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ENGINEERING CHANGE NOTICE

Page 1 of 2

1. ECN 613665

Proj. ECN

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.	3a. USQ Required?	4. Date
Supplemental [] Direct Revision [X] Change ECN [] Temporary [] Standby [] Supersedure [] Cancel/Void []	K. E. Bell, Characterization Plans and Reports, T6-06, 373-1629	[] Yes [X] No	05/15/95
	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
	8. Document Numbers Changed by this ECN (includes sheet no. and rev.) WHC-SD-WM-DP-081, Rev. 0	9. Related ECN No(s). N/A	10. Related PO No. N/A

11a. Modification Work	11b. Work Package No.	11c. Modification Work Complete	11d. Restored to Original Condition (Temp. or Standby ECN only)
[] Yes (fill out Blk. 11b) [X] No (NA Blks. 11b, 11c, 11d)	N/A	N/A Cog. Engineer Signature & Date	N/A Cog. Engineer Signature & Date

12. Description of Change

This ECN is being generated in order to update/add additional information to the existing document.

13a. Justification (mark one)

Criteria Change	[]	Design Improvement	[]	Environmental	[]	Facility Deactivation	[]
As-Found	[]	Facilitate Const	[]	Const. Error/Omission	[]	Design Error/Omission	[X]

13b. Justification Details

This ECN will assist in the completion of the documentation process for this document.

14. Distribution (include name, MSIN, and no. of copies)

See Attached Distribution Sheet

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DATE MAY 18 1995
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A-7900-013-2 (11/94) GEF095

A-7900-013-1 (04/94)

ENGINEERING CHANGE NOTICE

1. ECN (use no. from pg. 1) ECN-613665

15. Design Verification Required	16. Cost Impact				17. Schedule Impact (days)	
	ENGINEERING		CONSTRUCTION			
[] Yes	Additional	[] $	Additional	[] $	Improvement	[]
[X] No	Savings	[] $	Savings	[] $	Delay	[]

18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD	[]	Seismic/Stress Analysis	[]	Tank Calibration Manual	[]
Functional Design Criteria	[]	Stress/Design Report	[]	Health Physics Procedure	[]
Operating Specification	[]	Interface Control Drawing	[]	Spares Multiple Unit Listing	[]
Criticality Specification	[]	Calibration Procedure	[]	Test Procedures/Specification	[]
Conceptual Design Report	[]	Installation Procedure	[]	Component Index	[]
Equipment Spec.	[]	Maintenance Procedure	[]	ASME Coded Item	[]
Const. Spec.	[]	Engineering Procedure	[]	Human Factor Consideration	[]
Procurement Spec.	[]	Operating Instruction	[]	Computer Software	[]
Vendor Information	[]	Operating Procedure	[]	Electric Circuit Schedule	[]
OM Manual	[]	Operational Safety Requirement	[]	ICRS Procedure	[]
FSAR/SAR	[]	IEFD Drawing	[]	Process Control Manual/Plan	[]
Safety Equipment List	[]	Cell Arrangement Drawing	[]	Process Flow Chart	[]
Radiation Work Permit	[]	Essential Material Specification	[]	Purchase Requisition	[]
Environmental Impact Statement	[]	Fac. Proc. Samp. Schedule	[]	Tickler File	[]
Environmental Report	[]	Inspection Plan	[]		[]
Environmental Permit	[]	Inventory Adjustment Request	[]		[]

19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number Revision
N/A		

20. Approvals

Signature	Date	Signature	Date
OPERATIONS AND ENGINEERING		ARCHITECT-ENGINEER	
Cog. Eng. K. E. Bell *Ken E. Bell*	5/18/95	PE	
Cog. Mgr. J. G. Kristofzski *J. G. Kristofzski*	5-18-95	QA	
QA W.A. Hendricksen *W.A. Hendricksen*	5/18/95	Safety	
Safety		Design	
Environ.		Environ.	
Other		Other	
		DEPARTMENT OF ENERGY	
		Signature or a Control Number that tracks the Approval Signature	
		ADDITIONAL	

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RELEASE AUTHORIZATION

Document Number:	WHC-SD-WM-DP-081, REV 1
Document Title:	Aqueous Sample From B-Plant, Tank 9-1
Release Date:	5/18/95

This document was reviewed following the procedures described in WHC-CM-3-4 and is:

APPROVED FOR PUBLIC RELEASE

WHC Information Release Administration Specialist:

Kara M. Broz — May 18, 1995

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SUPPORTING DOCUMENT

1. Total Pages 266

2. Title	3. Number	4. Rev No.
Aqueous Sample From B-Plant, Tank 9-1	WHC-SD-WM-DP-081	1

5. Key Words

Aqueous, Aqueous Sample, B-Plant, Tank 9-1, 9-1

6. Author

Name: Kevin E. Bell

Signature

Organization/Charge Code 75310/MDR21

7. Abstract

N/A

8. RELEASE STAMP

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DATE MAY 18 1995
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RECORD OF REVISION	(1) Document Number WHC-SD-WM-DP-081	Page A

(2) Title
Aqueous Sample From B-Plant, Tank 9-1

CHANGE CONTROL RECORD

(3) Revision	(4) Description of Change - Replace, Add, and Delete Pages	Authorized for Release (5) Cog. Engr.	(6) Cog. Mgr. Date
0	(7) Initially released 01/13/95 on EDT-610401.	K.E. Bell	J.G. Kristofzski
1 RS	Incorporate per ECN-613665.	K.E. Bell	J.G. Kristofzski
		Kein Bell	A.G. Kristofzski 5-18-95

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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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NARRATIVE

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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:

1st Number	2nd Number
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.

Sample	Number
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 ±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 ±20%. This criterion assumes sample concentration is >10 times the detection limit.

- Accuracy

  - Criteria: ±20% or listed as "to be determined". Accuracy is assessed by standard recoveries.

- Precision

  - Criteria: ±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 purgablilty 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 of 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.

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ATTACHMENT 1

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

SAMPLING AND CUSTODY DATA

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WHC-SD-WM-DP-081
REV 1

COPY

CHAIN OF CUSTODY

Company Contact: Tina M. Ridge Telephone: 372-3860

Samples Collected by: Leon Hanlen 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
I1, R16837

CHAIN OF POSSESION

Relinquished by:	Received by:	Date/Time
[signature]	[signature]	1/23/95 1203
Relinquished by: Tina M. Ridge	Received by: [signature]	Date/Time 1-23-95 1318
Relinquished by: [signature]	Received by: [signature]	Date/Time 1-23-95 1414
Relinquished by:	Received by:	Date/Time

To:

Westinghouse Hanford Company

PG 505

COPY

WHC-SD-WM-DP-081
REV 1

CHAIN OF CUSTODY

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

Samples Collected by: Leon Hamlin Date: 1-17-95 Time: 1:52pm

Sample Location: 222SA

Ice Chest No.: Field Logbook Page No.:

Remarks: Trip Blank for TK 9-1

Method of Shipment: A

Sample Identification

A:

I Trip Blank R6838

CHAIN OF POSSESION

Relinquished by:	Received by:	Date/Time
[signature]	[signature]	1/23/95 1201
Relinquished by: [signature]	Received by: [signature]	Date/Time 1-23-95 1318
Relinquished by: [signature]	Received by: [signature]	Date/Time 1-23-95 1414
Relinquished by:	Received by:	Date/Time

To:

Westinghouse Hanford Company

9513316.2654

WHC-SD-WM-DP-081
REV 1

pg 1 of 2

COPY

CHAIN OF CUSTODY

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

Samples Collected by: Leon Hamlin Date: 1-17-95 Time: 1:59pm

Sample Location: 222S A

Ice Chest No.: Field Logbook Page No.:

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

Method of Shipment:

Sample Identification

A :

I Trip Blank, R6838

CHAIN OF POSSESION

Relinquished by:	Received by:	Date/Time
[illegible]	Tim M. Ridge	1-17-95 1350
Tim M. Ridge	[illegible]	1/19/95 0736
[illegible]	Tim M. Ridge	1/19/95 1245
Tim M. Ridge	[illegible]	1/23/95 0836

To:

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: _____ Date: 1-19-95 Time: _____

Sample Location: _____

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

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

Method of Shipment: _____

Sample Identification

VI: R6841

CHAIN OF POSSESION

Relinquished by: [signature]	Received by: [signature]	Date/Time 1/23/95 1202
Relinquished by: [signature]	Received by: [signature]	Date/Time 1-23-95
Relinquished by: [signature]	Received by: [signature]	Date/Time 1-23-95 1000
Relinquished by: [signature]	Received by: [signature]	Date/Time 1-23-95 1550

To:

Westinghouse Hanford Company

9513316.2655

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: 2225A

Ice Chest No.: Field Logbook Page No.:

Remarks: Trip Blank for TK-94 (B Plant)

Method of Shipment:

Sample Identification

B

Trip Blank, R68412

CHAIN OF POSSESION

Relinquished by:	Received by:	Date/Time
[signature]	[signature]	1-17-95 1350
Relinquished by: [signature]	Received by: [signature]	Date/Time 1/19/95 0736
Relinquished by: [signature]	Received by: [signature]	Date/Time 1/19/95 1245
Relinquished by: [signature]	Received by: [signature]	Date/Time 1/23/95 0937

To:

Westinghouse Hanford Company

WHC-SD-WM-DP-081
REV 1

COPY

CHAIN OF CUSTODY

Company Contact: Tim M. Ridge Telephone:

Samples Collected by: Leon Hamlin 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 R6842

CHAIN OF POSSESION

Relinquished by:	Received by:	Date/Time
[illegible]	[illegible]	1/23/95/1202
Relinquished by: [illegible]	Received by: [illegible]	Date/Time 1-23-95
Relinquished by: [illegible]	Received by: [illegible]	Date/Time 1-23-95 1500
Relinquished by: [illegible]	Received by: [illegible]	Date/Time 1-23-95 1550

To:

Westinghouse Hanford Company

9513316.2656

WHC-SD-WM-DP-081
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

B 6852

CHAIN OF POSSESION

Relinquished by: Timothy J. Milburn	Received by: Tina M. Ridge	Date/Time 2/6/95/1150
Relinquished by: Tina M Ridge	Received by: Paula Bailey	Date/Time 2/6/95/1500
Relinquished by: Paula Bailey	Received by: Ky Ellenard Jr	Date/Time 2/6/95 1405
Relinquished by:	Received by:	Date/Time

To:

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: 1:50pm

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 POSSESION

Relinquished by:	Received by:	Date/Time
Pamela Bailey	RJ Ekenfelder	2/6/95 1405
Relinquished by:	Received by:	Date/Time
Relinquished by:	Received by:	Date/Time
Relinquished by:	Received by:	Date/Time

9513316.2657

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: 150pm

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 POSSESION

Relinquished by:	Received by:	Date/Time
Leon Hamlin	Tina M. Ridge	1-17-95 1350
Tina M. Ridge	Kenneth J. Musser	2/6/95 0735
Kenneth J. Musser	Tina M. Ridge	2/6/95 1152
Tina M. Ridge	Paula Bailey	2/6/95 1300

To:

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: _____ Date: _____ Time: _____

Sample Location: BPlant TK 9-1

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

Remarks: Organic Sample

Method of Shipment: _____

Sample Identification

R 6856

CHAIN OF POSSESION

Relinquished by:	Received by:	Date/Time
[illegible]	Tina M. Ridge	2/6/95 1154
Tina M. Ridge	[illegible]	2/6/95 1255
[illegible]	Charles E. Byrd	2-6-95 15:10
Charles E. Byrd	Sandra Cobb	02-06-95 1550

To:

9513316.2658

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: 1:50pm

Sample Location: 222SA

Ice Chest No.: Field Logbook Page No.:

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

Method of Shipment: Sample Truck (Pig)

Sample Identification

D:
R6857

CHAIN OF POSSESION

Relinquished by: Bryan Jackson	Received by:	Date/Time 2-6-95 15:10
Relinquished by:	Received by:	Date/Time 02-06-95 15
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: Tim 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 (B Plant)

Method of Shipment: Sample Truck (Pig)

Sample Identification

D

R6857

CHAIN OF POSSESION

Relinquished by:	Received by:	Date/Time
[signature]	Tim M Ridge	1-17-95 1350
Tim M Ridge	[signature]	2/6/95 0735
[signature]	[signature]	2/6/95 1153
Tim M. Ridge	[signature]	2/6/95 1255

To:

9513316.2659

ATTACHMENT 2

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

REQUEST FOR SPECIAL ANALYSIS FORMS

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WHC-SD-WM-TI-308 9513016.2660
REV 1

REQUEST FOR SPECIAL ANALYSIS (RSA)

RSA No. 2216

1. Sample Origin: B Plant Tank 9-1	2. Date Submitted: 1-23-95	4. Requestor Name: T. M. Ridge	6. Charge Code/Work Package: KBLWD (16610)
	3. Submitted By:	5. Requestor Phone/MSIN: 2-3560 S6-70	7. Date Required: 90 days

8. Customer ID	Collected Date	Collected Time	9. Laboratory ID
T-1			R6837
T-Trip Blank			R6838

12. Number of Samples: 1Sample 1Trip

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

17. Process Knowledge/Known Listed Wastes: ☐ Unknown ☐ Known (Please attach list) ☒ Previously submitted for this Project

18. Survey: HPT Signature — Dose Rate

19. Disposition of Waste: ☐ Return to Client/Location ☒ Dispose per 222-S Procedures ☐ Other

10. Determination	11. Expected Range
✓ Carbonate	
✓ Chloride	
✓ Diff.Scan Caorimetry	
✓ Fluoride	
✓ Hydroxide	
✓ Nitrate	
✓ Nitrite	
✓ pH	
✓ Phosphate	
✓ Sodium	
✓ Total Organic Carbon	

20. Additional Information
Std R6835
Blank R6836
Std R6839

21. Chain of Custody: ☐ No ☒ Yes Number: 23

22. Assigned Custodial Group (select one): ☐ PCL ☐ POSC ☐ ENV ☐ Process

23. Sample Received By: [illegible] Date: 1-23-95 Time: [illegible]

24. Laboratory Manager (if required): Date:

BC-6700-181 (11/92)

REQUEST FOR SPECIAL ANALYSIS (RSA)

RSA No. 2217

1. Sample Origin	2. Date Submitted	4. Requester Name	6. Charge Code/Work Package
B Plant Tank 9-1	1-23-95	T. M. Ridge	KBLWD (16610)
	3. Submitted By	5. Requester Phone/MSIN	7. Date Required
		2-3560 S6-70	90 days

8. Customer ID	Collected Date	Collected Time	9. Laboratory ID
VT-1			R6841
VT-TripBlank			R6842

12. Number of Samples	13. Volume of Samples	14. Protocols
1 Sample 1 Trip	100 ml/sample	☐ 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
Volatile Organic Analys	Unknown

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

Chain of Custody
☐ No
☒ Yes Number: 24

22. Assigned Custodial Group (select one)
☐ PCL ☐ PDSD ☐ ENV ☐ Process

23. Sample Received By: [illegible]
Date: 1-23-95 Time: 15:40

24. Laboratory Manager (if required)
Date:

BC-6700-181 (11/92)

9513316.2661

REQUEST FOR SPECIAL ANALYSIS (RSA)

RSA No. 2224

1. Sample Origin	2. Date Submitted	4. Requester Name	6. Charge Code/Work Package
B Plant Tank 9-1		T. M. Ridge	KBLWD
	3. Submitted By	5. Requester Phone/MSIN	7. Date Required
		2-3560 S6-70	

8. Customer ID	Collected Date	Collected Time	9. Laboratory ID
Sample - R6852			Sample - R6852
Trip Blank R6854			Trip Blank R6854

12. Number of Samples: 1 Sample, 1 Trip

13. Volume of Samples: 100 ml/sample

14. Protocols: [ ] None [X] RCRA [ ] NQA-1 [ ] Other [ ] CERCLA

15. Sample Type: [ ] Solid [ ] Soil [ ] Slurry [ ] Gas [X] Water [ ] Waste [ ] Solution [ ] Sludge [ ] Oil [ ] Other (specify)

16. Storage Requirements: [ ] None [X] Specify SW-846 Holding Times and Standards

17. Process Knowledge/Known Listed Wastes: [ ] Unknown [ ] Known (Please attach list) [X] Previously submitted for this Project

10. Determination	11. Expected Range
✓ Carbonate	
Chloride	
✓ Diff.Scan Caorimetry	
Fluoride	
✓ Hydroxide	
Nitrate	
Nitrite	
✓ pH	
Phosphate	
✓ Sodium	
✓ Total Organic Carbon	

18. Survey — Dose Rate — HPT Signature

19. Disposition of Waste: [ ] Return to Client/Location [X] Dispose per 222-S Procedures [ ] Other

20. Additional Information

STD R6850
Blank R6851
STD R6853

21. Chain of Custody: [ ] No [X] Yes Number: 0 1 0

22. Assigned Custodial Group (select one): [ ] PCL [ ] PDSU [ ] ENV [ ] Process

Sample Received By: [signature]

Date: 2-6-95 Time: 14:05

24. Laboratory Manager (if required) Date:

REQUEST FOR SPECIAL ANALYSIS (RSA)

RSA No. 2225

1. Sample Origin: B Plant Tank 9-1

2. Date Submitted:

3. Submitted By:

4. Requester Name: T. M. Ridge

5. Requester Phone/MSIN: 2-3560 S6-70

6. Charge Code/Work Package: KBLWD

7. Date Required:

8. Customer ID	Collected Date	Collected Time	9. Laboratory ID
Sample - R6856			Sample R-6856
Trip Blank R6857			Trip Blank R6857

12. Number of Samples: 1 Sample 1 Trip

13. Volume of Samples: 100 ml/sample

14. Protocols: [ ] None [X] RCRA [ ] NQA-1 [ ] Other [ ] CERCLA

15. Sample Type: [ ] Solid [ ] Soil [ ] Slurry [ ] Gas [X] Water [ ] Waste [ ] Solution [ ] Sludge [ ] Oil [ ] Other (specify)

16. Storage Requirements: [ ] None [X] Specify SW-846 Holding Times and Standards

17. Process Knowledge/Known Listed Wastes: [ ] Unknown [ ] Known (Please attach list) [X] Previously submitted for this Project

10. Determination	11. Expected Range
\ atile Organic Analys	Unknown

18. Survey: HPT Signature — Dose Rate

19. Disposition of Waste: [ ] Return to Client/Location [X] Dispose per 222-S Procedures [ ] Other

20. Additional Information: Blank R6855

21. Chain of Custody: [ ] No [X] Yes Number:

22. Assigned Custodial Group (select one): [ ] PCL [ ] POSU [ ] ENV [ ] Process

Sample Received By: [signature]

Date: 03-06-95 Time: 1550

24. Laboratory Manager (if required) Date:

BC-6700-181 (11/92)

ATTACHMENT 3

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

SAMPLE DATA SUMMARY

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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.

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

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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

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

9513316.2666

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

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	85.9	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	106.3	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

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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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

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

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VOLATILE ORGANIC ANALYSES

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

DE Nelson 2-8-95
JdeLaRosa-Chang

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

9513316-3671

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

CAS NO.	COMPOUND		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

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
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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)

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	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

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)

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

Number TICs found: 0

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

9513316.2673

EPA SAMPLE NO.

VBLK46

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)

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	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

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK46

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

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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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 interpetation 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 D E Nelson 3/1/95
J.B DELAROSA-CHANG J de la Rosa-Chang 3/1/95
Organic Chemistry

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

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)

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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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
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	.3	JB
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.

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)

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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 9515316.2678

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: RDMeyers	Date: 2/5/95
Starting Time: 0505	Temperature 25°C
Ending Time: 0525	Chemist: Schroeder

Comments:

	Description	Lab ID		Description	Lab ID
1	LMCS	R6835-5513	11		
2	SAMPLE	R6837.5713	12		
3	DUP	R6837.5813	13		
4	SAMPLE	R6838.5713	14		
5	DUP	R6838.5813	15		
6	LMCS	R6839.5513	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
LMCS	86N16A .5mL			

A-6000-881 (03/92)

pH ANALYSIS

RERUN Batch 5452

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

S350 PH MAT.
STD# 06N16A RESULT 9.75
STD VAL 1.00E01 %REC 97.5%
S353 NBSPH1
STD# RESULT
STD VAL %REC

Valid data SKM 2-9-95
~~OUT FOR RERUN~~
Exception & MCS filed

OSCR # 6905

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2/5/95	Time Completed 0525	Lab Unit Mgr 2/10/95		

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

RERUN

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

9.20

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 2/5/95	Time Completed 0525	Lab Unit Mgr 2/9/95		

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

pH ANALYSIS

RERUN

Serial No	Sample Point	Date	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
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2/5/95	0525	2/9/95	

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

RERUN

Serial No.	Sample Point	Date	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
~~8.34~~ Com 2/5/95
6.78

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2/5/95	0525	2/9/95	

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

pH ANALYSIS

RERUN

Serial No.	Sample Point		Time Issued	Priority
R 6838.-5813	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-TRIPEK

Remarks, Calculations, Results:
DUPLICATE SAMPLE
6.70

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		
2/5/95	0525	2/9/95		

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

RERUN

Serial No.	Sample Point		Time Issued	Priority
R 6839.-5513	TANK 9-1	1-19-95	10:34	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
S350 PH MAT.
STD# 35N164 RESULT 9.76
STD VAL 1.00 E+1 %REC 97.6
S353 NBSPH1
STD# RESULT
STD VAL %REC

~~OUT FOR RERUN~~
data accepted by chemist (exceptions & mcb filed) SKM 2-9-95

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		
	0525	2/10/95	2-9-95	

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

KB

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WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

WHC-SD-WM-DP-081
REV 1

ANALYTICAL BATCH

Lab Segment Serial No. R6852,R6854	Customer ID: I-1,TRIP BLK
Analysis: pH	Sample Prep: DIRECT

Instrument: SN 246354	Procedure/ Rev: LA-212-102 / C-5
Technologist: DG GRIFFIN D G Griffin	Date: 02/13/95
Starting Time: 0530	Temperature 24 C
Ending Time: 0630	Chemist: ROB SCHROEDER

Comments: BATCH #5384

	Description	Lab ID		Description	Lab ID
1	LMCS STD	R6850-5513	11		
2	SAMPLE	R6852-5713	12		
3	SAMPL DUP	R6852-5813	13		
4	SAMPLE	R6854-5713	14		
5	SAMPL DUP	R6854-5813	15		
6	LMCS STD	R6853-5513	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
LMCS STD	86N16-B / 3ml			

A-6000-881 (03/92)

pH ANALYSIS

Batch 5384

Serial No	Sample Point	Date	Time Issued	Priority
R 6850.-5513	TANK 9-1	1-23-95	10:31	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
pH	LA-212-102	NONE	KBLWD	0

Sample Size	Customer ID
?	STD

Remarks, Calculations, Results

S350 PH MAT.
STD# 86N16-B RESULT
STD VAL 9.18 %REC 99.6
S353 NBSPH1
STD# RESULT
STD VAL %REC

PH 9.14

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
DS Suffer				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-13-95	0630	2/16/95	

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

Serial No.	Sample Point	Date	Time Issued	Priority
R 6852.-5713	TANK 9-1	1-23-95	10:37	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
pH	LA-212-102	NONE	KBLWD	0

Sample Size	Customer ID
?	I-1

Remarks, Calculations, Results

PH 8.57

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
DS Suffer				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-13-95	0630	2/16/95	

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

pH ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 6852.-5813	TANK 9-1	1-23-95	10:37	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
pH	LA-212-102	NONE	KBLWD	0

Sample Size	Customer ID
?	I-1

Remarks, Calculations, Results:

DUPLICATE SAMPLE

PH 8.58

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
KB Griffin				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-13-95	0630	2/16/95	

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

Serial No.	Sample Point	Date	Time Issued	Priority
R 6854.-5713	TANK 9-1	1-23-95	10:46	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
pH	LA-212-102	NONE	KBLWD	0

Sample Size	Customer ID
?	TRIP BLK

Remarks, Calculations, Results

PH 6.51

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
KB Griffin				
Hrs	Hrs	Hrs	Hrs	Hrs
	-			

Date	Time Completed	Lab Unit Mgr	
2-13-95	0630	2/16/95	

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

pH ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 6854.-5813	TANK 9-1	1-23-95	10:46	25

Determination	Method Standard	Result Units	Charge Code	Reruns
pH	LA-212-102	NONE	KBLWD	0

Sample Size	Customer ID
?	TRIP BLK

Remarks. Calculations. Results
DUPLICATE SAMPLE

PH 6.53

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
DB Griffin				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-13-95	0630	2/16/95	

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

Serial No.	Sample Point	Date	Time Issued	Priority
R 6853.-5513	TANK 9-1	1-23-95	10:42	25

Determination	Method Standard	Result Units	Charge Code	Reruns
pH	LA-212-102	NONE	KBLWD	0

Sample Size	Customer ID
?	END STD

Remarks. Calculations. Results
S350 PH MAT.
STD# 86N16-B RESULT
STD VAL 9.18 %REC 99.3
S353 NBSPH1
STD# RESULT
STD VAL %REC

PH 9.12

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
DB Griffin				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-13-95	0630	2/16/95	

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

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

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

WHC-SD-WM-DP-081
REV 1

ANALYTICAL BATCH

Lab Segment Serial No. R6835- R6839	Customer ID: I 1
Analysis: PH	Sample Prep:

Instrument:	Procedure/ Rev: LA-212-102-C5
Technologist: ADPurinton	Date: 1-28-95
Starting Time: 1000	Temperature 28°C
Ending Time: 1030	Chemist: J. S. Lachut

Comments: Batch 5345

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

	Description	Lab ID
11	DATA NOT USED IN PACKAGE	
12		
13		
14		
15		
16		
17		
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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	52N16-B 5ml			

A-6000-881 (03/92)

Serial No	Sample Point	Date	Time Issued	Priority
R 6838.-5813	TANK 9-1	1-19-95	10:31	25

Determination	Method Standard	Result Units	Charge Code	Reruns
pH	LA-212-102	NONE	KBLWD	0

Sample Size	Customer ID
? 5ml	I-TRIPBK

Remarks, Calculations, Results
DUPLICATE SAMPLE
6.67

OUT FOR RERUN

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-28-95	1030	

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

Serial No	Sample Point	Date	Time Issued	Priority
R 6839.-5513	TANK 9-1	1-19-95	10:34	25

Determination	Method Standard	Result Units	Charge Code	Reruns
pH	LA-212-102	NONE	KBLWD	0

Sample Size	Customer ID
? 5ml	STD

Remarks, Calculations, Results
S350 PH MAT.
STD# RESULT
STD VAL %REC
S353 NBSPH1
STD# 52N163 RESULT 3.99
STD VAL 4.00 %REC 99.8%

OUT FOR RERUN

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-28-95	1030	

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	0

Sample Size	Customer ID
? 5ml	I-1

Remarks, Calculations, Results:

9.40

OUT FOR RERUN

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-28-95	1030	

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

Serial No	Sample Point	Date	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	0

Sample Size	Customer ID
? 5ml	I-TRIPBK

Remarks, Calculations, Results:

ADD ADD

~~7.39~~ ~~7.12~~ 6.58

1-28-95 1-28-95

OUT FOR RERUN

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-28-95	1030	

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

Batch 5345

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	0

Sample Size	Customer ID
? 5ml	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%

OUT FOR RERUN

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-28-95	1030	1/30/95

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

Serial No	Sample Point	Date	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	0

Sample Size	Customer ID
? 5ml	I-1

Remarks, Calculations, Results

DUPLICATE SAMPLE

9.43

OUT FOR RERUN

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-28-95	1030	

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

KB

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH

WHC-SD-WM-DP-081
REV 1

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

Instrument: N/A	Procedure/ Rev: LA 211-102 ~~LA-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			

A-6000-881 (03/92)

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Batch 5348

Serial No.	Sample Point	Date	Time Issued	Priority
R 6835.-5529	TANK 9-1	1-19-95	10:22	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
OH	LA-211-102	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? .050 ~ 3mL	STD

Remarks, Calculations, Results

S273 ITS-OH 0.921

STD# ZIN8B RESULT ~~.957M~~ 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	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-27-95	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		Standard
07:24 AM	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

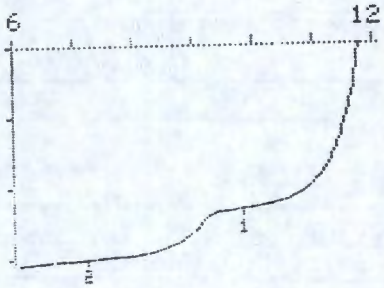
Form 211102_1 Rev. 1.3

R6835-5529

REG. STD

```
date 95-01-27 time 07:24
GET pH          12  #   30
Id.#1            1
Id.#2        .1994
pH(init)     11.75
            V/ml          pH
EP1         .231        9.82
EP2         .302        7.21
manual stop
         ========
```

```
date 95-01-27 time 07:25
GET pH          12  #   30
.10ml/div       ΔpH=1/div
start V    .000 ml
```




```
         --------
```

```
calibration data
date      95-01-27
pH(S) 1      7.00
pH(S) 2     10.00
t.cal.       24.0 °C
slope(rel)   .980
U(as)        53.3 mV
electr. input  1
         ========
```

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

9513316.2686

Serial No.	Sample Point	Date	Time Issued	Priority
R 6836.-5629	TANK 9-1	1-19-95	10:24	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
OH	LA-211-102	uG/ML	KBLWD	0

Sample Size	Customer ID
?	BLANK

Remarks, Calculations, Results

REAGENT BLANK

<4.17 E+1

R. WENDLAND

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2/7/95		2/13/95	

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

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

		BLANK
Type	Sample Size (mL) SS	3.000
BLANK	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.007
5348	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	
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:		Date:	02/09/95
Approved by:		Date:	2/13/95

Form 211102_1 Rev. 1.3

Page 1 of 1

R6836-5629

```
date 93-02-08 time 14:16
GET pH          12  #   56
Id.#1            1
Id.#2        .1994
pH(init)      5.51
            V/ml          pH
EP1         .007        4.60
manual stop
        ========
```

BLK

```
date 93-02-08 time 14:16
GET pH          12  #   56
.10ml/div        ΔpH=1/div
start V    .000 ml
```

```
        ========
```

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

9513316.2687

Serial No.	Sample Point	Date	Time Issued	Priority
R 6837.-5729	TANK 9-1	1-19-95	10:26	25

Determination	Method Standard	Result Units	Charge Code	Reruns
OH LIQ	LA-211-102	uG/ML	KBLWD	0

Sample Size	Customer ID
? 3mL	I-1

Remarks, Calculations, Results

<4.17 E+1

Robby Wendland

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1-27-95		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		SAMPLE
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

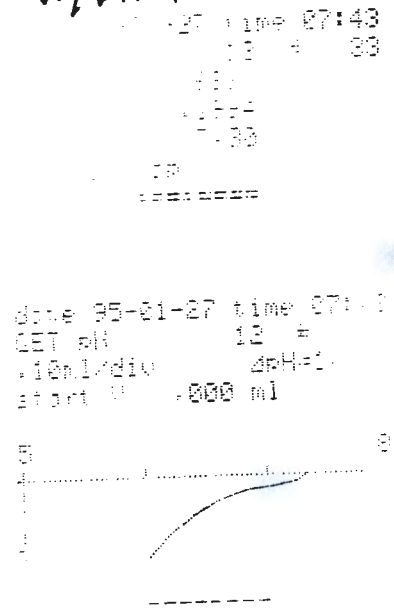
Data Entry by:		Date:	02/10/95
Approved by:		Date:	2/13/95

Form 211102_1 Rev. 1.3

Page 1 of 1

R6837-5729

W/BACI



PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

9513316.2000

Serial No.	Sample Point	Date	Time Issued	Priority
R 6837.-5829	TANK 9-1	1-19-95	10:26	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
OH LIQ	LA-211-102	uG/ML	KBLWD	0

Sample Size	Customer ID
? 3mL	I-1

Remarks, Calculations, Results:
DUPLICATE SAMPLE

<4.17 E+1

Bobby Wendland

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1-27-95		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:		Date:	02/10/95
Approved by:		Date:	2/13/95

Form 211102_1 Rev. 1.3

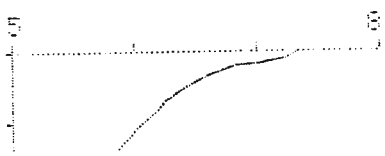
Page 1 of 1

R6837-5829

W/BACK DUP

date 95-01-27 time 07:47
GET pH 12 # 34
id.#1 6837-2
id.#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

9513316.2689

Serial No.	Sample Point	Date	Time Issued	Priority
R 6838.-5729	TANK 9-1	1-19-95	10:31	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
OH LIQ	LA-211-102	µG/ML	KHLWD	0

Sample Size	Customer ID
? 3mL	I-TRIPBK

Remarks, Calculations, Results

<4.17 E+1

Robert Wendland

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1-27-95		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	0.006
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		SAMPLE
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:		Date:	02/10/95
Approved by:		Date:	2/13/95

Form 211102_1 Rev. 1.3

Page 1 of 1

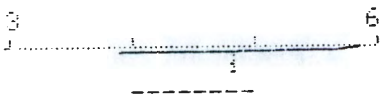
R 68 38 5729

W/BACL

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


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

3                          6
```



```
         --------
```

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

9513316.2690

Serial No.	Sample Point	Date	Time Issued	Priority
R 6838.-5829	TANK 9-1	1-19-95	10:31	25

Determination	Method Standard	Result Units	Charge Code	Reruns
OH LIQ	LA-211-102	uG/ML	KBLWD	0

Sample Size	Customer ID
? 3mL	I-TRIPBK

Remarks, Calculations, Results

DUPLICATE SAMPLE

< 4.17 E+1

Robby Wendland

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr.	
1-27-95		2/10/95	

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	0.006
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		DUPLICATE
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:		Date:	02/10/95
Approved by:		Date:	2/13/95

Form 211102_1 Rev. 1.3

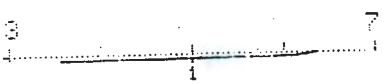
Page 1 of 1

R6838-5829

W/BACK
DUP

```
date 95-01-27 time 13:14
GET pH          12  #   51
Id.#1       6838-2
Id.#2        .1994
pH(init)      6.40
             V/ml          pH
EP1          .006        5.01
manual stop
          ========
```

```
date 95-01-27 time 13:14
GET pH          12  #   51
.10ml/div        ΔpH=1/div
start V    .000 ml
```



9513316.2691

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6839.-5529	TANK 9-1	1-19-95	10:34	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
OH	LA-211-102	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? .050 – 3	STD

Remarks, Calculations, Results:

S273 ITS-OH

STD# ZIN8B RESULT ~~9.61~~ 9.45 E-1 gwB 2/13/95

STD VAL 9.39 E-1 %REC ~~102.3 %~~ 100.6 gwB 2/13/95

Robby Wendland

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr.
1-27-95		gwBall 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	0.237
5348	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	9.45E-01
	OH in Sample in µg/mL (PPM)	1.61E+04
Matrix		
Liquid		
Sample #		
R6839-5529		
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		Standard
01:34 PM	Concentration of OH in Sample (Molarity)	9.45E-01
	OH in Sample in µg/mL (PPM)	1.61E+04

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

Form 211102_1 Rev. 1.3

Page 1 of 1

R6839-5529

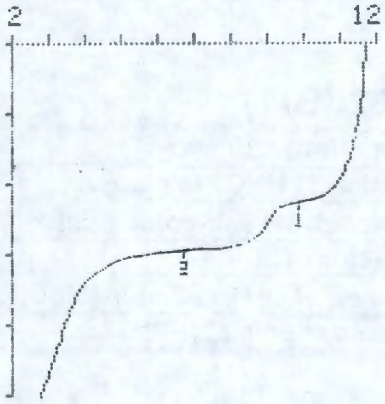
END STD

date 95-01-27 time 13:34
GET pH 12 # 54
Id.#1 1
Id.#2 .1334
pH(init. 1: 69

	V/ml	pH
EP1	.227	9.84
EP2	.296	6.73

manual stop
========

date 95-01-27 time 13:34
GET pH 12 # 54
.10ml/div .1pH=1/div
start V .000 ml



9513316.2692

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		Description	Lab ID
1	LMCS	R6850-5529	11		
2	BLK	R6851-5629	12		
3	SAM	R6852-5729	13		
4	DUP	R6852-5829	14		
5	SAM	R6854-5729	15		
6	DUP	R6854-5829	16		
7	LMCS	R6853-5529	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
LMCS	21N8B			

A-6000-881 (03/92)

WHC-SD-WM-DP-081
REV 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Batch 5387

Serial No.	Sample Point	Date	Time Issued	Priority
R 6850.-5529	TANK 9-1	1-23-95	10:31	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
OH	LA-211-102	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? .050	STD

Remarks, Calculations, Results

S273 ITS-OH

STD# 21N8B RESULT 9.05 E-1 M

STD VAL 9.39 E-1 M %REC 96.4 %

Robby Wendland

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-9-95		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	0.227
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 #	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		
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)	9.05E-01
	OH in Sample in µg/mL (PPM)	1.54E+04

Data Entry by:	RW Schroeder	Date:	02/13/95
Approved by:	Jon W Boell	Date:	2/16/95

Form 211102_1 Rev. 1.3

R6850-5529

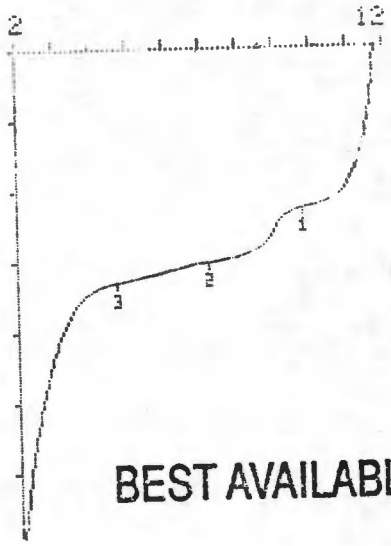
calibration data
date 95-02-09
pH(S) 1 7.00
pH(S) 2 10.00
t.cal. 24.0 °C
slope(rel) .977
U(as) 24.0 mV
electr. input 1
========

date 95-02-09 time 08:43
GET pH 12 # 57
Id.#1 1
Id.#2 .1994
pH(init) 11.71

	V/ml	pH
EP1	.227	9.82
EP2	.303	7.19
EP3	.371	4.71

stop volt.reached
========

date 95-02-09 time 08:44
GET pH 12 # 57
.10ml/div ΔpH=1/div
start V .000 ml



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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6851.-5629	TANK 9-1	1-23-95	10:33	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
OH	LA-211-102	uG/ML	KBLWD	0

Sample Size	Customer ID
? DIRECT	BLK

Remarks, Calculations, Results
REAGENT BLANK

<42

ROBBY WENDLAND

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-9-95		2/16/95	

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

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

		std
Type: std Blank	Sample Size (mL) SS	3.000
	Concentration of HNO3 (Molarity)	0.1994
Work List: 5387	HNO3 Titrant at OH end-point in mL	0.000
	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

RWS 2-13-95

Matrix: liquid	
Sample #: R6851-5629	Detection Limit = 125µg / SS * DF
Instrument Code	Detection Limit (µg/mL) 4.17E+01
Analyst: R. WENDLAND	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor
Date: 02/09/95	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))
Time: 03:00 PM	

	std
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:	RW Schroeder	Date:	02/13/95
Approved by:	Jon L Bare	Date:	2/16/95

Form 211102_1 Rev. 1.3

R6851-5629

```
date 95-02-09 time 09:56
GET pH          12  #   58
Io.#1            0
Io.#2        .1984
pH(init)      4.97
            V/ml          pH
EP1         .009        4.03
manual stop
         ========

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

2                          5
```

```
         ========
```

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6852.-5729	TANK 9-1	1-23-95	10:37	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
OH LIQ	LA-211-102	uG/ML	KBLWD	0

Sample Size	Customer ID
? 3mL	I-1

Remarks, Calculations, Results

<42

Robby Wendland

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr.	
2-9-95		2/16/95	

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

RWS 2-13-95

The Result is < Detection Limit

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

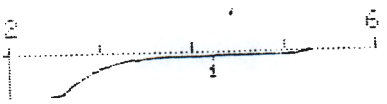
Form 211102_1 Rev. 1.3

R6852-5729

```
date 95-02-09 time 09:58
GET pH          12  #   59
Id.#1         6854
Id.#2        .1994
pH(init)      5.29
            V/ml          pH
EP1         .007        4.24
manual stop
        ========
```

.100

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

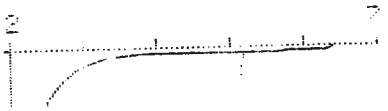



```
========
```

```
date 95-02-09 time 10:00
GET pH          12  #   60
Id.#1         6854
Id.#2        .1994
pH(init)      6.30
            V/ml          pH
EP1         .008        5.19
manual stop
        ========
```

3mL

```
date 95-02-09 time 10:00
GET pH          12  #   60
.10ml/div        ΔpH=1/div
start V    .000 ml
```



BEST AVAILABLE COPY

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6852.-5829	TANK 9-1	1-23-95	10:37	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
OH LIQ	LA-211-102	uG/ML	KBLWD	0

Sample Size	Customer ID
? 3mL	I-1

Remarks, Calculations, Results:
DUPLICATE SAMPLE

<42

R. WENDLAND

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)

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

2WS 1-23-95

The Result is < Detection Limit

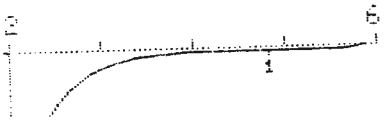
Data Entry by:		Date:	02/13/95
Approved by:		Date:	2/16/95

Form 211102_1 Rev. 1.3

R6852-5829

```
date 95-02-09 time 10:02
GET pH          12  #    61
Id.#1       6854-2
Id.#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        dpH=1/div
start V    .000 ml
```




```
========
```

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6854.-5729	TANK 9-1	1-23-95	10:46	25

Determination	Method/Standard	Result Units	Charge Code	Returns
OH LIQ	LA-211-102	uG/ML	KBLWD	0

Sample Size	Customer ID
? 3mL	TRIP BLK

Remarks, Calculations, Results

Robby Wendland <42

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-9-95		2/16/95	

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	0.016
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:		Date:	02/16/95
Approved by:		Date:	2/16/95

Form 211102_1 Rev. 1.3

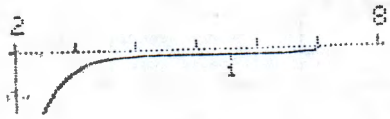
R 6854-5729

date 95-02-09 time 10:07
GET pH 12 # 62
Id.#1 6852
Id.#2 .1994
pH(init) 7.02

	V/ml	pH
EP1	.009	5.57

manual stop
======== 100

date 95-02-09 time 10:08
GET pH 12 # 62
.10ml/div ΔpH=1/div
start V .000 ml



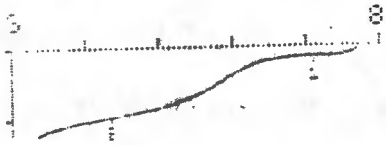
========

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	[illegible]
EP2	.098	[illegible]

manual stop
======== 3ml

date 95-02-09 time 10:11
GET pH 12 # 63
.10ml/div ΔpH=1/div
start V .200 ml



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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6854.-5829	TANK 9-1	1-23-95	10:46	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
OH LIQ	LA-211-102	uG/ML	KBLWD	0

Sample Size	Customer ID
? 3m	TRIP BLK

Remarks, Calculations, Results:
DUPLICATE SAMPLE

Robby Wendland <42

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-9-95		2/16/95	

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

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

		Dup
Type: Dup	Sample Size (mL) SS	3.000
	Concentration of HNO3 (Molarity)	0.1994
Work List: 5387	HNO3 Titrant at OH end-point in mL	0.016
	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 #: R6854-5829	Detection Limit = 125µg / SS * DF	
Instrument Code	Detection Limit (µg/mL)	4.17E+01
Analyst: R. Wendland	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
Date: 02/09/95	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
Time: 03:00 PM		Dup
	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:		Date:	02/16/95
Approved by:		Date:	2/16/95

Form 211102_1 Rev. 1.3

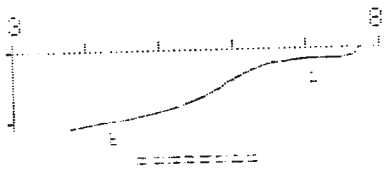
R6854-5829

date 95-02-09 time 10:14
GET pH 12 # 64
Id.#1 6852-2
Id.#2 .1994
pH(init) 7.74

	V/ml	pH
EP1	.016	7.12
EP2	.099	4.35

manual stop
======== 3ml

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



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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6853.-5529	TANK 9-1	1-23-95	10:42	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
OH	LA-211-102	% RECOVERY	KBLWD	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	Time Completed	Lab Unit Mgr	
2-9-95		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:	RW Schroeder	Date:	02/13/95
Approved by:		Date:	2/16/95

Form 211102_1 Rev. 1.3

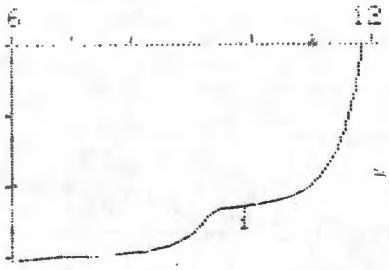
R 6853 -5529

date [illegible] time 10:21
GET pH 12 # 66
Id.#1 1
Id.#2 .1994
pH(init) 11.81

	V/ml	pH
EP1	.228	9.85
EP2	.299	7.26

manual stop
========

date 95-02-09 time 1[illegible]:21
GET pH 12 # [illegible]6
.1Cml [illegible]
start [illegible] .200 [illegible]1



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WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH

WHC-SD-WM-DP-081
REV 1

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		Description	Lab ID
1	LMCS	R6850-5529	11		
2	BLK	R6851-5629	12		
3	SAM	R6852-5729	13		
4	DUP	R6852-5829	14		
5	SAM	R6854-5729	15		
6	DUP	R6854-5829	16		
7	LMCS	R6853-5529	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
LMCS	21N8B			

A-6000-881 (03/92)

9513316.2700

WHC-SD-WM-DP-081
REV 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Batch 5387

Serial No	Sample Point	Date	Time Issued	Priority
R 6850.-5529	TANK 9-1	1-23-95	10:31	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
OH	LA-211-102	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? .050	STD

Remarks, Calculations, Results:
S273 ITS-OH
STD# 21N8B RESULT 9.05 E-1 M
STD VAL 9.39 E-1 M %REC 96.4 %

Robby Wendland

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-9-95		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	0.227
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 #	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		
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)	9.05E-01
	OH in Sample in µg/mL (PPM)	1.54E+04

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

Form 211102_1 Rev. 1.3

R6850-5529

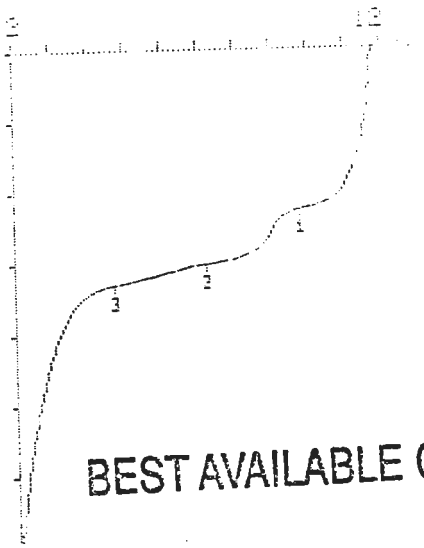
calibration 2017
date 95-02-09
pH(S) 1 7.00
pH(S) 2 10.00
t.cal. 24.0 °C
slope(rel) .977
U(as) 24.0 mV
electr. input 1
========

date 95-02-09 time 08:43
GET pH 12 # 57
Id.#1 1
Id.#2 .1934
pH(init) 11.71

	V/ml	pH
EP1	.227	9.82
EP2	.360	7.19
EP3	.531	4.71

stop volt.reached
========

date 95-02-09 time 08:44
GET pH 12 # 57
.10ml/div dpH=1/div
start V .800 mV



BEST AVAILABLE COPY

9513316.2701

WHC-SD-WM-DP-081
REV 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6851.-5629	TANK 9-1	1-23-95	10:33	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
OH	LA-211-102	uG/ML	KBLWD	0

Sample Size	Customer ID
? DIRECT	BLK

Remarks, Calculations, Results
REAGENT BLANK

<42

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

RWS 2-13-95

The Result is < Detection Limit

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

Form 211102_1 Rev. 1.3

Page 1 of 1

R 6851-5629

```
date 95-02-09 time 09:56
GET pH          12  #   58
Id.#1            0
Id.#2        .1994
pH(init)      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	Sample Point	Date	Time Issued	Priority
R 6852.-5729	TANK 9-1	1-23-95	10:37	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
OH LIQ	LA-211-102	uG/ML	KBLWD	0

Sample Size	Customer ID
? 3mL	I-1

Remarks, Calculations, Results

<42

Robby Wendland

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-9-95		2/16/95	

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

RWS 2-13-95

The Result is < Detection Limit

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

Form 211102_1 Rev. 1.3

R6852-5729

```
date 95-02-09 time 09:58
GET pH          12  #   59
Id.#1         6854
Id.#2        .1994
pH(init)      5.29
            V/ml          pH
EP1         .007        4.24
manual stop
        ========
```

.500

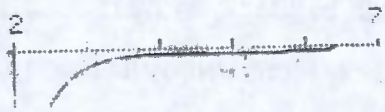
```
date 95-02-09 time 09:58
GET pH          12  #   59
.10ml/div        ΔpH=1/div
start V    .000 ml
```

```
        ========
```

```
date 95-02-09 time 10:00
GET pH          12  #   60
Id.#1         6854
Id.#2        .1994
pH(init)      6.30
            V/ml          pH
EP1         .008        5.19
manual stop
        ========
```

3ml

```
date 95-02-09 time 10:00
GET pH          12  #   60
.10ml/div        ΔpH=1/div
start V    .000 ml
```



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9513316.2703

WHC-SD-WM-DP-081
REV 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6852.-5829	TANK 9-1	1-23-95	10:37	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
OH LIQ	LA-211-102	uG/ML	KBLWD	0

Sample Size	Customer ID
? 3mL	I-1

Remarks, Calculations, Results
DUPLICATE SAMPLE

<42

R. WENDLAND

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)

		std
Type	Sample Size (mL) SS	3.000
std Dup	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

RWS 2-13-95

The Result is < Detection Limit

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

Form 211102_1 Rev. 1.3

R6852-5829

```
date 95-02-09 time 10:02
GET pH          12  #   61
Id.#1       6854-2
Id.#2        .1994
pH(init)      5.90
            V/ml          pH
EP1         .007        4.83
manual stop
        ========
```

3mL

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

```
========
```

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9513316.2704

WHC-SD-WM-DP-081
REV 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6854.-5729	TANK 9-1	1-23-95	10:46	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
OH LIQ	LA-211-102	uG/ML	KELWD	0

Sample Size	Customer ID
? 3mL	TRIP BLK

Remarks, Calculations, Results

Robby Wendland <42

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-9-95		2/16/95	

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	0.016
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:		Date:	02/16/95
Approved by:		Date:	2/16/95

Form 211102_1 Rev. 1.3

R6854-5429

```
date 95-02-09 time 10:07
GET pH          12  #   62
Id.#1         6852
Id.#2        .1994
pH(init)      7.02
             V/ml          pH
EP1          .009        5.57
manual stop
         ========
```

100

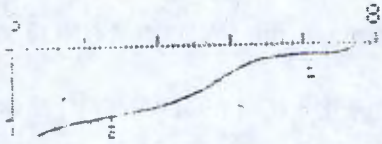
```
date 95-02-09 time 10:08
GET pH          12  #   62
.10ml/div        ΔpH=1/div
start V    .000 ml
```

```
         ========
```

```
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        [illegible]
EP2          .098        4.[illegible]
manual stop
         ========
```

3mL

```
date 95-02-09 time 10:11
GET pH          12  #   63
.10ml/div        ΔpH=1/div
start V    .000 ml
```




```
         ========
```

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9513316.2705

WHC-SD-WM-DP-081
REV 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No	Sample Point	Date	Time Issued	Priority
R 6854.-5829	TANK 9-1	1-23-95	10:46	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
OH LIQ	LA-211-102	uG/ML	KBLWD	0

Sample Size	Customer ID
? 3m	TRIP BLK

Remarks, Calculations, Results
DUPLICATE SAMPLE

Robby Wendland <42

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-9-95		2/16/95	

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:		Date:	02/16/95
Approved by:		Date:	2/16/95

Form 211102_1 Rev. 1.3

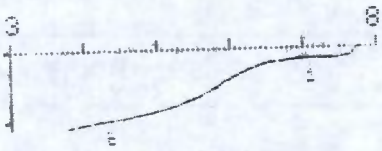
R6854-5829

date 95-02-09 time 10:14
GET pH 12 # 64
Id.#1 6852-2
Id.#2 .1994
pH(init) 7.74

	V/ml	pH
EP1	.016	7.12
EP2	.099	4.35

manual stop
========

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



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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6853.-5529	TANK 9-1	1-23-95	10:42	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
OH	LA-211-102	% RECOVERY	KBLWD	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	Time Completed	Lab Unit Mgr	
2-9-95		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:	RW Schroeder	Date:	02/13/95
Approved by:		Date:	2/16/95

Form 211102_1 Rev. 1.3

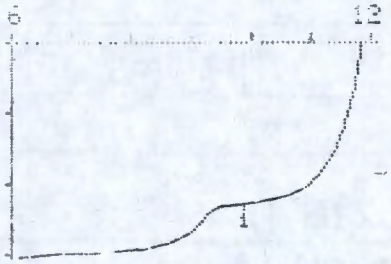
R6853-5529

date [illegible] time 10:21
GET pH 12 # 66
Id.#1 1
Id.#2 .1994
pH(init) 11.81

	V/ml	pH
EP1	.228	9.85
EP2	.299	7.26

manual stop
========

date 95-02-09 time 1[illegible]:21
GET pH 12 # [illegible]
.1Cmi[illegible]
start v .000 ml



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9513316.2707

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH

WHC-SD-WM-DP-081
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-505-161 / G-1
Technologist: J.K. Soto	Date: 1-25-95
Starting Time: 0100	Temperature N/a
Ending Time: 1500	Chemist: B. Wels, S. Parong

Comments:

	Description	Lab ID		Description	Lab ID
1	LMCS 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	LMCS 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
LMCS Check Std 5575	38B48 / Direct			
Spike 5575	38B48 / 1 ml			

A-6000-881 (03/92)

INDUCTIVELY COUPLED PLASMA ANALYSIS

Batch 5349

Serial No	Sample Point	Date	Time Issued	Priority
R 6835.-5550	TANK 9-1	1-19-95	10:22	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-~~151~~/41 DK 1-25-95	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? 5575 38848 Direct	STD

Remarks, Calculations, Results

LMCS CHECK SAMPLE

Na (4.945/5)(100) = 98.90 %

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
DK Lato				
Hrs	Hrs	Hrs	Hrs	Hrs
				DK Lato 1-24-95

Date	Time Completed	Lab Unit Mgr	
1-25-95	1500	1-27-95 Brian Wels	DK Lato 1-24-95

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

Serial No	Sample Point	Date	Time Issued	Priority
R 6836.-5650	TANK 9-1	1-19-95	10:24	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-~~151~~/41 DK 1-25-95	uG/ML	KBLWD	0

Sample Size	Customer ID
? Direct	BLANK

Remarks, Calculations, Results

REAGENT BLANK

Na <.10 ug/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
DK Lato				
Hrs	Hrs	Hrs	Hrs	Hrs
	-			

Date	Time Completed	Lab Unit Mgr	
1-25-95	1500	1-27-95 Brian Wels	DK Lato 1-24-95

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

INDUCTIVELY COUPLED PLASMA ANALYSIS

Serial No	Sample Point	Date	Time Issued	Priority
R 6837.-5750	TANK 9-1	1-19-95	10:26	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP-LIQ	LA-505-~~[illegible]~~/4 1-25-95	uG/ML	KBLWD	0

Sample Size	Customer ID
? 2-10 ml DF 6	I-1

Remarks, Calculations, Results

Na 95.1 x 6 = 5.71 E+2 ug/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
JK Lafo				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
01-25-95	1500	1-27-95 Brian Wels	JK Lafo 1-26-95

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

Serial No	Sample Point	Date	Time Issued	Priority
R 6837.-5850	TANK 9-1	1-19-95	10:26	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP-LIQ	LA-505-~~[illegible]~~/4 1-25-95	uG/ML	KBLWD	0

Sample Size	Customer ID
? 2-10 ml DF 6	I-1

Remarks, Calculations, Results

DUPLICATE SAMPLE

Na 95.3 x 6 = 5.72 E+2 ug/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
JK Lafo				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
01-25-95	1500	1-27-95 Brian Wels	JK Lafo 1-26-95

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

Serial No	Sample Point	Date	Time Issued	Priority
R 6837.-5950	TANK 9-1	1-19-95	10:26	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151/4 1-25-95	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? 2ml sample + 1ml SS75 — 9ml	I-1

Remarks, Calculations, Results

SAMPLE SPIKED ID
SPIKE ID 58B48
SPIKE VOLUME 1ml

Sample is > than 4x spike.

Analyst	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
JK Lito				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
01-25-95	1500	1-27-95 Brian Ulola	JK Lito 1-26-95

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

Serial No	Sample Point	Date	Time Issued	Priority
R 6837.-5050	TANK 9-1	1-19-95	10:26	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151/4 1-25-95	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? 2ml sample + 1ml SS75 — 9ml	I-1

Remarks, Calculations, Results

SAMPLE SPIKE
DUPLICATE

SPIKE ID 58B48
SPIKE VOL 1ml

Duplicate sample is > than 4x duplicate spike.

Analyst	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
JK Lito				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
01-25-95	1500	1-27-95 Brian Ulola	JK Lito 1-26-95

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

INDUCTIVELY COUPLED PLASMA ANALYSIS

Serial No	Sample Point	Date	Time Issued	Priority
R 6838.-5750	TANK 9-1	1-19-95	10:31	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP-LIQ	LA-505-~~151~~/4/ DR 1-25-95	uG/ML	KBLWD	0

Sample Size	Customer ID
? Direct	I-TRIPBK

Remarks, Calculations, Results:

Na .387 g/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
DK Lgto				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
01-25-95	1500	1-27-95 Brian Ulola	DK Lgto 1-26-95

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

Serial No	Sample Point	Date	Time Issued	Priority
R 6838.-5850	TANK 9-1	1-19-95	10:31	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP-LIQ	LA-505-~~151~~/4/ DR 1-25-95	uG/ML	KBLWD	0

Sample Size	Customer ID
? Direct	I-TRIPBK

Remarks, Calculations, Results

DUPLICATE SAMPLE

Na .384 g/l

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
DK Lgto				
Hrs	Hrs	Hrs	Hrs	Hrs
	-			

Date	Time Completed	Lab Unit Mgr	
01-25-95	1500	1-27-95 Brian Ulola	DK Lgto 1-26-95

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

INDUCTIVELY COUPLED PLASMA ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 6839.-5550	TANK 9-1	1-19-95	10:34	25

Determination	Method Standard	Result Units	Charge Code	Reruns
ICP	LA-505-~~[illegible]~~161 JK 1-24-95	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? SST5 38848 Direct	STD

Remarks, Calculations, Results:

LMCS CHECK SAMPLE

Na (5.155/5)(100) = 103.10 %

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
JK				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
01-25-95	1500	1-27-95 Brian Wells	JK 1-24-95

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

Analysis Report Summary Wed 01-25-95 02:16:01 PM page 1

#	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.

DK Lgd
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

Analysis Report Averages Wed 01-25-95 02:16:01 PM page 3

#	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

ANALYTICAL BATCH

WHC-SD-WM-DP-081
REV 1

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

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

Comments:

	Description	Lab ID
1	SST4 LMCS check STD	R6850-5550
2	Reag. Blk	R6851-5650
3	Tank 9-1 Sample	R6852-5750
4	" Dup	R6852-5850
5	" Post Spike	R6852-5950
6	" Post Spike Dup	R6852-6050
7	SST4 LMCS check STD	R6853-5550
8	Tank 9-1 Sample	R6854-5750
9	" Dup	R6854-5850
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
SST4 ICP	38B48 DIRECT			DIRECT
Post Spike SST4	38B48 2 ml			10 ml

A-6000-881 (03/92)

INDUCTIVELY COUPLED PLASMA ANALYSIS

Batch 5388

Serial No.	Sample Point	Date	Time Issued	Priority
R 6850.-5550	TANK 9-1	1-23-95	10:31	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-141 DK 2-8-95	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? 5575 38648 Direct	STD

Remarks, Calculations, Results
LMCS CHECK SAMPLE
Na (5.01/5)(100) = 100.20 %

Analyst 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
DK				
Hrs	Hrs	Hrs	Hrs	Hrs
				DK 2-8-95

Date	Time Completed	Lab Unit Mgr	
2-8-95	1400	02/09/95 S. Parry	DK 2-8-95

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

Serial No	Sample Point	Date	Time Issued	Priority
R 6851.-5650	TANK 9-1	1-23-95	10:33	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-141 DK 2-8-95	uG/ML	KBLWD	0

Sample Size	Customer ID
? Direct	BLK

Remarks, Calculations, Results
REAGENT BLANK
Na <.10 ug/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
DK				
Hrs	Hrs	Hrs	Hrs	Hrs
	-			

Date	Time Completed	Lab Unit Mgr	
2-8-95	1400	02/09/95 S. Parry	DK 2-8-95

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

INDUCTIVELY COUPLED PLASMA ANALYSIS

Serial No	Sample Point	Date	Time Issued	Priority
R 6852.-5750	TANK 9-1	1-23-95	10:37	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP-LIQ	LA-505-~~151~~/161 DK 2-8-95	uG/ML	KBLWD	0

Sample Size	Customer ID
? 5-5 ml (DF 2)	I-1

Remarks, Calculations, Results

Na 132 x 2 = 264 g/ml

Analyst 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
DK Lato				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-8-95	1400	02/09/95 S. Pang	DK Lato 2-8-95

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

Serial No.	Sample Point	Date	Time Issued	Priority
R 6852.-5850	TANK 9-1	1-23-95	10:37	25

Determination	Method Standard	Result Units	Charge Code	Reruns
ICP-LIQ	LA-505-~~151~~/161 DK 2-8-95	uG/ML	KBLWD	0

Sample Size	Customer ID
? 5-5 ml (DF 2)	I-1

Remarks, Calculations, Results

DUPLICATE SAMPLE

Na 134 x 2 = 268 g/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
DK Lato				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-8-95	1400	02/09/95 S. Pang	DK Lato 2-8-95

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

INDUCTIVELY COUPLED PLASMA ANALYSIS

Serial No	Sample Point	Date	Time Issued	Priority
R 6852.-5950	TANK 9-1	1-23-95	10:37	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-~~151~~/141 DK 2-8-95	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? 5-5 ml	I-1

Remarks, Calculations, Results

SAMPLE SPIKED ID
SPIKE ID 38848
SPIKE VOLUME 2 ml

Sample is > 4x the spike.

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
DK Lato				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-8-95	1400	02/09/95 S. Parry	DK Lato 2-8-95

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

Serial No	Sample Point	Date	Time Issued	Priority
R 6852.-5050	TANK 9-1	1-23-95	10:37	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-~~151~~/141 DK 2-8-95	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? 5-5 ml	I-1

Remarks, Calculations, Results

SAMPLE SPIKE
DUPLICATE

SPIKE ID 38848
SPIKE VOL 2 ml

Duplicate sample is > 4x the duplicate spike.

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
DK Lato				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-8-95	1400	02/09/95 S. Parry	DK Lato 2-8-95

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

INDUCTIVELY COUPLED PLASMA ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 6853.-5550	TANK 9-1	1-23-95	10:42	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-141 2-8-95	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? SSTS 38B48 Direct	END STD

Remarks, Calculations, Results

LMCS CHECK SAMPLE

Na (4.982/5)(100) = 99.64 %

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
JK Lab				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-8-95	1400	02/09/95 S. Parry	JK Lab 2-8-95

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

INDUCTIVELY COUPLED PLASMA ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 6854.-5750	TANK 9-1	1-23-95	10:46	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP-LIQ	LA-505-~~151~~/141 2-8-95	uG/ML	KBLWD	0

Sample Size	Customer ID
? Direct	TRIP BLK

Remarks, Calculations, Results

Na .5285 g/gl

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
DK Lato				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-8-95	1400	02/09/95 S. Pang	DK Lato 2-8-95

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

Serial No	Sample Point	Date	Time Issued	Priority
R 6854.-5850	TANK 9-1	1-23-95	10:46	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP-LIQ	LA-505-~~151~~/141 2-8-95	uG/ML	KBLWD	0

Sample Size	Customer ID
? Direct	TRIP BLK

Remarks, Calculations, Results

DUPLICATE SAMPLE

Na .530 g/gl

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
DK Lato				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-8-95	1400	02/09/95 S. Pang	DK Lato 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 DUPLICATE 2-8-95	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

DK Lo
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 2-8-95	-.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 2-8-95	.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 2-8-95	-.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 JM 2-8-95	-.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 JM 2-8-95	.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 JM 2-8-95	.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 JM 2-8-95	.0016	.0006	.0046
11	HNO3 REAG BLK	.0008	.0009	.0023

Analysis Report Averages Wed 02-08-95 10:46:48 AM page 4

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

JK Lato
02-08-95
Tank 9-1 (R6850-R6854)

KB

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH

WHC-SD-WM-DP-081
REV 1

Lab Segment Serial No. R6836- R6839	Customer ID: I 1
Analysis: IC	Sample Prep:

Instrument: 4000i J.M. Fuge 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. James Fuge

	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 5771 JMF 5/17/95
8	Sample Dup	R6838-5871
9	LMCS STD	R6839-5571
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	70N9A.100			
LMCS Spike	70N9-A.100			

A-6000-081 (03/91)

ION CHROMATOGRAPHIC ANALYSIS

Batch 5350

Serial No	Sample Point	Date	Time Issued	Priority
R 6835.-5571	TANK 9-1	1-19-95	10:22	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? .100-10	STD

Remarks, Calculations, Results

STD # 70N9-A

EDP 974 F	54.49	97.48
EDP 972 CL	76.09	101.45
EDP 968 NO2	529.13	100.21
EDP 978 NO3	571.99	98.96
EDP 976 PO4	491.21	95.19
EDP 970 SO4	598.85	99.97

Anthony Pierantoni

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1-29-95	1500	Jean Lage	R E Wright

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

Serial No	Sample Point	Date	Time Issued	Priority
R 6836.-5671	TANK 9-1	1-19-95	10:24	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	uG/ML	KBLWD	0

Sample Size	Customer ID
? Direct	BLANK

Remarks, Calculations, Results

REAGENT BLANK

F < .1 SO4 < 1 Corrected PHB

Cl < .2

NO2 < 1

NO3 < 1

PO4 Anthony Pierantoni

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Corrected 2-4-95

Date	Time Completed	Lab Unit Mgr	
1-29-95	1500	Jean Lage	R E Wright

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

ION CHROMATOGRAPHIC ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 6837.-5771	TANK 9-1	1-19-95	10:26	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	uG/ML	KBLWD	0

Sample Size	Customer ID
? 1-10	I-1

Remarks, Calculations, Results

F ~~3.35E+2~~ gmF 2/1/95
Cl ~~4.85E+4~~ gmF 2/1/95
NO_2 ~~4.51E+4~~ gmF 2/1/95
NO_3 ~~1.15E+5~~ gmF 2/1/95
PO_4 ~~1.77E+4~~ gmF 2/1/95

F <1.1
Cl 48.5
NO_2 45.1
NO_3 115
PO_4 17.7
SO_4 86.5

Corrected RWB

Anthony Pacuntio

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Corrected

Date	Time Completed	Lab Unit Mgr	
1-29-95	1500	Jaxw Faye	RE Wright

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

Serial No.	Sample Point	Date	Time Issued	Priority
R 6837.-5871	TANK 9-1	1-19-95	10:26	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	uG/ML	KBLWD	0

Sample Size	Customer ID
? 1-10	I-1

Remarks, Calculations, Results

DUPLICATE SAMPLE

F ~~3.17E+2~~ gmF 2/1/95
Cl ~~4.73E+4~~ gmF 2/1/95
NO_2 ~~4.39E+4~~ gmF 2/1/95
NO_3 ~~1.14E+5~~ gmF 2/1/95
PO_4 ~~1.73E+4~~ gmF 2/1/95

F <1.1
Cl 47.3
NO_2 43.9
NO_3 ~~+++~~ 114 gmF 2/1/95
PO_4 17.3
SO_4 86.4

Anthony Pacuntio

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Corrected 2-1-95

Date	Time Completed	Lab Unit Mgr	
1-29-95	1500	Jaxw Faye	RE Wright

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

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

Serial No	Sample Point	Date	Time Issued	Priority
R 6837.-5971	TANK 9-1	1-19-95	10:26	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? 1-10	I-1

Remarks. Calculations. Results

SAMPLE SPIKED ID R6837
SPIKE ID 70N9-A
SPIKE VOLUME 1.00

F gmF 2/1/95 ~~116.5~~ % F 121.4
Cl gmF 2/1/95 ~~113.4~~ % Cl 112.0
NO_2 gmF 2/1/95 ~~108.3~~ % NO_2 108.3
NO_3 gmF 2/1/95 ~~112.3~~ % NO_3 112.5
PO_4 gmF 2/1/95 ~~104.9~~ % PO_4 104.1
SO_4 111.0

Anthony Purinton

Corrected RHS

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Corrected

Date	Time Completed	Lab Unit Mgr
1-29-94	1500	

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)	1.00E-01	4.85E+01	4.51E+01	1.15E+02	1.77E+01	8.65E+01
sample	SAMPLE DILUTION FACTOR	11	11	11	11	11	11
Work List							
5350	DUPLICATE DATA (µg/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 µg/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. (µg/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						

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

Data Entry by: Date: 01-Feb-95
Approved by: Date: 2/1/95

Form L2 Rev. 2.0

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

Serial No	Sample Point	Date	Time Issued	Priority
R 6837.-5071	TANK 9-1	1-19-95	10:26	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	% RECOVERY	KBLWD	0

Sample Size	Customer ID
?	I-1

Remarks. Calculations. Results

SAMPLE SPIKE R6837
DUPLICATE

SPIKE ID 70N9-A
SPIKE VOL .100

F	~~113.1%~~ gmF 2/1/95	F	117.7
Cl	~~110.9%~~ gmF 2/1/95	Cl	109.3
NO_2	~~107.9%~~ gmF 2/1/95	NO_2	106.3
NO_3	~~107.8%~~ gmF 2/1/95	NO_3	107.3
PO_4	~~101.5%~~ gmF 2/1/95	PO_4	100.2
		SO_4	106.2

Anthony Purinton

Corrected PHS

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Corrected

Date	Time Completed	Lab Unit Mgr	
1-29-94	1500	Jayne Fryer	R E Wright

54-6800-081 (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)	1.00E-01	4.73E+01	4.39E+01	1.14E+02	1.73E+01	8.64E+01
sample	SAMPLE DILUTION FACTOR	11	11	11	11	11	11
Work List							
5350	DUPLICATE DATA (µg/mL)						
Test Code	DUPLICATE DILUTION FACTOR						
ic							
Matrix	SPIKE + SAMPLE (in µg/mL)	6.59E+00	5.55E+01	1.00E+02	1.76E+02	6.90E+01	1.50E+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. (µg/mL)	56	75	528	578	516	599

Analyst: Anthony Purinton
Date: 01/29/95
Time:

Spike Recovery = [((Spike+Sample)-(Sample)*(Vol.of Sample&Diluent))/((Spike Vol.)*(Spike Std
Note: (For spike recovery when the sample conc. is less than detection limit you do NOT subt
Relative Percent Difference = ((Sample - Duplicate) / ((Sample + Duplicate) / 2) * 100)
Less than Values are Calculated from the Detection Limit*Dilution Factor
Spike Actual = Spike Found / Spike Recovery

v RESULTS v	SAMPLE	DUPLICAT	DUP RPD	SPIKE FOU	SPIKE RE	SPIKE AC
FLOURIDE (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: Jayne Fryer Date: 01-Feb-95
Approved by: Jayne Fryer Date: 2/1/95

Form L2 Rev. 2.0

ION CHROMATOGRAPHIC ANALYSIS

Serial No	Sample Point	Date	Time Issued	Priority
R 6838.-5771	TANK 9-1	1-19-95	10:31	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	uG/ML	KBLWD	0

Sample Size	Customer ID
? Direct	I-TRIPBK

Remarks, Calculations, Results

F < .1
Cl < .2
NO_2 < 1
NO_3 < 1
PO_4 < 1
SO_4 < 1

Anthony Pierantoni

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Corrected

Date	Time Completed	Lab Unit Mgr
1-29-95	1500	

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

Serial No	Sample Point	Date	Time Issued	Priority
R 6838.-5871	TANK 9-1	1-19-95	10:31	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	uG/ML	KBLWD	0

Sample Size	Customer ID
? Direct	I-TRIPBK

Remarks, Calculations, Results

DUPLICATE SAMPLE

F < .1
Cl < .2
NO_2 < 1
NO_3 < 1
PO_4 < 1
SO_4 < 1

Anthony Pierantoni

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Corrected

Date	Time Completed	Lab Unit Mgr
1-29-95	1500	

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

ION CHROMATOGRAPHIC ANALYSIS

Serial No	Sample Point	Date	Time Issued	Priority
R 6839.-5571	TANK 9-1	1-19-95	10:34	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
IC	LA-BBB-105	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? ,100-10 STD # 70N9-A	STD

Remarks, Calculations, Results			% Rec
EDP 974	F	55.31	98.71
EDP 972	CL	74.55	99.40
EDP 968	NO2	516.45	98.19
EDP 978	NO3	563.44	97.48
EDP 976	PO4	503.74	97.47
EDP 970	SO4	599.50	100.00

Anthony Pursuto

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1-29-95	1500	Jean Fuge	R E Wright

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

9513316.2720

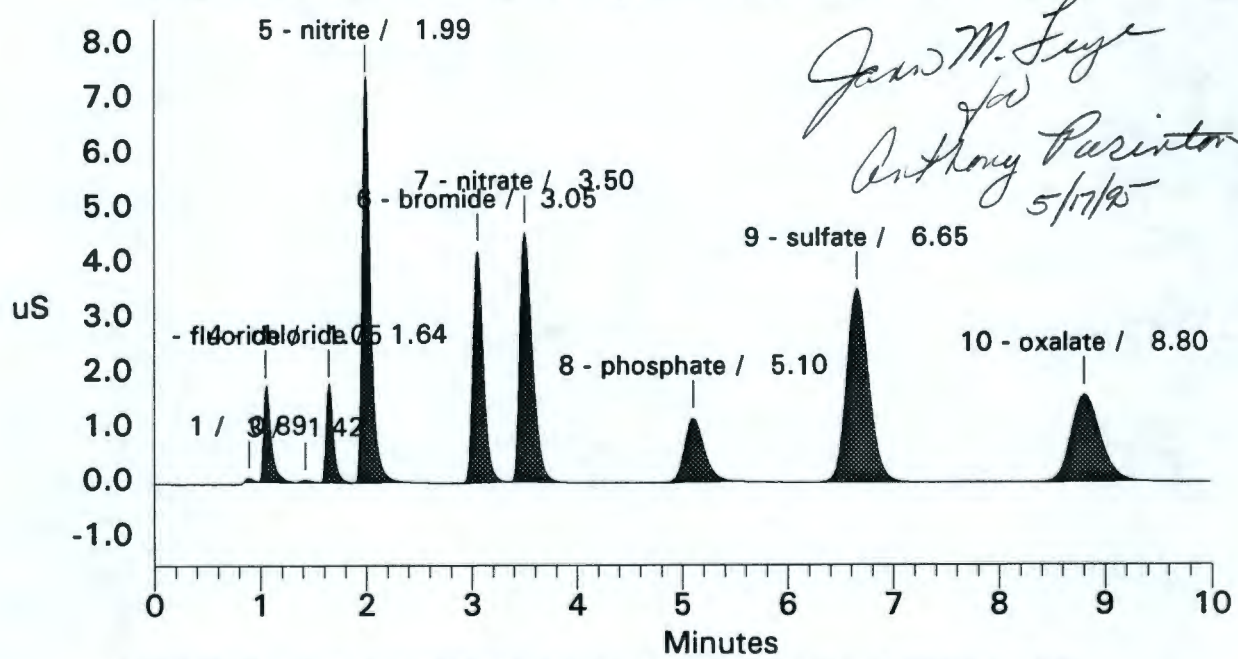
Sample Name: STD70N9-A R6835	Date: 01/29/1995 09:10:08
Data File : C:\DX\DATA\95012971.D02	
Method : C:\DX\METHOD\AUTOMEL.MET	
ACI Address: 1 System: 1 Inject#: 2	Detector:CDM-1
Analyst : Column:	

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	97.31	1719	8807	2	0.96
3	1.42		0.000		44	282	2	
4	1.64	chloride	76.086	101.45	1740	8546	1	-2.38
5	1.99	nitrite	529.128	100.21	7327	41142	1	-3.40
6	3.05	bromide	569.376	99.54	4236	29146	1	-2.24
7	3.50	nitrate	571.996	98.96	4567	38044	1	-0.28
8	5.10	phosphate	491.207	95.20	1172	15398	1	-3.41
9	6.65	sulfate	598.851	99.80	3529	51519	1	-6.21
10	8.80	oxalate	506.153	100.63	1586	30608	1	-6.38
		Totals	3397.288		25992	223831		

File: 95012971.D02 Sample: STD70N9-A R6835



Jan M. Lege for Anthony Parsinton 5/17/95

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

WHC-SD-WM-DP-081
REV 1

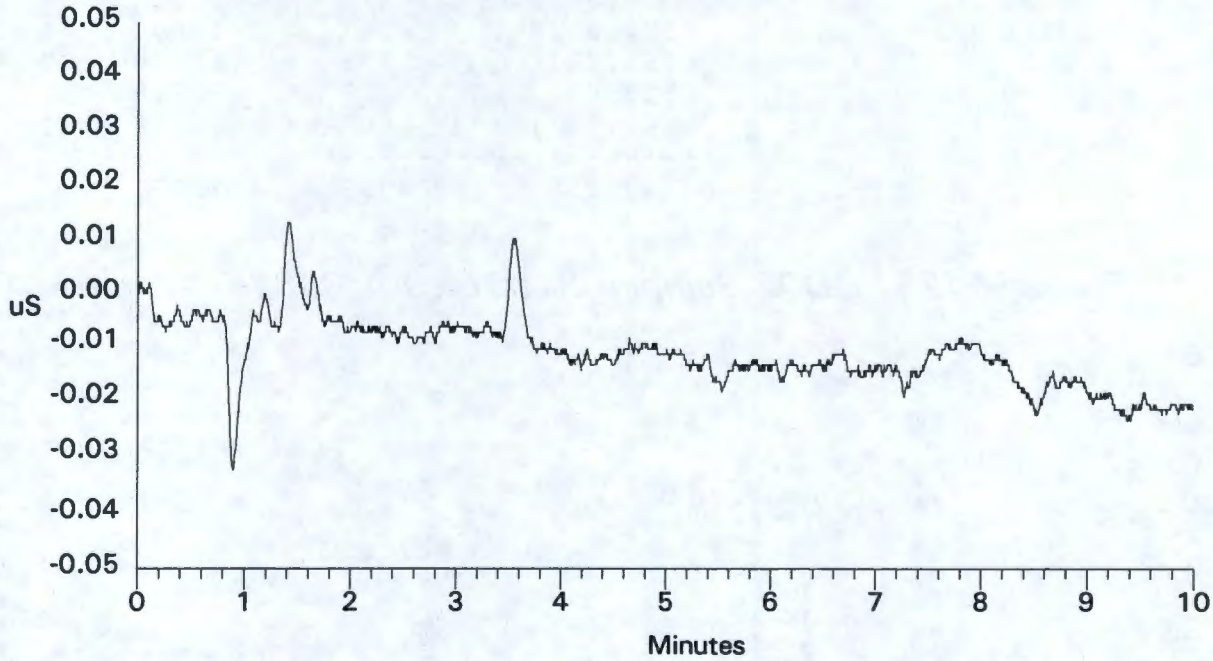
```
==============================================================================
| Sample Name: BLANK                          Date: 01/29/1995 08:46:56        |
| Data File  : C:\DX\DATA\95012971.D01                                         |
| Method     : C:\DX\METHOD\AUTOMEL.MET                                        |
| 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



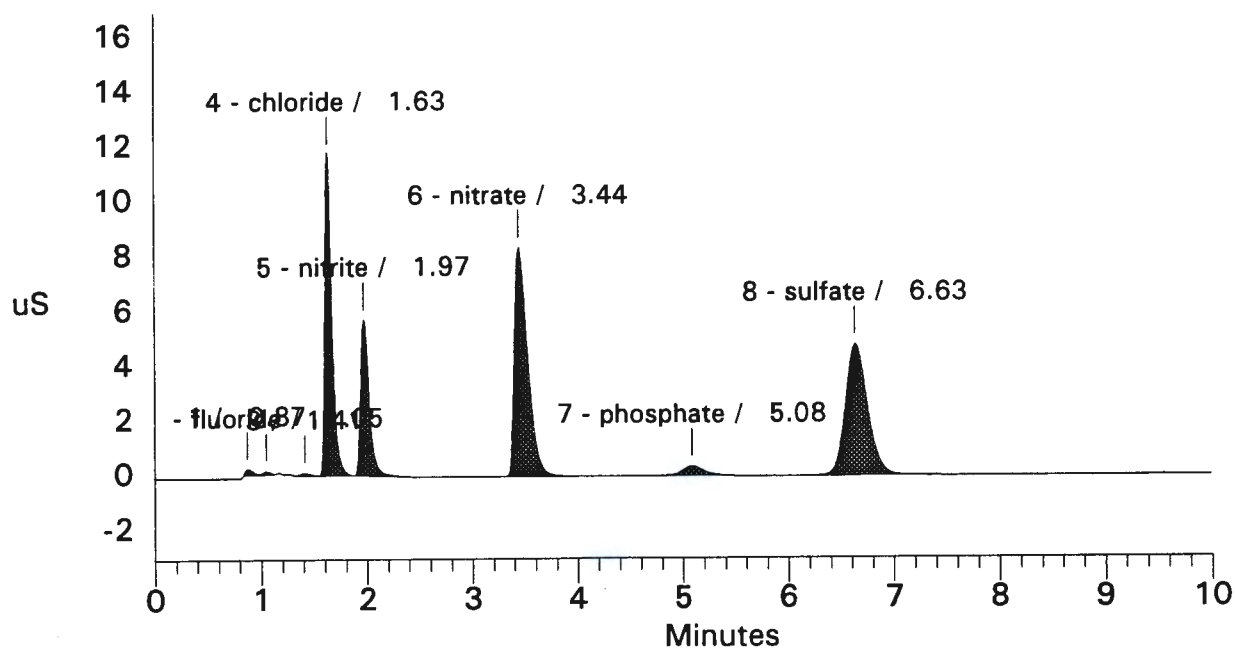
Sample Name: R 6837-5771 Date: 01/29/1995 12:52:59
Data File : C:\DX\DATA\95012971.D07
Method : C:\DX\METHOD\AUTOMEL.MET
ACI Address: 1 System: 1 Inject#: 7 Detector:CDM-1
Analyst : Column: 1ml - 10 JMF 5/12/95

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	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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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 Detector:CDM-1
Analyst : Column:

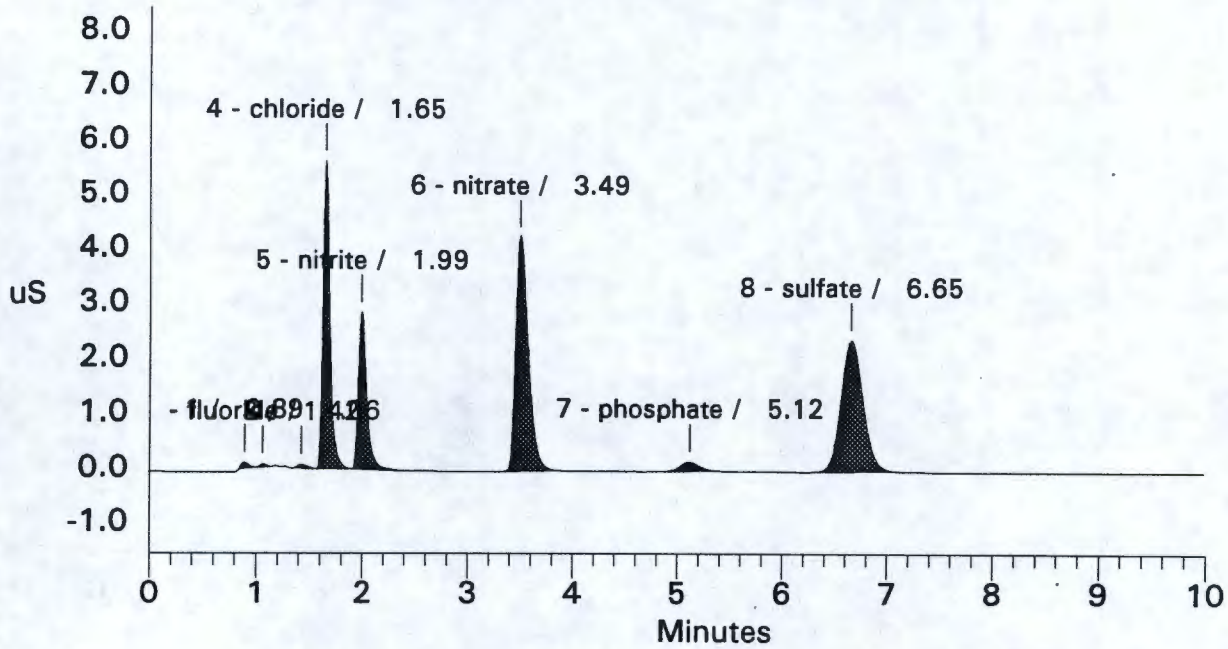
Sample Size .500-10 JMF 5/1/95

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	0.89		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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WHC-SD-WM-DP-081
REV 1

9513316.2722

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 Detector:CDM-1
Analyst : Column:

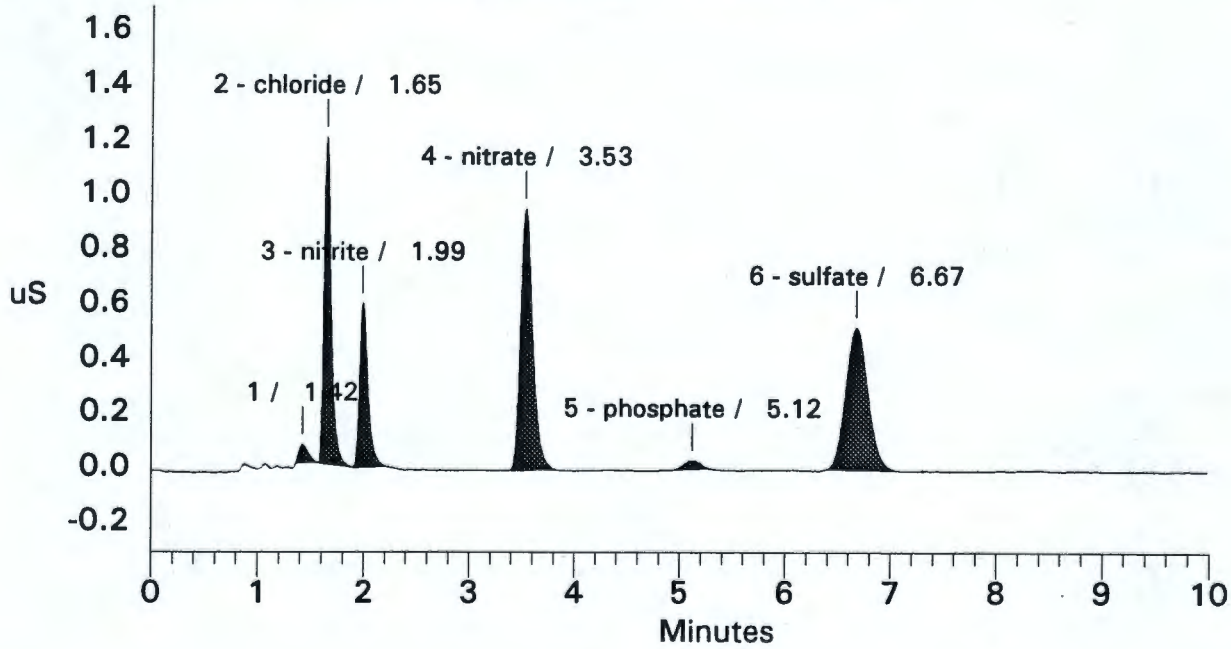
.100-10 gmF 5/17/95

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

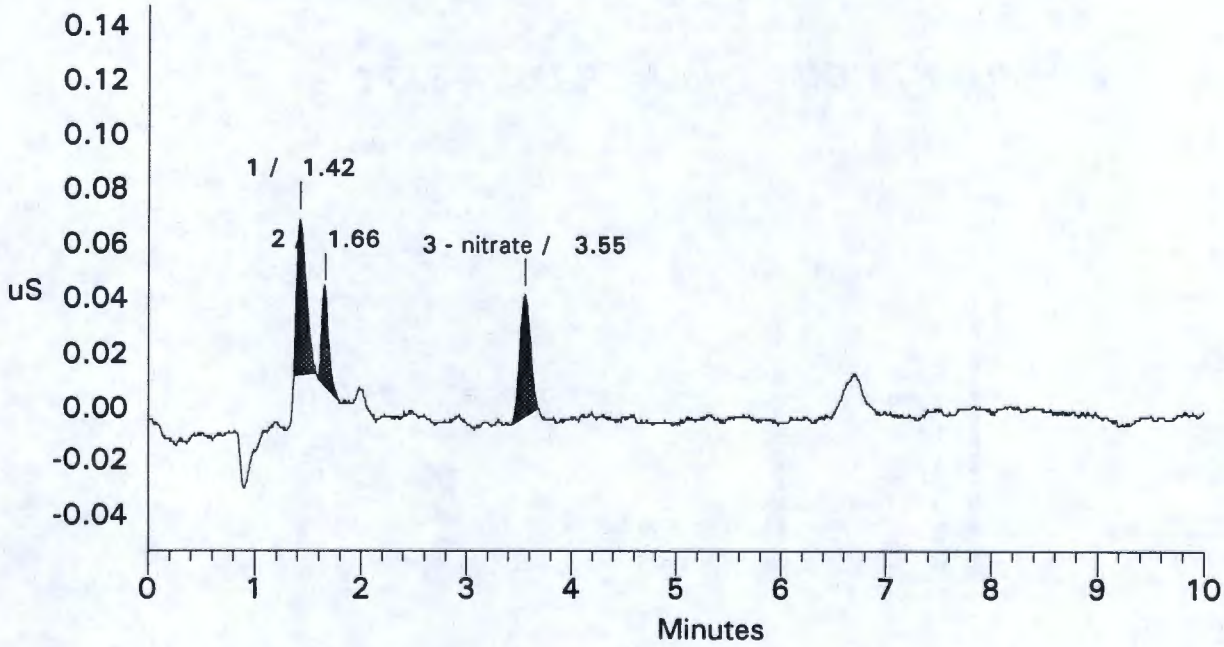
Sample Name: R 6837-5771 Date: 01/29/1995 09:44:13
Data File : C:\DX\DATA\95012971.D03
Method : C:\DX\METHOD\AUTOMEL.MET
ACI Address: 1 System: 1 Inject#: 3 .100-10-.100-10 Detector:CDM-1
Analyst : Column: Samplesize JMF 5/17/95

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 JMF 5/12/95 9513316.2723

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 Detector:CDM-1
Analyst : Column:

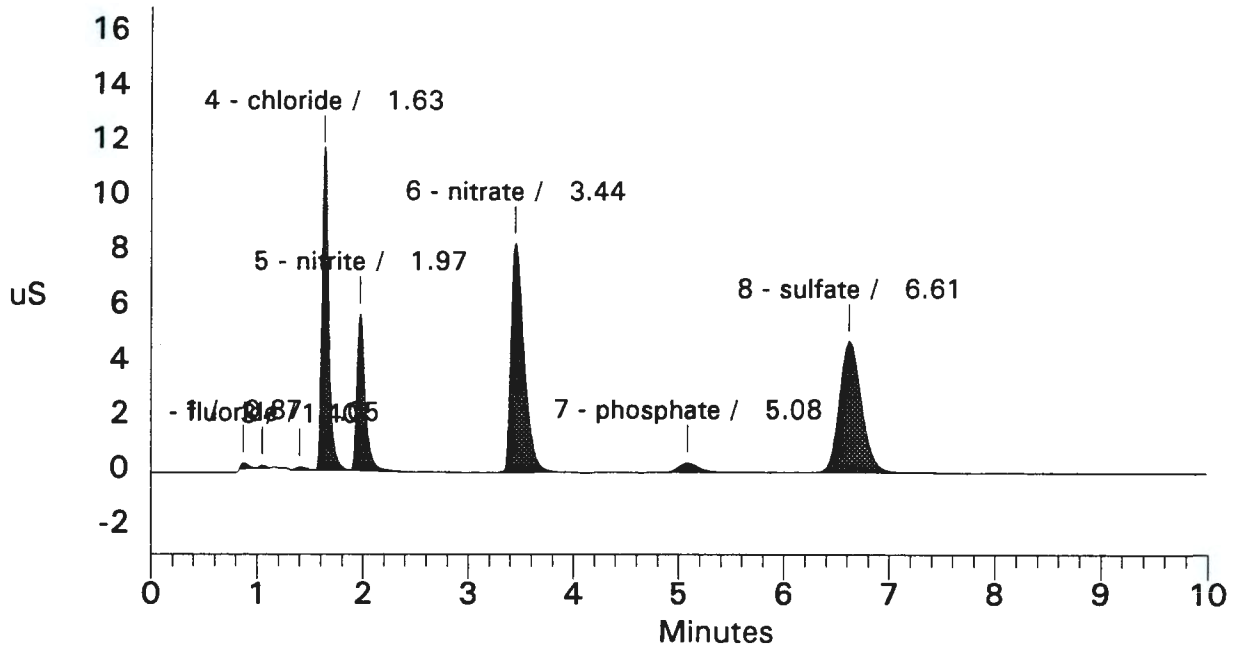
Sample Size 1ml - 10 JMF 5/12/95

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	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-081
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	Detector:CDM-1
Analyst : Column:	

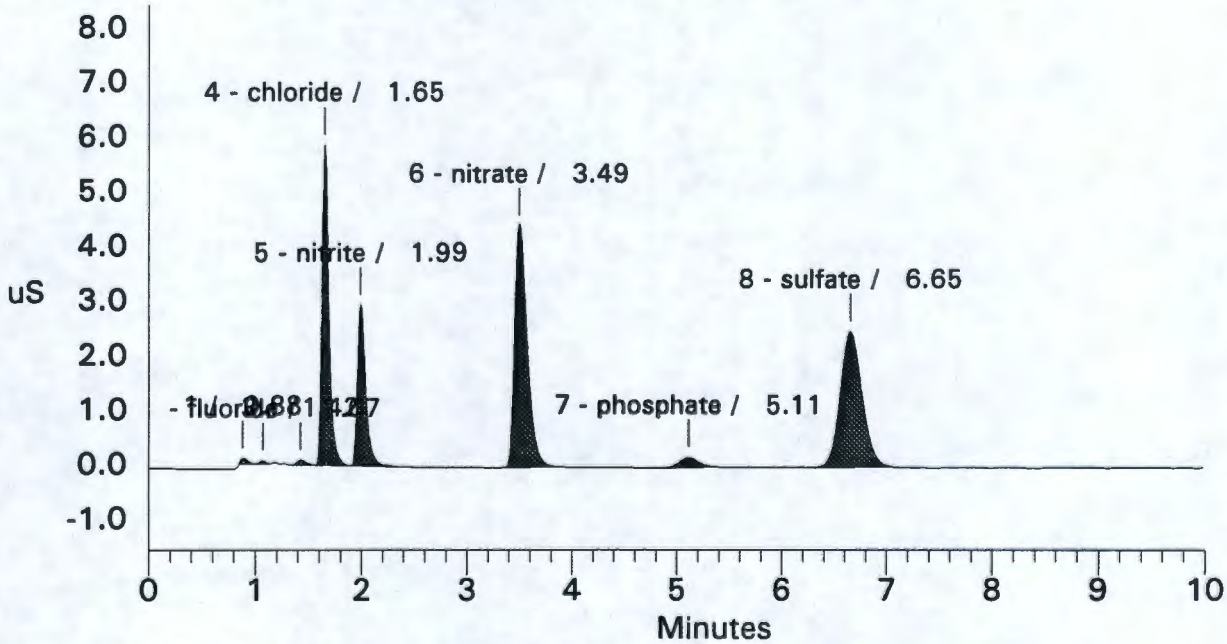
sample size .500 - 10 gMF 5/17/95

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



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9513316.2724

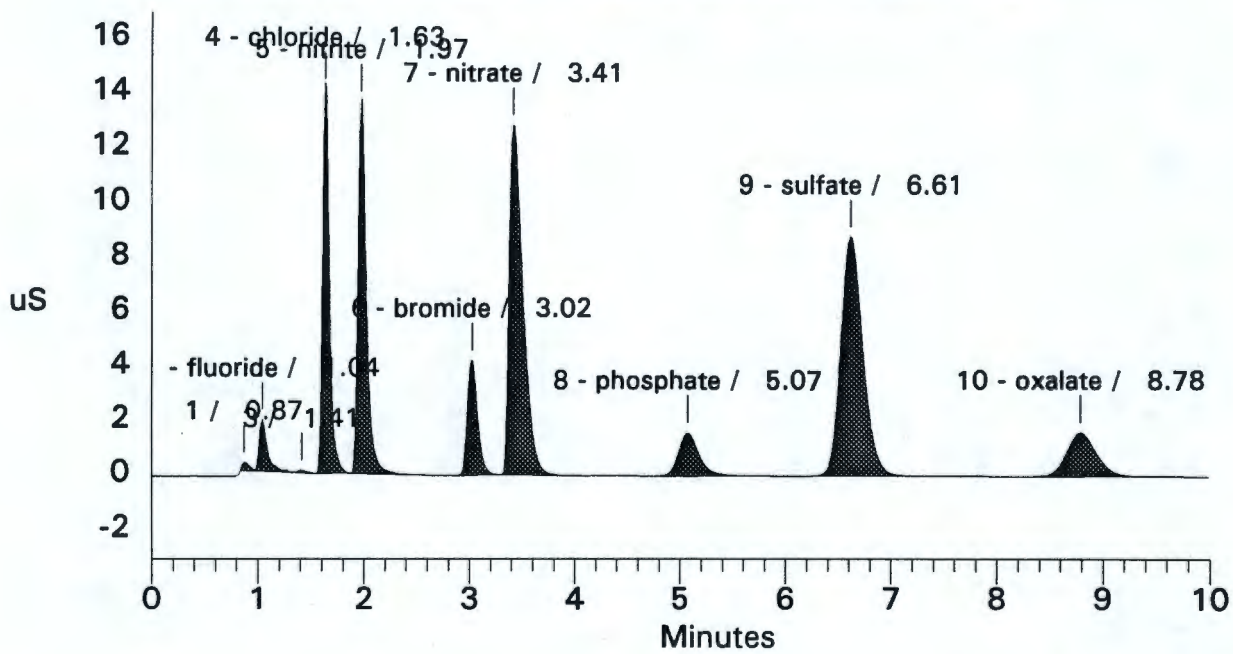
Sample Name: R 6837-5971SPIKE Date: 01/29/1995 13:21:21
Data File : C:\DX\DATA\95012971.D09
Method : C:\DX\METHOD\AUTOMEL.MET
ACI Address: 1 System: 1 Inject#: 9 sample size Detector:CDM-1
Analyst : Column: 1ml - 10ml gmf 5/17/95

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

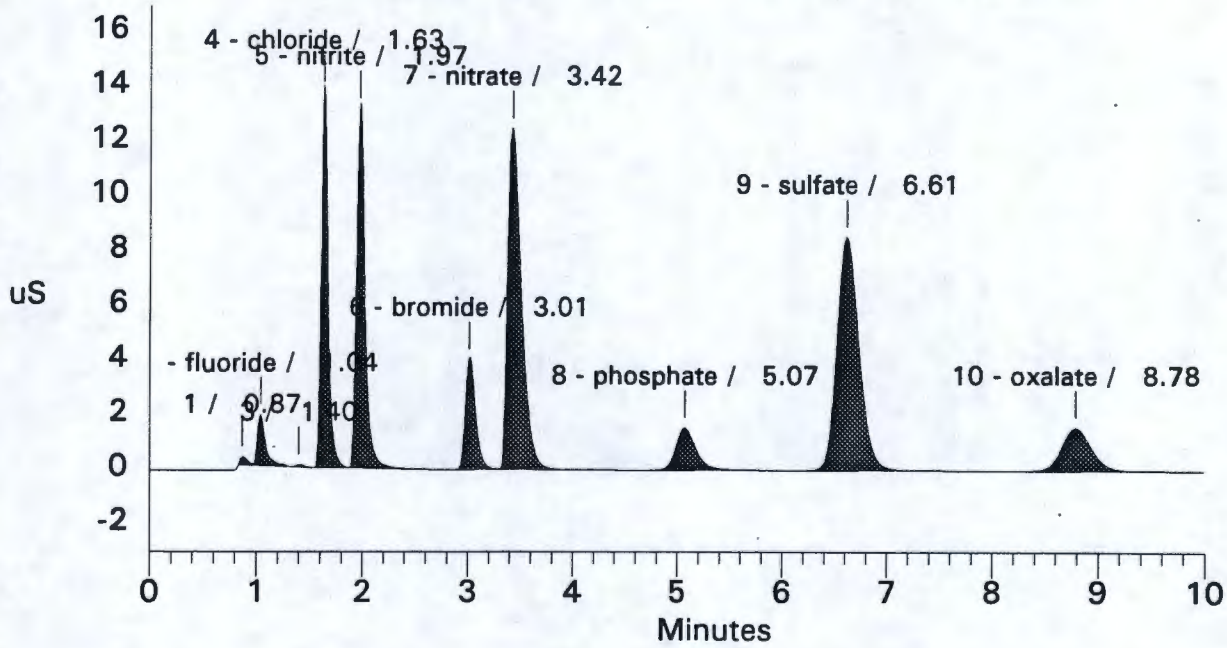
Sample Name: R 6837-5071SPIKE DUP	Date: 01/29/1995 13:35:04
Data File : C:\DX\DATA\95012971.D10	
Method : C:\DX\METHOD\AUTOMEL.MET	
ACI Address: 1 System: 1 Inject#: 10	Detector:CDM-1
Analyst : Column:	

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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9513316.2725

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 Detector:CDM-1
Analyst : Column:

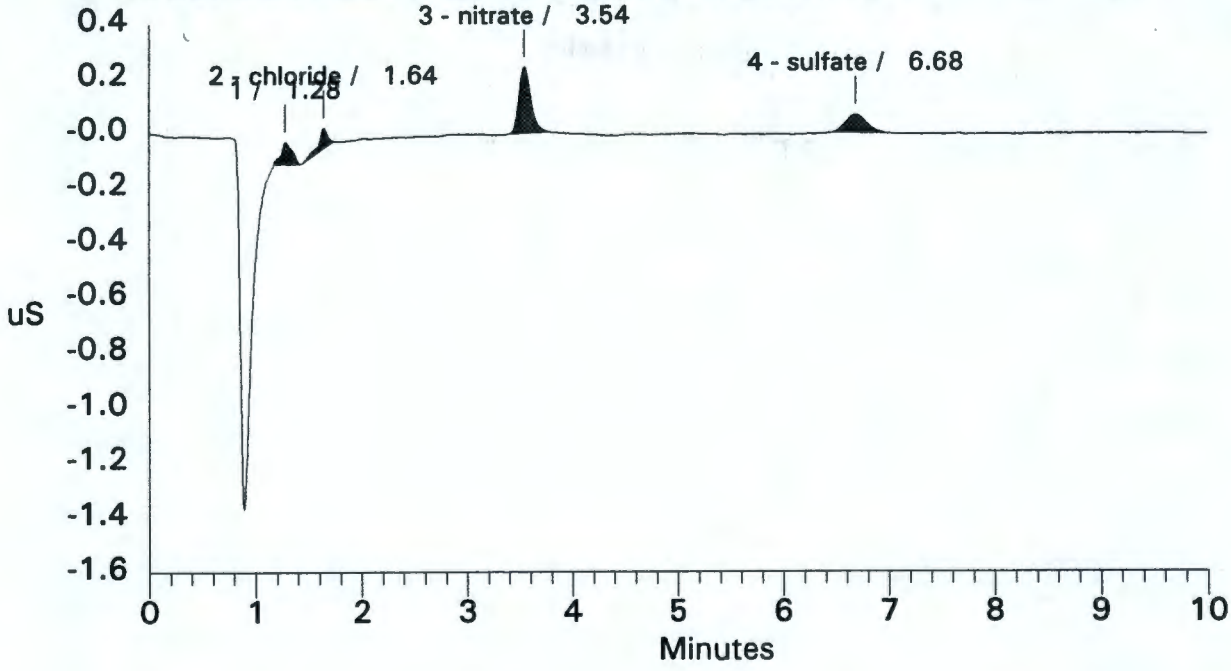
Sample Size 1ml Direct JMF 5/17/95

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		

File: 95012971.D13 Sample: R 6838-5771



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                  Detector:CDM-1          |
| Analyst    :                Column:                                             |
==================================================================================
```

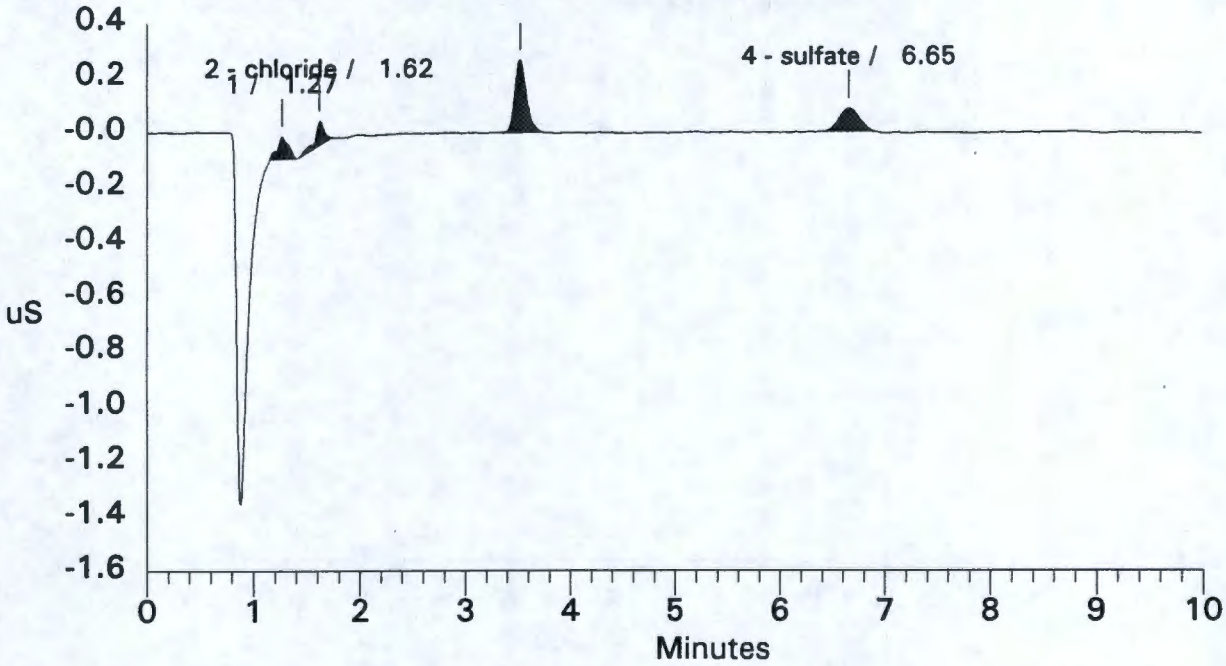
Sample Size 1ml Direct GMF 6/17/95

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
REV 1

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9513316.2726

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:	

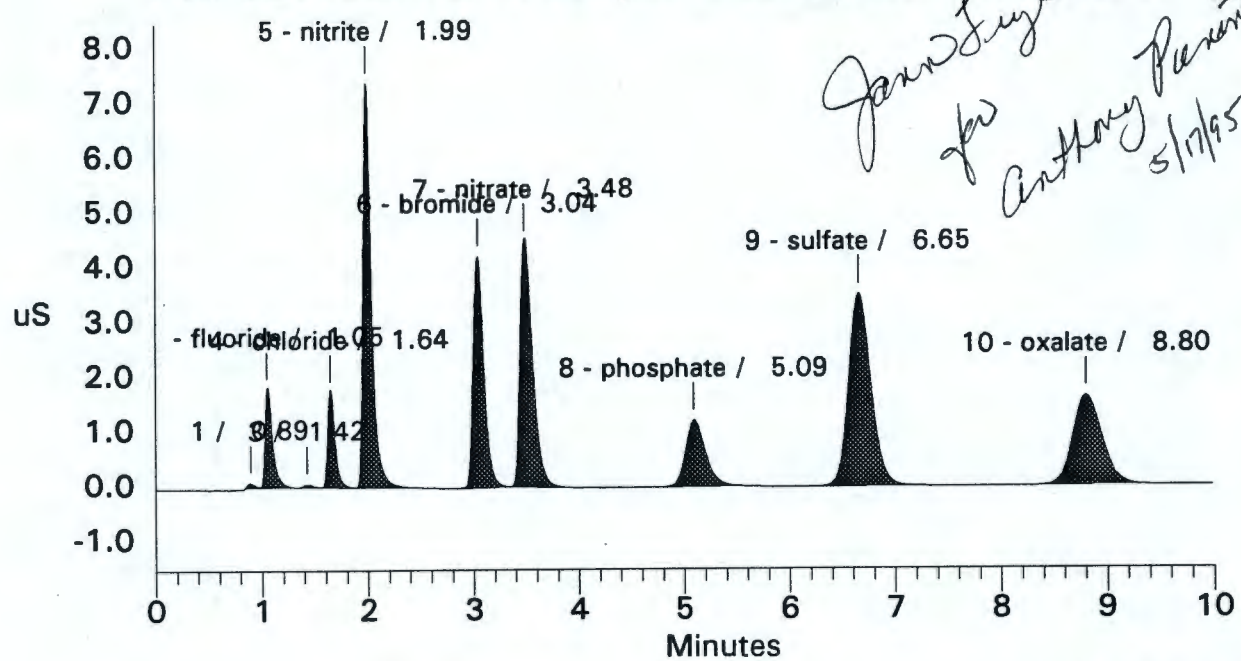
Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	101	3000	5Hz	0.00	10.00	200

********** 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	55.311	98.77	1790	8942	2	0.96
3	1.42		0.000		53	345	1	
4	1.64	chloride	74.547	99.40	1735	8372	1	-2.38
5	1.99	nitrite	518.453	98.19	7388	40272	1	-3.40
6	3.04	bromide	576.068	100.76 ~~99.67~~	4233	29509	1	-2.56
7	3.48	nitrate	563.444	97.48	4497	37444	1	-0.85
8	5.09	phosphate	503.745	97.63	1207	15817	1	-3.60
9	6.65	sulfate	599.503	100.84	3526	51578	1	-6.21
10	8.80	oxalate	519.505	103.28	1637	31461	1	-6.38
		Totals	3410.576		26142	224102		

JMF 5/17/95

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



Jan Lyle for Anthony Pacentra 5/17/95

WHC-SD-WM-DP-081
REV 1

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WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

WHC-SD-WM-DP-081 REV 1

ANALYTICAL BATCH

Lab Segment Serial No. R6852-R6854	Customer ID: I-1, TRIP BLK
Analysis: Ion Chromotography	Sample Prep: DIRECT

Instrument: AL10657	Procedure/ Rev: LA-533-105 / C-2
Technologist: DC DUNHAM David C 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			

A-6000-881 (03/92)

ION CHROMATOGRAPHIC ANALYSIS

Batch 5389

Serial No.	Sample Point	Date	Time Issued	Priority
R 6850.-5571	TANK 9-1	1-23-95	10:31	25

Determination	Method Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	% RECOVERY	KBLWD	0

Sample Size: ? , 100 ml - 10 ml Book #: 70N9-B B

Customer ID: STD

Remarks, Calculations, Results

EDP 974 F	54.7	97.7%
EDP 972 CL	72.3	96.4%
EDP 968 NO2	517	97.4%
EDP 978 NO3	558 6	96.2%
EDP 976 PO4	556 473 3	91.7%
EDP 970 SO4	478 561	93.7%
E960 Br	539	94.2%
E980 Oxalate	478	96.4%

95.6% g.m F 3/8/95

David C Dunham

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
3-2-95	1500	James M. Fuge

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

Serial No	Sample Point	Date	Time Issued	Priority
R 6851.-5671	TANK 9-1	1-23-95	10:33	25

Determination	Method Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	uG/ML	KBLWD	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

David C Dunham

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
3-2-95	1500	James Fuge

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

ION CHROMATOGRAPHIC ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 6852.-5771	TANK 9-1	1-23-95	10:37	25

Determination	Method Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	uG/ML	KBLWD	0

Sample Size	Customer ID
? 1ml - 10ml	I-1

Remarks, Calculations, Results

F = ~~2.36 E-1~~ <1.1E0 JMF 2/2/95
Cl = 2.40 E+1
NO_2 = 6.59 E+1
NO_3 = 7.23 E+1
PO_4 = 1.19 E+1

David C Dunham

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
3-2-95	1500		

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

Serial No.	Sample Point	Date	Time Issued	Priority
R 6852.-5871	TANK 9-1	1-23-95	10:37	25

Determination	Method Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	uG/ML	KBLWD	0

Sample Size	Customer ID
? 1ml - 10ml	I-1

Remarks, Calculations, Results

DUPLICATE SAMPLE
F = 2.39 E-1
Cl = 2.46 E+1
NO_2 = 4.78 E+1
NO_3 = 7.44 E+1
PO_4 = 1.22 E+1

(62.1)

2-3-95 PO4

David C Dunham

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
3-2-95	1500		

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

9513316.2728 WMC-SD-WM-DP-081
REV 1

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

Serial No	Sample Point	Date	Time Issued	Priority
R 6852.-5971	TANK 9-1	1-23-95	10:37	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
10	LA-533-105	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? 1 ml - ~~10 ml~~ + .100 ml spike 9.9 ml DLO 3-2-95	I-1

Remarks, Calculations, Results:

SAMPLE SPIKED ID R6852-5771
SPIKE ID 70N9-~~A~~D
SPIKE VOLUME .100 ml gmf 5/17/95

F= 106.1%
Cl= 140.0%
NO_2= 116.9%
NO_3= 115.4%
PO_4= 105.8%

David C Dunham

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
3-2-95	1500		

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: Date: 08-Mar-95
Approved by: Date: 3/8/95

Form L2 Rev. 2.0

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

WHC-SD-WM-DP-081
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 = |((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)	2.39E-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: Date: 08-Mar-95
Approved by: Date: 3/8/95

Form L2 Rev. 2.0

ION CHROMATOGRAPHIC ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 6852.-5071	TANK 9-1	1-23-95	10:37	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? 1ml - 9.9ml + .100ml spike	I-1

Remarks, Calculations, Results

SAMPLE SPIKE DUPLICATE R6852-5771

SPIKE ID 70N9-D
SPIKE VOL .100ml

F = 83.8%
Cl = 136.0%
NO_2 = 111.5%
NO_3 = 111.9%
PO_4 = 106.%

David C Dunham

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
3-2-95	1500	[signature]	[signature]

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

Serial No.	Sample Point	Date	Time Issued	Priority
R 6854.-5771	TANK 9-1	1-23-95	10:46	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	uG/ML	KBLWD	0

Sample Size	Customer ID
? 5 ml	TRIP BLK

Remarks, Calculations, Results

~~Cl = 2.50 E-2~~ ~~NO2 < 1~~ 3-8-95 ~~2.00E-1~~ 2-8-95
~~NO3 = 7.35 E-1~~ ~~PO4 < 1~~ 3-8-95 ~~2.00E-1~~ 2-8-95
~~F < 1.1~~ ~~2.00E-2~~ 2-8-95

F < .1
Cl < .2
NO_2 < 1
NO_3 < 1
PO_4 < 1

David C Dunham

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
3-2-95	1500	[signature]	[signature]

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

ION CHROMATOGRAPHIC ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 6854.-5871	TANK 9-1	1-23-95	10:46	25

Determination	Method Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	uG/ML	KBLWD	0

Sample Size	Customer ID
? 5 ml	TRIP BLK

Remarks, Calculations, Results

DUPLICATE SAMPLE ~~PO4 < 2.00E-1~~ 3-8-95

NO_2 ~~< 2.00E-1~~ F < .1

~~F < 2.00E-2~~ 3-8-95 Cl < .2

~~Cl = 2.50E-2~~ 3-8-95 NO_2 < 1

~~NO_3 = 7.55E-1~~ 3-8-95 NO_3 < 1

PO_4 < 1

David C Dunham

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
3-2-95	1500	James M. Fry

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

Serial No	Sample Point	Date	Time Issued	Priority
R 6853.-5571	TANK 9-1	1-23-95	10:42	25

Determination	Method Standard	Result Units	Charge Code	Reruns
IC	LA-533-105	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? .100 ml - 10 ml	END STD

Remarks, Calculations, Results

EDP 974	F	55.2	98.6
EDP 972	Cl	76.7	102.3
EDP 968	NO2	520	97.9
EDP 978	NO3	596	103.1
EDP 976	PO4	531	102.9
EDP 970	SO4	603	100.7
966	Br	574	100.3
980	Oxalate	~~475~~	95.8

David C Dunham

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
3-2-95	1500	James M. Fry

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

9513316.2730

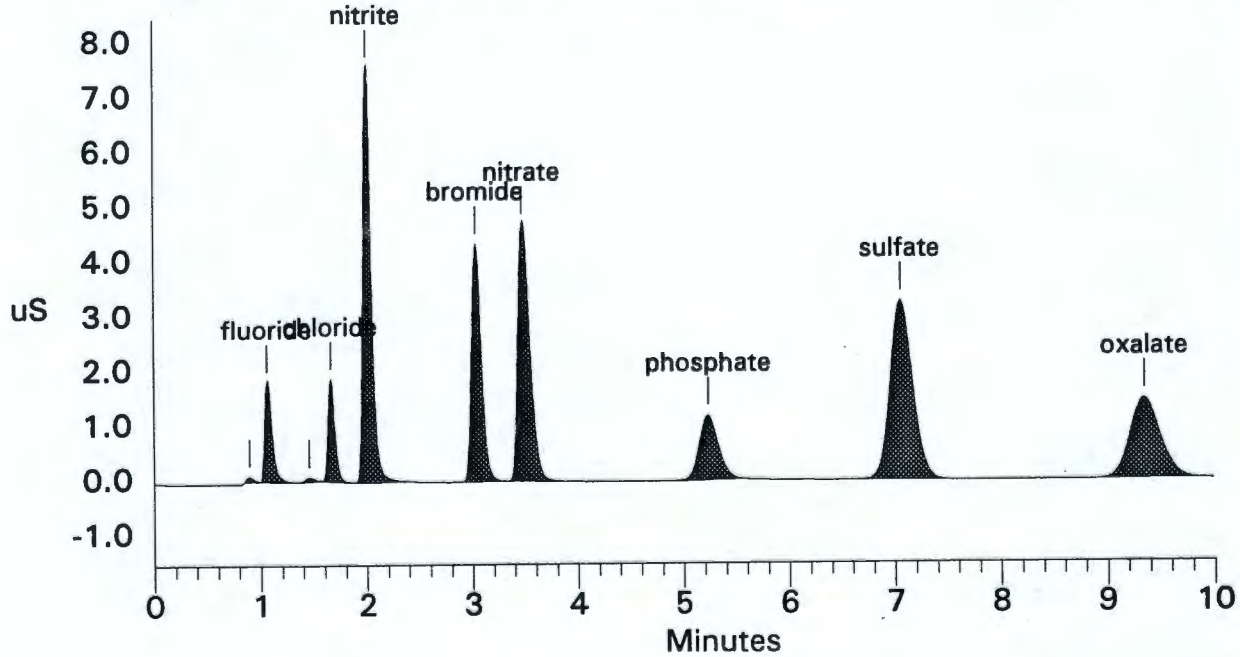
Sample Name: 70N9B Date: 02/13/1995 22:21:35
Data File : C:\DX\DATA\95021301.D02
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 2 Detector:CDM-1
Analyst : David Dunham Column: 2/13/95

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



BEST AVAILABLE COPY

WHC-SD-WM-DP-081
REV 1

BEST AVAILABLE COPY

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 160 TO 169.

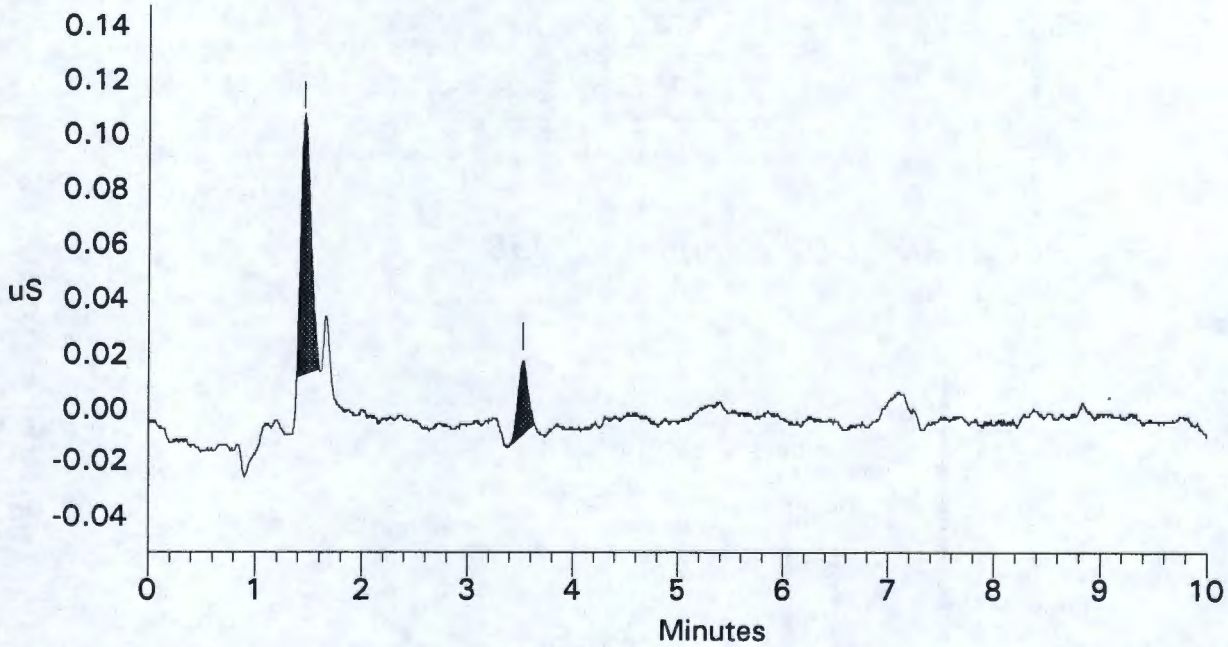
Sample Name: BLANK Date: 02/13/1995 22:06:53
Data File : C:\DX\DATA\95021301.D01
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 1 Detector:CDM-1
Analyst : David C Dunham Column:

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

9513316.2731

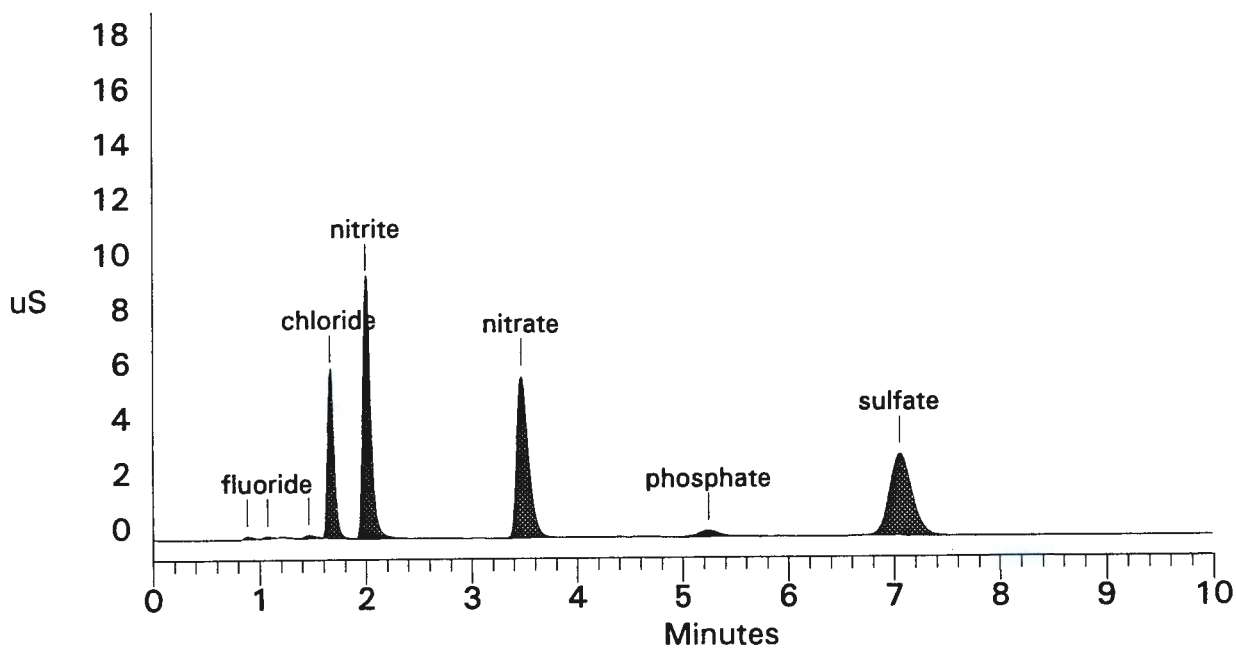
Sample Name: R6852-5771 Date: 02/13/1995 22:48:29
Data File : C:\DX\DATA\95021301.D04
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 4 Detector:CDM-1
Analyst : David Dunham Column:

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

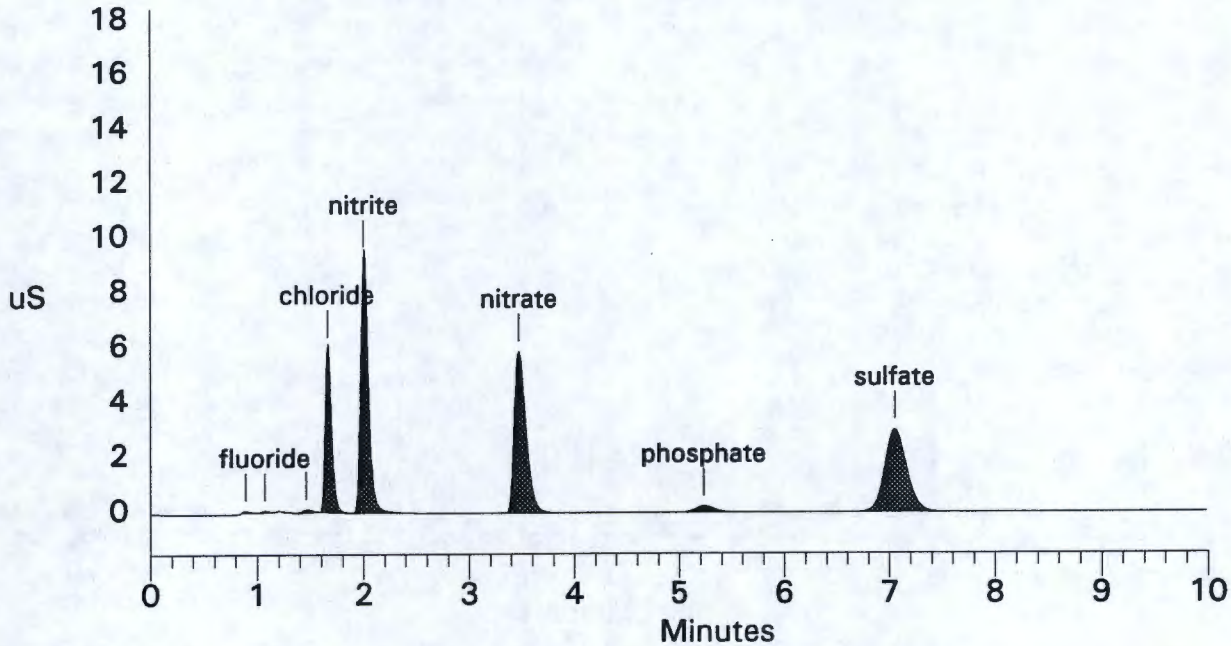
Sample Name: R6852-5871 Date: 02/13/1995 23:00:17
Data File : C:\DX\DATA\95021301.D05
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 5 Detector:CDM-1
Analyst : David Dunham Column:

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-SD-WM-DP-081
REV 1

9513316.2732

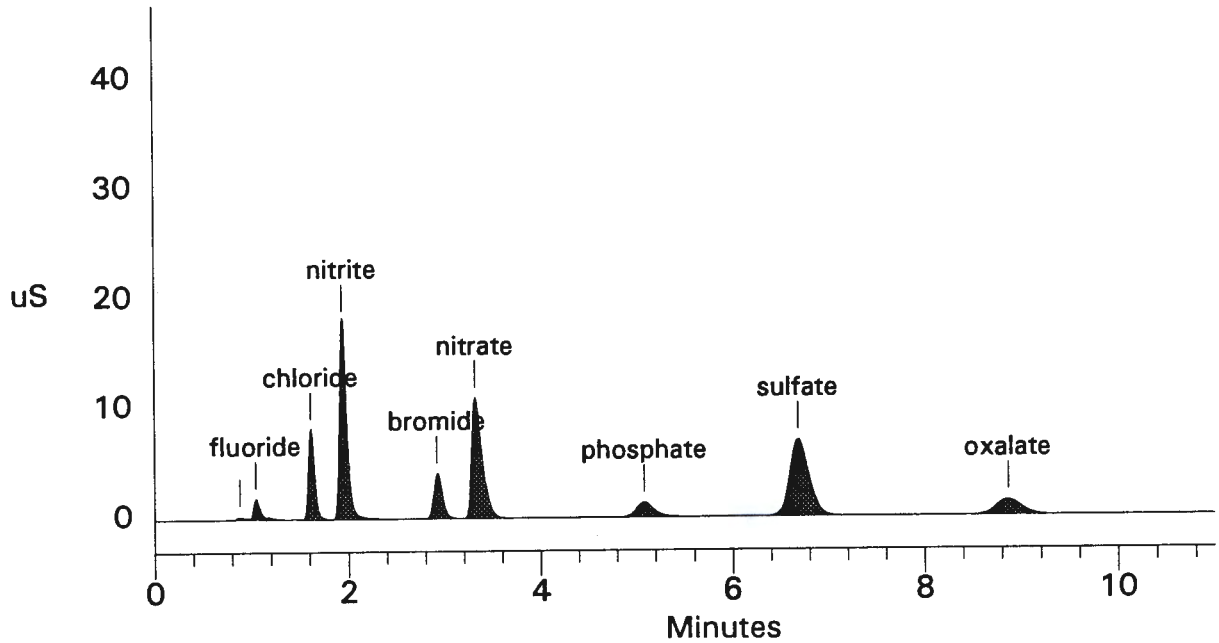
Sample Name: R6852-5971 Date: 03/02/1995 14:17:25
Data File : C:\DX\DATA\95030301.D05
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 5 Detector:CDM-1
Analyst : David Dunham Column:

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-SD-WM-DP-081
REV 1

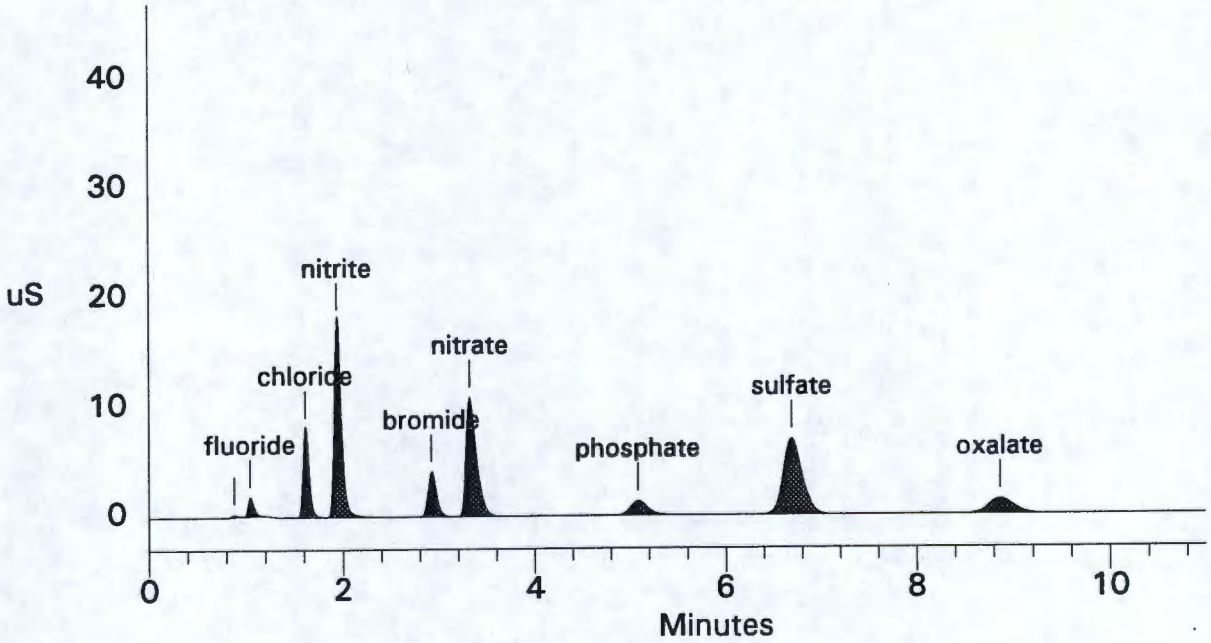
Sample Name: R6852-5071 Date: 03/02/1995 14:33:10
Data File : C:\DX\DATA\95030301.D06
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 6 Detector:CDM-1
Analyst : David C Dunham Column:

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-081
REV 1

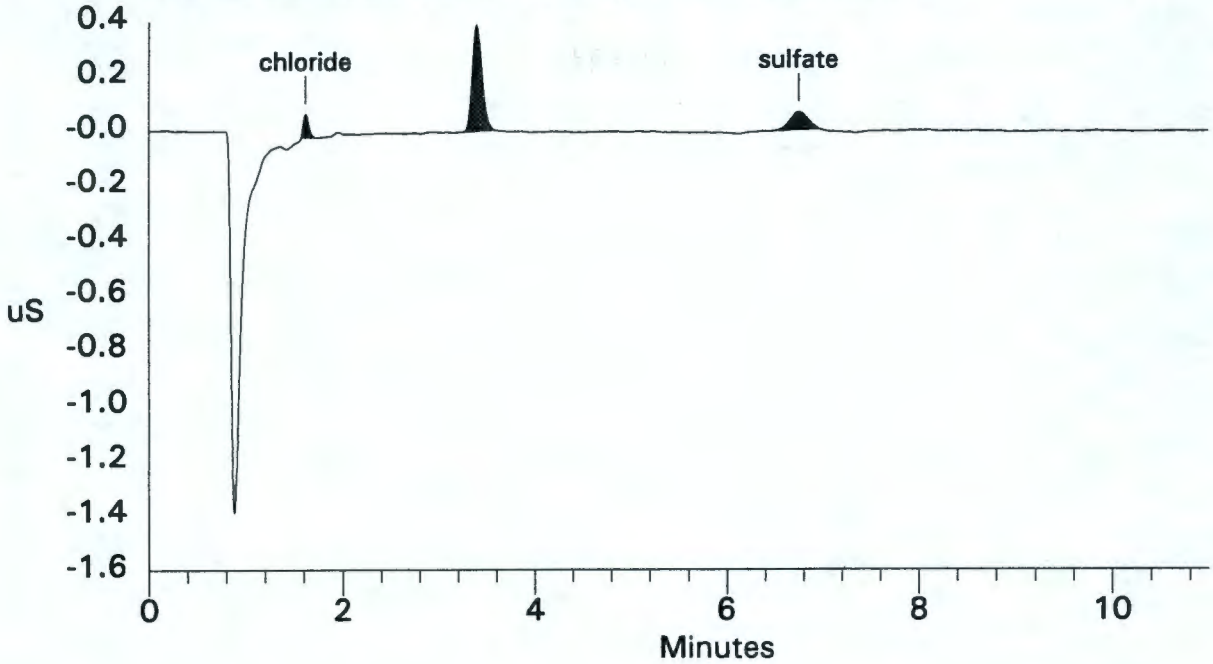
Sample Name: R6854-5771 Date: 03/02/1995 14:46:40
Data File : C:\DX\DATA\95030301.D07
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 7 Detector:CDM-1
Analyst : Column:

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		

File: 95030301.D07 Sample: R6854-5771



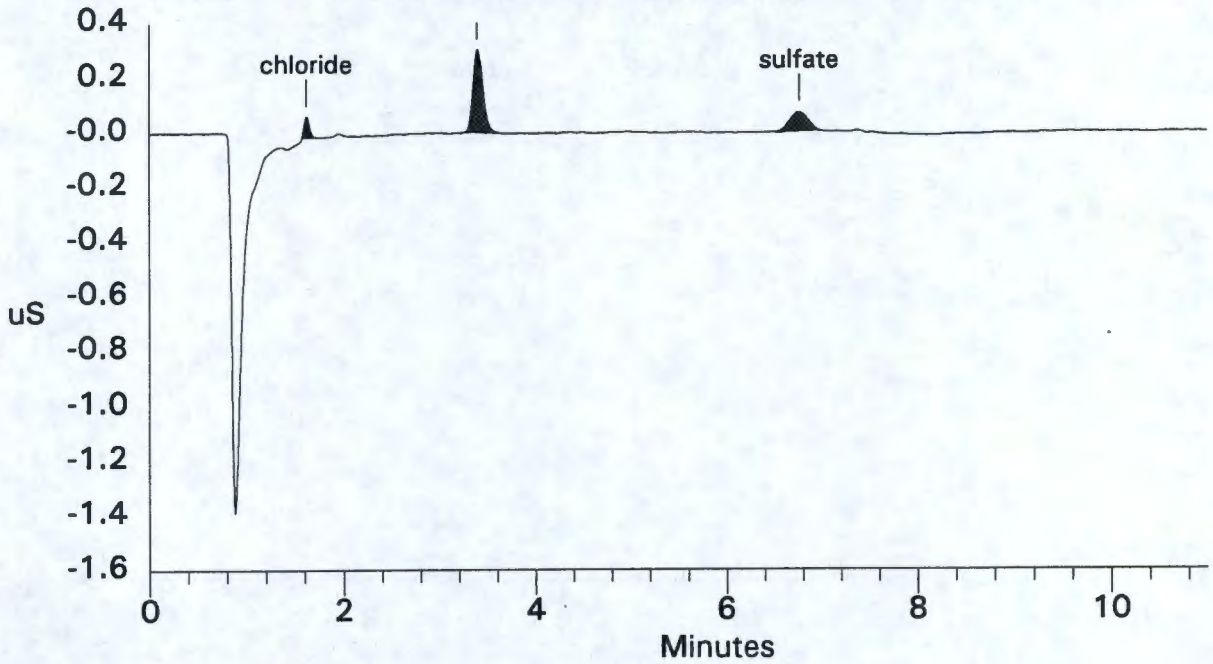
Sample Name: R6854-5871 Date: 03/02/1995 14:58:30
Data File : C:\DX\DATA\95030301.D08
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 8 Detector:CDM-1
Analyst : David Dunham Column:

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
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-081
REV 1

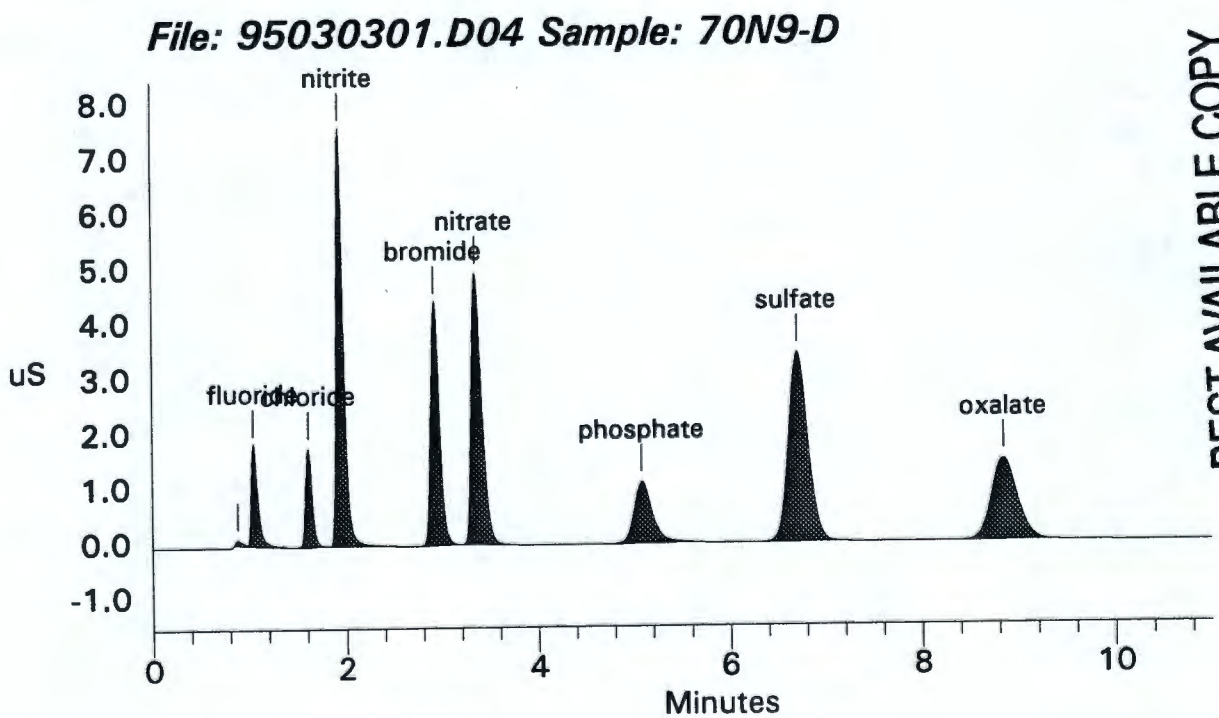
9513316.2734

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 Dunhan 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		



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WHC-SD-WM-DP-081
REV 1

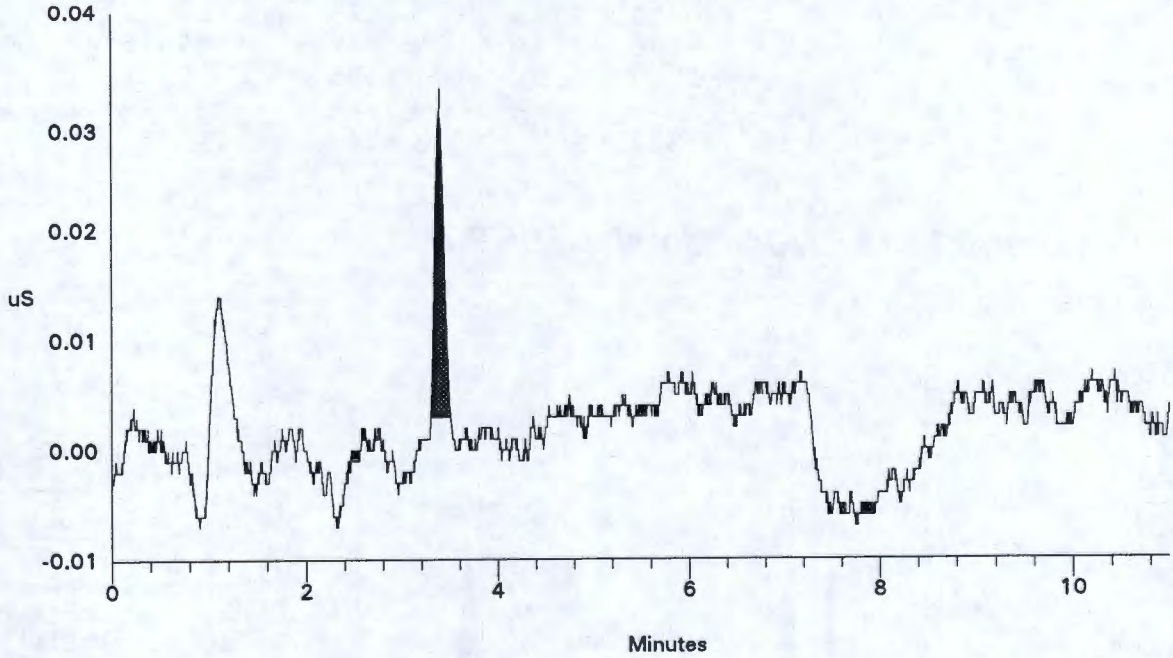
```
==================================================================================
| Sample Name: BLANK                                  Date: 03/02/1995 13:42:03    |
| Data File  : C:\DX\DATA\95030301.D03                                             |
| Method     : C:\DX\METHOD\KIT.MET                                                |
| 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-081
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 RWS 5-18-95
Technologist: KR MONTEITH	**Date:** 01/26/95
Starting Time: 0000	**Temperature** 25 C
Ending Time: 0700	**Chemist:** R. W. SCHROEDER

Comments: BATCH # 5346

	Description	Lab ID
1	LMCS STD	R 6835-5526
2	SAMPLE	R 6836-5626
3	SAMPLE	R 6837-5726
4	SAMPLE - DUP	R 6837-5826
5	SAMPLE + SPIKE	R 6837-5926
6	SAMPLE + SPIKE - DUP	R 6837-5026
7	SAMPLE	R 6838-5726
8	SAMPLE - DUP	R 6838-5826
9	LMCS STD	R 6839-5526
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	10N12-F / .200ml			
SPIKE	11N12-E / .400ml			

A-6000-881 (03/92)

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Batch 5346

Serial No.	Sample Point	Date	Time Issued	Priority
R 6835.-5526	TANK 9-1	1-19-95	10:22	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? .2mL - 2mL - .2mL	STD

Remarks, Calculations, Results

S356 CO3TOC

STD# 10W12F RESULT 2.85803

STD VAL 3.00303 %REC 95.0

WR# 9585

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-10-83)

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	

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

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

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

µg Carbon/mL =	2.85E+03	DETECTION LEVEL in µg/mL
		5.50E+01

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

Form 344105_C Rev. 1.1

9513316.2736

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6836.-5626	TANK 9-1	1-19-95	10:24	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	uG C/ML	KBLWD	0

Sample Size	Customer ID
? .2mL	BLANK

Remarks, Calculations, Results:

REAGENT BLANK

<5.50E+00 ug C/ML

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-10-83)

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
Instrument Code	AL-10723
Analyst	K. MONTEITH
Date	01/26/95
Time	

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

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

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

NOTE: Reported Result is Below Detection Level.

µg Carbon/mL =	< 5.00E+00	DETECTION LEVEL in µg/mL
		5.00E+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 OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6837.-5726	TANK 9-1	1-19-95	10:26	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	uG C/ML	KBLWD	0

Sample Size	Customer ID
? 2mL -, 2mL -, 2mL	I-1

Remarks, Calculations, Results

2.39602ug C/ML

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-10-83)

WHC-SD-WM-DP-081
REV 1

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

Type			SAMPLE
SAMPLE	Sample Volume in mL	(SS)	2.000
	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)	47.2
Matrix	µg of Carbon in Blank	(C2)	3.8
LIQUID	g of Carbon/L	=	2.39E-01

Sample #	R6837-5726
Instrument Code	AL-10723
Analyst	K. MONTEITH
Date	01/26/95
Time	

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

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

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

µg Carbon/mL =	2.39E+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

9513316.2737

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No	Sample Point	Date	Time Issued	Priority
R 6837.-5826	TANK 9-1	1-19-95	10:26	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	uG C/ML	KBLWD	0

Sample Size	Customer ID
? Jan-. Jan-. Jan	I-1

Remarks, Calculations, Results

DUPLICATE SAMPLE

2.47E02 ug C/ML

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-10-83)

WHC-SD-WM-DP-081 REV 1

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

			DUPLICATE
Sample Volume in mL	(SS)		2.000
H2SO4 Volume in mL	(VR)		0.200
Volume Injected in mL	(VI)		0.200
Dilution Factor	(DF)		1.1
Digest Dilution Factor	(DDF)		1
µg of Carbon in Sample	(C1)		48.7
µg of Carbon in Blank	(C2)		3.8
g of Carbon/L		=	2.47E-01

Type	Work List	Test Code	Matrix	Sample #	Instrument Code	Analyst	Date	Time
DUPLICATE	5346		LIQUID	R6837-5826	AL-10723	K. MONTEITH	01/26/95	

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

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

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

µg 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	Sample Point	Date	Time Issued	Priority
R 6837.-5926.	TANK 9-1	1-19-95	10:26	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? 2mL - .2mL - .4mL + .4mL - .2mL	I-1

Remarks, Calculations, Results

SAMPLE SPIKED ID
SPIKE ID 11W12E
SPIKE VOLUME .400mL

97.3%

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-10-83)

WHC-SD-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
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				
KR MONTEITH				
Date				
01/26/95				
Time				
06:00 AM				

PERCENT SPIKE RECOVERY = $\frac{\text{µg Carbon Recovered from Spike} * 100}{\text{µg Carbon in Spike}}$

WHERE : µg Carbon Recovered from Spike =
[(µgC in sample + spike − µgC in blank) * (Spike Correction Factor)]
− [(µgC sample − µgC blank) * (Sample Correction Factor) * (Sample Size Correction Factor) * (PDF)

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

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

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

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

WHERE : µg Carbon in Spike = Spike Value (µg/mL) * Spike Volume (mL)

Percent Spike Recovery 97.3%

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

Form X Rev. 1.1

9513316.2738

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

Serial No.	Sample Point	Date	Time Issued	Priority
R 6837.-5026	TANK 9-1	1-19-95	10:30	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? 2mc-.2mc-.4mc+.4mc-.2mc	I-1

Remarks, Calculations, Results:

SAMPLE SPIKE
DUPLICATE

SPIKE ID 11N12E
SPIKE VOL .400mc

94.6%

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-10-83)

WHC-SD-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	H2S04 Volume in mL	0.200	Spike Volume in mL	0.400
5346	Volume Injected in mL	0.200	H2S04 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				

PERCENT SPIKE RECOVERY = $\frac{\text{µg Carbon Recovered from Spike} * 100}{\text{µg Carbon in Spike}}$

WHERE : µg Carbon Recovered from Spike =
[(µgC in sample + spike − µgC in blank) * (Spike Correction Factor)]
− [(µgC sample − µgC blank) * (Sample Correction Factor) * (Sample Size Correction Factor) * (PDF)

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

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

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

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

WHERE : µg Carbon in Spike = Spike Value (µg/mL) * Spike Volume (mL)

Percent Spike Recovery 94.6%

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

Form X Rev. 1.1

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-344-105	uG C/ML	KBLWD	0

Sample Size	Customer ID
? 2mL - 2mL - 2mL	I-TRIPBK

Remarks, Calculations, Results

<5.50 5.00 ug C/ML

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-10-83)

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

			SAMPLE
Sample Volume in mL	(SS)		2.000
H2SO4 Volume in mL	(VR)		0.200
Volume Injected in mL	(VI)		0.200
Dilution Factor	(DF)		1.1
Digest Dilution Factor	(DDF)		1
µg of Carbon in Sample	(C1)		4.7
µg of Carbon in Blank	(C2)		3.8
g of Carbon/L	=	<	5.50E-03

Type	Work List	Test Code	Matrix	Sample #	Instrument Code	Analyst	Date	Time
SAMPLE	5346		LIQUID	R6838-5726	AL-10723	K. MONTEITH	01/26/95	

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

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

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

NOTE: Reported Result is Below Detection Level.

µg Carbon/mL =	< 5.50E+00	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 OR ATTACH TRAVELER

Serial No	Sample Point	Date	Time Issued	Priority
R 6838.-5826	TANK 9-1	1-19-95	10:31	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	uG C/ML	KBLWD	0

Sample Size	Customer ID
? 2mL - .2mL - .2mL	I-TRIPBK

Remarks, Calculations, Results
DUPLICATE SAMPLE

<5.50800 ug C/ML

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-10-83)

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

			DUPLICATE
Sample Volume in mL	(SS)		2.000
H2SO4 Volume in mL	(VR)		0.200
Volume Injected in mL	(VI)		0.200
Dilution Factor	(DF)		1.1
Digest Dilution Factor	(DDF)		1
µg of Carbon in Sample	(C1)		4.3
µg of Carbon in Blank	(C2)		3.8
g of Carbon/L	=	<	5.50E-03

Type	Work List	Test Code	Matrix	Sample #	Instrument Code	Analyst	Date	Time
DUPLICATE	5346		LIQUID	R6838-5826	AL-10723	K. MONTEITH	01/26/95	

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

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

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

NOTE: Reported Result is Below Detection Level.

µg Carbon/mL =	<	5.50E+00	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 OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6839.-5526	TANK 9-1	1-19-95	10:34	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? .2mL - 2mL - .2mL	STD

Remarks, Calculations, Results
8356 CO3TOC
STD# 10N12F RESULT 2.89503
STD VAL 3.00503 %REC 96.3

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	

Date	Time Completed	Lab Unit Mgr
1-26-95		1/27/95

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

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

			STANDARD
Sample Volume in mL	(SS)		0.200
H2SO4 Volume in mL	(VR)		2.000
Volume Injected in mL	(VI)		0.200
Dilution Factor	(DF)		11
Digest Dilution Factor	(DDF)		1
µg of Carbon in Sample	(C1)		56.3
µg of Carbon in Blank	(C2)		3.8
g of Carbon/L		=	2.89E+00

Type	Work List	Test Code	Matrix	Sample #	Instrument Code	Analyst	Date	Time
STANDARD	5346		LIQUID	R6839-5526	AL-10723	K. MONTEITH	01/26/95	

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

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

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

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

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

Form 344105_C Rev. 1.1

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: KR MMONTEITH 00000 1-26-95

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

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

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
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	0.30	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

KB

9513316.2745

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 Rob 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			

A-6000-881 (03/92)

TOTAL ORGANIC CARBON ANALYSIS

Batch 5385

Serial No.	Sample Point	Date	Time Issued	Priority
R 6850.-5526	TANK 9-1	1-23-95	10:31	25

Determination	Method Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? .200ml + 2ml 5M H2SO4 - 200 ml	STD

Remarks, Calculations, Results:

S356 C03TOC

STD# 10M12F RESULT 2.95 E+3 ug/ml

STD VAL 3.00 E+3 %REC 98.3 %

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
2/13/95		

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

Serial No.	Sample Point	Date	Time Issued	Priority
R 6851.-5626	TANK 9-1	1-23-95	10:33	25

Determination	Method Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	uG C/ML	KBLWD	0

Sample Size	Customer ID
? .200ml, 5M H2SO4 - .200ml	BLK

Remarks, Calculations, Results:

REAGENT BLANK

< 5.00 E+0 ug C/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
2/13/95		

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

TOTAL ORGANIC CARBON ANALYSIS

Serial No	Sample Point	Date	Time Issued	Priority
R 6852.-5726	TANK 9-1	1-23-95	10:37	25

Determination	Method Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	uG C/ML	KBLWD	0

Sample Size	Customer ID
? 2ml + .200ml .5% H_2SO_4 - .200ml	I-1

Remarks, Calculations, Results

1.55 E+2 uGC/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
2/13/95		

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

Serial No	Sample Point	Date	Time Issued	Priority
R 6852.-5826	TANK 9-1	1-23-95	10:37	25

Determination	Method Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	uG C/ML	KBLWD	0

Sample Size	Customer ID
? 2ml + .200ml .5% H_2SO_4 - .200ml	I-1

Remarks, Calculations, Results

DUPLICATE SAMPLE

RWS 5-18-95

1.58

1.5~~8~~ E+2 uGC/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
2/13/95		

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

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

Serial No	Sample Point	Date	Time Issued	Priority
R 6852.-5926	TANK 9-1	1-23-95	10:37	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? .400ml + .200ml, 5% H_2SO_4 + .400ml sp, - .200ml	I-1

Remarks, Calculations, Results

SAMPLE SPIKED ID
SPIKE ID 11N2E
SPIKE VOLUME .400ml

93.3% rec

Nol King

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
2/13/95		

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

WHC-SD-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	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				

PERCENT SPIKE RECOVERY = $\frac{\text{µg Carbon Recovered from Spike} * 100}{\text{µg Carbon in Spike}}$

WHERE : µg Carbon Recovered from Spike =
[(µgC in sample + spike − µgC in blank) * (Spike Correction Factor)]
− [(µgC sample − µgC blank) * (Sample Correction Factor) * (Sample Size Correction Factor) * (PDF)

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

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

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

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

WHERE : µg Carbon in Spike = Spike Value (µg/mL) * Spike Volume (mL)

Percent Spike Recovery 93.3%

Data Entry by:	Ru Schroeder	Date:	13-Feb-95
Approved by:		Date:	

Form X Rev. 1.1

9513316.2747

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

Serial No	Sample Point	Date	Time Issued	Priority
R 6852.-5026	TANK 9-1	1-23-95	10:37	25

Determination	Method-Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	KBLWD	0

Sample Size: ? .400ml+.200ml, 5M H_2SO_4+.400ml sp.-.200ml

Customer ID: I-1

Remarks, Calculations, Results

SAMPLE SPIKE
DUPLICATE

SPIKE ID 11N12E
SPIKE VOL .400ml

90.5% rec

Nol King

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
2/13/95		

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

WHC-SD-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	H2S04 Volume in mL	0.200	Spike Volume in mL	0.400
5385	Volume Injected in mL	0.200	H2S04 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				
Date				
02/13				
Time				
12:45 AM				

PERCENT SPIKE RECOVERY = $\frac{\text{µg Carbon Recovered from Spike} * 100}{\text{µg Carbon in Spike}}$

WHERE : µg Carbon Recovered from Spike =
[(µgC in sample + spike − µgC in blank) * (Spike Correction Factor)]
− [(µgC sample − µgC blank) * (Sample Correction Factor) * (Sample Size Correction Factor) * (PDF)

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

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

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

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

WHERE : µg Carbon in Spike = Spike Value (µg/mL) * Spike Volume (mL)

Percent Spike Recovery 90.5%

Data Entry by:	Ru Schroeder	Date: 13-Feb-95
Approved by:		Date:

Form X Rev. 1.1

~~194~~ HW 5/17/95

TOTAL ORGANIC CARBON ANALYSIS

Serial No	Sample Point	Date	Time Issued	Priority
R 6854.-5726	TANK 9-1	1-23-95	10:46	25

Determination	Method Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	uG C/ML	KBLWD	0

Sample Size	Customer ID
? 2ml + .200ml .5M H_2SO_4 - .200ml	TRIP BLK

Remarks, Calculations, Results:

< 5.00 E+0 uGC/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
2/13/95		

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

Serial No	Sample Point	Date	Time Issued	Priority
R 6854.-5826	TANK 9-1	1-23-95	10:46	25

Determination	Method Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	uG C/ML	KBLWD	0

Sample Size	Customer ID
? 2ml + .200ml .5M H_2SO_4 - .200ml	TRIP BLK

Remarks, Calculations, Results:
DUPLICATE SAMPLE

< 5.00 E+0 uGC/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
2/13/95		

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

TOTAL ORGANIC CARBON ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 6853.-5526	TANK 9-1	1-23-95	10:42	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? .200ml+2ml,5M H_2SO_4 - .200ml	END STD

Remarks, Calculations, Results

S356 CO3TOC

STD#10h12F RESULT 3.00 E+3

STD VAL 3.00 E+3 %REC 100.0 %

Not Rmq

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
2/13/95		

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 02/07/95
RW KING 00000

9513316.2749

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: Rob King
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: Rob King
RW KING 00000

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

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

KB

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No. R 6836, R 6837, R 6838	**Customer ID:** BLANK, I-1, I-TRIPBK
Analysis: TOTAL INORGANIC CARBON	**Sample 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		Description	Lab ID
1	LMCS STD	R 6835-5527	11		
2	BLANK	R 6836-5627	12		
3	SAMPLE	R 6837-5727	13		
4	SAMPLE - DUP	R 6837-5827	14		
5	SAMPLE + SPIKE	R 6837-5927	15		
6	SAMPLE + SPIKE - DUP	R 6837-5027	16		
7	SAMPLE	R 6838-5727	17		
8	SAMPLE - DUP	R 6838-5827	18		
9	LMCS STD	R 6839-5527	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	15N12-E / .200ml			
SPIKE	15N12-E / .400ml			

A-6000-881 (03/92)

9513316.2754

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Date 5347

Serial No	Sample Point	Date	Time Issued	Priority
R 6835.-5527	TANK 9-1	1-19-95	10:22	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
TIC	LA-622-102	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? .200mL	STD

Remarks, Calculations, Results

S223 C03

STD# 15N12E RESULT 5.85E+2

STD VAL 6.00E+2 % REC 97.50%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr 1/30/95	
1-27-95		Ruf Schroeder	TE Wright

54-6800-001 (R-10-83)

TIC : LA-622-102 (B-2) LIQUIDS

			STANDARD
Sample Volume in mL	(SS)		0.200
Dilution Factor	(DF)		1.000
Digest Dilution Factor	(DDF)		1.000
µg of Carbon in Sample	(C1)		122.7
µg of Carbon in Blank	(C2)		5.7
g of Carbon/L	=		5.85E-01

Type	STANDARD
Work List	5347
Test Code	
Matrix	LIQUID
Sample #	R6835-5527
Instrument Code	AL10656
Analyst	K. MONTEITH
Date	01/27/95
Time	12:00 AM

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

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

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

µg Carbon/mL =	5.85E+02	DETECTION LEVEL in µg/mL
		5.00E+00

Data Entry by:	TE Wright	Date:	01/27/95
Approved by:	Ruf Schroeder	Date:	1/30/95

Form 622102_C Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6836.-5627	TANK 9-1	1-19-95	10:24	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
TIC	LA-622-102	uG C/ML	KBLWD	0

Sample Size	Customer ID
? .200mL	BLANK

Remarks, Calculations, Results:
REAGENT BLANK

<5.00 ug C/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1-27-95		1/30/95 RW Schroeder	NE Wright

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

TIC : LA-622-102 (B-2) LIQUIDS

			BLANK
Sample Volume in mL	(SS)		0.200
Dilution Factor	(DF)		1.000
Digest Dilution Factor	(DDF)		1.000
µg of Carbon in Sample	(C1)		5.8
µg of Carbon in Blank	(C2)		5.69769
g of Carbon/L	=	<	5.00E-03

Type	Work List	Test Code	Matrix	Sample #	Instrument Code	Analyst	Date	Time
BLANK	5347		LIQUID	R6836-5627	AL10656	K. MONTEITH	01/27/95	12:00 AM

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

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

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

NOTE: Reported Result is Below Detection Level.

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

Data Entry by:	NE Wright	Date:	01/27/95
Approved by:	RW Schroeder	Date:	1/30/95

Form 622102_C Rev. 1.1

Page 1 of 1

WHC-SD-WM-DP-081
REV 1

9513316.2755

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6837.-5727	TANK 9-1	1-19-95	10:26	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
TIC	LA-622-102	uG C/ML	KBLWD	0

Sample Size	Customer ID
? .200mL	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	Time Completed	Lab Unit Mgr	
1-27-95		RW Schroeder 1/30/95	

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

TIC : LA-622-102 (B-2) LIQUIDS

			SAMPLE
Sample Volume in mL	(SS)		0.200
Dilution Factor	(DF)		1.000
Digest Dilution Factor	(DDF)		1.000
µg of Carbon in Sample	(C1)		39.8
µg of Carbon in Blank	(C2)		5.69769
g of Carbon/L		=	1.71E-01

Type	Work List	Test Code	Matrix	Sample #	Instrument Code	Analyst	Date	Time
SAMPLE	5347		LIQUID	R6837-5727	AL10656	K. MONTEITH	01/27/95	12:00 AM

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

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

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

µg Carbon/mL =	1.71E+02	DETECTION LEVEL in µg/mL
		5.00E+00

Data Entry by:	AEWright	Date:	01/27/95
Approved by:	RW Schroeder	Date:	1/30/95

Form 622102_C Rev. 1.1

WHC-SD-WM-DP-081
REV 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6837.-5827	TANK 9-1	1-19-95	10:26	25

Determination	Method/Standard	Result Units	Charge Code	Returns
TIC	LA-622-102	uG C/ML	KBLWD	0

Sample Size	Customer ID
? .200 ml	I-1

Remarks, Calculations, Results:
DUPLICATE SAMPLE

1.48E+2 µg C/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr 1/30/95
1-27-95		Ray Schroeder

54-6800-061 (R-10-93)

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	µg of Carbon in Sample	(C1)	39.3
Test Code	µg of Carbon in Blank	(C2)	5.69769
Matrix			
LIQUID	g of Carbon/L	=	1.68E-01

Sample #	
R6837-5827	g of Carbon/L = (C1-C2) * DF * DDF / SS * 1000
Instrument Code	
AL10656	
Analyst	µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m
K. MONTEITH	
Date	
01/27/95	Detection Level (µg/mL) = 1 µg C * DF * DDF / SS
Time	
12:00 AM	

µg Carbon/mL =	1.68E+02	DETECTION LEVEL in µg/mL
		5.00E+00

Data Entry by:		Date:	01/27/95
Approved by:	Ray Schroeder	Date:	1/27/95

Form 622102_C Rev. 1.1

WHC-SD-WM-DP-081
REV 1

9513316.2756

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6837.-5927	TANK 9-1	1-19-95	10:26	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
TIC	LA-622-102	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? .400mL + .400mL - .200mL	I-1

Remarks, Calculations, Results

SAMPLE SPIKED ID
SPIKE ID 15N12E
SPIKE VOLUME .400mL

~~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	Time Completed	Lab Unit Mgr	
1-22-95		RW Schroeder 1/30/95	

54-6800-001 (R-10-83)

WHC-SD-WM-DP-081
REV 1

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	µg of Carbon in Sample	39.8	Spike Volume in mL	0.400
5347	µg of Carbon in Blank	5.7	Volume Injected in mL	0.200
Test Code			Spike Value (µg/mL)	600
TIC			µg C in Sample + Spike	81.5
Matrix			µg C in Blank	5.7
liquid				
Sample #				
R6837-5927				
Instrument Code				
AL10656				
Analyst				
K.Montieth				
Date				
01/27/95				
Time				
12:00 AM				

PERCENT SPIKE RECOVERY = $\frac{\text{µg Carbon Recovered from Spike} * 100}{\text{µg Carbon in Spike}}$

WHERE : µg Carbon Recovered from Spike =
[(µgC in sample + spike - µgC in blank) * (Spike Correction Factor)]
- [(µgC sample - µgC blank) * (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 : µg Carbon in Spike =
[Spike Value (µg/mL) * Spike Volume (mL)]

Percent Spike Recovery = 97.9%

Data Entry by:	RW Schroeder	Date:	01/30/95
Approved by:	RW Schroeder	Date:	1/30/95

Form 622102X2 Rev. 1.2

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No	Sample Point	Date	Time Issued	Priority
R 6837.-5027	TANK 9-1	1-19-95	10:26	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
TIC	LA-622-102	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? .400mL + .400mL - .200mL	I-1

Remarks, Calculations, Results

SAMPLE SPIKE
DUPLICATE

SPIKE ID 15N12E
SPIKE VOL .400mL

~~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	Time Completed	Lab Unit Mgr
1-27-95	-	RW Schroeder 1/30/95

54-6800-081 (R-10-83)

WHC-SD-WM-DP-081
REV 1

TIC : LA-622-102 (B-2) SPIKED SAMPLE

SPIKE

Type
SPIKE
Work List
5347
Test Code
TIC
Matrix
liquid
Sample #
R6837-5027
Instrument Code
AL10656
Analyst
K.Montieth
Date
01/27/95
Time
12:00 AM

>>>>>> Sample Vial Data <<<<<<	
Sample Volume in mL	0.200
µg of Carbon in Sample	39.8
µg of Carbon in Blank	5.7

>>>>> Spiked Vial Data <<<<<	
Sample Volume in mL	0.400
Spike Volume in mL	0.400
Volume Injected in mL	0.200
Spike Value (µg/mL)	600
µg C in Sample + Spike	81.5
µg C in Blank	5.7

$$\text{PERCENT SPIKE RECOVERY} = \frac{\text{µg Carbon Recovered from Spike} * 100}{\text{µg Carbon in Spike}}$$

WHERE : µg Carbon Recovered from Spike =
[(µgC in sample + spike - µgC in blank) * (Spike Correction Factor)]
- [(µgC sample - µgC blank) * (Sample Size Correction Factor)]

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

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

WHERE : µg Carbon in Spike =
[Spike Value (µg/mL) * Spike Volume (mL)]

Percent Spike Recovery = 97.9%

Data Entry by:	RW Schroeder	Date:	01/30/95
Approved by:	RW Schroeder	Date:	1/30/95

Form 622102X2 Rev. 1.2

9513316.2757

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No	Sample Point	Date	Time Issued	Priority
R 6838.-5727	TANK 9-1	1-19-95	10:31	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
TIC	LA-622-102	uG C/ML	KBLWD	0

Sample Size	Customer ID
? .200mL	I-TRIPBK

Remarks, Calculations, Results

< 5.00E+00 µg C/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-27-95		1/30/95 Ray Schroeder

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

TIC : LA-622-102 (B-2) LIQUIDS

			SAMPLE
Sample Volume in mL	(SS)		0.200
Dilution Factor	(DF)		1.000
Digest Dilution Factor	(DDF)		1.000
µg of Carbon in Sample	(C1)		5.3
µg of Carbon in Blank	(C2)		5.69769
g of Carbon/L	=	<	5.00E-03

Type	Work List	Test Code	Matrix	Sample #	Instrument Code	Analyst	Date	Time
SAMPLE	5347		LIQUID	R6838-5727	AL10656	K. MONTEITH	01/27/95	12:00 AM

g of Carbon/L = (C1-C2) * DF * DDF / SS * 1000

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

Detection Level (µg/mL) = 1 µg C * DF * DDF / SS

NOTE: Reported Result is Below Detection Level.

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

Data Entry by: K Wright Date: 01/27/95

Approved by: Ray Schroeder Date: 1/30/95

Form 622102_C Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6838.-5827	TANK 9-1	1-19-95	10:31	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
TIC	LA-622-102	uG C/ML	KBLWD	0

Sample Size	Customer ID
? , 200mL	I-TRIPBK

Remarks, Calculations, Results

DUPLICATE SAMPLE

25.0E+00 ug C/ml

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr 1/30/95	
1-27-95		RW Schroeder	RE Wright

54-6800-561 (R-10-83)

WHC-SD-WM-DP-081 REV 1

TIC : LA-622-102 (B-2) LIQUIDS

			SAMPLE
Sample Volume in mL	(SS)		0.200
Dilution Factor	(DF)		1.000
Digest Dilution Factor	(DDF)		1.000
µg of Carbon in Sample	(C1)		5.1
µg of Carbon in Blank	(C2)		5.69769
g of Carbon/L	=	<	5.00E-03

Type	Work List	Test Code	Matrix	Sample #	Instrument Code	Analyst	Date	Time
SAMPLE	5347		LIQUID	R6838-5827	AL10656	K. MONTEITH	01/27/95	12:00 AM

g of Carbon/L = (C1-C2) * DF * DDF / SS * 1000

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

Detection Level (µg/mL) = 1 µg C * DF * DDF / SS

NOTE: Reported Result is Below Detection Level.

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

Data Entry by:	RE Wright	Date:	01/27/95
Approved by:	RW Schroeder	Date:	1/30/95

Form 622102_C Rev. 1.1

9513316.2758

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6839.-5527	TANK 9-1	1-19-95	10:34	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
TIC	LA-622-102	% RECOVERY	KBLWD	0

Sample Size	Customer ID
?.200mL	STD

Remarks, Calculations, Results

S223 C03

STD# 15N12E RESULT 5.87E+2

STD VAL 6.00E+2 % REC 97.83%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
1-27-95		1/30/95	

54-5800-061 (4-10-83)

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			
Instrument Code			
AL10656			
Analyst			
K. MONTEITH			
Date			
01/27/95			
Time			
12:00 AM			

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

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

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

µg Carbon/mL =	5.87E+02	DETECTION LEVEL in µg/mL
		5.00E+00

Data Entry by:		Date:	01/27/95
Approved by:		Date:	1/30/95

Form 622102_C Rev. 1.1

Page 1 of 1

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

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: _____
KR MONTEITH 00000

WHC-SD-WM-DP-081
REV 1

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 6837-5727 Date: 01/27/95 Time: 03:48:14

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	1.01	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

BLANK VALUE = 5.7 micrograms carbon
BLANK FACTOR = 5.7 / 7.004837 = +8.1E-01 ug/min Carbon

SAMPLE RESULTS:
(39.8 - 5.698497)(1)/(200) = +1.71E-01 g/L Carbon
(39.8 - 5.698497)(1)/(200)(12) = +1.42E-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 6837-5827 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

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
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	1.50	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

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

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

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	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			

A-6000-881 (03/92)

TOTAL INORGANIC CARBON ANALYSIS

Batch 5386

Serial No.	Sample Point	Date	Time Issued	Priority
R 6850.-5527	TANK 9-1	1-23-95	10:31	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
TIC	LA-622-102	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? .200 ml	STD

Remarks, Calculations, Results
S223 CO3
STD# 15112E RESULT 5.92 E02
STD VAL 6.00 E02 % REC 98.7

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2/12/95		2/13/95	

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

Serial No.	Sample Point	Date	Time Issued	Priority
R 6851.-5627	TANK 9-1	1-23-95	10:33	25

Determination	Method Standard	Result Units	Charge Code	Reruns
TIC	LA-622-102	uG C/ML	KBLWD	0

Sample Size	Customer ID
? .200 ml	BLK

Remarks, Calculations, Results
REAGENT BLANK

< 5.00 µg C/mL

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2/12/95		2/13/95	

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

TOTAL INORGANIC CARBON ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 6854.-5727	TANK 9-1	1-23-95	10:46	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
TIC	LA-622-102	uG C/ML	KBLWD	0

Sample Size	Customer ID
? .200ml	TRIP BLK

Remarks, Calculations, Results:

< 5.00 ug C/mL

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2/12/95		2/13/95	

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

Serial No.	Sample Point	Date	Time Issued	Priority
R 6854.-5827	TANK 9-1	1-23-95	10:46	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
TIC	LA-622-102	uG C/ML	KBLWD	0

Sample Size	Customer ID
? .200ml	TRIP BLK

Remarks, Calculations, Results:
DUPLICATE SAMPLE

< 5.00 ug C/mL

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2/12/95		2/13/95	

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6852.-5927	TANK 9-1	1-23-95	10:37	25

Determination	Method Standard	Result Units	Charge Code	Reruns
TIC	LA-622-102	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? .200 ml	I-1

Remarks, Calculations, Results

SAMPLE SPIKED ID
SPIKE ID 15ml-E
SPIKE VOLUME .400ml

97.0 % Recovery

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab/Unit Mgr.	
2/12/95		2/13/95	

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

TIC : LA-622-102 (B-2) SPIKED SAMPLE

Type	>>>>>> Sample Vial Data <<<<<<		>>>>> Spiked Vial Data <<<<<	SPIKE
SPIKE	Sample Volume in mL	0.200	Sample Volume in mL	0.200
Work List	µg of Carbon in Sample	18.9	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
			µg C in Sample + Spike	86.2
Matrix			µg C in Blank	3.4
LIQUID				
Sample #				
R6852-5927				
Instrument Code				
Analyst				
R.W. King				
Date				
02/12/95				
Time				
07:00 AM				

PERCENT SPIKE RECOVERY = $\frac{\text{µg Carbon Recovered from Spike} * 100}{\text{µg Carbon in Spike}}$

WHERE : µg Carbon Recovered from Spike =
[(µgC in sample + spike - µgC in blank) * (Spike Correction Factor)]
- [(µgC sample - µgC blank) * (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 : µg Carbon in Spike =
[Spike Value (µg/mL) * Spike Volume (mL)]

Percent Spike Recovery = 97.0%

Data Entry by:		Date:	02/12/95
Approved by:		Date:	2/13/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

Serial No.	Sample Point	Date	Time Issued	Priority
R 6852.-5027	TANK 9-1	1-23-95	10:37	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
TIC	LA-622-102	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? .200ml	I-1

Remarks, Calculations, Results
SAMPLE SPIKE
DUPLICATE

SPIKE ID 15N12E
SPIKE VOL .400ml

99.6 % Recovery

Rob King

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2/12/95		2/13/95	

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

TIC : LA-622-102 (B-2) SPIKED SAMPLE

Type	>>>>>> Sample Vial Data <<<<<<		>>>>> Spiked Vial Data <<<<<	SPIKE
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
			µg C in Sample + Spike	88.3
Matrix			µg C in Blank	3.4
LIQUID				
Sample #				
R6852-5027				
Instrument Code				
Analyst				
R.W. King				
Date				
02/12/95				
Time				
07:00 AM				

PERCENT SPIKE RECOVERY = $\frac{\text{µg Carbon Recovered from Spike} * 100}{\text{µg Carbon in Spike}}$

WHERE : µg Carbon Recovered from Spike =
[(µgC in sample + spike - µgC in blank) * (Spike Correction Factor)]
- [(µgC sample - µgC blank) * (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 : µg Carbon in Spike =
[Spike Value (µg/mL) * Spike Volume (mL)]

Percent Spike Recovery = 99.6%

Data Entry by:		Date:	02/12/95
Approved by:		Date:	2/13/95

TOTAL INORGANIC CARBON ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 6854.-5727	TANK 9-1	1-23-95	10:46	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
TIC	LA-622-102	uG C/ML	KBLWD	0

Sample Size	Customer ID
? .200ml	TRIP BLK

Remarks, Calculations, Results:

< 5.00 ug C/mL

Nob King

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2/12/95		Jerilo Ball 2/13/95	Jerry Hamm

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

Serial No.	Sample Point	Date	Time Issued	Priority
R 6854.-5827	TANK 9-1	1-23-95	10:46	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
TIC	LA-622-102	uG C/ML	KBLWD	0

Sample Size	Customer ID
? .200ml	TRIP BLK

Remarks, Calculations, Results

DUPLICATE SAMPLE

< 5.00 ug C/mL

Nob King

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2/12/95		Jerilo Ball 2/13/95	Jerry Hamm

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

TOTAL INORGANIC CARBON ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 6853.-5527	TANK 9-1	1-23-95	10:42	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
TIC	LA-622-102	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? .200ml	END STD

Remarks, Calculations, Results:
S223 C03
STD# 15h12E RESULT 6.12^{E02}
STD VAL 6.00^{E02} % REC 102.0

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2/12/95		2/13/95	

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
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	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: Rob King 2-7-95
RW KING 00000

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

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: Rob King
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
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	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: Rob King
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

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

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 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 00000

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 00000

WHC-SD-WM-DP-081
REV 1

KB

9513316.2772

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	Date: 01/31/95
Starting Time: 0730	Temperature 23.0 C
Ending Time: 1530	Chemist: JANN FRYE Blandina Valenzuela 2/10/95

Comments:

	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			

A-6000-881 (03/92)

DIFFERENTIAL SCANNING CALORIMETRY ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 6837.-5811	TANK 9-1	1-19-95	10:26	25

Determination	Method Standard	Result Units	Charge Code	Reruns
DSC	LA-514-113	EXOTHERMS	KBLWD	0

Sample Size	Customer ID
? 10.625 mg	I-1

Remarks, Calculations, Results

DUPLICATE SAMPLE

no exotherms

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-31-95	1530	B D Valenzuela

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

Serial No	Sample Point	Date	Time Issued	Priority
R 6838.-5711	TANK 9-1	1-19-95	10:31	25

Determination	Method Standard	Result Units	Charge Code	Reruns
DSC	LA-514-113	EXOTHERMS	KBLWD	0

Sample Size	Customer ID
? 9.824 mg	I-TRIPBK

Remarks, Calculations, Results

no exotherms

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-31-95	1530	B D Valenzuela

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

DIFFERENTIAL SCANNING CALORIMETRY ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 6837.-5711	TANK 9-1	1-19-95	10:26	25

Determination	Method Standard	Result Units	Charge Code	Reruns
DSC	LA-514-113.	EXOTHERMS	KBLWD	0

Sample Size	Customer ID
? 9.874 mg	I-1

Remarks, Calculations, Results

no exotherms

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-31-95	1530	B.D. Valenzuela

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

Batch 5344

Serial No	Sample Point	Date	Time Issued	Priority
R 6835.-5511	TANK 9-1	1-19-95	10:22	25

Determination	Method Standard	Result Units	Charge Code	Reruns
DSC	LA-514-113	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? 6.555 mg	STD

Remarks, Calculations, Results

12N14A

theo: 28.45 J/g

result: 28.1 J/g

% recovery: 98.77%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-31-95	1530	B.D. Valenzuela

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

DIFFERENTIAL SCANNING CALORIMETRY ANALYSIS

Serial No	Sample Point	Date	Time Issued	Priority
R 6838.-5811	TANK 9-1	1-19-95	10:31	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
DSC	LA-514-113	EXOTHERMS	KBLWD	0

Sample Size	Customer ID
? 9.909 mg	I-TRIPEK

Remarks, Calculations, Results

DUPLICATE SAMPLE

no exotherms

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-31-95	1530	D Valenzuela

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

Serial No	Sample Point	Date	Time Issued	Priority
R 6839.-5511	TANK 9-1	1-19-95	10:34	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
DSC	LA-514-113	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? 6.555 mg	STD

Remarks, Calculations, Results

theo: 28.45 J/g

result: 27.7 J/g

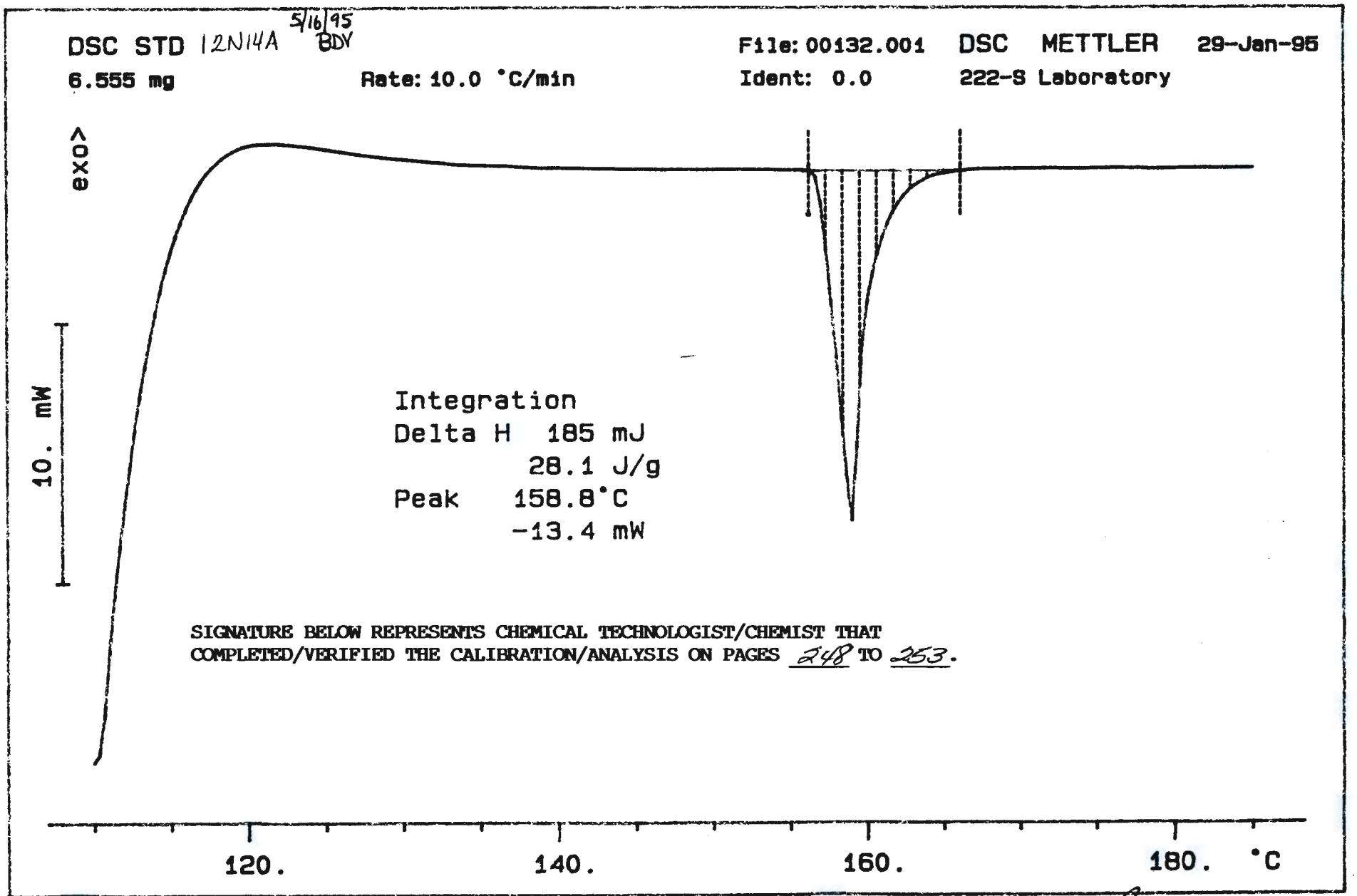
% recovery: 97.36%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-31-95	1530	D Valenzuela

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

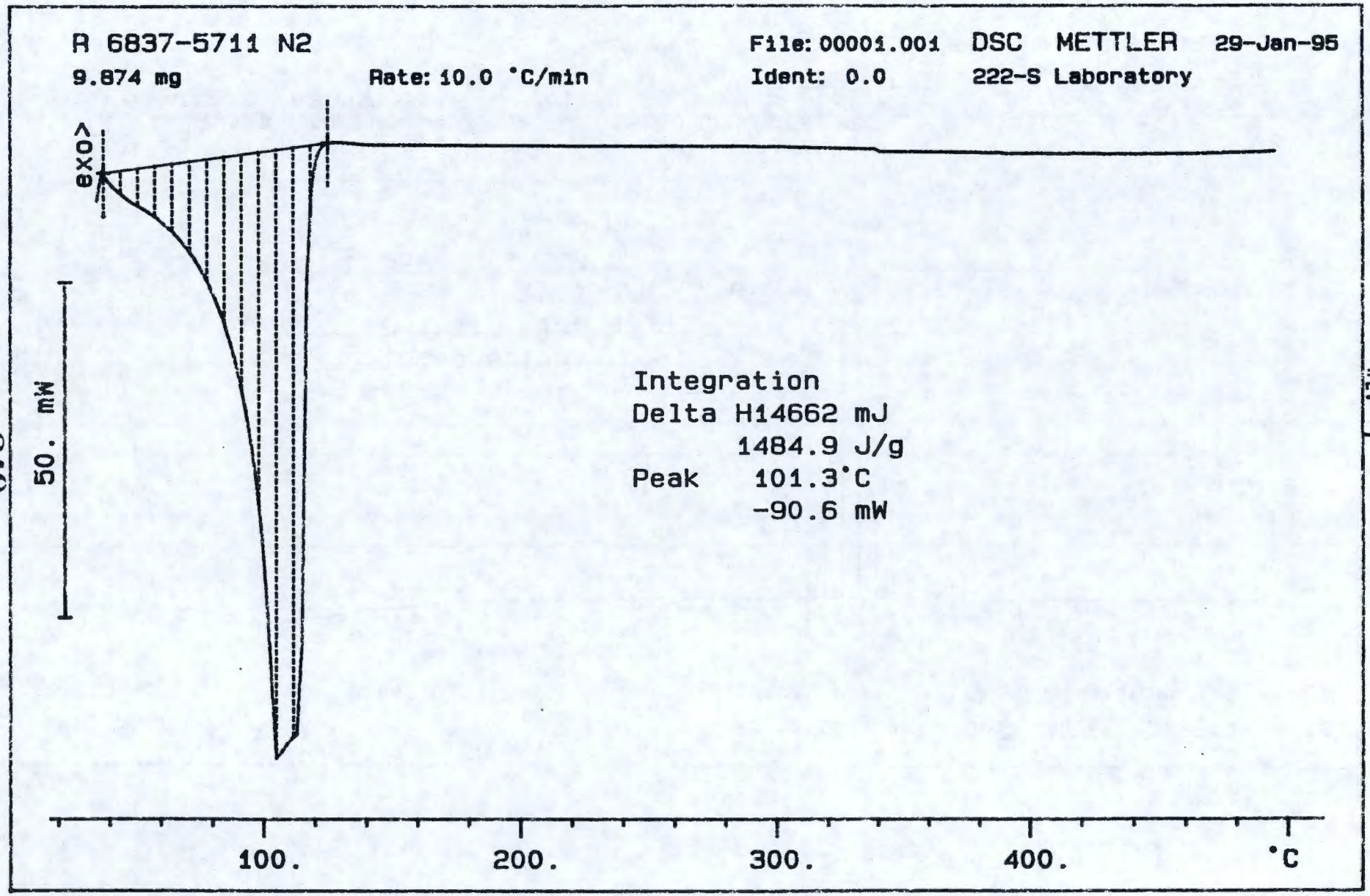
BEST AVAILABLE COPY



SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 248 TO 253.

12N14A 1/30/95

BEST AVAILABLE COPY



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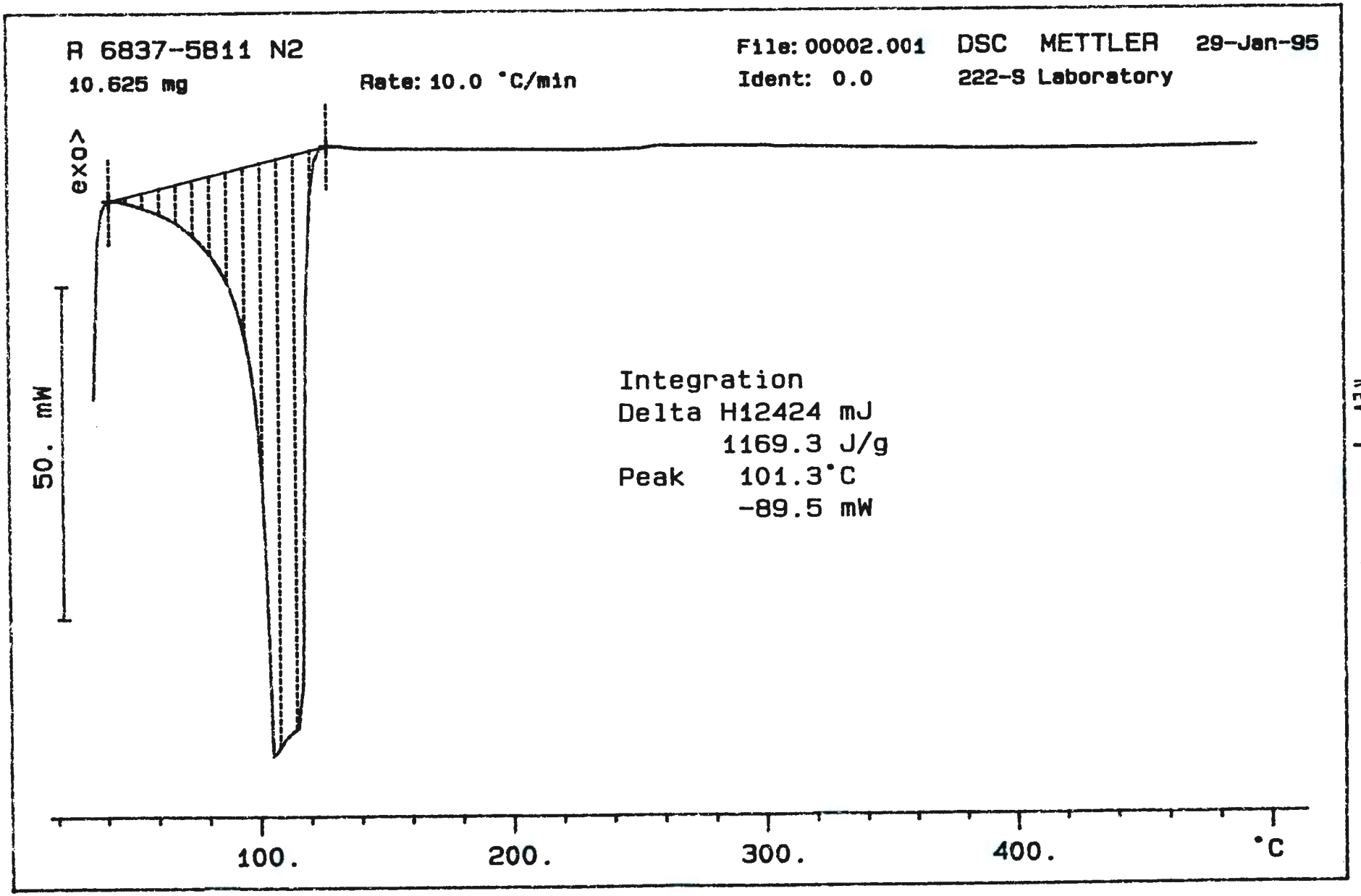
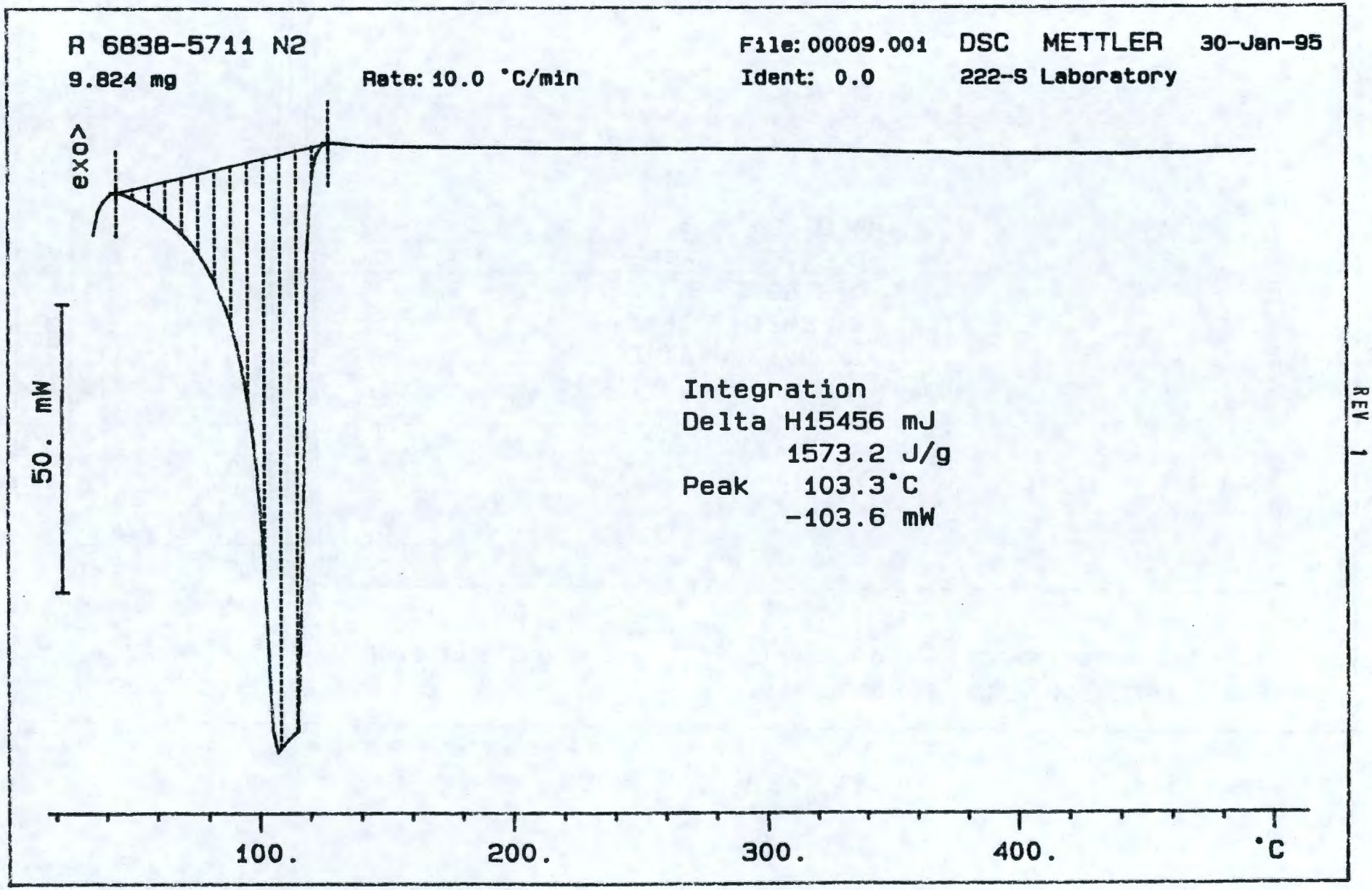
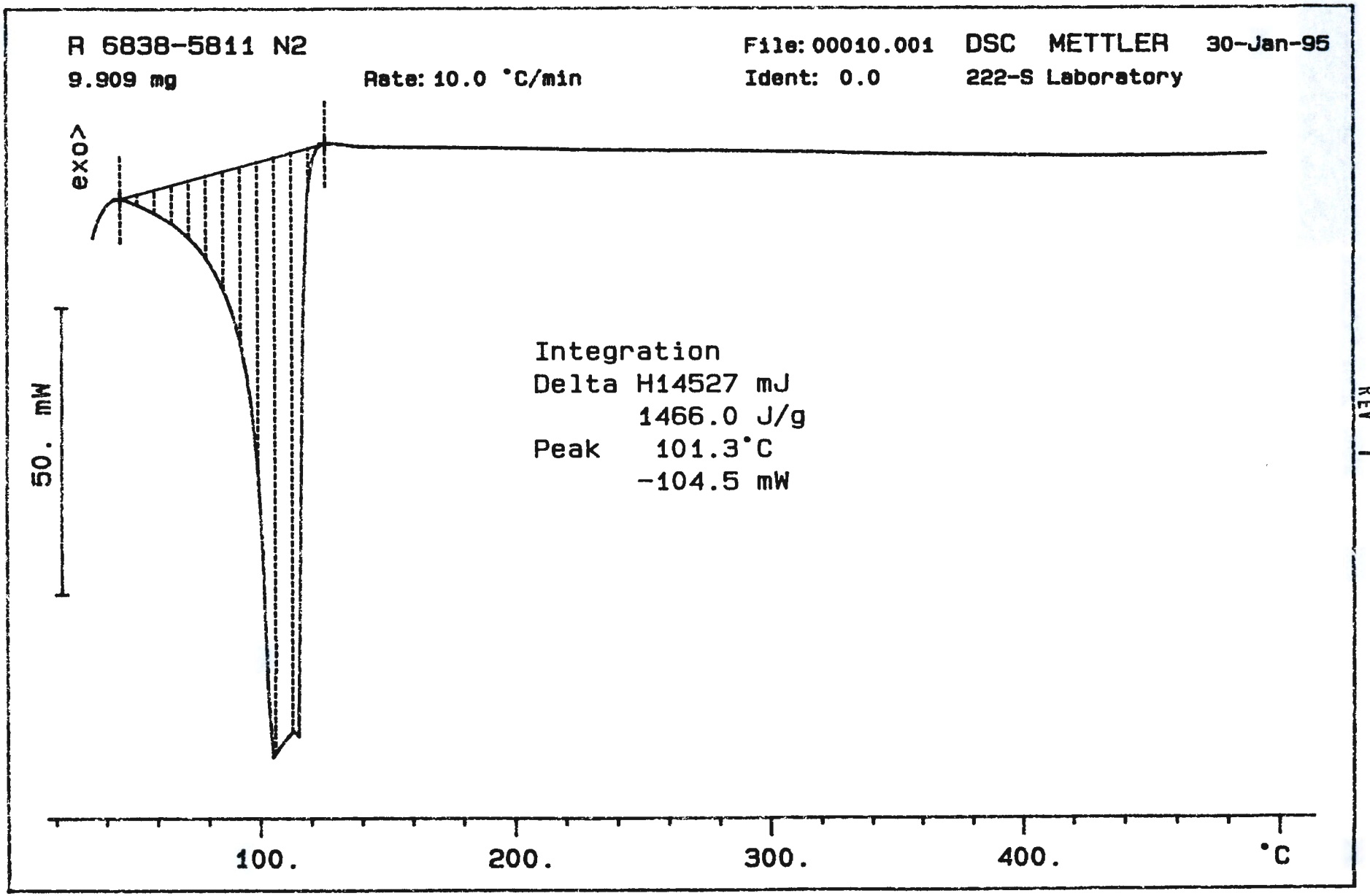


WHC-SD-WM-DB-08 REV 1
5/7/78-2775

BEST AVAILABLE COPY

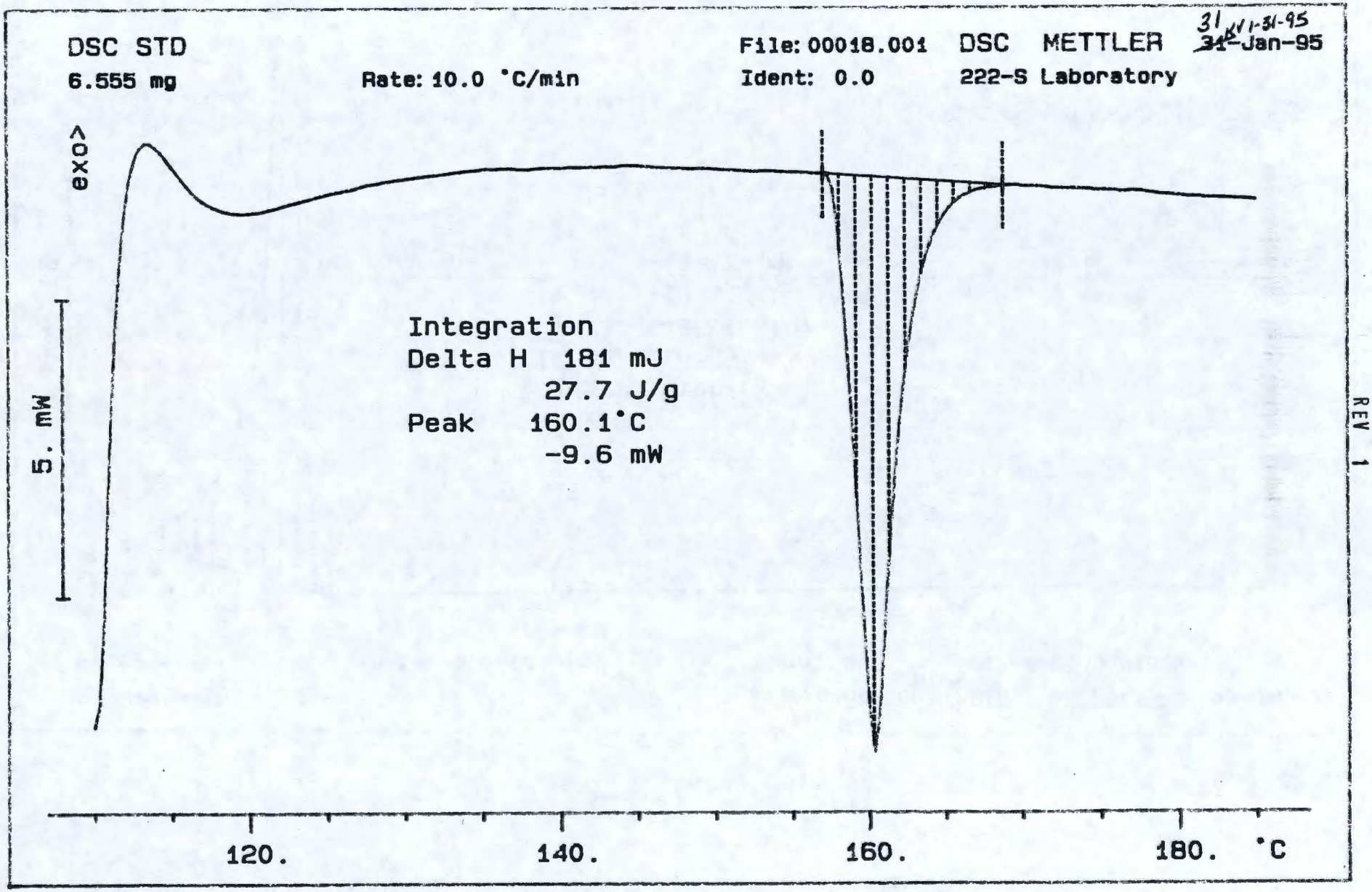


BEST AVAILABLE COPY



WHC-SD-WM-TD-077
REV 1

BEST AVAILABLE COPY



WHC-SD-WM-DP-081
REV 1

9513516.2777

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 Susie M. Fulton	Date: 02/20/95
Starting Time: 0015	Temperature
Ending Time: 0730	Chemist: J. FRYE BD Valenzuela 2-22-95

Comments: BATCH # 5383

	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			

A-6000-881 (03/92)

DIFFERENTIAL SCANNING CALORIMETRY ANALYSIS

Batch 283

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
DSC	LA-514-113	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? 6.670 mg	STD

Remarks, Calculations, Results

STD INDIUM
#12N14A
EDP R230
VALUE 28.45 J/g

Result: 28.4 J/g

99.8% Rec.

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
SMFulton				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
2-20-95	0750	BD Valenzuela

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

Serial No	Sample Point	Date	Time Issued	Priority
R 6852.-5711	TANK 9-1	1-23-95	10:37	25

Determination	Method Standard	Result Units	Charge Code	Reruns
DSC	LA-514-113	EXOTHERMS	KBLWD	0

Sample Size	Customer ID
? 10.298 mg	I-1

Remarks, Calculations, Results

1608.2 J/g

No Exotherms

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
SMFulton				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
2-20-95	0730	BD Valenzuela

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

DIFFERENTIAL SCANNING CALORIMETRY ANALYSIS

Serial No	Sample Point	Date	Time Issued	Priority
R 6852.-5811	TANK 9-1	1-23-95	10:37	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
DSC	LA-514-113	EXOTHERMS	KBLWD	0

Sample Size	Customer ID
? 10.464 mg	I-1

Remarks, Calculations, Results

DUPLICATE SAMPLE

1369.3 J/g

No Exotherms

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
SmFulton				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-20-95	0730	BD Valenzuela	

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

Serial No	Sample Point	Date	Time Issued	Priority
R 6854.-5711	TANK 9-1	1-23-95	10:46	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
DSC	LA-514-113	EXOTHERMS	KBLWD	0

Sample Size	Customer ID
? 10.101 mg	TRIP BLK

Remarks, Calculations, Results

1428.3 J/g

No Exotherms

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
SmFulton				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-20-95	0730	BD. Valenzuela	

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

DIFFERENTIAL SCANNING CALORIMETRY ANALYSIS

Serial No	Sample Point	Date	Time Issued	Priority
R 6854.-5811	TANK 9-1	1-23-95	10:46	25

Determination	Method Standard	Result Units	Charge Code	Reruns
DSC	LA-514-113	EXOTHERMS	KBLWD	0

Sample Size	Customer ID
? 10.012mg	TRIP BLK

Remarks, Calculations, Results

DUPLICATE SAMPLE

1559.8J/g

NO EXOTHERMS

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
SMFulton				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-20-95	0730	BD Valenzuela	

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

Serial No	Sample Point	Date	Time Issued	Priority
R 6853.-5511	TANK 9-1	1-23-95	10:42	25

Determination	Method Standard	Result Units	Charge Code	Reruns
DSC	LA-514-113	% RECOVERY	KBLWD	0

Sample Size	Customer ID
? ~~SMF 2-21-95 6.670mg~~ 6.220mg	END STD

Remarks, Calculations, Results

R230

STD INDIUM

#12N14A

VALUE 28.45

Result: 29.4J/g

103.3% Rec.

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
SMFulton				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr	
2-20-95	0730	BD Valenzuela	

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

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SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 258 TO 263.

DSC STD 12N14-A 5/16/95 BDV

6.670 mg

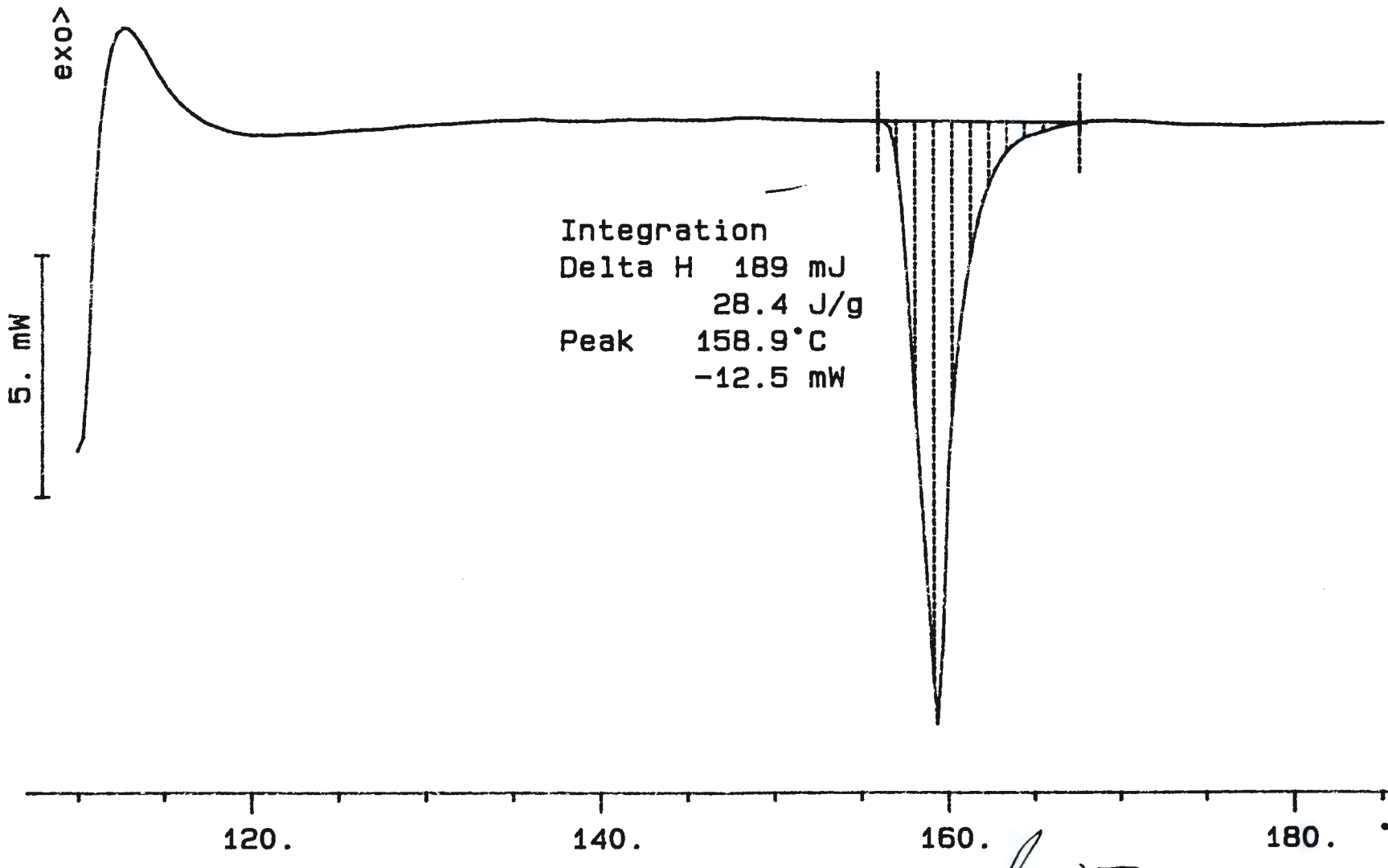
Rate: 10.0 °C/min

File: 00098.001

Ident: 0.0

DSC METTLER 20-Feb-95

222-S Laboratory



Susie M. Fulton

WHC-SD-WM-DP-061
REV 1

9513316.2779

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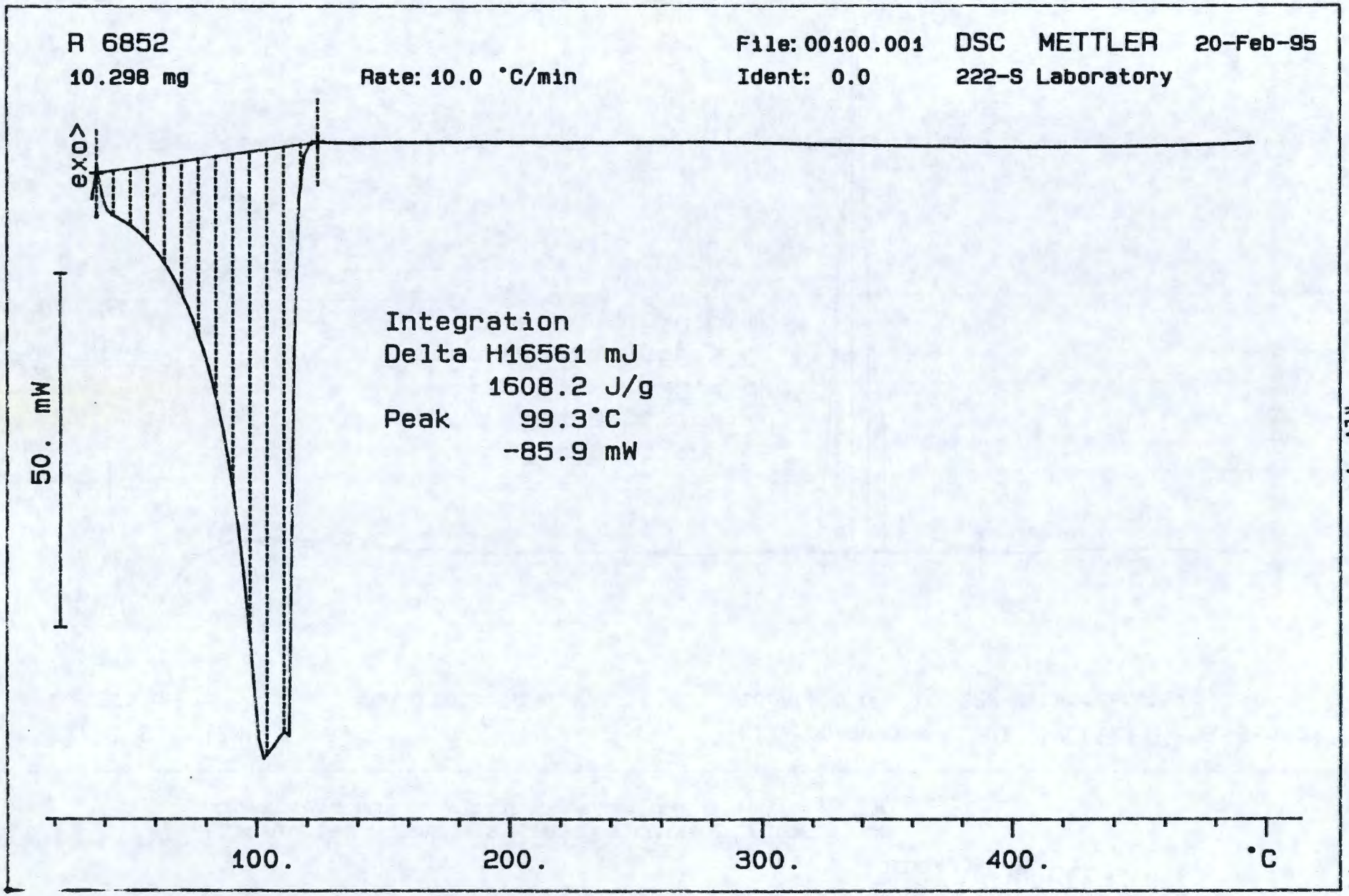

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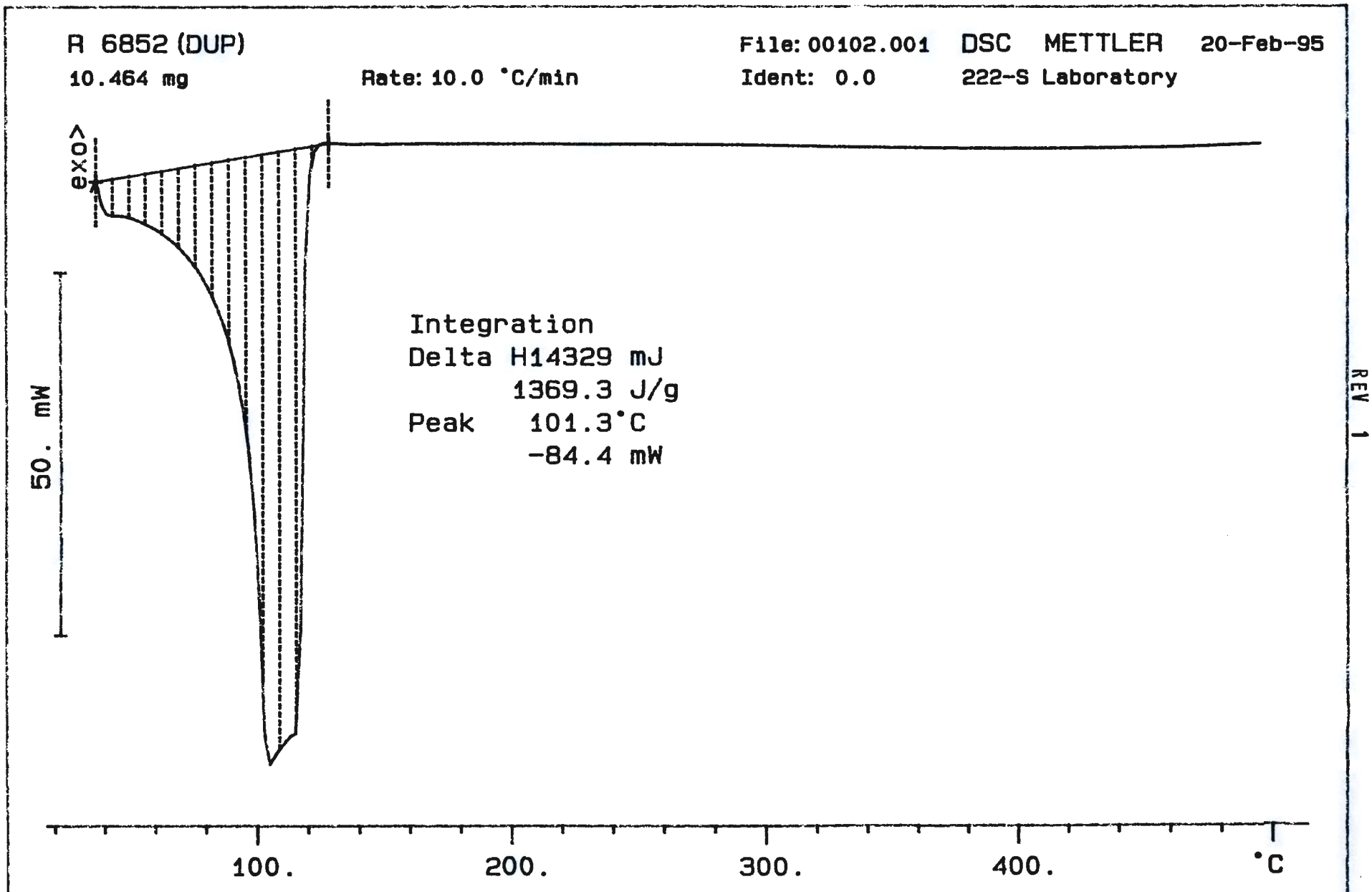

WHC-SD-WM-DP-081
REV 1
9513316.2780

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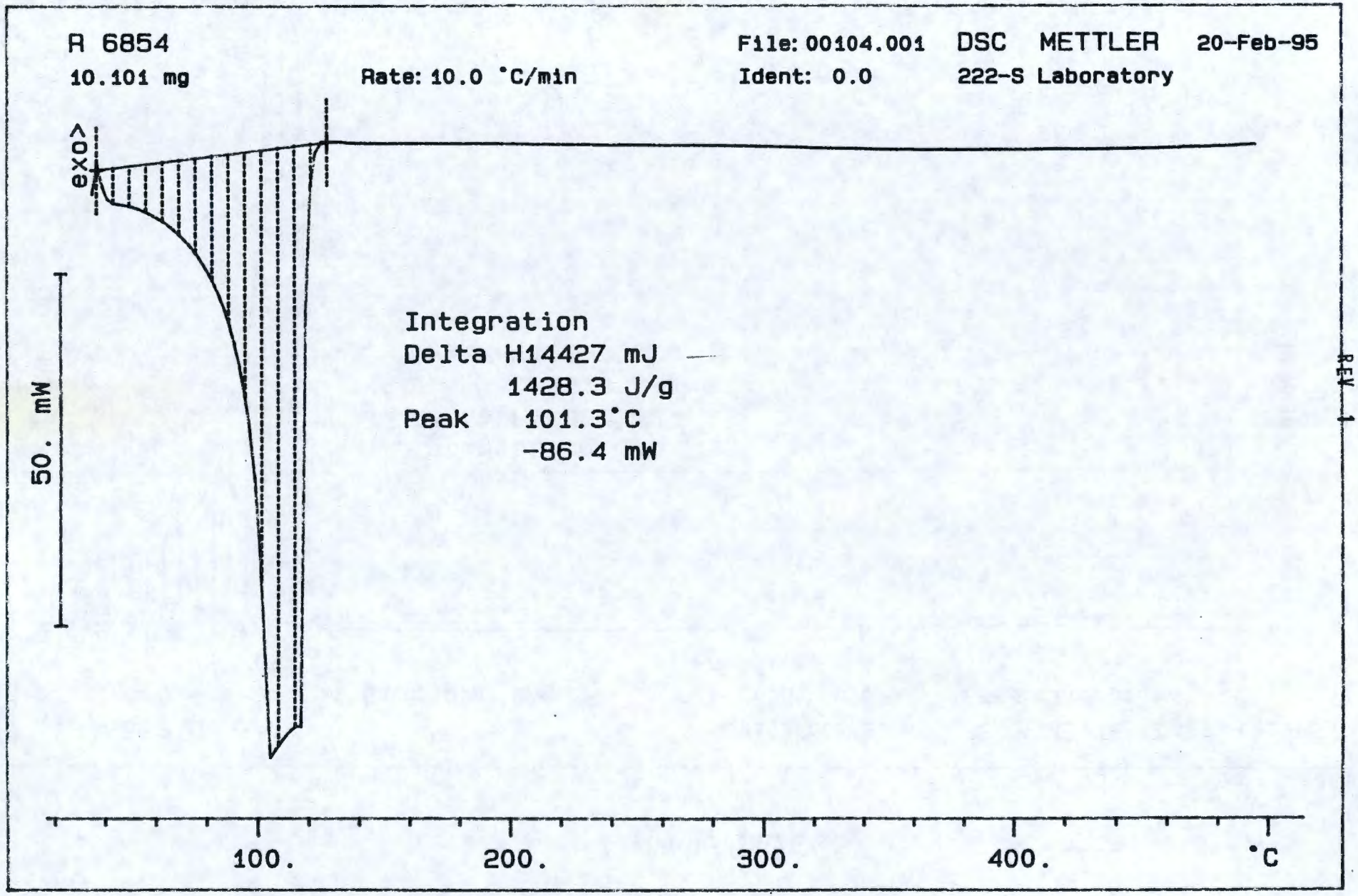

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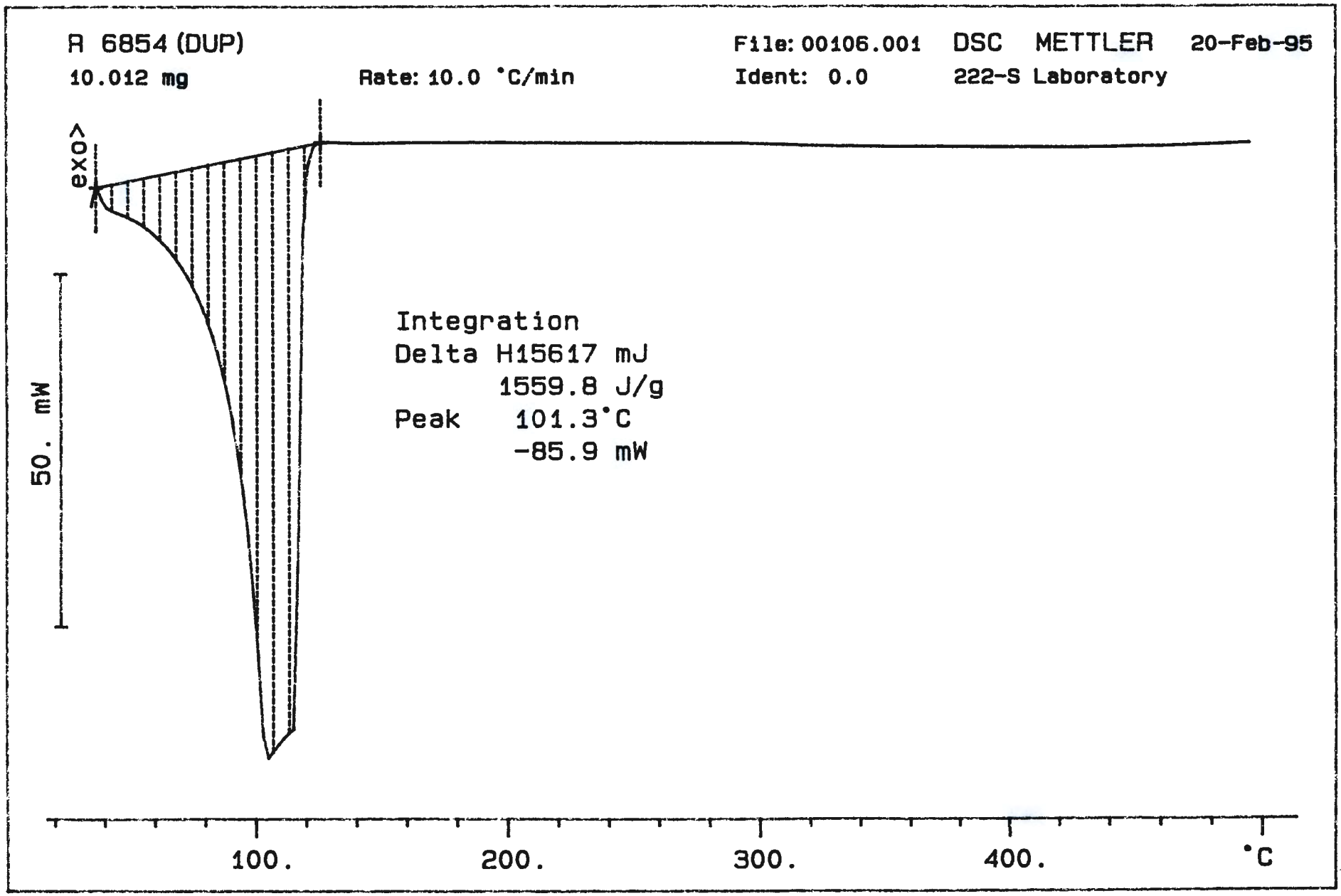

WHC-SD-WM-TRP-082 REV 1

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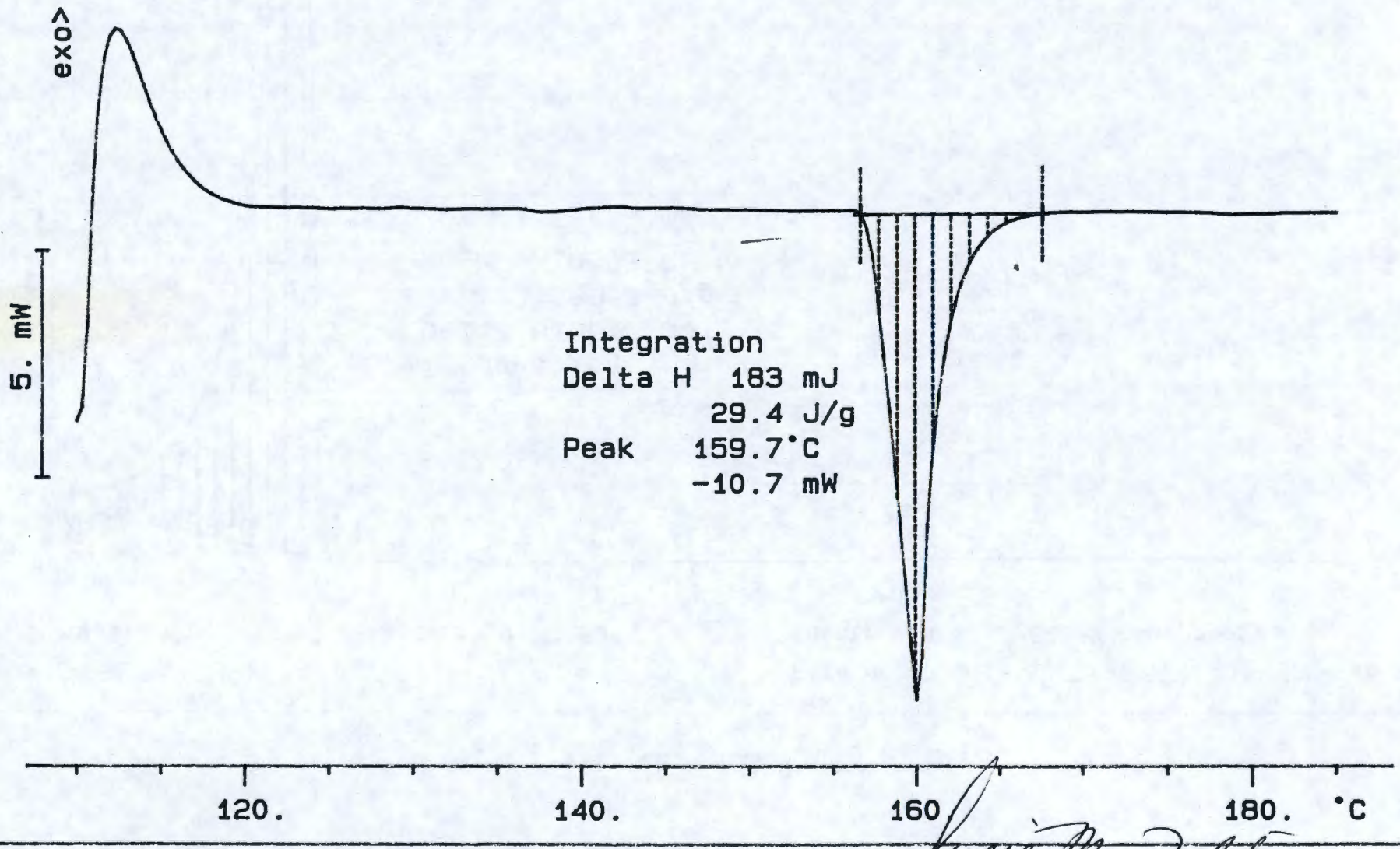
DSC STD 12N14-A
6.220 mg
Rate: 10.0 °C/min
File: 00118.001
Ident: 0.0
DSC METTLER
222-S Laboratory
21-Feb-95



Susie M. Fulton
2-21-95

9513316.2782

DISTRIBUTION SHEET

To	From	Page 1 of 2
Distribution	Characterization Plans and Reports	Date: 05/15/95
Project Title/Work Order WHC-SD-WM-DP-081, Rev. 1, "Aqueous Sample From B-Plant, Tank 9-1"		EDT NO.: EDT-610401 ECN NO.: ECN-613665

Name	MSIN	Text With all Attach	EDT/ECN ONLY	
Westinghouse Hanford Company				
K. E. Bell	T6-06	X		
S. E. Killoy	S6-70	2		
J. G. Kristofzski	T6-06	X		
T. M. Ridge	S6-70		X	
Central Files	L8-04	2		
EDMC	H6-08	X		
LTIC	T6-03		X	
OSTI	L8-07	2		
TCRC	R2-12	2		
TFIC	R1-20		X	

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