DISTRIBUTION SHEET

To Distribution	From Characterization Plans and Reports	Page 1 of 2	
		Date:	05/15/95
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		ECN NO.:	ECN-613665
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Page 1 of 2

1. ECN 613665

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	5. Project Title/No./Work Order No. Aqueous Sample From B-Plant, Tank 9-1	6. Bldg./Sys./Fac. No. N/A	7. Approval Designator Q
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Document Title: Aqueous Sample From B-Plant, Tank 9-1

Release Date: 5/18/95

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WHC Information Release Administration Specialist:

Kara M. Broz

May 18, 1995

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5. Key Words Aqueous, Aqueous Sample, B-Plant, Tank 9-1, 9-1	6. Author Name: Kevin E. Bell <i>Kevin E. Bell</i> Signature Organization/Charge Code 75310/MDR21	
7. Abstract N/A		

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8.

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Westinghouse
Hanford Company

P.O. Box 1970 Richland, WA 99352

WHC-SD-WM-DP-081, REV. 1

ANALYTICAL SERVICES

AQUEOUS SAMPLES FROM B-PLANT, TANK 9-1

Date Printed:

MAY 17, 1995

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WHC-SD-WM-DP-081, REV. 1

NARRATIVE

AQUEOUS SAMPLES FROM B-PLANT, TANK 9-1

1.0 INTRODUCTION

This is the final report for the fiscal year 1995 B-Plant Tank 9-1 sampling and analysis effort. B-Plant waste types, generation, storage, analytical requirements, and sampling are described in *B-Plant Waste Analysis Plan* (WHC-SD-WM-TI-438, Rev. 1). The project description and quality control (QC) requirements are described in *B-Plant Radioactive Liquid Waste Characterization Quality Assurance Project Plan* (WHC-SD-WM-QAPP-012, Rev. 0). Laboratory operations at the 222-S Facility for this project were performed according to *Quality Assurance Project Plan for Chemical Analysis of Highly Radioactive Mixed Waste Samples in Support of Environmental Activities on the Hanford Site* (WHC-SD-CP-QAPP-002) and *Quality Assurance Program Plan for Laboratory Analysis and Process Testing* (WHC-SD-CP-QAPP-003) unless superseded by the quality assurance project plan referenced above.

Included in this data package are summary tables of the analytical and quality control data as well as all raw data. Also included are copies of the chain of custody and Request for Special Analysis (RSA) forms.

1.1 TANK 9-1 ANALYTICAL SUMMARY

Samples received for inorganic analysis at the 222-S Laboratory from B-Plant were analyzed for sodium; the anions nitrate, nitrite, hydroxide, phosphate, chloride, and fluoride; total organic carbon (TOC); total inorganic carbon (TIC); differential scanning calorimetry; and pH. Samples received for organic analysis were analyzed for a prescribed list of volatile organic compounds.

Samples R6841 and R6856 for organic analysis indicated the presence of acetone and 2-butanone as the only positively identified volatile organic compounds. Samples R6852 and R6837 contained a significant amount of total organic carbon and sodium, and smaller amounts of the remaining analytes. The identity of the TOC is unknown. It cannot be accounted for from the organic analysis and there was no exotherm in the differential scanning calorimetry (DSC) as might be expected with most sources of TOC.

With few exceptions, all required quality control elements defined for this project were met. The inorganic and organic trip blanks showed little or no contamination.

2.0 SAMPLE RECEIPT

A total of eight liquid samples were received from B-Plant in four lots of two samples each. Received on each occasion were one sample for inorganic or organic analysis and an associated trip blank. The four trip blanks were created on 1/17/95 and consisted of deionized water supplied by the 222-S Laboratory. Copies of the chain of custody forms are shown in attachment 1.

2.1 SAMPLE TRACKING AND LABORATORY IDENTIFICATION

Each sample received is given a laboratory identification number. Subsamples withdrawn for analysis are given the respective sample number followed by an extension that identifies the method of preparation, sample type (standard, blank, duplicate, or spike), and subsequent analysis. Identification numbers begin with a letter designator to identify the customer and/or analytical protocol. The cross reference for the first two numbers in the extension are listed below:

<u>1st Number</u>	<u>2nd Number</u>
5 - Direct	5 - Standard
6 - Fusion Dissolution	6 - Blank
7 - Water Digest	7 - Sample
8 - Acid Digest	8 - Duplicate
9 - TCLP Prep	9 - Spike

The sample numbers assigned to the tank 9-1 samples received are given below.

<u>Sample</u>	<u>Number</u>
First inorganic sample	R6837
Second inorganic sample	R6852
First inorganic trip blank	R6838
Second inorganic trip blank	R6854
First organic sample	R6841
Second organic sample	R6856
First organic trip blank	R6842
Second organic trip blank	R6857

RSA forms were submitted by the customer with the samples above. They are reproduced in attachment 2. There were no deviations from the analyses prescribed by the RSA's.

3.0 LABORATORY OPERATIONS

Analytical Batch sheets appear with each analytical batch. These sheets provide a summary of what samples were run in a given batch, as well as information such as procedure number, performing technologist, date, and other pertinent information. In addition, Analytical Batch Summary Sheets appear with many of the analytical batches. These forms do not show any raw data, rather they summarize the calculated results for samples, duplicates, spikes, blanks, relative percent differences (RPD's), and detection limits from the initial data evaluation, and provide a means of obtaining descriptive results from the chemist and chemical technologist on each sample batch.

4.0 QUALITY CONTROL

The required QC criteria for this project as defined in the documentation referenced in Section 1.0 are summarized as follows:

- Matrix Spikes
 - Frequency: each analytical batch or every 20 samples.
 - Criteria: spike recovery between 75 and 125%, RPD of spike duplicates $\pm 20\%$.
- Surrogate Recovery
 - Frequency: all samples for organic analysis.
 - Criteria: recovery between 80 and 120%.
- Duplicates
 - Frequency: each analytical batch or every 20 samples.
 - Criteria: RPD $\pm 20\%$. This criterion assumes sample concentration is >10 times the detection limit.
- Accuracy
 - Criteria: $\pm 20\%$ or listed as "to be determined". Accuracy is assessed by standard recoveries.
- Precision
 - Criteria: $\pm 25\%$ or listed as "to be determined". Precision is assessed by relative percent difference of duplicate results.
- Analytical Blanks
 - Frequency: each batch or every 20 samples.
 - Criteria: flag any detected contaminants.
- Trip Blanks
 - Frequency: each sampling event.
 - Criteria: Prepared using ASTM Type II reagent water, shipped for analysis with the samples collected during the sampling event in the same type of container, blanks remain unopened throughout the sampling event.
- Minimum Quantitation Levels
 - Criteria: Specified in QAPP (WHC-SD-WM-QAPP-012)

- SW-846 Requirements
 - Frequency: from language in the B-Plant QAPP and specification on the RSA form, it appears that SW-846 protocol is required or desired.
 - Criteria: SW-846 methods and holding times.
- Completeness
 - Criteria: 90%

Sample analyses are normally repeated upon failure of any of the above QC criteria except for completeness and SW-846 holding times and methods. If a re-run was not performed or if a re-run continued to not meet the above QC criteria, reasons for not performing the initial or second re-run is provided in this narrative.

4.1 QUALITY CONTROL GENERALITIES

The following generalities with respect to QC are enumerated here. 1) All analyses on samples for inorganic analysis were run in 100% duplicate. 2) Samples for organic analysis were not run in duplicate. 3) Matrix spike and matrix spike duplicates were run for all analyses on samples R6837 and R6852 where spikes are used. Spike and spike duplicates were not performed on the trip blank samples. 4) Analytical blanks were performed as prescribed above for each method in which they are required. 5) Trip blanks met the criteria described above except that ASTM Type II water was not used. The 222-S reagent water, from which the trip blanks were generated, is deionized water and periodically tested for contamination. In addition, reagent blanks run with most analytical methods serve to ensure the purity of the laboratory reagent water. 6) Averages and RPD values are not reported when less-than results are reported. 7) The analytical methods used for this project were not SW-846 methods. However, many of the methods are based on the SW-846 methods. Furthermore, some SW-846 holding times were not met and any required SW-846 sample preservations were not performed except that samples for VOA analyses were stored at 4° C. Missed holding times and further clarifications of any QC parameters are discussed for each analysis below.

5.0 ANALYTICAL RESULTS

5.1 SUMMARY TABLES

Analytical results for B-Plant tank 9-1 samples are summarized in tables presented in attachment 3. These tables were intended to aid in review of analytical data, and may not include all of the associated information present in the raw data. The spreadsheet summaries display sample identification numbers, standard and spike recoveries, blank results, analytical results, detection limits, and RPD between duplicates.

Some explanation of the various table columns is in order. 1) Standards are reported as a percent recovery of the known standard concentration. Most analytical batches begin and end with a standard. These may be thought of as

instrument control standards. 2) Reagent blanks consist of reagent water used as a diluent for the sample. This provides an indication of any contamination in any reagent solutions. 3) Spiked sample results are reported as percent recovery of the spike. 4) Values preceded with the "<" symbol were found to be less than the detection limit.

5.2 SAMPLE PREPARATION

The samples received were subsampled for the requested analyses. Depending on the analytical method being performed, the subsample may have been diluted with acid or water, concentrated, purged, mixed with various reagents, or a combination of the above. Analysis of undigested samples is termed "direct" analysis, although some preparation is usually performed prior to analysis. Details of each analysis are not normally provided since they are beyond the scope of this narrative. All the analyses reported here were performed directly.

Samples for inorganic analysis that were analyzed directly required four independent subsamples for each analysis: 1) sample, 2) duplicate, 3) spiked sample, 4) spiked duplicate.

5.3 ORGANIC ANALYSIS

Volatile organic analyses (VOA) were performed by purge and trap on samples R6841, R6842, R6856, and R6857 per procedure LA-523-405, Rev. A-4. A narrative of these analyses was provided by the organic chemists and is provided as attachment 4. A summary of the analyses is presented in Table 1.

Matrix spike and matrix spike duplicates were all within the required 75 to 125% recovery. The Environmental Protection Agency Contract Laboratory Program (CLP) spiking compounds were used. Surrogate recoveries were also within the quality control limits required above. The surrogate compounds used were also defined by the CLP. The minimum quantitation limit of 10 ug/L defined in the B-Plant QAPP was not met for all compounds of samples R6841 and R6856. This limit is applied to all VOA analyses rather than being specific to each compound. Even then it can often be met when ample sample sizes can be used.

Analysis of the sample and trip blank indicate that all analytes are either below the quantitation limit or tentatively identified except the presence of acetone and 2-butanone in samples R6841 and R6856. The quantitation limits for butanol and pyridine are high primarily due to their poor purgability and the small sample sizes that had to be used. Their relatively low volatility and high water solubility also contribute to the high quantitation limit.

5.4 INORGANIC TEST METHODS

5.4.1 pH

The pH of liquid samples was measured according to procedure LA-212-102, Rev C-5. No reagent or preparation blanks are used with this procedure

because no reagents are used and no sample preparation is performed. Likewise, spikes are not performed on pH measurements. Analysis was not performed immediately as required by SW-846.

Results are presented in Table 2. The pH measurements of the two trip blanks are comparable and are close to pH 7 as expected. Both samples are slightly basic. Of the two samples, sample R6837 has a higher pH than sample R6852.

5.4.2 Hydroxide Determination by Titration

Hydroxide concentrations were determined directly by titration with nitric acid according to procedure LA-211-102, Rev. B-1. All results are less-than values as shown in Table 3. This is consistent with the pH of the samples, which indicates low concentrations of free hydroxide. Attempts were made to spike samples R6852 and R6837, however the spikes were consumed by the sample. This is most likely due to the presence of bicarbonate as indicated by the pH and total inorganic carbon concentrations. (See Section 5.4.6.)

5.4.3 Metals by Inductively Coupled Plasma

The concentration of sodium was determined by inductively coupled plasma per procedure LA-505-161, Rev A-1. All samples were diluted in acid prior to analysis and the results are presented in Table 4. Spiked samples were not quantified since both samples contained greater than four times the concentration of Na as the spike solution. Otherwise, all QC criteria were met.

Both trip blank samples contain less than 1 ug/mL of Na. Sample R6852 contains 266 ug Na/mL, while sample R6837 contains roughly twice that amount at 572 ug Na/mL.

5.4.4 Anions by Ion Chromatography

Concentrations of the anions fluoride, chloride, nitrite, nitrate, and phosphate were determined by ion chromatography according to procedure LA-533-105, Rev. C-2. Both trip blanks contain less-than amounts for all anions. In addition, the tank samples contain less-than amounts of fluoride. None of the anions are present in appreciable amounts; the highest concentration is found with nitrate at 73.4 ug/mL. Sample R6837 contains roughly 50-100% more analyte than sample R6852 for each analyte except nitrite and fluoride.

Table 5 shows that the QC acceptance criteria for spike recovery was not met for chloride. This is most likely due to the interference of low molecular weight organic acids with the chloride analysis. The SW-846 holding time of 48 hours for nitrate was not met.

5.4.5 Total Organic Carbon

Analysis of TOC by furnace oxidation was performed on samples R6852, R6854, R6837, and R6838 using procedure LA-344-105, Rev. B-3. Results are

presented in Table 6. No method variations or problems with the analysis were noted. The trip blanks contained less-than the detectable amount of organic carbon. At 243.0 ug of carbon (C) per mL, sample R6837 contains significantly more organic carbon than R6852 at 156.5 ug C/mL.

Acetone and 2-butanone were the only positively identified compounds found in the VOA analysis described above. Converting the concentration of these volatiles into a TOC value does not account for even 1/1000 of the TOC present. Other organic compounds, volatile or otherwise, for which the sample was not analyzed appear to be present in the sample.

5.4.7 Total Inorganic Carbon

Total inorganic carbon was determined directly on samples R6837, R6838, R6852, and R6854 using procedure LA-622-102, Rev. B-2. Both trip blanks contained less than the detectable amount (5 ug C/mL) of inorganic carbon. As with TOC, sample R6837 contained roughly twice the amount of analyte as sample R6852.

5.4.8 Differential Scanning Calorimetry

Procedure LA-514-113, Rev. B-1 was used to perform differential scanning calorimetry on samples R6837, R6838, R6852, and R6854 as shown in Table 9. No procedure variations or other problems were noted. Analyses are performed directly on the samples, therefore no reagent or preparation blanks are created. This method also does not require the use of spiked samples.

The DSC scans show endotherms due to the heating and evaporation of water. No exotherms were observed, however.

ATTACHMENT 1

WHC-SD-WM-DP-081, REV. 1

SAMPLING AND CUSTODY DATA

Westinghouse
Hanford Company

WHC-SO-WM-DP-081
REV 1

COPY

CHAIN OF CUSTODY

Company Contact: Tina M. Ridge Telephone: 372-3500

Samples Collected by: Leon Hamlin Date: 1-19-95 Time:

Sample Location: 222 SA

Ice Chest No.: Field Logbook Page No.:

Remarks: Tank 9-1 (B-Plant), Inorganic Sample

Method of Shipment:

Sample Identification

Inorganic Sample

I 1, R6837

CHAIN OF POSSESSION

Relinquished by: Tina M. Ridge

Relinquished by: Tina M. Ridge

Relinquished by: Amel R. Hamlin

Relinquished by:

Received by: Tina M. Ridge

Received by: Amel R. Hamlin

Received by: Amel R. Hamlin

Received by:

Date/Time: 1-23-95 1203

Date/Time: 1-23-95 1318

Date/Time: 1-23-95 1414

Date/Time:

To:

WHC-SD-WM-DP-081
REV 1

१५३०४

COPY

CHAIN OF CUSTODY

Company Contact: Tina M. Ridge Telephone: 372-3560

Samples Collected by: Leon Hamilton Date: 1-17-95 Time: 1:50pm

Sample Location: 222SA

Ice Chest No.: _____ Field Logbook Page No.: _____

Remarks: Trip Blank. per PK 9-1.

Method of Shipment: A

Sample Identification

A:

ITrip Blank R6838

CHAIN OF POSSESSION

Relinquished by:

Frank J. M. S. & Co.

Relinquished by:

John M. Kirk

Relinquished by:

James H. F. Nelson

Relinquished by:

Received by:

Iron Ridge

Received by:

James K. Flanagan

Received by:

James H. H. H.

Received by:

.....

Date/Time

1/23/55/1201

Date/Time

1-23-25 1318

Date/Time

1-23-95 1414

Date/Time

WHC-SD-WM-DP-08 i
REV 1

pg 1 of 2

COPY

CHAIN OF CUSTODY

Method of Shipment: _____

Sample Identification

A :
ITrip Blank, R6838

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time
<u>W. M. Riddle</u>	<u>St. Miller</u>	<u>1/23/95/0936</u>

To:

WHC-SD-WM-DP-087
REV 1

COPY

CHAIN OF CUSTODY

Company Contact: Tina M. Ridge Telephone: 372-3560

Samples Collected by: _____ Date: 1-19-95 Time: 12:00

Sample Location: _____

Ice Chest No.: _____ Field Logbook Page No.: _____

Remarks: TANK 9-1 (B Plant), Propionic Sample

Method of Shipment: _____

Sample Identification

VI : R6941

CHAIN OF POSSESSION

Relinquished by:
Paul J. Montrose

Received by: Jim M. Ridge

Date/Time
1/23/55/1202

Relinquished by:
Suzanne M. Goff

Received by: D. J. Parker

Date/Time
12-3-85

Relinquished by:
Boys' Scouts

Received by: *Paul J. [Signature]*

Date/Time
1-23-95 1000

Relinquished by: Anna M. Duba

Received by: M. Legier

Date/Time
1-23-95 1550

To:

WHC-SD-WM-DP-08 i
REV 1

COPY

CHAIN OF CUSTODY

Company Contact: Tina M. Ridge Telephone: 372-3560

Samples Collected by: Leon Hamlin Date: 1-17-95 Time: 1:50pm

Sample Location: 2225A

Ice Chest No.: _____ Field Logbook Page No.: _____

Remarks: Trip Blank for TK-9-1 (B Plant)

Method of Shipment: _____

Sample Identification

B :

Vtrip Blank, R6842

CHAIN OF POSSESSION

Relinquished by:

Received by:

Date/Time

Relinquished by:

Received by:

Date/Time

Relinquished by:

Received by:

Date/Time

Relinquished by:

Received by:

Date/Time

To:

WHC-SD-WM-DP-087
REV 1

COPY

CHAIN OF CUSTODY

Company Contact: Tina M. Kider Telephone: _____

Samples Collected by: Leon H. Anderson Date: _____ Time: _____

Sample Location: 222SA

Ice Chest No.: _____ Field Logbook Page No.: _____

Remarks: Trip Blank TK9-1 B Plant

Method of Shipment: _____

Sample Identification

B:

VTRip Blank B6842

CHAIN OF POSSESSION

Relinquished by: James W. Mosse Received by: Jim [Signature] Date/Time: 1/23/95/1202

Relinquished by: [Signature] Received by: [Signature] Date/Time 1:23:25

Relinquished by: Dana Henderson Received by: [Signature] Date/Time 1-23-95 1500

Relinquished by: Received by: Date/Time: 1-23-95 1550

To:

WHC-SD-WM-DP-08 i

REV 1

COPY

CHAIN OF CUSTODY

Company Contact: Tina M. Ridge Telephone: 372-3560

Samples Collected by: _____ Date: _____ Time: _____

Sample Location: B Plant TK 9-1

Ice Chest No.: _____ Field Logbook Page No.: _____

Remarks: Inorganic Sample

Method of Shipment: _____

Sample Identification

R 6852

CHAIN OF POSSESSION

Relinquished by:

Frank B. Miller

Relinquished by:

James M. Kidge

~~Relinquished~~ by:

Paula Fuley

Relinquished by:

Received by:

Streetwise

Received by:

Paula Bailey

Received by

K. J. Flanagan

Received by/

Date/Time

2/6/95/115.8

Date/Time

2/6/95/1500

Date/Time

2/6/95 1405

Date/Time

Westinghouse
Hanford Company

WHC-SD-WM-DP-081
REV 1

COPY

CHAIN OF CUSTODY

Company Contact: Tina M. Ridge Telephone: 372-3560

Samples Collected by: Leon Hamlin Date: 1-17-95 Time: 1:50 pm

Sample Location: 222 SA

Ice Chest No.: _____ Field Logbook Page No.: _____

Remarks: Inorganic Trip Blank for TK 9-1 (B Plant)

Method of Shipment: Sample Truck (Pig)

Sample Identification

C:

R6854

CHAIN OF POSSESSION

Relinquished by:

Paula Bailey

Received by:

RJ Kennedy

Date/Time

2/6/95 1405

Relinquished by:

Received by:

Date/Time

Relinquished by:

Received by:

Date/Time

Relinquished by:

Received by:

Date/Time

Westinghouse
Hanford Company

WHC-SD-WM-DP-081
REV 1

COPY

CHAIN OF CUSTODY

Company Contact: Tina M. Ridge Telephone: 372-3560
Samples Collected by: Leon Hamlin Date: 1-17-95 Time: 1500
Sample Location: 22234
Ice Chest No.: _____ Field Logbook Page No.: _____
Remarks: Inorganic Trip Blank for TK 9-1 (B Plant)

Method of Shipment: Sample Truck (Pig)

Sample Identification

C :
~~R6852~~ ^{T.R.} R6854

CHAIN OF POSSESSION

Relinquished by:

Leon Hamlin

Relinquished by:

Tina M. Ridge

Relinquished by:

Paula Bailey

Relinquished by:

Tina M. Ridge

Received by:

Tina M. Ridge

Received by:

Paula Bailey

Received by:

Tina M. Ridge

Received by:

Paula Bailey

Date/Time

1/17/95/1350

Date/Time

2/6/95/0735

Date/Time

2/6/95/1152

Date/Time

2/6/95/1300

REV 1

COPY

CHAIN OF CUSTODY

Method of Shipment: _____

Sample Identification

R 6856

CHAIN OF POSSESSION

Date/Time
02 06 25

To:

WHC-SD-WM-DP-081
REV 1

COPY

CHAIN OF CUSTODY

Company Contact: Tina M. Ridge Telephone: 372-3560
Samples Collected by: Leon Hamlin Date: 1-17-95 Time: 1:50pm
Sample Location: 222 SA
Ice Chest No.: _____ Field Logbook Page No.: _____
Remarks: Organic Trip Blank for TK 9-1 (CB Plant)

Method of Shipment: Sample Truck (pig)

Sample Identification

[The page contains several horizontal black bars obscuring the text.]

CHAIN OF POSSESSION

Relinquished by: Bryan Jackson

Relinquished by: Charles E. Buehl

Relinquished by:

Relinquished by:

Received by:

Received by: John E. B...

Received by:

Received by: *Wanda Cobb*

Received by:

Received by:

Date/Time

Date/Time
7-6-95 19:10

Date/Time

Date/Time
02-06-95 B

Date/Time

Date/Time

WHC-SD-WM-DP-081
REV 1

COPY

CHAIN OF CUSTODY

Sample Location: 2225A

Ice Chest No.: _____ Field Logbook Page No.: _____

Remarks: Organic Trip Blank for TK 9-1 (B Plant)

Method of Shipment: Sample Truck (Pia)

Sample Identification

D
R6857

CHAIN OF POSSESSION

Relinquished by: Samuel H. Hines Received by: Jim M. Riden Date/Time: 1-27-95 1350

Relinquished by: _____ Received by: _____ Date/Time
Sgt M. Riddle *Tennell H. McSwain* *2/6/95 0735*

Relinquished by: Beau M. Miller Received by: [Signature] Date/Time 2/6/85/1153

Relinquished by: Jim M. Ridge Received by: Bruce [Signature] Date/Time: 2/6/95 1/1255

To:

ATTACHMENT 2

WHC-SD-WM-DP-081, REV. 1

REQUEST FOR SPECIAL ANALYSIS FORMS

REV 1

PSA No.

2216

1. Sample Origin B Plant Tank 9-1		2. Date Submitted 1-23-95		4. Requester Name T. M. Ridge		6. Charge Code/Work Package KBLWD (16610)	
		3. Submitted By		5. Requester Phone/MSIN 2-3560 S6-70		7. Date Required 90 days	
8. Customer ID		Collected Date Time		9. Laboratory ID		12. Number of Samples 1 Sample 1 Trip	
I-1				R6837		13. Volume of Samples 100 ml/ sample	
I-Trip Blank				R6838		14. Protocols ☐ None ☒ RCRA ☐ NQA-1 ☐ Other ☐ CERCLA	
						15. Sample Type ☐ Solid ☐ Soil ☐ Slurry ☐ Gas ☒ Water ☐ Waste ☐ Solution ☐ Sludge ☐ Oil ☐ Other (specify)	
						16. Storage Requirements ☐ None ☒ Specify SW-846 Holding Times and Standards	
						17. Process Knowledge/known Listed Wastes ☐ Unknown ☐ Known (Please attach list) ☒ Previously submitted for this Project	
10. Determination		11. Expected Range		18. Survey		Dose Rate	
Carbonate				HPT Signature			
Chloride							
Diff. Scan Caorimetry				19. Disposition of Waste ☐ Return to Client/Location ☒ Dispose per 222-S Procedures ☐ Other			
Fluoride							
Hydroxide							
Nitrate				20. Additional Information std R6835 Blank R6836 std R6839			
Nitrite							
pH							
Phosphate							
Sodium							
Total Organic Carbon							
.. Chain of Custody				21. Assigned Custodial Group (select one) ☐ POC ☐ POSC ☒ ENV ☐ PROC			
☐ No ☒ Yes Number: 23				22. Laboratory Manager (if required)			
23. Sample Received By							
Date		Time					

RSA No.	
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2217

1. Site Origin B Plant Tank 9-1		2. Date Submitted 1-23-05 3. Submitted By		4. Requester Name T. M. Ridge 5. Requester Phone/MSIN 2-3560 S6-70		6. Charge Code/Work Package KBLWD (16610) 7. Date Required 90 days	
8. Customer ID VI-1 V-Trip Blank	9. Laboratory ID R6841 R6842		12. Number of Samples 1 Sample 1 Trip	13. Volume of Samples 100 ml/ Sample	14. Protocols ☐ None ☒ RCRA ☐ NQA-1 ☐ Other ☐ CERCLA		
			15. Sample Type ☐ Solid ☐ Soil ☐ Slurry ☐ Gas ☒ Water ☐ Waste ☐ Solution ☐ Sludge ☐ Oil ☐ Other (specify)	16. Storage Requirements ☐ None ☒ Specify SW-846 Holding Times and Standards			
10. Determination Volatile Organic Analysis		11. Expected Range Unknown		17. Process Knowledge/Known-Listed Wastes ☐ Unknown ☐ Known (Please attach list) ☒ Previously submitted for this Project		18. Survey Dose Rate HPT Signature	
				19. Disposition of Waste ☐ Return to Client/Location ☒ Dispose per 222-S Procedures ☐ Other			
				20. Additional Information Blank R6840			
21. Chain of Custody ☐ No ☒ Yes Number: 24				22. Approved Disposal Group (select one) ☒ RCRA ☐ CERCLA ☐ Other		23. Laboratory Manager (if required)	
24. Sample Received By Date: 1-23-05		25. Sample Received By Date: 1-23-05		26. Sample Received By Date: 1-23-05		27. Sample Received By Date: 1-23-05	

REQUEST FOR SPECIAL ANALYSIS (RSA)

RSA No.

2224

1. Sample Origin

B Plant
Tank 9-1

2. Date Submitted

2. Submitted By

4. Requester Name

T. M. Ridge

6. Charge Code/Work Package

KBLWD

5. Requester Phone/MSIN

2-3560

S6-70

7. Date Required

8. Customer ID

Collected

Date

Time

8. Laboratory ID

Sample - R6852

Trip Blank R6854

Sample - R6852

Trip Blank R6854

12. Number of Samples

1 Sample
1 Trip

13. Volume of Samples

100
ml/
sample

14. Protocols

☐ None ☒ RCRA

☐ NQA-1 ☐ Other

☐ CERCLA

15. Sample Type

☐ Solid

☐ Gas

☐ Solution

☐ Other (specify)

☐ Soil

☒ Water

☐ Sludge

☐ Slurry

☐ Waste

☐ Oil

16. Storage Requirements

☐ None

☒ Specify SW-846 Holding Times and Standards

17. Process Knowledge/Known Listed Wastes

☐ Unknown

☐ Known (Please attach list)

☒ Previously submitted for this Project

18. Survey

Dose Rate

HPT Signature

19. Disposition of Waste

☐ Return to Client/Location

☒ Dispose per 222-S Procedures

☐ Other

20. Additional Information

STD R6850
Blank R6851
STD R6853

21. Chain of Custody

☐ No

☒ Yes

Number:

1

22. Assigned Custodial Group (select one)

☒ PCL

☒ PDSU

☒ ENV

☒ Process

Sample Received By:

R. M. Ridge

24. Laboratory Manager (if required)

Date:

2-1-05

Time:

14:05

Date:

WHC-SD-WM-DP-081

REV 1

25

BC-6700-181 (11/92)

REQUEST FOR SPECIAL ANALYSIS (RSA)					RSA No. 2225	
1. Sample Origin B Plant Tank 9-1		2. Date Submitted		4. Requester Name T. M. Ridge		6. Charge Code/Work Package KBLWD
		3. Submitted By		5. Requester Phone/MSIN 2-3560 S6-70		7. Date Required
8. Customer ID	Collected		9. Laboratory ID	12. Number of Samples 1 Sample 1 Trip	13. Volume of Samples 100 ml/ sample	14. Protocols ☐ None ☒ RCRA ☐ NOAA-1 ☐ Other ☐ CERCLA
	Date	Time				
Sample - R6856			Sample R-6856			
Trip Blank R6857			Trip Blank R6857			
10. Determination		11. Expected Range		15. Sample Type		
Volatile Organic Analysis		Unknown		☐ Solid ☐ Soil ☐ Slurry ☐ Gas ☒ Water ☐ Waste ☐ Solution ☐ Sludge ☐ Oil ☐ Other (specify) _____		
				16. Storage Requirements		
				☐ None ☒ Specify <u>SW-846 Holding Times and Standards</u>		
				17. Process Knowledge/Known Listed Wastes		
				☐ Unknown ☐ Known (Please attach list) ☒ Previously submitted for this Project		
				18. Survey		
				<div style="display: flex; justify-content: space-between;"> HPT Signature _____ Dose Rate _____ </div>		
				19. Disposition of Waste		
				☐ Return to Client/Location _____ ☒ Dispose per 222-S Procedures ☐ Other _____		
				20. Additional Information		
				Blank R6855		
21. Chain of Custody				22. Assigned Custodial Group (select one)		
☐ No ☒ Yes Number: _____				☐ PCL ☒ PDSU ☐ ENV ☐ Process		
Sample Received By: <u>[Signature]</u>				24. Laboratory Manager (if required)		
Date: <u>02-06-95</u> Time: <u>1500</u>				Date: _____		

ATTACHMENT 3

WHC-SD-WM-DP-081, REV. 1

SAMPLE DATA SUMMARY

Table 1. Volatile Organics Analysis Results.

Lab. ID	Analyte	Results	Units	Quantitation Limit
R6841	Chloromethane	ND*	ug/L	100
	Bromomethane	ND	ug/L	100
	Vinyl Chloride	ND	ug/L	100
	Chloroethane	ND	ug/L	100
	Methylene Chloride	ND	ug/L	100
	Acetone	220**	ug/L	100
	Carbon Disulfide	ND	ug/L	100
	1,1-Dichloroethene	ND	ug/L	100
	1,1-Dichloroethane	ND	ug/L	100
	1,2-Dichloroethene (total)	ND	ug/L	100
	Chloroform	ND	ug/L	100
	1,2-Dichloroethane	ND	ug/L	100
	2-Butanone	170	ug/L	100
	1,1,1-Trichloroethane	ND	ug/L	100
	Carbon Tetrachloride	ND	ug/L	100
	Bromodichloromethane	ND	ug/L	100
	1,2-Dichloropropane	ND	ug/L	100
	cis-1,3-Dichloropropene	ND	ug/L	100
	Trichloroethene	ND	ug/L	100
	Dibromochloromethane	ND	ug/L	100
	1,1,2-Trichloroethane	ND	ug/L	100
	Benzene	ND	ug/L	100
	trans-1,3-Dichloropropene	ND	ug/L	100
	Bromoform	ND	ug/L	100
	4-methyl-2-pentanone	ND	ug/L	100
	2-Hexanone	ND	ug/L	100
	Tetrachloroethene	ND	ug/L	100
	1,1,2,2-Tetrachloroethane	ND	ug/L	100
	Toluene	ND	ug/L	100
	Chlorobenzene	ND	ug/L	100
	Ethylbenzene	ND	ug/L	100
	Styrene	ND	ug/L	100
	Xylene (total)	ND	ug/L	100
	Pyridine	ND	ug/L	5000
	1-Butanol	ND	ug/L	5000

*ND = none detected

** Compound was found in the method blank.

Table 1 (Continued). Volatile Organics Analysis Results.

Lab. ID	Analyte	Results	Units	Quantitation Limit
R6842	Chloromethane	ND*	ug/L	10
	Bromomethane	ND	ug/L	10
	Vinyl Chloride	ND	ug/L	10
	Chloroethane	ND	ug/L	10
	Methylene Chloride	4~	ug/L	10
	Acetone	ND	ug/L	10
	Carbon Disulfide	ND	ug/L	10
	1,1-Dichloroethene	ND	ug/L	10
	1,1-Dichloroethane	ND	ug/L	10
	1,2-Dichloroethene (total)	ND	ug/L	10
	Chloroform	ND	ug/L	10
	1,2-Dichloroethane	ND	ug/L	10
	2-Butanone	ND	ug/L	10
	1,1,1-Trichloroethane	ND	ug/L	10
	Carbon Tetrachloride	ND	ug/L	10
	Bromodichloromethane	ND	ug/L	10
	1,2-Dichloropropane	ND	ug/L	10
	cis-1,3-Dichloropropene	ND	ug/L	10
	Trichloroethene	ND	ug/L	10
	Dibromochloromethane	ND	ug/L	10
	1,1,2-Trichloroethane	ND	ug/L	10
	Benzene	ND	ug/L	10
	trans-1,3-Dichloropropen	ND	ug/L	10
	Bromoform	ND	ug/L	10
	4-methyl-2-pentanone	ND	ug/L	10
	2-Hexanone	ND	ug/L	10
	Tetrachloroethene	ND	ug/L	10
	1,1,2,2-Tetrachloroethane	ND	ug/L	10
	Toluene	ND	ug/L	10
	Chlorobenzene	ND	ug/L	10
	Ethylbenzene	ND	ug/L	10
	Styrene	ND	ug/L	10
	Xylene (total)	ND	ug/L	10
	Pyridine	ND	ug/L	500
	1-Butanol	ND	ug/L	500

*ND = none detected

~ Estimated value; spectra meet criteria, but response is below the quantitation limit.

Table 1 (Continued). Volatile Organics Analysis Results.

Lab. ID	Analyte	Results	Units	Quantitation Limit
R6856	Chloromethane	ND*	ug/L	100
	Bromomethane	ND	ug/L	100
	Vinyl Chloride	ND	ug/L	100
	Chloroethane	ND	ug/L	100
	Methylene Chloride	ND	ug/L	100
	Acetone	180	ug/L	100
	Carbon Disulfide	ND	ug/L	100
	1,1-Dichloroethene	ND	ug/L	100
	1,1-Dichloroethane	ND	ug/L	100
	1,2-Dichloroethene (total)	ND	ug/L	100
	Chloroform	ND	ug/L	100
	1,2-Dichloroethane	ND	ug/L	100
	2-Butanone	180	ug/L	100
	1,1,1-Trichloroethane	ND	ug/L	100
	Carbon Tetrachloride	ND	ug/L	100
	Bromodichloromethane	ND	ug/L	100
	1,2-Dichloropropane	ND	ug/L	100
	cis-1,3-Dichloropropene	ND	ug/L	100
	Trichloroethene	ND	ug/L	100
	Dibromochloromethane	ND	ug/L	100
	1,1,2-Trichloroethane	ND	ug/L	100
	Benzene	ND	ug/L	100
	trans-1,3-Dichloropropene	ND	ug/L	100
	Bromoform	ND	ug/L	100
	4-methyl-2-pentanone	ND	ug/L	100
	2-Hexanone	ND	ug/L	100
	Tetrachloroethene	ND	ug/L	100
	1,1,2,2-Tetrachloroethane	ND	ug/L	100
	Toluene	ND	ug/L	100
	Chlorobenzene	ND	ug/L	100
	Ethylbenzene	ND	ug/L	100
	Styrene	ND	ug/L	100
	Xylene (total)	ND	ug/L	100
	Pyridine	ND	ug/L	5000
	1-Butanol	ND	ug/L	5000

*ND = none detected

Table 1 (Continued). Volatile Organics Analysis Results.

Lab. ID	Analyte	Results	Units	Quantitation Limit
R6857	Chloromethane	ND*	ug/L	10
	Bromomethane	ND	ug/L	10
	Vinyl Chloride	ND	ug/L	10
	Chloroethane	ND	ug/L	10
	Methylene Chloride	6~	ug/L	10
	Acetone	1~	ug/L	10
	Carbon Disulfide	ND	ug/L	10
	1,1-Dichloroethene	ND	ug/L	10
	1,1-Dichloroethane	ND	ug/L	10
	1,2-Dichloroethene (total)	ND	ug/L	10
	Chloroform	ND	ug/L	10
	1,2-Dichloroethane	ND	ug/L	10
	2-Butanone	ND	ug/L	10
	1,1,1-Trichloroethane	ND	ug/L	10
	Carbon Tetrachloride	ND	ug/L	10
	Bromodichloromethane	ND	ug/L	10
	1,2-Dichloropropane	ND	ug/L	10
	cis-1,3-Dichloropropene	ND	ug/L	10
	Trichloroethene	ND	ug/L	10
	Dibromochloromethane	ND	ug/L	10
	1,1,2-Trichloroethane	ND	ug/L	10
	Benzene	ND	ug/L	10
	trans-1,3-Dichloropropene	ND	ug/L	10
	Bromoform	ND	ug/L	10
	4-methyl-2-pentanone	ND	ug/L	10
	2-Hexanone	ND	ug/L	10
	Tetrachloroethene	ND	ug/L	10
	1,1,2,2-Tetrachloroethane	ND	ug/L	10
	Toluene	ND	ug/L	10
	Chlorobenzene	ND	ug/L	10
	Ethylbenzene	ND	ug/L	10
	Styrene	ND	ug/L	10
	Xylene (total)	ND	ug/L	10
	Pyridine	ND	ug/L	500
	1-Butanol	ND	ug/L	500

*ND = none detected.

~ Estimated value; spectra meet criteria, but response is below the quantitation limit.

Data Summary Sheet

TABLE 2. pH OF LIQUID SAMPLES

SAMPLE I.D.	BEGIN STD % RECOVERY	END STD % RECOVERY	RESULT 1	RESULT 2	AVERAGE	RPD %	BEGIN STD I.D.	END STD I.D.
R6852	99.6	99.3	8.57	8.58	8.58	0.12	R6850	R6853
R6854	99.6	99.3	6.51	6.53	6.52	0.31	R6850	R6853
R6837	97.5	97.6	9.20	9.23	9.22	0.33	R6835	R6839
R6838	97.5	97.6	6.78	6.70	6.74	1.19	R6835	R6839

W H C - S D - M - D P - 0 8 7
R E V 1

Data Summary Sheet

TABLE 3. HYDROXIDE RESULTS

SAMPLE I.D.	BEGIN STD % RECOVERY	END STD % RECOVERY	BLANK ug/mL	RESULT 1 ug/mL	RESULT 2 ug/mL	AVERAGE ug/mL	RPD %	DET LIMIT ug/mL	BEGIN STD I.D.	END STD I.D.	BLANK I.D.
R6852	96.4	96.8	<4.17E+01	<4.17E+01	<4.17E+01	N/A	N/A	4.17E+01	R6850	R6853	R6851
R6854	96.4	96.8	<4.17E+01	<4.17E+01	<4.17E+01	N/A	N/A	4.17E+01	R6850	R6853	R6851
R6837	98.1	100.6	<4.17E+01	<4.17E+01	<4.17E+01	N/A	N/A	4.17E+01	R6835	R6839	R6836
R6838	98.1	100.6	<4.17E+01	<4.17E+01	<4.17E+01	N/A	N/A	4.17E+01	R6835	R6839	R6836

MHC-SD-W-M-DP-081
REV 1

Data Summary Sheet

TABLE 4. Na BY INDUCTIVELY COUPLED PLASMA

SAMPLE I.D.	BEGIN STD % RECOVERY	END STD % RECOVERY	PREP BLK ug/mL	RESULT 1 ug/mL	RESULT 2 ug/mL	AVERAGE ug/mL	RPD %	SPIKE 1 % RECOVERY	SPIKE 2 % RECOVERY	AVERAGE % RECOVERY	RPD %	DET LIM ug/mL	BEGIN STD I.D.	END STD I.D.	BLANK I.D.	SPIKE I.D.
R6852	100.2	99.64	<1.0E-01	2.64E+02	2.68E+02	2.66E+02	1.50	>4X	>4X	N/A	N/A	0.20	R6850	R6853	R6851	R6852
R6854	100.2	99.64	<1.0E-01	5.28E-01	5.30E-01	5.29E-01	0.378	N/A	N/A	N/A	N/A	0.10	R6850	R6853	R6851	N/A
R6837	98.90	103.1	<1.0E-01	5.71E+02	5.72E+02	5.72E+02	0.175	>4x	>4x	N/A	N/A	0.60	R6835	R6839	R3836	R6837
R6838	98.90	103.1	<1.0E-01	3.87E-01	3.84E-01	3.86E-01	0.778	N/A	N/A	N/A	N/A	0.10	R6835	R6839	R3867	N/A

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W HC-SD-M-M-DP-08
 REV 1

Data Summary Sheet

WHC-SD-WM-DP-081
REV 1

TABLE 5. SELECTED ANIONS BY ION CHROMATOGRAPHY

F

SAMPLE I.D.	BEGIN STD % RECOVERY	END STD % RECOVERY	BLANK ug/mL	RESULT 1 ug/mL	RESULT 2 ug/mL	AVERAGE ug/mL	RPD %	SPIKE 1 % RECOVERY	SPIKE 2 % RECOVERY	AVERAGE % RECOVERY	RPD %	DET LIM ug/mL	BEGIN STD I.D.	END STD I.D.	BLANK I.D.	SPIKE I.D.
R6852	97.7	98.6	<1	<1.1	<1.1	N/A	N/A	106.1	83.8	95.0	23.5	0.1	R6850	R6853	R6851	R6852
R6854	97.7	98.6	<1	<1	<1	N/A	N/A	N/A	N/A	N/A	N/A	0.1	R6850	R6853	R6851	N/A
R6837	97.5	98.8	<1	<1.1	<1.1	N/A	N/A	121.4	117.7	119.6	3.09	0.1	R6835	R6839	R6836	R6837
R6838	97.5	98.8	<1	<1	<1	N/A	N/A	N/A	N/A	N/A	N/A	0.1	R6835	R6839	R6836	N/A

CL

SAMPLE I.D.	BEGIN STD % RECOVERY	END STD % RECOVERY	BLANK ug/mL	RESULT 1 ug/mL	RESULT 2 ug/mL	AVERAGE ug/mL	RPD %	SPIKE 1 % RECOVERY	SPIKE 2 % RECOVERY	AVERAGE % RECOVERY	RPD %	DET LIM ug/mL	BEGIN STD I.D.	END STD I.D.	BLANK I.D.	SPIKE I.D.
R6852	96.4	102.3	<2	24.0	24.6	24.3	2.47	140.0	136.0	138.0	2.90	0.2	R6850	R6853	R6851	R6852
R6854	96.4	102.3	<2	<2	<2	N/A	N/A	N/A	N/A	N/A	N/A	0.2	R6850	R6853	R6851	N/A
R6837	101.5	99.4	<2	48.5	47.3	47.9	2.51	112.0	109.3	110.7	2.44	0.2	R6835	R6839	R6836	R6837
R6838	101.5	99.4	<2	<2	<2	N/A	N/A	N/A	N/A	N/A	N/A	0.2	R6835	R6839	R6836	N/A

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NO2

SAMPLE I.D.	BEGIN STD % RECOVERY	END STD % RECOVERY	BLANK ug/mL	RESULT 1 ug/mL	RESULT 2 ug/mL	AVERAGE ug/mL	RPD %	SPIKE 1 % RECOVERY	SPIKE 2 % RECOVERY	AVERAGE % RECOVERY	RPD %	DET LIM ug/mL	BEGIN STD I.D.	END STD I.D.	BLANK I.D.	SPIKE I.D.
R6852	97.4	97.9	<1	65.9	67.8	66.9	2.84	116.9	111.5	114.2	4.73	1	R6850	R6853	R6851	R6852
R6854	97.4	97.9	<1	<1	<1	N/A	N/A	N/A	N/A	N/A	N/A	1	R6850	R6853	R6851	N/A
R6837	100.2	98.2	<1	45.1	43.9	44.5	2.70	108.3	106.3	107.3	1.86	1	R6835	R6839	R6836	R6837
R6838	100.2	98.2	<1	<1	<1	N/A	N/A	N/A	N/A	N/A	N/A	1	R6835	R6839	R6836	N/A

NO3

SAMPLE I.D.	BEGIN STD % RECOVERY	END STD % RECOVERY	BLANK ug/mL	RESULT 1 ug/mL	RESULT 2 ug/mL	AVERAGE ug/mL	RPD %	SPIKE 1 % RECOVERY	SPIKE 2 % RECOVERY	AVERAGE % RECOVERY	RPD %	DET LIM ug/mL	BEGIN STD I.D.	END STD I.D.	BLANK I.D.	SPIKE I.D.
R6852	96.2	103.1	<1	72.3	74.4	73.4	2.86	115.4	111.9	113.7	3.08	1	R6850	R6853	R6851	R6852
R6854	96.2	103.1	<1	<1	<1	N/A	N/A	N/A	N/A	N/A	N/A	1	R6850	R6853	R6851	N/A
R6837	99.0	97.5	<1	115	114	114.5	0.87	112.5	107.3	109.9	4.73	1	R6835	R6839	R6836	R6837
R6838	99.0	97.5	<1	<1	<1	N/A	N/A	N/A	N/A	N/A	N/A	1	R6835	R6839	R6836	N/A

PO4

SAMPLE I.D.	BEGIN STD % RECOVERY	END STD % RECOVERY	BLANK ug/mL	RESULT 1 ug/mL	RESULT 2 ug/mL	AVERAGE ug/mL	RPD %	SPIKE 1 % RECOVERY	SPIKE 2 % RECOVERY	AVERAGE % RECOVERY	RPD %	DET LIM ug/mL	BEGIN STD I.D.	END STD I.D.	BLANK I.D.	SPIKE I.D.
R6852	91.7	102.9	<1	11.9	12.2	12.1	2.49	105.8	106.0	105.9	0.19	1	R6850	R6853	R6851	R6852
R6854	91.7	102.9	<1	<1	<1	N/A	N/A	N/A	N/A	N/A	N/A	1	R6850	R6853	R6851	N/A
R6837	95.2	97.7	<1	17.7	17.3	17.5	2.29	104.1	100.2	102.2	3.82	1	R6835	R6839	R6836	R6837
R6838	95.2	97.7	<1	<1	<1	N/A	N/A	N/A	N/A	N/A	N/A	1	R6835	R6839	R6836	N/A

Data Summary Sheet

TABLE 6. TOTAL ORGANIC CARBON RESULTS

SAMPLE I.D.	BEGIN STD % RECOVERY	END STD % RECOVERY	REAGENT BLANK ug C/mL	RESULT 1 ug C/mL	RESULT 2 ug C/mL	AVERAGE ug C/mL	RPD %	SPIKE 1 % RECOVERY	SPIKE 2 % RECOVERY	AVERAGE % RECOVERY	RPD %	DET LIM ug C/ml	BEG STD I.D.	END STD I.D.	BLANK I.D.	SPIKE I.D.
R6852	98.3	100	<5.00	155.0	158.0	156.5	1.92	93.3	90.5	91.9	3.05	5.00	R6850	R6853	R6851	R6852
R6854	98.3	100	<5.00	<5.00	<5.00	N/A	N/A	N/A	N/A	N/A	N/A	5.00	R6850	R6853	R6851	N/A
R6837	95.0	96.3	<5.50	239.0	247.0	243.0	3.29	97.3	94.6	96.0	2.81	5.50	R6835	R6839	R6836	R6837
R6838	95.0	96.3	<5.50	<5.50	<5.50	N/A	N/A	N/A	N/A	N/A	N/A	5.50	R6835	R6839	R6836	N/A

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MHC-SD-WM-DP-081
REV 1

Data Summary Sheet

TABLE 7. TOTAL INORGANIC CARBON RESULTS

SAMPLE I.D.	BEGIN STD % RECOVERY	END STD % RECOVERY	BLANK ug C/mL	RESULT 1 ug C/mL	RESULT 2 ug C/mL	AVERAGE ug C/mL	RPD %	SPIKE 1 % RECOVERY	SPIKE 2 % RECOVERY	AVERAGE % RECOVERY	RPD %	DET LIM ug C/mL	BEGIN STD I.D.	END STD I.D.	BLANK I.D.	SPIKE I.D.
R6852	98.7	102.0	<5.00	77.5	78.0	77.8	0.64	97.0	99.6	98.3	2.64	<5.00	R6850	R6853	R6851	R6852
R6854	98.7	102.0	<5.00	<5.00	<5.00	N/A	N/A	N/A	N/A	N/A	N/A	<5.00	R6850	R6853	R6851	N/A
R6837	97.5	97.8	<5.00	171.0	168.0	169.5	1.77	97.9	97.9	97.9	0.00	<5.00	R6835	R6839	R6836	R6837
R6838	97.5	97.8	<5.00	<5.00	<5.00	N/A	N/A	N/A	N/A	N/A	N/A	<5.00	R6835	R6839	R6836	N/A

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MHC-SO-M-OP-081
REV 1

Data Summary Sheet

TABLE 8. DIFFERENTIAL SCANNING CALORIMETRY RESULTS

SAMPLE I.D.	BEGIN STD % RECOVERY	END STD % RECOVERY	RESULT 1 J/g	RESULT 2 J/g	AVERAGE J/g	RPD %	BEGIN STD I.D.	END STD I.D.
R6852	99.8	103.3	0	0	0	0	R6850	R6853
R6854	99.8	103.3	0	0	0	0	R6850	R6853
R6837	98.8	97.4	0	0	0	0	R6835	R6839
R6838	98.8	97.4	0	0	0	0	R6835	R6839

ATTACHMENT 4

WHC-SD-WM-DP-081, REV. 1

VOLATILE ORGANIC ANALYSES

SDG NARRATIVE - V-1
Sample Point - B-Plant Tank 9-1
February 8, 1995

WHC-SD-WM-DP-081
REV 1

VOLATILE ORGANIC ANALYSIS (by GC/MS)

The samples were analyzed by method LA-523-405 A-4, using an Hewlett-Packard 5970 GC/MS (WB92426). Data acquisition and reduction were performed on an H.P.-1000 computer, running RTE-A revision F, which includes Aquarius software from Environmental Testing and Certification Corp.

A 0.5 mL aliquot of the sample was combined with 4.5 mL of lab blank water in the purge vessel. Hanford wastes have historically been difficult to analyze because of the carry-over of foam into the trap from the VOA sparging vessel. As a consequence, the sample aliquot was limited to the largest aliquot (0.5 mL) that did not produce foaming above the vessel during sparging. The Trip Blank and the Method blank used a 5 mL sample size. Holding time was met. The specific holding time for volatile organics analysis is 14 days as found in chapter 4, table 4-1 of SW-846.

The System Monitoring Compounds (SMC), Internal Standard Compounds (IS), and Matrix Spike Compounds (MS) were the same as those used in LA-523-401 A-1. Acceptance criteria for each is also contained in LA-523-401 A-1.

LMCS control limits for the VOA compounds were administratively set to the criteria listed in procedure LA-523-401 A-1 for System Monitoring Compounds (SMC). The LMCS standard for VOA is defined as the method blank analyzed at the start of each 12 hour analysis window. The LMCS codes for the SMC's are R256 for 1,2-Dichloroethane-d4, R258 for Toluene-d8, and R260 for Bromofluorobenzene.

INFORMATION	COMMENTS
SMC Recoveries	Meets all requirements
MS/MSD Recoveries	Meets all requirements
Method blank summary	Meets all requirements
Tune/Mass Calibration	Meets all requirements
Initial Calibration	Meets all requirements
Daily Calibration	Meets all requirements
Internal Standards	Meets all requirements

The following is a list of the pertinent GC/MS files, and the sample holding times:

Lab ID	Filename	Holding Time	Comment
R-6840	>AB01C	0	Method blank
R-6842	>AB01D	10	Trip blank
R-6841	>AB01E	10	Sample

Standards preparation data is kept in a controlled notebook, WHC-N-337
1. Acetone and 2-Butanone were detected in the sample. No Tentatively
Identified Compounds (TIC's) were observed in the sample and trip blank.

To enable interpretation of summary data for VOA compounds, the following
table defines the qualifiers, called Q-flags, used in Form I.

Q-Flag	Definition
U	Indicates the compound was analyzed for but not detected; the U-flagged concentration number is the quantitation limit.
J	Indicates an estimated value for the target or tentatively identified compounds; spectra meet criteria but response is below the quantitation limit for the target compounds.
B	Compound was found in the blank.
D	Analysis was performed on a diluted sample.
E	Indicates that quantitation was above the calibration range.
N	Indicates the presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search.

D.E. NELSON
J.B. DELAROSA-CHANG
Organic Chemistry

D.E. Nelson 2-8-95
J. Delarosa-Chang

WHC-SD-WM-DP-081
REV 1

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V-1

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: V-1

Matrix: (soil/water) WATER

Lab Sample ID: R6841

Sample wt/vol: 0.5 (g/mL) ML

Lab File ID: >AB01E

Level: (low/med) LOW

Date Received: 01/23/95

% Moisture: not dec.

Date Analyzed: 2/01/95

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/Kg) ug/L

Q

74-87-3-----	Chloromethane	100.	U
74-83-9-----	Bromomethane	100.	U
75-01-4-----	Vinyl Chloride	100.	U
75-00-3-----	Chloroethane	100.	U
75-09-2-----	Methylene Chloride	100.	U
67-64-1-----	Acetone	220.	B
75-15-0-----	Carbon Disulfide	100.	U
75-35-4-----	1,1-Dichloroethene	100.	U
75-34-3-----	1,1-Dichloroethane	100.	U
540-59-0-----	1,2-Dichloroethene (total)	100.	U
67-66-3-----	Chloroform	100.	U
107-02-2-----	1,2-Dichloroethane	100.	U
78-93-3-----	2-Butanone	170.	
71-55-6-----	1,1,1-Trichloroethane	100.	U
56-23-5-----	Carbon Tetrachloride	100.	U
75-27-4-----	Bromodichloromethane	100.	U
78-87-5-----	1,2-Dichloropropane	100.	U
10061-01-5-----	cis-1,3-Dichloropropene	100.	U
79-01-6-----	Trichloroethene	100.	U
124-48-1-----	Dibromochloromethane	100.	U
79-00-5-----	1,1,2-Trichloroethane	100.	U
71-43-2-----	Benzene	100.	U
10061-02-6-----	trans-1,3-Dichloropropene	100.	U
75-25-2-----	Bromoform	100.	U
108-10-1-----	4-Methyl-2-pentanone	100.	U
591-78-6-----	2-Hexanone	100.	U
127-18-4-----	Tetrachloroethene	100.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	100.	U
108-88-3-----	Toluene	100.	U
108-90-7-----	Chlorobenzene	100.	U
100-41-4-----	Ethylbenzene	100.	U
100-42-5-----	Styrene	100.	U
133-02-7-----	Xylene (total)	100.	U
71-36-3-----	1-Butanol	5000.	U
110-86-1-----	Pyridine	5000.	U

FORM I VOA

3/90

WHC-SD-WM-DP-081
REV 1

42

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

V-1

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: V-1

Matrix: (soil/water) WATER

Lab Sample ID: R6841

Sample wt/vol: 0.5 (g/mL) ML

Lab File ID: >AB01E

Level: (low/med) LOW

Date Received: 01/23/95

% Moisture: not dec.

Date Analyzed: 2/01/95

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====
1.				
2.				
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WHC-SD-WM-DP-081
REV 1

FORM I VOA-TIC

3/90

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V-TRIPBK

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: V-1

Matrix: (soil/water) WATER

Lab Sample ID: R6842

Sample wt/vol: 5 (g/mL) ML

Lab File ID: >AB01D

Level: (low/med) LOW

Date Received: 01/23/95

% Moisture: not dec.

Date Analyzed: 2/01/95

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/Kg) ug/L

Q

74-87-3-----	Chloromethane	10.	U
74-83-9-----	Bromomethane	10.	U
75-01-4-----	Vinyl Chloride	10.	U
75-00-3-----	Chloroethane	10.	U
75-09-2-----	Methylene Chloride	4.	J
67-64-1-----	Acetone	10.	U
75-15-0-----	Carbon Disulfide	10.	U
75-35-4-----	1,1-Dichloroethene	10.	U
75-34-3-----	1,1-Dichloroethane	10.	U
540-59-0-----	1,2-Dichloroethene (total)	10.	U
67-66-3-----	Chloroform	10.	U
107-02-2-----	1,2-Dichloroethane	10.	U
78-93-3-----	2-Butanone	10.	U
71-55-6-----	1,1,1-Trichloroethane	10.	U
56-23-5-----	Carbon Tetrachloride	10.	U
75-27-4-----	Bromodichloromethane	10.	U
78-87-5-----	1,2-Dichloropropane	10.	U
10061-01-5-----	cis-1,3-Dichloropropene	10.	U
79-01-6-----	Trichloroethene	10.	U
124-48-1-----	Dibromochloromethane	10.	U
79-00-5-----	1,1,2-Trichloroethane	10.	U
71-43-2-----	Benzene	10.	U
10061-02-6-----	trans-1,3-Dichloropropene	10.	U
75-25-2-----	Bromoform	10.	U
108-10-1-----	4-Methyl-2-pentanone	10.	U
591-78-6-----	2-Hexanone	10.	U
127-18-4-----	Tetrachloroethene	10.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	10.	U
108-88-3-----	Toluene	10.	U
108-90-7-----	Chlorobenzene	10.	U
100-41-4-----	Ethylbenzene	10.	U
100-42-5-----	Styrene	10.	U
133-02-7-----	Xylene (total)	10.	U
71-36-3-----	1-Butanol	500.	U
110-86-1-----	Pyridine	500.	U

FORM I VOA

3/90

WHC-SD-WM-DP-081

REV 1

44

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

V-TRIPBK

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: V-1

Matrix: (soil/water) WATER

Lab Sample ID: R6842

Sample wt/vol: 5 (g/mL) ML

Lab File ID: >AB01D

Level: (low/med) LOW

Date Received: 01/23/95

% Moisture: not dec.

Date Analyzed: 2/01/95

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====
1.				
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBK46

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: V-1

Matrix: (soil/water) WATER

Lab Sample ID: R6840

Sample wt/vol: 5 (g/mL) ML

Lab File ID: >AB01C

Level: (low/med) LOW

Date Received:

% Moisture: not dec.

Date Analyzed: 2/01/95

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/Kg) ug/L

Q

74-87-3-----	Chloromethane	10.	U
74-83-9-----	Bromomethane	10.	U
75-01-4-----	Vinyl Chloride	10.	U
75-00-3-----	Chloroethane	10.	U
75-09-2-----	Methylene Chloride	10.	U
67-64-1-----	Acetone	2.	JB
75-15-0-----	Carbon Disulfide	10.	U
75-35-4-----	1,1-Dichloroethene	10.	U
75-34-3-----	1,1-Dichloroethane	10.	U
540-59-0-----	1,2-Dichloroethene (total)	10.	U
67-66-3-----	Chloroform	10.	U
107-02-2-----	1,2-Dichloroethane	10.	U
78-93-3-----	2-Butanone	10.	U
71-55-6-----	1,1,1-Trichloroethane	10.	U
56-23-5-----	Carbon Tetrachloride	10.	U
75-27-4-----	Bromodichloromethane	10.	U
78-87-5-----	1,2-Dichloropropane	10.	U
10061-01-5-----	cis-1,3-Dichloropropene	10.	U
79-01-6-----	Trichloroethene	10.	U
124-48-1-----	Dibromochloromethane	10.	U
79-00-5-----	1,1,2-Trichloroethane	10.	U
71-43-2-----	Benzene	10.	U
10061-02-6-----	trans-1,3-Dichloropropene	10.	U
75-25-2-----	Bromoform	10.	U
108-10-1-----	4-Methyl-2-pentanone	10.	U
591-78-6-----	2-Hexanone	10.	U
127-18-4-----	Tetrachloroethene	10.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	10.	U
108-88-3-----	Toluene	10.	U
108-90-7-----	Chlorobenzene	10.	U
100-41-4-----	Ethylbenzene	10.	U
100-42-5-----	Styrene	.3	JB
133-02-7-----	Xylene (total)	10.	U
71-36-3-----	1-Butanol	500.	U
110-86-1-----	Pyridine	500.	U

WHC-SD-WM-DP-081

FORM I VOA

3/90

REV 1

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBK46

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: V-1

Matrix: (soil/water) WATER

Lab Sample ID: R6840

Sample wt/vol: 5 (g/mL) ML

Lab File ID: >AB01C

Level: (low/med) LOW

Date Received:

% Moisture: not dec.

Date Analyzed: 2/01/95

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
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SDG NARRATIVE - B-PLANT
Sample Point - B-Plant Tank 9-1
MARCH 1, 1995

VOLATILE ORGANIC ANALYSIS (by GC/MS)

The samples were analyzed by method LA-523-405 A-4, using an Hewlett-Packard 5970 GC/MS (WB92426). Data acquisition and reduction were performed on an H.P.-1000 computer, running RTE-A revision F, which includes Aquarius software from Environmental Testing and Certification Corp.

A 0.5 mL aliquot of the sample was combined with 4.5 mL of lab blank water in the purge vessel. Hanford wastes have historically been difficult to analyze because of the carry-over of foam into the trap from the VOA sparging vessel. As a consequence, the sample aliquot was limited to the largest aliquot (0.5 mL) that did not produce foaming above the vessel during sparging. The Trip Blank and the Method blank used a 5 mL sample size. Holding time was met. The specific holding time for volatile organics analysis is 14 days as found in chapter 4, table 4-1 of SW-846.

The System Monitoring Compounds (SMC), Internal Standard Compounds (IS), and Matrix Spike Compounds (MS) were the same as those used in LA-523-401 A-1. Acceptance criteria for each is also contained in LA-523-401 A-1.

LMCS control limits for the VOA compounds were administratively set to the criteria listed in procedure LA-523-401 A-1 for System Monitoring Compounds (SMC). The LMCS standard for VOA is defined as the method blank analyzed at the start of each 12 hour analysis window. The LMCS codes for the SMC's are R256 for 1,2-Dichloroethane-d4, R258 for Toluene-d8, and R260 for Bromofluorobenzene.

INFORMATION	COMMENTS
SMC Recoveries	Meets all requirements
MS/MSD Recoveries	Meets all requirements
Method blank summary	Meets all requirements
Tune/Mass Calibration	Meets all requirements
Initial Calibration	Meets all requirements
Daily Calibration	Meets all requirements
Internal Standards	Meets all requirements

The following is a list of the pertinent GC/MS files, and the sample holding times:

Lab ID	Filename	Holding Time	Comment
R-6855	>AB15C	0	Method blank
R-6857	>AB15D	9	Trip blank
R-6856	>AB15E	9	Sample

Standards preparation data is kept in a controlled notebook, WHC-N-337
1. Acetone and 2-Butanone were detected in the sample. No Tentatively
Identified Compounds (TIC's) were observed in the sample and trip blank.

To enable interpretation of summary data for VOA compounds, the following
table defines the qualifiers, called Q-flags, used in Form I.

Q-Flag	Definition
U	Indicates the compound was analyzed for but not detected; the U-flagged concentration number is the quantitation limit.
J	Indicates an estimated value for the target or tentatively identified compounds; spectra meet criteria but response is below the quantitation limit for the target compounds.
B	Compound was found in the blank.
D	Analysis was performed on a diluted sample.
E	Indicates that quantitation was above the calibration range.
N	Indicates the presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search.

D.E. NELSON
J.B. DELAROSA-CHANG
Organic Chemistry

D.E. Nelson 3/1/95
J.B. Delarosa-Chang 3/1/95

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V-1

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: B-PLANT

Matrix: (soil/water) WATER

Lab Sample ID: R-6856

Sample wt/vol: 0.5 (g/mL) ML

Lab File ID: >AB15E

Level: (low/med) LOW

Date Received: 02/06/95

% Moisture: not dec.

Date Analyzed: 2/15/95

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
---------	----------	--	---

74-87-3-----	Chloromethane	100.	U
74-83-9-----	Bromomethane	100.	U
75-01-4-----	Vinyl Chloride	100.	U
75-00-3-----	Chloroethane	100.	U
75-09-2-----	Methylene Chloride	100.	U
67-64-1-----	Acetone	180.	
75-15-0-----	Carbon Disulfide	100.	U
75-35-4-----	1,1-Dichloroethene	100.	U
75-34-3-----	1,1-Dichloroethane	100.	U
540-59-0-----	1,2-Dichloroethene (total)	100.	U
67-66-3-----	Chloroform	100.	U
107-02-2-----	1,2-Dichloroethane	100.	U
78-93-3-----	2-Butanone	180.	
71-55-6-----	1,1,1-Trichloroethane	100.	U
56-23-5-----	Carbon Tetrachloride	100.	U
75-27-4-----	Bromodichloromethane	100.	U
78-87-5-----	1,2-Dichloropropane	100.	U
10061-01-5-----	cis-1,3-Dichloropropene	100.	U
79-01-6-----	Trichloroethene	100.	U
124-48-1-----	Dibromochloromethane	100.	U
79-00-5-----	1,1,2-Trichloroethane	100.	U
71-43-2-----	Benzene	100.	U
10061-02-6-----	trans-1,3-Dichloropropene	100.	U
75-25-2-----	Bromoform	100.	U
108-10-1-----	4-Methyl-2-pentanone	100.	U
591-78-6-----	2-Hexanone	100.	U
127-18-4-----	Tetrachloroethene	100.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	100.	U
108-88-3-----	Toluene	100.	U
108-90-7-----	Chlorobenzene	100.	U
100-41-4-----	Ethylbenzene	100.	U
100-42-5-----	Styrene	100.	U
133-02-7-----	Xylene (total)	100.	U
71-36-3-----	1-Butanol	5000.	U
110-86-1-----	Pyridine	5000.	U

WHC-SD-WM-DP-081

REV 1

FORM I VOA

50

3/90

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

V-1

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: B-PLANT

Matrix: (soil/water) WATER

Lab Sample ID: R-6856

Sample wt/vol: 0.5 (g/mL) ML

Lab File ID: >AB15E

Level: (low/med) LOW

Date Received: 02/06/95

% Moisture: not dec.

Date Analyzed: 2/15/95

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V-TBLK

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: B-PLANT

Matrix: (soil/water) WATER

Lab Sample ID: R-6857

Sample wt/vol: 5 (g/mL) ML

Lab File ID: >AB15D

Level: (low/med) LOW

Date Received: 02/06/95

% Moisture: not dec.

Date Analyzed: 2/15/95

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl Chloride	10.	U
75-00-3	Chloroethane	10.	U
75-09-2	Methylene Chloride	6.	J
67-64-1	Acetone	1.	J
75-15-0	Carbon Disulfide	10.	U
75-35-4	1,1-Dichloroethene	10.	U
75-34-3	1,1-Dichloroethane	10.	U
540-59-0	1,2-Dichloroethene (total)	10.	U
67-66-3	Chloroform	10.	U
107-02-2	1,2-Dichloroethane	10.	U
78-93-3	2-Butanone	10.	U
71-55-6	1,1,1-Trichloroethane	10.	U
56-23-5	Carbon Tetrachloride	10.	U
75-27-4	Bromodichloromethane	10.	U
78-87-5	1,2-Dichloropropane	10.	U
10061-01-5	cis-1,3-Dichloropropene	10.	U
79-01-6	Trichloroethene	10.	U
124-48-1	Dibromochloromethane	10.	U
79-00-5	1,1,2-Trichloroethane	10.	U
71-43-2	Benzene	10.	U
10061-02-6	trans-1,3-Dichloropropene	10.	U
75-25-2	Bromoform	10.	U
108-10-1	4-Methyl-2-pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	10.	U
79-34-5	1,1,2,2-Tetrachloroethane	10.	U
108-88-3	Toluene	10.	U
108-90-7	Chlorobenzene	10.	U
100-41-4	Ethylbenzene	10.	U
100-42-5	Styrene	10.	U
133-02-7	Xylene (total)	10.	U
71-36-3	1-Butanol	500.	U
110-86-1	Pyridine	500.	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

V-TBLK

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: B-PLANT

Matrix: (soil/water) WATER

Lab Sample ID: R-6857

Sample wt/vol: 5 (g/mL) ML

Lab File ID: >AB15D

Level: (low/med) LOW

Date Received: 02/06/95

% Moisture: not dec.

Date Analyzed: 2/15/95

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK53

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: B-PLANT

Matrix: (soil/water) WATER

Lab Sample ID: R-6855

Sample wt/vol: 5 (g/mL) ML

Lab File ID: >AB15C

Level: (low/med) LOW

Date Received:

% Moisture: not dec.

Date Analyzed: 2/15/95

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
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74-87-3-----	Chloromethane	10.	U
74-83-9-----	Bromomethane	10.	U
75-01-4-----	Vinyl Chloride	10.	U
75-00-3-----	Chloroethane	10.	U
75-09-2-----	Methylene Chloride	10.	U
67-64-1-----	Acetone	10.	U
75-15-0-----	Carbon Disulfide	10.	U
75-35-4-----	1,1-Dichloroethene	10.	U
75-34-3-----	1,1-Dichloroethane	10.	U
540-59-0-----	1,2-Dichloroethene (total)	10.	U
67-66-3-----	Chloroform	10.	U
107-02-2-----	1,2-Dichloroethane	10.	U
78-93-3-----	2-Butanone	10.	U
71-55-6-----	1,1,1-Trichloroethane	10.	U
56-23-5-----	Carbon Tetrachloride	10.	U
75-27-4-----	Bromodichloromethane	10.	U
78-87-5-----	1,2-Dichloropropane	10.	U
10061-01-5-----	cis-1,3-Dichloropropene	10.	U
79-01-6-----	Trichloroethene	10.	U
124-48-1-----	Dibromochloromethane	10.	U
79-00-5-----	1,1,2-Trichloroethane	10.	U
71-43-2-----	Benzene	10.	U
10061-02-6-----	trans-1,3-Dichloropropene	10.	U
75-25-2-----	Bromoform	10.	U
108-10-1-----	4-Methyl-2-pentanone	10.	U
591-78-6-----	2-Hexanone	10.	U
127-18-4-----	Tetrachloroethene	10.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	10.	U
108-88-3-----	Toluene	10.	U
108-90-7-----	Chlorobenzene	10.	U
100-41-4-----	Ethylbenzene	10.	U
100-42-5-----	Styrene	10.	U
133-02-7-----	Xylene (total)	10.	U
71-36-3-----	1-Butanol	500.	U
110-86-1-----	Pyridine	500.	U

WHC-SD-WM-DP-081

REV 1

FORM I VOA

54

3/90

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VLK53

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: B-PLANT

Matrix: (soil/water) WATER

Lab Sample ID: R-6855

Sample wt/vol: 5 (g/mL) ML

Lab File ID: >AB15C

Level: (low/med) LOW

Date Received:

% Moisture: not dec.

Date Analyzed: 2/15/95

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.

R6837, R6838

Customer ID:

I-TRIPBK, I-1

Analysis:

PH

Sample Prep:

Direct

Instrument: N/A

Procedure/ Rev: LA-212-102/C-5

Technologist: ROMeyers

Date: 2/5/95

Starting Time: 0505

Temperature 25°C

Ending Time: 0525

Chemist: Schroeder

Comments:

	Description	Lab ID
1	LMCS	R6835-5513
2	SAMPLE	R6837.5713
3	DUP	R6837.5813
4	SAMPLE	R6838.5713
5	DUP	R6838.5813
6	LMCS	R6839.5513
7		
8		
9		
10		

	Description	Lab ID
11		
12		
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14		
15		
16		
17		
18		
19		
20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	86N/6A 5ml			

pH ANALYSIS

Serial No	Sample Point	Date	Time Issued	Priority
R 6835.-5513	TANK 9-1	1-19-95	10:22	25
Determination	Method/Standard	Result Units	Charge Code	Reruns
pH	LA-212-102	NONE	KBLWD	1
Sample Size	Customer ID			
5 ML	STD			
Remarks, Calculations, Results				
<p>S350 PH MAT. RESULT 4.75 STD# 46N16A %REC 97.5% S353 NESPH1 RESULT STD# %REC STD VAL</p> <p>valid data 3-9-95 OUT FOR RERUN Exception to MCS filed</p> <p>OSCR # 6905</p>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
<i>R. Jones</i>				
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		
2/5/95	0525	<i>R. Jones</i> 2/10/95		

54-6800-061 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
R 6837.-5713	TANK 9-1	1-19-95	10:26	25
Determination	Method/Standard	Result Units	Charge Code	Reruns
pH	LA-212-102	NONE	KBLWD	1
Sample Size	Customer ID			
5 ML	I-1			
Remarks, Calculations, Results				
<p>9.20</p>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
<i>R. Jones</i>				
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		
2/5/95	0525	<i>R. Jones</i> 2/9/95		

54-6800-061 (R-10-83)

pH ANALYSIS

WHC-SD-WM-DP-081

REV 1

Serial No.		Sample Point		Time Issued		Priority
R 6837.-5813		TANK 9-1		1-19-95 10:26		25
Determination	Method/Standard	Result Units		Charge Code	Reruns	
pH	LA-212-102	NONE		KBLWD	1	
Sample Size				Customer ID		
5 ML				I-1		
Remarks, Calculations, Results						
DUPLICATE SAMPLE 9.23						
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5		
<i>R. Meyer</i>						
Hrs	Hrs	Hrs	Hrs	Hrs		
Date	Time Completed	Lab Unit Mgr		Signature		
2/5/95	0525	<i>[Signature]</i> 2/9/95		<i>[Signature]</i>		

54-6800-061 (R-10-83)

Serial No.		Sample Point		Time Issued		Priority
R 6838.-5713		TANK 9-1		1-19-95 10:31		25
Determination	Method/Standard	Result Units		Charge Code	Reruns	
pH	LA-212-102	NONE		KBLWD	1	
Sample Size				Customer ID		
5 ML				I-TRIPBK		
Remarks, Calculations, Results						
8.39 from 2/5/95 6.78						
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5		
<i>R. Meyer</i>						
Hrs	Hrs	Hrs	Hrs	Hrs		
Date	Time Completed	Lab Unit Mgr		Signature		
2/5/95	0525	<i>[Signature]</i> 2/9/95		<i>[Signature]</i>		

54-6800-061 (R-10-83)

pH ANALYSIS

WHC-SD-WM-DP-081

REV 1

Serial No R 6838.-5813		Sample Point TANK 9-1		Time Issued 1-19-95		Priority 25
Determination PH	Method Standard LA-212-102	Result Units NONE		Charge Code KELWD	Reruns 1	
Sample Size 5 ML				Customer ID I-TRIPEK		
Remarks, Calculations, Results DUPLICATE SAMPLE 6.70						
Analyst - 1 <i>R. Meyer</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5		
Hrs	Hrs	Hrs	Hrs	Hrs		
Date 2/5/95	Time Completed 0525	Lab Unit Mat <i>[Signature]</i> 2/9/95		<i>[Signature]</i>		

54-6800-061 (R-10-83)

Serial No R 6839.-5513		Sample Point TANK 9-1		Time Issued 1-19-95		Priority 25
Determination PH	Method Standard LA-212-102	Result Units NONE		Charge Code KELWD	Reruns 1	
Sample Size 5 ML				Customer ID STD		
Remarks, Calculations, Results E350 PH MAT. STD# 36N15H RESULT 9.76 STD VAL 1.00 E+1 %REC 97.6 E353 NESPH1 STD# RESULT STD VAL %REC OUT FOR RERUN data accepted by chemist (exception to 2 mcs filed) SKM 2-9-95						
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5		
Hrs	Hrs	Hrs	Hrs	Hrs		
Date	Time Completed 0525	Lab Unit Mat <i>[Signature]</i> 2/16/95		<i>[Signature]</i> 2-9-95 SKM		

54-6800-061 (R-10-83)

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

WHC-SD-WM-DP-081

ANALYTICAL BATCH

REV 1

Lab Segment Serial No.
R6852, R6854Customer ID:
I-1, TRIP BLKAnalysis:
pHSample Prep:
DIRECT

Instrument: SN 246354

Procedure/ Rev: LA-212-102 / C-5

Technologist: DG GRIFFIN *DG Griffin*

Date: 02/13/95

Starting Time: 0530

Temperature 24 C

Ending Time: 0630

Chemist: ROB SCHROEDER

Comments: BATCH #5384

	Description	Lab ID
1	LMCS STD	R6850-5513
2	SAMPLE	R6852-5713
3	SAMPL DUP	R6852-5813
4	SAMPLE	R6854-5713
5	SAMPL DUP	R6854-5813
6	LMCS STD	R6853-5513
7		
8		
9		
10		

	Description	Lab ID
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS STD	86N16-B / 3ml			

pH ANALYSIS

Batch 5384

Serial No R 6850.-5513	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:31	Priority 25
Determination PH	Method/Standard LA-212-102	Result Units NONE	Charge Code KBLWD	Reruns (0)
Sample Size ?			Customer ID STD	
Remarks, Calculations, Results S350 PH MAT. <i>PH 9.14</i> STD# 86N16-B- RESULT STD VAL 9.18 %REC 99.6 S353 NBSPH1 STD# RESULT STD VAL %REC				
Analyst - 1 <i>OS Buff</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2-13-95	Time Completed 0630	Lab Unit Mon <i>2/16/95</i>	<i>LS Jones</i>	

54-6800-061 (R-10-83)

Serial No. R 6852.-5713	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:37	Priority 25
Determination PH	Method/Standard LA-212-102	Result Units NONE	Charge Code KBLWD	Reruns 0
Sample Size ?			Customer ID I-1	
Remarks, Calculations, Results <i>PH 8.57</i>				
Analyst - 1 <i>OS Buff</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2-13-95	Time Completed 0630	Lab Unit Mon <i>2/16/95</i>	<i>LS Jones</i>	

54-6800-061 (R-10-83)

pH ANALYSIS

WHC-SD-WM-DP-081

REV 1

Serial No. R 6852.-5813	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:37	Priority 25
Determination pH	Method/Standard LA-212-102	Result Units NONE	Charge Code KBLWD	Reruns 0
Sample Size ?	Customer ID I-1			
Remarks, Calculations, Results DUPLICATE SAMPLE PH 8.58				
Analyst - 1 <i>K.B. Bruff</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2-13-95	Time Completed 0630	Lab Unit Mgr <i>[Signature]</i> 2/16/95	<i>[Signature]</i>	

54-6800-061 (R-10-83)

Serial No. R 6854.-5713	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:46	Priority 25
Determination pH	Method/Standard LA-212-102	Result Units NONE	Charge Code KBLWD	Reruns 0
Sample Size ?	Customer ID TRIP BLK			
Remarks, Calculations, Results PH 6.51				
Analyst - 1 <i>K.B. Bruff</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2-13-95	Time Completed 0630	Lab Unit Mgr <i>[Signature]</i> 2/16/95	<i>[Signature]</i>	

54-6800-061 (R-10-83)

pH ANALYSIS

WHC-SD-WM-DP-081

REV 1

Serial No R 6854.-5813	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:46	Priority 25
Determination PH	Method/Standard LA-212-102	Result Units NONE	Charge Code KELWD	Reruns 0
Sample Size ?			Customer ID TRIP BLK	
Remarks, Calculations, Results DUPLICATE SAMPLE PH 6.53				
Analyst - 1 <i>LOB Suffer</i> Hrs	Analyst - 2 Hrs	Analyst - 3 Hrs	Analyst - 4 Hrs	Analyst - 5 Hrs
Date 2-13-95	Time Completed 0630	Lab Unit Mgr <i>Grubel</i> 2/16/95	<i>Le Jones</i>	

54-6800-061 (R-10-83)

Serial No. R 6853.-5513	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:42	Priority 25
Determination PH	Method/Standard LA-212-102	Result Units NONE	Charge Code KELWD	Reruns 0
Sample Size ?			Customer ID END STD	
Remarks, Calculations, Results S350 PH MAT. STD# 86N16-B SID VAL 9.18 S353 NESPH1 STD# STD VAL RESULT %REC 99.3 PH 9.12				
Analyst - 1 <i>LOB Suffer</i> Hrs	Analyst - 2 Hrs	Analyst - 3 Hrs	Analyst - 4 Hrs	Analyst - 5 <i>Le Jones</i>
Date 2-13-95	Time Completed 0630	Lab Unit Mgr <i>Grubel</i> 2/16/95	<i>Le Jones</i>	

54-6800-061 (R-10-83)

WHC-SD-WM-DP-081
REV 1

THE FOLLOWING ANALYSES ARE INCLUDED IN THE DATA PACKAGE BUT THE RESULTS HAVE NOT BEEN REPORTED IN THE FINAL SUMMARY REPORTS.

WHC-SD-WM-DP-081
REV 1

Sample Prep:

Chemist: J. S. Lachut

Batch 5345

	Description	Lab ID		Description	Lab ID
1	LMCS	R6835-5513	11	DATA NOT USED IN PACKAGE	
2	Sample	R6837-5813	12		
3	Sample Dup	R6837-5713	13		
4	Sample	R6838-5713	14		
5	Sample Dup	R6838-5813	15		
6	LMCS	R6839-5513	16		
7			17		
8			18		
9			19		
10			20		

[illegible]

Serial No R 6838.-5813	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:31	Priority 25
Determination PH	Method Standard LA-212-102	Result Units NONE	Charge Code KBLWD	Reruns 0
Sample Size ? 5ml			Customer ID 1-TRIPBK	
Remarks, Calculations, Results DUPLICATE SAMPLE 6.67 OUT FOR RERUN <i>PHS</i>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-28-95	Time Completed 1030	Lab Unit Mgr <i>PHS</i>		

54-6800-061 (R-10-83)

Serial No R 6839.-5513	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:34	Priority 25
Determination PH	Method Standard LA-212-102	Result Units NONE	Charge Code KBLWD	Reruns 0
Sample Size ? 5ml			Customer ID STD	
Remarks, Calculations, Results S350 PH MAT. STD# STD VAL RESULT S653 NPSPH1 %REC STD# 52N163 RESULT 3.99 STD VAL 4.00 %REC 99.8% OUT FOR RERUN <i>PHS</i>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-28-95	Time Completed 1030	Lab Unit Mgr <i>PHS</i>		

54-6800-061 (R-10-83)

WHC-SD-WM-DP-081
REV 1

Serial No R 6837.-5713	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:26	Priority 25
Determination pH	Method Standard LA-212-102	Result Units NONE	Charge Code KELWD	Reruns 0
Sample Size ? 5ml			Customer ID I-1	
Remarks Calculations, Results 9.40 OUT FOR RERUN <i>MS</i> Anthony Pereira				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-28-95	Time Completed 1030	Lab Unit Mgr	<i>MS</i>	

54-6800-061 (R-10-83)

Serial No R 6838.-5713	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:31	Priority 25
Determination pH	Method Standard LA-212-102	Result Units NONE	Charge Code KELWD	Reruns 0
Sample Size ? 5ml			Customer ID I-TRIPEK	
Remarks Calculations Results ADD ADD 7.39 7.12 6.58 1-28-95 1-28-95 OUT FOR RERUN <i>MS</i> Anthony Pereira				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-28-95	Time Completed 1030	Lab Unit Mgr	<i>MS</i>	

54-6800-061 (R-10-83)

Batch 5345

Serial No R 6835.-5513	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:22	Priority 25
Determination pH	Method/Standard LA-212-102	Result Units NONE	Charge Code KBLWD	Reruns 0
Sample Size ? 5ml			Customer ID STD	
Remarks, Calculations, Results S350 PH MAT. STD# RESULT STD VAL %REC S353 NBSPH1 STD# 520163 RESULT 4.00 STD VAL 4.00 %REC 100% <div style="text-align: right; font-weight: bold; font-size: 1.2em;">OUT FOR RERUN <i>MS</i></div>				
Analyst - 1 <i>Anthony Peruto</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-28-95	Time Completed 1030	Lab Unit Mgr <i>1/30/95</i> <i>R. Schneider</i>		

54-6800-061 (R-10-83)

Serial No R 6837.-5813	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:26	Priority 25
Determination pH	Method/Standard LA-212-102	Result Units NONE	Charge Code KBLWD	Reruns 0
Sample Size ? 5ml			Customer ID I-1	
Remarks, Calculations, Results DUPLICATE SAMPLE 9.43 <div style="text-align: right; font-weight: bold; font-size: 1.2em;">OUT FOR RERUN <i>MS</i></div>				
Analyst - 1 <i>Anthony Peruto</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-28-95	Time Completed 1030	Lab Unit Mgr <i>MS</i>		

54-6800-061 (R-10-83)

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

WHC-SD-WM-DP-081

REV 1

ANALYTICAL BATCH

Lab Segment Serial No. R6837,8	Customer ID: TANK 9-1
Analysis: OH	Sample Prep: DIRECT

Instrument: N/A	Procedure/ Rev: LA 211-102/A-0 B-1 ^{RWS} 5-18-95
Technologist: R. WENDLAND	Date: 01/29/95
Starting Time: 0800	Temperature 25.0
Ending Time: 1200	Chemist: R. SCHROEDER

Comments: _____

	Description	Lab ID
1	LMCS	R6835-5529
2	SAMPLE	R6837-5729
3	DUP	R6837-5829
4	SAMPLE	R6838-5729
5	DUP	R6838-5829
6	LMCS	R6839-5529
7	Reagent Blank	R6836-5629
8		
9		
10		

	Description	Lab ID
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	21N8B			

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No. R 6835.-5529		Sample Point TANK 9-1		Date 1-19-95	Time Issued 10:22	Priority 25	
Determination OH	Method/Standard LA-E11-102	Result Units % RECOVERY		Charge Code KBLWD	Reruns 0		
Sample Size ? 0.50 - 3mL				Customer ID STD			
Remarks, Calculations, Results B273 ITS-OH 0.921 STD# ZINBB RESULT .937M RWS 2/13/95 STD VAL .939 M %REC 99.8% RWS 2/13/95 98.1 Robby Wendland							
Analyst - 1		Analyst - 2		Analyst - 3		Analyst - 4	
Hrs		Hrs		Hrs		Hrs	
Date 1-22-95		Time Completed		Lab Unit Mgr 2/13/95

54-6800-061 (R-10-83)

OH (AUTO) : LA-211-102 (B-1)

		Standard
Type	Sample Size (mL) SS	0.050
Standard	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.231
5348	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	9.21E-01
	OH in Sample in µg/mL (PPM)	1.57E+04
Matrix		
Liquid		
Sample #		
R6835-5529		
Instrument Code		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
R. Wendland		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
01/27/95		
Time		
07:24 AM		
		Standard
Concentration of OH in Sample (Molarity)		9.21E-01
OH in Sample in µg/mL (PPM)		1.57E+04

Data Entry by:	Date: 02/13/95
Approved by:	Date: 2/13/95

R6835-5529

REG. STD

date 95-01-27 time 07:24
GET pH 12 # 30
Id.#1 1
Id.#2 .1934
pH(init) 11.75
V/ml pH
EP1 .231 9.32
EP2 .302 7.21
manual stop
=====

date 95-01-27 time 07:25
GET pH 12 # 30
.10ml tit. Δ pH=1/div
start .280 ml

calibration data
Date 95-01-27
T(°C) 1 7.00
T(°C) 2 10.00
T.col. 24.3 °C
slope(mV) .963
U(as) 53.3 mV
electr. input 1
=====

Serial No. R 6836.-5629	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:24	Priority 25
Determination OH	Method/Standard LA-211-102	Result Units uG/ML	Charge Code KBLWD	Reruns 0
Sample Size ?			Customer ID BLANK	
Remarks, Calculations, Results REAGENT BLANK <div style="text-align: right; font-size: 1.5em;"> $< 4.17 E+1$ </div> <div style="font-size: 1.5em; margin-top: 10px;"> <i>R. WENDLAND</i> </div>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2/7/95	Time Completed	Lab Dir. Mgr. <i>[Signature]</i> 2/13/95		

54-6800-061 (R-10-83)

OH (AUTO) : LA-211-102 (B-1)

Type	Sample Size (mL) SS	BLANK
BLANK	Concentration of HNO3 (Molarity)	3.000
Work List	HNO3 Titrant at OH end-point in mL	0.1994
5348	Dilution Factor DF	0.007
Test Code	Concentration of OH in Sample (Molarity)	1
	OH in Sample in µg/mL (PPM)	4.65E-04
Matrix		7.91E+00
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
R6836-5629		
Instrument Code	Detection Limit (µg/mL)	4.17E+01
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
WENDLAND		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
01/27/95		
Time		BLANK
07:24 AM	Concentration of OH in Sample (Molarity)	4.65E-04
	OH in Sample in µg/mL (PPM)	<42

The Result is < Detection Limit

Data Entry by: <i>[Signature]</i>	Date: 02/09/95
Approved by: <i>[Signature]</i>	Date: 2/13/95

Form 211102_1 Rev. 1.3

Page 1 of 1

R 6836-5629

date 85-22-88 time 14:16
GET pH 12 # 56
ID.#1 1
ID.#2 .1994
concentration 5.51
V/v 1 pH
EF 1 .827 4.68
manual stop

===== BSK

date 85-22-88 time 14:16
GET pH 12 # 56
.10ml/div Δ pH=1/div
start V .000 ml

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No. R 6837.-5729	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:26	Priority 25
Determination OH LIQ	Method/Standard LA-211-102	Result Units µG/ML	Charge Code KBLWD	Reruns 0
Sample Size ? 3ml			Customer ID I-1	
Remarks, Calculations, Results <div style="text-align: right;"> $< 4.17 E+1$ </div>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-27-95	Time Completed	Laboratory 2/13/95

54-6800-061 (R-10-83)

OH (AUTO) : LA-211-102 (B-1)

		SAMPLE
Type	Sample Size (mL) SS	3.000
SAMPLE	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.000
5348	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	0.00E+00
	OH in Sample in µg/mL (PPM)	0.00E+00
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
R6837-5729		
Instrument Code	Detection Limit (µg/mL)	4.17E+01
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
WENDLAND		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
01/27/95		
Time		
07:24 AM		
		SAMPLE
Concentration of OH in Sample (Molarity)		0.00E+00
OH in Sample in µg/mL (PPM)		<42

The Result is < Detection Limit

Data Entry by:	Date: 02/10/95
Approved by:	Date: 2/13/95

Form 211102_1 Rev. 1.3

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WHC-SD-WM-DP-08 1
REV 1

R6837-5729

W/BACI

Date 85-21-27 time 07:43
13 2301
0.001
0.001CP
0.000000

Date 85-21-27 time 07: 0
127 SN 12 =
100ml/dil 40H=1
start .000 ml

Serial No R 6837.-5829	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:26	Priority 25
Determination OH LIQ	Method/Standard LA-211-102	Result Units µG/ML	Charge Code KBLWD	Reruns 0
Sample Size ? 3mL			Customer ID I-1	
Remarks, Calculations, Results: DUPLICATE SAMPLE <div style="text-align: right; font-size: 1.5em;"> $< 4.17 \text{E} + 1$ </div>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-27-95	Time Completed	Lab Unit gms	2/13/95	

54-6800-061 (R-10-83)

OH (AUTO) : LA-211-102 (B-1)

		DUPLICATE
Type	Sample Size (mL) SS	3.000
DUPLICATE	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.000
5348	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	0.00E+00
	OH in Sample in µg/mL (PPM)	0.00E+00
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
R6837-5829		
Instrument Code	Detection Limit (µg/mL)	4.17E+01
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
WENDLAND		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
01/27/95		
Time		DUPLICATE
07:24 AM	Concentration of OH in Sample (Molarity)	0.00E+00
	OH in Sample in µg/mL (PPM)	<42

The Result is < Detection Limit

Data Entry by: <i>[Signature]</i>	Date: 02/10/95
Approved by: <i>[Signature]</i>	Date: 2/13/95

Form 211102_1 Rev. 1.3

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R6837-5829

W/BALL DUP

date 95-01-27 time 07:47
GET pH 12 # 34
10 #1 6837-2
10 #2 .1994
pH init 7.36
manual stop
=====

date 95-01-27 time 07:47
GET pH 12 # 34
.10ml/div dpH=1/div
start V .000 ml

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No. R 6838.-5729	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:31	Priority 25
Determination OH LIQ	Method/Standard LA-211-102	Result Units 13.5/mL	Charge Code RELW	Reqs 0
Sample Size ? 3mL			Customer ID I-TRIPBK	
Remarks, Calculations, Results: <div style="text-align: right; font-size: 1.5em;"> $< 4.17 E + 1$ </div> <div style="font-size: 1.5em; margin-top: 10px;"> <i>POPEY WENDLAND</i> </div>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-27-95	Time Completed	Lab Unit Mon <i>2/13/95</i>	<i>[Signature]</i>	

54-6800-061 (R-10-83)

OH (AUTO) : LA-211-102 (B-1)

		SAMPLE
Type	Sample Size (mL) SS	3.000
SAMPLE	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.006
5348	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	3.99E-04
	OH in Sample in µg/mL (PPM)	6.78E+00
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
R6838-5729		
Instrument Code	Detection Limit (µg/mL)	4.17E+01
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
WENDLAND		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
01/27/95		
Time		
07:24 AM	Concentration of OH in Sample (Molarity)	3.99E-04
	OH in Sample in µg/mL (PPM)	<42

The Result is < Detection Limit

Data Entry by: <i>[Signature]</i>	Date: 02/10/95
Approved by: <i>[Signature]</i>	Date: 2/13/95

Form 211102_1 Rev. 1.3

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R 68 38 5729

W/BACL

date 95-01-27 time 13:12
GET pH 12 # 50
IS.#1 6838
IS.#2 .1994
confinity 5.87
V/ml pH
EP1 .006 4.82
manual stop
=====

date 95-01-27 time 13:12
GET pH 12 # 50
.10ml/div Δ pH=1/div
start V .000 ml

3 6
|-----|
1

Serial No R 6838.-5829	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:31	Priority 25
Determination OH LIQ	Method/Standard LA-211-102	Result Units uG/ML	Charge Code KBLWD	Reruns 0
Sample Size ?	3mL			Customer ID I-TRIPBK
Remarks, Calculations, Results: DUPLICATE SAMPLE <div style="text-align: right; font-size: 1.2em;"> $< 4.17 E+1$ </div> <div style="font-size: 1.5em; margin-top: 10px;"> <i>Robby WENDLAND</i> </div>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-27-95	Time Completed	Lab Unit Mgr <i>[Signature]</i> 2/10/95	<i>[Signature]</i>	

54-6800-061 (R-10-83)

OH (AUTO) : LA-211-102 (B-1)

		DUPLICATE
Type	Sample Size (mL) SS	3.000
DUPLICATE	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.006
5348	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	3.99E-04
	OH in Sample in µg/mL (PPM)	6.78E+00
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
R6838-5829		
Instrument Code	Detection Limit (µg/mL)	4.17E+01
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
WENDLAND		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
01/27/95		
Time		
07:24 AM		
		DUPLICATE
Concentration of OH in Sample (Molarity)		3.99E-04
OH in Sample in µg/mL (PPM)		<42

The Result is < Detection Limit

Data Entry by: <i>[Signature]</i>	Date: 02/10/95
Approved by: <i>[Signature]</i>	Date: 2/13/95

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SO

WHC-SD-WM-DP-081
REV 1

OH ANALYSIS

R6838-5829
W/TRACE
DUP

date 95-01-27 time 13:14
GET pH 12 # 51
Id.#1 6838-2
Id.#2 .1994
pH(inst) 6.42
EP1 V/ml pH
.006 5.01
Manual stop
=====

date 95-01-27 time 13:14
GET pH 12 # 51
.16ml/div Δ pH=1/div
start V .000 ml

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No R 6839.-5529	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:34	Priority 25
Determination OH	Method/Standard LA-211-102	Result Units % RECOVERY	Charge Code KBLWD	Reruns 0
Sample Size ? .050 - 3			Customer ID STD	
Remarks, Calculations, Results S273 ITS-OH STD# ZIN8B RESULT 9.45 gwb 2/13/95 STD VAL 9.39E-1 %REC 102.3% 100.6 gwb 2/13/95 ROBERT WENDLAND				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-27-95	Time Completed	Lab Unit Mgr. J. Wendland 2/13/95		

54-6800-061 (R-10-83)

OH (AUTO) : LA-211-102 (B-1)

Type	Sample Size (mL) SS	Standard
Standard	Concentration of HNO3 (Molarity)	0.050
Work List	HNO3 Titrant at OH end-point in mL	0.1994
5348	Dilution Factor DF	0.237
Test Code	Concentration of OH in Sample (Molarity)	1
	OH in Sample in µg/mL (PPM)	9.45E-01
Matrix		1.61E+04
Liquid		
Sample #		
R6839-5529		
Instrument Code		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
R. Wendland	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
Date	01/27/95	
Time		
01:34 PM	Concentration of OH in Sample (Molarity)	Standard
	OH in Sample in µg/mL (PPM)	9.45E-01
		1.61E+04

Data Entry by: J. Wendland	Date: 02/13/95
Approved by: J. Wendland	Date: 2/13/95

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OH ANALYSIS

R6839-5529

END
STD

```

Date 05-21-87 Time 13:34
CE# 12 # 54
IS#1 1
IS#2 1334
C16000 11.00
          100.00 pH
IS1 -227 9.64
IS2 -236 6.73
C16001 STOP
=====

```

```
date 05-11-27 time 13:14
LET sd      11 # 54
.02ml/div      pH=1/div
start 0      .000 xl
```

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.

R6852,4

Customer ID:

TANK 9-1

Analysis:

OH-

Sample Prep:

DIRECT

Instrument: WC06695

Procedure/ Rev: LA 211-102/A-0

Technologist: R. WENDLAND

Date: 02/09/95

Starting Time: 0800

Temperature 24.0

Ending Time: 1200

Chemist: R. SCHROEDER

Comments: _____

	Description	Lab ID
1	LMCS	R6850-5529
2	BLK	R6851-5629
3	SAM	R6852-5729
4	DUP	R6852-5829
5	SAM	R6854-5729
6	DUP	R6854-5829
7	LMCS	R6853-5529
8		
9		
10		

	Description	Lab ID
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	2128B			

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No. R 6850.-5529		Sample Point TANK 9-1		Date 1-23-95		Time Issued 10:31		Priority 25	
Determination OH		Method/Standard LA-211-102		Result Units % RECOVERY		Charge Code KBLWD		Returns 0	
Sample Size ?		Customer ID STD		Remarks, Calculations, Results					
<p>STD# 2158B RESULT 9.05 E-1M STD VAL 9.39 E-1M %REC 96.4 %</p>									
Analyst - 1		Analyst - 2		Analyst - 3		Analyst - 4		Analyst - 5	
Hrs		Hrs		Hrs		Hrs		Hrs	
Time Completed		Lab Unit Mon		Date 2/16/95					

54-6800-061 (R-10-83)

OH (AUTO) : LA-211-102 (B-1)		std	
Type	Sample Size (mL) SS	0.050	
Work List	Concentration of HNO3 (Molarity)	0.1994	
5387	HNO3 Titrant at OH end-point in mL	0.227	
	Dilution Factor DF	1	
Test Code	Concentration of OH in Sample (Molarity)	9.05E-01	
	OH in Sample in µg/mL (PPM)	1.54E+04	
Matrix			
liquid			
Sample #	Detection Limit = 125µg / SS * DF		
R6850-5529			
Instrument Code	Detection Limit (µg/mL)	2.50E+03	
Analyst	OH Molarity = ((mL HNO3)/(M HNO3))/Sample Size in mL * Dilution Factor		
R. WENDLAND	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)/((1000000µg/g)/(1000mL/L))		
Date			
02/09/95			
Time			
03:00 PM			
	Concentration of OH in Sample (Molarity)	9.05E-01	
	OH in Sample in µg/mL (PPM)	1.54E+04	

Data Entry By: <i>R.W. Wendland</i>	Date: 02/13/95
Approved by: <i>R.W. Wendland</i>	Date: 2/16/95

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WHC-SD-WM-DP-08 1

REV 1

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OH ANALYSIS

R6850-5529

calibration error
 date 95-02-09
 pH(S) 1 7.00
 pH(S) 2 10.00
 t.cal. 24.0 °C
 slope(rel) .977
 U(ass) 24.0 mV
 electr. input 1
 =====

date 95-02-09 time 08:43
 GET pH 12 # 57
 Id.#1 1
 Id.#2 .1994
 pH(init) 11.74
 V/m1 pH
 EP1 .227 9.82
 EP2 .363 7.19
 EP3 .371 4.71
 stop volt. reached
 =====

date 95-02-09 time 08:46
 GET pH 12 # 57
 .10ml/div 2pH=1/div
 start / .266 ml

BEST AVAILABLE COPY

WHC-SD-WM-DP-08 1
REV 1
PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No	R 6851.-5629	Sample Point	TANK 9-1	Date	1-23-95	Time Issued	10:33	Priority	25
Determination	LA-211-102	Method/Standard	LA-211-102	Result Units	ug/mL	Charge Code	KELWD	Retuns	0
Sample Size	?	Customer ID	BLK	REAGENT BLANK					
Remarks, Calculations, Results	<i>Direct</i>								
Analyst - 1	<i>R. WENDLAND</i>								
Analyst - 2									
Analyst - 3									
Analyst - 4									
Analyst - 5									
Hrs									
Time Completed									
Lab Unit Mgr	<i>2/16/95</i>								
Date	<i>2/9/95</i>								

54-6800-061 (R-10-83)

OH (AUTO) : LA-211-102 (B-1)	std	3.000	0.1994	0.000	1	0.00E+00	OH in Sample in ug/mL (PPM)	0.00E+00	OH in Sample in ug/mL (PPM)	<42			
Type	std	Blank	Concentration of HNO3 (Molarity)	HNO3 Titrant at OH end-point in mL	Dilution Factor DF	Concentration of OH in Sample (Molarity)	OH in Sample in ug/mL (PPM)	Concentration of OH in Sample (Molarity)	OH in Sample in ug/mL (PPM)	<42			
Work List	5387	Test Code	Matrix	Liquid	Sample #	R6851-5629	Instrument Code	Analyst	R. WENDLAND	Date	02/09/95	Time	03:00 PM

OH Molarity = ((mL HNO3)/(Sample Size in mL * Dilution Factor)) * ((1000000 ug/g)/(1000 mL/L))

OH in ug/mL = (OH MOLARITY) * (17.0g/mole) * ((1000000 ug/g)/(1000 mL/L))

Detection Limit = 125ug / SS * DF

Detection Limit (ug/mL)

4.17E+01

The Result is < Detection Limit

Data Entry by:	<i>R. W. Wendland</i>	Date:	02/13/95
Approved by:	<i>R. W. Wendland</i>	Date:	2/16/95

Form 211102-1 Rev. 1.3

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pH ANALYSIS

WHC-SD-WM-DP-081
REV 1

R6851-5629

date 97-03-29 time 09:56
GET pH 12 # 58
Is.#1 0
Is.#2 .1991
pH(iniv) 4.97
V/ml pH
EP1 .009 4.03
manual stop
=====

date 95-02-09 time 09:56
GET pH 12 # 58
.10ml/div ΔpH=1/div
start V .000 ml

BEST AVAILABLE COPY

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No R 6852.-5729	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:37	Priority 25
Determination OH LIQ	Method/Standard LA-211-102	Result Units uG/ML	Charge Code KBLWD	Reruns 0
Sample Size ? 3ml			Customer ID I-1	
Remarks, Calculations, Results <42 R. WENDLAND				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2-9-95	Time Completed	Lab Unit Mgr. 2/16/95	[Signature]	

54-6800-061 (R-10-83)

OH (AUTO) : LA-211-102 (B-1)

		std
Type	Sample Size (mL) SS	3.000
std Sample	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.008
5387	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	5.32E-04
	OH in Sample in µg/mL (PPM)	9.04E+00
Matrix		
liquid		
Sample #	Detection Limit = 125µg / SS * DF	
R6852-5729		
Instrument Code	Detection Limit (µg/mL)	4.17E+01
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
R. WENDLAND		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
02/09/95		
Time		std
03:00 PM	Concentration of OH in Sample (Molarity)	5.32E-04
	OH in Sample in µg/mL (PPM)	<42

The Result is < Detection Limit

Data Entry by:	R. W. Schneider	Date:	02/13/95
Approved by:	[Signature]	Date:	2/16/95

R6852-5729

date 95-02-29 time 09:58

GET pH 12 # 59

ID.#1 6854

ID.#2 .1994

pH(init) 5.29

	V/ml	pH
EF1	.007	4.24

manual stop

===== 3.00

date 95-02-29 time 09:58

GET pH 12 # 59

.10ml/div Δ pH=1/div

start V .200 ml

=====

date 95-02-29 time 10:00

GET pH 12 # 63

ID.#1 6854

ID.#2 .1994

pH(init) 6.30

	V/ml	pH
EF1	.008	5.19

manual stop

===== 3ml

date 95-02-29 time 10:00

GET pH 12 # 63

.10ml/div Δ pH=1/div

start V .000 ml

=====

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No. R 6852.-5829	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:37	Priority 25
Determination OH LIQ	Method/Standard LA-211-102	Result Units µG/ML	Charge Code KBLWD	Reruns 0
Sample Size ? 3m	Customer ID I-1			
Remarks, Calculations, Results DUPLICATE SAMPLE R. WENDLAND <42				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr 2/16/95		

54-6800-061 (R-10-83)

OH (AUTO) : LA-211-102 (B-1)

Type	Sample Size (mL) SS	std
std Dup	Concentration of HNO3 (Molarity)	3.000
Work List	HNO3 Titrant at OH end-point in mL	0.1994
5387	Dilution Factor DF	0.007
Test Code	Concentration of OH in Sample (Molarity)	1
Matrix	OH in Sample in µg/mL (PPM)	4.65E-04
liquid		7.91E+00
Sample #	Detection Limit = 125µg / SS * DF	
R6852-5829		
Instrument Code	Detection Limit (µg/mL)	4.17E+01
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
R. WENDLAND		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
02/09/95		
Time		std
03:00 PM	Concentration of OH in Sample (Molarity)	4.65E-04
	OH in Sample in µg/mL (PPM)	<42

The Result is < Detection Limit

Data Entry by:	Date:	02/13/95
Approved by:	Date:	2/16/95

Form 211102_1 Rev. 1.3 Page 1 of 1

R 6852-5829

date 95-02-09 time 10:02
 GET pH 12 # 61
 Ic.#1 6854-2
 Ic.#2 .1994
 pH(init) 5.90
 V/ml pH
 EF1 .007 4.83
 manual stop
 =====

3ml

date 95-02-09 time 10:02
 GET pH 12 # 61
 .10ml/div $\Delta pH=1/\text{div}$
 start V .000 ml

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No. R 6854.-5729	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:46	Priority 25
Determination OH LIQ	Method/Standard LA-211-102	Result Units µg/mL	Charge Code RELWD	Recons 0
Sample Size ? 3ml			Customer ID TRIP BLK	
Remarks, Calculations, Results ROBBY WENDLAND <42				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2-9-95	Time Completed	Lab Unit Mgr 2/16/95	RELWD	

54-6800-061 (R-10-83)

OH (AUTO) : LA-211-102 (B-1)

		Sample
Type	Sample Size (mL) SS	3.000
Sample	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.016
5387	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.06E-03
	OH in Sample in µg/mL (PPM)	1.81E+01
Matrix		
liquid		
Sample #	Detection Limit = 125µg / SS * DF	
R6854-5729		
Instrument Code	Detection Limit (µg/mL)	4.17E+01
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
R. Wendland		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
02/09/95		
Time		
03:00 PM	Concentration of OH in Sample (Molarity)	1.06E-03
	OH in Sample in µg/mL (PPM)	<42

The Result is < Detection Limit

Data Entry by: RELWD	Date: 02/16/95
Approved by: RELWD	Date: 2/16/95

Form 211102_1 Rev. 1.3 Page 1 of 1

R 6854-5729

date 95-02-09 time 10:07

GET pH 12 # 62

ID.#1 6852

ID.#2 .1994

pH(init) 7.82

V/ml pH

EP1 .009 5.57

actual stop

===== 100

date 95-02-09 time 10:08

GET pH 12 # 62

.10ml/div Δ pH=1/div

start V .000 ml

=====

date 95-02-09 time 10:11

GET pH 12 # 63

ID.#1 6852

ID.#2 .1994

pH(init) 7.71

V/ml pH

EP1 .016 7.71

EP2 .098 7.71

actual stop

===== 3me

date 95-02-09 time 10:11

GET pH 12 # 62

.10ml/div Δ pH=1/div

start V .000 ml

=====

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No R 6854.-5829	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:46	Priority 25
Determination OH LIQ	Method/Standard LA-211-102	Result Units uG/ML	Charge Code KBLWD	Reruns 0
Sample Size ? <i>3m</i>			Customer ID TRIP BLK	
Remarks, Calculations, Results DUPLICATE SAMPLE				
<i>ROBBY WENDLAND</i> <i><42</i>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date <i>2-9-95</i>	Time Completed	Lab Unit Mgr <i>[Signature]</i> <i>2/16/95</i>	<i>[Signature]</i>	

54-6800-061 (R-10-83)

OH (AUTO) : LA-211-102 (B-1)

		Dup
Type	Sample Size (mL) SS	3.000
Dup	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.016
5387	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.06E-03
	OH in Sample in µg/mL (PPM)	1.81E+01
Matrix		
liquid		
Sample #	Detection Limit = 125µg / SS * DF	
R6854-5829		
Instrument Code	Detection Limit (µg/mL)	4.17E+01
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
R. Wendland		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
02/09/95		
Time		Dup
03:00 PM	Concentration of OH in Sample (Molarity)	1.06E-03
	OH in Sample in µg/mL (PPM)	<42

The Result is < Detection Limit

Data Entry by: <i>[Signature]</i>	Date: 02/16/95
Approved by: <i>[Signature]</i>	Date: 2/16/95

R 6854-5829

date 95-02-09 time 10:14
 GET pH 12 # 64
 id.#1 6852-2
 id.#2 .1994
 pH(initial) 7.74
 /ml pH
 EP1 .016 7.12
 EP2 .299 4.35
 manual stop
 =====

ZMU

date 95-02-09 time 10:14
 GET pH 12 # 64
 .10ml/dio Δ pH=1/dio
 start V .000 ml

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WHC-SD-WM-DP-081
 REV 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

REV 1

Serial No R 6853.-5529	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:42	Priority 25
Determination OH	Method/Standard LA-211-102	Result Units % RECOVERY	Charge Code KBLWD	Reruns 0
Sample Size ?	Customer ID END STD			
Remarks, Calculations, Results S273 ITS-OH STD# 21N8B RESULT 9.09^{E-1} M STD VAL 9.39^{E-1} M %REC 96.8% ROBBY WENDLAND				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2-9-95	Time Completed	Lab Unit Mgr 2/16/95		

54-6800-061 (R-10-83)

OH (AUTO) : LA-211-102 (B-1)

		std
Type	Sample Size (mL) SS	0.050
std	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.228
5387	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	9.09E-01
	OH in Sample in µg/mL (PPM)	1.55E+04
Matrix		
liquid		
Sample #	Detection Limit = 125µg / SS * DF	
R6853-5529		
Instrument Code	Detection Limit (µg/mL)	2.50E+03
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
R. WENDLAND		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
02/09/95		
Time		std
03:00 PM	Concentration of OH in Sample (Molarity)	9.09E-01
	OH in Sample in µg/mL (PPM)	1.55E+04

Data Entry by: R. W. Schroeder	Date: 02/13/95
Approved by: 2/16/95	Date: 2/16/95

R 6853 -5529

date 55-02-05 time 11:31
 GET pH 12 # 3
 ID.#1
 ID.#2 .1994
 pH (initial) 11.31
 V/ml pH
 EP1 .228 9.85
 EP2 .299 7.26
 manual stop

=====

date 55-02-05 time 11:31
 GET pH 12 # 3
 V/ml pH
 start .208 11

=====

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WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

WHC-SD-WM-DP-081

REV 1

ANALYTICAL BATCH

Lab Segment Serial No.

R6852,4

Customer ID:

TANK 9-1

Analysis:

OH-

Sample Prep:

DIRECT

Instrument: WC06695

Procedure/ Rev: LA 211-102/A-0

Technologist: R. WENDLAND

Date: 02/09/95

Starting Time: 0800

Temperature 24.0

Ending Time: 1200

Chemist: R. SCHROEDER

Comments: _____

	Description	Lab ID
1	LMCS	R6850-5529
2	BLK	R6851-5629
3	SAM	R6852-5729
4	DUP	R6852-5829
5	SAM	R6854-5729
6	DUP	R6854-5829
7	LMCS	R6853-5529
8		
9		
10		

	Description	Lab ID
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	ZIN8B			

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Batch 5387

Serial No R 6850.-5529	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:31	Priority 25
Determination OH	Method/Standard LA-211-102	Result Units % RECOVERY	Charge Code KBLWD	Reruns 0
Sample Size ? .050			Customer ID STD	
Remarks, Calculations, Results: S273 ITS-OH STD# 21N8B RESULT 9.05 E-1M STD VAL 9.39 E-1M %REC 96.4 %
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2995	Time Completed	Lap Unit Mo 2/16/95

54-6800-061 (R-10-83)

OH (AUTO) : LA-211-102 (B-1)

Type	std
Sample Size (mL) SS	0.050
Concentration of HNO3 (Molarity)	0.1994
Work List	
HNO3 Titrant at OH end-point in mL	0.227
5387	
Dilution Factor DF	1
Test Code	
Concentration of OH in Sample (Molarity)	9.05E-01
OH in Sample in µg/mL (PPM)	1.54E+04
Matrix	
liquid	
Sample #	
R6850-5529	
Detection Limit = 125µg / SS * DF	
Instrument Code	
Detection Limit (µg/mL)	2.50E+03
Analyst	
R. WENDLAND	
Date	
02/09/95	
Time	
03:00 PM	

	std
Concentration of OH in Sample (Molarity)	9.05E-01
OH in Sample in µg/mL (PPM)	1.54E+04

Data Entry by:		Date:	02/13/95
Approved by:		Date:	2/16/95

R6850-5529

calibration code
 date 95-02-03
 pH(S) 1 7.92
 pH(S) 2 10.92
 t.cal. 24.0 °C
 slope(rel) .977
 U(as) 24.0 mV
 electr. input 1
 =====

date 95-02-09 time 08:43
 GET pH 12 # 37
 Id.#1 1
 Id.#2 .1934
 pH(init) 11.71

	Volt	pH
EP1	.227	9.82
EP2	.363	7.19
EP3	.571	4.71

 stop volt. reached
 =====

date 95-02-29 time 08:44
 GET pH 12 # 37
 .10ml/min. 2pH=1/dm
 start 7 .223 mV

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No R 6851.-5629	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:33	Priority 25
Determination OH	Method/Standard LA-211-102	Result Units ug/ML	Charge Code KBLWD	Reruns 0
Sample Size ?	Customer ID BLK			
Remarks, Calculations, Results REAGENT BLANK <div style="text-align: center;">< 42</div>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2-9-95	Time Completed	Lab Unit Mgr 2/16/95		

54-6800-061 (R-10-83)

OH (AUTO) : LA-211-102 (B-1)

Type	Sample Size (mL) SS	std
std Blank	Concentration of HNO3 (Molarity)	3.000
Work List	HNO3 Titrant at OH end-point in mL	0.1994
5387	Dilution Factor DF	0.000
Test Code	Concentration of OH in Sample (Molarity)	1
	OH in Sample in ug/mL (PPM)	0.00E+00
Matrix		
liquid		
Sample #	Detection Limit = 125ug / SS * DF	
R6851-5629		
Instrument Code	Detection Limit (ug/mL)	4.17E+01
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
R. WENDLAND		
Date	OH in ug/mL = (OH MOLARITY)*(17.0g/mole)*((1000000ug/g)/(1000mL/L))	
02/09/95		
Time		std
03:00 PM	Concentration of OH in Sample (Molarity)	0.00E+00
	OH in Sample in ug/mL (PPM)	<42

The Result is < Detection Limit

Data Entry by:	<i>R. Schneider</i>	Date:	02/13/95
Approved by:	<i>J. Wallace</i>	Date:	2/16/95

pH ANALYSIS

WHC-SD-WM-DP-081
REV 1

126851-5629

date 95-11-29 time 09:56
GET pH 12 # 58
Id.#1 8
Id.#2 .1994
pH-init 4.97
V/ml pH
SF: .689 4.83
Manual stop
=====

date 95-02-09 time 09:56
GET pH 12 # 58
.18ml/div Δ pH=1/div
start V .689 ml

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No R 6852.-5729	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:37	Priority 25
Determination OH LIQ	Method/Standard LA-211-102	Result Units uG/ML	Charge Code KBLWD	Reruns 0
Sample Size ? 3mc			Customer ID I-1	
Remarks, Calculations, Results <42 ROBBY WENDLAND				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2-9-95	Time Completed	Lap Unit Mgr 2/16/95	[Signature]	

54-6800-061 (R-10-83)

OH (AUTO) : LA-211-102 (B-1)

		std
Type	Sample Size (mL) SS	3.000
std sample	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.008
5387	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	5.32E-04
	OH in Sample in µg/mL (PPM)	9.04E+00
Matrix		
liquid		
Sample #	Detection Limit = 125µg / SS * DF	
R6852-5729		
Instrument Code	Detection Limit (µg/mL)	4.17E+01
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
R. WENDLAND		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
02/09/95		
Time		std
03:00 PM	Concentration of OH in Sample (Molarity)	5.32E-04
	OH in Sample in µg/mL (PPM)	<42

The Result is < Detection Limit

Data Entry by:	[Signature]	Date:	02/13/95
Approved by:	[Signature]	Date:	2/16/95

26852-5729

date 95-02-29 time 09:58
 GET pH 12 # 59
 Id.#1 6:54
 Id.#2 .1994
 pH(init) 5.29
 V/ml pH
 EF1 .007 4.24
 manual stop
 ===== 5.00

date 95-02-29 time 09:58
 GET pH 12 # 59
 .10ml/div Δ pH=1/div
 start V .000 ml

date 95-02-29 time 10:00
 GET pH 12 # 60
 Id.#1 6:54
 Id.#2 .1994
 pH(init) 6.30
 V/ml pH
 EF1 .009 5.19
 manual stop
 ===== 3ml

date 95-02-29 time 10:00
 GET pH 12 # 60
 .10ml/div Δ pH=1/div
 start V .000 ml

BEST AVAILABLE COPY

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No R 6852.-5829	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:37	Priority 25
Determination OH LIQ	Method/Standard LA-211-102	Result Units µG/ML	Charge Code KBLWD	Reruns 0
Sample Size ? <i>3m</i>			Customer ID I-1	
Remarks, Calculations, Results DUPLICATE SAMPLE <i>R. WENDLAND</i> <i><42</i>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr <i>2/16/95</i>		

54-6800-061 (R-10-83)

OH (AUTO) : LA-211-102 (B-1)

std

Type	Sample Size (mL) SS	3.000
<i>std Dup</i>	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.007
5387	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	4.65E-04
	OH in Sample in µg/mL (PPM)	7.91E+00

Matrix

liquid

Sample

Detection Limit = 125µg / SS * DF

R6852-5829

Instrument Code

Detection Limit (µg/mL)

4.17E+01

Analyst

OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor

R. WENDLAND

Date

OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))

02/09/95

Time

std

03:00 PM

Concentration of OH in Sample (Molarity)

4.65E-04

OH in Sample in µg/mL (PPM)

<42

The Result is < Detection Limit

Data Entry by:

Date: 02/13/95

Approved by:

Date: 2/16/95

OH ANALYSIS

WHC-SD-WM-DP-081

REV 1

R6852-5829

date 95-02-09 time 10:02
GET pH 12 # 61
Ic.#1 5854-2
Ic.#2 .1994
pH(limit) 5.90
EF1 V/ml pH
.007 4.83
manual stop
===== 3ml

date 95-02-09 time 10:02
GET pH 12 # 61
.13ml/div pH=1/div
start V .000 ml

BEST AVAILABLE COPY

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No. R 6854.-5729	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:46	Priority 25
Determination OH LIQ	Method/Standard LA-211-102	Result Units µG/ML	Charge Code KELWL	Recons 0
Sample Size ? 3ml			Customer ID TRIP BLK	
Remarks, Calculations, Results ROBBY WENDLAND <42				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2-9-95	Time Completed	Lab Unit Mgr 2/16/95	4.17E+01	

54-6800-061 (R-10-83)

OH (AUTO) : LA-211-102 (B-1)

		Sample
Type	Sample Size (mL) SS	3.000
Sample	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.016
5387	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.06E-03
	OH in Sample in µg/mL (PPM)	1.81E+01
Matrix		
liquid		
Sample #	Detection Limit = 125µg / SS * DF	
R6854-5729		
Instrument Code	Detection Limit (µg/mL)	4.17E+01
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
R. Wendland		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
02/09/95		
Time		Sample
03:00 PM	Concentration of OH in Sample (Molarity)	1.06E-03
	OH in Sample in µg/mL (PPM)	<42

The Result is < Detection Limit

Data Entry by: R. Wendland	Date: 02/16/95
Approved by: R. Wendland	Date: 2/16/95

Form 211102_1 Rev 1.3

R6854-5729

date 95-02-09 time 10:37
 GET pH 12 # 62
 Id.#1 6852
 Id.#2 .1994
 pH(init) 7.92
 V/ml pH
 0.009 5.57
 actual stop
 =====

200

date 95-02-09 time 10:38
 GET pH 12 # 62
 .12ml/div Δ pH=1/div
 start V .000 ml

=====

date 95-02-09 time 10:11
 GET pH 12 # 63
 Id.#1 6852
 Id.#2 .1994
 pH(init) 7.71
 V/ml pH
 0.016 5.57
 0.008 5.57
 actual stop
 =====

3ml

date 95-02-29 time 10:11
 GET pH 12 # 63
 .12ml/div Δ pH=1/div
 start V .000 ml

=====

BEST AVAILABLE COPY

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No R 6854.-5829	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:46	Priority 25
Determination OH LIQ	Method/Standard LA-211-102	Result Units uG/ML	Charge Code KBLWD	Reruns 0
Sample Size ? <i>3m</i>	Customer ID TRIP BLK			
Remarks, Calculations, Results DUPLICATE SAMPLE				
<i>ROBBY WENDLAND</i> <i><42</i>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date <i>2-9-95</i>	Time Completed	Lab Unit Mgr <i>2/16/95</i>	<i>[Signature]</i>	

54-6800-061 (R-10-83)

OH (AUTO) : LA-211-102 (B-1)

Type	Sample Size (mL) SS	Dup
Dup	Concentration of HNO3 (Molarity)	3.000
Work List	HNO3 Titrant at OH end-point in mL	0.1994
5387	Dilution Factor DF	0.016
Test Code	Concentration of OH in Sample (Molarity)	1
	OH in Sample in µg/mL (PPM)	1.06E-03
Matrix		1.81E+01
liquid		
Sample #	Detection Limit = 125µg / SS * DF	
R6854-5829		
Instrument Code	Detection Limit (µg/mL)	4.17E+01
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
R. Wendland		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
02/09/95		
Time		Dup
03:00 PM	Concentration of OH in Sample (Molarity)	1.06E-03
	OH in Sample in µg/mL (PPM)	<42

The Result is < Detection Limit

Data Entry by: <i>[Signature]</i>	Date: 02/16/95
Approved by: <i>[Signature]</i>	Date: 2/16/95

OH ANALYSIS

WHC-SD-WM-DP-081

REV 1

R6854-5829

date 95-02-29 time 13:14
 CST # 12 # 64
 Id.#1 6552-2
 Id.#2 .1994
 pH(init) 7.74
 /ml pH
 EP1 .016 7.12
 EP2 .099 4.35
 actual stop

===== Zmu

date 95-02-09 time 10:14
 CST # 12 # 64
 .13ml/dil. pH=1.319
 start V .000 ml

BEST AVAILABLE COPY

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No R 6853.-5529	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:42	Priority 25
Determination OH	Method/Standard LA-211-102	Result Units % RECOVERY	Charge Code KBLWD	Reruns 0
Sample Size ?	Customer ID END STD			
Remarks, Calculations, Results S273 ITS-OH STD# 21N8B RESULT 9.09^{E-1}M STD VAL 9.39^{E-1}M %REC 96.8% ROBBY WENDLAND				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2-9-95	Time Completed	Lab Unit Mgr 2/16/95	Ph	

54-6800-061 (R-10-83)

OH (AUTO) : LA-211-102 (B-1)

		std
Type	Sample Size (mL) SS	0.050
std	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.228
5387	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	9.09E-01
	OH in Sample in µg/mL (PPM)	1.55E+04
Matrix		
liquid		
Sample #	Detection Limit = 125µg / SS * DF	
R6853-5529		
Instrument Code	Detection Limit (µg/mL)	2.50E+03
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
R. WENDLAND		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
02/09/95		
Time		std
03:00 PM	Concentration of OH in Sample (Molarity)	9.09E-01
	OH in Sample in µg/mL (PPM)	1.55E+04

Data Entry by: R. W. Schroeder	Date: 02/13/95
Approved by: Ph	Date: 2/16/95

OH ANALYSIS

WHC-SD-WM-DP-081
REV 1

R6853 - 5529

DATE 01-28-81 TIME 13:11
GET # 86
ID.#1 1
ID.#2 .1984
REFINER 11.81
WPI 2H
EP1 .228 9.85
EP2 .299 7.26
Manual stop
=====

DATE 02-05-81 TIME 13:11
GET # 86
ID.#1 1
ID.#2 .1984
REFINER 11.81
WPI 2H
EP1 .228 9.85
EP2 .299 7.26
Manual stop
=====

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WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

WHC-SD-WM-DP-087

ANALYTICAL BATCH

REV 1

Lab Segment Serial No.

R6837, R6838

Customer ID:

I-1, I-TRIPBK

Analysis:

ICP

Sample Prep:

Undigested

Instrument: UC 38935

Procedure/ Rev: LG-305-161/G-1

Technologist: J.K. Seto

Date: 1-25-85

Starting Time: 0100

Temperature 11/9

Ending Time: 1500

Chemist: B. Wells, S. Perony

Comments:

	Description	Lab ID		Description	Lab ID
1	Lincs Check Std	R6835-5550	11		
2	Reagent Blank	R6836-5650	12		
3	Sample	R6837-5750	13		
4	Duplicate Sample	R6837-5850	14		
5	Spike	R6837-5950	15		
6	Duplicate Spike	R6837-5050	16		
7	Sample	R6838-5750	17		
8	Duplicate Sample	R6838-5850	18		
9	Reagent Blank	- - - - -	19		
10	Lincs Check Std	R6839-5550	20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
Lincs Check Std SST5	38848 / Direct			
Spike SST5	38848 / 1 ml			

INDUCTIVELY COUPLED PLASMA ANALYSIS

WHC-SD-WM-DP-081
REV 1

Batch 5349

Serial No R 6835.-5550	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:22	Priority 25
Determination ICP	Method: Standard LA-505- 151 141	Result Units % RECOVERY	Charge Code KBLWD	Reruns 0
Sample Size ? 55.5 38848 Direct			Customer ID STD	
Remarks: Calculations, Results LMCS CHECK SAMPLE $114 (4.445/5)/(100) = 98.90 \%$				
Analyst (1) <i>JK Lito</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-25-95	Time Completed 1500	Lab Unit Mgr <i>Brian Wells</i>	<i>JK Lito 1-24-95</i>	

54-6800-061 (R-10-83)

Serial No R 6836.-5650	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:24	Priority 25
Determination ICP	Method: Standard LA-505- 151 141	Result Units uG/ML	Charge Code KBLWD	Reruns 0
Sample Size ? Direct			Customer ID BLANK	
Remarks: Calculations, Results REAGENT BLANK $Na < .10 \text{ uG/mL}$				
Analyst (1) <i>JK Lito</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-25-95	Time Completed 1500	Lab Unit Mgr <i>Brian Wells</i>	<i>JK Lito 1-24-95</i>	

54-6800-061 (R-10-83)

INDUCTIVELY COUPLED PLASMA ANALYSIS

WHC-SD-WM-DP-081

REV 1

Serial No R 6837.-5750	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:26	Priority 25
Determination ICP-LIQ	Method/Standard LA-505-1-14-95	Result Units uG/ML	Charge Code KBLWD	Reruns 0
Sample Size ? 2-10 mL	JF 6			Customer ID I-1
Remarks, Calculations, Results $Na\ 95.1 \times 6 = 5.71 E^{+2} \text{ ug/mL}$				
Analyst - 1 JK L 6/10	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 01-25-95	Time Completed 1500	Lab Unit Mgr 1-27-95 Brian Wells	JK L 6/10 1-24-95	

54-6800-061 (R-10-83)

Serial No R 6837.-5850	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:26	Priority 25
Determination ICP-LIQ	Method/Standard LA-505-1-14-95	Result Units uG/ML	Charge Code KBLWD	Reruns 0
Sample Size ? 2-10 mL	JF 6			Customer ID I-1
Remarks, Calculations, Results DUPLICATE SAMPLE $Na\ 95.3 \times 6 = 5.72 E^{+2} \text{ ug/mL}$				
Analyst - 1 JK L 6/10	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 01-25-95	Time Completed 1500	Lab Unit Mgr 1-27-95 Brian Wells	JK L 6/10 1-24-95	

54-6800-061 (R-10-83)

INDUCTIVELY COUPLED PLASMA ANALYSIS

WHC-SD-WM-DP-081

REV 1

Serial No R 6837.-5950	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:26	Priority 25
Determination ICP	Method/Standard LA-505-151/4	Result Units % RECOVERY	Charge Code KBLWD	Reruns 0
Sample Size ? 2ml sample + 1ml SST5 - 9ml			Customer ID I-1	
Remarks, Calculations, Results SAMPLE SPIKED ID SPIKE ID 38848 SPIKE VOLUME 1ml Sample is > than 4x spike.				
Analyst JK LJO	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 01-25-95	Time Completed 1500	Lab Unit Mgr 1-27-95 Brian Wolska	JK LJO 1-26-95	

54-6800-061 (R-10-83)

Serial No R 6837.-5050	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:26	Priority 25
Determination ICP	Method/Standard LA-505-151/4	Result Units % RECOVERY	Charge Code KBLWD	Reruns 0
Sample Size ? 2ml sample + 1ml SST5 - 9ml			Customer ID I-1	
Remarks, Calculations, Results SAMPLE SPIKE DUPLICATE SPIKE ID 38848 SPIKE VOL 1ml Duplicate sample is > than 4x duplicate spike.				
Analyst JK LJO	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 01-25-95	Time Completed 1500	Lab Unit Mgr 1-27-95 Brian Wolska	JK LJO 1-26-95	

54-6800-061 (R-10-83)

INDUCTIVELY COUPLED PLASMA ANALYSIS

WHC-SD-WM-DP-081

REV 1

Serial No R 6838.-5750	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:31	Priority 25
Determination ICP-LIQ	Method-Standard LA-505- 151 14	Result Units uG/ML	Charge Code RELWD	Reruns 0
Sample Size ? <i>Direct</i>			Customer ID I-TRIPBK	
Remarks, Calculations Results Na .387 ug/l				
Analyst - 1 <i>JK LGA</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 01-25-95	Time Completed 1500	Lab Unit Mgr <i>Brian Tibola</i>	<i>JK LGA</i> 1-26-95	

54-6800-061 (R-10-83)

Serial No R 6838.-5850	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:31	Priority 25
Determination ICP-LIQ	Method-Standard LA-505- 151 14	Result Units uG/ML	Charge Code RELWD	Reruns 0
Sample Size ? <i>Direct</i>			Customer ID I-TRIPBK	
Remarks, Calculations Results DUPLICATE SAMPLE Na .384 ug/l				
Analyst - 1 <i>JK LGA</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 01-25-95	Time Completed 1500	Lab Unit Mgr <i>Brian Tibola</i>	<i>JK LGA</i> 1-26-95	

54-6800-061 (R-10-83)

INDUCTIVELY COUPLED PLASMA ANALYSIS

WHC-SD-WM-DP-081

REV 1

Serial No R 6839.-5550	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:34	Priority 25
Determination ICP	Method-Standard LA-505- 22 161	Result Units % RECOVERY	Charge Code KPLWD	Reruns 0
Sample Size ? 575 38848 Direct			Customer ID STD	
Remarks, Calculations, Results LMCS CHECK SAMPLE $Na (5.155/5)(100) = 103.10\%$				
Analyst - 1 JK	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 01-25-95	Time Completed 1500	Lab Unit Mgr Brian Webb	1-27-95 JK 1-24-95	

54-6800-061 (R-10-83)

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	R6835 SST5 38B48	950125B	ICP2	01/25/95	13:25	DKS	Q	CONC
2	R6836 HNO3 REAG BLK	950125B	ICP2	01/25/95	13:29	DKS	Q	CONC
3	R6837 SAMDIL	950125B	ICP2	01/25/95	13:33	DKS	S	CONC
4	R6837 SAMDIL	950125B	ICP2	01/25/95	13:38	DKS	S	CONC
5	R6837 DUPDIL	950125B	ICP2	01/25/95	13:43	DKS	S	CONC
6	R6837 SPIKE	950125B	ICP2	01/25/95	13:48	DKS	S	CONC
7	R6837 DUP SPIKE	950125B	ICP2	01/25/95	13:53	DKS	S	CONC
8	R6838 SAMPLE	950125B	ICP2	01/25/95	13:57	DKS	S	CONC
9	R6838 DUPLICATE	950125B	ICP2	01/25/95	14:03	DKS	S	CONC
10	HNO3 REAG BLK	950125B	ICP2	01/25/95	14:07	DKS	Q	CONC
11	R6839 SST5 38B48	950125B	ICP2	01/25/95	14:11	DKS	Q	CONC

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 120 TO 122.

JK Lgld

01-25-95

Tank 9-1 R6835-R6839

#	Sample Name	Ag	Al	As	B	Ba	Be
1	R6835 SST5 38B48	5.023	4.936	5.056	4.848	4.926	5.122
2	R6836 HNO3 REAG BLK	.0003	.0004	-.0106	-.0029	.0000	.0001
3	R6837 SAMDIL	.0226	.0616	-.0222	.0276	.0149	.0001
4	R6837 SAMDIL	.0041	.0230	-.0143	.0000	.0030	.0002
5	R6837 DUPDIL	.0222	.0612	-.0129	.0236	.0147	.0003
6	R6837 SPIKE	.4127	.4589	.4191	.4274	.4212	.4242
7	R6837 DUP SPIKE	.4123	.4662	.4267	.4318	.4311	.4319
8	R6838 SAMPLE	-.0001	.0016	-.0070	-.0044	-.0000	.0001
9	R6838 DUPLICATE	.0003	.0023	-.0067	-.0093	-.0001	.0002
10	HNO3 REAG BLK	-.0008	.0096	-.0031	-.0098	-.0001	.0002
11	R6839 SST5 38B48	4.997	5.029	5.061	4.952	5.010	5.202

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	R6835 SST5 38B48	5.034	5.124	5.014	5.038	5.096	5.063
2	R6836 HNO3 REAG BLK	-.0206	.0000	.0001	.0000	-.0003	.0010
3	R6837 SAMDIL	-.0335	2.204	.0047	.0038	-.0015	.0144
4	R6837 SAMDIL	-.0254	.4435	.0006	.0050	-.0003	.0041
5	R6837 DUPDIL	-.0271	2.111	.0045	.0019	.0011	.0149
6	R6837 SPIKE	.3674	2.521	.4064	.4138	.4102	.4244
7	R6837 DUP SPIKE	.3692	2.581	.4168	.4291	.4218	.4333
8	R6838 SAMPLE	.0211	.0239	-.0002	.0064	.0020	.0007
9	R6838 DUPLICATE	.0306	.0196	.0002	.0027	-.0006	.0006
10	HNO3 REAG BLK	-.0177	-.0075	-.0016	-.0007	-.0003	.0007
11	R6839 SST5 38B48	4.975	5.011	4.970	5.121	5.054	5.025

#	Sample Name	Cu	Eu	Fe	K	La	Li
1	R6835 SST5 38B48	5.078	.0234	5.037	5.011	4.975	4.999
2	R6836 HNO3 REAG BLK	-.0005	.0002	.0000	-.0046	.0004	.0000
3	R6837 SAMDIL	.0414	.0025	.1746	.7887	.0057	-.0006
4	R6837 SAMDIL	.0096	-.0002	.0351	.0370	.0017	-.0015
5	R6837 DUPDIL	.0416	.0018	.1696	.7875	.0062	-.0012
6	R6837 SPIKE	.4659	.0039	.5800	1.086	.4214	.4302
7	R6837 DUP SPIKE	.4732	.0042	.5916	1.119	.4327	.4354
8	R6838 SAMPLE	.0004	.0021	.0033	.0427	.0001	.0013
9	R6838 DUPLICATE	-.0000	.0011	.0022	-.0970	-.0007	.0011
10	HNO3 REAG BLK	-.0002	-.0012	-.0010	-.0312	-.0009	-.0011
11	R6839 SST5 38B48	5.209	.0223	5.024	4.989	5.079	5.284

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	R6835 SST5 38B48	4.970	4.926	5.034	4.945	5.149	4.997
2	R6836 HNO3 REAG BLK	-.0039	.0001	.0022	.0007	-.0002	-.0134
3	R6837 SAMDIL	.6386	.0790	.0036	95.09	-.0008	.0126
4	R6837 SAMDIL	.1334	.0158	.0002	19.27	-.0004	-.0125
5	R6837 DUPDIL	.6294	.0771	.0028	95.26	-.0015	.0105
6	R6837 SPIKE	1.040	.4667	.4099	95.89	.4346	.4141
7	R6837 DUP SPIKE	1.054	.4775	.4213	96.49	.4425	.4198
8	R6838 SAMPLE	.0041	.0006	.0028	.3868	.0018	-.0098

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
9	R6838 DUPLICATE	.0018	.0004	.0010	.3838	-.0008	-.0094
10	HNO3 REAG BLK	-.0039	-.0004	-.0002	-.0067	-.0011	-.0087
11	R6839 SST5 38B48	5.061	4.891	4.997	5.155	5.278	4.937

#	Sample Name	P	Pb	S	Sb	Se	Si
1	R6835 SST5 38B48	4.970	5.028	5.070	4.758	4.997	4.869
2	R6836 HNO3 REAG BLK	-.0108	.0058	.0036	-.0011	.0312	-.0004
3	R6837 SAMDIL	2.394	.0174	5.928	.0024	.0272	2.654
4	R6837 SAMDIL	.4592	.0450	1.184	-.0113	.0198	.5238
5	R6837 DUPDIL	2.477	.0116	5.829	.0006	.0295	2.605
6	R6837 SPIKE	2.889	.4063	6.260	.3831	.4939	3.026
7	R6837 DUP SPIKE	2.894	.4212	6.356	.3936	.4809	3.069
8	R6838 SAMPLE	.0267	.0403	.0130	-.0090	.0417	.3615
9	R6838 DUPLICATE	.0106	.0217	.0013	-.0129	.0188	.3643
10	HNO3 REAG BLK	.0055	-.0100	-.0135	-.0147	.0091	-.0069
11	R6839 SST5 38B48	4.985	4.944	5.065	4.782	5.018	4.858

#	Sample Name	Sm	Sr	Ti	Tl	U	V
1	R6835 SST5 38B48	4.998	4.925	4.869	4.915	9.953	5.041
2	R6836 HNO3 REAG BLK	.0007	.0000	.0002	-.0059	-.0001	-.0006
3	R6837 SAMDIL	-.0200	.0246	.0118	.0126	.0335	-.0036
4	R6837 SAMDIL	-.0144	.0047	.0024	.0152	-.0300	-.0030
5	R6837 DUPDIL	-.0289	.0243	.0111	-.0252	.0737	-.0053
6	R6837 SPIKE	.3964	.4353	.4106	.3821	.9261	.4036
7	R6837 DUP SPIKE	.4077	.4459	.4207	.4192	.9483	.4146
8	R6838 SAMPLE	.0218	.0005	.0005	-.0011	.0885	.0039
9	R6838 DUPLICATE	.0116	.0004	.0005	-.0050	.0570	.0015
10	HNO3 REAG BLK	-.0109	-.0002	.0000	-.0122	-.0425	-.0027
11	R6839 SST5 38B48	5.117	5.029	4.927	4.882	10.22	5.043

#	Sample Name	Y	Zn	Zr
1	R6835 SST5 38B48	.0104	5.145	4.955
2	R6836 HNO3 REAG BLK	-.0001	.0010	.0000
3	R6837 SAMDIL	-.0006	.1029	.0040
4	R6837 SAMDIL	-.0005	.0414	-.0003
5	R6837 DUPDIL	-.0009	.0274	.0033
6	R6837 SPIKE	-.0001	.4440	.3856
7	R6837 DUP SPIKE	.0001	.4502	.3974
8	R6838 SAMPLE	.0010	.0014	.0037
9	R6838 DUPLICATE	.0007	.0013	.0033
10	HNO3 REAG BLK	-.0005	.0005	-.0006
11	R6839 SST5 38B48	.0100	5.107	4.996

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

WHC-SD-WM-DP-081

REV 1

ANALYTICAL BATCH

Lab Segment Serial No. <i>R6850-54</i>	Customer ID:
Analysis: <i>ICP</i>	Sample Prep: <i>NONE</i>

Instrument: <i>WC 38935</i>	Procedure/ Rev: <i>LA-505-161/A-1</i>
Technologist: <i>D.K. Sato</i>	Date: <i>2-8-95</i>
Starting Time: <i>900</i>	Temperature <i>N/A</i>
Ending Time: <i>1100</i>	Chemist: <i>S. Parong / B. Wells</i>

Comments: _____

	Description	Lab ID		Description	Lab ID
1	<i>SST4 LMCs Check STD</i>	<i>R6850-5550</i>	11		
2	<i>Reag. BIK</i>	<i>R6851-5650</i>	12		
3	<i>Tank 9-1 Sample</i>	<i>R6852-5750</i>	13		
4	<i>" Dup</i>	<i>R6852-5850</i>	14		
5	<i>" Post Spike</i>	<i>R6852-5950</i>	15		
6	<i>" Post Spike Dup</i>	<i>R6852-5050</i>	16		
7	<i>SST4 LMCs Check STD</i>	<i>R6853-5150</i>	17		
8	<i>Tank 9-1 Sample</i>	<i>R6854-5250</i>	18		
9	<i>" Dup</i>	<i>R6854-5350</i>	19		
10			20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
<i>SST4 ICP</i>	<i>38B48 DIRECT</i>			<i>DIRECT</i>
<i>Post Spike SST4</i>	<i>38B48 2 ml</i>			<i>10 ml</i>

INDUCTIVELY COUPLED PLASMA ANALYSIS

WHC-SD-WM-DP-081

REV 1

Batch 5388

Serial No R 6850.-5550	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:31	Priority 25
Determination ICP	Method/Standard LA-505-1-1/41 2-8-95	Result Units % RECOVERY	Charge Code KELWD	Reruns 0
Sample Size ? 5575 38548 Direct			Customer ID STD	
Remarks, Calculations, Results LMCS CHECK SAMPLE $N_2 (5.01/5)(100) = 100.20\%$ ✓				
Analyst JL 2-8-95	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs JL 2-8-95
Date 2-8-95	Time Completed 1400	Lab Unit Mgr 02/09/95 S. Parag		JL 2-8-95

54-6800-061 (R-10-83)

Serial No R 6851.-5650	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:33	Priority 25
Determination ICP	Method/Standard LA-505-1-1/41 2-8-95	Result Units uG/ML	Charge Code KBLWD	Reruns 0
Sample Size ? Direct			Customer ID BLK	
Remarks, Calculations, Results REAGENT BLANK $Na 4.10 ug/ml$				
Analyst JL 2-8-95	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2-8-95	Time Completed 1400	Lab Unit Mgr 02/09/95 S. Parag		JL 2-8-95

54-6800-061 (R-10-83)

INDUCTIVELY COUPLED PLASMA ANALYSIS

WHC-SD-WM-DP-081

REV 1

Serial No R 6852.-5750	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:37	Priority 25
Determination ICP-LIQ	Method Standard LA-505- 151 141	Result Units uG/ML	Charge Code KBLWD	Reruns 0
Sample Size ? 5-5 ml			Customer ID I-1	
Remarks, Calculations, Results No $132 \times 2 = 264$ ug/ml				
Analyst - 1 JK 2/6/95	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2-8-95	Time Completed 1400	Lab Unit Mgr S. Pung	JK 2/6/95 2-8-95	

54-6800-061 (R-10-83)

Serial No R 6852.-5850	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:37	Priority 25
Determination ICP-LIQ	Method Standard LA-505- 151 141	Result Units uG/ML	Charge Code KBLWD	Reruns 0
Sample Size ? 5-5 ml			Customer ID I-1	
Remarks, Calculations, Results DUPLICATE SAMPLE No $134 \times 2 = 268$ ug/ml				
Analyst - 1 JK 2/6/95	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2-8-95	Time Completed 1400	Lab Unit Mgr S. Pung	JK 2/6/95 2-8-95	

54-6800-061 (R-10-83)

INDUCTIVELY COUPLED PLASMA ANALYSIS

WHC-SD-WM-DP-081

REV 1

Serial No R 6852.-5950	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:37	Priority 25
Determination ICP	Method/Standard LA-505- 15-14 ²⁻⁸⁻⁹⁵	Result Units % RECOVERY	Charge Code KBLWD	Reruns 0
Sample Size ? 5-5 ml			Customer ID I-1	
Remarks, Calculations, Results SAMPLE SPIKED 1L SPIKE ID 38848 SPIKE VOLUME 1 ml <i>Sample is > 4x the spike.</i>				
Analyst - 1 <i>JK Ldt</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2-8-95	Time Completed 1400	Lab Unit Mgr <i>2/09/95</i> <i>S. Parry</i>	<i>JK Ldt 2-8-95</i>	

54-6800-061 (R-10-83)

Serial No R 6852.-5050	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:37	Priority 25
Determination ICP	Method/Standard LA-505- 15-14 ²⁻⁸⁻⁹⁵	Result Units % RECOVERY	Charge Code KBLWD	Reruns 0
Sample Size ? 5-5 ml			Customer ID I-1	
Remarks, Calculations, Results SAMPLE SPIKE DUPLICATE SPIKE ID 38848 SPIKE VOL 1 ml <i>Duplicate sample is > 4x the duplicate spike.</i>				
Analyst - 1 <i>JK Ldt</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2-8-95	Time Completed 1400	Lab Unit Mgr <i>2/09/95</i> <i>S. Parry</i>	<i>JK Ldt 2-8-95</i>	

54-6800-061 (R-10-83)

INDUCTIVELY COUPLED PLASMA ANALYSIS

WHC-SD-WM-DP-081
REV 1

Serial No R 6853.-5550	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:42	Priority 25
Determination ICP	Method-Standard LA-505-15-141 2-8-95	Result Units % RECOVERY	Charge Code KBLWD	Reruns 0
Sample Size ? 5575 38B48 Direct			Customer ID END STD	
Remarks, Calculations, Results LMCS CHECK SAMPLE $N_A (4.982/5)(100) = 99.64\%$ ✓				
Analyst - 1 JH L&D	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2-8-95	Time Completed 1400	Lab Unit Mgr S. Parry	$02/09/95$ JH L&D 2-8-95	

54-6800-061 (R-10-83)

INDUCTIVELY COUPLED PLASMA ANALYSIS

WHC-SD-WM-DP-081

REV 1

Serial No R 6854.-5750	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:46	Priority 25
Determination ICP-LIQ	Method/Standard LA-505-151/4	Result Units uG/ML	Charge Code KBLWD	Retuns 0
Sample Size ? Direct			Customer ID TRIP BLK	
Remarks, Calculations, Results Na .528 ug/l ✓				
Analyst - 1 JK LGO	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2-8-95	Time Completed 1400	Lab Unit Mgr S. Parry	JK LGO 2-8-95	

54-6800-061 (R-10-83)

Serial No R 6854.-5850	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:46	Priority 25
Determination ICP-LIQ	Method/Standard LA-505-151/4	Result Units uG/ML	Charge Code KBLWD	Retuns 0
Sample Size ? Direct			Customer ID TRIP ELK	
Remarks, Calculations, Results DUPLICATE SAMPLE Na .530 ug/l ✓				
Analyst - 1 JK LGO	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2-8-95	Time Completed 1400	Lab Unit Mgr S. Parry	JK LGO 2-8-95	

54-6800-061 (R-10-83)

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	R6850 SST5 38B48	950208A	ICP2	02/08/95	09:46	DKS	Q	CONC
2	R6851 REAG BLK	950208A	ICP2	02/08/95	09:53	DKS	Q	CONC
3	R6852 SERIAL DIL	950208A	ICP2	02/08/95	09:57	DKS	S	CONC
4	R6852 SAMPLE	950208A	ICP2	02/08/95	10:01	DKS	S	CONC
5	R6852 DUPLICATE	950208A	ICP2	02/08/95	10:05	DKS	S	CONC
6	R6852 SPIKE	950208A	ICP2	02/08/95	10:09	DKS	S	CONC
7	R6852 DUP SPIKE	950208A	ICP2	02/08/95	10:13	DKS	S	CONC
8	HNO3 REAG BLK	950208A	ICP2	02/08/95	10:27	DKS	Q	CONC
9	R6854 SAMPLE	950208A	ICP2	02/08/95	10:30	DKS	S	CONC
10	R6854 X DUPLICATE ^{NE} ₂₈₋₉₅	950208A	ICP2	02/08/95	10:34	DKS	S	CONC
11	HNO3 REAG BLK	950208A	ICP2	02/08/95	10:38	DKS	Q	CONC
12	R6853 SST5 38B48	950208A	ICP2	02/08/95	10:41	DKS	Q	CONC

JK L. G.

02-08-95

Tank 9-1 (R6850-R6854)

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 129 TO 132.

#	Sample Name	Ag	Al	As	B	Ba	Be
1	R6850 SST5 38B48	5.170	4.945	5.045	4.978	5.016	5.234
2	R6851 REAG BLK	-.0005	-.0081	.0056	-.0055	-.0001	.0001
3	R6852 SERIAL DIL	.0040	.0152	.0020	.0040	.0064	.0001
4	R6852 SAMPLE	.0256	.0890	-.0009	.0300	.0318	.0000
5	R6852 DUPLICATE	.0249	.0867	-.0038	.0315	.0320	-.0000
6	R6852 SPIKE	.9588	1.087	1.046	1.040	1.043	1.067
7	R6852 DUP SPIKE	.9647	1.088	1.063	1.042	1.047	1.076
8	HNO3 REAG BLK	-.0013	-.0084	.0039	-.0065	.0000	.0000
9	R6854 SAMPLE	-.0004	-.0127	.0072	-.0035	-.0001	-.0001
10	R6854X DUPLICATE ^{JK} _{LS-YT}	-.0010	-.0104	.0093	.0005	-.0001	-.0000
11	HNO3 REAG BLK	-.0005	.0000	.0132	-.0015	-.0001	.0001
12	R6853 SST5 38B48	5.195	4.970	5.096	5.062	5.029	5.331
#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	R6850 SST5 38B48	4.987	5.150	5.153	5.092	5.161	5.182
2	R6851 REAG BLK	.0098	.0060	-.0003	-.0092	.0018	.0004
3	R6852 SERIAL DIL	.0042	1.058	.0044	-.0042	-.0009	.0068
4	R6852 SAMPLE	.0058	5.215	.0195	-.0055	.0005	.0314
5	R6852 DUPLICATE	.0114	5.095	.0193	-.0035	-.0001	.0318
6	R6852 SPIKE	.9543	6.156	1.047	1.027	1.036	1.070
7	R6852 DUP SPIKE	.9700	6.257	1.059	1.042	1.052	1.083
8	HNO3 REAG BLK	.0083	.0106	.0002	-.0059	.0009	.0006
9	R6854 SAMPLE	.0335	.0954	-.0003	-.0002	-.0023	.0001
10	R6854X DUPLICATE ^{JK} _{LS-YT}	.0258	.0953	-.0000	-.0062	.0018	.0007
11	HNO3 REAG BLK	-.0002	.0104	.0008	-.0056	.0026	.0017
12	R6853 SST5 38B48	4.978	5.243	5.251	5.114	5.260	5.266
#	Sample Name	Cu	Eu	Fe	K	La	Li
1	R6850 SST5 38B48	5.103	.0256	5.077	5.203	5.065	5.010
2	R6851 REAG BLK	.0004	.0005	.0019	.0054	-.0018	.0008
3	R6852 SERIAL DIL	.0208	.0032	.0654	.3588	.0017	.0011
4	R6852 SAMPLE	.1014	.0110	.3198	1.595	.0091	.0029
5	R6852 DUPLICATE	.1023	.0096	.3128	1.762	.0098	.0017
6	R6852 SPIKE	1.144	.0146	1.331	2.587	1.040	1.031
7	R6852 DUP SPIKE	1.144	.0153	1.341	2.734	1.045	1.020
8	HNO3 REAG BLK	-.0000	.0014	.0029	.0607	-.0007	.0016
9	R6854 SAMPLE	-.0006	.0038	.0053	.0498	-.0004	.0032
10	R6854X DUPLICATE ^{JK} _{LS-YT}	-.0001	.0033	.0048	.1441	-.0015	.0027
11	HNO3 REAG BLK	.0004	.0010	.0026	.0596	-.0011	.0010
12	R6853 SST5 38B48	5.120	.0256	5.144	5.041	5.090	4.975
#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	R6850 SST5 38B48	4.851	5.033	5.090	5.010	4.879	5.094
2	R6851 REAG BLK	-.0074	.0002	.0002	.0051	.0006	.0035
3	R6852 SERIAL DIL	.2390	.0551	.0004	26.68	.0004	.0096
4	R6852 SAMPLE	1.203	.2713	.0023	131.5	.0050	.0371
5	R6852 DUPLICATE	1.192	.2659	.0031	133.5	.0045	.0411

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
6	R6852 SPIKE	2.173	1.266	1.017	136.5	.9984	1.063
7	R6852 DUP SPIKE	2.183	1.281	1.038	136.1	.9988	1.094
8	HNO3 REAG BLK	-.0106	.0004	.0006	.0114	-.0011	.0062
9	R6854 SAMPLE	-.0056	.0013	-.0034	.5275	.0026	.0099
10	R6854X DUPLICATE ^{JK} ₁₋₈₋₉₅	-.0020	.0008	.0010	.5304	.0011	.0061
11	HNO3 REAG BLK	-.0030	.0004	-.0004	.0070	.0019	.0041
12	R6853 SST5 38B48	4.871	5.105	5.149	4.982	4.876	5.198
#	Sample Name	P	Pb	S	Sb	Se	Si
1	R6850 SST5 38B48	5.075	5.017	5.134	4.855	5.027	4.817
2	R6851 REAG BLK	.0118	.0204	.0028	.0011	.0235	.0053
3	R6852 SERIAL DIL	1.032	.0547	2.432	.0000	.0214	1.178
4	R6852 SAMPLE	5.595	.1580	12.20	.0146	.0405	5.832
5	R6852 DUPLICATE	5.730	.1331	12.05	.0085	.0634	5.752
6	R6852 SPIKE	6.856	1.119	13.12	.9520	1.192	6.814
7	R6852 DUP SPIKE	6.979	1.139	13.19	.9596	1.216	6.869
8	HNO3 REAG BLK	.0350	.0369	.0044	-.0042	.0332	.0090
9	R6854 SAMPLE	.0377	.0617	-.0041	.0104	.0389	.8863
10	R6854X DUPLICATE ^{JK} ₁₋₈₋₉₅	.0232	.0463	-.0001	-.0083	.0412	.9162
11	HNO3 REAG BLK	.0315	.0382	.0066	.0086	.0418	.0079
12	R6853 SST5 38B48	5.162	5.107	5.204	4.947	5.069	4.862
#	Sample Name	Sm	Sr	Ti	Tl	U	V
1	R6850 SST5 38B48	5.012	4.993	4.916	4.864	9.780	5.073
2	R6851 REAG BLK	.0076	.0003	.0000	-.0286	.0249	.0020
3	R6852 SERIAL DIL	.0089	.0124	.0052	-.0005	.0559	.0033
4	R6852 SAMPLE	.0120	.0572	.0248	-.0066	.1545	.0057
5	R6852 DUPLICATE	-.0022	.0575	.0255	-.0430	.1853	.0015
6	R6852 SPIKE	1.008	1.074	1.012	.9657	2.129	1.025
7	R6852 DUP SPIKE	1.024	1.077	1.020	.9945	2.172	1.038
8	HNO3 REAG BLK	.0129	.0010	-.0002	.0115	.0545	.0031
9	R6854 SAMPLE	.0387	.0026	-.0005	-.0065	.1510	.0085
10	R6854X DUPLICATE ^{JK} ₁₋₈₋₉₅	.0312	.0025	.0000	-.0022	.1267	.0068
11	HNO3 REAG BLK	.0130	.0009	-.0002	-.0069	.0384	.0031
12	R6853 SST5 38B48	5.035	5.014	4.950	4.944	9.803	5.140
#	Sample Name	Y	Zn	Zr			
1	R6850 SST5 38B48	.0114	5.153	5.001			
2	R6851 REAG BLK	.0004	.0002	.0013			
3	R6852 SERIAL DIL	.0007	.0292	.0040			
4	R6852 SAMPLE	.0010	.1199	.0105			
5	R6852 DUPLICATE	.0002	.1078	.0092			
6	R6852 SPIKE	.0024	1.133	.9744			
7	R6852 DUP SPIKE	.0027	1.138	.9838			
8	HNO3 REAG BLK	.0009	.0006	.0020			
9	R6854 SAMPLE	.0019	.0005	.0053			
10	R6854X DUPLICATE ^{JK} ₁₋₈₋₉₅	.0016	.0006	.0046			
11	HNO3 REAG BLK	.0008	.0009	.0023			

#	Sample Name	Y	Zn	Zr
12	R6853 SST5 38B48	.0115	5.234	5.049

JK Lato

02-08-95

Tank 9-1 (R6850-R6854)

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY
ANALYTICAL BATCHWHC-SD-WM-DP-081
REV 1Lab Segment Serial No.
R6836-R6839

Customer ID: I1

Analysis: IC

Sample Prep:

Instrument: 4000i J.M. Jure 5/17/95	Procedure/ Rev: LA533-105-C2
Technologist: AD Purinton	Date: 1-29-95
Starting Time: 0900	Temperature 28°C
Ending Time:	Chemist:

Comments:

Batch 5350

- Verified 2/9/95. J.M. Jure

	Description	Lab ID
1	INITIAL LMCS CHECK STD	R6835-5571
2	REAGENT BLANK	R6836-5671
3	Sample	R6837-5771
4	Sample Dup	R6837-5871
5	Sample Spike	R6837-5971
6	Sample Spike Dup	R6837-5071
7	Sample	R6838-5571
8	Sample Dup	R6838-5871
9	LMCS STD	R6839-5571
10		

	Description	Lab ID
11		
12		
13		
14		
15		
16		
17	5771 J.M. Jure	
18		
19		
20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	70N9A.100			
LMCS Spike	70N9-A.100			

ION CHROMATOGRAPHIC ANALYSIS

Batch 5350

Serial No R 6835.-5571	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:22	Priority 25
Determination IC	Method/Standard LA-533-105	Result Units % RECOVERY	Charge Code KBLWD	Reruns 0
Sample Size ? 100-10			Customer ID STD	
Remarks, Calculations, Results EDP 974 F 54.79 STD # 70N9-A 97.48 EDP 972 CL 76.09 106.45 EDP 968 NO2 529.13 80.31 EDP 978 NO3 571.99 98.96 EDP 976 PO4 491.21 95.19 EDP 970 SO4 598.85 99.97
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-29-95		Time Completed 1500		Lab Unit Mgr James Luge
				Result Kewlight

54-6800-061 (R-10-83)

Serial No R 6836.-5671	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:24	Priority 25
Determination IC	Method/Standard LA-533-105	Result Units uG/ML	Charge Code KBLWD	Reruns 0
Sample Size ? Direct			Customer ID BLANK	
Remarks, Calculations, Results REAGENT BLANK F < .1 SO4 < 1 Corrected PAB Cl < .2 NO2 < 1 NO3 < 1 PO4 < 1
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-29-95		Time Completed 1500		Lab Unit Mgr James Luge
				Result Kewlight

54-6800-061 (R-10-83)

ION CHROMATOGRAPHIC ANALYSIS

Serial No R 6837.-5771	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:26	Priority 25
Determination IC	Method/Standard LA-533-105	Result Units uG/ML	Charge Code KBLWD	Reruns 0
Sample Size ? 1-10			Customer ID I-1	
Remarks, Calculations, Results F 3.35E + 2.9 MF 2/1/95 PO4 7.77E + 4.9 MF 2/1/95 Cl 4.85E + 4.9 MF 2/1/95 F 21.1 NO2 4.51E + 4.9 MF 2/1/95 Cl 48.5 NO3 1.15E + 5.9 MF 2/1/95 NO2 45.1 Corrected PHS NO3 115 PO4 17.7 SO4 86.5 <i>Anthony Perenta</i>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Corrected <i>Anthony Perenta</i>
Date 1-29-95	Time Completed 1500	Lab Unit Mgr <i>James Faye</i> <i>Ken Light</i>		

54-6800-061 (R-10-83)

Serial No R 6837.-5871	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:26	Priority 25
Determination IC	Method/Standard LA-533-105	Result Units uG/ML	Charge Code KBLWD	Reruns 0
Sample Size ? 1-10			Customer ID I-1	
Remarks, Calculations, Results DUPLICATE SAMPLE F 3.17E + 2.9 MF 2/1/95 NO3 1.14E + 5.9 MF 2/1/95 Cl 4.73E + 4.9 MF 2/1/95 PO4 1.73E + 4.9 MF 2/1/95 NO2 4.39E + 4.9 MF 2/1/95 F 21.1 NO3 114 9 MF 2/1/95 Cl 47.3 PO4 17.3 NO2 43.9 SO4 86.4 <i>Anthony Perenta</i>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Corrected <i>Anthony Perenta</i> 2-4-95
Date 1-29-95	Time Completed 1500	Lab Unit Mgr <i>James Faye</i> <i>Ken Light</i>		

54-6800-061 (R-10-83)

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

Serial No R 6837.-5971	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:26	Priority 25
Determination IC	Method-Standard LA-533-105	Result Units % RECOVERY	Charge Code KBLWD	Reruns 0
Sample Size ? 1-10			Customer ID I-1	
Remarks Calculations, Results SAMPLE SPIKED ID R6837 F gmF2/1145 9 F 121.4 SPIKE ID 70N9-A Cl gmF2/1145 9 Cl 112.0 SPIKE VOLUME 100 NO2 gmF2/1145 9 NO2 108.3 NO3 gmF2/1145 9 NO3 112.5 PO4 gmF2/1145 9 PO4 104.1 PO4 gmF2/1145 9 504 111.0 Corrected RUS				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Corrected RUS
Date 1-29-94	Time Completed 1500	Lab Unit Mgr James Faye	NE Wright	

54-6800-06 (R-10-83)

ANION ANALYSIS ON DIONEX MODEL 4000I
LA-533-105, C-1 DIRECT SAMPLES

Type	SAMPLE DATA (ug/mL)	FLUORIDE	CHLORID	NITRITE	NITRATE	PHOSPHA	SULFATE
sample	SAMPLE DILUTION FACTOR	11	11	11	11	11	11
Work List							
5350	DUPLICATE DATA (ug/mL)	1.00E-01	4.73E+01	4.39E+01	1.14E+02	1.73E+01	8.64E+01
Test Code	DUPLICATE DILUTION FACTOR	11	11	11	11	11	11
ic							
Matrix	SPIKE + SAMPLE (in ug/mL)	6.80E+00	5.69E+01	1.02E+02	1.80E+02	7.14E+01	1.53E+02
liquid							
Sample #	VOLUME OF SPIKE (mL)	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01
R6837	SPIKE BOOK NUMBER	70n9a	70n9a	70n9a	70n9a	70n9a	70n9a
Instrument Code	TOTAL VOLUME	11.00	11.00	11.00	11.00	11.00	11.00
dionex	SPIKE STD. (ug/mL)	56	75	528	578	516	599
Analyst	Spike Recovery = (((Spike+Sample)-(Sample)*(Vol. of Sample&Diluent)))/((Spike Vol.)*(Spike Std						
Anthony Purinton	Note: (For spike recovery when the sample conc. is less than detection limit you do NOT subt						
Date	Relative Percent Difference = ((Sample - Duplicate) / ((Sample + Duplicate) / 2) * 100)						
01/29/95	Less than Values are Calculated from the Detection Limit*Dilution Factor						
Time	Spike Actual = Spike Found / Spike Recovery						

v RESULTS v	SAMPLE	DUPLICAT	DUP RPD	SPIKE FOU	SPIKE RE	SPIKE AC
FLUORIDE (ug/mL)	<1.100	<1.100	N/A	6.80E+00	121.4%	5.60E+00
CHLORIDE (ug/mL)	4.85E+01	4.73E+01	2.5%	8.40E+00	112.0%	7.50E+00
NITRITE (ug/mL)	4.51E+01	4.39E+01	2.7%	5.72E+01	108.3%	5.28E+01
NITRATE (ug/mL)	1.15E+02	1.14E+02	0.9%	6.50E+01	112.5%	5.78E+01
PHOSPHATE (ug/mL)	1.77E+01	1.73E+01	2.3%	5.37E+01	104.1%	5.16E+01
SULFATE (ug/mL)	8.65E+01	8.64E+01	0.1%	6.65E+01	111.0%	5.99E+01

Data Entry by: *James Faye* Date: 01-Feb-95
Approved by: *James Faye* Date: 2/1/95
Form L2 Rev. 2.0 Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

Serial No R 6837.-5071	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:26	Priority 25
Determination IC	Method-Standard LA-533-105	Result Units % RECOVERY	Charge Code KBLWD	Reruns 0
Sample Size ?	Customer ID I-1			
Remarks. Calculations Results SAMPLE SPIKE R6837 DUPLICATE SPIKE ID 70N9-A SPIKE VOL .100 F 117.7 Cl 109.3 NO ₂ 106.3 NO ₃ 107.3 PO ₄ 100.2 SO ₄ 106.2 Corrected R6837				
Analyst - 1 <i>Anthony Purinton</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Corrected <i>Anthony Purinton</i>
Date 1-29-94	Time Completed 1500	Lab Unit Mgr <i>John Fugate</i>		

54-6800-061 (R-10-83)

ANION ANALYSIS ON DIONEX MODEL 4000i LA-533-105, C-1 DIRECT SAMPLES

Type	FLUORIDE	CHLORIDE	NITRITE	NITRATE	PHOSPHA	SULFATE
SAMPLE DATA (µg/mL)	1.00E-01	4.73E+01	4.39E+01	1.14E+02	1.73E+01	8.64E+01
SAMPLE DILUTION FACTOR	11	11	11	11	11	11
Work List						
5350						
Test Code						
ic						
Matrix	SPIKE + SAMPLE (in µg/mL)	6.59E+00	5.55E+01	1.00E+02	1.76E+02	6.90E+01
liquid						
Sample #	VOLUME OF SPIKE (mL)	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01
R6837	SPIKE BOOK NUMBER	70n9a	70n9a	70n9a	70n9a	70n9a
Instrument Code	TOTAL VOLUME	11.00	11.00	11.00	11.00	11.00
dionex	SPIKE STD. (µg/mL)	56	75	528	578	516
Analyst	Spike Recovery = (((Spike+Sample)-(Sample)*(Vol.of Sample&Diluent)))/((Spike Vol.)*(Spike Std					
Anthony Purinton	Note: (For spike recovery when the sample conc. is less than detection limit you do NOT sub:					
Date	Relative Percent Difference = ((Sample - Duplicate) / ((Sample + Duplicate) / 2) * 100)					
01/29/95	Less than Values are Calculated from the Detection Limit*Dilution Factor					
Time	Spike Actual = Spike Found / Spike Recovery					

RESULTS	SAMPLE	DUPLICAT	DUP RPD	SPIKE FOU	SPIKE RE	SPIKE AC
FLUORIDE (µg/mL)	<1.100	<0.000	N/A	6.59E+00	117.7%	5.60E+00
CHLORIDE (µg/mL)	4.73E+01	<0.000	N/A	8.20E+00	109.3%	7.50E+00
NITRITE (µg/mL)	4.39E+01	<0.000	N/A	5.61E+01	106.3%	5.28E+01
NITRATE (µg/mL)	1.14E+02	<0.000	N/A	6.20E+01	107.3%	5.78E+01
PHOSPHATE (µg/mL)	1.73E+01	<0.000	N/A	5.17E+01	100.2%	5.16E+01
SULFATE (µg/mL)	8.64E+01	<0.000	N/A	6.36E+01	106.2%	5.99E+01

Data Entry by: *John Fugate* Date: 01-Feb-95
 Approved by: *John Fugate* Date: 2/1/95
 Form L2 Rev. 2.0

ION CHROMATOGRAPHIC ANALYSIS

Serial No R 6838.-5771	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:31	Priority 25
Determination IC	Method/Standard LA-533-105	Result Units uG/ML	Charge Code KBLWD	Reruns 0
Sample Size ? <i>Direct</i>			Customer ID I-TRIPBK	
Remarks, Calculations, Results <i>F < .1</i> <i>NPg < 1</i> <i>cl < .2</i> <i>PO4 < 1</i> <i>NPg < 1</i> <i>Soy < 1</i> <i>Anthony Perento</i>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	<i>Corrected</i> <i>Ben Jones</i>
Date 1-29-95	Time Completed 1500	Lab Unit Mgr <i>James Faye</i> <i>RE Light</i>		

54-6800-06 (R-10-83)

Serial No R 6838.-5871	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:31	Priority 25
Determination IC	Method/Standard LA-533-105	Result Units uG/ML	Charge Code KBLWD	Reruns 0
Sample Size ? <i>Direct</i>			Customer ID I-TRIPBK	
Remarks, Calculations, Results DUPLICATE SAMPLE <i>F < .1</i> <i>NPg < 1</i> <i>cl < .2</i> <i>PO4 < 1</i> <i>NPg < 1</i> <i>Soy < 1</i> <i>Anthony Perento</i>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	<i>Corrected</i> <i>Ben Jones</i>
Date 1-29-95	Time Completed 1500	Lab Unit Mgr <i>James Faye</i> <i>RE Light</i>		

54-6800-06 (R-10-83)

ION CHROMATOGRAPHIC ANALYSIS

Serial No R 6839.-5571	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:34	Priority 25
Determination IC	Method/Standard LA-555-105	Result Units % RECOVERY	Charge Code KBLWD	Reruns 0
Sample Size ? 100-10 STD # 70N9-A			Customer ID STD	
Remarks, Calculations, Results EDP 974 F 55.31 98.71 EDP 972 CL 74.55 99.40 EDP 968 NO2 518.45 98.19 EDP 978 NO3 513.44 97.48 EDP 976 PO4 503.74 97.67 EDP 970 SO4 599.50 100.00				
<div style="text-align: center;"> Analyst - 1 </div>				
<div style="text-align: center;"> Analyst - 2 Analyst - 3 Analyst - 4 Analyst - 5 </div>				
<div style="text-align: center;"> Hrs Hrs Hrs Hrs Hrs </div>				
<div style="text-align: center;"> Date Time Completed Lab Unit Mgr </div>				
1-29-95		1500		<div style="text-align: center;"> John F. Jones </div>

54-6800-661 (R-10-83)

Sample Name: STD70N9-A R6835

Date: 01/29/1995 09:10:08

Data File : C:\DX\DATA\95012971.D02

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

ACI Address: 1 System: 1 Inject#: 2

Detector: CDM-1

Analyst :

Column:

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	101	3000	5Hz	0.00	10.00		200

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.89		0.000	71	341	2	
2	1.05	fluoride	54.492	1719	8807	2	0.96
3	1.42		0.000	44	282	2	
4	1.64	chloride	76.086	1740	8546	1	-2.38
5	1.99	nitrite	529.128	7327	41142	1	-3.40
6	3.05	bromide	569.376	4236	29146	1	-2.24
7	3.50	nitrate	571.996	4567	38044	1	-0.28
8	5.10	phosphate	491.207	1172	15398	1	-3.41
9	6.65	sulfate	598.851	3529	51519	1	-6.21
10	8.80	oxalate	506.153	1586	30608	1	-6.38
Totals			3397.288	25992	223831

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 140 TO 152.

WHC-SD-WM-DP-081

REV 1

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=====
Sample Name: BLANK                      Date: 01/29/1995 08:46:56
Data File  : C:\DX\DATA\95012971.D01
Method     : C:\DX\METHOD\AUTOMEL.MET
ACI Address: 1  System: 1  Inject#: 1    Detector: CDM-1
Analyst    :                          Column:
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          1  3000  5Hz   0.00 10.00        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: 95012971.D01 Sample: BLANK

WHC-SD-WM-DP-081
REV 1

```

=====
Sample Name: R 6837-5771                      Date: 01/29/1995 12:52:59
Data File  : C:\DX\DATA\95012971.D07
Method     : C:\DX\METHOD\AUTOMEL.MET
ACI Address: 1  System: 1  Inject#: 7
Analyst    :                               Column:
=====

```

```

=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          11    3000   5Hz   0.00 10.00      200
=====

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.87		0.000	215	1005	2	
②	1.05	fluoride	0.335	105	448	2	0.96
3	1.41		0.000	100	618	1	
4	1.63	chloride	48.455	11729	52528	1	-2.98
5	1.97	nitrite	45.111	5711	31786	1	-4.37
6	3.44	nitrate	115.495	8349	72717	1	-1.99
⑦	5.08	phosphate	17.741	341	4540	1	-3.79
8	6.63	sulfate	86.501	4779	69341	1	-6.49
Totals			313.638	31330	232981		

File: 95012971.D07 Sample: R 6837-5771

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WHC-SD-WM-DP-08 1
REV 1

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=====
Sample Name: R 6837-5771                      Date: 01/29/1995 11:15:49
Data File  : C:\DX\DATA\95012971.D05
Method     : C:\DX\METHOD\AUTOMEL.MET
ACI Address: 1 System: 1 Inject#: 5
Analyst    :                               Column:
Sample Size 500-10 gmf 5/17/95
Detector: CDM-1
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          21    3000   5Hz   0.00 10.00      200
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.89		0.000	112	547	2	
2	1.06	fluoride	0.364	57	234	2	1.92
3	1.42		0.000	78	492	1	
4	1.65	chloride	46.239	5632	25372	1	-1.79
5	1.99	nitrite	44.870	2851	15684	1	-3.40
6	3.49	nitrate	111.647	4259	35588	1	-0.57
7	5.12	phosphate	18.614	169	2144	1	-3.03
8	6.65	sulfate	85.875	2389	34736	1	-6.21
Totals			307.609	15546	114795		

File: 95012971.D05 Sample: R 6837-5771

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WMC-SD-WM-DP-081
REV 1

Sample Name: R 6837-5771

Date: 01/29/1995 10:53:52

Data File : C:\DX\DATA\95012971.D04

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

ACI Address: 1 System: 1 Inject#: 4

Analyst : Column:

Detector: CDM-1

100-10 gmf 5/17/95

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	101	3000	5Hz	0.00	10.00		200

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.42		0.000	66	395	1	
2	1.65	chloride	48.999	1197	5509	1	-1.79
3	1.99	nitrite	61.979	599	3240	1	-3.40
4	3.53	nitrate	134.543	957	7653	1	0.57
5	5.12	phosphate	33.045	30	306	1	-3.03
6	6.67	sulfate	108.260	523	7551	1	-5.92
Totals			386.825	3371	24655		

File: 95012971.D04 Sample: R 6837-5771

WHC-SD-WM-DP-081
REV 1

```

=====
Sample Name: R 6837-5771                      Date: 01/29/1995 09:44:13
Data File  : C:\DX\DATA\95012971.D03
Method     : C:\DX\METHOD\AUTOMEL.MET
ACI Address: 1 System: 1 Inject#: 3           .100-.10-.100-.10 Detector: CDM-1
Analyst    :                               Column: Sample size 9 MF 512h5
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1       10201   3000  5Hz   0.00 10.00       200
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.42		0.000	57	358	1	
3	3.55	nitrate	2790.757	44	316	1	1.14
Totals			2790.757	101	674		

File: 95012971.D03 Sample: R 6837-5771

WHC-SD-WM-DP-081
REV 1

8 gmF 5/2/95

=====

Sample Name: R 6837-5771 DUP	Date: 01/29/1995 13:06:19
Data File : C:\DX\DATA\95012971.D08	
Method : C:\DX\METHOD\AUTOMEL.MET	
ACI Address: 1 System: 1 Inject#: 8	Sample Size
Analyst :	Column: 1ml-10 gmF 5/2/95
	Detector: CDM-1

=====

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	11	3000	5Hz	0.00	10.00		200

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.87		0.000	206	939	1	
2	1.05	fluoride	0.317	103	421	1	0.96
3	1.40		0.000	100	611	1	
4	1.63	chloride	47.318	11567	51207	1	-2.98
5	1.97	nitrite	43.864	5689	30855	1	-4.37
6	3.44	nitrate	114.139	8329	71823	1	-1.99
7	5.08	phosphate	17.258	339	4395	1	-3.79
8	6.61	sulfate	86.417	4767	69271	1	-6.77
Totals			309.314	31100	229521		

File: 95012971.D08 Sample: R 6837-5771 DUP

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WHC-SD-WM-DP-08 1
REV 1

```

=====
Sample Name: R 6837-5771 DUP                      Date: 01/29/1995 12:33:48
Data File  : C:\DX\DATA\95012971.D06
Method     : C:\DX\METHOD\AUTOMEL.MET
ACI Address: 1 System: 1 Inject#: 6
Analyst    :                      Column: .500-10
                                     Sample Size 9.00
                                     Detector: CDM-1
                                     Date: 5/17/95
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1           21  3000  5Hz  0.00 10.00       200
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.88		0.000	108	502	1	
2	1.07	fluoride	0.346	54	220	1	2.88
3	1.42		0.000	94	589	1	
4	1.65	chloride	48.058	5876	26403	1	-1.79
5	1.99	nitrite	46.028	2950	16135	1	-3.40
6	3.49	nitrate	115.858	4440	37007	1	-0.57
7	5.11	phosphate	19.340	179	2257	1	-3.22
8	6.65	sulfate	88.904	2495	36046	1	-6.21
Totals			318.534	16197	119159		

File: 95012971.D06 Sample: R 6837-5771 DUP

WHC-SD-WM-DP-08 1
REV 1

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```

=====
Sample Name: R 6837-5971SPIKE                               Date: 01/29/1995 13:21:21
Data File  : C:\DX\DATA\95012971.D09
Method     : C:\DX\METHOD\AUTOMEL.MET
ACI Address: 1 System: 1 Inject#: 9 sample size Detector: CDM-1
Analyst    : Column: 1ml-10ml GMP 5/17/95
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1           11   3000  5Hz   0.00 10.00         200
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.87		0.000	283	1393	2	
2	1.04	fluoride	6.803	1888	10122	2	0.00
3	1.41		0.000	87	522	1	
4	1.63	chloride	56.885	14051	62487	1	-2.98
5	1.97	nitrite	102.281	13619	74684	1	-4.37
6	3.02	bromide	59.919	4218	28106	1	-3.21
7	3.41	nitrate	179.739	12838	115708	1	-2.85
8	5.07	phosphate	71.360	1577	20907	1	-3.98
9	6.61	sulfate	153.411	8789	126616	1	-6.77
10	8.78	oxalate	55.401	1600	30769	1	-6.60
Totals			685.799	58950	471314		

File: 95012971.D09 Sample: R 6837-5971SPIKE

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WHC-SD-WM-DP-081
REV 1

```

=====
Sample Name: R 6837-5071SPIKE DUP                      Date: 01/29/1995 13:35:04
Data File  : C:\DX\DATA\95012971.D10
Method     : C:\DX\METHOD\AUTOMEL.MET
ACI Address: 1 System: 1 Inject#: 10                    Detector:CDM-1
Analyst    :                      Column:
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          11  3000  5Hz  0.00 10.00          200
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.87		0.000	274	1342	2	
2	1.04	fluoride	6.591	1839	9800	2	0.00
3	1.40		0.000	90	558	2	
4	1.63	chloride	55.533	13718	60870	1	-2.98
5	1.97	nitrite	100.343	13146	73222	1	-4.37
6	3.01	bromide	58.508	4026	27406	1	-3.53
7	3.42	nitrate	175.899	12475	113102	1	-2.56
8	5.07	phosphate	69.038	1529	20187	1	-3.98
9	6.61	sulfate	150.122	8563	123755	1	-6.77
10	8.78	oxalate	54.156	1555	30039	1	-6.60
Totals			670.189	57214	460281		

File: 95012971.D10 Sample: R 6837-5071SPIKE DUP

WHC-SD-WM-DP-081
REV 1

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```

=====
Sample Name: R 6838-5771                      Date: 01/29/1995 14:16:30
Data File  : C:\DX\DATA\95012971.D13
Method     : C:\DX\METHOD\AUTOMEL.MET
ACI Address: 1  System: 1  Inject#: 13
Analyst    :                               Column:
Sample Size 1ml Direct
Detector: CDM-1
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1           1    3000  5Hz   0.00 10.00         200
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.28		0.000	78	576	1	
2	1.64	chloride	0.033	73	447	1	-2.38
3	3.54	nitrate	0.498	239	1870	1	0.85
4	6.68	sulfate	0.321	64	854	1	-5.78
Totals			0.853	454	3746

WHC-SD-WM-DP-081
REV 1

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```

=====
Sample Name: R 6838-5871DUP                      Date: 01/29/1995 14:29:51
Data File  : C:\DX\DATA\95012971.D14
Method     : C:\DX\METHOD\AUTOMEL.MET
ACI Address: 1 System: 1 Inject#: 14
Analyst    :                               Column:
Sample Size 1ml Direct gmf 6/17/95
Detector: CDM-1
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          1 3000 5Hz 0.00 10.00          200
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.27		0.000	81	602	1	
2	1.62	chloride	0.040	85	516	1	-3.57
3	3.52	nitrate	0.518	263	2005	1	0.28
4	6.65	sulfate	0.353	84	1139	1	-6.21
Totals			0.911	512	4262		

File: 95012971.D14 Sample: R 6838-5871DUP

WHC-SD-WM-DP-081 BEST AVAILABLE COPY
REV 1

Sample Name: R 6839-5571STD70N9-A Date: 01/29/1995 14:50:10
 Data File : C:\DX\DATA\95012971.D15
 Method : C:\DX\METHOD\AUTOMEL.MET
 ACI Address: 1 System: 1 Inject#: 15 Detector: CDM-1
 Analyst : Column:

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	101	3000	5Hz	0.00	10.00		200

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.89		0.000	77	363	2	
2	1.05	fluoride	55.31198.77	1790	8942	2	0.96
3	1.42		0.000	53	345	1	
4	1.64	chloride	74.54799.40	1735	8372	1	-2.38
5	1.99	nitrite	518.45398.19	7388	40272	1	-3.40
6	3.04	bromide	100.7576.06899.67	4233	29509	1	-2.56
7	3.48	nitrate	563.44497.48	4497	37444	1	-0.85
8	5.09	phosphate	503.74597.63	1207	15817	1	-3.60
9	6.65	sulfate	599.503100.84	3526	51578	1	-6.21
10	8.80	oxalate	519.505103.28	1637	31461	1	-6.38
Totals			3410.576	26142	224102		

File: 95012971.D15 Sample: R 6839-5571STD70N9-A

WHC-SD-WM-DP-081
REV 1

BEST AVAILABLE COPY

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

WHC-SD-WM-DP-081
REV 1

ANALYTICAL BATCH

Lab Segment Serial No.
R6852-R6854Customer ID:
I-1, TRIP BLKAnalysis:
Ion ChromotographySample Prep:
DIRECT

Instrument: AL10657

Procedure/ Rev: LA-533-105 / C-2

Technologist: DC DUNHAM

Date: 03/02/95

Starting Time: 1100

Temperature 25C

Ending Time: 1500

Chemist: J. FRYE

Comments: BATCH #5389

Verified 3/8/95 Jmf

	Description	Lab ID
1	LMCS STANDARD	R6850-5571
2	REAGENT BLANK	R6851-5671
3	SAMPLE	R6852-5771
4	DUPLICATE	R6852-5871
5	SPIKE	R6852-5971
6	SPIKE DUPLICATE	R6852-5071
7	SAMPLE	R6854-5771
8	DUPLICATE	R6854-5871
9	LMCS STANDARD	R6853-5571
10		

	Description	Lab ID
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS STANDARD	70N9-B / .100 mL	70N9-D / .100 mL		
SPIKE	70N9-D / .100 mL			

ION CHROMATOGRAPHIC ANALYSIS

WHC-SD-WM-DP-081
REV 1

Batch 5389

Serial No R 6850.-5571	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:31	Priority 25
Determination IC	Method-Standard LA-533-105	Result Units % RECOVERY	Charge Code KELWD	Reruns 0
Sample Size ? 100 ml - 10 ml			Customer ID STD	
Remarks, Calculations, Results EDP 974 F 54.7 97.7% EDP 972 Cl 72.3 96.4% EDP 968 NO ₂ 51.7 97.4% EDP 978 NO ₃ 55.6 96.2% EDP 976 PO ₄ 55.6 96.7% EDP 970 SO ₄ 56.1 93.7% 944 Rr 539 94.2% 980 Oxalate 478 96.4% 95.6%g.m F3/8/95				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 3-2-95	Time Completed 1500	Lab Unit Mgr James M. Luyke		

54-6800-061 (R-10-83)

Serial No R 6851.-5671	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:33	Priority 25
Determination IC	Method-Standard LA-533-105	Result Units ug/ML	Charge Code KELWD	Reruns 0
Sample Size ? 5 ml Eluent			Customer ID BLK	
Remarks, Calculations, Results REAGENT BLANK F < .1 Cl < .2 NO ₂ < 1 NO ₃ < 1 PO ₄ < 1				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 3-2-95	Time Completed 1500	Lab Unit Mgr James M. Luyke		

54-6800-061 (R-10-83)

ION CHROMATOGRAPHIC ANALYSIS

WHC-SD-WM-DP-081
REV 1

Serial No R 6852.-5771	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:37	Priority 25
Determination IC	Method-Standard LA-533-105	Result Units uG/ML	Charge Code KBLWD	Reruns 0
Sample Size ? 1 ml - 10 ml			Customer ID I-1	
Remarks, Calculations, Results $F = 2.35E+1$ $CI = 2.40E+1$ $NO_2 = 6.59E+1$ $NO_3 = 7.23E+1$ $PO_4 = 1.19E+1$ < 1.150 JAF 2/2/95 <i>David C. Dunham</i>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 3-2-95	Time Completed 1500	Lab Unit Mgr <i>John J. J...</i>		<i>PHB</i>

54-6800-061 (R-10-83)

Serial No R 6852.-5871	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:37	Priority 25
Determination IC	Method-Standard LA-533-105	Result Units uG/ML	Charge Code KBLWD	Reruns 0
Sample Size ? 1 ml - 10 ml			Customer ID I-1	
Remarks, Calculations, Results DUPLICATE SAMPLE $F = 2.39E+1$ $CI = 2.46E+1$ $NO_2 = 6.78E+1$ $NO_3 = 7.44E+1$ $PO_4 = 1.22E+1$ <i>David C. Dunham</i>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 3-2-95	Time Completed 1500	Lab Unit Mgr <i>John J. J...</i>		<i>PHB</i>

54-6800-061 (R-10-83)

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

WHC-SD-WM-DP-081

REV 1

Serial No R 6852.-5971	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:37	Priority 25
Determination 10	Method/Standard LA-533-105	Result Units % RECOVERY	Charge Code KBLWD	Reruns 0
Sample Size 9.9 ml DCD 3-2-95 ? 1 ml - 10 ml + .100 ml spike	Customer ID I-1			
Remarks, Calculations, Results SAMPLE SPIKED ID R6852-5771 F = 106.1% SPIKE ID 70N9-D C1 = 140.0% SPIKE VOLUME .100 ml 9mf 5/17/95 NO ₂ = 116.9% NO ₃ = 115.4% PO ₄ = 105.8% David Dunham				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 3-2-95	Time Completed 1500	Lab Unit Mgr J. N. J. J.		

54-6800-061 (R-10-83)

ANION ANALYSIS ON DIONEX MODEL 4000i

LA-533-105, C-1 DIRECT SAMPLES

		FLOURIDE	CHLORID	NITRITE	NITRATE	PHOSPHA	SULFATE
Type	SAMPLE DATA (µg/mL)	2.36E-01	2.40E+01	6.59E+01	7.23E+01	1.19E+01	
SPIKE	SAMPLE DILUTION FACTOR	11	11	11	11	11	
Work List							
5389	DUPLICATE DATA (µg/mL)	2.39E-01	2.46E+01	6.78E+01	7.44E+01	1.22E+01	
Test Code	DUPLICATE DILUTION FACTOR	11	11	11	11	11	
Matrix	SPIKE + SAMPLE (in µg/mL)	6.18E+00	3.45E+01	1.28E+02	1.39E+02	6.65E+01	
LIQUID							
Sample #	VOLUME OF SPIKE (mL)	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	
R6852-5971	SPIKE BOOK NUMBER	70N9D	70N9D	70N9D	70N9D	70N9D	70N9D
Instrument Code	TOTAL VOLUME	11.00	11.00	11.00	11.00	11.00	
AL10657	SPIKE STD. (µg/mL)	56	75	531	578	516	
Analyst	Spike Recovery = (((Spike+Sample)-(Sample)*(Vol. of Sample&Diluent)))/((Spike Vol.)*(Spike Std						
DUNHAM	Note: (For spike recovery when the sample conc. is less than detection limit you do NOT subt						
Date	Relative Percent Difference = ((Sample - Duplicate) / ((Sample + Duplicate) / 2) * 100)						
03/02/95	Less than Values are Calculated from the Detection Limit*Dilution Factor						
Time	Spike Actual = Spike Found / Spike Recovery						
15:00							

v RESULTS v

	SAMPLE	DUPLICAT	DUP RPD	SPIKE FOU	SPIKE RE	SPIKE AC
FLOURIDE (µg/mL)	2.36E-01	2.39E-01	1.3%	5.94E+00	106.1%	5.60E+00
CHLORIDE (µg/mL)	2.40E+01	2.46E+01	2.5%	1.05E+01	140.0%	7.50E+00
NITRITE (µg/mL)	6.59E+01	6.78E+01	2.8%	6.21E+01	116.9%	5.31E+01
NITRATE (µg/mL)	7.23E+01	7.44E+01	2.9%	6.67E+01	115.4%	5.78E+01
PHOSPHATE (µg/mL)	1.19E+01	1.22E+01	2.5%	5.46E+01	105.8%	5.16E+01
SULFATE (µg/mL)	<0.000	<0.000	N/A		ERR	ERR

Data Entry by: *[Signature]* Date: 08-Mar-95
 Approved by: *[Signature]* Date: 7/8/95
 Form L2 Rev. 2.0 Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

WHC-SD-WM-DP-08
REV 1

ANION ANALYSIS ON DIONEX MODEL 4000i
LA-533-105, C-1 DIRECT SAMPLES

		FLOURIDE	CHLORID	NITRITE	NITRATE	PHOSPHA	SULFATE
Type	SAMPLE DATA (µg/mL)	2.39E-01	2.46E+01	6.78E+01	7.23E+01	1.19E+01	
SPIKE	SAMPLE DILUTION FACTOR	11	11	11	11	11	
Work List							
5389	DUPLICATE DATA (µg/mL)						
Test Code	DUPLICATE DILUTION FACTOR						
Matrix	SPIKE + SAMPLE (in µg/mL)	4.93E+00	3.48E+01	1.27E+02	1.37E+02	6.66E+01	
LIQUID							
Sample #	VOLUME OF SPIKE (mL)	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	
R6852-5971	SPIKE BOOK NUMBER	70N9D	70N9D	70N9D	70N9D	70N9D	70N9D
Instrument Code	TOTAL VOLUME	11.00	11.00	11.00	11.00	11.00	
AL10657	SPIKE STD. (µg/mL)	56	75	531	578	516	
Analyst	Spike Recovery = $\frac{((\text{Spike} + \text{Sample}) - (\text{Sample} * (\text{Vol. of Sample} \& \text{Diluent})))}{((\text{Spike Vol.}) * (\text{Spike Std}))}$						
DUNHAM	Note: (For spike recovery when the sample conc. is less than detection limit you do NOT sub)						
Date	Relative Percent Difference = $\frac{((\text{Sample} - \text{Duplicate}) / ((\text{Sample} + \text{Duplicate}) / 2) * 100)}$						
03/02/95	Less than Values are Calculated from the Detection Limit * Dilution Factor						
Time	Spike Actual = Spike Found / Spike Recovery						
15:00							

v RESULTS v	SAMPLE	DUPLICAT	DUP RPD	SPIKE FOU	SPIKE RE	SPIKE AC
FLOURIDE (µg/mL)	2.39E-01	<0.000	N/A	4.69E+00	83.8%	5.60E+00
CHLORIDE (µg/mL)	2.46E+01	<0.000	N/A	1.02E+01	136.0%	7.50E+00
NITRITE (µg/mL)	6.78E+01	<0.000	N/A	5.92E+01	111.5%	5.31E+01
NITRATE (µg/mL)	7.23E+01	<0.000	N/A	6.47E+01	111.9%	5.78E+01
PHOSPHATE (µg/mL)	1.19E+01	<0.000	N/A	5.47E+01	106.0%	5.16E+01
SULFATE (µg/mL)	<0.000	<0.000	N/A		ERR	ERR

Data Entry by: *[Signature]* Date: 08-Mar-95
 Approved by: *[Signature]* Date: 3/8/95
 Form L2 Rev. 2.0

WHC-SD-WM-DP-087
REV 1
ION CHROMATOGRAPHIC ANALYSIS

Serial No. R 6852.-5071		Sample Point TANK 9-1		Date 1-23-95	Time Issued 10:37	Priority 25
Determination IC	Method-Standard LA-533-105	Result Units % RECOVERY		Charge Code KBLWD	Reruns 0	
Sample Size ? 1 ml - 9.9 ml + 100 ml spike					Customer ID I-1	
Remarks, Calculations, Results SAMPLE SPIKE DUPLICATE R6852-5771 $F = 83.8\%$ $Cl = 136.0\%$ $NO_2 = 111.5\%$ $NO_3 = 111.9\%$ $PO_4 = 106.7\%$ SPIKE ID 70N9-D SPIKE VOL 100 ml Daniel C. Dunham						
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5		
Hrs	Hrs	Hrs	Hrs	Hrs		
Date 3-2-95	Time Completed 1500	Lab Unit Mgr James J. [Signature]		[Signature]		

54-6800-061 (R-10-83)

Serial No. R 6854.-5771		Sample Point TANK 9-1		Date 1-23-95	Time Issued 10:46	Priority 25
Determination IC	Method-Standard LA-533-105	Result Units uG/ML		Charge Code KBLWD	Reruns 0	
Sample Size ? 5 ml					Customer ID TRIP BLK	
Remarks, Calculations, Results $Cl = 2.50$ $NO_2 < 1$ $NO_3 < 1$ $NO_2 = 7.35 E-1$ $PO_4 < 1$ $F < 1.1$ $Cl < .2$ $NO_2 < 1$ $NO_3 < 1$ Daniel C. Dunham						
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5		
Hrs	Hrs	Hrs	Hrs	Hrs		
Date 3-2-95	Time Completed 1500	Lab Unit Mgr James J. [Signature]		[Signature]		

54-6800-061 (R-10-83)

ION CHROMATOGRAPHIC ANALYSIS

54-8400-061 (R-10-83)

54-6800-061 (R-10-83)

Sample Name: 70N9B Date: 02/13/1995 22:21:35
 Data File : C:\DX\DATA\95021301.D02
 Method : C:\DX\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 2 Detector: CDM-1
 Analyst : *David Dunham* Column: *2/13/95*

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	101	3000	5Hz	0.00	10.00		200

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.89		0.000	88	413	2	
2	1.06	fluoride	54.657	1822	8834	2	1.92
3	1.45		0.000	79	481	1	
4	1.66	chloride	72.325	1866	8123	1	-1.19
5	2.00	nitrite	516.860	7589	40142	1	-2.91
6	3.03	bromide	539.086	4353	27507	1	-2.88
7	3.47	nitrate	555.617	4710	36895	1	-1.14
8	5.23	phosphate	473.132	1185	14794	1	-0.95
9	7.05	sulfate	560.923	3284	48080	1	-0.56
10	9.34	oxalate	477.979	1472	28809	1	-0.64
Totals			3250.578	26448	214079		

File: 95021301.D02 Sample: 70N9B

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WHC-SD-WM-DP-081
REV 1

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SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 1160 TO 1169.

```

=====
Sample Name: BLANK                      Date: 02/13/1995 22:06:53
Data File  : C:\DX\DATA\95021301.D01
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 1      Detector: CDM-1
Analyst    : David C. Dunham Column:
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1           1    3000   5Hz   0.00 10.00         200
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.45		0.000	93	610	1	
Totals			0.000	93	610		

File: 95021301.D01 Sample: BLANK

WHC-SD-WM-DP-081
REV 1

```

=====
Sample Name: R6852-5771                      Date: 02/13/1995 22:48:29
Data File  : C:\DX\DATA\95021301.D04
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 4           Detector: CDM-1
Analyst    : David C. Dunham Column:
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          11    3000  5Hz   0.00 10.00         200
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.88		0.000	69	328	1	
2	1.07	fluoride	0.236	70	300	1	2.88
3	1.46		0.000	111	659	1	
4	1.66	chloride	23.969	6001	25101	1	-1.19
5	2.00	nitrite	65.940	9371	47366	1	-2.91
6	3.47	nitrate	72.306	5876	44507	1	-1.14
7	5.24	phosphate	11.912	228	2791	1	-0.76
8	7.05	sulfate	55.926	2982	43790	1	-0.56
Totals			230.289	24709	164842		

File: 95021301.D04 Sample: R6852-5771

WHC-SD-WM-DP-081
REV 1

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=====
Sample Name: R6852-5871                      Date: 02/13/1995 23:00:17
Data File  : C:\DX\DATA\95021301.D05
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 5          Detector: CDM-1
Analyst    : David C. Dunham Column:
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1           11  3000  5Hz   0.00 10.00          200
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.89		0.000	70	300	1	
2	1.07	fluoride	0.239	69	305	1	2.88
3	1.46		0.000	118	693	1	
4	1.66	chloride	24.624	6000	25809	1	-1.19
5	2.00	nitrite	67.758	9312	48728	1	-2.91
6	3.47	nitrate	74.436	5902	45885	1	-1.14
7	5.23	phosphate	12.233	231	2887	1	-0.95
8	7.05	sulfate	56.279	3008	44084	1	-0.56
Totals			235.569	24709	168691		

File: 95021301.D05 Sample: R6852-5871

WHC-SO-WM-DP-081
REV 1

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=====
Sample Name: R6852-5971                      Date: 03/02/1995 14:17:25
Data File  : C:\DX\DATA\95030301.D05
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 5          Detector: CDM-1
Analyst    : David Dunham Column:
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          11  3300  5Hz   0.00 11.00          200
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.88		0.000	181	867	2	
2	1.04	fluoride	6.183	1773	8956	2	0.00
3	1.61	chloride	34.508	8093	35070	1	0.00
4	1.94	nitrite	128.060	17973	92542	1	0.00
5	2.92	bromide	57.708	4077	25662	1	0.00
6	3.32	nitrate	139.476	10933	84432	1	0.00
7	5.08	phosphate	66.465	1328	17182	1	0.00
8	6.68	sulfate	127.626	6979	97451	1	0.00
9	8.86	oxalate	48.537	1390	26151	1	0.00
Totals			608.563	52727	388312		

File: 95030301.D05 Sample: R6852-5971

WHC-SQ-WM-DP-08 1
REV 1

```

=====
Sample Name: R6852-5071                      Date: 03/02/1995 14:33:10
Data File  : C:\DX\DATA\95030301.D06
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 6          Detector: CDM-1
Analyst    : David Dunham Column:
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          11  3300  5Hz   0.00 11.00          200
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.88		0.000	173	758	1	
2	1.04	fluoride	4.931	1695	7077	1	0.00
3	1.61	chloride	34.767	8084	35344	1	0.00
4	1.94	nitrite	127.408	17975	92058	1	0.00
5	2.92	bromide	57.408	4089	25521	1	0.00
6	3.32	nitrate	137.271	10874	83024	1	0.00
7	5.08	phosphate	66.573	1316	17211	1	0.00
8	6.69	sulfate	126.956	6962	96917	1	0.00
9	8.86	oxalate	48.262	1383	25998	1	0.00
Totals			603.576	52551	383906		

File: 95030301.D06 Sample: R6852-5071

WHC-SD-WM-DP-08 1
REV 1

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=====
Sample Name: R6854-5771                      Date: 03/02/1995 14:46:40
Data File  : C:\DX\DATA\95030301.D07
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 7          Detector: CDM-1
Analyst    : David A. Ambrose             Column:
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          1 3300 5Hz 0.00 11.00          200
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.62	chloride	0.025	82	305	1	0.00
2	3.39	nitrate	0.735	381	2684	1	0.00
3	6.75	sulfate	0.181	66	837	1	0.00
Totals			0.940	529	3827

WHC-SD-WM-DP-081
REV 1

Sample Name: R6854-5871 Date: 03/02/1995 14:58:30
 Data File : C:\DX\DATA\95030301.D08
 Method : C:\DX\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 8 Detector: CDM-1
 Analyst : *David C. Sullivan* Column:

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3300	5Hz	0.00	11.00		200

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.62	chloride	0.022	76	280	1	0.00
2	3.39	nitrate	0.660	300	2187	1	0.00
3	6.76	sulfate	0.192	70	932	1	0.00
Totals			0.875	446	3399		

File: 95030301.D08 Sample: R6854-5871

WHC-SD-WM-DP-08 f
 REV 1

Sample Name: 70N9-D Date: 03/02/1995 13:56:20
 Data File : C:\DX\DATA\95030301.D04
 Method : C:\DX\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 4 Detector: CDM-1
 Analyst : *David Dunham* Column:

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	101	3300	5Hz	0.00	11.00		200

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.88		0.000	96	445	2	
2	1.04	fluoride	55.211	1816	8700	2	0.00
3	1.61	chloride	76.665	1792	8274	1	0.00
4	1.94	nitrite	520.067	7587	39350	1	0.00
5	2.92	bromide	573.968	4417	27931	1	0.00
6	3.35	nitrate	596.399	4952	37545	1	0.00
7	5.08	phosphate	531.004	1125	14876	1	0.00
8	6.70	sulfate	603.393	3465	49015	1	0.00
9	8.84	oxalate	474.795	1495	27918	1	0.00
Totals			3431.502	26744	214055		

File: 95030301.D04 Sample: 70N9-D

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WHC-SD-WM-DP-081
 REV 1

Sample Name: BLANK Date: 03/02/1995 13:42:03
 Data File : C:\DX\DATA\95030301.D03
 Method : C:\DX\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 3 Detector: CDM-1
 Analyst: *David Dunham* Column:

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3300	5Hz	0.00	11.00		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: 95030301.D03 Sample: BLANK

WHC-SD-WM-DP-08 j
 REV 1

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No. R 6836, R 68337, R 6838	Customer ID: BLANK, I-1, I-TRIPBK
Analysis: TOTAL ORGANIC CARBON	Sample Prep: DIRECT

Instrument: AL-10723	Procedure/ Rev: LA-344-105/B-2 B-3 <i>rw5-18-95</i>
Technologist: KR MONTEITH <i>[Signature]</i>	Date: 01/26/95
Starting Time: 0000	Temperature 25 C
Ending Time: 0700	Chemist: R. W. SCHROEDER

Comments: BATCH # 5346

	Description	Lab ID		Description	Lab ID
1	LMCS STD	R 6835-5526	11		
2	SAMPLE	R 6836-5626	12		
3	SAMPLE	R 6837-5726	13		
4	SAMPLE - DUP	R 6837-5826	14		
5	SAMPLE + SPIKE	R 6837-5926	15		
6	SAMPLE + SPIKE - DUP	R 6837-5026	16		
7	SAMPLE	R 6838-5726	17		
8	SAMPLE - DUP	R 6838-5826	18		
9	LMCS STD	R 6839-5526	19		
10			20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	10N12-F / .200ml			
SPIKE	11N12-E / .400ml			

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Batch 5346

Serial No R 6835.-5526	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:22	Priority 25
Determination TOC	Method/Standard LA-344-105	Result Units % RECOVERY	Charge Code KBLWD	Reruns 0
Sample Size ? .2mc - .2mc - .2mc			Customer ID STD	
Remarks, Calculations, Results 8356 C03TOC STD# 10W12F RESULT 2.85803 STD VAL 3.0038%REC 95.0 WR# 9585				
Analyst 	Analyst - 2 	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-26-95	Time Completed	Lab Unit Mgr 		

54-6800-061 (R-10-83)

WHC-SD-WM-DP-081
REV 1

TOC : LA-344-105 (B-3)

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
5346	Dilution Factor (DF)	11
Test Code	Digest Dilution Factor (DDF)	1
	µg of Carbon in Sample (C1)	55.6
Matrix	µg of Carbon in Blank (C2)	3.8
LIQUID	g of Carbon/L =	2.85E+00
Sample #		
R6835-5526		
Instrument Code		
AL-10723		
Analyst		
K. MONTEITH		
Date		
01/26/95		
Time		

$$\text{g of Carbon/L} = \frac{(C1 - C2) \cdot DF \cdot DDF}{VI \cdot 1000}$$

$$\mu\text{g of Carbon/mL} = \text{g of Carbon/L} \cdot 1000000 \mu\text{g/g} / 1000 \text{ mL/L}$$

$$\text{Detection Level } (\mu\text{g/mL}) = \frac{1 \mu\text{g C} \cdot DF \cdot DDF}{VI}$$

$\mu\text{g Carbon/mL} =$	2.85E+03	DETECTION LEVEL
		in $\mu\text{g/mL}$
		5.50E+01

Data Entry by:	Date: 01/26/95
Approved by:	Date: 1/27/95

[illegible]

WHC-SD-WM-DP-081
REV 1

TOC : LA-344-105 (B-3)		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
5346	Dilution Factor	(DF)			1
Test Code	Digest Dilution Factor	(DDF)			1
	µg of Carbon in Sample	(C1)			4.1
Matrix	µg of Carbon in Blank	(C2)			3.8
LIQUID	g of Carbon/L	=		<	5.00E-03
Sample #					
R6836-5626	g of Carbon/L = $\frac{(C1-C2) \cdot DF \cdot DDF}{VI \cdot 1000}$				
Instrument Code					
AL-10723					
Analyst	µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L				
K. MONTEITH					
Date					
01/26/95	Detection Level (µg/mL) = $\frac{1 \mu g C \cdot DF \cdot DDF}{VI}$				
Time					

<p>µg Carbon/mL = < 5.00E+00</p>	DETECTION LEVEL
	<p>in µg/mL</p> <p>5.00E+00</p>

Data Entry by: <i>RS Jones</i>	Date: 01/26/95
Approved by: <i>[Signature]</i>	Date: 1/27/95
Form 344105 C Rev. 1.1	
Page 1 of 1	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No R 6837.-5826	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:26	Priority 25
Determination TOC	Method/Standard LA-344-105	Result Units uG C/ML	Charge Code KBLWD	Reruns 0
Sample Size ? 2mc - 2mc - 2mc			Customer ID I-1	
Remarks, Calculations, Results DUPLICATE SAMPLE 2.47602 uG C/ML				
Analyst 1 	Analyst 2 	Analyst 3	Analyst 4	Analyst 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-26-95	Time Completed	Lab Unit Mgr 	1/27/95	

W H C - S D - W M - D P - 0 8 1
REV 1

54-6800-061 (R-10-83)

TOC : LA-344-105 (B-3)

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
5346	Dilution Factor (DF)	1.1
Test Code	Digest Dilution Factor (DDF)	1
	µg of Carbon in Sample (C1)	48.7
Matrix	µg of Carbon in Blank (C2)	3.8
LIQUID	g of Carbon/L =	2.47E-01
Sample #		
R6837-5826		
Instrument Code		
AL-10723		
Analyst		
K. MONTEITH		
Date		
01/26/95		
Time		

$$\text{g of Carbon/L} = \frac{(C1-C2) * DF * DDF}{VI * 1000}$$

$$\mu\text{g of Carbon/mL} = \text{g of Carbon/L} * 1000000 \mu\text{g/g} / 1000 \text{ mL/L}$$

$$\text{Detection Level } (\mu\text{g/mL}) = \frac{1 \mu\text{g C} * DF * DDF}{VI}$$

$\mu\text{g Carbon/mL} =$	2.47E+02	DETECTION LEVEL
		in µg/mL
		5.50E+00

Data Entry by:	Date: 01/26/95
Approved by:	Date: 1/27/95

Form 344105_C Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

Serial No R 6837.-5926.	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:26	Priority 25
Determination TOC	Method/Standard LA-344-105	Result Units % RECOVERY	Charge Code KBLWD	Reruns 0
Sample Size 2ml - 2ml - .4ml + .4ml - 2ml			Customer ID I-1	
Remarks, Calculations, Results SAMPLE SPIKED ID SPIKE ID 112125 SPIKE VOLUME .400ml 97.3%				
Analyst - 1 	Analyst - 2 	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-26-95	Time Completed	Lab Unit Mgr 	1/27/95	

WHC-SD-WM-DP-081
REV 1

54-6800-061 (R-10-83)

TOC: LA-344-105

SPIKED SAMPLE

SPIKE

Type	>>>>> Sample Vial Data <<<<<	>>>>> Spiked Vial Data <<<<<
SPIKE	Sample Volume in mL 2.000	Sample Size in mL (SS) 0.400
Work List	H2SO4 Volume in mL 0.200	Spike Volume in mL 0.400
BATCH 5346	Volume Injected in mL 0.200	H2SO4 Volume in mL 0.000
Test Code	µg of Carbon in Sample 47.2	Volume Injected in mL 0.200
	µg of Carbon in Blank 3.8	Sample Pre-Spike Dil. Factor (PDF) 1.1
Matrix		Spike Value (µg/mL) 747
LIQUID		µg C in Sample + Spike 98.2
Sample #		µg C in Blank 3.8
R6837-5926		
Instrument Code		
Analyst	PERCENT SPIKE RECOVERY = $\frac{\mu\text{g Carbon Recovered from Spike} * 100}{\mu\text{g Carbon in Spike}}$	
KR MONTEITH	WHERE: $\mu\text{g Carbon Recovered from Spike} =$ $[(\mu\text{gC in sample} + \text{spike} - \mu\text{gC in blank}) * (\text{Spike Correction Factor})]$ $- [(\mu\text{gC sample} - \mu\text{gC blank}) * (\text{Sample Correction Factor}) * (\text{Sample Size Correction Factor}) * (\text{PDF})]$	
Date	Spike Correction Factor = $\frac{\text{Total volume in spiked sample vial (mL)}}{\text{Volume injected (mL)}}$	
01/26/95	Sample Correction Factor = $\frac{\text{Total volume in sample vial (mL)}}{\text{Volume injected (mL)}}$	
Time	Sample Size Correction Factor = $\frac{\text{Sample size in (mL) in spiked vial}}{\text{Sample size (mL) in sample}}$	
06:00 AM	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 97.3%

Data Entry by:	Date: 26-Jan-95
Approved by:	Date: 1/27/95

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

Serial No R 6837.-5026	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:30	Priority 25
Determination TOC	Method/Standard LA-344-105	Result Units % RECOVERY	Charge Code KBLWD	Reruns 0
Sample Size ? 2ml, 2ml - 4ml, 4ml - 2ml			Customer ID I-1	
Remarks, Calculations, Results SAMPLE SPIKE DUPLICATE SPIKE ID 11N12E SPIKE VOL .400ml 94.6%				
Analyst - 1 <i>[Signature]</i>	Analyst - 2 <i>[Signature]</i>	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-26-95	Time Completed	Lab Unit No <i>[Signature]</i> 1/27/95	<i>[Signature]</i>	

54-6800-061 (R-10-83)

WHC-SO-WM-DP-081
REV 1

TOC: LA-344-105

SPIKED SAMPLE

SPIKE

Type	>>>>> Sample Vial Data <<<<<		>>>>> Spiked Vial Data <<<<<	
SPIKE	Sample Volume in mL	2.000	Sample Size in mL (SS)	0.400
Work List	H2SO4 Volume in mL	0.200	Spike Volume in mL	0.400
5346	Volume Injected in mL	0.200	H2SO4 Volume in mL	0.000
Test Code	µg of Carbon in Sample	47.2	Volume Injected in mL	0.200
	µg of Carbon in Blank	3.8	Sample Pre-Spike Dil. Factor (PDF)	1.1
Matrix			Spike Value (µg/mL)	747
LIQUID			µg C in Sample + Spike	96.2
Sample #			µg C in Blank	3.8
R6837-5026				
Instrument Code				
AL-10723				

Analyst
K. MONTEITH
Date
01/26/95
Time

$$\text{PERCENT SPIKE RECOVERY} = \frac{\mu\text{g Carbon Recovered from Spike} \times 100}{\mu\text{g Carbon in Spike}}$$

$$\text{WHERE: } \mu\text{g Carbon Recovered from Spike} = \left[(\mu\text{gC in sample} + \mu\text{gC in blank}) \times (\text{Spike Correction Factor}) \right] - \left[(\mu\text{gC sample} - \mu\text{gC blank}) \times (\text{Sample Correction Factor}) \times (\text{Sample Size Correction Factor}) \times (\text{PDF}) \right]$$

$$\text{Spike Correction Factor} = \frac{\text{Total volume in spiked sample vial (mL)}}{\text{Volume injected (mL)}}$$

$$\text{Sample Correction Factor} = \frac{\text{Total volume in sample vial (mL)}}{\text{Volume injected (mL)}}$$

$$\text{Sample Size Correction Factor} = \frac{\text{Sample size in (mL) in spiked vial}}{\text{Sample size (mL) in sample}}$$

$$\text{Sample Pre-Spike Dilution Factor} = \frac{1}{\text{Dilution of Sample Before Added to Spike Vial}}$$

$$\text{WHERE: } \mu\text{g Carbon in Spike} = \text{Spike Value } (\mu\text{g/mL}) \times \text{Spike Volume (mL)}$$

Percent Spike Recovery 94.6%

Data Entry by: <i>[Signature]</i>	Date: 26-Jan-95
Approved by: <i>[Signature]</i>	Date: 1/27/95

REV 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No	Sample Point	Date	Time Issued	Priority
R 6838.-5726	TANK 9-1	1-19-95	10:31	25
Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-844-105	µg C/ML	KBLWD	0
Sample Size			Customer ID	
? 2mc - 2mc - 2mc			I-TRIPBK	
Remarks, Calculations, Results				
<p style="text-align: right;">25.50500 µg/ML</p>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		
1-26-95		1/27/95		

54-6800-061 (R-10-A3)

TOC : LA-344-105 (B-3)		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
5346	Dilution Factor	(DF)			1.1
Test Code	Digest Dilution Factor	(DDF)			1
	µg of Carbon in Sample	(C1)			4.7
Matrix	µg of Carbon in Blank	(C2)			3.8
LIQUID	g of Carbon/L	=		<	5.50E-03
Sample #					
R6838-5726	g of Carbon/L	=	$\frac{(C1-C2) * DF * DDF}{VI * 1000}$		
Instrument Code					
AL-10723					
Analyst	µg of Carbon/mL	=	g of Carbon/L * 1000000 µg/g / 1000 mL/L		
K. MONTEITH					
Date					
01/26/95	Detection Level (µg/mL)	=	$\frac{1 \mu g C * DF * DDF}{VI}$		
Time					

NOTE: Reported Result is Below Detection Level.

<p>µg Carbon/mL = < 5.50E+00</p>	DETECTION LEVEL
	<p>in µg/mL 5.50E+00</p>

Data Entry by: <i>Kel Jones</i>	Date: 01/26/95
Approved by: <i>[Signature]</i>	Date: 1/27/95
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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No R 6838.-5826	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:31	Priority 25
Determination TOC	Method/Standard LA-344-105	Result Units uG C/ML	Charge Code KBLWD	Reruns 0
Sample Size ? 2ml - 2ml - 2ml			Customer ID I-TRIPBK	
Remarks, Calculations, Results DUPLICATE SAMPLE				
25.50500 uG C/ML				
Analyst - 1 	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-26-95	Time Completed	Lab Unit Mg 		

54-6800-061 (R-10-83)

TOC : LA-344-105 (B-3)

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
5346	Dilution Factor (DF)	1.1
Test Code	Digest Dilution Factor (DDF)	1
	µg of Carbon in Sample (C1)	4.3
Matrix	µg of Carbon in Blank (C2)	3.8
LIQUID	g of Carbon/L =	< 5.50E-03
Sample #		
R6838-5826		
Instrument Code		
AL-10723		
Analyst		
K. MONTEITH		
Date		
01/26/95		
Time		

$$\text{g of Carbon/L} = \frac{(C1-C2) \cdot DF \cdot DDF}{VI \cdot 1000}$$

$$\mu\text{g of Carbon/mL} = \text{g of Carbon/L} \cdot 1000000 \mu\text{g/g} / 1000 \text{ mL/L}$$

$$\text{Detection Level } (\mu\text{g/mL}) = \frac{1 \mu\text{g C} \cdot DF \cdot DDF}{VI}$$

NOTE: Reported Result is Below Detection Level.

$\mu\text{g Carbon/mL} =$	$< 5.50\text{E}+00$	DETECTION LEVEL
		in $\mu\text{g/mL}$
		5.50E+00

Data Entry by:	Date: 01/26/95
Approved by:	Date: 1/27/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No R 6839.-5526	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:34	Priority 25
Determination 100	Method/Standard LA-344-105	Result Units % RECOVERY	Charge Code KBLWD	Reruns 0
Sample Size ? .2ML - .2ML - .2ML			Customer ID STD	
Remarks Calculations, Results E356 C03TOC STD# 10N12F RESULT 2.89503 STD VAL 3.00503 %REC 96.3				
Analyst - 1 <i>[Signature]</i>		Analyst - 3	Analyst - 4	Analyst - 5 <i>[Signature]</i>
Hrs		Hrs	Hrs	Hrs
Date 1-26-95	Time Completed	Lab Unit Mgr <i>[Signature]</i> 1/27/95	<i>[Signature]</i>	

54-6800-061 (R-10-83)

TOC : LA-344-105 (B-3)

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
5346	Dilution Factor (DF)	11
Test Code	Digest Dilution Factor (DDF)	1
	µg of Carbon in Sample (C1)	56.3
Matrix	µg of Carbon in Blank (C2)	3.8
LIQUID	g of Carbon/L =	2.89E+00
Sample #	g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$	
R6839-5526	µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L	
Instrument Code	Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{VI}$	
AL-10723		
Analyst		
K. MONTEITH		
Date		
01/26/95		
Time		

µg Carbon/mL =	2.89E+03	DETECTION LEVEL
		in µg/mL
		5.50E+01

Data Entry by: <i>[Signature]</i>	Date: 01/26/95
Approved by: <i>[Signature]</i>	Date: 1/27/95

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BLK

Date: 01/26/95

Time: 03:25:48

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BLK

Blank Value = N/A

Analyst : KR MMONTEITH

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	0.80	87.50
3	1.51	1.10	27.27
4	2.01	1.50	26.67
5	2.51	1.70	11.76
6	3.01	1.90	10.53
7	3.51	2.20	13.64
8	4.01	2.40	8.33
9	4.50	2.70	11.11
10	5.00	2.90	6.90
11	5.50	3.10	6.45
12	6.00	3.40	8.82
13	6.50	3.60	5.56
14	7.00	3.80	5.26

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 180 TO 189.

BLANK VALUE = 3.8 micrograms carbon

BLANK FACTOR = 3.8 / 7.003006 =

+5.4E-01 ug/min Carbon

Sample Run By: 1-26-95

KR MMONTEITH

00000

WHC-SD-WM-DP-081

REV 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD

Date: 01/26/95

Time: 03:35:29

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BLK

Blank Value = .5426241 ug/minute C

Analyst : KR MMONTEITH

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	20.10	98.01
3	1.51	41.20	51.21
4	2.00	48.30	14.70
5	2.50	51.20	5.66
6	3.00	52.40	2.29
7	3.50	53.20	1.50
8	4.00	53.60	0.75
9	4.50	54.00	0.74
10	5.00	54.40	0.74
11	5.50	54.80	0.73
12	6.00	55.10	0.54
13	6.50	55.40	0.54
14	7.00	55.60	0.36

BLANK VALUE = 3.8 micrograms carbon

BLANK FACTOR = 3.8 / 7.003006 =

+5.4E-01 ug/min Carbon

SAMPLE RESULTS:

(55.6 - 3.800008) (11) / (200) =

+2.85E+00 g/L Carbon

(55.6 - 3.800008) (11) / (200) (12) =

+2.37E-01 Molar Carbon

Sample Run By:

KR MMONTEITH

00000

WHC-SD-WM-DP-081

REV 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 6836

Date: 01/26/95

Time: 03:44:20

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BLK

Blank Value = .5426241 ug/minute C

Analyst : KR MMONTEITH

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	0.80	75.00
3	1.50	1.20	33.33
4	2.00	1.50	20.00
5	2.50	1.80	16.67
6	3.00	2.10	14.29
7	3.50	2.40	12.50
8	4.00	2.60	7.69
9	4.50	2.80	7.14
10	5.00	3.00	6.67
11	5.50	3.40	11.76
12	6.00	3.60	5.56
13	6.50	3.80	5.26
14	7.00	4.10	7.32

BLANK VALUE = 3.8 micrograms carbon

BLANK FACTOR = 3.8 / 7.003006 =

+5.4E-01 ug/min Carbon

SAMPLE RESULTS:

(4.1 - 3.799545) (1) / (200) =

< 5.00 E-3 g/L Carbon

(4.1 - 3.799545) (1) / (200) (12) =

< 4.17 E-4 Molar Carbon

Sample Run By:

KR MMONTEITH

00000

WHC-SD-WM-DP-081

REV 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 6837-5726

Date: 01/26/95

Time: 06:32:28

Sample Size = 200 uL

Dil Factor = 1.1

Blank ID # =

Blank Value = .54 ug/minute C

Analyst : KR MONTEITH

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	12.20	98.36
3	1.50	32.70	62.69
4	2.00	37.70	13.26
5	2.50	40.50	6.91
6	3.00	42.30	4.26
7	3.50	43.50	2.76
8	4.01	44.50	2.25
9	4.50	45.20	1.55
10	5.00	45.70	1.09
11	5.50	46.30	1.30
12	6.00	46.60	0.64
13	6.50	46.90	0.64
14	7.00	47.20	0.64

USER INPUT BLANK VALUE

BLANK VALUE = 3.781623 micrograms carbon

BLANK FACTOR = 3.781623 / 7.003006 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:

(47.2 - 3.782077) (1.1) / (200)	=	+2.39E-01	g/L Carbon
(47.2 - 3.782077) (1.1) / (200) (12)	=	+1.99E-02	Molar Carbon

Sample Run By:

KR MONTEITH

00000

WHC-SD-WM-DP-081

REV 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 6837-5826

Date: 01/26/95

Time: 07:03:46

Sample Size = 200 uL

Dil Factor = 1.1

Blank ID # =

Blank Value = .54 ug/minute C

Analyst : KR MONTEITH

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	13.40	99.25
3	1.50	33.90	60.47
4	2.00	38.70	12.40
5	2.50	41.40	6.52
6	3.00	43.20	4.17
7	3.50	44.50	2.92
8	4.00	45.50	2.20
9	4.50	46.30	1.73
10	5.00	46.90	1.28
11	5.50	47.50	1.26
12	6.00	47.90	0.84
13	6.50	48.30	0.83
14	7.00	48.70	0.82

USER INPUT BLANK VALUE

BLANK VALUE = 3.781623 micrograms carbon

BLANK FACTOR = 3.781623 / 7.003006 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:

(48.7 - 3.781154) (1.1) / (200) = +2.47E-01 g/L Carbon
 (48.7 - 3.781154) (1.1) / (200) (12) = +2.06E-02 Molar Carbon

Sample Run By:

KR MONTEITH

00000

WHC-SD-WM-DP-081

REV 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 6837-5926 Date: 01/26/95 Time: 06:40:29

Sample Size = 200 uL Analyst : KR MONTEITH
Dil Factor = 2.2 Min Readings = 14
Blank ID # = Max Readings = 14
Blank Value = .54 ug/minute C % Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	21.30	98.59
3	1.51	68.90	69.09
4	2.01	79.70	13.55
5	2.51	85.00	6.24
6	3.01	88.50	3.95
7	3.50	91.10	2.85
8	4.00	92.90	1.94
9	4.50	94.50	1.69
10	5.00	95.50	1.05
11	5.50	96.40	0.93
12	6.00	97.10	0.72
13	6.50	97.70	0.61
14	7.00	98.20	0.51

USER INPUT BLANK VALUE

BLANK VALUE = 3.781623 micrograms carbon

BLANK FACTOR = 3.781623 / 7.003006 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:

(98.2 - 3.781632) (2.2) / (200) = +1.04E+00 g/L Carbon
(98.2 - 3.781632) (2.2) / (200) (12) = +8.66E-02 Molar Carbon

Sample Run By:

KR MONTEITH

00000

WHC-SD-WM-DP-081
REV 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 6837-5026

Date: 01/26/95

Time: 06:55:31

Sample Size = 200 uL

Dil Factor = 2.2

Blank ID # =

Blank Value = .54 ug/minute C

Analyst : KR MONTEITH

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	22.40	99.11
3	1.50	67.70	66.91
4	2.00	78.10	13.32
5	2.50	83.00	5.90
6	3.00	86.60	4.16
7	3.50	89.10	2.81
8	4.00	91.00	2.09
9	4.50	92.30	1.41
10	5.00	93.50	1.28
11	5.50	94.30	0.85
12	6.00	95.10	0.84
13	6.50	95.60	0.52
14	7.00	96.20	0.62

USER INPUT BLANK VALUE

BLANK VALUE = 3.781623 micrograms carbon

BLANK FACTOR = 3.781623 / 7.003006 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:

(96.2 - 3.781615) (2.2) / (200)	=	+1.02E+00	g/L Carbon
(96.2 - 3.781615) (2.2) / (200) (12)	=	+8.47E-02	Molar Carbon

Sample Run By:

KR MONTEITH

00000

WHC-SD-WM-DP-081

REV 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 6838-5726

Date: 01/26/95

Time: 04:01:34

Sample Size = 200 uL

Dil Factor = 1.1

Blank ID # = BLK

Blank Value = .5426241 ug/minute C

Analyst : KR MMONTEITH

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	0.00	0.00
2	1.01	0.60	100.00
3	1.51	1.10	45.45
4	2.01	1.40	21.43
5	2.51	1.80	22.22
6	3.00	2.10	14.29
7	3.50	2.40	12.50
8	4.00	2.80	14.29
9	4.50	3.10	9.68
10	5.00	3.40	8.82
11	5.50	3.70	8.11
12	6.00	4.00	7.50
13	6.50	4.30	6.98
14	7.00	4.70	8.51

BLANK VALUE = 3.8 micrograms carbon

BLANK FACTOR = 3.8 / 7.003006 =

+5.4E-01 ug/min Carbon

SAMPLE RESULTS:

(4.7 - 3.799992) (1.1) / (200) =

< 5.00 E-3 g/L Carbon

(4.7 - 3.799992) (1.1) / (200) (12) =

< 4.17 E-4 Molar Carbon

Sample Run By:

KR MMONTEITH

00000

WHC-SD-WM-DP-081

REV 1 .

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 6838-5826

Date: 01/26/95

Time: 04:09:27

Sample Size = 200 uL

Dil Factor = 1.1

Blank ID # = BLK

Blank Value = .5426241 ug/minute C

Analyst : KR MMONTEITH

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	0.70	57.14
3	1.50	1.20	41.67
4	2.00	1.50	20.00
5	2.50	1.80	16.67
6	3.00	2.10	14.29
7	3.50	2.40	12.50
8	4.00	2.60	7.69
9	4.50	2.90	10.34
10	5.00	3.20	9.37
11	5.50	3.50	8.57
12	6.00	3.80	7.89
13	6.50	4.00	5.00
14	7.00	4.30	6.98

BLANK VALUE = 3.8 micrograms carbon

BLANK FACTOR = 3.8 / 7.003006 =

+5.4E-01 ug/min Carbon

SAMPLE RESULTS:

(4.3 - 3.799453) (1.1) / (200) =

< 5.00 E-3 g/L Carbon

(4.3 - 3.799453) (1.1) / (200) (12) =

< 4.17 E-4 Molar Carbon

Sample Run By:

KR MMONTEITH

00000

WHC-SD-WM-DP-081
REV 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD

Date: 01/26/95

Time: 07:12:16

Sample Size = 200 uL

Dil Factor = 11

Blank ID # =

Blank Value = .54 ug/minute C

Analyst : KR MONTEITH

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	23.00	97.83
3	1.51	40.80	43.63
4	2.01	45.70	10.72
5	2.51	48.60	5.97
6	3.01	50.50	3.76
7	3.51	52.00	2.88
8	4.01	52.90	1.70
9	4.50	53.70	1.49
10	5.01	54.40	1.29
11	5.50	55.10	1.27
12	6.00	55.40	0.54
13	6.50	55.90	0.89
14	7.00	56.30	0.71

USER INPUT BLANK VALUE

BLANK VALUE = 3.781623 micrograms carbon

BLANK FACTOR = 3.781623 / 7.003006 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:

(56.3 - 3.782077) (11) / (200) = +2.89E+00 g/L Carbon
 (56.3 - 3.782077) (11) / (200) (12) = +2.41E-01 Molar Carbon

Sample Run By:

KR MONTEITH

00000

WHC-SD-WM-DP-081

REV 1

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

WHC-SD-WM-DP-081

REV 1

ANALYTICAL BATCH

Lab Segment Serial No.

R 6850 - R 6854

Customer ID:

I-1, TRIP BLK

Analysis:

TOTAL ORGANIC CARBON

Sample Prep:

DIRECT

Instrument: WC16130

Procedure/ Rev: LA-344-105 / B-5

Technologist: RW KING

Date: 02/13/95

Starting Time: 0030

Temperature N/A

Ending Time: 0600

Chemist: RW SCHRODER

Schroeder
RWS
2-13-95

Comments: BATCH # 5385

	Description	Lab ID
1	LMCS STD	R 6850-5526
2	REAGENT BLK	R 6851-5626
3	SAMPLE	R 6852-5726
4	SAMPLE DUP	R 6852-5826
5	SAMPLE SPIKE	R 6852-5926
6	SAMPLE SPIKE DUP	R 6852-5026
7	SAMPLE	R 6854-5726
8	SAMPLE DUP	R 6854-5826
9	LMCS END STD	R 6853-5526
10		

	Description	Lab ID
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	10N12F / .200ML			
LMCS SPIKE	11N12E / .400ML			

TOTAL ORGANIC CARBON ANALYSIS

WHC-SD-WM-DP-081

REV 1

5385

Serial No R 6850.-5526	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:31	Priority 25
Determination TOC	Method Standard LA-344-105	Result Units % RECOVERY	Charge Code KBLWD	Reruns 0
Sample Size ?	200 ml / 1 ml ^{5.12} / 142504 - 200 ml			Customer ID STD
Remarks, Calculations, Results S356 CO3TOC STD# 10712F RESULT 2.95^{E+3} ug/ml STD VAL 3.00^{E+5} %REC 98.3%				
<i>Not King</i>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2/13/95	Time Completed	Lab Unit Mgr	<i>Not King</i>	

54-6800-061 (R-10-83)

Serial No R 6851.-5626	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:33	Priority 25
Determination TOC	Method Standard LA-344-105	Result Units ug C/ML	Charge Code KBLWD	Reruns 0
Sample Size ?	200 ml / 5.12 / 142504 - 200 ml			Customer ID BLK
Remarks, Calculations, Results REAGENT BLANK $< 5.00^{E+0}$ ug C/ml				
<i>Not King</i>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2/13/95	Time Completed	Lab Unit Mgr	<i>Not King</i>	

54-6800-061 (R-10-83)

TOTAL ORGANIC CARBON ANALYSIS

WHC-SD-WM-DP-081
REV 1

Serial No R 6852.-5726	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:37	Priority 25
Determination TOC	Method: Standard LA-344-105	Result Units uG C/ML	Charge Code KELWD	Reruns 0
Sample Size ? 2ml + .200ml .5% H ₂ SO ₄ - .200ml			Customer ID I-1	
Remarks, Calculations, Results 1.55 E+2 uGC/ml M. King				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2/13/95	Time Completed	Lab Unit Mgr

54-6800-061 (R-10-83)

Serial No R 6852.-5826	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:37	Priority 25
Determination TOC	Method: Standard LA-344-105	Result Units uG C/ML	Charge Code KELWD	Reruns 0
Sample Size ? 2ml + .200ml .5% H ₂ SO ₄ - .200ml			Customer ID I-1	
Remarks, Calculations, Results DUPLICATE SAMPLE 1.58 ^{RWS 5-18-95} E+2 uGC/ml 1.58 M. King				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2/13/95	Time Completed	Lab Unit Mgr

54-6800-061 (R-10-83)

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

Serial No R 6852.-5926	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:37	Priority 25
Determination TOC	Method/Standard LA-344-105	Result Units % RECOVERY	Charge Code KBLWD	Repeats 0
Sample Size ? <i>400ml + 200ml, 5% H₂O₄ + 400ml sp. = 200ml</i>			Customer ID I-1	
Remarks, Calculations, Results SAMPLE SPIKED ID SPIKE ID <i>1102E</i> SPIKE VOLUME <i>400ml</i> <i>93.3% rec</i> <i>Mc King</i>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date <i>2/13/95</i>	Time Completed	Lab Unit Mgr		

54-6800-061 (R-10-83)

W H C - S D - W M - D P - 081
REV 1

TOC: LA-344-105

SPIKED SAMPLE

SPIKE

Type	>>>>> Sample Vial Data <<<<<		>>>>> Spiked Vial Data <<<<<	
SPIKE	Sample Volume in mL	2.000	Sample Size in mL (SS)	0.400
Work List	H2SO4 Volume in mL	0.200	Spike Volume in mL	0.400
5385	Volume Injected in mL	0.200	H2SO4 Volume in mL	0.200
Test Code	µg of Carbon in Sample	31.9	Volume Injected in mL	0.200
	µg of Carbon in Blank	3.8	Sample Pre-Spike Dil. Factor (PDF)	1
Matrix			Spike Value (µg/mL)	747
liquid			µg C in Sample + Spike	71.9
Sample #			µg C in Blank	3.8
R6852-5926				
Instrument Code				
WC16130				
Analyst				
King				
Date				
02/13				
Time				
12:45 AM				

$$\text{PERCENT SPIKE RECOVERY} = \frac{\mu\text{g Carbon Recovered from Spike} \times 100}{\mu\text{g Carbon in Spike}}$$

$$\text{WHERE: } \mu\text{g Carbon Recovered from Spike} = \left[(\mu\text{g C in sample} + \text{spike} - \mu\text{g C in blank}) \times (\text{Spike Correction Factor}) \right] - \left[(\mu\text{g C sample} - \mu\text{g C blank}) \times (\text{Sample Correction Factor}) \times (\text{Sample Size Correction Factor}) \times (\text{PDF}) \right]$$

$$\text{Spike Correction Factor} = \frac{\text{Total volume in spiked sample vial (mL)}}{\text{Volume injected (mL)}}$$

$$\text{Sample Correction Factor} = \frac{\text{Total volume in sample vial (mL)}}{\text{Volume injected (mL)}}$$

$$\text{Sample Size Correction Factor} = \frac{\text{Sample size in (mL) in spiked vial}}{\text{Sample size (mL) in sample}}$$

$$\text{Sample Pre-Spike Dilution Factor} = \frac{1}{\text{Dilution of Sample Before Added to Spike Vial}}$$

$$\text{WHERE: } \mu\text{g Carbon in Spike} = \text{Spike Value } (\mu\text{g/mL}) \times \text{Spike Volume (mL)}$$

Percent Spike Recovery 93.3%

Data Entry by: <i>Rw Schroeder</i>	Date: 13-Feb-95
Approved by:	Date:

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

Serial No R 6852.-5026	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:37	Priority 25
Determination TOC	Method-Standard LA-344-105	Result Units % RECOVERY	Charge Code KBLWD	Repeats 0
Sample Size ? .400ml + .200ml, 5% H ₂ SO ₄ + .400ml sp. - .200ml			Customer ID I-1	
Remarks, Calculations, Results SAMPLE SPIKE DUPLICATE SPIKE ID 1111E SPIKE VOL .400ml 90.5% rec <i>Not King</i>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2/13/95	Time Completed	Lab Unit Mgr		

54-6800-061 (R-10-83)

WHC-SO-WM-DP-081
REV 1

TOC: LA-344-105 SPIKED SAMPLE SPIKE

Type	>>>> Sample Vial Data <<<<		>>>> Spiked Vial Data <<<<	
SPIKE	Sample Volume in mL	2.000	Sample Size in mL (SS)	0.400
Work List	H2SO4 Volume in mL	0.200	Spike Volume in mL	0.400
5385	Volume Injected in mL	0.200	H2SO4 Volume in mL	0.200
Test Code	µg of Carbon in Sample	32.5	Volume Injected in mL	0.200
	µg of Carbon in Blank	3.8	Sample Pre-Spike Dil. Factor (PDF)	1
Matrix			Spike Value (µg/mL)	747
liquid			µg C in Sample + Spike	70.5
Sample #			µg C in Blank	3.8
R6852-5026				
Instrument Code				
WC16130				

Analyst King	PERCENT SPIKE RECOVERY = $\frac{\mu\text{g Carbon Recovered from Spike} * 100}{\mu\text{g Carbon in Spike}}$
Date 02/13	WHERE : $\mu\text{g Carbon Recovered from Spike} =$ $[(\mu\text{gC in sample} + \text{spike} - \mu\text{gC in blank}) * (\text{Spike Correction Factor})]$ $- [(\mu\text{gC sample} - \mu\text{gC blank}) * (\text{Sample Correction Factor}) * (\text{Sample Size Correction Factor}) * (\text{PDF})]$
Time 12:45 AM	

$$\text{Spike Correction Factor} = \frac{\text{Total volume in spiked sample vial (mL)}}{\text{Volume injected (mL)}}$$

$$\text{Sample Correction Factor} = \frac{\text{Total volume in sample vial (mL)}}{\text{Volume injected (mL)}}$$

$$\text{Sample Size Correction Factor} = \frac{\text{Sample size in (mL) in spiked vial}}{\text{Sample size (mL) in sample}}$$

$$\text{Sample Pre-Spike Dilution Factor} = \frac{1}{\text{Dilution of Sample Before Added to Spike Vial}}$$

$$\text{WHERE : } \mu\text{g Carbon in Spike} = \text{Spike Value } (\mu\text{g/mL}) * \text{Spike Volume (mL)}$$

Percent Spike Recovery 90.5%

Data Entry by:	<i>Rw Schroeder</i>	Date: 13-Feb-95
Approved by:		Date:

WHC-SD-WM-DP-081
REV 1

54-6800-D61 (R-10-B3)

54-6800-061 (R-10-83)

TOTAL ORGANIC CARBON ANALYSIS

WHC-SD-WM-DP-081

REV 1

Serial No. R 6653.-5526	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:42	Priority 25
Determination TOC	Method-Standard LA-344-105	Result Units % RECOVERY	Charge Code KBLWD	Retuns 0
Sample Size ? .200ml + 2ml 5M H ₂ SO ₄ - .200ml			Customer ID END STD	
Remarks, Calculations Results S356 C03TOC SID#10412F RESULT 3.00 E+3 STD VAL 3.00 E+3 %REC 100.0%				
<i>Not Comp</i>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2/13/95	Time Completed	Lab Unit Mgr	<i>[Signature]</i>	

54-6800-061 (R-10-83)

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

Sample: BLK

Date: 02/07/95

Time: 22:51:00

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = N/A

Analyst : RW KING
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.50	0.00
2	1.01	0.80	37.50
3	1.51	1.20	33.33
4	2.01	1.40	14.29
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	4.50	2.70	11.11
10	5.00	3.00	10.00
11	5.50	3.20	6.25
12	6.00	3.30	3.03
13	6.50	3.60	8.33
14	7.00	3.80	5.26

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 197 TO 206.

BLANK VALUE = 3.8 micrograms carbon
BLANK FACTOR = 3.8 / 7.003052 =

+5.4E-01 ug/min Carbon

Sample Run By:

RW KING

00000

WHC-SD-WM-DP-081
REV 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R6850-5526

Date: 02/07/95

Time: 22:59:47

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BLK

Blank Value = .5426206 ug/minute C

Analyst : RW KING

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.10	0.00
2	1.01	35.10	96.87
3	1.51	48.90	28.22
4	2.01	53.40	8.43
5	2.50	54.90	2.73
6	3.00	55.30	0.72
7	3.50	55.80	0.90
8	4.00	56.10	0.53
9	4.50	56.30	0.36
10	5.00	56.60	0.53
11	5.50	56.90	0.53
12	6.00	57.00	0.18
13	6.50	57.30	0.52
14	7.00	57.50	0.35

BLANK VALUE = 3.8 micrograms carbon

BLANK FACTOR = 3.8 / 7.003052 =

+5.4E-01 ug/min Carbon

SAMPLE RESULTS:

(57.5 - 3.8) (11) / (200) =

+2.95E+00 g/L Carbon

(57.5 - 3.8) (11) / (200) (12) =

+2.46E-01 Molar Carbon

Sample Run By:

RW KING

00000

WHC-SD-WM-DP-081

REV 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R6851-5626

Date: 02/07/95

Time: 23:14:25

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BLK

Blank Value = .5426206 ug/minute C

Analyst : RW KING

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	0.70	85.71
3	1.51	0.90	22.22
4	2.01	1.10	18.18
5	2.51	1.30	15.38
6	3.01	1.60	18.75
7	3.51	1.80	11.11
8	4.01	2.00	10.00
9	4.50	2.20	9.09
10	5.00	2.50	12.00
11	5.50	2.60	3.85
12	6.00	2.90	10.34
13	6.50	3.10	6.45
14	7.00	3.30	6.06

BLANK VALUE = 3.8 micrograms carbon

BLANK FACTOR = 3.8 / 7.003052 =

+5.4E-01 ug/min Carbon

SAMPLE RESULTS:

(3.3 - 3.80053) (1)/(200) =

< 5.00 E-3 g/L Carbon

(3.3 - 3.80053) (1)/(200) (12) =

< 4.17 E-4 Molar Carbon

Sample Run By:

RW KING

00000

WHC-SD-WM-DP-081

REV 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R6852-5726

Date: 02/07/95

Time: 23:35:41

Sample Size = 200 uL

Dil Factor = 1.1

Blank ID # = BLK

Blank Value = .5426206 ug/minute C

Analyst : RW KING

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	2.60	0.00
2	1.01	22.60	88.50
3	1.50	26.80	15.67
4	2.01	28.30	5.30
5	2.50	29.10	2.75
6	3.00	29.70	2.02
7	3.50	30.10	1.33
8	4.00	30.50	1.31
9	4.50	30.60	0.33
10	5.00	30.90	0.97
11	5.50	31.20	0.96
12	6.00	31.40	0.64
13	6.50	31.60	0.63
14	7.00	31.90	0.94

BLANK VALUE = 3.8 micrograms carbon

BLANK FACTOR = 3.8 / 7.003052 =

+5.4E-01 ug/min Carbon

SAMPLE RESULTS:

(31.9 - 3.799934) (1.1) / (200) =

+1.55E-01 g/L Carbon

(31.9 - 3.799934) (1.1) / (200) (12) =

+1.29E-02 Molar Carbon

Sample Run By:

RW KING

00000

WHC-SD-WM-DP-081

REV 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R6852-5826

Date: 02/07/95

Time: 23:43:57

Sample Size = 200 uL

Dil Factor = 1.1

Blank ID # = BLK

Blank Value = .5426206 ug/minute C

Analyst : RW KING

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference
1	0.51	1.60	0.00
2	1.01	22.80	92.98
3	1.51	27.50	17.09
4	2.00	28.70	4.18
5	2.50	29.60	3.04
6	3.00	30.30	2.31
7	3.50	30.70	1.30
8	4.00	31.00	0.97
9	4.50	31.30	0.96
10	5.00	31.50	0.63
11	5.50	31.80	0.94
12	6.00	32.00	0.63
13	6.50	32.20	0.62
14	7.00	32.50	0.92

BLANK VALUE = 3.8 micrograms carbon

BLANK FACTOR = 3.8 / 7.003052 =

+5.4E-01 ug/min Carbon

SAMPLE RESULTS:

(32.5 - 3.8) (1.1) / (200) =

+1.58E-01 g/L Carbon

(32.5 - 3.8) (1.1) / (200) (12) =

+1.32E-02 Molar Carbon

Sample Run By:

RW KING

00000

WHC-SD-WM-DP-081

REV 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R6852-5926

Date: 02/08/95

Time: 00:41:45

Sample Size = 200 uL

Dil Factor = 2.5

Blank ID # = BLK

Blank Value = .5426206 ug/minute C

Analyst : RW KING

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	5.80	0.00
2	1.01	52.30	88.91
3	1.51	62.00	15.65
4	2.01	65.90	5.92
5	2.51	67.80	2.80
6	3.01	69.10	1.88
7	3.51	69.80	1.00
8	4.01	70.30	0.71
9	4.51	70.70	0.57
10	5.00	70.90	0.28
11	5.50	71.20	0.42
12	6.00	71.50	0.42
13	6.51	71.70	0.28
14	7.01	71.90	0.28

BLANK VALUE = 3.8 micrograms carbon

BLANK FACTOR = 3.8 / 7.003052 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:

(71.9 - 3.80106) (2.5) / (200) = +8.51E-01 g/L Carbon
(71.9 - 3.80106) (2.5) / (200) (12) = +7.09E-02 Molar Carbon

Sample Run By:

RW KING

00000

WHC-SD-WM-DP-081

REV 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R6852-5026

Date: 02/08/95

Time: 00:53:05

Sample Size = 200 uL

Dil Factor = 2.5

Blank ID # = BLK

Blank Value = .5426206 ug/minute C

Analyst : RW KING

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	11.10	0.00
2	1.01	52.30	78.78
3	1.51	59.80	12.54
4	2.01	63.10	5.23
5	2.51	65.60	3.81
6	3.01	67.00	2.09
7	3.51	67.80	1.18
8	4.00	68.50	1.02
9	4.51	69.00	0.72
10	5.01	69.40	0.58
11	5.51	69.70	0.43
12	6.01	70.00	0.43
13	6.51	70.30	0.43
14	7.00	70.50	0.28

BLANK VALUE = 3.8 micrograms carbon

BLANK FACTOR = 3.8 / 7.003052 =

+5.4E-01 ug/min Carbon

SAMPLE RESULTS:

(70.5 - 3.800967) (2.5) / (200) =

+8.34E-01 g/L Carbon

(70.5 - 3.800967) (2.5) / (200) (12) =

+6.95E-02 Molar Carbon

Sample Run By:

RW KING

00000

WHC-SD-WM-DP-081

REV 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R6854-5726

Date: 02/08/95

Time: 01:02:33

Sample Size = 200 uL

Dil Factor = 1.1

Blank ID # = BLK

Blank Value = .5426206 ug/minute C

Analyst : RW KING

Min Readings = 14

Max Readings = 14

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.10	0.00
2	1.01	0.90	88.89
3	1.51	1.10	18.18
4	2.01	1.30	15.38
5	2.51	1.60	18.75
6	3.01	1.80	11.11
7	3.51	2.00	10.00
8	4.01	2.20	9.09
9	4.51	2.40	8.33
10	5.01	2.60	7.69
11	5.51	2.90	10.34
12	6.01	3.10	6.45
13	6.51	3.30	6.06
14	7.00	3.50	5.71

BLANK VALUE = 3.8 micrograms carbon

BLANK FACTOR = $3.8 / 7.003052 =$

+5.4E-01 ug/min Carbon

SAMPLE RESULTS:

(3.5 - 3.800967) (1.1) / (200) =

< 5.00 E-3 g/L Carbon

(3.5 - 3.800967) (1.1) / (200) (12) =

< 4.17 E-4 Molar Carbon

Sample Run By:

RW KING

00000

WHC-SD-WM-DP-081

REV 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R6854-5826

Date: 02/08/95

Time: 01:20:18

Sample Size = 200 uL

Dil Factor = 1.1

Blank ID # = BLK

Blank Value = .5426206 ug/minute C

Analyst : RW KING

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	0.60	0.00
2	1.01	0.80	25.00
3	1.50	1.00	20.00
4	2.00	1.20	16.67
5	2.50	1.40	14.29
6	3.00	1.60	12.50
7	3.50	1.70	5.88
8	4.00	2.00	15.00
9	4.50	2.10	4.76
10	5.00	2.40	12.50
11	5.50	2.50	4.00
12	6.00	2.70	7.41
13	6.50	3.00	10.00
14	7.00	3.10	3.23

BLANK VALUE = 3.8 micrograms carbon

BLANK FACTOR = 3.8 / 7.003052 =

+5.4E-01 ug/min Carbon

SAMPLE RESULTS:

(3.1 - 3.798978) (1.1)/(200) =

< 5.00 E-3 g/L Carbon

(3.1 - 3.798978) (1.1)/(200) (12) =

< 4.17 E-4 Molar Carbon

Sample Run By:

RW KING

00000

WHC-SD-WM-DP-081

REV 1

205

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R6853-5526

Date: 02/08/95

Time: 03:46:39

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BLK

Blank Value = .5426206 ug/minute C

Analyst : RW KING

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	3.70	0.00
2	1.01	43.40	91.47
3	1.51	49.70	12.68
4	2.00	51.70	3.87
5	2.50	53.50	3.36
6	3.00	54.50	1.83
7	3.50	55.50	1.80
8	4.01	56.10	1.07
9	4.50	56.60	0.88
10	5.00	57.10	0.88
11	5.50	57.40	0.52
12	6.00	57.80	0.69
13	6.50	58.10	0.52
14	7.00	58.40	0.51

BLANK VALUE = 3.8 micrograms carbon

BLANK FACTOR = 3.8 / 7.003052 =

+5.4E-01 ug/min Carbon

SAMPLE RESULTS:

(58.4 - 3.799984) (11)/(200) =

+3.00E+00 g/L Carbon

(58.4 - 3.799984) (11)/(200) (12) =

+2.50E-01 Molar Carbon

Sample Run By:

RW KING

00000

WHC-SD-WM-DP-081

REV 1

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.
R 6836, R 6837, R 6838Customer ID:
BLANK, I-1, I-TRIPBKAnalysis:
TOTAL INORGANIC CARBONSample Prep:
DIRECT

Instrument: AL-10656

Procedure/ Rev: LA-622-102 / B-2

Technologist: KR MONTEITH

Date: 01/27/95

Starting Time: 00:00

Temperature 25C

Ending Time: 05:00

Chemist: R. SCHROEDER

Comments: BATCH # 5347

	Description	Lab ID
1	LMCS STD	R 6835-5527
2	BLANK	R 6836-5627
3	SAMPLE	R 6837-5727
4	SAMPLE - DUP	R 6837-5827
5	SAMPLE + SPIKE	R 6837-5927
6	SAMPLE + SPIKE - DUP	R 6837-5027
7	SAMPLE	R 6838-5727
8	SAMPLE - DUP	R 6838-5827
9	LMCS STD	R 6839-5527
10		

	Description	Lab ID
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	15N12-E / .200ml			
SPIKE	15N12-E / .400ml			

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Date 5347

Serial No R 6835.-5527	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:22	Priority 25
Determination TIC	Method-Standard LA-622-102	Result Units % RECOVERY	Charge Code KBLWD	Reruns 0
Sample Size ?.200ml			Customer ID STD	
Remarks, Calculations, Results S223 C03 STD# 15N12E RESULT 5.85E+2 STD VAL 6.00E+2 % REC 97.50%				
Analyst <i>[Signature]</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-27-95	Time Completed	Lab Unit Mgr 1/30/95 <i>[Signature]</i>		

54-6800-051 (R-10-83)

TIC : LA-622-102 (B-2)		LIQUIDS	STANDARD
Type	Sample Volume in mL	(SS)	0.200
STANDARD	Dilution Factor	(DF)	1.000
Work List	Digest Dilution Factor	(DDF)	1.000
5347	µg of Carbon in Sample	(C1)	122.7
Test Code	µg of Carbon in Blank	(C2)	5.7
Matrix			
LIQUID	g of Carbon/L	=	5.85E-01
Sample #			
R6835-5527	g of Carbon/L	=	$\frac{(C1-C2) * DF * DDF}{SS * 1000}$
Instrument Code			
AL10656	µg of Carbon/mL	=	g of Carbon/L * 1000000 µg/g / 1000 m
Analyst			
K. MONTEITH			
Date			
01/27/95	Detection Level (µg/mL)	=	$\frac{1 \mu g C * DF * DDF}{SS}$
Time			
12:00 AM			

µg Carbon/mL =	5.85E+02	DETECTION LEVEL
		in µg/mL
		5.00E+00

Data Entry by: <i>[Signature]</i>	Date: 01/27/95
Approved by: <i>[Signature]</i>	Date: 1/30/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No. R 6836.-5627	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:24	Priority 25
Determination TIC	Method/Standard LA-622-102	Result Units ug C/ML	Charge Code KBLWD	Reruns 0
Sample Size ? .200ml			Customer ID PLANK	
Remarks, Calculations, Results: REAGENT BLANK <div style="text-align: center; font-size: 1.2em;"> $< 5.00 \text{ ug C/ml}$ </div>				
Analyst 	Analyst 	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-27-95	Time Completed	Lab Unit Mgr 1/30/95 		

54-6800-067 (R-10-63)

TIC : LA-622-102 (B-2)

LIQUIDS

		BLANK
Type	Sample Volume in mL (SS)	0.200
BLANK	Dilution Factor (DF)	1.000
Work List	Digest Dilution Factor (DDF)	1.000
5347	ug of Carbon in Sample (C1)	5.8
Test Code	ug of Carbon in Blank (C2)	5.69769
Matrix		
LIQUID	g of Carbon/L =	< 5.00E-03
Sample #	g of Carbon/L =	$\frac{(C1-C2) * DF * DDF}{SS * 1000}$
R6836-5627		
Instrument Code	ug of Carbon/mL =	g of Carbon/L * 1000000 ug/g / 1000 m
AL10656		
Analyst		
K. MONTEITH		
Date	Detection Level (ug/mL) =	$\frac{1 \text{ ug C} * DF * DDF}{SS}$
01/27/95		
Time		
12:00 AM		

NOTE: Reported Result is Below Detection Level.

ug Carbon/mL =	< 5.00E+00	DETECTION LEVEL
		in ug/mL
		5.00E+00

Data Entry by:	Date: 01/27/95
Approved by:	Date: 1/30/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No. R 6837.-5727	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:26	Priority 25
Determination TIC	Method/Standard LA-622-102	Result Units ug C/ML	Charge Code KBLWD	Reruns 0
Sample Size ? .200ml			Customer ID I-1	
Remarks, Calculations, Results 1.71E+2 ug C/ml				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-27-95	Time Completed	Lab Unit Mgr 1/30/95

54-6800-061 (R-10-83)

TIC : LA-622-102 (B-2)		LIQUIDS	SAMPLE
Type	Sample Volume in mL	(SS)	0.200
SAMPLE	Dilution Factor	(DF)	1.000
Work List	Digest Dilution Factor	(DDF)	1.000
5347	ug of Carbon in Sample	(C1)	39.8
Test Code	ug of Carbon in Blank	(C2)	5.69769
Matrix			
LIQUID	g of Carbon/L	=	1.71E-01
Sample #			
R6837-5727	g of Carbon/L	=	$\frac{(C1-C2) * DF * DDF}{SS * 1000}$
Instrument Code			
AL10656			
Analyst	ug of Carbon/mL	=	g of Carbon/L * 1000000 ug/g / 1000 m
K. MONTEITH			
Date			
01/27/95	Detection Level (ug/mL)	=	$\frac{1 \text{ ug C} * DF * DDF}{SS}$
Time			
12:00 AM			

ug Carbon/mL =	1.71E+02	DETECTION LEVEL
		in ug/mL 5.00E+00

Data Entry by:	Date: 01/27/95
Approved by:	Date: 1/30/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No. R 6837.-5827	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:26	Priority 25
Determination TIC	Method-Standard LA-622-102	Result Units ug C/ML	Charge Code KBLWD	Reruns 0
Sample Size ?.200 ml			Customer ID I-1	
Remarks, Calculations, Results DUPLICATE SAMPLE 1.48E+2 ug C/ml
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-27-95	Time Completed	Lab Unit Mgr 1/30/95

54-6800-061 (R-10-83)

TIC : LA-622-102 (B-2)

LIQUIDS

		SAMPLE
Type	Sample Volume in mL (SS)	0.200
SAMPLE	Dilution Factor (DF)	1.000
Work List	Digest Dilution Factor (DDF)	1.000
5347	ug of Carbon in Sample (C1)	39.3
Test Code	ug of Carbon in Blank (C2)	5.69769
Matrix		
LIQUID	g of Carbon/L =	1.68E-01
Sample #		
R6837-5827	g of Carbon/L =	$\frac{(C1-C2) * DF * DDF}{SS * 1000}$
Instrument Code		
AL10656		
Analyst	ug of Carbon/mL =	g of Carbon/L * 1000000 ug/g / 1000 m
K. MONTEITH		
Date		
01/27/95	Detection Level (ug/mL) =	$\frac{1 \text{ ug C} * DF * DDF}{SS}$
Time		
12:00 AM		

ug Carbon/mL = 1.68E+02	DETECTION LEVEL
	in ug/mL 5.00E+00

Data Entry by:	Date: 01/27/95
Approved by:	Date: 1/27/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No. R 6837.-5927	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:26	Priority 25
Determination TIC	Method/Standard LA-622-102	Result Units % RECOVERY	Charge Code KBLWD	Reruns 0
Sample Size ? .400 _{ml} + .400 _{ml} - .200 _{ml}			Customer ID I-1	
Remarks, Calculations, Results SAMPLE SPIKED ID SPIKE ID 15N12E SPIKE VOLUME .400 _{ml} 80.5% RWS 1/30/95 97.9% rec				
Analyst - 1 	Analyst - 2 	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-22-95	Time Completed	Lab Unit Mgr 1/30/95 RW Schneider		

WHC-SD-WM-DP-081
REV 1

54-6800-071 (R-10-83)

TIC : LA-622-102 (B-2)

SPIKED SAMPLE

SPIKE

Type	>>>>> Sample Vial Data <<<<<	>>>>> Spiked Vial Data <<<<<
SPIKE	Sample Volume in mL	0.200
Work List	µg of Carbon in Sample	39.8
5347	µg of Carbon in Blank	5.7
Test Code		Spike Value (µg/mL)
TIC		µg C in Sample + Spike
Matrix		µg C in Blank
Liquid		
Sample #		
R6837-5927	PERCENT SPIKE RECOVERY = $\frac{\mu\text{g Carbon Recovered from Spike} \cdot 100}{\mu\text{g Carbon in Spike}}$	
Instrument Code	WHERE : $\mu\text{g Carbon Recovered from Spike} =$	
AL10656	[(µgC in sample + spike - µgC in blank) • (Spike Correction Factor)]	
Analyst	- [(µgC sample - µgC blank) • (Sample Size Correction Factor)]	
K.Montieth	Spike Correction Factor = $\frac{\text{Total volume in spiked sample vial (mL)}}{\text{Volume injected (mL)}}$	
Date	Sample Size Correction Factor = $\frac{\text{Sample size in (mL) in spiked vial}}{\text{Sample size (mL) in sample}}$	
01/27/95	WHERE : $\mu\text{g Carbon in Spike} =$	
Time	[Spike Value (µg/mL) • Spike Volume (mL)]	
12:00 AM		

Percent Spike Recovery = 97.9%

Data Entry by:		Date:	01/30/95
Approved by:		Date:	1/30/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No R 6837.-5027	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:26	Priority 25
Determination TIC	Method/Standard LA-622-102	Result Units % RECOVERY	Charge Code KBLWD	Reruns 0
Sample Size ?.400 _{mL} + .400 _{mL} - .200 _{mL}			Customer ID I-1	
Remarks, Calculations, Results SAMPLE SPIKE DUPLICATE SPIKE ID 15N125 SPIKE VOL .400 _{mL} 80.5% RWS 1/30/95 97.9% rec				
Analyst - 1 	Analyst - 2 	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-27-95	Time Completed -	Lab Unit Mgr 1/30/95 RW Schaefer		

W HC-SO-WM-DP-081
REV 1

54-6800-091 (R-10-83)

TIC : LA-622-102 (B-2)

SPIKED SAMPLE

SPIKE

Type	>>>>> Sample Vial Data <<<<<		>>>>> Spiked Vial Data <<<<<	
SPIKE	Sample Volume in mL	0.200	Sample Volume in mL	0.400
Work List	ug of Carbon in Sample	39.8	Spike Volume in mL	0.400
5347	ug of Carbon in Blank	5.7	Volume Injected in mL	0.200
Test Code			Spike Value (ug/mL)	600
TIC			ug C in Sample + Spike	81.5
Matrix			ug C in Blank	5.7
Liquid				
Sample #				
R6837-5027				
Instrument Code				
AL10656				
Analyst				
K.Montieth				
Date				
01/27/95				
Time				
12:00 AM				

PERCENT SPIKE RECOVERY = $\frac{\mu\text{g Carbon Recovered from Spike} \cdot 100}{\mu\text{g Carbon in Spike}}$

WHERE : $\mu\text{g Carbon Recovered from Spike} =$
 $[(\mu\text{gC in sample} + \text{spike} - \mu\text{gC in blank}) \cdot (\text{Spike Correction Factor})]$
 $- [(\mu\text{gC sample} - \mu\text{gC blank}) \cdot (\text{Sample Size Correction Factor})]$

Spike Correction Factor = $\frac{\text{Total volume in spiked sample vial (mL)}}{\text{Volume injected (mL)}}$

Sample Size Correction Factor = $\frac{\text{Sample size in (mL) in spiked vial}}{\text{Sample size (mL) in sample}}$

WHERE : $\mu\text{g Carbon in Spike} =$
 $[\text{Spike Value } (\mu\text{g/mL}) \cdot \text{Spike Volume (mL)}]$

Percent Spike Recovery = 97.9%

Data Entry by:	RW Schaefer	Date:	01/30/95
Approved by:	RW Schaefer	Date:	1/30/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No R 6838.-5727	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:31	Priority 25
Determination TIC	Method/Standard LA-622-102	Result Units ug C/ML	Charge Code KBLWD	Reruns 0
Sample Size ? .200ml			Customer ID I-TRIPBK	
Remarks, Calculations, Results <div style="text-align: center; font-size: 1.2em;"> $< 5.00E^{+00} \text{ ug C/ml}$ </div>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-27-95	Time Completed	Lab Unit Mgr 1/30/95

54-6800-001 (R-10-83)

TIC : LA-622-102 (B-2)		LIQUIDS		SAMPLE
Type	Sample Volume in mL	(SS)		0.200
SAMPLE	Dilution Factor	(DF)		1.000
Work List	Digest Dilution Factor	(DDF)		1.000
5347	ug of Carbon in Sample	(C1)		5.3
Test Code	ug of Carbon in Blank	(C2)		5.69769
Matrix				
LIQUID	g of Carbon/L	=	<	5.00E-03
Sample #	g of Carbon/L	=	$\frac{(C1-C2) * DF * DDF}{SS * 1000}$	
R6838-5727	ug of Carbon/mL	=	g of Carbon/L * 1000000 ug/g / 1000 m	
Instrument Code	Detection Level (ug/mL)	=	$\frac{1 \text{ ug C} * DF * DDF}{SS}$	
AL10656				
Analyst				
K. MONTEITH				
Date				
01/27/95				
Time				
12:00 AM				

NOTE: Reported Result is Below Detection Level.

ug Carbon/mL =	< 5.00E+00	DETECTION LEVEL
		in ug/mL
		5.00E+00

Data Entry by:		Date:	01/27/95
Approved by:		Date:	1/30/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No R 6838.-5827	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:31	Priority 25
Determination TIC	Method/Standard LA-622-102	Result Units ug C/ML	Charge Code KBLWD	Reruns 0
Sample Size ? .200ml			Customer ID I-TRIPBK	
Remarks, Calculations, Results DUPLICATE SAMPLE 25.20E+00 ug C/ml
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-27-95	Time Completed	Lab Unit Mgr 1/30/95

54-6800-651 (R-10-83)

WHC-SD-WM-DP-081
REV 1

TIC : LA-622-102 (B-2)		LIQUIDS		SAMPLE
Type	Sample Volume in mL	(SS)		0.200
SAMPLE	Dilution Factor	(DF)		1.000
Work List	Digest Dilution Factor	(DDF)		1.000
5347	ug of Carbon in Sample	(C1)		5.1
Test Code	ug of Carbon in Blank	(C2)		5.69769
Matrix				
LIQUID	g of Carbon/L	=	<	5.00E-03
Sample #	g of Carbon/L	=	$\frac{(C1-C2) * DF * DDF}{SS * 1000}$	
R6838-5827				
Instrument Code				
AL10656				
Analyst	ug of Carbon/mL	=	g of Carbon/L * 1000000 ug/g / 1000 m	
K. MONTEITH				
Date	Detection Level (ug/mL)	=	$\frac{1 \text{ ug C} * DF * DDF}{SS}$	
01/27/95				
Time				
12:00 AM				

NOTE: Reported Result is Below Detection Level.

ug Carbon/mL =	< 5.00E+00	DETECTION LEVEL
		in ug/mL 5.00E+00

Data Entry by:	Date: 01/27/95
Approved by:	Date: 1/30/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No R 6839.-5527	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:34	Priority 25
Determination TIC	Method/Standard LA-622-102	Result Units % RECOVERY	Charge Code KBLWD	Retuns 0
Sample Size ?.200mc			Customer ID STD	
Remarks, Calculations, Results S223 C03 STD# 15N12E RESULT 5.87E+2 STD VAL 6.000E+2 % REC 97.83%				
Analyst - 1 <i>[Signature]</i>	Analyst - 2 <i>[Signature]</i>	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-27-95	Time Completed	Lab Unit Mgr 1/30/95 <i>[Signature]</i>		

54-0000-061 (A-10-83)

WHC-SD-WM-DP-081
 REV 1

TIC : LA-622-102 (B-2)		LIQUIDS	STANDARD
Type	Sample Volume in mL	(SS)	0.200
STANDARD	Dilution Factor	(DF)	1.000
Work List	Digest Dilution Factor	(DDF)	1.000
5347	µg of Carbon in Sample	(C1)	123.1
Test Code	µg of Carbon in Blank	(C2)	5.69769
Matrix			
LIQUID	g of Carbon/L	=	5.87E-01
Sample #			
R6839-5527	g of Carbon/L	=	$\frac{(C1-C2) * DF * DDF}{SS * 1000}$
Instrument Code			
AL10656	µg of Carbon/mL	=	g of Carbon/L * 1000000 µg/g / 1000 m
Analyst			
K. MONTEITH			
Date			
01/27/95	Detection Level (µg/mL)	=	$\frac{1 \mu g C * DF * DDF}{SS}$
Time			
12:00 AM			

µg Carbon/mL =	5.87E+02	DETECTION LEVEL
		in µg/mL
		5.00E+00

Data Entry by: <i>[Signature]</i>	Date: 01/27/95
Approved by: <i>[Signature]</i>	Date: 1/20/95

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
<<< BLANK ANALYSIS >>>

Sample: BLK

Date: 01/27/95

Time: 03:21:48

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	1.51	1.50	33.33
4	2.01	1.90	21.05
5	2.51	2.30	17.39
6	3.01	2.80	17.86
7	3.51	3.20	12.50
8	4.00	3.50	8.57
9	4.50	3.90	10.26
10	5.00	4.20	7.14
11	5.50	4.70	10.64
12	6.00	5.00	6.00
13	6.50	5.40	7.41
14	7.00	5.70	5.26

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 217 TO 226.

BLANK VALUE = 5.7 micrograms carbon
BLANK FACTOR = $5.7 / 7.004837 =$

+8.1E-01 ug/min Carbon

Sample Run By:

KR MONTEITH

00000

1-27-95

WHC-SD-WM-DP-081
REV 1

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 6836-5627

Date: 01/27/95

Time: 03:40:07

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BLK

Blank Value = .8137234 ug/minute C

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	0.90	66.67
3	1.50	1.50	40.00
4	2.00	1.80	16.67
5	2.50	2.20	18.18
6	3.00	2.60	15.38
7	3.50	3.00	13.33
8	4.00	3.40	11.76
9	4.50	3.80	10.53
10	5.00	4.20	9.52
11	5.50	4.60	8.70
12	6.00	5.10	9.80
13	6.50	5.40	5.56
14	7.00	5.80	6.90

BLANK VALUE = 5.7 micrograms carbon

BLANK FACTOR = 5.7 / 7.004837 =

+8.1E-01 ug/min Carbon

SAMPLE RESULTS:

(5.8 - 5.69769) (1) / (200) =

< 5.00 E-3 g/L Carbon

(5.8 - 5.69769) (1) / (200) (12) =

< 4.17 E-4 Molar Carbon

Sample Run By:

KR MONTEITH

00000

WHC-SD-WM-DP-081

REV 1

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD

Date: 01/27/95

Time: 04:41:50

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BLK

Blank Value = .8137234 ug/minute C

Analyst : KR MONTEITH

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	2.20	0.00
2	1.00	43.80	94.98
3	1.50	80.50	45.59
4	2.00	101.60	20.77
5	2.50	111.80	9.12
6	3.00	116.90	4.36
7	3.50	119.20	1.93
8	4.00	120.50	1.08
9	4.50	121.30	0.66
10	5.00	121.70	0.33
11	5.50	122.20	0.41
12	6.00	122.50	0.24
13	6.50	122.90	0.33
14	7.00	123.10	0.16

BLANK VALUE = 5.7 micrograms carbon

BLANK FACTOR = 5.7 / 7.004837 =

+8.1E-01 ug/min Carbon

SAMPLE RESULTS:

(123.1 - 5.696982) (1)/(200) =

+5.870E-01 g/L Carbon

(123.1 - 5.696982) (1)/(200) (12) =

+4.892E-02 Molar Carbon

Sample Run By:

KR MONTEITH

00000

WHC-SD-WM-DP-081
REV 1

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD

Date: 01/27/95

Time: 03:30:30

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BLK

Blank Value = .8137234 ug/minute C

Analyst : KR MONTEITH

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.80	0.00
2	1.01	37.60	97.87
3	1.51	82.90	54.64
4	2.00	105.50	21.42
5	2.50	114.50	7.86
6	3.00	118.20	3.13
7	3.50	119.30	0.92
8	4.00	119.90	0.50
9	4.50	120.50	0.50
10	5.00	121.00	0.41
11	5.50	121.40	0.33
12	6.00	121.80	0.33
13	6.50	122.30	0.41
14	7.00	122.70	0.33

BLANK VALUE = 5.7 micrograms carbon

BLANK FACTOR = 5.7 / 7.004837 =

+8.1E-01 ug/min Carbon

SAMPLE RESULTS:

(122.7 - 5.698522) (1) / (200) =

+5.850E-01 g/L Carbon

(122.7 - 5.698522) (1) / (200) (12) =

+4.875E-02 Molar Carbon

Sample Run By:

WHC-SD-WM-DP-081
REV 1

KR MONTEITH

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Date: 01/27/95

Time: 03:48:14

Dil Factor = 1

Blank Value = .8137234 ug/minute C

Min Readings = 14

Max Readings = 14

$$\% \text{ Difference} = 10$$
[illegible]

1	0.51	0.90	0.00
2	1.01	13.50	93.33
3	1.50	25.90	47.88
4	2.01	32.10	19.31
5	2.51	34.80	7.76
6	3.01	36.20	3.87
7	3.50	36.80	1.63
8	4.00	37.30	1.34
9	4.50	37.70	1.06
10	5.00	38.20	1.31
11	5.50	38.50	0.78
12	6.00	39.10	1.53
13	6.50	39.40	0.76
14	7.00	39.80	1.01

$$\text{BLANK FACTOR} = 5.7 / 7.004837 =$$

+8.1E-01 ug/min Carbon

SAMPLE RESULTS:

$$\begin{aligned} & (39.8 - 5.698497)(1)/(200) = \\ & (39.8 - 5.698497)(1)/(200)(12) = \end{aligned}$$

+1.71E-01	g/L Carbon
+1.42E-02	Molar Carbon

Sample Run By:

WHC-SD-WM-DP-081
REV 1

KR MONTEITH

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 6837-5827

Date: 01/27/95

Time: 03:56:36

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BLK

Blank Value = .8137234 ug/minute C

Analyst : KR MONTEITH

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.90	0.00
2	1.00	14.20	93.66
3	1.50	25.40	44.09
4	2.00	31.60	19.62
5	2.50	34.40	8.14
6	3.00	35.60	3.37
7	3.50	36.40	2.20
8	4.00	36.80	1.09
9	4.50	37.40	1.60
10	5.00	37.70	0.80
11	5.50	38.10	1.05
12	6.00	38.50	1.04
13	6.50	38.90	1.03
14	7.00	39.30	1.02

BLANK VALUE = 5.7 micrograms carbon

BLANK FACTOR = 5.7 / 7.004837 =

+8.1E-01 ug/min Carbon

SAMPLE RESULTS:

(39.3 - 5.69702) (1) / (200) =

+1.68E-01 g/L Carbon

(39.3 - 5.69702) (1) / (200) (12) =

+1.40E-02 Molar Carbon

Sample Run By:

KR MONTEITH

00000

WHC-SD-WM-DP-081

REV 1

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 6837-5927

Date: 01/27/95

Time: 04:04:32

Sample Size = 200 uL

Dil Factor = 2

Blank ID # = BLK

Blank Value = .8137234 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	30.80	95.45
3	1.51	55.20	44.20
4	2.00	68.20	19.06
5	2.50	74.20	8.09
6	3.00	76.80	3.39
7	3.50	78.10	1.66
8	4.00	78.80	0.89
9	4.50	79.40	0.76
10	5.00	79.90	0.63
11	5.50	80.20	0.37
12	6.00	80.60	0.50
13	6.50	81.10	0.62
14	7.00	81.50	0.49

BLANK VALUE = 5.7 micrograms carbon

BLANK FACTOR = 5.7 / 7.004837 =

+8.1E-01 ug/min Carbon

SAMPLE RESULTS:

(81.5 - 5.698497) (2) / (200) =

+7.58E-01 g/L Carbon

(81.5 - 5.698497) (2) / (200) (12) =

+6.32E-02 Molar Carbon

Sample Run By:

KR MONTEITH

00000

WHC-SD-WM-DP-081

REV 1

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 6837-5027 Date: 01/27/95 Time: 04:12:28

Sample Size = 200 uL	Analyst : KR MONTEITH
Dil Factor = 2	Min Readings = 14
Blank ID # = BLK	Max Readings = 14
Blank Value = .8137234 ug/minute C	% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.50	0.00
2	1.01	30.00	95.00
3	1.51	54.70	45.16
4	2.00	67.80	19.32
5	2.50	74.10	8.50
6	3.00	77.00	3.77
7	3.50	78.30	1.66
8	4.00	79.00	0.89
9	4.50	79.50	0.63
10	5.00	80.00	0.63
11	5.50	80.40	0.50
12	6.00	80.80	0.50
13	6.50	81.10	0.37
14	7.00	81.50	0.49

BLANK VALUE = 5.7 micrograms carbon

BLANK FACTOR = 5.7 / 7.004837 = +8.1E-01 ug/min Carbon

SAMPLE RESULTS:

(81.5 - 5.697827) (2) / (200) =	+7.58E-01	g/L Carbon
(81.5 - 5.697827) (2) / (200) (12) =	+6.32E-02	Molar Carbon

Sample Run By:

KR MONTEITH

00000

WHC-SD-WM-DP-081
REV 1

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 6838-5727

Date: 01/27/95

Time: 04:22:16

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BLK

Blank Value = .8137234 ug/minute C

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	0.80	62.50
3	1.50	1.20	33.33
4	2.00	1.70	29.41
5	2.50	2.00	15.00
6	3.01	2.40	16.67
7	3.51	2.70	11.11
8	4.00	3.20	15.63
9	4.50	3.40	5.88
10	5.00	3.90	12.82
11	5.50	4.10	4.88
12	6.00	4.60	10.87
13	6.50	4.90	6.12
14	7.00	5.30	7.55

BLANK VALUE = 5.7 micrograms carbon

BLANK FACTOR = 5.7 / 7.004837 =

+8.1E-01 ug/min Carbon

SAMPLE RESULTS:

(5.3 - 5.699193) (1)/(200) =

< 5.00 E-3 g/L Carbon

(5.3 - 5.699193) (1)/(200) (12) =

< 4.17 E-4 Molar Carbon

Sample Run By:

KR MONTEITH

00000

WHC-SD-WM-DP-081

REV 1

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 6838-5827

Date: 01/27/95

Time: 04:33:28

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BLK

Blank Value = .8137234 ug/minute C

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	0.80	62.50
3	1.51	1.30	38.46
4	2.01	1.60	18.75
5	2.51	2.10	23.81
6	3.01	2.30	8.70
7	3.51	2.70	14.81
8	4.01	3.00	10.00
9	4.50	3.40	11.76
10	5.00	3.60	5.56
11	5.50	4.00	10.00
12	6.00	4.40	9.09
13	6.50	4.70	6.38
14	7.00	5.10	7.84

BLANK VALUE = 5.7 micrograms carbon

BLANK FACTOR = 5.7 / 7.004837 =

+8.1E-01 ug/min Carbon

SAMPLE RESULTS:

(5.1 - 5.699317) (1)/(200) =

< 5.00 E-3 g/L Carbon

(5.1 - 5.699317) (1)/(200) (12) :=

< 4.17 E-4 Molar Carbon

Sample Run By:

KR MONTEITH

00000

WHC-SD-WM-DP-081

REV 1

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No. R6850-R6854	Customer ID: STD, BLK, I-1, TRIP BLK, END STD
Analysis: TIC	Sample Prep: DIRECT LIQ.

Instrument: AL-10656	Procedure/ Rev: LA-622-102 / B-2
Technologist: RW KING <i>Roh King</i>	Date: 02/12/95
Starting Time: 0300	Temperature N/A
Ending Time: 0700	Chemist: R. SCHROEDER

Comments: BATCH #5386

	Description	Lab ID		Description	Lab ID
1	LMCS STD	R 6850-5527	11		
2	REAGENT BLANK	R 6851-5627	12		
3	SAMPLE	R 6852-5727	13		
4	SAMPLE DUP	R 6852-5827	14		
5	SAMPLE SPIKE	R 6852-5927	15		
6	SAMPLE SPIKE DUP	R 6852-5027	16		
7	SAMPLE	R 6854-5727	17		
8	SAMPLE DUP	R 6854-5827	18		
9	LMCS END STD	R 6853-5527	19		
10			20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS STD	15N12-E / .200ml			
LMCS SPIKE	15N12-E / .400ML			

TOTAL INORGANIC CARBON ANALYSIS

Batch 5386

Serial No. R 6850.-5527	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:31	Priority 25
Determination TIC	Method/Standard LA-622-102	Result Units % RECOVERY	Charge Code KBLWD	Reruns 0
Sample Size ? <i>.200 ml</i>			Customer ID STD	
Remarks, Calculations, Results S223 CO3 STD# <i>15H12E</i> RESULT <i>5.92^{E02}</i> STD VAL <i>6.00^{E02}</i> % REC <i>98.7</i> <i>Rob King</i>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date <i>2/12/95</i>	Time Completed	Lab Unit Mgr <i>Paul Ball</i>	<i>2/13/95</i> <i>Paul Ball</i>	

54-6800-061 (R-10-83)

Serial No. R 6851.-5627	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:33	Priority 25
Determination TIC	Method/Standard LA-622-102	Result Units $\mu\text{G C/ML}$	Charge Code KBLWD	Reruns 0
Sample Size ? <i>.200 ml</i>			Customer ID BLX	
Remarks, Calculations, Results REAGENT BLANK <i>< 5.00 $\mu\text{g C/mL}$</i> <i>Rob King</i>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date <i>2/12/95</i>	Time Completed	Lab Unit Mgr <i>Paul Ball</i>	<i>2/13/95</i> <i>Paul Ball</i>	

54-6800-061 (R-10-83)

WHC-SD-WM-DP-081
REV 1
TOTAL INORGANIC CARBON ANALYSIS

Serial No. R 6854.-5727	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:46	Priority 25
Determination TIC	Method/Standard LA-622-102	Result Units uG C/ML	Charge Code KELWD	Reruns 0
Sample Size ? .200ml			Customer ID TRIP BLK	
<p>Remarks, Calculations, Results</p> <p>< 5.00 uG C/mL</p> <p><i>Wob King</i></p>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2/12/95	Time Completed	Lab Unit Mgr <i>Paul Ball</i> 2/13/95		<i>John H. Smith</i>

54-6800-061 (R-10-83)

Serial No. R 6854.-5627	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:46	Priority 25
Determination TIC	Method/Standard LA-622-102	Result Units uG C/ML	Charge Code KELWD	Reruns 0
Sample Size ? .200ml			Customer ID TRIP BLK	
<p>Remarks, Calculations, Results</p> <p>DUPLICATE SAMPLE</p> <p>< 5.00 uG C/mL</p> <p><i>Wob King</i></p>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2/12/95	Time Completed	Lab Unit Mgr <i>Paul Ball</i> 2/13/95		<i>John H. Smith</i>

54-6800-061 (R-10-83)

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No. R 6852.-5927	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:37	Priority 25
Determination TIC	Method-Standard LA-622-102	Result Units % RECOVERY	Charge Code KELWD	Reruns 0
Sample Size ?	.200 ml			Customer ID I-1
Remarks, Calculations Results SAMPLE SPIKED ID SPIKE ID 1512-E SPIKE VOLUME .400 ml 97.0 % Recovery <i>Wob King</i>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2/12/95	Time Completed	Lab/Unit Mgr <i>Wob King</i>	2/13/95 <i>Wob King</i>	

54-6800-061 (R-10-83)

TIC : LA-622-102 (B-2)

SPIKED SAMPLE

SPIKE

Type	>>>>> Sample Vial Data <<<<<		>>>>> Spiked Vial Data <<<<<	
SPIKE	Sample Volume in mL	0.200	Sample Volume in mL	0.200
Work List	ug of Carbon in Sample	18.9	Spike Volume in mL	0.400
BATCH #5386	ug of Carbon in Blank	3.4	Volume Injected in mL	0.200
Test Code			Spike Value (ug/mL)	600
Matrix			ug C in Sample + Spike	86.2
LIQUID			ug C in Blank	3.4

Sample #
R6852-5927
Instrument Code
Analyst
R.W. King
Date
02/12/95
Time
07:00 AM

PERCENT SPIKE RECOVERY = $\frac{\text{ug Carbon Recovered from Spike} \cdot 100}{\text{ug Carbon in Spike}}$

WHERE : $\text{ug Carbon Recovered from Spike} = [(\text{ugC in sample} + \text{spike} - \text{ugC in blank}) \cdot (\text{Spike Correction Factor})] - [(\text{ugC sample} - \text{ugC blank}) \cdot (\text{Sample Size Correction Factor})]$

Spike Correction Factor = $\frac{\text{Total volume in spiked sample vial (mL)}}{\text{Volume injected (mL)}}$

Sample Size Correction Factor = $\frac{\text{Sample size in (mL) in spiked vial}}{\text{Sample size (mL) in sample}}$

WHERE : $\text{ug Carbon in Spike} = [\text{Spike Value (ug/mL)} \cdot \text{Spike Volume (mL)}]$

Percent Spike Recovery = 97.0%

Data Entry by: <i>Dany</i>	Date: 02/12/95
Approved by: <i>Wob King</i>	Date: 2/13/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No R 6852.-5027	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:37	Priority 25
Determination 110	Method-Standard LA-622-102	Result Units % RECOVERY	Charge Code RELWD	Reruns 0
Sample Size ?	.200mL			Customer ID I-1
Remarks Calculations, Results SAMPLE SPIKE DUPLICATE SPIKE ID 15N12E SPIKE VOL .400mL 99.6 % Recovery Moh King				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2/12/95	Time Completed	Laboratory Unit Mgr 2/12/95	Signature	

54-6800-061 (R-10-83)

TIC : LA-622-102 (B-2)

SPIKED SAMPLE

SPIKE

Type	Sample Vial Data	Spiked Vial Data
SPIKE	Sample Volume in mL 0.200	Sample Volume in mL 0.200
Work List	µg of Carbon in Sample 19	Spike Volume in mL 0.400
BATCH #5386	µg of Carbon in Blank 3.4	Volume Injected in mL 0.200
Test Code		Spike Value (µg/mL) 600
Matrix		µg C in Sample + Spike 88.3
LIQUID		µg C in Blank 3.4

Sample #	R6852-5027
Instrument Code	
Analyst	R.W. King
Date	02/12/95
Time	07:00 AM

PERCENT SPIKE RECOVERY = $\frac{\mu\text{g Carbon Recovered from Spike} \times 100}{\mu\text{g Carbon in Spike}}$

WHERE : $\mu\text{g Carbon Recovered from Spike} =$
 $[(\mu\text{gC in sample} + \mu\text{gC in spike} - \mu\text{gC in blank}) \times (\text{Spike Correction Factor})]$
 $- [(\mu\text{gC sample} - \mu\text{gC blank}) \times (\text{Sample Size Correction Factor})]$

Spike Correction Factor = $\frac{\text{Total volume in spiked sample vial (mL)}}{\text{Volume injected (mL)}}$

Sample Size Correction Factor = $\frac{\text{Sample size in (mL) in spiked vial}}{\text{Sample size (mL) in sample}}$

WHERE : $\mu\text{g Carbon in Spike} =$
 $[\text{Spike Value } (\mu\text{g/mL}) \times \text{Spike Volume (mL)}]$

Percent Spike Recovery = 99.6%

Data Entry by:	Signature	Date:	02/12/95
Approved by:	Signature	Date:	2/12/95

WHC-SD-WM-DP-081
REV 1
TOTAL INORGANIC CARBON ANALYSIS

Serial No. R 6854.-5727		Sample Point TANK 9-1		Date 1-23-95		Time Issued 10:46		Priority 25	
Determination TIC		Method-Standard LA-622-102		Result Units uG C/ML		Charge Code KBLWD		Reruns 0	
Sample Size ? .200ml						Customer ID TRIP BLK			
Remarks, Calculations, Results <p style="text-align: center;">< 5.00 uG C/mL</p>									
Analyst - 1 <i>Wob King</i>		Analyst - 2		Analyst - 3		Analyst - 4		Analyst - 5	
Hrs		Hrs		Hrs		Hrs		Hrs	
Date 2/12/95		Time Completed		Lab Unit Mgr <i>Bob Ball</i> 2/13/95		<i>[Signature]</i>			

54-6800-061 (R-10-83)

Serial No. R 6854.-5827		Sample Point TANK 9-1		Date 1-23-95		Time Issued 10:46		Priority 25	
Determination TIC		Method-Standard LA-622-102		Result Units uG C/ML		Charge Code KBLWD		Reruns 0	
Sample Size ? .200ml						Customer ID TRIP BLK			
Remarks, Calculations, Results DUPLICATE SAMPLE <p style="text-align: center;">< 5.00 uG C/mL</p>									
Analyst - 1 <i>Wob King</i>		Analyst - 2		Analyst - 3		Analyst - 4		Analyst - 5	
Hrs		Hrs		Hrs		Hrs		Hrs	
Date 2/12/95		Time Completed		Lab Unit Mgr <i>Bob Ball</i> 2/13/95		<i>[Signature]</i>			

54-6800-061 (R-10-83)

WHC-SD-WM-DP-081
REV 1
TOTAL INORGANIC CARBON ANALYSIS

Serial No. R 6853.-5527	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:42	Priority 25
Determination FIC	Method Standard LA-622-102	Result Units % RECOVERY	Charge Code KELWD	Reruns 0
Sample Size ? .200g/			Customer ID END STD	
Remarks Calculations, Results E223 CO3 STD# 15h 12E RESULT 6.12 ^{E02} STD VAL 6.00 ^{E02} % REC 102.0 <div style="text-align: center; font-family: cursive; font-size: 1.2em;">[Signature]</div>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2/12/95		Time Completed		Lab Unit Mgr [Signature] 2/13/95 <div style="text-align: center; font-family: cursive; font-size: 1.2em;">[Signature]</div>

54-6800-061 (R-10-83)

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R6850-5527 Date: 02/07/95 Time: 16:34:00

Sample Size = 200 uL	Analyst : RW KING
Dil Factor = 1	Min Readings = 14
Blank ID # = BLK	Max Readings = 14
Blank Value = .4855069 ug/minute C	% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	6.20	100.00
3	1.51	43.10	85.61
4	2.00	80.30	46.33
5	2.50	102.60	21.73
6	3.00	112.70	8.96
7	3.50	117.80	4.33
8	4.00	119.50	1.42
9	4.50	120.30	0.67
10	5.00	120.70	0.33
11	5.50	121.10	0.33
12	6.00	121.30	0.16
13	6.50	121.70	0.33
14	7.00	121.70	0.00

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 234 TO 243.

BLANK VALUE = 3.4 micrograms carbon
BLANK FACTOR = 3.4 / 7.002991 = +4.9E-01 ug/min Carbon

SAMPLE RESULTS:
(121.7 - 3.399526) (1) / (200) = +5.915E-01 g/L Carbon
(121.7 - 3.399526) (1) / (200) (12) = +4.929E-02 Molar Carbon

Sample Run By: *RW King* 2-7-95
RW KING 00000

WHC-SD-WM-DP-081
REV 1

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
<<< BLANK ANALYSIS >>>

Sample: BLK

Date: 02/07/95

Time: 16:24:17

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = N/A

Analyst : RW KING
Min Readings = 14
Max Readings = 14
% 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	1.40	14.29
6	3.00	1.70	17.65
7	3.50	1.90	10.53
8	4.00	2.20	13.64
9	4.50	2.50	12.00
10	5.00	2.80	10.71
11	5.50	2.80	0.00
12	6.00	3.10	9.68
13	6.50	3.20	3.13
14	7.00	3.40	5.88

BLANK VALUE = 3.4 micrograms carbon
BLANK FACTOR = 3.4 / 7.002991 =

+4.9E-01 ug/min Carbon

Sample Run By:

RW King
RW KING

00000

WHC-SD-WM-DP-081
REV 1

P^

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R6851-5627

Date: 02/07/95

Time: 17:39:31

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BLK

Blank Value = .4855069 ug/minute C

Analyst : RW KING

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.20	0.00
2	1.01	0.40	50.00
3	1.51	0.60	33.33
4	2.00	1.00	40.00
5	2.50	1.00	0.00
6	3.00	1.30	23.08
7	3.50	1.40	7.14
8	4.00	1.70	17.65
9	4.50	1.90	10.53
10	5.00	1.90	0.00
11	5.50	2.20	13.64
12	6.00	2.30	4.35
13	6.50	2.70	14.81
14	7.00	2.70	0.00

BLANK VALUE = 3.4 micrograms carbon

BLANK FACTOR = 3.4 / 7.002991 =

+4.9E-01 ug/min Carbon

SAMPLE RESULTS:

(2.7 - 3.40003) (1) / (200) =

< 5.00 E-3 g/L Carbon

(2.7 - 3.40003) (1) / (200) (12) =

< 4.17 E-4 Molar Carbon

Sample Run By:

RW KING

00000

WHC-SD-WM-DP-081
REV 1

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R6852-5727

Date: 02/07/95

Time: 17:54:11

Sample Size = 200 uL

Analyst : RW KING

Dil Factor = 1

Min Readings = 14

Blank ID # = BLK

Max Readings = 14

Blank Value = .4855069 ug/minute C

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	2.10	90.48
3	1.51	8.00	73.75
4	2.01	12.70	37.01
5	2.51	15.30	16.99
6	3.01	16.40	6.71
7	3.51	17.20	4.65
8	4.01	17.60	2.27
9	4.50	17.80	1.12
10	5.00	18.00	1.11
11	5.50	18.20	1.10
12	6.00	18.40	1.09
13	6.50	18.50	0.54
14	7.00	18.90	2.12

BLANK VALUE = 3.4 micrograms carbon

BLANK FACTOR = 3.4 / 7.002991 =

+4.9E-01 ug/min Carbon

SAMPLE RESULTS:

(18.9 - 3.400385) (1) / (200) =

+7.75E-02 g/L Carbon

(18.9 - 3.400385) (1) / (200) (12) =

+6.46E-03 Molar Carbon

Sample Run By:

RW KING

00000

WHC-SD-WM-DP-081

REV 1

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R6852-5827

Date: 02/07/95

Time: 18:03:11

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BLK

Blank Value = .4855069 ug/minute C

Analyst : RW KING

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	3.30	100.00
3	1.50	9.10	63.74
4	2.00	13.40	32.09
5	2.50	15.40	12.99
6	3.00	16.60	7.23
7	3.50	17.30	4.05
8	4.00	17.60	1.70
9	4.50	18.00	2.22
10	5.00	18.10	0.55
11	5.50	18.30	1.09
12	6.00	18.50	1.08
13	6.50	18.70	1.07
14	7.00	19.00	1.58

BLANK VALUE = 3.4 micrograms carbon

BLANK FACTOR = 3.4 / 7.002991 =

+4.9E-01 ug/min Carbon

SAMPLE RESULTS:

(19 - 3.399496) (1) / (200) =

+7.80E-02 g/L Carbon

(19 - 3.399496) (1) / (200) (12) =

+6.50E-03 Molar Carbon

Sample Run By:

RW KING

00000

WHC-SD-WM-DP-081

REV 1

P

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R6852-5927

Date: 02/07/95

Time: 18:12:21

Sample Size = 200 uL

Dil Factor = 3

Blank ID # = BLK

Blank Value = .4855069 ug/minute C

Analyst : RW KING

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	8.60	98.84
3	1.50	36.40	76.37
4	2.00	58.10	37.35
5	2.50	70.70	17.82
6	3.00	78.10	9.48
7	3.50	81.80	4.52
8	4.00	83.80	2.39
9	4.50	84.70	1.06
10	5.00	85.10	0.47
11	5.50	85.70	0.70
12	6.00	85.80	0.12
13	6.50	86.10	0.35
14	7.00	86.20	0.12

BLANK VALUE = 3.4 micrograms carbon

BLANK FACTOR = 3.4 / 7.002991 =

+4.9E-01 ug/min Carbon

SAMPLE RESULTS:

(86.2 - 3.40003) (3) / (200) =

+1.24E+00 g/L Carbon

(86.2 - 3.40003) (3) / (200) (12) =

+1.03E-01 Molar Carbon

Sample Run By:

RW KING

00000

WHC-SD-WM-DP-081

REV 1

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R6852-5027

Date: 02/07/95

Time: 18:20:55

Sample Size = 200 uL

Dil Factor = 3

Blank ID # = BLK

Blank Value = .4855069 ug/minute C

Analyst : RW KING

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.20	0.00
2	1.01	9.90	97.98
3	1.51	36.80	73.10
4	2.01	58.80	37.41
5	2.51	71.80	18.11
6	3.01	79.40	9.57
7	3.51	83.70	5.14
8	4.01	85.40	1.99
9	4.51	86.70	1.50
10	5.00	87.30	0.69
11	5.50	87.60	0.34
12	6.00	87.90	0.34
13	6.50	88.20	0.34
14	7.00	88.30	0.11

BLANK VALUE = 3.4 micrograms carbon

BLANK FACTOR = 3.4 / 7.002991 =

+4.9E-01 ug/min Carbon

SAMPLE RESULTS:

(88.3 - 3.400445) (3) / (200) =

+1.27E+00 g/L Carbon

(88.3 - 3.400445) (3) / (200) (12) =

+1.06E-01 Molar Carbon

Sample Run By:

RW KING

00000

WHC-SD-WM-DP-081

REV 1

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R6854-5727

Date: 02/07/95

Time: 18:29:39

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BLK

Blank Value = .4855069 ug/minute C

Analyst : RW KING

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	0.80	25.00
4	2.01	1.10	27.27
5	2.50	1.40	21.43
6	3.01	1.40	0.00
7	3.51	1.60	12.50
8	4.01	1.90	15.79
9	4.50	2.10	9.52
10	5.00	2.20	4.55
11	5.50	2.40	8.33
12	6.00	2.60	7.69
13	6.50	2.80	7.14
14	7.00	3.00	6.67

BLANK VALUE = 3.4 micrograms carbon

BLANK FACTOR = 3.4 / 7.002991 =

+4.9E-01 ug/min Carbon

SAMPLE RESULTS:

(3 - 3.400504) (1) / (200) =

< 5.00 E-3 g/L Carbon

(3 - 3.400504) (1) / (200) (12) =

< 4.17 E-4 Molar Carbon

Sample Run By:

RW King
RW KING

00000

WHC-SD-WM-DP-081
REV 1

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R6854-5827

Date: 02/07/95

Time: 18:43:12

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BLK

Blank Value = .4855069 ug/minute C

Analyst : RW KING

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	0.30	33.33
3	1.51	0.70	57.14
4	2.01	1.00	30.00
5	2.51	1.30	23.08
6	3.01	1.50	13.33
7	3.51	1.70	11.76
8	4.00	1.90	10.53
9	4.50	2.00	5.00
10	5.00	2.30	13.04
11	5.50	2.50	8.00
12	6.00	2.60	3.85
13	6.50	2.80	7.14
14	7.00	3.00	6.67

BLANK VALUE = 3.4 micrograms carbon

BLANK FACTOR = 3.4 / 7.002991 =

+4.9E-01 ug/min Carbon

SAMPLE RESULTS:

(3 - 3.400385) (1) / (200) =

< 5.00 E-3 g/L Carbon

(3 - 3.400385) (1) / (200) (12) =

< 4.17 E-4 Molar Carbon

Sample Run By:

RW King
RW KING

00000

WHC-SD-WM-DP-081

REV 1

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R6853-5527

Date: 02/07/95

Time: 18:51:46

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BLK

Blank Value = .4855069 ug/minute C

Analyst : RW KING

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	11.50	99.13
3	1.50	50.40	77.18
4	2.00	81.30	38.01
5	2.50	101.40	19.82
6	3.00	112.10	9.55
7	3.50	118.30	5.24
8	4.00	121.40	2.55
9	4.50	123.10	1.38
10	5.00	124.20	0.89
11	5.50	124.80	0.48
12	6.00	125.20	0.32
13	6.50	125.50	0.24
14	7.00	125.70	0.16

BLANK VALUE = 3.4 micrograms carbon

BLANK FACTOR = 3.4 / 7.002991 =

+4.9E-01

ug/min Carbon

SAMPLE RESULTS:

(125.7 - 3.40003) (1)/(200) =

+6.115E-01 g/L Carbon

(125.7 - 3.40003) (1)/(200) (12) =

+5.096E-02 Molar Carbon

Sample Run By:

RW King
RW KING

00000

WHC-SD-WM-DP-081

REV 1

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No. R 6835 - R 6839	Customer ID: I-1, I-TRIPBK
Analysis: DSC	Sample Prep: DIRECT

Instrument: WC16134, WC16129	Procedure/ Rev: LA-514-113 B-1
Technologist: KL VOGEL <i>[Signature]</i>	Date: 01/31/95
Starting Time: 0730	Temperature 23.0 C
Ending Time: 1530	Chemist: JANN FRYE <i>[Signature]</i>

Comments: *2/10/95*

	Description	Lab ID		Description	Lab ID
1	STANDARD	R 6835-5511	11		
2	SAMPLE	R 6837-5711	12		
3	SAMPLE DUPLICATE	R 6837-5811	13		
4	SAMPLE	R 6838-5711	14		
5	SAMPLE DUPLICATE	R 6838-5811	15		
6	STANDARD	R 6839-5511	16		
7			17		
8			18		
9			19		
10			20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
INDIUM 12N14-A	6.555 mg			

DIFFERENTIAL SCANNING CALORIMETRY ANALYSIS

Serial No R 6837.-5811	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:26	Priority 25
Determination DSC	Method Standard LA-514-113	Result Units EXOTHERMS	Charge Code KBLWD	Reruns 0
Sample Size ? 10.625 mg			Customer ID I-1	
Remarks, Calculations, Results DUPLICATE SAMPLE no exotherms				
Analyst - 1 <i>[Signature]</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-31-95	Time Completed 1530	Lab Unit Mgr <i>[Signature]</i>		

54-6800-061 (R-10-83)

Serial No R 6838.-5711	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:31	Priority 25
Determination DSC	Method Standard LA-514-113	Result Units EXOTHERMS	Charge Code KBLWD	Reruns 0
Sample Size ? 9.824 mg			Customer ID I-TRIFEN	
Remarks, Calculations, Results no exotherms				
Analyst - 1 <i>[Signature]</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-31-95	Time Completed 1530	Lab Unit Mgr <i>[Signature]</i>		

54-6800-061 (R-10-83)

DIFFERENTIAL SCANNING CALORIMETRY ANALYSIS

Serial No R 6837.-5711		Sample Point TANK 9-1		Date 1-19-95	Time Issued 10:26	Priority 25
Determination LSC	Method Standard LA-514-113	Result Units EXOTHERMS		Charge Code KBLWD	Retuns 0	
Sample Size ? 9.874 mg					Customer ID I-1	
Remarks, Calculations, Results no exotherms						
Analyst <i>[Signature]</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5		
Hrs	Hrs	Hrs	Hrs	Hrs		
Date 1-31-95	Time Completed 1530	Lab Unit Mgr <i>[Signature]</i>				

54-6800-061 (R-10-83)

Batch 5344

Serial No R 6835.-5511		Sample Point TANK 9-1		Date 1-19-95	Time Issued 10:22	Priority 25
Determination LSC	Method Standard LA-514-113	Result Units % RECOVERY		Charge Code KBLWD	Retuns 0	
Sample Size ? 6.555 mg					Customer ID STD	
Remarks, Calculations, Results 12N14A theo: 28.45 % result: 28.1 % % recovery: 98.77%						
Analyst <i>[Signature]</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5		
Hrs	Hrs	Hrs	Hrs	Hrs		
Date 1-31-95	Time Completed 1530	Lab Unit Mgr <i>[Signature]</i>				

54-6800-061 (R-10-83)

DIFFERENTIAL SCANNING CALORIMETRY ANALYSIS

Serial No R 6636.-5811	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:31	Priority 25
Determination DSC	Method-Standard LA-514-113	Result Units EXOTHERMS	Charge Code KBLWD	Reruns 0
Sample Size ? 9.909 mg			Customer ID I-TRIPEK	
Remarks, Calculations, Results <div style="text-align: center; padding: 20px;"> <p>DUPLICATE SAMPLE</p> <p>no exotherms</p> </div>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-31-95	Time Completed 1530	Lab Dir Mgr B. Valenzuela

54-6800-061 (R-10-83)

Serial No R 6639.-5511	Sample Point TANK 9-1	Date 1-19-95	Time Issued 10:34	Priority 25
Determination DSC	Method-Standard LA-514-113	Result Units % RECOVERY	Charge Code KBLWD	Reruns 0
Sample Size ? 6.555 mg			Customer ID STD	
Remarks, Calculations, Results <div style="text-align: center; padding: 20px;"> <p>theo: 28.45 J/g</p> <p>result: 27.7 J/g</p> <p>% recovery: 97.36%</p> </div>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-31-95	Time Completed 1530	Lab Dir Mgr B. Valenzuela

54-6800-061 (R-10-83)

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DSC STD 12N14A ^{5/16/95} BDY
6.555 mg

Rate: 10.0 °C/min

File: 00132.001

DSC METTLER 29-Jan-95

Ident: 0.0

222-S Laboratory

exo

10. mW

Integration
Delta H 185 mJ
28.1 J/g
Peak 158.8°C
-13.4 mW

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 248 TO 253.

120.

140.

160.

180. °C

12N14A

Handwritten signature 1/30/95

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REV 1

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R 6837-5711 N2

9.874 mg

File: 00001.001 DSC METTLER 29-Jan-95

Ident: 0.0 222-S Laboratory

Rate: 10.0 °C/min

exo v

50 mW

Integration
Delta H14662 mJ
1484.9 J/g
Peak 101.3°C
-90.6 mW

100. 200. 300. 400. °C

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REV 1

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.

R 6852, R 6854

Customer ID:

I-1, TRIP BLK

Analysis:

DSC

Sample Prep:

DIRECT

Instrument:

Procedure/ Rev: LA-514-113/B-1

Technologist: SM FULTON

Lusie M. Fulton

Date: 02/20/95

Starting Time: 0015

Temperature

Ending Time: 0730

Chemist:

J. FRYE

Bo Valenzuela

Comments:

BATCH # 5383

2-22-95

	Description	Lab ID
1	LMCS STD	R 6850-5511
2	SAMPLE	R 6852-5711
3	SAMPLE DUP	R 6852-5811
4	SAMPLE	R 6854-5711
5	SAMPLE DUP	R 6854-5811
6	LMCS STD	R 6853-5511
7		
8		
9		
10		

	Description	Lab ID
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
INDIUM	12N14-A 6.670mg			

DIFFERENTIAL SCANNING CALORIMETRY ANALYSIS

Batch 583

Serial No	Sample Point	Date	Time Issued	Priority
R 6850.-5511	TANK 9-1	1-23-95	10:31	25
Determination	Method Standard	Result Units	Charge Code	Reruns
DEC	LA-514-113	% RECOVERY	KELWD	0
Sample Size			Customer ID	
? <i>6.670 mg</i>			STD	
Remarks, Calculations, Results				
<div style="display: flex; justify-content: space-between;"> <div> <p>STD Indium #12N14A EDP R230 VALUE 28.455 $\frac{1}{2}$</p> </div> <div> <p>Result: 28.4 J/g 99.8% Rec.</p> </div> </div>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
<i>Smfulton</i>				
Hrs	Hrs	Hrs	Hrs	Hrs
				<i>Dunham</i>
Date	Time Completed	Lab Unit Mgr		
2-20-95	0730	<i>BD Valenzuela</i>		

54-6800-061 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
R 6862.-5711	TANK 9-1	1-23-95	10:37	25
Determination	Method Standard	Result Units	Charge Code	Reruns
DEC	LA-514-113	EXOTHERMS	KELWD	0
Sample Size			Customer ID	
? <i>10.298 mg</i>			I-1	
Remarks, Calculations, Results				
<div style="text-align: center;"> <p>1608.2 J/g</p> <p>No EXOTHERMS</p> </div>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
<i>Smfulton</i>				
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		
2-20-95	0730	<i>BD Valenzuela</i>		

54-6800-061 (R-10-83)

DIFFERENTIAL SCANNING CALORIMETRY ANALYSIS

Serial No R 6652.-5811	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:37	Priority 25
Determination DEC	Method Standard LA-514-113	Result Units EXOTHERMS	Charge Code KELWD	Reruns 0
Sample Size ? 10.464 mg			Customer ID I-1	
Remarks, Calculations, Results <div style="text-align: center;"> DUPLICATE SAMPLE 1369.3 J/g No Exotherms </div>				
Analyst - 1 <i>Imfulton</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2-20-95	Time Completed 0730	Lab Unit Mgr <i>BD Valenzuela</i>		

54-6800-061 (R-10-83)

Serial No Z 6654.-5711	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:46	Priority 25
Determination DEC	Method Standard LA-514-113	Result Units EXOTHERMS	Charge Code KELWD	Reruns 0
Sample Size ? 10.101 mg			Customer ID TRIP BLK	
Remarks, Calculations, Results <div style="text-align: center;"> 1428.3 J/g No Exotherms </div>				
Analyst - 1 <i>Imfulton</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2-20-95	Time Completed 0730	Lab Unit Mgr <i>BD Valenzuela</i>		

54-6800-061 (R-10-83)

DIFFERENTIAL SCANNING CALORIMETRY ANALYSIS

Serial No R 6854.-5811	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:46	Priority 25
Determination DSC	Method Standard LA-514-113	Result Units EXOTHERMS	Charge Code KELWD	Reruns 0
Sample Size ? 10.012mg			Customer ID TRJP ELK	
Remarks, Calculations, Results DUPLICATE SAMPLE 1559.8J/g <div style="text-align: center; font-size: 1.2em;">NO EXOTHERMS</div>				
Analyst - 1 <i>Amfulon</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2-20-95	Time Completed 0730	Lab Unit Mgr <i>BB Valenzuela</i>		
54-6800-061 (R-10-83)				

Serial No R 6853.-5511	Sample Point TANK 9-1	Date 1-23-95	Time Issued 10:42	Priority 25
Determination DSC	Method Standard LA-514-113	Result Units % RECOVERY	Charge Code KELWD	Reruns 0
Sample Size ? 6.75mg ^{SUF 2-21-95} 6.220mg			Customer ID END STD	
Remarks, Calculations, Results STD INDIUM Result: 29.4J/g #12N147 103.3% Rec. VALUE 28.45				
Analyst - 1 <i>Amfulon</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2-20-95	Time Completed 0730	Lab Unit Mgr <i>BB Valenzuela</i>		
54-6800-061 (R-10-83)				

WHC-SD-WM-DP-081
REV 1

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COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 258 TO 263.

DSC STD 12N14-A 5/16/45 BV

6.670 mg

Rate: 10.0 °C/min

File: 00098.001 DSC METTLER 20-Feb-95

Ident: 0.0 222-S Laboratory

exo

5 mW

Integration
Delta H 189 mJ
28.4 J/g
Peak 158.9°C
-12.5 mW

120.

140.

160.

180. °C

258

Susie M. Fulton

2 20-05

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REV 1

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WHC-SD-WM-DP-081
REV 1

R 6854
10.101 mg
Rate: 10.0 °C/min
File: 00104.001 DSC METTLER 20-Feb-95
Ident: 0.0 222-S Laboratory

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DSC STD 12N14-A
6.220 mg

Rate: 10.0 °C/min

File: 00118.001 DSC METTLER 21-Feb-95
Ident: 0.0 222-S Laboratory

exo >

5. mW

120. 140. 160. 180. °C

Liane M. Fullon

2-21-95