE SUMMARY REPORT

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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222

Contact R. A. Esch

REPORT GUIDE

WHC-SD-WM-DP-165, REV. I

Client TWRS

Tank AN102

ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

DUPLICATES

Final Report

REPORT GUIDES

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SUMMARY DATA SECTION

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Version 3.08
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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222
Contact R. A. Esch

GUIDE, cont.
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Client TWRS
Tank AN102

ABOUT THE DATA SUMMARY SECTION

The Duplicate Reports, one for each Duplicate and Original sample pair relevant to the SDG, show all results, differences and primary supporting information for these QC samples.

MATRIX SPIKES

The Matrix Spike Reports, one for each Spiked and Original sample pair relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

DATA SHEETS

The Data Sheet Reports, one for each client sample in the SDG, show all results and primary supporting information for these samples.

METHOD SUMMARIES

The Method Summary Reports, one for each test used in the SDG, show all results, QC and method performance data for one analyte on one or two pages. (A test is a short code for the method used to do certain work to the client's specification.)

REPORT GUIDES

The Report Guides, one for each of the above groups of reports, have documentation on how to read the associated reports.

Final Report

REPORT GUIDES

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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222
Contact R. A. Esch

SAMPLE SUMMARY

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	PRIORITY COLLECTED	RECEIVED
AN102 S1 Radchem Tests	R: S: C:	LIQUID		S95T003870		12/01/95 12:50
AN102 S1 Radchem Tests-D	R: S: C:	LIQUID		S95T003870D		
AN102 S1 Radchem Tests-S	R: S: C:	LIQUID		S95T003870S		
AN102 S2 Radchem Tests	R: S: C:	LIQUID		S95T003871		12/01/95 14:15
AN102 S2 Radchem Tests-D	R: S: C:	LIQUID		S95T003871D		
AN102 S3 Radchem Tests	R: S: C:	LIQUID		S95T003872		12/01/95 12:50
AN102 S3 Radchem Tests-D	R: S: C:	LIQUID		S95T003872D		
AN102 S4A FUSION	R: 21A S: 2AN-95-4A C: n FUSION	SOLID		S95T004141		12/15/95 10:30
AN102 S4A FUSION-DUP	R: 21A S: 2AN-95-4A C: n FUSION	SOLID		S95T004141D		
AN102 S4A FUSION-SPK	R: 21A S: 2AN-95-4A C: n FUSION	SOLID		S95T004141S		
AN102 S5A FUSION	R: 21A S: 2AN-95-5A C: n FUSION	SOLID		S95T004142		12/15/95 10:30
AN102 S5A FUSION-DUP	R: 21A S: 2AN-95-5A C: n FUSION	SOLID		S95T004142D		
AN102 S6 Radchem Tests	R: S: C:	LIQUID		S95T003963		12/15/95 10:50
AN102 S6 Radchem Tests-D	R: S: C:	LIQUID		S95T003963D		
DI Blank		LIQUID		B4766-2		
DI Blank		LIQUID		B4767-2		
DI Blank		LIQUID		B4825-2		
DI Blank		LIQUID		B4826-2		
DI Blank		LIQUID		B4865-2		
DI Blank		LIQUID		B4882-2		
DI Blank		LIQUID		B4888-2		
DI Blank		LIQUID		B5167-2		
DI Blank		LIQUID		B5367-2		
Method Blank		SOLID		B5177-2		
Lab Control Sample		LIQUID		S4766-1		
Lab Control Sample		LIQUID		S4767-1		
Lab Control Sample		LIQUID		S4825-1		
Lab Control Sample		LIQUID		S4826-1		
Lab Control Sample		LIQUID		S4865-1		
Lab Control Sample		LIQUID		S4882-1		
Lab Control Sample		LIQUID		S4888-1		
Lab Control Sample		LIQUID		S5167-1		
Lab Control Sample		LIQUID		S5367-1		
Lab Control Sample		SOLID		S5177-1		

Final Report

SAMPLE SUMMARY

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Protocol GRAB
Version 1.0
Form DVP-CS
Version 3.08
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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222

Contact R. A. Esch

Client TWRS

Tank AN102

QC SUMMARY

WHC-SD-WM-DP-165, REV. 1

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	%	SAMPLE	BASIS	DAYS FROM/TO		LAB	DEPARTMENT
							COLL	RCVD		
				MOIST	AMOUNT	AMOUNT	RCVD	RPTD	SAMPLE ID	SAMPLE ID
95000222-F		AN102 S4A FUSION	FUSION	SOLID				88	S95T004141	
		AN102 S5A FUSION	FUSION	SOLID				88	S95T004142	
		AN102 S4A FUSION-DUP	FUSION	SOLID				88	S95T004141D	
		AN102 S4A FUSION-SPK	FUSION	SOLID				88	S95T004141S	
		AN102 S5A FUSION-DUP	FUSION	SOLID				88	S95T004142D	
95000222-L	n/a	AN102 S1 Radchem Tests		LIQUID				102	S95T003870	
		AN102 S2 Radchem Tests		LIQUID				102	S95T003871	
		AN102 S3 Radchem Tests		LIQUID				102	S95T003872	
		AN102 S6 Radchem Tests		LIQUID				88	S95T003963	
		AN102 S1 Radchem Tests-D		LIQUID				102	S95T003870D	
		AN102 S1 Radchem Tests-S		LIQUID				102	S95T003870S	
		AN102 S2 Radchem Tests-D		LIQUID				102	S95T003871D	
		AN102 S3 Radchem Tests-D		LIQUID				102	S95T003872D	
		AN102 S6 Radchem Tests-D		LIQUID				88	S95T003963D	
LIQUID		DI Blank		LIQUID					B4766-2	
		DI Blank		LIQUID					B4767-2	
		DI Blank		LIQUID					B4825-2	
		DI Blank		LIQUID					B4826-2	
		DI Blank		LIQUID					B4865-2	
		DI Blank		LIQUID					B4882-2	
		DI Blank		LIQUID					B4888-2	
		DI Blank		LIQUID					B5167-2	
		DI Blank		LIQUID					B5367-2	
		Lab Control Sample		LIQUID					S4766-1	
		Lab Control Sample		LIQUID					S4767-1	
		Lab Control Sample		LIQUID					S4825-1	
		Lab Control Sample		LIQUID					S4826-1	
		Lab Control Sample		LIQUID					S4865-1	
		Lab Control Sample		LIQUID					S4882-1	
		Lab Control Sample		LIQUID					S4888-1	
		Lab Control Sample		LIQUID					S5167-1	
		Lab Control Sample		LIQUID					S5367-1	
SOLID		Method Blank		SOLID					B5177-2	
		Lab Control Sample		SOLID					S5177-1	

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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222
Contact R. A. Esch

PREP BATCH SUMMARY

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. /

TEST	MATRIX	METHOD	PREPARATION	ERROR	PLANCHETS ANALYZED				QUALI-		
			BATCH	2σ %	CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG
Alpha Spectroscopy											
AM	LIQUID	Americium-241	96000202	15.0	2			1	1	2/2	
			96000342	15.0	1			1	1	1/1	
			96000674	15.0	1			1	1	1/1	
PU	LIQUID	Plutonium-239	96000201	15.0	2			1	1	2/2	
			96000785	15.0	2			1	1	2/2	
Gas Proportional Counting											
SR	LIQUID	Strontium-89/90	96000302	15.0	3			1	1	3/3	
			96000339	15.0	1			1	1	1/1	
Gas Proportional Counting											
AT	LIQUID	Alpha Analysis	96000688	15.0	2					2/2	1/1
		Alpha Analysis	96000301	15.0	3			1	1	3/3	1/1
	SOLID	Alpha Analysis	96000688	15.0				1	1		
Gamma Energy Analysis											
GEA	LIQUID	Gamma Spectroscopy	96000316	15.0	4			1	1	4/4	

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.
Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222
Contact R. A. Esch

Client TWRS
Tank AN102

WORK SUMMARY

WHC-SD-WM-DP-165, REV. 1

CLIENT SAMPLE ID		LAB SAMPLE ID								
LOCATION	MATRIX	COLLECTED		TEST	SUF-					
CUSTODY	Priority	RECEIVED	PLANCHET		FIX	ANALYZED	REVIEWED	BY	METHOD	
AN102 S1 Radchem Tests		S95T003870	5167-3	AM		01/26/96		LLF	Americium-241	
R: S: C:	LIQUID		4826-4	AT		01/12/96		SLF	Alpha Analysis	
n/a		12/01/95	4865-3	GEA		01/15/96		PPB	Gamma Spectroscopy	
			5367-3	PU		02/06/96		LLF	Plutonium-239	
			4825-4	SR		01/15/96		SLF	Strontium-89/90	
AN102 S1 Radchem Tests-D		S95T003870D	5167-4	AM		01/26/96		LLF	Americium-241	
R: S: C:	LIQUID		4826-5	AT		01/12/96		SLF	Alpha Analysis	
		12/01/95	4865-4	GEA		01/15/96		PPB	Gamma Spectroscopy	
			5367-4	PU		02/06/96		LLF	Plutonium-239	
			4825-5	SR		01/15/96		SLF	Strontium-89/90	
AN102 S1 Radchem Tests-S		S95T003870S	4826-6	AT		01/12/96		SLF	Alpha Analysis	
R: S: C:	LIQUID									
		12/01/95								
AN102 S2 Radchem Tests		S95T003871	4767-3	AM		01/10/96		LLF	Americium-241	
R: S: C:	LIQUID		4826-7	AT		01/12/96		SLF	Alpha Analysis	
n/a		12/01/95	4865-5	GEA		01/15/96		PPB	Gamma Spectroscopy	
			4766-3	PU		01/10/96		LLF	Plutonium-239	
			4825-6	SR		01/15/96		SLF	Strontium-89/90	
AN102 S2 Radchem Tests-D		S95T003871D	4767-4	AM		01/10/96		LLF	Americium-241	
R: S: C:	LIQUID		4826-8	AT		01/12/96		SLF	Alpha Analysis	
		12/01/95	4865-6	GEA		01/15/96		PPB	Gamma Spectroscopy	
			4766-4	PU		01/10/96		LLF	Plutonium-239	
			4825-7	SR		01/15/96		SLF	Strontium-89/90	
AN102 S3 Radchem Tests		S95T003872	4767-5	AM		01/10/96		LLF	Americium-241	
R: S: C:	LIQUID		4826-9	AT		01/12/96		SLF	Alpha Analysis	
n/a		12/01/95	4865-7	GEA		01/15/96		PPB	Gamma Spectroscopy	
			4766-5	PU		01/10/96		LLF	Plutonium-239	
			4825-8	SR		01/15/96		SLF	Strontium-89/90	
AN102 S3 Radchem Tests-D		S95T003872D	4767-6	AM		01/10/96		LLF	Americium-241	
R: S: C:	LIQUID		4826-10	AT		01/12/96		SLF	Alpha Analysis	
		12/01/95	4865-8	GEA		01/15/96		PPB	Gamma Spectroscopy	
			4766-6	PU		01/10/96		LLF	Plutonium-239	
			4825-9	SR		01/15/96		SLF	Strontium-89/90	

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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222
Contact R. A. Esch

WORK SUMMARY, cont.

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

CLIENT SAMPLE ID	MATRIX	LAB SAMPLE ID	COLLECTED	TEST	SUF-	ANALYZED	REVIEWED	BY	METHOD
LOCATION	Priority	RECEIVED	PLANCHET		FIX				
AN102 S4A FUSION	FUSION	S95T004141	5177-4	AT		01/26/96		SLF	Alpha Analysis
R: 21A S: 2AN-95-4A C: n	SOLID	12/15/95							
AN102 S4A FUSION-DUP	FUSION	S95T004141D	5177-5	AT		01/26/96		SLF	Alpha Analysis
R: 21A S: 2AN-95-4A C: n	SOLID	12/15/95							
AN102 S4A FUSION-SPK	FUSION	S95T004141S	5177-6	AT		01/26/96		SLF	Alpha Analysis
R: 21A S: 2AN-95-4A C: n	SOLID	12/15/95							
AN102 S5A FUSION	FUSION	S95T004142	5177-7	AT		01/26/96		SLF	Alpha Analysis
R: 21A S: 2AN-95-5A C: n	SOLID	12/15/95							
AN102 S5A FUSION-DUP	FUSION	S95T004142D	5177-8	AT		01/26/96		SLF	Alpha Analysis
R: 21A S: 2AN-95-5A C: n	SOLID	12/15/95							
AN102 S6 Radchem Tests		S95T003963	4882-5	AM		01/17/96		LLF	Americium-241
R: S: C:	LIQUID		4865-9	GEA		01/15/96		PPB	Gamma Spectroscopy
n/a		12/15/95	5367-5	PU		02/06/96		LLF	Plutonium-239
			4888-4	SR		01/16/96		SLF	Strontium-89/90
AN102 S6 Radchem Tests-D		S95T003963D	4882-6	AM		01/17/96		LLF	Americium-241
R: S: C:	LIQUID		4865-10	GEA		01/15/96		PPB	Gamma Spectroscopy
		12/15/95	5367-6	PU		02/06/96		LLF	Plutonium-239
			4888-5	SR		01/16/96		SLF	Strontium-89/90
DI Blank		B4766-2	4766-2	PU		01/10/96		LLF	Plutonium-239
	LIQUID								
DI Blank		B4767-2	4767-2	AM		01/10/96		LLF	Americium-241
	LIQUID								
DI Blank		B4825-2	4825-2	SR		01/15/96		SLF	Strontium-89/90
	LIQUID								

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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222
Contact R. A. Esch

WORK SUMMARY, cont.

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

CLIENT SAMPLE ID		LAB SAMPLE ID								
LOCATION	MATRIX	COLLECTED			SUF-					
CUSTODY	Priority	RECEIVED	PLANCHET	TEST	FIX	ANALYZED	REVIEWED	BY	METHOD	
DI Blank	LIQUID	B4826-2	4826-2	AT		01/12/96		SLF	Alpha Analysis	
DI Blank	LIQUID	B4865-2	4865-2	GEA		01/15/96		PPB	Gamma Spectroscopy	
DI Blank	LIQUID	B4882-2	4882-2	AM		01/17/96		LLF	Americium-241	
DI Blank	LIQUID	B4888-2	4888-2	SR		01/16/96		SLF	Strontium-89/90	
DI Blank	LIQUID	B5167-2	5167-2	AM		01/26/96		LLF	Americium-241	
Method Blank	SOLID	B5177-2	5177-2	AT		01/26/96		SLF	Alpha Analysis	
DI Blank	LIQUID	B5367-2	5367-2	PU		02/06/96		LLF	Plutonium-239	
Lab Control Sample	LIQUID	S4766-1	4766-1	PU		01/10/96		LLF	Plutonium-239	
Lab Control Sample	LIQUID	S4767-1	4767-1	AM		01/10/96		LLF	Americium-241	
Lab Control Sample	LIQUID	S4825-1	4825-1	SR		01/15/96		SLF	Strontium-89/90	
Lab Control Sample	LIQUID	S4826-1	4826-1	AT		01/12/96		SLF	Alpha Analysis	
Lab Control Sample	LIQUID	S4865-1	4865-1	GEA		01/15/96		PPB	Gamma Spectroscopy	
Lab Control Sample	LIQUID	S4882-1	4882-1	AM		01/17/96		LLF	Americium-241	

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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222

Contact R. A. Esch

Client TWRS

Tank AN102

WORK SUMMARY, cont.

WHC-SD-WM-DP-165, REV. 1

CLIENT SAMPLE ID		LAB SAMPLE ID								
LOCATION	MATRIX	COLLECTED			SUF-					
CUSTODY	Priority	RECEIVED	PLANCHET	TEST	FIX	ANALYZED	REVIEWED	BY	METHOD	
Lab Control Sample		S4888-1	4888-1	SR		01/16/96		SLF	Strontium-89/90	
	LIQUID									
Lab Control Sample		S5167-1	5167-1	AM		01/26/96		LLF	Americium-241	
	LIQUID									
Lab Control Sample		S5177-1	5177-1	AT		01/26/96		SLF	Alpha Analysis	
	SOLID									
Lab Control Sample		S5367-1	5367-1	PU		02/06/96		LLF	Plutonium-239	
	LIQUID									

COUNTS OF TESTS BY SAMPLE TYPE										
TEST	Priority	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM		Americium-241	222-S Lab Analytical Procedure	4			3	3	4	14
AT		Alpha Analysis	222-S Lab Analytical Procedure	2			1	1	2 1	7
AT		Alpha Analysis	222-S Lab Analytical Procedure	3			1	1	3 1	9
GEA		Gamma Spectroscopy	222-S Lab Analytical Procedure	4			1	1	4	10
PU		Plutonium-239	222-S Lab Analytical Procedure	4			2	2	4	12
SR		Strontium-89/90	222-S Lab Analytical Procedure	4			2	2	4	12
TOTALS				21			10	10	21 2	64

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W H C 2 2 2 - S L A B O R A T O R Y

TANK AN102, GROUP 95000222

SDG 95000222
Contact R. A. Esch

B L A N K S

Client TWRS
Tank AN102

W H C - S D - W M - D P - 1 6 5 , R E V . 1

Lab sample id <u>B4766-2</u>		Client sample id <u>DI Blank</u>					
Dept sample id _____		Material/Matrix _____ LIQUID					
ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST PREP BATCH
Plutonium 239/240		<8.5E-04		8.5E-04		U	PU 96000201

Lab sample id <u>B4767-2</u>		Client sample id <u>DI Blank</u>					
Dept sample id _____		Material/Matrix _____ LIQUID					
ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST PREP BATCH
Americium 241	14596-10-2	<1.8E-03		1.8E-03		U	AM 96000202

Lab sample id <u>B4825-2</u>		Client sample id <u>DI Blank</u>					
Dept sample id _____		Material/Matrix _____ LIQUID					
ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST PREP BATCH
Strontium 90	10098-97-2	7.90E-02	23	1.0E-02			SR 96000302

Lab sample id <u>B4826-2</u>		Client sample id <u>DI Blank</u>					
Dept sample id _____		Material/Matrix _____ LIQUID					
ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST PREP BATCH
Total Alpha	12587-46-1	<2.7E-02		2.7E-02		U	AT 96000301

Supernatant liquid

F i n a l R e p o r t

BLANKS

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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222
Contact R. A. Esch

BLANKS

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

Lab sample id <u>B4865-2</u>		Client sample id <u>DI Blank</u>					
Dept sample id _____		Material/Matrix _____ LIQUID					
ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST PREP BATCH
GEA Analytes							
Cobalt 60	10198-40-0	<3.0E-03		3.0E-03		U	GEA 96000316
Cesium 137	10045-97-3	<7.1E-03		7.1E-03		U	GEA 96000316

Lab sample id <u>B4882-2</u>		Client sample id <u>DI Blank</u>					
Dept sample id _____		Material/Matrix _____ LIQUID					
ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST PREP BATCH
Americium 241	14596-10-2	<4.2E-04		4.2E-04		U	AM 96000342

Lab sample id <u>B4888-2</u>		Client sample id <u>DI Blank</u>					
Dept sample id _____		Material/Matrix _____ LIQUID					
ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST PREP BATCH
Strontium 90	10098-97-2	4.14E-07	97	5.0E-07		U	SR 96000339

Supernatant liquid

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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222
Contact R. A. Esch

BLANKS

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

Lab sample id <u>B5167-2</u>		Client sample id <u>DI Blank</u>					
Dept sample id _____		Material/Matrix _____ LIQUID					
ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST PREP BATCH
Americium 241	14596-10-2	<4.8E-03		4.8E-03		U	AM 96000674

Lab sample id <u>B5177-2</u>		Client sample id <u>Method Blank</u>					
Dept sample id _____		Material/Matrix _____ SOLID					
ANALYTE	CAS NO	RESULT uCi/g	σ TPU %	MDA uCi/g	RDL uCi/g	QUALI- FIERS	TEST PREP BATCH
Total Alpha	12587-46-1	<9.8E-03		9.8E-03		U	AT 96000688

Lab sample id <u>B5367-2</u>		Client sample id <u>DI Blank</u>					
Dept sample id _____		Material/Matrix _____ LIQUID					
ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST PREP BATCH
Plutonium 239/240		<6.2E-05		6.2E-05		U	PU 96000785

Supernatant liquid

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BLANKS
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WHC 222-S LABORATORY

TANK AM102, GROUP 95000222

LAB CONTROL SAMPLES

WHC-SD-WM-DP-165, REV. 1

SDG 95000222

Contact R. A. Esch

Client TWRS

Tank AM102

Lab sample id <u>S4766-1</u>							Client sample id <u>Lab Control Sample</u>						
Dept sample id _____							Material/Matrix <u>LIQUID</u>						
ANALYTE	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST	ADDED uCi/mL	2σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH	
Plutonium 239/240	1.27E-01	15	9.4E-03			PU	1.28E-1	5.0	99	76-124	80-120	96000201	

Lab sample id <u>S4767-1</u>							Client sample id <u>Lab Control Sample</u>						
Dept sample id _____							Material/Matrix <u>LIQUID</u>						
ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH	
Americium 241	2.53E-02	15	3.2E-03			AM	3.07E-2	5.0	82	80-120	80-120	96000202	

Lab sample id <u>S4825-1</u>							Client sample id <u>Lab Control Sample</u>						
Dept sample id _____							Material/Matrix <u>LIQUID</u>						
ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH	
Strontium 90	1.15E-03	15	2.5E-06		B	SR	1.24E-3	5.0	93	78-122	80-112	96000302	

Lab sample id <u>S4826-1</u>							Client sample id <u>Lab Control Sample</u>						
Dept sample id _____							Material/Matrix <u>LIQUID</u>						
ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH	
Total Alpha	1.39E-05	16	1.3E-07			AT	1.54E-5	5.0	90	78-122	70-123	96000301	

Supernatant liquid

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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

LAB CONTROL SAMPLES

Client WRS

Tank AN102

WHC-SD-WM-DP-165, REV. |

Lab sample id <u>S4865-1</u>						Client sample id <u>Lab Control Sample</u>						
Dept sample id _____						Material/Matrix _____ LIQUID						
ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3 σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
GEA Analytes												
Cobalt 60	2.00E-02	15				GEA	2.08E-2	5.0	96	77-123	80-120	96000316
Cesium 137	2.45E-02	15				GEA	2.53E-2	5.0	97	77-123	80-120	96000316

Lab sample id <u>S4882-1</u>						Client sample id <u>Lab Control Sample</u>						
Dept sample id _____						Material/Matrix _____ LIQUID						
ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3 σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Americium 241	2.56E-02	15	3.8E-03			AM	3.07E-2	5.0	83	80-120	80-120	96000342

Lab sample id <u>S4888-1</u>						Client sample id <u>Lab Control Sample</u>						
Dept sample id _____						Material/Matrix _____ LIQUID						
ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3 σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Strontium 90	1.16E-03	16	2.6E-06			SR	1.24E-3	5.0	94	78-122	80-112	96000339

Supernatant liquid

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LAB CONTROL SAMPLES

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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222
Contact R. A. Esch

LAB CONTROL SAMPLES

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. I

Lab sample id <u>S5167-1</u>						Client sample id <u>Lab Control Sample</u>						
Dept sample id _____						Material/Matrix _____ LIQUID						
ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3 σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Americium 241	2.79E-02	15	4.0E-03			AM	3.07E-2	5.0	91	78-122	80-120	96000674

Lab sample id <u>S5177-1</u>						Client sample id <u>Lab Control Sample</u>						
Dept sample id _____						Material/Matrix _____ <u>SOLID</u>						
ANALYTE	RESULT uCi/g	σ TPU %	MDA uCi/g	RDL uCi/g	QUALI- FIERS	TEST	ADDED uCi/g	σ ERR %	REC %	3 σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Total Alpha	4.35E-03	16	4.9E-05			AT	4.72E-3	5.0	92	77-123	90-110	96000688

Lab sample id <u>S5367-1</u>						Client sample id <u>Lab Control Sample</u>						
Dept sample id _____						Material/Matrix _____ LIQUID						
ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3 σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Plutonium 239/240	1.29E-01	16	7.2E-03			PU	1.28E-1	5.0	101	76-124	80-120	96000785

Supernatant liquid

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LAB CONTROL SAMPLES

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-LCS
Version 3.08
Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

S95T0038700

AN102 S1 Radchem Tests

DUPLICATE

WHC-SD-WM-DP-165, REV. 1

SDG 95000222

Contact R. A. Esch

DUPLICATE

Lab sample id S95T0038700

Dept sample id

ORIGINAL

Lab sample id S95T003870

Dept sample id

Received 12/01/95

Client THRS

Tank AN102

Client sample id AN102 S1 Radchem Tests

Location/Matrix R: S: C: LIQUID

Collected

Chain of custody id n/a

ANALYTE	DUPLICATE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST	ORIGINAL uCi/mL	2σ TPU %	MDA uCi/mL	QUALI- FIERS	RPD %	3σ TOT LIMIT	PROT
Total Alpha	1.73E-01	24	2.7E-02			AT	1.75E-01	24	2.7E-02		1	51	31
Strontium 90	7.51E 01	15	1.0E-02		B	SR	7.13E 01	15	1.0E-02	B	5	32	20
Americium 241	1.63E-01	15	1.5E-02			AM	1.67E-01	15	1.6E-02		2	32	20
Plutonium 239/240	6.58E-03	15	3.2E-04			PU	6.52E-03	15	3.2E-04		1	32	20
GEA Analytes													
Cobalt 60	1.51E-01	18	3.0E-03			GEA	1.43E-01	18	3.0E-03		5	38	20
Cesium 137	3.23E 02	15	7.1E-03			GEA	3.22E 02	15	7.1E-03		0	32	20

Supernatant liquid

Loc: Riser: 21A Seg: 2AN-95-1 Core: n/a

Loc: Riser: 21A Seg: 2AN-95-1 Core: n/a

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DUPLICATES

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Lab id 222-S

Protocol GRAB

Version 1.0

Form DVD-DUP

Version 3.08

Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

S95T0038710

AN102 S2 Radchem Tests

DUPLICATE

WHC-SD-WM-DP-165, REV. I

SDG 95000222

Contact R. A. Esch

DUPLICATE

Lab sample id S95T0038710

Dept sample id

ORIGINAL

Lab sample id S95T003871

Dept sample id

Received 12/01/95

Client TWRS

Tank AN102

Client sample id AN102 S2 Radchem Tests

Location/Matrix R: S: C: LIQUID

Collected

Chain of custody id n/a

ANALYTE	DUPLICATE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST	ORIGINAL uCi/mL	2σ TPU %	MDA uCi/mL	QUALI- FIERS	RPD %	3σ TOT	PROT LIMIT
Total Alpha	1.69E-01	25	2.7E-02			AT	1.82E-01	24	2.7E-02		7	52	31
Strontium 90	7.39E 01	15	1.0E-02		B	SR	7.44E 01	15	1.0E-02	B	1	32	20
Americium 241	1.08E-01	15	7.8E-03			AM	1.23E-01	15	8.3E-03		13	32	20
Plutonium 239/240	5.24E-03	15	8.0E-04			PU	5.19E-03	15	6.2E-04		1	32	27
GEA Analytes													
Cobalt 60	1.57E-01	17	3.0E-03			GEA	1.48E-01	18	3.0E-03		6	37	20
Cesium 137	3.12E 02	15	7.1E-03			GEA	3.13E 02	15	7.1E-03		0	32	20

Supernatant liquid

Loc: Riser: 21A Seg: 2AN-95-2 Core: n/a

Loc: Riser: 21A Seg: 2AN-95-2 Core: n/a

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DUPLICATES

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Lab id 222-S

Protocol GRAB

Version 1.0

Form DVD-DUP

Version 3.08

Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

S95T003872D

AN102 S3 Radchem Tests

DUPLICATE
WHC-SD-WM-DP-165, REV. 1

SDG 95000222

Contact R. A. Esch

DUPLICATE

Lab sample id S95T003872D

Dept sample id

ORIGINAL

Lab sample id S95T003872

Dept sample id

Received 12/01/95

Client TWRS

Tank AN102

Client sample id AN102 S3 Radchem Tests

Location/Matrix R: S: C: LIQUID

Collected

Chain of custody id n/a

ANALYTE	DUPLICATE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST	ORIGINAL uCi/mL	2σ TPU %	MDA uCi/mL	QUALI- FIERS	RPD %	3σ TOT	PROT LIMIT
Total Alpha	2.02E-01	23	2.7E-02			AT	1.69E-01	25	2.7E-02		18	51	29
Strontium 90	7.94E 01	15	1.0E-02		B	SR	7.82E 01	15	1.0E-02	B	2	32	20
Americium 241	1.35E-01	15	9.7E-03			AM	1.29E-01	15	9.3E-03		5	32	20
Plutonium 239/240	5.71E-03	15	6.6E-04			PU	5.68E-03	15	6.0E-04		1	32	22
GEA Analytes													
Cobalt 60	1.44E-01	17	3.0E-03			GEA	1.42E-01	18	3.0E-03		1	38	20
Cesium 137	3.28E 02	15	7.1E-03			GEA	3.23E 02	15	7.1E-03		2	32	20

Supernatant liquid

Loc: Riser: 21A Seg: 2AN-95-3 Core: n/a

Loc: Riser: 21A Seg: 2AN-95-3 Core: n/a

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DUPLICATES

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SUMMARY DATA SECTION

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Lab id 222-S

Protocol GRAB

Version 1.0

Form DVD-DUP

Version 3.08

Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

S95T003963D

AN102 S6 Radchem Tests

DUPLICATE

WHC-SD-WM-DP-165, REV. /

SDG 95000222

Contact R. A. Esch

DUPLICATE

Lab sample id S95T003963D

Dept sample id

ORIGINAL

Lab sample id S95T003963

Dept sample id

Received 12/15/95

Client TWRS

Tank AN102

Client sample id AN102 S6 Radchem Tests

Location/Matrix R: S: C: LIQUID

Collected

Chain of custody id n/a

ANALYTE	DUPLICATE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST	ORIGINAL uCi/mL	2σ TPU %	MDA uCi/mL	QUALI- FIERS	RPD %	3σ TOT	PROT LIMIT
Strontium 90	3.20E-05	16	5.0E-07			SR	3.07E-05	16	5.0E-07		4	34	20
Americium 241	<4.6E-04		4.6E-04		U	AM	<4.6E-04		4.6E-04	U	-		
Plutonium 239/240	<3.1E-05		3.1E-05		U	PU	<2.9E-05		2.9E-05	U	-		
GEA Analytes													
Cobalt 60	<3.0E-03		3.0E-03		U	GEA	<3.0E-03		3.0E-03	U	-		
Cesium 137	<7.1E-03		7.1E-03		U	GEA	<7.1E-03		7.1E-03	U	-		

Supernatant liquid

Loc: Riser: 21A Seg: 2AN-95-6 Core: n/a

Loc: Riser: 21A Seg: 2AN-95-6 Core: n/a

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DUPLICATES

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Lab id 222-S

Protocol GRAB

Version 1.0

Form DVD-DUP

Version 3.08

Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

S95T004141D

AN102 S4A FUSION

DUPLICATE

WHC-SD-WM-DP-165, REV. 1

SDG 95000222

Contact R. A. Esch

DUPLICATE

Lab sample id S95T004141D

Dept sample id

ORIGINAL

Lab sample id S95T004141

Dept sample id

Received 12/15/95

Client TWRS

Tank AN102

Client sample id AN102 S4A FUSION FUSION

Location/Matrix R: 21A S: 2AN-95-4A C: n SOLID

Collected

Chain of custody id

ANALYTE	DUPLICATE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST	ORIGINAL uCi/mL	2σ TPU %	MDA uCi/mL	QUALI- FIERS	RPD %	3σ TOT	PROT LIMIT
Total Alpha	4.64E-01	17	9.9E-03			AT	4.59E-01	17	9.8E-03		1	35	20

Supernatant liquid

Loc: Riser: 21A Seg: 2AN-95-4A Core: n/a

Loc: Riser: 21A Seg: 2AN-95-4A Core: n/a

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DUPLICATES

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SUMMARY DATA SECTION

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Lab id 222-S

Protocol GRAB

Version 1.0

Form DVD-DUP

Version 3.08

Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

S95T0041420

AN102 S5A FUSION

DUPLICATE

WHC-SD-WM-DP-165, REV. 1

SDG 95000222

Contact R. A. Esch

DUPLICATE

Lab sample id S95T0041420

Dept sample id

ORIGINAL

Lab sample id S95T004142

Dept sample id

Received 12/15/95

Client THRS

Tank AN102

Client sample id AN102 S5A FUSION FUSION

Location/Matrix R: 21A S: 2AN-95-5A C: n SOLID

Collected

Chain of custody id

ANALYTE	DUPLICATE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST	ORIGINAL uCi/mL	2σ TPU %	MDA uCi/mL	QUALI- FIERS	RPD %	3σ PROT TOT LIMIT
Total Alpha	3.33E-01	17	9.8E-03			AT	3.29E-01	17	9.8E-03		1	37 20

Supernatant liquid

Loc: Riser: 21A Seg: 2AN-95-5A Core: n/a

Loc: Riser: 21A Seg: 2AN-95-5A Core: n/a

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DUPLICATES

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SUMMARY DATA SECTION

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Lab id 222-S

Protocol GRAB

Version 1.0

Form DVD-DUP

Version 3.08

Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

S95T003870S

AN102 S1 Radchem Tests

MATRIX SPIKE

WHC-SD-WM-DP-165, REV. 1

SDG 95000222

Contact R. A. Esch

MATRIX SPIKE

Lab sample id S95T003870S

Dept sample id

ORIGINAL

Lab sample id S95T003870

Dept sample id

Received 12/01/95

Client THRS

Tank AN102

Client sample id AN102 S1 Radchem Tests

Location/Matrix R: S: C: LIQUID

Collected

Chain of custody id n/a

ANALYTE	SPIKE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS TEST	ADDED uCi/mL	2σ ERR %	ORIGINAL uCi/mL	2σ TPU %	REC 3σ LMTS % (TOTAL)	PROTOCOL LIMITS
Total Alpha	2.11E-01				AT	3.92E-2	5.0	1.75E-01	24	92	

Supernatant liquid

Loc: Riser: 21A Seg: 2AN-95-1 Core: n/a

Loc: Riser: 21A Seg: 2AN-95-1 Core: n/a

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MATRIX SPIKES

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Lab id 222-S

Protocol GRAB

Version 1.0

Form DVD-MS

Version 3.08

Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

S95T004141S

AN102 S4A FUSION

MATRIX SPIKE

WHC-SD-WM-DP-165, REV. 1

SDG 95000222

Contact R. A. Esch

MATRIX SPIKE

Lab sample id S95T004141S

Dept sample id

ORIGINAL

Lab sample id S95T004141

Dept sample id

Received 12/15/95

Client TWRS

Tank AN102

Client sample id AN102 S4A FUSION FUSION

Location/Matrix R: 21A S: 2AN-95-4A C: n SOLID

Collected

Chain of custody id

ANALYTE	SPIKE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS TEST	ADDED uCi/mL	2σ ERR %	ORIGINAL uCi/mL	2σ TPU %	REC 3σ % (TOTAL)	LNTS LIMITS
Total Alpha	1.38E 01				AT	1.81E01	5.0	4.59E-01	17	74	81-119 80-120

Supernatant liquid

Loc: Riser: 21A Seg: 2AN-95-4A Core: n/a

Loc: Riser: 21A Seg: 2AN-95-4A Core: n/a

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MATRIX SPIKES

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Lab id 222-S

Protocol GRAB

Version 1.0

Form DVD-MS

Version 3.08

Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

S95T003870

AN102 S1 Radchem Tests

DATA SHEET

WHC-SD-WM-DP-165, REV. 1

SDG <u>95000222</u>	Client <u>TVRS</u>
Contact <u>R. A. Esch</u>	Tank <u>AN102</u>
Lab sample id <u>S95T003870</u>	Client sample id <u>AN102 S1 Radchem Tests</u>
Dept sample id _____	Location/Matrix <u>R: S: C:</u> <u>LIQUID</u>
Received <u>12/01/95</u>	Collected _____
Chain of custody id <u>n/a</u>	

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST
Total Alpha	12587-46-1	1.75E-01	24	2.7E-02			AT
Strontium 90	10098-97-2	7.13E 01	15	1.0E-02		B	SR
Americium 241	14596-10-2	1.67E-01	15	1.6E-02			AM
Plutonium 239/240		6.52E-03	15	3.2E-04			PU
GEA Analytes							
Cobalt 60	10198-40-0	1.43E-01	18	3.0E-03			GEA
Cesium 137	10045-97-3	3.22E 02	15	7.1E-03			GEA

Supernatant liquid

Loc: Riser: 21A Seg: 2AN-95-1 Core: n/a

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Lab id <u>222-S</u>
Protocol <u>GRAB</u>
Version <u>1.0</u>
Form <u>DVD-DS</u>
Version <u>3.08</u>
Report date <u>03/12/96</u>

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

S95T003871

AN102 S2 Radchem Tests

DATA SHEET

WHC-SD-WM-DP-165, REV. 1

SDG 95000222	Client TWRS
Contact R. A. Esch	Tank AN102
Lab sample id S95T003871	Client sample id AN102 S2 Radchem Tests
Dept sample id	Location/Matrix R: S: C: LIQUID
Received 12/01/95	Collected
Chain of custody id n/a	

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST
Total Alpha	12587-46-1	1.82E-01	24	2.7E-02			AT
Strontium 90	10098-97-2	7.44E-01	15	1.0E-02		B	SR
Americium 241	14596-10-2	1.23E-01	15	8.3E-03			AM
Plutonium 239/240		5.19E-03	15	6.2E-04			PU
GEA Analytes							
Cobalt 60	10198-40-0	1.48E-01	18	3.0E-03			GEA
Cesium 137	10045-97-3	3.13E-02	15	7.1E-03			GEA

Supernatant liquid

Loc: Riser: 21A Seg: 2AN-95-2 Core: n/a

Final Report

DATA SHEETS

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SUMMARY DATA SECTION

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-DS
Version 3.08
Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

S95T003872

AN102 S3 Radchem Tests

DATA SHEET

WHC-SD-WM-DP-165, REV. 1

SDG <u>95000222</u>	Client <u>TWRS</u>
Contact <u>R. A. Esch</u>	Tank <u>AN102</u>
Lab sample id <u>S95T003872</u>	Client sample id <u>AN102 S3 Radchem Tests</u>
Dept sample id _____	Location/Matrix R: S: C: _____
Received <u>12/01/95</u>	Collected _____
	Chain of custody id <u>n/a</u>

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST
Total Alpha	12587-46-1	1.69E-01	25	2.7E-02			AT
Strontium 90	10098-97-2	7.82E 01	15	1.0E-02		B	SR
Americium 241	14596-10-2	1.29E-01	15	9.3E-03			AM
Plutonium 239/240		5.68E-03	15	6.0E-04			PU
GEA Analytes							
Cobalt 60	10198-40-0	1.42E-01	18	3.0E-03			GEA
Cesium 137	10045-97-3	3.23E 02	15	7.1E-03			GEA

Supernatant liquid

Loc: Riser: 21A Seg: 2AN-95-3 Core: n/a

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DATA SHEETS
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SUMMARY DATA SECTION
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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-DS
Version 3.08
Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

S95T004141

AN102 S4A FUSION

DATA SHEET

WHC-SD-WM-DP-165, REV 1

SDG 95000222	Client TWRS
Contact R. A. Esch	Tank AN102
Lab sample id S95T004141	Client sample id AN102 S4A FUSION FUSION
Dept sample id	Location/Matrix R: 21A S: 2AN-95-4A C: n SOLID
Received 12/15/95	Collected
Chain of custody id	

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST
Total Alpha	12587-46-1	4.59E-01	17	9.8E-03			AT

Supernatant liquid

Loc: Riser: 21A Seg: 2AN-95-4A Core: n/a

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SUMMARY DATA SECTION

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-DS
Version 3.08
Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

S95T004142

AN102 S5A FUSION

DATA SHEET

WHC-SD-WM-DP-165, REV 1

SDG <u>95000222</u>	Client <u>TWRS</u>
Contact <u>R. A. Esch</u>	Tank <u>AN102</u>
Lab sample id <u>S95T004142</u>	Client sample id <u>AN102 S5A FUSION</u> <u>FUSION</u>
Dept sample id _____	Location/Matrix <u>R: 21A S: 2AN-95-5A C: n</u> <u>SOLID</u>
Received <u>12/15/95</u>	Collected _____
Chain of custody id _____	

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	NDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST
Total Alpha	12587-46-1	3.29E-01	17	9.8E-03			AT

Supernatant liquid

Loc: Riser: 21A Seg: 2AN-95-5A Core: n/a

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DATA SHEETS
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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-DS
Version 3.08
Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

S95T003963

AN102 S6 Radchem Tests

DATA SHEET WHC-SD-WM-DP-165, REV. I

SDG 95000222
Contact R. A. Esch

Client TWRS
Tank AN102

Lab sample id S95T003963
Dept sample id _____
Received 12/15/95

Client sample id AN102 S6 Radchem Tests
Location/Matrix R: S: C: LIQUID
Collected _____
Chain of custody id n/a

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST
Strontium 90	10098-97-2	3.07E-05	16	5.0E-07			SR
Americium 241	14596-10-2	<4.6E-04		4.6E-04		U	AM
Plutonium 239/240		<2.9E-05		2.9E-05		U	PU
GEA Analytes							
Cobalt 60	10198-40-0	<3.0E-03		3.0E-03		U	GEA
Cesium 137	10045-97-3	<7.1E-03		7.1E-03		U	GEA

Supernatant liquid

Loc: Riser: 21A Seg: 2AN-95-6 Core: n/a

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DATA SHEETS

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SUMMARY DATA SECTION

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-DS
Version 3.08
Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

Test AM Matrix LIQUID

SDG 95000222

Contact R. A. Esch

METHOD SUMMARY

AMERICIUM-241

ALPHA SPECTROSCOPY

Client TWRS

Tank AN102

RESULTS

WHC-SD-WM-DP-165, REV. 1

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Americium 241
Preparation batch 96000202					
AN102 S2 Radchem Tests	S95T003871			4767-3	1.23E-01
AN102 S2 Radchem Tests-D	S95T003871D			4767-4	ok
AN102 S3 Radchem Tests	S95T003872			4767-5	1.29E-01
AN102 S3 Radchem Tests-D	S95T003872D			4767-6	ok
DI Blank	B4767-2			4767-2	U
Lab Control Sample	S4767-1			4767-1	ok

Preparation batch 96000342					
AN102 S6 Radchem Tests	S95T003963			4882-5	U
AN102 S6 Radchem Tests-D	S95T003963D			4882-6	- U
DI Blank	B4882-2			4882-2	U
Lab Control Sample	S4882-1			4882-1	ok

Preparation batch 96000674					
AN102 S1 Radchem Tests	S95T003870			5167-3	1.67E-01
AN102 S1 Radchem Tests-D	S95T003870D			5167-4	ok
DI Blank	B5167-2			5167-2	U
Lab Control Sample	S5167-1			5167-1	ok

Nominal values and limits from method

RDLs (uCi/mL)

Supernatant liquid

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METHOD SUMMARIES

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Lab id 222-S

Protocol GRAB

Version 1.0

Form DVD-CMS

Version 3.08

Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

Test AM Matrix LIQUID

SDG 95000222

Contact R. A. Esch

Client TWRS

Tank AN102

METHOD SUMMARY

AMERICIUM-241

ALPHA SPECTROSCOPY

WHC-SD-WM-DP-165, REV. 1

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA UCI/mL	ALIQ ml	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 96000202 2σ prep error 15.0 % Reference																
AN102 S2 Radchem Tests	S95T003871			8.3E-03	1.00	1.00	101	101	50	30					01/10/96	AL105413
AN102 S2 Radchem Tests-D	S95T003871D			7.8E-03	1.00	1.00	101	116	50	30					01/10/96	AL105413
AN102 S3 Radchem Tests	S95T003872			9.3E-03	1.00	1.00	101	106	50	30					01/10/96	AL105413
AN102 S3 Radchem Tests-D	S95T003872D			9.7E-03	1.00	1.00	101	100	50	30					01/10/96	AL105391
DI Blank	B4767-2			1.8E-03	1.00		101	103	50	30					01/10/96	AL105391
Lab Control Sample	S4767-1			3.2E-03	1.00	1.00	101	101	50	30					01/10/96	AL105391
Preparation batch 96000342 2σ prep error 15.0 % Reference																
AN102 S6 Radchem Tests	S95T003963			4.6E-04	0.0500	1.00	1.00	84	50	30					01/17/96	AL105391
AN102 S6 Radchem Tests-D	S95T003963D			4.6E-04	0.0500	1.00	1.00	82	50	30					01/17/96	AL105402
DI Blank	B4882-2			4.2E-04	0.0500		1.00	92	50	30					01/17/96	AL105402
Lab Control Sample	S4882-1			3.8E-03	1.00	1.00	101	90	50	30					01/17/96	AL105391
Preparation batch 96000674 2σ prep error 15.0 % Reference																
AN102 S1 Radchem Tests	S95T003870			1.6E-02	1.00	1.00	201	88	50	30					01/26/96	AL105413
AN102 S1 Radchem Tests-D	S95T003870D			1.5E-02	1.00	1.00	201	90	50	30					01/26/96	AL105413
DI Blank	B5167-2			4.8E-03	1.00		201	83	50	30					01/26/96	AL105413
Lab Control Sample	S5167-1			4.0E-03	1.00	1.00	101	87	50	30					01/26/96	AL105413
Nominal values and limits from method				0.100			30-105	30								
							20-55									

PROCEDURES REFERENCE 222-S Lab Analytical Procedure
 10-160-103 Core Segment Extrusion Process and Sample Preparation, rev 17
 LA-953-103 Determinatin of Americium by Extraction by TRU.Spec Resin, rev 13
 LA-508-104 Total Alpha Counting by Alpha Proportional Counting, rev 14
 LA-508-161 Alpha Energy Analysis Using the Genie System, rev 11

AVERAGES ± 2 SD MDA 6.1E-03 ± 1.0E-02
 FOR 14 SAMPLES YIELD 94 ± 20
 EFFICIENCY 50 ± 0

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 Version 1.0
 Form DVD-CMS
 Version 3.08
 Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

Test PU Matrix LIQUID

SDG 95000222

Contact R. A. Esch

METHOD SUMMARY

PLUTONIUM-239

ALPHA SPECTROSCOPY

Client TRS

Tank AN102

RESULTS

WHC-SD-WM-DP-165, REV. 1

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUF- TEST FIX	PLANCHET	Plutonium 239/240
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Preparation batch 96000201

AN102 S2 Radchem Tests	S95T003871	4766-3	5.19E-03
AN102 S2 Radchem Tests-D	S95T003871D	4766-4	ok
AN102 S3 Radchem Tests	S95T003872	4766-5	5.68E-03
AN102 S3 Radchem Tests-D	S95T003872D	4766-6	ok
DI Blank	B4766-2	4766-2	U
Lab Control Sample	S4766-1	4766-1	ok

Preparation batch 96000785

AN102 S1 Radchem Tests	S95T003870	5367-3	6.52E-03
AN102 S1 Radchem Tests-D	S95T003870D	5367-4	ok
AN102 S6 Radchem Tests	S95T003963	5367-5	U
AN102 S6 Radchem Tests-D	S95T003963D	5367-6	- U
DI Blank	B5367-2	5367-2	U
Lab Control Sample	S5367-1	5367-1	ok

Nominal values and limits from method

RDLs (uCi/mL)

Supernatant liquid

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Lab id 222-s

Protocol GRAB

Version 1.0

Form DVD-CMS

Version 3.08

Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

Test PU Matrix LIQUID
SDG 95000222
Contact R. A. Esch

METHOD SUMMARY

PLUTONIUM-239
ALPHA SPECTROSCOPY

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA uCi/mL	ALIQ mL	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 96000201 2σ prep error 15.0 % Reference																
AN102 S2 Radchem Tests	S95T003871			6.2E-04	1.00	1.00	101	79	50	30				01/10/96		AL105391
AN102 S2 Radchem Tests-D	S95T003871D			8.0E-04	1.00	1.00	101	62	50	30				01/10/96		AL105413
AN102 S3 Radchem Tests	S95T003872			6.0E-04	1.00	1.00	101	84	50	30				01/10/96		AL105391
AN102 S3 Radchem Tests-D	S95T003872D			6.6E-04	1.00	1.00	101	79	50	30				01/10/96		AL105413
DI Blank	B4766-2			8.5E-04	1.00		101	34	50	30				01/10/96		AL105413
Lab Control Sample	S4766-1			9.4E-03	0.100	1.00	101	73	50	30				01/10/96		AL105391

Preparation batch 96000785 2σ prep error 15.0 % Reference																
AN102 S1 Radchem Tests	S95T003870			3.2E-04	0.0500	1.00	1.00	99	50	30				02/06/96		AL105391
AN102 S1 Radchem Tests-D	S95T003870D			3.2E-04	0.0500	1.00	1.00	100	50	30				02/06/96		AL105391
AN102 S6 Radchem Tests	S95T003963			2.9E-05	0.100	1.00	1.00	101	50	30				02/06/96		AL105391
AN102 S6 Radchem Tests-D	S95T003963D			3.1E-05	0.100	1.00	1.00	97	50	30				02/06/96		AL105391
DI Blank	B5367-2			6.2E-05	0.0500		1.00	97	50	30				02/06/96		AL105391
Lab Control Sample	S5367-1			7.2E-03	0.100	1.00	101	100	50	30				02/06/96		AL105391

Nominal values and limits from method 0.100 30-105 30
20-55

PROCEDURES REFERENCE 222-S Lab Analytical Procedure
LO-160-103 Core Segment Extrusion Process and Sample Preparation, rev 17
LA-943-127 Determination of Pu by Ion Exchange, rev 10
LA-508-104 Total Alpha Counting by Alpha Proportional Counting, rev 14
LA-508-161 Alpha Energy Analysis Using the Genie System, rev 11

AVERAGES ± 2 SD MDA 1.7E-03 ± 6.2E-03
FOR 12 SAMPLES YIELD 84 ± 41
EFFICIENCY 50 ± 0

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Lab id 222-s
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Version 3.08
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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

Client TWRS

Tank AN102

METHOD SUMMARY

STRONTIUM-89/90

GAS PROPORTIONAL COUNTING

RESULTS

WHC-SD-WM-DP-165, REV. 1

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Strontium 90
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Preparation batch 96000302

AN102 S1 Radchem Tests	S95T003870	4825-4	7.13E 01
AN102 S1 Radchem Tests-D	S95T003870D	4825-5	ok
AN102 S2 Radchem Tests	S95T003871	4825-6	7.44E 01
AN102 S2 Radchem Tests-D	S95T003871D	4825-7	ok
AN102 S3 Radchem Tests	S95T003872	4825-8	7.82E 01
AN102 S3 Radchem Tests-D	S95T003872D	4825-9	ok
DI Blank	B4825-2	4825-2	7.90E-02
Lab Control Sample	S4825-1	4825-1	ok

Preparation batch 96000339

AN102 S6 Radchem Tests	S95T003963	4888-4	3.07E-05
AN102 S6 Radchem Tests-D	S95T003963D	4888-5	ok
DI Blank	B4888-2	4888-2	U
Lab Control Sample	S4888-1	4888-1	ok

Nominal values and limits from method

RDLs (uCi/mL)

Supernatant liquid

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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

Test SR Matrix LIQUID

SDG 95000222

Contact R. A. Esch

METHOD SUMMARY

STRONTIUM-89/90

GAS PROPORTIONAL COUNTING

Client TWRS

Tank AN102

WHC-SD-WM-DP-165, REV. 1

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUF- TEST FIX	MDA UCI/mL	ALIQ ml	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT keV	DAYS HELD	ANAL- PREPARED	DETECTOR
Preparation batch 96000302 2σ prep error 15.0 % Reference														
AN102 S1 Radchem Tests	S95T003870		1.0E-02	0.0250	1.00	101	96	42	10				01/15/96	WB2781112
AN102 S1 Radchem Tests-D	S95T003870D		1.0E-02	0.0250	1.00	101	95	42	10				01/15/96	WB2781112
AN102 S2 Radchem Tests	S95T003871		1.0E-02	0.0250	1.00	101	96	42	10				01/15/96	WB2781112
AN102 S2 Radchem Tests-D	S95T003871D		1.0E-02	0.0250	1.00	101	96	42	10				01/15/96	WB2781112
AN102 S3 Radchem Tests	S95T003872		1.0E-02	0.0250	1.00	101	95	42	10				01/15/96	WB2781112
AN102 S3 Radchem Tests-D	S95T003872D		1.0E-02	0.0250	1.00	101	95	42	10				01/15/96	WB2781112
DI Blank	B4825-2		1.0E-02	0.0250		101	96	42	10				01/15/96	WB2781112
Lab Control Sample	S4825-1		2.5E-06	1.00	1.00	1.00	97	42	10				01/15/96	WB2781112

Preparation batch 96000339 2σ prep error 15.0 % Reference														
AN102 S6 Radchem Tests	S95T003963		5.0E-07	5.00	1.00	1.00	95	42	10				01/16/96	WB2781112
AN102 S6 Radchem Tests-D	S95T003963D		5.0E-07	5.00	1.00	1.00	95	42	10				01/16/96	WB2781112
DI Blank	B4888-2		5.0E-07	5.00		1.00	95	42	10				01/16/96	WB2781112
Lab Control Sample	S4888-1		2.6E-06	1.00	1.00	1.00	93	42	10				01/16/96	WB2781112

Nominal values and limits from method 0.100 30-105 10
20-55

PROCEDURES REFERENCE 222-S Lab Analytical Procedure
LO-160-103 Core Segment Extrusion Process and Sample Preparation, rev 17
LA-220-101 High level Strontium 89/90 in aqueous samples, rev 41
LA-508-11NB Operation of the [Tennelec LB-5500 (n=0, A-5), LB-1000 (n=1, A-3), Gamma Products (n=4, A-2)] Alpha/Beta Counting Systems

AVERAGES ± 2 SD MDA 5.8E-03 ± 1.0E-02
FOR 12 SAMPLES YIELD 95 ± 2
EFFICIENCY 42 ± 0

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METHOD SUMMARIES

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Lab id 222-S

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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

Test AT Matrix LIQUID
SDG 95000222
Contact R. A. Esch

Client TURS
Tank AN102

METHOD SUMMARY

ALPHA ANALYSIS
GAS PROPORTIONAL COUNTING

WHC-SD-WM-DP-165, REV. /

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUF- TEST FIX	PLANCHET	1: Total Alpha	2: Sum, Alpha Emitters	RESULT RATIO (%) 2+1 2σ
Preparation batch 96000688						
AN102 S4A FUSION FUSION	S95T004141		5177-4	4.59E-01		
AN102 S4A FUSION-DUP FUS	S95T004141D		5177-5	ok		
AN102 S4A FUSION-SPK FUS	S95T004141S		5177-6	LOW		
AN102 S5A FUSION FUSION	S95T004142		5177-7	3.29E-01		
AN102 S5A FUSION-DUP FUS	S95T004142D		5177-8	ok		
Nominal values and limits from method				RDLs (uCi/mL) Supernatant liquid		80 Average

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUF- TEST FIX	MDA uCi/mL	ALIQ ml	PREP FAC	DILU- TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 96000688 2σ prep error 15.0 % Reference															
AN102 S4A FUSION FUSION	S95T004141		9.8E-03	0.0500	463	1.00		24	30			01/24/96	01/26	WB26872	
AN102 S4A FUSION-DUP FUS	S95T004141D		9.9E-03	0.0500	468	1.00		24	30			01/24/96	01/26	WB26872	
AN102 S4A FUSION-SPK FUS	S95T004141S			0.0500	463	1.00		24	30			01/24/96	01/26	WB26872	
AN102 S5A FUSION FUSION	S95T004142		9.8E-03	0.0500	463	1.00		24	30			01/24/96	01/26	WB26872	
AN102 S5A FUSION-DUP FUS	S95T004142D		9.8E-03	0.0500	464	1.00		24	30			01/24/96	01/26	WB26872	
Nominal values and limits from method				0.100				30							
20-55															

PROCEDURES REFERENCE 222-S Lab Analytical Procedure
LO-160-103 Core Segment Extrusion Process and Sample Preparation, rev 17
LA-549-141 Fusion with Alkali Metal Hydroxide, rev 40
LA-508-101A Alpha in liquid samples, rev 42
LA-508-11NA Operation of the [Tennelec LB-5500 (n=0, A-5), LB-1000 (n=1, A-3), Gamma Products (n=4, A-2)] Alpha/Beta Counting Systems

AVERAGES ± 2 SD MDA 9.8E-03 ± 1.0E-04
FOR 5 SAMPLES EFFICIENCY 24 ± 0

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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

Test AT Matrix LIQUID

SDG 95000222

Contact R. A. Esch

METHOD SUMMARY

ALPHA ANALYSIS

GAS PROPORTIONAL COUNTING

Client THRS

Tank AN102

RESULTS

WHC-SD-WM-DP-165, REV 1

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	1: Total Alpha	2: Sum, Alpha Emitters	RESULT RATIO (%)	
							2+1	2σ
Preparation batch 96000301								
AN102 S1 Radchem Tests	S95T003870			4826-4	1.75E-01	1.74E-01	99	28
AN102 S1 Radchem Tests-D	S95T003870D			4826-5	ok	1.70E-01	98	28
AN102 S1 Radchem Tests-S	S95T003870S			4826-6	ok			
AN102 S2 Radchem Tests	S95T003871			4826-7	1.82E-01	1.28E-01	70	20
AN102 S2 Radchem Tests-D	S95T003871D			4826-8	ok	1.13E-01	67	19
AN102 S3 Radchem Tests	S95T003872			4826-9	1.69E-01	1.35E-01	80	23
AN102 S3 Radchem Tests-D	S95T003872D			4826-10	ok	1.41E-01	70	19
DI Blank	B4826-2			4826-2	U			
Lab Control Sample	S4826-1			4826-1	ok			

Nominal values and limits from method

RDLs (uCi/mL)

80

Supernatant liquid

Average 81

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA uCi/mL	ALIQ mL	PREP FAC	DILU- TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 96000301 2σ prep error 15.0 % Reference																
AN102 S1 Radchem Tests	S95T003870			2.7E-02	1.00	1.00	20300		23	30				01/12/96		WB27807
AN102 S1 Radchem Tests-D	S95T003870D			2.7E-02	1.00	1.00	20300		23	30				01/12/96		WB27807
AN102 S1 Radchem Tests-S	S95T003870S				1.00	1.00	1.00		23	30				01/12/96		WB27807
AN102 S2 Radchem Tests	S95T003871			2.7E-02	1.00	1.00	20300		23	30				01/12/96		WB27807
AN102 S2 Radchem Tests-D	S95T003871D			2.7E-02	1.00	1.00	20300		23	30				01/12/96		WB27807
AN102 S3 Radchem Tests	S95T003872			2.7E-02	1.00	1.00	20300		23	30				01/12/96		WB27807
AN102 S3 Radchem Tests-D	S95T003872D			2.7E-02	1.00	1.00	20300		23	30				01/12/96		WB27807
DI Blank	B4826-2			2.7E-02	1.00		20300		23	30				01/12/96		WB27807
Lab Control Sample	S4826-1			1.3E-07	10.0	1.00	1.00		23	30				01/12/96		WB27807

Nominal values and limits from method

0.100

30

20-55

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Lab id 222-S

Protocol GRAB

Version 1.0

Form DVD-CMS

Version 3.08

Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

Test AT Matrix LIQUID

SDG 95000222

Contact R. A. Esch

METHOD SUMMARY, cont.

ALPHA ANALYSIS

GAS PROPORTIONAL COUNTING

Client TWRS

Tank AN102

WHC-SD-WM-DP-165, REV. I

PROCEDURES	REFERENCE	222-S Lab Analytical Procedure
LO-160-103	Core Segment Extrusion Process and Sample Preparation, rev 17	
LA-508-101A	Alpha in liquid samples, rev 42	
LA-508-11WA	Operation of the [Tennelec LB-5500 (n=0, A-5), LB-1000 (n=1, A-3), Gamma Products (n=4, A-2)] Alpha/Beta Counting Systems	

AVERAGES ± 2 SD

MDA $2.4E-02 \pm 1.9E-02$

FOR 9 SAMPLES

EFFICIENCY 23 ± 0

Final Report

METHOD SUMMARIES

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Lab id 222-S

Protocol GRAB

Version 1.0

Form DVD-CMS

Version 3.08

Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

Test AT Matrix SOLID
SDG 95000222
Contact R. A. Esch

METHOD SUMMARY

ALPHA ANALYSIS
GAS PROPORTIONAL COUNTING

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	1: Total Alpha	2: Sum, Alpha Emitters	RESULT RATIO (%) 2+1 2σ
Preparation batch 96000688						
Method Blank	B5177-2		5177-2	U		
Lab Control Sample	S5177-1		5177-1	ok		
Nominal values and limits from method				RDLs (uCi/g) Sludge		80 Average

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- uc/g	MDA ml	ALIQ FAC	PREP TION	DILU- mg	RESID %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 96000688																
Method Blank	B5177-2		9.8E-03	0.0500	463	1.00		24	30					01/26/96	WB26872	
Lab Control Sample	S5177-1		4.9E-05	10.0	463	1.00		24	30					01/26/96	WB26872	
Nominal values and limits from method				0.100					30							
								20-55								

PROCEDURES REFERENCE 222-S Lab Analytical Procedure
LO-160-103 Core Segment Extrusion Process and Sample Preparation, rev 17
LA-549-141 Fusion with Alkali Metal Hydroxide, rev 40
LA-508-101A Alpha in liquid samples, rev 42
LA-508-11NA Operation of the [Tennelec LB-5500 (n=0, A-5), LB-1000 (n=1, A-3), Gamma Products (n=4, A-2)] Alpha/Beta Counting Systems

AVERAGES ± 2 SD MDA 4.9E-03 ± 1.4E-02
FOR 2 SAMPLES EFFICIENCY 24 ± 0

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Version 3.08
Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

Test GEA Matrix LIQUID

SDG 95000222

Contact R. A. Esch

Client TWRS

Tank AN102

METHOD SUMMARY

GAMMA SPECTROSCOPY

GAMMA ENERGY ANALYSIS

WHC-SD-WM-DP-165, REV. 1

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Cobalt 60	Cesium 137	Americium 241	Europium 154	Europium 155
Preparation batch 96000316								
AN102 S1 Radchem Tests	S95T003870		4865-3	1.43E-01	3.22E 02			
AN102 S1 Radchem Tests-D	S95T003870D		4865-4	ok	ok			
AN102 S2 Radchem Tests	S95T003871		4865-5	1.48E-01	3.13E 02			
AN102 S2 Radchem Tests-D	S95T003871D		4865-6	ok	ok			
AN102 S3 Radchem Tests	S95T003872		4865-7	1.42E-01	3.23E 02			
AN102 S3 Radchem Tests-D	S95T003872D		4865-8	ok	ok			
AN102 S6 Radchem Tests	S95T003963		4865-9	U	U			
AN102 S6 Radchem Tests-D	S95T003963D		4865-10	- U	- U			
DI Blank	B4865-2		4865-2	U	U			
Lab Control Sample	S4865-1		4865-1	ok	ok			

Nominal values and limits from method

RDLS (uCi/mL)

Supernatant liquid

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- uCi/mL	MAX MDA mL	ALIQ mL	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 96000316 2σ prep error 15.0 % Reference																
AN102 S1 Radchem Tests	S95T003870		7.1E-03	1.00	1.00	101				50				01/15/96		GEA02
AN102 S1 Radchem Tests-D	S95T003870D		7.1E-03	1.00	1.00	101				50				01/15/96		GEA02
AN102 S2 Radchem Tests	S95T003871		7.1E-03	1.00	1.00	101				50				01/15/96		GEA02
AN102 S2 Radchem Tests-D	S95T003871D		7.1E-03	1.00	1.00	101				50				01/15/96		GEA02
AN102 S3 Radchem Tests	S95T003872		7.1E-03	1.00	1.00	101				50				01/15/96		GEA02
AN102 S3 Radchem Tests-D	S95T003872D		7.1E-03	1.00	1.00	1.00				50				01/15/96		GEA02
AN102 S6 Radchem Tests	S95T003963		7.1E-03	1.00	1.00	1.00				50				01/15/96		GEA02
AN102 S6 Radchem Tests-D	S95T003963D		7.1E-03	0	1.00	1.00				50				01/15/96		GEA02
DI Blank	B4865-2		7.1E-03	1.00		101				50				01/15/96		GEA02
Lab Control Sample	S4865-1			1.00		1.00				50				01/15/96		GEA02

Nominal values and limits from method

0.100

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METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id 222-S

Protocol GRAB

Version 1.0

Form DVD-CMS

Version 3.08

Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

Test GEA Matrix LIQUID

SDG 95000222

Contact R. A. Esch

METHOD SUMMARY, cont.

GAMMA SPECTROSCOPY

GAMMA ENERGY ANALYSIS

Client THRS

Tank AN102

WHC-SD-WM-DP-165, REV. /

PROCEDURES	REFERENCE	222-S Lab Analytical Procedure
	LO-160-103	Core Segment Extrusion Process and Sample Preparation, rev 17
	LA-548-121	Preparation of Sample Mounts for Gamma Energy Analysis, rev 41
	LA-508-162	Gamma Energy Analysis - the Genie System, rev 11

AVERAGES $\pm$ 2 SD
FOR 9 SAMPLES

MDA 7.1E-03 $\pm$ 0.0E 00
YIELD $\pm$

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METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id 222-s

Protocol GRAB

Version 1.0

Form DVD-CMS

Version 3.08

Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222
Contact R. A. Esch**REPORT GUIDE**Client TWRS
Tank AN102**SAMPLE SUMMARY** WHC-SD-WM-DP-165, REV. I

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

- * LAB SAMPLE ID is the lab's primary identification for a sample.
- * DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.
- * CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.
- * QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.
- * All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

Final Report**REPORT GUIDES**

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-RG
Version 3.08
Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222

Contact R. A. Esch

Client TWRS

Tank AN102

REPORT GUIDE

PREPARATION BATCH SUMMARY

WHC-SD-WM-DP-165, REV. I

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

- * The preparation batches are shown in the same order as the Method Summary Reports are printed.
- * Only analyses of planchets relevant to the SDG are included.
- * Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.
- * The QUALIFIERS shown are all qualifiers other than U, J, B, L and M that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

These qualifiers should be reviewed as follows:

- X Some data has been manually entered or modified. Transcription errors are possible.
- P One or more results are 'preliminary'. The data is not ready for final reporting.
- 2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

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REPORT GUIDES

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Lab id 222-S

Protocol GRAB

Version 1.0

Form DVD-RG

Version 3.08

Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222Contact R. A. Esch**REPORT GUIDE**Client IWRSTank AN102**WORK SUMMARY**

WHC-SD-WM-DP-165, REV. 1

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

- * TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.
- * SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.
- * The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.
- * PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.
- * For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.
- * The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

Final Report**REPORT GUIDES**

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SUMMARY DATA SECTION

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Lab id 222-SProtocol GRABVersion 1.0Form DVD-RGVersion 3.08Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222
Contact R. A. Esch**REPORT GUIDE**Client TWRS
Tank AN102**DATA SHEET**
WHC-SD-WM-DP-165, REV. 1

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

- * TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.
- * The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

- * ERRORS can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.
- * A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.
- * When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

- U The RESULT is less than the MDA (Minimum Detectable Activity). If the MDA is blank, the ERROR is used as the limit.

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SUMMARY DATA SECTION

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-RG
Version 3.08
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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222
Contact R. A. Esch

GUIDE, cont.

Client TWRS
Tank AN102

DATA SHEET

WHC-SD-WM-DP-165, REV. 1

- J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.
- B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.
- Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.
- For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.
- L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.
- H Similar to 'L' except the recovery was high.
- P The RESULT is 'preliminary'.
- X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.
- 2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.
- Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

- * An MDA is underlined if it is bigger than its RDL.
- * An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA

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Lab id 222-s
Protocol GRAB
Version 1.0
Form DVD-RG
Version 3.08
Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222
Contact R. A. Esch**GUIDE, cont.**Client TWRS
Tank AN102**DATA SHEET**

WHC-SD-WM-DP-165, REV. 1

may not be a good estimate of the 'real' minimum detectable activity.

- * A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.
- * When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

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Lab id 222-S
Protocol GRAB
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Form DVD-RG
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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222

Contact R. A. Esch

REPORT GUIDE

Client TWRS

Tank AN102

LAB CONTROL SAMPLE

WHC-SD-WM-DP-165, REV. 1

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.
- * An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.
- * REC (Recovery) is RESULT divided by ADDED expressed as a percent.
- * The first, computed limits for the recovery reflect:
 1. The error of RESULT, including that introduced by rounding the result prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.
 2. The error of ADDED.
 3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- * The second limits are protocol defined upper and lower QC limits for the recovery.
- * The recovery is underlined if it is outside either of these ranges.

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Protocol GRAB
Version 1.0
Form DVD-RG
Version 3.08
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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222

Contact R. A. Esch

REPORT GUIDE

Client TWRS

Tank AN102

DUPLICATE

WHC-SD-WM-DP-165, REV. 1

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTS divided by their average expressed as a percent.

If both RESULTS are less than their MDAs, no RPD is computed and a '-' is printed.

For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

- * The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTS prior to printing.

If this limit is labeled TOT, it includes the preparation error in the RESULTS. If labeled CNT, it does not.

This value reported for this limit is at most 999.

The second limit for the RPD is the larger of:

1. A fixed percentage specified in the protocol.

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SUMMARY DATA SECTION

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Lab id 222-S

Protocol GRAB

Version 1.0

Form DVD-RG

Version 3.08

Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

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Contact R. A. Esch**GUIDE, cont.**Client TWRS
Tank AN102**DUPLICATE**

WHC-SD-WM-DP-165, REV. I

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

- * The RPD is underlined if it is greater than either limit.
- * If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

- * The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

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REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-RG
Version 3.08
Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222Contact R. A. Esch**REPORT GUIDE**Client TWRSTank AN102**MATRIX SPIKE**

WHC-SD-WM-DP-165, REV. 1

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.
- * An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.
- * REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.
- * The first, computed limits for the recovery reflect:
 1. The errors of the two RESULTS, including those introduced by rounding them prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.
 2. The error of ADDED.
 3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- * The second limits are protocol defined upper and lower QC limits for the recovery.

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Lab id 222-S
Protocol GRAB
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Form DVD-RG
Version 3.08
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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222Contact R. A. Esch**GUIDE, cont.**Client IWRSTank AN102**MATRIX SPIKE**

WHC-SD-WM-DP-165, REV. 1

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

* The recovery is underlined (out of spec) if it is outside either of these ranges.

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90Lab id 222-SProtocol GRABVersion 1.0Form DVD-RGVersion 3.08Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222

Contact R. A. Esch

REPORT GUIDE

Client TWRS

Tank AN102

METHOD SUMMARY

WHC-SD-WM-DP-165, REV 1

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

- * Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

- * The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

- * If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

The J and X flags are as on the data sheet.

- * Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.

- * Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data' means no amount ADDED was specified. 'LOW' and 'HIGH'

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Lab id 222-S

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Version 1.0

Form DVD-RG

Version 3.08

Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222
Contact R. A. Esch

GUIDE, cont.

Client TWRS
Tank AN102

METHOD SUMMARY

WHC-SD-WM-DP-165, REV. 1

correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

~ Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.

- * If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

MDAs are underlined if greater than the printed RDL.

- * Aliquots are underlined if less than the nominal value specified for the method.
- * Preparation factors are underlined if greater than the nominal value specified for the QC batch.
- * Dilution factors are underlined if greater than the nominal value specified for the method.
- * Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.
- * Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.
- ~ Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.
- ~ Count times are underlined if less than the nominal value

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REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id 222-S
Protocol GRAB
Version 1.0
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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222Contact R. A. Esch**GUIDE, cont.**Client TWRSTank AN102**METHOD SUMMARY**

WHC-SD-WM-DP-165, REV. I

specified for the method.

- * Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.
- * Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.
- * Days Held (Analyzed - Collected) are underlined if greater than the holding time specified in the protocol.
- * Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1+3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included.

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SUMMARY DATA SECTION

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Lab id 222-S
Protocol GRAB
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Form DVD-RG
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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222

Contact R. A. Esch

GUIDE, cont.

Client TWRS

Tank AN102

METHOD SUMMARY

WHC-SD-WM-DP-165, REV. 1

No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

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REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id 222-S

Protocol GRAB

Version 1.0

Form DVD-RG

Version 3.08

Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

SDG 95000227
Contact R. A. Esch

SAMPLE SUMMARY

Client THRS
Tank AN102

WHC-SD-WM-DP-165, REV. I

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	PRIORITY COLLECTED	RECEIVED
102AN R22A S1 Safety Scr	R: 22A S: 102-AN-1 C: n/	LIQUID		S95T003982		02/16/95 13:20
102AN R22A S1 Safety Scr	R: 22A S: 102-AN-1 C: n/	LIQUID		S95T003982D		
102AN R22A S2 Safety Scr	R: 22A S: 102-AN-2 C: n/	LIQUID		S95T003983		02/16/95 13:32
102AN R22A S2 Safety Scr	R: 22A S: 102-AN-2 C: n/	LIQUID		S95T003983D		
102AN R22A S4 Safety Scr	R: 22A S: 102-AN-4 C: n/	LIQUID		S95T003984		10/24/94 00:00
102AN R22A S4 Safety Scr	R: 22A S: 102-AN-4 C: n/	LIQUID		S95T003984D		
102AN S3A Dec Liq Sfty S	R: 22A S: 102-AN-3 C: n/	LIQUID		S96T000005		10/24/94 00:00
102AN S3A Dec Liq Sfty S	R: 22A S: 102-AN-3 C: n/	LIQUID		S96T000005D		
102AN S3A Dec Liq Sfty S	R: 22A S: 102-AN-3 C: n/	LIQUID		S96T000005S		
102AN S3A FUSION	R: 22A S: 102-AN-3 C: n/ FUSION	SOLID		S96T000007		10/24/94 00:00
102AN S3A FUSION-DUP	R: 22A S: 102-AN-3 C: n/ FUSION	SOLID		S96T000007D		
102AN S3A FUSION-SPK	R: 22A S: 102-AN-3 C: n/ FUSION	SOLID		S96T000007S		
102AN S3B Dec Liq Sfty S	R: 22A S: 102-AN-3 C: n/	LIQUID		S96T000006		02/16/95 14:55
102AN S3B Dec Liq Sfty S	R: 22A S: 102-AN-3 C: n/	LIQUID		S96T000006D		
102AN S3B FUSION	R: 22A S: 102-AN-3 C: n/ FUSION	SOLID		S96T000008		02/16/95 14:55
102AN S3B FUSION-DUP	R: 22A S: 102-AN-3 C: n/ FUSION	SOLID		S96T000008D		
DI Blank		LIQUID		B4800-2		
DI Blank		LIQUID		B4967-2		
Method Blank		SOLID		B5177-2		
Lab Control Sample		LIQUID		S4800-1		
Lab Control Sample		LIQUID		S4967-1		
Lab Control Sample		SOLID		S5177-1		

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SAMPLE SUMMARY

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SUMMARY DATA SECTION

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Lab id 222-s
Protocol GRAB
Version 1.0
Form DVD-CS
Version 3.08
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WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

SDG 95000227

Contact R. A. Esch

QC SUMMARY

Client TWRS

Tank AN102

WHC-SD-WM-DP-165, REV. I

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	X MOIST	SAMPLE AMOUNT	BASIS AMOUNT	DAYS FROM/TO		LAB SAMPLE ID	DEPARTMENT SAMPLE ID
							COLL	RCVD		
95000227-F		102AN S3A FUSION	FUSION	SOLID				505	S96T000007	
		102AN S3B FUSION	FUSION	SOLID				390	S96T000008	
		102AN S3A FUSION-DUP	FUSION	SOLID				505	S96T000007D	
		102AN S3A FUSION-SPK	FUSION	SOLID				505	S96T000007S	
		102AN S3B FUSION-DUP	FUSION	SOLID				390	S96T000008D	
95000227-L		102AN R22A S1 Safety Scr	LIQUID					390	S95T003982	
		102AN R22A S2 Safety Scr	LIQUID					390	S95T003983	
		102AN R22A S4 Safety Scr	LIQUID					505	S95T003984	
		102AN S3A Dec Liq Sfty S	LIQUID					505	S96T000005	
		102AN S3B Dec Liq Sfty S	LIQUID					390	S96T000006	
		102AN R22A S1 Safety Scr	LIQUID					390	S95T003982D	
		102AN R22A S2 Safety Scr	LIQUID					390	S95T003983D	
		102AN R22A S4 Safety Scr	LIQUID					505	S95T003984D	
		102AN S3A Dec Liq Sfty S	LIQUID					505	S96T000005D	
		102AN S3A Dec Liq Sfty S	LIQUID					505	S96T000005S	
		102AN S3B Dec Liq Sfty S	LIQUID					390	S96T000006D	
LIQUID		DI Blank	LIQUID						B4800-2	
		DI Blank	LIQUID						B4967-2	
		Lab Control Sample	LIQUID						S4800-1	
		Lab Control Sample	LIQUID						S4967-1	
SOLID		Method Blank	SOLID						B5177-2	
		Lab Control Sample	SOLID						S5177-1	

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QC SUMMARY

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Lab id 222-S

Protocol GRAB

Version 1.0

Form DVD-QS

Version 3.08

Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

SDG 95000227
Contact R. A. Esch

PREP BATCH SUMMARY

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED						QUALIFIERS
			BATCH	2σ %	CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	
Gas Proportional Counting											
AT	LIQUID	Alpha Analysis	96000688	15.0	2				2/2	1/1	
		Alpha Analysis	96000249	15.0	3			1	1	3/3	
			96000430	15.0	2			1	1	2/2	1/1
	SOLID	Alpha Analysis	96000688	15.0				1	1		

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.
Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

Final Report

PREP BATCH SUMMARY

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SUMMARY DATA SECTION

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-PBS
Version 3.08
Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

SDG 95000227

Contact R. A. Esch

Client TWRS

Tank AN102

WORK SUMMARY

WHC-SD-WM-DP-165, REV. 1

CLIENT SAMPLE ID	MATRIX	LAB SAMPLE ID								
LOCATION		COLLECTED				SUF-				
CUSTODY	Priority	RECEIVED	PLANCHET	TEST		FIX	ANALYZED	REVIEWED	BY	METHOD
102AM R22A S1 Safety Scr		S95T003982	4800-4	AT			01/15/96		SLF	Alpha Analysis
R: 22A S: 102-AN-1 C: n/ LIQUID		02/16/95								
102AM R22A S1 Safety Scr		S95T003982D	4800-5	AT			01/15/96		SLF	Alpha Analysis
R: 22A S: 102-AN-1 C: n/ LIQUID		02/16/95								
102AM R22A S2 Safety Scr		S95T003983	4800-7	AT			01/15/96		SLF	Alpha Analysis
R: 22A S: 102-AN-2 C: n/ LIQUID		02/16/95								
102AM R22A S2 Safety Scr		S95T003983D	4800-8	AT			01/15/96		SLF	Alpha Analysis
R: 22A S: 102-AN-2 C: n/ LIQUID		02/16/95								
102AM R22A S4 Safety Scr		S95T003984	4800-9	AT			01/15/96		SLF	Alpha Analysis
R: 22A S: 102-AN-4 C: n/ LIQUID		10/24/94								
102AM R22A S4 Safety Scr		S95T003984D	4800-10	AT			01/15/96		SLF	Alpha Analysis
R: 22A S: 102-AN-4 C: n/ LIQUID		10/24/94								
102AM S3A Dec Liq Sfty S		S96T000005	4967-4	AT			01/19/96		SLF	Alpha Analysis
R: 22A S: 102-AN-3 C: n/ LIQUID		10/24/94								
102AM S3A Dec Liq Sfty S		S96T000005D	4967-5	AT			01/19/96		SLF	Alpha Analysis
R: 22A S: 102-AN-3 C: n/ LIQUID		10/24/94								
102AM S3A Dec Liq Sfty S		S96T000005S	4967-6	AT			01/19/96		SLF	Alpha Analysis
R: 22A S: 102-AN-3 C: n/ LIQUID		10/24/94								
102AM S3A FUSION	FUSION	S96T000007	5177-9	AT			01/26/96		SLF	Alpha Analysis
R: 22A S: 102-AN-3 C: n/ SOLID		10/24/94								

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WORK SUMMARY

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-CMS
Version 3.08
Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

SDG 95000227
Contact R. A. Esch

WORK SUMMARY, cont.

Client IWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

CLIENT SAMPLE ID		LAB SAMPLE ID								
LOCATION	MATRIX	COLLECTED		TEST	SUF-					
CUSTODY	Priority	RECEIVED	PLANCHET		FIX	ANALYZED	REVIEWED	BY	METHOD	
102AN S3A FUSION-DUP	FUSION	S96T000007D	5177-10	AT		01/26/96		SLF	Alpha Analysis	
R: 22A S: 102-AN-3 C: n/	SOLID									
		10/24/94								
102AN S3A FUSION-SPK	FUSION	S96T000007S	5177-11	AT		01/26/96		SLF	Alpha Analysis	
R: 22A S: 102-AN-3 C: n/	SOLID									
		10/24/94								
102AN S3B Dec Liq Sfty S		S96T0000006	4967-7	AT		01/19/96		SLF	Alpha Analysis	
R: 22A S: 102-AN-3 C: n/	LIQUID									
		02/16/95								
102AN S3B Dec Liq Sfty S		S96T000006D	4967-8	AT		01/19/96		SLF	Alpha Analysis	
R: 22A S: 102-AN-3 C: n/	LIQUID									
		02/16/95								
102AN S3B FUSION	FUSION	S96T0000008	5177-12	AT		01/26/96		SLF	Alpha Analysis	
R: 22A S: 102-AN-3 C: n/	SOLID									
		02/16/95								
102AN S3B FUSION-DUP	FUSION	S96T000008D	5177-13	AT		01/26/96		SLF	Alpha Analysis	
R: 22A S: 102-AN-3 C: n/	SOLID									
		02/16/95								
DI Blank		B4800-2	4800-2	AT		01/15/96		SLF	Alpha Analysis	
	LIQUID									
DI Blank		B4967-2	4967-2	AT		01/19/96		SLF	Alpha Analysis	
	LIQUID									
Method Blank		B5177-2	5177-2	AT		01/26/96		SLF	Alpha Analysis	
	SOLID									
Lab Control Sample		S4800-1	4800-1	AT		01/15/96		SLF	Alpha Analysis	
	LIQUID									
Lab Control Sample		S4967-1	4967-1	AT		01/19/96		SLF	Alpha Analysis	
	LIQUID									

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WORK SUMMARY

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-CWS
Version 3.08
Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

SDG 95000227
Contact R. A. Esch

WORK SUMMARY, cont.

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

CLIENT SAMPLE ID	LAB SAMPLE ID								
LOCATION	MATRIX	COLLECTED		TEST	SUF-				
CUSTODY	Priority	RECEIVED	PLANCHET		FIX	ANALYZED	REVIEWED	BY	METHOD
Lab Control Sample		S5177-1	5177-1	AT		01/26/96		SLF	Alpha Analysis
	SOLID								

COUNTS OF TESTS BY SAMPLE TYPE										
TEST	Priority	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AT		Alpha Analysis	222-S Lab Analytical Procedure	2			1	1	2	7
AT		Alpha Analysis	222-S Lab Analytical Procedure	5			2	2	5	15
TOTALS				7			3	3	7	22

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WORK SUMMARY

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-CMS
Version 3.08
Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

SDG 95000227
Contact R. A. Esch

BLANKS

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

Lab sample id <u>B4800-2</u>		Client sample id <u>DI Blank</u>					
Dept sample id _____		Material/Matrix _____ LIQUID					
ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST PREP BATCH
Total Alpha	12587-46-1	<2.2E-02		2.2E-02		U	AT 96000249

Lab sample id <u>B4967-2</u>		Client sample id <u>DI Blank</u>					
Dept sample id _____		Material/Matrix _____ LIQUID					
ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST PREP BATCH
Total Alpha	12587-46-1	<1.9E-02		1.9E-02		U	AT 96000430

Lab sample id <u>B5177-2</u>		Client sample id <u>Method Blank</u>					
Dept sample id _____		Material/Matrix _____ SOLID					
ANALYTE	CAS NO	RESULT uCi/g	σ TPU %	MDA uCi/g	RDL uCi/g	QUALI- FIERS	TEST PREP BATCH
Total Alpha	12587-46-1	<9.8E-03		9.8E-03		U	AT 96000688

Sludge

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BLANKS

Page 1

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-BLANK
Version 3.08
Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

LAB CONTROL SAMPLES

WHC-SD-WM-DP-165, REV. I

SDG 95000227

Contact R. A. Esch

Client TWRS

Tank AN102

Lab sample id <u>S4800-1</u>							Client sample id <u>Lab Control Sample</u>						
Dept sample id _____							Material/Matrix _____ <u>LIQUID</u>						
ANALYTE	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST	ADDED uCi/mL	2σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH	
Total Alpha	1.55E-05	15	1.1E-07			AT	1.54E-5	5.0	101	75-125	70-123	96000249	

Lab sample id <u>S4967-1</u>					Client sample id <u>Lab Control Sample</u>							
Dept sample id _____					Material/Matrix _____ <u>LIQUID</u>							
ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Total Alpha	1.62E-05	15	9.5E-08			AT	1.54E-5	5.0	105	74-126	70-123	96000430

Lab sample id <u>S5177-1</u>							Client sample id <u>Lab Control Sample</u>					
Dept sample id _____							Material/Matrix _____ SOLID					
ANALYTE	RESULT uCi/g	σ TPU %	MDA uCi/g	RDL uCi/g	QUALI- FIERS	TEST	ADDED uCi/g	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Total Alpha	4.35E-03	16	4.9E-05			AT	4.72E-3	5.0	92	77-123	90-110	96000688

Sludge

Final Report

LAB CONTROL SAMPLES

Page 1

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Lab id 222-S

Protocol GRAB

Version 1.0

Form DVD-LCS

Version 3.08

Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

S95T003982D

102AN R22A S1 Safety Scr

DUPLICATE

WHC-SD-WM-DP-165, REV. /

SDG 95000227

Contact R. A. Esch

DUPLICATE

Lab sample id S95T003982D

Dept sample id

ORIGINAL

Lab sample id S95T003982

Dept sample id

Received 02/16/95

Client TWRS

Tank AN102

Client sample id 102AN R22A S1 Safety Scr

Location/Matrix R: 22A S: 102-AN-1 C: n/ LIQUID

Collected

Chain of custody id

ANALYTE	DUPLICATE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST	ORIGINAL uCi/mL	2σ TPU %	MDA uCi/mL	QUALI- FIERS	RPD %	3σ TOT	PROT LIMIT
Total Alpha	1.56E-01	26	2.2E-02			AT	1.44E-01	26	2.2E-02		8	54	29

Supernatant liquid

Loc: Riser: 22A Seg: 102-AN-1 Core: n/a

Samp: 102AN R22A S1 Safety Screen

Loc: Riser: 22A Seg: 102-AN-1 Core: n/a

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DUPLICATES

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Lab id 222-S

Protocol GRAB

Version 1.0

Form DVD-DUP

Version 3.08

Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

S95T003983D

102AN R22A S2 Safety Scr

DUPLICATE

WHC-SD-WM-DP-165, REV. J

SDG 95000227

Contact R. A. Esch

DUPLICATE

Lab sample id S95T003983D

Dept sample id

ORIGINAL

Lab sample id S95T003983

Dept sample id

Received 02/16/95

Client TWRS

Tank AN102

Client sample id 102AN R22A S2 Safety Scr

Location/Matrix R: 22A S: 102-AN-2 C: n/ LIQUID

Collected

Chain of custody id

ANALYTE	DUPLICATE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST	ORIGINAL uCi/mL	2σ TPU %	MDA uCi/mL	QUALI- FIERS	RPD %	3σ TOT	PROT LIMIT
Total Alpha	1.16E-01	28	2.2E-02			AT	1.16E-01	29	2.2E-02		0	60	38

Supernatant liquid

Loc: Riser: 22A Seg: 102-AN-2 Core: n/a

Samp: 102AN R22A S2 Safety Screen

Loc: Riser: 22A Seg: 102-AN-2 Core: n/a

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DUPLICATES

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SUMMARY DATA SECTION

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Lab id 222-S

Protocol GRAB

Version 1.0

Form DVD-DUP

Version 3.08

Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

S95T003984D

102AN R22A S4 Safety Scr

DUPLICATE

WHC-SD-WM-DP-165, REV. 1

SDG 95000227

Contact R. A. Esch

DUPLICATE

Lab sample id S95T003984D

Dept sample id

ORIGINAL

Lab sample id S95T003984

Dept sample id

Received 10/24/94

Client TWRS

Tank AN102

Client sample id 102AN R22A S4 Safety Scr

Location/Matrix R: 22A S: 102-AN-4 C: n/ LIQUID

Collected

Chain of custody id

ANALYTE	DUPLICATE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST	ORIGINAL uCi/mL	2σ TPU %	MDA uCi/mL	QUALI- FIERS	RPD %	3σ TOT	PROT LIMIT
Total Alpha	1.74E-01	25	2.2E-02			AT	1.59E-01	25	2.2E-02		9	53	26

Supernatant liquid

Loc: Riser: 22A Seg: 102-AN-4 Core: n/a

Samp: 102AN R22A S4 Safety Screen

Loc: Riser: 22A Seg: 102-AN-4 Core: n/a

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DUPLICATES

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Lab id 222-S

Protocol GRAB

Version 1.0

Form DVD-DUP

Version 3.08

Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

S96T000005D

102AN S3A Dec Liq Sfty S

DUPLICATE

WHC-SD-WM-DP-165, REV. 1

SDG 95000227

Contact R. A. Esch

DUPLICATE

Lab sample id S96T000005D

Dept sample id

Client TWRS

Tank AN102

ORIGINAL

Lab sample id S96T000005

Dept sample id

Received 10/24/96

Client sample id 102AN S3A Dec Liq Sfty S

Location/Matrix R: 22A S: 102-AN-3 C: n/ LIQUID

Collected

Chain of custody id

ANALYTE	DUPLICATE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST	ORIGINAL uCi/mL	2σ TPU %	MDA uCi/mL	QUALI- FIERS	RPD %	3σ PROT TOT LIMIT
Total Alpha	2.08E-01	23	1.9E-02			AT	1.75E-01	24	1.9E-02		17	50 20

Supernatant liquid

Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

Samp: 102AN S3A Dec Liq Sfty Scrn

Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

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DUPLICATES

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SUMMARY DATA SECTION

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Lab id 222-S

Protocol GRAB

Version 1.0

Form DVD-DUP

Version 3.08

Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

S96T0000060

102AN S3B Dec Liq Sfty S

DUPLICATE

WHC-SD-WM-DP-165, REV 1

SDG 95000227

Contact R. A. Esch

DUPLICATE

Lab sample id S96T0000060

Dept sample id

ORIGINAL

Lab sample id S96T0000060

Dept sample id

Received 02/16/95

Client TWRS

Tank AN102

Client sample id 102AN S3B Dec Liq Sfty S

Location/Matrix R: 22A S: 102-AN-3 C: n/ LIQUID

Collected

Chain of custody id

ANALYTE	DUPLICATE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST	ORIGINAL uCi/mL	2σ TPU %	MDA uCi/mL	QUALI- FIERS	RPD %	3σ TOT	PROT LIMIT
Total Alpha	2.18E-01	22	1.9E-02			AT	2.39E-01	22	1.9E-02		9	47	20

Supernatant liquid

Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

Samp: 102AN S3B Dec Liq Sfty Scrn

Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

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DUPLICATES

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SUMMARY DATA SECTION

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Lab id 222-S

Protocol GRAB

Version 1.0

Form DVD-DUP

Version 3.08

Report date 03/12/96

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WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

S96T000007D

102AN S3A FUSION

DUPLICATE

WHC-SD-WM-DP-165, REV. 1

SDG 95000227

Contact R. A. Esch

DUPLICATE

Lab sample id S96T000007D

Dept sample id

ORIGINAL

Lab sample id S96T000007

Dept sample id

Received 10/24/94

Client THRS

Tank AN102

Client sample id 102AN S3A FUSION FUSION

Location/Matrix R: 22A S: 102-AN-3 C: n/ SOLID

Collected

Chain of custody id

ANALYTE	DUPLICATE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST	ORIGINAL uCi/mL	2σ TPU %	MDA uCi/mL	QUALI- FIERS	RPD %	3σ TOT	PROT LIMIT
Total Alpha	3.32E-01	24	3.9E-02			AT	3.06E-01	23	3.1E-02		8	49	22

Supernatant liquid

Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

Final Report

DUPLICATES

Page 6

SUMMARY DATA SECTION

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Lab id 222-S

Protocol GRAB

Version 1.0

Form DVD-DUP

Version 3.08

Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

S96T0000080

102AN S3B FUSION

DUPLICATE

WHC-SD-WM-DP-165, REV. 1

SDG 95000227

Contact R. A. Esch

DUPLICATE

Lab sample id S96T0000080

Dept sample id

ORIGINAL

Lab sample id S96T000008

Dept sample id

Received 02/16/95

Client TWRS

Tank AN102

Client sample id 102AN S3B FUSION FUSION

Location/Matrix R: 22A S: 102-AN-3 C: n/ SOLID

Collected

Chain of custody id

ANALYTE	DUPLICATE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST	ORIGINAL uCi/mL	2σ TPU %	MDA uCi/mL	QUALI- FIERS	RPD %	3σ TOT	PROT LIMIT
Total Alpha	7.78E-01	18	3.9E-02			AT	9.52E-01	18	4.2E-02		20	39	20

Supernatant liquid

Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

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DUPLICATES

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SUMMARY DATA SECTION

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Lab id 222-S

Protocol GRAB

Version 1.0

Form DVD-DUP

Version 3.08

Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

S96T000005S

102AN S3A Dec Liq Sfty S

MATRIX SPIKE

WHC-SD-WM-DP-165, REV. 1

SDG 95000227

Contact R. A. Esch

MATRIX SPIKE

Lab sample id S96T000005S

Dept sample id

ORIGINAL

Lab sample id S96T000005S

Dept sample id

Received 10/24/94

Client TWRS

Tank AN102

Client sample id 102AN S3A Dec Liq Sfty S

Location/Matrix R: 22A S: 102-AN-3 C: n/ LIQUID

Collected

Chain of custody id

ANALYTE	SPIKE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS TEST	ADDED uCi/mL	2σ ERR %	ORIGINAL uCi/mL	2σ TPU %	REC 3σ % (TOTAL)	LMTS LIMITS	PROTOCOL
Total Alpha	2.16E-01				AT	3.92E-2	5.0	1.75E-01	24	105		

Supernatant liquid

Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

Samp: 102AN S3A Dec Liq Sfty Scrn

Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

Final Report

MATRIX SPIKES

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Lab id 222-S

Protocol GRAB

Version 1.0

Form DVD-MS

Version 3.08

Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

S96T000007S

102AN S3A FUSION

MATRIX SPIKE

WHC-SD-WM-DP-165, REV. 1

SDG 95000227

Contact R. A. Esch

MATRIX SPIKE

Client TWRS

Tank AN102

Lab sample id S96T000007S

Dept sample id

ORIGINAL

Lab sample id S96T000007

Dept sample id

Received 10/24/94

Client sample id 102AN S3A FUSION FUSION

Location/Matrix R: 22A S: 102-AN-3 C: n/ SOLID

Collected

Chain of custody id

ANALYTE	SPIKE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS TEST	ADDED uCi/mL	2σ ERR %	ORIGINAL uCi/mL	2σ TPU %	REC 3σ LMTS % (TOTAL)	PROTOCOL LIMITS
Total Alpha	4.69E 01				AT	5.80E01	5.0	3.06E-01	23	80 80-120	80-120

Supernatant liquid

Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

Final Report

MATRIX SPIKES

Page 2

SUMMARY DATA SECTION

Page 17

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Lab id 222-S

Protocol GRAB

Version 1.0

Form DVD-MS

Version 3.08

Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

S95T003982

102AN R22A S1 Safety Scr

DATA SHEET

WHC-SD-WM-DP-165, REV. 1

SDG <u>95000227</u>	Client <u>TWRS</u>
Contact <u>R. A. Esch</u>	Tank <u>AN102</u>
Lab sample id <u>S95T003982</u>	Client sample id <u>102AN R22A S1 Safety Scr</u>
Dept sample id <u></u>	Location/Matrix <u>R: 22A S: 102-AN-1 C: n/ LIQUID</u>
Received <u>02/16/95</u>	Collected <u></u>
Chain of custody id <u></u>	

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST
Total Alpha	12587-46-1	1.44E-01	26	2.2E-02			AT

Supernatant liquid

Samp: 102AN R22A S1 Safety Screen
Loc: Riser: 22A Seg: 102-AN-1 Core: n/a

Final Report

DATA SHEETS

Page 1

SUMMARY DATA SECTION

Page 18

112

Lab id <u>222-S</u>
Protocol <u>GRAB</u>
Version <u>1.0</u>
Form <u>DVD-DS</u>
Version <u>3.08</u>
Report date <u>03/12/96</u>

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

S95T003983

102AN R22A S2 Safety Scr

DATA SHEET

WHC-SD-WM-DP-165, REV. I

SDG <u>95000227</u>	Client <u>TWRS</u>
Contact <u>R. A. Esch</u>	Tank <u>AN102</u>
Lab sample id <u>S95T003983</u>	Client sample id <u>102AN R22A S2 Safety Scr</u>
Dept sample id <u></u>	Location/Matrix <u>R: 22A S: 102-AN-2 C: n/ LIQUID</u>
Received <u>02/16/95</u>	Collected <u></u>
Chain of custody id <u></u>	

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	NDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST
Total Alpha	12587-46-1	1.16E-01	29	2.2E-02			AT

Supernatant liquid

Samp: 102AN R22A S2 Safety Screen
Loc: Riser: 22A Seg: 102-AN-2 Core: n/a

Final Report

DATA SHEETS

Page 2

SUMMARY DATA SECTION

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Lab id <u>222-S</u>
Protocol <u>GRAB</u>
Version <u>1.0</u>
Form <u>DVD-DS</u>
Version <u>3.08</u>
Report date <u>03/12/96</u>

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

S95T003984

102AN R22A S4 Safety Scr

DATA SHEET

WHC-SD-WM-DP-165, REV. 1

SDG <u>95000227</u>	Client <u>TWRS</u>
Contact <u>R. A. Esch</u>	Tank <u>AN102</u>
Lab sample id <u>S95T003984</u>	Client sample id <u>102AN R22A S4 Safety Scr</u>
Dept sample id _____	Location/Matrix <u>R: 22A S: 102-AN-4 C: n/ LIQUID</u>
Received <u>10/24/94</u>	Collected _____
Chain of custody id _____	

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST
Total Alpha	12587-46-1	1.59E-01	25	2.2E-02			AT

Supernatant liquid

Samp: 102AN R22A S4 Safety Screen
Loc: Riser: 22A Seg: 102-AN-4 Core: n/a

Final Report

DATA SHEETS

Page 3

SUMMARY DATA SECTION

Page 20

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Lab id	<u>222-s</u>
Protocol	<u>GRAB</u>
Version	<u>1.0</u>
Form	<u>DVD-DS</u>
Version	<u>3.08</u>
Report date	<u>03/12/96</u>

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

S96T000005

102AN S3A Dec Liq Sfty S

DATA SHEET

WHC-SD-WM-DP-165, REV. I

SDG <u>95000227</u>	Client <u>TWRS</u>
Contact <u>R. A. Esch</u>	Tank <u>AN102</u>
Lab sample id <u>S96T000005</u>	Client sample id <u>102AN S3A Dec Liq Sfty S</u>
Dept sample id _____	Location/Matrix <u>R: 22A S: 102-AN-3 C: n/ LIQUID</u>
Received <u>10/24/94</u>	Collected _____
	Chain of custody id _____

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST
Total Alpha	12587-46-1	1.75E-01	24	1.9E-02			AT

Supernatant liquid

Samp: 102AN S3A Dec Liq Sfty Scrn
Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

Final Report

DATA SHEETS

Page 4

SUMMARY DATA SECTION

Page 21

Lab id <u>222-S</u>
Protocol <u>GRAB</u>
Version <u>1.0</u>
Form <u>DVD-DS</u>
Version <u>3.08</u>
Report date <u>03/12/96</u>

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

S96T000007

102AM S3A FUSION

DATA SHEET

WHC-SD-WM-DP-165, REV. I

SDG <u>95000227</u>	Client <u>TWRS</u>
Contact <u>R. A. Esch</u>	Tank <u>AN102</u>
Lab sample id <u>S96T000007</u>	Client sample id <u>102AM S3A FUSION</u> <u>FUSION</u>
Dept sample id <u></u>	Location/Matrix <u>R: 22A S: 102-AN-3 C: n/ SOLID</u>
Received <u>10/24/94</u>	Collected <u></u>
Chain of custody id <u></u>	

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST
Total Alpha	12587-46-1	3.06E-01	23	3.1E-02			AT

Supernatant liquid

Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

Final Report

DATA SHEETS

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SUMMARY DATA SECTION

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Lab id <u>222-S</u>
Protocol <u>GRAB</u>
Version <u>1.0</u>
Form <u>DVD-DS</u>
Version <u>3.08</u>
Report date <u>03/12/96</u>

W H C 2 2 2 - 8 L A B O R A T O R Y

TANK AN102, GROUP 95000227

S96T000006

102AN S3B Dec Liq Sfty S

D A T A S H E E T

WHC-SD-WM-DP-165, REV. 1

SDG <u>95000227</u>	Client <u>TWRS</u>
Contact <u>R. A. Esch</u>	Tank <u>AN102</u>
Lab sample id <u>S96T000006</u>	Client sample id <u>102AN S3B Dec Liq Sfty S</u>
Dept sample id <u></u>	Location/Matrix <u>R: 22A S: 102-AN-3 C: n/ LIQUID</u>
Received <u>02/16/95</u>	Collected <u></u>
Chain of custody id <u></u>	

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST
Total Alpha	12587-46-1	2.39E-01	22	1.9E-02			AT

Supernatant liquid

Samp: 102AN S3B Dec Liq Sfty Scrn
Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

Final Report

DATA SHEETS

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SUMMARY DATA SECTION

Page 23

Lab id <u>222-s</u>
Protocol <u>GRAB</u>
Version <u>1.0</u>
Form <u>DVD-DS</u>
Version <u>3.08</u>
Report date <u>03/12/96</u>

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

S96T000008

102AN S3B FUSION

DATA SHEET

WHC-SD-WM-DP-165, REV. 1

SDG <u>95000227</u>	Client <u>TWRS</u>
Contact <u>R. A. Esch</u>	Tank <u>AN102</u>
Lab sample id <u>S96T000008</u>	Client sample id <u>102AN S3B FUSION</u> <u>FUSION</u>
Dept sample id <u></u>	Location/Matrix <u>R: 22A S: 102-AN-3 C: n/ SOLID</u>
Received <u>02/16/95</u>	Collected <u></u>
Chain of custody id <u></u>	

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI- FIERS	TEST
Total Alpha	12587-46-1	9.52E-01	18	4.2E-02			AT

Supernatant liquid

Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

Final Report

DATA SHEETS

Page 7

SUMMARY DATA SECTION

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Lab id <u>222-S</u>
Protocol <u>GRAB</u>
Version <u>1.0</u>
Form <u>DVD-DS</u>
Version <u>3.08</u>
Report date <u>03/12/96</u>

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

Test AT Matrix LIQUID

SDG 95000227

Contact R. A. Esch

METHOD SUMMARY

ALPHA ANALYSIS

GAS PROPORTIONAL COUNTING

Client TWRS

Tank AN102

WHC-SD-WM-DP-165, REV. 1

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	1: Total Alpha	2: Sum, Alpha Emitters	RESULT RATIO (%) 2+1 2σ
Preparation batch 96000688							
102AN S3A FUSION FUSION	S96T000007			5177-9	3.06E-01		
102AN S3A FUSION-DUP FUS	S96T000007D			5177-10	ok		
102AN S3A FUSION-SPK FUS	S96T000007S			5177-11	ok		
102AN S3B FUSION FUSION	S96T000008			5177-12	9.52E-01		
102AN S3B FUSION-DUP FUS	S96T000008D			5177-13	ok		
Nominal values and limits from method				RDLs (uCi/mL) Supernatant liquid		80 Average	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA uCi/mL	ALIQ ml	PREP FAC	DILU- TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 96000688 2σ prep error 15.0 % Reference																
102AN S3A FUSION FUSION	S96T000007			3.1E-02	0.0500	1480	1.00	24	30				01/24/96	01/26	WB26872	
102AN S3A FUSION-DUP FUS	S96T000007D			3.9E-02	0.0500	1850	1.00	24	30				01/24/96	01/26	WB26872	
102AN S3A FUSION-SPK FUS	S96T000007S				0.0500	1480	1.00	24	30				01/24/96	01/26	WB26872	
102AN S3B FUSION FUSION	S96T000008			4.2E-02	0.0500	2010	1.00	24	30				01/24/96	01/26	WB26872	
102AN S3B FUSION-DUP FUS	S96T000008D			3.9E-02	0.0500	1830	1.00	24	30				01/24/96	01/26	WB26872	
Nominal values and limits from method				0.100		30		20-55								

PROCEDURES REFERENCE 222-S Lab Analytical Procedure
 LO-160-103 Core Segment Extrusion Process and Sample Preparation, rev 17
 LA-549-141 Fusion with Alkali Metal Hydroxide, rev 40
 LA-508-101A Alpha in liquid samples, rev 42
 LA-508-111A Operation of the [Tennelec LB-5500 (n=0, A-5), LB-1000 (n=1, A-3), Gamma Products (n=4, A-2)] Alpha/Beta Counting Systems

AVERAGES ± 2 SD MDA 3.8E-02 ± 9.4E-03
 FOR 5 SAMPLES EFFICIENCY 24 ± 0

Final Report

METHOD SUMMARIES

Page 1

SUMMARY DATA SECTION

Page 25

Lab id 222-S
 Protocol GRAB
 Version 1.0
 Form DVD-CMS
 Version 3.08
 Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

Client TWRS

Tank AN102

METHOD SUMMARY

ALPHA ANALYSIS

GAS PROPORTIONAL COUNTING

WHC-SD-WM-DP-165, REV. 1

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	1: Total Alpha	2: Sum, Alpha Emitters	RESULT RATIO (%)	
							2+1	2σ
Preparation batch 96000249								
102AM R22A S1 Safety Scr	S95T003982			4800-4	1.44E-01			
102AM R22A S1 Safety Scr	S95T003982D			4800-5	ok			
102AM R22A S2 Safety Scr	S95T003983			4800-7	1.16E-01			
102AM R22A S2 Safety Scr	S95T003983D			4800-8	ok			
102AM R22A S4 Safety Scr	S95T003984			4800-9	1.59E-01			
102AM R22A S4 Safety Scr	S95T003984D			4800-10	ok			
DI Blank	B4800-2			4800-2	U			
Lab Control Sample	S4800-1			4800-1	ok			
Preparation batch 96000430								
102AM S3A Dec Liq Sfty S	S96T000005			4967-4	1.75E-01			
102AM S3A Dec Liq Sfty S	S96T000005D			4967-5	ok			
102AM S3A Dec Liq Sfty S	S96T000005S			4967-6	ok			
102AM S3B Dec Liq Sfty S	S96T000006			4967-7	2.39E-01			
102AM S3B Dec Liq Sfty S	S96T000006D			4967-8	ok			
DI Blank	B4967-2			4967-2	U			
Lab Control Sample	S4967-1			4967-1	ok			
Nominal values and limits from method					RDls (uCi/mL)		80	
					Supernatant liquid		Average	

Final Report

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id 222-S

Protocol GRAB

Version 1.0

Form DVD-CMS

Version 3.08

Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

Test AT Matrix LIQUID

SDG 95000227

Contact R. A. Esch

Client TWRS

Tank AN102

METHOD SUMMARY

ALPHA ANALYSIS

GAS PROPORTIONAL COUNTING

WHC-SD-WM-DP-165, REV. 1

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA uCi/mL	ALIQ mL	PREP FAC	DILU- TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 96000249 2σ prep error 15.0 % Reference																
102AN R22A S1 Safety Scr	S95T003982			2.2E-02	1.00	1.00	20300		21	30				01/15/96	WB27806	
102AN R22A S1 Safety Scr	S95T003982D			2.2E-02	1.00	1.00	20300		21	30				01/15/96	WB27806	
102AN R22A S2 Safety Scr	S95T003983			2.2E-02	1.00	1.00	20300		21	30				01/15/96	WB27806	
102AN R22A S2 Safety Scr	S95T003983D			2.2E-02	1.00	1.00	20300		21	30				01/15/96	WB27806	
102AN R22A S4 Safety Scr	S95T003984			2.2E-02	1.00	1.00	20300		21	30				01/15/96	WB27806	
102AN R22A S4 Safety Scr	S95T003984D			2.2E-02	1.00	1.00	20300		21	30				01/15/96	WB27806	
DI Blank	B4800-2			2.2E-02	1.00		20300		21	30				01/15/96	WB27806	
Lab Control Sample	S4800-1			1.1E-07	10.0	1.00	1.00		21	30				01/15/96	WB27806	

Preparation batch 96000430 2σ prep error 15.0 % Reference																
102AN S3A Dec Liq Sfty S	S96T000005			1.9E-02	0.500	1.00	10200		21	30				01/19/96	WB27806	
102AN S3A Dec Liq Sfty S	S96T000005D			1.9E-02	0.500	1.00	10200		21	30				01/19/96	WB27806	
102AN S3A Dec Liq Sfty S	S96T000005S				0.500	1.00	1.00		21	30				01/19/96	WB27806	
102AN S3B Dec Liq Sfty S	S96T000006			1.9E-02	0.500	1.00	10200		21	30				01/19/96	WB27806	
102AN S3B Dec Liq Sfty S	S96T000006D			1.9E-02	0.500	1.00	10200		21	30				01/19/96	WB27806	
DI Blank	B4967-2			1.9E-02	0.500		10200		21	30				01/19/96	WB27806	
Lab Control Sample	S4967-1			9.5E-08	10.0	1.00	1.00		21	30				01/19/96	WB27806	

Nominal values and limits from method

0.100

30

20-55

PROCEDURES REFERENCE 222-S Lab Analytical Procedure
LO-160-103 Core Segment Extrusion Process and Sample Preparation, rev 17
LA-508-101A Alpha in liquid samples, rev 42
LA-508-111A Operation of the [Tennelec LB-5500 (n=0, A-5), LB-1000 (n=1, A-3), Gamma Products (n=4, A-2)] Alpha/Beta Counting Systems

AVERAGES ± 2 SD MDA 1.8E-02 ± 1.5E-02
FOR 15 SAMPLES EFFICIENCY 21 ± 0

Final Report

METHOD SUMMARIES

Page 3

SUMMARY DATA SECTION

Page 27

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Lab id 222-S

Protocol GRAB

Version 1.0

Form DVD-CMS

Version 3.08

Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

Test AT Matrix SOLID

SDG 95000227

Contact R. A. Esch

METHOD SUMMARY

ALPHA ANALYSIS

GAS PROPORTIONAL COUNTING

Client TWRS

Tank AN102

WHC-SD-WM-DP-165, REV. I

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	1: Total Alpha	2: Sum, Alpha Emitters	RESULT RATIO (%) 2+1 2σ
------------------	------------------	-------------	-------------	----------	-------------------	---------------------------	----------------------------

Preparation batch 96000688

Method Blank B5177-2 5177-2

U

Lab Control Sample S5177-1 5177-1

ok

Nominal values and limits from method

RDLs (uCi/g)

80

Sludge

Average

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA uCi/g	ALIQ ml	PREP FAC	DILU- TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT keV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
------------------	------------------	-------------	-------------	--------------	------------	-------------	---------------	-------------	----------	--------------	-------------	--------------	--------------	-------------------	------	----------

Preparation batch 96000688 2σ prep error 15.0 % Reference

Method Blank B5177-2 9.8E-03 0.0500 463 1.00

24

30

01/26/96 WB26872

Lab Control Sample S5177-1 4.9E-05 10.0 463 1.00

24

30

01/26/96 WB26872

Nominal values and limits from method

0.100

30

20-55

PROCEDURES REFERENCE 222-S Lab Analytical Procedure
LO-160-103 Core Segment Extrusion Process and Sample Preparation, rev 17
LA-549-141 Fusion with Alkali Metal Hydroxide, rev 40
LA-508-101A Alpha in liquid samples, rev 42
LA-508-11NA Operation of the [Tennelec LB-5500 (n=0, A-5), LB-1000 (n=1, A-3), Gamma Products (n=4, A-2)] Alpha/Beta Counting Systems

AVERAGES ± 2 SD MDA 4.9E-03 ± 1.4E-02
FOR 2 SAMPLES EFFICIENCY 24 ± 0

Final Report

METHOD SUMMARIES

Page 4

SUMMARY DATA SECTION

Page 28

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-CMS
Version 3.08
Report date 03/12/96

W H C 2 2 2 - S L A B O R A T O R Y
TANK AN102, GROUP 95000227

SDG 95000227
Contact R. A. Esch

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

S U M M A R Y D A T A S E C T I O N

T A B L E O F C O N T E N T S	
Sample Summaries	1
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F i n a l R e p o r t

Reviewed by

Approved by

Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-TOC
Version 3.08
Report date 03/12/96

WHC-SD-WM-DP-165, REV. 1

CHAIN OF CUSTODY FORMS

WHC-SD-WM-DP-165, REV. 1

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HC-9000-828 10 3

BC-6000-828 (1/2/92)

Westinghouse Hanford
Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround

Priority

Normal

Telephone No. 373-1483

SAF No. N/A

Method of Shipment
WHE TRANSPORTATION

Bill of Lading/AF Bill No.
N/A

Company Contact

Sampling Location 241-AN-102-R22A

Field Logbook No. N/A

Offsite Property No. N/A

Possible Sample Hazards/Remarks

Radioactive

Special Handling and/or Storage
N/A

SAMPLE ANALYSIS

Serial # 1210

Sample No.

102-AN-2

Date Sampled

2/15/95

Time Sampled

1957

Preservative

N/A

Type of Container

Glass

No. of Containers

1

Volume

125 mL

Matrix

Dose Rate on Contact - 2000 mR/hr

CHAIN OF POSSESSION

Released By

James S. Hicks

Date/Time

2-16-95 13:31

Received By

David E. Bopp

Date/Time

2-16-95 13:32

SPECIAL INSTRUCTIONS

WHC-SD-WM-DP-165, REV. 1

Signature Names

Received By

Received By

Date/Time

Date/Time

LABORATORY SECTION

Received By

Disposal Method

Disposal Method

LABORATORY SECTION

Received By

Received By

Date/Time

Date/Time

LABORATORY SECTION

Received By

Received By

Date/Time

Date/Time

Matrix

S

SE

SD

SL

W

O

A

DS

DL

T

WI

L

V

X

Soil

Sediment

Solid

Sludge

Water

Oil

Air

Drum Solids

Drum Liquids

Tissue

Wipe

Liquid

Vegetation

Other

DISTRIBUTION: Original - Sample Yellow - Sample

BC-6000-828 (1/2/92)

Westinghouse Hanford
Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround

☐ Priority
☒ Normal

Collector <u>D. Hartley</u>	Company Contact <u>Jim Sickels</u>	Telephone No. <u>373-4276</u> <u>373-3578</u>
Project Designation <u>N/A</u>	Sampling Location <u>241-AN-102, R22A</u>	SAF No. <u>N/A</u>
Ice Chest No. <u>N/A</u>	Field Logbook No. <u>N/A</u>	Method of Shipment <u>WHC Western Transportation</u>
Shipped To <u>222S</u>	Offsite Property No. <u>N/A</u>	Bill of Lading/Air Bill No. <u>N/A</u>
Possible Sample Hazards/Remarks <u>RADIOACTIVE</u>	Preservative <u>N/A</u>	
	Type of Container <u>GLASS</u>	
	No. of Container(s) <u>1</u>	
Special Handling and/or Storage <u>N/A</u>	Volume <u>125mL</u>	

SAMPLE ANALYSIS

Seal # 1211
1202 2-16-95

Sample No.	Matrix	Date Sampled	Time Sampled																	
<u>102-AN-3</u>	<u>W/L</u>	<u>2/15/95</u>	<u>2016</u>																	

DOSE RATE AT CONTACT 2500 mR/hr

CHAIN OF POSSESSION		Sign/Print Name	
Relinquished By <u>James Sickels</u>	Date/Time <u>2-16-95</u>	Received By <u>David Berg</u>	Date/Time <u>2-16-95</u>
Relinquished By <u>James Sickels</u>	Date/Time <u>2-16-95</u>	Received By <u>David Berg</u>	Date/Time <u>2-16-95</u>
Relinquished By <u>James Sickels</u>	Date/Time <u>2-16-95</u>	Received By <u>David Berg</u>	Date/Time <u>2-16-95</u>
Relinquished By <u>James Sickels</u>	Date/Time <u>2-16-95</u>	Received By <u>David Berg</u>	Date/Time <u>2-16-95</u>

SPECIAL INSTRUCTIONS
<u>WHC-SD-WM-DP-165, REV. 1</u>

Matrix
S = Soil
SE = Sediment
SO = Solid
SL = Sludge
W = Water
O = Oil
A = Air
DS = Drum Solids
DL = Drum Liquids
T = Tissue
WI = Wipe
L = Liquid
V = Vegetation
X = Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

DISTRIBUTION: Original- Sample Yellow- Sample

430

[illegible]

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

DISTRIBUTION: White - Remain with Samples Color - Customer

BC-6000-828 10/1/94

[illegible]

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

12/04/95

[illegible]

WHC-SD-WM-DP-165, REV.

DISTRIBUTION: White - Remains with Samples Color - Customer

BC-6000-828 (09/95)

WHC-SD-WM-DP-165, REV. 1

HOT CELL LOG BOOK

WHC-SD-WM-DP-165, REV. 1

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WHC-SD-WM-DP-165, REV. 1

AN-102 GRAB SAMPLES

★ 2AN-95-1 Supernate Sampled 11/30/95 from riser 21A
 Sampling Depth? 370 in
 Dose Rate: w/o: N/A mrad/hr

S95T003864

APPEARANCE: Dark yellow-brown liquid; no solids settled; no organic layer

Remove two 10 mL subsamples of supernate for analysis, and one 40 mL subsample for archive.

S95T003867 Inorganic Tests Dose Rate: w/o: 1500 mrad/hr

S95T003870 Radionuclide Tests Dose Rate: w/o: 1500 mrad/hr

S95T003917 Archive Dose Rate: w/o: N/A mrad/hr

subsample for archive will
be made in vial.

★ 2AN-95-2 Supernate Sampled 11/30/95 from riser 21A
 Sampling Depth? not available
 Dose Rate: w/o: N/A mrad/hr not available
 when transferred to vial

S95T003865

APPEARANCE: Dark yellow-brown liquid - opaque - trace of settled
solids. Decanted liquid off of solids. No org. layer
not 11/5/96 *not 11/5/96*

Remove two 10 mL subsamples of supernate for analysis, and one 40 mL subsample for archive.
15-20 *50-60*

Bulk density ~ 1.3 g/mL

S95T003868 Inorganic Tests Dose Rate: w/o: 2500 mrad/hr V8944 25.6g

S95T003871 Radionuclide Tests Dose Rate: w/o: 2500 mrad/hr V8945 30.1g

S95T003918 Archive Dose Rate: w/o: N/A mrad/hr V8919

WHC-SD-WM-DP-165, REV. 1

AN-102 GRAB SAMPLES

- ★ 2AN-95-3 Supernate Sampled 11/30/95 from riser 21A
Sampling Depth? not available
Dose Rate: w/o: N/A mrad/hr
not available when transferred to hot cell.

S95T003866

APPEARANCE: Dark yellow-brown, opaque liquid - no solids,
no organic layer.
12/15/96
Remove two 10 mL subsamples of supernate for analysis, and one 40 mL subsample for
15-20 archive. 12/15/96
50-60

Bulk density $\approx 1.3 \text{ g/mL}$

S95T003869	Inorganic Tests	Dose Rate: w/o: <u>2500</u> mrad/hr V8947 26.8g
S95T003872	Radionuclide Tests	Dose Rate: w/o: <u>2500</u> mrad/hr V8948 26.9g
S95T003919	Archive	Dose Rate: w/o: <u>N/A</u> mrad/hr V8920

- ★ 2AN-95-6 Field Blank Sampled 12/14/95 from riser 21A
Sampling Depth? 20 ft
Dose Rate: w/o: 40.5 mrad/hr

S95T003961

APPEARANCE: Clear, colorless liquid - no solids
Remove two 10 mL subsamples of supernate for analysis, and archive remaining sample

S95T003962	Inorganic Tests	Dose Rate: w/o: <u>40.5</u> mrad/hr
S95T003963	Radionuclide Tests	Dose Rate: w/o: <u>40.5</u> mrad/hr

WHC-SD-WM-DP-165, REV. I

AN-102 GRAB SAMPLES

1/8/96

★ 102-AN-1 Supernate Sampled 2/15/95 from riser 22A
Sampling Depth? 388"
Dose Rate: w/o: N/A mrad/hr
does not available - sample already in vial.

S95T003924

APPEARANCE: Dark yellow-brown to red-brown with a trace of settled solids - No organic layer. 1/8/96

Remove one 5-10 mL subsample of supernate for analysis.

S95T003982

Safety Screen Tests Dose Rate: w/o: 6000 mrad/hr

★ 102-AN-2 Supernate Sampled 2/15/95 from riser 22A
Sampling Depth? 576"
Dose Rate: w/o: N/A mrad/hr
does not available - sample already in vial.

S95T003925

APPEARANCE: Dark yellow-red-brown clear liquid with a trace of settled solids - No organic layer. 1/8/96

Remove one 5-10 mL subsample of supernate for analysis.

S95T003983

Safety Screen Tests Dose Rate: w/o: 8000 mrad/hr

★ 102-AN-4 Supernate Sampled 10/21/94 from riser 22A
Sampling Depth? 622"
Dose Rate: w/o: N/A mrad/hr
does not available - sample already in vial.

S95T003926

APPEARANCE: Dark yellow-red-brown clear liquid with a trace of settled solids - No organic layer. 1/8/96

Remove one 5-10 mL subsample of supernate for analysis.

S95T003984

Safety Screen Tests Dose Rate: w/o: 5000 mrad/hr

WHC-SD-WM-DP-165, REV. 1

AN-102 GRAB SAMPLES

1/9/96

★ 2AN-95-4A Sludge

Sampled 12/14/95 from riser 21A

Sampling Depth? _____

Dose Rate: w/o: N/A mrad/hr > 7000 mrad/hr
sample is in hot cell. > 7000 mrad/hr 1/5/96

S95T003959

APPEARANCE: Dark red-brown clear liquid with about 60%
tan settled solids. No organic layers. (see
(on right in photograph) 1/5/96

Measure the height of the settled solids and the total sample and calculate the volume percent settled solids according to the following equation.

measured in inches, then calculated mm

$$\text{Vol \% Settled Solids} = \frac{\text{Height solids}}{\text{Height total sample}} \times 100 = \frac{50.8 \text{ mm}}{82.6 \text{ mm}} \times 100 = 61.5 \%$$

Agitate sample to suspend all of the solids and transfer the entire sample to centrifuge cones. Record the volume and weight of the sample before centrifugation. If the solids settle rapidly (within a few minutes), record the volume of solids before centrifugation. Centrifuge the sample for a minimum of 1 hour. Record volume of solids after centrifugation. Remove liquid and subsample for analysis and archive. Record weight of solids that remain. Subsample solids for analysis and archive.

Before centrifugation:

Check weights:

*N. 3g of sludge remained in the jar. Contained
some black granular pieces.*
20g = 199.7g
520g = 499.39g 1/5/96

Final wt cone 1^A sample 71.94gTare wt cone 1^A 13.86gnet wt sample 58.08gvol sample 40 mLvol solids N/A mL*solids remained suspended.*Final wt cone 2^A sample 73.09gTare wt cone 2^A 13.59gnet wt sample 59.51gvol sample 40 mLvol solids N/A mL

WHC-SD-WM-DP-165, REV. 1

AN-102 GRAB SAMPLES

★ 2AN-95-4A Sludge

(Continued)

1/9/96

Final wt cone 3^A + sludge 79.79gTare wt cone 3^A 14.12gnet wt sample 65.87gvol sample 45 mLvol solids N/A mLFinal wt cone 4 + sludge N/AgTare wt cone 4 N/Agnet wt sample N/Agvol sample N/A mLvol solids N/A mLN/A
1/9/96

Record the total weight and volume of the sample as the sum of all of the cones.

Total wt. sample 183.46gTotal vol sample 125 mLBulk Density of sample before centrifugation: Total wt sample 183.5g = 1.47 g/mLTotal vol sample 125 mLAfter Centrifugation: after 15 min. still unable to separate solids so will
1/11/96 centrifuge an additional 1.5 hours. Solids appeared layered
with a light tan lower and a darker gray upper.vol sample cone 1^A 40 mLvol solids cone 1^A 21 mL (16 light gray)vol liquid cone 1^A 19 mLvol sample cone 2^A 40 mLvol solids cone 2^A 21 mL (15 ml light gray)vol liquid cone 2^A 19 mLvol sample cone 3^A 45 mLvol solids cone 3^A 25 mL (17.5 ml light gray)vol liquid cone 3^A 20 mLvol sample cone 4 N/A mLvol solids cone 4 N/A mLvol liquid cone 4 N/A mLN/A
1/9/96-8-5
1/11/96

WHC-SD-WM-DP-165, REV. 1

AN-102 GRAB SAMPLES 1/11/96

★ 2AN-95-4A Sludge (Continued)

Remove liquid. Subsample ¹⁰/₁₀₀ ml for analysis and ⁶⁰/₁₀₀ ml for archive.
me 1/1/96 *me 1/9/96*

S95T004133 Analysis Dose Rate: w/o: _____ mrad/hr *V8985*
 S95T004132 Archive Dose Rate: w/o: _____ mrad/hr *V8968*

Re-weigh cones and record weight of solids.

Final wt cone 1^A + solids 44.71g
 Tare wt cone 1^A 13.86g

 net wt solids 30.85g

Final wt cone 2^A + solids 47.09g
 Tare wt cone 2^A 13.58g

 net wt solids 33.51g

Final wt cone 3^A + solids 54.71g
 Tare wt cone 3^A 14.12g

 net wt solids 40.62g

Final wt cone 4 + solids _____g
 Tare wt cone 4 _____g

 net wt solids _____g

N/A
me 1/9/96

Record the total weight and volume of the solids as the sum of all of the cones.

Total wt. solids 104.98 g Total vol solids 67 mL

Bulk Density of centrifuged solids: $\frac{\text{net wt solids } 104.98\text{g}}{\text{vol solids } 67\text{ mL}} = 1.57 \text{ g/mL}$

Vol % Solids = $\frac{\text{Total vol solids}}{\text{Total vol sample}} = \frac{67\text{ mL}}{125\text{ mL}} \times 100 = 53.6\%$
 by centrifugation

142

me 1/11/96

WHC-SD-WM-DP-165, REV. I

AN-102 GRAB SAMPLES

★ 2AN-95-4A Sludge (Continued)

S95T004137

SOLIDS For analysis (2 - 5 g) $\sqrt{8984}$ Final wt vial + solids 32.67gTare wt vial 27.35g

net wt solids 5.32g

Dose Rate: w/o: _____mrad/hr

S95T004136

SOLIDS For archive $\sqrt{8967}$ Final wt vial + solids 157.99gTare wt vial 85.32g

net wt solids 72.67g

Dose Rate: w/o: _____mrad/hr

WHC-SD-WM-DP-165, REV 1

AN-102 GRAB SAMPLES

★ 2AN-95-5A Sludge

Sampled 12/14/95 from riser 21A

Sampling Depth? Dose Rate: w/o: N/A mrad/hr > 7000 mrad
sample is in hotcell > 7000 mrad

S95T003960

APPEARANCE: Dark red-brown clear liquid with about 60%
tan settled solids. No organic layer. see
(on left in photograph) 1/5/96

Measure the height of the settled solids and the total sample and calculate the volume percent settled solids according to the following equation.

measured in inches, then calculated mm.

$$\text{Vol \% Settled Solids} = \frac{\text{Height solids}}{\text{Height total sample}} \times 100 = \frac{50.8 \text{ mm}}{82.6 \text{ mm}} \times 100 = 61.5 \%$$

Agitate sample to suspend all of the solids and transfer the entire sample to centrifuge cones. Record the volume and weight of the sample before centrifugation. If the solids settle rapidly (within a few minutes), record the volume of solids before centrifugation. Centrifuge the sample for a minimum of 1 hour. Record volume of solids after centrifugation. Remove liquid and subsample for analysis and archive. Record weight of solids that remain. Subsample solids for analysis and archive.

Before centrifugation:

Check weights: 20g = 19.97g
500g = 499.35g*~ 1.7g of solid remained in original jar even after several rinsings with supernate.*Final wt cone 1^B + sample 75.77gTare wt cone 1^B 13.97gnet wt sample 61.80gvol sample 45 mL *120.2 1/5/96*vol solids N/A mLFinal wt cone 2^B + sample 73.18gTare wt cone 2^B 13.65gnet wt sample 59.53gvol sample 40 mLvol solids N/A mL

WHC-SD-WM-DP-165, REV. 1

AN-102 GRAB SAMPLES

★ 2AN-95-5A Sludge (Continued)

Final wt cone 3^B + sludge 79.55gTare wt cone 3^B 13.92gnet wt sample 65.63gvol sample 43 mL *rec 1/9/96*vol solids N/A mL

Final wt cone 4 + sludge _____g

Tare wt cone 4 _____g

net wt sample _____g

vol sample _____mL

vol solids _____mL

*N/A
rec 1/9/96*

Record the total weight and volume of the sample as the sum of all of the cones.

Total wt. sample 186.96 gTotal vol sample 125 mLBulk Density of sample before centrifugation: Total wt sample 186.96g = 1.50 g/mLTotal vol sample 125 mL

After Centrifugation:

*Centrifuge for 1 hour at setting 7.**1/11/96**solids appeared lumpy & small, light tan/gray color and a darker gray suspension*vol sample cone 1^B 42.5 mLvol sample cone 2^B 40 mLvol solids cone 1^B 20 mL (17.5 mL light gray)vol solids cone 2^B 19 mL (17 mL light gray)vol liquid cone 1^B 22.5 mLvol liquid cone 2^B 21 mLvol sample cone 3^B 44 mLvol solids cone 3^B 27.5 mL (20 mL light gray)vol liquid cone 3^B 16.5 mL *rec 3-12-96*

vol sample cone 4 _____ mL

vol solids cone 4 _____ mL

vol liquid cone 4 _____ mL

*N/A
rec 1/9/96*

145

*-10-9
rec 1/10/96*

WHC-SD-WM-DP-165, REV 1

AN-102 GRAB SAMPLES 1/11/96

★ 2AN-95-5A Sludge (Continued)

Remove liquid. Subsample 5 mL for analysis and 40 mL for archive.

S95T004135

Analysis

Dose Rate: w/o: _____ mrad/hr

0986
V8987 11.1.96

S95T004134

Archive

Dose Rate: w/o: _____ mrad/hr

V8970

Re-weigh cones and record weight of solids. Started subsampling from cone 1B before re-weighing for solids 6.14g was put into V8987 + 6.35g already put into V8966

Final wt cone 1^B + solids 31.60gTare wt cone 1^B 13.97gnet wt solids 17.63gFinal wt cone 2^B + solids 42.83gTare wt cone 2^B 13.65gnet wt solids 29.18gFinal wt cone 3^B + solids 47.96gTare wt cone 3^B 13.92gnet wt solids 34.04g

Final wt cone 4 + solids _____g

Tare wt cone 4 _____g

net wt solids _____g

N/A
1/9/96

Record the total weight and volume of the solids as the sum of all of the cones.

Total wt. solids 93.34 gTotal vol solids 66.5 mL

Bulk Density of centrifuged solids:

net wt solids 93.34 g= 1.58 g/mL 3.12.96
140 g/mLvol solids 59.0 mL 3.12.96
66.5 mLVol % Solids = Total vol solids
by centrifugation Total vol sample= 59.0 mL 3.12.96
66.5 mL X 100 = 46.6 % 3.12.96
126.5 mL11-10
1/11/96

WHC-SD-WM-DP-165, REV. 1

AN-102 GRAB SAMPLES _{11/11/96}★ 2AN-95-5A Sludge (Continued)

S95T004139

SOLIDS For analysis (2 - 5 g)

✓ ~~8986~~ 8987
rec
11/11/96Final wt vial + solids 33.71 gTare wt vial 27.43 gnet wt solids 6.28 g

Dose Rate: w/o: _____ mrad/hr

S95T004138

SOLIDS For archive

✓ 8969

Final wt vial + solids 144.43 gTare wt vial 85.79 gnet wt solids 58.64 g

Dose Rate: w/o: _____ mrad/hr

WHC-SD-WM-DP-165, REV. 1

AN-102 GRAB SAMPLES

1/8/96

★ 102-AN-3(A) Sludge Sampled 10/21/94 from riser 22ASampling Depth? 6666"Dose Rate: w/o: n/k mrad/hr*No dose rate available,
sample already in bottle*

S96T000001

APPEARANCE: Dark yellow-brown liquid. No organic layers.
Red-tan, settled solids. 1/8/96

Measure the height of the settled solids and the total sample and calculate the volume percent settled solids according to the following equation.

$$\text{Vol \% Settled Solids} = \frac{\text{Height solids}}{\text{Height total sample}} \times 100 = \frac{63 \text{ mm}}{85 \text{ mm}} \times 100 = 74.1 \%$$

Remove supernate that is present above solids. Transfer the solids to centrifuge cone(s). Record the volume and weight of the sludge before centrifugation. Centrifuge the sample for a minimum of 1 hour. Record volume of solids after centrifugation. Remove liquid and subsample for analysis and archive. Record weight of solids that remain. Subsample solids for analysis. and archive. *1/8/96*

Before centrifugation:

Check weights: $20 \text{ g} = 20.00 \text{ g}$
 $500 \text{ g} = 500.06 \text{ g}$

94-1
Final wt cone ~~1~~ + sludge 57.26 g
1/8/96
Tare wt cone 1 13.60 g

net wt sludge 43.66 gvol sludge 28.0 mL

94-2
Final wt cone ~~2~~ + sludge 56.97 g
1/8/96
Tare wt cone 2 13.42 g

net wt sludge 43.55 gvol sludge 28.0 mL

WHC-SD-WM-DP-165, REV. 1

AN-102 GRAB SAMPLES

1/8/96

★ 102-AN-3(A) Sludge (Continued)

Final wt cone 3 + sludge g ^{N/A}
 Tare wt cone 3 g

 net wt sludge g
 vol sludge mL

Final wt cone 4 + sludge g ^{N/A}
 Tare wt cone 4 g

 net wt sludge g
 vol sludge mL

Record the total weight and volume of the sludge as the sum of all of the cones.

Total wt. sludge 87.21 g Total vol sludge 56.0 mL

Bulk Density of sludge before centrifugation: $\frac{\text{Total wt sludge } 87.21 \text{ g}}{\text{Total vol sludge } 56.0 \text{ mL}} = \underline{1.56} \text{ g/mL}$

After Centrifugation:

vol sludge cone 1 29.0 mL
 vol solids cone 1 17.5 mL

 vol liquid cone 1 11.5 mL

vol sludge cone 2 29.0 mL
 vol solids cone 2 18.0 mL

 vol liquid cone 2 11.0 mL

vol sludge cone 3 mL
 vol solids cone 3 mL

 vol liquid cone 3 mL

vol sludge cone 4 mL
 vol solids cone 4 mL

 vol liquid cone 4 mL

WHC-SD-WM-DP-165, REV 1

AN-102 GRAB SAMPLES 1/9/96

★ 102-AN-3(A) Sludge (Continued)

Remove liquid. Subsample 5 mL for analysis supplementing, if necessary, with liquid removed before centrifugation.

S96T000005

Safety Screen Analysis

Dose Rate: w/o: 1000 mrad/hr

Re-weigh cones and record weight of solids.

Final wt cone 1 + solids ⁹⁴⁻42.76 g
 Tare wt cone 1 13.60 g

 net wt solids 29.16 g

Final wt cone 2 + solids ⁹⁴⁻42.65 g
 Tare wt cone 2 13.42 g

 net wt solids 29.23 g

Final wt cone 3 + solids g
 Tare wt cone 3 g

 net wt solids g

Final wt cone 4 + solids g
 Tare wt cone 4 g

 net wt solids g

Record the total weight and volume of the solids as the sum of all of the cones.

Total wt. solids 58.39 g Total vol solids 35.5 mL

Bulk Density of centrifuged solids: $\frac{\text{net wt solids } \underline{58.39} \text{ g}}{\text{vol solids } \underline{35.5} \text{ mL}} = \underline{1.64} \text{ g/mL}$

Vol % Solids = $\frac{\text{Total vol solids}}{\text{Total vol sludge}} = \frac{\underline{35.5} \text{ mL}}{\underline{58.0} \text{ mL}} \times 100 = \underline{61.2} \%$
 by centrifugation

WHC-SD-WM-DP-165, REV I

AN-102 GRAB SAMPLES 1/8/96

★ 102-AN-3(A) Sludge (Continued)

S96T000003

SOLIDS For Safety Screen Direct analyses (2 - 5 g)

Final wt vial + solids 30.69gTare wt vial 28.59g w/ hand & stopper

net wt solids 2.00gDose Rate: w/o: 2000 mrad/hr

WHC-SD-WM-DP-165, REV. 1

AN-102 GRAB SAMPLES

★ 102-AN-3(B) Sludge Sampled 2/15/95 from riser 22ASampling Depth? 603"Dose Rate: w/o: N/A mrad/hr*1/15/96 No dose rate available,
sample already in notebook*

S96T000002

APPEARANCE: Dark yellow-brown liquid. No organic layer.
Red-tan settled solids see 1/15/96

Measure the height of the settled solids and the total sample and calculate the volume percent settled solids according to the following equation.

$$\text{Vol \% Settled Solids} = \frac{\text{Height solids}}{\text{Height total sample}} = \frac{15 \text{ mm}}{80 \text{ mm}} \times 100 = 18.75\%$$

Remove supernate that is present above solids. Transfer the solids to centrifuge cone(s). Record the volume and weight of the sludge before centrifugation. Centrifuge the sample for a minimum of 1 hour. Record volume of solids after centrifugation. Remove liquid and subsample for analysis ~~and archive~~. Record weight of solids that remain. Subsample solids for analysis. ~~and archive~~. *see 1/15/96 Homogenized sludge using a vortex Genie 2 set on maximum (mixer) settling for approximately 3 minutes. Sludge seemed to mix very well and become pourable.*

Before centrifugation:

Check weights: $20 \text{ g} = 20.00 \text{ g}$
 $500 \text{ g} = 500.06 \text{ g}$

Final wt cone 1 + sludge 43.14 gTare wt cone 1 13.56 gnet wt sludge 29.58 gvol sludge 20.0 mLFinal wt cone 2 + sludge _____ g *N/A see 1/15/96*Tare wt cone 2 _____ gnet wt sludge _____ gvol sludge _____ mL

WHC-SD-WM-DP-165, REV. 1

AN-102 GRAB SAMPLES

1/8/96

★ 102-AN-3(B) Sludge (Continued)

Final wt cone 3 + sludge _____ g

Tare wt cone 3 _____ g

net wt sludge _____ g

vol sludge _____ ml

Final wt cone 4 + sludge _____ g

Tare wt cone 4 _____ g

net wt sludge _____ g

vol sludge _____ ml

Record the total weight and volume of the sludge as the sum of all of the cones.

Total wt. sludge 29.58 gTotal vol sludge 20.0 mlBulk Density of sludge before centrifugation: $\frac{\text{Total wt. sludge } 29.58 \text{ g}}{\text{Total vol sludge } 20.0 \text{ mL}} = 1.48 \text{ g/mL}$ Total vol sludge 20.0 mL

After Centrifugation:

vol sludge cone 1 20 mlvol solids cone 1 10 mLvol liquid cone 1 10 ml

vol sludge cone 3 _____ mL

vol solids cone 3 _____ mL

vol liquid cone 3 _____ mL

vol sludge cone 2 _____ mL

vol solids cone 2 _____ mL

vol liquid cone 2 _____ mL

vol sludge cone 4 _____ mL

vol solids cone 4 _____ mL

vol liquid cone 4 _____ mL

WHC-SD-WM-DP-165, REV 1

AN-102 GRAB SAMPLES

1/8/96

★ 102-AN-3(B) Sludge (Continued)

Remove liquid. Subsample 5 ml. for analysis supplementing, as necessary, with liquid that was removed before centrifugation.

rec
1/8/96

S96T000006

Safety Screen Analyses

Dose Rate: w/o: 1000 mrad/hr

Re-weigh cones and record weight of solids.

Final wt cone 1 + solids 29.20 g
 Tare wt cone 1 13.56 g
 net wt solids 15.64 g

Final wt cone 2 + solids _____ g
 Tare wt cone 2 _____ g
 net wt solids _____ g

Final wt cone 3 + solids _____ g
 Tare wt cone 3 _____ g
 net wt solids _____ g

Final wt cone 4 + solids _____ g
 Tare wt cone 4 _____ g
 net wt solids _____ g

Record the total weight and volume of the solids as the sum of all of the cones.

Total wt. solids 15.64 gTotal vol solids 10.0 mL

Bulk Density of centrifuged solids: $\frac{\text{net wt solids } \underline{15.64} \text{ g}}{\text{vol solids } \underline{10.0} \text{ mL}} = \underline{1.56} \text{ g/mL}$

Vol % Solids = $\frac{\text{Total vol solids}}{\text{Total vol sludge}} \times 100 = \frac{\underline{10.0} \text{ mL}}{\underline{20.0} \text{ mL}} \times 100 = \underline{50.0} \%$
 by centrifugation

WHC-SD-WM-DP-165, REV 1

AN-102 GRAB SAMPLES

1/8/96

★ 102-AN-3(B) Sludge (Continued)

S96T000004

SOLIDS For Safety Screen Direct analyses (2 - 5 g)

Final wt vial + solids 29.14 gTare wt vial 27.27 g *w/o head & stopper*

net wt solids 1.87 gDose Rate: w/o: 1000 mrad/hr

WHC-SD-WM-DP-165, REV. 1

CORRESPONDENCE

WHC-SD-WM-DP-165, REV. 1

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**Westinghouse
Hanford Company**

WHC-SD-WM-DP-165, REV. 1

**Internal
Memo**

From: Production Planning and Control 75725-96-003
Phone: 373-4314 T6-06
Date: January 17, 1996
Subject: IMMEDIATE NOTIFICATION: VIOLATION OF DIFFERENTIAL SCANNING CALORIMETRY
LIMIT FOR SAMPLE S95T003868 FROM TANK 241-AN-102

To:	R. J. Cash	S7-15	W. Liou	S7-54
	G. B. Griffin	T6-16	M. A. Islam	R3-08
	T. J. Kelley	S7-21	H. Babad	S7-15
	N. W. Kirch	R2-11	G. N. Hanson	S5-05
	E. J. Lipke	S7-15	S. H. Rifaey	T4-07
	J. E. Meacham	S7-15	D. A. Turner	S7-15
	B. C. Simpson	R2-12	G. T. Dukelow	S7-15

cc: J. G. Kristofzski R2-12
J. Jo R2-12
R. A. Esch T6-06
ADR-File/LB

- References: (1) WHC-SD-WM-TSAP-065, Rev. 1, "Tank 241-AN-102 Grab Sampling and Analysis Plan", dated December 6, 1995, Westinghouse Hanford Company, Richland, WA 99352
- (2) WHC-SD-WM-SP-004, Rev. 2, "Tank Safety Screening Data Quality Objective", dated August 31, 1995, Westinghouse Hanford Company, Richland, WA 99352

One sample from 241-AN-102, submitted for differential scanning calorimetry (DSC) determination exceeded the maximum exothermic criterion of 480 joules/gram (dry weight basis) stated in the Sampling and Analysis Plan and the Safety Screening Data Quality Objective (References 1 and 2). The sample information and analytical results are given in the table below.

R.J. Cash, et al.
Page 2
January 17, 1996

75725-96-003

SAMPLE DESCRIPTION	SAMPLE NUMBER	DSC RESULTS (JOULES/GRAM, DRY WEIGHT)						TGA AVERAGE (WT% H ₂ O)
		SAMPLE	DUPLICATE	TRIPPLICATE	AVERAGE	STANDARD DEVIATION OF THE AVERAGE	95% UPPER LIMIT	
2AN-95-2	S95T003868	1201	1088	n/a	1144	80	1501	48.71

TGA = thermogravimetric analysis

95% Upper Limit = one-sided upper confidence limit for DSC results

n/a = Not available. No triplicate analysis was run.

This sample was obtained from riser 21A, at a depth of 550 inches. The results agreed well between the sample and duplicate, the relative percent difference was 9.9%. Two other samples collected on the same day from riser 21A exhibited exotherms of approximately 42 joules/g dry weight (based on the average wt% water for sample 2AN-95-2 listed above).

Should you have any questions regarding this notification, please feel free to contact me on 373-4314.

Ruth A. Esch
Production Planning and Control

From: Production Planning and Control 75725-96-004
Phone: 373-4314 T6-06
Date: January 30, 1996
Subject: IMMEDIATE NOTIFICATION: VIOLATION OF DIFFERENTIAL SCANNING CALORIMETRY
LIMIT FOR THE LISTED SAMPLES FROM TANK 241-AN-102

To:	R. J. Cash	S7-15	W. Liou	S7-54
	G. B. Griffin	T6-16	M. N. Islam	R3-08
	T. J. Kelley	S7-21	H. Babad	S7-15
	N. W. Kirch	R2-11	G. N. Hanson	S5-05
	E. J. Lipke	S7-15	S. H. Rifaey	T4-07
	J. E. Meacham	S7-15	D. A. Turner	S7-15
	B. C. Simpson	R2-12	G. T. Dukelow	S7-15

cc: J. G. Kristofzski R2-12
J. Jo R2-12
R. A. Esch T6-06
ADR-File/LB

- References: (1) WHC-SD-WM-TSAP-065, Rev. 1, "Tank 241-AN-102 Grab Sampling and Analysis Plan", dated December 6, 1995, Westinghouse Hanford Company, Richland, WA 99352
- (2) WHC-SD-WM-SP-004, Rev. 2, "Tank Safety Screening Data Quality Objective", dated August 31, 1995, Westinghouse Hanford Company, Richland, WA 99352

Eight samples from 241-AN-102, submitted for differential scanning calorimetry (DSC) determinations exceeded the maximum exothermic criterion of 480 joules/gram (dry weight basis) stated in the Sampling and Analysis Plan and the Safety Screening Data Quality Objective (References 1 and 2). The sample information and analytical results are given in the table below.

R.J. Cash, et al.
Page 2
January 30, 1996

75725-96-004

SAMPLE DESCRIPTION	SAMPLE NUMBER	DSC RESULTS (JOULES/GRAM, DRY WEIGHT)					TGA AVERAGE (WT% H ₂ O)
		SAMPLE	DUPLICATE	AVERAGE	STANDARD DEVIATION	95% UPPER LIMIT (MEAN)	
Supernates							
102-AN-1	S95T003982	563.6	629.4	596.5	46.5	804.2	49.56
102-AN-2	S95T003983	720.3	560.2	640.3	113.2	1145.7	49.83
2AN-95-2	S95T003868	1201	1088	1144	80	1501	48.71*
2AN-95-3	S95T003869	555.3	566.1	560.7	7.6	594.8	50.08
Sludges							
Decanted Supernate							
2AN-95-4A	S95T004133	487.1	475.9	481.5	7.9	516.9	47.03
2AN-95-5A	S95T004135	556.5	597.5	577.0	29.0	706.4	49.74
Solids							
2AN-95-4A	S95T004137	488.1	458.2	473.2	21.1	567.5	42.70
2AN-95-5A	S95T004139	492.1	569.1	530.6	54.4	773.7	42.45

* - This result is the average of three results

TGA = thermogravimetric analysis

95% Upper Limit = one-sided upper confidence limit for DSC results

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Page 3
January 30, 1996

75725-96-004

The results agreed well between the sample and duplicate for all but three of the samples. The samples that had an RPD larger than $\pm 10\%$ were: sample 102-AN-1 RPD = 11.0%; sample 102-AN-2 RPD = 25.0%; and sample 2AN-95-5A solid RPD = 14.5%. These high exotherms were expected for this tank, since 241-AN-102 contains complexed waste.

Should you have any questions regarding this notification, please feel free to contact me on 373-4314.

Ruth A. Esch
Production Planning and Control

**Westinghouse
Hanford Company**

WHC-SD-WM-DP-165, REV. 1

**Internal
Memo**

From: Production Planning and Control
Phone: 373-4314 T6-06
Date: February 2, 1996
Subject: IMMEDIATE NOTIFICATION: VIOLATION OF DIFFERENTIAL SCANNING CALORIMETRY
LIMIT FOR SAMPLE S95T003867 FROM TANK 241-AN-102

75725-96-005

To:	R. J. Cash	S7-15	W. Liou	S7-54
	G. B. Griffin	T6-16	M. N. Islam	R3-08
	T. J. Kelley	S7-21	H. Babad	S7-15
	N. W. Kirch	R2-11	G. N. Hanson	S5-05
	E. J. Lipke	S7-15	S. H. Rifaey	T4-07
	J. E. Meacham	S7-15	D. A. Turner	S7-15
	B. C. Simpson	R2-12	G. T. Dukelow	S7-15

cc: J. G. Kristofzski R2-12
J. Jo R2-12
R. A. Esch T6-06
ADR-File/LB

- References: (1) WHC-SD-WM-TSAP-065, Rev. 1, "Tank 241-AN-102 Grab Sampling and Analysis Plan", dated December 6, 1995, Westinghouse Hanford Company, Richland, WA 99352
- (2) WHC-SD-WM-SP-004, Rev. 2, "Tank Safety Screening Data Quality Objective", dated August 31, 1995, Westinghouse Hanford Company, Richland, WA 99352

One sample from 241-AN-102, submitted for differential scanning calorimetry (DSC) determination exceeded the maximum exothermic criterion of 480 joules/gram (dry weight basis) stated in the Sampling and Analysis Plan and the Safety Screening Data Quality Objective (References 1 and 2). The sample information and analytical results are given in the table below.

Westinghouse
Hanford Company

WHC-SD-WM-DP-165, REV. 1

Internal
Memo

R.J. Cash, et al.
Page 2
February 2, 1996

75725-96-005

SAMPLE DESCRIPTION	SAMPLE NUMBER	DSC RESULTS (JOULES/GRAM, DRY WEIGHT)					TGA AVERAGE (WT% H ₂ O)
		SAMPLE	DUPLICATE	AVERAGE	STANDARD DEVIATION	95% UPPER LIMIT (MEAN)	
2AN-95-1	S95T003867	558.2	558.4	558.3	0.14	558.9	49.14

TGA = thermogravimetric analysis
95% Upper Limit = one-sided upper confidence limit for DSC results

Sample 2AN-95-1 was a supernate sample taken from riser 21A at a depth of 370 inches (cable length from top of riser) on November 30, 1995. The results agreed well between the sample and duplicate. The high exotherm was expected for this tank, since 241-AN-102 contains complexed waste.

Should you have any questions regarding this notification, please feel free to contact me on 373-4314.

Ruth A. Esch
Production Planning and Control

**Westinghouse
Hanford Company**

WHC-SD-WM-DP-165, REV 1

**Internal
Memo**

From: Production Planning and Control 75725-96-015
Phone: 373-4314 T6-06
Date: March 8, 1996
Subject: IMMEDIATE NOTIFICATION: HYDROXIDE CONCENTRATION OUT OF SPECIFICATION FOR
CORROSION CONCERNS FOR SUPERNATE SAMPLES FROM TANK 241-AN-102

To:	R. J. Cash	S7-15	D. A. Turner	S7-15
	G. B. Griffin	T6-16	M. N. Islam	R3-08
	T. J. Kelley	S7-21	H. Babad	S7-15
	N. W. Kirch	R2-11	G. N. Hanson	S5-05
	E. J. Lipke	S7-15	S. H. Rifaey	T4-07
	J. E. Meacham	S7-15	D. A. Turner	S7-15
	B. C. Simpson	R2-12		

cc: J. G. Kristofzski R2-12
S. J. Eberlein R2-12
J. Jo R2-12
R. A. Esch T6-06
ADR-File/LB

- References: (1) WHC-SD-WM-TSAP-065, Rev. 1, "Tank 241-AN-102 Grab Sampling and Analysis Plan", dated December 6, 1995, Westinghouse Hanford Company, Richland, WA 99352
- (2) WHC-SD-WM-DQO-001, Rev. 1, "Data Quality Objectives for Tank Farms Waste Compatibility Program", dated April 24, 1995, Westinghouse Hanford Company, Richland, WA 99352

Three supernate samples from 241-AN-102, submitted for hydroxide analysis had concentrations that were below the required range for corrosion control stated in the Sampling and Analysis Plan and the Data Quality Objectives for Tank Farms Waste Compatibility Program (References 1 and 2). The sample information and analytical results are given in the table below.

**Westinghouse
Hanford Company**

WHC-SD-WM-DP-165, REV 1

**Internal
Memo**

R.J. Cash, et al.
Page 2
March 8, 1996

75725-96-005

SAMPLE DESCRIPTION	SAMPLE NUMBER	RESULTS (M)			OH REQUIRED RANGE
		NITRATE (NO ₃ ⁻)	HYDROXIDE (OH ⁻)	HYDROXIDE RPD	
2AN-95-1	S95T003867	2.63	0.195		$0.1 \times [\text{NO}_3^-] \leq [\text{OH}^-] \leq 10 \text{ M}$
2AN-95-1 DUP	S95T003867	3.11	0.181	7.4%	$0.3 \text{ M} \leq [\text{OH}^-] \leq 10 \text{ M}$
2AN-95-2	S95T003868	4.56	0.195		$0.3 \text{ M} \leq [\text{OH}^-] \leq 10 \text{ M}$
2AN-95-2 DUP	S95T003868	4.82	0.191	2.1%	$0.3 \text{ M} \leq [\text{OH}^-] \leq 10 \text{ M}$
2AN-95-3	S95T003869	3.16	0.182		$0.3 \text{ M} \leq [\text{OH}^-] \leq 10 \text{ M}$
2AN-95-3 DUP	S95T003869	3.18	0.195	6.9%	$0.3 \text{ M} \leq [\text{OH}^-] \leq 10 \text{ M}$

RPD = Relative percent difference between sample and duplicate results

The three supernate samples were taken from Tank 241-AN-102 riser 21A on November 30, 1995. They were analyzed for waste compatibility. According to the DQO for waste compatibility (reference 2) the required range for OH⁻ concentration is dependent on the concentration range of the NO₃⁻. If $1.0 \text{ M} < [\text{NO}_3^-] \leq 3.0 \text{ M}$, then $0.1 \times [\text{NO}_3^-] \leq [\text{OH}^-] < 10 \text{ M}$. However, if $[\text{NO}_3^-] > 3.0 \text{ M}$, then $0.3 \text{ M} \leq [\text{OH}^-] < 10 \text{ M}$. The table above shows that the [OH⁻] is below the required ranges for all three samples and their duplicates. All three samples had very good agreement between the sample and duplicate OH⁻ results, all RPDs were less than 10%.

Should you have any questions regarding this notification, please feel free to contact me on 373-4314.

Ruth A. Esch
Production Planning and Control

WHC-SD-WM-DP-165, REV. 1

SAMPLE PREPARATIONS

WHC-SD-WM-DP-165, REV. 1

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LABCORE Data Entry Template for Worklist#

4790

Analyst: QNM Instrument: FUS01 32116355 Book # _____

Method: LA-549-141 Rev/Mod E - O

Worklist Comment: AN-102 Grab Samples (S4A,S5A,S3A,S3B) Fusion Digestion rkf

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			FUSION01	SOLID	<u>1</u>	<u>250</u>	N/A	g/L
95000222	AN-102 GRAB	2 SAMPLE	S95T004141	0 F	FUSION01	SOLID	N/A	<u>2.1588</u>		g/L
			<u>.5397g</u>							
95000222	AN-102 GRAB	3 SAMPLE	S95T004141	0	DOSE-02	SOLID	N/A	<u>26</u>		mrad/hour
95000222	AN-102 GRAB	4 DUP	S95T004141	0 F	FUSION01	SOLID	<u>2.1588</u>	<u>2.1376</u>	N/A	g/L
			<u>.5344g</u>							
95000222	AN-102 GRAB	5 DUP	S95T004141	0	DOSE-02	SOLID	<u>26</u>	<u>25</u>	N/A	mrad/hour
95000222	AN-102 GRAB	6 SAMPLE	S95T004142	0 F	FUSION01	SOLID	N/A	<u>2.1584</u>		g/L
			<u>.5396g</u>							
95000222	AN-102 GRAB	7 SAMPLE	S95T004142	0	DOSE-02	SOLID	N/A	<u>25</u>		mrad/hour
95000222	AN-102 GRAB	8 DUP	S95T004142	0 F	FUSION01	SOLID	<u>2.1584</u>	<u>2.1560</u>	N/A	g/L
			<u>.5390g</u>							
95000222	AN-102 GRAB	9 DUP	S95T004142	0	DOSE-02	SOLID	<u>25</u>	<u>25</u>	N/A	mrad/hour
95000227	AN-102 GRAB	10 SAMPLE	S96T000007	0 F	FUSION01	SOLID	N/A	<u>.6760</u>		g/L
			<u>.1690g</u>							
95000227	AN-102 GRAB	11 SAMPLE	S96T000007	0	DOSE-02	SOLID	N/A	<u>6</u>		mrad/hour
95000227	AN-102 GRAB	12 DUP	S96T000007	0 F	FUSION01	SOLID	<u>0.6760</u>	<u>.5404</u>	N/A	g/L
			<u>.1351g</u>							
95000227	AN-102 GRAB	13 DUP	S96T000007	0	DOSE-02	SOLID	<u>6</u>	<u>6</u>	N/A	mrad/hour
95000227	AN-102 GRAB	14 SAMPLE	S96T000008	0 F	FUSION01	SOLID	N/A	<u>.4968</u>		g/L
			<u>.1242g</u>							
95000227	AN-102 GRAB	15 SAMPLE	S96T000008	0	DOSE-02	SOLID	N/A	<u>8</u>		mrad/hour
95000227	AN-102 GRAB	16 DUP	S96T000008	0 F	FUSION01	SOLID	<u>.4968</u>	<u>.5468</u>	N/A	g/L
			<u>.1367g</u>							
95000227	AN-102 GRAB	17 DUP	S96T000008	0	DOSE-02	SOLID	<u>8</u>	<u>7</u>	N/A	mrad/hour

Data Entry Comments:

41% Solids

40 ml of H₂O₂

For all Samples & QC

HPT was Pam Higbee

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#

4790

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

Final page for worklist #

4790

QAMurphy 1-23-96
Analyst Signature Date

Keith Fuller 1/24/96
Analyst Signature Date

S95T004137 → 4141

4139 → 4142

S96T000003 → 0007

0004 → 0008

Reviewed by RFX Fuller 1/24/96

Data Entry Comments:

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

WHC-SD-WM-DP-165, REV. 1

INORGANIC ANALYSES

WHC-SD-WM-DP-165, REV. 1

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LABCORE Data Entry Template for Worklist#

4993

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

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

Worklist Comment: SpG AN-102 (Do not run replicates)

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			SPG-01	LIQUID		<u>1.410</u>	<u>N/A</u>	Sp.G.
95000222	AN-102 GRAB	2 SAMPLE	S95T003867	0	SPG-01	LIQUID	<u>N/A</u>	<u>1.388</u>		Sp.G.
95000222	AN-102 GRAB	3 DUP	S95T003867	0	SPG-01	LIQUID	<u>1.388</u>	<u>1.382</u>	<u>N/A</u>	Sp.G.
95000222	AN-102 GRAB	4 SAMPLE	S95T003868	0	SPG-01	LIQUID	<u>N/A</u>	<u>1.432</u>		Sp.G.
95000222	AN-102 GRAB	5 DUP	S95T003868	0	SPG-01	LIQUID	<u>1.432</u>	<u>1.402</u>	<u>N/A</u>	Sp.G.
95000222	AN-102 GRAB	6 SAMPLE	S95T003869	0	SPG-01	LIQUID	<u>N/A</u>	<u>1.394</u>		Sp.G.
95000222	AN-102 GRAB	7 DUP	S95T003869	0	SPG-01	LIQUID	<u>1.394</u>	<u>1.383</u>	<u>N/A</u>	Sp.G.
95000222	AN-102 GRAB	8 SAMPLE	S95T003962	0	SPG-01	LIQUID	<u>N/A</u>	<u>.994</u>		Sp.G.
95000222	AN-102 GRAB	9 DUP	S95T003962	0	SPG-01	LIQUID	<u>.994</u>	<u>1.015</u>	<u>N/A</u>	Sp.G.

Final page for worklist #

4993

Andre M. Dutton 2-11-96
Analyst Signature Date
1500

Andre M. Dutton 2-13-96
Analyst Signature Date
Approved by H. Anastas
2-15-96

Data Entry Comments:

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

WORKLIST
#

ANALYST
SIGNATURE

ANALYSIS
DATE

ANALYSIS
TIME

INSTRUMENT
CODE

4993

Leslie M. Dutton 2-11-96

1500

☒ SAMPLE
STANDARD

☐ DUPLICATE

SAMPLE # =

STD # =

133 N16-A

TARE WEIGHT (g) 1.9817
GROSS WEIGHT (g) 2.0227
VOL. of SOLUTION (mL) 1.0002

REPLICATE
1.8903
2.0323
1.0002

☒ SAMPLE
STANDARD

☐ DUPLICATE

SAMPLE # = 5957003867

STD # =

TARE WEIGHT (g) 1.8670
GROSS WEIGHT (g) 2.0058
VOL. of SOLUTION (mL) 1.0002

REPLICATE
1.8670
2.0058
1.0002

☒ SAMPLE
STANDARD

☒ DUPLICATE

SAMPLE # = 5957003867

STD # =

TARE WEIGHT (g) 1.8371
GROSS WEIGHT (g) 1.9753
VOL. of SOLUTION (mL) 1.0002

REPLICATE
1.8371
1.9753
1.0002

☒ SAMPLE
STANDARD

☐ DUPLICATE

SAMPLE # = 5957003867

STD # =

TARE WEIGHT (g) 1.8804
GROSS WEIGHT (g) 2.0236
VOL. of SOLUTION (mL) 1.0002

REPLICATE
1.8804
2.0236
1.0002

☒ SAMPLE
STANDARD

☒ DUPLICATE

SAMPLE # = 5957003868

STD # =

TARE WEIGHT (g) 1.8907
GROSS WEIGHT (g) 2.0309
VOL. of SOLUTION (mL) 1.0002

REPLICATE
1.8907
2.0309
1.0002

☒ SAMPLE
STANDARD

☐ DUPLICATE

SAMPLE # = 5957003869

STD # =

TARE WEIGHT (g) 1.8797
GROSS WEIGHT (g) 2.0191
VOL. of SOLUTION (mL) 1.0002

REPLICATE
1.8797
2.0191
1.0002

☒ SAMPLE
STANDARD

☒ DUPLICATE

SAMPLE # = 5957003869

STD # =

TARE WEIGHT (g) 1.8481
GROSS WEIGHT (g) 1.9784
VOL. of SOLUTION (mL) 1.0002

REPLICATE
1.8481
1.9784
1.0002

☒ SAMPLE
STANDARD

☐ DUPLICATE

SAMPLE # = 5957003962

STD # =

TARE WEIGHT (g) 1.8487
GROSS WEIGHT (g) 1.9981
VOL. of SOLUTION (mL) 1.0002

REPLICATE
1.8487
1.9981
1.0002

WHC-SD-WM-DP-165, REV. 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. I

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

Type		STANDARD	STANDARD
STANDARD	Gross Weight (W2)	2.0227	2.0323
Work List	Tare Weight (W1)	1.8817	1.8913
4993	Weight of Solution (W2-W1)	0.141	0.141
Test Code	Volume of Solution μ L	100.0200	100.0200
SPG-01	Specific Gravity	1.410	1.410
Matrix	Specific Gravity (Average)	1.4097	
LIQUID			
Sample #			
STD			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
SMF	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
02/11/96	ν RESULT ν		
Time	Specific Gravity Average =	1.410	
03:00 PM			

Data Entry by: *[Signature]* Date: 02/13/96
 Approved by: *[Signature]* Date: 2-15-96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

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

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	2.0058	
Work List	Tare Weight (W1)	1.8670	
4993	Weight of Solution (W2-W1)	0.1388	0
Test Code	Volume of Solution μ L	100.0200	
SPG-01	Specific Gravity	1.3877	NA
Matrix			
LIQUID			
Sample #			
S95T003867			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
SMF	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L}/\text{mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
02/11/96	$\checkmark$ RESULT $\checkmark$		
Time	Specific Gravity =	1.388	
03:00 PM			

Data Entry by: <i>[Signature]</i>	Date: 02/13/96
Approved by: <i>[Signature]</i>	Date: 2-15-96

Form 510112L1 Rev. 1.1 Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

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

Type		DUPLICATE	REPLICATE
DUPLICATE	Gross Weight (W2)	1.9753	
Work List	Tare Weight (W1)	1.8371	
4993	Weight of Solution (W2-W1)	0.1382	0
Test Code	Volume of Solution μ L	100.0200	
SPG-01	Specific Gravity	1.3817	NA
Matrix			
LIQUID			
Sample #			
S95T003867			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
SMF	Specific Gravity = $[(W2-W1) \times 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} \times 1.000 \text{ g/mL}]$		
Date			
02/11/96	∇ RESULT ∇		
Time	Specific Gravity =	1.382	
03:00 PM			

Data Entry by: <i>Day</i>	Date: 02/13/96
Approved by: <i>H Anasto</i>	Date: 2-15-96

Form 510112L1 Rev. 1.1 Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

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

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	2.0236	
Work List	Tare Weight (W1)	1.8804	
4993	Weight of Solution (W2-W1)	0.1432	0
Test Code	Volume of Solution μ L	100.0200	
SPG-01	Specific Gravity	1.4317	NA
Matrix			
LIQUID			
Sample #			
S95T003868			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
SMF			
Date			
02/11/96			
Time			
03:00 PM			

v RESULT v

Specific Gravity =	1.432
--------------------	-------

Data Entry by: <i>Dan Hemmick</i>	Date: 02/13/96
Approved by: <i>Al Anasta</i>	Date: 2-15-96

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. I

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

Type		DUPLICATE	REPLICATE
DUPLICATE	Gross Weight (W2)	2.0309	
Work List	Tare Weight (W1)	1.8907	
4993	Weight of Solution (W2-W1)	0.1402	0
Test Code	Volume of Solution μ L	100.0200	
SPG-01	Specific Gravity	1.4017	NA
Matrix			
LIQUID			
Sample #			
S95T003868			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
SMF			
Date			
02/11/96	v RESULT v		
Time	Specific Gravity =	1.402	
03:00 PM			

Data Entry by: <i>Dan Hammett</i>	Date: 02/13/96
Approved by: <i>J. Anasto</i>	Date: 2-15-96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

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

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	2.0191	
Work List	Tare Weight (W1)	1.8797	
4993	Weight of Solution (W2-W1)	0.1394	0
Test Code	Volume of Solution μ L	100.0200	
SPG-01	Specific Gravity	1.3937	NA
Matrix			
LIQUID			
Sample #			
S95T003869			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
SMF	Specific Gravity = $[(W2-W1) \times 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} \times 1.000 \text{ g/mL}]$		
Date			
02/11/96			
Time			
03:00 PM			
	v RESULT v		
	Specific Gravity =	1.394	

Data Entry by: <i>[Signature]</i>	Date: 02/13/96
Approved by: <i>[Signature]</i>	Date: 2-15-96

Form 510112L1 Rev. 1.1 Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

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

Type		DUPLICATE	REPLICATE
DUPLICATE	Gross Weight (W2)	1.9784	
Work List	Tare Weight (W1)	1.8401	
4993	Weight of Solution (W2-W1)	0.1383	0
Test Code	Volume of Solution μ L	100.0200	
SPG-01	Specific Gravity	1.3827	NA
Matrix			
LIQUID			
Sample #			
S95T003869			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
SMF			
Date			
02/11/96	v RESULT v		
Time	Specific Gravity =	1.383	
03:00 PM			

Data Entry by: *[Signature]* Date: 02/13/96
 Approved by: *[Signature]* Date: 2-15-96
 Form 510112L1 Rev. 1.1 Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. I

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

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.9481	
Work List	Tare Weight (W1)	1.8487	
4993	Weight of Solution (W2-W1)	0.0994	0
Test Code	Volume of Solution μ L	100.0200	
SPG-01	Specific Gravity	0.9938	NA
Matrix			
LIQUID			
Sample #			
S95T003962			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
SMF	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L}/\text{mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g}/\text{mL}]$		
Date			
02/11/96			
Time			
03:00 PM			

v RESULT v	
Specific Gravity =	0.994

Data Entry by:	Date: 02/13/96
Approved by:	Date: 2-15-96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

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

Type		DUPLICATE	REPLICATE
DUPLICATE	Gross Weight (W2)	1.9911	
Work List	Tare Weight (W1)	1.8896	
4993	Weight of Solution (W2-W1)	0.1015	0
Test Code	Volume of Solution μ L	100.0200	
SPG-01	Specific Gravity	1.0148	NA
Matrix			
LIQUID			
Sample #			
S95T003962			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
SMF			
Date			
02/11/96			
Time			
03:00 PM			

v RESULT v

Specific Gravity = 1.015

Data Entry by: <i>Ray H. Hunsicker</i>	Date: 02/13/96
Approved by: <i>Alonso</i>	Date: 2-15-96

LABCORE Data Entry Template for Worklist#

4995

Analyst: SMF Instrument: BA001 Book # 133 N 116 A

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

Worklist Comment: SpG 102AN (Do not run replicates)

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			SPG-01	LIQUID		1.400	N/A	Sp.G.
95000227	AN-102 GRAB	2 SAMPLE	S95T003982	0	SPG-01	LIQUID	N/A	1.44		Sp.G.
95000227	AN-102 GRAB	3 DUP	S95T003982	0	SPG-01	LIQUID	1.44	1.43	N/A	Sp.G.
95000227	AN-102 GRAB	4 SAMPLE	S95T003983	0	SPG-01	LIQUID	N/A	1.39		Sp.G.
95000227	AN-102 GRAB	5 DUP	S95T003983	0	SPG-01	LIQUID	1.39	1.51 1.50 Hka	2-6-96 N/A	Sp.G.
95000227	AN-102 GRAB	6 SAMPLE	S95T003984	0	SPG-01	LIQUID	N/A	1.37		Sp.G.
95000227	AN-102 GRAB	7 DUP	S95T003984	0	SPG-01	LIQUID	1.37	1.48	N/A	Sp.G.

Final page for worklist #

4995

See Attached for Signatures
Analyst Signature RTB Date 2-5-96

RTB 2-5-96
Analyst Signature Date

Data Entry Comments:

Approved by Hka 2-7-96

LABCORE Data Entry Template for Worklist#

4995

Analyst: SMF Instrument: BA001 Book # 133N16-1A

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

Worklist Comment: SpG 102AN (Do not run replicates)

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			SPG-01	LIQUID		<u>1399.5</u>	N/A	Sp.G.
95000227	AN-102 GRAB	2 SAMPLE	S95T003982	0	SPG-01	LIQUID	N/A	<u>1438.0</u>		Sp.G.
95000227	AN-102 GRAB	3 DUP	S95T003982	0	SPG-01	LIQUID	<u>1458.0</u>	<u>1425.6</u> <u>1.42</u> 1458.0	N/A	Sp.G.
95000227	AN-102 GRAB	4 SAMPLE	S95T003983	0	SPG-01	LIQUID	N/A	<u>1387.3</u>		Sp.G.
95000227	AN-102 GRAB	5 DUP	S95T003983	0	SPG-01	LIQUID	<u>1387.3</u>	<u>1507.6</u>	N/A	Sp.G.
95000227	AN-102 GRAB	6 SAMPLE	S95T003984	0	SPG-01	LIQUID	N/A	<u>1374.1</u>		Sp.G.
95000227	AN-102 GRAB	7 DUP	S95T003984	0	SPG-01	LIQUID	<u>1374.1</u>	<u>2377.4</u>	N/A	Sp.G.

Final page for worklist #

4995

[Signature] 2-5-96
Analyst Signature Date
0500

Analyst Signature Date

Results on this page were reported incorrectly.
The correct values are reported on the page
previous to this. reach 3/7/96

Data Entry Comments:

Seep. Size 10017 ml

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

WORKLIST

#

4995

ANALYST

SIGNATURE

J. Fulton

ANALYSIS

DATE

2-4-96
2-5-96

ANALYSIS

TIME

0500

INSTRUMENT

CODE

☒ SAMPLE
STANDARD☐ DUPLICATE

#1 SAMPLE # = STD

STD # = 133N16-A

TARE WEIGHT (g)

1.86452

GROSS WEIGHT (g)

2.00471

VOL. of SOLUTION (mL)

1.0017

REPLICATE

N/A

☐ SAMPLE
STANDARD☒ DUPLICATE

#5 SAMPLE # = 595T003983

STD # =

TARE WEIGHT (g)

1.87868

GROSS WEIGHT (g)

2.02976

VOL. of SOLUTION (mL)

1.0017

REPLICATE

N/A

☒ SAMPLE
STANDARD☐ DUPLICATE

#2 SAMPLE # = 595T003982

STD # =

TARE WEIGHT (g)

1.82934

GROSS WEIGHT (g)

1.97338

VOL. of SOLUTION (mL)

1.0017

REPLICATE

N/A

☒ SAMPLE
STANDARD☐ DUPLICATE

#6 SAMPLE # = 595T003984

STD # =

TARE WEIGHT (g)

1.80172

GROSS WEIGHT (g)

1.93937

VOL. of SOLUTION (mL)

1.0017

REPLICATE

N/A

☐ SAMPLE
STANDARD☒ DUPLICATE

#3 SAMPLE # = 595T003982

STD # =

TARE WEIGHT (g)

1.84351

GROSS WEIGHT (g)

1.93631

VOL. of SOLUTION (mL)

1.0017

REPLICATE

N/A

☐ SAMPLE
STANDARD☒ DUPLICATE

#7 SAMPLE # = 595T003984

STD # =

TARE WEIGHT (g)

1.86608

GROSS WEIGHT (g)

2.01422

VOL. of SOLUTION (mL)

1.0017

REPLICATE

N/A

☒ SAMPLE
STANDARD☐ DUPLICATE

#4 SAMPLE # = 595T003983

STD # =

TARE WEIGHT (g)

1.86665

GROSS WEIGHT (g)

2.00562

VOL. of SOLUTION (mL)

1.0017

REPLICATE

N/A

☐ SAMPLE
STANDARD☐ DUPLICATE

SAMPLE # =

STD # =

TARE WEIGHT (g)

GROSS WEIGHT (g)

VOL. of SOLUTION (mL)

REPLICATE

WHC-SD-WM-DP-165, REV. 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

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

Type		STANDARD	STANDARD
STANDARD	Gross Weight (W2)	2.0047	
Work List	Tare Weight (W1)	1.8645	
4995	Weight of Solution (W2-W1)	0.14019	0
Test Code	Volume of Solution μ L	100.1700	
SPG-01	Specific Gravity	1.3995	NA
Matrix			
LIQUID			
Sample #			
133N16A			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst	Specific Gravity = $[(W2-W1) \div 1000 \mu\text{L/mL}] \div [\text{Vol. of Solution } \mu\text{L} \div 1.000 \text{ g/mL}]$		
SM FULTON			
Date			
02/05/96			
Time	v RESULT v		
	Specific Gravity =	1.400	

Data Entry by: <i>H Anastor</i>	Date: 02/05/96
Approved by: <i>Heather Anastor</i>	Date: 2-6-96

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

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

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.9734	
Work List	Tare Weight (W1)	1.8293	
4995	Weight of Solution (W2-W1)	0.14404	0
Test Code	Volume of Solution μ L	100.1700	
SPG-01	Specific Gravity	1.4380	NA
Matrix			
LIQUID			
Sample #			
S95T003982			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L}/\text{mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
SM FULTON			
Date			
02/05/96			
Time			
	v RESULT v		
	Specific Gravity =	1.438	

Data Entry by: <i>H. Anastro</i>	Date: 02/05/96
Approved by: <i>Heather Anastro</i>	Date: 2-6-96

Form 510112L1 Rev. 1.1

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. ↓

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

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.9863	
Work List	Tare Weight (W1)	1.8435	
4995	Weight of Solution (W2-W1)	0.1428	0
Test Code	Volume of Solution μ L	100.1700	
SPG-01	Specific Gravity	1.4256	NA
Matrix			
LIQUID			
Sample #			
S95T003982/DUP			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
SM FULTON	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
02/05/96	v RESULT v		
Time	Specific Gravity =	1.426	

Data Entry by: <i>A Anast</i>	Date: 02/05/96
Approved by: <i>Heather Anast</i>	Date: 2-6-96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. I

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

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	2.0056	
Work List	Tare Weight (W1)	1.8667	
4995	Weight of Solution (W2-W1)	0.13897	0
Test Code	Volume of Solution μ L	100.1700	
SPG-01	Specific Gravity	1.3873	NA
Matrix			
LIQUID			
Sample #			
S95T003983			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
SM FULTON	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L}/\text{mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
02/05/96	v RESULT v		
Time	Specific Gravity =	1.387	

Data Entry by: <i>A Anastas</i>	Date: 02/05/96
Approved by: <i>Heather Anastas</i>	Date: 2-6-96

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

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

Type		SAMPLE/DUP	REPLICATE
SAMPLE/DUP	Gross Weight (W2)	2.0297	
Work List	Tare Weight (W1)	1.8787	
4995	Weight of Solution (W2-W1)	0.15102	0
Test Code	Volume of Solution μ L	100.1700	
SPG-01	Specific Gravity	1.5076	NA
Matrix			
LIQUID			
Sample #			
S95T003983			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst	Specific Gravity = $[(W2-W1) \times 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} \times 1.000 \text{ g/mL}]$		
SM FULTON			
Date			
02/05/96	∇ RESULT ∇		
Time	Specific Gravity =	1.508	

Data Entry by: <i>H. Anasta</i>	Date: 02/05/96
Approved by: <i>Heather Anasta</i>	Date: 2-6-96

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

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

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.9394	
Work List	Tare Weight (W1)	1.8017	
4995	Weight of Solution (W2-W1)	0.13765	0
Test Code	Volume of Solution μ L	100.1700	
SPG-01	Specific Gravity	1.3742	NA
Matrix			
LIQUID			
Sample #			
S95T003984			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
SM FULTON	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L}/\text{mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
02/05/96			
Time			
	v RESULT v		
	Specific Gravity =	1.374	

Data Entry by: <i>A. Anastas</i>	Date: 02/05/96
Approved by: <i>Shirley Anastas</i>	Date: 2-6-96

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. I

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

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	2.0142	
Work List	Tare Weight (W1)	1.8661	
4995	Weight of Solution (W2-W1)	0.14814	0
Test Code	Volume of Solution μ L	100.1700	
SPG-01	Specific Gravity	1.4789	NA
Matrix			
LIQUID			
Sample #			
S95T003984/DUP			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst	Specific Gravity = $[(W2-W1) \times 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} \times 1.000 \text{ g/mL}]$		
SM FULTON			
Date			
02/05/96	∇ RESULT ∇		
Time	Specific Gravity =	1.479	

Data Entry by: <i>H. Anastas</i>	Date: 02/05/96
Approved by: <i>Heather Anastas</i>	Date: 2-6-96

LABCORE Data Entry Template for Worklist#

4472

Analyst: RS Instrument: PH01 Book # 144N16-B

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

WHC-SD-WM-DP-165, REV. 1

Worklist Comment: pH AN-102

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
95000222	AN-102 GRAB	2 SAMPLE	S95T003867	0	PH-01	LIQUID	N/A	13.33	0.01	pH 13.33 pt
95000222	AN-102 GRAB	3 DUP	S95T003867	0	PH-01	LIQUID	13.33	13.32	N/A	pH 13.32 pt
95000222	AN-102 GRAB	4 SAMPLE	S95T003868	0	PH-01	LIQUID	N/A	13.35	0.01	pH 13.35 pt
95000222	AN-102 GRAB	5 DUP	S95T003868	0	PH-01	LIQUID	13.35	13.34	N/A	pH 13.34 pt
95000222	AN-102 GRAB	6 SAMPLE	S95T003869	0	PH-01	LIQUID	N/A	13.28	0.01	pH 13.28 pH
95000222	AN-102 GRAB	7 DUP	S95T003869	0	PH-01	LIQUID	13.28	13.30	N/A	pH 13.30 pH
95000222	AN-102 GRAB	8 SAMPLE	S95T003962	0	PH-01	LIQUID	N/A	9.03	0.01	pH 9.03 pH
95000222	AN-102 GRAB	9 DUP	S95T003962	0	PH-01	LIQUID	9.03	9.01	N/A	pH 9.01 pH

Final page for worklist #

4472

R. Green 1-22-96
Analyst Signature Date

Reid Wright 1/22/96
Analyst Signature Date
Reviewed RW & Schreder 1/22/96

Data Entry Comments: STD # 11N16-G 6.00 pH

STD # 144N16-B 9.20 pH

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#

4808

Analyst: ABJ

Instrument: PH01

Book # 57118

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

WHC-SD-WM-DP-165, REV. 1

Worklist Comment: OH AP-101, AN-102

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK			OH-01	LIQUID	1	2.42	N/A	ug/mL
		2 STD			OH-01	LIQUID	1.66e4	1.64e4	N/A	ug/mL
95000197	AP-101 GRAB	3 SAMPLE	S95T003734	0	OH-01	LIQUID	N/A	1.25e2	1.25e2	ug/mL
95000197	AP-101 GRAB	4 DUP	S95T003734	0	OH-01	LIQUID	N/A	1.25e2	1.25e2	ug/mL
95000222	AN-102 GRAB	5 SAMPLE	S95T003868	0	OH-01	LIQUID	N/A	3.31e+3	1.25e+3	ug/mL
95000222	AN-102 GRAB	6 DUP	S95T003868	0	OH-01	LIQUID	N/A	3.31e+3	3.24e+3	ug/mL
95000222	AN-102 GRAB	7 SAMPLE	S95T003869	0	OH-01	LIQUID	N/A	3.11e+3	1.25e+3	ug/mL
95000222	AN-102 GRAB	8 DUP	S95T003869	0	OH-01	LIQUID	N/A	3.11e+3	3.31e+3	ug/mL

Final page for worklist #

4808

Analyst Signature

Date

Analyst Signature

Date

Data Entry Comments:

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

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

		BLANK
Type	Sample Size (mL) SS	3.000
BLANK	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.009
4808	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	6.02E-04
PH01	OH in Sample in µg/mL (PPM)	1.02E+01
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
Instrument Code	Detection Limit (µg/mL)	4.17E+01
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
K. QUERIN	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
Date		
01/19/96		
Time		
		BLANK
Concentration of OH in Sample (Molarity)		6.02E-04
OH in Sample in µg/mL (PPM)		<42

The Result is < Detection Limit

Data Entry by: <i>K. Querin</i>	Date: 01/19/96
Approved by: <i>R. Johnson</i>	Date: 1/22/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

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

		STANDARD
Type	Sample Size (mL) SS	0.050
STANDARD	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.240
4808	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	9.62E-01
PH01	OH in Sample in µg/mL (PPM)	1.64E+04
Matrix		
LIQUID		
Sample #		
57N8		
Instrument Code		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
K. QUERIN	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
Date		
01/19/96		
Time		
		STANDARD
Concentration of OH in Sample (Molarity)		9.62E-01
OH in Sample in µg/mL (PPM)		1.64E+04

Data Entry by: <i>K. Querin</i>	Date: 01/19/96
Approved by: <i>K. Querin</i>	Date: 1/20/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

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

		SAMPLE
Type	Sample Size (mL) SS	0.100
SAMPLE	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.097
4808	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.94E-01
PH01	OH in Sample in µg/mL (PPM)	3.31E+03
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S95T003868		
Instrument Code	Detection Limit (µg/mL)	1.25E+03
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
K. QUERIN		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
01/19/96		
Time		
	Concentration of OH in Sample (Molarity)	1.94E-01
	OH in Sample in µg/mL (PPM)	3.31E+03

Data Entry by: <i>K. Querin</i>	Date: 01/19/96
Approved by: <i>R. J. Schaeffer</i>	Date: 1/32/96

Form 211102_1 Rev. 1.3 Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

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

		DUPLICATE
Type	Sample Size (mL) SS	0.100
DUPLICATE	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.095
4808	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.90E-01
PH01	OH in Sample in µg/mL (PPM)	3.24E+03
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S95T003868		
Instrument Code	Detection Limit (µg/mL)	1.25E+03
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
K. QUERIN		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
01/19/96		
Time		
		DUPLICATE
Concentration of OH in Sample (Molarity)		1.90E-01
OH in Sample in µg/mL (PPM)		3.24E+03

Data Entry by: <i>AE Wright</i>	Date: 01/19/96
Approved by: <i>RW Schmidt</i>	Date: 1/22/96

Form 211102_1 Rev. 1.3 Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. I

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

OH (AUTO) : LA-211-102 (C-0)		SAMPLE
Type	Sample Size (mL) SS	0.100
SAMPLE	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.091
4808	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.82E-01
PH01	OH in Sample in µg/mL (PPM)	3.10E+03
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S95T003869		
Instrument Code	Detection Limit (µg/mL)	1.25E+03
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
K. QUERIN	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
Date		
01/19/96		
Time		
Concentration of OH in Sample (Molarity)		1.82E-01
OH in Sample in µg/mL (PPM)		3.10E+03

Data Entry by: <i>K. Querin</i>	Date: 01/19/96
Approved by: <i>R. Schneider</i>	Date: 1/22/96

Form 211102_1 Rev. 1.3 200 Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

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

		DUPLICATE
Type	Sample Size (mL) SS	0.100
DUPLICATE	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.097
4808	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.94E-01
PH01	OH in Sample in µg/mL (PPM)	3.31E+03
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S95T003869		
Instrument Code	Detection Limit (µg/mL)	1.25E+03
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
K. QUERIN	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
Date		
01/19/96		
Time		
		DUPLICATE
Concentration of OH in Sample (Molarity)		1.94E-01
OH in Sample in µg/mL (PPM)		3.31E+03

Data Entry by: <i>K. Querin</i>	Date: 01/19/96
Approved by: <i>RW. Anderson</i>	Date: 1/23/96
Form 211102_1 Rev. 1.3	

OH ANALYSIS

WHC-SD-WM-DP-165, REV. 1

calibration data
 date 96-01-18
 pH(S) 1 7.00
 pH(S) 2 10.00
 t.cal. 23.0 °C
 slope(rel) 1.019
 U(as) -8.1 mV
 electr. input 1
 =====

date 96-01-18 time 23:07
 GET pH 12 # 5
 Id.#1 *Titrat* 0
 Id.#2 *2005 BIK*
 pH(init) 4.79

V/ml pH
 EP1 .009 3.75
 stop volt.reached

date 96-01-19 time 00:35
 GET pH 12 # 8
 Id.#1 *Standard* 0
 Id.#2 *.2005 Sample*
 pH(init) 11.43 *Size .040*

V/ml pH
 EP1 .240 9.78
 EP2 .310 7.08
 stop volt.reached

date 96-01-19 time 00:46
 GET pH 12 # 9
 Id.#1 0
 Id.#2 .2005
 pH(init) 5.69

V/ml pH
 EP1 .008 4.73
 stop volt.reached
 =====

595T003868

date 96-01-19 time 02:59
 GET pH 12 # 12
 Id.#1 *3868*
 Id.#2 .2005
 pH(init) 10.97 *.100ml(SS)*

V/ml pH
 EP1 .097 10.33
 EP2 .384 9.18
 EP3 .493 8.58
 EP4 .548 8.16
 stop V reached
 =====

595T003868 Dup

date 96-01-19 time 03:14
 GET pH 12 # 13
 Id.#1 3868
 Id.#2 .2005 *.100ml(SS)*
 pH(init) 11.06

V/ml pH
 EP1 .095 10.39
 EP2 .497 8.22
 stop V reached
 =====

date 96-01-19 time 03:47
 GET pH 12 # 13
 .10ml/div Δ pH=1/div
 start V .000 ml

595T003869

date 96-01-19 time 03:56
 GET pH 12 # 14
 Id.#1 3869
 Id.#2 .2005
 pH(init) 11.06
 V/ml .100ml(55)
 EP1 .091 10.38
 EP2 .488 8.24
 stop V reached
 =====

date 96-01-19 time 03:57
 GET pH 12 # 14
 .10ml/div Δ pH=1/div
 start V .000 ml

595T003869 Dup

date 96-01-19 time 04:12
 GET pH 12 # 15
 Id.#1 3869
 Id.#2 .2005
 pH(init) 10.59
 V/ml .100ml(55)
 EP1 .097 10.48
 EP2 .516 8.25
 stop V reached
 =====

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date 96-01-19 time 05:28
GET pH 12 # 15
.10ml/div Δ pH=1/div
start V .000 ml

LABCORE Data Entry Template for Worklist#

5005

Analyst: RAN Instrument: PH01 W06645 Book # 57N8

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

Worklist Comment: AN-102 OH-

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK			OH-01	LIQUID	<u>1</u>	<u>42</u>	<u>N/A</u>	ug/mL
		2 STD			OH-01	LIQUID	<u>1.6E4</u>	<u>1.62E4</u>	<u>N/A</u>	ug/mL
95000222	AN-102 GRAB	3 SAMPLE	S95T003867	0	OH-01	LIQUID	<u>N/A</u>	<u>3.31E3</u>	<u>6.25E2</u>	ug/mL
95000222	AN-102 GRAB	4 DUP	S95T003867	0	OH-01	LIQUID	<u>3.31E3</u>	<u>3.08E3</u>	<u>N/A</u>	ug/mL
95000222	AN-102 GRAB	5 SAMPLE	S95T003962	0	OH-01	LIQUID	<u>N/A</u>	<u>PH=6.67</u>	<u>N/A</u>	ug/mL
95000222	AN-102 GRAB	6 DUP	S95T003962	0	OH-01	LIQUID	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	ug/mL

Final page for worklist # 5005

R. N. S. D. A. N. D.
Analyst Signature Date 1-29-96

R. J. S. D. A. N. D.
Analyst Signature Date 2-1-96

Reviewed RW Schnoeller 2/2/96

Data Entry Comments:

3867 - .200

3962 - PH TOO LOW FOR OH- ANALYSIS

PH result is ~~PH~~ after BrCl₂ addition, pH prior to reagent addition

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.

was 6.64.
RWS 2/1/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

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

OH (AUTO) : LA-211-102 (C-0)		STANDARD
Type	Sample Size (mL) SS	0.050
STANDARD	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.238
	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	9.54E-01
OH-01	OH in Sample in µg/mL (PPM)	1.62E+04
Matrix		
LIQUID		
Sample #		
57N8		
Instrument Code		
WC06645		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RAW		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
01/29/96		
Time		
09:40 AM	Concentration of OH in Sample (Molarity)	9.54E-01
	OH in Sample in µg/mL (PPM)	1.62E+04

Data Entry by: <i>[Signature]</i>	Date: 02/01/96
Approved by: <i>[Signature]</i>	Date: 2/2/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

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

		SAMPLE
Type	Sample Size (mL) SS	0.200
SAMPLE	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.194
	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.94E-01
OH-01	OH in Sample in µg/mL (PPM)	3.31E+03
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S95T003867		
Instrument Code	Detection Limit (µg/mL)	6.25E+02
WC06645		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RAW		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
01/29/96		
Time		SAMPLE
09:40 AM	Concentration of OH in Sample (Molarity)	1.94E-01
	OH in Sample in µg/mL (PPM)	3.31E+03

Data Entry by: <i>[Signature]</i>	Date: 02/01/96
Approved by: <i>[Signature]</i>	Date: 2/2/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

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

		SAMPLE
Type	Sample Size (mL) SS	0.200
SAMPLE	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.181
	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.81E-01
OH-01	OH in Sample in µg/mL (PPM)	3.08E+03
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S95T003867DUP		
Instrument Code	Detection Limit (µg/mL)	6.25E+02
WC06645		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RAW		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
01/29/96		
Time	SAMPLE	
09:40 AM	Concentration of OH in Sample (Molarity)	1.81E-01
	OH in Sample in µg/mL (PPM)	3.08E+03

Data Entry by: <i>[Signature]</i>	Date: 02/01/96
Approved by: <i>[Signature]</i>	Date: 2/2/96

OH ANALYSIS

WHC-SD-WM-DP-165, REV. 1

date 96-01-29 time 10:30
GET pH 12 # 60
.10ml/div Δ pH=1/div
start V .000 ml

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date 96-01-29 time 09:36
 GET pH 12 # 57
 Id.#1 1
 Id.#2 .2005
 pH(init) 11.54
 V/ml pH
 EP1 .238 9.79
 stop volt.reached

date 96-01-29 time 09:37
 GET pH 12 # 57
 .10ml/div Δ pH=1/div
 start V .000 ml

date 96-01-29 time 09:39
 GET pH 12 # 58
 Id.#1 0
 Id.#2 .2005
 pH(init) 6.71
 V/ml pH
 EP1 .008 5.47
 manual stop

date 96-01-29 time 09:39
 GET pH 12 # 58
 .10ml/div Δ pH=1/div
 start V .000 ml

Id.#1 3962 *W/O*
 pH 6.64 *BACK*
 pH 6.67

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Id.#1 3867
 pH 12.73 *DIRECT*
 pH 12.74 *W/O BACK*

pH 12.64 *W/BACK*

date 96-01-29 time 10:12
 GET pH 12 # 59
 Id.#1 3867
 Id.#2 .2005
 pH(init) 11.54
 V/ml pH
 EP1 .194 10.67
 manual stop

date 96-01-29 time 10:12
 GET pH 12 # 59
 .10ml/div Δ pH=1/div
 start V .000 ml

date 96-01-29 time 10:29
 GET pH 12 # 60
 Id.#1 3867
 Id.#2 .2005
 pH(init) 11.54
 V/ml pH
 EP1 .181 10.73
 manual stop
 =====

LABCORE Data Entry Template for Worklist#

6574

Analyst: JTK Instrument: CN01 Book # 71N86

Method: LA-695-103 Rev/Mod A-0

Worklist Comment: CN AN-102

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK			CN-01	SOLID	<u>1</u>	<u>$43.8e^{-2}$</u>	<u>N/A</u>	<u>ug/g</u>
		2 STD			CN-01	SOLID	<u>915</u>	<u>924</u>	<u>N/A</u>	<u>ug/g</u>
95000222	AN-102 GRAB	3 SAMPLE	S95T004137	0	CN-01	SOLID	<u>N/A</u>	<u>2.17e'</u>	<u>2.40</u>	<u>ug/g</u>
95000222	AN-102 GRAB	4 DUP	S95T004137	0	CN-01	SOLID	<u>2.17e'</u>	<u>2.03e'</u>	<u>N/A</u>	<u>ug/g</u>
95000222	AN-102 GRAB	5 SPK	S95T004137	0	CN-01	SOLID	<u>100</u>	<u>92.0</u>	<u>N/A</u>	<u>ug/g</u>
95000222	AN-102 GRAB	6 SAMPLE	S95T004139	0	CN-01	SOLID	<u>N/A</u>	<u>2.07e'</u>	<u>1.98</u>	<u>ug/g</u>
95000222	AN-102 GRAB	7 DUP	S95T004139	0	CN-01	SOLID	<u>2.07e'</u>	<u>2.09e'</u>	<u>N/A</u>	<u>ug/g</u>
95000222	AN-102 GRAB	8 SPK	S95T004139	0	CN-01	SOLID	<u>100</u>	<u>87.8</u>	<u>N/A</u>	<u>ug/g</u>
		9 CCV			CN-01	SOLID	<u>915</u>	<u>1005</u>	<u>N/A</u>	<u>ug/g</u>
		10 CCB			CN-01	SOLID	<u>1</u>	<u>$<1.1e^{-2}$</u>	<u>N/A</u>	<u>ug/g</u>

Final page for worklist #

6574

Dr JTK
Heather Anastro 3-15-96
Analyst Signature Date

Dr RTG
Heather Anastro 3-15-96
Analyst Signature Date
Approved by Heather Anastro
3-15-96

Data Entry Comments:

CN: LA-695-102 (C-0)

Matrix: Liquid / Solid

Worklist #
Analyst JTK Analysis Date & Time 3.15.96
Instrument Code Spec 301
 CN01 WA93252 Standard Id 71N8G

Sample#	Dissolution	Dilution	Sample Size (mL)	Abs.
1. LCS Standard	N/A	0.250mL to 25mL	0.500	.667
2. Reagent Blank	N/A	N/A	5	.004
3. 595T004137	.3965 g to 5 mL EDTA/en	N/A	1	.251
4. Duplicate	.4123 g to 5 mL EDTA/en	N/A	1	.244
5. Spike	Same as #3	Same as #3 0.250mL Std	1	.553
6. 595T004139	.4805 g to 5 mL EDTA/en	N/A	1	.289
7. Duplicate	.3779 g to 5 mL EDTA/en	N/A	1	.232
8. Spike	Same as #6	Same as #6 0.250mL Std	1	.577
9. CCV	N/A	0.250mL to 25mL	0.500	.749
10. CCB	N/A	N/A	5	.001

Comments:

AN-102's No worklist for these reruns
 WE 3/15/96

212

WHC-SD-WM-DP-165, REV. 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

CN- DETERMINATION : LA-695-102 (E-0) BLANK, LIQUID, SOLID

Type	SAMPLE	
BLANK		
Work List		
6574	Blank Aliquot in mL (SS)	5.00000
Test Code	Absorbance of Instrument Blank	0.000
CN-01	Absorbance of Blank (Reagent, Prep)	0.004
6575	Digest Dilution Factor	1
LIQUID	Y-Intercept Value	0.000194
Sample	Slope Value	0.143424
BLNK	µg of Cyanide	0.027
Instrument Code	µg CN- /mL	5.31E-03
301		
Analyst	µg of Cyanide = [Absorb. of Blank - Absorb. of Inst. Blank - (Y-Intercept)] / Slope Value	
J. KNIGHT	µg/mL of Cyanide = µg Cyanide * Digest Dilution Factor / SS (mL)	
Date	0.19 Ha 3-15-96	
03/15/96	Detection Limit = 0.055 µg Cyanide / SS (mL) * Digest Dilution Factor	
Time	v RESULTS v	
	Cyanide Concentration (µg/mL)	< Detection Limit
Calibration Date		Detection Limit µg CN- / mL
02/23/96		1.10E-02

Data Entry by: RTS Date: 03/15/96Approved by: H Anast Date: 3-15-96

Form 695102C1 Rev. 1.7

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PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

WHC-SD-WM-DP-165, REV. 1

CN- DETERMINATION : LA-695-102 (E-0) SPIKE, STANDARD

		NA	STANDARD
STANDARD	Standard Aliquot in mL		0.250
WORKSHEET	Diluent + Standard Volume		25.00
6574	Diluted Standard in mL to be Analyzed		0.500
015-086	True Value CN- Concentration (µg/mL)		915
CN-01	Absorbance of Blank		0.004
1500	Absorbance of Standard		0.667
LIQUID	Y-Intercept Value		0.000194
	Slope Value		0.143424
STD71N8G	µg of CN in Standard		4.621
301			
J.KNIGHT			
03/15/96	µg of CN-/mL in Standard		924
	Standard % Recovery		101.0%
	Slope and Y-Intercept calculated from working curve calibration		
02/23/96	Original Sample Calculation from Form 695102C1		

$$\mu\text{g of CN- in Sample+Spike} = [(\text{Absorbance of Sample+Spike} - \text{Absorbance of Blank}) - (\text{Y-Intercept})] / \text{Slope Value}$$

$$\mu\text{g/mL of CN-} = \mu\text{g of CN- in Standard} / \text{Diluted Standard} * \text{Dilution Factor}$$

$$\text{Dilution Factor} = \text{Flask Volume} / \text{Standard Aliquot}$$

$$\text{Standard \% Recovery} = (\mu\text{g of CN-/mL in Standard} / \text{True Value CN- Concentration } (\mu\text{g/mL})) * 100$$

Data Entry by:	RTS	Date:	03/15/96
Approved by:	Al Anastro	Date:	3-15-96

Form X2 Rev. 1.0

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

CN- DETERMINATION : LA-695-102 (E-0) BLANK, LIQUID, SOLID

		SAMPLE
SOLID	Sample Weight in grams (SS)	0.39650
6574	Dissolution Volume (EDTA/en + sample) in mL (DV)	5.00000
6574	Aliquot Analyzed from Dissolution (A)	1.00000
Test Code	Dilution Factor (DF)	1.000
CN-01	Absorbance of Blank	0.004
0.251	Absorbance of Sample	0.251
SOLID	Y-Intercept Value	0.000194
Sample	Slope Value	0.143424
S95T004137	µg of Cyanide	1.721
301	µg CN- /g	2.17E+01
301	µg of Cyanide = [(Absorb. of Sample - Absorb. of Blank) - (Y-Intercept)] / Slope Value	
J. KNIGHT	µg/g of Cyanide = (µg Cyanide / A) * (DV / SS (g)) * DF	
03/15/96	Detection Limit = (0.19 µg Cyanide / A) * (DV / SS) * DF	
	v RESULTS v	
	Cyanide Concentration (µg/g)	2.17E+01
		Detection Limit
		µg CN- / g
02/23/96		2.40E+00

Data Entry by:	RTS	Date:	03/15/96
Approved by:	J. Knight	Date:	3-15-96
Form 695102C1 Rev. 1.7		Page 1 of 1	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

CN- DETERMINATION : LA-695-102 (E-0) BLANK, LIQUID, SOLID

SOLID	Sample Weight in grams (SS)	0.41230
Wt/Liq	Dissolution Volume (EDTA/en + sample) in mL (DV)	5.00000
6574	Aliquot Analyzed from Dissolution (A)	1.00000
Test Code	Dilution Factor (DF)	1.000
CN-01	Absorbance of Blank	0.004
Matrix	Absorbance of Sample	0.244
SOLID	Y-Intercept Value	0.000194
Sample #	Slope Value	0.143424
S95T004137/DUP	µg of Cyanide	1.672
Instrument Code	µg CN-/g	2.03E+01
301		

µg of Cyanide = [(Absorb. of Sample - Absorb. of Blank) - (Y-Intercept)] / Slope Value
µg/g of Cyanide = (µg Cyanide / A) * (DV / SS (g)) * DF
Detection Limit = (0.19 µg Cyanide / A) * (DV / SS) * DF
v RESULTS v

02/23/96	Cyanide Concentration (µg/g)	2.03E+01
03/15/96	Detection Limit	µg CN-/g
		2.30E+00

Date Entry by: RTS	Date: 03/15/96
Approved by: M. A. A. A. A. A.	Date: 3-15-96

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PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

WHC-SD-WM-DP-165, REV. 1

CN- DETERMINATION : LA-695-102 (E-0) SPIKE, STANDARD

		SPIKE	NA
SPIKE	Spike Aliquot in mL	0.250	
Diluent + Spike Standard Volume		25.00	
Diluted Spike Standard in mL		0.250	
True Value CN- Concentration (µg/mL)		915	
Absorbance of Blank		0.004	
Absorbance of Sample+Spike		0.553	
Y-Intercept Value		0.000194	
Slope Value		0.143424	
µg of CN- in Sample+Spike		3.826	ERR
Known µg of CN- in Original Sample		1.7210	
µg of CN- in Spike		2.2875	
Spike % Recovery		92.0%	
Slope and Y-Intercept calculated from working curve calibration			
Original Sample Calculation from Form 695102C1			

$$\mu\text{g of CN- in Sample (Corrected)} = \text{Known } \mu\text{g of CN- in Original Sample} * \text{g of Sample in Spike} / \text{g Used in Original Sample}$$

$$\mu\text{g of CN- in Sample+Spike} = [(\text{Absorbance of Sample+Spike} - \text{Absorbance of Blank}) - (\text{Y-Intercept})] / \text{Slope Value}$$

$$\mu\text{g of CN- in Spike} = \text{LMCS Value (ppm)} / \text{Dilution Factor} * \text{Diluted Spike Standard}$$

$$\text{Dilution Factor} = \text{Spike Dilution Volume} / \text{Spike Aliquot}$$

$$\text{Spike \% Recovery} = (\mu\text{g of CN- in Sample+Spike}) - (\mu\text{g of CN- in Sample}) / (\mu\text{g of CN- in Spike}) * 100\%$$

Data Entry by: <i>RTS</i>	Date: 03/15/96
Approved by: <i>H. Knaster</i>	Date: 3-15-96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

CN-DETERMINATION : LA-695-102 (E-0) BLANK, LIQUID, SOLID

SAMPLE	0.48050	Sample Weight in grams (SS)
	5.00000	Dissolution Volume (EDTA/en + sample) in mL (DV)
	1.00000	Aliquot Analyzed from Dissolution (A)
	1.000	Dilution Factor (DF)
	0.004	Absorbance of Blank
	0.289	Absorbance of Sample
	0.000194	Y-Intercept Value
	0.143424	Slope Value
	1.986	µg of Cyanide
	2.07E+01	µg CN-/g

µg of Cyanide = [(Absorb. of Sample - Absorb. of Blank) - (Y-Intercept)] / Slope Value
 µg of Cyanide = (µg Cyanide / A) * (DV / SS (g)) * DF
 Detection Limit = (0.19 µg Cyanide / A) * (DV / SS) * DF
 v RESULTS v

02/23/96	Cyanide Concentration (µg/g)	2.07E+01	Detection Limit	1.98E+00
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Date Entry by: <i>RTS</i>	Date: 03/15/96
Approved by: <i>Alamatha</i>	Date: 3-15-96

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

CN- DETERMINATION : LA-695-102 (E-0) BLANK, LIQUID, SOLID

Type	SAMPLE	
SOLID	Sample Weight in grams (SS)	0.37990
Work List	Dissolution Volume (EDTA/en + sample) in mL (DV)	5.00000
6574	Aliquot Analyzed from Dissolution (A)	1.00000
Test Code	Dilution Factor (DF)	1.000
CN-01	Absorbance of Blank	0.004
Matrix	Absorbance of Sample	0.232
SOLID	Y-Intercept Value	0.000194
Sample #	Slope Value	0.143424
S95T004139/DUP	µg of Cyanide	1.588
Instrument Code	µg CN- /g	2.09E+01
301		
Analyst	µg of Cyanide = [(Absorb. of Sample - Absorb. of Blank) - (Y-Intercept)] / Slope Value	
J. KNIGHT	µg/g of Cyanide = (µg Cyanide / A) * (DV / SS (g)) * DF	
Date		
03/15/96	Detection Limit = (0.19 µg Cyanide / A) * (DV / SS) * DF	
Time	v RESULTS v	
	Cyanide Concentration (µg/g)	2.09E+01
Calibration Date		Detection Limit
02/23/96		µg CN- / g
		2.50E+00

Data Entry by:	RTS	Date:	03/15/96
Approved by:	H. Anestn	Date:	3-15-96

Form 695102C1 Rev. 1.7

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PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

WHC-SD-WM-DP-165, REV. 1

CN- DETERMINATION : LA-695-102 (E-0) SPIKE, STANDARD

		SPIKE	NA
SPIKE	Spike Aliquot in mL	0.250	
	Diluent + Spike Standard Volume	25.00	
6574	Diluted Spike Standard in mL	0.250	
	True Value CN- Concentration (µg/mL)	915	
CN-01	Absorbance of Blank	0.004	
	Absorbance of Sample+Spike	0.577	
SOLID	Y-Intercept Value	0.000194	
	Slope Value	0.143424	
S95T004139	µg of CN- in Sample+Spike	3.994	ERR
301			
	Known µg of CN- in Original Sample	1.9860	
J.KNIGHT			
	µg of CN- in Spike	2.2875	
03/15/96			
	Spike % Recovery	87.8%	
	Slope and Y-Intercept calculated from working curve calibration		
02/23/96	Original Sample Calculation from Form 695102C1		

$$\mu\text{g of CN- in Sample (Corrected)} = \text{Known } \mu\text{g of CN- in Original Sample} * \text{g of Sample in Spike} / \text{g Used in Original Sample}$$

$$\mu\text{g of CN- in Sample+Spike} = [(\text{Absorbance of Sample+Spike} - \text{Absorbance of Blank}) - (\text{Y-Intercept})] / \text{Slope Value}$$

$$\mu\text{g of CN- in Spike} = \text{LMCS Value (ppm)} / \text{Dilution Factor} * \text{Diluted Spike Standard}$$

$$\text{Dilution Factor} = \text{Spike Dilution Volume} / \text{Spike Aliquot}$$

$$\text{Spike \% Recovery} = (\mu\text{g of CN- in Sample+Spike}) - (\mu\text{g of CN- in Sample}) / (\mu\text{g of CN- in Spike}) * 100\%$$

Data Entry by:	RTS	Date:	03/15/96
Approved by:	Hanastin	Date:	3-15-96

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

WHC-SD-WM-DP-165, REV. 1

CN- DETERMINATION : LA-695-102 (E-0) SPIKE, STANDARD

Type		NA	STANDARD
STANDARD	Standard Aliquot in mL		0.250
Work List	Diluent + Standard Volume		25.00
6574	Diluted Standard in mL to be Analyzed		0.500
Test Code	True Value CN- Concentration (µg/mL)		915
CN-01	Absorbance of Blank		0.001
Matrix	Absorbance of Standard		0.749
SOLID	Y-Intercept Value		0.007237
Sample #	Slope Value		0.147420
CCV/71N8G	µg of CN in Standard		5.025
Instrument Code			
301			
Analyst			
JTK			
Date	µg of CN-/mL in Standard		1005
03/15/96			
Time	Standard % Recovery		109.8%
Calibration Date	Slope and Y-Intercept calculated from working curve calibration		
02/25/96	Original Sample Calculation from Form 695102C1		

$\mu\text{g of CN- in Sample+Spoke} = [(\text{Absorbance of Sample+Spoke} - \text{Absorbance of Blank}) - (\text{Y-Intercept})] / \text{Slope Value}$
 $\mu\text{g/mL of CN-} = \mu\text{g of CN- in Standard} / \text{Diluted Standard} * \text{Dilution Factor}$
 $\text{Dilution Factor} = \text{Flask Volume} / \text{Standard Aliquot}$
 $\text{Standard \% Recovery} = (\mu\text{g of CN-/mL in Standard} / \text{True Value CN- Concentration } (\mu\text{g/mL})) * 100$

Data Entry by:	HJA	Date:	03/15/96
Approved by:	ANASTR	Date:	3-15-96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV 1

CN- DETERMINATION : LA-695-102 (E-0) BLANK, LIQUID, SOLID

Type	SAMPLE	
BLANK		
Work File		
6574	Blank Aliquot in mL (SS)	5.00000
Test Code	Absorbance of Instrument Blank	0.000
CN-01	Absorbance of Blank (Reagent, Prep)	0.001
Matrix	Digest Dilution Factor	1
LIQUID	Y-Intercept Value	0.007237
Sample #	Slope Value	0.147420
CCB/BLANK	µg of Cyanide	-0.042
Instrument Code	µg CN- /mL	-8.46E-03
301		
Analysis	µg of Cyanide = [(Absorb. of Blank - Absorb. of Inst. Blank) - (Y-Intercept)] / Slope Value	
J. KNIGHT	µg/mL of Cyanide = µg Cyanide * Digest Dilution Factor / SS (mL)	
Date	Detection Limit = 0.055 µg Cyanide / SS (mL) * Digest Dilution Factor	
03/15/96	v RESULTS v	
Limit	Cyanide Concentration (µg/mL)	< Detection Limit
Calibration Date		Detection Limit µg CN- / mL
02/25/96		1.10E-02

Data Entry by:	RTS	Date:	03/15/96
Approved by:	Hanarth	Date:	3-15-96

Form 695102C1 Rev. 1.7

Page 1 of 1

WHC-SD-WM-DP-165, REV. I

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

LABCORE Data Entry Template for Worklist#

6311

Analyst: KRM Instrument: CN01 Book # 71.086

Method: LA-695-103 Rev/Mod A-0

Worklist Comment: AN-102 CN.mjl

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK			CN-01	SOLID	<u>1</u>	<u><1.10^{e-2}</u>	<u>N/A</u>	ug/g
		2 STD			CN-01	SOLID	<u>915</u>	<u>917</u>	<u>N/A</u>	ug/g
95000222	AN-102 GRAB	3 SAMPLE	S95T004137	0	CN-01	SOLID	<u>N/A</u>	<u>2.67^{e1}</u>	<u>9.58</u>	ug/g
95000222	AN-102 GRAB	4 DUP	S95T004137	0	CN-01	SOLID	<u>267^{e1}</u>	<u>2.63^{e1}</u>	<u>N/A</u>	ug/g
95000222	AN-102 GRAB	5 SPK	S95T004137	0	CN-01	SOLID	<u>100</u>	<u>60.3</u>	<u>N/A</u>	ug/g
95000222	AN-102 GRAB	6 SAMPLE	S95T004139	0	CN-01	SOLID	<u>N/A</u>	<u>2.61^{e1}</u>	<u>7.91</u>	ug/g
95000222	AN-102 GRAB	7 DUP	S95T004139	0	CN-01	SOLID	<u>261^{e1}</u>	<u>2.75^{e1}</u>	<u>N/A</u>	ug/g
95000222	AN-102 GRAB	8 SPK	S95T004139	0	CN-01	SOLID	<u>100</u>	<u>79.0</u>	<u>N/A</u>	ug/g
		9 CCV			CN-01	SOLID	<u>915</u>	<u>903</u>	<u>N/A</u>	ug/g
		10 CCB			CN-01	SOLID	<u>1</u>	<u><1.10^{e-2}</u>	<u>N/A</u>	ug/g

Final page for worklist #

6311

See Attached sheet for sig
Analyst Signature Date

Rep. #
12249

all lab 3/12/96
Analyst Signature Date

Reviewed RW Schroeder 3/13/96
Results rejected
RWS 3/13/96

DATA
NOT USED
IN PACKAGE

Data Entry Comments:

Analyzed in incorrect matrix. Reanalysis
in H₂O is requested. spike recoveries were unacceptable.
Robt W Schroeder 3/13/96

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#

6311

Analyst: KRM Instrument: CN01 Book # 7/NBG

Method: LA-695-103 Rev/Mod A-0

Worklist Comment: AN-102 CN.mjl

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK			CN-01	SOLID	1	<110 ^{e-2}	N/A	ug/g
		2 STD			CN-01	SOLID		917	N/A	ug/g
95000222	AN-102 GRAB	3 SAMPLE	S95T004137	0	CN-01	SOLID	N/A	1.33 ^{e+2}	479 ^{e1}	ug/g
95000222	AN-102 GRAB	4 DUP	S95T004137	0	CN-01	SOLID	1.33 ^{e2}	1.32 ^{e2}	N/A	ug/g
95000222	AN-102 GRAB	5 SPK	S95T004137	0	CN-01	SOLID	100	60.3	N/A	ug/g
95000222	AN-102 GRAB	6 SAMPLE	S95T004139	0	CN-01	SOLID	N/A	1.30 ^{e2}	3.95 ^{e1}	ug/g
95000222	AN-102 GRAB	7 DUP	S95T004139	0	CN-01	SOLID	1.30 ^{e2}	1.37 ^{e2}	N/A	ug/g
95000222	AN-102 GRAB	8 SPK	S95T004139	0	CN-01	SOLID	100	79.0	N/A	ug/g
		9 CCV			CN-01	SOLID		903	N/A	ug/g
		10 CCB			CN-01	SOLID	1	<110 ^{e-2}	N/A	ug/g

Final page for worklist #

6311

R15
3/12/96

Analyst Signature Date 3-9-96

Analyst Signature Date

DATA
NOT USED
IN PACKAGE

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.

CN: LA-695-102 (C-0)

Matrix: Liquid / Solid

WHC-SD-WM-DP-165, REV. 1

Worklist #	Analyst	Analysis Date & Time	Instrument Code	Standard Id
6311	KRM	3-9-96	CN01 WA93252	7N86

Sample#	Dissolution	Dilution	Sample Size (mL)	Abs.
1. LCS Standard	N/A	0.250mL to 25mL	0.500	.660
2. Reagent Blank	N/A	N/A	5	.002
3.	3965 g to 5 mL EDTA/en		.250	.078
4. Duplicate	4123 g to 5 mL EDTA/en		.250	.080
5. Spike	Same as #3	Same as #3 0.250mL Std	.250	.276
6.	4805 g to 5 mL EDTA/en		.250	.092
7. Duplicate	3799 g to 5 mL EDTA/en		.250	.077
8. Spike	Same as #6	Same as #6 0.250mL Std	.250	.351
9. CCV	N/A	0.250mL to 25mL	0.500	.674
10. CCB	N/A	N/A	5	.001

Comments: Spec 301

DATA
NOT USED
IN PACKAGE

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV 1

CN- DETERMINATION : LA-695-102 (E-0) BLANK, LIQUID, SOLID

SAMPLE	
BLANK	
Work List	
6311	Blank Aliquot in mL (SS) 5.00000
Test Code	Absorbance of Instrument Blank 0.000
CN-01	Absorbance of Blank (Reagent, Prep) 0.002
Matrix	Digest Dilution Factor 1
LIQUID	Y-Intercept Value 0.000194
Samples	Slope Value 0.143424
BLNK	µg of Cyanide 0.013
Instrument Stock	µg CN- /mL 2.52E-03
301	
ANALYSIS	µg of Cyanide = [Absorb. of Blank - Absorb. of Inst. Blank - (Y-Intercept)] / Slope Value
K.MONTEITH	µg/mL of Cyanide = µg Cyanide * Digest Dilution Factor / SS (mL)
Date	
03/09/96	Detection Limit = 0.055 µg Cyanide / SS (mL) * Digest Dilution Factor
Time	v RESULTS v
	Cyanide Concentration (µg/mL) < Detection Limit
Calibration Data	Detection Limit µg CN- / mL
02/23/96	1.10E-02

Data Entry by: *RTS* Date: 03/12/96
 Approved by: *RW. Schneider* Date: 3/13/96
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DATA
NOT USED
IN PACKAGE

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PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

A large, empty rectangular box with a thin black border, occupying the central portion of the page. It is positioned below the 'DRAWING' label and above the 'EXPLANATION' label. The box is intended for a student to draw a picture related to their explanation.

INSTRUMENT CODE		NA	STANDARD
STANDARD	Standard Aliquot in mL		0.250
	Diluent + Standard Volume		25.00
6311	Diluted Standard in mL to be Analyzed		0.500
	True Value CN- Concentration (µg/mL)		915
CN-01	Absorbance of Blank		0.002
	Absorbance of Standard		0.660
LIQUID	Y-Intercept Value		0.000194
	Slope Value		0.143424
STD/71N8G	µg of CN in Standard		4.586
Instrument Code			
301			
K. MONTEITH			
	µg of CN-/mL in Standard		917
03/09/96			
	Standard % Recovery		100.3%
	Slope and Y-Intercept calculated from working curve calibration		
02/23/96	Original Sample Calculation from Form 695102C1		

DATA
NOT

**DATA NOT USED
IN PACKAGE**

$$\text{Standard \% Recovery} = (\mu\text{g of CN- / mL in Standard} / \text{True Value CN- Concentration } (\mu\text{g/mL})) * 100$$

Data Entry by:	RTS	Date:	03/12/96
Approved by:	Rw Schroeder	Date:	3/13/96

Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER WHC-SD-WM-DP-165, REV. 1

CN-DETERMINATION : LA-695-102 (E-0) BLANK, LIQUID, SOLID

SAMPLE	Sample Weight in grams (SS)	0.39650
	Dissolution Volume (EDTA/en + sample) in mL (DV)	5.00000
	Aliquot Analyzed from Dissolution (A)	0.25000
	Dilution Factor (DF)	1.000
	Absorbance of Blank	0.002
	Absorbance of Sample	0.078
	Y-Intercept Value	0.000194
	Slope Value	0.143424
	µg of Cyanide	0.529
	µg CN-/g	2.67E+01

$$\mu\text{g of Cyanide} = [(\text{Absorb. of Sample} - \text{Absorb. of Blank}) - (Y\text{-Intercept})] / \text{Slope Value}$$

$$\mu\text{g/g of Cyanide} = (\mu\text{g Cyanide} / A) * (DV / SS (g)) * DF$$

$$\text{Detection Limit} = (0.19 \mu\text{g Cyanide} / A) * (DV / SS) * DF$$

v RESULTS v

Cyanide Concentration (µg/g)

9.58E+00	Detection Limit
2.67E+01	

Date: 03/12/96	Date: 3/13/96
Data Entry by: <i>RTS</i>	Approved by: <i>RW Schmidt</i>

Form 695102C1 Rev. 1.7

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DATA
NOT USED
IN PACKAGE

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER WHC-SD-WM-DP-165, REV. 1

CN- DETERMINATION : LA-695-102 (E-0) BLANK, LIQUID, SOLID

TYPE		SAMPLE
SOLID	Sample Weight in grams (SS)	0.41230
Work List	Dissolution Volume (EDTA/en + sample) in mL (DV)	5.00000
6311	Aliquot Analyzed from Dissolution (A)	0.25000
Test Code	Dilution Factor (DF)	1.000
CN-01	Absorbance of Blank	0.002
Matrix	Absorbance of Sample	0.08
SOLID	Y-Intercept Value	0.000194
Sample #	Slope Value	0.143424
S95T004137/DUP	µg of Cyanide	0.542
Instrument Code	µg CN- /g	2.63E+01
301		
Analyst	µg of Cyanide = [(Absorb. of Sample - Absorb. of Blank) - (Y-Intercept)] / Slope Value	
K.MONTEITH	µg/g of Cyanide = (µg Cyanide / A) * (DV / SS (g)) * DF	
Date	Detection Limit = (0.19 µg Cyanide / A) * (DV / SS) * DF	
03/09/96	v RESULTS v	
Time	Cyanide Concentration (µg/g)	2.63E+01
Calibration Date		Detection Limit
02/23/96		µg CN- / g
		9.22E+00

Data Entry by: RTS Date: 03/12/96
 Approved by: Rw Schroeder Date: 3/13/96
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DATA
NOT USED
IN PACKAGE

230

북북북북북북

Form X2 Rev. 1.0

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Page 1 of 1

Approved by:

Data Entry by:

Date:

Date: 03/12/96

$$\text{Spike \% Recovery} = (\mu\text{g of CN-in Sample+Spike}) - (\mu\text{g of CN-in Sample}) / (\mu\text{g of CN-in Spike}) * 100\%$$

Dilution Factor = Spike Dilution Volume / Spike Aliquot

$$\mu\text{g of CN-in Spike} = \text{LMCS Value (ppm)} / \text{Dilution Factor} * \text{Diluted Spike Standard}$$
$$\mu\text{g of CN- in Sample+Spike} = [(\text{Absorbance of Sample+Spike} - \text{Absorbance of Blank}) - (Y\text{-Intercept})] / \text{Slope Value}$$

Original Sample Calculation from Form 695102C1

Slope and Y-intercept calculated from working curve calibration

DATA NOT USED IN PACKAGE

[illegible]

CN-DETERMINATION : LA-695-102 (E-0) SPIKE, STANDARD

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

WHC-SD-WM-DP-165, REV. 1

695102X2 - CN SPIKE

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER WHC-SD-WM-DP-165, REV. 1

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DATA
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IN PACKAGE

Type		SOLID
World		6311
Test Code		CN-01
Matrix		SOLID
Sample		S95T004139
Instrument Code		301
Analyte		K.MONTEITH
Date		03/09/96
Cyanide Concentration (µg/g)		2.61E+01
Detection Limit		7.91E+00

Sample Weight in grams (SS)		0.48050
Dissolution Volume (EDTA/en + sample) in mL (DV)		5.00000
Aliquot Analyzed from Dissolution (A)		0.25000
Dilution Factor (DF)		1.000
Absorbance of Blank		0.002
Absorbance of Sample		0.092
Y-Intercept Value		0.000194
Slope Value		0.143424
µg of Cyanide		0.626
µg CN-/g		2.61E+01

$\mu\text{g of Cyanide} = [(\text{Absorb. of Sample} - \text{Absorb. of Blank}) - (Y\text{-Intercept})] / \text{Slope Value}$
 $\mu\text{g/g of Cyanide} = (\mu\text{g Cyanide} / A) * (DV / SS (g)) * DF$
 $\text{Detection Limit} = (0.19 \mu\text{g Cyanide} / A) * (DV / SS) * DF$
 v RESULTS v

CN-DETERMINATION : LA-695-102 (E-0) BLANK, LIQUID, SOLID

Approved by: *RW Schorck*
 Date: 3/13/96
 Date Entry by: *RTS*
 Date: 03/12/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

CN- DETERMINATION : LA-695-102 (E-0) BLANK, LIQUID, SOLID

		SAMPLE
SOLID	Sample Weight in grams (SS)	0.37990
6311	Dissolution Volume (EDTA/en + sample) in mL (DV)	5.00000
	Aliquot Analyzed from Dissolution (A)	0.25000
	Dilution Factor (DF)	1.000
CN-01	Absorbance of Blank	0.002
	Absorbance of Sample	0.077
SOLID	Y-Intercept Value	0.000194
	Slope Value	0.143424
S95T004139/DUP	µg of Cyanide	0.522
	µg CN- /g	2.75E+01

301

$$\mu\text{g of Cyanide} = [(\text{Absorb. of Sample} - \text{Absorb. of Blank}) - (\text{Y-Intercept})] / \text{Slope Value}$$

K.MONTEITH

$$\mu\text{g/g of Cyanide} = (\mu\text{g Cyanide} / A) * (DV / SS (g)) * DF$$

03/09/96

$$\text{Detection Limit} = (0.19 \mu\text{g Cyanide} / A) * (DV / SS) * DF$$

v RESULTS v

	Cyanide Concentration (µg/g)	2.75E+01	Detection Limit
			µg CN- / g
02/23/96			1.00E+01

Data Entry by:

Date: 03/12/96

Approved by:

Date: 3/13/96

Form 695102C1 Rev. 1.7

Page 1 of 1

DATA
NOT USED
IN PACKAGE

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PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

WHC-SD-WM-DP-165, REV. 1

CN- DETERMINATION : LA-695-102 (E-0) SPIKE, STANDARD

SPIKE	Spike Aliquot in mL	0.250	NA
Work List	Diluent + Spike Standard Volume	25.00	
6311	Diluted Spike Standard in mL	0.250	
Test Code	True Value CN- Concentration (µg/mL)	915	
CN-01	Absorbance of Blank	0.002	
Matrix	Absorbance of Sample+Spike	0.351	
SOLID	Y-Intercept Value	0.000194	
Sample	Slope Value	0.143424	
S95T004139	µg of CN- in Sample+Spike	2.432	
Instrument			
301			
695102X2	Known µg of CN- in Original Sample	0.6260	
K.MONTEITH			
03/09/96	µg of CN- in Spike	2.2875	
	Spike % Recovery	79.0%	
	Slope and Y-Intercept calculated from working curve calibration		DATA NOT USED IN PACKAGE
02/23/96	Original Sample Calculation from Form 695102C1		

$$\mu\text{g of CN- in Sample (Corrected)} = \text{Known } \mu\text{g of CN- in Original Sample} * \text{g of Sample in Spike} / \text{g Used in Original Sample}$$

$$\mu\text{g of CN- in Sample+Spike} = [(\text{Absorbance of Sample+Spike} - \text{Absorbance of Blank}) - (\text{Y-Intercept})] / \text{Slope Value}$$

$$\mu\text{g of CN- in Spike} = \text{LMCS Value (ppm)} / \text{Dilution Factor} * \text{Diluted Spike Standard}$$

$$\text{Dilution Factor} = \text{Spike Dilution Volume} / \text{Spike Aliquot}$$

$$\text{Spike \% Recovery} = (\mu\text{g of CN- in Sample+Spike}) - (\mu\text{g of CN- in Sample}) / (\mu\text{g of CN- in Spike}) * 100\%$$

Data Entry by:

RTS

Date: 03/12/96

Approved by:

DW Schaefer

Date: 3/13/96

Form X2 Rev. 1.0

Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

CN- DETERMINATION : LA-695-102 (E-0) BLANK, LIQUID, SOLID

		SAMPLE
BLANK		
6311	Blank Aliquot in mL (SS)	5.00000
	Absorbance of Instrument Blank	0.000
CN-01	Absorbance of Blank (Reagent, Prep)	0.001
	Digest Dilution Factor	1
LIQUID	Y-Intercept Value	0.007237
	Slope Value	0.147420
CCB	µg of Cyanide	-0.042
	µg CN- /mL	-8.46E-03

301 µg of Cyanide = [(Absorb. of Blank - Absorb. of Inst. Blank) - (Y-Intercept)] / Slope Value

K.MONTEITH µg/mL of Cyanide = µg Cyanide * Digest Dilution Factor / SS (mL)

03/09/96 Detection Limit = 0.055 µg Cyanide / SS (mL) * Digest Dilution Factor

v RESULTS v

	Cyanide Concentration (µg/mL)	< Detection Limit	Detection Limit µg CN- / mL
02/25/96			1.10E-02

Data Entry by:

RTS

Date: 03/12/96

Approved by:

RW Schroeder

Date: 3/13/96

Form 695102C1 Rev. 1.7

Page 1 of 1

DATA
NOT USED
IN PACKAGE

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

WHC-SD-WM-DP-165, REV 1

CN- DETERMINATION : LA-695-102 (E-0) SPIKE, STANDARD

		NA	STANDARD
STANDARD	Standard Aliquot in mL		0.250
	Diluent + Standard Volume		25.00
6311	Diluted Standard in mL to be Analyzed		0.500
	True Value CN- Concentration (µg/mL)		915
CN-01	Absorbance of Blank		0.001
	Absorbance of Standard		0.674
LIQUID	Y-Intercept Value		0.007237
	Slope Value		0.147420
CCV	µg of CN in Standard		4.516
301			
K. MONTEITH			
	µg of CN-/mL in Standard		903
03/09/96			
	Standard % Recovery		98.7%
02/25/96	Slope and Y-Intercept calculated from working curve calibration Original Sample Calculation from Form 695102C1		

DATA
NOT USED
IN PACKAGE
$$\mu\text{g of CN- in Sample+Spike} = [(\text{Absorbance of Sample+Spike} - \text{Absorbance of Blank}) - (\text{Y-Intercept})] / \text{Slope Value}$$

$$\mu\text{g/mL of CN-} = \mu\text{g of CN- in Standard} / \text{Diluted Standard} * \text{Dilution Factor}$$

$$\text{Dilution Factor} = \text{Flask Volume} / \text{Standard Aliquot}$$

$$\text{Standard \% Recovery} = (\mu\text{g of CN-/mL in Standard} / \text{True Value CN- Concentration} (\mu\text{g/mL})) * 100$$

Data Entry by:	RTS	Date:	03/12/96
Approved by:	Rw Schneider	Date:	3/13/96

Form X2 Rev. 1.0

Page 1 of 1

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WHC-SD-WM-DP-165, REV. 1

LABCORE Completed Worklist Report for Worklist# 5008

Analyst: vlm

Instrument: IC03

Book# 122 N 9E

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

Worklist Comment: AN102 FOR IC RTS

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 CCB		0	②IC-QC F	QC	1	<1.30e-2		ug/mL
1 CCB		0	②IC-QC CL	QC	1	<1.70e-2		ug/mL
1 CCB		0	②IC-QC NO2	QC	1	<1.07e-1		ug/mL
1 CCB		0	②IC-QC BR	QC	1	<1.26e-1		ug/mL
1 CCB		0	②IC-QC NO3	QC	1	<1.40e-1		ug/mL
1 CCB		0	②IC-QC PO4	QC	1	<1.19e-1		ug/mL
1 CCB		0	②IC-QC SO4	QC	1	<1.36e-1		ug/mL
1 CCB		0	②IC-QC OXALATE2	QC	1	<1.05e-1		ug/mL
2 CCV		0	②IC-QC F	QC	59	5.30e+01	89.830 % Recovery	
2 CCV		0	②IC-QC CL	QC	79	7.53e+01	95.320 % Recovery	
2 CCV		0	②IC-QC NO2	QC	534	5.01e+02	93.820 % Recovery	
2 CCV		0	②IC-QC BR	QC	575	5.27e+02	91.650 % Recovery	
2 CCV		0	②IC-QC NO3	QC	614	5.83e+02	94.950 % Recovery	
2 CCV		0	②IC-QC PO4	QC	546	5.25e+02	96.150 % Recovery	
2 CCV		0	②IC-QC SO4	QC	631	5.84e+02	92.550 % Recovery	
2 CCV		0	②IC-QC OXALATE2	QC	526	4.84e+02	92.020 % Recovery	
3 SAMPLE	S95T003867	0	②IC-01 F-02	LIQUID	N/A	<1.326e+02	132.600	ug/mL
3 SAMPLE	S95T003867	0	②IC-01 CL-02	LIQUID	N/A	2.976e+03	173.400	ug/mL
3 SAMPLE	S95T003867	0	②IC-01 NO2-02	LIQUID	N/A	6.035e+04	1.092e+003	ug/mL
3 SAMPLE	S95T003867	0	②IC-01 NO3-02	LIQUID	N/A	1.632e+05	1.428e+003	ug/mL
3 SAMPLE	S95T003867	0	②IC-01 PO4-02	LIQUID	N/A	3.526e+03	1.224e+003	ug/mL
3 SAMPLE	S95T003867	0	②IC-01 SO4-02	LIQUID	N/A	1.048e+04	1.387e+003	ug/mL
4 DUP	S95T003867	0	②IC-01 F-02	LIQUID	<1.33e2	<1.33e2		RPD
4 DUP	S95T003867	0	②IC-01 CL-02	LIQUID	2.98e+03	3.32e+03	10.790	RPD
4 DUP	S95T003867	0	②IC-01 NO2-02	LIQUID	6.04e+04	7.14e+04	16.690	RPD
4 DUP	S95T003867	0	②IC-01 NO3-02	LIQUID	1.63e+05	1.93e+05	16.850	RPD
4 DUP	S95T003867	0	②IC-01 PO4-02	LIQUID	3.53e+03	4.15e+03	16.150	RPD
4 DUP	S95T003867	0	②IC-01 SO4-02	LIQUID	1.05e+04	1.22e+04	14.980	RPD
5 SPK	S95T003867	0	②IC-01 F-02	LIQUID	100	155.1	155.100 % Recovery	
5 SPK	S95T003867	0	②IC-01 CL-02	LIQUID	100	90.5	90.500 % Recovery	
5 SPK	S95T003867	0	②IC-01 NO2-02	LIQUID	100	101.9	101.900 % Recovery	
5 SPK	S95T003867	0	②IC-01 NO3-02	LIQUID	100	108.2	108.200 % Recovery	
5 SPK	S95T003867	0	②IC-01 PO4-02	LIQUID	100	94.1	94.100 % Recovery	
5 SPK	S95T003867	0	②IC-01 SO4-02	LIQUID	100	91.8	91.800 % Recovery	
6 SAMPLE	S95T003868	0	②IC-01 F-02	LIQUID	N/A	<1.326e+02	132.600	ug/mL
6 SAMPLE	S95T003868	0	②IC-01 CL-02	LIQUID	N/A	4.719e+03	173.400	ug/mL
6 SAMPLE	S95T003868	0	②IC-01 NO2-02	LIQUID	N/A	1.044e+05	1.092e+003	ug/mL
6 SAMPLE	S95T003868	0	②IC-01 NO3-02	LIQUID	N/A	2.827e+05	1.428e+003	ug/mL
6 SAMPLE	S95T003868	0	②IC-01 PO4-02	LIQUID	N/A	6.225e+03	1.224e+003	ug/mL
6 SAMPLE	S95T003868	0	②IC-01 SO4-02	LIQUID	N/A	1.684e+04	1.387e+003	ug/mL
7 DUP	S95T003868	0	②IC-01 F-02	LIQUID	<1.33e2	<1.33e2		RPD

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

LABCORE Completed Worklist Report for Worklist# 5008

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
7 DUP	S95T003868	0	IC-01	CL-02	LIQUID	4.72e+03	4.88e+03	3.330 RPD
7 DUP	S95T003868	0	IC-01	NO2-02	LIQUID	1.04e+05	1.10e+05	2.420 RPD
7 DUP	S95T003868	0	IC-01	NO3-02	LIQUID	2.83e+05	2.99e+05	5.500 RPD
7 DUP	S95T003868	0	IC-01	PO4-02	LIQUID	6.22e+03	5.99e+03	3.770 RPD
7 DUP	S95T003868	0	IC-01	SO4-02	LIQUID	1.68e+04	1.74e+04	3.510 RPD

Comments Section:

Comments for sample# S95T003867 and test @IC-01
Spike on upload wrong will be fixed matrix interference on F

Final page for worklist# 5008

Analyst Signature	Date	Analyst Signature	Date
-------------------	------	-------------------	------

3/20/96
Reviewer Signature	Date

Spike calculations in the automatic data upload were incorrect. The correct calculations are on the forms on pages 240 and 241.

A matrix interference on F⁻ caused the high spike recovery result.

3/20/96

LABCORE Data Entry Template for Worklist# 5008

Analyst: VLM Instrument: IC01 IC03 Book# 122 N9-E

Method: LA-533-105 Rev/Mod VM 02-15-96 D-1

Worklist Comment: AN102 FOR IC RTS

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 CCB			@IC-QC	QC		
2 CCV			@IC-QC	QC		
3 SAMPLE	S95T003867 0		@IC-01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested: CL-02 , F-02 , NO2-02 , NO3-02 , PO4-02 , SO4-02					
4 DUP	S95T003867 0		@IC-01	LIQUID		
5 SPK	S95T003867 0		@IC-01	LIQUID		
6 SAMPLE	S95T003868 0		@IC-01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested: CL-02 , F-02 , NO2-02 , NO3-02 , PO4-02 , SO4-02					
7 DUP	S95T003868 0		@IC-01	LIQUID		

Final page for worklist # 5008

Valerie Massi 02-15-96
Analyst Signature Date

Analyst Signature Date

Exported on shell

Liquidated 2/1/96 J. M. J.

Spike proteins extracted on GC held at 100°C J. M. J.

Data Entry Comments:

**WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY
INORGANIC ANALYTICAL BATCH AND SUMMARY SHEET**

ANION ANALYSIS ON DIONEX

SAMPLE #: S95T003867 &
TEST CODE: @ic-01
INSTRUMENT: IC03
WORK LIST #: 5008
BATCH ID:

ANALYST: VL Massie
ANALYSIS DATE: 02/15/96
SAMPLE POINT: An-102
SAMPLE PREP: direct

Result Units	µg/mL	Fluoride	Chloride	Nitrite	Nitrate	Phosphate	Sulfate	Bromide	Oxalate
122n9e									
S95T003867		<132.61	2.98E+03	6.04E+04	1.63E+05	3.53E+03	1.05E+04	<1285.33	<1071.11
		<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00
Duplicate 1 RPD		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00
		<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00
Duplicate 2 RPD		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
S95T003867spk		155.1%	90.5%	101.9%	108.2%	94.1%	91.8%	90.4%	91.3%

NARRATIVE:

Analyst Comments:

Chemist Comments:

Spike calculation

Raw data for calculations can be found on pages 247 (sample) and 249 (spike).

Wendy 3/20/96

Form Completed By: *[Signature]* Date: *3/2/96*
Chemist Approval: *[Signature]* Date: *3/2/96*

LAB LEADER INFO	
Method:	LA-533106 d-1
Matrix:	liquid
Test Code:	@ic-01
Work List #:	5006
Batch #:	
Result Units	
($\mu\text{g/g}$ or $\mu\text{g/mL}$):	$\mu\text{g/mL}$
Spike Book Number:	122n9e
Spike Sample #:	1
Prepared By: Jann Frye	
Prepared Date: 03/07/96	
Chemist: Jann Frye	
Analyst: VL Masie	
Analysis Date: 02/15/96	
Time Complete:	
Instrument Code: IC03	
Run: 0	
Sample Prep: direct	
Sample Point: An-102	
Sample Type	
STANDARD	122n9e
SAMPLE 1	S95T003867
DUPLICATE 1	
SAMPLE 2	
DUPLICATE 2	
SAMPLE 3	
DUPLICATE 3	
SAMPLE 4	
DUPLICATE 4	
SPIKE	S95T003867spk
SPIKE DUPLICATE	

PRINT

TECH INFO								
	Fluoride	Chloride	Nitrite	Nitrate	Phosphate	Sulfate	Bromide	Oxalate
Blank Data ($\mu\text{g/mL}$)								

Standard Data ($\mu\text{g/mL}$)								
------------------------------------	--	--	--	--	--	--	--	--

Sample 1 Data ($\mu\text{g/mL}$)	<.013	2.98E+03	6.04E+04	1.63E+06	3.63E+03	1.05E+04	<.126	<.105
Sample 1 Dilution Factor	10201	10201	10201	10201	10201	10201	10201	10201
Sample 1 Prep DF	1	1	1	1	1	1	1	1
Duplicate 1 Data ($\mu\text{g/mL}$)								
Duplicate 1 Dilution Factor								
Duplicate 1 Prep DF								

Sample 2 Data ($\mu\text{g/mL}$)								
Sample 2 Dilution Factor								
Sample 2 Prep DF								
Duplicate 2 Data ($\mu\text{g/mL}$)								
Duplicate 2 Dilution Factor								
Duplicate 2 Prep DF								

Sample 3 Data ($\mu\text{g/mL}$)								
Sample 3 Dilution Factor								
Sample 3 Prep DF								
Duplicate 3 Data ($\mu\text{g/mL}$)								
Duplicate 3 Dilution Factor								
Duplicate 3 Prep DF								

Sample 4 Data ($\mu\text{g/mL}$)								
Sample 4 Dilution Factor								
Sample 4 Prep DF								
Duplicate 4 Data ($\mu\text{g/mL}$)								
Duplicate 4 Dilution Factor								
Duplicate 4 Prep DF								

Spike + Sample 1 ($\mu\text{g/mL}$)	9.24E+03	1.02E+04	1.15E+05	2.30E+06	6.54E+04	6.90E+04	6.26E+04	4.85E+04
Spike + Dup 1 ($\mu\text{g/mL}$)								

Spike Volume (mL)	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01
Total Volume (mL)	10.10	10.10	10.10	10.10	10.10	10.10	10.10	10.10
Std. Conc. ($\mu\text{g/mL}$)	59	79	534	614	546	631	575	528
Detection Limit	0.013	0.017	0.107	0.140	0.119	0.136	0.126	0.105
Matrix Detection Limit 1	1.33E+02	1.73E+02	1.09E+03	1.43E+03	1.21E+03	1.39E+03	1.29E+03	1.07E+03
Matrix Detection Limit 2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Matrix Detection Limit 3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Matrix Detection Limit 4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Spike Recovery = $\frac{((\text{Spike} + \text{Sample}) - (\text{Sample})) \times (\text{Total Volume})}{((\text{Spike Vol.}) \times (\text{Spike Std.}) \times (\text{Sample DF}))} \times 100\%$

Note: (For spike recovery when the sample conc. is less than detection limit you do NOT subtract sample conc.)

Duplicate Relative % Difference = $\frac{((\text{Sample} - \text{Duplicate}))}{((\text{Sample} + \text{Duplicate}) / 2)} \times 100\%$

Less than Values are Calculated from the Detection Limit Dilution Factor

v RESULTS v	Fluoride	Chloride	Nitrite	Nitrate	Phosphate	Sulfate	Bromide	Oxalate
Sample 1 in $\mu\text{g/mL}$	<132.61	2.98E+03	6.04E+04	1.63E+06	3.63E+03	1.05E+04	<126.33	<1071.11
Duplicate 1 in $\mu\text{g/mL}$	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00
Duplicate 1 RPD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sample 2 in $\mu\text{g/mL}$	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00
Duplicate 2 in $\mu\text{g/mL}$	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00
Duplicate 2 RPD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Spike % Recovery	185.1%	90.6%	101.9%	106.2%	94.1%	91.6%	80.4%	91.3%

Data Entry by:

Date: 03/07/96

Approved by:

Date:

Form DIONEX.WB1 Rev. 1.3

A-0010-IC				DATA FILE/WORKLIST RESOLUTION				07-Mar-96			
Worklist#: 5008				Data File: 5008FEB.CSV							
		Seq	Type	Sample #			Seq#	Data File	Sample Name	Dilution	
-	=>	1	CCB		-	1	96021501.d01	INSTR BLANK		1.00	
	=>	2	CCV				96021501.d02	122N9-E STD		101.00	
	=>	3	SAMPLE	S95T003867		2	96021501.d03	122N9-E STD		101.00	
	=>	4	DUP	S95T003867		3	96021501.d04	S95T003867 SAMPL		10201.00	
	=>	5	SPK	S95T003867		4	96021501.d05	S95T003867 DUP		10201.00	
	=>	6	SAMPLE	S95T003868		5	96021501.d06	S95T003867 SPIKE		10201.00	
	=>	7	DUP	S95T003868		6	96021501.d07	S95T003868 SAMPL		10201.00	
						7	96021501.d08	S95T003868 DUP		10201.00	
+					+						

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

WHC-SD-WM-DP-165, REV. 1

A-0010-1		WORKLIST DATA ENTRY USING SODIUM::LIMS3				05-Mar-96	
I PROTOCOL DETAIL INFORMATION Seq: 5 Type: SPK Sample#: S95T003867 Aliquot: Rep: 0							
Code	Name	Actual	Raw Found	Found	Yield	Q	
- F-02	Fluoride-IC-Di	59	< 9242.56	< 1.33e2	225.424	N	
CL-02	Chloride-IC-Di	79	< 10198.9	< 1.73e2	218.987	N	
N02-02	Nitrite-IC - D	534	< 115310	< 1.09e3	204.120	N	
N03-02	Nitrate-IC - D	614	< 230342	< 1.43e3	232.899	N	
P04-02	Phosphate-IC-D	546	< 55401.3	< 1.22e3	223.443	N	
S04-02	Sulfate by IC-	631	< 68984.4	< 1.39e3	220.285	N	
<Alt-Enter> Clear from cursor/move to next <Tab> Move to next							

QC Chart(F5) Defaults(F6) ClearRow(F7) Delete Row(F8) >

WHC-SD-WM-DP-165, REV. 1

*This will be
used for
GC
tables.*

See ACF Form

*for right
values for*

Spikes.

Data Reprocessed On 02/26/1996 15:14:26

=====

Sample Name: INSTR BLANK	Date: 02/15/1996 10:19:31
Data File : C:\DX\DATA\96021501.d01	WHC-SD-WM-DP-165, REV. 1
Method : C:\DX\METHOD\ANIONS.MET	Detector: CDM-1
ACI Address: 1 System: 2 Inject#: 1	
Analyst : <i>[Signature]</i> Column:	

=====

=====

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	2700	5Hz	0.00	9.00		200

=====

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
Totals			0.000	0	0		

=====

File: 96021501.d01 Sample: INSTR BLANK

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 244 TO 251

WHC-SD-WM-DP-165, REV. 1

THIS PAGE WAS INTENTIONALLY LEFT BLANK

Data Reprocessed On 02/26/1996 15:14:30

Sample Name: 122N9-E STD	Date: 02/15/1996 10:54:03
Data File : C:\DX\DATA\96021501.d03	
Method : C:\DX\METHOD\ANIONS.MET	WHC-SD-WM-DP-165, REV. 1
ACI Address: 1 System: 2 Inject#: 3	Detector: CDM-1
Analyst: <i>[Signature]</i>	Column:

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	101	2700	5Hz	0.00	9.00		200

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.90		0.000	54	208	2	
2	1.04	FLUORIDE	52.999	1589	8553	2	-1.57
3	1.53	CHLORIDE	75.324	1350	7509	1	-0.65
4	1.82	NITRITE	500.906	6177	37562	1	-0.18
5	2.67	BROMIDE	527.466	3964	26262	2	-0.74
6	3.03	NITRATE	582.880	4883	37956	2	-1.30
7	4.49	PHOSPHATE	525.343	1382	16023	1	-1.54
8	5.99	SULFATE	583.513	3646	49191	1	-1.96
9	7.84	OXALATE	483.935	1733	30424	1	-1.96
Totals			3332.366	24777	213687		

File: 96021501.d03 Sample: 122N9-E STD

Data Reprocessed On 02/26/1996 15:14:32

```
=====
Sample Name: S95TOO3867 SAMPLE                      Date: 02/15/1996 11:30:56
Data File  : C:\DX\DATA\96021501.d04                WHC-SD-WM-DP-165, REV. 1
Method     : C:\DX\METHOD\ANIONS.MET
ACI Address: 1 System: 2 Inject#: 4                  Detector: CDM-1
Analyst    :                                         Column:
=====
```

```
-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1       10201    2700   5Hz   0.00   9.00       200
-----
```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.90		0.000	109	603	2	
2	1.14		0.000	867	7721	2	
3	1.53	CHLORIDE	2976.483	564	3184	1	-0.65
4	1.82	NITRITE	60352.251	7452	44891	1	-0.18
5	3.00	NITRATE	163229.583	13783	108756	1	-2.39
6	4.50	PHOSPHATE	3525.932	83	954	1	-1.24
7	6.02	SULFATE	10482.278	632	8683	1	-1.53
Totals			240566.527	23489	174792		

File: 96021501.d04 Sample: S95TOO3867 SAMPLE

Data Reprocessed On 02/26/1996 15:14:34

```
=====
Sample Name: S95TOO3867 DUP                      Date: 02/15/1996 11:45:31
Data File  : C:\DX\DATA\96021501.d05              WHC-SD-WM-DP-165, REV. 1
Method     : C:\DX\METHOD\ANIONS.MET
ACI Address: 1 System: 2 Inject#: 5                Detector: CDM-1
Analyst    :                                     Column:
=====
```

```
-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1       10201    2700   5Hz   0.00  9.00         200
-----
```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.90		0.000	120	644	2	
2	1.14		0.000	1010	8774	2	
3	1.53	CHLORIDE	3323.407	620	3505	1	-0.65
4	1.82	NITRITE	71416.735	8824	53230	1	-0.18
5	2.98	NITRATE	192837.804	16001	129660	1	-2.82
6	4.50	PHOSPHATE	4153.307	99	1143	1	-1.39
7	6.01	SULFATE	12179.060	732	10085	1	-1.64
Totals			283910.314	27406	207040		

File: 96021501.d05 Sample: S95TOO3867 DUP

Data Reprocessed On 02/26/1996 15:14:36

Sample Name: S95TOO3867 SPIKE

Date: 02/15/1996 13:32:16

Data File : C:\DX\DATA\96021501.d06

WHC-SD-WM-DP-165, REV. 1

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

ACI Address: 1 System: 2 Inject#: 6

Detector: CDM-1

Analyst : Column:

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	10201	2700	5Hz	0.00	9.00		200

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.90		0.000	149	574	2	
2	1.06	FLUORIDE	9242.559	1842	14575	2	-0.31
3	1.53	CHLORIDE	10198.866	1829	9969	2	-0.65
4	1.82	NITRITE	115309.701	14763	86649	2	-0.18
5	2.67	BROMIDE	52495.496	4069	25870	2	-0.74
6	2.98	NITRATE	230342.087	19283	156713	2	-2.82
7	4.48	PHOSPHATE	55401.330	1457	16747	1	-1.68
8	5.98	SULFATE	68984.411	4354	57720	1	-2.07
9	7.83	OXALATE	48520.536	1720	30199	1	-2.12
Totals			590494.984	49466	399017		

File: 96021501.d06 Sample: S95TOO3867 SPIKE

Data Reprocessed On 02/26/1996 15:14:38

```
=====
Sample Name: S95TOO3868 SAMPLE          Date: 02/15/1996 13:51:28
Data File  : C:\DX\DATA\96021501.d07
Method     : C:\DX\METHOD\ANIONS.MET   WHC-SD-WM-DP-165, REV. 1
ACI Address: 1 System: 2 Inject#: 7      Detector: CDM-1
Analyst    :                          Column:
=====
```

```
-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1       10201    2700  5Hz   0.00  9.00       200
-----
```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.90		0.000	185	1003	2	
2	1.14		0.000	1487	12726	2	
3	1.53	CHLORIDE	4718.992	844	4800	1	-0.65
4	1.82	NITRITE	104406.982	12921	78297	1	-0.18
5	2.97	NITRATE	282707.504	23316	195651	1	-3.26
6	4.51	PHOSPHATE	6225.297	150	1764	1	-1.10
7	6.01	SULFATE	16840.580	1032	13942	1	-1.64
Totals			414899.356	39935	308183		

File: 96021501.d07 Sample: S95TOO3868 SAMPLE

Data Reprocessed On 02/26/1996 15:14:40

```
=====
Sample Name: S95TOO3868 DUP          Date: 02/15/1996 14:08:01
Data File  : C:\DX\DATA\96021501.d08  WHC-SD-WM-DP-165, REV. 1
Method     : C:\DX\METHOD\ANIONS.MET
ACI Address: 1 System: 2 Inject#: 8    Detector: CDM-1
Analyst    :                          Column:
=====
```

```
-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1       10201    2700  5Hz   0.00  9.00        200
-----
```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.90		0.000	203	1062	2	
2	1.14		0.000	1558	13548	2	
3	1.53	CHLORIDE	4881.927	905	4952	1	-0.65
4	1.82	NITRITE	109583.911	13905	82258	1	-0.18
5	2.96	NITRATE	299357.705	24949	208337	1	-3.47
6	4.50	PHOSPHATE	5987.020	153	1692	1	-1.39
7	6.00	SULFATE	17421.800	1086	14424	1	-1.75
Totals			437232.363	42759	326273		

File: 96021501.d08 Sample: S95TOO3868 DUP

LABCORE Completed Worklist Report for Worklist# 5009

Analyst: kgh

Instrument: IC01

Book# 12299E

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

Worklist Comment: AN102 FOR IC RTS

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 CCB		0	IC-QC F	QC	1	1.70e-02	2.000e-002	ug/mL
1 CCB		0	IC-QC CL	QC	1	<1.70e-2		ug/mL
1 CCB		0	IC-QC NO2	QC	1	<1.07e-1		ug/mL
1 CCB		0	IC-QC BR	QC	1	<1.26e-1		ug/mL
1 CCB		0	IC-QC NO3	QC	1	2.37e-01	0.240	ug/mL
1 CCB		0	IC-QC PO4	QC	1	<1.19e-1		ug/mL
1 CCB		0	IC-QC SO4	QC	1	<1.36e-1		ug/mL
1 CCB		0	IC-QC OXALATE2	QC	1	<1.05e-1		ug/mL
2 CCV		0	IC-QC F	QC	59	5.45e+01	92.370 % Recovery	
2 CCV		0	IC-QC CL	QC	79	7.51e+01	95.060 % Recovery	
2 CCV		0	IC-QC NO2	QC	534	5.01e+02	93.820 % Recovery	
2 CCV		0	IC-QC BR	QC	575	5.48e+02	95.300 % Recovery	
2 CCV		0	IC-QC NO3	QC	614	6.02e+02	98.050 % Recovery	
2 CCV		0	IC-QC PO4	QC	546	5.23e+02	95.790 % Recovery	
2 CCV		0	IC-QC SO4	QC	631	6.13e+02	97.150 % Recovery	
2 CCV		0	IC-QC OXALATE2	QC	526	5.20e+02	98.860 % Recovery	
3 SAMPLE	S95T003869	0	IC-01 F-02	LIQUID	N/A	1.452e+03	53.830	ug/mL
3 SAMPLE	S95T003869	0	IC-01 CL-02	LIQUID	N/A	3.459e+03	70.400	ug/mL
3 SAMPLE	S95T003869	0	IC-01 NO2-02	LIQUID	N/A	7.316e+04	443.100	ug/mL
3 SAMPLE	S95T003869	0	IC-01 NO3-02	LIQUID	N/A	1.959e+05	579.700	ug/mL
3 SAMPLE	S95T003869	0	IC-01 PO4-02	LIQUID	N/A	4.220e+03	496.900	ug/mL
3 SAMPLE	S95T003869	0	IC-01 SO4-02	LIQUID	N/A	1.270e+04	563.200	ug/mL
4 DUP	S95T003869	0	IC-01 F-02	LIQUID	1.45e+03	1.45e+03	0.000	RPD
4 DUP	S95T003869	0	IC-01 CL-02	LIQUID	3.46e+03	3.61e+03	4.240	RPD
4 DUP	S95T003869	0	IC-01 NO2-02	LIQUID	7.32e+04	7.27e+04	0.690	RPD
4 DUP	S95T003869	0	IC-01 NO3-02	LIQUID	1.96e+05	1.97e+05	0.510	RPD
4 DUP	S95T003869	0	IC-01 PO4-02	LIQUID	4.22e+03	4.17e+03	1.190	RPD
4 DUP	S95T003869	0	IC-01 SO4-02	LIQUID	1.27e+04	1.28e+04	0.780	RPD
5 SPK	S95T003869	0	IC-01 F-02	LIQUID	100	88.8	88.800 % Recovery	
5 SPK	S95T003869	0	IC-01 CL-02	LIQUID	100	95.6	95.600 % Recovery	
5 SPK	S95T003869	0	IC-01 NO2-02	LIQUID	100	124.3	124.300 % Recovery	
5 SPK	S95T003869	0	IC-01 BR-02	LIQUID	100	90.2	90.400 % Recovery	
5 SPK	S95T003869	0	IC-01 NO3-02	LIQUID	100	133.8	133.800 % Recovery	
5 SPK	S95T003869	0	IC-01 PO4-02	LIQUID	100	92.7	92.700 % Recovery	
5 SPK	S95T003869	0	IC-01 SO4-02	LIQUID	100	100.0	100.000 % Recovery	
5 SPK	S95T003869	0	IC-01 OXALATE2	LIQUID	100	97.9	97.900 % Recovery	
6 SAMPLE	S95T003962	0	IC-01 F-02	LIQUID	N/A	< 1.43e-01	0.143	ug/mL
6 SAMPLE	S95T003962	0	IC-01 CL-02	LIQUID	N/A	1.369e+00	0.187	ug/mL
6 SAMPLE	S95T003962	0	IC-01 NO2-02	LIQUID	N/A	< 1.177e+00	1.177	ug/mL
6 SAMPLE	S95T003962	0	IC-01 NO3-02	LIQUID	N/A	6.178e+00	1.540	ug/mL
6 SAMPLE	S95T003962	0	IC-01 PO4-02	LIQUID	N/A	< LDL	1.320	ug/mL

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

LABCORE Completed Worklist Report for Worklist# 5009

Seq Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
6 SAMPLE	S95T003962	0		②IC-01	SO4-02	LIQUID	N/A	3.671e+00	1.496 ug/mL
7 DUF	S95T003962	0		②IC-01	F-02	LIQUID	<1.43e-1	<1.43e-1	RPD
7 DUF	S95T003962	0		②IC-01	CL-02	LIQUID	1.37e+00	1.28e+00	6.790 RPD
7 DUF	S95T003962	0		②IC-01	NO2-02	LIQUID	<1.18e0	<1.18e0	RPD
7 DUF	S95T003962	0		②IC-01	NO3-02	LIQUID	6.18e+00	6.45e+00	4.280 RPD
7 DUF	S95T003962	0		②IC-01	PO4-02	LIQUID	<1.32e0	<1.32e0	RPD
7 DUF	S95T003962	0		②IC-01	SO4-02	LIQUID	3.67e+00	3.46e+00	5.890 RPD

Final page for worklist# 5009

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Jean M. Luge 3/20/96
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 5009

Analyst: [Signature] Instrument: IC01

Book# 22219-6

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

Worklist Comment: AN102 FOR IC RTS

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 CCB			@IC-QC	QC		
2 CCV			@IC-QC	QC		
3 SAMPLE	S95T003869 0		@IC-01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested:		CL-02	, F-02	, NO2-02	, NO3-02 , PO4-02 ,
			SO4-02			
4 DUP	S95T003869 0		@IC-01	LIQUID		
5 SPK	S95T003869 0		@IC-01	LIQUID		
6 SAMPLE	S95T003962 0		@IC-01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested:		CL-02	, F-02	, NO2-02	, NO3-02 , PO4-02 ,
			SO4-02			
7 DUP	S95T003962 0		@IC-01	LIQUID		

Final page for worklist # 5009

Analyst Signature [Signature] Date 2/15/96

Analyst Signature _____ Date _____

Inshell
Uploaded n.smith 2/28/96

Data Entry Comments:

On sample 4 Dup S95T003962 - THERE WAS
insufficient sample. I ran a sample & a replicate both
at 1000-10. NO MORE SAMPLE AT ALL.

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

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY
INORGANIC ANALYTICAL BATCH AND SUMMARY SHEET

ANION ANALYSIS ON DIONEX

SAMPLE #:	S95T003869	ANALYST:	Kristin Higbee
TEST CODE:	@lc-01	ANALYSIS DATE:	02/15/96
INSTRUMENT:	lc01	SAMPLE POINT:	AN-102
WORK LIST #:	5009	SAMPLE PREP:	direct
BATCH ID:			

Result Units	µg/mL	Fluoride	Chloride	Nitrite	Nitrate	Phosphate	Sulfate	Bromide	Oxalate
S95T003869		1.45E+03	3.46E+03	7.32E+04	1.96E+05	4.22E+03	1.27E+04	7.86E+02	6.93E+02
		<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00
Duplicate 1 RPD		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00
		<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00
Duplicate 2 RPD		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
S95T003869spk		88.8%	95.6%	124.3%	133.8%	92.7%	100.0%	90.2%	97.9%

NARRATIVE: **Analyst Comments:**

Chemist Comments:

Raw data for spike may be found on p. 262.
 Raw data for the sample is on p. 258.
 This data was manually entered into lab core.
 because at the time of the original data upload, the spike recovery
 for some dilution factors was calculated incorrectly. *GMF 3/20/96*
AK 3/21/96

Form Completed By: <i>John Faye</i>	Date: <i>3/20/96</i>
Chemist Approval: <i>John Faye</i>	Date: <i>3/20/96</i>

254.1

LAB LEADER INFO	
Method:	La-533-105
Matrix:	liquid
Test Code:	@Mc-01
Work List #:	5009
Batch #:	
Result Units	
(µg/g or µg/mL):	µg/mL
Spike Book Number:	122n8e
Spike Sample #:	1
Prepared By:	Jann Frye
Prepared Date:	03/20/96
Chemist:	Jann Frye
Analyst:	Kristin Higbee
Analysis Date:	02/15/96
Time Complete:	
Instrument Code:	lc01
Rerun:	
Sample Prep:	direct
Sample Point:	AN-102
Sample Type	
STANDARD	
SAMPLE 1	S85T003869
DUPLICATE 1	
SAMPLE 2	
DUPLICATE 2	
SAMPLE 3	
DUPLICATE 3	
SAMPLE 4	
DUPLICATE 4	
SPIKE	S85T003869spk
SPIKE DUPLICATE	

PRINT

TECH INFO								
	Fluoride	Chloride	Nitrite	Nitrate	Phosphate	Sulfate	Bromide	Oxalate
Blank Data (µg/mL)								
Standard Data (µg/mL)								
Sample 1 Data (µg/mL)	1.48E+03	3.46E+03	7.32E+04	1.96E+05	4.22E+03	1.27E+04	7.86E+02	6.93E+02
Sample 1 Dilution Factor	4141	4141	4141	4141	4141	4141	4141	4141
Sample 1 Prep DF	1	1	1	1	1	1	1	1
Duplicate 1 Data (µg/mL)								
Duplicate 1 Dilution Factor								
Duplicate 1 Prep DF								
Sample 2 Data (µg/mL)								
Sample 2 Dilution Factor								
Sample 2 Prep DF								
Duplicate 2 Data (µg/mL)								
Duplicate 2 Dilution Factor								
Duplicate 2 Prep DF								
Sample 3 Data (µg/mL)								
Sample 3 Dilution Factor								
Sample 3 Prep DF								
Duplicate 3 Data (µg/mL)								
Duplicate 3 Dilution Factor								
Duplicate 3 Prep DF								
Sample 4 Data (µg/mL)								
Sample 4 Dilution Factor								
Sample 4 Prep DF								
Duplicate 4 Data (µg/mL)								
Duplicate 4 Dilution Factor								
Duplicate 4 Prep DF								
Spike + Sample 1 (µg/mL)	3.57E+03	6.51E+03	1.00E+05	2.29E+05	2.47E+04	3.82E+04	2.17E+04	2.15E+04
Spike + Dup 1 (µg/mL)								

Spike Volume (mL)	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01
Total Volume (mL)	10.25	10.25	10.25	10.25	10.25	10.25	10.25	10.25
Std. Conc. (µg/mL)	59	79	534	614	546	631	575	526
Detection Limit	0.013	0.017	0.107	0.140	0.119	0.136	0.126	0.106
Matrix Detection Limit 1	5.38E+01	7.04E+01	4.43E+02	5.80E+02	4.93E+02	5.63E+02	5.22E+02	4.35E+02
Matrix Detection Limit 2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Matrix Detection Limit 3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Matrix Detection Limit 4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Spike Recovery = $\frac{((\text{Spike} + \text{Sample}) - (\text{Sample}) * (\text{Total Volume}))}{((\text{Spike Vol.}) * (\text{Spike Std.}) * (\text{Sample DF}))} * 100\%$

Note: (For spike recovery when the sample conc. is less than detection limit you do NOT subtract sample conc.)

Duplicate Relative % Difference = $\frac{((\text{Sample} - \text{Duplicate}) / ((\text{Sample} + \text{Duplicate}) / 2)) * 100\%}{\text{Dilution Factor}}$

Less than Values are Calculated from the Detection Limit Dilution Factor

v RESULTS v	Fluoride	Chloride	Nitrite	Nitrate	Phosphate	Sulfate	Bromide	Oxalate
Sample 1 in µg/mL	1.48E+03	3.46E+03	7.32E+04	1.96E+05	4.22E+03	1.27E+04	7.86E+02	6.93E+02
Duplicate 1 in µg/mL	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00
Duplicate 1 RPD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sample 2 in µg/mL	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00
Duplicate 2 in µg/mL	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00
Duplicate 2 RPD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Spike % Recovery	88.6%	95.6%	124.3%	133.8%	92.7%	100.0%	90.2%	97.9%

Data Entry by:
Approved by:
Form DIONEX-WB1 Rev. 1.3

Jann Frye
Jann Frye

Date: 03/20/96

Date: 3/20/96

254.2

Data Reprocessed On 02/26/1996 16:18:18

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Sample Name: BLANK	Date: 02/15/1996 12:41:14
Data File : C:\DX\DATA\96021471.d11	WHC-SD-WM-DP-165, REV. 1
Method : C:\DX\METHOD\KIT.MET	
ACI Address: 1 System: 1 Inject#: 11	Detector: CDM-2
Analyst <i>John F. ...</i>	Column: AG4A/AS4A anion column

=====

Calibration Volume Dilution Points Rate Start Stop Area Reject

External	1	1	3150	5Hz	0.00	10.50	20000
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***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
2	1.06	fluoride	0.017	7016	21496	1	4.95
3	1.40		0.000	6516	29672	1	
4	1.56	chloride	0.014	11859	58026	1	-0.64
5	3.25	nitrate	0.237	18315	117680	1	3.07
Totals			0.268	43705	226874		

File: 96021471.d11 Sample: BLANK

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 255 TO 266

Data Reprocessed On 02/26/1996 16:18:21

Sample Name: 122N9-E STD Date: 02/15/1996 12:58:43
Data File : C:\DX\DATA\96021471.d12 WHC-SD-WM-DP-165, REV. I
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 12 Detector: CDM-2
Analyst: *John F. [signature]* Column: AG4A/AS4A anion column

Calibration Volume Dilution Points Rate Start Stop Area Reject
External 1 101 3150 5Hz 0.00 10.50 20000

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.85		0.000	85852	373634	2	
2	1.01	fluoride	54.462	2610707	11476733	2	-0.33
3	1.39		0.000	15871	68858	1	
4	1.53	chloride	75.142	2140338	9939076	1	-2.34
5	1.85	nitrite	501.038	9316766	47894280	1	-3.32
6	2.77	bromide	548.334	5480717	34009308	1	-1.65
7	3.17	nitrate	602.462	6499698	48439188	1	0.53
8	4.64	phosphate	523.214	1648200	20758180	1	-1.07
9	6.03	sulfate	612.632	4116542	64430850	1	-2.64
10	8.00	oxalate	519.910	2342511	40923822	1	-1.36
Totals			3437.195	34257201	278313929		

File: 96021471.d12 Sample: 122N9-E STD

WHC-SD-WM-DP-165, REV. 1

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Data Reprocessed On 02/26/1996 16:18:26

Sample Name: S95T003869 SAM	Date: 02/15/1996 14:01:56
Data File : C:\DX\DATA\96021471.d14	WHC-SD-WM-DP-165, REV. 1
Method : C:\DX\METHOD\KIT.MET	
ACI Address: 1 System: 1 Inject#: 14	Detector: CDM-2
Analyst :	Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	4141	3150	5Hz	0.00	10.50		20000

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.86		0.000	333525	1665158	2	
2	1.05	fluoride	1452.276	2343075	7331396	2	4.29
3	1.12		0.000	3521575	19158298	2	
4	1.53	chloride	3459.083	2163983	11187278	1	-2.76
5	1.85	nitrite	73158.841	32535584	176049034	1	-3.32
6	2.85	bromide	786.350	20830	120094	1	1.18
7	3.05	nitrate	195903.466	47192347	444191794	1	-3.28
8	4.08		0.000	19734	224232	1	
9	4.64	phosphate	4220.435	289400	3629976	1	-1.07
10	6.08	sulfate	12697.528	2369543	31361290	1	-1.78
11	8.00	oxalate	693.014	63220	1126488	1	-1.36
Totals			292370.993	90852815	696045038		

File: 96021471.d14 Sample: S95T003869 SAM

Data Reprocessed On 02/26/1996 16:18:28

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=====
Sample Name: S95T003869 DUP                      Date: 02/15/1996 14:17:19
Data File  : C:\DX\DATA\96021471.d15             WHC-SD-WM-DP-165, REV. 1
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 15              Detector: CDM-2
Analyst    :                                     Column: AG4A/AS4A anion column
=====
```

```
-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          4141   3150   5Hz   0.00 10.50      20000
-----
```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.87		0.000	305955	1473797	2	
2	1.07	fluoride	1454.437	2324632	7342858	2	6.27
3	1.13		0.000	3461464	18930119	2	
4	1.55	chloride	3611.245	2391550	11690138	1	-1.06
5	1.87	nitrite	72739.445	32653321	175018426	1	-1.92
6	2.88	bromide	852.071	35109	221120	1	2.13
7	3.07	nitrate	196859.588	47297025	446705892	1	-2.43
8	4.15		0.000	11731	122288	1	
9	4.69	phosphate	4173.269	298123	3583674	1	0.07
10	6.08	sulfate	12796.395	2156777	31622350	1	-1.78
11	8.05	oxalate	694.816	65830	1129944	1	-0.70
Totals			293181.265	91001517	697840605		

File: 96021471.d15 Sample: S95T003869 DUP

Data Reprocessed On 02/26/1996 16:18:31

Sample Name: S95T003869 SPK

Date: 02/15/1996 14:34:28

Data File : C:\DX\DATA\96021471.d16

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

WHC-SD-WM-DP-165, REV. 1

ACI Address: 1 System: 1 Inject#: 16

Detector: CDM-2

Analyst :

Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	4141	3150	5Hz	0.00	10.50		20000

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.87		0.000	84556	374044	2	
2	1.02	fluoride	2319.623	2488118	11937454	2	0.99
3	1.55	chloride	4533.366	3289779	14746646	1	-1.06
4	1.87	nitrite	20901.065	9473045	48759782	1	-2.27
5	2.79	bromide	21500.326	5131597	32452254	1	-0.95
6	3.19	nitrate	27189.217	7215574	53581410	1	1.16
7	4.67	phosphate	20170.075	1552253	19469218	1	-0.50
8	6.08	sulfate	23982.540	4572590	61384664	1	-1.78
9	8.00	oxalate	19696.199	1999771	37778328	1	-1.36
Totals			140292.412	35807282	280483800		

File: 96021471.d16 Sample: S95T003869 SPK

Data Reprocessed On 02/26/1996 16:18:33

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Sample Name: S95T003869 SPK	Date: 02/15/1996 14:51:12
Data File : C:\DX\DATA\96021471.d17	WHC-SD-WM-DP-165, REV. I
Method : C:\DX\METHOD\KIT.MET	
ACI Address: 1 System: 1 Inject#: 17	Detector: CDM-2
Analyst :	Column: AG4A/AS4A anion column

=====

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	4141	3150	5Hz	0.00	10.50		20000

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.87		0.000	88965	389141	2	
2	1.02	fluoride	2348.444	2625062	12090675	2	0.99
3	1.55	chloride	2955.731	2064780	9526808	1	-1.06
4	1.87	nitrite	21941.325	9964550	51271854	1	-2.27
5	2.80	bromide	21939.308	5385274	33148444	1	-0.71
6	3.19	nitrate	28520.419	7466904	56338362	1	1.16
7	4.67	phosphate	21116.990	1652275	20421268	1	-0.50
8	6.08	sulfate	24726.551	4808500	63380294	1	-1.78
9	8.00	oxalate	20583.294	2190639	39500258	1	-1.36
Totals			144132.061	36246950	286067104		

File: 96021471.d17 Sample: S95T003869 SPK

Data Reprocessed On 02/26/1996 16:18:36

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=====
Sample Name: S95T003869 SPK                               Date: 02/15/1996 15:08:30
Data File  : C:\DX\DATA\96021471.d18
Method     : C:\DX\METHOD\KIT.MET                        WHC-SD-WM-DP-165, REV. 1
ACI Address: 1 System: 1 Inject#: 18                      Detector: CDM-2
Analyst    :                                              Column: AG4A/AS4A anion column
=====
  
```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          4141   3150   5Hz   0.00 10.50      20000
  
```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.86		0.000	377562	1676392	2	
2	1.03	fluoride	3569.289	3654098	18591052	2	2.31
3	1.12		0.000	3836916	21239101	2	
4	1.53	chloride	6509.260	4310567	21349508	1	-2.76
5	1.85	nitrite	99970.838	43568926	242247930	1	-2.97
6	2.77	bromide	21741.204	5837210	32834209	1	-1.65
7	3.04	nitrate	229084.637	54860947	534157289	1	-3.49
8	4.07		0.000	19559	229896	1	
9	4.61	phosphate	24659.790	1892238	23995256	1	-1.63
10	6.03	sulfate	38180.120	7380669	99824686	1	-2.64
11	7.95	oxalate	21495.796	2191815	41272542	1	-2.01
Totals			445210.934	127930506	1037417862		

File: 96021471.d18 Sample: S95T003869 SPK

Data Reprocessed On 02/26/1996 16:18:39

```
=====
Sample Name: S95T003962 SAM                      Date: 02/15/1996 16:40:59
Data File  : C:\DX\DATA\96021471.d19              WHC-SD-WM-DP-165, REV. 1
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 19              Detector: CDM-2
Analyst    :                      Column: AG4A/AS4A anion column
=====
```

```
-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          11    3150  5Hz   0.00 10.50    20000
-----
```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
2	1.53	chloride	1.369	317079	1541332	1	-2.76
3	3.22	nitrate	6.178	393905	2826866	1	2.22
4	6.03	sulfate	3.671	88365	1705440	1	-2.64
Totals			11.218	799348	6073638		

File: 96021471.d19 Sample: S95T003962 SAM

Data Reprocessed On 02/26/1996 16:18:41

```
=====
Sample Name: S95T003962 REP                      Date: 02/15/1996 16:54:57
Data File  : C:\DX\DATA\96021471.d20             WHC-SD-WM-DP-165, REV. I
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 20              Detector: CDM-2
Analyst    :                                     Column: AG4A/AS4A anion column
=====
```

```
-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          11  3150  5Hz   0.00 10.50      20000
-----
```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
2	1.42		0.000	13382	68692	1	
3	1.56	chloride	1.279	325938	1430188	1	-0.64
4	3.26	nitrate	6.448	421703	3032076	1	3.49
5	6.08	sulfate	3.460	101339	1498772	1	-1.78
Totals			11.187	862361	6029728		

File: 96021471.d20 Sample: S95T003962 REP

A-0010-IC				DATA FILE/WORKLIST RESOLUTION				28-Feb-96			
Worklist#: 5009				Data File: 5009FEB.CSV							
		Seq	Type	Sample #	Seq#		Data File	Sample Name		Dilution	
-	=>	1	CCB		-	1	96021471.d11	BLANK		1.00	
	=>	2	CCV			2	96021471.d12	122N9-E STD		101.00	
	=>	3	SAMPLE	S95T003869			96021471.d13	S95T003869		10201.00	
	=>	4	DUP	S95T003869		3	96021471.d14	S95T003869 SAM		4141.00	
	=>	5	SPK	S95T003869		4	96021471.d15	S95T003869 DUP		4141.00	
	=>	6	SAMPLE	S95T003962			96021471.d16	S95T003869 SPK		4141.00	
	=>	7	DUP	S95T003962			96021471.d17	S95T003869 SPK		4141.00	
						5	96021471.d18	S95T003869 SPK		4141.00	
						6	96021471.d19	S95T003962 SAM		11.00	
						7	96021471.d20	S95T003962 REP		11.00	
+					+						

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

WHC-SD-WM-DP-165, REV. 1

WHC-SD-WM-DP-165, REV. 1

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LABCORE Data Entry Template for Worklist# 4898

Analyst: D.K. Sato Instrument: ICP01² Book# 50B48A
 Method: LA-505-151/161 Rev/Mod B-0 ^{8/3/96}
 Worklist Comment: ICP AN-102 (DIRECT) WHC-SD-WM-DP-165, REV. 1

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	ICV				@ICP-QC	QC		
2	ICB				@ICP-QC	QC		
3	ICSA				@ICP-QC	QC		
4	ICSAB				@ICP-QC	QC		
5	SAMPLE	S95T003867	0	D	@ICP-D01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested: AL-D-01 , CR-D-01 , FE-D-01 , MN-D-01 , NA-D-01 , NI-D-01 , SI-D-01 , U-D-01							
6	DUP	S95T003867	0	D	@ICP-D01	LIQUID		
7	SPK	S95T003867	0	D	@ICP-D01	LIQUID		
8	CCV				@ICP-QC	QC		
9	CCB				@ICP-QC	QC		
10	SAMPLE	S95T003868	0	D	@ICP-D01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested: AL-D-01 , CR-D-01 , FE-D-01 , MN-D-01 , NA-D-01 , NI-D-01 , SI-D-01 , U-D-01							
11	DUP	S95T003868	0	D	@ICP-D01	LIQUID		
12	SAMPLE	S95T003869	0	D	@ICP-D01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested: AL-D-01 , CR-D-01 , FE-D-01 , MN-D-01 , NA-D-01 , NI-D-01 , SI-D-01 , U-D-01							
13	DUP	S95T003869	0	D	@ICP-D01	LIQUID		
14	SAMPLE	S95T003962	0	D	@ICP-D01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested: AL-D-01 , CR-D-01 , FE-D-01 , MN-D-01 , NA-D-01 , NI-D-01 , SI-D-01 , U-D-01							
15	DUP	S95T003962	0	D	@ICP-D01	LIQUID		

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist# 4898

S Type	Sample#	R A	Test	Matrix	Group#	Project
16	ICSA		@ICP-QC	QC		
17	ICSAB		@ICP-QC	QC		
18	CCV		@ICP-QC	QC		
19	CCB		@ICP-QC	QC		

For: *Sam M. Pang*

Final page for worklist # 4898

Reviewed by:

Sam M. Pang 3/11/96

D.K. Seto 3/8/96

Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

ICV
ICB
ICSA
ICSTB

PERM AN-102

WHC-SD-WM-DP-165, REV. 1

~~DE~~

D.F.

SSST003867-L .025mL-10mL-2mL-8mL

2050 2005

SSST003867 .025mL-10mL

~~440~~ 401

SSST003867-D .025mL-10mL

475 401

SSST003867-H .025mL-2mL-8mL

475 401

CCV
CCB

SSST003868-L .025mL-10mL-2mL-8mL

~~2050~~ 2005

SSST003868 .025mL-10mL

~~440~~ 401

SSST003868-D .025mL-10mL

~~440~~ 401

SSST003868-L .025mL-10mL-2mL-8mL

~~2050~~ 2005

SSST003868 .025mL-10mL

~~440~~ 401

CCV
CCB

SSST003868-D .025mL-10mL

~~440~~ 401

~~SSST003862-L 2mL-8mL NO SK NEEDED~~ ~~40~~ ~~←~~

SSST003862 DIRECT

SSST003862-D DIRECT

ICSA
ICSTB
CCV
CCB

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 369 TO 374.

J. C. [Signature]
3-8-86

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	960308B	ICP2	03/08/96	13:28	BJG	Q	CONC
2	ICB	960308B	ICP2	03/08/96	13:35	BJG	Q	CONC
3	ICSA	960308B	ICP2	03/08/96	13:39	BJG	Q	CONC
4	ICSAB	960308B	ICP2	03/08/96	13:42	BJG	Q	CONC
5	S95T003867 L	960308B	ICP2	03/08/96	13:46	BJG	S	CONC
6	S95T003867	960308B	ICP2	03/08/96	13:49	BJG	S	CONC
7	S95T003867 D	960308B	ICP2	03/08/96	13:53	BJG	S	CONC
8	S95T003867 A	960308B	ICP2	03/08/96	13:57	BJG	S	CONC
9	CCV	960308B	ICP2	03/08/96	14:02	BJG	Q	CONC
10	CCB	960308B	ICP2	03/08/96	14:06	BJG	Q	CONC
11	S95T003868 L	960308B	ICP2	03/08/96	14:09	BJG	S	CONC
12	S95T003868	960308B	ICP2	03/08/96	14:12	BJG	S	CONC
13	S95T003868 D	960308B	ICP2	03/08/96	14:15	BJG	S	CONC
14	S95T003869 L	960308B	ICP2	03/08/96	14:19	BJG	S	CONC
15	S95T003869	960308B	ICP2	03/08/96	14:23	BJG	S	CONC
16	S95T003869 D	960308B	ICP2	03/08/96	14:28	BJG	S	CONC
17	CCV	960308B	ICP2	03/08/96	14:32	BJG	Q	CONC
18	CCB	960308B	ICP2	03/08/96	14:36	BJG	Q	CONC
19	S95T003962	960308B	ICP2	03/08/96	14:39	BJG	S	CONC
20	S95T003962 D	960308B	ICP2	03/08/96	14:43	BJG	S	CONC
21	ICSA	960308B	ICP2	03/08/96	14:46	BJG	Q	CONC
22	ICSAB	960308B	ICP2	03/08/96	14:49	BJG	Q	CONC
23	CCV	960308B	ICP2	03/08/96	14:52	BJG	Q	CONC
24	CCB	960308B	ICP2	03/08/96	14:55	BJG	Q	CONC

WHC-SD-WM-DP-165, REV. 1

B/C

3-8-96

A/J-102

S95T003867-68

S95T003962

.02526-1026, 5X

#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	4.937	4.826	5.097	4.929	4.878	5.077
2	ICB	-.0007	.0180	.0119	.0029	.0001	.0004
3	ICSA	.0006	235.7	-.0593	-.0016	.0025	.0005
4	ICSAB	.9623	233.9	-.0744	-.0011	.4772	.4730
5	S95T003867 L	14.26	15420.	-55.42	38.63	1.717	.3458
6	S95T003867	15.64	15190.	-39.50	41.64	1.741	.0783
7	S95T003867 D	15.31	14800.	-37.38	42.13	1.295	.0915
8	S95T003867 A	381.1	15520.	378.5	419.4	382.4	393.6
9	CCV	4.935	4.809	5.077	4.924	4.882	5.051
10	CCB	-.0017	-.0008	.0019	.0025	.0000	.0002
11	S95T003868 L	13.07	14690.	-34.39	41.96	.9996	-.0076
12	S95T003868	15.00	14440.	-43.93	37.43	1.194	.0360
13	S95T003868 D	15.40	14770.	-40.98	40.46	1.170	.0621
14	S95T003869 L	15.30	16670.	-37.64	37.78	1.533	.3465
15	S95T003869	16.50	16290.	-40.73	42.64	1.547	.0781
16	S95T003869 D	16.06	16050.	-36.48	42.48	1.332	.0756
17	CCV	4.850	4.730	4.996	4.864	4.725	4.949
18	CCB	.0004	.0034	.0145	-.0008	.0001	.0002
19	S95T003962	-.0010	.0515	.0195	.0548	.0621	.0001
20	S95T003962 D	-.0005	.0608	.0164	.0523	.0623	.0003
21	ICSA	.0003	235.3	-.0843	.0049	.0024	.0005
22	ICSAB	.9584	232.6	-.0419	.0025	.4711	.4717
23	CCV	4.889	4.768	5.023	4.940	4.802	5.027
24	CCB	.0001	.0049	-.0024	.0029	.0001	.0002

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	ICV	5.081	4.965	4.970	5.021	5.017	5.025
2	ICB	-.0042	-.0016	-.0006	-.0056	.0001	-.0000
3	ICSA	-.0153	247.7	-.0014	.0154	-.0004	.0031
4	ICSAB	-.0244	246.2	.9383	.0124	.4677	.4789
5	S95T003867 L	-4.043	516.1	62.76	-5.442	1.418	332.4
6	S95T003867	-5.946	480.3	60.38	7.095	3.831	327.1
7	S95T003867 D	-3.014	463.8	58.54	3.561	3.836	297.1
8	S95T003867 A	389.4	866.2	438.1	400.9	388.6	690.1
9	CCV	5.090	5.045	4.923	4.981	4.987	5.009
10	CCB	.0220	-.0042	-.0013	-.0209	-.0017	.0009
11	S95T003868 L	10.88	474.5	53.64	-1.803	3.591	287.5
12	S95T003868	-3.929	454.5	56.14	5.756	3.491	283.2
13	S95T003868 D	-1.314	462.5	57.25	4.589	3.183	286.7
14	S95T003869 L	-43.95	539.2	62.72	-8.431	2.708	341.8
15	S95T003869	-15.71	516.8	63.91	1.833	3.867	336.2
16	S95T003869 D	-3.112	502.0	62.92	5.056	3.915	319.6
17	CCV	4.955	4.952	4.842	4.833	4.900	4.917
18	CCB	-.0114	.0011	-.0005	-.0014	-.0001	.0017
19	S95T003962	-.0198	.5845	-.0008	-.0031	-.0002	.0127
20	S95T003962 D	-.0143	.5837	-.0004	-.0009	.0003	.0135
21	ICSA	.0017	245.7	-.0018	.0091	.0014	.0043
22	ICSAB	-.0042	245.6	.9347	.0055	.4668	.4767
23	CCV	5.034	5.020	4.889	4.892	4.947	4.958
24	CCB	-.0175	-.0021	-.0016	-.0065	-.0004	.0013

WHC-SD-WM-DP-165, REV. 1

#	Sample Name	Cu	Eu	Fe	K	La	Li
1	ICV	5.098	-.0006	4.990	4.801	4.950	4.949
2	ICB	-.0007	-.0006	-.0002	-.0208	-.0013	-.0005
3	ICSA	-.0114	-.0201	95.11	.1786	-.0049	.0031
4	ICSAB	.4747	-.0186	94.30	.0598	-.0060	.9683
5	S95T003867_L	25.02	2.689	55.29	2072.	14.75	1.589
6	S95T003867_	24.06	.7814	65.66	2285.	16.44	.1300
7	S95T003867_D	23.53	.5796	47.30	2321.	15.19	.0835
8	S95T003867_A	418.1	.3509	432.4	2641.	403.4	391.4
9	CCV	5.079	.0001	4.983	4.978	4.888	4.969
10	CCB	-.0009	.0002	-.0018	-.1852	-.0025	.0003
11	S95T003868_L	23.29	1.334	26.76	2373.	13.73	.9056
12	S95T003868_	22.75	.7179	40.96	2296.	15.19	.1757
13	S95T003868_D	22.91	.3639	39.95	2228.	15.41	-.1455
14	S95T003869_L	22.80	1.190	48.69	2213.	15.20	1.361
15	S95T003869_	25.56	.7202	61.28	2504.	17.01	.1748
16	S95T003869_D	25.10	.6586	50.40	2336.	16.62	.0823
17	CCV	4.963	.0001	4.896	4.774	4.744	4.868
18	CCB	.0004	.0004	-.0006	.0134	-.0002	.0007
19	S95T003962	.0006	.0019	-.0034	.2338	-.0003	.0014
20	S95T003962_D	.0013	.0021	-.0044	.4738	.0007	.0018
21	ICSA	-.0102	-.0201	94.54	-.1563	-.0064	.0030
22	ICSAB	.4727	-.0197	93.79	.0993	-.0058	.9642
23	CCV	5.032	.0006	4.928	5.018	4.810	4.932
24	CCB	.0009	.0005	-.0002	.2192	-.0011	.0007
#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	4.812	4.867	5.024	4.902	4.969	4.923
2	ICB	-.0069	.0002	-.0003	-.0088	-.0044	-.0040
3	ICSA	240.9	-.0066	-.0108	194.6	.0013	-.0075
4	ICSAB	239.9	.4463	-.0123	194.3	.0053	.9257
5	S95T003867_L	-5.530	69.44	44.82	226800.	28.11	413.9
6	S95T003867_	-3.065	68.31	49.62	220800.	30.68	402.8
7	S95T003867_D	-4.006	24.02	48.78	216200.	29.07	389.5
8	S95T003867_A	361.4	411.0	441.8	222000.	420.8	777.7
9	CCV	4.810	4.853	5.007	4.879	4.940	4.943
10	CCB	-.0037	.0003	-.0013	.0034	-.0023	-.0007
11	S95T003868_L	-14.18	21.70	39.95	217400.	32.10	388.7
12	S95T003868_	-1.652	21.31	46.54	211000.	28.13	380.7
13	S95T003868_D	-5.142	20.22	48.85	216300.	28.37	389.6
14	S95T003869_L	-31.49	68.59	53.89	245300.	23.95	444.0
15	S95T003869_	-6.783	66.77	52.46	237300.	32.32	428.7
16	S95T003869_D	-5.589	33.99	51.58	233600.	29.49	421.6
17	CCV	4.735	4.759	4.903	4.783	4.782	4.819
18	CCB	-.0031	.0002	-.0015	.0034	.0016	.0053
19	S95T003962	.0921	.0006	-.0021	2.304	.0014	-.0025
20	S95T003962_D	.1069	.0007	.0011	2.318	.0033	.0028
21	ICSA	240.9	-.0070	-.0132	194.7	.0063	.0016
22	ICSAB	238.9	.4417	-.0168	193.0	.0086	.9030
23	CCV	4.766	4.804	4.943	4.848	4.857	4.874
24	CCB	.0011	.0003	-.0033	.0046	.0018	.0008

WHC-SD-WM-DP-165, REV. 1

#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	5.087	4.908	4.957	4.795	4.830	4.817
2	ICB	.0126	.0027	-.0072	.0066	.0184	-.0001
3	ICSA	.0059	.0254	-.0399	-.0015	-.0450	.0076
4	ICSAB	.0289	1.006	-.0538	-.0002	-.0483	.0101
5	S95T003867 L	1838.	182.8	5253.	-4.160	53.98	20.92
6	S95T003867	1836.	177.7	5127.	1.820	37.12	20.88
7	S95T003867 D	1736.	167.5	4971.	2.143	45.54	18.44
8	S95T003867 A	2163.	553.1	5403.	374.3	490.9	398.1
9	CCV	4.961	4.907	4.934	4.772	4.831	4.831
10	CCB	.0175	-.0041	-.0028	-.0036	.0160	.0035
11	S95T003868 L	1652.	152.7	4967.	-22.82	48.64	14.06
12	S95T003868	1671.	167.8	4895.	-2.481	32.53	17.67
13	S95T003868 D	1733.	170.6	4940.	2.648	42.65	15.88
14	S95T003869 L	2072.	213.8	5598.	-10.31	37.30	19.45
15	S95T003869	2068.	182.7	5483.	5.447	52.53	20.08
16	S95T003869 D	1908.	179.7	5380.	2.397	53.02	19.16
17	CCV	4.926	4.824	4.908	4.679	4.744	4.768
18	CCB	.0077	.0079	.0045	.0018	-.0025	.0014
19	S95T003962	.0028	-.0053	.0191	-.0034	.0057	3.203
20	S95T003962 D	-.0026	.0073	.0185	.0002	.0172	3.236
21	ICSA	.0378	.0168	-.0360	.0029	-.0635	.0037
22	ICSAB	.0335	.9955	-.0350	.0038	-.0828	.0155
23	CCV	5.026	4.858	4.957	4.726	4.819	4.816
24	CCB	.0160	.0056	-.0123	.0036	.0081	.0043

#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	4.856	4.874	.0449	4.876	4.796	9.510
2	ICB	-.0075	-.0001	.0036	-.0007	.0018	-.0344
3	ICSA	.0080	-.0025	.0221	.0012	-.0216	.0879
4	ICSAB	.0097	-.0024	.0174	.0016	-.0214	.0934
5	S95T003867 L	28.74	3.217	-10.22	-.5552	33.50	195.6
6	S95T003867	8.948	2.960	1.678	-.1375	-8.534	130.2
7	S95T003867 D	5.722	2.857	-.8544	-.2521	6.031	146.5
8	S95T003867 A	382.8	383.3	4.187	377.6	365.0	903.6
9	CCV	4.790	4.837	.0463	4.818	4.753	9.432
10	CCB	.0044	.0001	-.0054	-.0003	-.0103	.0165
11	S95T003868 L	20.31	2.917	-8.659	-.5392	-24.38	153.0
12	S95T003868	8.859	2.798	.7971	-.1416	7.153	130.7
13	S95T003868 D	4.501	2.836	-.9397	-.1677	3.522	155.1
14	S95T003869 L	23.68	3.421	-7.959	-2.365	-.5197	180.7
15	S95T003869	9.255	3.160	-.8976	-.0656	4.565	147.4
16	S95T003869 D	6.799	3.118	-1.568	-.3557	4.799	168.6
17	CCV	4.660	4.698	.0474	4.707	4.659	9.150
18	CCB	.0055	.0000	.0009	-.0002	.0035	.0213
19	S95T003962	.0209	.0025	-.0083	-.0001	.0017	.1000
20	S95T003962 D	.0277	.0025	-.0020	.0007	.0142	.1109
21	ICSA	.0040	-.0024	.0154	.0014	-.0139	.0772
22	ICSAB	.0133	-.0024	.0182	.0019	-.0083	.1011
23	CCV	4.721	4.766	.0398	4.749	4.717	9.275
24	CCB	.0077	.0000	-.0058	-.0000	.0177	.0238

WHC-SD-WM-DP-165, REV. 1

#	Sample Name	V	Y	Zn	Zr
1	ICV	5.003	.0063	5.000	4.918
2	ICB	-.0018	-.0007	.0021	-.0019
3	ICSA	.0009	.0077	.0008	-.0035
4	ICSAB	.4657	.0080	.9698	-.0032
5	S95T003867 L	2.678	4.005	16.25	11.75
6	S95T003867	.2122	3.403	14.07	9.605
7	S95T003867 D	-.0803	3.145	13.47	8.857
8	S95T003867 A	386.8	3.641	399.4	390.2
9	CCV	4.976	.0069	5.008	4.864
10	CCB	.0001	.0001	.0006	.0004
11	S95T003868 L	.7004	3.394	15.80	9.034
12	S95T003868	.3617	3.183	16.19	8.216
13	S95T003868 D	-.7136	2.953	16.77	8.058
14	S95T003869 L	.9698	3.696	19.83	9.611
15	S95T003869	.4587	3.585	16.54	10.04
16	S95T003869 D	-.3997	3.356	15.55	9.413
17	CCV	4.876	.0067	4.948	4.747
18	CCB	.0003	.0001	.0007	-.0001
19	S95T003962	.0029	.0009	.0011	.0021
20	S95T003962 D	.0039	.0009	.0026	.0023
21	ICSA	-.0005	.0074	.0013	-.0046
22	ICSAB	.4635	.0078	.9670	-.0033
23	CCV	4.929	.0070	4.984	4.802
24	CCB	.0005	.0001	.0005	.0004

WHC-SD-WM-DP-165, REV. 1

WHC-SD-WM-DP-165, REV. 1

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

LABCORE Data Entry Template for Worklist# 4898

Analyst: JK Sato Instrument: ICP01 Book# 508480

Method: LA-505-151/161 Rev/Mod B-U

Worklist Comment: ICP AN-102 (DIRECT)

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	ICV				@ICP-QC	QC		
2	ICB				@ICP-QC	QC		
3	ICSA				@ICP-QC	QC		
4	ICSAB				@ICP-QC	QC		
5	SAMPLE	S95T003867	0	D	@ICP-D01	LIQUID	95000222	AN-102 GRAB
Analytes Requested: AL-D-01 , CR-D-01 , FE-D-01 , MN-D-01 , NA-D-01 , NI-D-01 , SI-D-01 , U-D-01								
6	DUP	S95T003867	0	D	@ICP-D01	LIQUID		
7	SPK	S95T003867	0	D	@ICP-D01	LIQUID		
8	CCV				@ICP-QC	QC		
9	CCB				@ICP-QC	QC		
10	SAMPLE	S95T003868	0	D	@ICP-D01	LIQUID	95000222	AN-102 GRAB
Analytes Requested: AL-D-01 , CR-D-01 , FE-D-01 , MN-D-01 , NA-D-01 , NI-D-01 , SI-D-01 , U-D-01								
11	DUP	S95T003868	0	D	@ICP-D01	LIQUID		
12	SAMPLE	S95T003869	0	D	@ICP-D01	LIQUID	95000222	AN-102 GRAB
Analytes Requested: AL-D-01 , CR-D-01 , FE-D-01 , MN-D-01 , NA-D-01 , NI-D-01 , SI-D-01 , U-D-01								
13	DUP	S95T003869	0	D	@ICP-D01	LIQUID		
14	SAMPLE	S95T003962	0	D	@ICP-D01	LIQUID	95000222	AN-102 GRAB
Analytes Requested: AL-D-01 , CR-D-01 , FE-D-01 , MN-D-01 , NA-D-01 , NI-D-01 , SI-D-01 , U-D-01								
15	DUP	S95T003962	0	D	@ICP-D01	LIQUID		

DATA
NOT USED
IN PACKAGE

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist# 4898

S Type	Sample#	R A	Test	Matrix	Group#	Project
16	ICSA		@ICP-QC	QC		
17	ICSAB		@ICP-QC	QC		
18	CCV		@ICP-QC	QC		
19	CCB		@ICP-QC	QC		

Final page for worklist # 4898

K. L. G.
Analyst Signature

02-06-96
Date

Sam M. Parry
Analyst Signature

2/7/96
Date

5757003847 , 0.25-15 ml, DF 601
 5757003847_D 0.25-15 601
 5757003847_G 0.25-15 601, 0.25 ml sample/c + 3 ml 5573 + 12 ml H₂O₂
 5757003848 , 0.25-15, DF 601
 5757003848_D 0.25-15 601
 5757003849 , 0.25-15, DF 601
 5757003849_D 0.25-15 601
 5757003842 J. H. 1
 5757003842_D J. H. 1

DATA
NOT USED
IN PACKAGE

Data Entry Comments:

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

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	960206F	ICP2	02/06/96	18:33	DKS	Q	CONC
2	ICB	960206F	ICP2	02/06/96	18:36	DKS	Q	CONC
3	ICSA	960206F	ICP2	02/06/96	18:39	DKS	Q	CONC
4	ICSAB	960206F	ICP2	02/06/96	18:42	DKS	Q	CONC
5	S95T003867	960206F	ICP2	02/06/96	18:46	DKS	S	CONC
6	S95T003867 D	960206F	ICP2	02/06/96	18:51	DKS	S	CONC
7	S95T003867 A	960206F	ICP2	02/06/96	18:54	DKS	S	CONC
8	CCV	960206F	ICP2	02/06/96	19:01	DKS	Q	CONC
9	CCB	960206F	ICP2	02/06/96	19:05	DKS	Q	CONC
10	S95T003868	960206F	ICP2	02/06/96	20:28	DKS	S	CONC
11	S95T003868 D	960206F	ICP2	02/06/96	20:31	DKS	S	CONC
12	S95T003869	960206F	ICP2	02/06/96	20:34	DKS	S	CONC
13	S95T003869 D	960206F	ICP2	02/06/96	20:37	DKS	S	CONC
14	S95T003962	960206F	ICP2	02/06/96	20:43	DKS	S	CONC
15	S95T003962 D	960206F	ICP2	02/06/96	20:46	DKS	S	CONC
16	ICSA	960206F	ICP2	02/06/96	20:50	DKS	Q	CONC
17	ICSAB	960206F	ICP2	02/06/96	20:52	DKS	Q	CONC
18	CCV 1	960206F	ICP2	02/06/96	20:56	DKS	Q	CONC
19	CCB 1	960206F	ICP2	02/06/96	20:59	DKS	Q	CONC

WHC-SD-WM-DP-165, REV. 1

JK L.D.
CL-64-46
QK-102 S95T003867
S95T003868
S95T003869
S95T003962
Worklist # 4878

DATA
NOT USED
IN PACKAGE

#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	4.958	4.814	5.126	4.826	4.859	5.137
2	ICB	-.0004	-.0015	-.0099	-.0004	.0001	-.0002
3	ICSA	-.0000	233.3	-.0209	.0048	.0024	.0000
4	ICSAB	.9695	232.5	-.0196	.0018	.4721	.4747
5	S95T003867	15.22	15070.	-46.89	40.67	1.284	-.0543
6	S95T003867_D	15.83	15250.	-44.87	42.82	1.256	-.0541
7	S95T003867_A	576.3	16010.	589.2	606.4	577.3	608.9
8	CCV	4.936	4.812	5.079	4.820	4.840	5.046
9	CCB	-.0011	-.0023	-.0102	-.0009	.0000	-.0002
10	S95T003868	19.41	19410.	-56.51	49.83	1.549	-.0801
11	S95T003868_D	19.26	18810.	-55.46	50.37	1.494	-.0334
12	S95T003869	16.97	17210.	-49.17	43.90	1.385	-.1988
13	S95T003869_D	16.59	16800.	-52.28	42.83	1.321	-.1986
14	S95T003962	-.0012	.0439	.0124	.0470	.0732	-.0002
15	S95T003962_D	-.0021	.0826	.0045	.0479	.0781	-.0002
16	ICSA	.0002	232.7	-.0073	.0016	.0023	.0000
17	ICSAB	.9704	232.4	-.0148	-.0003	.4690	.4783
18	CCV_1	4.943	4.769	5.048	4.799	4.813	5.052
19	CCB_1	-.0001	.0059	-.0070	.0054	.0000	-.0000

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	ICV	5.026	5.140	5.097	5.059	5.025	5.107
2	ICB	-.0233	-.0015	-.0023	.0029	.0011	.0007
3	ICSA	-.0173	248.9	-.0005	.0167	.0040	.0021
4	ICSAB	-.0230	246.7	.9561	.0162	.4677	.4798
5	S95T003867	-6.511	477.6	59.92	1.779	5.116	303.6
6	S95T003867_D	-33.74	479.4	60.89	.8129	3.533	307.2
7	S95T003867_A	579.0	1090.	658.0	605.7	592.5	909.8
8	CCV	5.029	5.063	5.001	5.036	4.946	5.038
9	CCB	-.0463	-.0040	-.0017	-.0012	-.0001	.0003
10	S95T003868	-14.80	616.2	77.69	4.288	4.857	393.5
11	S95T003868_D	-18.78	599.4	75.67	6.471	5.686	381.6
12	S95T003869	2.580	557.3	69.57	5.479	5.104	348.3
13	S95T003869_D	-11.60	531.2	66.80	.3901	3.528	336.0
14	S95T003962	-.0137	.6289	-.0009	-.0054	.0012	.0100
15	S95T003962_D	-.0330	.6545	-.0019	.0034	-.0003	.0102
16	ICSA	-.0028	247.9	-.0003	.0147	.0007	.0017
17	ICSAB	-.0375	248.4	.9631	.0191	.4640	.4834
18	CCV_1	4.961	5.110	5.044	5.036	4.976	5.068
19	CCB_1	-.0265	-.0014	-.0021	.0069	.0005	.0001

#	Sample Name	Cu	Eu	Fe	K	La	Li
1	ICV	4.933	-.0022	5.077	4.827	4.950	4.871
2	ICB	.0007	.0008	.0010	-.0719	.0013	.0005
3	ICSA	-.0098	-.0534	93.77	.1019	-.0041	.0032
4	ICSAB	.4641	-.0492	92.74	.1246	-.0038	.9555
5	S95T003867	23.90	.5770	51.53	2228.	15.90	-.2140
6	S95T003867_D	24.04	.5280	51.02	2405.	16.24	-.2138
7	S95T003867_A	610.3	.1082	646.9	2876.	609.9	585.5

WHC-SD-WM-DP-165, REV. 1

 DATA
NOT USED
IN PACKAGE

#	Sample Name	Cu	Eu	Fe	K	La	Li
8	CCV	4.923	-.0028	5.009	4.874	4.922	4.908
9	CCB	.0012	.0003	.0009	.0139	.0000	.0001
10	S95T003868	30.71	.7728	65.45	2961.	20.22	.1977
11	S95T003868_D	29.44	.9064	62.92	2835.	20.03	.3346
12	S95T003869-	26.81	1.078	56.18	2549.	18.12	.6117
13	S95T003869_D	25.83	.8985	53.12	2532.	17.09	.3361
14	S95T003962-	.0016	.0023	.0013	.2284	-.0007	.0014
15	S95T003962_D	.0004	.0022	.0022	.3370	.0002	.0017
16	ICSA	-.0099	-.0528	93.52	.1901	-.0038	.0035
17	ICSAB	.4622	-.0510	93.07	.0357	-.0036	.9491
18	CCV_1	4.888	-.0016	5.010	5.038	4.917	4.845
19	CCB_1	.0007	.0016	.0014	.1264	.0020	.0010

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	4.816	4.950	4.996	4.861	5.008	5.026
2	ICB	.0114	.0003	-.0005	.0066	.0017	.0021
3	ICSA	237.0	-.0057	-.0136	192.0	.0049	.0070
4	ICSAB	237.2	.4502	-.0184	192.9	.0070	.9144
5	S95T003867	-.9662	24.63	48.43	219700.	30.54	397.0
6	S95T003867_D	-1.104	23.89	48.33	222300.	30.65	414.8
7	S95T003867_A	556.3	594.6	640.1	226200.	631.9	1001.
8	CCV	4.789	4.886	4.922	4.866	4.991	4.916
9	CCB	.0085	-.0001	-.0026	-.0009	.0007	.0003
10	S95T003868	-2.804	40.43	64.61	281000.	38.24	512.9
11	S95T003868_D	1.444	35.10	60.58	271700.	39.24	512.1
12	S95T003869-	-.2130	32.10	56.53	248900.	35.06	464.3
13	S95T003869_D	-2.056	27.02	54.35	243700.	32.57	454.7
14	S95T003962-	.1016	.0005	-.0027	1.988	.0024	.0001
15	S95T003962_D	.0949	.0007	-.0015	2.022	-.0002	-.0016
16	ICSA	236.5	-.0057	-.0117	191.5	.0062	-.0065
17	ICSAB	237.2	.4525	-.0145	191.9	.0041	.9313
18	CCV_1	4.764	4.909	4.945	4.826	4.991	4.976
19	CCB_1	.0069	.0004	-.0010	.0123	.0016	.0019

#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	5.026	5.096	5.012	4.706	4.922	4.796
2	ICB	-.0048	-.0012	.0091	.0068	-.0029	.0041
3	ICSA	.0352	.0657	-.0257	-.0055	-.0282	.0117
4	ICSAB	.0281	1.034	-.0420	.0012	-.0344	.0150
5	S95T003867	1776.	180.4	5149.	-2.133	36.58	14.75
6	S95T003867_D	1764.	173.7	5186.	9.045	36.67	13.97
7	S95T003867_A	2425.	767.7	5838.	556.9	687.7	588.3
8	CCV	4.811	5.017	4.939	4.622	4.820	4.754
9	CCB	-.0060	.0165	-.0016	.0000	-.0355	-.0019
10	S95T003868	2243.	237.8	6643.	-3.282	40.61	17.77
11	S95T003868_D	2185.	227.6	6411.	.9077	48.64	16.78
12	S95T003869-	1994.	207.8	5874.	4.193	44.20	17.88
13	S95T003869_D	1933.	204.5	5711.	-.8119	40.03	17.52
14	S95T003962-	-.0085	.0006	.0866	.0051	.0016	3.176
15	S95T003962_D	.0142	.0116	.0701	-.0022	-.0014	3.221

WHC-SD-WM-DP-165, REV. 1

DATA
NOT USED
IN PACKAGE

Analysis Report

Averages

Tue 02-06-96 09:04:05 PM

page 4

#	Sample Name	P	Pb	S	Sb	Se	Si
16	ICSA	.0173	.0726	-.0372	-.0016	-.0200	.0073
17	ICSAB	.0264	1.056	-.0325	-.0004	-.0223	.0148
18	CCV_1	4.856	5.061	4.939	4.644	4.833	4.756
19	CCB_1	-.0078	.0057	-.0048	.0091	-.0117	.0040

#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	4.822	4.869	-.0040	4.766	4.881	9.213
2	ICB	.0157	.0001	-.0067	.0002	.0016	.0330
3	ICSA	.0169	-.0022	.0031	.0017	-.0029	.1016
4	ICSAB	.0120	-.0024	-.0025	.0017	.0241	.0986
5	S95T003867	6.539	2.993	-3.153	-.0709	11.07	131.7
6	S95T003867_D	6.280	2.927	-2.315	.3782	13.78	128.3
7	S95T003867_A	584.2	583.9	-4.859	566.0	594.9	1241.
8	CCV	4.800	4.835	-.0012	4.718	4.823	9.163
9	CCB	.0032	.0000	-.0074	.0005	-.0294	-.0046
10	S95T003868	13.30	3.904	-3.625	-.2304	-9.760	169.5
11	S95T003868_D	14.05	3.706	-2.828	.5047	-9.078	188.5
12	S95T003869	17.20	3.447	-5.900	.5083	-1.809	165.6
13	S95T003869_D	12.12	3.120	-6.126	.2060	11.56	161.3
14	S95T003962	.0290	.0026	-.0109	.0009	-.0049	.0895
15	S95T003962_D	.0289	.0026	-.0110	.0009	.0108	.1106
16	ICSA	.0212	-.0021	.0033	.0012	-.0167	.1270
17	ICSAB	.0178	-.0021	.0048	.0020	.0106	.1018
18	CCV_1	4.778	4.832	-.0044	4.733	4.870	9.170
19	CCB_1	.0188	.0001	-.0056	.0002	.0112	.0575

#	Sample Name	V	Y	Zn	Zr
1	ICV	4.908	.0066	4.961	4.928
2	ICB	.0024	.0005	.0001	.0027
3	ICSA	.0021	.0080	-.0033	-.0001
4	ICSAB	.4583	.0076	.9468	-.0000
5	S95T003867	.2388	3.054	12.90	10.15
6	S95T003867_D	.0171	2.961	15.07	9.867
7	S95T003867_A	580.5	3.713	599.9	597.0
8	CCV	4.852	.0063	4.897	4.879
9	CCB	.0006	.0001	-.0013	.0017
10	S95T003868	.4805	3.980	24.18	12.98
11	S95T003868_D	.9021	3.925	20.93	12.67
12	S95T003869	2.088	3.793	19.46	12.72
13	S95T003869_D	1.198	3.607	16.41	11.43
14	S95T003962	.0044	.0011	.0010	.0040
15	S95T003962_D	.0047	.0012	.0021	.0047
16	ICSA	.0027	.0081	-.0031	.0006
17	ICSAB	.4617	.0082	.9537	.0004
18	CCV_1	4.863	.0068	4.924	4.889
19	CCB_1	.0039	.0009	.0003	.0036

KLD

02-06-96

DATA
NOT USED
IN PACKAGE

WHC-SD-WM-DP-165, REV. 1

LABCORE Data Entry Template for Worklist#

4999

Analyst: KRM Instrument: TOC01 Book # 16 N120

Method: LA-344-105 Rev/Mod C-0

Worklist Comment: TOC combustion AN-102

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK			TOC-01	LIQUID	<u>1</u>	<u>1.8</u>	<u>N/A</u>	ug/mL
		2 STD			TOC-01	LIQUID	<u>2.97E⁺³</u>	<u>2.85E⁺³</u>	<u>N/A</u>	ug/mL
95000222	AN-102 GRAB	3 SAMPLE	S95T003867	0	TOC-01	LIQUID	<u>N/A</u>	<u>2.79E⁺⁴</u>	<u>3.05E⁺²</u>	ug/mL
95000222	AN-102 GRAB	4 DUP	S95T003867	0	TOC-01	LIQUID	<u>2.79E⁺⁴</u>	<u>2.57E⁺⁴</u>	<u>N/A</u>	ug/mL
95000222	AN-102 GRAB	5 SPK	S95T003867	0	TOC-01	LIQUID	<u>100</u>	<u>94.1</u>	<u>N/A</u>	ug/mL
95000222	AN-102 GRAB	6 SAMPLE	S95T003868	0	TOC-01	LIQUID	<u>N/A</u>	<u>2.48E⁺⁴</u>	<u>3.05E⁺²</u>	ug/mL
95000222	AN-102 GRAB	7 DUP	S95T003868	0	TOC-01	LIQUID	<u>2.48E⁺⁴</u>	<u>2.65E⁺⁴</u>	<u>N/A</u>	ug/mL
95000222	AN-102 GRAB	8 SAMPLE	S95T003869	0	TOC-01	LIQUID	<u>N/A</u>	<u>2.65E⁺⁴</u>	<u>3.05E⁺²</u>	ug/mL
95000222	AN-102 GRAB	9 DUP	S95T003869	0	TOC-01	LIQUID	<u>2.65E⁺⁴</u>	<u>2.51E⁺⁴</u>	<u>N/A</u>	ug/mL
95000222	AN-102 GRAB	10 SAMPLE	S95T003962	0	TOC-01	LIQUID	<u>N/A</u>	<u><5.50</u>	<u>5.50</u>	ug/mL
95000222	AN-102 GRAB	11 DUP	S95T003962	0	TOC-01	LIQUID	<u><5.50</u>	<u><5.50</u>	<u>N/A</u>	ug/mL

Final page for worklist #

4999

Analyst Signature

Date

Analyst Signature

Date

Reviewed RW Schuedt 1/29/96

Data Entry Comments:

Rather than reporting the calculated concentration of the blank, we chose to report the absolute value of the difference between the blank and baseline. This shows control better. The ACE form does not allow this, yet. The correction has been made and is pending user acceptance testing. 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.

282

This is true for all TIC and TOC blank reports.

RW Schuedt
3/20/96

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

WORKLIST

#

9999

ANALYST
SIGNATURE*[Signature]*ANALYSIS
DATE

1-25-96

ANALYSIS
TIME

11:30

INSTRUMENT
CODE☐ SAMPLE
STANDARD☒ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # =

STD # =

Volume SAMPLE Used (mL)

Volume H₂SO₄ Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H₂SO₄ Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in µg Carbon (Optional)

2 mL
.2
No☒ SAMPLE
STANDARD☐ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # = 595T003867

STD # =

Amount of SAMPLE Used (mL)

Volume H₂SO₄ Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H₂SO₄ Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in µg Carbon (Optional)

.1
6
.2
No
1.5☐ SAMPLE
STANDARD☐ DUPLICATE
BASELINE☒ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # =

STD # =

11N120

Amount of SAMPLE Used (mL)

Volume H₂SO₄ Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H₂SO₄ Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in µg Carbon (Optional)

1
6
.2
No
.5*.5 mL OF SAMPLE
AND .5 mL SPIKE*☐ SAMPLE
STANDARD☒ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # = 595T003868

STD # =

Amount of SAMPLE Used (mL)

Volume H₂SO₄ Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H₂SO₄ Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in µg Carbon (Optional)

1
6
.2
No☒ SAMPLE
STANDARD☐ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # =

STD # = 16N120

Amount of SAMPLE Used (mL)

Volume H₂SO₄ Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H₂SO₄ Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in µg Carbon (Optional)

.2
2
.2
No☐ SAMPLE
STANDARD☒ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # = 595T003867

STD # =

Amount of SAMPLE Used (mL)

Volume H₂SO₄ Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H₂SO₄ Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in µg Carbon (Optional)

.1
6
.2
No☒ SAMPLE
STANDARD☐ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # = 595T003868

STD # =

Amount of SAMPLE Used (mL)

Volume H₂SO₄ Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H₂SO₄ Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in µg Carbon (Optional)

1
6
.2
No☒ SAMPLE
STANDARD☐ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # = 595T003869

STD # =

Amount of SAMPLE Used (mL)

Volume H₂SO₄ Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H₂SO₄ Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in µg Carbon (Optional)

1
6
.2
No

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

WORKLIST
#ANALYST
SIGNATUREANALYSIS
DATEANALYSIS
TIMEINSTRUMENT
CODE

4999

[Signature]

1-25-96

11:30

☐ SAMPLE
STANDARD☒ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # = 595T003869 STD # =

Volume SAMPLE Used (mL)

Volume H2SO4 Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H2SO4 Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in µg Carbon (Optional)

☒ SAMPLE
STANDARD☐ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # = 595T003862 STD # =

Amount of SAMPLE Used (mL)

Volume H2SO4 Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H2SO4 Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in µg Carbon (Optional)

☐ SAMPLE
STANDARD☒ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # = 595T003862 STD # =

Amount of SAMPLE Used (mL)

Volume H2SO4 Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H2SO4 Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in µg Carbon (Optional)

☐ SAMPLE
STANDARD☐ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # = STD # =

Amount of SAMPLE Used (mL)

Volume H2SO4 Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H2SO4 Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in µg Carbon (Optional)

☐ SAMPLE
STANDARD☐ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # =

STD # =

Amount of SAMPLE Used (mL)

Volume H2SO4 Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H2SO4 Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in µg Carbon (Optional)

☐ SAMPLE
STANDARD☐ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # =

STD # =

Amount of SAMPLE Used (mL)

Volume H2SO4 Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H2SO4 Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in µg Carbon (Optional)

☐ SAMPLE
STANDARD☐ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # =

STD # =

Amount of SAMPLE Used (mL)

Volume H2SO4 Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H2SO4 Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in µg Carbon (Optional)

☐ SAMPLE
STANDARD☐ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # =

STD # =

Amount of SAMPLE Used (mL)

Volume H2SO4 Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H2SO4 Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in µg Carbon (Optional)

WHC-SD-WM-DP-165, REV. 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. J

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

LIQUIDS

		BLANK
Type	Sample Volume in mL (SS)	0.200
BLANK	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
4999	Dilution Factor (DF)	1
Test Code	Digest Dilution Factor (DDF)	1
TOC01	µg of Carbon in Sample (C1)	7.5
Matrix	µg of Carbon in Blank (C2)	5.7
LIQUID	g of Carbon/L =	0.00E+00 1.8
Sample #	g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$	1.8
Instrument Code	µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L	
WC16130	Detection Level (µg/mL) $\frac{1 \mu g C * DF * DDF}{VI}$	
Analyst		
K. MONTEITH		
Date		
01/25/96		
Time		
05:45 AM		

$$|7.5 - 5.7| = 1.8$$

µg Carbon/mL =	1.8 RWS 0.00E+00	DETECTION LEVEL in µg/mL 5.00E+00
----------------	--------------------------------	---

Data Entry by: <i>KW Schmitt</i>	Date: 01/26/96
Approved by: <i>KW Schmitt</i>	Date: 1/29/96

Form 344105_C Rev. 1.1

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

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

LIQUIDS

		STANDARD
Type	Sample Volume in mL (SS)	0.200
STANDARD	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
4999	Dilution Factor (DF)	11
Test Code	Digest Dilution Factor (DDF)	1
TOC01	µg of Carbon in Sample (C1)	57.6
Matrix	µg of Carbon in Blank (C2)	5.7
LIQUID	g of Carbon/L =	2.85E+00
Sample #		
16N12D		
Instrument Code		
WC16130		
Analyst		
K. MONTEITH		
Date		
01/25/96		
Time		
05:45 AM		

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

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

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

$\mu\text{g Carbon/mL} =$	2.85E+03	DETECTION LEVEL
		in $\mu\text{g/mL}$
		5.50E+01

Data Entry by: <i>[Signature]</i>	Date: 01/26/96
Approved by: <i>[Signature]</i>	Date: 1/29/96
Form 344105_C Rev. 1.1	

Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

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

LIQUIDS

		SAMPLE
Type	Sample Volume in mL (SS)	0.100
SAMPLE	H2SO4 Volume in mL (VR)	6.000
Work List	Volume Injected in mL (VI)	0.200
4999	Dilution Factor (DF)	61
Test Code	Digest Dilution Factor (DDF)	1
TOC01	µg of Carbon in Sample (C1)	97.1
Matrix	µg of Carbon in Blank (C2)	5.7
LIQUID	g of Carbon/L =	2.79E+01
Sample #		
S95T003867	g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$	
Instrument Code		
WC16130		
Analyst	µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L	
K. MONTEITH		
Date		
01/25/96	Detection Level (µg/mL) $\frac{1 \mu g C * DF * DDF}{VI}$	
Time		
05:45 AM		

µg Carbon/mL = 2.79E+04	DETECTION LEVEL
	in µg/mL 3.05E+02

Data Entry by: <i>NEU</i>	Date: 01/26/96
Approved by: <i>RH Schneider</i>	Date: 1/29/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TOC : LA-344-105 (C-0) LIQUIDS		DUPLICATE
Type	Sample Volume in mL (SS)	0.100
DUPLICATE	H2SO4 Volume in mL (VR)	6.000
Work List	Volume Injected in mL (VI)	0.200
4999	Dilution Factor (DF)	61
Test Code	Digest Dilution Factor (DDF)	1
TOC01	µg of Carbon in Sample (C1)	89.9
Matrix	µg of Carbon in Blank (C2)	5.7
LIQUID	g of Carbon/L =	2.57E+01
Sample #	g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$	
S95T003867		
Instrument Code	µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L	
WC16130		
Analyst	Detection Level (µg/mL) $\frac{1 \mu g C * DF * DDF}{VI}$	
K. MONTEITH		
Date		
01/25/96		
Time		
05:45 AM		

µg Carbon/mL =	2.57E+04	DETECTION LEVEL
		in µg/mL
		3.05E+02

Data Entry by: <i>Rus Schneider</i>	Date: 01/26/96
Approved by: <i>Rus Schneider</i>	Date: 1/29/96

Form 344105_C Rev. 1.1 Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

WHC-SD-WM-DP-165, REV. 1

TOC: LA-344-105

SPIKED SAMPLE

SPIKE

Type	>>>>> Sample Vial Data <<<<<<		>>>>> Spiked Vial Data <<<<<<	
SPIKE	Sample Volume in mL	0.100	Sample Size in mL (SS)	0.500
Work List	H2SO4 Volume in mL	6.000	Spike Volume in mL	0.500
4999	Volume Injected in mL	0.200	H2SO4 Volume in mL	0.000
Test Code	µg of Carbon in Sample	97.1	Volume Injected in mL	0.200
TOC01	µg of Carbon in Blank	5.7	Sample Pre-Spike Dil. Factor (PDF)	61
Matrix			Spike Value (µg/mL)	748
LIQUID			µg C in Sample + Spike	121.8
Sample #			µg C in Blank	5.7
S95T003867				
Instrument Code				
WC16130	PERCENT SPIKE REC = $\frac{\mu\text{g Carbon Recovered from Spike} * 100}{\mu\text{g Carbon in Spike}}$			
Analyst				
K. MONTEITH				
Date	WHERE : $\mu\text{g Carbon Recovered from Spike} =$			
01/25/96	$[(\mu\text{gC in sample} + \text{spike} - \mu\text{gC in blank}) * (\text{Spike Correction Factor})]$			
Time	$- [(\mu\text{gC sample} - \mu\text{gC blank}) * (\text{Sample Correction Factor}) * (\text{Sample Size Correction Factor}) * (\text{PDF})]$			
08:57 AM				

Spike Correction Factor = $\frac{\text{Total volume in spiked sample vial (mL)}}{\text{Volume Injected (mL)}}$

Sample Correction Factor = $\frac{\text{Total volume in sample vial (mL)}}{\text{Volume injected (mL)}}$

Sample Size Correction Factor = $\frac{\text{Sample size in (mL) in spiked vial}}{\text{Sample size (mL) in sample}}$

Sample Pre-Spike Dilution Factor = $\frac{1}{\text{Dilution of Sample Before Added to Spike Vial}}$

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

Percent Spike Recovery 94.1%

Data Entry by: <i>RE Smith</i>	Date: 26-Jan-96
Approved by: <i>RW Schroeder</i>	Date: 1/29/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TOC : LA-344-105 (C-0)		LIQUIDS		SAMPLE	
Type	Sample Volume in mL	(SS)			0.100
SAMPLE	H2SO4 Volume in mL	(VR)			6.000
Work List	Volume Injected in mL	(VI)			0.200
4999	Dilution Factor	(DF)			61
Test Code	Digest Dilution Factor	(DDF)			1
TOC01	µg of Carbon in Sample	(C1)			86.9
Matrix	µg of Carbon in Blank	(C2)			5.7
LIQUID	g of Carbon/L	=			2.48E+01
Sample #	g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$				
S95T003868					
Instrument Code	µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L				
WC16130					
Analyst	Detection Level (µg/mL) $\frac{1 \mu g C * DF * DDF}{VI}$				
K. MONTEITH					
Date					
01/25/96					
Time					
05:45 AM					

µg Carbon/mL =	2.48E+04	DETECTION LEVEL
		in µg/mL
		3.05E+02

Data Entry by: <i>K. Monteith</i>	Date: 01/26/96
Approved by: <i>RW Schneider</i>	Date: 1/29/96
Form 344105_C Rev. 1.1	

Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

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

LIQUIDS

		DUPLICATE
Type	Sample Volume in mL (SS)	0.100
DUPLICATE	H2SO4 Volume in mL (VR)	6.000
Work List	Volume Injected in mL (VI)	0.200
4999	Dilution Factor (DF)	61
Test Code	Digest Dilution Factor (DDF)	1
TOC01	µg of Carbon in Sample (C1)	92.7
Matrix	µg of Carbon in Blank (C2)	5.7
LIQUID	g of Carbon/L =	2.65E+01
Sample #		
S95T003868	g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$	
Instrument Code		
WC16130		
Analyst	µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L	
K. MONTEITH		
Date		
01/25/96	Detection Level (µg/mL) $\frac{1 \mu g C * DF * DDF}{VI}$	
Time		
05:45 AM		

µg Carbon/mL =	2.65E+04	DETECTION LEVEL
		in µg/mL
		3.05E+02

Data Entry by: <i>K. Monteith</i>	Date: 01/26/96
Approved by: <i>P. W. Salcedo</i>	Date: 1/29/96
Form 344105_C Rev. 1.1	Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TOC : LA-344-105 (C-0)		LIQUIDS		SAMPLE	
Type	Sample Volume in mL	(SS)			0.100
SAMPLE	H2SO4 Volume in mL	(VR)			6.000
Work List	Volume Injected in mL	(VI)			0.200
4999	Dilution Factor	(DF)			61
Test Code	Digest Dilution Factor	(DDF)			1
TOC01	µg of Carbon in Sample	(C1)			92.6
Matrix	µg of Carbon in Blank	(C2)			5.7
LIQUID	g of Carbon/L	=			2.65E+01
Sample #	g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$				
S95T003869					
Instrument Code	µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L				
WC16130					
Analyst	Detection Level (µg/mL) $\frac{1 \mu\text{g C} * DF * DDF}{VI}$				
K. MONTEITH					
Date					
01/25/96					
Time					
05:45 AM					

µg Carbon/mL =	2.65E+04	DETECTION LEVEL
		in µg/mL
		3.05E+02

Data Entry by: <i>K. Monteith</i>	Date: 01/26/96
Approved by: <i>K. Schneider</i>	Date: 1/29/96
Form 344105_C Rev. 1.1	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

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

LIQUIDS

		DUPLICATE
Type	Sample Volume in mL (SS)	0.100
DUPLICATE	H2SO4 Volume in mL (VR)	6.000
Work List	Volume Injected in mL (VI)	0.200
4999	Dilution Factor (DF)	61
Test Code	Digest Dilution Factor (DDF)	1
TOC01	µg of Carbon in Sample (C1)	87.9
Matrix	µg of Carbon in Blank (C2)	5.7
LIQUID	g of Carbon/L =	2.51E+01
Sample #	g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$	
S95T003869		
Instrument Code	µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L	
WC16130		
Analyst	Detection Level (µg/mL) $\frac{1 \mu g C * DF * DDF}{VI}$	
K. MONTEITH		
Date		
01/25/96		
Time		
05:45 AM		

µg Carbon/mL =	2.51E+04	DETECTION LEVEL
		in µg/mL
		3.05E+02

Data Entry by: <i>AC Wright</i>	Date: 01/26/96
Approved by: <i>EW Schneider</i>	Date: 1/29/96
Form 344105_C Rev. 1.1	

Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

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

LIQUIDS

		SAMPLE
Type	Sample Volume in mL (SS)	2.000
SAMPLE	H2SO4 Volume in mL (VR)	0.200
Work List	Volume Injected in mL (VI)	0.200
4999	Dilution Factor (DF)	1.1
Test Code	Digest Dilution Factor (DDF)	1
TOC01	µg of Carbon in Sample (C1)	6.5
Matrix	µg of Carbon in Blank (C2)	5.7
LIQUID	g of Carbon/L =	< 5.50E-03
Sample #	g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$	
S95T003962		
Instrument Code	µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L	
WC16130		
Analyst	Detection Level (µg/mL) $\frac{1 \mu g C * DF * DDF}{VI}$	
K. MONTEITH		
Date		
01/25/96		
Time		
05:45 AM		

NOTE: Reported Result is Below Detection Level.

µg Carbon/mL = < 5.50E+00	DETECTION LEVEL
	in µg/mL 5.50E+00

Data Entry by: <i>KE Wright</i>	Date: 01/26/96
Approved by: <i>R. J. Schneider</i>	Date: 1/27/96
Form 344105_C Rev. 1.1	Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

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

LIQUIDS

		DUPLICATE
Type	Sample Volume in mL (SS)	2.000
DUPLICATE	H2SO4 Volume in mL (VR)	0.200
Work List	Volume Injected in mL (VI)	0.200
4999	Dilution Factor (DF)	1.1
Test Code	Digest Dilution Factor (DDF)	1
TOC01	µg of Carbon in Sample (C1)	2.9
Matrix	µg of Carbon in Blank (C2)	5.7
LIQUID	g of Carbon/L = <	5.50E-03
Sample #		
S95T003962	g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$	
Instrument Code		
WC16130		
Analyst	µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L	
K. MONTEITH		
Date		
01/25/96	Detection Level (µg/mL) $\frac{1 \mu g C * DF * DDF}{VI}$	
Time		
05:45 AM		

NOTE: Reported Result is Below Detection Level.

µg Carbon/mL = < 5.50E+00	DETECTION LEVEL
	in µg/mL 5.50E+00

Data Entry by: <i>Rebecca</i>	Date: 01/26/96
Approved by: <i>RW Schneider</i>	Date: 1/29/96
Form 344105_C Rev. 1.1	

Page 1 of 1

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

Sample: BLK

Date: 01/25/96

Time: 05:45:05

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = N/A

Analyst : KR MONTEITH
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	1.00	70.00
3	1.50	1.60	37.50
4	2.00	2.00	20.00
5	2.50	2.40	16.67
6	3.00	3.10	22.58
7	3.50	3.30	6.06
8	4.00	3.80	13.16
9	4.50	4.00	5.00
10	5.00	4.50	11.11
11	5.51	4.80	6.25
12	6.00	5.10	5.88
13	6.50	5.50	7.27
14	7.00	5.70	3.51

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 296 TO 307.

BLANK VALUE = 5.7 micrograms carbon
BLANK FACTOR = 5.7 / 7.003815 =

+8.1E-01 ug/min Carbon

Sample Run By:

KR MONTEITH

1-25-96

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK

Date: 01/25/96

Time: 06:54:04

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BLK

Blank Value = .8138422 ug/minute C

Analyst : KR MONTEITH

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	1.20	100.00
3	1.51	2.60	53.85
4	2.01	3.00	13.33
5	2.51	3.50	14.29
6	3.01	3.70	5.41
7	3.51	4.30	13.95
8	4.01	4.50	4.44
9	4.51	5.10	11.76
10	5.01	5.50	7.27
11	5.51	6.00	8.33
12	6.01	6.40	6.25
13	6.51	6.90	7.25
14	7.00	7.50	8.00

BLANK VALUE = 5.7 micrograms carbon

BLANK FACTOR = 5.7 / 7.003815 =

+8.1E-01 ug/min Carbon

SAMPLE RESULTS:

(7.5 - 5.700844) (1) / (200) =
(7.5 - 5.700844) (1) / (200) (12) =

+9.0E-03 g/L Carbon
+7.5E-04 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD

Date: 01/25/96

Time: 06:28:18

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BLK

Blank Value = .8138422 ug/minute C

Analyst : KR MONTEITH

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.40	0.00
2	1.01	35.40	96.05
3	1.51	44.20	19.91
4	2.01	47.40	6.75
5	2.51	49.70	4.63
6	3.01	51.30	3.12
7	3.51	52.90	3.02
8	4.01	54.00	2.04
9	4.51	54.80	1.46
10	5.01	55.40	1.08
11	5.51	56.00	1.07
12	6.01	56.40	0.71
13	6.50	57.10	1.23
14	7.00	57.60	0.87

BLANK VALUE = 5.7 micrograms carbon

BLANK FACTOR = 5.7 / 7.003815 =

+8.1E-01 ug/min Carbon

SAMPLE RESULTS:

(57.6 - 5.700819) (11)/(200) =

+2.85E+00 g/L Carbon

(57.6 - 5.700819) (11)/(200) (12) =

+2.38E-01 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S95T3867

Date: 01/25/96

Time: 07:18:46

Sample Size = 200 uL

Dil Factor = 61

Blank ID # = BLK

Blank Value = .8138422 ug/minute C

Analyst : KR MONTEITH

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading	==== Analysis	Time	==== Coulometer	==== % Difference ==
1	0.51		1.40	0.00
2	1.01		52.40	97.33
3	1.51		74.30	29.48
4	2.01		81.20	8.50
5	2.51		85.50	5.03
6	3.01		88.60	3.50
7	3.51		90.60	2.21
8	4.01		92.30	1.84
9	4.51		93.60	1.39
10	5.01		94.60	1.06
11	5.51		95.50	0.94
12	6.01		96.00	0.52
13	6.51		96.80	0.83
14	7.00		97.10	0.31

BLANK VALUE = 5.7 micrograms carbon

BLANK FACTOR = 5.7 / 7.003815 =

+8.1E-01 ug/min Carbon

SAMPLE RESULTS:

(97.1 - 5.700819) (61)/(200) =

+2.79E+01 g/L Carbon

(97.1 - 5.700819) (61)/(200) (12) =

+2.32E+00 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T3867 DUP

Date: 01/25/96

Time: 08:44:29

Sample Size = 200 uL

Dil Factor = 61

Blank ID # = BLK

Blank Value = .8138422 ug/minute C

Analyst : KR MONTEITH

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.10	0.00
2	1.01	51.70	97.87
3	1.51	69.00	25.07
4	2.01	75.70	8.85
5	2.51	79.30	4.54
6	3.01	82.20	3.53
7	3.51	83.90	2.03
8	4.01	85.40	1.76
9	4.51	86.70	1.50
10	5.00	87.80	1.25
11	5.50	88.20	0.45
12	6.00	89.00	0.90
13	6.50	89.60	0.67
14	7.00	89.90	0.33

BLANK VALUE = 5.7 micrograms carbon

BLANK FACTOR = 5.7 / 7.003815 =

+8.1E-01 ug/min Carbon

SAMPLE RESULTS:

(89.9 - 5.700149) (61) / (200) =

+2.57E+01 g/L Carbon

(89.9 - 5.700149) (61) / (200) (12) =

+2.14E+00 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T3867 SPK

Date: 01/25/96

Time: 08:57:13

Sample Size = 200 uL

Dil Factor = 122

Blank ID # = BLK

Blank Value = .8138422 ug/minute C

Analyst : KR MONTEITH

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	Analysis	Time	Coulometer	% Difference ==
1	0.51		2.10	0.00
2	1.01		24.20	91.32
3	1.51		88.90	72.78
4	2.01		101.40	12.33
5	2.51		107.70	5.85
6	3.00		111.90	3.75
7	3.51		115.00	2.70
8	4.01		116.30	1.12
9	4.50		118.30	1.69
10	5.00		119.90	1.33
11	5.50		120.40	0.42
12	6.00		121.40	0.82
13	6.50		121.50	0.08
14	7.00		121.80	0.25

BLANK VALUE = 5.7 micrograms carbon

BLANK FACTOR = 5.7 / 7.003815 =

+8.1E-01 ug/min Carbon

SAMPLE RESULTS:

(121.8 - 5.700025) (122) / (200) =
(121.8 - 5.700025) (122) / (200) (12) =

+7.082E+01 g/L Carbon
+5.902E+00 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T3868

Date: 01/25/96

Time: 09:13:50

Sample Size = 200 uL

Dil Factor = 61

Blank ID # = BLK

Blank Value = .8138422 ug/minute C

Analyst : KR MONTEITH

Min Readings = 14

Max Readings = 14

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.00	0.00
2	1.01	42.00	100.00
3	1.51	64.20	34.58
4	2.01	70.80	9.32
5	2.51	75.00	5.60
6	3.01	77.80	3.60
7	3.51	80.50	3.35
8	4.01	81.30	0.98
9	4.50	82.30	1.22
10	5.00	83.50	1.44
11	5.50	84.90	1.65
12	6.00	85.40	0.59
13	6.50	86.00	0.70
14	7.00	86.90	1.04

BLANK VALUE = 5.7 micrograms carbon

BLANK FACTOR = 5.7 / 7.003815 =

+8.1E-01 ug/min Carbon

SAMPLE RESULTS:

(86.9 - 5.700174) (61) / (200) =

+2.48E+01 g/L Carbon

(86.9 - 5.700174) (61) / (200) (12) =

+2.06E+00 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0 WHC-SD-WM-DP-165, REV. 1

Sample: S95T3868 DUP Date: 01/25/96 Time: 09:30:38

Sample Size = 200 uL	Analyst : KR MONTEITH
Dil Factor = 61	Min Readings = 14
Blank ID # = BLK	Max Readings = 14
Blank Value = .8138422 ug/minute C	% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	45.80	100.00
3	1.51	66.80	31.44
4	2.01	74.50	10.34
5	2.51	79.10	5.82
6	3.01	82.40	4.00
7	3.51	84.70	2.72
8	4.00	86.30	1.85
9	4.50	87.50	1.37
10	5.00	89.20	1.91
11	5.51	90.30	1.22
12	6.01	91.40	1.20
13	6.51	91.90	0.54
14	7.00	92.70	0.86

BLANK VALUE = 5.7 micrograms carbon
 BLANK FACTOR = 5.7 / 7.003815 = +8.1E-01 ug/min Carbon

SAMPLE RESULTS:
 (92.7 - 5.700869) (61) / (200) = +2.65E+01 g/L Carbon
 (92.7 - 5.700869) (61) / (200) (12) = +2.21E+00 Molar Carbon

Sample Run By: KR MONTEITH 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. I

Sample: S95T3869

Date: 01/25/96

Time: 09:39:07

Sample Size = 200 uL

Dil Factor = 61

Blank ID # = BLK

Blank Value = .8138422 ug/minute C

Analyst : KR MONTEITH

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.00	0.00
2	1.00	41.10	100.00
3	1.50	67.30	38.93
4	2.00	76.70	12.26
5	2.50	82.00	6.46
6	3.00	85.30	3.87
7	3.50	87.30	2.29
8	4.00	88.40	1.24
9	4.50	88.50	0.11
10	5.00	90.00	1.67
11	5.50	90.60	0.66
12	6.00	91.40	0.88
13	6.50	92.20	0.87
14	7.00	92.60	0.43

BLANK VALUE = 5.7 micrograms carbon

BLANK FACTOR = 5.7 / 7.003815 =

+8.1E-01 ug/min Carbon

SAMPLE RESULTS:

(92.6 - 5.699975) (61) / (200) =

+2.65E+01 g/L Carbon

(92.6 - 5.699975) (61) / (200) (12) =

+2.21E+00 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T3869 DUP

Date: 01/25/96

Time: 09:47:30

Sample Size = 200 uL

Dil Factor = 61

Blank ID # = BLK

Blank Value = .8138422 ug/minute C

Analyst : KR MONTEITH

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	0.00	0.00
2	1.01	36.90	100.00
3	1.51	61.30	39.80
4	2.01	69.90	12.30
5	2.51	74.70	6.43
6	3.01	78.80	5.20
7	3.51	80.30	1.87
8	4.01	82.90	3.14
9	4.50	84.50	1.89
10	5.00	85.60	1.29
11	5.50	87.10	1.72
12	6.00	87.20	0.11
13	6.50	87.40	0.23
14	7.00	87.90	0.57

BLANK VALUE = 5.7 micrograms carbon

BLANK FACTOR = 5.7 / 7.003815 =

+8.1E-01 ug/min Carbon

SAMPLE RESULTS:

(87.9 - 5.700174) (61) / (200) =

+2.51E+01 g/L Carbon

(87.9 - 5.700174) (61) / (200) (12) =

+2.09E+00 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T3962

Date: 01/25/96

Time: 10:14:27

Sample Size = 200 uL

Dil Factor = 1.1

Blank ID # =

Blank Value = .81 ug/minute C

Analyst : KR MONTEITH

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	0.20	100.00
3	1.51	1.90	89.47
4	2.01	2.00	5.00
5	2.51	3.30	39.39
6	3.00	3.70	10.81
7	3.50	4.90	24.49
8	4.00	5.00	2.00
9	4.50	5.10	1.96
10	5.00	5.70	10.53
11	5.50	6.20	8.06
12	6.00	6.50	4.62
13	6.50	6.50	0.00
14	7.00	6.50	0.00

USER INPUT BLANK VALUE

BLANK VALUE = 5.67309 micrograms carbon

BLANK FACTOR = 5.67309 / 7.003815 = +8.1E-01 ug/min Carbon

SAMPLE RESULTS:

(6.5 - 5.672422) (1.1) / (200) = < 5.00 E-3 g/L Carbon
 (6.5 - 5.672422) (1.1) / (200) (12) = < 4.17 E-4 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T3962 DUP

Date: 01/25/96

Time: 10:49:28

Sample Size = 200 uL

Dil Factor = 1.1

Blank ID # =

Blank Value = .81 ug/minute C

Analyst : KR MONTEITH

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	0.00	0.00	
4	2.01	0.10	100.00	
5	2.51	1.10	90.91	
6	3.01	1.20	8.33	
7	3.51	1.40	14.29	
8	4.01	1.80	22.22	
9	4.51	2.70	33.33	
10	5.01	2.90	6.90	
11	5.51	2.90	0.00	
12	6.01	2.90	0.00	
13	6.51	2.90	0.00	
14	7.00	2.90	0.00	

USER INPUT BLANK VALUE

BLANK VALUE = 5.67309 micrograms carbon

BLANK FACTOR = 5.67309 / 7.003815 =

+8.1E-01 ug/min Carbon

SAMPLE RESULTS:

(2.9 - 5.673906) (1.1) / (200) =

< 5.00 E-3 g/L Carbon

(2.9 - 5.673906) (1.1) / (200) (12) =

< 4.17 E-4 Molar Carbon

Sample Run By:

KR MONTEITH

00000

LABCORE Data Entry Template for Worklist#

5364

Analyst: KRM Instrument: TOC01 Book # 16N12D

Method: LA-344-105 Rev/Mod C-0

Worklist Comment: 102-AN TOC BY COUL. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK			TOC-01	LIQUID	<u>1</u>	<u>1.5</u> <u>2.86E00</u>	<u>N/A</u>	<u>2.23-96</u> ug/mL
		2 STD			TOC-01	LIQUID	<u>3000</u>	<u>3.03E3</u>	<u>N/A</u>	ug/mL
95000227	AN-102 GRAB	3 SAMPLE	S95T003984	0	TOC-01	LIQUID	<u>N/A</u>	<u>2.57E4</u>	<u>3.05E2</u>	ug/mL
95000227	AN-102 GRAB	4 DUP	S95T003984	0	TOC-01	LIQUID	<u>2.57E4</u>	<u>2.57E4</u>	<u>N/A</u>	ug/mL
95000227	AN-102 GRAB	5 SPK	S95T003984	0	TOC-01	LIQUID	<u>100</u>	<u>97.6</u>	<u>N/A</u>	ug/mL
95000227	AN-102 GRAB	6 SAMPLE	S95T003982	0	TOC-01	LIQUID	<u>N/A</u>	<u>2.69E4</u>	<u>3.05E2</u>	ug/mL
95000227	AN-102 GRAB	7 DUP	S95T003982	0	TOC-01	LIQUID	<u>2.69E4</u>	<u>2.62E4</u>	<u>N/A</u>	ug/mL
95000227	AN-102 GRAB	8 SAMPLE	S95T003983	0	TOC-01	LIQUID	<u>N/A</u>	<u>2.57E4</u> <u>2.52E4</u>	<u>3.05E2</u>	ug/mL
95000227	AN-102 GRAB	9 DUP	S95T003983	0	TOC-01	LIQUID	<u>2.57E4</u>	<u>2.75E4</u>	<u>N/A</u>	ug/mL

Final page for worklist #

5364

Analyst Signature Date 2-15-96

Analyst Signature Date 2-16-96

Reviewed Ru Schmedh
2/20/96

Data Entry Comments:

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

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

WORKLIST
#ANALYST
SIGNATUREANALYSIS
DATEANALYSIS
TIMEINSTRUMENT
CODE

5364

2-15-96

☐ SAMPLE
STANDARD☒ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # =

STD # =

Volume SAMPLE Used (mL)

Volume H₂SO₄ Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H₂SO₄ Added to SAMPLE + SPIKE (mL)Final Coulometer Reading in μ g Carbon (Optional)☒ SAMPLE
STANDARD☐ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # = 5957003984

STD # =

Amount of SAMPLE Used (mL)

Volume H₂SO₄ Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H₂SO₄ Added to SAMPLE + SPIKE (mL)Final Coulometer Reading in μ g Carbon (Optional)☐ SAMPLE
STANDARD☐ DUPLICATE
BASELINE☒ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # = 5957003984

STD # = 11N1214

Amount of SAMPLE Used (mL)

Volume H₂SO₄ Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H₂SO₄ Added to SAMPLE + SPIKE (mL)Final Coulometer Reading in μ g Carbon (Optional)☐ SAMPLE
STANDARD☒ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # = 5957003982

STD # =

Amount of SAMPLE Used (mL)

Volume H₂SO₄ Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H₂SO₄ Added to SAMPLE + SPIKE (mL)Final Coulometer Reading in μ g Carbon (Optional)☒ SAMPLE
STANDARD☐ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # =

STD # = 16N1215

Amount of SAMPLE Used (mL)

Volume H₂SO₄ Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H₂SO₄ Added to SAMPLE + SPIKE (mL)Final Coulometer Reading in μ g Carbon (Optional)☐ SAMPLE
STANDARD☒ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # = 5957003984

STD # =

Amount of SAMPLE Used (mL)

Volume H₂SO₄ Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H₂SO₄ Added to SAMPLE + SPIKE (mL)Final Coulometer Reading in μ g Carbon (Optional)☒ SAMPLE
STANDARD☐ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # = 5957003982

STD # =

Amount of SAMPLE Used (mL)

Volume H₂SO₄ Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H₂SO₄ Added to SAMPLE + SPIKE (mL)Final Coulometer Reading in μ g Carbon (Optional)☒ SAMPLE
STANDARD☐ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # = 597003983

STD # =

Amount of SAMPLE Used (mL)

Volume H₂SO₄ Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H₂SO₄ Added to SAMPLE + SPIKE (mL)Final Coulometer Reading in μ g Carbon (Optional)

WHO-SD-WM-DP-165, REV. 11

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

WORKLIST
#

ANALYST
SIGNATURE

ANALYSIS
DATE

ANALYSIS
TIME

INSTRUMENT
CODE

☐ SAMPLE
STANDARD

☒ DUPLICATE
BASELINE

☐ SPIKE
BLANK

☐ TRIPLICATE

SAMPLE # = 595T003983

STD # =

Volume SAMPLE Used (mL)

Volume H2SO4 Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H2SO4 Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in μ g Carbon (Optional)

☐ SAMPLE
STANDARD

☐ DUPLICATE
BASELINE

☐ SPIKE
BLANK

☐ TRIPLICATE

SAMPLE # =

STD # =

Amount of SAMPLE Used (mL)

Volume H2SO4 Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H2SO4 Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in μ g Carbon (Optional)

☐ SAMPLE
STANDARD

☐ DUPLICATE
BASELINE

☐ SPIKE
BLANK

☐ TRIPLICATE

SAMPLE # =

STD # =

Amount of SAMPLE Used (mL)

Volume H2SO4 Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H2SO4 Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in μ g Carbon (Optional)

☐ SAMPLE
STANDARD

☐ DUPLICATE
BASELINE

☐ SPIKE
BLANK

☐ TRIPLICATE

SAMPLE # =

STD # =

Amount of SAMPLE Used (mL)

Volume H2SO4 Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H2SO4 Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in μ g Carbon (Optional)

☐ SAMPLE
STANDARD

☐ DUPLICATE
BASELINE

☐ SPIKE
BLANK

☐ TRIPLICATE

SAMPLE # =

STD # =

Amount of SAMPLE Used (mL)

Volume H2SO4 Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H2SO4 Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in μ g Carbon (Optional)

☐ SAMPLE
STANDARD

☐ DUPLICATE
BASELINE

☐ SPIKE
BLANK

☐ TRIPLICATE

SAMPLE # =

STD # =

Amount of SAMPLE Used (mL)

Volume H2SO4 Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H2SO4 Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in μ g Carbon (Optional)

☐ SAMPLE
STANDARD

☐ DUPLICATE
BASELINE

☐ SPIKE
BLANK

☐ TRIPLICATE

SAMPLE # =

STD # =

Amount of SAMPLE Used (mL)

Volume H2SO4 Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H2SO4 Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in μ g Carbon (Optional)

☐ SAMPLE
STANDARD

☐ DUPLICATE
BASELINE

☐ SPIKE
BLANK

☐ TRIPLICATE

SAMPLE # =

STD # =

Amount of SAMPLE Used (mL)

Volume H2SO4 Added to SAMPLE (mL)

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H2SO4 Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in μ g Carbon (Optional)

WHC-SD-WM-DP-165, REV. 1

WHC-SD-WM-DP-165, REV. 1

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

LIQUIDS

STANDARD

Type	Sample Volume in mL	(SS)	0.200
STANDARD	H2SO4 Volume in mL	(VR)	2.000
Work List	Volume Injected in mL	(VI)	0.200
5364	Dilution Factor	(DF)	11
Test Code	Digest Dilution Factor	(DDF)	1
TOC01	µg of Carbon in Sample	(C1)	56.5
Matrix	µg of Carbon in Blank	(C2)	1.4
LIQUID	g of Carbon/L	=	3.03E+00
Sample #	$\text{g of Carbon/L} = \frac{(C1-C2) * DF * DDF}{VI * 1000}$		
16N12D	$\mu\text{g of Carbon/mL} = \text{g of Carbon/L} * 1000000 \mu\text{g/g} / 1000 \text{ mL/L}$		
Instrument Code	$\text{Detection Level } (\mu\text{g/mL}) = \frac{1 \mu\text{g C} * DF * DDF}{VI}$		
Analyst			
KRM			
Date			
02/15/96			
Time			

µg Carbon/mL = 3.03E+03

DETECTION LEVEL

in µg/mL

5.50E+01

Data Entry by: <i>[Signature]</i>	Date: 02/20/96
Approved by: <i>[Signature]</i>	Date: 2-23-96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

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

LIQUIDS

Type	Sample Volume in mL (SS)	BLANK
BLANK	H2SO4 Volume in mL (VR)	0.200
Work List	Volume Injected in mL (VI)	2.000
5364	Dilution Factor (DF)	0.200
Test Code	Digest Dilution Factor (DDF)	1
TOC01	µg of Carbon in Sample (C1)	1
Matrix	µg of Carbon in Blank (C2)	2.9
LIQUID	g of Carbon/L =	1.4
Sample #		7.50E-03
BLNK	g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$	
Instrument Code		
Analyst	µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L	
KRM		
Date	Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{VI}$	
02/15/96		
Time		

$$| 2.9 - 1.4 | = 1.5$$

µg Carbon/mL =	1.5 RWS 3/20/96 7.50E+00	DETECTION LEVEL
		in µg/mL
		5.00E+00

Data Entry by: <i>[Signature]</i>	Date: 02/20/96
Approved by: <i>[Signature]</i>	Date: 2-23-96
Form 344105_C Rev. 1.1	Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TOC : LA-344-105 (C-0)		LIQUIDS		SAMPLE	
Type	Sample Volume in mL	(SS)			0.100
SAMPLE	H2SO4 Volume in mL	(VR)			6.000
Work List	Volume Injected in mL	(VI)			0.200
5364	Dilution Factor	(DF)			61
Test Code	Digest Dilution Factor	(DDF)			1
TOC01	µg of Carbon in Sample	(C1)			85.6
Matrix	µg of Carbon in Blank	(C2)			1.4
LIQUID	g of Carbon/L	=			2.57E+01
Sample #	g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$				
S95T003984					
Instrument Code	µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L				
Analyst					
KRM					
Date	Detection Level (µg/mL) = $\frac{1 \mu\text{g C} * DF * DDF}{VI}$				
02/15/96					
Time					

µg Carbon/mL =	2.57E+04	DETECTION LEVEL
		in µg/mL
		3.05E+02

Data Entry by:	<i>[Signature]</i>	Date:	02/20/96
Approved by:	<i>[Signature]</i>	Date:	2-23-96
Form 344105_C Rev. 1.1		Page 1 of 1	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. /

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

LIQUIDS

		DUPLICATE
Type	Sample Volume in mL (SS)	0.100
DUPLICATE	H2SO4 Volume in mL (VR)	6.000
Work List	Volume Injected in mL (VI)	0.200
5364	Dilution Factor (DF)	61
Test Code	Digest Dilution Factor (DDF)	1
TOC01	µg of Carbon in Sample (C1)	83.8
Matrix	µg of Carbon in Blank (C2)	1.4
LIQUID	g of Carbon/L =	2.51E+01
Sample #		
S95T003984DUP	g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$	
Instrument Code		
Analyst	µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L	
KRM		
Date	Detection Level (µg/mL) = $\frac{1 \mu\text{g C} * DF * DDF}{VI}$	
02/15/96		
Time		

µg Carbon/mL =	2.51E+04	DETECTION LEVEL
		in µg/mL
		3.05E+02

Data Entry by:	<i>[Signature]</i>	Date:	02/20/96
Approved by:	<i>[Signature]</i>	Date:	2-23-96
Form 344105_C Rev. 1.1		Page 1 of 1	

WHC-SD-WM-DP-165, REV. 1

TOC: LA-344-105

SPIKED SAMPLE

SPIKE

Type	>>>>> Sample Vial Data <<<<<		>>>>> Spiked Vial Data <<<<<	
SPIKE	Sample Volume in mL	0.100	Sample Size in mL (SS)	0.400
Work List	H2SO4 Volume in mL	6.000	Spike Volume in mL	0.400
5364	Volume Injected in mL	0.200	H2SO4 Volume in mL	0.000
Test Code	µg of Carbon in Sample	85.6	Volume Injected in mL	0.200
toc-01	µg of Carbon in Blank	1.4	Sample Pre-Spike Dil. Factor (PDF)	61
Matrix			Spike Value (µg/ml)	748
LIQUID			µg C in Sample + Spike	116.5
Sample #			µg C in Blank	1.4
S95T003984				
Instrument Code				
TOC01				
Analyst				
KRM				
Date				
02/15				
Time				

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

WHERE : $\mu\text{g Carbon Recovered from Spike} = [(\mu\text{gC in sample} + \text{spike} - \mu\text{gC in blank}) * (\text{Spike Correction Factor})]$
 $- [(\mu\text{gC sample} - \mu\text{gC blank}) * (\text{Sample Correction Factor}) * (\text{Sample Size Correction Factor}) * (\text{PDF})]$

Spike Correction Factor = $\frac{\text{Total volume in spiked sample vial (mL)}}{\text{Volume injected (mL)}}$

Sample Correction Factor = $\frac{\text{Total volume in sample vial (mL)}}{\text{Volume injected (mL)}}$

Sample Size Correction Factor = $\frac{\text{Sample size in (mL) in spiked vial}}{\text{Sample size (mL) in sample}}$

Sample Pre-Spike Dilution Factor = $\frac{1}{\text{Dilution of Sample Before Added to Spike Vial}}$

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

Percent Spike Recovery 97.6%

Data Entry by: <i>RSJ</i>	Date: 16-Feb-96
Approved by: <i>PLW Schneider</i>	Date: 2/20/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

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

LIQUIDS

		SAMPLE
Type	Sample Volume in mL (SS)	0.100
SAMPLE	H2SO4 Volume in mL (VR)	6.000
Work List	Volume Injected in mL (VI)	0.200
5364	Dilution Factor (DF)	61
Test Code	Digest Dilution Factor (DDF)	1
TOC01	µg of Carbon in Sample (C1)	89.7
Matrix	µg of Carbon in Blank (C2)	1.4
LIQUID	g of Carbon/L =	2.69E+01
Sample #		
S95T003982	g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$	
Instrument Code		
Analyst	µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L	
KRM		
Date	Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{VI}$	
02/15/96		
Time		

µg Carbon/mL =	2.69E+04	DETECTION LEVEL
		in µg/mL
		3.05E+02

Data Entry by:	<i>[Signature]</i>	Date:	02/20/96
Approved by:	<i>[Signature]</i>	Date:	2-23-96

Form 344105_C Rev. 1.1

Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TOC : LA-344-105 (C-0)		LIQUIDS		DUPLICATE
Type	Sample Volume in mL	(SS)		0.100
DUPLICATE	H2SO4 Volume in mL	(VR)		6.000
Work List	Volume Injected in mL	(VI)		0.200
5364	Dilution Factor	(DF)		61
Test Code	Digest Dilution Factor	(DDF)		1
TOC01	µg of Carbon in Sample	(C1)		87.2
Matrix	µg of Carbon in Blank	(C2)		1.4
LIQUID	g of Carbon/L	=		2.62E+01
Sample #	g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$			
S95T003982DUP	µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L			
Instrument Code	Detection Level (µg/mL) = $\frac{1 \mu\text{g C} * DF * DDF}{VI}$			
Analyst				
KRM				
Date				
02/15/96				
Time				

µg Carbon/mL =	2.62E+04	DETECTION LEVEL
		in µg/mL
		3.05E+02

Data Entry by:	<i>[Signature]</i>	Date:	02/20/96
Approved by:	<i>[Signature]</i>	Date:	2-23-96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

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

LIQUIDS

		SAMPLE
Type	Sample Volume in mL (SS)	0.100
SAMPLE	H2SO4 Volume in mL (VR)	6.000
Work List	Volume Injected in mL (VI)	0.200
5364	Dilution Factor (DF)	61
Test Code	Digest Dilution Factor (DDF)	1
TOC01	µg of Carbon in Sample (C1)	85.7
Matrix	µg of Carbon in Blank (C2)	1.4
LIQUID	g of Carbon/L =	2.57E+01
Sample #		
S95T003983		
Instrument Code		
Analyst		
KRM		
Date		
02/15/96		
Time		

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

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

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

		DETECTION LEVEL
µg Carbon/mL =	2.57E+04	in µg/mL
		3.05E+02

Data Entry by:	Date: 02/20/96
Approved by:	Date: 2-23-96

Form 344105_C Rev. 1.1 Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. I

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

LIQUIDS

		DUPLICATE
Type	Sample Volume in mL (SS)	0.100
DUPLICATE	H2SO4 Volume in mL (VR)	6.000
Work List	Volume Injected in mL (VI)	0.200
5364	Dilution Factor (DF)	61
Test Code	Digest Dilution Factor (DDF)	1
TOC01	µg of Carbon in Sample (C1)	91.4
Matrix	µg of Carbon in Blank (C2)	1.4
LIQUID	g of Carbon/L =	2.75E+01
Sample #	g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$	
S95T003983DUP		
Instrument Code	µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L	
Analyst		
KRM		
Date	Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{VI}$	
02/15/96		
Time		

µg Carbon/mL =	2.75E+04	DETECTION LEVEL
		in µg/mL
		3.05E+02

Data Entry by: <i>[Signature]</i>	Date: 02/20/96
Approved by: <i>[Signature]</i>	Date: 2-23-96

P TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

WHC-SD-WM-DP-165, REV. 1

Sample: BLK Date: 02/15/96 Time: 21:20:02

Sample Size = 200 μ L

Analyst : KR MONTEITH

Dil Factor = 1

Min Readings = 12

Blank ID # = BLK

Max Readings = 12

Blank Value = N/A

% Difference = 10

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

1	0.51	0.10	0.00
2	1.01	0.40	75.00
3	1.51	0.70	42.86
4	2.01	0.90	22.22
5	2.51	0.90	0.00
6	3.01	1.10	18.18
7	3.51	1.10	0.00
8	4.00	1.20	8.33
9	4.50	1.20	0.00
10	5.00	1.30	7.69
11	5.50	1.30	0.00
12	6.00	1.40	7.14

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 320 TO 329

BLANK VALUE = 1.4 micrograms carbon

BLANK FACTOR = $1.4 / 6.004272 = +2.3E-01$ ug/min Carbon

Sample Run By:

KR MONTEITH

00000

2-15-96

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: STD

Date: 02/15/96

Time: 21:33:54

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BLK

Blank Value = .2331673 ug/minute C

Analyst : KR MONTEITH

Min Readings = 12

Max Readings = 12

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	0.60	0.00
2	1.01	30.50	98.03
3	1.51	48.70	37.37
4	2.01	53.50	8.97
5	2.51	54.80	2.37
6	3.01	55.40	1.08
7	3.51	55.70	0.54
8	4.01	55.80	0.18
9	4.50	56.00	0.36
10	5.00	56.10	0.18
11	5.50	56.30	0.36
12	6.00	56.50	0.35

BLANK VALUE = 1.4 micrograms carbon

BLANK FACTOR = 1.4 / 6.004272 =

+2.3E-01 ug/min Carbon

SAMPLE RESULTS:

(56.5 - 1.399801) (11) / (200) =

+3.03E+00 g/L Carbon

(56.5 - 1.399801) (11) / (200) (12) =

+2.53E-01 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: R BLK

Date: 02/15/96

Time: 21:54:30

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BLK

Blank Value = .2331673 ug/minute C

Analyst : KR MONTEITH

Min Readings = 12

Max Readings = 12

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	0.90	100.00
3	1.51	1.30	30.77
4	2.01	1.50	13.33
5	2.51	1.70	11.76
6	3.01	1.80	5.56
7	3.51	2.00	10.00
8	4.00	2.30	13.04
9	4.50	2.40	4.17
10	5.00	2.50	4.00
11	5.50	2.60	3.85
12	6.00	2.90	10.34

BLANK VALUE = 1.4 micrograms carbon

BLANK FACTOR = 1.4 / 6.004272 =

+2.3E-01 ug/min Carbon

SAMPLE RESULTS:

(2.9 - 1.399971) (1)/(200) =

+7.5E-03 g/L Carbon

(2.9 - 1.399971) (1)/(200) (12) =

+6.3E-04 Molar Carbon

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

This warning does not pose a problem with the sample analysis.
rev 2/15/96

Sample Run By:

KR MONTEITH

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. I

Sample: S95T3984

Date: 02/15/96

Time: 22:22:19

Sample Size = 200 uL

Dil Factor = 61

Blank ID # = BLK

Blank Value = .2331673 ug/minute C

Analyst : KR MONTEITH

Min Readings = 12

Max Readings = 12

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	32.00	98.44
3	1.51	66.40	51.81
4	2.00	75.50	12.05
5	2.50	79.90	5.51
6	3.00	82.10	2.68
7	3.50	83.40	1.56
8	4.00	84.10	0.83
9	4.50	84.50	0.47
10	5.00	85.00	0.59
11	5.50	85.30	0.35
12	6.00	85.60	0.35

BLANK VALUE = 1.4 micrograms carbon

BLANK FACTOR = 1.4 / 6.004272 =

+2.3E-01 ug/min Carbon

SAMPLE RESULTS:

(85.6 - 1.399971) (61) / (200) =

+2.57E+01 g/L Carbon

(85.6 - 1.399971) (61) / (200) (12) =

+2.14E+00 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0 WHC-SD-WM-DP-165, REV. 1

Sample: S95T3984 DUP Date: 02/15/96 Time: 22:40:22

Sample Size = 200 uL	Analyst : KR MONTEITH
Dil Factor = 61	Min Readings = 12
Blank ID # = BLK	Max Readings = 12
Blank Value = .2331673 ug/minute C	% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	51.80	99.23
3	1.51	68.10	23.94
4	2.01	74.60	8.71
5	2.51	78.00	4.36
6	3.01	80.20	2.74
7	3.51	81.50	1.60
8	4.01	82.20	0.85
9	4.51	82.70	0.60
10	5.01	83.10	0.48
11	5.51	83.50	0.48
12	6.01	83.80	0.36

BLANK VALUE = 1.4 micrograms carbon
 BLANK FACTOR = 1.4 / 6.004272 = +2.3E-01 ug/min Carbon

SAMPLE RESULTS:
 (83.8 - 1.400228) (61) / (200) = +2.51E+01 g/L Carbon
 (83.8 - 1.400228) (61) / (200) (12) = +2.09E+00 Molar Carbon

Sample Run By: KR MONTEITH 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T3984 SPK

Date: 02/15/96

Time: 22:31:36

Sample Size = 200 uL

Dil Factor = 122

Blank ID # = BLK

Blank Value = .2331673 ug/minute C

Analyst : KR MONTEITH

Min Readings = 12

Max Readings = 12

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	0.50	0.00
2	1.01	62.70	99.20
3	1.51	92.50	32.22
4	2.00	102.90	10.11
5	2.50	108.60	5.25
6	3.00	111.90	2.95
7	3.50	113.50	1.41
8	4.00	114.60	0.96
9	4.50	115.20	0.52
10	5.00	115.90	0.60
11	5.50	116.20	0.26
12	6.00	116.50	0.26

BLANK VALUE = 1.4 micrograms carbon

BLANK FACTOR = 1.4 / 6.004272 =

+2.3E-01 ug/min Carbon

SAMPLE RESULTS:

(116.5 - 1.4) (122) / (200) =

+7.021E+01 g/L Carbon

(116.5 - 1.4) (122) / (200) (12) =

+5.851E+00 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T3982

Date: 02/15/96

Time: 22:51:40

Sample Size = 200 uL

Dil Factor = 61

Blank ID # = BLK

Blank Value = .2331673 ug/minute C

Analyst : KR MONTEITH

Min Readings = 12

Max Readings = 12

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	0.60	0.00
2	1.01	52.50	98.86
3	1.51	71.40	26.47
4	2.01	78.50	9.04
5	2.51	82.70	5.08
6	3.01	85.10	2.82
7	3.51	86.60	1.73
8	4.01	87.60	1.14
9	4.51	88.40	0.90
10	5.01	88.90	0.56
11	5.51	89.40	0.56
12	6.01	89.70	0.33

BLANK VALUE = 1.4 micrograms carbon

BLANK FACTOR = 1.4 / 6.004272 =

+2.3E-01 ug/min Carbon

SAMPLE RESULTS:

(89.7 - 1.400171) (61) / (200) =

+2.69E+01 g/L Carbon

(89.7 - 1.400171) (61) / (200) (12) =

+2.24E+00 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T3982 DUP

Date: 02/15/96

Time: 22:59:23

Sample Size = 200 uL

Dil Factor = 61

Blank ID # = BLK

Blank Value = .2331673 ug/minute C

Analyst : KR MONTEITH

Min Readings = 12

Max Readings = 12

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.80	0.00
2	1.01	55.40	98.56
3	1.51	69.50	20.29
4	2.01	75.70	8.19
5	2.51	79.60	4.90
6	3.01	81.80	2.69
7	3.51	83.60	2.15
8	4.01	84.70	1.30
9	4.51	85.60	1.05
10	5.01	86.30	0.81
11	5.51	86.70	0.46
12	6.01	87.20	0.57

BLANK VALUE = 1.4 micrograms carbon

BLANK FACTOR = 1.4 / 6.004272 =

+2.3E-01 ug/min Carbon

SAMPLE RESULTS:

(87.2 - 1.400228) (61) / (200) =

+2.62E+01 g/L Carbon

(87.2 - 1.400228) (61) / (200) (12) =

+2.18E+00 Molar Carbon

Sample Run By:

KR MONTEITH

00000

P

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T3983

Date: 02/15/96

Time: 23:07:16

Sample Size = 200 uL

Dil Factor = 61

Blank ID # = BLK

Blank Value = .2331673 ug/minute C

Analyst : KR MONTEITH

Min Readings = 12

Max Readings = 12

% Difference = 10

== Reading	==== Analysis	Time	==== Coulometer	==== % Difference	==
1	0.51		0.90	0.00	
2	1.01		43.00	97.91	
3	1.51		66.60	35.44	
4	2.01		74.10	10.12	
5	2.51		78.50	5.61	
6	3.01		81.20	3.33	
7	3.51		82.80	1.93	
8	4.01		83.80	1.19	
9	4.50		84.40	0.71	
10	5.01		84.90	0.59	
11	5.50		85.30	0.47	
12	6.00		85.70	0.47	

BLANK VALUE = 1.4 micrograms carbon

BLANK FACTOR = 1.4 / 6.004272 =

+2.3E-01 ug/min Carbon

SAMPLE RESULTS:

(85.7 - 1.399971) (61) / (200) =

+2.57E+01 g/L Carbon

(85.7 - 1.399971) (61) / (200) (12) =

+2.14E+00 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T3983 DUP

Date: 02/15/96

Time: 23:14:45

Sample Size = 200 uL

Dil Factor = 61

Blank ID # = BLK

Blank Value = .2331673 ug/minute C

Analyst : KR MONTEITH

Min Readings = 12

Max Readings = 12

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	0.70	0.00
2	1.01	48.20	98.55
3	1.51	69.40	30.55
4	2.01	77.70	10.68
5	2.51	82.70	6.05
6	3.01	85.70	3.50
7	3.51	87.80	2.39
8	4.00	88.80	1.13
9	4.50	89.90	1.22
10	5.00	90.40	0.55
11	5.51	90.90	0.55
12	6.00	91.40	0.55

BLANK VALUE = 1.4 micrograms carbon

BLANK FACTOR = 1.4 / 6.004272 =

+2.3E-01 ug/min Carbon

SAMPLE RESULTS:

(91.4 - 1.399971) (61) / (200) =

+2.75E+01 g/L Carbon

(91.4 - 1.399971) (61) / (200) (12) =

+2.29E+00 Molar Carbon

Sample Run By:

KR MONTEITH

00000

LABCORE Data Entry Template for Worklist#

6319

Analyst: JSZ Instrument: TOC01 Book # 17N12-F TIC

Method: LA-342-100 Rev/Mod 0-0 16N12-D TUC

Worklist Comment: AN-102 TOC. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK			TOC-02	LIQUID	<u>1</u>	<u>.5</u>	N/A	ug/mL
		2 STD			TOC-02	LIQUID	<u>2.00E+3</u>	<u>2.83E+3</u>	N/A	ug/mL
95000222	AN-102 GRAB	3 SAMPLE	S95T004133	0	TOC-02	LIQUID	N/A	<u>2.41E+4</u>		ug/mL
95000222	AN-102 GRAB	4 DUP	S95T004133	0	TOC-02	LIQUID	<u>2.41E+4</u>	<u>2.59E+4</u>	N/A	ug/mL
95000222	AN-102 GRAB	5 SPK	S95T004133	0	TOC-02	LIQUID	<u>100</u>	<u>104</u>	N/A	ug/mL
95000222	AN-102 GRAB	6 SAMPLE	S95T004135	0	TOC-02	LIQUID	N/A	<u>2.43E+4</u>		ug/mL
95000222	AN-102 GRAB	7 DUP	S95T004135	0	TOC-02	LIQUID	<u>2.43E+4</u>	<u>2.51E+4</u>	N/A	ug/mL

Final page for worklist #

6319

Jacqui Steele 3/10/96
Analyst Signature Date

ET Steel 3/11/96
Analyst Signature Date

Reviewed RW Schroeder 3/12/96

Data Entry Comments:

The TIC data has been generated as a
consequence of analyzing for TOC by this method. Although
the TIC analysis was not requested by the customer, it is included
with the data package as supporting data or future needs.

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.

This is done by procedure and will be
and has been for future and past worklists

RW Schroeder
3/20/96

WORKLIST #

ANALYST SIGNATURE

ANALYSIS DATE

ANALYSIS TIME

INSTRUMENT CODE

SAMPLE # = STD # =

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE ☐ BLANK ☐ SPIKE ☐ TRIPPLICATE

Amount of SAMPLE Used (mL) _____

Volume H2SO4 Added to SAMPLE (mL) _____

Volume INJECTED (mL) _____

Was Sample Dilution Used for SPIKE? Y or N _____

Amount SPIKE Standard Added (mL) _____

Volume H2SO4 Added to SAMPLE + SPIKE (mL) _____

Final Coulometer Reading in ug Carbon (Optional) _____

SAMPLE # = STD # =

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE ☐ BLANK ☐ SPIKE ☐ TRIPPLICATE

Amount of SAMPLE Used (mL) _____

Volume H2SO4 Added to SAMPLE (mL) _____

Volume INJECTED (mL) _____

Was Sample Dilution Used for SPIKE? Y or N _____

Amount SPIKE Standard Added (mL) _____

Volume H2SO4 Added to SAMPLE + SPIKE (mL) _____

Final Coulometer Reading in ug Carbon (Optional) _____

SAMPLE # = STD # =

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE ☐ BLANK ☐ SPIKE ☐ TRIPPLICATE

Amount of SAMPLE Used (mL) _____

Volume H2SO4 Added to SAMPLE (mL) _____

Volume INJECTED (mL) _____

Was Sample Dilution Used for SPIKE? Y or N _____

Amount SPIKE Standard Added (mL) _____

Volume H2SO4 Added to SAMPLE + SPIKE (mL) _____

Final Coulometer Reading in ug Carbon (Optional) _____

SAMPLE # = STD # =

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE ☐ BLANK ☐ SPIKE ☐ TRIPPLICATE

Amount of SAMPLE Used (mL) _____

Volume H2SO4 Added to SAMPLE (mL) _____

Volume INJECTED (mL) _____

Was Sample Dilution Used for SPIKE? Y or N _____

Amount SPIKE Standard Added (mL) _____

Volume H2SO4 Added to SAMPLE + SPIKE (mL) _____

Final Coulometer Reading in ug Carbon (Optional) _____

SAMPLE # = STD # =

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE ☐ BLANK ☐ SPIKE ☐ TRIPPLICATE

Amount of SAMPLE Used (mL) _____

Volume H2SO4 Added to SAMPLE (mL) _____

Volume INJECTED (mL) _____

Was Sample Dilution Used for SPIKE? Y or N _____

Amount SPIKE Standard Added (mL) _____

Volume H2SO4 Added to SAMPLE + SPIKE (mL) _____

Final Coulometer Reading in ug Carbon (Optional) _____

SAMPLE # = STD # =

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE ☐ BLANK ☐ SPIKE ☐ TRIPPLICATE

Amount of SAMPLE Used (mL) _____

Volume H2SO4 Added to SAMPLE (mL) _____

Volume INJECTED (mL) _____

Was Sample Dilution Used for SPIKE? Y or N _____

Amount SPIKE Standard Added (mL) _____

Volume H2SO4 Added to SAMPLE + SPIKE (mL) _____

Final Coulometer Reading in ug Carbon (Optional) _____

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

WHC-SD-WM-DP-165, REV. I

Sample: BASE

Date: 03/10/96

Time: 11:46:02

Sample Size = 1 uL

Dil Factor = 1

Blank ID # = BASE

Blank Value = N/A

Analyst : JL STEELE

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	0.20	0.00
2	1.01	1.00	80.00
3	1.50	4.50	77.78
4	2.00	12.20	63.11
5	2.50	19.30	36.79
6	3.00	23.30	17.17
7	3.50	25.10	7.17
8	4.00	26.20	4.20
9	4.50	27.10	3.32
10	5.00	27.60	1.81
11	5.50	28.10	1.78
12	6.00	28.50	1.40
13	6.50	28.90	1.38
14	7.00	29.20	1.03
15	7.50	29.60	1.35
16	8.00	29.90	1.00
17	8.50	30.20	0.99
18	9.00	30.60	1.31
19	9.50	30.80	0.65
20	10.00	31.10	0.96
21	10.50	31.30	0.64
22	11.00	31.60	0.95

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 332 TO 344.

BLANK VALUE = 31.6 micrograms carbon

BLANK FACTOR = 31.6 / 10.99884 =

+2.87E+00 ug/min Carbon

~~WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!~~

This message is not applicable to this method.

rev 3/15/96

Sample Run By:

JL Steele 3-10-96
JL STEELE 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV 1

Sample: STD 16N12-D

Date: 03/10/96

Time: 12:13:53

Sample Size = 200 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.87 ug/minute C

Analyst : JL STEELE

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.40	0.00
2	1.00	6.70	94.03
3	1.50	34.40	80.52
4	2.00	116.00	70.34
5	2.50	289.30	59.90
6	3.00	462.10	37.39
7	3.50	543.80	15.02
8	4.00	575.90	5.57
9	4.50	586.20	1.76
10	5.00	589.50	0.56
11	5.50	590.90	0.24
12	6.00	592.00	0.19
13	6.50	592.80	0.13
14	7.00	593.60	0.13
15	7.50	594.20	0.10
16	8.00	594.90	0.12
17	8.50	595.40	0.08
18	9.00	596.00	0.10
19	9.50	596.40	0.07
20	10.00	596.90	0.08
21	10.50	597.30	0.07
22	11.00	597.80	0.08

USER INPUT BLANK VALUE

BLANK VALUE = 31.56667 micrograms carbon

BLANK FACTOR = 31.56667 / 10.99884 = +2.9E+00 ug/min Carbon

SAMPLE RESULTS:

(597.8 - 31.56369) (1) / (200) = +2.831E+00 g/L Carbon
(597.8 - 31.56369) (1) / (200) (12) = +2.359E-01 Molar Carbon

~~WARNING BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!~~

This method is not applicable to this method. rev 3/15/96

Sample Run By:

Jackie Steele
JL STEELE

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. I

Sample: BLANK

Date: 03/10/96

Time: 12:39:25

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.87 ug/minute C

Analyst : JL STEELE

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	0.40	0.00
2	1.01	2.10	80.95
3	1.51	6.00	65.00
4	2.01	12.90	53.49
5	2.51	18.40	29.89
6	3.00	21.70	15.21
7	3.50	23.50	7.66
8	4.00	24.60	4.47
9	4.50	25.40	3.15
10	5.00	26.10	2.68
11	5.50	26.60	1.88
12	6.00	27.20	2.21
13	6.50	27.70	1.81
14	7.00	28.10	1.42
15	7.50	28.50	1.40
16	8.00	28.90	1.38
17	8.50	29.40	1.70
18	9.00	29.70	1.01
19	9.50	30.10	1.33
20	10.00	30.50	1.31
21	10.50	30.70	0.65
22	11.00	31.10	1.29

USER INPUT BLANK VALUE

BLANK VALUE = 31.56667 micrograms carbon

BLANK FACTOR = 31.56667 / 10.99884 = +2.9E+00 ug/min Carbon

SAMPLE RESULTS:

(31.1 - 31.57175) (1)/(1) = < 5.00 E-3 g/L Carbon
(31.1 - 31.57175) (1)/(1) (12) = < 4.17 E-4 Molar Carbon

←←← WARNING BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!! →→→
This message is not applicable to this method. 3/15/96

Sample Run By:

JL Steele
JL STEELE 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T004133

Date: 03/10/96

Time: 14:06:39

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.87 ug/minute C

Analyst : JL STEELE

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	2.70	0.00
2	1.01	57.90	95.34
3	1.50	252.40	77.06
4	2.00	852.10	70.38
5	2.50	1598.60	46.70
6	3.00	2345.40	31.84
7	3.50	3092.30	24.15
8	4.00	3839.50	19.46
9	4.50	4586.20	16.28
10	5.00	5333.40	14.01
11	5.50	6080.90	12.29
12	6.00	6827.20	10.93
13	6.50	7574.50	9.87
14	7.00	8321.60	8.98
15	7.50	9068.50	8.24
16	8.00	9815.80	7.61
17	8.50	%10562.20	7.07
18	9.00	%11309.20	6.61
19	9.50	%11992.40	5.70
20	10.00	%12054.00	0.51
21	10.50	%12066.70	0.11
22	11.00	%12076.60	0.08

USER INPUT BLANK VALUE

BLANK VALUE = 31.56667 micrograms carbon

BLANK FACTOR = 31.56667 / 10.99884 = +2.9E+00 ug/min Carbon

SAMPLE RESULTS:

(12076.6 - 31.56895) (1)/(1) = +1.2045E+04 g/L Carbon
(12076.6 - 31.56895) (1)/(1) (12) = +1.0038E+03 Molar Carbon

~~WARNING~~ BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>
This message is not applicable to this method.

RLK
3/15/96

Sample Run By:

JL STEELE

00000

12045.
500ml = 2.41E+4

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: 4133 DUP

Date: 03/10/96

Time: 14:36:09

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.87 ug/minute C

Analyst : JL STEELE

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.50	0.00
2	1.01	29.80	98.32
3	1.50	90.80	67.18
4	2.00	230.00	60.52
5	2.50	634.40	63.75
6	3.00	990.80	35.97
7	3.50	1144.00	13.39
8	4.00	1217.10	6.01
9	4.50	1261.80	3.54
10	5.00	1285.40	1.84
11	5.50	1296.90	0.89
12	6.00	1304.00	0.54
13	6.50	1309.10	0.39
14	7.00	1313.10	0.30
15	7.50	1316.30	0.24
16	8.00	1319.00	0.20
17	8.50	1321.10	0.16
18	9.00	1323.00	0.14
19	9.50	1324.60	0.12
20	10.00	1325.90	0.10
21	10.50	1327.30	0.11
22	11.00	1328.40	0.08

USER INPUT BLANK VALUE

BLANK VALUE = 31.56667 micrograms carbon

BLANK FACTOR = 31.56667 / 10.99884 = +2.9E+00 ug/min Carbon

SAMPLE RESULTS:

(1328.4 - 31.56912) (1)/(1) = +1.2968E+03 g/L Carbon
 (1328.4 - 31.56912) (1)/(1) (12) = +1.0807E+02 Molar Carbon

~~WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!~~
 This message is not applicable to this method. 202 3/15/96

Sample Run By:

JL STEELE

00000

1296.8
 .05 = 2.59E4

336

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: 4133 SPIKE

Date: 03/10/96

Time: 15:03:23

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.87 ug/minute C

Analyst : JL STEELE

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.70	0.00
2	1.01	16.40	95.73
3	1.51	78.60	79.13
4	2.01	303.80	74.13
5	2.51	789.50	61.52
6	3.00	1190.60	33.69
7	3.50	1376.30	13.49
8	4.00	1455.00	5.41
9	4.50	1500.50	3.03
10	5.00	1527.90	1.79
11	5.50	1541.80	0.90
12	6.00	1548.90	0.46
13	6.50	1554.60	0.37
14	7.00	1558.60	0.26
15	7.50	1561.80	0.20
16	8.00	1564.60	0.18
17	8.50	1567.10	0.16
18	9.00	1569.10	0.13
19	9.50	1571.10	0.13
20	10.00	1572.50	0.09
21	10.50	1574.20	0.11
22	11.00	1575.30	0.07

USER INPUT BLANK VALUE

BLANK VALUE = 31.56667 micrograms carbon

BLANK FACTOR = 31.56667 / 10.99884 = +2.9E+00 ug/min Carbon

SAMPLE RESULTS:

(1575.3 - 31.57193) (1)/(1) = +1.5437E+03 g/L Carbon

(1575.3 - 31.57193) (1)/(1) (12) = +1.2864E+02 Molar Carbon

~~WARNING BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!~~

This message is not applicable to this method. 10-2 3/15/96

*.05mL
100mL 17N12-D*

Sample Run By:

JL STEELE

00000

$$\frac{12076.4}{.500} \times .05 + 300 = 337 + 300 = 1507.66$$

$$\frac{1575.30}{1507.66} = 104.49\%$$

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T004135

Date: 03/10/96

Time: 15:28:41

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.87 ug/minute C

Analyst : JL STEELE

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.70	0.00
2	1.01	21.90	96.80
3	1.51	144.30	84.82
4	2.00	525.20	72.52
5	2.50	889.50	40.96
6	3.00	1064.30	16.42
7	3.50	1137.10	6.40
8	4.00	1180.60	3.68
9	4.50	1206.60	2.15
10	5.00	1219.60	1.07
11	5.50	1226.20	0.54
12	6.00	1230.70	0.37
13	6.50	1234.30	0.29
14	7.00	1237.00	0.22
15	7.50	1239.30	0.19
16	8.00	1241.40	0.17
17	8.50	1243.10	0.14
18	9.00	1244.60	0.12
19	9.50	1245.80	0.10
20	10.00	1246.80	0.08
21	10.50	1247.90	0.09
22	11.00	1249.00	0.09

USER INPUT BLANK VALUE

BLANK VALUE = 31.56667 micrograms carbon

BLANK FACTOR = 31.56667 / 10.99884 = +2.9E+00 ug/min Carbon

SAMPLE RESULTS:

(1249 - 31.56667) (1)/(1) = +1.2174E+03 g/L Carbon
(1249 - 31.56667) (1)/(1) (12) = +1.0145E+02 Molar Carbon

~~WARNING BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!~~
This message is not applicable to this method. 02/3/96

Sample Run By:

JL STEELE

00000

$$\frac{1217.4}{.050} = 2.4348 \times 10^4$$

338

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: 4135 DUP

Date: 03/10/96

Time: 15:54:00

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.87 ug/minute C

Analyst : JL STEELE

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.60	0.00
2	1.01	17.30	96.53
3	1.51	94.20	81.63
4	2.00	363.90	74.11
5	2.50	767.80	52.60
6	3.00	1020.40	24.76
7	3.50	1125.80	9.36
8	4.00	1183.10	4.84
9	4.50	1221.20	3.12
10	5.00	1244.10	1.84
11	5.50	1257.00	1.03
12	6.00	1263.70	0.53
13	6.50	1268.50	0.38
14	7.00	1272.30	0.30
15	7.50	1275.30	0.24
16	8.00	1277.70	0.19
17	8.50	1280.00	0.18
18	9.00	1281.90	0.15
19	9.50	1283.70	0.14
20	10.00	1285.10	0.11
21	10.50	1286.60	0.12
22	11.00	1287.80	0.09

USER INPUT BLANK VALUE

BLANK VALUE = 31.56667 micrograms carbon

BLANK FACTOR = 31.56667 / 10.99884 = +2.9E+00 ug/min Carbon

SAMPLE RESULTS:

(1287.8 - 31.56667) (1)/(1) = +1.2562E+03 g/L Carbon
(1287.8 - 31.56667) (1)/(1) (12) = +1.0469E+02 Molar Carbon

~~WARNING BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>~~

This message is not applicable to this method. see 3/15/96

Sample Run By:

JL STEELE

00000

$$\frac{1256.2}{.050 \text{ mL}} = 2.5124 \text{E}4$$

339

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: 17N12-G

Date: 03/10/96

Time: 16:07:24

Sample Size = 500 uL

Dil Factor = 1

Blank ID # =

Blank Value = .44 ug/minute C

Analyst : JL STEELE

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	2.40	0.00
2	1.01	349.20	99.31
3	1.51	1096.00	68.14
4	2.00	1842.90	40.53
5	2.50	2589.40	28.83
6	3.00	2924.50	11.46
7	3.50	2989.20	2.16
8	4.00	3026.60	1.24
9	4.50	3041.00	0.47
10	5.00	3045.10	0.13
11	5.50	3047.30	0.07
12	6.00	3048.70	0.05
13	6.50	3049.70	0.03
14	7.00	3050.40	0.02
15	7.50	3051.00	0.02
16	8.00	3051.50	0.02
17	8.50	3051.90	0.01
18	9.00	3052.40	0.02
19	9.50	3052.60	0.01
20	10.00	3052.80	0.01
21	10.50	3053.20	0.01
22	11.00	3053.40	0.01

USER INPUT BLANK VALUE

BLANK VALUE = 4.83949 micrograms carbon

BLANK FACTOR = 4.83949 / 10.99884 = +4.4E-01 ug/min Carbon

SAMPLE RESULTS:

(3053.4 - 4.840752) (1) / (500) = +6.0971E+00 g/L Carbon
(3053.4 - 4.840752) (1) / (500) (12) = +5.0809E-01 Molar Carbon

Sample Run By:

JL STEELE

00000

*High Range
Std*

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS WPC-SD-WM-DP-165, REV. 1

Sample: BASE

Date: 03/10/96

Time: 11:33:39

Sample Size = 1 uL

Dil Factor = 1

Blank ID # = BASE

Blank Value = N/A

Analyst : JL STEELE

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.00	0.80	37.50
3	1.50	1.00	20.00
4	2.00	1.30	23.08
5	2.50	1.40	7.14
6	3.00	1.70	17.65
7	3.50	2.00	15.00
8	4.00	2.10	4.76
9	4.50	2.20	4.55
10	5.00	2.50	12.00
11	5.50	2.70	7.41
12	6.00	2.90	6.90
13	6.50	3.10	6.45
14	7.00	3.20	3.13
15	7.50	3.40	5.88
16	8.00	3.70	8.11
17	8.50	3.80	2.63
18	9.00	4.00	5.00
19	9.50	4.30	6.98
20	10.00	4.40	2.27
21	10.50	4.60	4.35
22	11.00	4.80	4.17

BLANK VALUE = 4.8 micrograms carbon

BLANK FACTOR = 4.8 / 11.00073 =

+4.4E-01

ug/min Carbon

Sample Run By:

JL STEELE

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

WHC-SD-WM-DP-165, REV 1

Sample: STD 17N12-F

Date: 03/10/96

Time: 11:59:53

Sample Size = 1000 uL

Dil Factor = 1

Blank ID # =

Blank Value = .44 ug/minute C

Analyst : JL STEELE

Min Readings = 22

Max Readings = 22

% Difference = 10

==	Reading	====	Analysis Time	====	Coulometer	====	% Difference	==
	1		0.51		0.40		0.00	
	2		1.01		51.60		99.22	
	3		1.50		222.50		76.81	
	4		2.00		378.60		41.23	
	5		2.50		477.50		20.71	
	6		3.00		533.70		10.53	
	7		3.50		560.30		4.75	
	8		4.00		570.10		1.72	
	9		4.50		573.60		0.61	
	10		5.00		575.30		0.30	
	11		5.50		576.10		0.14	
	12		6.00		576.70		0.10	
	13		6.50		577.10		0.07	
	14		7.00		577.60		0.09	
	15		7.50		578.00		0.07	
	16		8.00		578.40		0.07	
	17		8.50		578.80		0.07	
	18		9.00		579.10		0.05	
	19		9.50		579.40		0.05	
	20		10.00		579.80		0.07	
	21		10.50		580.10		0.05	
	22		11.00		580.40		0.05	

USER INPUT BLANK VALUE

BLANK VALUE = 4.83949 micrograms carbon

BLANK FACTOR = 4.83949 / 10.99884 = +4.4E-01 ug/min Carbon

SAMPLE RESULTS:

(580.4 - 4.839839) (1) / (1000)	=	+5.756E-01	g/L Carbon
(580.4 - 4.839839) (1) / (1000) (12)	=	+4.796E-02	Molar Carbon

Sample Run By:

JL STEELE

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: BLANK

Date: 03/10/96

Time: 12:27:04

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .44 ug/minute C

Analyst : JL STEELE

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	1.00	50.00
3	1.50	1.50	33.33
4	2.00	1.90	21.05
5	2.50	2.40	20.83
6	3.00	2.70	11.11
7	3.50	3.10	12.90
8	4.00	3.30	6.06
9	4.50	3.70	10.81
10	5.00	4.00	7.50
11	5.50	4.30	6.98
12	6.00	4.60	6.52
13	6.50	4.90	6.12
14	7.00	5.20	5.77
15	7.50	5.60	7.14
16	8.00	5.80	3.45
17	8.50	6.10	4.92
18	9.00	6.40	4.69
19	9.50	6.70	4.48
20	10.00	7.10	5.63
21	10.50	7.30	2.74
22	11.00	7.70	5.19

USER INPUT BLANK VALUE

BLANK VALUE = 4.83949 micrograms carbon

BLANK FACTOR = 4.83949 / 10.99884 = +4.4E-01 ug/min Carbon

SAMPLE RESULTS:

(7.7 - 4.840295) (1)/(1) =

+2.9E+00 g/L Carbon

(7.7 - 4.840295) (1)/(1) (12) =

+2.4E-01 Molar Carbon

Sample Run By:

 JL STEELE

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. I

Sample: S95T004133

Date: 03/10/96

Time: 13:53:53

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .44 ug/minute C

Analyst : JL STEELE

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	5.00	0.00
2	1.01	466.20	98.93
3	1.51	1212.70	61.56
4	2.00	1960.00	38.13
5	2.50	2707.10	27.60
6	3.00	3453.40	21.61
7	3.50	4201.00	17.80
8	4.00	4947.50	15.09
9	4.50	5694.30	13.11
10	5.00	6314.50	9.82
11	5.50	6334.50	0.32
12	6.00	6344.60	0.16
13	6.50	6352.50	0.12
14	7.00	6358.40	0.09
15	7.50	6363.60	0.08
16	8.00	6367.80	0.07
17	8.50	6371.70	0.06
18	9.00	6375.20	0.05
19	9.50	6378.00	0.04
20	10.00	6380.80	0.04
21	10.50	6383.30	0.04
22	11.00	6385.70	0.04

USER INPUT BLANK VALUE

BLANK VALUE = 4.83949 micrograms carbon

BLANK FACTOR = 4.83949 / 10.99884 = +4.4E-01 ug/min Carbon

SAMPLE RESULTS:

(6385.7 - 4.83949) (1) / (1) = +6.3809E+03 g/L Carbon
(6385.7 - 4.83949) (1) / (1) (12) = +5.3174E+02 Molar Carbon

Sample Run By:

JL Steele
JL STEELE 00000

.500 ml

344

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: 4133 DUP

Date: 03/10/96

Time: 14:23:42

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .44 ug/minute C

Analyst : JL STEELE

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	2.40	0.00
2	1.01	48.90	95.09
3	1.51	246.70	80.18
4	2.00	429.50	42.56
5	2.50	549.30	21.81
6	3.00	619.80	11.37
7	3.50	655.90	5.50
8	4.00	667.20	1.69
9	4.50	671.40	0.63
10	5.00	674.10	0.40
11	5.50	675.80	0.25
12	6.00	677.10	0.19
13	6.50	678.40	0.19
14	7.00	679.40	0.15
15	7.50	680.40	0.15
16	8.00	681.20	0.12
17	8.50	682.00	0.12
18	9.00	682.60	0.09
19	9.50	683.30	0.10
20	10.00	683.90	0.09
21	10.50	684.50	0.09
22	11.00	685.00	0.07

USER INPUT BLANK VALUE

BLANK VALUE = 4.83949 micrograms carbon

BLANK FACTOR = 4.83949 / 10.99884 = +4.4E-01 ug/min Carbon

SAMPLE RESULTS:

(685 - 4.83992) (1) / (1) = +6.802E+02 g/L Carbon
 (685 - 4.83992) (1) / (1) (12) = +5.668E+01 Molar Carbon

Sample Run By:

JL STEELE

00000

.050 ml

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV 1

Sample: 4133 SPIKE

Date: 03/10/96

Time: 14:51:04

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .44 ug/minute C

Analyst : JL STEELE

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	1.10	0.00
2	1.01	62.50	98.24
3	1.51	358.20	82.55
4	2.00	625.60	42.74
5	2.50	780.80	19.88
6	3.00	864.10	9.64
7	3.50	914.10	5.47
8	4.00	938.40	2.59
9	4.50	945.70	0.77
10	5.00	948.90	0.34
11	5.50	950.70	0.19
12	6.00	952.10	0.15
13	6.50	953.40	0.14
14	7.00	954.50	0.12
15	7.50	955.40	0.09
16	8.00	956.20	0.08
17	8.50	957.00	0.08
18	9.00	957.80	0.08
19	9.50	958.40	0.06
20	10.00	959.00	0.06
21	10.50	959.50	0.05
22	11.00	960.30	0.08

USER INPUT BLANK VALUE

BLANK VALUE = 4.83949 micrograms carbon

BLANK FACTOR = 4.83949 / 10.99884 = +4.4E-01 ug/min Carbon

SAMPLE RESULTS:

(960.3 - 4.839866) (1)/(1) = +9.555E+02 g/L Carbon
(960.3 - 4.839866) (1)/(1)(12) = +7.962E+01 Molar Carbon

Sample Run By:

JL STEELE

00000

.050mL

346

.500mL (17N12-P)

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T004135

Date: 03/10/96

Time: 15:16:36

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .44 ug/minute C

Analyst : JL STEELE

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	3.30	0.00
2	1.01	45.90	92.81
3	1.51	239.40	80.83
4	2.01	405.80	41.01
5	2.50	500.60	18.94
6	3.00	561.50	10.85
7	3.50	598.80	6.23
8	4.00	617.00	2.95
9	4.50	622.70	0.92
10	5.00	625.30	0.42
11	5.50	627.20	0.30
12	6.00	628.50	0.21
13	6.50	629.60	0.17
14	7.00	630.60	0.16
15	7.50	631.60	0.16
16	8.00	632.40	0.13
17	8.50	633.30	0.14
18	9.00	634.00	0.11
19	9.50	634.50	0.08
20	10.00	635.30	0.13
21	10.50	635.90	0.09
22	11.00	636.40	0.08

USER INPUT BLANK VALUE

BLANK VALUE = 4.83949 micrograms carbon

BLANK FACTOR = 4.83949 / 10.99884 = +4.4E-01 ug/min Carbon

SAMPLE RESULTS:

(636.4 - 4.840242) (1) / (1) = +6.316E+02 g/L Carbon
 (636.4 - 4.840242) (1) / (1) (12) = +5.263E+01 Molar Carbon

Sample Run By:

JL STEELE

00000

.050ml

347

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: 4135 DUP

Date: 03/10/96

Time: 15:41:54

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .44 ug/minute C

Analyst : JL STEELE

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.10	0.00
2	1.01	60.80	98.19
3	1.51	277.00	78.05
4	2.00	441.60	37.27
5	2.50	527.90	16.35
6	3.00	585.50	9.84
7	3.50	621.70	5.82
8	4.00	640.70	2.97
9	4.50	646.90	0.96
10	5.00	649.50	0.40
11	5.50	651.60	0.32
12	6.00	652.90	0.20
13	6.50	654.10	0.18
14	7.00	655.30	0.18
15	7.50	656.20	0.14
16	8.00	657.30	0.17
17	8.50	657.90	0.09
18	9.00	658.70	0.12
19	9.50	659.40	0.11
20	10.00	660.10	0.11
21	10.50	660.80	0.11
22	11.00	661.30	0.08

USER INPUT BLANK VALUE

BLANK VALUE = 4.83949 micrograms carbon

BLANK FACTOR = 4.83949 / 10.99884 = +4.4E-01 ug/min Carbon

SAMPLE RESULTS:

(661.3 - 4.83949) (1)/(1) = +6.565E+02 g/L Carbon
(661.3 - 4.83949) (1)/(1) (12) = +5.471E+01 Molar Carbon

Sample Run By:

JL STEELE

00000

LABCORE Data Entry Template for Worklist#

6320

Analyst: JLS2 Instrument: TOC01 Book # 16N12-D

Method: LA-342-100 Rev/Mod C-D

Worklist Comment: AN-102 TOC. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK			TOC-02	SOLID	<u>1.5</u>	<u>1.5</u>	N/A	ug/g
		2 STD			TOC-02	SOLID	<u>3.00E3</u>	<u>3.00E3</u>	N/A	ug/g
95000222	AN-102 GRAB	3 SAMPLE	S95T004137	0	TOC-02	SOLID	<u>2.60E4</u>	<u>2.60E4</u>	40.0	ug/g
95000222	AN-102 GRAB	4 DUP	S95T004137	0	TOC-02	SOLID	<u>2.60E4</u>	<u>2.70E4</u>	N/A	ug/g
95000222	AN-102 GRAB	5 SPK	S95T004137	0	TOC-02	SOLID	<u>100</u>	<u>101</u>	N/A	ug/g
95000222	AN-102 GRAB	6 SAMPLE	S95T004139	0	TOC-02	SOLID	<u>1.97E4</u>	<u>1.97E4</u>	40.0	ug/g
95000222	AN-102 GRAB	7 DUP	S95T004139	0	TOC-02	SOLID	<u>1.97E4</u>	<u>2.26E4</u>	N/A	ug/g

Final page for worklist #

6320

Analyst Signature

Date

Analyst Signature

Date

Reviewed RW Schmedt 3/13/96

Data Entry Comments:

TIC data included as additional
information that is generated by this
procedure. RCJ 3/20/96

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

WHC-SD-WM-DP-165, REV. 1

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASE

Date: 03/11/96

Time: 10:21:02

Sample Size # 1 uL

Dil Factor # 1

Blank ID # BASE

Blank Value # N/A

Analyst : JL STEELE

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	0.30	0.00
2	1.01	0.60	50.00
3	1.50	0.90	33.33
4	2.00	1.20	25.00
5	2.50	1.50	20.00
6	3.00	1.80	16.67
7	3.50	2.10	14.29
8	4.00	2.50	16.00
9	4.50	2.80	10.71
10	5.00	3.10	9.68
11	5.50	3.40	8.82
12	6.00	3.70	8.11
13	6.50	4.00	7.50
14	7.00	4.20	4.76
15	7.50	4.50	6.67
16	8.00	4.80	6.25
17	8.50	5.10	5.88
18	9.00	5.40	5.56
19	9.50	5.70	5.26
20	10.00	6.00	5.00
21	10.50	6.30	4.76
22	11.00	6.60	4.55

BLANK VALUE = 6.6 micrograms carbon

BLANK FACTOR = 6.6 / 10.99878 =

+6.0E-01 ug/min Carbon

Sample Run By:

Jacob Steele 3-11-96
JL STEELE 00000

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 350 TO 365.

WHC-SD-WM-DP-165, REV. I
 TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
 TICTOC REV 2.0
 <<< BLANK ANALYSIS >>>

Sample: BASE

Date: 03/11/96

Time: 10:33:49

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

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

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	1.30	61.54
3	1.51	2.30	43.48
4	2.00	6.30	63.49
5	2.50	12.00	47.50
6	3.00	16.30	26.38
7	3.50	18.80	13.30
8	4.00	20.10	6.47
9	4.50	20.80	3.37
10	5.00	21.50	3.26
11	5.50	22.10	2.71
12	6.00	22.60	2.21
13	6.50	23.00	1.74
14	7.00	23.50	2.13
15	7.50	23.90	1.67
16	8.00	24.20	1.24
17	8.50	24.60	1.63
18	9.00	24.90	1.20
19	9.50	25.30	1.58
20	10.00	25.60	1.17
21	10.50	26.00	1.54
22	11.00	26.30	1.14

BLANK VALUE = 26.3 micrograms carbon

BLANK FACTOR = 26.3 / 10.99884 =

+2.39E+00 ug/min Carbon

~~<<< WARNING BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!! >>>~~
This blank level is acceptable for this method.
10/2 3/15/96

Sample Run By:

JL STEELE

00000

WHC-SD-WM-DP-165, REV. I
TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD 17N12-F

Date: 03/11/96

Time: 10:47:31

Sample Size = 1000 uL

Dil Factor = 1

Blank ID # =

Blank Value = .6 ug/minute C

Analyst : JL STEELE

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	1.30	0.00
2	1.01	39.50	96.71
3	1.51	204.20	80.66
4	2.00	368.50	44.59
5	2.50	478.80	23.04
6	3.00	546.70	12.42
7	3.50	582.10	6.08
8	4.00	598.60	2.76
9	4.50	605.30	1.11
10	5.00	608.20	0.48
11	5.50	609.70	0.25
12	6.00	610.40	0.11
13	6.50	611.00	0.10
14	7.00	611.40	0.07
15	7.50	611.80	0.07
16	8.00	612.30	0.08
17	8.50	612.60	0.05
18	9.00	613.00	0.07
19	9.50	613.40	0.07
20	10.00	613.70	0.05
21	10.50	614.00	0.05
22	11.00	614.40	0.07

USER INPUT BLANK VALUE

BLANK VALUE = 6.599305 micrograms carbon

BLANK FACTOR = 6.599305 / 10.99884 = +6.0E-01 ug/min Carbon

SAMPLE RESULTS:

(614.4 - 6.599268) (1)/(1000) = +6.078E-01 g/L Carbon
(614.4 - 6.599268) (1)/(1000) (12) = +5.065E-02 Molar Carbon

Sample Run By:

JL STEELE

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. I

Sample: STD 16N12-D

Date: 03/11/96

Time: 11:00:17

Sample Size = 1 uL *.200 ml*
Dil Factor = 1
Blank ID # =
Blank Value = 2.39 ug/minute C

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

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	0.40	0.00
2	1.01	17.70	97.74
3	1.51	78.90	77.57
4	2.00	203.40	61.21
5	2.50	389.20	47.74
6	3.00	511.50	23.91
7	3.50	563.60	9.24
8	4.00	583.40	3.39
9	4.50	589.10	0.97
10	5.00	591.60	0.42
11	5.50	593.10	0.25
12	6.00	594.10	0.17
13	6.50	594.80	0.12
14	7.00	595.50	0.12
15	7.50	596.20	0.12
16	8.00	596.80	0.10
17	8.50	597.30	0.08
18	9.00	597.80	0.08
19	9.50	598.20	0.07
20	10.00	598.70	0.08
21	10.50	599.10	0.07
22	11.00	599.50	0.07

USER INPUT BLANK VALUE

BLANK VALUE = 26.28723 micrograms carbon

BLANK FACTOR = 26.28723 / 10.99884 = +2.4E+00 ug/min Carbon

SAMPLE RESULTS:

(599.5 - 26.29146) (1) / (1) *(.200)* =

(599.5 - 26.29146) (1) / (1) (12) =

2.81E+00
2/11/96
~~+5.732E+02~~ g/L Carbon
~~+4.777E+01~~ Molar Carbon

~~WARNING BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!~~
This blank acceptable for this method. 2/11/96

Sample Run By:

JL STEELE

00000

WHC-SD-WM-DP-165, REV. 1
TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLANK

Date: 03/11/96

Time: 11:15:12

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .6 ug/minute C

Analyst : JL STEELE

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.60	0.00
2	1.01	1.20	50.00
3	1.50	1.70	29.41
4	2.00	2.10	19.05
5	2.50	2.40	12.50
6	3.00	2.70	11.11
7	3.50	3.10	12.90
8	4.00	3.30	6.06
9	4.50	3.60	8.33
10	5.00	3.90	7.69
11	5.50	4.20	7.14
12	6.00	4.50	6.67
13	6.50	4.80	6.25
14	7.00	5.10	5.88
15	7.50	5.40	5.56
16	8.00	5.60	3.57
17	8.50	5.90	5.08
18	9.00	6.20	4.84
19	9.50	6.50	4.62
20	10.00	6.80	4.41
21	10.50	7.10	4.23
22	11.00	7.30	2.74

USER INPUT BLANK VALUE

BLANK VALUE = 6.599305 micrograms carbon

BLANK FACTOR = 6.599305 / 10.99884 = +6.0E-01 ug/min Carbon

SAMPLE RESULTS:

(7.3 - 6.598792) (1)/(1) =

+7.0E-01 g/L Carbon

(7.3 - 6.598792) (1)/(1) (12) =

+5.8E-02 Molar Carbon

Sample Run By:

JL STEELE

00000

WHC-SD-WM-DP-165, REV. 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT TICTOC REV 2.0

Sample: BLANK

Date: 03/11/96

Time: 11:28:29

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.39 ug/minute C

Analyst : JL STEELE

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	2.40	79.17
3	1.51	5.50	56.36
4	2.01	9.60	42.71
5	2.51	13.50	28.89
6	3.01	16.10	16.15
7	3.51	17.70	9.04
8	4.01	18.70	5.35
9	4.50	19.50	4.10
10	5.00	20.10	2.99
11	5.50	20.70	2.90
12	6.00	21.20	2.36
13	6.50	21.60	1.85
14	7.00	22.00	1.82
15	7.50	22.40	1.79
16	8.00	22.80	1.75
17	8.50	23.10	1.30
18	9.00	23.50	1.70
19	9.50	23.90	1.67
20	10.00	24.20	1.24
21	10.50	24.50	1.22
22	11.00	24.80	1.21

USER INPUT BLANK VALUE

BLANK VALUE = 26.28723 micrograms carbon

BLANK FACTOR = 26.28723 / 10.99884 = +2.4E+00 ug/min Carbon

SAMPLE RESULTS:

(24.8 - 26.2916) (1)/(1) = < 5.00 E-3 g/L Carbon
(24.8 - 26.2916) (1)/(1) (12) = < 4.17 E-4 Molar Carbon

~~WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!!~~

*This blank is acceptable for this method
etc 2/15/96*

Sample Run By:

JL STEELE

00000

$$|26.3 - 24.8| = 1.5$$

355

WHC-SD-WM-DP-165, REV. I

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S95T004137

Date: 03/11/96

Time: 11:41:24

Sample Size = 1 uL *.0460 g*
Dil Factor = 1
Blank ID # =
Blank Value = .6 ug/minute C

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

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.80	0.00
2	1.01	92.70	99.14
3	1.51	265.20	65.05
4	2.00	388.10	31.67
5	2.50	459.40	15.52
6	3.00	519.30	11.53
7	3.50	582.80	10.90
8	4.00	633.80	8.05
9	4.50	667.50	5.05
10	5.00	684.90	2.54
11	5.50	697.20	1.76
12	6.00	704.90	1.09
13	6.50	708.90	0.56
14	7.00	711.20	0.32
15	7.50	712.60	0.20
16	8.00	714.20	0.22
17	8.50	715.90	0.24
18	9.00	716.80	0.13
19	9.50	717.50	0.10
20	10.00	718.20	0.10
21	10.50	718.80	0.08
22	11.00	719.30	0.07

USER INPUT BLANK VALUE

BLANK VALUE = 6.599305 micrograms carbon

BLANK FACTOR = 6.599305 / 10.99884 = +6.0E-01 ug/min Carbon

SAMPLE RESULTS:

(719.3 - 6.600403) (1)/(1) = +7.127E+02 g/L Carbon
(719.3 - 6.600403) (1)/(1) (12) = +5.939E+01 Molar Carbon

Sample Run By:

JL STEELE

00000

$$\frac{712.7}{0.460} = 1.5493 \times 10^4$$

356

WHC-SD-WM-DP-165, REV. 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT TICTOC REV 2.0

Sample: S95T004137

Date: 03/11/96

Time: 11:54:40

Sample Size = 1 uL *.0440 g*
Dil Factor = 1
Blank ID # =
Blank Value = 2.39 ug/minute C

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

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	3.70	0.00
2	1.01	165.90	97.77
3	1.51	332.10	50.05
4	2.00	514.60	35.46
5	2.50	787.40	34.65
6	3.00	994.10	20.79
7	3.50	1098.30	9.49
8	4.00	1149.90	4.49
9	4.50	1175.30	2.16
10	5.00	1188.10	1.08
11	5.50	1196.20	0.68
12	6.00	1201.70	0.46
13	6.50	1205.70	0.33
14	7.00	1208.80	0.26
15	7.50	1211.30	0.21
16	8.00	1213.40	0.17
17	8.50	1215.10	0.14
18	9.00	1216.60	0.12
19	9.50	1218.00	0.11
20	10.00	1219.20	0.10
21	10.50	1220.20	0.08
22	11.00	1221.20	0.08

USER INPUT BLANK VALUE

BLANK VALUE = 26.28723 micrograms carbon

BLANK FACTOR = 26.28723 / 10.99884 = +2.4E+00 ug/min Carbon

SAMPLE RESULTS:

(1221.2 - 26.2916) (1)/(1) = +1.1949E+03 g/L Carbon
(1221.2 - 26.2916) (1)/(1) (12) = +9.9576E+01 Molar Carbon

~~WARNING BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!~~
this blank acceptable for this method. see 3/15/96

Sample Run By:

JL STEELE

00000

$$\frac{1194.9}{.0440g} = 2.5976E4 \quad 357$$

WHC-SD-WM-DP-165, REV. 1

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 4137 DUP

Date: 03/11/96

Time: 12:11:56

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .6 ug/minute C

Analyst : JL STEELE

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.60	0.00
2	1.01	20.20	97.03
3	1.50	85.40	76.35
4	2.00	140.70	39.30
5	2.50	181.30	22.39
6	3.00	223.20	18.77
7	3.50	271.80	17.88
8	4.00	331.70	18.06
9	4.50	403.80	17.86
10	5.00	481.70	16.17
11	5.50	588.00	18.08
12	6.00	666.00	11.71
13	6.50	705.70	5.63
14	7.00	720.90	2.11
15	7.50	726.90	0.83
16	8.00	730.10	0.44
17	8.50	732.20	0.29
18	9.00	733.70	0.20
19	9.50	734.70	0.14
20	10.00	735.50	0.11
21	10.50	736.20	0.10
22	11.00	736.90	0.09

USER INPUT BLANK VALUE

BLANK VALUE = 6.599305 micrograms carbon

BLANK FACTOR = 6.599305 / 10.99884 = +6.0E-01 ug/min Carbon

SAMPLE RESULTS:

(736.9 - 6.598792) (1) / (1) =

+7.303E+02 g/L Carbon

(736.9 - 6.598792) (1) / (1) (12) =

+6.086E+01 Molar Carbon

Sample Run By:

JL STEELE

00000

$$\frac{730.3}{.0451} = 1.6193E4$$

358

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 4137 DUP

Date: 03/11/96

Time: 12:24:44

Sample Size = 1 uL *.0451g*
Dil Factor = 1
Blank ID # =
Blank Value = 2.39 ug/minute C

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

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.00	0.00
2	1.01	145.80	99.31
3	1.51	354.30	58.85
4	2.00	594.30	40.38
5	2.50	887.20	33.01
6	3.00	1065.30	16.72
7	3.50	1144.90	6.95
8	4.00	1185.00	3.38
9	4.50	1205.50	1.70
10	5.00	1216.10	0.87
11	5.50	1222.80	0.55
12	6.00	1227.70	0.40
13	6.50	1231.40	0.30
14	7.00	1234.10	0.22
15	7.50	1236.40	0.19
16	8.00	1238.30	0.15
17	8.50	1239.80	0.12
18	9.00	1241.20	0.11
19	9.50	1242.40	0.10
20	10.00	1243.60	0.10
21	10.50	1244.50	0.07
22	11.00	1245.50	0.08

USER INPUT BLANK VALUE

BLANK VALUE = 26.28723 micrograms carbon

BLANK FACTOR = 26.28723 / 10.99884 = +2.4E+00 ug/min Carbon

SAMPLE RESULTS:

(1245.5 - 26.28956) (1)/(1) = +1.2192E+03 g/L Carbon
(1245.5 - 26.28956) (1)/(1) (12) = +1.0160E+02 Molar Carbon

~~WARNING BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!~~
*This blank is acceptable for this method.
JL 3/15/96*

Sample Run By:

JL STEELE

00000

1219.2
.0451 → *2.7033E4*

WHC-SD-WM-DP-165, REV. 1
TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 4137 SPIKE

Date: 03/11/96

Time: 12:40:48

Sample Size = 1 uL *.0403g*
Dil Factor = 1
Blank ID # =
Blank Value = .6 ug/minute C

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

Reading	Analysis Time	Coulometer	% Difference
1	0.51	1.60	0.00
2	1.01	152.80	98.95
3	1.50	438.30	65.14
4	2.00	637.90	31.29
5	2.50	752.80	15.26
6	3.00	815.90	7.73
7	3.50	854.60	4.53
8	4.00	885.80	3.52
9	4.50	902.10	1.81
10	5.00	917.20	1.65
11	5.50	932.10	1.60
12	6.00	939.90	0.83
13	6.50	947.50	0.80
14	7.00	951.80	0.45
15	7.50	954.00	0.23
16	8.00	955.40	0.15
17	8.50	956.60	0.13
18	9.00	957.50	0.09
19	9.50	958.30	0.08
20	10.00	959.00	0.07
21	10.50	959.70	0.07
22	11.00	960.40	0.07

USER INPUT BLANK VALUE

BLANK VALUE = 6.599305 micrograms carbon

BLANK FACTOR = 6.599305 / 10.99884 = +6.0E-01 ug/min Carbon

SAMPLE RESULTS:

(960.4 - 6.599305) (1)/(1) = +9.538E+02 g/L Carbon
(960.4 - 6.599305) (1)/(1) (12) = +7.948E+01 Molar Carbon

*OK
2/15/96*

Sample Run By:

JL STEELE

00000

$$\frac{960.40}{\left(\frac{719.30}{.0403}\right)(.0403) + 300} = \frac{960.40}{930.16932} \times \frac{360}{103.252}$$

WHC-SD-WM-DP-165, REV. 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT TICTOC REV 2.0

Sample: 4137 SPIKE

Date: 03/11/96

Time: 12:53:18

Sample Size = 1 uL *0403g*
Dil Factor = 1
Blank ID # =
Blank Value = 2.39 ug/minute C

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

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	1.00	0.00
2	1.01	125.30	99.20
3	1.50	311.50	59.78
4	2.00	603.70	48.40
5	2.50	968.20	37.65
6	3.00	1181.90	18.08
7	3.50	1277.90	7.51
8	4.00	1321.00	3.26
9	4.50	1342.90	1.63
10	5.00	1354.00	0.82
11	5.50	1360.70	0.49
12	6.00	1365.40	0.34
13	6.50	1368.90	0.26
14	7.00	1371.50	0.19
15	7.50	1373.70	0.16
16	8.00	1375.60	0.14
17	8.50	1377.30	0.12
18	9.00	1378.70	0.10
19	9.50	1379.90	0.09
20	10.00	1381.00	0.08
21	10.50	1382.00	0.07
22	11.00	1382.90	0.07

USER INPUT BLANK VALUE

BLANK VALUE = 26.28723 micrograms carbon

BLANK FACTOR = 26.28723 / 10.99884 = +2.4E+00 ug/min Carbon

SAMPLE RESULTS:

(1382.9 - 26.28927) (1)/(1) = +1.3566E+03 g/L Carbon
(1382.9 - 26.28927) (1)/(1) (12) = +1.1305E+02 Molar Carbon

~~WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!~~
This blank is acceptable for this method, see 3/15/96

0403g

Sample Run By:

JL STEELE

00000

$$\frac{1382.90}{\left(\frac{1221.20}{10400}\right)(0.0403) + 300} = \frac{1382.90}{1349.8772} = 100.95\%$$

WHC-SD-WM-DP-165, REV 1

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S95T004139

Date: 03/11/96

Time: 13:09:36

Sample Size = 1 uL *.0375g*
Dil Factor = 1
Blank ID # =
Blank Value = .6 ug/minute C

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

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	2.80	0.00
2	1.01	145.00	98.07
3	1.51	368.60	60.66
4	2.01	479.10	23.06
5	2.51	533.60	10.21
6	3.01	573.50	6.96
7	3.51	605.10	5.22
8	4.00	621.50	2.64
9	4.50	627.60	0.97
10	5.00	630.60	0.48
11	5.50	632.50	0.30
12	6.00	633.70	0.19
13	6.50	634.70	0.16
14	7.00	635.80	0.17
15	7.50	636.80	0.16
16	8.00	637.60	0.13
17	8.50	638.30	0.11
18	9.00	638.90	0.09
19	9.50	639.50	0.09
20	10.00	640.10	0.09
21	10.50	640.60	0.08
22	11.00	641.10	0.08

USER INPUT BLANK VALUE

BLANK VALUE = 6.599305 micrograms carbon

BLANK FACTOR = 6.599305 / 10.99884 =

+6.0E-01

ug/min Carbon

SAMPLE RESULTS:

(641.1 - 6.601502) (1)/(1) =
(641.1 - 6.601502) (1)/(1) (12) =

+6.345E+02 g/L Carbon
+5.287E+01 Molar Carbon

Sample Run By:

JL STEELE

00000

$$\frac{6.345}{.0375} = 1.6920E4$$

362

WHC-SD-WM-DP-165, REV. 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S95TOO4139

Date: 03/11/96

Time: 13:22:11

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.39 ug/minute C

.0375g

Analyst : JL STEELE

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.80	0.00
2	1.01	93.60	99.15
3	1.50	229.60	59.23
4	2.00	393.20	41.61
5	2.50	551.60	28.72
6	3.01	646.80	14.72
7	3.51	697.00	7.20
8	4.00	722.20	3.49
9	4.50	734.50	1.67
10	5.00	741.20	0.90
11	5.50	745.90	0.63
12	6.00	749.30	0.45
13	6.50	752.00	0.36
14	7.00	754.20	0.29
15	7.50	755.90	0.22
16	8.00	757.50	0.21
17	8.50	758.80	0.17
18	9.00	760.00	0.16
19	9.50	761.00	0.13
20	10.00	762.00	0.13
21	10.50	762.80	0.10
22	11.00	763.60	0.10

USER INPUT BLANK VALUE

BLANK VALUE = 26.28723 micrograms carbon

BLANK FACTOR = 26.28723 / 10.99884 = +2.4E+00 ug/min Carbon

SAMPLE RESULTS:

(763.6 - 26.28708) (1)/(1) = +7.373E+02 g/L Carbon
(763.6 - 26.28708) (1)/(1) (12) = +6.144E+01 Molar Carbon

~~WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!~~
This blank is acceptable for this method 3/15/96

Sample Run By:

JL STEELE

00000

737.3
.0375 *- 1.9661E4*

363

WHC-SD-WM-DP-165, REV. I

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 4139 DUP

Date: 03/11/96

Time: 13:38:00

Sample Size = 1 uL *.0587g*
Dil Factor = 1
Blank ID # =
Blank Value = .6 ug/minute C

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

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	2.00	0.00
2	1.01	44.00	95.45
3	1.50	86.70	49.25
4	2.00	118.20	26.65
5	2.50	179.10	34.00
6	3.00	272.50	34.28
7	3.50	455.70	40.20
8	4.00	688.20	33.78
9	4.50	875.90	21.43
10	5.00	948.90	7.69
11	5.50	980.70	3.24
12	6.00	992.50	1.19
13	6.50	997.00	0.45
14	7.00	999.60	0.26
15	7.50	1001.50	0.19
16	8.00	1003.00	0.15
17	8.50	1004.40	0.14
18	9.00	1005.70	0.13
19	9.50	1006.80	0.11
20	10.00	1007.80	0.10
21	10.50	1008.60	0.08
22	11.00	1009.30	0.07

USER INPUT BLANK VALUE

BLANK VALUE = 6.599305 micrograms carbon
BLANK FACTOR = 6.599305 / 10.99884 =

+6.0E-01 ug/min Carbon

SAMPLE RESULTS:

(1009.3 - 6.599927) (1)/(1) = +1.0027E+03 g/L Carbon
(1009.3 - 6.599927) (1)/(1) (12) = +8.3558E+01 Molar Carbon

Sample Run By:

JL STEELE

00000

$$\frac{1002.7}{.0587} = 1.7082 \times 10^4$$

WHC-SD-WM-DP-165, REV. 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 4139 DUP

Date: 03/11/96

Time: 13:51:13

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.39 ug/minute C

Analyst : JL STEELE

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.80	0.00
2	1.01	103.80	99.23
3	1.51	318.10	67.37
4	2.00	510.60	37.70
5	2.50	815.90	37.42
6	3.00	1061.70	23.15
7	3.50	1195.90	11.22
8	4.00	1262.20	5.25
9	4.50	1298.90	2.83
10	5.00	1317.10	1.38
11	5.50	1326.60	0.72
12	6.00	1333.00	0.48
13	6.50	1337.70	0.35
14	7.00	1341.20	0.26
15	7.50	1344.00	0.21
16	8.00	1346.40	0.18
17	8.50	1348.30	0.14
18	9.00	1350.00	0.13
19	9.50	1351.50	0.11
20	10.00	1352.70	0.09
21	10.50	1353.90	0.09
22	11.00	1354.90	0.07

USER INPUT BLANK VALUE

BLANK VALUE = 26.28723 micrograms carbon

BLANK FACTOR = 26.28723 / 10.99884 = +2.4E+00 ug/min Carbon

SAMPLE RESULTS:

(1354.9 - 26.28927) (1)/(1) = +1.3286E+03 g/L Carbon
(1354.9 - 26.28927) (1)/(1) (12) = +1.1072E+02 Molar Carbon

~~WARNING BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!~~
This blank is acceptable for this method 202 3/15/96.

Sample Run By:

JL STEELE

00000

$\frac{1328.4}{.0587} = 2.2634 \times 10^4$

365

LABCORE Completed Worklist Report for Worklist# 4997

Analyst: slh

Instrument: TIC01

Book# 17N12F

Method: LA-622-102 Rev/Mod C-D

WHC-SD-WM-DP-165, REV. 1

Worklist Comment: TIC AN-102

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK		0	TIC-01	LIQUID	1	3.00E-1	0.300 ug/mL	
2 STD		0	TIC-01	LIQUID	6.02E+02	5.87E+2	97.510 % Recovery	
3 SAMPLE	S95T003867	0	TIC-01	LIQUID	N/A	1.40E+04	20.000 ug/mL	
4 DUP	S95T003867	0	TIC-01	LIQUID	1.40E+4	1.39E+4	0.720 RPD	
5 SPK	S95T003867	0	TIC-01	LIQUID	6.02E+02	8.12E+02	135.880 % Recovery	
6 SAMPLE	S95T003868	0	TIC-01	LIQUID	N/A	1.39E+04	20.000 ug/mL	
7 DUP	S95T003868	0	TIC-01	LIQUID	1.39E+4	1.40E+4	0.720 RPD	
8 SAMPLE	S95T003869	0	TIC-01	LIQUID	N/A	1.39E+04	20.000 ug/mL	
9 DUP	S95T003869	0	TIC-01	LIQUID	1.39E+4	1.40E+4	0.720 RPD	
10 SAMPLE	S95T003962	0	TIC-01	LIQUID	N/A	5.00E+00	5.000 ug/mL	
11 DUP	S95T003962	0	TIC-01	LIQUID	<5.00E+0	<5.00E+0	RPD	

Final page for worklist# 4997

Analyst Signature

Date

Analyst Signature

Date

H. Anastos
Reviewer Signature

2-9-96
Date

Samples 3867, 3868, and 3869

These
Batch 2-15-96 will be rejected. Samples should be
diluted and reran. Hsa

LABCORE Data Entry Template for Worklist#

4997

Analyst: SLH Instrument: TIC01 Book # 17N12-F

Method: LA-622-102 Rev/Mod C.O.

WHC-SD-WM-DP-165, REV. 1

Worklist Comment: TIC AN-102

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK				TIC-01	LIQUID			N/A	ug/mL
		2	STD				TIC-01	LIQUID			N/A	ug/mL
95000222	AN-102 GRAB	3	SAMPLE	S95T003867	0		TIC-01	LIQUID	N/A			ug/mL
95000222	AN-102 GRAB	4	DUP	S95T003867	0		TIC-01	LIQUID			N/A	ug/mL
95000222	AN-102 GRAB	5	SPK	S95T003867	0		TIC-01	LIQUID			N/A	ug/mL
95000222	AN-102 GRAB	6	SAMPLE	S95T003868	0		TIC-01	LIQUID	N/A			ug/mL
95000222	AN-102 GRAB	7	DUP	S95T003868	0		TIC-01	LIQUID			N/A	ug/mL
95000222	AN-102 GRAB	8	SAMPLE	S95T003869	0		TIC-01	LIQUID	N/A			ug/mL
95000222	AN-102 GRAB	9	DUP	S95T003869	0		TIC-01	LIQUID			N/A	ug/mL
95000222	AN-102 GRAB	10	SAMPLE	S95T003962	0		TIC-01	LIQUID	N/A			ug/mL
95000222	AN-102 GRAB	11	DUP	S95T003962	0		TIC-01	LIQUID			N/A	ug/mL

Final page for worklist #

4997

Janice Alford Boettch
Analyst Signature Date 1-31-96 SLH
2-1-96

Shethy Anasta 2-9-96
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.

WORKLIST # 4997
ANALYST SIGNATURE
LA-34405 (C-0)
6/22

ANALYSIS DATE
2-1-98

ANALYSIS TIME
1330

INSTRUMENT CODE

Schubert

TRIPPLICATE

SAMPLE STANDARD

DUPLICATE BASELINE

SAMPLE STANDARD

DUPLICATE BASELINE

TRIPPLICATE

SAMPLE STANDARD

DUPLICATE BASELINE

SAMPLE STANDARD

TRIPPLICATE

SAMPLE # = 515703869 STD # =

Amount of SAMPLE Used (mL)
Volume H2SO4 Added to SAMPLE (mL)
Volume INJECTED (mL)
Was Sample Dilution Used for SPIKE? Y or N
Amount SPIKE Standard Added (mL)
Volume H2SO4 Added to SAMPLE + SPIKE (mL)
Final Coulometer Reading in μ g Carbon (Optional)

0.50

0.50

0.50

0.50

0.50

0.50

0.50

0.50

0.50

0.50

0.50

SAMPLE # = 515703862 STD # =

Amount of SAMPLE Used (mL)
Volume H2SO4 Added to SAMPLE (mL)
Volume INJECTED (mL)
Was Sample Dilution Used for SPIKE? Y or N
Amount SPIKE Standard Added (mL)
Volume H2SO4 Added to SAMPLE + SPIKE (mL)
Final Coulometer Reading in μ g Carbon (Optional)

0.20

0.20

0.20

0.20

0.20

0.20

0.20

0.20

0.20

0.20

0.20

SAMPLE # = 515703862 STD # =

Amount of SAMPLE Used (mL)
Volume H2SO4 Added to SAMPLE (mL)
Volume INJECTED (mL)
Was Sample Dilution Used for SPIKE? Y or N
Amount SPIKE Standard Added (mL)
Volume H2SO4 Added to SAMPLE + SPIKE (mL)
Final Coulometer Reading in μ g Carbon (Optional)

0.20

0.20

0.20

0.20

0.20

0.20

0.20

0.20

0.20

0.20

0.20

SAMPLE # = 515703862 STD # =

Amount of SAMPLE Used (mL)
Volume H2SO4 Added to SAMPLE (mL)
Volume INJECTED (mL)
Was Sample Dilution Used for SPIKE? Y or N
Amount SPIKE Standard Added (mL)
Volume H2SO4 Added to SAMPLE + SPIKE (mL)
Final Coulometer Reading in μ g Carbon (Optional)

0.20

0.20

0.20

0.20

0.20

0.20

0.20

0.20

0.20

0.20

0.20

WORKBOOK PAGE: BLANK1

TIC : LA-622-102 (C-0)

LIQUIDS

		BLNK
Sample Volume in mL (SS)		0.200
H2O Volume in mL (VR)		0.000
Volume Injected in mL (VI)		0.200
Dilution Factor (calculated) (DF)		1.000
Digest Dilution Factor (DDF)		1
µg of Carbon in Blank (C1)		4.1
µg of Carbon from Baseline (C2)		3.8
LIQUID		
Method Number		
96000468	µg of Carbon = C1-C2	
Reactor		
0	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI	
Sample Prep		
N/A		
Sample #		
BLANK		
Instrument Code		
TIC01		
Prepared By		
HLA		
Chemist		
HLA		
Analyst		
SHB		
Date Complete		
02/07/96		
Analysis Date		
02/01/96		
Analysis Time	Method Detection Limit in µg/mL	5.00E+00
01:30 PM		
Sample Point	µg of Carbon	3.00E-01

Data Entered By:	HLA	Date:	02/07/96
Signature of Chemist:	<i>Heather Anasto</i>	Date:	2-9-96

BLANK WB1 REV 1.0

622102ML

369

TIC : LA-622-102 (C-0)

LIQUIDS

		STD
Type	Sample Volume in mL (SS)	0.200
STD	H2O Volume in mL (VR)	0.000
Volume	Volume Injected in mL (VI)	0.200
4997	Dilution Factor (calculated) (DF)	1.000
Digest Code	Digest Dilution Factor (DDF)	1
TIC-01	µg of Carbon Found (C1)	121.1
Blank	µg of Carbon from Baseline (C2)	3.8
LIQUID	Standard Book Number	17N12F
Batch Number	Standard Value (µg/ml)	602
96000468		
Ream		
0	$\mu\text{g of Carbon/mL} = (C1 - C2) * DF * DDF / VI$	
Sample Prep		
N/A	Method Detection Limit (µg/mL) = $1 \mu\text{g C} * DF * DDF / VI$	
Sample #		
17N12F		
Instrument Code		
TIC01		
Prepared By		
HLA		
Chemist		
HLA		
Analyst		
SHB		
Date Complete		
02/07/96		
Analysis Date		
02/01/96		
Analysis Time	Method Detection Limit in µg/mL	5.00E+00
01:30 PM	QC Actual in µg/mL	6.02E+02
Sample Point	QC Found in µg/mL	5.86E+02
	Percent Standard Recovery	97.4

Data Entered By:	HLA	Date:	02/07/96
Signature of Chemist:	<i>H. Anastro</i>	Date:	2/9/96

TIC : LA-622-102 (C-0)

LIQUIDS

		SAMPLE
Sample Type	Sample Volume in mL (SS)	0.200
SAMPLE	H2O Volume in mL (VR)	0.000
Work Unit	Volume Injected in mL (VI)	0.200
4997	Dilution Factor (calculated) (DF)	1.000
Test Code	Digest Dilution Factor (DDF)	1
TIC-01	µg of Carbon in Sample (C1)	4.1
Matrix	µg of Carbon from Baseline (C2)	3.8
LIQUID		
Batch Number		
96000468		
Rerun	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)	
0		
Sample Prep	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S95T003962		
Instrument Code		
TIC01		
Prepared By		
HLA		
Chemist		
HLA		
Analyst		
SHB		
Date Complete		
02/07/96		
Analysis Date	NOTE: Reported Result is Below Detection Level.	
02/01/96		
Analysis Time	Method Detection Limit in µg/mL	5.00E+00
01:30 PM		
Sample Point	µg of Carbon/mL	< 5.00E+00

Data Entered By:	HLA	Date:	02/07/96
Signature of Chemist:	<i>H. Anas</i>	Date:	2/9/96

SAMPLE.WB1 REV 1.0

622102ML

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WORKBOOK PAGE: DUP11

TIC : LA-622-102 (C-0)

LIQUIDS

		DUP
Sample Volume in mL (SS)		0.200
H2O Volume in mL (VR)		0.000
Volume Injected in mL (VI)		0.200
Dilution Factor (calculated) (DF)		1.000
Digest Dilution Factor (DDF)		1
µg of Carbon in Sample (C1)		3.4
µg of Carbon from Baseline (C2)		3.8
Sample Result		5.00E+00
Batch Number		
96000468		
Formula	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)	
0		
Sample Prep	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI	
N/A		
Sample #	RPD (of Sample and Dup Results) = Difference / Average	
S95T003962		
Instrument Code		
TIC01		
Prepared By		
HLA		
Chemist		
HLA		
Analyst		
SHB		
Date Complete		
02/07/96		
Analysis Date		
02/01/96		
Analysis Time	Method Detection Limit in µg/mL	5.00E+00
01:30 PM		
Sample Point	µg of Carbon/mL	< 5.00E+00
	RPD (of Sam and Dup Results)	0.0000

NOTE: Reported Result is Below Detection Level.

Data Entered By:	HLA	Date:	02/07/96
Signature of Chemist:	<i>H. Anastn</i>	Date:	2/9/96

SAMPLE.WB1 REV 1.0

622102ML

372

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

WHC-SD-WM-DP-165, REV. /

Sample: BLK Date: 02/01/96 Time: 06:53:42

Sample Size = 200 uL

Analyst : SL HOOD

Dil Factor = 1

Min Readings = 14

Blank ID # = BLK

Max Readings = 14

Blank Value = N/A

% Difference = 10

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

1	0.51	0.30	0.00
2	1.01	0.50	40.00
3	1.51	0.70	28.57
4	2.01	1.10	36.36
5	2.51	1.50	26.67
6	3.01	1.70	11.76
7	3.51	1.90	10.53
8	4.01	2.20	13.64
9	4.50	2.50	12.00
10	5.00	2.70	7.41
11	5.51	3.00	10.00
12	6.00	3.30	9.09
13	6.50	3.50	5.71
14	7.00	3.80	7.89

BLANK VALUE = 3.8 micrograms carbon

BLANK FACTOR = $3.8 / 7.004852 = +5.4E-01$ ug/min Carbon

Sample Run By:

SL HOOD

00000

Sandra Hood Bootright 2-1-96

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 373 TO 377

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: STD Date: 02/01/96 Time: 07:03:05

Sample Size = 200 uL Analyst : SL HOOD
Dil Factor = 1 Min Readings = 14
Blank ID # = BLK Max Readings = 14
Blank Value = .5424811 ug/minute C % Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.60	0.00
2	1.01	16.10	96.27
3	1.51	44.50	63.82
4	2.01	69.30	35.79
5	2.51	88.10	21.34
6	3.01	100.20	12.08
7	3.51	108.00	7.22
8	4.01	113.00	4.42
9	4.50	116.20	2.75
10	5.00	118.10	1.61
11	5.51	119.30	1.01
12	6.01	120.30	0.83
13	6.51	120.70	0.33
14	7.00	121.10	0.33

BLANK VALUE = 3.8 micrograms carbon
BLANK FACTOR = $3.8 / 7.004852 = +5.4E-01$ ug/min Carbon

SAMPLE RESULTS:
 $(121.1 - 3.799984) / (1) / (200) = +5.865E-01$ g/L Carbon
 $(121.1 - 3.799984) / (1) / (200) / (12) = +4.888E-02$ Molar Carbon

Sample Run By: SL HOOD 00000

$$\frac{121.1 - 3.8}{12} = 586.5$$

374

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: B-2 Date: 02/01/96 Time: 08:41:32

WHC-SD-WM-DP-165, REV. 1

Sample Size = 200 uL Analyst : SL HOOD
 Dil Factor = 1 Min Readings = 14
 Blank ID # = BLK Max Readings = 14
 Blank Value = .5424811 ug/minute C % Difference = 10

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

1	0.51	0.20	0.00
2	1.01	0.50	60.00
3	1.50	1.00	50.00
4	2.00	1.20	16.67
5	2.50	1.60	25.00
6	3.00	1.90	15.79
7	3.51	2.20	13.64
8	4.00	2.40	8.33
9	4.50	2.70	11.11
10	5.00	3.00	10.00
11	5.50	3.20	6.25
12	6.00	3.50	8.57
13	6.50	3.70	5.41
14	7.00	4.10	9.76

BLANK VALUE = 3.8 micrograms carbon

BLANK FACTOR = $3.8 / 7.004852 = +5.4E-01$ ug/min Carbon

SAMPLE RESULTS:

$(4.1 - 3.79899) / (1) / (200) = < 5.00 \text{ E-3 g/L Carbon}$

$(4.1 - 3.79899) / (1) / (200) / (12) = < 4.17 \text{ E-4 Molar Carbon}$

Sample Run By:

SL HOOD

00000

$$|4.1 - 3.8| = 0.3$$

375

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T03962

Date: 02/01/96

Time: 10:51:59

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BLK

Blank Value = .5424811 ug/minute C

Analyst : SL HOOD

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.20	0.00
2	1.01	0.60	66.67
3	1.51	1.10	45.45
4	2.00	1.60	31.25
5	2.50	1.90	15.79
6	3.00	2.30	17.39
7	3.51	2.50	8.00
8	4.01	2.80	10.71
9	4.50	3.00	6.67
10	5.00	3.20	6.25
11	5.50	3.40	5.88
12	6.00	3.70	8.11
13	6.50	3.80	2.63
14	7.00	4.10	7.32

BLANK VALUE = 3.8 micrograms carbon

BLANK FACTOR = 3.8 / 7.004852 =

+5.4E-01 ug/min Carbon

SAMPLE RESULTS:

(4.1 - 3.79899) (1) / (200) =

< 5.00 E-3 g/L Carbon

(4.1 - 3.79899) (1) / (200) (12) =

< 4.17 E-4 Molar Carbon

Sample Run By:

SL HOOD

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. I

Sample: S95T03962 DUP Date: 02/01/96 Time: 12:55:17

Sample Size = 200 uL	Analyst : SL HOOD
Dil Factor = 1	Min Readings = 14
Blank ID # = BLK	Max Readings = 14
Blank Value = .5424811 ug/minute C	% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	0.50	80.00
3	1.51	1.00	50.00
4	2.01	1.40	28.57
5	2.51	1.70	17.65
6	3.01	2.00	15.00
7	3.51	2.20	9.09
8	4.01	2.40	8.33
9	4.51	2.50	4.00
10	5.01	2.70	7.41
11	5.51	2.90	6.90
12	6.01	3.00	3.33
13	6.51	3.20	6.25
14	7.00	3.40	5.88

BLANK VALUE = 3.8 micrograms carbon

BLANK FACTOR = 3.8 / 7.004852 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:

(3.4 - 3.799984) (1) / (200) =	< 5.00 E-3 g/L Carbon
(3.4 - 3.799984) (1) / (200) (12) =	< 4.17 E-4 Molar Carbon

Sample Run By: _____

SL HOOD

00000

LABCORE Data Entry Template for Worklist#

5752

Analyst: AB8 Instrument: TIC01 Book # 17N12-F

Method: LA-622-102 Rev/Mod C 0

Worklist Comment: AN102 TIC-01. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK			TIC-01	LIQUID	<u>1</u>	<u>0.3</u>	<u>N/A</u>	ug/mL
		2 STD			TIC-01	LIQUID	<u>601</u> <u>602</u> <u>2-27-96</u>	<u>594</u>	<u>N/A</u>	ug/mL
95000222	AN-102 GRAB	3 SAMPLE	S95T003867	0	TIC-01	LIQUID	<u>N/A</u>	<u>1.22e4</u>	<u>1.05e2</u>	ug/mL
95000222	AN-102 GRAB	4 DUP	S95T003867	0	TIC-01	LIQUID	<u>1.22e4</u>	<u>1.25e4</u>	<u>N/A</u>	ug/mL
95000222	AN-102 GRAB	5 SPK	S95T003867	0	TIC-01	LIQUID	<u>100</u>	<u>98.1</u>	<u>N/A</u>	ug/mL
95000222	AN-102 GRAB	6 SAMPLE	S95T003868	0	TIC-01	LIQUID	<u>N/A</u>	<u>1.31e4</u>	<u>1.05e2</u>	ug/mL
95000222	AN-102 GRAB	7 DUP	S95T003868	0	TIC-01	LIQUID	<u>1.31e4</u>	<u>1.35e4</u>	<u>N/A</u>	ug/mL
95000222	AN-102 GRAB	8 SAMPLE	S95T003869	0	TIC-01	LIQUID	<u>N/A</u>	<u>1.30e4</u>	<u>1.05e2</u>	ug/mL
95000222	AN-102 GRAB	9 DUP	S95T003869	0	TIC-01	LIQUID	<u>1.30e4</u>	<u>1.34e4</u>	<u>N/A</u>	ug/mL

Final page for worklist #

5752

AB8
Analyst Signature Date 2-20-96

AB8
Analyst Signature Date 2-27-96

Approved by
H. Anestis 2-29-96

Data Entry Comments:

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

378

TIC: LA-622-102 (C-0)

WORKLIST
#ANALYST
SIGNATUREANALYSIS
DATEANALYSIS
TIMEINSTRUMENT
CODE

5752

Jb Jb

2-28-96

☐ SAMPLE
STANDARD☐ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # =

STD # =

Volume SAMPLE Used (mL)

Volume H₂O Added to SAMPLE

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H₂O Added to SAMPLE + SPIKE (mL)Final Coulometer Reading in μg Carbon (Optional)☒ SAMPLE
STANDARD☐ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # =

STD # = 17N12-F

Volume SAMPLE Used (mL)

Volume H₂O Added to SAMPLE

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H₂O Added to SAMPLE + SPIKE (mL)Final Coulometer Reading in μg Carbon (Optional)☒ SAMPLE
STANDARD☐ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # = 5957003867

STD # =

Volume SAMPLE Used (mL)

Volume H₂O Added to SAMPLE

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H₂O Added to SAMPLE + SPIKE (mL)Final Coulometer Reading in μg Carbon (Optional)☐ SAMPLE
STANDARD☒ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # = 5957003867

STD # =

Volume SAMPLE Used (mL)

Volume H₂O Added to SAMPLE

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H₂O Added to SAMPLE + SPIKE (mL)Final Coulometer Reading in μg Carbon (Optional)

.050 - 1.0 - .200 inject

DF 21

☐ SAMPLE
STANDARD☐ DUPLICATE
BASELINE☒ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # = 5957003867

STD # =

Volume SAMPLE Used (mL)

Volume H₂O Added to SAMPLE

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H₂O Added to SAMPLE + SPIKE (mL)Final Coulometer Reading in μg Carbon (Optional)☒ SAMPLE
STANDARD☐ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # = 5957003868

STD # =

Volume SAMPLE Used (mL)

Volume H₂O Added to SAMPLE

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H₂O Added to SAMPLE + SPIKE (mL)Final Coulometer Reading in μg Carbon (Optional)☐ SAMPLE
STANDARD☒ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # = 5957003868

STD # =

Volume SAMPLE Used (mL)

Volume H₂O Added to SAMPLE

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H₂O Added to SAMPLE + SPIKE (mL)Final Coulometer Reading in μg Carbon (Optional)☒ SAMPLE
STANDARD☐ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # = 5957003869

STD # =

Volume SAMPLE Used (mL)

Volume H₂O Added to SAMPLE

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H₂O Added to SAMPLE + SPIKE (mL)Final Coulometer Reading in μg Carbon (Optional)Final Coulometer Reading in μg Carbon (Optional)Final Coulometer Reading in μg Carbon (Optional)Final Coulometer Reading in μg Carbon (Optional)Final Coulometer Reading in μg Carbon (Optional)SAMPLE # = 5957003867 spk STD # =
Volume SAMPLE Used (mL) .200
Volume H₂O Added to SAMPLE .200
Volume INJECTED (mL) .200
Was Sample Dilution Used for SPIKE? Y or N
Amount SPIKE Standard Added (mL)
Volume H₂O Added to SAMPLE + SPIKE (mL)
Final Coulometer Reading in μg Carbon (Optional)
DF 21
0.050 - 1.0 - .200 injectSAMPLE # = 5957003868 STD # =
Volume SAMPLE Used (mL) .050 ml
Volume H₂O Added to SAMPLE 1.0 ml H₂O
Volume INJECTED (mL) .200 ml
Was Sample Dilution Used for SPIKE? Y or N
Amount SPIKE Standard Added (mL)
Volume H₂O Added to SAMPLE + SPIKE (mL)
Final Coulometer Reading in μg Carbon (Optional)
DF 21
0.050 - 1.0 - .200 injectSAMPLE # = 5957003868 STD # =
Volume SAMPLE Used (mL) .050 ml
Volume H₂O Added to SAMPLE 1.0 ml
Volume INJECTED (mL) .200 ml
Was Sample Dilution Used for SPIKE? Y or N
Amount SPIKE Standard Added (mL)
Volume H₂O Added to SAMPLE + SPIKE (mL)
Final Coulometer Reading in μg Carbon (Optional)
DF 21
0.050 - 1.0 - .200 injectSAMPLE # = 5957003869 STD # =
Volume SAMPLE Used (mL) .050 ml
Volume H₂O Added to SAMPLE 1.0 ml
Volume INJECTED (mL) .200 ml
Was Sample Dilution Used for SPIKE? Y or N
Amount SPIKE Standard Added (mL)
Volume H₂O Added to SAMPLE + SPIKE (mL)
Final Coulometer Reading in μg Carbon (Optional)
DF 21
0.050 - 1.0 - .200 inject

WHC-SD-WM-DP-165, REV.1

TIC: LA-622-102 (C-0)

WORKLIST

#

ANALYST

SIGNATURE

ANALYSIS

DATE

ANALYSIS

TIME

INSTRUMENT

CODE

5752

K. J. Buffa

2-20-96

☐ SAMPLE
STANDARD☒ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # = 595 T003869 Dup STD # =

Volume SAMPLE Used (mL)

.050 mL

DF 21

Volume H2O Added to SAMPLE

1.0 mL

Volume INJECTED (mL)

.200 mL

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H2O Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in μ g Carbon (Optional)

.050 - 1.0 - .200 inject

☐ SAMPLE
STANDARD☐ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # = STD # =

Volume SAMPLE Used (mL)

Volume H2O Added to SAMPLE

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H2O Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in μ g Carbon (Optional)☐ SAMPLE
STANDARD☐ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

050

SAMPLE # = STD # =

Volume SAMPLE Used (mL)

Volume H2O Added to SAMPLE

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H2O Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in μ g Carbon (Optional)☐ SAMPLE
STANDARD☐ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # = STD # =

Volume SAMPLE Used (mL)

Volume H2O Added to SAMPLE

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H2O Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in μ g Carbon (Optional)☐ SAMPLE
STANDARD☐ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # = STD # =

Volume SAMPLE Used (mL)

Volume H2O Added to SAMPLE

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H2O Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in μ g Carbon (Optional)☐ SAMPLE
STANDARD☐ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # = STD # =

Volume SAMPLE Used (mL)

Volume H2O Added to SAMPLE

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H2O Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in μ g Carbon (Optional)☐ SAMPLE
STANDARD☐ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # = STD # =

Volume SAMPLE Used (mL)

Volume H2O Added to SAMPLE

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H2O Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in μ g Carbon (Optional)☐ SAMPLE
STANDARD☐ DUPLICATE
BASELINE☐ SPIKE
BLANK☐ TRIPLICATE

SAMPLE # = STD # =

Volume SAMPLE Used (mL)

Volume H2O Added to SAMPLE

Volume INJECTED (mL)

Was Sample Dilution Used for SPIKE? Y or N

Amount SPIKE Standard Added (mL)

Volume H2O Added to SAMPLE + SPIKE (mL)

Final Coulometer Reading in μ g Carbon (Optional)

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. I

TIC : LA-622-102 (C-0)

LIQUIDS

		BLANK
Type	Sample Volume in mL (SS)	0.200
BLANK	Dilution Factor (DF)	1.000
Work List	Digest Dilution Factor (DDF)	1.000
5752	µg of Carbon in Sample (C1)	3.3
Test Code	µg of Carbon in Blank (C2)	3
TIC01		
Matrix		0.30
LIQUID	g of Carbon/L =	< 5.00E-03
Sample #		
BLANK	g of Carbon/L =	$\frac{(C1-C2) * DF * DDF}{SS * 1000}$
Instrument Code		
WC16130		
Analyst	µg of Carbon/mL =	g of Carbon/L * 1000000 µg/g / 1000 m
DG GRIFFIN		
Date	Detection Level (µg/mL) =	$\frac{1 \mu g C * DF * DDF}{SS}$
02/20/96		
Time		
06:19 PM		

NOTE: Reported Result is Below Detection Level of Blank and baseline

absolute value of difference	0.30	DETECTION LEVEL in µg/mL 5.00E+00
µg Carbon/mL =	< 5.00E+00	

$3.3 - 3 = 0.3$

Data Entry by: <i>E. J. Light</i>	Date: 02/23/96
Approved by: <i>R. J. Schneider</i>	Date: 2/26/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TIC : LA-622-102 (C-0)

LIQUIDS

		STANDARD
Type	Sample Volume in mL (SS)	0.200
STANDARD	Dilution Factor (DF)	1.000
Work List	Digest Dilution Factor (DDF)	1.000
5752	µg of Carbon in Sample (C1)	121.8
Test Code	µg of Carbon in Blank (C2)	3
TIC01		
Matrix		
LIQUID	g of Carbon/L =	5.94E-01
Sample #	g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$	
17N12F		
Instrument Code	µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m	
WC16130		
Analyst		
DG GRIFFIN		
Date	Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{SS}$	
02/20/96		
Time		
06:19 PM		

µg Carbon/mL = 5.94E+02	DETECTION LEVEL
	In µg/mL 5.00E+00

Data Entry by: <i>RE Griffith</i>	Date: 02/23/96
Approved by: <i>R. W. Schroeder</i>	Date: 2/26/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TIC : LA-622-102 (C-0)		LIQUIDS	Sample
Type	Sample Volume in mL	(SS)	0.200
Sample	Dilution Factor	(DF)	21.000
Work List	Digest Dilution Factor	(DDF)	1.000
5752	µg of Carbon in Sample	(C1)	119.1
Test Code	µg of Carbon in Blank	(C2)	3
TIC-01			
Matrix			
Liquid	g of Carbon/L	=	1.22E+01
Sample #	g of Carbon/L	=	$\frac{(C1-C2) * DF * DDF}{SS * 1000}$
S95T003867			
Instrument Code	µg of Carbon/mL	=	g of Carbon/L * 1000000 µg/g / 1000 m
WC16130			
Analyst			
DG Griffin			
Date	Detection Level (µg/mL)	=	$\frac{1 \mu g C * DF * DDF}{SS}$
02/20/96			
Time			

µg Carbon/mL =	1.22E+04	DETECTION LEVEL
		in µg/mL
		1.05E+02

Data Entry by:	<i>aws</i>	Date:	02/26/96
Approved by:	<i>Al Ornest</i>	Date:	2-29-96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TIC : LA-622-102 (C-0)		LIQUIDS	Duplicate
Type	Sample Volume in mL	(SS)	0.200
Duplicate	Dilution Factor	(DF)	21.000
Work List	Digest Dilution Factor	(DDF)	1.000
5752	µg of Carbon in Sample	(C1)	121.6
Test Code	µg of Carbon in Blank	(C2)	3
TIC-01			
Matrix			
Liquid	g of Carbon/L	=	1.25E+01
Sample #	g of Carbon/L	=	$\frac{(C1-C2) * DF * DDF}{SS * 1000}$
S95T003867			
Instrument Code	µg of Carbon/mL	=	g of Carbon/L * 1000000 µg/g / 1000 m
WC16130			
Analyst			
DG Griffin			
Date	Detection Level (µg/mL)	=	$\frac{1 \mu g C * DF * DDF}{SS}$
02/20/96			
Time			

µg Carbon/mL =	1.25E+04	DETECTION LEVEL
		in µg/mL
		1.05E+02

Data Entry by:	<i>RWS</i>	Date:	02/26/96
Approved by:	<i>Hea</i>	Date:	2-29-96

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

WHC-SD-WM-DP-165, REV. 1

TIC LA 622-102

TOC: LA-344-105

SPIKED SAMPLE

SPIKE

Sample Type	>>>>> Sample Vial Data <<<<<		>>>>> Spiked Vial Data <<<<<	
SPIKE	Sample Volume in mL	0.050	Sample Size in mL (SS)	0.200
Work Order	H2SO4 Volume in mL	1.000	Spike Volume in mL	0.200
5752	Volume Injected in mL	0.200	H2SO4 Volume in mL	0.000
Test Code	µg of Carbon in Sample	119.1	Volume Injected in mL	0.200
TIC01	µg of Carbon in Blank	3	Sample Pre-Spike Dil. Factor (PDF)	21
Matrix			Spike Value (µg/ml)	602
Liquid			µg C in Sample + Spike	120.1
Sample #			µg C in Blank	3

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

$$\begin{aligned} \text{WHERE : } \mu\text{g Carbon Recovered from Spike} &= \\ & [(\mu\text{gC in sample} + \text{spike} - \mu\text{gC in blank}) * (\text{Spike Correction Factor})] \\ & - [(\mu\text{gC sample} - \mu\text{gC blank}) * (\text{Sample Correction Factor}) * (\text{Sample Size Correction Factor}) * (\text{PDF})] \end{aligned}$$

$$\text{Spike Correction Factor} = \frac{\text{Total volume in spiked sample vial (mL)}}{\text{Volume injected (mL)}}$$

$$\text{Sample Correction Factor} = \frac{\text{Total volume in sample vial (mL)}}{\text{Volume injected (mL)}}$$

$$\text{Sample Size Correction Factor} = \frac{\text{Sample size in (mL) in spiked vial}}{\text{Sample size (mL) in sample}}$$

$$\text{Sample Pre-Spike Dilution Factor} = \frac{1}{\text{Dilution of Sample Before Added to Spike Vial}}$$

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

Percent Spike Recovery 98.1%

Data Entry by: RWS Date: 26-Feb-96
 Approved by: Hea Date: 2-29-96

385

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TIC : LA-622-102 (C-0)		LIQUIDS	Sample
Type	Sample Volume in mL	(SS)	0.200
Sample	Dilution Factor	(DF)	21.000
Work List	Digest Dilution Factor	(DDF)	1.000
5752	µg of Carbon in Sample	(C1)	127.9
Test Code	µg of Carbon in Blank	(C2)	3
TIC-01			
Matrix			
Liquid	g of Carbon/L	=	1.31E+01
Sample #	g of Carbon/L	=	$\frac{(C1-C2) * DF * DDF}{SS * 1000}$
S95T003868	µg of Carbon/mL	=	g of Carbon/L * 1000000 µg/g / 1000 m
Instrument Code			
WC16130			
Analyst			
DG Griffin			
Date			
02/20/96	Detection Level (µg/mL)	=	$\frac{1 \mu g C * DF * DDF}{SS}$
Time			

µg Carbon/mL =	1.31E+04	DETECTION LEVEL
		in µg/mL
		1.05E+02

Data Entry by:	<i>RWS</i>	Date:	02/26/96
Approved by:	<i>Al Anastro</i>	Date:	2-29-96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. /

TIC : LA-622-102 (C-0)		LIQUIDS		Duplicate
Type	Sample Volume in mL	(SS)		0.200
Duplicate	Dilution Factor	(DF)		21.000
Work List	Digest Dilution Factor	(DDF)		1.000
5752	µg of Carbon in Sample	(C1)		131.7
Test Code	µg of Carbon in Blank	(C2)		3
TIC-01				
Matrix				
Liquid	g of Carbon/L	=		1.35E+01
Sample #	g of Carbon/L	=	$\frac{(C1-C2) * DF * DDF}{SS * 1000}$	
S95T003868				
Instrument Code	µg of Carbon/mL	=	g of Carbon/L * 1000000 µg/g / 1000 m	
WC16130				
Analyst				
DG Griffin				
Date	Detection Level (µg/mL)	=	$\frac{1 \mu g C * DF * DDF}{SS}$	
02/20/96				
Time				

µg Carbon/mL =	1.35E+04	DETECTION LEVEL
		in µg/mL
		1.05E+02

Data Entry by: <i>RWS</i>	Date: 02/26/96
Approved by: <i>H Annot</i>	Date: 2-29-96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TIC : LA-622-102 (C-0)		LIQUIDS	Sample
Type	Sample Volume in mL	(SS)	0.200
Sample	Dilution Factor	(DF)	21.000
Work List	Digest Dilution Factor	(DDF)	1.000
5752	µg of Carbon in Sample	(C1)	126.7
Test Code	µg of Carbon in Blank	(C2)	3
TIC-01			
Matrix			
Liquid	g of Carbon/L	=	1.30E+01
Sample #	g of Carbon/L	=	$\frac{(C1-C2) * DF * DDF}{SS * 1000}$
S95T003869	µg of Carbon/mL	=	g of Carbon/L * 1000000 µg/g / 1000 m
Instrument Code	Detection Level (µg/mL)	=	$\frac{1 \mu g C * DF * DDF}{SS}$
WC16130			
Analyst			
DG Griffin			
Date			
02/20/96			
Time			

µg Carbon/mL =	1.30E+04	DETECTION LEVEL
		in µg/mL
		1.05E+02

Data Entry by:	<i>DWS</i>	Date:	02/26/96
Approved by:	<i>H. Anestis</i>	Date:	2-29-96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. I

TIC : LA-622-102 (C-0)

LIQUIDS

		Duplicate
Type	Sample Volume in mL (SS)	0.200
Duplicate	Dilution Factor (DF)	21.000
Work List	Digest Dilution Factor (DDF)	1.000
5752	µg of Carbon in Sample (C1)	131
Test Code	µg of Carbon in Blank (C2)	3
TIC-01		
Matrix		
Liquid	g of Carbon/L =	1.34E+01
Sample #	g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$	
S95T003869		
Instrument Code	µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m	
WC16130		
Analyst		
DG Griffin		
Date	Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{SS}$	
02/20/96		
Time		

µg Carbon/mL = 1.34E+04	DETECTION LEVEL
	in µg/mL 1.05E+02

Data Entry by: <i>RWS</i>	Date: 02/26/96
Approved by: <i>H Anast</i>	Date: 2-29-96

<

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>> WHC-SD-WM-DP-165, REV. 1

Sample: BLANK

Date: 02/20/96

Time: 18:19:00

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BLANK

Blank Value = N/A

Analyst : DG GRIFFIN

Min Readings = 14

Max Readings = 14

% Difference = 10

==	Reading	====	Analysis Time	====	Coulometer	====	% Difference	==
	1		0.51		0.10		0.00	
	2		1.01		0.30		66.67	
	3		1.51		0.60		50.00	
	4		2.01		0.90		33.33	
	5		2.51		1.20		25.00	
	6		3.01		1.40		14.29	
	7		3.51		1.60		12.50	
	8		4.01		1.80		11.11	
	9		4.51		2.00		10.00	
	10		5.01		2.20		9.09	
	11		5.51		2.40		8.33	
	12		6.01		2.60		7.69	
	13		6.51		2.80		7.14	
	14		7.00		3.00		6.67	

BLANK VALUE = 3 micrograms carbon

BLANK FACTOR = 3 / 7.004761 =

+4.3E-01

ug/min Carbon

Sample Run By:

DG GRIFFIN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0 WHC-SD-WM-DP-165, REV. 1

Sample: BLK Date: 02/20/96 Time: 18:38:49

Sample Size = 200 uL Analyst : DG GRIFFIN
Dil Factor = 1 Min Readings = 14
Blank ID # = BLANK Max Readings = 14
Blank Value = .4282801 ug/minute C % Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	0.40	50.00
3	1.51	0.70	42.86
4	2.01	1.10	36.36
5	2.51	1.30	15.38
6	3.01	1.50	13.33
7	3.51	1.70	11.76
8	4.00	2.00	15.00
9	4.50	2.20	9.09
10	5.00	2.40	8.33
11	5.50	2.60	7.69
12	6.00	2.80	7.14
13	6.50	3.00	6.67
14	7.00	3.30	9.09

BLANK VALUE = .3 micrograms carbon
BLANK FACTOR = 3 / 7.004761 = +4.3E-01 ug/min Carbon

SAMPLE RESULTS:
(3.3 - 3) (1) / (200) = < 5.00 E-3 g/L Carbon
(3.3 - 3) (1) / (200) (12) = < 4.17 E-4 Molar Carbon

Sample Run By: DG GRIFFIN 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. J

Sample: LMCS STD.

Date: 02/20/96

Time: 18:50:23

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BLANK

Blank Value = .4282801 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.40	0.00
2	1.01	26.60	98.50
3	1.50	69.00	61.45
4	2.00	95.60	27.82
5	2.50	109.00	12.29
6	3.01	115.10	5.30
7	3.50	117.70	2.21
8	4.00	118.90	1.01
9	4.50	119.60	0.59
10	5.00	120.10	0.42
11	5.50	120.60	0.41
12	6.00	121.00	0.33
13	6.50	121.50	0.41
14	7.00	121.80	0.25

BLANK VALUE = 3 micrograms carbon

BLANK FACTOR = 3 / 7.004761 =

+4.3E-01 ug/min Carbon

SAMPLE RESULTS:

(121.8 - 2.999634) (1) / (200) =

+5.940E-01 g/L Carbon

(121.8 - 2.999634) (1) / (200) (12) =

+4.950E-02 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. I

Sample: S95T003867

Date: 02/20/96

Time: 20:32:07

Sample Size = 200 uL

Dil Factor = 21

Blank ID # = BLANK

Blank Value = .4282801 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	0.60	0.00
2	1.01	37.80	98.41
3	1.50	78.60	51.91
4	2.00	99.80	21.24
5	2.50	109.40	8.78
6	3.00	113.60	3.70
7	3.50	115.60	1.73
8	4.00	116.50	0.77
9	4.50	117.20	0.60
10	5.00	117.70	0.42
11	5.50	118.00	0.25
12	6.00	118.50	0.42
13	6.50	118.70	0.17
14	7.00	119.10	0.34

BLANK VALUE = 3 micrograms carbon

BLANK FACTOR = 3 / 7.004761 =

+4.3E-01 ug/min Carbon

SAMPLE RESULTS:

(119.1 - 2.999216) (21)/(200) =

+1.219E+01 g/L Carbon

(119.1 - 2.999216) (21)/(200) (12) =

+1.016E+00 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. I

Sample: S95T003867DUP Date: 02/20/96 Time: 20:41:33

Sample Size = 200 uL Analyst : DG GRIFFIN
Dil Factor = 21 Min Readings = 14
Blank ID # = BLANK Max Readings = 14
Blank Value = .4282801 ug/minute C % Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference
1	0.51	0.80	0.00
2	1.01	40.20	98.01
3	1.51	81.20	50.49
4	2.01	102.20	20.55
5	2.51	112.10	8.83
6	3.01	116.40	3.69
7	3.51	118.30	1.61
8	4.01	119.40	0.92
9	4.50	119.80	0.33
10	5.00	120.20	0.33
11	5.50	120.60	0.33
12	6.00	120.90	0.25
13	6.51	121.30	0.33
14	7.00	121.60	0.25

BLANK VALUE = 3 micrograms carbon
BLANK FACTOR = 3 / 7.004761 =

+4.3E-01 ug/min Carbon

SAMPLE RESULTS:

(121.6 - 3.000052) (21) / (200) = +1.245E+01 g/L Carbon
(121.6 - 3.000052) (21) / (200) (12) = +1.038E+00 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV ~~W~~HC-SD-WM-DP-165, REV. I

Sample: S95T003867SPK Date: 02/20/96 Time: 20:58:09

Sample Size = 200 uL	Analyst : DG GRIFFIN
Dil Factor = 42	Min Readings = 14
Blank ID # = BLANK	Max Readings = 14
Blank Value = .4282801 ug/minute C	% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.70	0.00
2	1.01	37.00	98.11
3	1.51	77.50	52.26
4	2.01	99.10	21.80
5	2.51	109.70	9.66
6	3.01	114.50	4.19
7	3.51	116.80	1.97
8	4.01	117.70	0.76
9	4.51	118.30	0.51
10	5.01	118.80	0.42
11	5.51	119.20	0.34
12	6.01	119.60	0.33
13	6.51	119.80	0.17
14	7.00	120.10	0.25

BLANK VALUE = 3 micrograms carbon
BLANK FACTOR = 3 / 7.004761 = +4.3E-01 ug/min Carbon

SAMPLE RESULTS:

(120.1 - 3) (42) / (200) =	+2.459E+01 g/L Carbon
(120.1 - 3) (42) / (200) (12) =	+2.049E+00 Molar Carbon

Sample Run By: DG GRIFFIN 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T003868

Date: 02/20/96

Time: 21:12:57

Sample Size = 200 uL

Dil Factor = 21

Blank ID # = BLANK

Blank Value = .4282801 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	1.10	0.00
2	1.01	45.90	97.60
3	1.51	87.60	47.60
4	2.01	108.00	18.89
5	2.51	117.70	8.24
6	3.01	122.20	3.68
7	3.51	124.30	1.69
8	4.01	125.20	0.72
9	4.51	125.90	0.56
10	5.01	126.40	0.40
11	5.51	126.90	0.39
12	6.01	127.20	0.24
13	6.51	127.50	0.24
14	7.00	127.90	0.31

BLANK VALUE = 3 micrograms carbon

BLANK FACTOR = 3 / 7.004761 =

+4.3E-01 ug/min Carbon

SAMPLE RESULTS:

(127.9 - 3) (21) / (200) =

+1.311E+01 g/L Carbon

(127.9 - 3) (21) / (200) (12) =

+1.093E+00 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T003868DUP

Date: 02/20/96

Time: 21:22:40

Sample Size = 200 uL

Dil Factor = 21

Blank ID # = BLANK

Blank Value = .4282801 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.90	0.00
2	1.01	45.40	98.02
3	1.51	87.20	47.94
4	2.01	109.20	20.15
5	2.51	120.10	9.08
6	3.01	125.30	4.15
7	3.51	127.70	1.88
8	4.01	128.90	0.93
9	4.51	129.70	0.62
10	5.01	130.30	0.46
11	5.51	130.60	0.23
12	6.01	131.00	0.31
13	6.51	131.40	0.30
14	7.00	131.70	0.23

BLANK VALUE = 3 micrograms carbon

BLANK FACTOR = 3 / 7.004761 =

+4.3E-01 ug/min Carbon

SAMPLE RESULTS:

(131.7 - 3.000052) (21)/(200) =

+1.351E+01 g/L Carbon

(131.7 - 3.000052) (21)/(200) (12) =

+1.126E+00 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T003869

Date: 02/20/96

Time: 21:36:36

Sample Size = 200 uL

Dil Factor = 21

Blank ID # = BLANK

Blank Value = .4282801 ug/minute C

Analyst: DG GRIFFIN

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.90	0.00
2	1.01	45.00	98.00
3	1.51	85.00	47.06
4	2.00	105.20	19.20
5	2.50	115.30	8.76
6	3.00	120.20	4.08
7	3.50	122.60	1.96
8	4.00	123.80	0.97
9	4.50	124.60	0.64
10	5.00	125.10	0.40
11	5.50	125.60	0.40
12	6.00	125.90	0.24
13	6.50	126.40	0.40
14	7.00	126.70	0.24

BLANK VALUE = 3 micrograms carbon

BLANK FACTOR = 3 / 7.004761 =

+4.3E-01 ug/min Carbon

SAMPLE RESULTS:

(126.7 - 2.999216) (21)/(200) =

+1.299E+01 g/L Carbon

(126.7 - 2.999216) (21)/(200) (12) =

+1.082E+00 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0 WHC-SD-WM-DP-165, REV. 1

Sample: S95T003869DUP Date: 02/20/96 Time: 21:45:23

Sample Size = 200 uL Analyst : DG GRIFFIN
Dil Factor = 21 Min Readings = 14
Blank ID # = BLANK Max Readings = 14
Blank Value = .4282801 ug/minute C % Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.10	0.00
2	1.01	47.00	97.66
3	1.51	86.60	45.73
4	2.01	107.90	19.74
5	2.51	118.60	9.02
6	3.01	124.10	4.43
7	3.51	126.60	1.97
8	4.01	128.10	1.17
9	4.51	128.90	0.62
10	5.00	129.40	0.39
11	5.51	129.90	0.38
12	6.01	130.30	0.31
13	6.51	130.70	0.31
14	7.01	131.00	0.23

BLANK VALUE = 3 micrograms carbon
BLANK FACTOR = 3 / 7.004761 = +4.3E-01 ug/min Carbon

SAMPLE RESULTS:
(131 - 3.000104) (21)/(200) = +1.344E+01 g/L Carbon
(131 - 3.000104) (21)/(200) (12) = +1.120E+00 Molar Carbon

Sample Run By: DG GRIFFIN 00000

S95T03869 DUP
 Sample Size = 50 uL
 Dil Factor = 1
 Blank ID # = BLK
 Blank Value = .5424811 ug/minute C
 Date: 02/01/96
 TOTAL INORGANIC CARBON ANALYSIS REPORT
 TICTOC REV 2.0
 WHC-SD-WM-DP-165, REV. 1
 Time: 10:33:33 SL HOOD
 Analyst :
 Min Readings = 14
 Max Readings = 14
 % Difference = 10
 % Difference ==
 Coulometer ==
 3.00
 195.60
 448.90
 587.40
 650.80
 679.60
 691.80
 696.80
 698.90
 700.00
 700.70
 701.20
 701.70
 702.20
 Analysis Time ==
 0.51
 1.01
 1.50
 2.00
 2.50
 3.00
 3.50
 4.00
 4.50
 5.00
 5.50
 6.00
 6.50
 7.00
 Reading ==
 1
 2
 3
 4
 5
 6
 7
 8
 9
 10
 11
 12
 13
 14

carbon
 =

DATA
 NOT USED
 IN PACKAGE

+5.4E-01 ug/min Carbon
 +1.397E+01 g/L Carbon
 +1.164E+00 Molar Carbon
 00000

TIC : LA-622-102 (C-0)

LIQUIDS

		SAMPLE
Type	Sample Volume in mL (SS)	0.050
SAMPLE	H2O Volume in mL (VR)	0.000
Volume	Volume Injected in mL (VI)	0.050
4997	Dilution Factor (calculated) (DF)	1.000
Test Code	Digest Dilution Factor (DDF)	1
TIC-01	µg of Carbon in Sample (C1)	704.1
Method	µg of Carbon from Baseline (C2)	3.8
LIQUID		
Batch Number		
96000468		
Retin	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)	
0		
Sample Prep	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S95T003867		
Instrument Code		
TIC01		
Prepared By		
HLA		
Chemist		
HLA		
Analyst		
SHB		
Date Complete		
02/07/96		
Analysis Date		
02/01/96		
Analysis Time	Method Detection Limit in µg/mL	2.00E+01
01:30 PM		
Sample Point	µg of Carbon/mL	1.40E+04

DATA
NOT USED
IN PACKAGE

Data Entered By:	HLA	Date:	02/07/96
Signature of Chemist:	<i>H. Anastos</i>	Date:	2/9/96

WORKBOOK PAGE: DUP4

TIC : LA-622-102 (C-0)

LIQUIDS

		DUP
Type	Sample Volume in mL (SS)	0.050
DUP	H2O Volume in mL (VR)	0.000
Work File	Volume Injected in mL (VI)	0.050
4997	Dilution Factor (calculated) (DF)	1.000
Test Code	Digest Dilution Factor (DDF)	1
TIC-01	µg of Carbon in Sample (C1)	697.5
(C1)	µg of Carbon from Baseline (C2)	3.8
LIQUID	Sample Result	1.40E+04
Batch Number		
96000468		
Reprint	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)	
0		
Sample Prep	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI	
N/A		
Sample #	RPD (of Sample and Dup Results) = Difference / Average	
S95T003867		
Instrument Code		
TIC01		
Prepared By		
HLA		
Chemist		
HLA		
Analyst		
SHB		
Date Complete		
02/07/96		
Analysis Date		
02/01/96		
Analysis Time	Method Detection Limit in µg/mL	2.00E+01
01:30 PM		
Sample Point	µg of Carbon/mL	1.39E+04
	RPD (of Sam and Dup Results)	0.0095

DATA
NOT USED
IN PACKAGE

Data Entered By:	HLA	Date:	02/07/96
Signature of Chemist:	<i>H. Anastas</i>	Date:	2/9/96

SAMPLE.WB1 REV 1.0

622102ML

403

WORKBOOK PAGE: SPIKE5

TIC : LA-622-102 (C-0)

LIQUIDS

			SPIKE	
Sample Vial Data		Spiked Vial Data		
SPK	Sample Volume in mL (SS)	0.050	Was the sample dilution used? (yes/no)	NO
	H2O Volume in mL (VR)	0.000	Sample Volume in mL (SPK SS)	0.050
4997	Volume Injected in mL (VI)	0.050	H2O Volume in mL (SPK VR)	0.000
	µg of Carbon in Sample (C1)	704.1	Amount of Spike Std. in mL (SPK VOL)	0.100
	µg of Carbon from Baseline (C2)	3.8	Volume Injected in mL (SPK VI)	0.050
			µg C in Sample + Spike (C3)	264.5
LIQUID			Pre-Spike Dilution Factor (PDF)	1
Batch Number			Spike Book Number	17N12F
96000468			Spike Value in µg/ml	602
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 ID	QC Actual in µg/mL = Spike Value (µg/mL)			
S95T003867	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			
TIC01				
Prepared By				
HLA				
Chemist				
HLA				
Analyst				
SHB				
Date Complete				
02/07/96				
Analysis Date				
02/01/96				
Analysis Time				
01:30 PM	QC Actual in µg/mL	6.02E+02		
Sample Point	QC Found in µg/mL	8.18E+02		
	Percent Spike Recovery	135.9		

DATA
NOT USED
IN PACKAGE

Data Entered By:	HLA	Date:	02/07/96
Signature of Chemist:	<i>H. Anastas</i>	Date:	2/9/96

SPIKE.WB1 REV 1.0

622102ML

404

WORKBOOK PAGE: SAM6

TIC : LA-622-102 (C-0)

LIQUIDS

SAMPLE	
Sample Volume in mL (SS)	0.050
H2O Volume in mL (VR)	0.000
Volume Injected in mL (VI)	0.050
Dilution Factor (calculated) (DF)	1.000
Digest Dilution Factor (DDF)	1
µg of Carbon In Sample (C1)	700.1
µg of Carbon from Baseline (C2)	3.8
LIQUID	
Batch Number	

96000468

0

Sample Prep

N/A

Sample #

S95T003868

Instrument Code

TIC01

Prepared By

HLA

Chemist

HLA

Analyst

SHB

Date Complete

02/07/96

Analysis Date

02/01/96

Analysis Time

01:30 PM

Sample Point

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

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

Method Detection Limit in µg/mL

2.00E+01

µg of Carbon/mL

1.39E+04

DATA
NOT USED
IN PACKAGE

Data Entered By:

HLA

Date:

02/07/96

Signature of Chemist:

H. Anastos

Date:

2/9/96

SAMPLE.WB1 REV 1.0

622102ML

405

WORKBOOK PAGE: DUP7

TIC : LA-622-102 (C-0)

LIQUIDS

		DUP
Type	Sample Volume in mL (SS)	0.050
DUP	H2O Volume in mL (VR)	0.000
Volume	Volume Injected in mL (VI)	0.050
4997	Dilution Factor (calculated) (DF)	1.000
Test Code	Digest Dilution Factor (DDF)	1
TIC-01	µg of Carbon in Sample (C1)	701.4
Main	µg of Carbon from Baseline (C2)	3.8
LIQUID	Sample Result	1.39E+04
Batch Number		
96000468		
Re-run	µg of Carbon/g = (C1-C2) * DF ^ 1000 / (VI * D g/L)	
0		
Sample Prep	Method Detection Limit (µg/mL) = 1 µg C ^ DF ^ DDF / VI	
N/A		
Sample #	RPD (of Sample and Dup Results) = Difference / Average	
S95T003868		
Instrument Code		
TIC01		
Prepared By		
HLA		
Chemist		
HLA		
Analyst		
SHB		
Date Complete		
02/07/96		
Analysis Date		
02/01/96		
Analysis Time	Method Detection Limit in µg/mL	2.00E+01
01:30 PM		
Sample Point	µg of Carbon/mL	1.40E+04
	RPD (of Sam and Dup Results)	0.0037

DATA
NOT USED
IN PACKAGE

Data Entered By:	HLA	Date:	02/07/96
Signature of Chemist:	<i>H. Anastas</i>	Date:	2/9/96

SAMPLE.WB1 REV 1.0

622102ML

TIC : LA-622-102 (C-0)

LIQUIDS

SAMPLE	
Sample Volume in mL (SS)	0.050
H2O Volume in mL (VR)	0.000
Volume Injected in mL (VI)	0.050
Dilution Factor (calculated) (DF)	1.000
Digest Dilution Factor (DDF)	1
µg of Carbon in Sample (C1)	700
µg of Carbon from Baseline (C2)	3.8
LIQUID	
Sample Number	

96000468

Rain

0

Sample Prep

N/A

Sample

S95T003869

Instrument Code

TIC01

Prepared By

HLA

Analyst

HLA

Analyst

SHB

Data Complete

02/07/96

Analysis Date

02/01/96

Analysis Time

01:30 PM

Sample Point

$$\mu\text{g of Carbon/g} = (C1 - C2) \cdot DF \cdot 1000 / (VI \cdot D \text{ g/L})$$

$$\text{Method Detection Limit } (\mu\text{g/mL}) = 1 \mu\text{g C} \cdot DF \cdot DDF / VI$$

DATA
NOT USED
IN PACKAGE

Method Detection Limit in µg/mL

2.00E+01

µg of Carbon/mL

1.39E+04

Data Entered By:

HLA

Date:

02/07/96

Signature of Chemist:

H. Anastos

Date:

2/9/96

WORKBOOK PAGE: DUP9

TIC : LA-622-102 (C-0)

LIQUIDS

DUP	
Sample Volume in mL (SS)	0.050
H2O Volume in mL (VR)	0.000
Volume Injected in mL (VI)	0.050
Dilution Factor (calculated) (DF)	1.000
Digest Dilution Factor (DDF)	1
µg of Carbon in Sample (C1)	702.2
µg of Carbon from Baseline (C2)	3.8
Sample Result	1.39E+04

Batch Number	96000468
µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)	0
Sample Prep	N/A
Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI	
RPD (of Sample and Dup Results) = Difference / Average	
Sample #	S95T003869
Instrument Code	TIC01
Prepared By	HLA
Technician	HLA
Analyst	SHB
Date Complete	02/07/96
Analysis Date	02/01/96
Method Detection Limit in µg/mL	2.00E+01
Sample Point	1.40E+04
RPD (of Sam and Dup Results)	0.0032

DATA
NOT USED
IN PACKAGE

Data Entered By:	HLA	Date:	02/07/96
Signature of Chemist:	<i>H. Anastos</i>	Date:	2/9/96

SAMPLE.WB1 REV 1.0

622102ML

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S95T003867 Date: 02/01/96 Time: 09:13:43

WHC-SD-WM-DP-165, REV. 1

Sample Size = 50 uL Analyst : SL HOOD
Dil Factor = 1 Min Readings = 14
Blank ID # = BLK Max Readings = 14
Blank Value = .5424811 ug/minute C % Difference = 10

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

1	0.51	14.40	0.00
2	1.01	296.60	95.14
3	1.51	520.80	43.05
4	2.01	616.90	15.58
5	2.51	660.20	6.56
6	3.01	680.20	2.94
7	3.51	690.60	1.51
8	4.01	696.30	0.82
9	4.51	699.30	0.43
10	5.01	701.00	0.24
11	5.51	702.10	0.16
12	6.01	702.90	0.11
13	6.51	703.60	0.10
14	7.00	704.10	0.07

**DATA
NOT USED
IN PACKAGE**

BLANK VALUE = 3.8 micrograms carbon
BLANK FACTOR = 3.8 / 7.004852 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:
(704.1 - 3.800017)(1)/(50) = +1.401E+01 g/L Carbon
(704.1 - 3.800017)(1)/(50)(12) = +1.167E+00 Molar Carbon

Sample Run By: SL HOOD 00000

$$\frac{704.1 - 3.8}{0.05} = 1.40e4$$

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S95T003867 DU Date: 02/01/96 Time: 09:26:26

WHC-SD-WM-DP-165, REV. 1

Sample Size = 50 uL Analyst : SL HOOD
Dil Factor = 1 Min Readings = 14
Blank ID # = BLK Max Readings = 14
Blank Value = .5424811 ug/minute C % Difference = 10

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

1	0.51	9.30	0.00
2	1.01	276.30	96.63
3	1.51	505.80	45.37
4	2.01	604.40	16.31
5	2.51	647.50	6.66
6	3.01	670.30	3.40
7	3.51	681.30	1.61
8	4.01	687.80	0.95
9	4.50	691.40	0.52
10	5.00	693.70	0.33
11	5.51	695.10	0.20
12	6.00	696.20	0.16
13	6.51	697.00	0.11
14	7.00	697.50	0.07

DATA
NOT USED
IN PACKAGE

BLANK VALUE = 3.8 micrograms carbon

BLANK FACTOR = $3.8 / 7.004852 = +5.4E-01$ ug/min Carbon

SAMPLE RESULTS:

$(697.5 - 3.799984)(1)/(50) = +1.387E+01$ g/L Carbon
 $(697.5 - 3.799984)(1)/(50)(12) = +1.156E+00$ Molar Carbon

Sample Run By: SL HOOD 00000

$$\frac{695.5 - 3.8}{0.05} = 1.38e^4$$

410

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S95T03867 SPK Date: 02/01/96 Time: 09:41:34

WHC-SD-WM-DP-165, REV. 1

Sample Size = 50 uL Analyst : SL HOOD
Dil Factor = 3 Min Readings = 14
Blank ID # = BLK Max Readings = 14
Blank Value = .5424811 ug/minute C % Difference = 10

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

1	0.51	2.30	0.00
2	1.01	110.80	97.92
3	1.51	194.70	43.09
4	2.01	229.90	15.31
5	2.51	246.00	6.54
6	3.00	253.60	3.00
7	3.50	257.70	1.59
8	4.00	259.90	0.85
9	4.50	261.40	0.57
10	5.00	262.30	0.34
11	5.50	263.10	0.30
12	6.00	263.60	0.19
13	6.50	264.00	0.15
14	7.00	264.50	0.19

BLANK VALUE = 3.8 micrograms carbon
BLANK FACTOR = $3.8 / 7.004852 = +5.4E-01$ ug/min Carbon

SAMPLE RESULTS:

$(264.5 - 3.79952) (3) / (50) = +1.564E+01$ g/L Carbon
 $(264.5 - 3.79952) (3) / (50) (12) = +1.304E+00$ Molar Carbon

Sample Run By: SL HOOD 00000

DATA
NOT USED
IN PACKAGE

~~264.5~~

 $(\frac{704.1}{.05}) 0.05 + 300$ HLA 2-5-96

411

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S95T03868 Date: 02/01/96 Time: 09:55:01

WHC-SD-WM-DP-165, REV. 1

Sample Size = 50 uL Analyst : SL HOOD
Dil Factor = 1 Min Readings = 14
Blank ID # = BLK Max Readings = 14
Blank Value = .5424811 ug/minute C % Difference = 10

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

1	0.51	10.50	0.00
2	1.01	292.00	96.40
3	1.51	507.80	42.50
4	2.00	599.80	15.34
5	2.50	643.80	6.83
6	3.00	667.60	3.57
7	3.50	680.80	1.94
8	4.00	688.30	1.09
9	4.50	692.90	0.66
10	5.00	695.60	0.39
11	5.50	697.40	0.26
12	6.00	698.50	0.16
13	6.50	699.40	0.13
14	7.00	700.10	0.10

BLANK VALUE = 3.8 micrograms carbon

BLANK FACTOR = 3.8 / 7.004852 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:

(700.1 - 3.79952)(1)/(50) = +1.393E+01 g/L Carbon
(700.1 - 3.79952)(1)/(50)(12) = +1.161E+00 Molar Carbon

DATA
NOT USED
PACKAGE

Sample Run By: _____
SL HOOD 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S95T03868 DUP Date: 02/01/96 Time: 10:08:48

WHC-SD-WM-DP-165, REV. 1

Sample Size = 50 uL Analyst : SL HOOD
Dil Factor = 1 Min Readings = 14
Blank ID # = BLK Max Readings = 14
Blank Value = .5424811 ug/minute C % Difference = 10

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

1	0.51	9.50	0.00
2	1.01	292.50	96.75
3	1.51	504.60	42.03
4	2.00	594.20	15.08
5	2.50	640.10	7.17
6	3.01	665.40	3.80
7	3.51	679.40	2.06
8	4.01	687.70	1.21
9	4.50	693.00	0.76
10	5.00	696.10	0.45
11	5.50	698.30	0.32
12	6.00	699.70	0.20
13	6.50	700.60	0.13
14	7.00	701.40	0.11

BLANK VALUE = 3.8 micrograms carbon

BLANK FACTOR = $3.8 / 7.004852 = +5.4E-01$ ug/min Carbon

SAMPLE RESULTS:

$(701.4 - 3.79952) / (1) / (50) = +1.395E+01$ g/L Carbon
 $(701.4 - 3.79952) / (1) / (50) / (12) = +1.163E+00$ Molar Carbon

DATA
NOT USED
IN PACKAGE

Sample Run By: _____
SL HOOD 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T03869

Date: 02/01/96

Time: 10:25:27

Sample Size = 50 uL

Dil Factor = 1

Blank ID # = BLK

Blank Value = .5424811 ug/minute C

Analyst : SL HOOD

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	3.30	0.00
2	1.01	185.80	98.22
3	1.51	429.60	56.75
4	2.01	571.90	24.88
5	2.51	640.20	10.67
6	3.01	672.20	4.76
7	3.51	687.00	2.15
8	4.01	693.70	0.97
9	4.50	696.40	0.39
10	5.01	697.80	0.20
11	5.51	698.60	0.11
12	6.01	699.10	0.07
13	6.51	699.60	0.07
14	7.00	700.00	0.06

DATA
NOT USED
IN PACKAGE

BLANK VALUE = 3.8 micrograms carbon

BLANK FACTOR = 3.8 / 7.004852 =

+5.4E-01 ug/min Carbon

SAMPLE RESULTS:

(700 - 3.799984) (1) / (50) =

+1.392E+01 g/L Carbon

(700 - 3.799984) (1) / (50) (12) =

+1.160E+00 Molar Carbon

Sample Run By:

SL HOOD

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S95T03869 DUP

Date: 02/01/96

WHC-SD-WM-DP-165, REV. 1
Time: 10:33:33

Sample Size = .50 uL

Dil Factor = 1

Blank ID # = BLK

Blank Value = .5424811 ug/minute C

Analyst : SL HOOD
Min Readings = 14
Max Readings = 14
% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	3.00	0.00
2	1.01	195.60	98.47
3	1.50	448.90	56.43
4	2.00	587.40	23.58
5	2.50	650.80	9.74
6	3.00	679.60	4.24
7	3.50	691.80	1.76
8	4.00	696.80	0.72
9	4.50	698.90	0.30
10	5.00	700.00	0.16
11	5.50	700.70	0.10
12	6.00	701.20	0.07
13	6.50	701.70	0.07
14	7.00	702.20	0.07

DATA
NOT USED
IN PACKAGE

BLANK VALUE = 3.8 micrograms carbon
BLANK FACTOR = 3.8 / 7.004852 =

SAMPLE RESULTS:

702.2 - 3.79899) (1) / (50) =
702.2 - 3.79899) (1) / (50) (12) =

+5.4E-01 ug/min Carbon

+1.397E+01 g/L Carbon
+1.164E+00 Molar Carbon

Sample Run By:

SL HOOD

00000

WHC-SD-WM-DP-165, REV. 1

RADIOCHEMICAL ANALYSES

WHC-SD-WM-DP-165, REV. 1

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LABCORE Data Entry Template for Worklist# 4800

Analyst: JmV Instrument: AB00 16 Book# 14856

Method: LA-508-101 Rev/Mod D-2

Worklist Comment: Determine sample size using Ludlum. Use .100 mL A-SPK. SLF

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@ALPHA01	LIQUID		
2	BLNK				@ALPHA01	LIQUID		
3	BLNK/BKG				@ALPHA01	LIQUID		
4	SAMPLE	S95T003982	0		@ALPHA01	LIQUID	95000227	AN-102 GRAB
		Analytes Requested: ALPHA01 , ALPHA01E						
5	DUP	S95T003982	0		@ALPHA01	LIQUID		
6	SPK	S95T003982	0		@ALPHA01	LIQUID		
7	SAMPLE	S95T003983	0		@ALPHA01	LIQUID	95000227	AN-102 GRAB
		Analytes Requested: ALPHA01 , ALPHA01E						
8	DUP	S95T003983	0		@ALPHA01	LIQUID		
9	SAMPLE	S95T003984	0		@ALPHA01	LIQUID	95000227	AN-102 GRAB
		Analytes Requested: ALPHA01 , ALPHA01E						
10	DUP	S95T003984	0		@ALPHA01	LIQUID		

Final page for worklist # 4800

JmV
Analyst Signature Date

C.J. Opener 1/16/96
Analyst Signature Date

Data Entry Comments: Spile 119343

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

LABCORE Completed Worklist Report for Worklist# 4800

Analyst: jmv

Instrument: AB16

Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: Determine sample size using Ludlum. Use .100 mL A-SPK. SLF

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	ALPHA01 ALPHA01	LIQUID	1.54E-05	1.55E-5	100.650 % Recovery	
1 STD		0	ALPHA01 ALPHA01E	LIQUID	1.00	4.24E+00	4.240 % Ct. Error	
2 BLNK		0	ALPHA01 ALPHA01	LIQUID	1	<8.88E-3	uCi/mL	
2 BLNK		0	ALPHA01 ALPHA01E	LIQUID	1.00	5.00E+02	500.000 % Ct. Error	
3 BLNK/BKG		0	ALPHA01 ALPHA01	LIQUID	1.00E+00	5.07E-01	0.510 uCi/mL	
4 SAMPLE	S95T003982	0	ALPHA01 ALPHA01	LIQUID	N/A	1.44E-01	2.170e-002 uCi/mL	
4 SAMPLE	S95T003982	0	ALPHA01 ALPHA01E	LIQUID	N/A	2.10E+01	0.000 % Ct. Error	
5 DUP	S95T003982	0	ALPHA01 ALPHA01	LIQUID	1.44E-1	1.56E-1	8.000 RPD	
5 DUP	S95T003982	0	ALPHA01 ALPHA01E	LIQUID	1.00	2.07E+01	20.700 % Ct. Error	
6 SPK	S95T003982	0	ALPHA01 ALPHA01	LIQUID	3.92E-02	3.94E-02	100.510 % Recovery	
7 SAMPLE	S95T003983	0	ALPHA01 ALPHA01	LIQUID	N/A	1.16E-01	2.170e-002 uCi/mL	
7 SAMPLE	S95T003983	0	ALPHA01 ALPHA01E	LIQUID	N/A	2.54E+01	0.000 % Ct. Error	
8 DUP	S95T003983	0	ALPHA01 ALPHA01	LIQUID	1.16E-1	1.16E-1	0.000 RPD	
8 DUP	S95T003983	0	ALPHA01 ALPHA01E	LIQUID	1.00	2.37E+01	23.700 % Ct. Error	
9 SAMPLE	S95T003984	0	ALPHA01 ALPHA01	LIQUID	N/A	1.59E-01	2.170e-002 uCi/mL	
9 SAMPLE	S95T003984	0	ALPHA01 ALPHA01E	LIQUID	N/A	2.02E+01	0.000 % Ct. Error	
10 DUP	S95T003984	0	ALPHA01 ALPHA01	LIQUID	1.59E-1	1.74E-1	9.010 RPD	
10 DUP	S95T003984	0	ALPHA01 ALPHA01E	LIQUID	1.00	1.93E+01	19.300 % Ct. Error	

Final page for worklist# 4800

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

1/22/96
Date

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

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

STANDARD

		STANDARD	REPLICATE
Type	DETECTOR NUMBER	16	16
STD	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	2154	2217
4800	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.23	0.23
AT	SAMPLE SIZE in mL (SS)	10.000	10.000
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	STANDARD BOOK NUMBER (Std BN)	14B56	14B56
Matrix	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	71.570	73.670
Batch Number	Standard Value in $\mu\text{Ci/mL}$	1.54E-05	
96000249	Concentration in $\mu\text{Ci/L}$ =	1.53E-02	
Re-run	Replicate Concentration in $\mu\text{Ci/L}$ =	1.58E-02	
0	AVERAGE CONCENTRATION in $\mu\text{Ci/L}$ =	1.5547E-02	
Sample Prep			
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
WL4800	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$		
Instrument Code	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
MCB			
Chemist			
SLF	ALPHA TOTAL CONCENTRATION in $\mu\text{Ci/mL}$	1.55E-05	
Analyst			
JMV			
Date Complete			
01/16/96	RELATIVE COUNTING ERROR	4.2%	
Analysis Date			
01/15/96			
Analysis Time			
02:00 PM			
Sample Point			
AN-102 GRAB			

Analyst:	MCB	Date: 16-Jan-96
Signature of Chemist:	SLF	Date: 1/18/96
STANDARD.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: BLANK2

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

LIQUIDS

		BLNK	REPLICATE
Type	DETECTOR NUMBER	16	16
BLNK	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	4	3
4800	COUNT TIME in MINUTES (CT)	30	30
AT or IS ?	BACKGROUND in cpm (BKG)	0.23	0.23
AT	SAMPLE SIZE in mL (SS)	1.000	1.000
Test Code	DILUTION FACTOR (DF)	20301	20301
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.204	0.204
Batch Number			
96000249	Blank Concentration in $\mu\text{Ci/L}$	< 8.88E+00	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	< 8.88E+00	
0	Maximum Concentration in $\mu\text{Ci/L}$	< 8.8802E+00	
Sample Prep			
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
WL4800	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$		
Instrument Code	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
MCB			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$	< 8.88E-03	DETECTION LEVEL
Analyst	LESS Than Value was Determined from Lc. <i>see 1/16/96</i>		
JMV			
Date Complete	RELATIVE COUNTING ERROR	500.0%	2.17E-02 $\mu\text{Ci/mL}$
01/16/96			
Analysis Date			
01/15/96			
Analysis Time			
02:00 PM			
Sample Point			
AN-102 GRAB			

Analyst:	MCB	Date: 16-Jan-96
Signature of Chemist:	SLF	Date: 1/18/96

BLANK.WB1 Rev. 1.0

508101ML

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

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	16	16
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	106	107
4800	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.23	0.23
AT	SAMPLE SIZE in mL (SS)	1.000	1.000
Test Code	DILUTION FACTOR (DF)	20301	20301
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	3.303	3.337
Batch Number			
96000249	Blank Concentration in $\mu\text{Ci/L}$	1.44E+02	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	1.45E+02	
0	Average Concentration in $\mu\text{Ci/L}$	1.4430E+02	
Sample Prep			
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
S95T003982	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$		
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
MCB			
Chemist			
SLF			
Analyst			
JMV			
Date Complete			
01/16/96			
Analysis Date			
01/15/96			
Analysis Time			
02:00 PM			
Sample Point			
AN-102 GRAB			

Analyst:	MCB	Date: 16-Jan-96
Signature of Chemist:	SLF	Date: 1/18/96
SAMPLE.WB1 Rev. 1.	508104ML	

WHC-SD-WM-DP-165, REV. 1
LIQUIDS

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

	DUP	REPLICATE
Type	DETECTOR NUMBER	16
DUP	DISH SIZE (1, 2, or 5) (MS)	2
Wdth List	GROSS COUNTS (GC)	109
4800	COUNT TIME in MINUTES (CT)	30
AT 01/15/96	BACKGROUND in cpm (BKG)	0.23
AT	SAMPLE SIZE in mL (SS)	1.000
Test Code	DILUTION FACTOR (DF)	20301
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2104
LIQUID	Lc, Rmax, or Rs.(SAMPLE RATE) as APPROPRIATE	3.403
Batch Number		
96000249	Blank Concentration in $\mu\text{Ci/L}$	1.48E+02
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	1.64E+02
0	Average Concentration in $\mu\text{Ci/L}$	1.5589E+02
Sample Prep		
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$	
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$	
S95T003982	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$	
Instrument Code	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$	
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
Prepared By		
MCB		
Chemist		
SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$	1.56E-01
Analyst		
JMV		
Date Complete		
01/16/96	RELATIVE COUNTING ERROR	20.7%
Analysis Date		
01/15/96		
Analysis Time		
02:00 PM		
Sample Point		
AN-102 GRAB		

Analyst:

MCB

Date: 16-Jan-96

Signature of Chemist:

SLF

Date: 1/18/96

SAMPLE.WB1 Rev. 1.

508101ML

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

SPIKED SAMPLE

		SPIKE	REPLICATE
Type	DETECTOR NUMBER	16	16
SPK	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	56674	53937
4800	COUNT TIME in MINUTES (CT)	30	30
At or TB?	BACKGROUND in cpm (BKG)	0.23	0.23
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	1.000	1.000
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	20301	20301
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	SPIKE VOLUME in mL (SVol)	0.100	0.100
LIQUID	SPIKE DILUTION FACTOR (SDF)	1	1
Batch Number	SPIKE BOOK NUMBER (Spk BN)	119B43	119B43
96000249	SPIKE VALUE in $\mu\text{Ci/mL}$ (SVal)	3.9211E-02	3.9211E-02
Rerun	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.2104	0.2104
0	SAMPLE + SPIKE $\mu\text{Ci/mL}$ (S+S)	8.21E+01	7.81E+01
Sample Prep	AVERAGE or MAXIMUM $\mu\text{Ci/mL}$ in SAMPLE	1.4430E-01	
N/A			
Sample #			
S95T003982			
Instrument Code			
WB27806			
Prepared By			
MCB			
Chemist			
SLF			
Analyst			
JMV			
Date Complete			
01/16/96			
Analysis Date			
01/15/96			
Analysis Time			
02:00 PM			
Sample Point			
AN-102 GRAB			

Rs (Sample Count Rate) = (TC / CT) - BKG
SAMPLE + SPIKE $\mu\text{Ci/mL}$ = Rs * DF * DDF / (EFF * SS * 2220000dpm/ μCi)
QC ACTUAL = SVal
QC FOUND = (((S+S $\mu\text{Ci/mL}$ - SAMPLE $\mu\text{Ci/mL}$) * ((SDF/SVol)/(DF*DDF/SS))))
PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) * 100

QC ACTUAL	=	3.92E-02
QC FOUND	=	3.94E-02
AVG. PERCENT SPIKE RECOVERY	=	100.5%

Analyst:	MCB	Date: 16-Jan-96
Signature of Chemist:	SLF	Date: 1/18/96

SPIKE.WB1 Rev. 1.0

508101ML

LIQUIDS

Analyst:	MCB	Date: 16-Jan-96
Signature of Chemist:	SLF	Date: 1/18/96
SAMPLE WB1 Rev. 1.	508101ML	

426

Analyst:	MCB	Date: 16-Jan-96
Signature of Chemist:	SLF	Date: 11/8/96
SAMPLE W81 Rev. 1 508101ML		

AT : LA-508-101 (D-2)		LIQUIDS		DUP DSH SIZE (1, 2, or 5) GROSS COUNTS COUNT TIME in MINUTES BACKGROUND in cpm SAMPLE SIZE in mL DILUTION FACTOR DIGEST DILUTION FACTOR EFFICIENCY FACTOR LC, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE		REPLICATE 16 2 87 30 0.23 1.000 20301 1 0.2104 2.670	
TYPE	DETECTOR NUMBER	16	2	87	30	0.23	1.000
DUP	DISH SIZE (1, 2, or 5)	2	2	87	30	0.23	1.000
WORK UNIT	GROSS COUNTS	(GC)	87	87	30	0.23	1.000
4800	COUNT TIME in MINUTES	(CT)	30	30	30	0.23	1.000
AT or TB ?	BACKGROUND in cpm	(BKG)	0.23	0.23	0.23	0.23	1.000
AT	SAMPLE SIZE in mL	(SS)	1.000	1.000	1.000	1.000	1.000
Test Code	DILUTION FACTOR	(DF)	20301	20301	20301	20301	20301
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1	1	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104	0.2104	0.2104	0.2104
LIQUID	LC, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE		2.670	2.670	2.670	2.670	2.670
Batch Number	Blank Concentration in pCi/L		1.16E+02	1.16E+02	1.16E+02	1.16E+02	1.16E+02
96000249	Replicate Concentration in pCi/L		1.16E+02	1.16E+02	1.16E+02	1.16E+02	1.16E+02
Normal	Average Concentration in pCi/L		1.1605E+02	1.1605E+02	1.1605E+02	1.1605E+02	1.1605E+02
0	Sample Prep	N/A					
Sample #	Sample #	9551003983					
Instrument Code	Instrument Code	WB27806					
Prepared By	Prepared By	MCB					
Chemist	Chemist	SLF					
Analyst	Analyst	JMV					
Date Complete	Date Complete	01/16/96					
Analysis Date	Analysis Date	01/15/96					
Analysis Time	Analysis Time	02:00 PM					
Sample Point	Sample Point	AN-102 GRAB					

WHC-SD-WM-DP-165, REV. 1

WORKBOOK PAGE: SAM9

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

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	16	16
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	113	120
4800	COUNT TIME in MINUTES (CT)	30	30
AT or IS ?	BACKGROUND in cpm (BKG)	0.23	0.23
AT	SAMPLE SIZE in mL (SS)	1.000	1.000
Test Code	DILUTION FACTOR (DF)	20301	20301
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	3.537	3.770
Batch Number			
96000249	Blank Concentration in $\mu\text{Ci/L}$	1.54E+02	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	1.64E+02	
0	Average Concentration in $\mu\text{Ci/L}$	1.5878E+02	
Sample Prep			
N/A			
Sample #	Rs (Sample Count Rate) = $(TC / CT) - BKG$		
S95T003984	ALPHA TOTAL $\mu\text{Ci/L}$ = $Rs * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
Instrument Code	ALPHA TOTAL $\mu\text{Ci/mL}$ = $ALPHA\ TOTAL\ \mu\text{Ci/L} / 1000\text{mL/L}$		
WB27806	Relative Counting Error = $[(The\ Square\ Root\ of\ TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
Prepared By	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
MCB			
Chemist			
SLF	ν RESULTS ν		
Analyst	ALPHA TOTAL in $\mu\text{Ci/mL}$	1.59E-01	DETECTION LEVEL
JMV			
Date Complete			2.17E-02
01/16/96	RELATIVE COUNTING ERROR	20.2%	$\mu\text{Ci/mL}$
Analysis Date			
01/15/96			
Analysis Time			
02:00 PM			
Sample Point			
AN-102 GRAB			

Analyst:	MCB	Date: 16-Jan-96
Signature of Chemist:	SLF	Date: 1/11/96
SAMPLE.WB1 Rev. 1.	508101ML	

WORKBOOK PAGE: DUP10

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

LIQUIDS

		DUP	REPLICATE
Type	DETECTOR NUMBER	16	16
DUP	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	132	122
4800	COUNT TIME in MINUTES (CT)	30	30
AT or IS?	BACKGROUND in cpm (BKG)	0.23	0.23
AT	SAMPLE SIZE in mL (SS)	1.000	1.000
Test Code	DILUTION FACTOR (DF)	20301	20301
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	4.170	3.837
Batch Number			
96000249	Blank Concentration in $\mu\text{Ci/L}$	1.81E+02	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	1.67E+02	
0	Average Concentration in $\mu\text{Ci/L}$	1.7400E+02	
Sample Prep			
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/ μCi)		
S95T003984	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L}$ / 1000mL/L		
Instrument Code	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100		
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
MCB			
Chemist			
SLF			
Analyst	v RESULTS v		DETECTION LEVEL
JMV	in $\mu\text{Ci/mL}$ 1.74E-01		
Date Complete	RELATIVE COUNTING ERROR		2.17E-02 $\mu\text{Ci/mL}$
01/16/96	19.3%		
Analysis Date			
01/15/96			
Analysis Time			
02:00 PM			
Sample Point			
AN-102 GRAB			

Analyst:	MCB	Date: 16-Jan-96
Signature of Chemist:	SLF	Date: 1/18/96
SAMPLE.WB1 Rev. 1.	508101ML	

LABCORE Data Entry Template for Worklist# 4826

Analyst: S.C.L. Instrument: AB00 14 Book# 14856

Method: LA-508-101 Rev/Mod D-2

Worklist Comment: Determine sample size using Ludlum. Use .100 mL A-SPK. SLF

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@ALPHA01	LIQUID		
2 BLNK			@ALPHA01	LIQUID		
3 BLNK/BKG			@ALPHA01	LIQUID		
4 SAMPLE	S95T003870	0	@ALPHA01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested: ALPHA01 , ALPHA01E					
5 DUP	S95T003870	0	@ALPHA01	LIQUID		
6 SPK	S95T003870	0	@ALPHA01	LIQUID		
7 SAMPLE	S95T003871	0	@ALPHA01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested: ALPHA01 , ALPHA01E					
8 DUP	S95T003871	0	@ALPHA01	LIQUID		
9 SAMPLE	S95T003872	0	@ALPHA01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested: ALPHA01 , ALPHA01E					
10 DUP	S95T003872	0	@ALPHA01	LIQUID		

Final page for worklist # 4826

Sue C. L. 1-12-96
Analyst Signature Date

C. J. Quinn 12/16/94
Analyst Signature Date
M. B. Quinn 1/14/96

Data Entry Comments:

Spike: 119843

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

LABCORE Completed Worklist Report for Worklist# 4826

Analyst: scl

Instrument: AB14

Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: Determine sample size using Ludlum. Use .100 mL A-SPK. SLF

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	QALPHA01 ALPHA01	LIQUID	1.54E-05	1.39E-5	90.260 % Recovery	
1 STD		0	QALPHA01 ALPHA01E	LIQUID	1.00	4.37E+00	4.370 % Ct. Error	
2 BLNK		0	QALPHA01 ALPHA01	LIQUID	1	<1.17E-2	uCi/mL	
2 BLNK		0	QALPHA01 ALPHA01E	LIQUID	1.00	5.00E+02	500.000 % Ct. Error	
3 BLNK/BKG		0	QALPHA01 ALPHA01	LIQUID	1.00E+00	7.45E-01	0.750 uCi/mL	
4 SAMPLE	S95T003870	0	QALPHA01 ALPHA01	LIQUID	N/A	1.75E-01	2.710e-002 uCi/mL	
4 SAMPLE	S95T003870	0	QALPHA01 ALPHA01E	LIQUID	N/A	1.91E+01	0.000 % Ct. Error	
5 DUP	S95T003870	0	QALPHA01 ALPHA01	LIQUID	1.75E-1	1.73E-1	1.150 RPD	
5 DUP	S95T003870	0	QALPHA01 ALPHA01E	LIQUID	1.00	1.91E+01	19.100 % Ct. Error	
6 SPK	S95T003870	0	QALPHA01 ALPHA01	LIQUID	3.92E-02	3.57E-02	91.070 % Recovery	
7 SAMPLE	S95T003871	0	QALPHA01 ALPHA01	LIQUID	N/A	1.82E-01	2.710e-002 uCi/mL	
7 SAMPLE	S95T003871	0	QALPHA01 ALPHA01E	LIQUID	N/A	1.91E+01	0.000 % Ct. Error	
8 DUP	S95T003871	0	QALPHA01 ALPHA01	LIQUID	1.82E-1	1.69E-1	7.410 RPD	
8 DUP	S95T003871	0	QALPHA01 ALPHA01E	LIQUID	1.00	1.96E+01	19.600 % Ct. Error	
9 SAMPLE	S95T003872	0	QALPHA01 ALPHA01	LIQUID	N/A	1.69E-01	2.710e-002 uCi/mL	
9 SAMPLE	S95T003872	0	QALPHA01 ALPHA01E	LIQUID	N/A	2.01E+01	0.000 % Ct. Error	
10 DUP	S95T003872	0	QALPHA01 ALPHA01	LIQUID	1.69E-1	2.02E-1	17.790 RPD	
10 DUP	S95T003872	0	QALPHA01 ALPHA01E	LIQUID	1.00	1.79E+01	17.900 % Ct. Error	

Final page for worklist# 4826

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

Date

1/22/96

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

WHC-SD-WM-DP-165, REV. 1

WORKBOOK PAGE: STD1

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

STANDARD

		STANDARD	REPLICATE
Type	DETECTOR NUMBER	14	14
STD	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	2050	2189
4826	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.47	0.47
AT	SAMPLE SIZE in mL (SS)	10.000	10.000
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	STANDARD BOOK NUMBER (Std BN)	14B56	14B56
Matrix	EFFICIENCY FACTOR (EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	67.863	72.497
Batch Number	Standard Value in $\mu\text{Ci/mL}$	1.54E-05	
96000301	Concentration in $\mu\text{Ci/L}$ =	1.34E-02	
Retin	Replicate Concentration in $\mu\text{Ci/L}$ =	1.44E-02	
0	AVERAGE CONCENTRATION in $\mu\text{Ci/L}$ =	1.3902E-02	
Sample Prep			
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
WL#4826	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$		
Instrument Code	Relative Counting Error = $[(The\ Square\ Root\ of\ TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27807	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
CJO			
Chemist			
SLF	ALPHA TOTAL CONCENTRATION in $\mu\text{Ci/mL}$	1.39E-05	
Analyst			DETECTION LEVEL
SCL			
Date Complete			1.34E-07 $\mu\text{Ci/mL}$
01/16/96	RELATIVE COUNTING ERROR =	4.4%	
Analysis Date			
01/12/96			
Analysis Time			
08:30 AM			
Sample Point			
AN-102 GRAB			

Analyst:	CJO	Date: 16-Jan-96
Signature of Chemist:	SLF	Date: 1/18/96

STANDARD.WB1 Rev. 1.0

508101ML

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

LIQUIDS

		BLNK	REPLICATE
Type	DETECTOR NUMBER	14	14
BLNK	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	14	7
4826	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.47	0.47
AT	SAMPLE SIZE in mL (SS)	1.000	1.000
Test Code	DILUTION FACTOR (DF)	20301	20301
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.292	0.292
Batch Number			
96000301	Blank Concentration in $\mu\text{Ci/L}$	< 1.17E+01	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	< 1.17E+01	
0	Maximum Concentration in $\mu\text{Ci/L}$	< 1.1745E+01	
Sample Prep			
N/A	Rs (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $Rs * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
WL#4826	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$		
Instrument Code	Relative Counting Error = $[(The\ Square\ Root\ of\ TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27807	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
CJO			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$	< 1.17E-02	DETECTION LEVEL
Analyst	LESS Than Value was Determined from Lc. <i>2.71E-02</i>		
SCL			
Date Complete	RELATIVE COUNTING ERROR	500.0%	2.71E-02 $\mu\text{Ci/mL}$
01/16/96			
Analysis Date			
01/12/96			
Analysis Time			
08:30 AM			
Sample Point			
AN-102 GRAB			

Analyst:	CJO	Date: 16-Jan-96
Signature of Chemist:	SLF	Date: 1/18/96
BLANK.WB1 Rev. 1.0	508101ML	

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

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	14	14
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	148	142
4826	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.47	0.47
AT	SAMPLE SIZE in mL (SS)	1.000	1.000
Test Code	DILUTION FACTOR (DF)	20301	20301
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	4.463	4.263
Batch Number			
96000301	Blank Concentration in $\mu\text{Ci/L}$	1.79E+02	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	1.71E+02	
0	Average Concentration in $\mu\text{Ci/L}$	1.7547E+02	
Sample Prep			
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
S95T003870	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$		
Instrument Code	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27807	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
CJO			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$	1.75E-01	DETECTION LEVEL
Analyst			
SCL			
Date Complete			2.71E-02 $\mu\text{Ci/mL}$
01/16/96	RELATIVE COUNTING ERROR	19.1%	
Analysis Date			
01/12/96			
Analysis Time			
08:30 AM			
Sample Point			
AN-102 GRAB			

Analyst:	CJO	Date: 16-Jan-96
Signature of Chemist:	SLF	Date: 1/18/96
SAMPLE.WB1 Rev. 1.0	508101/L	

WORKBOOK PAGE: DUP5

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

LIQUIDS

		DUP	REPLICATE
Type	DETECTOR NUMBER	14	14
DUP	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	145	142
4826	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.47	0.47
AT	SAMPLE SIZE in mL (SS)	1.000	1.000
Test Code	DILUTION FACTOR (DF)	20301	20301
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs.(SAMPLE RATE) as APPROPRIATE	4.363	4.263
Batch Number			
96000301	Blank Concentration in $\mu\text{Ci/L}$	1.75E+02	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	1.71E+02	
0	Average Concentration in $\mu\text{Ci/L}$	1.7346E+02	
Sample Prep			
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
S95T003870	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$		
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27807	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
CJO			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$	1.73E-01	DETECTION LEVEL
Analyst			
SCL			
Date Complete			2.71E-02
01/16/96	RELATIVE COUNTING ERROR	19.1%	$\mu\text{Ci/mL}$
Analysis Date			
01/12/96			
Analysis Time			
08:30 AM			
Sample Point			
AN-102 GRAB			

Analyst:	CJO	Date: 16-Jan-96
Signature of Chemist:	SLF	Date: 1/18/96
SAMPLE.WB1 Rev. 1.0	508101ML	

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

	SPIKE	REPLICATE
Type	14	14
SPK	2	2
Work List	52736	55666
4826	30	30
AT or TB ?	0.47	0.47
AT	1.000	1.000
Test Code	20301	20301
@ALPHA01	1	1
Matrix	0.100	0.100
LIQUID	1	1
Batch Number	119B43	119B43
96000301	3.9211E-02	3.9211E-02
Rerun	0.2274	0.2274
0	7.07E+01	7.46E+01
Sample Prep	AVERAGE or MAXIMUM $\mu\text{Ci/mL}$ in SAMPLE	
N/A	1.7547E-01	
Sample #	Rs (Sample Count Rate) = (TC / CT) - BKG	
S95T003870	SAMPLE + SPIKE $\mu\text{Ci/mL}$ = Rs * DF * DDF / (EFF * SS * 2220000dpm/ μCi)	
Instrument Code	QC ACTUAL = SVal	
WB27807	QC FOUND = (((S+S $\mu\text{Ci/mL}$ - SAMPLE $\mu\text{Ci/mL}$) * ((SDF/SVol)/(DF*DDF/SS))))	
Prepared By	PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) * 100	
CJO		
Chemist		
SLF		
Analyst		
SCL		
Date Complete		
01/16/96		
Analysis Date		
01/12/96	QC ACTUAL	= 3.92E-02
Analysis Time	QC FOUND	= 3.57E-02
08:30 AM	AVG. PERCENT SPIKE RECOVERY	= 91.0%
Sample Point		
AN-102 GRAB		

Analyst:	CJO	Date: 16-Jan-96
Signature of Chemist:	SLF	Date: 1/18/96

SPIKE.WB1 Rev. 1.0

508101ML

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

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	14	14
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	157	143
4826	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.47	0.47
AT	SAMPLE SIZE in mL (SS)	1.000	1.000
Test Code	DILUTION FACTOR (DF)	20301	20301
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	4.763	4.297
Batch Number			
96000301	Blank Concentration in $\mu\text{Ci/L}$	1.92E+02	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	1.73E+02	
0	Average Concentration in $\mu\text{Ci/L}$	1.8217E+02	
Sample Prep			
N/A	Rs (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $Rs * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
S95T003871	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$		
Instrument Code	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27807	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
CJO			
Chemist			
SLF	ALPHA TOTAL	1.82E-01	DETECTION LEVEL
Analyst	in $\mu\text{Ci/mL}$		
SCL			
Date Complete	RELATIVE COUNTING ERROR	19.1%	2.71E-02 $\mu\text{Ci/mL}$
01/16/96			
Analysis Date			
01/12/96			
Analysis Time			
08:30 AM			
Sample Point			
AN-102 GRAB			

Analyst:	CJO	Date: 16-Jan-96
Signature of Chemist:	SLF	Date: 1/18/96
SAMPLE.WB1 Rev. 1.0	506101ML	

WORKBOOK PAGE: DUP8

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

LIQUIDS

		DUP	REPLICATE
Type	DETECTOR NUMBER	14	14
DUP	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	144	137
4826	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.47	0.47
AT	SAMPLE SIZE in mL (SS)	1.000	1.000
Test Code	DILUTION FACTOR (DF)	20301	20301
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	4.330	4.097
Batch Number			
96000301	Blank Concentration in $\mu\text{Ci/L}$	1.74E+02	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	1.65E+02	
0	Average Concentration in $\mu\text{Ci/L}$	1.6943E+02	
Sample Prep			
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
S95T003871	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$		
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27807	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
CJO			
Chemist			
SLF	ALPHA TOTAL	1.69E-01	DETECTION LEVEL
Analyst	in $\mu\text{Ci/mL}$		
SCL			
Date Complete	RELATIVE COUNTING ERROR	19.6%	2.71E-02 $\mu\text{Ci/mL}$
01/18/96			
Analysis Date			
01/12/96			
Analysis Time			
08:30 AM			
Sample Point			
AN-102 GRAB			

Analyst:	CJO	Date: 16-Jan-96
Signature of Chemist:	SLF	Date: 1/18/96
SAMPLE.WB1 Rev. 1.0	508101ML	

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

LIQUIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	14	14
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	148	132
4826	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.47	0.47
AT	SAMPLE SIZE in mL (SS)	1.000	1.000
Test Code	DILUTION FACTOR (DF)	20301	20301
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Main	EFFICIENCY FACTOR (EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs (SAMPLE RATE) as APPROPRIATE	4.463	3.930
Batch Number			
96000301	Blank Concentration in $\mu\text{Ci/L}$	1.79E+02	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	1.58E+02	
0	Average Concentration in $\mu\text{Ci/L}$	1.6876E+02	
Sample Prep			
N/A	Rs (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $Rs * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
S95T003872	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$		
Instrument Code	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27807	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
CJO			
Chemist			
SLF			
Analyst	ALPHA TOTAL	in $\mu\text{Ci/mL}$	1.69E-01
SCL			
Date Complete			
01/16/96	RELATIVE COUNTING ERROR	20.1%	DETECTION LEVEL
Analysis Date			2.71E-02
01/12/96			$\mu\text{Ci/mL}$
Analysis Time			
08:30 AM			
Sample Point			
AN-102 GRAB			

Analyst:	CJO	Date: 16-Jan-96
Signature of Chemist:	SLF	Date: 1/18/96
SAMPLE.WB1 Rev. 1.0	508101ML	

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

		DUP	REPLICATE
Type	DETECTOR NUMBER	14	14
DUP	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	173	157
4826	COUNT TIME In MINUTES (CT)	30	30
AT or TS ?	BACKGROUND In cpm (BKG)	0.47	0.47
AT	SAMPLE SIZE In mL (SS)	1.000	1.000
Test Code	DILUTION FACTOR (DF)	20301	20301
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs (SAMPLE RATE) as APPROPRIATE	5.297	4.763
Batch Number			
96000301	Blank Concentration In $\mu\text{Ci/L}$	2.13E+02	
Rerun	Replicate Concentration In $\mu\text{Ci/L}$	1.92E+02	
0	Average Concentration In $\mu\text{Ci/L}$	2.0227E+02	
Sample Prep			
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/ μCi)		
S95T003872	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L}$ / 1000mL/L		
Instrument Code	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100		
WB27807	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
CJO			
Chemist	v RESULTS v		
SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$	2.02E-01	DETECTION LEVEL
Analyst	$\frac{2.02 \times 10^{-1}}{1/26/96}$		
SCL			
Date Complete	RELATIVE COUNTING ERROR	17.9%	2.71E-02 $\mu\text{Ci/mL}$
01/16/96			
Analysis Date			
01/12/96			
Analysis Time			
08:30 AM			
Sample Point			
AN-102 GRAB			

Analyst:	CJO	Date: 16-Jan-96
Signature of Chemist:	SLF	Date: 1/18/96
SAMPLE.WB1 Rev. 1.0	508101ML	

LABCORE Data Entry Template for Worklist# 4967

Analyst: SGL ⁽⁶²⁾ 7/13/96 Instrument: AB00 #16 Book# 14856

Method: LA-508-101 Rev/Mod D-2

Worklist Comment: Use .1-10-.1-10-.5 mL sample size. Rerun #1. SLF

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@ALPHA01	LIQUID		
2 BLNK			@ALPHA01	LIQUID		
3 BLNK/BKG			@ALPHA01	LIQUID		
4 SAMPLE	S96T000005 0		@ALPHA01	LIQUID	95000227	AN-102 GRAB
	Analytes Requested: ALPHA01 , ALPHA01E					
5 DUP	S96T000005 0		@ALPHA01	LIQUID		
6 SPK	S96T000005 0		@ALPHA01	LIQUID		
7 SAMPLE	S96T000006 0		@ALPHA01	LIQUID	95000227	AN-102 GRAB
	Analytes Requested: ALPHA01 , ALPHA01E					
8 DUP	S96T000006 0		@ALPHA01	LIQUID		

Sue C. Lee

1-19-96 Final page for worklist # 4967

⁽⁵⁶⁾
[Signature]
Analyst Signature

1/19/96
Date

[Signature]
Analyst Signature

1/22/96
Date

Data Entry Comments:

Spike: 119843

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

LABCORE Completed Worklist Report for Worklist# 4967

Analyst: scl Instrument: AB16 Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: Use .1-10-.1-10-.5 mL sample size. Rerun #1. SLF

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	0ALPHA01 ALPHA01	LIQUID	1.54E-05	1.62E-5	105.190 % Recovery	
1 STD		0	0ALPHA01 ALPHA01E	LIQUID	1.00	4.20E+00	4.200 % Ct. Error	
2 BLNK		0	0ALPHA01 ALPHA01	LIQUID	1	<9.31E-3	uCi/mL	
2 BLNK		0	0ALPHA01 ALPHA01E	LIQUID	1.00	5.00E+02	500.000 % Ct. Error	
3 BLNK/BKG		0	0ALPHA01 ALPHA01	LIQUID	1.00E+00	9.80E-01	0.980 uCi/mL	
4 SAMPLE	S96T000005	0	0ALPHA01 ALPHA01	LIQUID	N/A	1.75E-01	1.930e-002 uCi/mL	
4 SAMPLE	S96T000005	0	0ALPHA01 ALPHA01E	LIQUID	N/A	1.89E+01	0.000 % Ct. Error	
5 DUP	S96T000005	0	0ALPHA01 ALPHA01	LIQUID	1.75E-1	2.08E-1	17.230 RPD	
5 DUP	S96T000005	0	0ALPHA01 ALPHA01E	LIQUID	1.00	1.72E+01	17.200 % Ct. Error	
6 SPK	S96T000005	0	0ALPHA01 ALPHA01	LIQUID	3.92E-02	4.10E-02	104.590 % Recovery	
7 SAMPLE	S96T000006	0	0ALPHA01 ALPHA01	LIQUID	N/A	2.39E-01	1.930e-002 uCi/mL	
7 SAMPLE	S96T000006	0	0ALPHA01 ALPHA01E	LIQUID	N/A	1.61E+01	0.000 % Ct. Error	
8 DUP	S96T000006	0	0ALPHA01 ALPHA01	LIQUID	2.39E-1	2.18E-1	9.190 RPD	
8 DUP	S96T000006	0	0ALPHA01 ALPHA01E	LIQUID	1.00	1.72E+01	17.200 % Ct. Error	

Final page for worklist# 4967

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Reviewer Signature _____ Date 1/24/96

WORKBOOK PAGE: STD1

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

STANDARD

	STANDARD	REPLICATE
STD	DETECTOR NUMBER	16
STD	DISH SIZE (1, 2, or 5) (MS)	2
STD	GROSS COUNTS (GC)	2348
4967	COUNT TIME in MINUTES (CT)	30
STD	BACKGROUND in cpm (BKG)	0.17
AT	SAMPLE SIZE in mL (SS)	10.000
STD	DILUTION FACTOR (DF)	1
@ALPHA01	STANDARD BOOK NUMBER (Std BN)	14B56
STD	EFFICIENCY FACTOR (EFF)	0.2104
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	78.097
STD	Standard Value in $\mu\text{Ci/mL}$	1.54E-05
98000430	Concentration in $\mu\text{Ci/L}$	1.67E-02
Repn	Replicate Concentration in $\mu\text{Ci/L}$	1.56E-02
0	AVERAGE CONCENTRATION in $\mu\text{Ci/L}$	1.6153E-02
STD	Rs (Sample Count Rate) = $(TC / CT) - BKG$	
Sample	ALPHA TOTAL $\mu\text{Ci/L}$ = $Rs * 1000\text{mL/L} * DF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$	
WL#4967	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$	
Instrum	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$	
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
Prepared By		
SEH		
Chemist		
SLF	ALPHA TOTAL CONCENTRATION in $\mu\text{Ci/mL}$	1.62E-05
Analysis		
SCL		
Date Complete		
01/22/96	RELATIVE COUNTING ERROR	4.2%
Analysis Date		
01/19/96		
Analysis Time		
01:00 PM		
Sample Point		
AN-102 GRAB		

DETECTION
LEVEL9.46E-08
 $\mu\text{Ci/mL}$

Analyst:

SEH

Date: 22-Jan-96

Signature of Chemist:

SLF

Date: 1/23/96

STANDARD.WB1 Rev. 1.0

608101M

WORKBOOK PAGE: BLANK2

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

		BLNK	REPLICATE
DETECTOR NUMBER		18	2
BLNK	DISH SIZE (1, 2, or 5) (MS)	2	2
	GROSS COUNTS (GC)	6	4
4967	COUNT TIME In MINUTES (CT)	30	30
	BACKGROUND In cpm (BKG)	0.17	0.17
AT	SAMPLE SIZE In mL (SS)	0.500	0.500
	DILUTION FACTOR (DF)	10201	10201
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.213	0.176

96000430	Blank Concentration in $\mu\text{Ci/L}$	< 9.31E+00
0	Replicate Concentration in $\mu\text{Ci/L}$	< 7.67E+00
	Maximum Concentration in $\mu\text{Ci/L}$	< 9.3142E+00

N/A	Rs (Sample Count Rate) = (TC / CT) - BKG
WL#4967	ALPHA TOTAL $\mu\text{Ci/L}$ = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/ μCi)
WB27806	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L}$ / 1000mL/L
SEH	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100
	Detection Levels and Less Than Values are determined from Procedure LA-508-002.

SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Maximum) =	< 9.31E-03	DETECTION LEVEL
ANALYST	LESS THAN Value was Determined from Rmax.		
SCL			
Date Complete	RELATIVE COUNTING ERROR	500.0%	1.93E-02 $\mu\text{Ci/mL}$
01/22/96			
Analysis Date			
01/19/96			
Analysis Time			
01:00 PM			
Sample Point			
AN-102 GRAB			

Analyst:	SCL	Date: 22-Jan-96
Signature of Chemist:	SLF	Date: 1/23/96
BLANK.WB1 Rev. 1.0	508101MLN	

WORKBOOK PAGE: SAM4

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

		SAMPLE	REPLICATE
DETECTOR NUMBER		16	16
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
GROSS COUNTS	(GC)	122	128
4967	COUNT TIME In MINUTES (CT)	30	30
BACKGROUND In cpm	(BKG)	0.17	0.17
AT	SAMPLE SIZE In mL (SS)	0.500	0.500
DILUTION FACTOR	(DF)	10201	10201
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	3.897	4.097
Blank Concentration In $\mu\text{Ci/L}$		1.70E+02	
Replicate Concentration In $\mu\text{Ci/L}$		1.79E+02	
0	Average Concentration In $\mu\text{Ci/L}$	1.7457E+02	
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG		
S96T000005	ALPHA TOTAL $\mu\text{Ci/L}$ = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/ μCi)		
WB27806	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L}$ / 1000mL/L		
SEH	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100		
chemis	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Average) in $\mu\text{Ci/mL}$	1.75E-01	DETECTION LEVEL
ANALYST			
SCL			
Date Complete			1.93E-02 $\mu\text{Ci/mL}$
01/22/96	RELATIVE COUNTING ERROR	18.9%	
Analysis Date			
01/19/96			
Analysis Time			
01:00 PM			
Sample Point			
AN-102 GRAB			

Analyst:	SCL	Date: 22-Jan-96
Signature of Chemist:	SLF	Date: 1/23/96
SAMPLE.WB1 Rev. 1.0	508101ML	

AAA

WORKBOOK PAGE: DUP5

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

		DUP	REPLICATE
DETECTOR NUMBER		16	16
DISH SIZE (1, 2, or 5)	(MS)	2	2
GROSS COUNTS	(GC)	152	144
COUNT TIME In MINUTES	(CT)	30	30
BACKGROUND In cpm	(BKG)	0.17	0.17
SAMPLE SIZE In mL	(SS)	0.500	0.500
DILUTION FACTOR	(DF)	10201	10201
DIGEST DILUTION FACTOR	(DDF)	1	1
EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	4.897	4.830

Blank Concentration In $\mu\text{Ci/L}$	2.14E+02
Replicate Concentration In $\mu\text{Ci/L}$	2.02E+02
Average Concentration In $\mu\text{Ci/L}$	2.0806E+02

N/A	Rs (Sample Count Rate) = $(TC / CT) - BKG$
S96T000005	ALPHA TOTAL $\mu\text{Ci/L}$ = $Rs * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$
WB27806	ALPHA TOTAL $\mu\text{Ci/mL}$ = $ALPHA\ TOTAL\ \mu\text{Ci/L} / 1000\text{mL/L}$
	Relative Counting Error = $[(The\ Square\ Root\ of\ TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$
	Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Prepared By	SEH
Chemist	
SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Average) in $\mu\text{Ci/mL}$ 2.08E-01
ANALYST	
SCL	
Date Complete	01/22/96
Analysis Date	01/19/96
Analysis Time	01:00 PM
Sample Point	AN-102 GRAB

Analyst:	SCL	Date: 22-Jan-96
Signature of Chemist:	SLF	Date: 1/23/96
SAMPLE.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: SPIKE8

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

		SPIKE	REPLICATE
DETECTOR NUMBER		16	16
SPK	DISH SIZE 1, 2, or 5 (MS)	2	2
WORK BOOK	TOTAL COUNTS (TC)	58454	56785
4967	COUNT TIME in MINUTES (CT)	30	30
4967	BACKGROUND in cpm (BKG)	0.17	0.17
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	0.500	0.500
4967	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	10201	10201
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
4967	SPIKE VOLUME in mL (SVol)	0.100	0.100
LIQUID	SPIKE DILUTION FACTOR (SDF)	1	1
4967	SPIKE BOOK NUMBER (Spk BN)	119B43	119B43
96000430	SPIKE VALUE in $\mu\text{Ci/mL}$ (SVal)	3.9210E-02	3.9210E-02
0	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.2104	0.2104
0	SAMPLE + SPIKE $\mu\text{Ci/mL}$ (S+S)	8.51E+01	8.27E+01
Sample Prep	AVERAGE or MAXIMUM $\mu\text{Ci/mL}$ in SAMPLE	1.8622E-01	
N/A			
Sample #			
S96T000005	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Instrument Code	SAMPLE + SPIKE $\mu\text{Ci/mL}$ = $R_s * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
WB27808	QC ACTUAL = SVal		
Prepared By	QC FOUND = $((S+S \mu\text{Ci/mL} - \text{SAMPLE } \mu\text{Ci/mL}) * ((SDF/SVol)/(DF*DDF/SS)))$		
SEH	PERCENT SPIKE RECOVERY = $(QC \text{ FOUND} / QC \text{ ACTUAL}) * 100$		
Chemist			
SLF			
Analyst			
SCL			
Date Complete			
01/22/96			
Analysis Date			
01/19/96	QC ACTUAL =	3.92E-02	
Analysis Time	QC FOUND =	4.10E-02	
01:00 PM	AVG. PERCENT SPIKE RECOVERY =	104.6%	
Sample Point			
AN-102 GRAB			

Analyst:	SEH	Date: 22-Jan-96
Signature of Chemist:	SLF	Date: 1/23/96
SPIKE.WB1 Rev. 1.0	508101 ML	

WORKBOOK PAGE: SAM7

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

		SAMPLE	REPLICATE
DETECTOR NUMBER		16	16
SAMPLE DISH SIZE (1, 2, or 5)	(MS)	2	2
GROSS COUNTS	(GC)	178	162
COUNT TIME In MINUTES	(CT)	30	30
BACKGROUND In cpm	(BKG)	0.17	0.17
SAMPLE SIZE in mL	(SS)	0.500	0.500
DILUTION FACTOR	(DF)	10201	10201
DIGEST DILUTION FACTOR	(DDF)	1	1
EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
LIQUID Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE		5.697	5.230

Blank Concentration In $\mu\text{Ci/L}$	2.49E+02
Replicate Concentration in $\mu\text{Ci/L}$	2.28E+02
Average Concentration in $\mu\text{Ci/L}$	2.3863E+02

N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$
S96T000006	ALPHA TOTAL $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$
WB27806	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$
Prepared By SEH	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$
Chemist	Detection Levels and Less Than Values are determined from Procedure LA-508-002.

SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Average) in $\mu\text{Ci/mL}$	2.39E-01	DETECTION LEVEL
Analyst SCL	see 1/23/96		
Date Complete 01/22/96	RELATIVE COUNTING ERROR	16.1%	1.93E-02 $\mu\text{Ci/mL}$
Analysis Date 01/19/96			
Analysis Time 01:00 PM			
Sample Point AN-102 GRAB			

Analyst: SCL	Date: 22-Jan-96
Signature of Chemist:	Date: 1/23/96
SAMPLE.WB1 Rev. 1.0	508101ML

WORKBOOK PAGE: DUP8

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

		DUP	REPLICATE
DETECTOR NUMBER		16	16
DUP	DISH SIZE (1, 2, or 5) (MS)	2	2
4967	GROSS COUNTS (GC)	166	144
	COUNT TIME In MINUTES (CT)	30	30
	BACKGROUND In cpm (BKG)	0.17	0.17
AT	SAMPLE SIZE In mL (SS)	0.500	0.500
	DILUTION FACTOR (DF)	10201	10201
ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	5.363	4.630

96000430	Blank Concentration In $\mu\text{Ci/L}$	2.34E+02
Replic	Replicate Concentration In $\mu\text{Ci/L}$	2.02E+02
0	Average Concentration In $\mu\text{Ci/L}$	2.1825E+02

N/A	Rs (Sample Count Rate) = $(TC / CT) - BKG$
Sample	ALPHA TOTAL $\mu\text{Ci/L}$ = $Rs * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$
S96T000006	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$
Instrument Code	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Prepared By
SEH

Chemist

SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Average) in $\mu\text{Ci/mL}$	2.18E-01	DETECTION LEVEL
Analyst			
SCL			
Date Complete			
01/22/96	RELATIVE COUNTING ERROR	17.2%	1.93E-02 $\mu\text{Ci/mL}$
Analysis Date			
01/19/96			
Analysis Time			
01:00 PM			
Sample Point			
AN-102 GRAB			

Analyst:	SCL	Date: 22-Jan-96
Signature of Chemist:	SLF	Date: 1/23/96
SAMPLE.WB1 Rev. 1.0	508101ML	

LABCORE Data Entry Template for Worklist# 4972

Analyst: AVL Instrument: AB00 14 Book# 23B56

Method: LA-508-101 Rev/Mod D-2

Worklist Comment: Determine Sample Size Using Ludlum.(if spk, use .1ml spk)lc

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@ALPHA01	LIQUID		
2 BLNK			@ALPHA01	LIQUID		
3 BLNK/BKG			@ALPHA01	LIQUID		
4 SAMPLE	S95T004135 0		@ALPHA01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested: ALPHA01 , ALPHA01E					
5 DUP	S95T004135 0		@ALPHA01	LIQUID		
6 SAMPLE	S95T003963 0		@ALPHA01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested: ALPHA01 , ALPHA01E					
7 DUP	S95T003963 0		@ALPHA01	LIQUID		
8 SAMPLE	S95T004133 0		@ALPHA01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested: ALPHA01 , ALPHA01E					
9 DUP	S95T004133 0		@ALPHA01	LIQUID		
10 SPK	S95T004133 0		@ALPHA01	LIQUID		

Final page for worklist # 4972

C. Lewis 1/24/96
Analyst Signature Date

M. Brown 1/25/96
Analyst Signature Date
S. Hogan 1/25/96

Data Entry Comments:

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

LABCORE Completed Worklist Report for Worklist# 4972

Analyst: ak1

Instrument: AB14

Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: Determine Sample Size Using Ludlum.(if spk, use .1ml spk)lc

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	ALPHA01 ALPHA01	LIQUID	1.02E-05	9.95E-6	97.550 % Recovery	
1 STD		0	ALPHA01 ALPHA01E	LIQUID	1.00	5.13E+00	5.130 % Ct. Error	
2 BLNK		0	ALPHA01 ALPHA01	LIQUID	1	<2.40E-2	uCi/mL	
2 BLNK		0	ALPHA01 ALPHA01E	LIQUID	1.00	3.39E+02	339.000 % Ct. Error	
3 BLNK/BKG		0	ALPHA01 ALPHA01	LIQUID	1.00E+00	1.35E+00	1.350 uCi/mL	
4 SAMPLE	S95T004135	0	ALPHA01 ALPHA01	LIQUID	N/A	1.37E-01	3.260e-002 uCi/mL	
4 SAMPLE	S95T004135	0	ALPHA01 ALPHA01E	LIQUID	N/A	3.06E+01	0.000 % Ct. Error	
5 DUP	S95T004135	0	ALPHA01 ALPHA01	LIQUID	1.37E-1	1.53E-1	11.030 RPD	
5 DUP	S95T004135	0	ALPHA01 ALPHA01E	LIQUID	1.00	2.41E+01	24.100 % Ct. Error	
6 SAMPLE	S95T003963	0	ALPHA01 ALPHA01	LIQUID	N/A	5.83E-06	1.210e-005 uCi/mL	
6 SAMPLE	S95T003963	0	ALPHA01 ALPHA01E	LIQUID	N/A	5.00E+02	0.000 % Ct. Error	
7 DUP	S95T003963	0	ALPHA01 ALPHA01	LIQUID	<5.83E-6	<1.04E-5	RPD	
7 DUP	S95T003963	0	ALPHA01 ALPHA01E	LIQUID	1.00	1.76E+02	176.000 % Ct. Error	
8 SAMPLE	S95T004133	0	ALPHA01 ALPHA01	LIQUID	N/A	1.68E-01	3.260e-002 uCi/mL	
8 SAMPLE	S95T004133	0	ALPHA01 ALPHA01E	LIQUID	N/A	2.37E+01	0.000 % Ct. Error	
9 DUP	S95T004133	0	ALPHA01 ALPHA01	LIQUID	1.68E-1	1.71E-1	1.770 RPD	
9 DUP	S95T004133	0	ALPHA01 ALPHA01E	LIQUID	1.00	2.29E+01	22.900 % Ct. Error	
10 SPK	S95T004133	0	ALPHA01 ALPHA01	LIQUID	3.92E-02	4.32E-02	110.200 % Recovery	

Final page for worklist# 4972

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

Date

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

WORKBOOK PAGE: STD1

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

STANDARD

	STANDARD	REPLICATE
Type	DETECTOR NUMBER	14
STD	DISH SIZE (1 , 2 , or 5) (MS)	2
Work List	GROSS COUNTS (GC)	1494
4972	COUNT TIME in MINUTES (CT)	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.37
AT	SAMPLE SIZE in mL (SS)	10.000
Test Code	DILUTION FACTOR (DF)	1
@ALPHA01	STANDARD BOOK NUMBER (Std BN)	23B56
Matrix	EFFICIENCY FACTOR (EFF)	0.2274
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	49.430
Batch Number	Standard Value in $\mu\text{Ci/mL}$	1.02E-05
96000436	Concentration in $\mu\text{Ci/L}$ =	9.79E-03
Rerun	Replicate Concentration in $\mu\text{Ci/L}$ =	1.01E-02
0	AVERAGE CONCENTRATION in $\mu\text{Ci/L}$ =	9.9499E-03
Sample Prep	Rs (Sample Count Rate) = (TC / CT) - BKG	
N/A	ALPHA TOTAL $\mu\text{Ci/L}$ = Rs * 1000mL/L * DF / (EFF * SS * 2220000dpm/ μCi)	
Sample #	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L}$ / 1000mL/L	
WL4972	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100	
Instrument Code	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
WB27807		
Prepared By		
MCB		
Chemist		
SLF	ALPHA TOTAL CONCENTRATION in $\mu\text{Ci/mL}$	9.95E-06
Analyst		
AKL		
Date Complete		
01/25/96	RELATIVE COUNTING ERROR	5.1%
Analysis Date		
01/24/96		
Analysis Time		
02:00 PM		
Sample Point		
AN-102 GRAB		

Analyst:	MCB	Date: 25-Jan-96
Signature of Chemist:	SLF	Date: 1/26/96
STANDARD.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: BLANK2

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

	BLNK	REPLICATE
Type	DETECTOR NUMBER	14
BLNK	DISH SIZE (1, 2, or 5) (MS)	2
Work List	GROSS COUNTS (GC)	16
4972	COUNT TIME in MINUTES (CT)	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.37
AT	SAMPLE SIZE in mL (SS)	1.000
Test Code	DILUTION FACTOR (DF)	27001
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2274
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.450
Batch Number		
96000436	Blank Concentration in $\mu\text{Ci/L}$	< 2.40E+01
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	< 1.99E+01
0	Maximum Concentration in $\mu\text{Ci/L}$	< 2.4050E+01
Sample Prep		
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$	
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$	
WL4972	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$	
Instrument Code	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$	
WB27807	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
Prepared By		
MCB		
Chemist		
SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Maximum) =	< 2.40E-02
Analyst		
AKL	LESS THAN Value was Determined from Rmax.	
Date Complete		
01/25/96	RELATIVE COUNTING ERROR	338.6%
Analysis Date		
01/24/96		
Analysis Time		
02:00 PM		
Sample Point		
AN-102 GRAB		

Analyst:	AKL	Date: 25-Jan-96
Signature of Chemist:	SLF	Date: 1/26/96
BLANK.WB1 Rev. 1.0	508101ML	

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

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	14	14
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	108	68
4972	COUNT TIME In MINUTES (CT)	30	30
AT or TS ?	BACKGROUND in cpm (BKG)	0.37	0.37
AT	SAMPLE SIZE In mL (SS)	1.000	1.000
Test Code	DILUTION FACTOR (DF)	27001	27001
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	3.230	1.897

Batch Number	
96000436	Blank Concentration in $\mu\text{Ci/L}$ 1.73E+02
Rerun	Replicate Concentration in $\mu\text{Ci/L}$ 1.01E+02
0	Average Concentration in $\mu\text{Ci/L}$ 1.3710E+02

Sample Prep	
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$
S95T004135	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$
Instrument Code	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$
WB27807	Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Prepared By	
MCB	
Chemist	
SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Average) in $\mu\text{Ci/mL}$ 1.37E-01
Analyst	
AKL	
Date Complete	
01/25/96	RELATIVE COUNTING ERROR 30.6%
Analysis Date	
01/24/96	
Analysis Time	
02:00 PM	
Sample Point	
AN-102 GRAB	

Analyst:	AKL	Date: 25-Jan-96
Signature of Chemist:	SLF	Date: 1/26/96
SAMPLE.WB1 Rev. 1.0	508101M	

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

LIQUIDS

		DUP	REPLICATE
Type	DETECTOR NUMBER	14	14
DUP	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	95	99
4972	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.37	0.37
AT	SAMPLE SIZE in mL (SS)	1.000	1.000
Test Code	DILUTION FACTOR (DF)	27001	27001
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs (SAMPLE RATE) as APPROPRIATE	2.797	2.930
Batch Number			
96000436	Blank Concentration in $\mu\text{Ci/L}$	1.50E+02	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	1.57E+02	
0	Average Concentration in $\mu\text{Ci/L}$	1.5315E+02	
Sample Prep			
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
S95T004135	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$		
Instrument Code	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27807	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
MCB			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Average) in $\mu\text{Ci/mL}$	1.53E-01	
Analyst			
AKL			
Date Complete			
01/25/96	RELATIVE COUNTING ERROR	24.1%	
Analysis Date			
01/24/96			
Analysis Time			
02:00 PM			
Sample Point			
AN-102 GRAB			

Analyst:	AKL	Date: 25-Jan-96
Signature of Chemist:	SLF	Date: 1/26/96
SAMPLE.WB1 Rev. 1.0	508101 ML	

WORKBOOK PAGE: SAM6

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

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	14	14
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	12	7
4972	COUNT TIME In MINUTES (CT)	30	30
AT or TB ?	BACKGROUND In cpm (BKG)	0.37	0.37
AT	SAMPLE SIZE In mL (SS)	0.100	0.100
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	0.294	0.259
Batch Number			
96000436	Blank Concentration in $\mu\text{Ci/L}$	< 5.83E-03	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	< 5.13E-03	
0	Maximum Concentration in $\mu\text{Ci/L}$	< 5.8306E-03	
Sample Prep			
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
S95T003963	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$		
Instrument Code	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27807	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
MCB			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Maximum) in $\mu\text{Ci/mL}$	< 5.83E-06	DETECTION LEVEL
Analyst	LESS THAN Value was Determined from Rmax.		
AKL			
Date Complete	RELATIVE COUNTING ERROR	500.0%	1.21E-05 $\mu\text{Ci/mL}$
01/25/96			
Analysis Date			
01/24/96			
Analysis Time			
02:00 PM			
Sample Point			
AN-102 GRAB			

Analyst:	AKL	Date: 25-Jan-96
Signature of Chemist:	SLF	Date: 1/26/96
SAMPLE.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: DUP7

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

LIQUIDS

	DUP	REPLICATE
Type	DETECTOR NUMBER	14
DUP	DISH SIZE (1, 2, or 5) (MS)	2
Work List	GROSS COUNTS (GC)	17
4972	COUNT TIME in MINUTES (CT)	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.37
AT	SAMPLE SIZE in mL (SS)	0.100
Test Code	DILUTION FACTOR (DF)	1
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2274
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.488
Batch Number		
96000436	Blank Concentration in $\mu\text{Ci/L}$	< 9.67E-03
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	< 1.04E-02
0	Maximum Concentration in $\mu\text{Ci/L}$	< 1.0433E-02
Sample Prep		
N/A	Rs (Sample Count Rate) = $(TC / CT) - BKG$	
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $Rs * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$	
S95T003963	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$	
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$	
WB27807	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
Prepared By		
MCB		
Chemist		
SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Maximum) in $\mu\text{Ci/mL}$	< 1.04E-05
Analyst	LESS THAN Value was Determined from Rmax.	
AKL		
Date Complete	RELATIVE COUNTING ERROR	176.1%
01/25/96		
Analysis Date		
01/24/96		
Analysis Time		
02:00 PM		
Sample Point		
AN-102 GRAB		

Analyst:	AKL	Date: 25-Jan-96
Signature of Chemist:	SLF	Date: 1/26/96
SAMPLE.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: SAM8

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

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	14	14
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	97	114
4972	COUNT TIME in MINUTES (CT)	30	30
AT or TS ?	BACKGROUND in cpm (BKG)	0.37	0.37
AT	SAMPLE SIZE in mL (SS)	1.000	1.000
Test Code	DILUTION FACTOR (DF)	27001	27001
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	2.863	3.430
Batch Number			
96000436	Blank Concentration in $\mu\text{Ci/L}$	1.53E+02	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	1.83E+02	
0	Average Concentration in $\mu\text{Ci/L}$	1.6830E+02	
Sample Prep			
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/ μCi)		
S95T004133	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L}$ / 1000mL/L		
Instrument Code	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100		
WB27807	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
MCB			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Average)	in $\mu\text{Ci/mL}$	1.68E-01
Analyst			DETECTION LEVEL
AKL			
Date Complete			3.26E-02
01/25/96	RELATIVE COUNTING ERROR	23.7%	$\mu\text{Ci/mL}$
Analysis Date			
01/24/96			
Analysis Time			
02:00 PM			
Sample Point			
AN-102 GRAB			

Analyst:	AKL	Date: 25-Jan-96
Signature of Chemist:	SLF	Date: 1/26/96

SAMPLE.WB1 Rev. 1.0 508101ML

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

Type	DETECTOR NUMBER	DUP	REPLICATE
DUP	DISH SIZE (1, 2, or 5)	14	14
Work List	(MS)	2	2
4972	GROSS COUNTS (GC)	102	112
AT or TB ?	COUNT TIME in MINUTES (CT)	30	30
AT	BACKGROUND in cpm (BKG)	0.37	0.37
Test Code	SAMPLE SIZE in mL (SS)	1.000	1.000
@ALPHA01	DILUTION FACTOR (DF)	27001	27001
Matrix	DIGEST DILUTION FACTOR (DDF)	1	1
LIQUID	EFFICIENCY FACTOR (EFF)	0.2274	0.2274
Batch Number	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	3.030	3.363
96000436	Blank Concentration in $\mu\text{Ci/L}$	1.62E+02	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	1.80E+02	
0	Average Concentration in $\mu\text{Ci/L}$	1.7098E+02	
Sample Prep			
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
S95T004133	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$		
Instrument Code	Relative Counting Error = $[(The\ Square\ Root\ of\ TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27807	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
MCB			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Average) in $\mu\text{Ci/mL}$	1.71E-01	
Analyst			DETECTION LEVEL
AKL			
Date Complete			
01/25/96	RELATIVE COUNTING ERROR	22.9%	3.26E-02 $\mu\text{Ci/mL}$
Analysis Date			
01/24/96			
Analysis Time			
02:00 PM			
Sample Point			
AN-102 GRAB			

Analyst:	AKL	Date: 25-Jan-96
Signature of Chemist:	SLF	Date: 1/26/96
SAMPLE.WB1 Rev. 1.0	508101ML	

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

		SPIKE	REPLICATE
Type	DETECTOR NUMBER	14	14
SPK	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	65270	65749
4972	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.37	0.37
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	1.000	1.000
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	27001	27001
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	SPIKE VOLUME in mL (SVol)	0.100	0.100
LIQUID	SPIKE DILUTION FACTOR (SDF)	1	1
Batch Number	SPIKE BOOK NUMBER (Spk BN)	119B43	119B43
96000436	SPIKE VALUE in $\mu\text{Ci/mL}$ (SVal)	3.9209E-02	3.9209E-02
Rerun	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.2274	0.2274
0	SAMPLE + SPIKE $\mu\text{Ci/mL}$ (S+S)	1.16E+02	1.17E+02
Sample Prep	AVERAGE or MAXIMUM $\mu\text{Ci/mL}$ in SAMPLE	1.6830E-01	
N/A			
Sample #			
S95T004133	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Instrument Code	SAMPLE + SPIKE $\mu\text{Ci/mL}$ = $R_s * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
WB27807	QC ACTUAL = SVal		
Prepared By	QC FOUND = $((S+S \mu\text{Ci/mL} - \text{SAMPLE } \mu\text{Ci/mL}) * ((SDF/SVol)/(DF*DDF/SS)))$		
MCB	PERCENT SPIKE RECOVERY = $(QC \text{ FOUND} / QC \text{ ACTUAL}) * 100$		
Chemist			
SLF			
Analyst			
AKL			
Date Complete			
01/25/96			
Analysis Date			
01/24/96	QC ACTUAL =	3.92E-02	
Analysis Time	QC FOUND =	4.32E-02	
02:00 PM	AVG. PERCENT SPIKE RECOVERY =	110.1%	
Sample Point			
AN-102 GRAB			

Analyst:	MCB	Date: 25-Jan-96
Signature of Chemist:	SLF	Date: 1/26/96

SPIKE.WB1 Rev. 1.0

508101ML

LABCORE Data Entry Template for Worklist# 5177

Analyst: S.C.C. Instrument: AB00 15 Book# 23856

Method: LA-508-101 Rev/Mod 0-2

Worklist Comment: RUSH! @ALPHA01, Determine sample size using Ludlum. skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@ALPHA01	SOLID		
2 BLNK-PREP			@ALPHA01	SOLID		
3 BLNK/BKG			@ALPHA01	SOLID		
4 SAMPLE	S95T004141	0 F	@ALPHA01	SOLID	95000222	AN-102 GRAB
Analytes Requested: ALPHA01 , ALPHA01E						
5 DUP	S95T004141	0 F	@ALPHA01	SOLID		
6 SPK	S95T004141	0 F	@ALPHA01	SOLID		
7 SAMPLE	S95T004142	0 F	@ALPHA01	SOLID	95000222	AN-102 GRAB
Analytes Requested: ALPHA01 , ALPHA01E						
8 DUP	S95T004142	0 F	@ALPHA01	SOLID		
9 SAMPLE	S96T000007	0 F	@ALPHA01	SOLID	95000227	AN-102 GRAB
Analytes Requested: ALPHA01 , ALPHA01E						
10 DUP	S96T000007	0 F	@ALPHA01	SOLID		
11 SPK	S96T000007	0 F	@ALPHA01	SOLID		
12 SAMPLE	S96T000008	0 F	@ALPHA01	SOLID	95000227	AN-102 GRAB
Analytes Requested: ALPHA01 , ALPHA01E						
13 DUP	S96T000008	0 F	@ALPHA01	SOLID		

Final page for worklist # 5177

S.C.C. 1-26-96
Analyst Signature Date

S.C.C. Hagan 1/29/96
Analyst Signature Date
Sylvia Z. Cochran 1/29/96

Data Entry Comments:

the elevated RPD for sample # 8 is due to
low sample alpha activity. No rerun requested.

WJH 1/29/96
S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed Worklist Report for Worklist# 5177

Analyst: scl

Instrument: AB15

Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: RUSH! @ALPHA01, Determine sample size using Ludlum. skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	@ALPHA01 ALPHA01	SOLID	1.02E-05	9.39E-6	92.060 % Recovery	
1 STD		0	@ALPHA01 ALPHA01E	SOLID	1.00	5.12E+00	5.120 % Ct. Error	
2 BLNK-PREP		0	@ALPHA01 ALPHA01	SOLID	1	<1.11E-2	uCi/g	
2 BLNK-PREP		0	@ALPHA01 ALPHA01E	SOLID	1.00	1.40E+02	140.000 % Ct. Error	
3 BLNK/BKG		0	@ALPHA01 ALPHA01	SOLID	1.00E+00	2.44E+00	2.440 uCi/g	
4 SAMPLE	S95T004141	0 F	@ALPHA01 ALPHA01	SOLID	N/A	4.59E-01	9.770e-003 uCi/g	
4 SAMPLE	S95T004141	0 F	@ALPHA01 ALPHA01E	SOLID	N/A	7.17E+00	0.000 % Ct. Error	
5 DUP	S95T004141	0 F	@ALPHA01 ALPHA01	SOLID	4.59E-1	4.64E-1	1.080 RPD	
5 DUP	S95T004141	0 F	@ALPHA01 ALPHA01E	SOLID	1.00	7.09E+00	7.090 % Ct. Error	
6 SPK	S95T004141	0 F	@ALPHA01 ALPHA01	SOLID	3.92E-02	2.89E-02	73.720 % Recovery	
7 SAMPLE	S95T004142	0 F	@ALPHA01 ALPHA01	SOLID	N/A	3.29E-01	9.770e-003 uCi/g	
7 SAMPLE	S95T004142	0 F	@ALPHA01 ALPHA01E	SOLID	N/A	8.44E+00	0.000 % Ct. Error	
8 DUP	S95T004142	0 F	@ALPHA01 ALPHA01	SOLID	3.29E-1	3.33E-1	1.210 RPD	
8 DUP	S95T004142	0 F	@ALPHA01 ALPHA01E	SOLID	1.00	8.57E+00	8.570 % Ct. Error	
9 SAMPLE	S96T000007	0 F	@ALPHA01 ALPHA01	SOLID	N/A	3.06E-01	3.120e-002 uCi/g	
9 SAMPLE	S96T000007	0 F	@ALPHA01 ALPHA01E	SOLID	N/A	1.71E+01	0.000 % Ct. Error	
10 DUP	S96T000007	0 F	@ALPHA01 ALPHA01	SOLID	3.06E-1	3.32E-1	8.150 RPD	
10 DUP	S96T000007	0 F	@ALPHA01 ALPHA01E	SOLID	1.00	1.85E+01	18.500 % Ct. Error	
11 SPK	S96T000007	0 F	@ALPHA01 ALPHA01	SOLID	3.92E-02	3.15E-02	80.360 % Recovery	
12 SAMPLE	S96T000008	0 F	@ALPHA01 ALPHA01	SOLID	N/A	9.52E-01	4.250e-002 uCi/g	
12 SAMPLE	S96T000008	0 F	@ALPHA01 ALPHA01E	SOLID	N/A	1.07E+01	0.000 % Ct. Error	
13 DUP	S96T000008	0 F	@ALPHA01 ALPHA01	SOLID	9.52E-1	7.78E-1	20.120 RPD	
13 DUP	S96T000008	0 F	@ALPHA01 ALPHA01E	SOLID	1.00	1.10E+01	11.000 % Ct. Error	

Final page for worklist# 5177

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

1/29/96
Date

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

WORKBOOK PAGE: STD1

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

STANDARD

		STANDARD	REPLICATE
Type	DETECTOR NUMBER	15	15
STD	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	1492	1502
5177	COUNT TIME in MINUTES (CT)	30	30
A or B ?	BACKGROUND in cpm (BKG)	0.3	0.3
AT	SAMPLE SIZE in mL (SS)	10.000	10.000
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	STANDARD BOOK NUMBER (Std BN)	23B56	23B56
Matrix	EFFICIENCY FACTOR (EFF)	0.2380	0.2380
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	49.433	49.767
Batch Number	Standard Value in $\mu\text{Ci/mL}$	1.02E-05	
96000688	Concentration in $\mu\text{Ci/L}$ =	9.36E-03	
Run	Replicate Concentration in $\mu\text{Ci/L}$ =	9.42E-03	
0	AVERAGE CONCENTRATION in $\mu\text{Ci/L}$ =	9.3875E-03	
Sample Prep			
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
WL#5177	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L}$ / 1000mL/L		
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SEH			
Chemist			
SLF	ALPHA TOTAL CONCENTRATION in $\mu\text{Ci/mL}$	9.39E-06	DETECTION LEVEL
Analyst			
SCL			
Date Complete			1.05E-07
01/29/96	RELATIVE COUNTING ERROR	5.1%	$\mu\text{Ci/mL}$
Analysis Date			
01/26/96			
Analysis Time			
08:00 AM			
Sample Point			
AN-102			

Analyst:	SEH	Date: 29-Jan-96
Signature of Chemist:	SLF	Date: 1/29/96

STANDARD.WB1 Rev. 1.0

508101ML

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

SOLIDS

		BLNK-PREP	REPLICATE
Type	DETECTOR NUMBER	15	15
BLNK-PREP	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	28	16
5177	COUNT TIME in MINUTES (CT)	30	30
AT or B ?	BACKGROUND in cpm (BKG)	0.3	0.3
AT	SAMPLE SIZE in mL (SS)	0.050	0.050
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.1588	2.1588
Matrix	EFFICIENCY FACTOR (EFF)	0.2380	0.2380
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.633	0.508
Batch Number			
96000688	Blank Concentration in $\mu\text{Ci/g}$	1.11E-02	
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	< 8.91E-03	
0	Maximum Concentration in $\mu\text{Ci/g}$	< 1.1105E-02	
Sample Prep			
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/g}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
WL#5177			
Instrument Code	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SEH			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Maximum) =	< 1.11E-02	DETECTION LEVEL
Analyst			
SCL	LESS THAN Value was Determined from R_s .		
Date Complete	RELATIVE COUNTING ERROR	140.0%	9.77E-03 $\mu\text{Ci/g}$
01/29/96			
Analysis Date			
01/26/96			
Analysis Time			
08:00 AM			
Sample Point			
AN-102			

Analyst:	SCL	Date: 29-Jan-96
Signature of Chemist:	SLF	Date: 1/29/96

BLANK.WB1 Rev. 1.0

508101ML V

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

SOLIDS

Type	DETECTOR NUMBER	SAMPLE	REPLICATE
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	15	15
Work List	GROSS COUNTS (GC)	2	2
5177	COUNT TIME in MINUTES (CT)	773	815
AT or TB ?	BACKGROUND in cpm (BKG)	30	30
AT	SAMPLE SIZE in mL (SS)	0.3	0.3
Test Code	DILUTION FACTOR (DF)	0.050	0.050
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	2.1588	2.1588
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.2380	0.2380
Batch Number		25.467	26.867
96000688	Blank Concentration in $\mu\text{Ci/g}$		
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	4.47E-01	4.71E-01
0	Average Concentration in $\mu\text{Ci/g}$		4.5881E-01
Sample Prep			
FUSION01	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/g}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
S95T004141			
Instrument Code	Relative Counting Error = $[(The\ Square\ Root\ of\ TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SEH			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average) =	4.59E-01	DETECTION LEVEL
Analyst			
SCL			
Date Complete			
01/29/96	RELATIVE COUNTING ERROR	7.2%	9.77E-03 $\mu\text{Ci/g}$
Analysis Date			
01/26/96			
Analysis Time			
08:00 AM			
Sample Point			
AN-102			

Analyst:	SCL	Date: 29-Jan-96
Signature of Chemist:	SLF	Date: 1/29/96
SAMPLE.WB1 Rev. 1.	508101ML	

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

SOLIDS

		DUP	REPLICATE
Type	DETECTOR NUMBER	15	15
DUP	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	790	801
5177	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.3	0.3
AT	SAMPLE SIZE in mL (SS)	0.050	0.050
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.1376	2.1376
Matrix	EFFICIENCY FACTOR (EFF)	0.2380	0.2380
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	26.033	26.400
Batch Number			
96000688	Blank Concentration in $\mu\text{Ci/g}$	4.61E-01	
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	4.67E-01	
0	Average Concentration in $\mu\text{Ci/g}$	4.6425E-01	
Sample Prep			
FUSION01	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/g}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
S95T004141			
Instrument Code	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SEH			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average) =	4.64E-01	DETECTION LEVEL
Analyst			
SCL			
Date Complete			9.87E-03
01/29/96	RELATIVE COUNTING ERROR	7.1%	$\mu\text{Ci/g}$
Analysis Date			
01/26/96			
Analysis Time			
08:00 AM			
Sample Point			
AN-102			

Analyst:	SCL	Date: 29-Jan-96
Signature of Chemist:	SLF	Date: 1/27/96
SAMPLE.WB1 Rev. 1.	508101 ML	

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

		SPIKE	REPLICATE
Type	DETECTOR NUMBER	15	15
SPK	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	48962	44368
5177	COUNT TIME in MINUTES (CT)	30	30
AT or IB?	BACKGROUND in cpm (BKG)	0.3	0.3
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	0.050	0.050
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.1588	2.1588
Matrix	SPIKE VOLUME in mL (SVol)	0.100	0.100
SOLID	SPIKE DILUTION FACTOR (SDF)	1	1
Batch Number	SPIKE BOOK NUMBER (Spk BN)	119B43	119B43
96000688	SPIKE VALUE in $\mu\text{Ci/mL}$ (SVal)	3.9209E-02	3.9209E-02
Rerun	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.238	0.238
0	SAMPLE + SPIKE $\mu\text{Ci/g}$ (S+S)	2.86E+01	2.59E+01
Sample Prep	AVERAGE or MAXIMUM $\mu\text{Ci/g}$ in SAMPLE	4.5881E-01	
FUSION01			
Sample #			
S95T004141			
Instrument Code			
WB26872			
Prepared By			
SEH			
Chemist			
SLF			
Analyst			
SCL			
Date Complete			
01/29/96			
Analysis Date			
01/26/96	QC ACTUAL	=	3.92E-02
Analysis Time	QC FOUND	=	2.89E-02
08:00 AM	AVG. PERCENT SPIKE RECOVERY	=	73.8%
Sample Point			
AN-102			

R_s (Sample Count Rate) = $(TC / CT) - BKG$
 $SAMPLE + SPIKE \mu\text{Ci/g} = R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$
 $QC ACTUAL = SVal$
 $QC FOUND = (((S+S \mu\text{Ci/g} - SAMPLE \mu\text{Ci/g}) * ((SDF/(SVol*1000))/(DF/SS/Dg/L))))$
 $PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) * 100$

Analyst:	SEH	Date: 29-Jan-96
Signature of Chemist:	SLF	Date: 1/29/96

SPIKE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SAM7

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

SOLIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	15	15
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	566	579
5177	COUNT TIME in MINUTES (CT)	30	30
AT or IS ?	BACKGROUND in cpm (BKG)	0.3	0.3
AT	SAMPLE SIZE in mL (SS)	0.050	0.050
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.1584	2.1584
Matrix	EFFICIENCY FACTOR (EFF)	0.2380	0.2380
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	18.567	19.000
Batch Number			
96000688	Blank Concentration in $\mu\text{Ci/g}$	3.26E-01	
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	3.33E-01	
0	Average Concentration in $\mu\text{Ci/g}$	3.2941E-01	
Sample Prep			
FUSION01	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	$\text{ALPHA TOTAL } \mu\text{Ci/g} = R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
S95T004142			
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SEH			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average) =	3.29E-01	DETECTION LEVEL
Analyst			
SCL			
Date Complete	RELATIVE COUNTING ERROR	8.4%	9.77E-03 $\mu\text{Ci/g}$
01/29/96			
Analysis Date			
01/26/96			
Analysis Time			
08:00 AM			
Sample Point			
AN-102			

Analyst:	SCL	Date: 29-Jan-96
Signature of Chemist:	SLF	Date: 1/29/96
SAMPLE.WB1 Rev. 1.	50810\ML	

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WORKBOOK PAGE: DUP8

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

SOLIDS

		DUP	REPLICATE
Type	DETECTOR NUMBER	15	15
DUP	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	549	606
5177	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.3	0.3
AT	SAMPLE SIZE in mL (SS)	0.050	0.050
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.156	2.156
Matrix	EFFICIENCY FACTOR (EFF)	0.2380	0.2380
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	18.000	19.900
Batch Number			
96000688	Blank Concentration in $\mu\text{Ci/g}$	3.16E-01	
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	3.49E-01	
0	Average Concentration in $\mu\text{Ci/g}$	3.3271E-01	
Sample Prep			
FUSION01	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	$\text{ALPHA TOTAL } \mu\text{Ci/g} = R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
S95T004142			
Instrument Code	Relative Counting Error = $\{ [(The \text{ Square Root of } TC + BKG * CT) / (TC - BKG * CT)] \} * 1.96 * 100$		
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SEH			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average) =	3.33E-01	DETECTION LEVEL
Analyst			
SCL			
Date Complete			9.79E-03 $\mu\text{Ci/g}$
01/29/96	RELATIVE COUNTING ERROR	8.6%	
Analysis Date			
01/26/96			
Analysis Time			
08:00 AM			
Sample Point			
AN-102			

Analyst:	SCL	Date: 29-Jan-96
Signature of Chemist:	SLF	Date: 1/29/96
SAMPLE.WB1 Rev. 1. 508101ML		

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

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	15	15
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	156	190
5177	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.3	0.3
AT	SAMPLE SIZE in mL (SS)	0.050	0.050
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	0.676	0.676
Matrix	EFFICIENCY FACTOR (EFF)	0.2380	0.2380
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	4.900	6.033
Batch Number			
96000688	Blank Concentration in $\mu\text{Ci/g}$	2.74E-01	
Run	Replicate Concentration in $\mu\text{Ci/g}$	3.38E-01	
0	Average Concentration in $\mu\text{Ci/g}$	3.0611E-01	
Sample Prep			
FUSION01	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/g}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
S96T000007			
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SEH			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average) =	3.06E-01	DETECTION LEVEL
Analyst			
SCL			
Date Complete			3.12E-02 $\mu\text{Ci/g}$
01/29/96	RELATIVE COUNTING ERROR	17.1%	
Analysis Date			
01/26/96			
Analysis Time			
08:00 AM			
Sample Point			
AN-102			

Analyst:	SCL	Date: 29-Jan-96
Signature of Chemist:	SLF	Date: 1/29/96
SAMPLE.WB1 Rev. 1.	508101ML	

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

SOLIDS

		DUP	REPLICATE
Type	DETECTOR NUMBER	15	15
DUP	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	137	165
5177	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.3	0.3
AT	SAMPLE SIZE in mL (SS)	0.050	0.050
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	0.5404	0.5404
Matrix	EFFICIENCY FACTOR (EFF)	0.2380	0.2380
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	4.267	5.200
Batch Number			
96000688	Blank Concentration in $\mu\text{Ci/g}$	2.99E-01	
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	3.64E-01	
0	Average Concentration in $\mu\text{Ci/g}$	3.3155E-01	
Sample Prep			
FUSION01	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/g}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
S96T000007			
Instrument Code	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SEH			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average) =	3.32E-01	DETECTION LEVEL
Analyst			
SCL			
Date Complete			
01/29/96	RELATIVE COUNTING ERROR	18.5%	3.90E-02 $\mu\text{Ci/g}$
Analysis Date			
01/26/96			
Analysis Time			
08:00 AM			
Sample Point			
AN-102			

Analyst:	SCL	Date: 29-Jan-96
Signature of Chemist:	SLF	Date: 1/29/96
SAMPLE.WB1 Rev. 1.	508101ML	

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

		SPIKE	REPLICATE
Type	DETECTOR NUMBER	15	15
SPK	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	51543	48747
5177	COUNT TIME in MINUTES (CT)	30	30
At or IS?	BACKGROUND in cpm (BKG)	0.3	0.3
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	0.050	0.050
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	0.676	0.676
Matrix	SPIKE VOLUME in mL (SVol)	0.100	0.100
SOLID	SPIKE DILUTION FACTOR (SDF)	1	1
Batch Number	SPIKE BOOK NUMBER (Spk BN)	119B43	119B43
96000688	SPIKE VALUE in $\mu\text{Ci/mL}$ (SVal)	3.9209E-02	3.9209E-02
Rerun	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.238	0.238
0	SAMPLE + SPIKE $\mu\text{Ci/g}$ (S+S)	9.62E+01	9.10E+01
Sample Prep	AVERAGE or MAXIMUM $\mu\text{Ci/g}$ in SAMPLE	3.0611E-01	
FUSION01			
Sample #			
S96T000007			
Instrument Code			
WB26872			
Prepared By			
SEH			
Chemist			
SLF			
Analyst			
SCL			
Date Complete			
01/29/96			
Analysis Date			
01/26/96			
Analysis Time			
08:00 AM			
Sample Point			
AN-102			

Rs (Sample Count Rate) = (TC / CT) - BKG	
SAMPLE + SPIKE $\mu\text{Ci/g}$ = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/ μCi)	
QC ACTUAL = SVal	
QC FOUND = (((S+S $\mu\text{Ci/g}$ - SAMPLE $\mu\text{Ci/g}$) * ((SDF/(SVol*1000)))/(DF/SS/Dg/L))))	
PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) * 100	

QC ACTUAL	=	3.92E-02
QC FOUND	=	3.15E-02
AVG. PERCENT SPIKE RECOVERY	=	80.4%

Analyst:	SEH	Date: 29-Jan-96
Signature of Chemist:	SLF	Date: 1/29/96
SPIKE.WB1 Rev. 1.0	508101ML	

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

SOLIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	15	15
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	364	404
5177	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.3	0.3
AT	SAMPLE SIZE in mL (SS)	0.050	0.050
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	0.4968	0.4968
Matrix	EFFICIENCY FACTOR (EFF)	0.2380	0.2380
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	11.833	13.167
Batch Number			
96000688	Blank Concentration in $\mu\text{Ci/g}$	9.02E-01	
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	1.00E+00	
0	Average Concentration in $\mu\text{Ci/g}$	9.5242E-01	
Sample Prep			
FUSION01	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/g}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
S96T000008			
Instrument Code	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SEH			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average) =	9.52E-01	DETECTION LEVEL
Analyst			
SCL			
Date Complete			4.25E-02
01/29/96	RELATIVE COUNTING ERROR	10.7%	$\mu\text{Ci/g}$
Analysis Date			
01/26/96			
Analysis Time			
08:00 AM			
Sample Point			
AN-102			

Analyst:	SCL	Date: 29-Jan-96
Signature of Chemist:	SLF	Date: 1/29/96
SAMPLE.WB1 Rev. 1.	50810/ML	

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

SOLIDS

		DUP	REPLICATE
Type	DETECTOR NUMBER	15	15
DUP	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	348	344
5177	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.3	0.3
AT	SAMPLE SIZE in mL (SS)	0.050	0.050
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	0.5468	0.5468
Matrix	EFFICIENCY FACTOR (EFF)	0.2380	0.2380
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	11.300	11.167
Batch Number			
96000688	Blank Concentration in $\mu\text{Ci/g}$	7.82E-01	
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	7.73E-01	
0	Average Concentration in $\mu\text{Ci/g}$	7.7764E-01	
Sample Prep			
FUSION01	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	$\text{ALPHA TOTAL } \mu\text{Ci/g} = R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
S96T000008			
Instrument Code	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SEH			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average) =	7.78E-01	DETECTION LEVEL
Analyst			
SCL			
Date Complete			3.86E-02 $\mu\text{Ci/g}$
01/29/96	RELATIVE COUNTING ERROR	11.0%	
Analysis Date			
01/26/96			
Analysis Time			
08:00 AM			
Sample Point			
AN-102			

Analyst:	SCL	Date: 29-Jan-96
Signature of Chemist:	SLF	Date: 1/29/96
SAMPLE.WB1 Rev. 1.	508101ML	

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Accession #: D196061100

Document #: SD-WM-DP-165

Title/Desc:

FINAL REPORT FOR TANK 241AN102 GRAB SAMPLES
2AN-95-1 THRU 2AN-95-6 & 102-AN-1 THRU 102-AN-4
[SEC 2 OF 2 PAGE 474 TO 2-153]

Pages: 378

This document was too large to scan as a whole document, therefore it required breaking into smaller sections.

Document number: SD-WM-DP-165

Section 2 of 2

Title: Final Report for Tank 24/AN102, Grab
Samples 2AN-95-1 Through 2AN-95-6 &
102-AN-1 Through 102-AN-4

Date: 3-21-96 Revision: A000

Originator: Esch RA
Co: _____

Recipient: _____
Co: _____

References: _____

WHC-SD-WM-DP-165, REV. 1

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

LABCORE Data Entry Template for Worklist#

4801

Analyst: S. C. L. Instrument: AB00 15 Book # 14056

Method: LA-508-101 Rev/Mod D-2

Worklist Comment: Determine sample size using Ludlum. Use .100 mL A-SPK. SLF

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				@ALPHA01 ALPHA01	LIQUID			N/A	uCi/mL
		1	STD				@ALPHA01 ALPHA01E	LIQUID			N/A	% Ct. Error
		2	BLNK				@ALPHA01 ALPHA01	LIQUID			N/A	uCi/mL
		2	BLNK				@ALPHA01 ALPHA01E	LIQUID			N/A	% Ct. Error
		3	BLNK/BKG				@ALPHA01 ALPHA01	LIQUID			N/A	uCi/mL
95000227	AN-102 GRAB	4	SAMPLE	S96T000005	0		@ALPHA01 ALPHA01	LIQUID	N/A			uCi/mL
95000227	AN-102 GRAB	4	SAMPLE	S96T000005	0		@ALPHA01 ALPHA01E	LIQUID	N/A			% Ct. Error
95000227	AN-102 GRAB	5	DUP	S96T000005	0		@ALPHA01 ALPHA01	LIQUID			N/A	uCi/mL
95000227	AN-102 GRAB	5	DUP	S96T000005	0		@ALPHA01 ALPHA01E	LIQUID			N/A	% Ct. Error
95000227	AN-102 GRAB	6	SPK	S96T000005	0		@ALPHA01 ALPHA01	LIQUID			N/A	uCi/mL
95000227	AN-102 GRAB	7	SAMPLE	S96T000006	0		@ALPHA01 ALPHA01	LIQUID	N/A			uCi/mL
95000227	AN-102 GRAB	7	SAMPLE	S96T000006	0		@ALPHA01 ALPHA01E	LIQUID	N/A			% Ct. Error
95000227	AN-102 GRAB	8	DUP	S96T000006	0		@ALPHA01 ALPHA01	LIQUID			N/A	uCi/mL
95000227	AN-102 GRAB	8	DUP	S96T000006	0		@ALPHA01 ALPHA01E	LIQUID			N/A	% Ct. Error

DATA
NOT USED
IN PACKAGE

Final page for worklist #

4801

S. C. L. 1-10-96
Analyst Signature Date

DATA
NOT USED
IN PACKAGE

SE Hogan 1/12/96
Analyst Signature Date
C. J. Quinn 1/15/96

Data Entry Comments:

SPK recovery is out of control limits. Batch
Spikes: 119843 will be rerun at 1/16/96

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

LABCORE Completed Worklist Report for Worklist# 4801

Analyst: scl Instrument: AB15 Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: Determine sample size using Ludlum. Use .100 mL A-SPK. SLF

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	ALPHA01 ALPHA01	LIQUID	1.54E-05	1.36E-5	88.310 % Recovery	
1 STD		0	ALPHA01 ALPHA01E	LIQUID	1.00	4.24E+00	4.240 % Ct. Error	
2 BLNK		0	ALPHA01 ALPHA01	LIQUID	1	<1.57E-2	uCi/mL	
2 BLNK		0	ALPHA01 ALPHA01E	LIQUID	1.00	5.00E+02	500.000 % Ct. Error	
3 BLNK/BKG		0	ALPHA01 ALPHA01	LIQUID	1.00E+00	1.45E+00	1.450 uCi/mL	
4 SAMPLE	S96T000005	0	ALPHA01 ALPHA01	LIQUID	N/A	1.63E-01	1.920e-002 uCi/mL	
4 SAMPLE	S96T000005	0	ALPHA01 ALPHA01E	LIQUID	N/A	1.89E+01	0.000 % Ct. Error	
5 DUP	S96T000005	0	ALPHA01 ALPHA01	LIQUID	1.63E-1	1.89E-1	14.770 RPD	
5 DUP	S96T000005	0	ALPHA01 ALPHA01E	LIQUID	1.00	1.75E+01	17.500 % Ct. Error	
6 SPK	S96T000005	0	ALPHA01 ALPHA01	LIQUID	3.92E-02	1.90E-02	48.470 % Recovery	
7 SAMPLE	S96T000006	0	ALPHA01 ALPHA01	LIQUID	N/A	1.83E-01	1.920e-002 uCi/mL	
7 SAMPLE	S96T000006	0	ALPHA01 ALPHA01E	LIQUID	N/A	1.78E+01	0.000 % Ct. Error	
8 DUP	S96T000006	0	ALPHA01 ALPHA01	LIQUID	1.83E-1	1.78E-1	2.770 RPD	
8 DUP	S96T000006	0	ALPHA01 ALPHA01E	LIQUID	1.00	1.89E+01	18.900 % Ct. Error	

Final page for worklist# 4801

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Reviewer Signature _____ Date 1/17/96

DATA
NOT USED
IN PACKAGE

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

WHC-SD-WM-DP-165, REV. 1

WORKBOOK PAGE: STD1

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

STANDARD

Type	DETECTOR NUMBER	STANDARD	REPLICATE
STD	DISH SIZE (1, 2, or 5) (MS)	15	15
Work List	GROSS COUNTS (GC)	2	2
4801	COUNT TIME in MINUTES (CT)	2167	2156
AT or TS ?	BACKGROUND in cpm (BKG)	30	30
AT	SAMPLE SIZE in mL (SS)	0.23	0.23
Test Code	DILUTION FACTOR (DF)	10.000	10.000
@ALPHA01	STANDARD BOOK NUMBER (Std BN)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	14856	14856
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.2380	0.2380
Batch Number	Standard Value in $\mu\text{Ci/mL}$	72.003	71.637
96000250	Concentration in $\mu\text{Ci/L}$ =	1.54E-05	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$ =	1.36E-02	
0	AVERAGE CONCENTRATION in $\mu\text{Ci/L}$ =	1.3593E-02	
Sample Prep			
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
WL#4801	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$		
Instrument Code	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SEH			
Chemist			
SLF	ALPHA TOTAL CONCENTRATION in $\mu\text{Ci/mL}$	1.36E-05	DETECTION LEVEL
Analyst			
SCL			
Date Complete	RELATIVE COUNTING ERROR =	4.2%	9.45E-08 $\mu\text{Ci/mL}$
01/12/96			
Analysis Date			
01/10/96			
Analysis Time			
11:00 AM			
Sample Point			
AN-102 GRAB			

Analyst:	SEH	Date: 12-Jan-96
Signature of Chemist:	SLF	Date: 1/16/96
STANDARD.WB1 Rev. 1.0	508101ML	

DATA
NOT USED
PACKAGE

477

WORKBOOK PAGE: BLANK2

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

LIQUIDS

Type	DETECTOR NUMBER	BLNK	REPLICATE
BLNK	DISH SIZE (1, 2, or 5) (MS)	15	15
Work List	GROSS COUNTS (GC)	2	2
4801	COUNT TIME in MINUTES (CT)	8	12
AT or TB ?	BACKGROUND in cpm (BKG)	30	30
AT	SAMPLE SIZE in mL (SS)	0.23	0.23
Test Code	DILUTION FACTOR (DF)	1.000	1.000
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	20301	20301
Matrix	EFFICIENCY FACTOR (EFF)	1	1
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.2380	0.2380
Batch Number		0.249	0.409
96000250	Blank Concentration in $\mu\text{Ci/L}$	< 9.57E+00	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	< 1.57E+01	
0	Maximum Concentration in $\mu\text{Ci/L}$	< 1.5719E+01	
Sample Prep			
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/ μCi)		
WL#4801	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L}$ / 1000mL/L		
Instrument Code	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100		
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SEH			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$	< 1.57E-02	
Analyst	LESS THAN Value was Determined from Rmax.		
SCL			
Date Complete	RELATIVE COUNTING ERROR	500.0%	
01/12/96			
Analysis Date			
01/10/96			
Analysis Time			
11:00 AM			
Sample Point			
AN-102 GRAB			

Analyst:	SEH	Date: 12-Jan-96
Signature of Chemist:	SLF	Date: 1/16/96

BLANK.WB1 Rev. 1.0

508101ML

DATA
NOT USED
PACKAGE

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

LIQUIDS

Type	DETECTOR NUMBER	SAMPLE	REPLICATE
SAMPLE	DISH SIZE (1, 2, or 5)	15	15
Work List	GROSS COUNTS (GC)	2	2
4801	COUNT TIME in MINUTES (CT)	127	141
AT or TB ?	BACKGROUND in cpm (BKG)	30	30
AT	SAMPLE SIZE in mL (SS)	0.23	0.23
Test Code	DILUTION FACTOR (DF)	1.000	1.000
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	20301	20301
Matrix	EFFICIENCY FACTOR (EFF)	1	1
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.2380	0.2380
Batch Number		4.003	4.470
96000250	Blank Concentration in $\mu\text{Ci/L}$		1.54E+02
Run	Replicate Concentration in $\mu\text{Ci/L}$		1.72E+02
0	Average Concentration in $\mu\text{Ci/L}$		1.6278E+02
Sample Prep			
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
S96T000005	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$		
Instrument Code	Relative Counting Error = $[(The\ Square\ Root\ of\ TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SEH			
Chemist			
SLF	ALPHA TOTAL	1.63E-01	
Analyst	in $\mu\text{Ci/mL}$		
SCL			
Date Complete			
01/12/96	RELATIVE COUNTING ERROR	18.9%	
Analysis Date			
01/10/96			
Analysis Time			
11:00 AM			
Sample Point			
AN-102 GRAB			

Analyst:	SEH	Date: 12-Jan-96
Signature of Chemist:	SLF	Date: 1/16/96
SAMPLE.WB1 Rev. 1.0	508101ML	

DATA
NOT USED
IN PACKAGE

WORKBOOK PAGE: DUP5

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

LIQUIDS

Type	DETECTOR NUMBER	DUP	REPLICATE
DUP	DISH SIZE (1, 2, or 5) (MS)	15	15
Work List	GROSS COUNTS (GC)	2	2
4801	COUNT TIME in MINUTES (CT)	145	164
AT or TB ?	BACKGROUND in cpm (BKG)	30	30
AT	SAMPLE SIZE in mL (SS)	0.23	0.23
Test Code	DILUTION FACTOR (DF)	1.000	1.000
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	20301	20301
Matrix	EFFICIENCY FACTOR (EFF)	1	1
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.2380	0.2380
Batch Number		4.603	5.237
96000250	Blank Concentration in $\mu\text{Ci/L}$		
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	1.77E+02	
0	Average Concentration in $\mu\text{Ci/L}$	2.01E+02	
Sample Prep		1.8904E+02	
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
S96T000005	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$		
Instrument Code	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SEH			
Chemist			
SLF	ALPHA TOTAL	1.89E-01	
Analyst	in $\mu\text{Ci/mL}$		
SCL			
Date Complete	RELATIVE COUNTING ERROR	17.5%	
01/12/96			
Analysis Date			
01/10/96			
Analysis Time			
11:00 AM			
Sample Point			
AN-102 GRAB			

Analyst:	SEH	Date: 12-Jan-96
Signature of Chemist:	SLF	Date: 1/16/96
SAMPLE.WB1 Rev. 1.0	508101ML	

DATA
USED
PAGE

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

		SPIKE	REPLICATE
Type	DETECTOR NUMBER	15	15
SPK	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	29926	30508
4801	COUNT TIME in MINUTES (CT)	30	30
AT or TB?	BACKGROUND in cpm (BKG)	0.23	0.23
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	1.000	1.000
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	20301	20301
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	SPIKE VOLUME in mL (SVol)	0.100	0.100
LIQUID	SPIKE DILUTION FACTOR (SDF)	1	1
Batch Number	SPIKE BOOK NUMBER (Spk BN)	119B43	119B43
96000250	SPIKE VALUE in $\mu\text{Ci/mL}$ (SVal)	3.9211E-02	3.9211E-02
Rerun	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.238	0.238
0	SAMPLE + SPIKE $\mu\text{Ci/mL}$ (S+S)	3.83E+01	3.91E+01
Sample Prep	AVERAGE or MAXIMUM $\mu\text{Ci/mL}$ in SAMPLE	1.6278E-01	
N/A			
Sample #			
S96T000005			
Instrument Code			
WB26872			
Prepared By			
SEH			
Chemist			
SLF			
Analyst			
SCL			
Date Complete			
01/12/96			
Analysis Date			
01/10/96			
QC ACTUAL	=	3.92E-02	
QC FOUND	=	1.90E-02	
11:00 AM	AVG. PERCENT SPIKE RECOVERY	=	48.4%
Sample Point			
AN-102 GRAB			

Rs (Sample Count Rate) = (TC / CT) - BKG
SAMPLE + SPIKE $\mu\text{Ci/mL}$ = Rs * DF * DDF / (EFF * SS * 2220000dpm/ μCi)
QC ACTUAL = SVal
QC FOUND = (((S+S $\mu\text{Ci/mL}$ - SAMPLE $\mu\text{Ci/mL}$) * ((SDF/SVol)/(DF*DDF/SS))))
PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) * 100

Analyst:	SEH	Date: 12-Jan-96
Signature of Chemist:	SLF	Date: 1/16/96

SPIKE.WB1 Rev. 1.0 508101ML

DATA
NOT USED
IN PACKAGE

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

LIQUIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	15	15
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	159	141
4801	COUNT TIME In MINUTES (CT)	30	30
AT or TB ?	BACKGROUND In cpm (BKG)	0.23	0.23
AT	SAMPLE SIZE In mL (SS)	1.000	1.000
Test Code	DILUTION FACTOR (DF)	20301	20301
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2380	0.2380
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	5.070	4.470
Batch Number			
96000250	Blank Concentration in $\mu\text{Ci/L}$	1.95E+02	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	1.72E+02	
0	Average Concentration in $\mu\text{Ci/L}$	1.8328E+02	
Sample Prep			
N/A			
Sample #			
S96T000006			
Instrument Code			
WB26872			
Prepared By			
SEH			
Chemist			
SLF			
Analyst			
SCL			
Date Complete			
01/12/96			
Analysis Date			
01/10/96			
Analysis Time			
11:00 AM			
Sample Point			
AN-102 GRAB			

v RESULTS v		DETECTION LEVEL
ALPHA TOTAL	in $\mu\text{Ci/mL}$ 1.83E-01	
$Rs \text{ (Sample Count Rate)} = (TC / CT) - BKG$ $\text{ALPHA TOTAL } \mu\text{Ci/L} = Rs * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$ $\text{ALPHA TOTAL } \mu\text{Ci/mL} = \text{ALPHA TOTAL } \mu\text{Ci/L} / 1000\text{mL/L}$ $\text{Relative Counting Error} = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$ Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
RELATIVE COUNTING ERROR	17.8%	1.92E-02 $\mu\text{Ci/mL}$

Analyst:	SEH	Date: 12-Jan-96
Signature of Chemist:	SLF	Date: 1/16/96
SAMPLE.WB1 Rev. 1.0	508101ML	

DATA
NOT USED
CKAGE

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

	DUP	REPLICATE
Type	DETECTOR NUMBER	15
DUP	DISH SIZE (1, 2, or 5) (MS)	2
Work List	GROSS COUNTS (GC)	165
4801	COUNT TIME in MINUTES (CT)	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.23
AT	SAMPLE SIZE in mL (SS)	1.000
Test Code	DILUTION FACTOR (DF)	20301
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2380
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	5.270
Batch Number		
96000250	Blank Concentration in $\mu\text{Ci/L}$	2.02E+02
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	1.54E+02
0	Average Concentration in $\mu\text{Ci/L}$	1.7815E+02
Sample Prep		
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$	
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$	
S96T000006	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$	
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$	
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
Prepared By		
SEH		
Chemist		
SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$	1.78E-01
Analyst		
SCL		
Date Complete		
01/12/96	RELATIVE COUNTING ERROR	18.9%
Analysis Date		
01/10/96		
Analysis Time		
11:00 AM		
Sample Point		
AN-102 GRAB		

Analyst:	SEH	Date: 12-Jan-96
Signature of Chemist:	SLF	Date: 1/16/96
SAMPLE.WB1 Rev. 1.0	508V01ML	

DATA
NOT USED
IN PACKAGE

483

LABCORE Completed Worklist Report for Worklist# 4865

Analyst: rwk

Instrument: GEA02

Book# 144852

Method: LA-548-121 Rev/Mod D-1

Worklist Comment: AN102 GEA 3870,71,72 SS=.100-10-1. for 3963 use 1ml SS. gjh

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	@GEA-01	CO60-02	LIQUID	0.0208	2.00e-02	96.150 % Recovery
1 STD		0	@GEA-01	CO60-02E	LIQUID	1	1.55	1.550 % Ct. Error
1 STD		0	@GEA-01	CS13702	LIQUID	0.0253	2.45e-02	96.840 % Recovery
1 STD		0	@GEA-01	CS13702E	LIQUID	1	1.66	1.660 % Ct. Error
2 BLNK		0	@GEA-01	CO60-02	LIQUID	1	<3.03e-3	uCi/mL
2 BLNK		0	@GEA-01	CS13702	LIQUID	1	<7.11e-3	uCi/mL
3 SAMPLE	S95T003870	0	@GEA-01	CO60-02	LIQUID	N/A	1.430e-01	3.000e-003 uCi/mL
3 SAMPLE	S95T003870	0	@GEA-01	CO60-02E	LIQUID	N/A	10.27	0.000 % Ct. Error
3 SAMPLE	S95T003870	0	@GEA-01	CS13702	LIQUID	N/A	3.220e+02	7.000e-003 uCi/mL
3 SAMPLE	S95T003870	0	@GEA-01	CS13702E	LIQUID	N/A	.14	0.000 % Ct. Error
4 DUP	S95T003870	0	@GEA-01	CO60-02	LIQUID	1.43e-01	1.51e-01	5.440 RPD
4 DUP	S95T003870	0	@GEA-01	CO60-02E	LIQUID	1	9.17	9.170 % Ct. Error
4 DUP	S95T003870	0	@GEA-01	CS13702	LIQUID	3.22e+02	3.23e+02	0.310 RPD
4 DUP	S95T003870	0	@GEA-01	CS13702E	LIQUID	1	.14	0.140 % Ct. Error
5 SAMPLE	S95T003871	0	@GEA-01	CO60-02	LIQUID	N/A	1.480e-01	3.000e-003 uCi/mL
5 SAMPLE	S95T003871	0	@GEA-01	CO60-02E	LIQUID	N/A	9.19	0.000 % Ct. Error
5 SAMPLE	S95T003871	0	@GEA-01	CS13702	LIQUID	N/A	3.130e+02	7.000e-003 uCi/mL
5 SAMPLE	S95T003871	0	@GEA-01	CS13702E	LIQUID	N/A	.14	0.000 % Ct. Error
6 DUP	S95T003871	0	@GEA-01	CO60-02	LIQUID	1.48e-01	1.57e-01	5.900 RPD
6 DUP	S95T003871	0	@GEA-01	CO60-02E	LIQUID	1	8.93	8.930 % Ct. Error
6 DUP	S95T003871	0	@GEA-01	CS13702	LIQUID	3.13e+02	3.12e+02	0.320 RPD
6 DUP	S95T003871	0	@GEA-01	CS13702E	LIQUID	1	.14	0.140 % Ct. Error
7 SAMPLE	S95T003872	0	@GEA-01	CO60-02	LIQUID	N/A	1.420e-01	3.000e-003 uCi/mL
7 SAMPLE	S95T003872	0	@GEA-01	CO60-02E	LIQUID	N/A	10.5	0.000 % Ct. Error
7 SAMPLE	S95T003872	0	@GEA-01	CS13702	LIQUID	N/A	3.230e+02	7.000e-003 uCi/mL
7 SAMPLE	S95T003872	0	@GEA-01	CS13702E	LIQUID	N/A	.14	0.000 % Ct. Error
8 DUP	S95T003872	0	@GEA-01	CO60-02	LIQUID	1.42e-01	1.44e-01	1.400 RPD
8 DUP	S95T003872	0	@GEA-01	CO60-02E	LIQUID	1	8.93	8.930 % Ct. Error
8 DUP	S95T003872	0	@GEA-01	CS13702	LIQUID	3.23e+02	3.28e+02	1.540 RPD
8 DUP	S95T003872	0	@GEA-01	CS13702E	LIQUID	1	.14	0.140 % Ct. Error
9 SAMPLE	S95T003963	0	@GEA-01	CO60-02	LIQUID	N/A	2.760e-05	3.000e-003 uCi/mL
9 SAMPLE	S95T003963	0	@GEA-01	CO60-02E	LIQUID	N/A	n/a	0.000 % Ct. Error
9 SAMPLE	S95T003963	0	@GEA-01	CS13702	LIQUID	N/A	8.050e-05	7.000e-003 uCi/mL
9 SAMPLE	S95T003963	0	@GEA-01	CS13702E	LIQUID	N/A	n/a	0.000 % Ct. Error
10 DUP	S95T003963	0	@GEA-01	CO60-02	LIQUID	<2.76e-5	<3.04e-5	RPD
10 DUP	S95T003963	0	@GEA-01	CO60-02E	LIQUID	1	n/a	% Ct. Error
10 DUP	S95T003963	0	@GEA-01	CS13702	LIQUID	<8.05e-5	<7.93e-5	RPD
10 DUP	S95T003963	0	@GEA-01	CS13702E	LIQUID	1	n/a	% Ct. Error

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

LABCORE Completed Worklist Report for Worklist# 4865

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

Final page for worklist# 4865

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

B. Machelot 1/17/96
Reviewer Signature Date

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

LABCORE Data Entry Template for Worklist# 4865

Analyst: RK Instrument: GEA00 2 Book# 144B52

Method: LA-548-121 Rev/Mod D-1

Worklist Comment: AN102 GEA 3870,71,72 SS=.100-10-1. for 3963 use 1ml SS. gjh

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@GEA-01	LIQUID		
2	BLNK				@GEA-01	LIQUID		
3	SAMPLE	S95T003870 0			@GEA-01	LIQUID	95000222	AN-102 GRAB
		Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
4	DUP	S95T003870 0			@GEA-01	LIQUID		
5	SAMPLE	S95T003871 0			@GEA-01	LIQUID	95000222	AN-102 GRAB
		Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
6	DUP	S95T003871 0			@GEA-01	LIQUID		
7	SAMPLE	S95T003872 0			@GEA-01	LIQUID	95000222	AN-102 GRAB
		Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
8	DUP	S95T003872 0			@GEA-01	LIQUID		
9	SAMPLE	S95T003963 0			@GEA-01	LIQUID	95000222	AN-102 GRAB
		Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
10	DUP	S95T003963 0			@GEA-01	LIQUID		

Final page for worklist # 4865

Mark King 1/15/96
Analyst Signature Date

MC Brown 1/14/96
Analyst Signature Date
SE Hogan 1/16/96

Data Entry Comments:

 ~ 222-S Laboratory Counting Room 15-JAN-1996 10:13:56.65

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

WHC-SD-WM-DP-165, REV. 1

Worklist #: WL#4865
 Sample ID: WL#4865-STD
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.00000E+00

Removed by:

ADP/James 1-15-96

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

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2551.cnf
 Geometry: 42
 Count Time: 0 00:50:00.00 sec
 Real Time: 0 00:50:07.23 sec
 Dead Time: 0.2%

Verified by:

RA Jones 1-16-96

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

Sample Count Time: 15-JAN-1996 09:23:10.05
 Decayed to: 15-JAN-1996 09:23:10.05
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: CJO
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

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

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.65*	17671	1.56	1323.32	1316	15	1.7		CS-137	24.5
0	1173.23	10251	1.88	2346.51	2337	19	2.2		CO-60	20.1
0	1332.51	9123	2.03	2665.17	2655	21	2.2		CO-60	19.9

Summary of Nuclide Activity
Sample ID : WL#4865-STD

Page : 2
Acquisition date : 15-JAN-1996 09:23:10

Total number of lines in spectrum 3 WHC-SD-WM-DP-165, REV. 1
Number of unidentified lines 0
Number of lines tentatively identified by NID 3 100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CO-60	5.27Y	1.000	1.999E+01	1.999E+01	0.031E+01	1.55	
CS-137	30.00Y	1.000	2.452E+01	2.452E+01	0.041E+01	1.66	
Total Activity :			4.452E+01	4.452E+01			

Grand Total Activity : 4.452E+01 4.452E+01

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

Minimum Detectable Activity Report
Sample ID : WL#4865-STD

Page : 3
Acquisition date : 15-JAN-1996 09:23:10

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	883.	477.59	1.2053E+00
NA-22	76.	1274.53	8.4904E-02
NA-24	14.	1368.55	3.9375E-02
K-40	125.	1460.75	1.1389E+00
SC-46	408.	1120.55	1.7669E-01
CR-51	889.	320.08	9.0236E-01
MN-54	498.	834.83	1.4953E-01
CO-56	564.	846.76	1.6111E-01
CO-57	1084.	122.06	7.3609E-02
CO-58	510.	810.78	1.4841E-01
FE-59	514.	1099.25	3.4474E-01
ZN-65	481.	1115.55	3.7686E-01
SE-75	1145.	264.66	1.5459E-01
KR-85	703.	514.00	2.7317E+01
SR-85	703.	514.01	1.2349E-01
Y-88	11.	1836.06	4.2920E-02
Y-90	13.	1760.70	1.6177E-01
Y-91	138.	1204.67	3.6522E+01
NB-94	616.	871.09	1.7239E-01
NB-95	430.	765.78	1.2938E-01
ZR-95	411.	756.73	2.2925E-01
RU-103	683.	497.08	1.2487E-01
RURH-106	515.	621.93	2.3913E+00
AG-108m	418.	722.94	1.3353E-01
CD-109	999.	88.03	2.4269E+00
AG-110M	827.	657.76	1.6635E-01
SN-113	891.	391.69	1.6430E-01
TE-123m	1079.	159.00	7.3500E-02
SB-124	540.	602.73	1.2103E-01
SB-125	968.	427.89	4.0173E-01
TE-125m	998.	109.27	2.3417E+01
I-129	940.	39.60	0.0000E+00
I-131	882.	364.48	1.2241E-01
XE-131m	1067.	163.93	3.1723E+00
BA-133	905.	356.02	1.5941E-01
CS-134	543.	604.70	1.2194E-01
CS-136	504.	818.51	1.4849E-01
CS-138	15.	1435.86	8.8272E-02
CE-139	1090.	165.85	7.9009E-02
BA-140	594.	537.31	4.6422E-01
LA-140	16.	1596.21	4.9973E-02
CE-141	1163.	145.44	1.3046E-01
CE-144	1103.	133.51	5.5531E-01
CEPR-144	1102.	133.51	1.1096E+00
EU-152	25.	1408.01	2.5463E-01
EU-154	76.	1274.51	2.4687E-01
EU-155	957.	86.54	2.6915E-01
HF-181	801.	482.18	1.4887E-01
TA-182	922.	67.75	3.6570E-01
HG-203	1084.	279.20	1.1189E-01
BI-207	513.	569.70	1.1274E-01

WHC-SD-WM-DP-165, REV. 1

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : WL#4865-STD

Acquisition date : 15-JAN-1996 09:23:10

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
TL-208	1077.	277.36	1.4329E+00
PB-210	906.	46.50	0.0000E+00
BI-212	422.	727.18	1.8402E+00
PB-212	1309.	238.63	2.0646E-01
BI-214	517.	609.31	2.6089E-01
PB-214	931.	351.92	4.9610E-01
RA-224	1221.	240.99	2.2127E+00
RA-226	1217.	186.10	2.0353E+00
AC-228	641.	911.21	6.8707E-01
TH-228	920.	84.37	7.1508E+00
TH-229	962.	88.47	3.4521E-01
U-232	874.	57.78	1.3313E+02
PA-233	953.	312.17	2.3952E-01
PA-234M	506.	1001.03	3.0049E-01
TH-234	888.	63.29	4.0915E+00
U-235	1216.	185.71	1.2367E-01
NP-237	955.	86.48	7.1185E-01
U-237	870.	59.54	6.7214E-01
NP-238	554.	984.45	6.6081E-01
NP-239	931.	106.12	2.8823E-01
PU-239	1084.	129.30	9.6111E+02
AM-241	870.	59.54	6.4472E-01
AM-243	936.	74.67	1.9604E-01

WHC-SD-WM-DP-165, REV. I

^ 222-S Laboratory Counting Room 15-JAN-1996 13:16:00.49 *

>>>>>>> SAMPLE INFORMATION <<<<<<<<< WHC-SD-WM-DP-165, REV. 1

Worklist #: 4865
Sample ID: W/L#4865-BLK
Sample Size: 1.00000E-03 L
Dilution Factor: 1.01000E+02

Removed by:

[Signature] 1-15-96

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

Detector ID: GEA2
File Number: dka300:[spec.GEA2]2g2555.cnf
Geometry: 42
Count Time: 0 00:50:00.00 sec
Real Time: 0 00:50:00.46 sec
Dead Time: 0.0%

Verified by:

[Signature] 1-16-96

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

Sample Count Time: 15-JAN-1996 12:25:24.08
Decayed to: 15-JAN-1996 12:25:24.08
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst: ALJ
Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

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

Post-NID Peak Search Report

***** No peaks found *****

Summary of Nuclide Activity
Sample ID : W/L#4865-BLK

Page : 2
Acquisition date : 15-JAN-1996 12:25:24

**** There are no nuclides meeting summary criteria **** WHC-SD-WM-DF-165, REV. 1

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

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

Minimum Detectable Activity Report
Sample ID : W/L#4865-BLK

Page : 3
Acquisition date : 15-JAN-1996 12:25:24

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)	WHC-SD-WM-DP-165, REV. 1
BE-7	27.	477.59	2.1164E+01	
NA-22	7.	1274.53	2.6565E+00	
NA-24	4.	1368.55	2.1195E+00	
K-40	106.	1460.75	1.0623E+02	
SC-46	20.	1120.55	3.9319E+00	
CR-51	70.	320.08	2.5521E+01	
MN-54	16.	834.83	2.7134E+00	
CO-56	16.	846.76	2.7416E+00	
CO-57	65.	122.06	1.8176E+00	
CO-58	10.	810.78	2.0962E+00	
FE-59	11.	1099.25	5.0294E+00	
CO-60	9.	1332.50	3.0270E+00	
ZN-65	12.	1115.55	5.9754E+00	
SE-75	61.	264.66	3.6106E+00	
KR-85	40.	514.00	6.5883E+02	
SR-85	40.	514.01	2.9733E+00	
Y-88	1.	1836.06	1.3305E+00	
Y-90	1.	1760.70	4.4984E+00	
Y-91	16.	1204.67	1.2650E+03	
NB-94	17.	871.09	2.9029E+00	
NB-95	17.	765.78	2.6275E+00	
ZR-95	14.	756.73	4.2749E+00	
RU-103	32.	497.08	2.7152E+00	
RURH-106	27.	621.93	5.5502E+01	
AG-108m	13.	722.94	2.3618E+00	
CD-109	72.	88.03	6.5868E+01	
AG-110M	26.	657.76	2.9877E+00	
SN-113	40.	391.69	3.5199E+00	
TE-123m	71.	159.00	1.9093E+00	
SB-124	18.	602.73	2.2316E+00	
SB-125	43.	427.89	8.5329E+00	
TE-125m	64.	109.27	6.0073E+02	
I-129	56.	39.60	0.0000E+00	
I-131	48.	364.48	2.8881E+00	
XE-131m	84.	163.93	8.9727E+01	
BA-133	32.	356.02	3.0137E+00	
CS-134	24.	604.70	2.5693E+00	
CS-136	20.	818.51	2.9797E+00	
CS-137	119.	661.66	7.1051E+00	
CS-138	3.	1435.86	4.0202E+00	
CE-139	84.	165.85	2.2095E+00	
BA-140	23.	537.31	9.3023E+00	
LA-140	7.	1596.21	3.2262E+00	
CE-141	76.	145.44	3.3632E+00	
CE-144	66.	133.51	1.3745E+01	
CEPR-144	66.	133.51	2.7469E+01	
EU-152	8.	1408.01	1.4470E+01	
EU-154	7.	1274.51	7.7178E+00	
EU-155	74.	86.54	7.5689E+00	
HF-181	36.	482.18	3.1845E+00	
TA-182	60.	67.75	9.3869E+00	

Minimum Detectable Activity Report (continued)

Sample ID : W/L#4865-BLK

Page : 4

Acquisition date : 15-JAN-1996 12:25:24

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)	WHC-SD-WM-DP-165, REV. 1
HG-203	55.	279.20	2.5445E+00	
BI-207	31.	569.70	2.8003E+00	
TL-208	54.	277.36	3.2384E+01	
PB-210	52.	46.50	0.0000E+00	
BI-212	19.	727.18	3.9643E+01	
PB-212	93.	238.63	5.5494E+00	
BI-214	40.	609.31	7.3477E+00	
PB-214	55.	351.92	1.2170E+01	
RA-224	69.	240.99	5.3295E+01	
RA-226	69.	186.10	4.9003E+01	
AC-228	27.	911.21	1.4350E+01	
TH-228	74.	84.37	2.0517E+02	
TH-229	80.	88.47	1.0076E+01	
U-232	61.	57.78	3.5675E+03	
PA-233	48.	312.17	5.4117E+00	
PA-234M	12.	1001.03	4.7662E+00	
TH-234	62.	63.29	1.0879E+02	
U-235	75.	185.71	3.1013E+00	
NP-237	75.	86.48	2.0118E+01	
U-237	36.	59.54	1.3738E+01	
NP-238	13.	984.45	1.0240E+01	
NP-239	51.	106.12	6.7957E+00	
PU-239	83.	129.30	2.6793E+04	
AM-241	36.	59.54	1.3178E+01	
AM-243	94.	74.67	6.2589E+00	

```

*****
* 222-S Laboratory Counting Room 15-JAN-1996 12:19:30.49
*****
>>>>>>>> SAMPLE INFORMATION <<<<<<<<<< WHC-SD-WM-DP-165, REV. 1
Worklist #: 4865
Sample ID: S95T003870-SAM rev 3/3/96 DUP
Sample Size: 1.00000E-03 L
Dilution Factor: 1.01000E+02

Removed by:
AB Jensen 1-15-96

>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID: GEA2
File Number: dka300:[spec.GEA2]2g2554.cnf
Geometry: 42
Count Time: 0 00:50:00.00 sec
Real Time: 0 00:55:50.33 sec
Dead Time: 10%

Verified by:
R. Jensen 1-16-96

>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time: 15-JAN-1996 11:22:58.39
Decayed to: 15-JAN-1996 11:22:58.39
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst: ALJ
Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

```

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	86.53	1397	1.08	173.53	171	7	61.5		NP-237	699.
									EU-155	264.
0	105.24	1339	1.25	210.92	209	5	49.6		EU-155	289.
0	122.91	2714	1.16	246.26	244	6	29.3		CO-57	132.
									<u>EU-154</u>	279.
0	185.93*	1005	1.04	372.23	370	6	85.5		RA-226	1.274E+03
0	661.67*	2305122	1.55	1323.35	1315	17	0.1		CS-137	3.231E+05
0	723.41	459	1.27	1446.82	1444	8	54.3		EU-154	296.
0	1004.40	322	1.51	2008.79	2004	11	54.1		EU-154	309.
0	1173.27	839	2.20	2346.60	2341	13	14.5		CO-60	167.
0	1274.53	510	2.07	2549.17	2542	15	26.2		<u>EU-154</u>	314.
									NA-22	108.
0	1322.43	1393	2.42	2645.01	2638	15	10.5			
0	1332.46	655	1.93	2665.07	2658	17	11.8		CO-60	144.
0	1597.34	26	1.33	3195.08	3190	12	101.6			

Summary of Nuclide Activity

Sample ID : S95T003870-SAM ^{Dup}
or 3/8/96

Page : 2

Acquisition date : 15-JAN-1996 11:22:58

Total number of lines in spectrum

12 WHC-SD-WM-DP-165, REV. 1

Number of unidentified lines

1

Number of lines tentatively identified by NID

11 91.67%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
NA-22	2.60Y	1.000	1.081E+02	1.081E+02	0.283E+02	26.19	Eu-154
CO-57	271.80D	1.000	1.318E+02	1.318E+02	0.386E+02	29.29	Eu-154
CO-60	5.27Y	1.000	1.513E+02	1.513E+02	0.139E+02	9.17	
CS-137	30.00Y	1.000	3.231E+05	3.231E+05	0.004E+05	0.14	
EU-154	8.59Y	1.000	3.020E+02	3.020E+02	1.158E+02	38.34	
EU-155	4.68Y	1.000	2.894E+02	2.894E+02	1.434E+02	49.56	
RA-226	1600.00Y	1.000	1.274E+03	1.274E+03	1.089E+03	85.47	750%
NP-237	2.14E+06Y	1.000	6.989E+02	6.989E+02	4.298E+02	61.50	750%
Total Activity :			3.260E+05	3.260E+05			

Grand Total Activity : 3.260E+05

3.260E+05

Flags: "K" = Keyline not found

"E" = Manually edited

"M" = Manually accepted

"A" = Nuclide specific abn. limit

Minimum Detectable Activity Report

Sample ID : S95T003870-SAM ^{Dup}

Page : 3

Acquisition date : 15-JAN-1996 11:22:58

rev 3/8/96

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)	WHC-SD-WM-DP-165, REV. /
BE-7	77639.	477.59	1.1416E+03	
NA-24	92.	1368.55	1.0241E+01	
K-40	142.	1460.75	1.2266E+02	
SC-46	1220.	1120.55	3.0874E+01	
CR-51	62865.	320.08	7.6638E+02	
MN-54	3780.	834.83	4.1595E+01	
CO-56	3639.	846.76	4.1324E+01	
CO-58	4145.	810.78	4.2726E+01	
FE-59	1316.	1099.25	5.5723E+01	
ZN-65	1181.	1115.55	5.9644E+01	
SE-75	69574.	264.66	1.2170E+02	
KR-85	40967.	514.00	2.1063E+04	
SR-85	40962.	514.01	9.5237E+01	
Y-88	8.	1836.06	3.7633E+00	
Y-90	9.	1760.70	1.3455E+01	
Y-91	623.	1204.67	7.8443E+03	
NB-94	3369.	871.09	4.0722E+01	
NB-95	4739.	765.78	4.3381E+01	
ZR-95	5211.	756.73	8.2446E+01	
RU-103	49683.	497.08	1.0756E+02	
RURH-106	18385.	621.93	1.4426E+03	
AG-108m	6556.	722.94	5.3382E+01	
CD-109	60148.	88.03	1.9018E+03	
AG-110M	58508.	657.76	1.4131E+02	
SN-113	68561.	391.69	1.4554E+02	
TE-123m	68766.	159.00	5.9259E+01	
SB-124	19046.	602.73	7.2605E+01	
SB-125	79307.	427.89	3.6733E+02	
TE-125m	63475.	109.27	1.8861E+04	
I-129	56152.	39.60	0.0000E+00	
I-131	65359.	364.48	1.0646E+02	
XE-131m	68785.	163.93	2.5729E+03	
BA-133	63556.	356.02	1.3493E+02	
CS-134	19122.	604.70	7.3076E+01	
CS-136	4026.	818.51	4.2372E+01	
CS-138	56.	1435.86	1.8288E+01	
CE-139	68845.	165.85	6.3410E+01	
BA-140	30913.	537.31	3.3818E+02	
LA-140	66.	1596.21	1.0114E+01	
CE-141	69254.	145.44	1.0169E+02	
CE-144	69816.	133.51	4.4632E+02	
CEPR-144	69815.	133.51	8.9184E+02	
EU-152	72.	1408.01	4.3467E+01	
HF-181	63433.	482.18	1.3380E+02	
TA-182	56214.	67.75	2.8848E+02	
HG-203	67321.	279.20	8.9070E+01	
BI-207	21407.	569.70	7.3531E+01	
TL-208	67501.	277.36	1.1460E+03	
PB-210	55474.	46.50	0.0000E+00	
BI-212	5969.	727.18	6.9900E+02	
PB-212	78366.	238.63	1.6134E+02	

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S95T003870-SAM ^{not} _{dup} 3/8/96

Acquisition date : 15-JAN-1996 11:22:58

Nuclide	Bckgnd Sum	Energy (keV)	MDA WHC-SD-WM-DP-165, REV. I (uCi/L)
BI-214	18845.	609.31	1.5902E+02
PB-214	63292.	351.92	4.3761E+02
RA-224	77075.	240.99	1.7765E+03
AC-228	2703.	911.21	1.4246E+02
TH-228	59465.	84.37	5.8064E+03
TH-229	59722.	88.47	2.7470E+02
U-232	55418.	57.78	1.0709E+05
PA-233	63657.	312.17	1.9776E+02
PA-234M	1875.	1001.03	5.8401E+01
TH-234	55685.	63.29	3.2731E+03
U-235	86938.	185.71	1.0559E+02
U-237	55674.	59.54	5.4331E+02
NP-238	1927.	984.45	1.2453E+02
NP-239	63420.	106.12	2.4043E+02
PU-239	69059.	129.30	7.7493E+05
AM-241	55674.	59.54	5.2105E+02
AM-243	57247.	74.67	1.5484E+02

* 222-S Laboratory Counting Room 15-JAN-1996 14:17:36.65

```
>>>>>>> SAMPLE INFORMATION <<<<<<<<<
Worklist #:      4865
Sample ID:       S95T003870-DUP SAM
Sample Size:     1.00000E-03 L
Dilution Factor: 1.01000E+02
```

WHC-SD-WM-DP-165, REV. 1

Removed by:

Johnson 1-15-96

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

Verified by:

verified by: R. Jones 1-16-96

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

Decayed to: 15-JAN-1996 13:21:10.50

Analysis Library: ENVGEA

Background Subtract: DKA

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

```

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

```

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	86.35*	1010	1.26	173.17	171	7	85.0		NP-237	506.
0	105.07	717	1.01	210.60	209	5	92.0		EU-155	191.
0	123.02	2414	1.02	246.46	244	6	32.8		EU-155	155.
0	661.66*	2293491	1.55	1323.35	1315	17	0.1		CO-57	117.
0	1004.80	386	1.63	2009.60	2005	10	41.0		CS-137	3.215E+05
0	1173.35	796	2.02	2346.76	2336	20	23.0		CO-60	158.
0	1274.63	576	1.87	2549.37	2543	15	22.5		NA-22	122.
0	1322.36	1456	2.92	2644.88	2637	22	12.9			
0	1332.57	639	1.54	2665.30	2658	16	11.5		CO-60	140.

Summary of Nuclide Activity

Sample ID : S95T003870-DUP-SAM
12/2/96

Page : 2

Acquisition date : 15-JAN-1996 13:21:10

Total number of lines in spectrum 9

Number of unidentified lines 1

Number of lines tentatively identified by NID 8

WHC-SD-WM-DP-165, REV. 1

88.89%

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
NA-22	2.60Y	1.000	1.220E+02	1.220E+02	0.274E+02	22.45	2h
CO-57	271.80D	1.000	1.172E+02	1.172E+02	0.385E+02	32.82	15h
CO-60	5.27Y	1.000	1.433E+02	1.433E+02	0.147E+02	10.27	
CS-137	30.00Y	1.000	3.215E+05	3.215E+05	0.004E+05	0.14	
EU-155	4.68Y	1.000	1.549E+02	1.549E+02	1.426E+02	92.04	750%
NP-237	2.14E+06Y	1.000	5.056E+02	5.056E+02	4.298E+02	85.02	750%
Total Activity :			3.225E+05	3.225E+05			

Grand Total Activity : 3.225E+05 3.225E+05

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

Minimum Detectable Activity Report

Sample ID : S95T003870-DUP-~~SA~~ ^{cur 3/8/96}

Page : 3

Acquisition date : 15-JAN-1996 13:21:10

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	76466.	477.59	1.1329E+03
NA-24	92.	1368.55	1.0206E+01
K-40	144.	1460.75	1.2366E+02
SC-46	1138.	1120.55	2.9810E+01
CR-51	62550.	320.08	7.6445E+02
MN-54	3756.	834.83	4.1461E+01
CO-56	3592.	846.76	4.1052E+01
CO-58	4089.	810.78	4.2432E+01
FE-59	1302.	1099.25	5.5421E+01
ZN-65	1236.	1115.55	6.1023E+01
SE-75	69299.	264.66	1.2146E+02
KR-85	40544.	514.00	2.0954E+04
SR-85	40541.	514.01	9.4746E+01
Y-88	5.	1836.06	2.9593E+00
Y-90	17.	1760.70	1.8359E+01
Y-91	604.	1204.67	7.7236E+03
NB-94	3431.	871.09	4.1093E+01
NB-95	4752.	765.78	4.3441E+01
ZR-95	5186.	756.73	8.2246E+01
RU-103	49440.	497.08	1.0730E+02
RURH-106	18341.	621.93	1.4409E+03
AG-108m	6701.	722.94	5.3973E+01
CD-109	60376.	88.03	1.9054E+03
AG-110M	58347.	657.76	1.4111E+02
SN-113	68723.	391.69	1.4571E+02
TE-123m	69001.	159.00	5.9360E+01
SB-124	18863.	602.73	7.2254E+01
SB-125	78523.	427.89	3.6551E+02
TE-125m	62768.	109.27	1.8755E+04
I-129	56156.	39.60	0.0000E+00
I-131	64288.	364.48	1.0558E+02
XE-131m	68944.	163.93	2.5758E+03
BA-133	63581.	356.02	1.3496E+02
CS-134	19059.	604.70	7.2956E+01
CS-136	3971.	818.51	4.2082E+01
CS-138	53.	1435.86	1.7808E+01
CE-139	68957.	165.85	6.3462E+01
BA-140	30813.	537.31	3.3763E+02
LA-140	44.	1596.21	8.3116E+00
CE-141	69158.	145.44	1.0162E+02
CE-144	69114.	133.51	4.4407E+02
CEPR-144	69113.	133.51	8.8734E+02
EU-152	65.	1408.01	4.1152E+01
EU-154	1135.	1274.51	9.6518E+01
HF-181	62685.	482.18	1.3301E+02
TA-182	55962.	67.75	2.8783E+02
HG-203	66395.	279.20	8.8456E+01
BI-207	20912.	569.70	7.2675E+01
TL-208	67068.	277.36	1.1423E+03
PB-210	55151.	46.50	0.0000E+00
BI-212	5922.	727.18	6.9623E+02

WHC-SD-WM-DP-165, REV.1

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S95T003870-~~DP~~ SAM
3/8/96

Acquisition date : 15-JAN-1996 13:21:10

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-212	77480.	238.63	1.6042E+02
BI-214	18958.	609.31	1.5950E+02
PB-214	63661.	351.92	4.3872E+02
RA-224	76415.	240.99	1.7688E+03
RA-226	87531.	186.10	1.7431E+03
AC-228	2627.	911.21	1.4044E+02
TH-228	59198.	84.37	5.7933E+03
TH-229	60022.	88.47	2.7539E+02
U-232	54997.	57.78	1.0669E+05
PA-233	62747.	312.17	1.9634E+02
PA-234M	1876.	1001.03	5.8417E+01
TH-234	55291.	63.29	3.2615E+03
U-235	86572.	185.71	1.0537E+02
U-237	55191.	59.54	5.4095E+02
NP-238	1885.	984.45	1.2316E+02
NP-239	62616.	106.12	2.3890E+02
PU-239	68855.	129.30	7.7378E+05
AM-241	55191.	59.54	5.1878E+02
AM-243	57553.	74.67	1.5525E+02

WHC-SD-WM-DP-165, REV. 1

 * 222-S Laboratory Counting Room 15-JAN-1996 15:16:38.80 *

>>>>>>> SAMPLE INFORMATION <<<<<<<<< WHC-SD-WM-DP-165, REV. I

Worklist #: 4865
 Sample ID: S95T003871-SAM
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.01000E+02

Removed by:

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

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2557.cnf
 Geometry: 42
 Count Time: 0 00:50:00.00 sec
 Real Time: 0 00:55:37.86 sec
 Dead Time: 10%

Verified by:
1-16-96

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

Sample Count Time: 15-JAN-1996 14:20:20.91
 Decayed to: 15-JAN-1996 14:20:20.91
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: ALJ
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

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

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	32.16*	784	2.61	64.86	62	6	99.9			
0	86.40*	1374	1.44	173.28	171	6	54.5		NP-237	688.
									EU-155	260.
0	105.15	968	1.35	210.74	209	5	67.5		EU-155	209.
0	123.06	2494	1.17	246.55	244	7	35.5		CO-57	121.
									<u>EU-154</u>	256.
0	185.87*	1169	1.57	372.10	370	6	72.5		RA-226	1.481E+03
0	661.67*	2235798	1.54	1323.35	1315	17	0.1		CS-137	3.134E+05
0	723.45	578	1.72	1446.89	1443	9	46.4		EU-154	372.
0	1004.41	279	1.50	2008.82	2005	9	49.9		EU-154	267.
0	1173.14	774	2.02	2346.35	2340	14	16.9		CO-60	154.
0	1274.41	600	1.94	2548.94	2542	14	19.9		<u>EU-154</u>	370.
									NA-22	127.
0	1322.55	1136	2.76	2645.24	2638	20	16.2			
0	1332.64	664	1.95	2665.43	2657	19	10.9		CO-60	146.
0	1596.49	31	1.65	3193.40	3188	14	72.7			

Total number of lines in spectrum 13 WHC-SD-WM-DP-165, REV. 1
Number of unidentified lines 2
Number of lines tentatively identified by NID 11 84.62%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	Flags
			Uncorrected	Decay Corr			
			uCi/L	uCi/L	2-Sigma Error	%Error	
NA-22	2.60Y	1.000	1.272E+02	1.272E+02	0.253E+02	19.89	Eu-154
CO-57	271.80D	1.000	1.211E+02	1.211E+02	0.430E+02	35.48	Eu-154
CO-60	5.27Y	1.000	1.480E+02	1.480E+02	0.136E+02	9.19	
CS-137	30.00Y	1.000	3.134E+05	3.134E+05	0.004E+05	0.14	
EU-154	8.59Y	1.000	3.065E+02	3.065E+02	1.055E+02	34.41	
EU-155	4.68Y	1.000	2.093E+02	2.093E+02	1.413E+02	67.48	>50%
RA-226	1600.00Y	1.000	1.481E+03	1.481E+03	1.074E+03	72.50	>50%
NP-237	2.14E+06Y	1.000	6.877E+02	6.877E+02	3.746E+02	54.47	>50%
Total Activity :			3.165E+05	3.165E+05			

Grand Total Activity : 3.165E+05 3.165E+05

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

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

Minimum Detectable Activity Report
Sample ID : S95T003871-SAM

Page : 3
Acquisition date : 15-JAN-1996 14:20:20

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)	WHC-SD-WM-DF-165, REV. I
BE-7	74381.	477.59	1.1174E+03	
NA-24	68.	1368.55	8.7686E+00	
K-40	148.	1460.75	1.2551E+02	
SC-46	1115.	1120.55	2.9510E+01	
CR-51	61083.	320.08	7.5543E+02	
MN-54	3346.	834.83	3.9134E+01	
CO-56	3520.	846.76	4.0642E+01	
CO-58	3900.	810.78	4.1443E+01	
FE-59	1268.	1099.25	5.4693E+01	
ZN-65	1086.	1115.55	5.7180E+01	
SE-75	67451.	264.66	1.1983E+02	
KR-85	39896.	514.00	2.0786E+04	
SR-85	39890.	514.01	9.3983E+01	
Y-88	6.	1836.06	3.2446E+00	
Y-90	12.	1760.70	1.5838E+01	
Y-91	580.	1204.67	7.5693E+03	
NB-94	3196.	871.09	3.9659E+01	
NB-95	4624.	765.78	4.2851E+01	
ZR-95	4866.	756.73	7.9665E+01	
RU-103	48013.	497.08	1.0574E+02	
RURH-106	17915.	621.93	1.4241E+03	
AG-108m	6314.	722.94	5.2389E+01	
CD-109	58464.	88.03	1.8750E+03	
AG-110M	55923.	657.76	1.3815E+02	
SN-113	65924.	391.69	1.4271E+02	
TE-123m	66645.	159.00	5.8338E+01	
SB-124	18318.	602.73	7.1203E+01	
SB-125	76359.	427.89	3.6044E+02	
TE-125m	61034.	109.27	1.8495E+04	
I-129	54835.	39.60	0.0000E+00	
I-131	62760.	364.48	1.0432E+02	
XE-131m	66744.	163.93	2.5344E+03	
BA-133	61840.	356.02	1.3310E+02	
CS-134	18331.	604.70	7.1549E+01	
CS-136	3774.	818.51	4.1026E+01	
CS-138	56.	1435.86	1.8173E+01	
CE-139	67317.	165.85	6.2703E+01	
BA-140	29867.	537.31	3.3240E+02	
LA-140	50.	1596.21	8.8591E+00	
CE-141	67059.	145.44	1.0007E+02	
CE-144	67466.	133.51	4.3875E+02	
CEPR-144	67465.	133.51	8.7670E+02	
EU-152	63.	1408.01	4.0705E+01	
HF-181	60702.	482.18	1.3089E+02	
TA-182	54383.	67.75	2.8374E+02	
HG-203	64450.	279.20	8.7150E+01	
BI-207	20645.	569.70	7.2210E+01	
TL-208	64680.	277.36	1.1218E+03	
PB-210	53979.	46.50	0.0000E+00	
BI-212	5482.	727.18	6.6987E+02	
PB-212	76126.	238.63	1.5902E+02	

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S95T003871-SAM

Acquisition date : 15-JAN-1996 14:20:20

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BI-214	18332.	609.31	1.5684E+02
PB-214	61638.	351.92	4.3096E+02
RA-224	74826.	240.99	1.7503E+03
AC-228	2386.	911.21	1.3384E+02
TH-228	57718.	84.37	5.7205E+03
TH-229	58165.	88.47	2.7110E+02
U-232	53889.	57.78	1.0561E+05
PA-233	61397.	312.17	1.9421E+02
PA-234M	1652.	1001.03	5.4828E+01
TH-234	53780.	63.29	3.2167E+03
U-235	84610.	185.71	1.0417E+02
U-237	54171.	59.54	5.3592E+02
NP-238	1812.	984.45	1.2073E+02
NP-239	61562.	106.12	2.3688E+02
PU-239	66931.	129.30	7.6290E+05
AM-241	54170.	59.54	5.1396E+02
AM-243	55311.	74.67	1.5220E+02

WHC-SD-WM-DP-165, REV. 1

 * 222-S Laboratory Counting Room 15-JAN-1996 16:17:50.11 *

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

Worklist #: 4865
 Sample ID: S95T003871-DUP
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.01000E+02

WHC-SD-WM-DP-165, REV. I

Removed by:

[Signature] 1-15-96

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

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2558.cnf
 Geometry: 42
 Count Time: 0 00:50:00.00 sec
 Real Time: 0 00:55:37.15 sec
 Dead Time: 10%

Verified by:

[Signature] 1-16-96

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

Sample Count Time: 15-JAN-1996 19:21:33.37
 Decayed to: 15-JAN-1996 15:21:33.37
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: ALJ
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

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

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	86.62	1366	0.92	173.71	171	7	61.9		NP-237	684.
									EU-155	258.
									CD-109	2.278E+03
0	105.25	840	1.30	210.96	209	5	77.9		EU-155	182.
0	123.07	2510	1.17	246.57	244	7	35.1		CO-57	122.
									<u>EU-154</u>	258.
0	661.67*	2227812	1.54	1323.35	1315	17	0.1		CS-137	3.123E+05
0	723.63	527	1.07	1447.25	1443	9	50.3		EU-154	339.
0	995.73	185	1.74	1991.46	1988	9	76.6		EU-154	305.
0	1004.78	421	1.36	2009.55	2004	11	39.3		EU-154	403.
0	1173.50	892	2.06	2347.06	2340	17	16.7		CO-60	177.
0	1274.33	497	2.14	2548.77	2543	13	22.2		<u>EU-154</u>	306.
									NA-22	105.
0	1322.23	1419	3.00	2644.61	2636	19	11.9			
0	1332.47	687	1.99	2665.10	2656	18	10.5		CO-60	151.

Summary of Nuclide Activity
Sample ID : S95T003871-DUP

Page : 2
Acquisition date : 15-JAN-1996 15:21:33

Total number of lines in spectrum 11 WHC-SD-WM-DP-165, REV. 1
Number of unidentified lines 1
Number of lines tentatively identified by NID 10 90.91%

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
NA-22	2.60Y	1.000	1.055E+02	1.055E+02	0.235E+02	22.24	E-15Y
EO-57	271.80D	1.000	1.219E+02	1.219E+02	0.428E+02	35.11	E-15Y
CO-60	5.27Y	1.000	1.567E+02	1.567E+02	0.140E+02	8.93	
ED-109	462.90D	1.000	2.278E+03	2.278E+03	1.411E+03	61.92	750%
CS-137	30.00Y	1.000	3.123E+05	3.123E+05	0.004E+05	0.14	
EU-154	8.59Y	1.000	3.599E+02	3.599E+02	1.040E+02	28.88	
EU-155	4.68Y	1.000	1.816E+02	1.816E+02	1.415E+02	77.90	750%
NP-237	2.14E+06Y	1.000	6.836E+02	6.836E+02	4.233E+02	61.92	750%
Total Activity :			3.161E+05	3.161E+05			

Grand Total Activity : 3.161E+05 3.161E+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	74431.	477.59	1.1177E+03
NA-24	82.	1368.55	9.6572E+00
K-40	145.	1460.75	1.2429E+02
SC-46	1133.	1120.55	2.9754E+01
CR-51	60956.	320.08	7.5465E+02
MN-54	3545.	834.83	4.0277E+01
CO-56	3527.	846.76	4.0680E+01
CO-58	3820.	810.78	4.1015E+01
FE-59	1207.	1099.25	5.3374E+01
ZN-65	1121.	1115.55	5.8108E+01
SE-75	67690.	264.66	1.2004E+02
KR-85	40144.	514.00	2.0850E+04
SR-85	40142.	514.01	9.4279E+01
Y-88	13.	1836.06	4.7874E+00
Y-90	7.	1760.70	1.2282E+01
Y-91	540.	1204.67	7.2987E+03
NB-94	3124.	871.09	3.9210E+01
NB-95	4383.	765.78	4.1718E+01
ZR-95	4947.	756.73	8.0326E+01
RU-103	47720.	497.08	1.0541E+02
RURH-106	17797.	621.93	1.4194E+03
AG-108m	6149.	722.94	5.1699E+01
AG-110M	56323.	657.76	1.3864E+02
SN-113	66525.	391.69	1.4336E+02
TE-123m	66921.	159.00	5.8458E+01
SB-124	18546.	602.73	7.1645E+01
SB-125	76321.	427.89	3.6035E+02
TE-125m	60981.	109.27	1.8486E+04
I-129	54849.	39.60	0.0000E+00
I-131	62699.	364.48	1.0427E+02
XE-131m	66618.	163.93	2.5320E+03
BA-133	61324.	356.02	1.3254E+02
CS-134	18477.	604.70	7.1833E+01
CS-136	3784.	818.51	4.1082E+01
CS-138	53.	1435.86	1.7712E+01
CE-139	67284.	165.85	6.2687E+01
BA-140	29717.	537.31	3.3157E+02
LA-140	45.	1596.21	8.4060E+00
CE-141	67275.	145.44	1.0023E+02
CE-144	67367.	133.51	4.3842E+02
CEPR-144	67368.	133.51	8.7607E+02
EU-152	68.	1408.01	4.2212E+01
HF-181	60882.	482.18	1.3108E+02
TA-182	54538.	67.75	2.8414E+02
HG-203	65339.	279.20	8.7749E+01
BI-207	20509.	569.70	7.1971E+01
TL-208	65288.	277.36	1.1271E+03
PB-210	53163.	46.50	0.0000E+00
BI-212	5570.	727.18	6.7522E+02
PB-212	75577.	238.63	1.5844E+02
BI-214	18064.	609.31	1.5569E+02

WHC-SD-WM-DP-165, REV.1

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S95T003871-DUP

Acquisition date : 15-JAN-1996 15:21:33

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-214	61319.	351.92	4.2979E+02
RA-224	74250.	240.99	1.7436E+03
RA-226	85500.	186.10	1.7228E+03
AC-228	2462.	911.21	1.3596E+02
TH-228	57655.	84.37	5.7173E+03
TH-229	57973.	88.47	2.7065E+02
U-232	53912.	57.78	1.0563E+05
PA-233	61514.	312.17	1.9440E+02
PA-234M	1803.	1001.03	5.7267E+01
TH-234	53706.	63.29	3.2145E+03
U-235	84678.	185.71	1.0421E+02
U-237	54216.	59.54	5.3615E+02
NP-238	1747.	984.45	1.1856E+02
NP-239	61709.	106.12	2.3716E+02
PU-239	67054.	129.30	7.6360E+05
AM-241	54216.	59.54	5.1418E+02
AM-243	55622.	74.67	1.5262E+02

WHC-SD-WM-DP-165, REV. I

 * 222-S Laboratory Counting Room 15-JAN-1996 17:29:02.72 *

>>>>>>> SAMPLE INFORMATION <<<<<<<<< WHC-SD-WM-DP-165, REV. 1

Worklist #: 4865
 Sample ID: S95T003872-SAM
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.01000E+02

Removed by:

[Signature] 1-15-96

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

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2559.cnf
 Geometry: 42
 Count Time: 0 00:50:00.00 sec
 Real Time: 0 00:55:49.88 sec
 Dead Time: 10%

Verified by:

[Signature] 1/16/96

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

Sample Count Time: 15-JAN-1996 16:32:33.42
 Decayed to: 15-JAN-1996 16:32:33.42
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: ALJ
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

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

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	86.54	1280	1.41	173.56	171	6	59.3		NP-237	641.
									CD-109	2.135E+03
0	123.26	2391	1.03	246.94	245	6	33.4		CO-57	116.
									EU-154	246.
0	661.66*	2304305	1.54	1323.35	1315	17	0.1		CS-137	3.230E+05
0	723.36	413	1.64	1446.72	1444	8	61.0		EU-154	266.
0	996.37	157	0.81	1992.73	1989	8	84.0		EU-154	259.
0	1004.83	422	2.17	2009.67	2004	12	42.9		EU-154	405.
0	1173.31	657	2.10	2346.68	2339	15	23.0		CO-60	130.
0	1274.49	563	1.87	2549.09	2542	14	20.8		EU-154	347.
									NA-22	119.
0	1322.34	1341	2.49	2644.83	2637	20	13.7			
0	1332.57	664	1.90	2665.30	2657	18	11.8		CO-60	146.

Total number of lines in spectrum 10 WHC-SD-WM-DP-165, REV. 1
Number of unidentified lines 1
Number of lines tentatively identified by NID 9 90.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	Error	%Error	Flags
			Uncorrected	Decay Corr					
NA-22	2.60Y	1.000	1.194E+02	1.194E+02	0.248E+02	20.80			Eu-15Y
CO-57	271.80D	1.000	1.161E+02	1.161E+02	0.388E+02	33.38			Eu-15Y
CO-60	5.27Y	1.000	1.421E+02	1.421E+02	0.149E+02	10.50			
CD-109	462.90D	1.000	2.135E+03	2.135E+03	1.267E+03	59.35			> 50%
CS-137	30.00Y	1.000	3.230E+05	3.230E+05	0.004E+05	0.14			
EU-154	8.59Y	1.000	3.141E+02	3.141E+02	1.041E+02	33.13			
NP-237	2.14E+06Y	1.000	6.408E+02	6.408E+02	3.803E+02	59.35			> 50%
Total Activity :			3.264E+05	3.264E+05					

Grand Total Activity : 3.264E+05 3.264E+05

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

Minimum Detectable Activity Report
Sample ID : S95T003872-SAM

Page : 3
Acquisition date : 15-JAN-1996 16:32:33

WHC-SD-WM-DP-165, REV. 1

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	77149.	477.59	1.1380E+03
NA-24	75.	1368.55	9.2450E+00
K-40	148.	1460.75	1.2554E+02
SC-46	1194.	1120.55	3.0542E+01
CR-51	62791.	320.08	7.6593E+02
MN-54	3800.	834.83	4.1706E+01
CO-56	3656.	846.76	4.1419E+01
CO-58	4062.	810.78	4.2293E+01
FE-59	1340.	1099.25	5.6239E+01
ZN-65	1243.	1115.55	6.1175E+01
SE-75	70000.	264.66	1.2207E+02
KR-85	41203.	514.00	2.1124E+04
SR-85	41197.	514.01	9.5510E+01
Y-88	10.	1836.06	4.1371E+00
Y-90	9.	1760.70	1.3866E+01
Y-91	618.	1204.67	7.8128E+03
NB-94	3331.	871.09	4.0491E+01
NB-95	4725.	765.78	4.3315E+01
ZR-95	5135.	756.73	8.1836E+01
RU-103	49796.	497.08	1.0768E+02
RURH-106	18640.	621.93	1.4526E+03
AG-108m	6675.	722.94	5.3865E+01
AG-110M	58489.	657.76	1.4129E+02
SN-113	68794.	391.69	1.4578E+02
TE-123m	69131.	159.00	5.9416E+01
SB-124	19118.	602.73	7.2742E+01
SB-125	78844.	427.89	3.6625E+02
TE-125m	63258.	109.27	1.8828E+04
I-129	56544.	39.60	0.0000E+00
I-131	64263.	364.48	1.0556E+02
XE-131m	68934.	163.93	2.5756E+03
BA-133	63918.	356.02	1.3532E+02
CS-134	19051.	604.70	7.2941E+01
CS-136	4071.	818.51	4.2613E+01
CS-138	53.	1435.86	1.7808E+01
CE-139	69359.	165.85	6.3646E+01
BA-140	30491.	537.31	3.3586E+02
LA-140	45.	1596.21	8.3392E+00
CE-141	68937.	145.44	1.0146E+02
CE-144	69664.	133.51	4.4584E+02
CEPR-144	69663.	133.51	8.9087E+02
EU-152	74.	1408.01	4.4127E+01
EU-155	60800.	86.54	2.1663E+02
HF-181	63274.	482.18	1.3363E+02
TA-182	56351.	67.75	2.8883E+02
HG-203	66740.	279.20	8.8685E+01
BI-207	21355.	569.70	7.3441E+01
TL-208	66979.	277.36	1.1416E+03
PB-210	55502.	46.50	0.0000E+00
BI-212	5961.	727.18	6.9852E+02
PB-212	77737.	238.63	1.6069E+02

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S95T003872-SAM

Acquisition date : 15-JAN-1996 16:32:33

Nuclide	Bckgnd Sum	Energy (keV)	MDA WHC-SD-WM-DP-165, REV.1 (uCi/L)
BI-214	18985.	609.31	1.5961E+02
PB-214	63583.	351.92	4.3858E+02
RA-224	76958.	240.99	1.7751E+03
RA-226	87969.	186.10	1.7475E+03
AC-228	2605.	911.21	1.3985E+02
TH-228	59449.	84.37	5.8056E+03
TH-229	59861.	88.47	2.7502E+02
U-232	55400.	57.78	1.0708E+05
PA-233	63461.	312.17	1.9745E+02
PA-234M	1950.	1001.03	5.9566E+01
TH-234	55619.	63.29	3.2712E+03
U-235	86877.	185.71	1.0556E+02
U-237	55699.	59.54	5.4343E+02
NP-238	1851.	984.45	1.2204E+02
NP-239	63054.	106.12	2.3974E+02
PU-239	68749.	129.30	7.7319E+05
AM-241	55698.	59.54	5.2116E+02
AM-243	57670.	74.67	1.5541E+02

 * 222-S Laboratory Counting Room 15-JAN-1996 18:28:11.45 *

 >>>>>>> SAMPLE INFORMATION <<<<<<<<<<
 Worklist #: 4865 WHC-SD-WM-DP-165, REV. 1
 Sample ID: S95T003872-DUP Removed by:
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.01000E+02 *Em Buebel*
 >>>>>>> COUNT INFORMATION <<<<<<<<<<
 Detector ID: GEA2 Verified by:
 File Number: dka300:[spec.GEA2]2g2560.cnf *RA Jones 1-16-96*
 Geometry: 42
 Count Time: 0 00:50:00.00 sec
 Real Time: 0 00:55:55.00 sec
 Dead Time: 11%
 >>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
 Sample Count Time: 15-JAN-1996 17:31:36.26
 Decayed to: 15-JAN-1996 17:31:36.26
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: ALJ
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK
 >>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration: 21-MAR-1994 09:31:55.15
 Date of last efficiency calibration: 21-MAR-1994 09:43:42.61

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	41.57	721	1.45	83.67	82	6107.0				
0	86.66	1626	1.13	173.80	171	7 53.2			NP-237 <u>EU-155</u> CD-109	814. 307. 2.712E+03
0	105.35	1493	1.51	211.14	209	7 58.2			EU-155	323.
0	123.07	2684	1.13	246.56	244	7 33.6			CO-57 <u>EU-154</u>	130. 276.
0	661.66*	2336947	1.55	1323.34	1315	17 0.1			CS-137	3.275E+05
0	723.25	251	1.04	1446.51	1444	7 91.5			EU-154	162.
0	1004.98	455	1.10	2009.97	2006	9 31.8			EU-154	437.
0	1173.27	719	1.78	2346.59	2341	12 17.4			CO-60	143.
0	1274.33	696	1.71	2548.79	2542	16 18.9			<u>EU-154</u> NA-22	429. 148.
0	1322.27	1503	2.69	2644.69	2637	21 12.5				
0	1332.63	660	1.73	2665.42	2659	14 10.4			CO-60	145.

Summary of Nuclide Activity
Sample ID : S95T003872-DUP

Page : 2
Acquisition date : 15-JAN-1996 17:31:36

Total number of lines in spectrum 11
Number of unidentified lines 2
Number of lines tentatively identified by NID 9 81.82% WHC-SD-WM-DP-165, REV. 1

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
NA-22	2.60Y	1.000	1.476E+02	1.476E+02	0.279E+02	18.93	Eu-15Y
CO-57	271.80D	1.000	1.303E+02	1.303E+02	0.438E+02	33.63	Eu-15Y
CO-60	5.27Y	1.000	1.444E+02	1.444E+02	0.129E+02	8.93	
CD-109	462.90D	1.000	2.712E+03	2.712E+03	1.442E+03	53.19	750%
CS-137	30.00Y	1.000	3.275E+05	3.275E+05	0.005E+05	0.14	
EU-154	8.59Y	1.000	3.078E+02	3.078E+02	1.013E+02	32.91	
EU-155	4.68Y	1.000	3.228E+02	3.228E+02	1.878E+02	58.19	750%
NP-237	2.14E+06Y	1.000	8.139E+02	8.139E+02	4.329E+02	53.19	750%
Total Activity :			3.321E+05	3.321E+05			

Grand Total Activity : 3.321E+05 3.321E+05

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

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

Minimum Detectable Activity Report
Sample ID : S95T003872-DUP

Page : 3
Acquisition date : 15-JAN-1996 17:31:36

Nuclide	Bckgnd Sum	Energy (keV)	MDA WHC-SD-WM-DP-165, REV. 1 (uCi/L)
BE-7	78680.	477.59	1.1492E+03
NA-24	87.	1368.55	9.9730E+00
K-40	143.	1460.75	1.2326E+02
SC-46	1246.	1120.55	3.1201E+01
CR-51	63499.	320.08	7.7023E+02
MN-54	3838.	834.83	4.1909E+01
CO-56	3713.	846.76	4.1738E+01
CO-58	4282.	810.78	4.3423E+01
FE-59	1370.	1099.25	5.6863E+01
ZN-65	1296.	1115.55	6.2484E+01
SE-75	70836.	264.66	1.2280E+02
KR-85	41829.	514.00	2.1283E+04
SR-85	41824.	514.01	9.6234E+01
Y-88	10.	1836.06	4.2776E+00
Y-90	10.	1760.70	1.4578E+01
Y-91	627.	1204.67	7.8707E+03
NB-94	3529.	871.09	4.1676E+01
NB-95	5007.	765.78	4.4590E+01
ZR-95	5282.	756.73	8.3003E+01
RU-103	50297.	497.08	1.0822E+02
RURH-106	18782.	621.93	1.4581E+03
AG-108m	6688.	722.94	5.3921E+01
AG-110M	59677.	657.76	1.4271E+02
SN-113	69723.	391.69	1.4677E+02
TE-123m	70056.	159.00	5.9812E+01
SB-124	19408.	602.73	7.3291E+01
SB-125	80308.	427.89	3.6964E+02
TE-125m	63632.	109.27	1.8884E+04
I-129	57230.	39.60	0.0000E+00
I-131	65288.	364.48	1.0640E+02
XE-131m	69621.	163.93	2.5884E+03
BA-133	64084.	356.02	1.3549E+02
CS-134	19461.	604.70	7.3721E+01
CS-136	4169.	818.51	4.3121E+01
CS-138	61.	1435.86	1.9095E+01
CE-139	69572.	165.85	6.3744E+01
BA-140	31009.	537.31	3.3870E+02
LA-140	41.	1596.21	7.9704E+00
CE-141	70262.	145.44	1.0243E+02
CE-144	70066.	133.51	4.4712E+02
CEPR-144	70065.	133.51	8.9343E+02
EU-152	67.	1408.01	4.1724E+01
HF-181	63908.	482.18	1.3430E+02
TA-182	57017.	67.75	2.9053E+02
HG-203	67902.	279.20	8.9454E+01
BI-207	21511.	569.70	7.3710E+01
TL-208	67953.	277.36	1.1499E+03
PB-210	56421.	46.50	0.0000E+00
BI-212	6254.	727.18	7.1547E+02
PB-212	79249.	238.63	1.6224E+02
BI-214	19103.	609.31	1.6011E+02

Minimum Detectable Activity Report (continued)

Sample ID : S95T003872-DUP

Page : 4

Acquisition date : 15-JAN-1996 17:31:36

WHC-SD-WM-DP-165, REV. 1

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-214	65188.	351.92	4.4445E+02
RA-224	78210.	240.99	1.7895E+03
RA-226	88928.	186.10	1.7570E+03
AC-228	2737.	911.21	1.4336E+02
TH-228	60288.	84.37	5.8464E+03
TH-229	60529.	88.47	2.7655E+02
U-232	55911.	57.78	1.0757E+05
PA-233	64051.	312.17	1.9837E+02
PA-234M	1934.	1001.03	5.9318E+01
TH-234	56326.	63.29	3.2919E+03
U-235	88071.	185.71	1.0628E+02
U-237	56277.	59.54	5.4625E+02
NP-238	2041.	984.45	1.2816E+02
NP-239	63964.	106.12	2.4146E+02
PU-239	70024.	129.30	7.8033E+05
AM-241	56277.	59.54	5.2386E+02
AM-243	58507.	74.67	1.5653E+02

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*****
* 222-S Laboratory Counting Room 15-JAN-1996 19:42:44.37 *
*****
>>>>>>> SAMPLE INFORMATION <<<<<<<<< WHC-SD-WM-DP-165, REV. 1
Worklist #: 4865
Sample ID: S95T003963-SAM Removed by:
Sample Size: 1.00000E-03 L
Dilution Factor: 1.00000E+00 Em Barch

>>>>>>> COUNT INFORMATION <<<<<<<<<
Detector ID: GEA2
File Number: dka300:[spec.GEA2]2g2561.cnf Verified by:
Geometry: 42 R. Jones 1-16-96
Count Time: 0 00:50:00.00 sec
Real Time: 0 00:50:00.49 sec
Dead Time: 0.0%

>>>>>>> ANALYSIS INFORMATION <<<<<<<<<
Sample Count Time: 15-JAN-1996 18:52:06.01
Decayed to: 15-JAN-1996 18:52:06.01
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst: EMB
Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

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Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw %Err	Fit	Nuclides	Activity uCi/L
0	610.05*	22	0.81	1220.14	1214	15110.5			

Summary of Nuclide Activity
Sample ID : S95T003963-SAM

Page : 2
Acquisition date : 15-JAN-1996 18:52:06

Total number of lines in spectrum	1	WHC-SD-WM-DP-165, REV /
Number of unidentified lines	0	
Number of lines tentatively identified by NID	1	100.00%

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

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

Minimum Detectable Activity Report
Sample ID : S95T003963-SAM

Page : 3
Acquisition date : 15-JAN-1996 18:52:06

Nuclide	Bckgnd Sum	Energy (keV)	MDA WHC-SD-WM-DP-165, REV. 1 (uCi/L)
BE-7	27.	477.59	2.0994E-01
NA-22	8.	1274.53	2.7533E-02
NA-24	2.	1368.55	1.4899E-02
K-40	120.	1460.75	1.1176E+00
SC-46	13.	1120.55	3.1600E-02
CR-51	48.	320.08	2.0912E-01
MN-54	12.	834.83	2.3220E-02
CO-56	15.	846.76	2.6283E-02
CO-57	78.	122.06	1.9769E-02
CO-58	16.	810.78	2.6152E-02
FE-59	14.	1099.25	5.7181E-02
CO-60	7.	1332.50	2.7632E-02
ZN-65	7.	1115.55	4.5459E-02
SE-75	60.	264.66	3.5401E-02
KR-85	48.	514.00	7.1337E+00
SR-85	48.	514.01	3.2171E-02
Y-88	3.	1836.06	2.2614E-02
Y-90	4.	1760.70	8.6195E-02
Y-91	13.	1204.67	1.1202E+01
NB-94	16.	871.09	2.7676E-02
NB-95	15.	765.78	2.4537E-02
ZR-95	9.	756.73	3.3922E-02
RU-103	36.	497.08	2.8512E-02
RURH-106	21.	621.93	4.8113E-01
AG-108m	10.	722.94	2.0210E-02
CD-109	64.	88.03	6.1559E-01
AG-110M	32.	657.76	3.2556E-02
SN-113	48.	391.69	3.8109E-02
TE-123m	75.	159.00	1.9339E-02
SB-124	27.	602.73	2.7062E-02
SB-125	39.	427.89	8.0468E-02
TE-125m	73.	109.27	6.3425E+00
I-129	55.	39.60	0.0000E+00
I-131	54.	364.48	3.0380E-02
XE-131m	78.	163.93	8.5789E-01
BA-133	39.	356.02	3.3098E-02
CS-134	27.	604.70	2.6952E-02
CS-136	10.	818.51	2.0843E-02
CS-137	156.	661.66	8.0541E-02
CS-138	6.	1435.86	5.8028E-02
CE-139	72.	165.85	2.0238E-02
BA-140	30.	537.31	1.0474E-01
LA-140	6.	1596.21	3.1231E-02
CE-141	79.	145.44	3.4025E-02
CE-144	78.	133.51	1.4779E-01
CEPR-144	78.	133.51	2.9520E-01
EU-152	7.	1408.01	1.2954E-01
EU-154	8.	1274.51	8.0191E-02
EU-155	64.	86.54	6.9624E-02
HF-181	40.	482.18	3.3092E-02
TA-182	64.	67.75	9.6270E-02

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S95T003963-SAM

Acquisition date : 15-JAN-1996 18:52:06

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)	WHC-SD-WM-DP-165, REV. 1
HG-203	53.	279.20	2.4710E-02	
BI-207	15.	569.70	1.9047E-02	
TL-208	60.	277.36	3.3693E-01	
PB-210	57.	46.50	0.0000E+00	
BI-212	25.	727.18	4.4662E-01	
PB-212	89.	238.63	5.3760E-02	
BI-214	49.	609.31	8.0084E-02	
PB-214	51.	351.92	1.1562E-01	
RA-224	75.	240.99	5.4945E-01	
RA-226	88.	186.10	5.4602E-01	
AC-228	29.	911.21	1.4664E-01	
TH-228	62.	84.37	1.8616E+00	
TH-229	70.	88.47	9.3259E-02	
U-232	64.	57.78	3.6011E+01	
PA-233	49.	312.17	5.4079E-02	
PA-234M	18.	1001.03	5.6617E-02	
TH-234	62.	63.29	1.0798E+00	
U-235	89.	185.71	3.3426E-02	
NP-237	63.	86.48	1.8326E-01	
U-237	63.	59.54	1.8132E-01	
NP-238	18.	984.45	1.1894E-01	
NP-239	81.	106.12	8.5042E-02	
PU-239	80.	129.30	2.6141E+02	
AM-241	63.	59.54	1.7393E-01	
AM-243	68.	74.67	5.2653E-02	

* 222-S Laboratory Counting Room 15-JAN-1996 20:45:43.17 *

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

Worklist #: 4865
Sample ID: S95T00396-DUP
Sample Size: 1.00000E-03 L
Dilution Factor: 1.00000E+00

WHC-SD-WM-DP-165, REV. 1

Removed by:

Em Bavelle

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

Detector ID: GEA2
File Number: dka300:[spec.GEA2]2g2562.cnf
Geometry: 42
Count Time: 0 00:50:00.00 sec
Real Time: 0 00:50:00.47 sec
Dead Time: 0.0%

Verified by:

R. Jones 1-16-96

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

Sample Count Time: 15-JAN-1996 19:54:24.38
Decayed to: 15-JAN-1996 19:54:24.38
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst: EMB
Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

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

Post-NID Peak Search Report

***** No peaks found *****

Summary of Nuclide Activity
Sample ID : S95T00396-DUP

Page : 2
Acquisition date : 15-JAN-1996 19:54:24

**** There are no nuclides meeting summary criteria **** WHC-SD-WM-DP-165, REV.1

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

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

Minimum Detectable Activity Report
Sample ID : S95T00396-DUP

Page : 3
Acquisition date : 15-JAN-1996 19:54:24
WHC-SD-WM-DP-165, REV. I
MDA
(uCi/L)

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	38.	477.59	2.5122E-01
NA-22	8.	1274.53	2.7613E-02
NA-24	12.	1368.55	3.6445E-02
K-40	109.	1460.75	1.0639E+00
SC-46	16.	1120.55	3.4820E-02
CR-51	38.	320.08	1.8589E-01
MN-54	18.	834.83	2.8268E-02
CO-56	22.	846.76	3.1797E-02
CO-57	72.	122.06	1.8999E-02
CO-58	9.	810.78	1.9710E-02
FE-59	16.	1099.25	6.1518E-02
CO-60	9.	1332.50	3.0354E-02
ZN-65	9.	1115.55	5.1646E-02
SE-75	64.	264.66	3.6667E-02
KR-85	38.	514.00	6.3926E+00
SR-85	38.	514.01	2.8833E-02
Y-88	2.	1836.06	1.8630E-02
Y-90	3.	1760.70	8.3214E-02
Y-91	10.	1204.67	1.0056E+01
NB-94	24.	871.09	3.4148E-02
NB-95	23.	765.78	3.0224E-02
ZR-95	21.	756.73	5.2190E-02
RU-103	27.	497.08	2.4975E-02
RURH-106	24.	621.93	5.2066E-01
AG-108m	14.	722.94	2.4061E-02
CD-109	66.	88.03	6.2201E-01
AG-110M	27.	657.76	3.0082E-02
SN-113	35.	391.69	3.2644E-02
TE-123m	86.	159.00	2.0699E-02
SB-124	26.	602.73	2.6484E-02
SB-125	38.	427.89	7.9201E-02
TE-125m	76.	109.27	6.4609E+00
I-129	65.	39.60	0.0000E+00
I-131	40.	364.48	2.5918E-02
XE-131m	75.	163.93	8.4208E-01
BA-133	48.	356.02	3.6775E-02
CS-134	27.	604.70	2.7230E-02
CS-136	12.	818.51	2.2759E-02
CS-137	151.	661.66	7.9320E-02
CS-138	12.	1435.86	7.9609E-02
CE-139	77.	165.85	2.1046E-02
BA-140	23.	537.31	9.1827E-02
LA-140	5.	1596.21	2.7765E-02
CE-141	73.	145.44	3.2741E-02
CE-144	69.	133.51	1.3870E-01
CEPR-144	69.	133.51	2.7728E-01
EU-152	8.	1408.01	1.3909E-01
EU-154	8.	1274.51	8.0223E-02
EU-155	67.	86.54	7.1079E-02
HF-181	33.	482.18	3.0322E-02
TA-182	65.	67.75	9.7458E-02

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S95T00396-DUP

Acquisition date : 15-JAN-1996 19:54:24

WHC-SD-WM-DP-165, REV. 1

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
HG-203	52.	279.20	2.4399E-02
BI-207	19.	569.70	2.1913E-02
TL-208	46.	277.36	2.9565E-01
PB-210	52.	46.50	0.0000E+00
BI-212	22.	727.18	4.2016E-01
PB-212	69.	238.63	4.7331E-02
BI-214	37.	609.31	6.9775E-02
PB-214	57.	351.92	1.2300E-01
RA-224	62.	240.99	4.9862E-01
RA-226	91.	186.10	5.5668E-01
AC-228	27.	911.21	1.4207E-01
TH-228	71.	84.37	1.9805E+00
TH-229	66.	88.47	9.0442E-02
U-232	58.	57.78	3.4394E+01
PA-233	62.	312.17	6.0942E-02
PA-234M	18.	1001.03	5.6079E-02
TH-234	66.	63.29	1.1133E+00
U-235	90.	185.71	3.3620E-02
NP-237	67.	86.48	1.8844E-01
U-237	68.	59.54	1.8821E-01
NP-238	10.	984.45	8.7967E-02
NP-239	68.	106.12	7.7784E-02
PU-239	72.	129.30	2.4750E+02
AM-241	68.	59.54	1.8053E-01
AM-243	59.	74.67	4.9159E-02

LABCORE Data Entry Template for Worklist# 4825

Analyst: RM Instrument: AB00 12 Book# 9856

Method: LA-220-101 Rev/Mod D-1

Worklist Comment: Determine sample size using Ludlum. SLF

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	S95T003870 0		@SR90-01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E					
5 DUP	S95T003870 0		@SR90-01	LIQUID		
6 SAMPLE	S95T003871 0		@SR90-01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E					
7 DUP	S95T003871 0		@SR90-01	LIQUID		
8 SAMPLE	S95T003872 0		@SR90-01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E					
9 DUP	S95T003872 0		@SR90-01	LIQUID		

Final page for worklist # 4825

Not King 1/15/96
Analyst Signature Date

MSB 1/14/96
Analyst Signature Date

C. J. Opener 1/16/96

Data Entry Comments:

BLNK value indicates contamination, but
at insignificant levels compared to the
samples. RA 1/18/96

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

LABCORE Completed Worklist Report for Worklist# 4825

Analyst: rwk

Instrument: AB12

Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: Determine sample size using Ludlum. SLF

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	@SR90-01 SR90-01 LIQUID		1.24E-03	1.15E-3	92.740 % Recovery	
1 STD		0	@SR90-01 SR90-01C LIQUID		100	9.70E+01	97.000 % Recovery	
1 STD		0	@SR90-01 SR90-01E LIQUID		1.00	1.86E+00	1.860 % Ct. Error	
2 BLNK		0	@SR90-01 SR90-01 LIQUID		1	7.90E-2	8.000e-002 uCi/mL	
2 BLNK		0	@SR90-01 SR90-01C LIQUID		100	9.60E+01	96.000 % Recovery	
2 BLNK		0	@SR90-01 SR90-01E LIQUID		1.00	1.68E+01	16.800 % Ct. Error	
3 BLNK/BKG		0	@SR90-01 SR90-01 LIQUID		1	6.00E+00	6.000 uCi/mL	
4 SAMPLE	S95T003870	0	@SR90-01 SR90-01 LIQUID		N/A	7.13E+01	1.010e-002 uCi/mL	
4 SAMPLE	S95T003870	0	@SR90-01 SR90-01C LIQUID		N/A	9.62E+01	1.000e-004 % Recovery	
4 SAMPLE	S95T003870	0	@SR90-01 SR90-01E LIQUID		N/A	4.72E-01	0.000 % Ct. Error	
5 DUP	S95T003870	0	@SR90-01 SR90-01 LIQUID		7.13E+1	7.51E+1	5.190 RPD	
5 DUP	S95T003870	0	@SR90-01 SR90-01C LIQUID		100	9.47E+01	94.700 % Recovery	
5 DUP	S95T003870	0	@SR90-01 SR90-01E LIQUID		1.00	4.63E-01	0.460 % Ct. Error	
6 SAMPLE	S95T003871	0	@SR90-01 SR90-01 LIQUID		N/A	7.44E+01	1.000e-002 uCi/mL	
6 SAMPLE	S95T003871	0	@SR90-01 SR90-01C LIQUID		N/A	9.64E+01	1.000e-004 % Recovery	
6 SAMPLE	S95T003871	0	@SR90-01 SR90-01E LIQUID		N/A	4.61E-01	0.000 % Ct. Error	
7 DUP	S95T003871	0	@SR90-01 SR90-01 LIQUID		7.44E+1	7.39E+1	0.670 RPD	
7 DUP	S95T003871	0	@SR90-01 SR90-01C LIQUID		100	9.55E+01	95.500 % Recovery	
7 DUP	S95T003871	0	@SR90-01 SR90-01E LIQUID		1.00	4.63E-01	0.460 % Ct. Error	
8 SAMPLE	S95T003872	0	@SR90-01 SR90-01 LIQUID		N/A	7.82E+01	1.010e-002 uCi/mL	
8 SAMPLE	S95T003872	0	@SR90-01 SR90-01C LIQUID		N/A	9.50E+01	1.000e-004 % Recovery	
8 SAMPLE	S95T003872	0	@SR90-01 SR90-01E LIQUID		N/A	4.52E-01	0.000 % Ct. Error	
9 DUP	S95T003872	0	@SR90-01 SR90-01 LIQUID		7.82E+1	7.94E+1	1.520 RPD	
9 DUP	S95T003872	0	@SR90-01 SR90-01C LIQUID		100	9.52E+01	95.200 % Recovery	
9 DUP	S95T003872	0	@SR90-01 SR90-01E LIQUID		1.00	4.47E-01	0.450 % Ct. Error	

Final page for worklist# 4825

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

1/18/96
Date

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

WORKBOOK PAGE: STD1

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

				STANDARD
Type	DETECTOR NUMBER	12	CARRIER ADDED in mL (CVA)	1.000
STD	TOTAL COUNTS (TC)	11276	GROSS WEIGHT (W2)	7.2938
Work List	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT (W1)	7.1968
4825	BACKGROUND in cpm (BKG)	3.8	NET WEIGHT (W3)	0.0970
Test Code	SAMPLE VOLUME in mL (SS)	1.000	DELTA TIME (HOURS) (DT)	7.38
@SR90-01	DILUTION FACTOR (DF)	1		
Matrix	DIGEST DILUTION FACTOR DDF	1		
LIQUID	SAMPLE COUNT RATE (Rs)	1123.80	SR-90 EFFICIENCY FACTO (C1)	0.4180
Batch Number	CRITICAL LEVEL (Lc)	1.17	Y-90 EFFICIENCY FACTOR (C2)	0.4660
96000302	TIME OF SEPARATION (ST)	21:47	Rmax	N/A
Rerun	DATE OF SEPARATION (SD)	01/15/96	DETECTION LIMIT (Ld)	2.44
0	TIME OF COUNT (TOC)	05:10	Sr-89/90 CONC. in $\mu\text{Ci/L}$	1.1502E+00
Sample Prep	DATE OF COUNT (DOC)	01/16/96		
N/A	STANDARD BOOK #	9B56		
Sample #	STANDARD VALUE in $\mu\text{Ci/mL}$	1.2366E-03		
WL4825				
Instrument Code				
WB27811	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)			
Prepared By	Sr-89/90 CONC in $\mu\text{Ci/mL}$ REPLACE RS WITH RMAX IF $RS \leq Lc$ AND $RS \geq 0$ OR REPLACE RS WITH Lc IF $RS < 0$			
MCB	$RS * DF * DDF * 1000 / ((C1 + C2 * (1 - e \text{ to the power of } ((-\text{natural log } 2) / 64.2 * DT))) * SS * REC * 2220000)$			
Chemist	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery $((W2 - W1) / (CVA * 0.1000))$			
SLF	Relative Counting Error = The Square Root of $((TC + BKG * CT) / (TC - BKG * CT) * 1.96)$			
Analyst	Percent Carrier Recovery = (Net Weight / Expected weight) * 100			
RWK	NOTE: Expected weight = $CVA * 0.1$			
Date Complete	Detection Levels and Less Than Values are determined from Procedure LA-508-002.			
01/16/96	Delta Time (hours) = $((DOC - SD) * 24) + (TOC - ST) / 100$			
Analysis Date	Sr-89/90 CONCENTRATION			DETECTION LEVEL 2.50E-06 $\mu\text{Ci/L}$
01/15/96	1.15E-03 $\mu\text{Ci/mL}$			
Analysis Time				
09:47 PM	RELATIVE COUNTING ERROR			
Sample Point	PERCENT CARRIER RECOVERY			
AN-102 GRAB	97.0%			

Analyst:	RWK	Date:	16-Jan-96
Signature of Chemist:	SLF	Date:	1/18/96

STANDARD.WB1 REV 1.2

22010NML

WHC-SD-WM-DP-165, REV.)

WORKBOOK PAGE: BLANK2

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

					BLNK		
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000	
BLNK	TOTAL COUNTS	(TC)	228	GROSS WEIGHT	(W2)	7.3308	
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.2348	
4825	BACKGROUND in cpm	(BKG)	3.8	NET WEIGHT	(W3)	0.0960	
Test Code	SAMPLE VOLUME in mL	(SS)	0.025	DELTA TIME (HOURS)	(DT)	7.80	
@SR90-01	DILUTION FACTOR	(DF)	101				
Matrix	DIGEST DILUTION FACTOR	(DDF)	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	19.00	SR-90 EFFICIENCY FACTOR	(C1)	0.4180	
Batch Number	CRITICAL LEVEL	(Lc)	1.17	Y-90 EFFICIENCY FACTOR	(C2)	0.4660	
96000302	TIME OF SEPARATION	(ST)	21:47	Rmax		N/A	
Run	DATE OF SEPARATION	(SD)	01/15/96	DETECTION LIMIT	(Ld)	2.44	
0	TIME OF COUNT	(TOC)	05:35	Sr-89/90 CONC in µCi/L		7.9048E+01	
Sample Prep	DATE OF COUNT	(DOC)	01/16/96				
N/A							
Sample #							
WL4825							
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)						
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0						
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)						
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))						
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT))*1.96						
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100						
Analyst	NOTE: Expected weight = CVA * 0.1						
RWK	Detection Levels and Less Than Values are determined from Procedure LA-508-002.						
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100						
01/16/96							
Analysis Date							
01/15/96	Sr-89/90 CONCENTRATION		7.90E-02	µCi/mL	DETECTION LEVEL 1.01E-02 µCi/mL		
Analysis Time							
09:47 PM	RELATIVE COUNTING ERROR		16.8%				
Sample Point							
AN-102 GRAB	PERCENT CARRIER RECOVERY		96.0%				

Analyst:	RWK	Date:	16-Jan-96
Signature of Chemist:	SLF	Date:	1/16/96

BLANK.WB1 REV 1.2

22010NML

WHC-SD-WM-DP-165, REV. 1

WORKBOOK PAGE: SAM4

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

					SAMPLE		
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000	
SAMPLE	TOTAL COUNTS	(TC)	172230	GROSS WEIGHT	(W2)	7.3059	
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.2097	
4825	BACKGROUND in cpm	(BKG)	3.8	NET WEIGHT	(W3)	0.0962	
Test Code	SAMPLE VOLUME in mL	(SS)	0.025	DELTA TIME (HOURS)	(DT)	8.05	
@SR90-01	DILUTION FACTOR	(DF)	101				
Matrix	DIGEST DILUTION FACTOR	(DDF)	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	17219.20	SR-90 EFFICIENCY FACTOR	(C1)	0.4180	
Batch Number	CRITICAL LEVEL	(Lc)	1.17	Y-90 EFFICIENCY FACTOR	(C2)	0.4660	
96000302	TIME OF SEPARATION	(ST)	21:47	Rmax		N/A	
Rerun	DATE OF SEPARATION	(SD)	01/15/96	DETECTION LIMIT	(Ld)	2.44	
0	TIME OF COUNT	(TOC)	05:50	Sr-89/90 CONC in µCi/L		7.1310E+04	
Sample Prep	DATE OF COUNT	(DOC)	01/16/96				
N/A							
Sample #							
S95T003870							
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)						
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0						
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)						
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))						
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)						
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100						
Analyst	NOTE: Expected weight = CVA * 0.1						
RWK	Detection Levels and Less Than Values are determined from Procedure LA-508-002.						
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100						
01/16/96							
Analysis Date							
01/15/96	Sr-89/90 CONCENTRATION	7.13E+01		µCi/mL	DETECTION LEVEL 1.01E-02 µCi/mL		
Analysis Time							
09:47 PM	RELATIVE COUNTING ERROR	0.5%					
Sample Point							
AN-102 GRAB	PERCENT CARRIER RECOVERY	96.2%					

Analyst:	RWK	Date:	16-Jan-96
Signature of Chemist:	SLF	Date:	1/18/96

SAMPLE.WB1 REV 1.2

22010NML

WORKBOOK PAGE: DUP5

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

					DUP	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS	(TC)	179043	GROSS WEIGHT	(W2)	7.3603
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.2656
4825	BACKGROUND in cpm	(BKG)	3.8	NET WEIGHT	(W3)	0.0947
Test Code	SAMPLE VOLUME in mL	(SS)	0.025	DELTA TIME (HOURS)	(DT)	8.38
@SR90-01	DILUTION FACTOR	(DF)	101			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	17900.50	Sr-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.17	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96000302	TIME OF SEPARATION	(ST)	21:47	Rmax		N/A
Run	DATE OF SEPARATION	(SD)	01/15/96	DETECTION LIMIT	(Ld)	2.44
0	TIME OF COUNT	(TOC)	06:10	Sr-89/90 CONC in µCi/L		7.5053E+04
Sample Prep	DATE OF COUNT	(DOC)	01/16/96			
N/A						
Sample #						
S95T003870						
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*22200000					
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)					
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
RWK	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
01/16/96						
Analysis Date						DETECTION LEVEL 1.02E-02 µCi/mL
01/15/96	Sr-89/90 CONCENTRATION		7.51E+01	µCi/mL		
Analysis Time						
09:47 PM	RELATIVE COUNTING ERROR		0.5%			
Sample Point						
AN-102 GRAB	PERCENT CARRIER RECOVERY		94.7%			

Analyst:	RWK	Date:	16-Jan-96
Signature of Chemist:	SLF	Date:	1/18/96
SAMPLE WB1 REV 1.2		22010NML	

WHC-SD-WM-DP-165, REV. 1

WORKBOOK PAGE: SAM6

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

LA-220-101 / D-1				Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)		SAMPLE	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000	
SAMPLE	TOTAL COUNTS	(TC)	181176	GROSS WEIGHT	(W2)	7.2778	
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.1814	
4825	BACKGROUND In cpm	(BKG)	3.8	NET WEIGHT	(W3)	0.0964	
Test Code	SAMPLE VOLUME in mL	(SS)	0.025	DELTA TIME (HOURS)	(DT)	8.72	
@SR90-01	DILUTION FACTOR	(DF)	101				
Matrix	DIGEST DILUTION FACTOR	(DDF)	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	18113.80	SR-90 EFFICIENCY FACTOR	(C1)	0.4180	
Batch Number	CRITICAL LEVEL	(Lc)	1.17	Y-90 EFFICIENCY FACTOR	(C2)	0.4660	
96000302	TIME OF SEPARATION	(ST)	21:47	Rmax		N/A	
Rerun	DATE OF SEPARATION	(SD)	01/15/96	DETECTION LIMIT	(Ld)	2.44	
0	TIME OF COUNT	(TOC)	06:30	Sr-89/90 CONC in µCi/L		7.4360E+04	
Sample Prep	DATE OF COUNT	(DOC)	01/16/96				
N/A							
Sample #							
S95T003871							
Instrument Code							
WB27811							
Prepared By							
MCB							
Chemist							
SLF							
Analyst							
RWK							
Date Complete							
01/16/96							
Analysis Date						DETECTION LEVEL 1.00E-02 µCi/mL	
01/15/96							
Analysis Time							
09:47 PM							
Sample Point							
AN-102 GRAB	PERCENT CARRIER RECOVERY	96.4%					

Analyst:	RWK	Date:	16-Jan-96
Signature of Chemist:	SLF	Date:	1/18/96
SAMPLE.WB1 REV 1.2	22010NML		

WORKBOOK PAGE: DUP7

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

					DUP	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS	(TC)	178959	GROSS WEIGHT	(W2)	7.2818
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.1863
4825	BACKGROUND in cpm	(BKG)	3.8	NET WEIGHT	(W3)	0.0955
Test Code	SAMPLE VOLUME in mL	(SS)	0.025	DELTA TIME (HOURS)	(DT)	9.05
@SR90-01	DILUTION FACTOR	(DF)	101			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	17892.10	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.17	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96000302	TIME OF SEPARATION	(ST)	21:47	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	01/15/96	DETECTION LIMIT	(Ld)	2.44
0	TIME OF COUNT	(TOC)	06:50	Sr-89/90 CONC in $\mu\text{Ci/L}$		7.3897E+04
Sample Prep	DATE OF COUNT	(DOC)	01/16/96			
N/A						
Sample #						
S95T003871						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB27811	Sr-89/90 CONC in $\mu\text{Ci/L}$ Replace RS with RMAX if RS<Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT))))*SS*REC*22200000					
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)					
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
RWK	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
01/16/96						
Analysis Date						
01/15/96	Sr-89/90 CONCENTRATION		7.39E+01		$\mu\text{Ci/mL}$	
Analysis Time						
09:47 PM	RELATIVE COUNTING ERROR		0.5%		1.01E-02	
Sample Point						
AN-102 GRAB	PERCENT CARRIER RECOVERY		95.5%		$\mu\text{Ci/mL}$	

Analyst:	RWK	Date:	16-Jan-96
Signature of Chemist:	SLF	Date:	1/18/96

SAMPLE.WB1 REV 1.2

22010NML

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

					SAMPLE	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	188472	GROSS WEIGHT	(W2)	7.3321
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.2371
4825	BACKGROUND in cpm	(BKG)	3.8	NET WEIGHT	(W3)	0.0950
Test Code	SAMPLE VOLUME in mL	(SS)	0.025	DELTA TIME (HOURS)	(DT)	9.08
@SR90-01	DILUTION FACTOR	(DF)	101			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	18843.40	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Sample Number	CRITICAL LEVEL	(Lc)	1.17	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96000302	TIME OF SEPARATION	(ST)	21:55	Rmax		N/A
Person	DATE OF SEPARATION	(SD)	01/15/96	DETECTION LIMIT	(Ld)	2.44
0	TIME OF COUNT	(TOC)	07:00	Sr-89/90 CONC in $\mu\text{Ci/L}$		7.8210E+04
Sample Prep	DATE OF COUNT	(DOC)	01/16/96			
N/A						
Sample #						
S95T003872						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB27811	Sr-89/90 CONC in $\mu\text{Ci/L}$ Replace RS with RMAX if $RS \leq Lc$ and $RS > 0$ or Replace RS with Lc if $RS < 0$					
Prepared By	$RS * DF * DDF / ((C1 + C2 * (1 - e^{-((-\text{natural log } 2) / 64.2 * DT))}) * SS * REC * 2220000)$					
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery $((W2 - W1) / (CVA * 0.1000))$					
Chemist	Relative Counting Error = The Square Root of $((TC + BKG * CT) / (TC - BKG * CT) * 1.96)$					
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
RWK	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = $((DOC - SD) * 24) + (TOC - ST) / 100$					
01/16/96						
Analysis Date						DETECTION LEVEL 1.01E-02 $\mu\text{Ci/mL}$
01/15/96	Sr-89/90 CONCENTRATION		7.82E+01	$\mu\text{Ci/mL}$		
Analysis Time						
09:47 PM	RELATIVE COUNTING ERROR		0.5%			
Sample Point						
AN-102 GRAB	PERCENT CARRIER RECOVERY		95.0%			

Analyst:	RWK	Date:	16-Jan-96
Signature of Chemist:	SLF	Date:	1/18/96
SAMPLE.WB1 REV 1.2		22010NML	

WHC-SD-WM-DP-165, REV. 1

WORKBOOK PAGE: DUP9

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

					DUP	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS	(TC)	192163	GROSS WEIGHT	(W2)	7.3389
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.2437
4825	BACKGROUND in cpm	(BKG)	3.8	NET WEIGHT	(W3)	0.0952
Test Code	SAMPLE VOLUME in mL	(SS)	0.025	DELTA TIME (HOURS)	(DT)	9.33
@SR90-01	DILUTION FACTOR	(DF)	101			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	19212.50	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.17	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96000302	TIME OF SEPARATION	(ST)	21:55	Rmax		N/A
Recon	DATE OF SEPARATION	(SD)	01/15/96	DETECTION LIMIT	(Ld)	2.44
0	TIME OF COUNT	(TOC)	07:15	Sr-89/90 CONC in µCi/L		7.9379E+04
Sample Prep	DATE OF COUNT	(DOC)	01/16/96			
N/A						
Sample #						
S95T003872						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*DF*DDF/(((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT))))*SS*REC*2220000)					
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)					
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
RWK	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
01/16/96						
Analysis Date						DETECTION LEVEL 1.01E-02 µCi/mL
01/15/96	Sr-89/90 CONCENTRATION		7.94E+01	µCi/mL		
Analysis Time						
09:47 PM	RELATIVE COUNTING ERROR		0.4%			
Sample Point						
AN-102 GRAB	PERCENT CARRIER RECOVERY		95.2%			

Analyst:	RWK	Date:	16-Jan-96
Signature of Chemist:	SLF	Date:	1/18/96
SAMPLE.WB1 REV 1.2	22010NML		

LABCORE Data Entry Template for Worklist# 4888

Analyst: KK Instrument: AB00 12 Book# 9856

Method: LA-220-101 Rev/Mod D-1

Worklist Comment: Determine sample size using Ludlum. SLF

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	S95T003963	0		@SR90-01	LIQUID	95000222	AN-102 GRAB
		Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
5	DUP	S95T003963	0		@SR90-01	LIQUID		

Final page for worklist # 4888

KK 1/16/96
Analyst Signature Date

MJB 1/16/96
Analyst Signature Date

Data Entry Comments:

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

LABCORE Completed Worklist Report for Worklist# 4888

Analyst: rwk

Instrument: AB12

Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: Determine sample size using Ludlum. SLF

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	@SR90-01 SR90-01	LIQUID	1.24E-03	1.16E-3	93.550 %	Recovery
1 STD		0	@SR90-01 SR90-01C	LIQUID	100	9.29E+01	92.900 %	Recovery
1 STD		0	@SR90-01 SR90-01E	LIQUID	1.00	1.89E+00	1.890 %	Ct. Error
2 BLNK		0	@SR90-01 SR90-01	LIQUID	1	4.14E-7	0.000 uCi/mL	
2 BLNK		0	@SR90-01 SR90-01C	LIQUID	100	9.50E+01	95.000 %	Recovery
2 BLNK		0	@SR90-01 SR90-01E	LIQUID	1.00	9.60E+01	96.000 %	Ct. Error
3 BLNK/BKG		0	@SR90-01 SR90-01	LIQUID	1	1.53E+00	1.530 uCi/mL	
4 SAMPLE	S95T003963	0	@SR90-01 SR90-01	LIQUID	N/A	3.07E-05	5.040e-007 uCi/mL	
4 SAMPLE	S95T003963	0	@SR90-01 SR90-01C	LIQUID	N/A	9.49E+01	1.000e-004 %	Recovery
4 SAMPLE	S95T003963	0	@SR90-01 SR90-01E	LIQUID	N/A	5.21E+00	0.000 %	Ct. Error
5 DUP	S95T003963	0	@SR90-01 SR90-01	LIQUID	3.07E-5	3.20E-5	4.150 RPD	
5 DUP	S95T003963	0	@SR90-01 SR90-01C	LIQUID	100	9.46E+01	94.600 %	Recovery
5 DUP	S95T003963	0	@SR90-01 SR90-01E	LIQUID	1.00	5.10E+00	5.100 %	Ct. Error

Final page for worklist# 4888

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

1/18/96
Date

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

WHC-SD-WM-DP-165, REV. I

WORKBOOK PAGE: STD1

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1) LIQUIDS				STANDARD	
Type	DETECTOR NUMBER	12	CARRIER ADDED in mL (CVA)	1.000	
STD	TOTAL COUNTS (TC)	10913	GROSS WEIGHT (W2)	7.3198	
Work List	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT (W1)	7.2269	
4888	BACKGROUND in cpm (BKG)	3.8	NET WEIGHT (W3)	0.0929	
Test Code	SAMPLE VOLUME in mL (SS)	1.000	DELTA TIME (HOURS) (DT)	7.85	
@SR90-01	DILUTION FACTOR (DF)	1			
Matrix	DIGEST DILUTION FACTOR DDF	1			
LIQUID	SAMPLE COUNT RATE (Rs)	1087.50	SR-90 EFFICIENCY FACTO (C1)	0.4180	
Batch Number	CRITICAL LEVEL (Lc)	1.17	Y-90 EFFICIENCY FACTOR (C2)	0.4660	
96000339	TIME OF SEPARATION (ST)	01:29	Rmax	N/A	
Rerun	DATE OF SEPARATION (SD)	01/16/96	DETECTION LIMIT (Ld)	2.44	
0	TIME OF COUNT (TOC)	09:20	Sr-89/90 CONC. in µCi/L	1.1567E+00	
Sample Prep	DATE OF COUNT (DOC)	01/16/96			
N/A	STANDARD BOOK #	9B56			
Sample #	STANDARD VALUE in µCi/mL	1.2366E-03			
WL4888					
Instrument Code					
WB27811	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
Prepared By	Sr-89/90 CONC in µCi/mL REPLACE RS WITH RMAX IF RS<=LcAND RS>=0 OR REPLACE RS WITH Lc IF RS<0				
MCB	RS*DF*DDF*1000/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)				
Chemist	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))				
SLF	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)				
Analyst	Percent Carrier Recovery = (Net Weight / Expected weight) * 100				
RWK	NOTE: Expected weight = CVA * 0.1				
Date Complete	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
01/16/96	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
Analysis Date					
01/16/96	Sr-89/90 CONCENTRATION	1.16E-03	µCi/mL	DETECTION LEVEL 2.59E-06 µCi/L	
Analysis Time					
01:29 AM	RELATIVE COUNTING ERROR	1.9%			
Sample Point					
AN-102 GRAB	PERCENT CARRIER RECOVERY	92.9%			

Analyst:	RWK	Date:	16-Jan-96
Signature of Chemist:	SLF	Date:	1/18/96

STANDARD WB1 REV 1.2

22010NML

WHC-SD-WM-DP-165, REV. 1

WORKBOOK PAGE: BLANK2

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

					BLNK
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA) 1.000
BLNK	TOTAL COUNTS	(TC)	58	GROSS WEIGHT	(W2) 7.2670
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1) 7.1720
4888	BACKGROUND in cpm	(BKG)	3.8	NET WEIGHT	(W3) 0.0950
Test Code	SAMPLE VOLUME in mL	(SS)	5.000	DELTA TIME (HOURS)	(DT) 8.32
@SR90-01	DILUTION FACTOR	(DF)	1		
Matrix	DIGEST DILUTION FACTOR	(DDF)	1		
LIQUID	SAMPLE COUNT RATE	(Rs)	2.00	SR-90 EFFICIENCY FACTOR	(C1) 0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.17	Y-90 EFFICIENCY FACTOR	(C2) 0.4660
96000339	TIME OF SEPARATION	(ST)	01:29	Rmax	N/A
Reagent	DATE OF SEPARATION	(SD)	01/16/96	DETECTION LIMIT	(Ld) 2.44
0	TIME OF COUNT	(TOC)	09:48	Sr-89/90 CONC in $\mu\text{Ci/L}$	4.1409E-04
Sample Prep	DATE OF COUNT	(DOC)	01/16/96		
N/A					
Sample #					
WL4888					
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
WB27811	Sr-89/90 CONC in $\mu\text{Ci/L}$ Replace RS with RMAX if $RS \leq Lc$ and $RS \geq 0$ or Replace RS with Lc if $RS < 0$				
Prepared By	$RS * DF * DDF / ((C1 + C2 * (1 - e \text{ to the power of } ((-\text{natural log } 2) / 64.2 * DT))) * SS * REC * 2220000)$				
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery $((W2 - W1) / (CVA * 0.1000))$				
Chemist	Relative Counting Error = The Square Root of $((TC + BKG * CT) / (TC - BKG * CT) * 1.96)$				
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100				
Analyst	NOTE: Expected weight = CVA * 0.1				
RWK	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
Date Complete	Delta Time (hours) = $((DOC - SD) * 24) + (TOC - ST) / 100$				
01/16/96					
Analysis Date					
01/16/96	Sr-89/90 CONCENTRATION	4.14E-07		$\mu\text{Ci/mL}$	DETECTION LEVEL 5.05E-07 $\mu\text{Ci/mL}$
Analysis Time					
01:29 AM	RELATIVE COUNTING ERROR	96.0%			
Sample Point					
AN-102 GRAB	PERCENT CARRIER RECOVERY	95.0%			

Analyst:	RWK	Date:	16-Jan-96
Signature of Chemist:	SLF	Date:	1/18/96

BLANK.WB1 REV 1.2

22010NML

WHC-SD-WM-DP-165, REV. J

WORKBOOK PAGE: SAM4

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

					SAMPLE	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	1525	GROSS WEIGHT	(W2)	7.3191
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.2242
4888	BACKGROUND in cpm	(BKG)	3.8	NET WEIGHT	(W3)	0.0949
Test Code	SAMPLE VOLUME in mL	(SS)	5.000	DELTA TIME (HOURS)	(DT)	8.60
@SR90-01	DILUTION FACTOR	(DF)	1			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	148.70	Sr-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.17	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96000339	TIME OF SEPARATION	(ST)	01:29	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	01/16/96	DETECTION LIMIT	(Ld)	2.44
0	TIME OF COUNT	(TOC)	10:05	Sr-89/90 CONC in $\mu\text{Ci/L}$		3.0733E-02
Sample Prep	DATE OF COUNT	(DOC)	01/16/96			
N/A						
Sample #						
S95T003963						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB27811	Sr-89/90 CONC in $\mu\text{Ci/L}$ Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)					
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)					
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
RWK	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
01/16/96						
Analysis Date						DETECTION LEVEL 5.04E-07 $\mu\text{Ci/mL}$
01/16/96	Sr-89/90 CONCENTRATION	3.07E-05			$\mu\text{Ci/mL}$	
Analysis Time						
01:29 AM	RELATIVE COUNTING ERROR	5.2%				
Sample Point						
AN-102 GRAB	PERCENT CARRIER RECOVERY	94.9%				

Analyst:	RWK	Date:	16-Jan-96
Signature of Chemist:	SLF	Date:	1/18/96

SAMPLE.WB1 REV 1.2

22010NML

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WHC-SD-WM-DP-165, REV. 1

WORKBOOK PAGE: DUP5

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

					DUP	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS	(TC)	1588	GROSS WEIGHT	(W2)	7.3111
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.2165
4888	BACKGROUND in cpm	(BKG)	3.8	NET WEIGHT	(W3)	0.0946
Test Code	SAMPLE VOLUME in mL	(SS)	5.000	DELTA TIME (HOURS)	(DT)	9.02
@SR90-01	DILUTION FACTOR	(DF)	1			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	155.00	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.17	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96000339	TIME OF SEPARATION	(ST)	01:29	Rmax		N/A
Baruc	DATE OF SEPARATION	(SD)	01/16/96	DETECTION LIMIT	(Ld)	2.44
0	TIME OF COUNT	(TOC)	10:30	Sr-89/90 CONC in µCi/L		3.2004E-02
Sample Prep	DATE OF COUNT	(DOC)	01/16/96			
N/A						
Sample #						
S95T003963						
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)					
MCE	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)					
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
RWK	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
01/16/96						
Analysis Date						DETECTION LEVEL 5.04E-07 µCi/mL
01/16/96	Sr-89/90 CONCENTRATION	3.20E-05	µCi/mL			
Analysis Time						
01:29 AM	RELATIVE COUNTING ERROR	5.1%				
Sample Point						
AN-102 GRAB	PERCENT CARRIER RECOVERY	94.6%				

Analyst:	RWK	Date:	16-Jan-96
Signature of Chemist:	SLF	Date:	1/18/96

SAMPLE.WB1 REV 1.2

22010NML

LABCORE Completed Worklist Report for Worklist# 4767

Analyst: akl

Instrument: AM01

Book# 104B43

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

Worklist Comment: Determine sample size by Ludlum. --LLF

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	@AM24101 AM24101	LIQUID	3.07E-02	2.53E-2	82.410 % Recovery	
1 STD		0	@AM24101 AM24101E	LIQUID	1.00	1.18E+00	1.180 % Ct. Error	
1 STD		0	@AM24101 AM24101T	LIQUID	100	1.01E+02	101.000 % Recovery	
2 BLNK		0	@AM24101 AM24101	LIQUID	1	<1.79E-3	uCi/mL	
2 BLNK		0	@AM24101 AM24101E	LIQUID	1.00	1.00E+02	100.000 % Ct. Error	
2 BLNK		0	@AM24101 AM24101T	LIQUID	100	1.03E+02	103.000 % Recovery	
3 SAMPLE	S95T003871	0	@AM24101 AM24101	LIQUID	N/A	1.23E-01	8.300e-003 uCi/mL	
3 SAMPLE	S95T003871	0	@AM24101 AM24101E	LIQUID	N/A	8.78E-01	0.000 % Ct. Error	
3 SAMPLE	S95T003871	0	@AM24101 AM24101T	LIQUID	N/A	1.01E+02	1.000e-007 % Recovery	
4 DUP	S95T003871	0	@AM24101 AM24101	LIQUID	1.23E-1	1.08E-1	12.990 RPD	
4 DUP	S95T003871	0	@AM24101 AM24101E	LIQUID	1.00	8.13E-01	0.810 % Ct. Error	
4 DUP	S95T003871	0	@AM24101 AM24101T	LIQUID	100	1.16E+02	116.000 % Recovery	
5 SAMPLE	S95T003872	0	@AM24101 AM24101	LIQUID	N/A	1.29E-01	9.330e-003 uCi/mL	
5 SAMPLE	S95T003872	0	@AM24101 AM24101E	LIQUID	N/A	8.41E-01	0.000 % Ct. Error	
5 SAMPLE	S95T003872	0	@AM24101 AM24101T	LIQUID	N/A	1.06E+02	1.000e-007 % Recovery	
6 DUP	S95T003872	0	@AM24101 AM24101	LIQUID	1.29E-1	1.35E-1	4.550 RPD	
6 DUP	S95T003872	0	@AM24101 AM24101E	LIQUID	1.00	8.30E-01	0.830 % Ct. Error	
6 DUP	S95T003872	0	@AM24101 AM24101T	LIQUID	100	9.98E+01	99.800 % Recovery	

Final page for worklist# 4767

Analyst Signature

Date

Analyst Signature

Date

LLF 23 Jan 96
Reviewer Signature

Date

Cm 243/244 and Cm 242 activity below the detection limit!
LLF 23 Jan 96

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

LABCORE Data Entry Template for Worklist# 4767

Analyst: AKL Instrument: AM01 Book# 104B43

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

Worklist Comment: Determine sample size by Ludlum. --LLF

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@AM24101	LIQUID		
2 BLNK			@AM24101	LIQUID		
3 SAMPLE	S95T003871 0		@AM24101	LIQUID	95000222	AN-102 GRAB
	Analytes Requested: AM24101 , AM24101E, AM24101T					
4 DUP	S95T003871 0		@AM24101	LIQUID		
5 SAMPLE	S95T003872 0		@AM24101	LIQUID	95000222	AN-102 GRAB
	Analytes Requested: AM24101 , AM24101E, AM24101T					
6 DUP	S95T003872 0		@AM24101	LIQUID		

Final page for worklist # 4767

AKL 1/10/96
Analyst Signature Date

SE Logan 1/12/96
Analyst Signature Date
M. Brennan 1/12/96

Data Entry Comments:

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

WORKBOOK PAGE: STD1

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

LIQUID

Type	Date Counted	JAN-11-96	Am 241 AEA Frac. (C241)	STD
STD	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.393
Work List	Sample D.F. (DF)	101	Cm 243/244 AEA Frac. (Cm)	0
4767	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	21445
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	118B43	Background in cpm (Bkg)	4
Matrix	Am-243 Tracer Value (dpm/mL)	7550.4	Am 241 cpm	99.16
LIQUID	Detector Number	1	Am 243 cpm	134.93
Batch Number	Detector Efficiency (DetEff)	0.5000	Cm 243/244 cpm	0
96000202	Standard Book No	104B43	AEA Count Time (min)	480
Remun	Standard Value in $\mu\text{Ci/mL}$	0.03067	Am 241 $\mu\text{Ci/L}$ =	2.5281E+01
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 3.2164E+00
Sample Prep				
N/A				
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
WL#4767	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100			
AL10539	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV			
Prepared By				
SEH				
Chemist				
LLF	Am 241 $\mu\text{Ci/mL}$ =	2.53E-02	DETECTION LEVELS In $\mu\text{Ci/mL}$	
Analyst	Relative Counting Error =	1.2%		
AKL				
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			
01/12/96	Cm 243/244 $\mu\text{Ci/mL}$	< 3.22E-03	Am 241	
Analysis Date	Relative Counting Error =	100.0%	Cm 243/244	
01/10/96	Am 243 Tracer Recovery =	100.5%	3.22E-03	
Analysis Time				
12:00 PM				
Sample Point				
AN-102 GRAB				

Analyst:	AKL	Date:	01/12/96
Signature of Chemist:	LLF	Date:	23 Jan 96

STANDARD.WB1 REV 1.2

953103ML

WORKBOOK PAGE: BLANK2

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

LIQUID / SOLID

BLNK

Type	Date Counted	JAN-11-96	Am 241 AEA Frac. (C241)	0
BLNK	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.959
Work List	Sample D.F. (DF)	101	Cm 243/244 AEA Frac. (Cm)	0
4767	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	12239
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
0AM24101	Tracer Book No.	118B43	Background in cpm (Bkg)	4
Matrix	Am-243 Tracer Value (dpm/mL)	7550.4	Am 241 cpm	0
LIQUID	Detector Number	1	Am 243 cpm	148.43
Batch Number	Detector Efficiency (DetEff)	0.5000	Cm 243/244 cpm	0
96000202			AEA Count Time (min)	480
Rerun			Am 241 $\mu\text{Ci/L}$ =	< 1.7910E+00
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 1.7910E+00
Sample Prep				
N/A				
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
WL#4767	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100			
AL10539	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV			
Prepared By	NOTE: Am-241 Result is a LESS THAN Value.			
SEH				
Chemist				
LLF	Am 241 $\mu\text{Ci/mL}$ =	< 1.79E-03	DETECTION LEVELS In $\mu\text{Ci/mL}$	
Analyst	Relative Counting Error =	100.0%		
AKL				
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			
01/12/96	Cm 243/244 $\mu\text{Ci/mL}$	< 1.79E-03		Am 241
Analysis Date	Relative Counting Error =	100.0%		1.79E-03
01/10/96	Am 243 Tracer Recovery =	102.6%		Cm 243/244
Analysis Time				1.79E-03
12:00 PM				
Sample Point				
AN-102 GRAB				

Analyst:	AKL	Date:	01/12/96
Signature of Chemist:	LLF	Date:	23 Jan 96

BLANK.WB1 REV 1.2

953103ML

WORKBOOK PAGE: SAM3

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

LIQUID / SOLID

SAMPLE

Type	Date Counted	JAN-11-96	Am 241 AEA Frac. (C241)	0.738	
SAMPLE	Sample Volume In mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.207	
Work List	Sample D.F. (DF)	101	Cm 243/244 AEA Frac. (Cm)	0.04	
4767	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	55235	
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30	
AM24101	Tracer Book No.	118B43	Background in cpm (Bkg)	4	
Matrix	Am-243 Tracer Value (dpm/mL)	7550.4	Am 241 cpm	474.81	
LIQUID	Detector Number	3	Am 243 cpm	132.84	
Batch Number	Detector Efficiency (DetEff)	0.5000	Cm 243/244 cpm	25.4	
96000202			AEA Count Time (min)	480	
Rerun			Am 241 $\mu\text{Ci/L}$ =	1.2263E+02	
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 8.2973E+00	
Sample Prep					
N/A					
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
S95T003871	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100				
AL10541	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV				
Prepared By					
SEH					
Chemist					
LLF	Am 241 $\mu\text{Ci/mL}$ =	1.23E-01	DETECTION LEVELS In $\mu\text{Ci/mL}$		
Analyst	Relative Counting Error =	0.9%			
AKL					
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241	
01/12/96	Cm 243/244 $\mu\text{Ci/mL}$	< 8.30E-03		8.30E-03	
Analysis Date	Relative Counting Error =	1.9%		Cm 243/244	
01/10/96	Am 243 Tracer Recovery =	100.7%		8.30E-03	
Analysis Time					
12:00 PM					
Sample Point					
AN-102 GRAB					

Analyst:	AKL	Date:	01/12/96
Signature of Chemist:	LLF	Date:	23 Jan 96

SAMPLE.WB1 REV 1.2

953103ML

WORKBOOK PAGE: DUP4

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

LIQUID / SOLID

Type	Date Counted	JAN-11-96	Am 241 AEA Frac. (C241)	DUP		
DUP	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.69		
Work List	Sample D.F. (DF)	101	Cm 243/244 AEA Frac. (Cm)	0.22		
4767	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	0.037		
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	59923		
@AM24101	Tracer Book No.	118B43	Background in cpm (Bkg)	30		
Matrix	Am-243 Tracer Value (dpm/mL)	7550.4	Am 241 cpm	4		
LIQUID	Detector Number	3	Am 243 cpm	501.6		
Batch Number	Detector Efficiency (DetEff)	0.5000	Cm 243/244 cpm	159.78		
96000202			AEA Count Time (min)	26.84		
Run			Am 241 $\mu\text{Ci/L}$ =	480		
0			Am 243 $\mu\text{Ci/L}$ =	1.0774E+02		
Sample Prep			Cm 243/244 $\mu\text{Ci/L}$ =	< 7.8070E+00		
N/A						
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))					
S95T003871	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))					
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100					
AL10541	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV					
Prepared By						
SEH						
Chemist						
LLF	Am 241 $\mu\text{Ci/mL}$ =	1.08E-01	DETECTION LEVELS In $\mu\text{Ci/mL}$			
Analyst	Relative Counting Error =	0.8%				
AKL						
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.					
01/12/96	Cm 243/244 $\mu\text{Ci/mL}$	< 7.81E-03	Am 241			
Analysis Date	Relative Counting Error =	1.9%	7.81E-03			
01/10/96	Am 243 Tracer Recovery =	116.2%	Cm 243/244			
Analysis Time				7.81E-03		
12:00 PM						
Sample Point						
AN-102 GRAB						

Analyst:	AKL	Date:	01/12/96
Signature of Chemist: <i>SEH</i>	LLF	Date:	23 Jan 96

SAMPLE.WB1 REV 1.2

953103ML

WORKBOOK PAGE: SAM5

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

LIQUID / SOLID

				SAMPLE	
Type	Date Counted	JAN-11-96	Am 241 AEA Frac.	(C241)	0.692
SAMPLE	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac.	(C243)	0.184
Work List	Sample D.F. (DF)	101	Cm 243/244 AEA Frac.	(Cm)	0.038
4767	Tracer Volume in mL (SPKV)	0.100	Total AT Counts		65485
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)		30
0AM24101	Tracer Book No.	118B43	Background in cpm (Bkg)		4
Matrix	Am-243 Tracer Value (dpm/mL)	7550.4	Am 241 cpm		540.55
LIQUID	Detector Number	3	Am 243 cpm		143.33
Batch Number	Detector Efficiency (DetEff)	0.5000	Cm 243/244 cpm		29.39
96000202			AEA Count Time (min)		480
Retain			Am 241 $\mu\text{Ci/L}$ =		1.2919E+02
0			Cm 243/244 $\mu\text{Ci/L}$ =	<	9.3345E+00
Sample Prep					
N/A					
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
S95T003872	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100				
AL10541	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV				
Prepared By					
SEH					
Chemist					
LLF	Am 241 $\mu\text{Ci/mL}$ =	1.29E-01	DETECTION LEVELS in $\mu\text{Ci/mL}$		
Analyst	Relative Counting Error =	0.8%			
AKL	NOTE: Cm-243/244 Result is a LESS THAN Value.				
Date Complete					
01/12/96	Cm 243/244 $\mu\text{Ci/mL}$	< 9.33E-03	Am 241		
Analysis Date	Relative Counting Error =	1.8%	9.33E-03		
01/10/96	Am 243 Tracer Recovery =	106.2%	Cm 243/244		
Analysis Time			9.33E-03		
12:00 PM					
Sample Point					
AN-102 GRAB					

Analyst:	AKL	Date:	01/12/96
Signature of Chemist: <i>AKL</i>	LLF	Date:	23 Jan 96
SAMPLE.WB1 REV 1.2	953103ML		

WORKBOOK PAGE: DUP6

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

LIQUID / SOLID

DUP
0.702
0.178
0.038
63590
30
4
574.45
145.7
31.37
480
1.3547E+02
9.6730E+00

TYPE	Date Counted	JAN-11-96	Am 241 AEA Frac. (C241)	DUP	
DUP	Sample Volume In mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.702	
Work List	Sample D.F. (DF)	101	Cm 243/244 AEA Frac. (Cm)	0.178	
4767	Tracer Volume In mL (SPKV)	0.100	Total AT Counts	0.038	
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	63590	
AM24101	Tracer Book No.	118B43	Background In cpm (Bkg)	30	
Matrix	Am-243 Tracer Value (dpm/mL)	7550.4	Am 241 cpm	4	
LIQUID	Detector Number	1	Am 243 cpm	574.45	
Batch Number	Detector Efficiency (DetEff)	0.5000	Cm 243/244 cpm	145.7	
96000202			Cm 243/244 cpm	31.37	
Rerun			AEA Count Time (min)	480	
0			Am 241 µCi/L =	1.3547E+02	
Sample Prep			Cm 243/244 µCi/L =	< 9.6730E+00	
N/A					
Sample Number	Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))				
S95T003872	Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))				
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100				
AL10539	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV				
Prepared By					
SEH					
Chemist					
LLF	Am 241 µCi/mL =	1.35E-01	DETECTION LEVELS In µCi/mL		
Analyst	Relative Counting Error =	0.8%			
AKL	NOTE: Cm-243/244 Result is a LESS THAN Value.				
Date Complete	Cm 243/244 µCi/mL	< 9.67E-03			
01/12/96	Relative Counting Error =	1.8%	Am 241	9.67E-03	
Analysis Date	Am 243 Tracer Recovery =	99.8%	Cm 243/244	9.67E-03	
01/10/96					
Analysis Time					
12:00 PM					
Sample Point					
AN-102 GRAB					

Analyst:	AKL	Date:	01/12/96
Signature of Chemist: <i>AKL</i>	LLF	Date:	23 Jan 96
SAMPLE.WB1 REV 1.2	953103ML		

1-11-96

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01 WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
WL4767-STD
File ID: 19a1988.CNF

Counted on: 1/11/96 @11: 8
Detector: AEA19
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	4135.2	4135.2	298.638	298.638	10.000	4.366	5.000	3.142
2	6174.6	6174.6	253.203	253.203	10.000	3.252	5.000	2.325

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid	Count	%err	Activity
			Exp. Obs. Diff. FWHM	Rate c/m	@95	uCi/ea
1	Pu238	0.393	5.487 5.499 -.0120.02	99.16	0.9	0.795E-02
	Am241		5.479 5.499 -.020			0.609E-02
2	Am243	0.534	5.270 5.286 -.0160.02	134.93	0.8	0.787E-02
Totals:		0.927	<--valid peaks only-->		234.10	

DETECTOR CALIBRATION
Energy(MEV) = 4.096 + (0.0047)*Channel
Energy range (MeV): 4.096 TO 6.502
Efficiency = 0.0078 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	121225.0	100.000
Smoothed	121226.4	100.001
Composite fit	112382.1	92.705
Residuals	8842.9	7.295

Analyzed by: _____
VR

WHC-SD-WM-DP-165, REV. 1

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

Raw Data Dump for AEA Spectrum: 19a1988.CNF

1	0.	0.	0.	1.	1.	0.	0.	2.	0.	0.
11	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.
21	0.	5.	0.	1.	0.	1.	0.	3.	1.	0.
31	0.	0.	0.	0.	0.	0.	0.	1.	2.	2.
41	1.	1.	0.	3.	0.	2.	4.	1.	2.	2.
51	0.	1.	1.	1.	0.	1.	1.	0.	1.	0.
61	1.	3.	0.	0.	6.	0.	1.	1.	1.	0.
71	1.	1.	2.	1.	1.	1.	1.	4.	4.	1.
81	0.	1.	1.	1.	2.	1.	1.	2.	0.	0.
91	1.	3.	2.	3.	0.	1.	2.	1.	3.	1.
101	2.	0.	4.	3.	2.	1.	4.	0.	1.	4.
111	1.	1.	1.	1.	2.	0.	4.	3.	0.	1.
121	3.	2.	3.	5.	6.	2.	1.	2.	4.	3.
131	3.	6.	4.	6.	6.	1.	3.	2.	5.	2.
141	4.	4.	3.	4.	4.	6.	5.	4.	3.	8.
151	5.	5.	4.	2.	9.	5.	8.	7.	4.	8.
161	4.	4.	4.	6.	8.	3.	8.	2.	8.	7.
171	6.	7.	8.	8.	10.	10.	6.	11.	10.	5.
181	7.	8.	10.	10.	9.	13.	7.	16.	11.	11.
191	11.	23.	15.	15.	11.	17.	22.	19.	18.	20.
201	18.	25.	26.	22.	31.	19.	32.	31.	31.	33.
211	31.	38.	35.	48.	49.	48.	47.	60.	72.	79.
221	80.	74.	88.	97.	125.	132.	136.	150.	184.	212.
231	246.	270.	270.	322.	371.	350.	414.	528.	582.	698.
241	858.	1126.	1259.	1540.	1784.	1975.	2151.	2640.	3168.	4089.
251	5366.	6880.	7751.	7620.	6079.	3563.	1700.	817.	547.	441.
261	428.	400.	393.	401.	369.	319.	274.	225.	196.	148.
271	127.	116.	110.	116.	137.	136.	194.	182.	194.	276.
281	239.	325.	339.	407.	500.	596.	730.	835.	1008.	1199.
291	1287.	1415.	1636.	1971.	2614.	3379.	4271.	4965.	5173.	4529.
301	3237.	1950.	1206.	894.	802.	708.	605.	465.	355.	256.
311	183.	106.	68.	19.	3.	0.	0.	0.	0.	0.
321	0.	1.	0.	0.	0.	1.	0.	0.	0.	0.
331	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
341	2.	0.	0.	0.	0.	0.	1.	2.	0.	4.
351	0.	2.	1.	0.	1.	3.	2.	2.	3.	1.
361	2.	1.	1.	0.	1.	1.	0.	0.	0.	1.
371	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

WHC-SD-WM-DP-165, REV. I

1-11-96

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01

DATA REDUCTION REPORT

SAMPLE
WL4767-BLK
File ID: 20a2090.CNF

WHC-SD-WM-DP-165, REV. 1

Counted on: 1/11/96 @11: 9
Detector: AEA20
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1?	12.6	12.6	298.333	298.333	10.000	4.317	5.000	1.794
2	5658.6	5658.6	253.310	253.310	10.000	4.221	5.000	2.332

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Exp.	Peak Centroid Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea
1		????		5.474			0.38	14.5		
2	Am243	0.959	5.270	5.267	0.0030	0.02	148.43	0.7	11024.1	0.497E-02
Totals:		0.959	<--valid peaks only-->				148.43			

DETECTOR CALIBRATION

Energy(MEV) = 4.102 + (0.0046)*Channel
Energy range (MeV): 4.102 TO 6.457
Efficiency = 0.0136 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	74302.0	100.000
Smoothed	74301.9	100.000
Composite fit	71442.0	96.151
Residuals	2860.0	3.849

Analyzed by: _____
VR

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

Display Max.: 38518.3

WHC-SD-WM-DP-165, REV. }

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Raw Data Dump for AEA Spectrum: 20a2090.CNF

1	0.	0.	0.	1.	0.	1.	0.	1.	0.	0.
11	0.	1.	0.	0.	1.	0.	1.	0.	0.	0.
21	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
31	0.	0.	1.	0.	0.	0.	1.	0.	0.	0.
41	0.	0.	0.	0.	0.	1.	0.	0.	1.	1.
51	0.	0.	2.	0.	0.	1.	0.	0.	1.	1.
61	1.	0.	0.	1.	1.	0.	0.	0.	1.	0.
71	1.	2.	0.	1.	0.	1.	0.	1.	2.	1.
81	0.	2.	0.	1.	1.	1.	1.	0.	3.	1.
91	0.	1.	0.	0.	2.	3.	0.	2.	2.	1.
101	1.	1.	1.	1.	1.	0.	0.	1.	1.	2.
111	1.	1.	1.	2.	2.	0.	1.	2.	1.	1.
121	0.	0.	1.	3.	3.	0.	2.	2.	2.	4.
131	1.	0.	0.	0.	3.	3.	0.	1.	1.	2.
141	5.	3.	4.	4.	3.	3.	5.	2.	2.	3.
151	2.	5.	1.	4.	2.	1.	1.	0.	2.	4.
161	3.	1.	3.	2.	2.	4.	3.	7.	7.	2.
171	2.	3.	3.	3.	4.	2.	6.	2.	2.	5.
181	5.	2.	1.	5.	4.	3.	5.	7.	2.	2.
191	7.	9.	8.	6.	7.	11.	9.	12.	10.	8.
201	11.	9.	15.	13.	12.	13.	25.	17.	18.	15.
211	19.	18.	28.	32.	22.	35.	31.	32.	46.	33.
221	48.	43.	61.	63.	79.	90.	108.	114.	136.	168.
231	188.	241.	268.	285.	314.	387.	522.	539.	720.	900.
241	1044.	1237.	1555.	1897.	2274.	2673.	2995.	3384.	3860.	4463.
251	5340.	5958.	6544.	6684.	6039.	4336.	2315.	1080.	673.	514.
261	484.	388.	421.	377.	342.	321.	260.	185.	151.	100.
271	86.	37.	14.	3.	0.	1.	0.	0.	0.	1.
281	0.	0.	0.	1.	1.	3.	3.	1.	5.	5.
291	5.	3.	4.	8.	9.	13.	12.	14.	16.	15.
301	6.	3.	5.	2.	3.	2.	1.	4.	1.	2.
311	0.	2.	0.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
341	0.	0.	0.	0.	1.	1.	1.	1.	3.	2.
351	1.	0.	1.	4.	4.	7.	2.	0.	4.	1.
361	4.	3.	1.	1.	0.	1.	0.	0.	1.	1.
371	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

APJ 1-11-96

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS

Rev. 2.01

WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE

S95T3871-SAM

File ID: 21a2194.CNF

Counted on: 1/11/96 @11:10
Detector: AEA21
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?	61.2	61.2	432.704	432.704	10.000	3.815	5.000	1.313
2	819.9	819.9	366.196	366.196	12.000	4.301	6.000	1.716
3	15342.4	15342.4	298.145	298.145	14.000	6.245	7.000	3.049
4	4518.0	4518.0	252.525	252.500	12.000	4.870	6.000	2.280
5?	14.1	14.1	194.329	193.312	42.000	34.601	21.000	1.854

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Exp.	Centroid Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea
1		????		6.123			2.02	6.3		
2	Cm243	0.040	5.779	5.811	-.032	0.02	25.40	1.8	1922.3	0.866E-03
	Cm244		5.795	5.811	-.016				1403.3	0.632E-03
3	Pu238	0.739	5.487	5.491	-.004	0.03	474.81	0.4	36434.1	0.164E-01
	Am241		5.479	5.491	-.012				27907.0	0.126E-01
4	Am243	0.207	5.270	5.276	-.006	0.02	132.84	0.8	7413.4	0.334E-02
5		????		4.998			2.30	9.6		

Totals:		0.985	<--valid peaks only-->				633.05			

DETECTOR CALIBRATION

Energy(MEV) = 4.090 + (0.0047)*Channel
Energy range (MeV): 4.090 TO 6.496
Efficiency = 0.0181 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	308522.0	100.000
Smoothed	308527.8	100.002
Composite fit	305976.6	99.175
Residuals	2545.4	0.825

Analyzed by:

VR

WHC-SD-WM-DP-165, REV. 1

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Raw Data Dump for AEA Spectrum: 21a2194.CNF

1	0.	0.	1.	2.	5.	0.	3.	2.	2.	2.
11	1.	0.	2.	0.	3.	2.	2.	1.	2.	3.
21	0.	3.	0.	1.	3.	0.	3.	1.	1.	3.
31	1.	2.	2.	1.	0.	1.	2.	2.	2.	1.
41	6.	1.	4.	1.	5.	3.	3.	2.	1.	1.
51	4.	4.	2.	1.	2.	3.	1.	1.	1.	3.
61	0.	4.	1.	7.	2.	2.	3.	4.	4.	2.
71	4.	1.	2.	2.	2.	4.	6.	6.	6.	4.
81	2.	5.	3.	6.	2.	2.	6.	3.	0.	4.
91	5.	5.	3.	3.	2.	4.	6.	1.	12.	3.
101	4.	4.	8.	3.	4.	2.	4.	6.	3.	1.
111	1.	5.	7.	4.	2.	6.	5.	5.	5.	6.
121	3.	3.	4.	9.	4.	7.	6.	5.	5.	8.
131	4.	2.	6.	5.	4.	6.	5.	9.	2.	5.
141	7.	9.	12.	9.	9.	5.	5.	13.	12.	3.
151	5.	11.	6.	7.	12.	9.	9.	15.	9.	6.
161	5.	10.	8.	9.	13.	12.	8.	9.	14.	8.
171	10.	11.	12.	8.	12.	14.	8.	12.	8.	9.
181	17.	15.	14.	15.	13.	10.	15.	13.	11.	19.
191	20.	8.	18.	18.	18.	14.	15.	14.	11.	16.
201	22.	22.	28.	15.	20.	24.	30.	20.	32.	35.
211	15.	34.	34.	38.	39.	37.	42.	52.	56.	66.
221	57.	72.	80.	113.	117.	124.	132.	185.	223.	256.
231	248.	316.	368.	388.	438.	548.	613.	753.	862.	1065.
241	1382.	1577.	1747.	2056.	2374.	2670.	3048.	3511.	3802.	4246.
251	4721.	4957.	5230.	4817.	4099.	2832.	1541.	842.	548.	464.
261	428.	432.	432.	400.	414.	357.	365.	330.	388.	354.
271	381.	442.	446.	551.	661.	796.	856.	1012.	1212.	1402.
281	1594.	1912.	2257.	2796.	3333.	3870.	4643.	5581.	6405.	7621.
291	8749.	9648.	10868.	12140.	13529.	15101.	16523.	17167.	17142.	15463.
301	12347.	8381.	5371.	3721.	2889.	2362.	2032.	1604.	1276.	887.
311	654.	447.	247.	123.	45.	16.	6.	2.	0.	8.
321	2.	6.	2.	2.	2.	9.	6.	0.	8.	8.
331	9.	10.	10.	7.	9.	14.	19.	15.	21.	22.
341	27.	16.	31.	30.	42.	57.	69.	77.	99.	117.
351	133.	199.	193.	235.	283.	362.	430.	498.	540.	590.
361	647.	644.	768.	781.	849.	899.	914.	853.	700.	418.
371	180.	59.	12.	4.	3.	0.	3.	6.	2.	5.
381	3.	3.	1.	2.	5.	4.	3.	3.	1.	1.
391	0.	1.	3.	6.	1.	0.	2.	1.	2.	0.
401	1.	4.	1.	3.	1.	4.	3.	5.	6.	3.
411	2.	9.	1.	9.	7.	6.	11.	16.	23.	25.
421	27.	33.	27.	40.	39.	44.	41.	43.	43.	55.
431	60.	62.	73.	66.	51.	48.	16.	6.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

WHC-SD-WM-DP-165, REV. 1

1-11-96

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01 WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
S95T871-DUP
File ID: 22a2194.CNF

Counted on: 1/11/96 @11: 7
Detector: AEA22
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1?	69.9	69.9	435.224	435.224	10.000	3.447	5.000	1.276
2	920.5	920.5	368.048	368.047	12.000	3.651	6.000	1.522
3	17107.8	17107.8	299.278	299.278	14.000	5.697	7.000	2.971
4	5343.2	5343.2	253.273	253.260	12.000	5.060	6.000	2.335

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count Rate c/m	%err @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.	FWHM			
1		????		6.113		2.16	6.1		
2	Cm243	0.037	5.779	5.804	-.025	0.02	26.84	1.7	2053.7
	Cm244		5.795	5.804	-.009				1499.2
3	Pu238	0.690	5.487	5.487	0.000	0.03	501.60	0.4	38920.2
	Am241		5.479	5.487	-.008				29811.2
4	Am243	0.220	5.270	5.276	-.006	0.02	159.78	0.7	9016.5
Totals:		0.947	<--valid peaks only-->			688.22			

DETECTOR CALIBRATION
Energy(MEV) = 4.111 + (0.0046)*Channel
Energy range (MeV): 4.111 TO 6.466
Efficiency = 0.0179 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	348813.0	100.000
Smoothed	348813.2	100.000
Composite fit	331441.9	95.020
Residuals	17371.1	4.980

Analyzed by: _____
VR

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

Display Max.: 113351.1

WHC-SD-WM-DP-165, REV. 1

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Raw Data Dump for AEA Spectrum: 22a2194.CNF

1	0.	0.	1.	1.	0.	0.	2.	1.	3.	1.
11	2.	1.	2.	0.	0.	1.	2.	0.	1.	1.
21	1.	1.	1.	3.	2.	3.	0.	2.	2.	1.
31	3.	0.	2.	0.	2.	1.	1.	1.	1.	1.
41	1.	2.	1.	2.	1.	2.	0.	0.	3.	2.
51	2.	0.	2.	1.	1.	1.	1.	2.	1.	4.
61	3.	2.	0.	3.	2.	2.	3.	4.	0.	1.
71	1.	1.	3.	4.	1.	0.	6.	2.	1.	1.
81	2.	3.	6.	0.	1.	4.	3.	4.	2.	2.
91	3.	3.	0.	3.	3.	5.	4.	6.	4.	9.
101	8.	4.	6.	4.	3.	7.	5.	6.	2.	9.
111	8.	8.	4.	11.	13.	11.	11.	10.	10.	9.
121	13.	12.	14.	14.	13.	12.	11.	12.	11.	15.
131	14.	20.	15.	17.	19.	12.	19.	26.	32.	21.
141	22.	32.	24.	33.	19.	32.	36.	31.	24.	29.
151	45.	35.	36.	54.	27.	35.	40.	40.	56.	48.
161	51.	49.	54.	49.	53.	60.	67.	58.	51.	64.
171	73.	69.	61.	71.	79.	74.	70.	85.	91.	92.
181	91.	95.	96.	93.	97.	99.	93.	99.	90.	118.
191	129.	129.	140.	112.	123.	142.	132.	141.	145.	159.
201	144.	182.	152.	172.	178.	194.	165.	194.	199.	203.
211	205.	209.	201.	218.	232.	239.	264.	243.	268.	265.
221	293.	236.	322.	318.	335.	320.	383.	389.	397.	405.
231	471.	496.	579.	596.	648.	731.	768.	898.	922.	1167.
241	1230.	1502.	1869.	2127.	2501.	2728.	3029.	3554.	3882.	4423.
251	5190.	5505.	6168.	6215.	5608.	4202.	2466.	1381.	991.	858.
261	740.	772.	719.	732.	621.	746.	677.	667.	630.	649.
271	583.	691.	667.	699.	804.	842.	954.	994.	1157.	1282.
281	1463.	1681.	1906.	2186.	2614.	3182.	3719.	4389.	5378.	6220.
291	7438.	8653.	9632.	10840.	12492.	14575.	16364.	17980.	19478.	19925.
301	17737.	13333.	8428.	5569.	4000.	3324.	2833.	2379.	1931.	1405.
311	1073.	717.	535.	294.	133.	52.	18.	18.	20.	20.
321	15.	20.	15.	22.	10.	17.	18.	22.	22.	14.
331	24.	20.	16.	30.	30.	25.	13.	27.	26.	34.
341	26.	40.	38.	46.	31.	49.	57.	67.	65.	80.
351	115.	135.	153.	192.	213.	284.	315.	367.	460.	488.
361	574.	627.	674.	685.	802.	876.	921.	1053.	1052.	939.
371	603.	335.	120.	25.	9.	6.	2.	2.	4.	2.
381	3.	3.	3.	4.	2.	6.	5.	4.	8.	3.
391	1.	4.	5.	2.	5.	1.	2.	1.	2.	3.
401	2.	3.	1.	3.	0.	3.	2.	5.	7.	4.
411	9.	6.	6.	5.	6.	3.	5.	8.	11.	16.
421	18.	21.	25.	33.	24.	39.	46.	39.	41.	57.
431	57.	44.	75.	68.	66.	86.	77.	49.	24.	11.
441	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WHC-SD-WM-DP-165, REV. 1

AD-1-11-96

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01 WHC-SD-WM-DP-165, REV. I

DATA REDUCTION REPORT

SAMPLE
S95T3872-SAM
File ID: 23a2333.CNF

Counted on: 1/11/96 @11:11
Detector: AEA23
Geometry number: 1
Count time: 28806. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1?	104.0	104.0	434.638	434.638	8.000	2.258	4.000	1.326
2	1415.1	1415.1	367.521	367.521	8.000	2.551	4.000	1.739
3	25345.4	25345.4	298.715	298.715	10.000	3.824	5.000	3.521
4	7143.8	7143.8	252.806	252.806	10.000	3.120	5.000	2.745
5?	18.8	18.8	146.522	146.522	180.000	1.000	90.000	0.100

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Exp.	Centroid Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea	
1		????		6.114			2.26	6.0			
2	Cm243	0.038	5.779	5.805	-.026	0.01	29.39	1.7	362.4	0.163E-03	
	Cm244		5.795	5.805	-.010				264.5	0.119E-03	
3	Pu238	0.692	5.487	5.489	-.002	0.02	540.55	0.4	6757.5	0.304E-02	
	Am241		5.479	5.489	-.010				5176.0	0.233E-02	
4	Am243	0.184	5.270	5.278	-.008	0.01	143.33	0.7	1303.1	0.587E-03	
5		????		4.789			1.49	7.3			
Totals:		0.913	<--valid peaks only-->				713.26				

DETECTOR CALIBRATION
Energy(MEV) = 4.115 + (0.0046)*Channel
Energy range (MeV): 4.115 TO 6.470
Efficiency = 0.1111 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	374914.0	100.000
Smoothed	374914.3	100.000
Composite fit	344233.9	91.817
Residuals	30680.1	8.183

Analyzed by: VR

WHC-SD-WM-DP-165, REV. /

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Raw Data Dump for AEA Spectrum: 23a2333.CNF

1	0.	0.	4.	1.	0.	0.	4.	3.	1.	2.
11	4.	0.	2.	2.	1.	2.	3.	1.	2.	4.
21	1.	1.	2.	2.	0.	4.	3.	2.	0.	2.
31	1.	1.	4.	3.	1.	3.	3.	1.	2.	7.
41	2.	1.	1.	3.	5.	0.	1.	3.	2.	2.
51	2.	5.	3.	1.	2.	2.	4.	3.	0.	2.
61	3.	6.	3.	2.	8.	3.	4.	3.	5.	5.
71	4.	6.	5.	4.	3.	5.	3.	4.	1.	5.
81	7.	2.	4.	4.	3.	4.	6.	6.	5.	10.
91	3.	4.	3.	8.	4.	9.	5.	6.	3.	4.
101	8.	0.	8.	8.	2.	6.	5.	9.	9.	10.
111	10.	7.	4.	5.	5.	9.	9.	7.	6.	10.
121	8.	6.	6.	5.	13.	8.	12.	10.	13.	12.
131	11.	11.	10.	13.	12.	16.	11.	11.	9.	8.
141	13.	14.	18.	18.	12.	24.	13.	20.	15.	9.
151	18.	13.	16.	21.	18.	17.	22.	29.	11.	13.
161	20.	28.	20.	22.	22.	23.	22.	26.	28.	29.
171	32.	25.	26.	36.	33.	23.	33.	32.	43.	31.
181	43.	44.	35.	63.	46.	41.	51.	34.	40.	57.
191	52.	50.	48.	47.	53.	56.	66.	63.	61.	69.
201	64.	87.	61.	76.	71.	66.	72.	86.	79.	98.
211	93.	94.	91.	89.	103.	101.	107.	132.	117.	112.
221	103.	139.	127.	159.	146.	187.	187.	193.	223.	243.
231	262.	310.	308.	312.	305.	330.	378.	470.	526.	677.
241	830.	1088.	1341.	1503.	1694.	1754.	2020.	2603.	3603.	5080.
251	6927.	8581.	9310.	8304.	5672.	2902.	1399.	877.	680.	638.
261	597.	607.	610.	663.	620.	549.	503.	447.	421.	382.
271	377.	343.	403.	463.	569.	611.	731.	832.	852.	887.
281	957.	1023.	1089.	1421.	1757.	2337.	3040.	3939.	5005.	5734.
291	5870.	6451.	7502.	9709.	13706.	18796.	25609.	31193.	33024.	28213.
301	18962.	11279.	7137.	5394.	4680.	4096.	3601.	2851.	2207.	1773.
311	1182.	768.	414.	151.	46.	17.	14.	14.	8.	10.
321	8.	7.	11.	10.	13.	14.	7.	12.	16.	6.
331	13.	15.	12.	13.	10.	8.	10.	18.	17.	16.
341	6.	22.	22.	30.	19.	26.	29.	32.	30.	59.
351	48.	65.	81.	102.	190.	254.	326.	472.	507.	555.
361	516.	481.	530.	752.	1058.	1453.	1777.	1823.	1604.	952.
371	358.	93.	29.	7.	3.	5.	3.	0.	1.	3.
381	5.	4.	5.	2.	5.	1.	1.	1.	3.	1.
391	3.	2.	0.	2.	2.	0.	4.	2.	4.	4.
401	0.	2.	4.	3.	3.	3.	4.	6.	4.	3.
411	5.	4.	3.	3.	1.	5.	6.	5.	7.	10.
421	11.	15.	31.	36.	59.	35.	40.	31.	39.	33.
431	57.	71.	83.	131.	143.	120.	62.	28.	6.	1.
441	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

WHC-SD-WM-DP-165, REV. 1

AEJ 1-11-96

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS

Rev. 2.01 WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE

S95T3872-DUP

File ID: 24a2439.CNF

Counted on: 1/11/96 @11:12
 Detector: AEA24
 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?	110.5	110.5	435.292	435.292	10.000	2.347	5.000	1.428
2	1606.6	1606.6	368.754	368.754	8.000	2.356	4.000	1.756
3	27637.3	27637.3	300.397	300.397	12.000	3.767	6.000	3.788
4	7840.2	7840.2	254.735	254.735	10.000	2.814	5.000	2.845

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Exp.	Centroid Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea
1		????		6.102			2.37	5.8		
2	Cm243	0.038	5.779	5.796	-.017	0.01	31.37	1.6	397.9	0.179E-03
	Cm244		5.795	5.796	-.001				290.5	0.131E-03
3	Pu238	0.702	5.487	5.481	0.006	0.02	574.45	0.4	7387.5	0.333E-02
	Am241		5.479	5.481	-.002				5658.5	0.255E-02
4	Am243	0.178	5.270	5.271	-.001	0.01	145.70	0.7	1362.7	0.614E-03

Totals:		0.918	<--valid peaks only-->				751.53			

DETECTOR CALIBRATION

Energy(MEV) = 4.099 + (0.0046)*Channel
 Energy range (MeV): 4.099 TO 6.455
 Efficiency = 0.1080 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	392852.0	100.000
Smoothed	392852.2	100.000
Composite fit	361910.2	92.124
Residuals	30941.8	7.876

Analyzed by: _____

VR

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 172864.9

WHC-SD-WM-DP-165, REV. 1

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Raw Data Dump for AEA Spectrum: 24a2439.CNF

1	0.	0.	2.	0.	1.	2.	1.	1.	1.	3.
11	4.	1.	2.	5.	2.	4.	1.	3.	2.	0.
21	3.	2.	4.	3.	2.	2.	3.	1.	1.	1.
31	1.	3.	2.	1.	0.	1.	2.	3.	5.	3.
41	2.	2.	2.	5.	1.	1.	2.	5.	2.	4.
51	4.	6.	6.	8.	4.	1.	8.	5.	4.	2.
61	3.	1.	2.	9.	5.	4.	2.	1.	2.	4.
71	1.	2.	5.	4.	7.	1.	3.	3.	2.	0.
81	7.	5.	0.	3.	2.	1.	6.	4.	3.	3.
91	4.	3.	1.	3.	6.	6.	5.	3.	2.	6.
101	2.	6.	3.	7.	5.	5.	5.	5.	4.	7.
111	1.	4.	7.	4.	9.	5.	5.	8.	7.	5.
121	5.	4.	7.	5.	5.	9.	5.	7.	5.	9.
131	5.	4.	8.	10.	4.	9.	5.	5.	8.	11.
141	12.	11.	4.	6.	6.	10.	11.	9.	4.	4.
151	6.	7.	10.	6.	13.	13.	9.	9.	11.	10.
161	15.	12.	8.	9.	15.	16.	10.	12.	11.	10.
171	21.	13.	10.	18.	13.	15.	18.	11.	23.	15.
181	13.	17.	15.	23.	22.	13.	21.	20.	17.	20.
191	20.	25.	21.	22.	22.	24.	19.	23.	25.	26.
201	33.	26.	38.	38.	32.	33.	32.	34.	40.	46.
211	41.	47.	46.	47.	38.	39.	42.	43.	52.	53.
221	56.	47.	62.	73.	65.	70.	83.	88.	121.	124.
231	121.	165.	175.	213.	241.	232.	253.	264.	267.	375.
241	425.	542.	779.	1065.	1384.	1446.	1536.	1573.	1841.	2554.
251	3688.	5316.	7498.	9734.	10609.	8933.	5655.	2611.	1296.	842.
261	734.	620.	587.	589.	640.	554.	576.	473.	455.	364.
271	372.	280.	297.	282.	308.	384.	480.	591.	701.	755.
281	803.	765.	870.	905.	1077.	1381.	1807.	2368.	3343.	4314.
291	5294.	5810.	6119.	6447.	7718.	10833.	15470.	22498.	30657.	36295.
301	35482.	27292.	17165.	10233.	7338.	5912.	5276.	4558.	3971.	3106.
311	2373.	1709.	1214.	640.	287.	72.	25.	8.	2.	5.
321	4.	2.	4.	10.	6.	3.	7.	11.	8.	7.
331	8.	2.	9.	5.	2.	11.	3.	10.	8.	8.
341	10.	15.	17.	12.	14.	24.	18.	19.	27.	32.
351	45.	54.	54.	77.	97.	168.	233.	300.	456.	502.
361	553.	470.	535.	579.	738.	1067.	1481.	1951.	2116.	1900.
371	1241.	455.	103.	24.	9.	3.	3.	3.	6.	0.
381	3.	8.	5.	2.	3.	2.	4.	4.	0.	2.
391	2.	3.	5.	2.	3.	4.	4.	2.	4.	0.
401	1.	0.	1.	3.	2.	1.	3.	2.	4.	6.
411	1.	2.	3.	2.	2.	3.	4.	10.	7.	7.
421	21.	14.	31.	24.	32.	48.	38.	37.	38.	38.
431	48.	66.	75.	118.	139.	157.	103.	55.	20.	5.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WHC-SD-WM-DP-165, REV. 1

AN102

LABCORE Completed Worklist Report for Worklist# 4882

Analyst: akl

Instrument: AM01

Book# 104843

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

WHC-SD-WM-DP-165, REV. 1

Worklist Comment: Determine Sample Size Using Ludlum / jls

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	0	AM24101 AM24101	LIQUID	3.07E-02	2.56E-2	83.390 %	Recovery
1 STD	0	0	AM24101 AM24101E	LIQUID	1.00	1.23E+00	1.230 %	Ct. Error
1 STD	0	0	AM24101 AM24101T	LIQUID	100	9.03E+01	90.300 %	Recovery
2 BLNK	0	0	AM24101 AM24101	LIQUID	1	<4.23E-4		uCi/mL
2 BLNK	0	0	AM24101 AM24101E	LIQUID	1.00	1.00E+02	100.000 %	Ct. Error
2 BLNK	0	0	AM24101 AM24101T	LIQUID	100	9.22E+01	92.200 %	Recovery
3 SAMPLE	S95T003870	0	AM24101 AM24101	LIQUID	N/A	1.00E-01	6.180e-003	uCi/mL
3 SAMPLE	S95T003870	0	AM24101 AM24101E	LIQUID	N/A	6.98E-01	0.000 %	Ct. Error
3 SAMPLE	S95T003870	0	AM24101 AM24101T	LIQUID	N/A	1.35E+02	1.000e-007	% Recovery
4 DUP	S95T003870	0	AM24101 AM24101	LIQUID	1.00E-1	1.18E-1	16.510	RPD
4 DUP	S95T003870	0	AM24101 AM24101E	LIQUID	1.00	7.26E-01	0.730 %	Ct. Error
4 DUP	S95T003870	0	AM24101 AM24101T	LIQUID	100	1.11E+02	111.000 %	Recovery
5 SAMPLE	S95T003963	0	AM24101 AM24101	LIQUID	N/A	4.64E-04	4.640e-004	uCi/mL
5 SAMPLE	S95T003963	0	AM24101 AM24101E	LIQUID	N/A	1.00E+02	0.000 %	Ct. Error
5 SAMPLE	S95T003963	0	AM24101 AM24101T	LIQUID	N/A	8.40E+01	1.000e-007	% Recovery
6 DUP	S95T003963	0	AM24101 AM24101	LIQUID	<4.64E-4	<4.59E-4		RPD
6 DUP	S95T003963	0	AM24101 AM24101E	LIQUID	1.00	1.00E+02	100.000 %	Ct. Error
6 DUP	S95T003963	0	AM24101 AM24101T	LIQUID	100	8.24E+01	82.400 %	Recovery

Final page for worklist# 4882

Analyst Signature

Date

Analyst Signature

Date

[Signature] 23 Jan 96
Reviewer Signature Date

Sample S95T003870 was ~~not~~ be rerun on
worklist # 5167 due to poor tracer recovery
on this run. Went 3/18/96

13
5201/15/96 09:37
A-0004-1

WHC-SD-WM-DP-165, REV. 1

Page: 1

LABCORE Data Entry Template for Worklist# 4882Analyst: AKL Instrument: AM01 Book# 104B43Method: LA-953-103 Rev/Mod A-4

Worklist Comment: Determine Sample Size Using Ludlum / jls

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@AM24101	LIQUID		
2 BLNK			@AM24101	LIQUID		
3 SAMPLE	S95T003870 0		@AM24101	LIQUID	95000222	AN-102 GRAB
	Analytes Requested: AM24101 , AM24101E, AM24101T					
4 DUP	S95T003870 0		@AM24101	LIQUID		
5 SAMPLE	S95T003963 0		@AM24101	LIQUID	95000222	AN-102 GRAB
	Analytes Requested: AM24101 , AM24101E, AM24101T					
6 DUP	S95T003963 0		@AM24101	LIQUID		

Final page for worklist # 4882G. Lewis 1/17/96
Analyst Signature DateM. Brown 1/17/96
Analyst Signature Date

Data Entry Comments:

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

WORKBOOK PAGE: STD1

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

LIQUID

STD

Type	Date Counted	JAN-17-96	Am 241 AEA Frac. (C241)	0.373
STD	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.501
Work List	Sample D.F. (DF)	101	Cm 243/244 AEA Frac. (Cm)	0
4882	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	20544
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	118B43	Background in cpm (Bkg)	4
Matrix	Am-243 Tracer Value (dpm/mL)	7550.4	Am 241 cpm	92.14
LIQUID	Detector Number	1	Am 243 cpm	123.66
Batch Number	Detector Efficiency (DetEff)	0.5000	Cm 243/244 cpm	0
96000342	Standard Book No	104B43	AEA Count Time (min)	480
Run	Standard Value in µCi/mL	0.03067	Am 241 µCi/L =	2.5575E+01
0			Cm 243/244 µCi/L =	< 3.7945E+00
Sample Prep				
N/A				
Sample Number	Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))			
WL4882	Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))			
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100			
AL10539	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV			
Prepared By				
MCB				
Chemist				
LLF	Am 241 µCi/mL =	2.56E-02	DETECTION LEVELS in µCi/mL	
Analyst	Relative Counting Error =	1.2%		
AKL	NOTE: Cm-243/244 Result is a LESS THAN Value.			
Date Complete	Cm 243/244 µCi/mL	< 3.79E-03	Am 241	
01/18/96	Relative Counting Error =	100.0%	3.79E-03	
Analysis Date	Am 243 Tracer Recovery =	90.3%	Cm 243/244	
01/17/96			3.79E-03	
Analysis Time				
02:30 PM				
Sample Point				
AN-102 GRAB				

Analyst:	AKL	Date:	01/18/96
Signature of Chemist:	LLF	Date:	23 Jan 96

STANDARD.WB1 REV 1.2

953103ML

WORKBOOK PAGE: BLANK2

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

LIQUID / SOLID

		LIQUID / SOLID		BLNK	
Type	Date Counted	JAN-17-96	Am 241 AEA Frac. (C241)	0	
BLNK	Sample Volume in mL (SS)	0.050	Am 243 AEA Frac. (C243)	0.871	
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0	
4882	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	12084	
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30	
@AM24101	Tracer Book No.	118B43	Background in cpm (Bkg)	3	
Matrix	Am-243 Tracer Value (dpm/mL)	7550.4	Am 241 cpm	0	
LIQUID	Detector Number	2	Am 243 cpm	121.5	
Batch Number	Detector Efficiency (DetEff)	0.5000	Cm 243/244 cpm	0	
96000342			AEA Count Time (min)	480	
Rerun			Am 241 $\mu\text{Ci/L}$ =	< 4.2333E-01	
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 4.2333E-01	
Sample Prep					
N/A					
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
WL4882	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100				
AL10540	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV				
Prepared By					
MCB					
Chemist	NOTE: Am-241 Result is a LESS THAN Value.				
LLF	Am 241 $\mu\text{Ci/mL}$ =	< 4.23E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$		
Analyst	Relative Counting Error =	100.0%			
AKL					
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.				
01/18/96	Cm 243/244 $\mu\text{Ci/mL}$	< 4.23E-04		Am 241 4.23E-04	
Analysis Date	Relative Counting Error =	100.0%		Cm 243/244 4.23E-04	
01/17/96	Am 243 Tracer Recovery =	92.2%			
Analysis Time					
02:30 PM					
Sample Point					
AN-102 GRAB					

Analyst:	AKL	Date:	01/18/96
Signature of Chemist:	LLF	Date:	23 Jan 96

BLANK.WB1 REV 1.2

953103ML

WORKBOOK PAGE: SAM5

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

LIQUID / SOLID

				SAMPLE				
Type	Date Counted	JAN-17-96	Am 241 AEA Frac. (C241)		0			
SAMPLE	Sample Volume in mL (SS)	0.050	Am 243 AEA Frac. (C243)		0.872			
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)		0			
4882	Tracer Volume in mL (SPKV)	0.100	Total AT Counts		11026			
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)		30			
@AM24101	Tracer Book No.	118B43	Background in cpm (Bkg)		4			
Matrix	Am-243 Tracer Value (dpm/mL)	7550.4	Am 241 cpm		0			
LIQUID	Detector Number	1	Am 243 cpm		119.33			
Batch Number	Detector Efficiency (DetEff)	0.5000	Cm 243/244 cpm		0			
96000342			AEA Count Time (min)		480			
Rebin			Am 241 $\mu\text{Ci/L}$ =	<	4.6449E-01			
0			Cm 243/244 $\mu\text{Ci/L}$ =	<	4.6449E-01			
Sample Prep								
N/A								
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))							
S95T003963	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))							
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100							
AL10539	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV							
Prepared By	NOTE: Am-241 Result is a LESS THAN Value.							
MCB								
Chemist								
LLF	Am 241 $\mu\text{Ci/mL}$ =	< 4.64E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$					
Analyst	Relative Counting Error =	100.0%						
AKL								
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.							
01/18/96	Cm 243/244 $\mu\text{Ci/mL}$	< 4.64E-04	Am 241					
Analysis Date	Relative Counting Error =	100.0%	4.64E-04					
01/17/96	Am 243 Tracer Recovery =	84.0%	Cm 243/244					
Analysis Time			4.64E-04					
02:30 PM								
Sample Point								
AN-102 GRAB								

Analyst:	AKL	Date:	01/18/96
Signature of Chemist: <i>LLF</i>	LLF	Date:	23 Jan 96
SAMPLE.WB1 REV 1.2	953103ML		

WORKBOOK PAGE: DUP6

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

LIQUID / SOLID

DUP

Type	Date Counted	JAN-17-96	Am 241 AEA Frac. (C241)	0	
DUP	Sample Volume in mL (SS)	0.050	Am 243 AEA Frac. (C243)	0.898	
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0	
4882	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	10487	
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30	
@AM24101	Tracer Book No.	118B43	Background in cpm (Bkg)	3	
Matrix	Am-243 Tracer Value (dpm/mL)	7550.4	Am 241 cpm	0	
LIQUID	Detector Number	2	Am 243 cpm	117.7	
Batch Number	Detector Efficiency (DetEff)	0.5000	Cm 243/244 cpm	0	
96000342			AEA Count Time (min)	480	
Re-run			Am 241 $\mu\text{Ci/L}$ =	< 4.5943E-01	
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 4.5943E-01	
Sample Prep					
N/A					
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
S95T003963	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100				
AL10540	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV				
Prepared By	NOTE: Am-241 Result is a LESS THAN Value.				
MCB					
Chemist					
LLF	Am 241 $\mu\text{Ci/mL}$ =	< 4.59E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$		
Analyst	Relative Counting Error =	100.0%			
AKL					
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.				
01/18/96	Cm 243/244 $\mu\text{Ci/mL}$	< 4.59E-04	Am 241	4.59E-04	
Analysis Date	Relative Counting Error =	100.0%	Cm 243/244	4.59E-04	
01/17/96	Am 243 Tracer Recovery =	82.4%			
Analysis Time					
02:30 PM					
Sample Point					
AN-102 GRAB					

Analyst:	AKL	Date:	01/18/96
Signature of Chemist:	LLF	Date:	23 Jan 96

SAMPLE.WB1 REV 1.2

953103ML

Westinghouse Hanford Co.

D. Hamilton
1-18-96

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01 WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
W/L488STD
File ID: 25a2546.CNF

Counted on: 1/17/96 @17:22
Detector: AEA25
Geometry number: 1
Count time: 28800. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1?	10.2	10.2	369.090	369.090	10.000	2.429	5.000	1.843
2	4301.8	4301.8	301.461	301.461	12.000	3.582	6.000	2.979
3	6534.1	6534.1	255.825	255.825	10.000	2.629	5.000	2.318

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		????		5.789			0.20	20.0		
2	Pu238	0.373	5.487	5.478	0.009	0.02	92.14	0.9	6843.3	0.308E-02
	Am241			5.479	5.478	0.001			5241.7	0.236E-02
3	Am243	0.501	5.270	5.268	0.002	0.01	123.66	0.8	6679.9	0.301E-02
Totals:		0.874	<--valid peaks only-->				215.80			

DETECTOR CALIBRATION
Energy(MEV) = 4.091 + (0.0046)*Channel
Energy range (MeV): 4.091 TO 6.446
Efficiency = 0.0187 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	118476.0	100.000
Smoothed	118477.5	100.001
Composite fit	103681.3	87.513
Residuals	14794.7	12.487

Analyzed by: ALJ

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

Display Max.: 29905.5

WHC-SD-WM-DP-165, REV. J

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Raw Data Dump for AEA Spectrum: 25a2546.CNF

1	0.	0.	0.	3.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	2.	1.	1.	0.	0.	0.	1.
21	2.	1.	0.	2.	1.	0.	0.	1.	2.	2.
31	0.	2.	1.	0.	0.	0.	0.	0.	1.	1.
41	1.	1.	0.	2.	2.	0.	1.	0.	0.	0.
51	0.	0.	1.	1.	1.	0.	2.	1.	0.	2.
61	2.	2.	1.	1.	1.	2.	3.	0.	0.	3.
71	1.	0.	0.	0.	2.	4.	1.	1.	0.	1.
81	3.	4.	1.	2.	2.	2.	0.	0.	0.	0.
91	2.	0.	0.	1.	1.	1.	1.	2.	2.	2.
101	1.	1.	1.	3.	5.	1.	0.	3.	4.	2.
111	1.	3.	2.	5.	5.	4.	3.	2.	5.	2.
121	5.	2.	5.	2.	5.	2.	5.	4.	4.	2.
131	1.	7.	7.	4.	5.	5.	8.	4.	8.	6.
141	3.	5.	8.	3.	9.	7.	9.	3.	5.	2.
151	10.	8.	13.	10.	7.	5.	15.	8.	9.	14.
161	14.	10.	10.	14.	14.	8.	20.	6.	16.	14.
171	16.	24.	19.	16.	24.	15.	21.	14.	25.	14.
181	30.	19.	18.	29.	19.	26.	18.	29.	25.	39.
191	30.	30.	45.	45.	37.	42.	50.	39.	43.	55.
201	32.	54.	56.	56.	52.	75.	67.	55.	54.	66.
211	87.	71.	89.	82.	89.	88.	87.	100.	102.	105.
221	113.	101.	120.	131.	151.	132.	137.	152.	161.	203.
231	193.	224.	243.	289.	313.	336.	360.	353.	344.	446.
241	440.	571.	649.	765.	1043.	1256.	1485.	1549.	1493.	1708.
251	2039.	2823.	3936.	5932.	7814.	8958.	7750.	4761.	2168.	954.
261	693.	518.	436.	411.	420.	439.	411.	441.	379.	332.
271	263.	214.	177.	128.	106.	130.	164.	153.	184.	214.
281	223.	214.	255.	259.	275.	297.	365.	418.	509.	695.
291	891.	963.	1106.	1107.	1091.	1270.	1643.	2316.	3176.	4500.
301	5653.	5796.	4331.	2580.	1447.	1045.	899.	743.	700.	585.
311	422.	350.	249.	176.	108.	52.	11.	4.	0.	0.
321	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
331	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
341	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
351	1.	2.	1.	0.	2.	1.	1.	1.	4.	1.
361	3.	3.	5.	2.	5.	4.	7.	13.	14.	13.
371	8.	5.	2.	1.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WHC-SD-WM-DP-165, REV.1

Westinghouse Hanford Co.

D. H. Wilkin
1-18-96

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01

WHC-SD-WM-DP-165, REV. 1
DATA REDUCTION REPORT

SAMPLE
W/L4882-BLK
File ID: 26a2651.CNF

Counted on: 1/17/96 @17:23
Detector: AEA26
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?	14.5	14.5	301.570	301.570	8.000	2.287	4.000	2.504
2	7270.4	7270.4	255.586	255.586	8.000	2.322	4.000	2.686

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		????		5.496			0.24	18.1		
2	Am243	0.871	5.270	5.284	-.014	0.01	121.50	0.8	7094.1	0.320E-02
Totals:		0.871	<--valid peaks only-->				121.50			

DETECTOR CALIBRATION
Energy(MEV) = 4.108 + (0.0046)*Channel
Energy range (MeV): 4.108 TO 6.464
Efficiency = 0.0173 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	66933.0	100.000
Smoothed	66932.3	99.999
Composite fit	58441.2	87.313
Residuals	8491.8	12.687

Analyzed by:

ALJ

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 32608.5

WHC-SD-WM-DP-165, REV. 1

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Raw Data Dump for AEA Spectrum: 26a2651.CNF

1	0.	0.	0.	0.	0.	0.	4.	0.	0.	0.
11	0.	1.	1.	0.	0.	0.	1.	0.	0.	1.
21	2.	1.	0.	3.	0.	0.	2.	0.	0.	0.
31	0.	0.	1.	0.	1.	2.	0.	0.	1.	1.
41	0.	1.	0.	0.	1.	1.	0.	0.	1.	1.
51	1.	0.	0.	0.	1.	2.	1.	0.	0.	1.
61	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
71	2.	1.	0.	1.	2.	0.	0.	0.	4.	2.
81	2.	1.	1.	2.	0.	0.	3.	1.	1.	0.
91	1.	2.	0.	3.	2.	1.	1.	0.	1.	0.
101	0.	2.	1.	1.	0.	0.	0.	1.	0.	0.
111	2.	1.	0.	1.	0.	3.	0.	0.	2.	2.
121	2.	0.	2.	0.	2.	3.	1.	0.	2.	2.
131	2.	1.	0.	3.	0.	2.	2.	3.	2.	2.
141	2.	1.	2.	1.	6.	3.	3.	2.	3.	2.
151	2.	2.	2.	0.	5.	3.	0.	1.	3.	5.
161	3.	7.	2.	2.	4.	1.	5.	4.	1.	4.
171	7.	1.	1.	5.	4.	2.	2.	6.	6.	8.
181	11.	8.	10.	9.	6.	2.	9.	11.	6.	7.
191	10.	6.	11.	6.	13.	9.	12.	10.	14.	13.
201	17.	11.	14.	11.	11.	12.	14.	21.	12.	12.
211	17.	13.	27.	27.	27.	29.	16.	28.	25.	25.
221	24.	29.	32.	39.	34.	52.	53.	48.	65.	69.
231	87.	107.	134.	166.	182.	189.	177.	167.	179.	222.
241	244.	312.	419.	620.	902.	1249.	1316.	1312.	1165.	1320.
251	1866.	2872.	4575.	7102.	9747.	10284.	8041.	4034.	1585.	785.
261	527.	448.	372.	365.	344.	370.	412.	369.	327.	201.
271	189.	119.	70.	21.	4.	1.	0.	1.	1.	0.
281	0.	0.	1.	2.	0.	2.	0.	0.	1.	4.
291	2.	3.	3.	2.	2.	1.	3.	6.	5.	18.
301	11.	27.	10.	8.	3.	3.	3.	2.	3.	2.
311	0.	1.	0.	1.	0.	1.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	1.	1.	0.	1.	1.
351	1.	0.	0.	3.	1.	1.	1.	1.	3.	2.
361	3.	4.	4.	3.	0.	3.	1.	3.	4.	11.
371	8.	2.	2.	1.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

WHC-SD-WM-DP-165, REV. 1

D 11921 ilia
1-18-96

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS

Rev. 2.01

WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE

S95T003963-SAM

File ID: 29a2928.CNF

Counted on: 1/17/96 @17:24

Detector: AEA29

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?	18.3	18.3	305.902	305.902	12.000	4.388	6.000	1.301
2	7255.5	7255.5	260.843	260.843	10.000	2.267	5.000	2.694

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		????		5.498			0.68	10.8		
2	Am243	0.872	5.270	5.291	-.021	10.01	119.33	0.8	1044.5	0.471E-03
Totals:		0.872	<--valid peaks only-->				119.33			

DETECTOR CALIBRATION

Energy(MEV) = 4.091 + (0.0046)*Channel

Energy range (MeV): 4.091 TO 6.446

Efficiency = 0.1154 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	65694.0	100.000
Smoothed	65692.9	99.998
Composite fit	57615.0	87.702
Residuals	8079.0	12.298

Analyzed by:

ALJ

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

Display Max.: 41057.7

WHC-SD-WM-DP-165, REV. 1

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Raw Data Dump for AEA Spectrum: 29a2928.CNF

1	0.	0.	0.	0.	0.	2.	0.	0.	1.	0.
11	0.	0.	0.	0.	1.	0.	0.	0.	2.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
41	1.	0.	0.	1.	1.	0.	0.	1.	1.	1.
51	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
61	0.	2.	1.	1.	2.	0.	1.	1.	0.	0.
71	0.	1.	1.	0.	0.	1.	0.	1.	0.	0.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
91	1.	0.	0.	0.	0.	0.	2.	1.	1.	0.
101	0.	1.	1.	0.	1.	0.	1.	1.	0.	1.
111	3.	0.	0.	0.	1.	0.	0.	0.	0.	1.
121	2.	1.	0.	1.	2.	1.	0.	1.	3.	1.
131	2.	3.	2.	0.	2.	3.	0.	2.	1.	1.
141	0.	1.	0.	3.	3.	3.	0.	4.	3.	0.
151	5.	3.	2.	5.	4.	1.	0.	1.	5.	6.
161	1.	1.	2.	1.	5.	3.	5.	2.	5.	4.
171	4.	1.	5.	2.	2.	4.	2.	6.	9.	5.
181	7.	7.	7.	7.	4.	5.	3.	8.	8.	3.
191	5.	5.	7.	12.	8.	6.	9.	6.	6.	8.
201	7.	6.	15.	11.	14.	14.	18.	18.	21.	16.
211	21.	19.	14.	15.	15.	15.	22.	24.	19.	19.
221	25.	19.	25.	25.	23.	33.	23.	32.	41.	37.
231	42.	35.	54.	43.	59.	58.	84.	108.	142.	161.
241	149.	182.	143.	150.	175.	200.	305.	378.	549.	801.
251	1158.	1321.	1249.	1139.	1205.	1659.	2343.	3930.	6203.	9022.
261	10378.	8744.	4805.	2058.	940.	652.	493.	392.	408.	404.
271	424.	376.	391.	302.	248.	201.	152.	76.	41.	9.
281	1.	1.	1.	0.	2.	0.	0.	1.	0.	0.
291	1.	1.	1.	1.	2.	0.	2.	4.	2.	4.
301	6.	6.	7.	13.	28.	27.	19.	13.	8.	8.
311	5.	9.	1.	6.	1.	1.	1.	0.	0.	1.
321	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
351	0.	0.	0.	1.	0.	0.	1.	1.	3.	1.
361	0.	0.	0.	4.	3.	3.	3.	4.	1.	1.
371	0.	1.	4.	2.	4.	0.	1.	1.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WHC-SD-WM-DP-165, REV. 1

D.H. Mabeia
1-18-96

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01 WHC-SD-WM-DP-165, REV. 1
DATA REDUCTION REPORT

SAMPLE
S95T003963-DUP
File ID: 30a3050.CNF

Counted on: 1/17/96 @17:25
Detector: AEA30
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?	11.7	11.7	299.324	299.324	14.000	5.530	7.000	0.652
2	6394.9	6394.9	254.125	254.124	10.000	2.839	5.000	3.016

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Exp.	Peak Centroid Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		5.487			0.89	9.5		
2	Am243	0.898	5.270	5.279	-.009	0.01	117.70	0.8	1177.1	0.530E-03
Totals:		0.898	<--valid peaks only-->				117.70			

DETECTOR CALIBRATION
Energy(MEV) = 4.110 + (0.0046)*Channel
Energy range (MeV): 4.110 TO 6.465
Efficiency = 0.1010 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	62898.0	100.000
Smoothed	62899.5	100.002
Composite fit	56927.8	90.508
Residuals	5970.2	9.492

Analyzed by: ALJ

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 35927.4

WHC-SD-WM-DP-165, REV. |

2.
1.....2..
1.....
1.....2..... 2
1.....
1....
1
1
1
1
1
1

Raw Data Dump for AEA Spectrum: 30a3050.CNF

1	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.
21	0.	0.	0.	0.	2.	1.	0.	2.	0.	1.
31	0.	0.	0.	0.	0.	2.	1.	0.	0.	0.
41	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
51	0.	1.	0.	1.	1.	0.	1.	1.	0.	1.
61	1.	0.	1.	0.	1.	0.	0.	0.	0.	1.
71	1.	0.	1.	0.	0.	1.	0.	1.	0.	0.
81	1.	0.	0.	0.	0.	1.	0.	1.	0.	1.
91	0.	1.	1.	0.	2.	2.	2.	1.	1.	0.
101	0.	2.	1.	1.	0.	0.	0.	1.	2.	0.
111	1.	2.	0.	1.	1.	0.	2.	1.	0.	3.
121	1.	0.	2.	0.	2.	0.	2.	2.	0.	3.
131	0.	0.	1.	0.	2.	0.	1.	1.	3.	1.
141	2.	0.	0.	1.	1.	0.	5.	2.	2.	0.
151	1.	1.	2.	0.	0.	0.	2.	1.	1.	1.
161	2.	1.	2.	1.	1.	3.	0.	1.	2.	3.
171	3.	2.	2.	4.	2.	3.	2.	3.	4.	1.
181	5.	7.	2.	0.	7.	5.	3.	6.	3.	1.
191	5.	7.	3.	2.	2.	1.	4.	5.	10.	6.
201	10.	8.	11.	4.	7.	6.	5.	4.	9.	11.
211	5.	17.	12.	13.	9.	21.	13.	18.	19.	17.
221	27.	26.	27.	35.	28.	42.	47.	46.	50.	78.
231	99.	145.	154.	143.	162.	182.	167.	186.	245.	292.
241	337.	540.	764.	960.	1176.	1205.	1263.	1366.	1670.	2331.
251	3558.	5509.	7558.	8749.	7716.	5511.	3385.	1703.	845.	545.
261	385.	368.	397.	362.	348.	381.	327.	258.	222.	167.
271	104.	47.	28.	10.	3.	0.	0.	0.	0.	0.
281	0.	1.	0.	2.	1.	2.	2.	0.	1.	3.
291	3.	3.	6.	3.	7.	6.	11.	9.	17.	14.
301	9.	7.	7.	5.	7.	0.	3.	0.	2.	1.
311	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
341	0.	1.	0.	0.	0.	1.	0.	0.	0.	1.
351	0.	0.	0.	0.	2.	0.	0.	0.	1.	2.
361	1.	1.	1.	5.	1.	1.	4.	3.	2.	4.
371	3.	1.	1.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

WHC-SD-WM-DP-165, REV. I

LABCORE Completed Worklist Report for Worklist# 5167

Analyst: akl

Instrument: AM01

Book# 104643

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

Worklist Comment: Use a 0.5 - 10 - 1.0 mL sample size. --LLF

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	@AM24101 AM24101	LIQUID	3.07E-02	2.79E-2	90.880 % Recovery	
1 STD		0	@AM24101 AM24101E	LIQUID	1.00	1.23E+00	1.230 % Ct. Error	
1 STD		0	@AM24101 AM24101T	LIQUID	100	8.73E+01	87.300 % Recovery	
2 BLNK		0	@AM24101 AM24101	LIQUID	1	<4.76E-3	uCi/mL	
2 BLNK		0	@AM24101 AM24101E	LIQUID	1.00	1.00E+02	100.000 % Ct. Error	
2 BLNK		0	@AM24101 AM24101T	LIQUID	100	8.34E+01	83.400 % Recovery	
3 SAMPLE	S95T003870	0	@AM24101 AM24101	LIQUID	N/A	1.67E-01	1.550e-002 uCi/mL	
3 SAMPLE	S95T003870	0	@AM24101 AM24101E	LIQUID	N/A	9.61E-01	0.000 % Ct. Error	
3 SAMPLE	S95T003870	0	@AM24101 AM24101T	LIQUID	N/A	8.79E+01	1.000e-007 % Recovery	
4 DUP	S95T003870	0	@AM24101 AM24101	LIQUID	1.67E-1	1.63E-1	2.420 RPD	
4 DUP	S95T003870	0	@AM24101 AM24101E	LIQUID	1.00	9.53E-01	0.950 % Ct. Error	
4 DUP	S95T003870	0	@AM24101 AM24101T	LIQUID	100	8.96E+01	89.600 % Recovery	

Final page for worklist# 5167

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

AKL 31 Jan 96
Reviewer Signature _____ Date _____

LABCORE Data Entry Template for Worklist# 5167

Analyst: AKL Instrument: AM01 #3 Book# 104643

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

Worklist Comment: Use a 0.5 - 10 - 1.0 mL sample size. --LLF

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@AM24101	LIQUID		
2	BLNK				@AM24101	LIQUID		
3	SAMPLE	S95T003870	0		@AM24101	LIQUID	95000222	AN-102 GRAB
		Analytes Requested: AM24101 , AM24101E, AM24101T						
4	DUP	S95T003870	0		@AM24101	LIQUID		

Final page for worklist # 5167

AKL 1/26/96
Analyst Signature Date

SE Heppner 1/29/96
Analyst Signature Date

C.J. Oprien 1/30/96

Data Entry Comments:

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

588

WORKBOOK PAGE: STD1

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

LIQUID

				STD
Type	Date Counted	JAN-26-96	Am 241 AEA Frac. (C241)	0.401
STD	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.494
Work List	Sample D.F. (DF)	101	Cm 243/244 AEA Frac. (Cm)	0
5167	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	20145
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	118B43	Background in cpm (Bkg)	4
Matrix	Am-243 Tracer Value (dpm/mL)	7550.4	Am 241 cpm	96.34
LIQUID	Detector Number	3	Am 243 cpm	118.88
Batch Number	Detector Efficiency (DetEff)	0.5000	Cm 243/244 cpm	0
96000674	Standard Book No	104B43	AEA Count Time (min)	480
Rerun	Standard Value in $\mu\text{Ci/mL}$	0.03067	Am 241 $\mu\text{Ci/L}$ =	2.7884E+01
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 3.9806E+00
Sample Prep				
N/A				
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
WL#5167	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
Instrument Code				
AL10541	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			
SEH				
Chemist				
LLF	Am 241 $\mu\text{Ci/mL}$ =	2.79E-02	DETECTION LEVELS in $\mu\text{Ci/mL}$	
Analyst	Relative Counting Error =	1.2%		
AKL			Am 241	
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.		3.98E-03	
01/29/96	Cm 243/244 $\mu\text{Ci/mL}$	< 3.98E-03	Cm 243/244	
Analysis Date	Relative Counting Error =	100.0%	3.98E-03	
01/26/96	Am 243 Tracer Recovery =	87.3%		
Analysis Time				
12:15 PM				
Sample Point				
AN-102				

Analyst:	AKL	Date:	01/29/96
Signature of Chemist: <i>AKL</i>	LLF	Date:	31 Jan 96

STANDARD.WB1 REV 1.2

953103ML

WORKBOOK PAGE: BLANK2

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

LIQUID / SOLID

Type	Date Counted	JAN-26-96	Am 241 AEA Frac. (C241)	BLNK
BLNK	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.861
Work List	Sample D.F. (DF)	201	Cm 243/244 AEA Frac. (Cm)	0
5167	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	11095
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	118B43	Background in cpm (Bkg)	4
Matrix	Am-243 Tracer Value (dpm/mL)	7550.4	Am 241 cpm	0
LIQUID	Detector Number	3	Am 243 cpm	110.54
Batch Number	Detector Efficiency (DetEff)	0.5000	Cm 243/244 cpm	0
96000674			AEA Count Time (min)	480
Rerun			Am 241 $\mu\text{Ci/L}$ =	< 4.7581E+00
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 4.7581E+00
Sample Prep				
N/A				
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
WL5167	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100			
AL10541	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV			
Prepared By				
SEH				
Chemist	NOTE: Am-241 Result is a LESS THAN Value.			
LLF	Am 241 $\mu\text{Ci/mL}$ =	< 4.76E-03	DETECTION LEVELS in $\mu\text{Ci/mL}$	
Analyst	Relative Counting Error =	100.0%		
AKL				
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			
01/29/96	Cm 243/244 $\mu\text{Ci/mL}$	< 4.76E-03	Am 241	4.76E-03
Analysis Date	Relative Counting Error =	100.0%	Cm 243/244	4.76E-03
01/26/96	Am 243 Tracer Recovery =	83.4%		
Analysis Time				
12:15 PM				
Sample Point				
AN-102				

Analyst:	AKL	Date:	01/29/96
Signature of Chemist:	LLF	Date:	31 Jan 96

BLANK.WB1 REV 1.2

953103ML

WORKBOOK PAGE: SAM3

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

LIQUID / SOLID

SAMPLE

Type	Date Counted	JAN-26-96	Am 241 AEA Frac. (C241)	0.61		
SAMPLE	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.25		
Work List	Sample D.F. (DF)	201	Cm 243/244 AEA Frac. (Cm)	0.033		
5167	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	39959		
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30		
@AM24101	Tracer Book No.	118B43	Background in cpm (Bkg)	4		
Matrix	Am-243 Tracer Value (dpm/mL)	7550.4	Am 241 cpm	298.26		
LIQUID	Detector Number	3	Am 243 cpm	122.13		
Batch Number	Detector Efficiency (DetEff)	0.5000	Cm 243/244 cpm	16.27		
96000674			AEA Count Time (min)	480		
Rerun			Am 241 µCi/L =	1.6680E+02		
0			Cm 243/244 µCi/L =	< 1.5547E+01		
Sample Prep						
N/A						
Sample Number	Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))					
S95T003870	Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))					
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100					
AL10541	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV					
Prepared By						
SEH						
Chemist						
LLF	Am 241 µCi/mL =	1.67E-01	DETECTION LEVELS in µCi/mL			
Analyst	Relative Counting Error =	1.0%				
AKL						
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.					
01/29/96	Cm 243/244 µCi/mL	< 1.55E-02	Am 241			
Analysis Date	Relative Counting Error =	2.4%	1.55E-02			
01/26/96	Am 243 Tracer Recovery =	87.9%	Cm 243/244			
Analysis Time						
12:15 PM						
Sample Point						
AN-102						

Analyst:	AKL	Date:	01/29/96
Signature of Chemist: <i>LLF</i>	LLF	Date:	31 Jan 96
SAMPLE.WB1 REV 1.2	953103ML		

WHC-SD-WM-DP-165, REV. I

WORKBOOK PAGE: DUP4

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

LIQUID / SOLID

Am 241 and Cm 243/244: LA-953-103 (A-4)			LIQUID / SOLID		DUP
Type	Date Counted		JAN-26-96	Am 241 AEA Frac. (C241)	0.607
DUP	Sample Volume in mL (SS)		1.000	Am 243 AEA Frac. (C243)	0.254
Work List	Sample D.F. (DF)		201	Cm 243/244 AEA Frac. (Cm)	0.033
5167	Tracer Volume in mL (SPKV)		0.100	Total AT Counts	40065
Test Code	Digest D.F. (DDF)		1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.		118B43	Background in cpm (Bkg)	4
Matrix	Am-243 Tracer Value (dpm/mL)		7550.4	Am 241 cpm	298.57
LIQUID	Detector Number		3	Am 243 cpm	124.85
Batch Number	Detector Efficiency (DetEff)		0.5000	Cm 243/244 cpm	16.1
96000674				AEA Count Time (min)	480
Rerun				Am 241 $\mu\text{Ci/L}$ =	1.6337E+02
0				Cm 243/244 $\mu\text{Ci/L}$ =	< 1.5022E+01
Sample Prep					
N/A					
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
S95T003870	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100				
AL10541	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV				
Prepared By					
SEH					
Chemist					
LLF	Am 241 $\mu\text{Ci/mL}$ =	1.63E-01	DETECTION LEVELS in $\mu\text{Ci/mL}$		
Analyst	Relative Counting Error =	1.0%			
AKL					
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.				
01/29/96	Cm 243/244 $\mu\text{Ci/mL}$	< 1.50E-02	Am 241		
Analysis Date	Relative Counting Error =	2.4%	1.50E-02		
01/26/96	Am 243 Tracer Recovery =	89.6%	Cm 243/244		
Analysis Time	1.50E-02				
12:15 PM					
Sample Point					
AN-102					

Analyst:	AKL	Date:	01/29/96
Signature of Chemist: <i>AKL</i>	LLF	Date:	31 Jan 96
SAMPLE.WB1 REV 1.2 953103ML			

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS

Rev. 2.01

WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE

WL5167-STD

File ID: 13a1399.CNF

Counted on: 1/26/96 @16:11
 Detector: AEA13
 Geometry number: 1
 Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	4843.3	4843.3	301.064	301.064	10.000	3.267	5.000	3.141
2	6676.5	6676.5	255.184	255.184	10.000	2.434	5.000	2.390

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu238	0.401	5.487	5.481	0.006	0.02	96.34	0.9	17378.1	0.783E-02
	Am241		5.479	5.481	-0.002				13310.9	0.600E-02
2	Am243	0.494	5.270	5.270	0.000	0.01	118.88	0.8	15594.6	0.702E-02
Totals:		0.895	<--valid peaks only-->				215.22			

DETECTOR CALIBRATION

Energy(MEV) = 4.096 + (0.0046)*Channel
 Energy range (MeV): 4.096 TO 6.452
 Efficiency = 0.0077 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	115423.0	100.000
Smoothed	115423.0	100.000
Composite fit	103324.5	89.518
Residuals	12098.5	10.482

Analyzed by:

VR

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

Display Max.: 32798.0

WHC-SD-WM-DP-165, REV. 1

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Raw Data Dump for AEA Spectrum: 13a1399.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	2.	0.	1.	1.	0.	1.	0.
31	0.	1.	0.	1.	3.	0.	1.	2.	0.	2.
41	0.	0.	0.	1.	0.	0.	2.	1.	0.	1.
51	1.	0.	1.	2.	3.	1.	0.	0.	0.	1.
61	0.	0.	2.	0.	0.	1.	0.	2.	1.	1.
71	2.	1.	0.	1.	2.	2.	4.	1.	2.	2.
81	0.	1.	0.	4.	3.	1.	3.	1.	3.	5.
91	2.	3.	3.	2.	3.	3.	2.	1.	3.	2.
101	3.	1.	3.	0.	5.	3.	2.	3.	3.	2.
111	1.	1.	0.	3.	5.	0.	5.	2.	3.	3.
121	3.	2.	3.	3.	0.	3.	4.	5.	4.	1.
131	5.	5.	3.	3.	6.	4.	2.	3.	5.	7.
141	5.	3.	5.	7.	8.	3.	3.	3.	4.	7.
151	4.	8.	4.	10.	6.	7.	6.	1.	5.	3.
161	6.	7.	5.	5.	9.	5.	4.	8.	9.	4.
171	6.	7.	5.	8.	10.	10.	12.	5.	7.	14.
181	9.	6.	7.	11.	11.	7.	19.	8.	11.	8.
191	14.	12.	8.	7.	14.	10.	19.	18.	17.	16.
201	10.	10.	20.	25.	21.	19.	25.	21.	28.	17.
211	19.	37.	34.	25.	21.	29.	39.	42.	43.	58.
221	48.	50.	51.	44.	55.	75.	75.	80.	112.	108.
231	122.	131.	164.	191.	239.	232.	193.	236.	252.	293.
241	352.	468.	636.	816.	1089.	1344.	1506.	1361.	1436.	1741.
251	2352.	3342.	5083.	7379.	9224.	8688.	5889.	2704.	1117.	665.
261	488.	476.	385.	356.	390.	362.	364.	318.	285.	239.
271	189.	165.	100.	64.	79.	76.	74.	116.	122.	154.
281	169.	155.	164.	191.	195.	214.	285.	397.	512.	692.
291	900.	1068.	1138.	1081.	1175.	1358.	1866.	2714.	4128.	5665.
301	6587.	5968.	3986.	2156.	1332.	1059.	853.	765.	708.	616.
311	453.	320.	247.	173.	82.	34.	8.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
351	0.	0.	1.	1.	1.	0.	3.	0.	1.	0.
361	0.	2.	1.	2.	0.	0.	0.	3.	0.	5.
371	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WHC-SD-WM-DP-165, REV. 1

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01 WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
WL5167-BLK
File ID: 14a1404.CNFCounted on: 1/26/96 @16:12
Detector: AEA14
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?	12.4	12.4	302.269	302.269	12.000	3.331	6.000	1.267
2	6761.2	6761.2	256.447	256.447	10.000	2.238	5.000	2.676
3?	13.5	13.5	190.493	190.493	106.000	1.000	53.000	0.100

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		????		5.487		0.38	14.6		
2	Am243	0.861	5.270	5.276	-.0060.01	110.54	0.9	9462.6	0.426E-02
3		????		4.972		1.08	8.6		
Totals:		0.861	<--valid peaks only-->			110.54			

DETECTOR CALIBRATION

Energy(MEV) = 4.096 + (0.0046)*Channel
Energy range (MeV): 4.096 TO 6.451
Efficiency = 0.0118 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	61623.0	100.000
Smoothed	61623.0	100.000
Composite fit	53762.6	87.244
Residuals	7860.4	12.756

Analyzed by:

VR

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

Display Max.: 25262.4

WHC-SD-WM-DP-165, REV. 1

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Raw Data Dump for AEA Spectrum: 14a1404.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	1.	1.	0.	0.	1.
31	0.	1.	0.	3.	0.	0.	1.	1.	1.
41	1.	0.	0.	1.	0.	0.	0.	0.	2.
51	2.	0.	0.	0.	0.	2.	1.	0.	2.
61	2.	0.	0.	0.	1.	1.	0.	0.	1.
71	1.	0.	0.	1.	1.	2.	2.	0.	2.
81	1.	1.	2.	1.	1.	0.	1.	1.	0.
91	0.	1.	1.	2.	1.	1.	0.	1.	2.
101	0.	1.	1.	3.	0.	2.	1.	1.	2.
111	0.	0.	1.	1.	1.	2.	1.	1.	3.
121	0.	1.	1.	5.	1.	5.	2.	0.	1.
131	2.	4.	1.	1.	4.	3.	6.	3.	0.
141	2.	3.	0.	3.	3.	3.	1.	3.	3.
151	8.	1.	2.	2.	4.	4.	6.	1.	4.
161	4.	3.	1.	2.	3.	3.	2.	3.	3.
171	6.	6.	7.	9.	3.	6.	5.	13.	11.
181	10.	6.	8.	9.	7.	7.	7.	10.	8.
191	13.	9.	9.	7.	12.	12.	7.	18.	17.
201	15.	15.	21.	12.	29.	21.	19.	25.	19.
211	26.	33.	40.	30.	25.	24.	33.	33.	31.
221	32.	36.	36.	31.	39.	41.	50.	53.	49.
231	86.	92.	110.	119.	147.	166.	173.	177.	165.
241	200.	246.	272.	387.	630.	910.	1167.	1211.	1169.
251	1196.	1609.	2605.	4370.	6990.	9426.	9626.	6749.	3230.
261	656.	482.	383.	324.	326.	345.	352.	355.	305.
271	205.	183.	103.	62.	14.	1.	0.	0.	0.
281	0.	0.	0.	0.	0.	1.	1.	0.	1.
291	3.	3.	2.	2.	4.	3.	3.	1.	7.
301	11.	18.	15.	9.	10.	5.	2.	2.	1.
311	1.	0.	1.	0.	1.	0.	0.	1.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	1.	0.	0.	0.	0.	0.
351	0.	0.	0.	0.	1.	1.	0.	0.	0.
361	0.	1.	1.	1.	1.	0.	0.	1.	1.
371	2.	3.	3.	1.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	1.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.	0.	0.	0.	0.	0.	0.	0.

WHC-SD-WM-DP-165, REV. 1

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01 WHC-SD-WM-DP-165, REV. 1
DATA REDUCTION REPORT

SAMPLE
S95T3870-SAM
File ID: 15a1585.CNF

Counted on: 1/26/96 @16:12
Detector: AEA15
Geometry number: 1
Count time: 28800. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1?	71.4	71.4	438.861	438.861	8.000	1.714	4.000	1.351
2	942.5	942.5	371.356	371.356	10.000	1.953	5.000	1.718
3	16218.2	16218.2	302.160	302.160	10.000	2.954	5.000	3.370
4	7492.5	7492.5	255.890	255.890	10.000	2.235	5.000	2.697
5?	10.2	10.2	183.440	183.440	134.000	1.000	67.000	0.100

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Exp.	Centroid Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea
1		????		6.123			1.25	8.0		
2	Cm243	0.033	5.779	5.812	-.033	0.01	16.27	2.2	1154.6	0.520E-03
	Cm244		5.795	5.812	-.017				842.8	0.380E-03
3	Pu238	0.610	5.487	5.494	-.007	0.01	298.26	0.5	21463.8	0.967E-02
	Am241		5.479	5.494	-.015				16440.3	0.741E-02
4	Am243	0.250	5.270	5.281	-.011	0.01	122.13	0.8	6392.1	0.288E-02
5		????		4.948			0.82	9.9		
Totals:		0.893	<--valid peaks only-->				436.66			

DETECTOR CALIBRATION

Energy(MEV) = 4.104 + (0.0046)*Channel
Energy range (MeV): 4.104 TO 6.459
Efficiency = 0.0193 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	234809.0	100.000
Smoothed	234809.0	100.000
Composite fit	210587.4	89.685
Residuals	24221.6	10.315

Analyzed by: VR

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

Display Max.: 87499.6

WHC-SD-WM-DP-165, REV. 1

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Raw Data Dump for AEA Spectrum: 15a1585.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	2.	3.	0.	0.	1.
31	1.	0.	0.	0.	1.	1.	0.	4.	1.	1.
41	3.	1.	0.	2.	0.	1.	2.	0.	3.	0.
51	2.	1.	3.	0.	2.	1.	0.	3.	3.	3.
61	0.	1.	0.	3.	4.	0.	1.	3.	3.	1.
71	5.	0.	0.	1.	0.	0.	4.	4.	2.	3.
81	3.	2.	0.	1.	2.	1.	2.	0.	4.	0.
91	1.	1.	1.	3.	1.	1.	2.	3.	4.	4.
101	1.	2.	2.	2.	0.	3.	0.	2.	1.	1.
111	1.	0.	2.	1.	1.	3.	2.	3.	4.	2.
121	3.	0.	0.	3.	5.	6.	3.	1.	3.	1.
131	4.	2.	3.	0.	2.	6.	6.	6.	5.	7.
141	2.	3.	5.	0.	11.	4.	6.	3.	5.	7.
151	4.	5.	9.	8.	4.	6.	6.	5.	3.	5.
161	3.	4.	5.	6.	12.	10.	8.	3.	4.	8.
171	6.	11.	5.	8.	5.	8.	7.	8.	5.	6.
181	4.	11.	14.	11.	11.	6.	5.	4.	11.	7.
191	10.	9.	7.	8.	8.	5.	6.	8.	6.	7.
201	6.	14.	18.	19.	16.	20.	20.	19.	13.	17.
211	22.	24.	23.	23.	31.	22.	28.	25.	34.	27.
221	40.	32.	35.	39.	44.	42.	41.	63.	52.	74.
231	62.	93.	121.	164.	192.	164.	160.	182.	180.	205.
241	241.	288.	370.	575.	839.	1166.	1308.	1325.	1169.	1182.
251	1553.	2341.	3856.	6195.	9371.	10794.	8965.	5282.	2155.	980.
261	646.	477.	428.	388.	427.	433.	477.	413.	366.	334.
271	280.	259.	178.	132.	119.	133.	144.	211.	272.	324.
281	340.	389.	369.	374.	404.	467.	569.	685.	919.	1345.
291	1875.	2627.	3156.	3050.	2754.	2987.	3641.	4897.	7877.	12773.
301	18733.	22896.	20478.	13244.	7235.	4532.	3410.	2974.	2642.	2268.
311	1947.	1493.	1152.	906.	630.	278.	114.	30.	2.	1.
321	2.	3.	4.	1.	1.	1.	1.	0.	1.	1.
331	2.	5.	4.	3.	5.	4.	2.	5.	2.	7.
341	7.	8.	6.	1.	9.	7.	7.	11.	10.	10.
351	7.	10.	15.	13.	19.	30.	28.	41.	85.	121.
361	193.	282.	317.	251.	220.	215.	275.	405.	578.	971.
371	1284.	1359.	921.	371.	93.	14.	2.	2.	2.	1.
381	1.	0.	2.	1.	2.	1.	1.	3.	5.	0.
391	0.	2.	0.	2.	0.	0.	1.	1.	1.	2.
401	0.	1.	0.	0.	0.	1.	2.	2.	1.	2.
411	4.	2.	2.	8.	5.	2.	2.	3.	0.	3.
421	1.	2.	4.	2.	6.	8.	14.	24.	15.	29.
431	22.	19.	17.	16.	26.	23.	55.	81.	113.	77.
441	52.	10.	1.	0.	0.	0.	0.	0.	0.	0.
451	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WHC-SD-WM-DP-165, REV. 1

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01 WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
S95T3870-DUP
File ID: 16a1673.CNFCounted on: 1/26/96 @16:13
Detector: AEA16
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?	59.2	59.2	437.010	437.010	8.000	1.917	4.000	1.321
2	800.7	800.7	370.167	370.167	10.000	2.158	5.000	1.437
3	14168.9	14168.9	301.692	301.692	10.000	3.430	5.000	2.864
4	6633.1	6633.1	256.040	256.040	10.000	2.526	5.000	2.181
5?	13.7	13.7	163.849	163.849	154.000	1.000	77.000	0.100
6?	3.3	3.3	153.099	152.527	16.000	1.000	8.000	0.100
7?	2.7	2.7	135.441	134.834	6.000	0.522	3.000	0.545

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		????	6.106		1.14	8.4		
2	Cm243	0.033	5.779 5.798 -.019	0.01	16.10	2.2	218.7	0.985E-04
	Cm244		5.795 5.798 -.003				159.7	0.719E-04
3	Pu238	0.607	5.487 5.483 0.004	0.02	298.57	0.5	4113.9	0.185E-02
	Am241		5.479 5.483 -.004				3151.1	0.142E-02
4	Am243	0.254	5.270 5.273 -.003	0.01	124.85	0.8	1251.1	0.564E-03
5		????	4.849		1.09	8.6		
6		????	4.797		0.26	36.9		
7		????	4.716		0.03	249.		
Totals:		0.893	<--valid peaks only-->		439.52			

DETECTOR CALIBRATION

Energy (MEV) = 4.096 + (0.0046)*Channel
Energy range (MeV): 4.096 TO 6.451
Efficiency = 0.1008 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	236151.0	100.000
Smoothed	236150.9	100.000
Composite fit	212196.4	89.856

Residuals

23954.6

10.144

Analyzed by:

VR

WHC-SD-WM-DP-165, REV. 1

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

Display Max.: 82954.3

WHC-SD-WM-DP-165, REV. I

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Raw Data Dump for AEA Spectrum: 16a1673.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	1.	3.	0.	1.	3.
31	3.	1.	1.	3.	0.	2.	1.	2.	1.	4.
41	2.	3.	4.	3.	3.	5.	1.	2.	1.	0.
51	1.	3.	3.	3.	2.	3.	3.	2.	3.	4.
61	3.	4.	2.	3.	1.	2.	1.	3.	1.	0.
71	1.	0.	4.	2.	2.	5.	4.	2.	4.	4.
81	4.	5.	3.	4.	3.	2.	4.	4.	5.	5.
91	2.	3.	1.	3.	5.	7.	4.	10.	4.	4.
101	3.	8.	1.	4.	7.	4.	1.	5.	4.	1.
111	6.	8.	8.	7.	6.	5.	6.	2.	2.	12.
121	4.	8.	5.	9.	5.	11.	7.	8.	7.	7.
131	9.	6.	10.	9.	16.	9.	10.	11.	6.	8.
141	8.	5.	14.	13.	11.	13.	8.	13.	16.	9.
151	12.	11.	15.	16.	12.	10.	9.	4.	11.	5.
161	9.	18.	12.	17.	10.	15.	9.	13.	9.	13.
171	12.	12.	12.	18.	21.	11.	21.	12.	18.	20.
181	14.	21.	23.	18.	20.	20.	22.	21.	18.	26.
191	29.	17.	28.	32.	32.	35.	38.	26.	30.	36.
201	36.	40.	42.	30.	49.	24.	24.	46.	33.	54.
211	41.	38.	47.	52.	83.	58.	54.	80.	80.	76.
221	82.	108.	94.	104.	116.	136.	126.	129.	151.	167.
231	187.	218.	262.	299.	315.	374.	365.	392.	442.	462.
241	531.	558.	719.	847.	1097.	1304.	1574.	1645.	1534.	1562.
251	1896.	2480.	3580.	5300.	7636.	9085.	8486.	5300.	2405.	1101.
261	680.	590.	547.	461.	468.	470.	483.	529.	475.	444.
271	401.	364.	332.	316.	308.	320.	387.	471.	534.	636.
281	747.	784.	806.	874.	969.	1004.	1229.	1369.	1685.	2090.
291	2766.	3372.	3652.	3778.	3496.	3905.	4607.	6518.	9247.	13681.
301	17919.	19486.	15443.	9554.	5396.	3657.	2807.	2585.	2243.	1929.
311	1622.	1156.	874.	670.	401.	147.	50.	16.	3.	4.
321	4.	2.	4.	5.	4.	4.	3.	5.	2.	5.
331	7.	11.	8.	7.	9.	12.	9.	8.	10.	8.
341	11.	17.	19.	13.	18.	20.	21.	24.	32.	39.
351	33.	51.	50.	57.	58.	80.	111.	109.	152.	235.
361	296.	303.	306.	268.	243.	292.	405.	596.	889.	1058.
371	1065.	739.	315.	73.	15.	0.	1.	3.	5.	1.
381	0.	1.	1.	3.	0.	5.	0.	0.	2.	0.
391	4.	1.	1.	0.	0.	2.	3.	3.	2.	0.
401	1.	1.	0.	1.	2.	1.	3.	1.	3.	2.
411	2.	1.	1.	0.	3.	2.	3.	1.	4.	6.
421	4.	5.	5.	11.	9.	13.	19.	23.	26.	18.
431	8.	18.	19.	39.	43.	62.	83.	77.	46.	14.
441	3.	1.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WHC-SD-WM-DP-165, REV. J

WHC-SD-WM-DP-165, REV. 1

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

WHC-SD-WM-DP-165, REV. 1

WORKBOOK PAGE: SAM3

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

LIQUID / SOLID

				SAMPLE							
Type	Date Counted	JAN-17-96	Am 241 AEA Frac. (C241)	0.812							
SAMPLE	Sample Volume in mL (SS)	0.050	Am 243 AEA Frac. (C243)	0.055							
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0.044							
4882	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	278123							
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30							
@AM24101	Tracer Book No.	118B43	Background in cpm (Bkg)	4							
Am-243	Am-243 Tracer Value (dpm/mL)	7550.4	Am 241 cpm	2601.89							
LIQUID	Detector Number	1	Am 243 cpm	175.26							
Batch Number	Detector Efficiency (DetEff)	0.5000	Cm 243/244 cpm	141.41							
96000342			AEA Count Time (min)	480							
Rowin			Am 241 µCi/L =	1.0042E+02							
0			Cm 243/244 µCi/L =	< 6.1838E+00							
Sample Prep											
N/A											
Sample Number	Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))										
S95T003870	Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))										
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100										
AL10539	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV										
Prepared By											
MCB											
Chemist											
LLF	Am 241 µCi/mL =	1.00E-01	<table border="1"> <thead> <tr> <th colspan="2">DETECTION LEVELS in µCi/mL</th> </tr> </thead> <tbody> <tr> <td>Am 241</td> <td>6.18E-03</td> </tr> <tr> <td>Cm 243/244</td> <td>6.18E-03</td> </tr> </tbody> </table>			DETECTION LEVELS in µCi/mL		Am 241	6.18E-03	Cm 243/244	6.18E-03
DETECTION LEVELS in µCi/mL											
Am 241	6.18E-03										
Cm 243/244	6.18E-03										
Analyst	Relative Counting Error =	0.7%									
AKL											
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.										
01/18/96	Cm 243/244 µCi/mL	< 6.18E-03									
Analysis Date	Relative Counting Error =	1.0%									
01/17/96	Am 243 Tracer Recovery =	135.0%									
Analysis Time											
02:30 PM											
Sample Point											
AN-102 GRAB											

Analyst:	AKL	Date:	01/18/96
Signature of Chemist:	LLF	Date:	23 Jan 96

SAMPLE.WB1 REV 1.2

953103ML

WORKBOOK PAGE: DUP4

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

LIQUID / SOLID

				DUP
Type	Date Counted	JAN-17-96	Am 241 AEA Frac. (C241)	0.814
DUP	Sample Volume in mL (SS)	0.050	Am 243 AEA Frac. (C243)	0.047
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0.044
4882	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	268433
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	118B43	Background in cpm (Bkg)	3
Matrix	Am-243 Tracer Value (dpm/mL)	7550.4	Am 241 cpm	2792.57
LIQUID	Detector Number	2	Am 243 cpm	160.49
Batch Number	Detector Efficiency (DetEff)	0.5000	Cm 243/244 cpm	150.42
96000342			AEA Count Time (min)	480
Rerun			Am 241 $\mu\text{Ci/L}$ =	1.1781E+02
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 7.2363E+00
Sample Prep				
N/A				
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
S95T003870	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100			
AL10540	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV			
Prepared By				
MCB				
Chemist				
LLF	Am 241 $\mu\text{Ci/mL}$ =	1.18E-01	DETECTION LEVELS in $\mu\text{Ci/mL}$	
Analyst	Relative Counting Error =	0.7%		
AKL	NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241
Date Complete				01/18/96
Analysis Date	Cm 243/244 $\mu\text{Ci/mL}$	< 7.24E-03	Cm 243/244	
01/17/96	Relative Counting Error =	1.0%	7.24E-03	
Analysis Time	Am 243 Tracer Recovery =	111.4%		
02:30 PM				
Sample Point				
AN-102 GRAB				

Analyst:	AKL	Date:	01/18/96
Signature of Chemist:	LLF	Date:	23 Jan 96

SAMPLE WB1 REV 1.2 953103ML

608

Westinghouse Hanford Co.

D H M. J.
 1-18-96

GENERAL ALPHA ENERGY ANALYSIS

Rev. 2.01 WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE

S95T003870-SAM

File ID: 27a2741.CNF

Counted on: 1/17/96 @17:23
Detector: AEA27
Geometry number: 1
Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1?	489.7	489.7	437.676	437.676	8.000	2.160	4.000	1.168
2	6653.9	6653.9	371.040	371.040	10.000	2.228	5.000	1.351
3	117686.5	117686.5	302.525	302.525	10.000	3.584	5.000	2.703
4	6718.1	6718.1	256.921	256.916	10.000	4.694	5.000	2.841
5?	91.9	91.9	151.322	151.322	176.000	1.000	88.000	0.100
6?	15.7	15.7	119.053	119.053	28.000	23.848	14.000	1.633
7?	15.4	15.4	35.448	35.117	108.000	72.505	54.000	55.612
8?	0.0	0.1	32.278	32.278	4.000	0.100	2.000	0.100

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count Rate c/m	%err @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff. FWHM				
1		????		6.092		11.00	2.7		
2	Cm244	0.044	5.795	5.785	0.0100.01	141.41	0.8	11497.0	0.518E-02
	Cm243		5.779	5.785	-.006			15749.3	0.709E-02
3	Pu238	0.812	5.487	5.470	0.0170.02	2601.89	0.2	293800.2	0.132E+00
	Am241		5.479	5.470	0.009			225038.5	0.101E+00
4	Am243	0.055	5.270	5.261	0.0090.02	175.26	0.7	14392.5	0.648E-02
5		????		4.775		7.29	3.3		
6		????		4.626		1.94	13.2		
7		????		4.240		1.27	12.2		
8		????		4.227		0.00	9632.		

Totals:		0.911	<--valid peaks only-->			2918.56			

DETECTOR CALIBRATION

Energy(MEV) = 4.079 + (0.0046)*Channel
Energy range (MeV): 4.079 TO 6.434
Efficiency = 0.0123 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	1538575.0	100.000

Smoothed
Composite fit
Residuals

1538588.3	100.001
1411280.3	91.726
127294.8	8.274

Analyzed by: _____

ALJ

WHC-SD-WM-DP-165. REV. I

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

Display Max.: 671606.5

WHC-SD-WM-DP-165, REV. 1

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Raw Data Dump for AEA Spectrum: 27a2741.CNF

1	0.	0.	13.	14.	13.	14.	11.	11.	12.	10.
11	14.	9.	10.	13.	8.	9.	12.	15.	17.	21.
21	15.	20.	8.	16.	13.	21.	15.	20.	24.	21.
31	20.	21.	20.	24.	10.	30.	22.	19.	13.	11.
41	23.	14.	17.	18.	18.	21.	13.	23.	16.	22.
51	23.	23.	27.	11.	24.	23.	21.	20.	20.	23.
61	26.	23.	22.	20.	24.	28.	25.	20.	31.	27.
71	25.	25.	31.	29.	22.	38.	25.	25.	26.	35.
81	28.	32.	30.	38.	39.	33.	43.	29.	32.	32.
91	32.	32.	31.	37.	31.	43.	41.	48.	38.	43.
101	42.	41.	44.	50.	38.	50.	30.	35.	42.	52.
111	46.	46.	43.	43.	53.	46.	52.	49.	56.	46.
121	50.	53.	43.	44.	52.	61.	45.	59.	69.	51.
131	68.	55.	71.	57.	66.	67.	62.	85.	71.	69.
141	67.	66.	87.	77.	84.	82.	84.	82.	93.	74.
151	104.	82.	83.	84.	96.	66.	82.	103.	99.	80.
161	92.	94.	102.	102.	121.	120.	117.	100.	108.	121.
171	127.	143.	123.	123.	142.	135.	121.	140.	135.	132.
181	133.	130.	145.	180.	168.	157.	154.	171.	151.	175.
191	157.	177.	175.	153.	196.	174.	172.	178.	174.	227.
201	212.	224.	227.	254.	242.	239.	283.	257.	247.	276.
211	282.	279.	282.	300.	284.	319.	314.	331.	325.	313.
221	352.	365.	384.	412.	451.	460.	414.	448.	515.	540.
231	543.	526.	590.	588.	700.	708.	756.	854.	830.	907.
241	920.	1007.	1117.	1281.	1474.	1639.	1961.	2186.	2253.	2277.
251	2521.	2801.	3401.	4351.	5923.	7713.	8842.	8054.	5320.	3012.
261	1891.	1722.	1663.	1687.	1666.	1780.	1857.	1954.	2086.	2067.
271	2204.	2299.	2433.	2643.	2761.	2983.	3376.	3801.	4453.	5031.
281	5788.	6525.	6932.	7258.	7734.	8574.	9478.	11159.	13031.	15649.
291	20098.	25424.	30518.	33968.	34447.	35419.	39265.	47579.	62499.	85468.
301	119328.	151823.	158054.	123950.	74233.	41110.	27895.	22217.	19270.	17623.
311	15052.	11747.	8968.	6556.	4918.	2944.	1322.	423.	165.	96.
321	88.	78.	72.	80.	79.	70.	59.	87.	84.	66.
331	92.	82.	87.	72.	91.	94.	105.	97.	102.	125.
341	128.	143.	142.	135.	172.	182.	181.	211.	282.	275.
351	293.	341.	371.	432.	501.	618.	752.	936.	1230.	1596.
361	2172.	2635.	2771.	2585.	2335.	2537.	3035.	3921.	5164.	7180.
371	8862.	8459.	5741.	2343.	611.	113.	36.	46.	31.	20.
381	18.	17.	28.	18.	13.	16.	25.	13.	17.	16.
391	20.	19.	15.	8.	15.	18.	20.	13.	13.	16.
401	8.	15.	14.	6.	16.	10.	17.	13.	18.	21.
411	24.	31.	36.	18.	24.	18.	30.	22.	31.	37.
421	54.	49.	63.	94.	103.	139.	162.	220.	250.	199.
431	172.	153.	211.	202.	294.	421.	593.	675.	571.	322.
441	100.	23.	4.	1.	0.	1.	2.	3.	2.	1.
451	0.	1.	1.	0.	0.	0.	0.	0.	1.	0.
461	0.	0.	1.	1.	0.	0.	0.	0.	1.	0.
471	0.	0.	0.	0.	0.	0.	0.	2.	0.	0.
481	0.	0.	0.	0.	0.	1.	0.	0.	1.	1.
491	0.	0.	1.	0.	0.	0.	0.	1.	0.	0.
511	0.	0.								

WHC-SD-WM-DP-165, REV. 1

Residuals

149293.9

9.070

Analyzed by:

ALJ

WHC-SD-WM-DP-165, REV. 1

Spectrum 28a2847.CNF
1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 806536.8

WHC-SD-WM-DP-165, REV. 1

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Raw Data Dump for AEA Spectrum: 28a2847.CNF

1	0.	0.	3.	3.	7.	6.	10.	9.	5.	6.
11	2.	3.	4.	4.	4.	5.	6.	6.	7.	9.
21	6.	8.	8.	8.	5.	7.	5.	10.	6.	8.
31	6.	7.	4.	9.	9.	5.	8.	8.	9.	9.
41	5.	5.	6.	10.	3.	9.	6.	7.	14.	5.
51	7.	7.	13.	9.	13.	9.	8.	11.	17.	9.
61	12.	8.	14.	6.	12.	9.	7.	21.	2.	15.
71	7.	11.	10.	13.	10.	9.	7.	10.	14.	12.
81	11.	7.	8.	10.	18.	9.	16.	6.	13.	13.
91	12.	12.	12.	16.	12.	15.	19.	12.	20.	14.
101	18.	18.	19.	12.	17.	26.	18.	17.	11.	15.
111	14.	28.	17.	14.	17.	18.	20.	19.	24.	18.
121	16.	22.	22.	19.	28.	32.	29.	35.	22.	21.
131	25.	25.	20.	22.	28.	30.	33.	27.	41.	31.
141	31.	38.	24.	37.	43.	32.	38.	37.	32.	28.
151	41.	40.	34.	46.	44.	47.	47.	44.	48.	47.
161	64.	49.	54.	52.	63.	58.	57.	56.	61.	67.
171	70.	59.	55.	69.	77.	79.	59.	73.	85.	76.
181	78.	56.	83.	83.	86.	92.	101.	95.	108.	100.
191	107.	101.	102.	99.	117.	130.	135.	128.	128.	128.
201	148.	126.	143.	151.	177.	181.	168.	195.	182.	186.
211	186.	203.	182.	237.	233.	265.	239.	224.	258.	261.
221	294.	284.	301.	305.	354.	327.	360.	377.	447.	471.
231	508.	523.	569.	593.	609.	612.	615.	665.	833.	956.
241	1111.	1342.	1647.	1868.	1825.	1857.	2009.	2441.	3219.	4687.
251	6834.	9384.	10709.	9110.	5666.	2905.	1782.	1412.	1367.	1276.
261	1258.	1300.	1396.	1472.	1547.	1512.	1430.	1496.	1556.	1557.
271	1668.	1958.	2144.	2319.	2836.	3502.	4089.	4625.	4972.	4898.
281	5197.	5602.	6488.	7405.	9305.	11709.	15702.	21489.	27417.	30797.
291	30870.	30702.	34198.	44287.	61976.	92031.	134960.	176854.	190319.	153884.
301	95100.	53716.	36340.	28687.	24995.	22560.	19883.	15856.	12183.	9336.
311	6774.	4261.	1912.	630.	206.	71.	84.	73.	71.	63.
321	59.	63.	55.	57.	68.	62.	58.	60.	55.	53.
331	63.	57.	56.	64.	75.	82.	77.	75.	80.	93.
341	90.	98.	113.	144.	152.	151.	148.	219.	240.	261.
351	337.	379.	444.	641.	854.	1215.	1864.	2427.	2869.	2722.
361	2366.	2252.	2761.	3733.	5218.	7729.	10121.	10956.	8269.	4136.
371	1238.	247.	64.	48.	37.	29.	18.	14.	16.	16.
381	22.	16.	21.	25.	17.	21.	24.	23.	10.	12.
391	21.	12.	11.	12.	16.	19.	13.	18.	15.	9.
401	7.	11.	13.	10.	17.	15.	15.	27.	34.	25.
411	22.	29.	24.	14.	22.	21.	22.	37.	34.	56.
421	76.	99.	136.	184.	212.	243.	209.	178.	173.	184.
431	287.	413.	591.	775.	763.	561.	266.	68.	10.	2.
441	0.	2.	0.	1.	0.	2.	0.	0.	2.	0.
451	1.	0.	1.	0.	1.	0.	0.	3.	0.	3.
461	0.	0.	0.	1.	0.	0.	1.	1.	0.	1.
471	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.
481	0.	0.	1.	0.	1.	0.	0.	0.	0.	1.
491	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WHC-SD-WM-DP-165, REV.1

LABCORE Completed Worklist Report for Worklist# 4766

Analyst: ak1

Instrument: PU01

Book# 104843

Method: LA-943-127 Rev/Mod B-D1 1/24/96

Worklist Comment: Determine sample size by Ludlum. --LLF

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	@PU23901 PU23901	LIQUID	1.28E-01	1.27E-1	99.220 %	Recovery
1 STD		0	@PU23901 PU23901E	LIQUID	1.00	2.29E+00	2.290 %	Ct. Error
1 STD		0	@PU23901 PU23901T	LIQUID	100	7.32E+01	73.200 %	Recovery
2 BLNK		0	@PU23901 PU23901	LIQUID	1	<8.53E-4		uCi/mL
2 BLNK		0	@PU23901 PU23901T	LIQUID	100	3.41E+01	34.100 %	Recovery
2 BLNK		0	@PU23901 PU23901E	LIQUID	1.00	1.00E+02	100.000 %	Ct. Error
3 SAMPLE	S95T003871	0	@PU23901 PU23901	LIQUID	N/A	5.19E-03	6.250e-004	uCi/mL
3 SAMPLE	S95T003871	0	@PU23901 PU23901T	LIQUID	N/A	7.91E+01	1.000e-007	% Recovery
3 SAMPLE	S95T003871	0	@PU23901 PU23901E	LIQUID	N/A	2.76E+00	0.000 %	Ct. Error
4 DUP	S95T003871	0	@PU23901 PU23901	LIQUID	5.19E-3	5.24E-3	0.960	RPD
4 DUP	S95T003871	0	@PU23901 PU23901T	LIQUID	100	6.15E+01	61.500 %	Recovery
4 DUP	S95T003871	0	@PU23901 PU23901E	LIQUID	1.00	3.04E+00	3.040 %	Ct. Error
5 SAMPLE	S95T003872	0	@PU23901 PU23901	LIQUID	N/A	5.68E-03	5.980e-004	uCi/mL
5 SAMPLE	S95T003872	0	@PU23901 PU23901T	LIQUID	N/A	8.42E+01	1.000e-007	% Recovery
5 SAMPLE	S95T003872	0	@PU23901 PU23901E	LIQUID	N/A	2.57E+00	0.000 %	Ct. Error
6 DUP	S95T003872	0	@PU23901 PU23901	LIQUID	5.68E-3	5.71E-3	0.530	RPD
6 DUP	S95T003872	0	@PU23901 PU23901T	LIQUID	100	7.93E+01	79.300 %	Recovery
6 DUP	S95T003872	0	@PU23901 PU23901E	LIQUID	1.00	2.65E+00	2.650 %	Ct. Error

Final page for worklist# 4766

Analyst Signature

Date

Analyst Signature

Date

AK1 24 Jan 96
Reviewer Signature Date

Quantifiable activity for Pu-238.
AK1 1/24/96

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

01/08/96 14:31
A-0004-1

WHC-SD-WM-DP-165, REV. 1

Page: 1

LABCORE Data Entry Template for Worklist# 4766

Analyst: AKL Instrument: PU01 B-1 Book# 109643

Method: LA-943-127 Rev/Mod _____

Worklist Comment: Determine sample size by Ludlum. --LLF

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@PU23901	LIQUID		
2 BLNK			@PU23901	LIQUID		
3 SAMPLE	S95T003871 0		@PU23901	LIQUID	95000222	AN-102 GRAB
	Analytes Requested: PU23901 , PU23901E, PU23901T					
4 DUP	S95T003871 0		@PU23901	LIQUID		
5 SAMPLE	S95T003872 0		@PU23901	LIQUID	95000222	AN-102 GRAB
	Analytes Requested: PU23901 , PU23901E, PU23901T					
6 DUP	S95T003872 0		@PU23901	LIQUID		

Final page for worklist # 4766

C. J. [Signature] 1/10/96
Analyst Signature Date

S. [Signature] 1/12/96
Analyst Signature Date
M. [Signature] 1/12/96

Data Entry Comments:

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

WORKBOOK PAGE: STD1

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

LIQUID

Type	DATE COUNTED	JAN-11-96	PU 236 AEA FRAC (C236)	STD
STD	SAMPLE VOLUME in mL SS	0.100	PU 238 AEA FRAC (C238)	0.000
Work List	SAMPLE DILUTION FACTOR DF	101.000	PU 239 AEA FRAC (C239)	0.551
4766	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS	5679
Test Code	DIGEST DILUTION FACTOR DDF	1.000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	117B43	BACKGROUND in cpm (Bkg)	4.000
Matrix	DETECTOR NUMBER	1	PU 236 cpm	26.760
LIQUID	EFFICIENCY FACTOR EFF	0.500	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE	09/12/95	PU 239 cpm	35.720
96000201	TRACER PREPARATION VALUE (dpm/mL)	2265.000	AEA COUNT TIME	480
Partin	PU-236 DECAY CORR'D VALUE (dpm/mL)	2089.664	Pu 239/240 µCi/L	1.2684E+02
0	PU-238 TRACER VALUE (dpm/mL)	0.000		
Sample Prep	STANDARD BOOK NO	104B43		
N/A	STANDARD VALUE in µCi/mL	0.128		
Sample #				
WL#4766				
Instrument Code	Decay Time = Date Counted - Tracer Preparation Date			
AL10639	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of ((-ln2 * Decay Time/1040.95))]			
Prepared By	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 1/EFF * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV			
SEH	Pu 239/240 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 * C236] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)			
LLF	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			
AKL				
Date Complete	✓ RESULTS ✓			
01/12/96	Pu 239/240 µCi/mL	1.27E-01	DETECTION LEVELS in µCi/mL	
Analysis Date	Relative Counting Error =	2.3%	Pu 239/240	9.43E-03
01/10/96				
Analysis Time				
11:20 PM				
Sample Point				
AN-102 GRAB	Pu 236 Tracer Recovery =	73.2%		

Analyst:	AKL	Date:	12-Jan-96
Signature of Chemist:	LLF	Date:	24 Jan 96

STANDARD WB1 REV 1.2

943127ML

WORKBOOK PAGE: BLANK2

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

LIQUID / SOLID

Type	DATE COUNTED	JAN-11-96	PU 236 AEA FRAC (C236)	BLNK
BLNK	SAMPLE VOLUME in mL SS	1.000	PU 238 AEA FRAC (C238)	0.000
Work List	SAMPLE DILUTION FACTOR DF	101.000	PU 239 AEA FRAC (C239)	0.000
4766	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS	1209
Test Code	DIGEST DILUTION FACTOR DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	117B43	BACKGROUND in cpm (Bkg)	4.000
Matrix	DETECTOR NUMBER	3	PU 236 cpm	12.400
LIQUID	EFFICIENCY FACTOR EFF	0.5000	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE	09/12/95	PU 239 cpm	0.000
96000201	TRACER PREPARATION VALUE (dpm/mL)	2265.00	AEA COUNT TIME	480
Re-run	PU-236 DECAY CORR'D VALUE (dpm/mL)	2089.66	Pu 239/240 µCi/L =	< 8.530E-01
0	PU-238 TRACER VALUE (dpm/mL)	0.00		

Sample Prep	
N/A	
Sample #	Decay Time = Date Counted - Tracer Preparation Date
WL#4766	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.95)}]
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)
AL10541	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)
SEH	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery / 100)(2220000 dpm/µCi)(D g/L)(SS)]
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
LLF	
Analyst	
AKL	
Date Complete	√ RESULTS √
01/12/96	Pu 239/240 µCi/mL < 8.53E-04
Analysis Date	Relative Counting Error = 100.0%
01/10/96	
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.
11:20 PM	Pu 238 µCi/mL < 8.53E-04
Sample Point	Relative Counting Error = 100.0%
AN-102 GRAB	Pu 236 Tracer Recovery = 34.1%

Analyst:	AKL	Date:	12-Jan-96
Signature of Chemist:	LLF	Date:	24 Jan 96

BLANK.WB1 REV 1.2

943127ML

WHC-SD-WM-DP-165, REV. 1

WORKBOOK PAGE: SAM3

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

LIQUID / SOLID

				SAMPLE
DATE COUNTED	JAN-11-96			
SAMPLE	SAMPLE VOLUME in mL	SS	1.000	PU 236 AEA FRAC (C236) 0.577
Work List	SAMPLE DILUTION FACTOR	DF	101.000	PU 238 AEA FRAC (C238) 0.083
4766	TRACER VOLUME in mL	SPKV	0.100	PU 239 AEA FRAC (C239) 0.315
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	TOTAL AT COUNTS 4418
@PU23901	TRACER BOOK NO		117B43	AT COUNT TIME (MIN) 30
Matrix	DETECTOR NUMBER		1	BACKGROUND in cpm (Bkg) 4.000
LIQUID	EFFICIENCY FACTOR	EFF	0.500	PU 236 cpm 29.810
Batch Number	TRACER PREPARATION DATE		09/12/95	PU 238 cpm 4.270
96000201	TRACER PREPARATION VALUE (dpm/mL)		2265.000	PU 239 cpm 16.240
Ream	PU-236 DECAY CORR'D VALUE (dpm/mL)		2089.664	AEA COUNT TIME 480
0	PU-238 TRACER VALUE (dpm/mL)		0.000	Pu 239/240 µCi/L 5.1901E+00

Sample Prep

N/A

Sample #

S95T003871

Decay Time = Date Counted - Tracer Preparation Date

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

Instrument Code

AL10539

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

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

Prepared By

SEH

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

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

Chemist

LLF

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

Analyst

AKL

Date Complete

01/12/96

RESULTS

Analysis Date

01/10/96

Analysis Time

11:20 PM

Sample Point

AN-102 GRAB

Pu 239/240 µCi/mL 5.19E-03

Relative Counting Error = 2.8%

Pu 238 µCi/mL 1.37E-03

Relative Counting Error = 4.6%

Pu 236 Tracer Recovery = 79.1%

DETECTION

LEVELS

In µCi/mL

Pu 239/240

6.25E-04

Pu 238

6.25E-04

Analyst:

AKL

Date:

12-Jan-96

Signature of Chemist:

LLF

LLF

Date:

24 Jan 96

SAMPLE.WB1 REV 1.2

943127ML

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

LIQUID / SOLID

				DUP
Type	DATE COUNTED	JAN-11-96	PU 236 AEA FRAC (C236)	0.582
DUP	SAMPLE VOLUME in mL SS	1.000	PU 238 AEA FRAC (C238)	0.082
Work List	SAMPLE DILUTION FACTOR DF	101.000	PU 239 AEA FRAC (C239)	0.321
4766	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS	3431
Test Code	DIGEST DILUTION FACTOR DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	117B43	BACKGROUND in cpm (Bkg)	4.000
Maink	DETECTOR NUMBER	3	PU 236 cpm	24.300
LIQUID	EFFICIENCY FACTOR EFF	0.500	PU 238 cpm	3.430
Batch Number	TRACER PREPARATION DATE	09/12/95	PU 239 cpm	13.390
96000201	TRACER PREPARATION VALUE (dpm/mL)	2265.000	AEA COUNT TIME	480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)	2089.664	Pu 239/240 $\mu\text{Ci/L}$	5.2436E+00
0	PU-238 TRACER VALUE (dpm/mL)	0.000		

Sample Prep

N/A

Sample #

S95T003871

Instrument Code

AL10541

Prepared By

SEH

Chemist

LLF

Analyst

AKL

Data Complete

01/12/96

Analysis Date

01/10/96

Analysis Time

11:20 PM

Sample Point

AN-102 GRAB

Decay Time = Date Counted - Tracer Preparation Date

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

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

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

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

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

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

v RESULTS v

Pu 239/240 $\mu\text{Ci/mL}$	=	5.24E-03	DETECTION LEVELS in $\mu\text{Ci/mL}$
Relative Counting Error	=	3.0%	
Pu 238 $\mu\text{Ci/mL}$	=	1.34E-03	Pu 239/240
Relative Counting Error	=	5.2%	7.97E-04
Pu 236 Tracer Recovery	=	61.5%	Pu 238
			7.97E-04

Analyst:

AKL

Date: 12-Jan-96

Signature of Chemist:

LLF

Date: 24 Jan 96

SAMPLE WB1 REV 1.2

943127ML

WHC-SD-WM-DP-165, REV. I

WORKBOOK PAGE: SAM5

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

LIQUID / SOLID

				SAMPLE
Type	DATE COUNTED	JAN-11-96	PU 236 AEA FRAC (C236)	0.566
SAMPLE	SAMPLE VOLUME in mL	SS	PU 238 AEA FRAC (C238)	0.087
Work List	SAMPLE DILUTION FACTOR	DF	PU 239 AEA FRAC (C239)	0.339
4766	TRACER VOLUME in mL	SPKV	TOTAL AT COUNTS	4784
Test Code	DIGEST DILUTION FACTOR	DDF	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	117B43	BACKGROUND in cpm (Bkg)	4.000
Matrix	DETECTOR NUMBER	1	PU 236 cpm	32.480
LIQUID	EFFICIENCY FACTOR	EFF	PU 238 cpm	5.020
Batch Number	TRACER PREPARATION DATE	09/12/95	PU 239 cpm	19.400
96000201	TRACER PREPARATION VALUE (dpm/mL)	2265.000	AEA COUNT TIME	480
Re-run	PU-236 DECAY CORR'D VALUE (dpm/mL)	2089.664	Pu 239/240 µCi/L	5.6773E+00
0	PU-238 TRACER VALUE (dpm/mL)	0.000		

Sample Prep

N/A

Sample #

S95T003872

Instrument Code

AL10539

Prepared By

SEH

Chemist

LLF

Analyst

AKL

Date Complete

01/12/96

Analysis Date

01/10/96

Analysis Time

11:20 PM

Sample Point

AN-102 GRAB

Decay Time = Date Counted - Tracer Preparation Date

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

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

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

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

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

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

RESULTS

Pu 239/240 µCi/mL	5.68E-03	DETECTION LEVELS in µCi/mL Pu 239/240 5.98E-04 Pu 238 5.98E-04
Relative Counting Error =	2.6%	
Pu 238 µCi/mL	1.46E-03	
Relative Counting Error =	4.3%	
Pu 236 Tracer Recovery =	84.2%	

Analyst:	AKL	Date:	12-Jan-96
Signature of Chemist:	LLF	Date:	21 Jan 96

SAMPLE.WB1 REV 1.2

943127ML

WHC-SD-WM-DP-165, REV. 1

WORKBOOK PAGE: DUP6

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

LIQUID / SOLID

				DUP
Type	DATE COUNTED	JAN-11-96	PU 236 AEA FRAC (C236)	0.546
DUP	SAMPLE VOLUME in mL	SS 1.000	PU 238 AEA FRAC (C238)	0.089
Work List	SAMPLE DILUTION FACTOR	DF 101.000	PU 239 AEA FRAC (C239)	0.328
4766	TRACER VOLUME in mL	SPKV 0.100	TOTAL AT COUNTS	4670
Test Code	DIGEST DILUTION FACTOR	DDF 1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	117B43	BACKGROUND in cpm (Bkg)	4.000
Matrix	DETECTOR NUMBER	3	PU 236 cpm	30.430
LIQUID	EFFICIENCY FACTOR	EFF 0.500	PU 238 cpm	4.940
Batch Number	TRACER PREPARATION DATE	09/12/95	PU 239 cpm	18.280
96000201	TRACER PREPARATION VALUE (dpm/mL)	2265.000	AEA COUNT TIME	480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)	2089.664	Pu 239/240 µCi/L	6.7112E+00
0	PU-238 TRACER VALUE (dpm/mL)	0.000		

Sample Prep

N/A

Sample #

S957003872

Instrument Code

AL10541

Prepared By

SEH

Chemist

LLF

Analyst

AKL

Date Complete

01/12/96

Analysis Date

01/10/96

Analysis Time

11:20 PM

Sample Point

AN-102 GRAB

Decay Time = Date Counted - Tracer Preparation Date

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

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

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

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

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

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

~ RESULTS ~

01/12/96	Pu 239/240 µCi/mL	5.71E-03	DETECTION LEVELS In µCi/mL
Analysis Date	Relative Counting Error	= 2.6%	
01/10/96			
Analysis Time			Pu 239/240
11:20 PM	Pu 238 µCi/mL	1.55E-03	6.59E-04
Sample Point	Relative Counting Error	= 4.3%	Pu 238
AN-102 GRAB	Pu 236 Tracer Recovery	= 79.3%	6.59E-04

Analyst:

AKL

Date: 12-Jan-96

Signature of Chemist:

AKL

LLF

Date: 24 Jan 96

SAMPLE WB1 REV 1.2

943127ML

624

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01

DATA REDUCTION REPORT

SAMPLE
WL4766-STD
File ID: 13a1374.CNF

WHC-SD-WM-DP-165, REV. 1

Counted on: 1/11/96 @14:34
Detector: AEA13
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	1056.5	1056.5	363.083	363.083	10.000	2.804	5.000	1.355
2?	19.6	19.6	303.757	303.710	10.000	6.062	5.000	3.022
3	1587.1	1587.1	229.799	229.799	10.000	3.185	5.000	2.085

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.413	5.755	5.762	-.0070	0.01	26.76	1.7	3413.3	0.154E-02
	Cm243		5.779	5.762	0.017				4582.3	0.206E-02
2		????		5.489			0.60	12.0		
3	Pu239	0.551	5.147	5.149	-.0020	0.01	35.72	1.5	4465.5	0.201E-02
	Pu240		5.144	5.149	-.005				4465.5	0.201E-02
Totals:		0.965	<--valid peaks only-->				62.48			

DETECTOR CALIBRATION

Energy(MEV) = 4.092 + (0.0046)*Channel
Energy range (MeV): 4.092 TO 6.447
Efficiency = 0.0080 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	31097.0	100.000
Smoothed	31097.0	100.000
Composite fit	30280.7	97.375
Residuals	816.3	2.625

Analyzed by:

SEH

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 625 TO 642

3.
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Raw Data Dump for AEA Spectrum: 13a1374.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
41	0.	1.	0.	1.	0.	0.	0.	1.	0.	0.
51	1.	1.	0.	0.	1.	1.	0.	1.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	0.	0.	2.	0.	0.	0.	0.	0.	0.
81	0.	1.	0.	0.	0.	1.	0.	0.	2.	0.
91	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
101	1.	1.	0.	4.	1.	1.	0.	1.	0.	2.
111	1.	0.	2.	2.	1.	2.	0.	2.	1.	2.
121	1.	0.	0.	0.	0.	0.	1.	3.	1.	3.
131	3.	2.	1.	0.	1.	0.	0.	0.	1.	3.
141	0.	3.	2.	3.	1.	1.	2.	4.	3.	1.
151	4.	2.	1.	1.	1.	1.	2.	0.	2.	2.
161	0.	1.	3.	4.	1.	8.	0.	1.	3.	1.
171	3.	3.	5.	6.	1.	4.	3.	4.	4.	6.
181	5.	3.	9.	5.	5.	15.	10.	8.	6.	5.
191	7.	6.	6.	9.	13.	16.	10.	27.	19.	24.
201	26.	31.	29.	43.	48.	47.	42.	56.	51.	83.
211	92.	107.	107.	131.	171.	208.	248.	292.	367.	408.
221	437.	467.	531.	614.	746.	1047.	1218.	1569.	1852.	1975.
231	1790.	1360.	828.	380.	131.	46.	10.	1.	1.	1.
241	0.	0.	0.	2.	0.	2.	0.	0.	2.	1.
251	0.	0.	0.	2.	0.	2.	1.	1.	1.	1.
261	1.	0.	2.	1.	1.	0.	0.	0.	1.	1.
271	1.	2.	2.	1.	1.	2.	0.	2.	0.	0.
281	3.	0.	1.	2.	1.	2.	4.	7.	1.	3.
291	5.	1.	10.	12.	7.	13.	9.	10.	8.	10.
301	13.	26.	29.	10.	29.	15.	18.	8.	8.	7.
311	2.	8.	4.	7.	2.	4.	4.	6.	3.	5.
321	3.	8.	12.	7.	9.	6.	9.	16.	8.	16.
331	12.	12.	14.	22.	21.	28.	29.	27.	42.	39.
341	35.	39.	53.	63.	80.	92.	105.	114.	192.	269.
351	293.	428.	515.	504.	466.	446.	418.	478.	550.	736.
361	916.	1188.	1313.	1265.	1015.	584.	237.	45.	5.	2.
371	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WHC-SD-WM-DP-165, REV. I

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS

Rev. 2.01

WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE

WL4766-BLK

File ID: 14a1479.CNF

Counted on: 1/11/96 @14:31
 Detector: AEA14
 Geometry number: 1
 Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	384.4	384.4	361.462	361.462	10.000	3.016	5.000	1.008

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	0.981	5.755	5.758	-.0030.01	12.40	2.5	980.5	0.442E-03
Totals:		0.981	<--valid peaks only-->			12.40			

DETECTOR CALIBRATION

Energy(MEV) = 4.095 + (0.0046)*Channel
 Energy range (MeV): 4.095 TO 6.451
 Efficiency = 0.0129 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	6064.0	100.000
Smoothed	6064.0	100.000
Composite fit	5950.9	98.136
Residuals	113.1	1.864

Analyzed by:

SEH

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

Display Max.:

2010.0

WHC-SD-WM-DP-165, REV. 1

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Raw Data Dump for AEA Spectrum: 14a1479.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
41	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
101	0.	0.	1.	0.	1.	1.	0.	0.	1.	0.
111	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
121	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
131	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
141	0.	0.	0.	0.	1.	0.	1.	1.	0.	1.
151	1.	1.	0.	0.	1.	0.	0.	0.	0.	0.
161	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
171	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.
181	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
191	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
201	0.	0.	0.	0.	0.	2.	0.	0.	1.	0.
211	0.	0.	1.	0.	0.	3.	0.	2.	3.	1.
221	1.	0.	1.	3.	3.	4.	6.	3.	3.	4.
231	2.	0.	1.	0.	1.	0.	1.	0.	2.	1.
241	1.	1.	1.	1.	0.	0.	0.	2.	0.	1.
251	2.	1.	0.	2.	2.	1.	2.	2.	3.	2.
261	0.	4.	2.	0.	0.	0.	2.	0.	1.	1.
271	1.	1.	2.	3.	1.	2.	2.	1.	1.	1.
281	5.	6.	2.	1.	1.	3.	2.	4.	1.	3.
291	1.	6.	2.	2.	2.	2.	6.	4.	7.	4.
301	11.	7.	6.	4.	10.	5.	4.	5.	5.	8.
311	4.	6.	8.	2.	5.	8.	4.	13.	10.	6.
321	12.	12.	10.	17.	4.	13.	8.	10.	9.	20.
331	17.	22.	32.	19.	27.	28.	29.	34.	46.	47.
341	51.	42.	56.	70.	80.	107.	105.	134.	151.	184.
351	192.	241.	263.	223.	209.	205.	222.	280.	328.	351.
361	456.	464.	432.	287.	135.	42.	10.	1.	0.	0.
371	3.	1.	0.	0.	0.	0.	0.	1.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01

WHC-SD-WM-DP-165, REV. I

DATA REDUCTION REPORT

SAMPLE

S95T3871-S

File ID: 15a1561.CNF

Counted on: 1/11/96 @14:34
 Detector: AEA15
 Geometry number: 1
 Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1256.6	1256.6	362.371	362.371	8.000	2.503	4.000	1.301
2	183.6	183.6	303.615	303.612	10.000	2.769	5.000	1.563
3	748.1	748.1	228.559	228.559	10.000	3.348	5.000	2.495
4?	13.6	13.6	147.529	147.529	18.000	10.003	9.000	8.168

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Exp.	Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea
1	Pu236	0.577	5.755	5.771	-.0160	0.01	29.81	1.6	1609.3	0.725E-03
	Cm243		5.779	5.771	0.008				2160.5	0.973E-03
2	Pu238	0.083	5.487	5.501	-.0140	0.01	4.27	4.3	313.5	0.141E-03
	Am241		5.479	5.501	-.022				240.1	0.108E-03
3	Pu239	0.315	5.147	5.156	-.0090	0.02	16.24	2.2	859.5	0.387E-03
	Pu240		5.144	5.156	-.012				859.5	0.387E-03
4		????		4.783			0.44	13.5		
Totals:		0.975	<--valid peaks only-->				50.32			

DETECTOR CALIBRATION

Energy(MEV) = 4.104 + (0.0046)*Channel
 Energy range (MeV): 4.104 TO 6.460
 Efficiency = 0.0189 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	24788.0	100.000
Smoothed	24788.0	100.000
Composite fit	24368.0	98.305
Residuals	420.0	1.695

Analyzed by:

SEH

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

Display Max.:

6734.2

WHC-SD-WM-DP-165, REV. 1

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Raw Data Dump for AEA Spectrum: 15a1561.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
41	0.	1.	0.	0.	0.	0.	2.	0.	0.	0.
51	1.	0.	0.	0.	0.	0.	0.	1.	0.	0.
61	1.	0.	0.	2.	0.	0.	0.	0.	0.	0.
71	0.	1.	0.	0.	0.	1.	1.	0.	0.	0.
81	2.	0.	0.	0.	1.	1.	1.	2.	2.	1.
91	0.	0.	1.	0.	1.	0.	0.	1.	1.	0.
101	0.	1.	0.	1.	0.	1.	1.	2.	2.	1.
111	0.	1.	1.	1.	1.	0.	4.	1.	6.	1.
121	0.	2.	1.	3.	1.	2.	2.	2.	1.	0.
131	1.	1.	0.	3.	2.	1.	0.	1.	2.	5.
141	3.	6.	7.	14.	13.	14.	16.	15.	18.	6.
151	10.	9.	8.	11.	5.	3.	6.	8.	4.	2.
161	3.	7.	2.	2.	1.	1.	1.	3.	0.	4.
171	3.	1.	1.	1.	2.	2.	2.	2.	3.	3.
181	0.	3.	4.	1.	1.	5.	3.	4.	4.	3.
191	3.	4.	3.	6.	5.	7.	6.	4.	7.	8.
201	9.	9.	8.	14.	16.	17.	22.	22.	30.	20.
211	26.	35.	45.	64.	81.	106.	137.	146.	195.	178.
221	202.	223.	305.	330.	481.	624.	779.	925.	958.	770.
231	580.	346.	182.	77.	31.	2.	0.	1.	1.	1.
241	1.	2.	1.	1.	2.	1.	1.	3.	4.	2.
251	3.	4.	5.	8.	7.	8.	5.	4.	1.	2.
261	0.	0.	2.	4.	2.	4.	0.	2.	7.	2.
271	2.	2.	1.	2.	3.	3.	5.	4.	0.	3.
281	7.	9.	5.	9.	11.	7.	5.	12.	15.	26.
291	30.	49.	53.	72.	89.	92.	78.	71.	74.	111.
301	125.	186.	211.	240.	207.	133.	65.	18.	6.	6.
311	8.	7.	6.	6.	6.	2.	5.	8.	8.	7.
321	6.	9.	9.	3.	4.	9.	8.	9.	13.	14.
331	12.	14.	7.	17.	15.	23.	19.	26.	27.	27.
341	44.	49.	62.	39.	89.	94.	104.	149.	223.	302.
351	441.	572.	620.	586.	502.	420.	425.	590.	686.	1010.
361	1326.	1525.	1653.	1361.	748.	252.	54.	3.	1.	2.
371	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WHC-SD-WM-DP-165, REV. 1

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01 WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
S95T3871-D
File ID: 16a1648.CNFCounted on: 1/11/96 @14:35
Detector: AEA16
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1005.8	1005.8	361.204	361.204	10.000	2.608	5.000	1.333
2	138.4	138.4	303.017	303.013	10.000	2.782	5.000	1.391
3	574.8	574.8	228.842	228.842	10.000	3.697	5.000	2.481

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid				Count Rate	%err c/m @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.	FWHM				
1	Pu236	0.582	5.755	5.755	0.0000	0.01	24.30	1.8	1305.3	0.588E-03
2	Pu238	0.082	5.487	5.488	-0.0010	0.01	3.43	4.8	251.0	0.113E-03
	Am241		5.479	5.488	-0.009				192.3	0.866E-04
3	Pu239	0.321	5.147	5.147	0.0000	0.02	13.39	2.4	704.5	0.317E-03
	Pu240		5.144	5.147	-0.003				704.5	0.317E-03

Totals:		0.986	<--valid peaks only-->				41.12			

DETECTOR CALIBRATION

Energy(MEV) = 4.094 + (0.0046)*Channel
Energy range (MeV): 4.094 TO 6.449
Efficiency = 0.0190 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	20032.0	100.000
Smoothed	20032.0	100.000
Composite fit	19742.8	98.556
Residuals	289.2	1.444

Analyzed by:

SEH

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

Display Max.:

4542.3

WHC-SD-WM-DP-165, REV. /

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Raw Data Dump for AEA Spectrum: 16a1648.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
31	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
51	1.	1.	0.	0.	0.	0.	0.	1.	0.	1.
61	0.	0.	0.	0.	1.	0.	0.	1.	0.	2.
71	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
81	0.	1.	0.	0.	0.	0.	0.	0.	1.	0.
91	0.	2.	0.	0.	1.	0.	0.	0.	0.	1.
101	1.	0.	0.	0.	1.	1.	0.	0.	0.	0.
111	0.	1.	0.	2.	0.	4.	1.	1.	2.	0.
121	2.	2.	0.	1.	1.	1.	1.	3.	1.	1.
131	1.	1.	0.	1.	3.	5.	2.	1.	0.	1.
141	0.	3.	3.	8.	5.	9.	9.	6.	9.	9.
151	14.	7.	7.	3.	5.	7.	2.	1.	4.	3.
161	4.	2.	0.	1.	0.	6.	0.	1.	0.	0.
171	1.	1.	2.	0.	1.	0.	0.	1.	2.	1.
181	1.	0.	3.	1.	1.	2.	2.	3.	1.	2.
191	4.	1.	5.	2.	5.	6.	1.	3.	8.	5.
201	5.	5.	3.	8.	11.	12.	11.	21.	12.	31.
211	25.	36.	33.	56.	78.	65.	99.	127.	145.	159.
221	179.	236.	219.	281.	378.	479.	570.	671.	691.	664.
231	495.	336.	195.	96.	45.	13.	0.	2.	2.	0.
241	0.	0.	1.	0.	2.	1.	1.	1.	0.	1.
251	0.	1.	1.	1.	2.	1.	1.	0.	3.	0.
261	1.	0.	0.	3.	1.	0.	1.	1.	1.	3.
271	0.	2.	3.	3.	2.	1.	2.	4.	3.	4.
281	6.	6.	9.	10.	6.	4.	11.	11.	11.	30.
291	38.	42.	60.	77.	64.	79.	64.	59.	87.	78.
301	126.	148.	186.	145.	139.	70.	29.	5.	1.	2.
311	1.	3.	1.	4.	2.	3.	5.	3.	5.	8.
321	2.	5.	4.	5.	3.	4.	10.	8.	6.	9.
331	14.	8.	10.	14.	17.	16.	20.	19.	30.	33.
341	36.	49.	48.	61.	92.	109.	155.	210.	283.	381.
351	433.	457.	480.	413.	361.	383.	506.	637.	865.	1077.
361	1260.	1244.	1029.	560.	185.	31.	7.	0.	0.	1.
371	1.	0.	2.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WHC-SD-WM-DP-165, REV. 1

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS

Rev. 2.01

WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE

S95T3872-S

File ID: 17a1733.CNF

Counted on: 1/11/96 @14:37

Detector: AEA17

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	1085.4	1085.4	359.223	359.223	10.000	3.089	5.000	1.166
2	165.0	165.0	301.212	301.190	10.000	3.184	5.000	1.183
3	690.3	690.3	227.041	227.041	12.000	4.104	6.000	1.927
4	15.7	15.7	148.248	148.243	20.000	14.262	10.000	5.158

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count Rate c/m	%err @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff. FWHM				
1	Pu236	0.566	5.755	5.753	0.0020.01	32.48	1.6	302.1	0.136E-03
2	Pu238	0.087	5.487	5.486	0.0010.01	5.02	4.1	63.5	0.286E-04
	Am241		5.479	5.486	-0.007			48.6	0.219E-04
3	Pu239	0.338	5.147	5.145	0.0020.02	19.40	2.0	176.9	0.797E-04
	Pu240		5.144	5.145	-0.001			176.9	0.797E-04
4	Np237	0.012	4.769	4.782	-0.0130.07	0.71	10.7	7.4	0.333E-05
Totals:		1.003	<--valid peaks only-->			57.60			

DETECTOR CALIBRATION

Energy(MEV) = 4.100 + (0.0046)*Channel

Energy range (MeV): 4.100 TO 6.456

Efficiency = 0.1097 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	27565.0	100.000
Smoothed	27565.0	100.000
Composite fit	27650.4	100.310
Residuals	-85.4	-0.310

Analyzed by:

SEH

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

Display Max.:

6649.0

WHC-SD-WM-DP-165, REV. 1

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Raw Data Dump for AEA Spectrum: 17a1733.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	1.	1.	1.	0.	0.	1.	0.	0.
31	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	1.	1.	2.	1.	1.	0.	0.	0.	0.
51	0.	1.	0.	0.	0.	0.	0.	1.	1.	0.
61	1.	1.	1.	0.	0.	0.	0.	1.	1.	0.
71	0.	1.	0.	0.	1.	0.	1.	1.	0.	1.
81	1.	1.	1.	1.	1.	0.	2.	2.	0.	0.
91	1.	0.	0.	1.	1.	2.	1.	0.	0.	1.
101	2.	1.	0.	3.	2.	2.	3.	1.	2.	2.
111	3.	5.	5.	1.	1.	2.	4.	2.	1.	3.
121	7.	5.	1.	2.	0.	1.	2.	1.	2.	5.
131	3.	3.	3.	6.	2.	4.	5.	6.	5.	14.
141	10.	10.	19.	8.	17.	14.	8.	20.	20.	12.
151	10.	9.	11.	7.	8.	8.	6.	5.	4.	10.
161	4.	3.	2.	1.	1.	3.	0.	3.	4.	4.
171	6.	8.	6.	2.	2.	4.	2.	4.	2.	4.
181	6.	4.	7.	3.	4.	14.	7.	12.	8.	9.
191	12.	15.	19.	14.	16.	22.	17.	20.	23.	21.
201	28.	43.	47.	50.	40.	51.	57.	71.	69.	65.
211	107.	124.	141.	144.	191.	199.	229.	286.	306.	352.
221	348.	447.	502.	600.	674.	772.	802.	743.	725.	463.
231	300.	159.	63.	22.	5.	2.	0.	1.	2.	2.
241	3.	1.	1.	2.	1.	0.	2.	3.	2.	1.
251	1.	1.	2.	4.	3.	0.	3.	0.	1.	4.
261	1.	5.	4.	1.	6.	5.	5.	7.	5.	6.
271	8.	5.	9.	8.	6.	8.	11.	8.	9.	15.
281	15.	24.	18.	21.	31.	26.	38.	43.	65.	72.
291	104.	89.	92.	103.	97.	98.	118.	128.	140.	173.
301	197.	200.	176.	108.	56.	18.	10.	13.	6.	7.
311	6.	10.	5.	8.	7.	7.	10.	9.	13.	11.
321	21.	15.	19.	18.	29.	32.	15.	28.	27.	34.
331	37.	49.	49.	51.	50.	66.	85.	91.	98.	130.
341	154.	183.	196.	215.	227.	319.	399.	487.	603.	602.
351	641.	604.	519.	564.	688.	722.	980.	1151.	1274.	1332.
361	1113.	748.	322.	88.	17.	1.	1.	1.	2.	0.
371	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WHC-SD-WM-DP-165, REV. 1

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS

Rev. 2.01

WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE

S95T3872-D

File ID: 25a2538.CNF

Counted on: 1/11/96 @14:37

Detector: AEA25

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	997.9	997.9	360.978	360.978	10.000	3.000	5.000	1.091
2	163.8	163.8	302.987	302.954	10.000	3.327	5.000	1.270
3	643.9	643.9	228.647	228.647	12.000	4.286	6.000	2.015
4?	12.2	12.2	183.173	182.597	46.000	86.786	23.000	34.516
5	10.9	10.9	154.621	154.621	28.000	1.699	14.000	0.254

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA		Peak Centroid			Count Rate c/m	%err @95	d/m	Activity uCi/ea
		Frac	Exp.	Obs.	Diff.	FWHM				
1	Pu236	0.546	5.755	5.750	0.005	0.01	30.43	1.6	3652.7	0.165E-02
2	Pu238	0.089	5.487	5.483	0.004	0.02	4.94	4.1	807.1	0.364E-03
	Am241		5.479	5.483	-.004				618.2	0.278E-03
3	Pu239	0.328	5.147	5.141	0.006	0.02	18.28	2.1	2151.1	0.969E-03
	Pu240		5.144	5.141	0.003				2151.1	0.969E-03
4		????		4.929			1.13	34.6		
5	Np237	0.011	4.769	4.801	-.032	0.01	0.62	12.8	84.1	0.379E-04
Totals:		0.974	<--valid peaks only-->				54.27			

DETECTOR CALIBRATION

Energy(MEV) = 4.089 + (0.0046)*Channel

Energy range (MeV): 4.089 TO 6.445

Efficiency = 0.0085 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	26744.0	100.000
Smoothed	26744.0	100.000
Composite fit	26597.3	99.452
Residuals	146.7	0.548

Analyzed by:

SEH

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

Display Max.:

5366.4

WHC-SD-WM-DP-165, REV. 1

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Raw Data Dump for AEA Spectrum: 25a2538.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
21	2.	0.	0.	0.	1.	1.	0.	0.	0.	0.
31	1.	0.	2.	0.	1.	0.	0.	1.	1.	0.
41	0.	0.	0.	0.	0.	1.	1.	0.	1.	0.
51	1.	0.	1.	1.	0.	1.	1.	2.	0.	0.
61	0.	0.	2.	0.	2.	0.	0.	0.	0.	1.
71	2.	1.	0.	0.	4.	1.	2.	2.	2.	1.
81	0.	0.	0.	0.	0.	2.	2.	1.	1.	1.
91	1.	1.	0.	2.	0.	0.	0.	2.	0.	1.
101	1.	2.	1.	1.	1.	3.	4.	0.	2.	4.
111	0.	3.	4.	1.	4.	3.	2.	4.	1.	5.
121	3.	6.	3.	1.	5.	1.	4.	2.	1.	5.
131	1.	1.	6.	5.	6.	4.	5.	5.	8.	6.
141	5.	10.	7.	10.	19.	10.	15.	10.	13.	16.
151	10.	14.	7.	9.	17.	13.	11.	6.	3.	9.
161	6.	14.	5.	6.	4.	8.	10.	4.	8.	10.
171	14.	12.	4.	8.	7.	12.	9.	10.	12.	12.
181	13.	13.	18.	14.	12.	12.	14.	4.	16.	16.
191	14.	19.	19.	17.	24.	32.	29.	14.	30.	27.
201	28.	47.	46.	34.	39.	40.	46.	58.	55.	55.
211	71.	81.	107.	115.	125.	170.	174.	218.	243.	274.
221	281.	319.	361.	461.	453.	588.	666.	707.	765.	683.
231	565.	410.	235.	127.	54.	18.	6.	3.	3.	2.
241	0.	4.	4.	2.	2.	3.	0.	4.	3.	2.
251	5.	5.	4.	4.	7.	5.	3.	2.	6.	5.
261	6.	5.	4.	9.	6.	5.	8.	7.	10.	11.
271	8.	8.	11.	13.	16.	7.	9.	10.	13.	14.
281	9.	15.	25.	21.	31.	33.	31.	38.	41.	51.
291	60.	65.	72.	95.	82.	98.	90.	111.	113.	118.
301	167.	164.	206.	184.	164.	104.	40.	22.	11.	11.
311	11.	16.	19.	20.	16.	22.	24.	16.	24.	28.
321	27.	25.	40.	19.	27.	34.	27.	32.	39.	35.
331	55.	53.	45.	65.	77.	73.	84.	100.	84.	111.
341	92.	124.	140.	163.	190.	232.	282.	308.	391.	477.
351	576.	550.	608.	507.	548.	578.	659.	774.	910.	1064.
361	1165.	1203.	968.	529.	215.	53.	6.	2.	0.	0.
371	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

WHC-SD-WM-DP-165, REV. I

LABCORE Completed Worklist Report for Worklist# 5367

Analyst: aki

Instrument: PU01

Book# 104643

Method: LA-943-128 Rev/Mod A-0

Worklist Comment: Use 0.05 mL for 3870, 0.1 mL for 3963. R(1). --LLF

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	@PU23901 PU23901	LIQUID	1.28E-01	1.29E-1	100.780 %	Recovery
1 STD		0	@PU23901 PU23901E	LIQUID	1.00	1.96E+00	1.960 %	Ct. Error
1 STD		0	@PU23901 PU23901T	LIQUID	100	1.00E+02	100.000 %	Recovery
2 BLNK		0	@PU23901 PU23901	LIQUID	1	<6.15E-5		uCi/mL
2 BLNK		0	@PU23901 PU23901T	LIQUID	100	9.68E+01	96.800 %	Recovery
2 BLNK		0	@PU23901 PU23901E	LIQUID	1.00	1.00E+02	100.000 %	Ct. Error
3 SAMPLE	S95T003870	0	@PU23901 PU23901	LIQUID	N/A	6.52E-03	3.210e-004	uCi/mL
3 SAMPLE	S95T003870	0	@PU23901 PU23901T	LIQUID	N/A	9.89E+01	1.000e-007 %	Recovery
3 SAMPLE	S95T003870	0	@PU23901 PU23901E	LIQUID	N/A	1.66E+00	0.000 %	Ct. Error
4 DUP	S95T003870	0	@PU23901 PU23901	LIQUID	6.52E-3	6.58E-3	0.920	RPD
4 DUP	S95T003870	0	@PU23901 PU23901T	LIQUID	100	1.00E+02	100.300 %	Recovery
4 DUP	S95T003870	0	@PU23901 PU23901E	LIQUID	1.00	1.60E+00	1.600 %	Ct. Error
5 SAMPLE	S95T003963	0	@PU23901 PU23901	LIQUID	N/A	2.89E-05	2.890e-005	uCi/mL
5 SAMPLE	S95T003963	0	@PU23901 PU23901T	LIQUID	N/A	1.01E+02	1.000e-007 %	Recovery
5 SAMPLE	S95T003963	0	@PU23901 PU23901E	LIQUID	N/A	1.00E+02	0.000 %	Ct. Error
6 DUP	S95T003963	0	@PU23901 PU23901	LIQUID	<2.89E-5	<3.06E-5		RPD
6 DUP	S95T003963	0	@PU23901 PU23901T	LIQUID	100	9.70E+01	97.000 %	Recovery
6 DUP	S95T003963	0	@PU23901 PU23901E	LIQUID	1.00	1.00E+02	100.000 %	Ct. Error

Final page for worklist# 5367

Analyst Signature

Date

Analyst Signature

Date

[Signature] 8 Feb 96
Reviewer Signature Date

Pu-238 at quantifiable activities for S95T 3870.

[Signature] 2/8/96

LABCORE Data Entry Template for Worklist# 5367

Analyst: AXL Instrument: PU01 Book# 104B43

Method: LA-943-128 Rev/Mod A-0

Worklist Comment: Use 0.05 mL for 3870, 0.1 mL for 3963. R(1). --LLF

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@PU23901	LIQUID		
2	BLNK				@PU23901	LIQUID		
3	SAMPLE	S95T003870	0		@PU23901	LIQUID	95000222	AN-102 GRAB
Analytes Requested: PU23901 , PU23901E, PU23901T								
4	DUP	S95T003870	0		@PU23901	LIQUID		
5	SAMPLE	S95T003963	0		@PU23901	LIQUID	95000222	AN-102 GRAB
Analytes Requested: PU23901 , PU23901E, PU23901T								
6	DUP	S95T003963	0		@PU23901	LIQUID		

Final page for worklist # 5367

Chita Lewis 2/6/96
Analyst Signature Date

C. J. Owen 2/7/96
Analyst Signature Date
Se Hogan 2/7/96

Data Entry Comments:

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

Pu 238 and 239/240 : LA-943-128 (A-0)

LIQUID

Type	DATE COUNTED	FEB-06-96	PU 236 AEA FRAC (C236)	STD
STD	SAMPLE VOLUME in mL	SS	0.100	0.390
Volume	SAMPLE DILUTION FACTOR	DF	101.000	0.000
5367	TRACER VOLUME in mL	SPKV	0.100	0.539
Test Code	DIGEST DILUTION FACTOR	DDF	1.000	8019
@PU23901	TRACER BOOK NO	117B43	TOTAL AT COUNTS	30
Matrix	DETECTOR NUMBER	1	BACKGROUND in cpm (Bkg)	4.000
LIQUID	EFFICIENCY FACTOR	EFF	PU 236 cpm	35.930
Batch Number	TRACER PREPARATION DATE	09/12/95	PU 238 cpm	0.000
96000786	TRACER PREPARATION VALUE (dpm/mL)	2265.000	PU 239 cpm	49.670
Ratio	PU-236 DECAY CORR'D VALUE (dpm/mL)	2053.797	AEA COUNT TIME	480
0	PU-238 TRACER VALUE (dpm/mL)	0.000	Pu 239/240 μ Ci/L	1.2914E+02
Standard Book	STANDARD BOOK NO	104B43		
N/A	STANDARD VALUE in μ Ci/mL	0.128		
Sample ID				
WL#5367				
Instrument Code	Decay Time = Date Counted - Tracer Preparation Date			
AL10639	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			
CJO	Pu 239/240 μ Ci/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(2220000 dpm/ μ Ci)]			
Chemist	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)			
LLF	Pu 238 μ Ci/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-238 Tracer Recovery / 100)(2220000 dpm/ μ Ci)(D g/L)(SS)]			
Analyst	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100			
AKL				
Date Complete				
02/07/96	Pu 239/240 μ Ci/mL	1.29E-01	DETECTION LEVELS in μ Ci/mL Pu 239/240 7.19E-03	
Analysis Date	Relative Counting Error =	2.0%		
02/06/96				
Analysis Time				
12:30 PM				
Sample Point				
AN-102 GRAB	Pu 236 Tracer Recovery =	100.0%		

Analyst:	AKL	Date:	07-Feb-96
Signature of Chemist: <i>[Signature]</i>	LLF	Date:	8 Feb 96

STANDARD.WB1 REV 1.0

943128ML

C45

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-128 (A-0)**LIQUID / SOLID**

				BLNK
Type	DATE COUNTED	FEB-06-96	PU 236 AEA FRAC (C236)	0.933
BLNK	SAMPLE VOLUME in mL SS	0.050	PU 238 AEA FRAC (C238)	0.000
Work List	SAMPLE DILUTION FACTOR DF	1.000	PU 239 AEA FRAC (C239)	0.000
5367	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS	3315
Test Code	DIGEST DILUTION FACTOR DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	117B43	BACKGROUND in cpm (Bkg)	4.000
Matrix	DETECTOR NUMBER	1	PU 236 cpm	36.250
LIQUID	EFFICIENCY FACTOR EFF	0.5000	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE	09/12/95	PU 239 cpm	0.000
96000785	TRACER PREPARATION VALUE (dpm/mL)	2265.00	AEA COUNT TIME	480
Re-run	PU-236 DECAY CORR'D VALUE (dpm/mL)	2053.80	Pu 239/240 $\mu\text{Ci/L}$ =	< 6.149E-02
0	PU-238 TRACER VALUE (dpm/mL)	0.00		
Sample Prep				
N/A				
Sample #	Decay Time = Date Counted - Tracer Preparation Date			
WL#5367	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of $\{(-\ln 2 * \text{Decay Time}/1040.95)\}$]			
Instrument Code	Pu 236 Tracer Recovery = $(\text{Total AT Counts} / \text{TC} - \text{Bkg}) * \text{C236} * 100 / (\text{Pu-236 Decay Corr'd Value} * \text{SPKV} * \text{EFF})$			
AL10539	Pu 239/240 $\mu\text{Ci/L}$ = $(\text{C239}) * (\text{Pu 236 Decay Corr'd Value}) * (\text{SPKV}) * (1000 \text{ mL/L}) * (\text{DF}) * (\text{DDF}) / [(\text{C236}) * (\text{SS}) * (\text{D g/L}) * (2220000 \text{ dpm}/\mu\text{Ci})]$			
Prepared By	Pu 238 dpm = $[(\text{Total AT Counts} / \text{TC}) - \text{Bkg} * 1/\text{EFF} * \text{C238}] - (\text{Pu-238 Tracer Value} * \text{SPKV} * \text{Pu 236 Tracer Recovery} / 100)$			
CJO	Pu 238 $\mu\text{Ci/L}$ = $[(\text{Pu 238 dpm}) * (\text{DF}) * (\text{DDF}) * (1000 \text{ mL/L})] / [(\text{Pu-236 Tracer Recovery} / 100) * (2220000 \text{ dpm}/\mu\text{Ci}) * (\text{D g/L}) * (\text{SS})]$			
Chemist	Relative Counting Error = Square Root of $[(1/(\text{Pu 236 cpm} * \text{min})) + (1/(\text{Pu 238 or 239/240 cpm} * \text{min}))] * 1.96 * 100$			
LLF				
Analyst				
AKL				
Date Complete				
02/07/96	Pu 239/240 $\mu\text{Ci/mL}$	< 6.15E-05	DETECTION LEVELS in $\mu\text{Ci/mL}$	
Analysis Date	Relative Counting Error	= 100.0%		
02/06/96				
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.		Pu 239/240	
12:30 PM	Pu 238 $\mu\text{Ci/mL}$	< 6.15E-05	6.15E-05	
Sample Point	Relative Counting Error	= 100.0%	Pu 238	
AN-102 GRAB	Pu 236 Tracer Recovery	= 96.8%	6.15E-05	

Analyst:	AKL	Date:	07-Feb-96
Signature of Chemist:	LLF	Date:	8 Feb 96

BLANK.WB1 REV 1.0 943128ML

646

Pu 238 and 239/240 : LA-943-128 (A-0)

LIQUID / SOLID

				SAMPLE
Type	DATE COUNTED	FEB-06-96		Pu 236 AEA FRAC (C236)
SAMPLE	SAMPLE VOLUME in mL	SS	0.050	Pu 238 AEA FRAC (C238)
Work List	SAMPLE DILUTION FACTOR	DF	1.000	Pu 239 AEA FRAC (C239)
5367	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS
1.51/5.04	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)
@PU23901	TRACER BOOK NO	117B43		BACKGROUND in cpm (Bkg)
Matrix	DETECTOR NUMBER	1		Pu 236 cpm
LIQUID	EFFICIENCY FACTOR	EFF	0.500	Pu 238 cpm
Batch Number	TRACER PREPARATION DATE	09/12/95		Pu 239 cpm
96000785	TRACER PREPARATION VALUE (dpm/mL)	2265.000		AEA COUNT TIME
Retin	PU-236 DECAY CORR'D VALUE (dpm/mL)	2053.797		Pu 239/240 $\mu\text{Ci/L}$
0	PU-238 TRACER VALUE (dpm/mL)	0.000		6.5235E+00
Sample Map				
N/A				
Sample #	Decay Time = Date Counted - Tracer Preparation Date			
S95T003970	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.95)}]			
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)			
AL10539	Pu 239/240 $\mu\text{Ci/L}$ = (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/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)			
CJO	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 / (Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100			
LLF				
Analyst				
AKL				
Date Complete				
02/07/96	Pu 239/240 $\mu\text{Ci/mL}$	6.52E-03		DETECTION LEVELS in $\mu\text{Ci/mL}$
Analysis Date	Relative Counting Error	=	1.7%	
02/06/96				
Analysis Time				
12:30 PM	Pu 238 $\mu\text{Ci/mL}$	1.68E-03		Pu 239/240
Sample Point	Relative Counting Error	=	2.1%	3.21E-04
AN-102 GRAB	Pu 236 Tracer Recovery	=	98.9%	Pu 238
				3.21E-04

Analyst:	AKL	Date:	07-Feb-96
Signature of Chemist:	LLF	Date:	8 Feb 96

SAMPLE.WB1 REV 1.0

943128ML

WHC-SD-WM-DP-165, REV. 1

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-128 (A-0)

LIQUID / SOLID

Pu-238 and 239/240 : LA-943-128 (A-0)				LIQUID / SOLID		DUP	
Type	DATE COUNTED		FEB-06-96		PU 236 AEA FRAC (C236)		0.174
DUP	SAMPLE VOLUME in mL SS		0.050		PU 238 AEA FRAC (C238)		0.160
Work List	SAMPLE DILUTION FACTOR DF		1.000		PU 239 AEA FRAC (C239)		0.619
5367	TRACER VOLUME in mL SPKV		0.100		TOTAL AT COUNTS		17877
Test Code	DIGEST DILUTION FACTOR DDF		1.0000		AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		117B43		BACKGROUND in cpm (Bkg)		4.000
Matrix	DETECTOR NUMBER		1		PU 236 cpm		37.770
LIQUID	EFFICIENCY FACTOR EFF		0.500		PU 238 cpm		34.780
Batch Number	TRACER PREPARATION DATE		09/12/95		PU 239 cpm		134.500
96000785	TRACER PREPARATION VALUE (dpm/mL)		2265.000		AEA COUNT TIME		480
Run	PU-236 DECAY CORR'D VALUE (dpm/mL)		2053.797		Pu 239/240 μ Ci/L		6.5823E+00
0	PU-238 TRACER VALUE (dpm/mL)		0.000				
Sample Prep							
N/A							
Sample #							
S95T003870							
Instrument Code							
AL10539							
Prepared By							
CJO							
Chemist							
LLF							
Analyst							
AKL							
Date Complete							
02/07/96							
Analysis Date							
02/06/96							
Analysis Time							
12:30 PM							
Sample Point							
AN-102 GRAB							

Decay Time = Date Counted - Tracer Preparation Date		
Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.95)}]		
Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)		
Pu 239/240 μ Ci/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/ μ Ci)]		
Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)		
Pu 238 μ Ci/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery / 100)(2220000 dpm/ μ Ci)(D g/L)(SS)]		
Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100		

Pu 239/240 μ Ci/mL			6.58E-03		DETECTION LEVELS	
Relative Counting Error			= 1.6%		in μ Ci/mL	
Pu 238 μ Ci/mL			1.70E-03		Pu 239/240	
Relative Counting Error			= 2.1%		3.19E-04	
Pu 236 Tracer Recovery			= 100.3%		Pu 238	
					3.19E-04	

Analyst:	AKL	Date:	07-Feb-96
Signature of Chemist:	LLF	Date:	8 Feb 96

SAMPLE.WB1 REV 1.0

943128ML

WORKBOOK PAGE: SAM5

Pu 238 and 239/240 : LA-943-128 (A-0)

LIQUID / SOLID

				SAMPLE	
Type	DATE COUNTED		FEB-08-96	PU 236 AEA FRAC (C236)	0.961
SAMPLE	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
5367	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	3356
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO		117B43	BACKGROUND in cpm (Bkg)	4.000
Matrix	DETECTOR NUMBER		1	PU 236 cpm	37.050
LIQUID	EFFICIENCY FACTOR	EFF	0.500	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE		09/12/95	PU 239 cpm	0.000
96000785	TRACER PREPARATION VALUE (dpm/mL)		2265.000	AEA COUNT TIME	480
Result	PU-236 DECAY CORR'D VALUE (dpm/mL)		2053.797	Pu 239/240 μ Ci/L =	< 2.8880E-02
0	PU-238 TRACER VALUE (dpm/mL)		0.000		
Sample Prep					
N/A					
Sample #	Decay Time = Date Counted - Tracer Preparation Date				
S95T003963	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of $\{-\ln 2 * \text{Decay Time}/1040.95\}$]				
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)				
AL10639	Pu 239/240 μ Ci/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/ μ Ci)]				
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)				
CJO	Pu 238 μ Ci/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery / 100)(2220000 dpm/ μ Ci)(D g/L)(SS)]				
Chemist	Relative Counting Error = Square Root of $\{[1 / (\text{Pu 236 cpm} * \text{min})] + [1 / (\text{Pu 238 or 239/240 cpm} * \text{min})]\} * 1.96 * 100$				
LLF					
Analyst					
AKL					
Date Complete					
02/07/96	Pu 239/240 μ Ci/mL		< 2.89E-05	DETECTION LEVELS in μ Ci/mL	
Analysis Date	Relative Counting Error	=	100.0%		
02/06/96				Pu 239/240	
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.			2.89E-05	
12:30 PM	Pu 238 μ Ci/mL		< 2.89E-05	Pu 238	
Sample Point	Relative Counting Error	=	100.0%	2.89E-05	
AN-102 GRAB	Pu 236 Tracer Recovery	=	100.9%		

Analyst:	AKL	Date:	07-Feb-96
Signature of Chemist: <i>LLF</i>	LLF	Date:	8 Feb 96

SAMPLE.WB1 REV 1.0

943128ML

WORKBOOK PAGE: DUP6

Pu 238 and 239/240 : LA-943-128 (A-0)

LIQUID / SOLID

Type	DATE COUNTED	FEB-06-96	Pu 236 AEA FRAC (C236)	DUP						
DUP	SAMPLE VOLUME in mL	SS	0.100	0.936						
Work List	SAMPLE DILUTION FACTOR	DF	1.000	0.000						
5367	TRACER VOLUME in mL	SPKV	0.100	0.000						
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	3312						
@PU23901	TRACER BOOK NO	117B43	BACKGROUND in cpm (Bkg)	30						
Matrix	DETECTOR NUMBER	1	PU 236 cpm	4.000						
LIQUID	EFFICIENCY FACTOR	EFF	0.500	36.640						
Batch Number	TRACER PREPARATION DATE	09/12/95	PU 238 cpm	0.000						
96000785	TRACER PREPARATION VALUE (dpm/mL)	2265.000	PU 239 cpm	0.000						
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)	2053.797	AEA COUNT TIME	480						
0	PU-238 TRACER VALUE (dpm/mL)	0.000	Pu 239/240 μ Ci/L =	< 3.0575E-02						
Sample Prep										
N/A										
Sample #	Decay Time = Date Counted - Tracer Preparation Date									
S95T003963	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.95)}]									
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)									
AL10539	Pu 239/240 μ Ci/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/ μ Ci)]									
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)									
CJO	Pu 238 μ Ci/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery / 100)(2220000 dpm/ μ Ci)(D g/L)(SS)]									
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100									
LLF										
Analyst										
AKL										
Date Complete										
02/07/96	Pu 239/240 μ Ci/mL	< 3.06E-05	<table border="1"> <thead> <tr> <th colspan="2">DETECTION LEVELS in μCi/mL</th> </tr> </thead> <tbody> <tr> <td>Pu 239/240</td> <td>3.06E-05</td> </tr> <tr> <td>Pu 238</td> <td>3.06E-05</td> </tr> </tbody> </table>		DETECTION LEVELS in μ Ci/mL		Pu 239/240	3.06E-05	Pu 238	3.06E-05
DETECTION LEVELS in μ Ci/mL										
Pu 239/240	3.06E-05									
Pu 238	3.06E-05									
Analysis Date	Relative Counting Error	= 100.0%								
02/06/96										
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.									
12:30 PM	Pu 238 μ Ci/mL	< 3.06E-05								
Sample Point	Relative Counting Error	= 100.0%								
AN-102 GRAB	Pu 236 Tracer Recovery	= 97.0%								

Analyst:	AKL	Date:	07-Feb-96
Signature of Chemist:	LLF	Date:	8 Feb 96

SAMPLE.WB1 REV 1.0

943128ML

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01 WHC-SD-WM-DP-165, REV 1

DATA REDUCTION REPORT

SAMPLE
W/L#5367-STD
File ID: 13a1318.CNFCounted on: 2/ 6/96 @19:23
Detector: AEA13
Geometry number: 1
Count time: 28806. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1854.8	1854.8	361.330	361.330	10.000	2.068	5.000	1.452
2?	32.9	32.9	303.096	303.095	10.000	2.337	5.000	1.298
3?	17.7	17.7	287.091	286.898	8.000	1.022	4.000	1.239
4?	41.5	41.5	264.426	264.422	10.000	2.466	5.000	3.551
5	35.3	35.3	252.838	252.540	6.000	0.029	3.000	0.003
6	2834.6	2834.6	228.438	228.437	8.000	2.464	4.000	2.589

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Exp.	Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea	
1	Pu236	0.390	5.755	5.765	-0.010	0.01	35.93	1.5	333.6	0.150E-03	
	Cm243		5.779	5.765	0.014				447.9	0.202E-03	
2		????		5.497			0.74	10.4			
3		????		5.422			0.22	23.4			
4		????		5.319			0.68	10.9			
5	Am243	0.030	5.270	5.264	0.006	0.00	2.74	5.4	25.1	0.113E-04	
6	Pu239	0.539	5.147	5.153	-0.006	0.01	49.67	1.3	452.0	0.204E-03	
	Pu240		5.144	5.153	-0.009				452.0	0.204E-03	

Totals:		0.959	<--valid peaks only-->				88.34				

DETECTOR CALIBRATION

Energy(MEV) = 4.102 + (0.0046)*Channel
Energy range (MeV): 4.102 TO 6.458
Efficiency = 0.1099 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	44221.0	100.000
Smoothed	44221.0	100.000
Composite fit	43199.3	97.690
Residuals	1021.7	2.310

ANALYZED BY:

ALJ

WHC-SD-WM-DP-165, REV. 1

5
5
5
5
6..
5.....6.
5.....6
5.....6.....
5
5
4
4

3
2
2
2

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

Raw Data Dump for AEA Spectrum: 13a1318.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
31	0.	0.	0.	0.	1.	0.	1.	2.	1.	0.
41	0.	1.	0.	1.	1.	0.	0.	0.	1.	0.
51	0.	0.	0.	0.	1.	0.	1.	1.	0.	0.
61	2.	1.	0.	0.	0.	1.	1.	0.	0.	0.
71	0.	1.	0.	0.	1.	0.	0.	0.	1.	0.
81	3.	0.	0.	0.	0.	1.	0.	1.	2.	0.
91	0.	0.	1.	0.	0.	0.	0.	0.	1.	0.
101	0.	0.	0.	0.	0.	2.	0.	2.	0.	0.
111	0.	1.	1.	0.	1.	0.	1.	1.	0.	0.
121	0.	1.	0.	2.	0.	1.	0.	1.	1.	0.
131	0.	0.	4.	1.	1.	3.	0.	1.	1.	2.
141	2.	2.	2.	1.	1.	1.	0.	0.	0.	1.
151	1.	0.	2.	0.	1.	1.	0.	1.	1.	1.
161	2.	3.	0.	0.	1.	2.	2.	1.	0.	1.
171	2.	0.	0.	1.	1.	2.	3.	1.	0.	2.
181	0.	1.	1.	3.	3.	2.	5.	3.	4.	2.
191	0.	6.	3.	5.	6.	10.	4.	3.	7.	7.
201	6.	6.	8.	8.	8.	8.	15.	30.	14.	23.
211	41.	52.	70.	105.	217.	260.	395.	455.	458.	444.
221	430.	527.	687.	1025.	1581.	2270.	2967.	3704.	3888.	3010.
231	1631.	681.	267.	109.	8.	4.	2.	0.	2.	0.
241	0.	2.	1.	0.	3.	1.	1.	2.	9.	5.
251	7.	18.	23.	7.	14.	5.	3.	8.	8.	5.
261	13.	30.	41.	64.	50.	42.	21.	8.	11.	5.
271	6.	4.	3.	2.	1.	1.	0.	1.	6.	3.
281	3.	4.	10.	11.	7.	21.	35.	25.	12.	5.
291	3.	4.	10.	16.	9.	15.	8.	17.	11.	22.
301	25.	36.	44.	40.	31.	13.	4.	1.	0.	0.
311	2.	1.	1.	0.	2.	2.	3.	3.	1.	2.
321	2.	2.	1.	1.	4.	5.	3.	7.	10.	8.
331	11.	5.	4.	8.	10.	10.	10.	9.	17.	19.
341	17.	22.	23.	32.	32.	74.	117.	197.	342.	563.
351	743.	790.	686.	527.	401.	403.	566.	836.	1288.	1954.
361	2521.	2496.	1893.	814.	204.	25.	1.	0.	2.	0.
371	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
421	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	1.	2.	2.	3.	3.	4.	2.	1.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WHC-SD-WM-DP-165, REV. 1

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01 WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
W/L#5367-BLK
File ID: 14a1422.CNFCounted on: 2/ 6/96 @19:24
Detector: AEA14
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1929.7	1929.7	361.745	361.745	8.000	1.939	4.000	1.401
2?	19.6	19.6	287.567	287.567	8.000	2.369	4.000	2.976
3	35.9	35.9	264.792	264.790	10.000	3.423	5.000	2.584
4?	10.3	10.3	254.144	253.193	8.000	1.694	4.000	2.372

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs. Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea	
1	Pu236	0.933	5.755	5.756	-0.0010.01	36.25	1.5	2043.6	0.921E-03	
2		????		5.415		0.32	15.7			
3		0.020		5.310	0.02	0.78	10.2	43.1	0.194E-04	
4		????		5.257		0.15	37.8			

Totals:		0.953	<--valid peaks only-->			37.03				

DETECTOR CALIBRATION

Energy(MEV) = 4.092 + (0.0046)*Channel
 Energy range (MeV): 4.092 TO 6.447
 Efficiency = 0.0181 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	18658.0	100.000
Smoothed	18658.0	100.000
Composite fit	18003.0	96.490
Residuals	655.0	3.510

Analyzed by:

ALJ

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

Display Max.:

8792.1

WHC-SD-WM-DP-165, REV. 1

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Raw Data Dump for AEA Spectrum: 14a1422.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	2.	1.	0.	0.	0.	1.	0.	0.	0.
71	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
81	0.	1.	0.	0.	0.	0.	0.	0.	1.	0.
91	1.	0.	1.	0.	0.	1.	0.	0.	0.	0.
101	0.	0.	0.	0.	0.	0.	2.	0.	0.	2.
111	0.	1.	0.	3.	0.	0.	1.	0.	1.	0.
121	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
131	2.	0.	0.	0.	0.	1.	2.	0.	0.	0.
141	1.	0.	1.	1.	0.	0.	1.	2.	0.	1.
151	1.	0.	1.	1.	0.	0.	0.	0.	2.	0.
161	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.
171	1.	0.	0.	0.	0.	1.	0.	0.	1.	0.
181	0.	0.	0.	1.	1.	0.	2.	0.	0.	0.
191	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
201	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
211	1.	0.	1.	0.	2.	0.	2.	2.	1.	2.
221	2.	0.	2.	3.	0.	2.	0.	2.	1.	4.
231	0.	1.	0.	0.	1.	0.	1.	1.	1.	0.
241	0.	0.	2.	0.	0.	1.	3.	3.	9.	6.
251	12.	17.	16.	20.	17.	14.	8.	13.	7.	17.
261	21.	22.	37.	42.	43.	47.	27.	13.	10.	9.
271	4.	2.	0.	0.	1.	6.	3.	2.	2.	1.
281	1.	3.	3.	9.	12.	20.	26.	28.	22.	10.
291	4.	1.	2.	3.	4.	3.	1.	3.	4.	5.
301	5.	7.	7.	10.	4.	6.	1.	0.	2.	1.
311	3.	4.	2.	2.	6.	1.	3.	2.	2.	1.
321	2.	1.	7.	0.	2.	3.	7.	6.	11.	13.
331	5.	11.	5.	3.	14.	12.	14.	9.	12.	13.
341	19.	12.	24.	29.	33.	67.	90.	134.	280.	434.
351	661.	817.	804.	602.	444.	385.	487.	675.	1072.	1638.
361	2255.	2831.	2249.	1180.	401.	75.	6.	3.	1.	1.
371	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	1.	0.	1.	0.	0.	2.	1.
471	0.	1.	0.	1.	2.	2.	6.	0.	1.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WHC-SD-WM-DP-165, REV. 1

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01

WHC-SD-WM-DP-165, REV. I

DATA REDUCTION REPORT

SAMPLE

S95T003870-SAM

File ID: 15a1503.CNF

Counted on: 2/ 6/96 @19:26
 Detector: AEA15
 Geometry number: 1
 Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1909.1	1909.1	362.110	362.110	10.000	2.079	5.000	1.434
2	1705.9	1705.9	303.331	303.331	10.000	2.326	5.000	1.660
3?	51.2	51.2	264.568	264.538	10.000	2.370	5.000	2.850
4?	138.4	138.4	251.986	251.637	6.000	0.000	3.000	0.112
5	6771.5	6771.5	228.387	228.387	12.000	3.040	6.000	2.905
6?	64.4	64.4	147.287	147.287	24.000	9.536	12.000	8.244

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count Rate	%err @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.				
1	Pu236	0.175	5.755	5.742	0.0130.01	37.37	1.5	376.8	0.170E-03
2	Pu238	0.159	5.487	5.477	0.0100.01	33.84	1.5	464.5	0.209E-03
	Am241		5.479	5.477	0.002			355.8	0.160E-03
3		????		5.303		0.85	10.1		
4		????		5.245		0.00	1000.		
5	Pu239	0.617	5.147	5.140	0.0070.01	131.42	0.8	1298.6	0.585E-03
	Pu240		5.144	5.140	0.004			1298.6	0.585E-03
6		????		4.775		2.03	6.3		
Totals:			0.951	<--valid peaks only-->			202.63		

DETECTOR CALIBRATION

Energy(MEV) = 4.113 + (0.0045)*Channel
 Energy range (MeV): 4.113 TO 6.417
 Efficiency = 0.1012 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	102261.0	100.000
Smoothed	102260.9	100.000
Composite fit	98661.5	96.480
Residuals	3599.5	3.520

ANALYZED BY:

ALJ

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

Display Max.: 42662.6

WHC-SD-WM-DP-165, REV. 1

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Raw Data Dump for AEA Spectrum:	15a1503.CNF									
1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
31	0.	2.	1.	1.	0.	1.	2.	1.	1.	0.
41	1.	1.	1.	0.	0.	1.	2.	0.	1.	0.
51	1.	0.	2.	0.	0.	0.	0.	3.	0.	1.
61	2.	0.	1.	0.	0.	0.	0.	3.	3.	2.
71	1.	0.	0.	0.	1.	0.	2.	2.	0.	0.
81	0.	2.	1.	0.	0.	1.	1.	0.	0.	1.
91	2.	1.	1.	1.	1.	2.	1.	2.	0.	2.
101	2.	0.	1.	5.	0.	1.	1.	0.	1.	4.
111	4.	2.	4.	7.	4.	9.	6.	3.	11.	6.
121	4.	11.	10.	6.	2.	7.	6.	7.	1.	5.
131	5.	5.	8.	4.	8.	7.	8.	5.	7.	17.
141	22.	22.	41.	45.	69.	75.	77.	78.	57.	53.
151	41.	31.	37.	37.	35.	35.	38.	22.	17.	7.
161	12.	7.	13.	12.	6.	11.	9.	9.	6.	5.
171	6.	3.	3.	2.	9.	10.	7.	6.	6.	5.
181	3.	5.	8.	9.	4.	14.	7.	11.	7.	8.
191	10.	12.	7.	13.	17.	23.	18.	18.	22.	18.
201	22.	27.	28.	29.	34.	48.	44.	55.	68.	87.
211	118.	152.	221.	353.	503.	754.	970.	1146.	1191.	1210.
221	1245.	1639.	2056.	2853.	4068.	5671.	7653.	8661.	8708.	6759.
231	4439.	2518.	1289.	452.	94.	12.	4.	2.	0.	2.
241	3.	1.	1.	1.	3.	3.	3.	5.	5.	18.
251	18.	23.	25.	20.	10.	5.	6.	10.	13.	8.
261	26.	34.	41.	73.	75.	61.	19.	12.	7.	10.
271	14.	7.	9.	17.	12.	5.	9.	14.	12.	10.
281	10.	15.	15.	23.	38.	42.	61.	63.	89.	121.
291	215.	311.	509.	641.	648.	610.	469.	518.	607.	894.
301	1301.	1761.	2224.	2308.	1738.	845.	273.	67.	21.	18.
311	18.	11.	7.	5.	3.	4.	3.	2.	3.	1.
321	3.	2.	5.	3.	2.	5.	14.	5.	7.	7.
331	6.	12.	10.	9.	12.	12.	7.	12.	14.	13.
341	19.	17.	34.	38.	47.	63.	105.	140.	268.	409.
351	686.	742.	806.	621.	517.	396.	472.	669.	995.	1417.
361	2099.	2636.	2490.	1583.	734.	170.	25.	4.	8.	4.
371	12.	11.	5.	1.	0.	0.	0.	0.	0.	1.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
401	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
421	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	2.	0.	0.	1.	1.
441	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
461	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.
471	0.	0.	0.	3.	4.	0.	3.	1.	1.	0.
481	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WHC-SD-WM-DP-165, REV. I

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS

Rev. 2.01

WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE *ALJ 2/8/96*
~~STANDARD~~

S95T003870-DUP

File ID: 16a.CNF

Counted on: 2/ 6/96 @19:27
 Detector: AEA16
 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	2066.2	2066.2	361.735	361.735	8.000	1.927	4.000	1.470
2	1820.7	1820.7	303.641	303.641	8.000	2.169	4.000	1.613
3?	54.2	54.2	264.979	264.952	10.000	2.319	5.000	3.245
4?	153.4	153.4	252.924	252.722	6.000	0.000	3.000	0.137
5	7269.4	7269.4	229.634	229.634	10.000	2.840	5.000	2.958
6?	68.2	68.2	149.800	149.800	20.000	7.978	10.000	7.730

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	<i>Pu236</i>	0.174		37.405		0.46	37.77	1.5	8784.0	0.396E-02
2	<i>Pu238</i>	0.160		23.497		0.52	34.78	1.5	8087.3	0.364E-02
3		????		14.235			0.87	9.9		
4		????		11.307			0.00	1000.		
5	<i>Cm243</i>	0.619	5.779	5.780	-.0010	10.68	134.50	0.8	42848.7	0.193E-01
	<i>Cm244</i>		5.795	5.780	0.015				31279.6	0.141E-01
6	<i>Pu239</i>	????		*****			1.96	6.4		
Totals:		0.952	<--valid peaks only-->				207.05			

DETECTOR CALIBRATION

Energy(MEV) = -49.194 + (0.2394)*Channel

Energy range (MeV): ***** TO 73.378

Efficiency = 0.0043 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	104367.0	100.000
Smoothed	104367.0	100.000
Composite fit	100755.7	96.540
Residuals	3611.3	3.460

ANALYZED BY;

ALJ

WHC-SD-WM-DP-165, REV. 1

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Raw Data Dump for AEA Spectrum: 16a.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	6.	4.	1.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	1.	0.	1.	2.
41	0.	0.	2.	0.	0.	0.	1.	0.	0.	1.
51	0.	0.	0.	0.	0.	2.	1.	0.	0.	1.
61	0.	0.	1.	1.	0.	0.	0.	0.	0.	1.
71	0.	1.	0.	1.	0.	1.	0.	0.	3.	1.
81	2.	0.	1.	2.	0.	3.	1.	1.	0.	1.
91	0.	0.	0.	1.	0.	1.	1.	1.	0.	2.
101	0.	1.	2.	2.	1.	1.	2.	1.	1.	2.
111	1.	3.	4.	1.	0.	10.	5.	4.	12.	7.
121	7.	7.	7.	5.	7.	9.	4.	8.	2.	0.
131	6.	2.	8.	4.	3.	13.	4.	4.	7.	6.
141	12.	8.	23.	29.	39.	42.	66.	74.	87.	77.
151	74.	64.	47.	29.	42.	33.	27.	34.	23.	17.
161	11.	15.	15.	7.	7.	4.	11.	2.	2.	4.
171	4.	3.	2.	2.	2.	4.	0.	0.	1.	2.
181	0.	4.	2.	2.	5.	4.	5.	2.	1.	1.
191	4.	2.	4.	8.	4.	6.	10.	6.	9.	6.
201	11.	15.	15.	8.	16.	20.	15.	30.	30.	26.
211	47.	52.	94.	132.	227.	388.	594.	900.	1117.	1125.
221	1154.	1216.	1513.	1795.	2513.	3746.	5551.	7484.	9236.	9601.
231	7981.	5042.	3031.	1446.	516.	89.	11.	2.	0.	1.
241	1.	2.	1.	2.	1.	1.	4.	1.	1.	9.
251	10.	21.	33.	30.	15.	7.	5.	5.	9.	14.
261	12.	27.	46.	64.	82.	63.	41.	21.	11.	7.
271	12.	5.	4.	6.	2.	5.	1.	10.	8.	5.
281	13.	12.	14.	11.	17.	27.	45.	57.	69.	100.
291	152.	277.	384.	603.	702.	678.	559.	464.	594.	832.
301	1156.	1673.	2213.	2498.	2156.	1126.	333.	92.	28.	19.
311	19.	6.	8.	10.	1.	0.	0.	2.	1.	2.
321	0.	0.	0.	3.	1.	2.	3.	6.	4.	10.
331	7.	6.	4.	1.	5.	7.	6.	7.	5.	8.
341	7.	9.	20.	18.	31.	48.	82.	140.	279.	463.
351	706.	845.	790.	553.	432.	405.	502.	719.	1121.	1763.
361	2536.	2969.	2467.	1259.	375.	67.	6.	5.	9.	13.
371	12.	6.	1.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
421	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.
431	0.	0.	1.	0.	0.	1.	1.	1.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
461	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
471	1.	1.	0.	5.	1.	4.	1.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WHC-SD-WM-DP-165, REV. 1

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01

DATA REDUCTION REPORT

WHC-SD-WM-DP-165, REV. 1

SAMPLE

S95T003963-SAM

File ID: 17a1772.CNF

Counted on: 2/ 6/96 @19:28
 Detector: AEA17
 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	1662.1	1662.1	360.056	360.056	10.000	2.340	5.000	1.325
2?	15.4	15.4	286.526	286.524	10.000	4.520	5.000	4.043
3	33.6	33.6	263.639	263.632	10.000	3.381	5.000	2.571
4?	9.1	9.1	252.746	251.858	8.000	1.420	4.000	1.647

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Exp.	Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea	
1	Pu236	0.961	5.755	5.756	-.0010	10.01	37.05	1.5	2976.8	0.134E-02	
2		????		5.418			0.35	15.1			
3		0.019		5.313		0.02	0.73	10.6	57.2	0.258E-04	
4		????		5.258			0.13	39.1			

Totals:		0.980	--valid peaks only-->				37.78				

DETECTOR CALIBRATION

Energy(MEV) = 4.100 + (0.0046)*Channel
 Energy range (MeV): 4.100 TO 6.455
 Efficiency = 0.0127 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	18508.0	100.000
Smoothed	18508.0	100.000
Composite fit	18364.9	99.227
Residuals	143.1	0.773

Analyzed by:

ALJ

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

Display Max.: 8116.2

WHC-SD-WM-DP-165, REV. 1

4
4
3
3
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2
2

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

Raw Data Dump for AEA Spectrum: 17a1772.CNF

1	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	0.	1.	0.	0.	1.	0.	0.	0.
91	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
101	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.
111	1.	0.	1.	0.	1.	0.	0.	1.	0.	0.
121	0.	0.	0.	0.	0.	0.	1.	1.	0.	1.
131	0.	0.	0.	0.	0.	1.	0.	0.	2.	0.
141	0.	0.	1.	0.	1.	0.	1.	0.	1.	1.
151	0.	0.	2.	0.	0.	0.	0.	0.	0.	0.
161	1.	0.	0.	0.	0.	1.	0.	0.	0.	0.
171	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
181	1.	0.	0.	0.	1.	0.	0.	0.	0.	0.
191	0.	1.	0.	0.	0.	0.	0.	0.	1.	0.
201	0.	0.	0.	0.	2.	0.	0.	0.	0.	1.
211	1.	0.	1.	0.	0.	1.	1.	0.	1.	1.
221	1.	0.	0.	2.	1.	2.	2.	2.	2.	1.
231	2.	1.	1.	1.	0.	0.	3.	1.	1.	1.
241	2.	2.	2.	3.	0.	0.	4.	5.	10.	7.
251	15.	18.	16.	11.	11.	9.	11.	9.	18.	21.
261	20.	35.	39.	44.	39.	22.	14.	5.	10.	3.
271	3.	2.	2.	4.	5.	1.	3.	1.	2.	2.
281	2.	8.	12.	15.	6.	21.	24.	12.	10.	2.
291	2.	5.	5.	7.	6.	7.	3.	2.	4.	2.
301	10.	10.	9.	8.	4.	1.	0.	0.	2.	2.
311	2.	3.	1.	1.	2.	3.	3.	3.	4.	6.
321	3.	5.	8.	9.	7.	7.	17.	7.	13.	10.
331	8.	19.	22.	16.	18.	20.	28.	26.	37.	40.
341	44.	60.	87.	108.	134.	207.	272.	400.	576.	725.
351	788.	733.	608.	528.	598.	739.	1003.	1371.	1821.	2206.
361	2013.	1537.	676.	184.	28.	3.	0.	2.	1.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
421	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
461	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	1.	0.	2.	0.	1.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WHC-SD-WM-DP-165, REV. J

GENERAL ALPHA ENERGY ANALYSIS

Rev. 2.01

WHC-SD-WM-DP-165, REV. I

DATA REDUCTION REPORT

SAMPLE

S95T003963-DUP

File ID: 18a1847.CNF

Counted on: 2/ 6/96 @19:29
 Detector: AEA18
 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	1998.6	1998.6	358.035	358.035	8.000	1.905	4.000	1.436
2?	19.7	19.7	283.757	283.757	12.000	2.458	6.000	3.852
3	40.4	40.4	261.514	261.513	12.000	2.437	6.000	3.319
4?	9.4	9.4	249.750	249.353	8.000	2.195	4.000	3.830

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Exp.	Peak Centroid Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea
1	Pu236	0.936	5.755	5.754	0.001	10.01	36.64	1.5	4674.0	0.211E-02
2		????		5.412			0.32	15.9		
3		0.017		5.310		0.01	0.66	11.0	82.9	0.374E-04
4		????		5.254			0.14	33.1		
Totals:		0.953	<--valid peaks only-->				37.31			

DETECTOR CALIBRATION

Energy(MEV) = 4.107 + (0.0046)*Channel
 Energy range (MeV): 4.107 TO 6.462
 Efficiency = 0.0080 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	18793.0	100.000
Smoothed	18793.0	100.000
Composite fit	18131.4	96.479
Residuals	661.6	3.521

Analyzed by:

ALJ

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

Display Max.: 10722.7

WHC-SD-WM-DP-165, REV. 1

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4
3
3
2
2..1
.....1.....
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.....1.....
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Raw Data Dump for AEA Spectrum: 18a1847.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
21	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	1.	0.	0.	1.	0.	0.	0.
61	0.	1.	0.	0.	1.	1.	0.	1.	0.	0.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.
101	0.	0.	0.	0.	0.	0.	0.	0.	2.	0.
111	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
121	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
131	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
141	1.	0.	0.	2.	0.	3.	0.	0.	0.	0.
151	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
161	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
171	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
181	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
191	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
201	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
211	0.	0.	0.	0.	1.	1.	0.	0.	1.	0.
221	0.	1.	3.	4.	3.	1.	1.	2.	0.	0.
231	0.	0.	0.	0.	1.	0.	0.	1.	1.	0.
241	1.	1.	1.	0.	4.	2.	9.	14.	12.	13.
251	12.	8.	5.	6.	8.	5.	11.	13.	26.	38.
261	64.	48.	37.	25.	19.	1.	4.	3.	1.	0.
271	1.	1.	0.	1.	1.	1.	3.	4.	1.	7.
281	10.	16.	33.	23.	22.	14.	7.	2.	3.	2.
291	5.	2.	2.	4.	2.	5.	3.	7.	10.	10.
301	8.	5.	1.	1.	0.	0.	0.	0.	1.	2.
311	0.	1.	1.	0.	3.	1.	1.	4.	0.	1.
321	1.	2.	4.	4.	8.	6.	6.	3.	4.	2.
331	6.	6.	6.	5.	5.	3.	7.	12.	14.	26.
341	24.	39.	57.	119.	218.	407.	625.	768.	874.	653.
351	463.	336.	426.	585.	952.	1496.	2263.	2804.	2644.	1546.
361	540.	117.	18.	1.	0.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	1.	0.	0.	0.	0.	1.	0.	0.	0.
421	0.	0.	0.	0.	1.	0.	1.	1.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	1.	1.	2.	1.	1.
471	1.	2.	2.	0.	0.	1.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WHC-SD-WM-DP-165, REV. 1

WHC-SD-WM-DP-165, REV. I

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

LABCORE Completed Worklist Report for Worklist# 4886

Analyst: akl

Instrument: PU01

Book# 104643

Method: LA-943-127 Rev/Mod B-1

Worklist Comment: Determine Sample Size Using Ludlum / jls

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	@PU23901 PU23901	LIQUID	1.28E-01	1.33E-1	103.910 %	Recovery
1 STD		0	@PU23901 PU23901E	LIQUID	1.00	2.64E+00	2.640 %	Ct. Error
1 STD		0	@PU23901 PU23901T	LIQUID	100	5.62E+01	56.200 %	Recovery
2 BLNK		0	@PU23901 PU23901	LIQUID	1	<1.27E-4		uCi/mL
2 BLNK		0	@PU23901 PU23901T	LIQUID	100	5.22E+01	52.200 %	Recovery
2 BLNK		0	@PU23901 PU23901E	LIQUID	1.00	1.00E+02	100.000 %	Ct. Error
3 SAMPLE	S95T003870	0	@PU23901 PU23901	LIQUID	N/A	ERR	1.000e-007	uCi/mL
3 SAMPLE	S95T003870	0	@PU23901 PU23901T	LIQUID	N/A	LDL	1.000e-007	% Recovery
3 SAMPLE	S95T003870	0	@PU23901 PU23901E	LIQUID	N/A	1.00E+02	0.000 %	Ct. Error
4 DUP	S95T003870	0	@PU23901 PU23901	LIQUID	ERR	ERR		RPD
4 DUP	S95T003870	0	@PU23901 PU23901T	LIQUID	100	0.00E+00	0.000 %	Recovery
4 DUP	S95T003870	0	@PU23901 PU23901E	LIQUID	1.00	1.00E+02	100.000 %	Ct. Error
5 SAMPLE	S95T003963	0	@PU23901 PU23901	LIQUID	N/A	ERR	1.000e-007	uCi/mL
5 SAMPLE	S95T003963	0	@PU23901 PU23901T	LIQUID	N/A	LDL	1.000e-007	% Recovery
5 SAMPLE	S95T003963	0	@PU23901 PU23901E	LIQUID	N/A	1.00E+02	0.000 %	Ct. Error
6 DUP	S95T003963	0	@PU23901 PU23901	LIQUID	ERR	ERR		RPD
6 DUP	S95T003963	0	@PU23901 PU23901T	LIQUID	100	0.00E+00	0.000 %	Recovery
6 DUP	S95T003963	0	@PU23901 PU23901E	LIQUID	1.00	1.00E+02	100.000 %	Ct. Error

Final page for worklist# 4886

Analyst Signature

Date

Analyst Signature

Date

AKL 30 Jan 96
Reviewer Signature Date

DATA
NOT USED
IN PACKAGE

Reven: No traces added to samples or duplicates.
AKL 1/30/96

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

LABCORE Data Entry Template for Worklist# 4886

Analyst: AKL Instrument: PU01 Book# 1041343

Method: LA-943-127 Rev/Mod B-1

Worklist Comment: Determine Sample Size Using Ludlum / jls

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@PU23901	LIQUID		
2 BLNK			@PU23901	LIQUID		
3 SAMPLE	S95T003870 0		@PU23901	LIQUID	95000222	AN-102 GRAB
	Analytes Requested: PU23901 , PU23901E, PU23901T					
4 DUP	S95T003870 0		@PU23901	LIQUID		
5 SAMPLE	S95T003963 0		@PU23901	LIQUID	95000222	AN-102 GRAB
	Analytes Requested: PU23901 , PU23901E, PU23901T					
6 DUP	S95T003963 0		@PU23901	LIQUID		

Final page for worklist # 4886

AKL 1/23/96
Analyst Signature Date

SE Hagan 1/24/96
Analyst Signature Date

DATA
NOT USED
IN PACKAGE

Data Entry Comments:

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

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

LIQUID

Type	DATE COUNTED	JAN-23-96	PU 236 AEA FRAC (C236)	STD
STD	SAMPLE VOLUME in mL SS	0.100	PU 238 AEA FRAC (C238)	0.000
Work List	SAMPLE DILUTION FACTOR DF	101.000	PU 239 AEA FRAC (C239)	0.530
4886	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS	4848
Test Code	DIGEST DILUTION FACTOR DDF	1.000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	120B43	BACKGROUND in cpm (Bkg)	6.000
Main	DETECTOR NUMBER	1	PU 236 cpm	20.660
LIQUID	EFFICIENCY FACTOR EFF	0.500	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE	12/27/95	PU 239 cpm	25.820
96000338	TRACER PREPARATION VALUE (dpm/mL)	2390.000	AEA COUNT TIME	480
Result	PU-236 DECAY CORR'D VALUE (dpm/mL)	2347.415	Pu 239/240 μ Ci/L	1.3350E+02
0	PU-238 TRACER VALUE (dpm/mL)	0.000		
Sample Prep	STANDARD BOOK NO	104B43		
N/A	STANDARD VALUE in μ Ci/mL	0.128		
Sample #				
WL4886				
Instrument Code	Decay Time = Date Counted - Tracer Preparation Date			
AL10539	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of ((-ln2 * Decay Time)/1040.95)]			
Prepared By	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 1/EFF * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV			
MCB	Pu 239/240 μ Ci/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(2220000 dpm/ μ Ci)]			
Chemist	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C236] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)			
LLF	Pu 238 μ Ci/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery / 100)(2220000 dpm/ μ Ci)(D g/L)(SS)]			
Analyst	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100			
AKL				
Date Complete	v RESULTS v			
01/24/96	Pu 239/240 μ Ci/mL	1.33E-01	DETECTION LEVELS in μ Ci/mL Pu 239/240 1.34E-02	
Analysis Date	Relative Counting Error =	2.6%		
01/23/96				
Analysis Time				
03:00 PM				
Sample Point				
AN-102 GRAB	Pu 236 Tracer Recovery =	56.2%		

Analyst:	AKL	Date:	24-Jan-96
Signature of Chemist:	LLF	Date:	29 Jan 96

DATA
NOT USED
IN PACKAGE

WORKBOOK PAGE: BLANK2

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

Type	DATE COUNTED	JAN-23-96	PU 236 AEA FRAC (C236)	0.957
BLNK	SAMPLE VOLUME in mL SS	0.050	PU 238 AEA FRAC (C238)	0.000
Work List	SAMPLE DILUTION FACTOR DF	1.000	PU 239 AEA FRAC (C239)	0.000
4886	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS	2009
Test Code	DIGEST DILUTION FACTOR DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	120B43	BACKGROUND in cpm (Bkg)	3.000
Matrix	DETECTOR NUMBER	2	PU 236 cpm	12.750
LIQUID	EFFICIENCY FACTOR EFF	0.5000	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE	12/27/95	PU 239 cpm	0.000
96000338	TRACER PREPARATION VALUE (dpm/mL)	2390.00	AEA COUNT TIME	480
Run	PU-236 DECAY CORR'D VALUE (dpm/mL)	2347.41	Pu 239/240 $\mu\text{Ci/L}$ =	< 1.271E-01
0	PU-238 TRACER VALUE (dpm/mL)	0.00		

Sample Prep

N/A

Sample #

WL4886

Instrument Code

AL10540

Prepared By

MCB

Chemist

LLF

Analyst

AKL

Date Complete

01/24/96

Analysis Date

01/23/96

Analysis Time

03:00 PM

Sample Point

AN-102 GRAB

Decay Time = Date Counted - Tracer Preparation Date

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

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

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

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

Pu 238 $\mu\text{Ci/L}$ = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery / 100)(2220000 dpm/ μCi)(D g/L)(SS)]Relative Counting Error = Square Root of $\{[1 / (\text{Pu 236 cpm} * \text{min})] + [1 / (\text{Pu 238 or 239/240 cpm} * \text{min})]\} * 1.96 * 100$

v RESULTS v

01/24/96	Pu 239/240 $\mu\text{Ci/mL}$	< 1.27E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$ Pu 239/240 1.27E-04 Pu 238 1.27E-04
01/23/96	Relative Counting Error	= 100.0%	
03:00 PM	NOTE: Pu 238 Result is a LESS THAN Value.		
Sample Point	Pu 238 $\mu\text{Ci/mL}$	< 1.27E-04	
AN-102 GRAB	Relative Counting Error	= 100.0%	
	Pu 236 Tracer Recovery	= 52.2%	

Analyst:

AKL

Date:

24-Jan-96

Signature of Chemist:

LLF

Date:

29 Jan 96

BLANK.WB1 REV 1.2

943127ML

DATA
NOT USED
IN PACKAGE

673

WORKBOOK PAGE: SAM3

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

LIQUID / SOLID

Pu 238 and 239/240 : LA-943-127 (B-1)				LIQUID / SOLID		SAMPLE		
Type	DATE COUNTED		JAN-23-96	PU 236 AEA FRAC (C236)		0.000		
SAMPLE	SAMPLE VOLUME in mL		SS	0.050		PU 238 AEA FRAC (C238)		0.162
Work List	SAMPLE DILUTION FACTOR		DF	1.000		PU 239 AEA FRAC (C239)		0.688
4886	TRACER VOLUME in mL		SPKV	0.100		TOTAL AT COUNTS		3426
Test Code	DIGEST DILUTION FACTOR		DDF	1.0000		AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm (Bkg)		6.000		
Matrix	DETECTOR NUMBER		3	PU 236 cpm		0.000		
LIQUID	EFFICIENCY FACTOR		EFF	0.500		PU 238 cpm		5.080
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		21.640		
96000338	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME		480		
Ratio	PU-236 DECAY CORR'D VALUE (dpm/mL)		2347.415	Pu 239/240 μ Ci/L		ERR		
0	PU-238 TRACER VALUE (dpm/mL)		0.000					

Sample Prep					
N/A					
Sample #	Decay Time = Date Counted - Tracer Preparation Date				
S95T003870	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of $\{-\ln 2 * \text{Decay Time} / 1040.95\}$]				
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)				
AL1053941	Pu 239/240 $\mu\text{Ci/L}$ = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000 mL/L) (DF) (DDF) / [(C236) (SS) (D g/L) (2220000 dpm/ μCi)]				
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)				
MCB	Pu 238 $\mu\text{Ci/L}$ = [(Pu 238 dpm) (DF) (DDF) (1000 mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000 dpm/ μCi) (D g/L) (SS)]				
Chemist	Relative Counting Error = Square Root of $\{[1 / (\text{Pu 236 cpm} * \text{min})] + [1 / (\text{Pu 238 or 239/240 cpm} * \text{min})]\} * 1.96 * 100$				
LLF					
Analyst					
AKL					

Date Complete	v RESULTS v			DETECTION LEVELS In µCi/mL Pu 239/240 ERR Pu 238 ERR
01/24/96	Pu 239/240 µCi/mL	ERR		
Analysis Date	Relative Counting Error	=	100.0%	
01/23/96				
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.			
03:00 PM	Pu 238 µCi/mL	<	ERR	
Sample Point	Relative Counting Error	=	100.0%	
AN-102 GRAB	Pu 236 Tracer Recovery	=	0.0%	

Analyst:	AKL	Date:	24-Jan-96
Signature of Chemist:	LLF	Date:	29 Jan 96

SAMPLE.WB1 REV 1.2

943127ML

DATA
NOT USED
IN PACKAGE

WHC-SD-WM-DP-165, REV. 1

WORKBOOK PAGE: DUP4

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

LIQUID / SOLID

Pu 238 and 239/240 : LA-943-127 (B-1)			LIQUID / SOLID		DUP	
Type	DATE COUNTED		JAN-23-96	PU 236 AEA FRAC (C236)	0.000	
DUP	SAMPLE VOLUME in mL	SS	0.050	PU 238 AEA FRAC (C238)	0.178	
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC (C239)	0.747	
4886	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	4705	
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)	30	
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm (Bkg)	6.000	
Matrix	DETECTOR NUMBER		1	PU 236 cpm	0.000	
LIQUID	EFFICIENCY FACTOR	EFF	0.500	PU 238 cpm	8.670	
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm	36.410	
96000338	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME	480	
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2347.415	Pu 239/240 µCi/L ERR		
0	PU-238 TRACER VALUE (dpm/mL)		0.000			
Sample Prep						
N/A						
Sample #	Decay Time = Date Counted - Tracer Preparation Date					
S95T003870	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.95)}]					
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)					
AL10539	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]					
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)					
MCS	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery / 100)(2220000 dpm/µCi)(D g/L)(SS)]					
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100					
LLF						
Analyst						
AKL						
Date Complete	v RESULTS v					
01/24/96	Pu 239/240 µCi/mL		ERR	DETECTION LEVELS In µCi/mL		
Analysis Date	Relative Counting Error	=	100.0%			
01/23/96				Pu 239/240		
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.			ERR		
03:00 PM	Pu 238 µCi/mL		< ERR	Pu 238		
Sample Point	Relative Counting Error	=	100.0%	ERR		
AN-102 GRAB	Pu 236 Tracer Recovery	=	0.0%			

Analyst:	AKL	Date:	24-Jan-96
Signature of Chemist: <i>AKL</i>	LLF	Date:	29 Jan 96

SAMPLE.WB1 REV 1.2

943127ML

DATA
NOT USED
IN PACKAGE

675

WORKBOOK PAGE: SAM5

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

LIQUID / SOLID

				SAMPLE	
Type	DATE COUNTED		JAN-23-96	PU 236 AEA FRAC (C236)	0.000
SAMPLE	SAMPLE VOLUME in mL	SS	0.050	PU 238 AEA FRAC (C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC (C239)	0.643
4886	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	965
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm (Bkg)	3.000
Matrix	DETECTOR NUMBER		2	PU 236 cpm	0.000
LIQUID	EFFICIENCY FACTOR	EFF	0.500	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm	0.250
96000338	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME	480
Run	PU-236 DECAY CORR'D VALUE (dpm/mL)		2347.415	Pu 239/240 μ Ci/L	ERR
0	PU-238 TRACER VALUE (dpm/mL)		0.000		

Sample Prep

N/A

Sample

S95T003963

Decay Time = Date Counted - Tracer Preparation Date

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

Instrument Code

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

AL10540

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

Prepared By

MCB

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

Chemist

LLF

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

Analyst

AKL

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

Date Complete

01/24/96

v RESULTS v

Analysis Date	01/23/96	Pu 239/240 μ Ci/mL	ERR	DETECTION LEVELS in μ Ci/mL
Analysis Time	03:00 PM	Relative Counting Error	= 100.0%	
Sample Point	AN-102 GRAB	NOTE: Pu 238 Result is a LESS THAN Value.		Pu 239/240
		Pu 238 μ Ci/mL	< ERR	ERR
		Relative Counting Error	= 100.0%	Pu 238
		Pu 236 Tracer Recovery	= 0.0%	ERR

Analyst:	AKL	Date:	24-Jan-96
Signature of Chemist:	LLF	Date:	29 Jan 96

SAMPLE WB1 REV 1.2

943127ML

DATA
NOT USED
IN PACKAGE

E76

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

LIQUID / SOLID

Pu 238 and 239/240 : LA-943-127 (B-1)			LIQUID / SOLID		DUP
Type	DATE COUNTED		JAN-23-96	PU 236 AEA FRAC (C236)	0.000
DUP	SAMPLE VOLUME in mL	SS	0.050	PU 238 AEA FRAC (C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC (C239)	0.589
4886	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	361
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm (Bkg)	6.000
Matrix	DETECTOR NUMBER		3	PU 236 cpm	0.000
LIQUID	EFFICIENCY FACTOR	EFF	0.500	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm	0.120
96000338	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME	480
Run	PU-236 DECAY CORR'D VALUE (dpm/mL)		2347.415	Pu 239/240 μ Ci/L	ERR
0	PU-238 TRACER VALUE (dpm/mL)		0.000		

Sample Prep

N/A

Sample #

S95T003963

Decay Time = Date Counted - Tracer Preparation Date

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

Instrument Code

AL10541

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

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

Prepared By

MCB

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

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

Chemist

LLF

Analyst

AKL

Date Complete

v RESULTS v

01/24/96	Pu 239/240 μ Ci/mL	ERR	DETECTION LEVELS in μ Ci/mL Pu 239/240 ERR Pu 238 ERR
Analysis Date	Relative Counting Error =	100.0%	
01/23/96			
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.		
03:00 PM	Pu 238 μ Ci/mL	< ERR	
Sample Point	Relative Counting Error =	100.0%	
AN-102 GRAB	Pu 236 Tracer Recovery =	0.0%	

Analyst: AKL Date: 24-Jan-96

Signature of Chemist: *LLF* LLF Date: 29 Jan 96

SAMPLE.WB1 REV 1.2

943127ML

DATA
NOT USED
IN PACKAGE

677

Westinghouse Hanford Co.

D. H. Millican
1-24-96

GENERAL ALPHA ENERGY ANALYSIS

Rev. 2.01

WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE

WL4886-STD

File ID: 13a195.CNF

Counted on: 1/23/96 @23:27
Detector: AEA13
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1048.0	1048.0	361.389	361.389	10.000	2.116	5.000	1.450
2?	18.5	18.5	302.950	302.947	10.000	2.443	5.000	1.635
3	1402.4	1402.4	228.342	228.342	10.000	2.696	5.000	2.666

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea	
1	Pu236	0.424	5.755	5.768	-.013	0.01	20.66	2.0	217.2	0.978E-04	
	Cm243		5.779	5.768	0.011				291.5	0.131E-03	
2		????		5.500			0.38	14.5			
3	Pu239	0.530	5.147	5.156	-.009	0.01	25.82	1.8	265.9	0.120E-03	
	Pu240		5.144	5.156	-.012				265.9	0.120E-03	

Totals:		0.954	<--valid peaks only-->				46.48				

DETECTOR CALIBRATION

Energy(MEV) = 4.106 + (0.0046)*Channel
Energy range (MeV): 4.106 TO 6.461
Efficiency = 0.0971 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	23380.0	100.000
Smoothed	23380.0	100.000
Composite fit	22499.6	96.235
Residuals	880.4	3.765

Analyzed by:

EMB

DATA
NOT USED
IN PACKAGE

WHC-SD-WM-DP-165, REV. 1

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3...

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 2

1
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DATA
 NOT USED
 IN PACKAGE

Raw Data Dump for AEA Spectrum: 13a195.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
31	1.	0.	0.	1.	0.	1.	1.	0.	0.	0.
41	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
71	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
81	0.	1.	1.	0.	0.	0.	1.	0.	0.	1.
91	1.	0.	0.	0.	0.	0.	1.	0.	0.	1.
101	1.	0.	0.	0.	0.	1.	0.	1.	1.	0.
111	0.	0.	1.	0.	1.	1.	0.	1.	1.	0.
121	0.	1.	1.	0.	0.	0.	0.	1.	0.	2.
131	0.	2.	1.	1.	0.	0.	0.	1.	0.	2.
141	0.	1.	0.	1.	0.	1.	1.	0.	2.	2.
151	0.	1.	0.	0.	0.	0.	0.	1.	1.	1.
161	1.	0.	1.	0.	1.	0.	1.	0.	0.	1.
171	1.	1.	0.	0.	3.	0.	1.	1.	2.	0.
181	1.	3.	1.	3.	0.	2.	4.	1.	2.	3.
191	4.	0.	1.	6.	3.	3.	1.	5.	5.	2.
201	5.	3.	8.	8.	8.	8.	11.	10.	12.	18.
211	18.	36.	43.	59.	85.	136.	200.	261.	235.	231.
221	254.	301.	391.	534.	817.	1146.	1590.	1812.	1830.	1394.
231	845.	383.	147.	55.	8.	0.	0.	0.	1.	0.
241	0.	0.	0.	1.	0.	0.	1.	1.	1.	1.
251	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
261	0.	0.	0.	2.	0.	2.	0.	2.	2.	0.
271	0.	0.	0.	0.	0.	1.	0.	2.	1.	1.
281	2.	1.	0.	0.	1.	2.	2.	0.	2.	0.
291	0.	7.	6.	6.	5.	6.	11.	8.	6.	12.
301	16.	16.	26.	24.	13.	5.	4.	0.	2.	0.
311	3.	4.	0.	0.	0.	1.	1.	1.	0.	0.
321	0.	1.	0.	2.	0.	2.	0.	5.	3.	4.
331	6.	2.	6.	4.	2.	3.	7.	4.	8.	6.
341	14.	9.	14.	25.	26.	45.	69.	109.	198.	312.
351	421.	463.	407.	289.	213.	288.	302.	480.	717.	1058.
361	1406.	1462.	1067.	504.	146.	26.	2.	1.	1.	1.
371	3.	4.	2.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WHC-SD-WM-DP-165, REV. 1

DATA
NOTED
IN

D. Hamilton
1-24-96

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01 WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
WL4886-BLK
File ID: 14a1400.CNF

Counted on: 1/23/96 @23:27
Detector: AEA14
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	558.8	558.8	361.887	361.887	10.000	2.460	5.000	1.362

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Exp.	Centroid Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea
1	Pu236	0.957	5.755	5.756	-.001	10.01	12.75	2.5	1032.9	0.465E-03
Totals:		0.957	<--valid peaks only-->				12.75			

DETECTOR CALIBRATION
Energy(MEV) = 4.091 + (0.0046)*Channel
Energy range (MeV): 4.091 TO 6.446
Efficiency = 0.0126 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	6397.0	100.000
Smoothed	6397.0	100.000
Composite fit	6122.8	95.714
Residuals	274.2	4.286

Analyzed by:

EMB

DATA
NOT USED
IN P. 100

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

Display Max.:

2765.2

WHC-SD-WM-DP-165. REV. 1

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1....

DATA
NOT USED
IN PACKAGE

Raw Data Dump for AEA Spectrum: 14a1400.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
41	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
61	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
81	1.	0.	0.	0.	0.	1.	0.	0.	0.	0.
91	1.	1.	0.	0.	1.	0.	0.	1.	0.	0.
101	0.	0.	0.	0.	1.	0.	2.	0.	0.	0.
111	0.	2.	0.	1.	0.	0.	0.	0.	0.	0.
121	0.	0.	0.	1.	0.	0.	2.	1.	0.	0.
131	0.	0.	1.	0.	1.	0.	0.	0.	1.	2.
141	0.	0.	1.	1.	1.	1.	0.	1.	0.	0.
151	0.	1.	0.	1.	2.	0.	0.	0.	0.	0.
161	0.	0.	3.	0.	0.	0.	0.	1.	0.	0.
171	1.	0.	1.	1.	0.	0.	3.	0.	0.	2.
181	1.	0.	1.	1.	0.	0.	1.	1.	0.	1.
191	1.	0.	0.	2.	0.	1.	2.	0.	3.	2.
201	3.	3.	1.	3.	5.	3.	1.	2.	3.	2.
211	3.	1.	2.	3.	3.	6.	5.	4.	7.	7.
221	11.	6.	4.	4.	8.	15.	9.	10.	14.	7.
231	5.	7.	1.	1.	0.	0.	0.	0.	0.	0.
241	0.	0.	0.	0.	0.	0.	0.	0.	3.	0.
251	0.	1.	1.	0.	1.	1.	1.	2.	1.	0.
261	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
271	1.	1.	0.	0.	0.	0.	2.	2.	0.	0.
281	1.	0.	0.	0.	2.	1.	0.	1.	2.	1.
291	1.	2.	2.	1.	1.	1.	1.	4.	1.	7.
301	4.	5.	2.	5.	6.	3.	1.	1.	0.	2.
311	1.	1.	1.	0.	1.	1.	2.	1.	3.	1.
321	2.	0.	4.	1.	1.	1.	1.	4.	3.	4.
331	2.	2.	1.	6.	3.	4.	5.	6.	9.	11.
341	12.	13.	11.	17.	25.	32.	55.	76.	105.	161.
351	204.	264.	242.	237.	210.	218.	222.	262.	362.	495.
361	617.	733.	678.	451.	223.	60.	12.	0.	0.	1.
371	1.	2.	1.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

WHC-SD-WM-DP-165, REV. 1

DATA
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IN PAGE

D.H. Milbrin
1-24-96

Westinghouse Hanford Co.

GENERAL ALPHA ENERGY ANALYSIS

Rev. 2.01

WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE

S95T870-SAM

File ID: 15a1581.CNF

Counted on: 1/23/96 @23:28
Detector: AEA15
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	197.5	197.5	303.909	303.909	10.000	2.745	5.000	1.279
2	894.7	894.7	228.638	228.638	10.000	3.461	5.000	2.027
3	23.3	23.3	161.485	161.467	140.000	1.000	70.000	0.100
4?	16.2	16.2	155.045	155.045	10.000	0.000	5.000	4.608
5?	16.2	16.2	147.935	147.553	10.000	1.795	5.000	1.704

PEAK RESULTS

Peak Error Limit: 30%

Peak		AEA		Peak Centroid			Count		%err @95	d/m	Activity uCi/ea
ID	Isotope	Frac	Exp.	Obs.	Diff.	FWHM	Rate	c/m			
1	Pu238	0.162	5.487	5.507	-.0200	0.01	5.08	4.0		63.2	0.285E-04
	Am241		5.479	5.507	-.028					48.4	0.218E-04
2	Pu239	0.688	5.147	5.160	-.0130	0.02	21.64	1.9		193.7	0.873E-04
	Pu240		5.144	5.160	-.016					193.7	0.873E-04
3		0.059		4.851		0.00	1.86	6.6		16.6	0.749E-05
4		????		4.822			0.00	1000.			
5		????		4.787			0.26	45.2			
Totals:		0.909	<--valid peaks only-->				28.58				

DETECTOR CALIBRATION

Energy(MEV) = 4.109 + (0.0046)*Channel

Energy range (MeV): 4.109 TO 6.464

Efficiency = 0.1117 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	15089.0	100.000
Smoothed	15089.0	100.000
Composite fit	13846.8	91.767
Residuals	1242.2	8.233

DATA
NOT USED
IN PACKAGE

Analyzed by: _____

684

EMB

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

Display Max.:

5814.1

WHC-SD-WM-DP-165, REV. 1

DATA
NOT USED
IN PACKAGE

Raw Data Dump for AEA Spectrum: 15a1581.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	3.	1.	1.	2.	1.	0.
31	2.	1.	2.	1.	1.	1.	1.	0.	0.	1.
41	1.	0.	3.	2.	2.	0.	2.	2.	3.	1.
51	1.	4.	2.	1.	3.	1.	3.	2.	2.	2.
61	2.	0.	2.	2.	1.	3.	0.	1.	3.	2.
71	2.	2.	2.	0.	1.	3.	0.	2.	3.	2.
81	3.	1.	6.	0.	1.	2.	4.	2.	0.	2.
91	3.	1.	3.	1.	2.	4.	4.	4.	5.	6.
101	5.	7.	5.	3.	1.	4.	3.	1.	2.	11.
111	3.	5.	11.	7.	8.	2.	6.	6.	11.	6.
121	12.	7.	7.	6.	5.	8.	7.	11.	10.	14.
131	8.	8.	6.	10.	8.	7.	8.	13.	15.	24.
141	10.	16.	26.	32.	33.	24.	41.	30.	36.	33.
151	20.	14.	13.	17.	18.	19.	19.	21.	16.	13.
161	14.	21.	16.	18.	14.	6.	10.	13.	17.	17.
171	14.	19.	12.	12.	19.	15.	18.	13.	12.	24.
181	18.	20.	21.	29.	15.	19.	22.	29.	31.	20.
191	20.	34.	29.	41.	42.	35.	41.	38.	50.	37.
201	37.	37.	47.	55.	58.	56.	63.	61.	64.	62.
211	99.	88.	99.	127.	129.	168.	219.	254.	261.	276.
221	311.	335.	376.	466.	572.	728.	917.	1041.	1114.	997.
231	691.	423.	273.	121.	32.	7.	8.	1.	2.	4.
241	3.	1.	3.	6.	0.	3.	1.	4.	1.	2.
251	5.	5.	7.	10.	6.	5.	5.	4.	6.	8.
261	2.	4.	5.	5.	9.	4.	8.	14.	9.	5.
271	6.	8.	3.	8.	8.	12.	14.	6.	10.	10.
281	9.	17.	16.	13.	15.	16.	22.	20.	20.	31.
291	45.	56.	61.	83.	113.	125.	103.	77.	89.	116.
301	133.	179.	240.	236.	234.	190.	94.	18.	5.	1.
311	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
351	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
361	0.	1.	1.	1.	0.	1.	0.	0.	0.	0.
371	0.	0.	1.	0.	0.	0.	0.	1.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WHC-SD-WM-DP-165, REV. 1

DATA
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Westinghouse Hanford Co.

D. H. Wilson
1-24-96

GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.01 WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
S95T870-DUP
File ID: 16a1669.CNF

Counted on: 1/23/96 @23:28
Detector: AEA16
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	419.1	419.1	303.359	303.359	10.000	2.326	5.000	1.519
2	1745.4	1745.4	229.300	229.300	12.000	3.218	6.000	2.592
3	35.8	35.8	149.612	149.612	20.000	11.079	10.000	6.648

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu238	0.178	5.487	5.482	0.005	0.01	8.67	3.0	647.4	0.292E-03
	Am241		5.479	5.482	-0.003				495.9	0.223E-03
2	Pu239	0.747	5.147	5.142	0.005	0.01	36.41	1.5	1957.7	0.882E-03
	Pu240		5.144	5.142	0.002				1957.7	0.882E-03
3	Np237	0.026	4.769	4.775	-0.006	0.05	1.27	7.9	78.5	0.353E-04
Totals:		0.951	<--valid peaks only-->				46.35			

DETECTOR CALIBRATION
Energy(MEV) = 4.087 + (0.0046)*Channel
Energy range (MeV): 4.087 TO 6.442
Efficiency = 0.0186 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	23400.0	100.000
Smoothed	23400.0	100.000
Composite fit	22251.7	95.093
Residuals	1148.3	4.907

DATA
NOT USED
IN PACKAGE

Analyzed by: EMB

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

Display Max.: 11106.8

WHC-SD-WM-DP-165, REV. I

3
3
3

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..2
.....2
.....2
.....2..

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

DATA
NOT USED
IN PACKAGE

Raw Data Dump for AEA Spectrum: 16a1669.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	1.	1.	0.	0.	1.	3.	1.
31	3.	1.	1.	0.	1.	0.	1.	2.	0.	1.
41	0.	1.	0.	1.	0.	1.	2.	2.	0.	2.
51	0.	1.	1.	0.	1.	2.	1.	1.	1.	1.
61	1.	1.	2.	2.	2.	4.	2.	0.	2.	2.
71	2.	2.	1.	0.	0.	0.	2.	0.	6.	0.
81	1.	3.	3.	1.	2.	1.	2.	0.	2.	1.
91	1.	2.	2.	1.	1.	0.	2.	2.	1.	3.
101	2.	5.	2.	0.	2.	1.	5.	2.	3.	0.
111	4.	6.	4.	5.	2.	5.	5.	9.	2.	5.
121	5.	4.	11.	5.	5.	9.	10.	2.	5.	5.
131	1.	6.	4.	6.	6.	2.	5.	5.	7.	4.
141	6.	8.	13.	22.	27.	32.	36.	34.	46.	38.
151	32.	32.	33.	21.	19.	9.	22.	12.	15.	14.
161	10.	11.	6.	10.	6.	12.	8.	5.	12.	9.
171	7.	7.	7.	8.	4.	8.	5.	7.	7.	8.
181	10.	6.	4.	5.	7.	10.	12.	7.	13.	13.
191	12.	9.	16.	9.	11.	11.	14.	20.	10.	14.
201	22.	13.	20.	18.	20.	24.	27.	31.	37.	46.
211	49.	56.	75.	78.	123.	194.	215.	282.	316.	381.
221	383.	442.	555.	653.	892.	1167.	1539.	1995.	2173.	2135.
231	1804.	1108.	641.	312.	119.	22.	2.	0.	1.	1.
241	1.	0.	0.	0.	3.	1.	2.	2.	3.	3.
251	1.	2.	2.	3.	2.	1.	2.	1.	2.	0.
261	5.	2.	6.	2.	1.	3.	3.	2.	1.	2.
271	2.	8.	4.	5.	7.	6.	4.	1.	9.	5.
281	11.	7.	4.	8.	13.	20.	18.	15.	24.	42.
291	67.	83.	132.	166.	166.	170.	121.	158.	176.	205.
301	304.	423.	565.	536.	427.	247.	59.	12.	5.	0.
311	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
351	0.	0.	0.	0.	0.	1.	1.	0.	1.	5.
361	1.	1.	1.	3.	1.	0.	0.	0.	2.	2.
371	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

WHC-SD-WM-DP-165, REV. 1

DATA
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Westinghouse Hanford Co.

DH Malina
1-24-96

GENERAL ALPHA ENERGY ANALYSIS

Rev. 2.01

WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE

S95T3963-SAM

File ID: 17a1752.CNF

Counted on: 1/23/96 @23:29
Detector: AEA17
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	4.5	4.5	225.679	227.334	12.000	3.507	6.000	0.587

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Exp.	Centroid Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea
1	Pu239	0.643	5.147	5.143	0.004	0.02	0.25	17.9	13.3	0.600E-05
	Pu240		5.144	5.143	0.001				13.3	0.600E-05
Totals:		0.643	<--valid peaks only-->				0.25			

DETECTOR CALIBRATION

Energy(MEV) = 4.098 + (0.0046)*Channel
Energy range (MeV): 4.098 TO 6.453
Efficiency = 0.0188 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	187.0	100.000
Smoothed	187.0	99.999
Composite fit	120.2	64.264
Residuals	66.8	35.736

Analyzed by:

EMB

DATA
NOT USED
IN PACKAGE

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

Display Max.:

27.1

WHC-SD-WM-DP-165, REV. 1

DATA
NOT USED
IN PACKAGE

Raw Data Dump for AEA Spectrum: 17a1752.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
21	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
91	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
111	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
121	0.	0.	0.	1.	0.	0.	0.	0.	0.	1.
131	0.	1.	2.	1.	0.	0.	0.	0.	0.	0.
141	0.	1.	1.	0.	2.	0.	0.	0.	0.	1.
151	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
161	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
171	1.	0.	0.	2.	0.	0.	1.	0.	0.	0.
181	0.	1.	3.	1.	2.	0.	0.	2.	0.	2.
191	4.	2.	0.	3.	2.	3.	2.	2.	1.	1.
201	2.	2.	3.	2.	1.	2.	1.	0.	2.	3.
211	1.	3.	2.	4.	5.	2.	3.	3.	4.	1.
221	2.	3.	5.	5.	2.	2.	7.	4.	5.	4.
231	1.	1.	1.	0.	0.	0.	0.	0.	0.	2.
241	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
251	0.	0.	1.	0.	0.	1.	0.	0.	0.	0.
261	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
271	0.	1.	0.	0.	1.	1.	0.	0.	0.	1.
281	1.	1.	0.	0.	1.	1.	0.	0.	0.	0.
291	0.	1.	0.	0.	0.	1.	0.	0.	0.	3.
301	3.	0.	2.	1.	0.	1.	0.	0.	0.	0.
311	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
351	1.	0.	0.	0.	1.	0.	0.	0.	2.	1.
361	0.	1.	1.	2.	3.	0.	1.	1.	3.	1.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

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D. H. Milicia
1-24-96

GENERAL ALPHA ENERGY ANALYSIS

Rev. 2.01

WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE

S95T3963-DUP

File ID: 18a1828.CNF

Counted on: 1/23/96 @23:30
Detector: AEA18
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	5.1	5.1	226.169	224.564	12.000	2.621	6.000	1.347

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	Pu239	0.589	5.147	5.134	0.013	0.01	0.12	25.5	15.1	0.682E-05
	Pu240		5.144	5.134	0.010				15.1	0.682E-05
Totals:		0.589	<--valid peaks only-->				0.12			

DETECTOR CALIBRATION

Energy(MEV) = 4.101 + (0.0046)*Channel
Energy range (MeV): 4.101 TO 6.456
Efficiency = 0.0081 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	100.0	100.000
Smoothed	100.0	100.000
Composite fit	58.9	58.867
Residuals	41.1	41.133

Analyzed by:

EMB

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Spectrum 18a1828.CNF
1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 22.2

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Raw Data Dump for AFA Spectrum: 18a1828.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
111	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
121	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
131	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
141	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
151	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
161	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
171	1.	0.	1.	0.	0.	1.	0.	0.	0.	0.
181	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
191	0.	2.	0.	1.	0.	0.	0.	2.	1.	2.
201	0.	0.	1.	0.	0.	0.	0.	1.	1.	2.
211	0.	5.	1.	2.	0.	3.	0.	2.	2.	0.
221	5.	5.	2.	7.	7.	6.	1.	3.	1.	0.
231	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
241	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.
251	1.	1.	0.	1.	0.	0.	0.	0.	0.	0.
261	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
271	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.
281	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.
291	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.
301	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
311	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
341	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
351	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
361	0.	0.	0.	0.	1.	1.	4.	3.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

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PART II

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ANALYTICAL SERVICES

45-DAY SAFETY SCREENING RESULTS FOR
TANK 241-AN-102, GRAB SAMPLES
2AN-95-1 THROUGH 2AN-95-6 AND
102-AN-1 THROUGH 102-AN-4

Project Coordinator: Ruth A. Esch

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

by

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Richland, Washington

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This document consists of pages 1 through 140, plus pages 85.1 through 85.8, 90.1 through 90.2, 131.1 and pages 53, 54, 60 through 63 were intentionally left blank.

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NARRATIVE

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45 DAY SAFETY SCREENING RESULTS FOR TANK 241-AN-102
GRAB SAMPLES 2AN-95-1 THROUGH 2AN-95-6 AND 102-AN-1 THROUGH 102-AN-4

SUMMARY

Ten supernate grab samples (2AN-95-1, 2AN-95-2, 2AN-95-3, 2AN-95-4A, 2AN-95-5A, 102-AN-1, 102-AN-2, 102-AN-3(A), 102-AN-3(B), and 102-AN-4) and one field blank (2AN-95-6) were taken from tank 241-AN-102. The following analyses were performed in support of the Safety Screening program, as specified in the Tank 241-AN-102 Grab Sampling and Analysis Plan (TSAP) (reference 1): differential scanning calorimetry (DSC), thermogravimetric analysis (TGA), density by specific gravity (Sp.G.), and total alpha activity (AT). The results for DSC and AT were compared to the safety screening limits at a confidence level of 95%.

Based on the results of vapor monitoring prior to sampling, the vapor in tank AN-102 dome space is far below the lower flammability limits (LFL) stated in the TSAP.

Eleven out of fourteen of the samples had DSC exotherms that exceeded the action limit of 480 joules/g (dry weight basis) stated in the TSAP and the Safety Screening Data Quality Objective (references 1 & 2). These high energetics results were expected for this tank, since tank 241-AN-102 is known to contain complexed waste. Appropriate notifications were made and total organic carbon (TOC) analyses were requested. The need for RSST analysis will be determined after review of the TOC results.

The accuracy and precision criteria was satisfied for most of the sample analyses. The following did not meet the specified precision criterion of $\pm 10\%$: for DSC analysis, four of ten supernate samples, and one of four sludge samples; and for AT analysis one of four sludge samples.

None of the data indicate that the tank is "unsafe" when compared to the criteria in the Safety Screening Data Quality Objective (reference 2) with the exception of the energetics. However, with the high moisture content of 50%, the tank may be considered "conditionally" safe.

SCOPE

This document serves as the 45 day report deliverable for the tank 241-AN-102 grab samples collected during three sampling events. Two samples were collected on October 21, 1994, three on February 15, 1995, and five on November 30, 1995. Two additional samples and a field blank were collected December 14, 1995 to complete the November 1995 sampling event. All of the samples were subsampled and analyzed in accordance with the TSAP (reference 1). This document summarizes sample handling with respect to each sampling event. The analytical results from each sampling event are presented in separate summary tables. The analytical results section of this report provides an overall summary of the results from all ten samples.

Attachment 1 is provided as a cross-reference for relating the tank farm customer ID numbers with the 222-S Laboratory LABCORE sample numbers. The samples are arranged with respect to the sampling event in which they were collected. The subsamples that were generated in the laboratory for analysis are also identified in these diagrams.

Included in this report are the tank dome space flammability screening and primary safety screening results. Copies of the DSC and TGA raw data are also included.

Waste Compatibility analyses were performed on the samples that were collected in the third sampling event. The results from these and any required secondary analyses will be reported in a revision to this document.

TANK DOME SPACE FLAMMABILITY SCREENING

The dome space was sampled and analyzed for the presence of flammable gases prior to sampling tank AN-102. The results of the combustible gas monitoring inside riser 21A are presented in Table 1. Although the TSAP indicates that the results shall be reported as a percentage of the lower flammability limit (%LFL), the instrumentation used to collect the data reports as a percentage of the lower explosive limit (%LEL). For the purpose of screening the tank dome space, the %LEL is an acceptable substitute for %LFL, since the two values are used interchangeably in reference to the physical properties of chemical hazards (reference 3).

Table 1: Characteristics of Vapor Space as Determined by Combustible Gas Monitoring
Tank 241-AN-102, Dome Space in Riser 21A

Vapor Characteristic Measured	Results
Flammable vapor concentration as percent of lower explosion limit (LEL)	0%
Volume percent oxygen gas	20.9%
Concentration of ammonia gas	300 ppm
Concentration of total organic carbon vapor	19 ppm

ppm = parts per million

APPEARANCE AND SAMPLE HANDLING

October 21, 1994 Sampling Event

Appearance

Two grab samples (102-AN-3(A) and 102-AN-4) were removed from tank 241-AN-102 riser 22A on October 21, 1994. The (A) was appended to sample number 102-AN-3 by the project coordinator to differentiate this sample from the sample with the same number collected On February 15, 1995.

Table 2 summarizes the appearance information for the samples for this sampling event. The reported sampling depths were recorded from the tank farm sample labels attached to the sample containers.

Table 2: Appearance for Tank 241-AN-102 Liquid Grab Samples from October 21, 1994

CUSTOMER ID	LAB ID	SAMP DEPTH (IN.)	APPEARANCE			
			Color	Clarity	Org Layer	Solids
102-AN-3(A)	S96T000001	666	Dark yellow/brown	Translucent	None	74.1% Red/tan settled
102-AN-4	S95T003926	622	Dark yellow/brown	Translucent	None	Trace settled

Subsampling

These two samples were collected on October 21, 1994, but were archived at the 222-S Laboratory until they were subsampled for analysis on January 8, 1996.

For sample 102-AN-4, one unfiltered subsample was recovered for safety screening analyses only.

For sample 102-AN-3(A), first the volume percent settled solids was measured. The result is listed in Table 2. The supernate above the settled solids was then removed, and the remaining sludge was transferred to two centrifuge cones for volume percent solids by centrifugation determination, and for separation of solids from remaining liquids. Bulk densities of both the solid alone and the liquid alone were determined. Subsamples were created from both the centrifuged solid and decanted liquid portions and identical analyses were performed on each.

A summary of the analytical results for these two samples is presented in Table 3.

February 15, 1995 Sampling Event

Appearance

Three grab samples (102-AN-1, 102-AN-2, and 102-AN-3(B)) were removed from tank 241-AN-102 riser 22A on February 15, 1995. The (B) was appended to sample number 102-AN-3 by the project coordinator to differentiate this sample from the sample with the same number collected on October 21, 1994.

Table 4 summarizes the appearance information for the samples for this sampling event. The reported sampling depths were recorded from the tank farm sample labels attached to the sample containers.

Table 4: Appearance for Tank 241-AN-102 Liquid Grab Samples from February 15, 1995

CUSTOMER ID	LAB ID	SAMP DEPTH (IN.)	APPEARANCE			
			Color	Clarity	Org Layer	Solids
102-AN-1	S95T003924	388	Dark yellow/brown	Translucent	None	Trace settled
102-AN-2	S95T003925	576	Dark yellow/brown	Translucent	None	Trace settled
102-AN-3(B)	S96T000002	603	Dark yellow/brown	Translucent	None	18.8% Red/tan settled

Subsampling

These three samples were collected on February 15, 1995, but were archived at the 222-S Laboratory until they were subsampled for analysis on January 8, 1996.

For samples 102-AN-1 and 102-AN-2, one unfiltered subsample was recovered from each of the two samples for safety screening analyses only.

For sample 102-AN-3(B), first the volume percent settled solids was measured. The result is listed in Table 4. The supernate above the settled solids was then removed, and the remaining sludge was transferred to a centrifuge cone

for volume percent solids by centrifugation determination, and for separation of solids from remaining liquids. Bulk densities of both the solid alone and the liquid alone were determined. Subsamples were created from both the centrifuged solid and decanted liquid portions and identical analyses were performed on each.

A summary of the analytical results for these three samples is presented in Table 5.

November 30 thru December 14, 1995 Sampling Event

Appearance

A third sampling event took place November 30, 1995. Three supernates (2AN-95-1, 2AN-95-2 and 2AN-95-3) and two sludge samples (2AN-95-4 and 2AN-95-5) were taken from tank 241-AN-102 riser 21A during this sampling event. Visual observation in the 222-S Laboratory indicated that there were no solids in the two sludge samples. Therefore, it was decided that one more sampling event was needed. During the final sampling event, on December 14, 1995, two sludge samples (2AN-95-4A and 2AN-95-5A) and a field blank (2AN-95-6) were collected from riser 21A. Since the samples were clearly related and recovered from the same riser, these two sampling events will be treated as one.

Table 6 summarizes the appearance information for the samples for this sampling event. The reported sampling depths were recorded from the tank farm sample labels attached to the sample containers. Note that the sampling depth for samples 2AN-95-2 and 2AN-95-3 were switched. This change was confirmed on the sample label, as well as by notes on the chain-of-custody forms. No solids were present in 2AN-95-4 and 2AN-95-5, and no analysis was performed on these samples.

Table 6: Appearance for Tank 241-AN-102 Liquid Grab Samples
from November 30 thru December 14, 1995

CUSTOMER ID	LAB ID	SAMP DEPTH (IN.)	APPEARANCE			
			Color	Clarity	Org Layer	Solids
2AN-95-1	S95T003864	370	Dark yellow/brown	Translucent	None	None
2AN-95-2	S95T003865	460	Dark yellow/brown	Translucent	None	Trace settled
2AN-95-3	S95T003866	550	Dark yellow/brown	Translucent	None	None
2AN-95-6 Field Blank	S95T003961	240	Dark yellow/brown	Translucent	None	None
2AN-95-4A	S95T003959	654	Dark yellow/brown	Translucent	None	61.5% tan settled
2AN-95-5A	S95T003960	667	Dark yellow/brown	Translucent	None	61.5% tan settled

Subsampling

These six samples were collected on November 30 and December 14, 1995 and were subsampled for analysis between January 5 and 11, 1996.

For samples 2AN-95-1, 2AN-95-2, and 2AN-95-3, two unfiltered subsamples were recovered from each for safety screening and compatibility analyses, and one from each for archive.

For samples 2AN-95-4A and 2AN-95-5A, first the volume percent settled solids was measured. The results are listed in Table 6. The samples were then shaken to suspend the settled solids. The resulting slurry for each sample was then transferred to three centrifuge cones for volume percent solids by

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centrifugation determination, and for separation of solids from liquids. Bulk densities of the wet sludge, the solid alone and the liquid alone were determined. Subsamples were created from both the centrifuged solid and decanted liquid portions and identical analyses were performed on each.

A summary of the analytical results for the six acceptable samples is presented in Table 7.

ANALYTICAL RESULTS

Differential Scanning Calorimetry (DSC)

The energetics determination was performed by DSC using procedures LA-514-114 Rev. C-1 and LA-514-113 Rev. C-1. The two procedures are for the Perkin-Elmer and Mettler DSC instruments, respectively. The analysis was performed in duplicate on direct samples. The exothermic energy based on a dry weight of sample was calculated for all samples except the field blank, which did not exhibit any exotherms. The average of two TGA results (sample and duplicate) was used in the dry weight correction for all but one sample. For sample 2AN-95-2, the dry weight calculation used an average of three TGA results (sample, duplicate, and triplicate) in the calculation.

Twelve of the fourteen samples collected from this tank exhibited exotherms. Ten of the dry weight results were in the range of 389.2 joules/g to 720.0 joules/g. One sample (2AN-95-2) had a significantly larger dry weight exotherm of 1201 joules/g. The results for the remaining three samples were less than 60 joules/g.

Nine out of the fourteen wet weight results exceeded the action limit of 480 joules/g. These high results were expected based on the knowledge of the presence of a high concentration of total organic carbon (TOC) in this tank.

An interference was observed with two of the fourteen samples (2AN-95-1 and 102-AN-3(A)) analyzed for DSC that created unacceptable baseline curvature which biased the integration. These samples were reanalyzed on a different instrument and a better baseline was observed. The second instrument yielded results that were more consistent with those obtained for the other samples analyzed, therefore the first set of results were not used in this report. However, the raw data scans for these two samples are attached at the end of the document, and marked as "Data Not Used in Package".

The relative percent difference (RPD) between the sample and duplicate results for four supernate samples and one sludge sample was outside of the criterion of $\pm 10\%$. The RPDs were: sample 102-AN-4 (S95T003984), RPD = 12.4%; sample 102-AN-1 (S95T003982), RPD = 11.0%; sample 102-AN-2 (S95T003983), RPD = 25.0%; sample 102-AN-3(B) (S96T000006) RPD = 200.0%; and 2AN-95-5A (S95T004139), RPD = 14.5%. Typically a triplicate sample is analyzed when the RPD is greater than 10%. However, no additional analyses were performed for sample 102-AN-3(B) because the results were well below the action limit. For the other samples, statistics show that with a third analysis, the 95% upper confidence limit would still be above the action limit.

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The 95% upper confidence limit was calculated for each sample. The upper limit for eleven of the fourteen samples was greater than the action limit of 480 joules/g. The results are presented in Table 8.

Table 8: Comparison of Dry Weight DSC Results at a Confidence Level of 95%

CUSTOMER ID	SAMPLE RESULT	DUPLICATE RESULT	MEAN	STANDARD DEVIATION	95% UPPER CONFIDENCE LIMIT (MEAN)
SUPERNATES	joules/g	joules/g	joules/g		joules/g
102-AN-1	563.6	629.4	596.5	46.5	804.2
102-AN-2	720.3	560.2	640.3	113.2	1145.7
102-AN-4	440.8	389.2	415.0	36.5	577.9
2AN-95-1	558.2	558.4	558.3	0.14	558.9
2AN-95-2	1201	1088	1145	79.9	1501
2AN-95-3	555.3	566.1	560.7	7.6	594.8
2AN-95-6 Field Blank	0.00	0.00	0.00	0.00	0.00
SLUDGES					
Decanted Supernates	joules/g	joules/g	joules/g		joules/g
102-AN-3(A)	465.6	452.3	459.0	9.4	500.9
102-AN-3(B)	0.00	52.21	26.10	36.9	190.9
2AN-95-4A	487.1	475.9	481.5	7.9	516.9
2AN-95-5A	556.5	597.5	577.0	29.0	706.4
Centrifuged Solids	joules/g	joules/g	joules/g		joules/g
102-AN-3(A)	0.00	0.00	0.00	0.00	0.00
102-AN-3(B)	0.00	0.00	0.00	0.00	0.00
2AN-95-4A	488.1	458.2	473.2	21.1	567.5
2AN-95-5A	492.1	569.1	530.6	54.4	773.7

Thermogravimetric Analysis (TGA)

The percent moisture content was determined by TGA using procedures LA-514-114 Rev. C-1 and LA-560-112 Rev. B-1. The procedures are for the Perkin-Elmer and Mettler TGA instruments, respectively. The analysis was performed in duplicate on direct samples.

Results for the supernates and decanted supernates were in the range of 47.39 to 50.13 percent moisture. The field blank gave an average result of 100.0 percent moisture. Most of the samples (except for the field blank) produced more than one weight loss step between approximately 50° C to 400° C. Any weight loss steps that occurred beyond 200 to 250° C were not included in the calculation of the final results. The relative percent difference (RPD) between sample and duplicate results for all supernate samples were within the criterion of $\pm 10\%$.

The results for the centrifuged solids were in the range of 35.60 to 44.25 percent moisture. Here again, more than one weight loss step was seen for each of the samples, with only the weight loss occurring less than about 200 to 250° C used in the final calculations. The relative percent difference (RPD) between sample and duplicate results for all of the centrifuged solid samples were within the criterion of $\pm 10\%$.

Density

The density measurements obtained for the sludge samples were determined by performing a bulk density analysis during subsampling, using procedure LO-160-103 Rev. B-0. A single determination was made for each phase (i.e. solids alone, liquids alone, and wet sludge (for samples 2AN-95-4A and 2AN-95-5A only)).

The densities obtained for all of the sludge samples are listed below.

102-AN-3(A)	decanted liquid	1.28 g/mL
	centrifuged solid	1.64 g/mL
102-AN-3(B)	decanted liquid	1.39 g/mL
	centrifuged solid	1.56 g/mL
2AN-95-4A	sludge	1.47 g/mL
	decanted liquid	1.35 g/mL
	centrifuged solid	1.57 g/mL
2AN-95-5A	sludge	1.50 g/mL
	decanted liquid	1.39 g/mL
	centrifuged solid	1.58 g/mL

Total Alpha (AT)

The AT determination was performed using procedure LA-508-101 Rev. D-2. The analysis was performed in duplicate on direct samples for the supernates. The solid portion of the sludge samples was prepared for analysis, in duplicate, using a fusion digest following procedure LA-549-141 Rev. D-0. The fusion digest is indicated with an "F" in the aliquot class (A#) column in the LABCORE summary tables.

The maximum result for the supernate samples was $0.202 \mu\text{Ci/mL}$. The maximum result for the supernate that was decanted off of the centrifuged solids of the sludge samples was $0.239 \mu\text{Ci/mL}$. All of the results were at least two orders of magnitude below the action limit of $61.5 \mu\text{Ci/mL}$ for liquid samples. The RPDs for all supernate samples were within the criterion of $\pm 20\%$ for liquid samples.

The maximum result for the centrifuged solids was $0.952 \mu\text{Ci/g}$. This result is well below the action limit of $38.9 \mu\text{Ci/g}$, which is based on an average density of 1.58 g/mL for the centrifuged solids. The RPDs for all solid samples were within the criterion of $\pm 10\%$, except for one (102-AN-3(B)), which had an RPD = 20.1%. This high RPD was attributed to low alpha activity in the sample. No reruns were performed because the results are significantly below the action limit, and historically, additional analyses on low activity samples have not improved the RPDs.

The 95% upper confidence limits were calculated for each sample, and are presented in Table 9. The maximum liquid result of $0.296 \mu\text{Ci/mL}$, is still well below the action limit of $61.5 \mu\text{Ci/mL}$, and $1.41 \mu\text{Ci/g}$ is well below the action limit of $38.9 \mu\text{Ci/g}$ for the solids.

Table 9: Comparison of Total Alpha Results at a Confidence Level of 95%

CUSTOMER ID	SAMPLE RESULT	DUPLICATE RESULT	MEAN	STANDARD DEVIATION	95% UPPER CONFIDENCE LIMIT (MEAN)
SUPERNATES	$\mu\text{Ci/mL}$	$\mu\text{Ci/mL}$	$\mu\text{Ci/mL}$		$\mu\text{Ci/mL}$
102-AN-1	0.144	0.156	0.150	8.49e-3	0.188
102-AN-2	0.116	0.116	0.116	0.000	0.116
102-AN-4	0.159	0.174	0.167	1.06e-2	0.214
2AN-95-1	0.175	0.173	0.174	1.41e-3	0.180
2AN-95-2	0.182	0.169	0.176	9.19e-3	0.216
2AN-95-3	0.169	0.202	0.186	2.33e-2	0.290
2AN-95-6 Field Blank	<5.86e-6	<1.04e-5	n/a	n/a	n/a
SLUDGES					
Decanted Supernates	$\mu\text{Ci/mL}$	$\mu\text{Ci/mL}$	$\mu\text{Ci/mL}$		$\mu\text{Ci/mL}$
102-AN-3(A)	0.175	0.208	0.192	2.33e-2	0.296
102-AN-3(B)	0.239	0.218	0.229	1.48e-2	0.295
2AN-95-4A	0.168	0.171	0.170	2.12e-3	0.178
2AN-95-5A	0.137	0.153	0.145	1.13e-2	0.196
Centrifuged Solids	$\mu\text{Ci/g}$	$\mu\text{Ci/g}$	$\mu\text{Ci/g}$		$\mu\text{Ci/g}$
102-AN-3(A)	0.306	0.332	0.319	1.84e-2	0.401
102-AN-3(B)	0.952	0.778	0.865	1.23e-1	1.414
2AN-95-4A	0.459	0.464	0.462	3.54e-3	0.477
2AN-95-5A	0.329	0.333	0.331	2.83e-3	0.344

n/a - These calculations are not applicable with results that are less than the detection limit.

References

1. WHC-SD-WM-TSAP-065, REV. 1, "Tank 241-AN-102 Grab Sampling and Analysis Plan", dated December 6, 1995, Westinghouse Hanford Company, Richland, WA 99352.
2. WHC-SD-WM-SP-004, Rev. 2, "Tank Safety Screening Data Quality Objective", dated August 31, 1995, Westinghouse Hanford Company, Richland, WA 99352.
3. NIOSH Pocket Guide to Chemical Hazards, 1994 edition.

WHC-SD-WM-DP-165, REV. 1

WHC-SD-WM-DP-165, REV. 0

ATTACHMENT 1

AN-102 GRAB SAMPLE BREAKDOWN

WHC-SD-WM-DP-165, REV. 1

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Attachment 1 (1 of 4)

AN-102 GRAB SAMPLE BREAKDOWN

Riser 22A

October 21, 1994 Sampling Event

622 in.
102-AN-4
S95T003926

S95T003984

DSC
TGA
AT
Sp.G.

666 in.
102-AN-3(A)
S96T000001

%Settled Solids

Centrifuge

Solid

Liquid

S96T000003

DSC, TGA
Bulk Density
Vol % Solids

S96T000005

AT
DSC
TGA
Bulk Density

Fusion
Digest

S96T000007

AT

WHC-SD-WM-DP-165, REV. 1
WHC-SD-WM-DP-165, REV. 0

Attachment 1 (2 of 4)

AN-102 GRAB SAMPLE BREAKDOWN

Riser 22A

February 15, 1995 Sampling Event

WHC-SD-WM-DP-165, REV. 1

WHC-SD-WM-DP-165, REV. 0

Attachment 1 (3 of 4)

AN-102 GRAB SAMPLE BREAKDOWN

Riser 21A
November 30, 1995 Sampling Event

WHC-SD-WM-DP-165, REV. 1

WHC-SD-WM-DP-165, REV. 0

370 in.
2AN-95-1
S95T003864

550 in.
2AN-95-2
S95T003865

460 in.
2AN-95-3
S95T003866

Attachment 1 (4 of 4)

AN-102 GRAB SAMPLE BREAKDOWN

Riser 21A

December 14, 1995 Sampling Event

2-22

654 in.
2AN-95-4A
S95T003959

667 in.
2AN-95-5A
S95T003960

240 in.
2AN-95-6 (Field Blank)
S95T003961

WHC-SD-WM-DP-165, REV. 1
WHC-SD-WM-DP-165, REV. 0

WHC-SD-WM-DP-165, REV. I

WHC-SD-WM-DP-165, REV. 0

SAMPLE DATA SUMMARIES

WHC-SD-WM-DP-165, REV. 1

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Table 3: Safety Screen Results for 10/21/94 Sampling Event
AN-102 GRAB

RISER: 22A
SEGMENT #: 102-AN-3(A)

SEGMENT PORTION: Decanted Supernate (Liquid Grab Sludge)

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S96T000005			% Water by TGA using Mettler	%	None	None	101.7	n/a	49.09	49.10	49.09	0.02	n/a	n/a	n/a
S96T000005			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	465.6	452.3	459.0	2.90	n/a	n/a	n/a
S96T000005			DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	106.9	n/a	237.0	230.2	233.6	2.91	n/a	n/a	n/a
S96T000005			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.280	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T000005			Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	105.2	<9.31e-03	1.75e-01	2.08e-01	1.92e-01	17.2	104.6	1.93e-02	1.89E+01

Sludge (from Liquid Grab Sample): Sludge (from Liquid Grab Sample)

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S96T000003			% Water by TGA using Mettler	%	None	None	102.0	n/a	35.60	35.98	35.79	1.06	n/a	n/a	n/a
S96T000003			DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+00	480.0	101.1	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T000003			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T000003			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.640	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T000007	F		Alpha of Digested Solid	uCi/g	-1.0e+00	38.90	92.06	<1.11e-02	3.06e-01	3.32e-01	3.19e-01	8.15	80.36	3.12e-02	1.71E+01

=> Limit violated
=> Selected Limit

2-25

WHC-SD-WM-DP-165, REV. 1
WHC-SD-WM-DP-165, REV. 0

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INTERIM

Table 3: Safety Screen Results for 10/21/94 Sampling Event
AN-102 GRAB

RISER: 22A
SEGMENT #: 102-AN-4

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S95T003984			% Water by TGA using Mettler	%	None	None	102.0	n/a	49.33	49.38	49.36	0.10	n/a	n/a	n/a
S95T003984			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	440.8	389.2	415.0	12.4	n/a	n/a	n/a
S95T003984			DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	96.66	n/a	223.2	197.1	210.1	12.4	n/a	n/a	n/a
S95T003984			Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	100.6	<8.88e-03	1.59e-01	1.74e-01	1.66e-01	9.01	n/a	2.17e-02	2.02E+01

=> Limit violated
=> Selected Limit

2-26

WHC-SD-WM-DP-165, REV. 0

WHC-SD-WM-DP-165, REV. 1

30-Jan-1996 12:21:17
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INTERIM

Table 5: Safety Screen Results for 02/15/95 Sampling Event
AN-102 GRAB

RISER: 22A
SEGMENT #: 102-AN-1

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S95T003982			% Water by TGA using Mettler	%	None	None	102.0	n/a	50.06	49.07	49.56	2.00	n/a	n/a	n/a
S95T003982			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	563.6	629.4	596.5	11.0	n/a	n/a	n/a
S95T003982			DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	96.66	n/a	284.2	317.4	300.8	11.0	n/a	n/a	n/a
S95T003982			Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	100.6	<8.88e-03	1.44e-01	1.56e-01	1.50e-01	8.00	100.5	2.17e-02	2.10E+01

=> Limit violated
=> Selected Limit

2-27

INTERIM

WHC-SD-WM-DP-165, REV. 0

WHC-SD-WM-DP-165, REV. 1

30-Jan-1996 12:21:20
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INTERIM

Table 5: Safety Screen Results for 02/15/95 Sampling Event
AN-102 GRAB

RISER: 22A
SEGMENT #: 102-AN-2

SEGMENT PORTION: Supernate

Sample#	R A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
				Lower	Upper									
S95T003983		% Water by IGA using Mettler	%	None	None	102.0	n/a	49.76	49.91	49.83	0.30	n/a	n/a	n/a
S95T003983		DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	720.3	560.2	640.2	25.0	n/a	n/a	n/a
S95T003983		DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	96.66	n/a	361.3	281.0	321.1	25.0	n/a	n/a	n/a
S95T003983		Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	100.6	<8.88e-03	1.16e-01	1.16e-01	1.16e-01	0.00	n/a	2.17e-02	2.54E+01

=> Limit Violated
=> Selected Limit

WHC-SD-WM-DP-165, REV. 0

WHC-SD-WM-DP-165, REV. 1

30-Jan-1996 12:21:23
A-0002-1

INTERIM

Table 5: Safety Screen Results for 02/15/95 Sampling Event
AN-102 GRAB

RISER: 22A
SEGMENT #: 102-AN-3(B)

SEGMENT PORTION: Decanted Supernate (Liquid Grab Sludge)

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S96T000006			% Water by TGA using Mettler	%	None	None	101.7	n/a	47.61	47.17	47.39	0.93	n/a	n/a	n/a
S96T000006			DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+00	480.0	99.33	n/a	0.00e+00	27.47	13.73	200	n/a	n/a	n/a
S96T000006			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	0.00e+00	52.21	26.11	200	n/a	n/a	n/a
S96T000006			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.390	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T000006			Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	105.2	<9.31e-03	2.39e-01	2.18e-01	2.28e-01	9.19	n/a	1.93e-02	1.61E+01

Sludge (from Liquid Grab Sample): Sludge (from Liquid Grab Sample)

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S96T000004			% Water by TGA using Mettler	%	None	None	102.0	n/a	44.25	43.72	43.98	1.20	n/a	n/a	n/a
S96T000004			DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+00	480.0	100.2	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T000004			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T000004			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.560	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T000008	F		Alpha of Digested Solid	uCi/g	-1.0e+00	38.90	92.06	<1.11e-02	9.52e-01	7.78e-01	8.65e-01	20.1	n/a	4.25e-02	1.07E+01

=> Limit violated
=> Selected Limit

2-29

WHC-SD-WM-DP-165, REV. 0

WHC-SD-WM-DP-165, REV. 1

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A-0002-1

Table 7: Safety Screen Results for 11/30 & 12/14/95 Events
AN-102 GRAB

RISER: 21A
SEGMENT #: 2AN-95-1

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S95T003867			% Water by TGA on Perkin Elmer	%	None	None	101.7	n/a	49.74	48.54	49.14	2.44	n/a	n/a	n/a
S95T003867			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	558.2	558.4	558.3	0.04	n/a	n/a	n/a
S95T003867			DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	104.0	n/a	283.9	284.0	283.9	0.04	n/a	n/a	n/a
S95T003870			Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	90.26	<1.17e-02	1.75e-01	1.73e-01	1.74e-01	1.15	91.07	2.71e-02	1.91E+01

=> Limit Violated

=> Selected Limit

INTERIM

Table 7: Safety Screen Results for 11/30 & 12/14/95 Events
AN-102 GRAB

RISE: 21A
SEGMENT #: 2AN-95-2

SEGMENT PORTION: Supernate

Sample#	R A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003868		% Water by TGA using Mettler	%	None	None	102.1	n/a	48.58	49.35	48.97	1.57	n/a	n/a	n/a
S95T003868		DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	430.0	n/a	n/a	1.20e+03	1.09e+03	1.15e+03	9.93	n/a	n/a	n/a
S95T003868		DSC Exotherm using Mettler	Joules/g	-1.0e+00	430.0	108.3	n/a	616.1	557.8	587.0	9.93	n/a	n/a	n/a
S95T003871		Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	90.26	<1.17e-02	1.82e-01	1.69e-01	1.75e-01	7.41	n/a	2.71e-02	1.91E+01

=> Limit violated
=> Selected Limit

WHC-SD-WM-DP-165, REV. 1

WHC-SD-WM-DP-165, REV. 0

INTERIM

Table 7: Safety Screen Results for 11/30 & 12/14/95 Events
AM-102 GRAB

RISE: 21A
SEGMENT #: 2AN-95-3

SEGMENT PORTION: Supernate

Sample#	R A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003869		% Water by TGA using Mettler	%	None	None	102.5	n/a	50.13	50.02	50.08	0.22	n/a	n/a	n/a
S95T003869		DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+00	480.0	99.75	n/a	277.2	282.6	279.9	1.93	n/a	n/a	n/a
S95T003869		DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	555.3	566.1	560.7	1.93	n/a	n/a	n/a
S95T003872		Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	90.26	<1.17e-02	1.69e-01	2.02e-01	1.85e-01	17.8	n/a	2.71e-02	2.01E+01

=> Limit violated
=> Selected Limit

WHC-SD-WM-DP-165, REV. 1
WHC-SD-WM-DP-165, REV. 0

INTERIM

Table 7: Safety Screen Results for 11/30 & 12/14/95 Events
AN-102 GRAB

RISER: 21A
SEGMENT #: 2AN-95-4A

SEGMENT PORTION: Decanted Supernate (Liquid Grab Sludge)

Sample#	R A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T004133		% Water by TGA on Perkin Elmer	%	None	None	101.6	n/a	45.26	48.80	47.03	7.53	n/a	n/a	n/a
S95T004133		DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+00	480.0	98.95	n/a	258.0	252.1	255.1	2.31	n/a	n/a	n/a
S95T004133		DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	487.1	475.9	481.5	2.33	n/a	n/a	n/a
S95T004133		Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.350	n/a	n/a	n/a	n/a	5.00e-01	n/a
S95T004133		Alpha in Liquid Samples	UCT/mL	-1.0e+00	61.50	97.55	<2.40e-02	1.68e-01	1.71e-01	1.70e-01	1.77	110.2	3.26e-02	2.37E+01

Sludge (from Liquid Grab Sample): Sludge (from Liquid Grab Sample)

Sample#	R A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003959		Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.470	n/a	n/a	n/a	n/a	5.00e-01	n/a
S95T004137		% Water by TGA on Perkin Elmer	%	None	None	100.6	n/a	43.35	42.06	42.70	3.02	n/a	n/a	n/a
S95T004137		DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+00	480.0	98.70	n/a	279.7	262.5	271.1	6.34	n/a	n/a	n/a
S95T004137		DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	488.1	458.2	473.1	6.32	n/a	n/a	n/a
S95T004137		Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.570	n/a	n/a	n/a	n/a	5.00e-01	n/a
S95T004141	F	Alpha of Digested Solid	UCT/g	-1.0e+00	33.90	92.06	<1.11e-02	4.59e-01	4.64e-01	4.62e-01	1.08	73.72	9.77e-03	7.17E+00

=> Limit violated
=> Selected Limit

WHC-SD-WM-DP-165, REV. 0

WHC-SD-WM-DP-165, REV. /

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INTERIM

Table 7: Safety Screen Results for 11/30 & 12/14/95 Events
AN-102 GRAB

RISER: 21A
SEGMENT #: 2AN-95-5A

SEGMENT PORTION: Decanted Supernate (Liquid Grab Sludge)

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S95T004135			% Water by TGA on Perkin Elmer	%	None	None	101.6	n/a	48.45	51.03	49.74	5.19	n/a	n/a	n/a
S95T004135			DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+00	480.0	98.95	n/a	279.7	300.3	290.0	7.10	n/a	n/a	n/a
S95T004135			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	556.5	597.5	577.0	7.11	n/a	n/a	n/a
S95T004135			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.390	n/a	n/a	n/a	n/a	5.00e-01	n/a
S95T004135			Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	97.55	<2.40e-02	1.37e-01	1.53e-01	1.45e-01	11.0	n/a	3.26e-02	3.06E+01

Sludge (from Liquid Grab Sample): Sludge (from Liquid Grab Sample)

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S95T003960			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.500	n/a	n/a	n/a	n/a	5.00e-01	n/a
S95T004139			% Water by TGA using Mettler	%	None	None	102.6	n/a	43.50	41.39	42.45	4.97	n/a	n/a	n/a
S95T004139			DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+00	480.0	98.70	n/a	283.2	327.5	305.4	14.5	n/a	n/a	n/a
S95T004139			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	492.1	569.1	530.6	14.5	n/a	n/a	n/a
S95T004139			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.580	n/a	n/a	n/a	n/a	5.00e-01	n/a
S95T004142	F		Alpha of Digested Solid	uCi/g	-1.0e+00	38.90	92.06	<1.11e-02	3.29e-01	3.33e-01	3.31e-01	1.21	n/a	9.77e-03	8.44E+00

=> Limit violated
=> Selected Limit

WHC-SD-WM-DP-165, REV. 0

WHC-SD-WM-DP-165, REV. 1

30-Jan-1996 12:28:45
A-0002-1

INTERIM

Table 7: Safety Screen Results for 11/30 & 12/14/95 Events
AN-102 GRAB

RISER: 21A
SEGMENT #: ZAN-95-6

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S95T003962			% Water by TGA using Mettler	%	None	None	102.5	n/a	99.99	100.1	100.0	0.11	n/a	n/a	n/a
S95T003962			DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	108.3	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S95T003963			Alpha in Liquid Samples	uCi/mL	-1.0e+00	81.50	97.55	<2.40e-02	<5.83E-06	<1.04E-5	n/a	n/a	n/a	1.21e-05	5.00E+02

=> Limit violated
=> Selected Limit

2-35

INTERIM

WHC-SD-WM-DP-165, REV. 1

WHC-SD-WM-DP-165, REV. 0

WHC-SD-WM-DP-165, REV. 1

WHC-SD-WM-DP-165, REV. 0

DOME SPACE FLAMMABILITY

WHC-SD-WM-DP-165, REV. 1

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WHC-SD-WM-DP-165, REV. 0

WHC-SD-WM-DP-165, REV. 1

DATA SHEET 2 - IH&S VAPOR SURVEY

Tank No. AN102Riser No. 21ALocation (Breather Vent. Riser, Dome Space, Breathing zone) _____

Vapor

Results

O₂20.9% O₂LEL0% LELT.O.C.2.0 PPMNH₃50 PPMTank No. AN102Riser No. 21ALocation (Breather, Vent, Riser Dome Space, Breathing zone) _____

Vapor

Results

O₂20.9%LEL0% LELT.O.C.19 PPMNH₃300 PPMTank No. AN102Riser No. 21ALocation (Breather, Vent, Riser, Dome Space Breathing zone) _____

Vapor

Results

O₂20.9%LEL0% LELT.O.C.0 PPMNH₃0 PPM

COMMENTS: _____

John J. Muncy 12-14-95
IH&S Signature/Date

Document No.	Rev/Mod	Page
TO-080-065	C-3	66

WHC-SD-WM-DP-165, REV. 1

WHC-SD-WM-DP-165, REV. 0

INORGANIC ANALYSES

WHC-SD-WM-DP-165, REV. 1

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LABCORE Data Entry Template for Worklist#

4824

Analyst: JDS Instrument: DSC0 3 Book # 12N4B

Method: LA-514-114 Rev/Mod C-1 WHC-SD-WM-DP-165, REV. 1

Worklist Comment: Please run AN-102 DSCs under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-03	SOLID	<u>28.45</u>	<u>28.76</u>	<u>N/A</u>	Joules/g
95000227	AN-102 GRAB	2 SAMPLE	S96T000003	0	DSC-03	SOLID	<u>N/A</u>	<u>Ø</u>		Joules/g
95000227	AN-102 GRAB	3 DUP	S96T000003	0	DSC-03	SOLID	<u>Ø</u>	<u>Ø</u>	<u>N/A</u>	Joules/g
		4 STD			DSC-03	SOLID	<u>28.45</u>	<u>28.7651</u>	<u>N/A</u>	Joules/g
95000227	AN-102 GRAB	5 SAMPLE	S96T000004	0	DSC-03	SOLID	<u>N/A</u>	<u>Ø</u>		Joules/g
95000227	AN-102 GRAB	6 DUP	S96T000004	0	DSC-03	SOLID	<u>Ø</u>	<u>Ø</u>	<u>N/A</u>	Joules/g

Final page for worklist #

4824

See attached for signatures
Analyst Signature 1/24/96
Date BDV

[Signature] 1-25-96
Analyst Signature Date

Verified by Blandina Valenzuela
1/26/96

Data Entry Comments: S96T000003 produced a small peak at approximately 280°C
this is from the instrument not the sample. It also produced an endotherm
at 125.5°C with a delta H of 978.7 J/g

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

S96T000004 produced an endotherm at 118.3°C with a delta H of 1034.7 J/g

LABCORE Data Entry Template for Worklist#

4824

SPS

Analyst: ADP 1-16-96 Instrument: DSC0 Book # 12N14B

Method: LA-514-113 Rev/Mod C-1 WHC-SD-WM-DP-165, REV. 1

Worklist Comment: Please run AN-102 DSCs under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-01	SOLID			N/A	Joules/g
95000227	AN-102 GRAB	2 SAMPLE	S96T000003	0	DSC-01	SOLID	N/A			Joules/g
95000227	AN-102 GRAB	3 DUP	S96T000003	0	DSC-01	SOLID			N/A	Joules/g
95000227	AN-102 GRAB	4 SAMPLE	S96T000004	0	DSC-01	SOLID	N/A			Joules/g
95000227	AN-102 GRAB	5 DUP	S96T000004	0	DSC-01	SOLID			N/A	Joules/g

Final page for worklist #

4824

ADP 1-16-96
1-15-96
Analyst Signature Date

Analyst Signature Date

Isa Spd 1-16-96

Data Entry Comments:

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

Curve 1: DSC

File info: IND011602 Tue Jan 16 06:53:33 1996

Sample Weight 15.000 mg

12N148 Indium at 10C/min

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 243 TO 248.

N2, EXOTHERM DOWN

Temperature (°C)

TEMP1: 150.0 °C TIME1: 0.0 min RATE1: 10.0 °C/min
TEMP2: 170.0 °C

JD SPELLMAN
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Jan 16 06:57:36 1996

Curve 1: DSC

File info: SAM011601 Tue Jan 16 09:46:56 1996

Sample Weight: 11.920 mg

S96T000003

exotherm down, N2 purge gas

Temperature (°C)

TEMP1: 35.0 °C TIME1: 0.0 min RATE1: 10.0 °C/min
TEMP2: 500.0 °C

JD SPELLMAN
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Jan 16 14:01:58 1996

Curve 1: DSC

File info: SAM011603 Tue Jan 16 13:35:52 1996

Sample Weight: 17.850 mg

S96T000003DUP

exotherm down, N2 purge gas

TEMP1: 35.0 °C TIME1: 0.0 min RATE1: 10.0 °C/min
TEMP2: 500.0 °C

Temperature (°C)

JD SPELLMAN
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Jan 16 13:52:33 1996

Curve 1: DSC

File info: qsav2 Wed Jan 17 06:29:25 1996

Sample Weight: 15.000 mg

12N14B Indium at 10C/min

2-46

Heat Flow (mW)

WHC-SD-WM-DP-165, REV. 1

N2, EXOTHERM DOWN

Temperature (°C)

TEMP1: 150.0 °C TIME1: 0.0 min RATE1: 10.0 °C/min
TEMP2: 170.0 °C

JD SPELLMAN
PERKIN-ELMER
7 Series Thermal Analysis System
Wed Jan 17 06:35:39 1996

Curve 1: DSC
 File info: SAM011701 Wed Jan 17 07:47:02 1996
 Sample Weight: 8.360 mg
 S96T000004

exotherm down, N2 purge gas
 TEMP: 35.0 °C
 TIME: 0.0 min RATE: 10.0 °C/min
 JD SPELLMAN
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Wed Jan 17 08:50:13 1996

Curve 1: DSC

File info: SAM011702 Wed Jan 17 09:41:51 1996

Sample Weight: 13.590 mg

S96T000004DUP

WHC-SD-WM-DP-165, REV. 1

exotherm down, N2 purge gas

TEMP1: 35.0 °C TIME1: 0.0 min RATE1: 10.0 °C/min
TEMP2: 500.0 °C

Temperature (°C)

JD SPELLMAN
PERKIN-ELMER
7 Series Thermal Analysis System
Wed Jan 17 10:28:47 1996

LABCORE Data Entry Template for Worklist#

4850

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

Method: LA-514-113 Rev/Mod C-1 WHC-SD-WM-DP-165, REV. 1

Worklist Comment: Please run AN-102 ^{DSC} PGAs under N2. bdv
LAD 1-26-96

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-01	LIQUID	<u>28.45</u>	<u>27.5</u>	N/A	Joules/g
95000227	AN-102 GRAB	2 SAMPLE	S95T003982	0	DSC-01	LIQUID	N/A	<u>277.3</u>	<u>284.2</u> <u>123/96</u>	Joules/g
95000227	AN-102 GRAB	3 DUP	S95T003982	0	DSC-01	LIQUID	<u>272.3</u>	<u>317.4</u>	N/A	Joules/g
95000227	AN-102 GRAB	4 SAMPLE	S95T003983	0	DSC-01	LIQUID	N/A	<u>361.3</u>		Joules/g
95000227	AN-102 GRAB	5 DUP	S95T003983	0	DSC-01	LIQUID	<u>361.3</u>	<u>281.0</u>	N/A	Joules/g
95000227	AN-102 GRAB	6 SAMPLE	S95T003984	0	DSC-01	LIQUID	N/A	<u>223.2</u>		Joules/g
95000227	AN-102 GRAB	7 DUP	S95T003984	0	DSC-01	LIQUID	<u>223.2</u>	<u>197.1</u>	N/A	Joules/g

Final page for worklist # 4850

[Signature] 1-19-96
Analyst Signature Date

[Signature] 1-24-96
Analyst Signature Date

Rae Lynn Green 1-19-96

Verified by Blandina Valenzuela
1/26/96

S95T003982 produced an endotherm at 133.8°C with a delta H of 900.15/g

Data Entry Comments: S95T003983 produced an endotherm at ^{125/96} 123.8°C with a delta H of 1628.8J/g

S95T003984 produced an endotherm at 127.6°C with a delta H of 863.4J/g

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

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 250 TO 256.

WHC-SD-WM-DP-165, REV. 1

DSC STD 12N14-B N2

9.310 mg

Rate: 10.0 °C/min

File: 00004.001 DSC METTLER 19-Jan-96

Ident: 0.0 222-S Laboratory

exo

120.

140.

160.

180. °C

John P. Wicks 1-19-96

S95T003982 SAM N2
 34.700 mg
 Rate: 10.0 °C/min
 File: 00005.001 DSC METTLER 19-Jan-96
 Ident: 0.0 222-S Laboratory

S95T003982 DUP N2
 38.400 mg
 Rate: 10.0 °C/min
 File: 00008.001 DSC METTLER 19-Jan-96
 Ident: 0.0 222-S Laboratory

exo

Integration
 Delta H41297 mJ
 1075.4 J/g
 Peak 137.8°C
 -104.1 mW

Integration
 Delta H12190 mJ
 317.4 J/g
 Peak 435.9°C
 21.4 mW

1-19-96

Rae Ann Green

100. 200. 300. 400. °C

S95T003983 SAM N2

14.660 mg

File: 00010.001 DSC METTLER 19-Jan-96

Ident: 0.0 222-S Laboratory

Rate: 10.0 °C/min

Rae Ann Green
1-19-96

100. 200. 300. 400. °C

S95T0039E3 DUP N2

16.846 mg

Rate: 10.0 °C/min

File: 00012.001 DSC METTLER 19-Jan-96

Ident: 0.0 222-S Laboratory

Rac Cann Green 1-19-96

S95T003984 SAM N2

23.280 mg

Rate: 10.0 °C/min

File: 00014.001 DSC METTLER 20-Jan-96

Ident: 0.0 222-S Laboratory

exo

Integration
Delta H20100 mJ
863.4 J/g
127.6°C
Peak
-56.6 mW

Integration
Delta H 5195 mJ
223.2 J/g
Peak
437.2°C
10.7 mW

Rachel Green
1-20-96

LABCORE Data Entry Template for Worklist#

4851

Analyst: SMF Instrument: DSC0 3 Book # 12N14B

Method: LA-514-114 Rev/Mod C-1 WHC-SD-WM-DP-165, REV. 1

Worklist Comment: Please run AN-102 ^{1/25/96} ~~TGA's~~ under N2. bdv
DSC's

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-03	LIQUID	<u>28.45</u>	<u>28.26</u>	<u>N/A</u>	Joules/g
95000227	AN-102 GRAB	2 SAMPLE	S96T000005	0	DSC-03	LIQUID	<u>N/A</u>	<u>15.76</u>		Joules/g
95000227	AN-102 GRAB	3 DUP	S96T000005	0	DSC-03	LIQUID	<u>15.76</u>	<u>18.15</u>	<u>N/A</u>	Joules/g
95000227	AN-102 GRAB	4 SAMPLE	S96T000006	0	DSC-03	LIQUID	<u>N/A</u>	<u>0</u>		Joules/g
95000227	AN-102 GRAB	5 DUP	S96T000006	0	DSC-03	LIQUID	<u>0</u>	<u>0</u> ^{27.47} 1-36.36 _{0.07}	<u>N/A</u>	Joules/g

Final page for worklist #

4851

See attached for signatures
Analyst Signature 1/25/96
Date ^{bdv}

Linda Conlin
Analyst Signature 1/28/96
Date

Verified by Blandina Valenzuela
1/29/96

* Data for sample S96T000005 from this worklist will not be used in the report due to questionable baseline. Sample was rerun on worklist # 5343. ²⁰⁵_{2/2/96}

Data Entry Comments: S96T000005 produced two endotherms one at 121.99°C with a delta H of 1205.5 J/g and the second at 260.5°C with a delta H of 1157 J/g
S96T000006 produced ^{an endotherm} at 112.9°C with a delta H of 1712.8 J/g

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

LABCORE Data Entry Template for Worklist#

4851

Analyst: SMF Instrument: DSC0 Book # 12N14B

Method: LA-514-113 Rev/Mod _____ WHC-SD-WM-DP-165, REV. 1

Worklist Comment: Please run AN-102 ~~PGAS~~ DSC under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-01	LIQUID			N/A	Joules/g
95000227	AN-102 GRAB	2 SAMPLE	S96T000005	0	DSC-01	LIQUID	N/A			Joules/g
95000227	AN-102 GRAB	3 DUP	S96T000005	0	DSC-01	LIQUID			N/A	Joules/g
95000227	AN-102 GRAB	4 SAMPLE	S96T000006	0	DSC-01	LIQUID	N/A			Joules/g
95000227	AN-102 GRAB	5 DUP	S96T000006	0	DSC-01	LIQUID			N/A	Joules/g

Final page for worklist #

4851

Susie M. Fulton 1-17-96
Analyst Signature Date

Analyst Signature Date

Other instruments
were used.
1/29/96
BDV

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: IND011701 Wed Jan 17 10:37:31 1996
 Sample Weight: 15.000 mg
 12N14B Indium at 10C/min

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
 COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 259 TO 263.

N2, EXOTHERM DOWN
 TEMPERATURE: 150.0 °C
 TIME: 0.0 min
 RATE: 10.0 °C/min
 SM FULTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Wed Jan 17 22:00:32 1996

Curve 1: DSC

File info: SAM011706 Wed Jan 17 22:22:08 1996

Sample Weight: 14.360 mg

S965T000005

exotherm down, N2 purge gas

TEMP: 25.0 °C TIME: 0.0 min RATE: 10.0 °C/min

SM FULTON

PERKIN-ELMER

7 Series Thermal Analysis System

Wed Jan 17 22:27:58 1996

Curve 1: DSC

File Info: SAM011707 Wed Jan 17 23:21:43 1996

Sample Weight: 12.530 mg

S96T000005 DUP

exotherm down, N2 purge gas

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

Temperature (°C)

SM FULTON
PERKIN-ELMER

7 Series Thermal Analysis System
Thu Jan 18 01:37:04 1996

Curve 1: DSC

File info: SAM011708 Thu Jan 18 02:28:45 1996

Sample Weight: 8.650 mg

S96T000006

2-62

WHC-SD-WM-DP-165, REV. 0

WHC-SD-WM-DP-165, REV. 1

exotherm down, N2 purge gas
TEMP1: 35.0 °C TIME1: 0.0 min RATE1: 10.0 °C/min
TEMP2: 500.0 °C

Temperature (°C)

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Jan 18 04:01:38 1996

Curve 1: DSC
 File Info: SAM011709 Thu Jan 18 04:51:27 1996
 Sample Weight: 11.770 mg
 S96T000006 DUP

exotherm down, N2 purge gas
 TEMPERATURE 35.0 °C
 RATE 500.0 °C/min
 TIME 0.0 min RATE 10.0 °C/min
 SM FULTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Thu Jan 18 19:02:27 1996

LABCORE Data Entry Template for Worklist#

4856

Analyst: ADP Instrument: DSC0 3 Book # 12 N14B

Method: LA-514-114 Rev/Mod C-1 WHC-SD-WM-DP-165, REV. 1

Worklist Comment: Please run AN-102 DSCs under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-03	LIQUID	28.45	28.38	N/A	Joules/g
95000222	AN-102 GRAB	2 SAMPLE	S95T003867	0	DSC-03	LIQUID	N/A	22.14		Joules/g
95000222	AN-102 GRAB	3 DUP	S95T003867	0	DSC-03	LIQUID	22.14	22.01	N/A	Joules/g
95000222	AN-102 GRAB	4 SAMPLE	S95T003869	0	DSC-03	LIQUID	N/A	19.38	277.25/g	Joules/g
95000222	AN-102 GRAB	5 DUP	S95T003869	0	DSC-03	LIQUID	277.2	22.51	1129/16 BDV	Joules/g

Final page for worklist #

4856

See attached for signatures
Analyst Signature Date 1/16/96
BDV

Analyst Signature Date 1/16/96

Verified by Blandina Valenzuela
1/17/96

* Data for sample S95T003867 from this worklist will not be used in the report due to questionable baseline. Sample was rerun on worklist # 5343.
RSC 2/2/96

Data Entry Comments:

The original integration results were 19.38 J/g for sample and 22.50 J/g for duplicate.

LABCORE Data Entry Template for Worklist#

4856

Analyst: ADP Instrument: DSC0 Book # 12014B

Method: LA-514-113 Rev/Mod C-1 WHC-SD-WM-DP-165, REV. 1

Worklist Comment: Please run AN-102 DSCs under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-01	LIQUID			N/A	Joules/g
95000222	AN-102 GRAB	2 SAMPLE	S95T003867	0	DSC-01	LIQUID	N/A			Joules/g
95000222	AN-102 GRAB	3 DUP	S95T003867	0	DSC-01	LIQUID			N/A	Joules/g
95000222	AN-102 GRAB	4 SAMPLE	S95T003869	0	DSC-01	LIQUID	N/A			Joules/g
95000222	AN-102 GRAB	5 DUP	S95T003869	0	DSC-01	LIQUID			N/A	Joules/g

Final page for worklist #

4856

Anthony Parente 1-12-96
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

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

Curve 1: DSC

File Info: IND011202 Fri Jan 12 22:23:10 1996

Sample Weight: 15.000 mg

12N148 Indium at 10C/min

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 266 TO 268.

N2, EXOTHERM DOWN

TEMP1: 150.0 °C TIME1: 0.0 min RATE1: 10.0 °C/min
TEMP2: 170.0 °C

Curve 1: DSC
 File Info: SA011203 Sat Jan 13 01:59:29 1996
 Sample Weight: 29.770 mg
 S95T003869 SA1

exotherm down, N2 purge gas
 TEMPERATURE 30.0 °C
 RATE 100.0 °C/min
 TIME 0.0 min
 RATE 10.0 °C/min

ADURINTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Fri Jan 26 10:01:41 1996

Curve 1: DSC
 File Info: SAH011204 Sat Jan 13 02:55:21 1996
 Sample Weight: 32.210 mg
 S95T003869 DUP

exotherm down, N2 purge gas
 Temp: 35.0 °C
 Temp: 350.0 °C
 Time: 0.0 min
 Rate: 10.0 °C/min
 AD PURINTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Fri Jan 26 10:10:16 1996

LABCORE Data Entry Template for Worklist#

4857

Analyst: ADP Instrument: DSC0 1 Book # 12N143

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

Worklist Comment: Please run AN-102 DSCs under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-01	LIQUID	<u>28.45</u>	<u>30.8*</u>	<u>N/A</u>	Joules/g
95000222	AN-102 GRAB	2 SAMPLE	S95T003868	0	DSC-01	LIQUID	<u>N/A</u>	<u>616.1</u>		Joules/g
95000222	AN-102 GRAB	3 DUP	S95T003868	0	DSC-01	LIQUID	<u>616.1</u>	<u>557.8</u>	<u>N/A</u>	Joules/g
95000222	AN-102 GRAB	4 SAMPLE	S95T003962	0	DSC-01	LIQUID	<u>N/A</u>	<u>Ø</u>		Joules/g
95000222	AN-102 GRAB	5 DUP	S95T003962	0	DSC-01	LIQUID	<u>Ø</u>	<u>Ø</u>	<u>N/A</u>	Joules/g

Final page for worklist #

4857

Cathy Puntier 1-12-96
Analyst Signature Date

KE Wright 1/16/96
Analyst Signature Date

Verified by Blandina Valenzuela 1/17/96

S95T003868 produced an endotherm at 133.8°C with a delta H of 914.9 J/g

Data Entry Comments: S95T003962 produced an endotherm at 117.9°C with
a delta H of 1550.7 J/g.

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

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 291 TO 294.

DSC STD 12N14B

8.127 mg

Rate: 10.0 °C/min

File: 00029.001 DSC METTLER 12-Jan-96

Ident: 0.0 222-S Laboratory

S95T003868 SAM N2
 26.387 mg
 File: 00039.001 DSC METTLER 13-Jan-96
 Rate: 10.0 °C/min Ident: 0.0 222-S Laboratory

S95T003868 DUP N2
 32.234 mg
 Rate: 10.0 °C/min
 File: 00041.001
 Ident: 0.0
 DSC METTLER
 222-S Laboratory
 13-Jan-96

S95T003962 DUP N2

19.605 mg

Rate: 10.0 °C/min

File: 00045.001

DSC METTLER

13-Jan-96

Ident: 0.0

222-S Laboratory

exo>

50. mW

Integration

Delta H24351 mJ

1242.1 J/g

Peak 127.9°C

-98.8 mW

100.

200.

300.

400.

°C

2074

V:\HSC\SD\MM\DP-165, REV. 1

LABCORE Data Entry Template for Worklist#

5122

Analyst: ADP Instrument: DSC0 3 Book # 12N14B

Method: LA-514-114 Rev/Mod C-1 WHC-SD-WM-DP-165, REV. 1

Worklist Comment: Please run AN-102 DSCs under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-03	LIQUID	<u>28.45</u>	<u>28.15</u>	<u>N/A</u>	Joules/g
95000222	AN-102 GRAB	2 SAMPLE	S95T004133	0	DSC-03	LIQUID	<u>N/A</u>	<u>258.01</u>		Joules/g
95000222	AN-102 GRAB	3 DUP	S95T004133	0	DSC-03	LIQUID	<u>258.01</u>	<u>252.12</u>	<u>N/A</u>	Joules/g
95000222	AN-102 GRAB	4 SAMPLE	S95T004135	0	DSC-03	LIQUID	<u>N/A</u>	<u>279.7</u>		Joules/g
95000222	AN-102 GRAB	5 DUP	S95T004135	0	DSC-03	LIQUID	<u>279.7</u>	<u>300.3</u>	<u>N/A</u>	Joules/g

Final page for worklist #

5122

See attached for signatures
Analyst Signature ADP Date 1/25/96 *bdv*

ADP
Analyst Signature ADP Date 1-29-96

Data Entry Comments: S95T004133 produced one endotherm at 125.61°C with a delta H

of 1178.6 J/g

S95T004135 produced an endotherm at 128.4°C with a delta H of 1147.73

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#

5122

Analyst: ADP Instrument: DSC0 Book # 12N14B

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

Worklist Comment: Please run AN-102 DSCs under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-01	LIQUID			N/A	Joules/g
95000222	AN-102 GRAB	2 SAMPLE	S95T004133	0	DSC-01	LIQUID	N/A			Joules/g
95000222	AN-102 GRAB	3 DUP	S95T004133	0	DSC-01	LIQUID			N/A	Joules/g
95000222	AN-102 GRAB	4 SAMPLE	S95T004135	0	DSC-01	LIQUID	N/A			Joules/g
95000222	AN-102 GRAB	5 DUP	S95T004135	0	DSC-01	LIQUID			N/A	Joules/g

Final page for worklist #

5122

Anthony Peruto 1-23-96
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

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

Curve 1: DSC

File info: IND012301 Tue Jan 23 18:27:37 1996

Sample Weight: 15.000 mg

12M14B Indium at 10C/min

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 277 TO 281.

N2, EXOTHERM DOWN

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

Temperature (°C)

AD PURINTON
PERKIN-ELMER

7 Series Thermal Analysis System
Tue Jan 23 18:34:15 1996

Curve 1: DSC

File info: SAM012302 Tue Jan 23 22:12:03 1996

Sample Weight: 38.650 mg

S95T0904133 SAM

TEMP: 38.0 °C TIME: 0.0 min RATE: 10.0 °C/min

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Wed Jan 24 15:03:25 1996

WHC-SD-WM-DP-165, REV.1

Curve 1: DSC

File info: SAM012303 Tue Jan 23 23:08:50 1996

Sample Weight: 31.990 mg

S95T004133 DUP

WHC-SD-WM-DP-165, REV.1

exotherm down, N2 purge gas

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

Temperature (°C)

AD PURINTON

PERKIN-ELMER

7 Series Thermal Analysis System

Wed Jan 24 15:34:05 1996

Curve 1: DSC
 File Info: SAM012304 Wed Jan 24 00:09:20 1996
 Sample Weight: 34.370 mg
 S95T004135 SAM

exotherm down, N2 purge gas
 TEMPERATURE 500.0 °C
 TIME 0.0 min RATE 10.0 °C/min
 Al P J R I N T O N
 P L A K I N - E L M E R
 7 Series Thermal Analysis System
 Wed Jan 24 15:40:45 1996

Curve 1: DSC

File info: SAM012405 Wed Jan 24 01:55:10 1996

Sample Weight: 37.630 mg

S95T004135 DUP

2481

WHC-SD-WM-DP-165, REV. 1

exotherm down, N2 purge gas

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

TEMP2: 600.0 °C

Temperature (°C)

AD PURINTON

PERKIN-ELMER

7 Series Thermal Analysis System

Thu Jan 25 11:27:38 1996

LABCORE Data Entry Template for Worklist#

5132

Analyst: ADP Instrument: DSC0 3 Book # 12N14B

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

Worklist Comment: Please run AN-102 DSCs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-03	SOLID	<u>28.45</u>	<u>28.08</u>	<u>N/A</u>	Joules/g
95000222	AN-102 GRAB	2	SAMPLE	S95T004137	0		DSC-03	SOLID	<u>N/A</u>	<u>279.65</u>		Joules/g
95000222	AN-102 GRAB	3	DUP	S95T004137	0		DSC-03	SOLID	<u>279.65</u>	<u>262.5</u>	<u>N/A</u>	Joules/g
95000222	AN-102 GRAB	4	SAMPLE	S95T004139	0		DSC-03	SOLID	<u>N/A</u>	<u>283.2</u>		Joules/g
95000222	AN-102 GRAB	5	DUP	S95T004139	0		DSC-03	SOLID	<u>283.2</u>	<u>327.5</u>	<u>N/A</u>	Joules/g

Final page for worklist #

5132

See attached for signatures
Analyst Signature [Signature] Date 1/25/96
BDV

[Signature] 1-26-95
Analyst Signature Date

Verified by Blanca
Valenzuela
1/26/96
BDV

Data Entry Comments: S95T004137 produced an ^{1/26/96 BDV} endotherm at 130.17°C
with a delta H of 991.8 J/g
S95T004139 produced an endotherm at 131.73°C with a delta H of 1037.11 J/g.

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

LABCORE Data Entry Template for Worklist#

5132

Analyst: _____ Instrument: DSC0 _____ Book # _____

Method: LA-514-113 Rev/Mod _____

Worklist Comment: Please run AN-102 DSCs under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-01	SOLID	_____	_____	N/A	Joules/g
95000222	AN-102 GRAB	2 SAMPLE	S95T004137	0	DSC-01	SOLID	N/A	_____	_____	Joules/g
95000222	AN-102 GRAB	3 DUP	S95T004137	0	DSC-01	SOLID	_____	_____	N/A	Joules/g
95000222	AN-102 GRAB	4 SAMPLE	S95T004139	0	DSC-01	SOLID	N/A	_____	_____	Joules/g
95000222	AN-102 GRAB	5 DUP	S95T004139	0	DSC-01	SOLID	_____	_____	N/A	Joules/g

Final page for worklist #

5132

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Data Entry Comments:

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

Curve 1: DSC

File info: IND0012501 Thu Jan 25 06:14:44 1996

Sample Weight: 15.000 mg

12N14B Indium at 10C/min

WHC-SD-WM-DP-165, REV. 1

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 284 TO 288.

N2, EXOTHERM DOWN

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

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Jan 25 06:25:13 1996

Curve 1: DSC
 File Info: SAM012401 Wed Jan 24 23:30:19 1996
 Sample Weight: 39.350 mg
 S95T004137 SAM

WHC-SD-WM-DP-165, REV. 1

exotherm down, N2 purge gas
 TEMP: 35.0 °C TIME: 0.0 min RATE: 10.0 °C/min
 AD PURINTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Thu Jan 25 14:56:50 1996

Curve 1: DSC
 File info: SAM012402 Thu Jun 25 00:39:54 1996
 Sample Weight: 59.970 mg
 S95T004137 DUP

exotherm down, N2 purge gas
 TEMPERATURE 500.0 °C
 RATE 10.0 °C/min
 TIME 0.0 min
 AD PURINTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Thu Jan 25 10:14:37 1996

Curve 1: DSC

File info: SAM012403 Thu Jan 25 01:39:29 1996

Sample Weight: 51.900 mg

S95T004139 SAM

WHC-SD-WM-DP-165, REV. 1

exotherm down, N2 purge gas

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

TEMP2: 500.0 °C

Temperature (°C)

AD PURINTON

PERKIN-ELMER

7 Series Thermal Analysis System

Thu Jan 25 15:28:29 1996

Curve 1: DSC

File info: SAM012409 Thu Jan 25 02:50:03 1996

Sample Weight: 39.120 mg

S95T004139 DUP

88-2

WHC-SD-WM-DP-165, REV.1

exotherm down, N2 purge gas

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

TEMP2: 500.0 °C

Temperature (°C)

AD PURINTON

PERKIN-ELMER

7 Series Thermal Analysis System

Thu Jan 25 15:21:09 1996

LABCORE Data Entry Template for Worklist#

5343

Analyst: ADP Instrument: DSC01 Book # 12N14BMethod: LA-514-113 Rev/Mod C-1 WHC-SD-WM-DP-165, REV. 1

Worklist Comment: Run AN-102 DSCs on Mettler under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-01	LIQUID	<u>28.45</u>	<u>30.4</u>	<u>N/A</u>	Joules/g
95000227	AN-102 GRAB	2 SAMPLE	S96T000005	0	DSC-01	LIQUID	<u>N/A</u>	<u>237.0</u>		Joules/g
95000227	AN-102 GRAB	3 DUP	S96T000005	0	DSC-01	LIQUID	<u>237.0</u>	<u>230.2</u>	<u>N/A</u>	Joules/g
		4 STD			DSC-01	LIQUID	<u>28.45</u>	<u>29.6</u>	<u>N/A</u>	Joules/g
95000222	AN-102 GRAB	5 SAMPLE	S95T003867	0	DSC-01	LIQUID	<u>N/A</u>	<u>283.9</u>		Joules/g
95000222	AN-102 GRAB	6 DUP	S95T003867	0	DSC-01	LIQUID	<u>283.9</u>	<u>284.0</u>	<u>N/A</u>	Joules/g

Final page for worklist #

5343

See attached for signatures
Analyst Signature _____ Date _____See attached for signatures
Analyst Signature _____ Date _____Verified by Blandina Valenzuela
2/2/96

Data Entry Comments: S96T000005 produced two endotherms one at 129.7°C with a delta H of 1112.2 J/g and second at 233.0°C with a delta H of 20.1 J/g
S95T003867 produced an endotherm at 130.5°C with a delta H of 922.9 J/g

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

LABCORE Data Entry Template for Worklist#

5343

Analyst: ADP Instrument: DSC01 Book # 12814-BMethod: LA-514-113 Rev/Mod C-1 WHC-SD-WM-DP-165, REV. 1

Worklist Comment: Run AN-102 DSCs on Mettler under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-01	LIQUID			N/A	Joules/g
95000227	AN-102 GRAB	2 SAMPLE	S96T000005	0	DSC-01	LIQUID	N/A			Joules/g
95000227	AN-102 GRAB	3 DUP	S96T000005	0	DSC-01	LIQUID			N/A	Joules/g
95000222	AN-102 GRAB	4 SAMPLE	S95T003867	0	DSC-01	LIQUID	N/A			Joules/g
95000222	AN-102 GRAB	5 DUP	S95T003867	0	DSC-01	LIQUID			N/A	Joules/g

Final page for worklist #

5343

Anthony Perinetti 1-31-96
Analyst Signature Date

NE Wight 2/2/96
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.

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 89 TO 96

IND 12N14-B N2 Rate: 10.0 °C/min File: 00116.001 DSC METTLER 31-Jan-96
10.220 mg Ident: 0.0 222-S Laboratory

WHC-SD-WM-DP-165, REV.

S96T000005 SAM N2
 26.870 mg
 File: 00122.001 DSC METTLER 31-Jan-96
 Rate: 10.0 °C/min
 Ident: 0.0 222-S Laboratory

S96T000005 DUP N2
 23.220 mg
 Rate: 10.0 °C/min
 File: 00124.001 DSC METTLER 31-Jan-96
 Ident: 0.0 222-S Laboratory

WHC-SD-WM-DP-165, REV. 1

IND 12N14-A N2
6.450 mg

Rate: 10.0 °C/min

File: 00131.001
Ident: 0.0

DSC METTLER 01-Feb-96
222-S Laboratory

WHC-SD-WM-DP-165, REV. 1

S95T003867 SAM N2

28.477 mg

Rate: 10.0 °C/min

File: 00139.001

DSC METTLER

01-Feb-96

Ident: 0.0

222-S Laboratory

exo>

50. mW

Integration

Delta H 26280 mJ

922.9 J/g

Peak 130.5 °C

-90.5 mW

Integration

Delta H 8083 mJ

283.9 J/g

Peak 435.7 °C

15.8 mW

100.

200.

300.

400.

°C

2-35

WHC-SD-WM-DP-165, REV. 1

WHC-SD-WM-DP-165, REV. 0

S95T003867 DUP N2

Rate: 10.0 °C/min

File: 00141.001

DSC METTLER

01-Feb-96

exo >

Integration
Delta H30138 mJ
968.2 J/g
Peak
133.6 °C
-100.2 mW

Integration
Delta H 8840 mJ
284.0 J/g
Peak
437.8 °C
16.5 mW

LABCORE Data Entry Template for Worklist#

5199

Analyst: BNV Instrument: DSC01 Book #

Method: LA-514-113 Rev/Mod

Worklist Comment: Dry DSC for AN-102. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
95000227	AN-102 GRAB	1 SAMPLE	S96T000003	0	DSC-02	SOLID	N/A	Ø		Joules/g Dry
95000227	AN-102 GRAB	2 DUP	S96T000003	0	DSC-02	SOLID	Ø	Ø	N/A	Joules/g Dry
95000227	AN-102 GRAB	3 SAMPLE	S96T000004	0	DSC-02	SOLID	N/A	Ø		Joules/g Dry
95000227	AN-102 GRAB	4 DUP	S96T000004	0	DSC-02	SOLID	Ø	Ø	N/A	Joules/g Dry
95000222	AN-102 GRAB	5 SAMPLE	S95T004137	0	DSC-02	SOLID	N/A	488.1		Joules/g Dry
95000222	AN-102 GRAB	6 DUP	S95T004137	0	DSC-02	SOLID	488.1	458.2	N/A	Joules/g Dry
95000222	AN-102 GRAB	7 SAMPLE	S95T004139	0	DSC-02	SOLID	N/A	472.1		Joules/g Dry
95000222	AN-102 GRAB	8 DUP	S95T004139	0	DSC-02	SOLID	492.1	569.1	N/A	Joules/g Dry

Final page for worklist #

5199

Data entered + verified by

Blandina Valenzuela 1-29-96
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

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

2-98

LABCORE Data Entry Template for Worklist#

5200

Analyst: BDV Instrument: DSC01 Book #

Method: LA-514-113 Rev/Mod

WHC-SD-WM-DP-165, REV. 1

Worklist Comment: Dry DSC for AN-102. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
95000222	AN-102 GRAB	1 SAMPLE	S95T004133	0	DSC-02	LIQUID	N/A	487.1		Joules/g Dry
95000222	AN-102 GRAB	2 DUP	S95T004133	0	DSC-02	LIQUID	487.1	475.9	N/A	Joules/g Dry
95000222	AN-102 GRAB	3 SAMPLE	S95T004135	0	DSC-02	LIQUID	N/A	556.5		Joules/g Dry
95000222	AN-102 GRAB	4 DUP	S95T004135	0	DSC-02	LIQUID	556.5	597.5	N/A	Joules/g Dry
95000222	AN-102 GRAB	5 SAMPLE	S95T003867	0	DSC-02	LIQUID	N/A	43.53		Joules/g Dry
95000222	AN-102 GRAB	6 DUP	S95T003867	0	DSC-02	LIQUID	43.53	43.28	N/A	Joules/g Dry
95000222	AN-102 GRAB	7 SAMPLE	S95T003868	0	DSC-02	LIQUID	N/A	540.5	1-30.96 BDV	Joules/g Dry
95000222	AN-102 GRAB	8 DUP	S95T003868	0	DSC-02	LIQUID	540.5	1088 551.0	1-30.96 N/A BDV	Joules/g Dry
95000222	AN-102 GRAB	9 SAMPLE	S95T003869	0	DSC-02	LIQUID	N/A	555.3 51234	1-30.96 BDV	Joules/g Dry
95000222	AN-102 GRAB	10 DUP	S95T003869	0	DSC-02	LIQUID	555.3 1234	566.1 117	1-30.96 N/A	Joules/g Dry
95000227	AN-102 GRAB	11 SAMPLE	S95T003982	0	DSC-02	LIQUID	N/A	563.6		Joules/g Dry
95000227	AN-102 GRAB	12 DUP	S95T003982	0	DSC-02	LIQUID	563.6	629.4	N/A	Joules/g Dry
95000227	AN-102 GRAB	13 SAMPLE	S95T003983	0	DSC-02	LIQUID	N/A	720.3		Joules/g Dry
95000227	AN-102 GRAB	14 DUP	S95T003983	0	DSC-02	LIQUID	720.3	560.2	N/A	Joules/g Dry
95000227	AN-102 GRAB	15 SAMPLE	S95T003984	0	DSC-02	LIQUID	N/A	440.8		Joules/g Dry
95000227	AN-102 GRAB	16 DUP	S95T003984	0	DSC-02	LIQUID	440.8	389.2	N/A	Joules/g Dry
95000227	AN-102 GRAB	17 SAMPLE	S96T000005	0	DSC-02	LIQUID	N/A	30.96		Joules/g Dry
95000227	AN-102 GRAB	18 DUP	S96T000005	0	DSC-02	LIQUID	30.96	35.66	N/A	Joules/g Dry

Data Entry Comments:

Dry DSC results for samples S95T003867 and S96T000005 for this worklist will NOT be included in the report due to a DSC perm. Recalculated results are on worksheet # 5401

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.

206
2/2/96

LABCORE Data Entry Template for Worklist#

5200

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
95000227	AN-102 GRAB	19 SAMPLE	S96T000006	0	DSC-02	LIQUID	N/A	52.21		Joules/g Dry
95000227	AN-102 GRAB	20 DUP	S96T000006	0	DSC-02	LIQUID		1130/96	N/A	Joules/g Dry

Final page for worklist #

5200

Data entered + verified by

Blandina Valenzuela 1/29/96

Analyst Signature

Date

Analyst Signature

Date

Data Entry Comments:

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

AN-102 (liquid)

CALCULATED DRY DSC			
SAMPLE NO.	DSC RESULT (J/g)	TGA RESULT (% water)	DRY DSC RESULT
S95T004133	258.0	47.03	487.1
4133D	252.1	47.03	475.9
4135	279.7	49.74	556.5
4135D	300.3	49.74	597.5
3867	22.14	49.14 49.14	43.53
3867D	22.01	49.14	43.28
3868	¹⁻³⁰⁻¹⁶ 277.2 616.1	48.71 ^{x avg of 3 results}	¹⁻³⁰⁻¹⁶ 540.5 1201
3868D	¹⁻³⁰⁻¹⁶ 277.2 557.8	48.71	¹⁻³⁰⁻¹⁶ 551.0 1088
3869	¹⁻³⁰⁻¹⁶ 616.1 277.2	50.08	¹⁻³⁰⁻¹⁶ 1234 555.3
3869D	¹⁻³⁰⁻¹⁶ 557.8 282.61	50.08	¹⁻³⁰⁻¹⁶ 1117 566.1
3982	284.2	49.57	563.6
3982D	317.4	49.57	629.4
3983	361.3	49.84	720.3
3983D	281.0	49.84	560.2
3984	223.2	49.36	440.8
3984D	197.1	49.36	389.2
S96T000005	15.76	49.10	30.96
000005D	18.15	49.10	35.66
06	Ø	—	
06D	¹⁻³⁰⁻¹⁶ Ø 27.47	— 47.39	52.21 ¹⁻³⁰⁻¹⁶

202
2/2/96

LABCORE Data Entry Template for Worklist#

5401

Analyst: BVD Instrument: DSC01 Book # N/A

Method: LA-514-113 Rev/Mod _____

WHC-SD-WM-DP-165, REV. 1

Worklist Comment: Dry DSC RERUN for AN-102. rae

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
95000227	AN-102 GRAB	1 SAMPLE	S96T000005	0	DSC-02	LIQUID	N/A	465.6		Joules/g Dry
95000227	AN-102 GRAB	2 DUP	S96T000005	0	DSC-02	LIQUID	465.6	452.3	N/A	Joules/g Dry
95000222	AN-102 GRAB	3 SAMPLE	S95T003867	0	DSC-02	LIQUID	N/A	558.2		Joules/g Dry
95000222	AN-102 GRAB	4 DUP	S95T003867	0	DSC-02	LIQUID	558.2	558.4	N/A	Joules/g Dry

Final page for worklist #

5401

Data entered & verified by
Blandina Valenzuela 2/2/96
Analyst Signature

Date

Analyst Signature

Date

Data Entry Comments:

Dry DSC was recalculated because of a rerun. Used results from worklist # 5343. For 2/2/96

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.

* DSC results are from wahlst # 5343. *rcw 2/2/96*

LABCORE Data Entry Template for Worklist#

4845

Analyst: ADP Instrument: TGA0 1 Book # 75N8A

Method: LA-560-112 Rev/Mod B-1

Worklist Comment: Please run AN-102 TGAs under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-01	SOLID	<u>59.2</u>	<u>60.36</u>	<u>N/A</u>	%
95000227	AN-102 GRAB	2 SAMPLE	S96T000003	0	TGA-01	SOLID	<u>N/A</u>	<u>35.6</u>		%
95000227	AN-102 GRAB	3 DUP	S96T000003	0	TGA-01	SOLID	<u>35.6</u>	<u>35.98</u>	<u>N/A</u>	%
95000227	AN-102 GRAB	4 SAMPLE	S96T000004	0	TGA-01	SOLID	<u>N/A</u>	<u>44.25</u>		%
95000227	AN-102 GRAB	5 DUP	S96T000004	0	TGA-01	SOLID	<u>44.25</u>	<u>43.72</u>	<u>N/A</u>	%

Final page for worklist #

4845

Analyst Signature

1-20-96

Date

Analyst Signature

1/24/96

Date

Verified by Blandina Valenzuela
1/26/96

Data Entry Comments:

S96T000003 produced weight loss of 7.90% at approximately
320°C. The results given are the sum of two weight loss steps.
S96T000004 produced two additional weight loss of 3.65% and 4.38%

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

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 2-105 TO 2-109.

WHC-SD-WM-DP-165, REV. 1

TGA STD 75N8A N2 File: 00019.001 TG METTLER 20-Jan-96
13.263 mg Rate: 10.0 °C/min Ident: 0.0 222-S Laboratory

Step Analysis
Height -8.01 mg
-60.36 %
Resid. 5.21 mg
39.31 %
Dpeak 83.3 °C

S96T000003 SAM N2

20.662 mg

Rate: 10.0 °C/min

File: 00020.001 TG METTLER 20-Jan-96

Ident: 0.0 222-S Laboratory

Step Analysis
Height -3.53 mg
-17.07 %
ResidC. 17.13 mg
82.93 %

Step Analysis
Height -3.83 mg
-18.53 %
ResidC. 13.31 mg
64.40 %
Dpeak 107.0 °C

Step Analysis
Height -1.63 mg
-7.90 %
ResidC. 11.67 mg
56.50 %
Dpeak 403.0 °C

WHC-SD-WM-DP-165, REV. I

S96T000003 DUP N2

20.253 mg

Rate: 10.0 °C/min

Step Analysis

Height -2.37 mg

-11.69 %

Resid. 17.89 mg

88.31 %

File: 00022.001 TG METTLER 20-Jan-96

Ident: 0.0 222-S Laboratory

WHC-SD-WM-DP-165, REV. I

Step Analysis

Height -4.92 mg

-24.29 %

Resid. 12.97 mg

64.02 %

Dpeak 117.0 °C

Step Analysis

Height -1.32 mg

-6.54 %

Resid. 11.64 mg

57.48 %

Dpeak 401.0 °C

S96T000004 SAM N2

38.129 mg

Rate: 10.0 °C/min

File: 00023.001

Ident: 0.0

TG METTLER

20-Jan-96

222-S Laboratory

WHC-SD-WM-DP-165, REV. I

Step Analysis

Height-16.87 mg

-44.25 %

Resid. 21.26 mg

55.75 %

Dpeak 127.0 °C

Step Analysis

Height -1.39 mg

-3.65 %

Resid. 19.87 mg

52.10 %

Step Analysis

Height -1.67 mg

-4.38 %

Resid. 18.19 mg

47.72 %

2-109

S96T000004 DUP N2

18.263 mg

Rate: 10.0 °C/min

File: 00025.001

Ident: 0.0

TG

METTLER

20-Jan-96

222-S Laboratory

Step Analysis

Height -7.98 mg

-43.72 %

ResiC. 10.28 mg

56.28 %

Dpeak 75.0 °C

Step Analysis

Height -0.85 mg

-4.68 %

ResiC. 9.42 mg

51.60 %

Dpeak 287.0 °C

Step Analysis

Height -0.40 mg

-2.18 %

ResiC. 9.03 mg

49.43 %

Step Analysis

Height -0.47 mg

-2.59 %

ResiC. 8.55 mg

46.84 %

LABCORE Data Entry Template for Worklist#

4846

Analyst: ADP

Instrument: TGA0 1

Book # 15N8A

Method: LA-560-112 Rev/Mod B-1

Worklist Comment: Please run AN-102 TGAs under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-01	LIQUID	<u>59.2</u>	<u>60.38</u>	<u>N/A</u>	%
95000227	AN-102 GRAB	2 SAMPLE	S95T003982	0	TGA-01	LIQUID	<u>N/A</u>	<u>50.06</u>		%
95000227	AN-102 GRAB	3 DUP	S95T003982	0	TGA-01	LIQUID	<u>50.06</u>	<u>49.07</u>	<u>N/A</u>	%
95000227	AN-102 GRAB	4 SAMPLE	S95T003983	0	TGA-01	LIQUID	<u>N/A</u>	<u>49.76</u>		%
95000227	AN-102 GRAB	5 DUP	S95T003983	0	TGA-01	LIQUID	<u>49.76</u>	<u>49.91</u>	<u>N/A</u>	%
95000227	AN-102 GRAB	6 SAMPLE	S95T003984	0	TGA-01	LIQUID	<u>N/A</u>	<u>49.33</u>		%
95000227	AN-102 GRAB	7 DUP	S95T003984	0	TGA-01	LIQUID	<u>49.33</u>	<u>49.38</u>	<u>N/A</u>	%

Final page for worklist #

4846

Anthony Purnetto 1-19-96
Analyst Signature Date

Shelton 1/24/96
Analyst Signature Date

RaeAnn Green 1-19-96

Verified by Blandina Valenzuela 1/26/96

S95T003982 produced a second weight loss step of 5.38% at approximately 330°C.

Data Entry Comments:

S95T003983 produced a second weight loss step of 5.50% at approximately 340°C

S95T003984 produced a second weight loss step at approximately 6.90% at 320°C

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

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 2 TO 2//7.

TGA STD 75NBA N2
16.025 mg
Rate: 10.0 °C/min
File: 00006.001 TG METTLER 19-Jan-96
Ident: 0.0 222-S Laboratory

```

Step Analysis
Height -9.68 mg
      -60.38 %
Resic.  6.35 mg
      39.62 %
Dpeak   73.3°C

```

Anthony Purnator 1-19-96

S95T003982 SAM N2

40.906 mg

Rate: 10.0 °C/min

File: 00007.001

Ident: 0.0

TG

19-Jan-96

222-S Laboratory

Step Analysis
Height-20.48 mg
-50.06 %
ResiC. 20.43 mg
49.94 %
Dpeak 125.0 °C

Step Analysis
Height -2.20 mg
-5.38 %
ResiC. 18.23 mg
44.55 %

S95T003982 DUP N2

26.567 mg

Rate: 10.0 °C/min

File: 00009.001 TG METTLER 19-Jan-96
 Ident: 0.0 222-S Laboratory

Step Analysis
 Height-13.04 mg
 -49.07 %
 Resid. 13.53 mg
 50.93 %
 Dpeak 85.0 °C

Step Analysis
 Height -1.55 mg
 -5.85 %
 Resid. 11.83 mg
 44.54 %

S95T003983 SAM N2

30.216 mg

Rate: 10.0 °C/min

File: 00011.001 TG METTLER 19-Jan-96

Ident: 0.0 222-S Laboratory

Step Analysis

Height-15.04 mg

-49.76 %

ResidC. 15.18 mg

50.24 %

Dpeak 91.0 °C

Step Analysis

Height -1.66 mg

-5.50 %

ResidC. 13.51 mg

44.71 %

2-115

S95T003983 DUP N2

23.490 mg

Rate: 10.0 °C/min

File: 00013.001

TG

METTLER

19-Jan-96

Ident: 0.0

222-S Laboratory

Step Analysis

Height-11.72 mg

-49.91 %

ResiC. 11.77 mg

50.09 %

Dpeak 81.0 °C

Step Analysis

Height -1.31 mg

-5.59 %

ResiC. 10.45 mg

44.50 %

Dpeak 417.0 °C

WHC:SD-MM-DP-166, REV. 1

S95T003984 SAM N2

23.252 mg

Rate: 10.0 °C/min

File: 00015.001

TG

METTLER

20-Jan-96

Ident: 0.0

222-S Laboratory

Step Analysis

Height-11.47 mg

-49.33 %

ResiC. 11.78 mg

50.67 %

Dpeak 99.0 °C

Step Analysis

Height -1.49 mg

-6.40 %

ResiC. 10.29 mg

44.25 %

Dpeak 425.0 °C

2-116

WHC-SD-WM-DP-165, REV. 1

LABCORE Data Entry Template for Worklist#

4848

Analyst: Res Instrument: TGA0 1 Book # 75N8-A

Method: LA-560-112 Rev/Mod C-1

Worklist Comment: Please run AN-102 TGAs under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-01	LIQUID	<u>59.2</u>	<u>60.22</u>	<u>N/A</u>	%
95000227	AN-102 GRAB	2 SAMPLE	S96T000005	0	TGA-01	LIQUID	<u>N/A</u>	<u>49.09</u>		%
95000227	AN-102 GRAB	3 DUP	S96T000005	0	TGA-01	LIQUID	<u>49.09</u>	<u>49.10</u>	<u>N/A</u>	%
95000227	AN-102 GRAB	4 SAMPLE	S96T000006	0	TGA-01	LIQUID	<u>N/A</u>	<u>47.61</u>		%
95000227	AN-102 GRAB	5 DUP	S96T000006	0	TGA-01	LIQUID	<u>47.61</u>	<u>47.17</u>	<u>N/A</u>	%

Final page for worklist # 4848

Rae Ann Jean 1-22-96
Analyst Signature Date

[Signature] 1-24-96
Analyst Signature Date

Verified by Blandina Valenzuela
1-26-96

Data Entry Comments: S96T000005 produced a second weight loss step of
6.35%.

S96T000006 produced a second weight loss step of 6.50%

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.

S96T000005 SAM N2

12.884 mg

Rate: 10.0 °C/min

File: 00038.001 TG METTLER 22-Jan-96

Ident: 0.0 222-S Laboratory

Step Analysis

Height -5.32 mg

-29.09 %

Resid. 5.56 mg

50.91 %

Dpeak 79.0 °C

Step Analysis

Height -0.82 mg

-6.35 %

Resid. 5.74 mg

44.55 %

Dpeak 421.0 °C

S98T000005 DUP N2

23.082 mg

Rate: 10.0 °C/min

File: 00039.001 TG METTLER 22-Jan-96
Ident: 0.0 222-S Laboratory

Step Analysis
Height 11.33 mg
-49.10 %
Resid. 11.75 mg
50.90 %
Dpeak 93.0 °C

Step Analysis
Height 1.47 mg
-6.37 %
Resid. 10.28 mg
44.53 %
Dpeak 411.0 °C

S96T000006 SAM N2

13.399 mg

Rate: 10.0 °C/min

File: 00040.001 TG METTLER 22-Jan-96

Ident: 0.0 222-S Laboratory

Step Analysis
Height -5.38 mg
-47.61 %
Resid. 7.02 mg
52.39 %
Dpeak -3.0 °C

Step Analysis
Height -0.87 mg
-6.50 %
Resid. 6.07 mg
45.30 %

400. °C
Rae Ann Green
1-22-96

S96T00000G DUP N2

11.200 mg

Rate: 10.0 °C/min

File: 00041.001 TG METTLER 22-Jan-95

Ident: 0.0 222-S Laboratory

Step Analysis
Height -5.28 mg
Resid. 5.92 mg
Peak 52.93 %
Temp 3.0 °C

Step Analysis
Height -0.72 mg
Resid. 5.20 mg
Peak 46.41 %

LABCORE Data Entry Template for Worklist#

4859

Analyst: ADP Instrument: TGA0 1 Book # 75N8A

Method: LA-560-112 Rev/Mod B-1

Worklist Comment: Please run AN-102 TGAs under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-01	LIQUID	59.2	60.43	N/A	%
95000222	AN-102 GRAB	2 SAMPLE	S95T003868	0	TGA-01	LIQUID	N/A	48.58 24.29	1/24/96	%
95000222	AN-102 GRAB	3 DUP	S95T003868	0	TGA-01	LIQUID	48.58 46.43	49.35	N/A	%
95000222	AN-102 GRAB	4 TRIPL	S95T003868	0	TGA-01	LIQUID	48.58	48.2	N/A	%

Final page for worklist #

4859

See attached for signatures
Analyst Signature ADP Date 1/24/96
Verified by Blamolina
Valenzuela 1/26/96

Analyst Signature _____ Date _____

Data Entry Comments:

Sample produced an additional weight loss step of 7.49% after 200°C. The results reported are the sum of two weight loss steps.

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#

4859

Analyst: ADP Instrument: TGA0 _____ Book # 75N8A

Method: LA-560-112 Rev/Mod Q-1

Worklist Comment: Please run AN-102 TGAs under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-01	LIQUID			N/A	%
95000222	AN-102 GRAB	2 SAMPLE	S95T003867	0	TGA-01	LIQUID	N/A			%
95000222	AN-102 GRAB	3 DUP	S95T003867	0	TGA-01	LIQUID			N/A	%
95000222	AN-102 GRAB	4 SAMPLE	S95T003868	0	TGA-01	LIQUID	N/A			%
95000222	AN-102 GRAB	5 DUP	S95T003868	0	TGA-01	LIQUID			N/A	%

Final page for worklist #

4859

Anthony Turner 1-12-96
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

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

Curve 1: TGA

File Info: TER011201 Fri Jan 12 22:38:29 1996

Sample Weight: 14.491 mg

65N8-A Terliq

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 2126 TO 2129.

N2 10C/MIN

TEMP: 38.0 °C

TIME: 0.0 min

RATE: 10.0 °C/min

AD PURINTON

PERKIN-ELMER

7 Series Thermal Analysis System

Fri Jan 12 22:57:18 1996

Curve 1: TGA
 File Info: SAM011294 Sat Jan 13 03:16:11 1996
 Sample Weight: 17.921 mg
 S95T003868 SAM

10C/MIN N2
 TEMP: 55.0 C
 TIME: 0.0 min RATE: 10.0 C/min
 AD PURINTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Sat Jan 13 03:19:02 1996

Curve 1: TGA
 File info: SAM011206 Sat Jan 13 05:32:27 1996
 Sample Weight: 20.596 mg
 S95T003868 DUP

10C/MIN N2
 TEMPERATURE 350.0 C
 TIME 000.0 S
 0.0 min RATE: 10.0 C/min
 Temperature (°C)
 AD PURINTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Sat Jan 13 06:58:26 1996

Curve 1: TGA
 File Info: SAM011205 Sat Jan 13 04:22:07 1996
 Sample Weight: 19.627 mg
 S95T003867 TRP

10C/MIN N2
 TEMPERATURE: 500.0 °C
 TIME: 0.0 min RATE: 10.0 °C/min
 AD PURINTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Sat Jan 13 04:26:29 1996

LABCORE Data Entry Template for Worklist#

4860

Analyst: ADP Instrument: TGA0 1 Book # 75N8A

Method: LA-560-112 Rev/Mod B-1

Worklist Comment: Please run AN-102 TGAs under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-01	LIQUID	<u>59.2</u>	<u>60.68*</u>	<u>N/A</u>	%
95000222	AN-102 GRAB	2 SAMPLE	S95T003869	0	TGA-01	LIQUID	<u>N/A</u>	<u>50.13</u>		%
95000222	AN-102 GRAB	3 DUP	S95T003869	0	TGA-01	LIQUID	<u>50.13</u>	<u>50.02</u>	<u>N/A</u>	%
95000222	AN-102 GRAB	4 SAMPLE	S95T003962	0	TGA-01	LIQUID	<u>N/A</u>	<u>99.99</u>		%
95000222	AN-102 GRAB	5 DUP	S95T003962	0	TGA-01	LIQUID	<u>99.99</u>	<u>100.09</u>	<u>N/A</u>	%

Final page for worklist #

4860

Antony Puro 1-12-96
Analyst Signature Date

RT Shute 1-16-96
Analyst Signature Date

Verified by Blandina Valenzuela
1/17/96

Data Entry Comments:

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

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
 COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 2-131 TO 2-132 *MS*
2/12/96

TGA STD 65N8A

13.951 mg

Rate: 10.0 °C/min

File: 00030.001 TG METTLER 12-Jan-96

Ident: 0.0 222-S Laboratory

Step Analysis

Height -8.47 mg

-60.68 %

ResidC. 5.49 mg

39.32 %

Dpeak 80.0 °C

File: 00040.001 TG METTLER 13-Jan-96
 Ident: 0.0 222-S Laboratory

S95T003869 SAM N2
 28.895 mg

Rate: 10.0 °C/min

Step Analysis
 Height-14.49 mg
 -50.13 %
 Resid. 14.41 mg
 49.87 %
 Dpeak 85.0 °C

Step Analysis
 Height -1.88 mg
 -6.50 %
 Resid. 12.53 mg
 43.37 %

S95T003869 DUP N2

37.737 mg

Rate: 10.0 °C/min

File: 00042.001

TG

METTLER

13-Jan-96

Ident: 0.0

222-S Laboratory

2-133

S95T003962 SAM N2

19.526 mg

Rate: 10.0 °C/min

File: 00044.001

TG

METTLER

13-Jan-96

Ident: 0.0

222-S Laboratory

Step Analysis

Height-19.52 mg

-99.99 %

ResiC. 0.00 mg

0.01 %

2-134

WHC-SD-WM-DP-165, REV. 1

S95T003962 DUP N2
15.515 mg

File: 00046.001 TG METTLER 13-Jan-96
Ident: 0.0 222-S Laboratory

Rate: 10.0 °C/min

Step Analysis
Height-15.53 mg
-100.09 %
Resid. -0.01 mg
-0.09 %

LABCORE Data Entry Template for Worklist#

5124

Analyst: SME Instrument: TGA0 3 Book # 75N8-A

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

Worklist Comment: Please run AN-102 TGAs under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-03	LIQUID	<u>59.2</u>	<u>60.16</u>	<u>N/A</u>	%
95000222	AN-102 GRAB	2 SAMPLE	S95T004133	0	TGA-03	LIQUID	<u>N/A</u>	<u>45.26</u>		%
95000222	AN-102 GRAB	3 DUP	S95T004133	0	TGA-03	LIQUID	<u>45.26</u>	<u>48.80</u>	<u>N/A</u>	%
95000222	AN-102 GRAB	4 SAMPLE	S95T004135	0	TGA-03	LIQUID	<u>N/A</u>	<u>48.45</u>		%
95000222	AN-102 GRAB	5 DUP	S95T004135	0	TGA-03	LIQUID	<u>48.45</u>	<u>51.03</u>	<u>N/A</u>	%

Final page for worklist # 5124

Blandina Valenzuela for SME
Analyst Signature Date 1/26/96

Jim Con 1/26/96
Analyst Signature Date

Verified by Blandina Valenzuela
1/29/96

Data Entry Comments: S95T004133 produced a second weight loss step of 10.87%.
1/26/96 bdv
S95T004135 produced results were the sum of 3 weight loss steps.

Curve 1: TGA

File info: TER012501 Thu Jan 25 06:37:00 1996

Sample Weight: 10.981 mg

Terliq 75N8-A SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 2137 TO 2142

N2 10C/MIN
 TEMP: 35.0 °C
 TIME: 0.0 min RATE: 10.0 °C/min
 SM FULTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Thu Jan 25 06:45:22 1996

Curve 1: TGA
 File Info: SAM012503 Thu Jan 25 16:38:36 1996
 Sample Weight: 13.406 mg
 S95T004133

10C/MIN N2
 TEMP: 35.0 C
 TIME: 500.0 S
 RATE: 0.0 min RATE: 10.0 C/min
 SM FULTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Thu Jan 25 20:50:43 1996

Curve 1: TGA
 File info: SAM012504 Thu Jan 25 22:19:37 1996
 Sample Weight: 23.238 mg
 S95T004133 DUP

WHC-SD-WM-DP-165, REV. 1

10C/MIN N2
 TEMPE 35.0 C
 TIME: 0.0 min RATE: 10.0 C/min
 SM FULTON
 PERKIN-ELMER
 7 Series Thermal Analysis S/8' em
 Thu Jan 25 23:32:29 1996

Curve 1: TGA
 File Info: SAM012501 Thu Jan 25 13:27:51 1996
 Sample Weight: 7.865 mg
 S95T004135

SM FULTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Thu Jan 25 13:29:43 1996

10C/MIN N2
 Temp: 95.0 C
 TIME: 000.0 C
 0.0 min RATE: 10.0 C/min

Curve 1: TGA

File info: SAM012502 Thu Jan 25 14:38:14 1996

Sample Weight: 16.941 mg

S95T004135 DUP

2-141

WHC-SD-WM-DP-165, REV. 1

10C/MIN N2

TEMP: 95.0 °C
TEMP: 500.0 °C

TIME: 0.0 min RATE: 10.0 °C/min

Temperature (°C)

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Jan 25 15:44:20 1996

LABCORE Data Entry Template for Worklist#

5125

Analyst: ADP **Instrument:** TGA0 3 **Book #** 75N8 A

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

Worklist Comment: Please run AN-102 TGAs under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-03	LIQUID	<u>59.2</u>	<u>60.20</u>	<u>N/A</u>	%
95000222	AN-102 GRAB	2 SAMPLE	S95T003867	0	TGA-03	LIQUID	<u>N/A</u>	<u>49.74</u>		%
95000222	AN-102 GRAB	3 DUP	S95T003867	0	TGA-03	LIQUID	<u>49.74</u>	<u>48.54</u>	<u>N/A</u>	%

Final page for worklist #

5125

Blandina Valenzuela for ADP
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

The results are the sum of two weight loss steps.

Curve 1: TGA
 File info: TER011901 Fri Jan 19 07:43:54 1996
 Sample Weight: 17.367 mg
 Ter11q 75N8-A

2-143

N2 10C/MIN
 Temp: 25.0 °C
 Time: 200.0 s
 Rate: 0.0 min RATE: 10.0 C/min
 AD PURINTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Mon Jan 29 09:23:25 1996

Curve 1: TGA

File info: SAM011901 Fri Jan 19 14:00:43 1996

Sample Weight: 18.617 mg

S95T003867 SAM

WHC-SD-WM-DP-165, REV.1

10C/MIN N2

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

Temperature (°C)

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Jan 29 09:41:49 1996

Curve 1: TGA
 File info: SAM011902 Fri Jan 19 15:53:24 1996
 Sample Weight: 26.500 mg
 S95T003867 DUP

10C/MIN N2
 TEMP: 35.0 C
 TIME: 00:00
 0.0 min RATE: 10.0 C/min
 Temperature (°C)
 AD PURINTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Mon Jan 29 09:50:11 1996

LABCORE Data Entry Template for Worklist#

5148

Analyst: ADP **Instrument:** TGA0 3 **Book #** 75N8A

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

Worklist Comment: Please run AN-102 TGAs under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-03	SOLID	<u>59.2</u>	<u>59.55</u>	<u>N/A</u>	%
95000222	AN-102 GRAB	2 SAMPLE	S95T004137	0	TGA-03	SOLID	<u>N/A</u>	<u>43.35</u>		%
95000222	AN-102 GRAB	3 DUP	S95T004137	0	TGA-03	SOLID	<u>43.35</u>	<u>42.06</u>	<u>N/A</u>	%

Final page for worklist #

5148

See attached for signatures
Analyst Signature ADP **Date** 1-25-96
BDV

[Signature] **Date** 1-26-96
Analyst Signature

Verified by Blandina
Valenzuela
1/26/96

Data Entry Comments: Sample produced a second weight loss step of 7.58%

LABCORE Data Entry Template for Worklist#

5148

Analyst: ANP Instrument: TGA0 Book # 100CN2

Method: LA-560-112 Rev/Mod C-1

Worklist Comment: Please run AN-102 TGAs under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-01	SOLID			N/A	%
95000222	AN-102 GRAB	2 SAMPLE	S95T004137	0	TGA-01	SOLID	N/A			%
95000222	AN-102 GRAB	3 DUP	S95T004137	0	TGA-01	SOLID			N/A	%
95000222	AN-102 GRAB	4 SAMPLE	S95T004139	0	TGA-01	SOLID	N/A			%
95000222	AN-102 GRAB	5 DUP	S95T004139	0	TGA-01	SOLID			N/A	%

Final page for worklist # 5148

Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

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

Curve 1: TGA

File info: TER012401 Wed Jan 24 21:17:06 1996

Sample Weight: 14.645 mg

Terliq 75NB-A

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 2-148 TO 2-150.

2-148

WHC-SD-WM-DP-165, REV. 1

N2 10C/MIN
TEMP: 25.0 °C
TIME: 0.0 min RATE: 10.0 °C/min

Temperature (°C)

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Wed Jan 24 22:18:20 1996

Curve 1: TGA
 File info: SAM012402 Thu Jan 25 00:36:35 1996
 Sample Weight: 15.096 mg
 S95T004137 SAM

10C/MIN N2
 TEMP1: 36.0 C
 TEMP2: 500.0 C
 TIME1: 0.0 min
 RATE1: 10.0 C/min
 AD PURINTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Thu Jan 25 00:39:15 1996

Curve 1: TGA

File info: SAM012405 Thu Jan 25 01:50:16 1996

Sample Weight: 21.428 mg

S95T004137 DUP

10C/MIN N2
TEMP1: 50.0 C
TEMP2: 500.0 C
TIME1: 0.0 min
RATE1: 10.0 C/min

Temperature (°C)

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Jan 25 01:59:36 1996

WHC-SD-WM-DP-165, REV. 1

LABCORE Data Entry Template for Worklist#

5196

Analyst: SME Instrument: 1GAU 1 Book # 75N8-A

Method: LA-560-112 Rev/Mod B-1

Worklist Comment: Please run AN-102 TGAs under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-01	SOLID	<u>59.2</u>	<u>60.76</u>	<u>* N/A</u>	%
95000222	AN-102 GRAB	2 SAMPLE	S95T004139	0	TGA-01	SOLID	<u>N/A</u>	<u>43.50</u>		%
95000222	AN-102 GRAB	3 DUP	S95T004139	0	TGA-01	SOLID	<u>43.50</u>	<u>41.39</u>	<u>N/A</u>	%

Final page for worklist #

5196

Lusie M. Fulton 1-25-96
Analyst Signature Date
1625

Frank Conlin 1/26/96
Analyst Signature Date

Verified by Blandina Valenzuela
1/29/96

Data Entry Comments:

Sample produced a second weight loss step of
6.84% at approximately 380%.

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 2/52 TO 2/53.

S95T004139 N2

16.096 mg

Rate: 10.0 °C/min

File: 00075.001 TG METTLER 25-Jan-96

Ident: 0.0

222-S Laboratory

Step Analysis

Height -7.00 mg

-43.50 %

ResiC. 9.09 mg

56.50 %

Dpeak 117.0 °C

Step Analysis

Height -1.10 mg

-6.84 %

ResiC. 7.71 mg

47.87 %

Dpeak 421.0 °C

2-153

WHC-SD-WM-DP-165, REV. 1

DISTRIBUTION SHEET

To Distribution	From Production Planning and Control	Page 1 of 1	
		Date: 03-07-96	
Project Title/Work Order WHC-SD-WM-DP-165, Rev. 1, "Final Report for Tank 241-AN-102, Grab Samples 2AN-95-1 through 2AN-95-6 and 102-AN-1 through 102-AN-4."		EDT NO.: 614770 (Ref)	
		ECN NO.: 629020	
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L. R. Webb (SD COV. SHT., DST. SHT., ROR)	T6-06		X*
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U. S. Department of Energy

Jim Poppiti			X
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Germantown, MD 20874			

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