AR TARGET SHEET

The following document was too large to scan as one unit, therefore it has been broken down into sections.

DOCUMENT # SD-WM-DP-025

EDMC # 0025698 Vol 17 of 18

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Westinghouse
Hanford Company

P.O. Box 1970 Richland, WA 99352

222-S Analytical Laboratory

Project: 242-A EVAPORATOR FEED CHARACTERIZATION

Tank: 106AW

Customer Id. Number:

791-1A	791-6A
791-2A	791-7A
791-3A	791-8A
791-4A	791-9A
791-5A	791-10A

Report Revision: 0

Date Printed: June 2, 1992

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SIGNATURE PAGE

I have reviewed the Inorganic and Radiochemistry results reported in this data package (when applicable). The results meet the requirements of "242-A Evaporator Feed Characterization Project - Statement of Work" - WHC-SOW-91-0002. This data is an accurate representation of the data generated for the requested laboratory analyses performed.

J. H. Tillman — 9/5/92
J. H. Tillman
242-A Evaporator Project Manager
Date

I have reviewed the compiled report and certify that this data package meets the document standards of the RCRA Data Packaging Procedure LO-150-151. This data package is complete and contains the data generated from the requested laboratory analysis performed on this sample.

L. R. Webb — 9/5/92
L. R. Webb
Records Management Specialist
Data Coordinator
Date

I have reviewed this report and certify that this data package meets the requirements of "Quality Assurance Project Plan for the Chemical Analysis of Highly Radioactive Samples in Support of Environmental Activities on the Hanford Site" - WHC-SD-CP-QAPP-002, unless superseded by the Statement of Work or Waste Characterization Plan. This data package is a complete and accurate representation of the data generated from the requested laboratory analyses performed on this sample based on the QA Review Process. This Data Package has been reviewed by the Laboratory QA Officer or designee.

L. P. Markel — 9/21/92
L. P. Markel
Laboratory Q.A. Officer
Date

The data contained in this hardcopy data package has been approved and authorized for release by the Laboratory Manager or Manager's designee as verified by the following signature.

M. A. Bell — 9-22-92
M. A. Bell
Manager
Processing and Analytical Laboratories
Date

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NARRATIVE

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Hanford Company

P.O. Box 1970 Richland, WA 99352

242-EVAPORATOR FEED CHARACTERIZATION

INORGANIC CASE NARRATIVE

Introduction

The analysis of samples in support of the 242-A Evaporator Feed Characterization Project for Fiscal Year 1991, was performed by the 222-S Laboratory during the last quarter of 1991 and completed during the first quarter of 1992. Samples received and analyzed for the inorganic and conventional parameters were performed using methods specified in the Statement of Work (SOW), WHC-SOW-91-0002 Westinghouse Hanford Company, 242-A Evaporator Feed Characterization Project Fiscal Year 1991, September 1991.

Samples submitted to the laboratory were identified as:

1. TK-102-AW (referred to as 102AW in the remainder of this report) the feed tank prior to the evaporator.

2. TK-106-AW (referred to as 106AW in the remainder of this report) one of the candidate feed tanks into 102AW.

3. TK-103-AP (referred to as 103AP in the remainder of this report) the other candidate feed tank into 102AW.

The inorganic constituents requested for analysis on the three tanks were divided into the following categories; metals by Inductively Coupled Plasma (ICP), metals by Atomic Absorption Spectroscopy (AAS), and conventional parameters by specified methods. The results were obtained using approved methods as specified in Table I of the SOW. Quality analyses, including number and frequency, were performed in accordance to guidance found in Table 2 of the SOW. The parameters analyzed for from the three tanks are:

Metals by ICP

Silver	Ag
Aluminum	Al
Barium	Ba
Cadmium	Cd
Chromium	Cr
Iron	Fe
Magnesium	Mg
Manganese	Mn
Sodium	Na
Lead	Pb
Zinc	Zn

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Metals (AAS)

Arsenic	As
Selenium	Se
Mercury	Hg

Conventionals (IC)

Fluoride	F
Chloride	Cl
Nitrite	NO2
Nitrate	NO3
Phosphate	PO4
Sulfate	SO4

Conventional (Specified Methods)

Total Organic Carbon	TOC
Total Inorganic Carbon	TIC
Cyanide	CN
Hydroxide	OH
Ph	
Specific Gravity	SpG
Differential Scanning Calorimetry	DSC

The analysis of the samples for Cyanide, Total Ammonia, Total Inorganic Carbon (TIC), Specific Gravity, and Differential Scanning Calorimetry (DSC) were performed using methods traceable to ASTM or EPA. All other analytes were determined based on EPA SW-846 methods or current approved WHC golden rod procedures.

The Quality Objectives and requirements for this work effort were set to achieve the highest quality data. Factors relevant to sample matrix and the applicability of the methods to these complex matrices of samples from the evaporator candidate and feed tanks may have lead to biased results for some analytes of concern. The Quality Objectives were:

1. Matrix Spike and Matrix Spike Duplicate per batch or for no more than 20 samples which ever is less. The calculated Percent Recovery for these analyses to be within 75 to 125% and the Relative Percent Difference (RPD) must not exceed ± 20%.

2. One sample in twenty was to be analyzed in duplicate where specified. The duplicate results must agree with an RPD of ± 20%.

3. A blank must be run for each batch or for every 20 samples.

John H. Tillman 9/5/92

J. H. Tillman, Manager
Inorganic Chemistry PAL

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242-EVAPORATOR FEED CHARACTERIZATION

INORGANICS CASE NARRATIVE

Problems encountered:

Samples from the two candidate and one feed tank into the evaporator were received into the 222-S laboratory during the laboratory's transition period from process to environmental analysis. This transition period signaled a change in the analytical protocols required to meet different, and in some cases, more stringent conditions. Most of the problems encountered during this work effort can be attributed to the response of the laboratory to these changing requirements. Nevertheless, the data generated for these samples was obtained using the best available laboratory practice at the time of sample analysis. The following problems were observed to have occurred throughout the samples submitted from tanks 102AW, 103AP, and 106AW:

(1) In a few cases, the analytical data cards are not corrected with one line, an initial and a date. Also, due to insufficient training, the chemists signed the analytical data card in the incorrect location. Though the analytical data cards were signed by the cognizant chemists, they were often signed in the inappropriate location on the card. This indicated the need for appropriate training to address this problem. This training effort has begun.

The Extension "1621" on the data cards represent an old extension which specifically denotes "TOC" analysis.

(2) Instrument Detection Limits (IDL). Detection limits for the parameters determined were obtained using the method prescribed by the US EPA. The instrument detection limits for the metals determined by Inductively Coupled Plasma (ICP), Atomic Absorption (AA), Ion Chromatograph (IC) and classical methods are obtained from an aqueous matrix. The instrument detection limits for the analytes on actual evaporator feed or candidate tanks would probably be higher due to matrix efforts. The standards used to prepare the solutions for the detection limit determinations were obtained from bonifide and reliable sources. The procedure basically requires the analysis of seven replicates of the analyte at a concentration two times the noise level for the instrument. Following this protocol, the instrument detection limits were met or exceeded when compared to the IDC's in the Request for Special Analyses (RSA). Typical instrument detection limits obtained during this work effort are listed below:

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Analyte	Detection Limit (ppm) Required	Actual
Arsenic (As)	5	.005
Cyanide (CN)	.10	.010
Mercury (Hg)	.20	.002
Ammonia (NH4)	500	.100
Hydroxide (OH-)	1700	17.000
Selenium (Se)	1	.005
Total Inorganic Carbon (TIC)	5000	5.000
Total Organic Carbon (TOC)	500	5.500
Fluoride (F)	6000	.090
Nitrate (NO3)	5000	.240
Chloride (Cl)	4000	.040
Nitrite (NO2)	5000	.180
Phosphate (PO4)	10000	.130
Sulfate (SO4)	10000	.130
Aluminum (Al)	50	.075
Barium (Ba)	2	.003
Cadmium (Cd)	1	.004
Chromium (Cr)	5	.004
Iron (Fe)	10	.007
Lead (Pb)	5	.030
Magnesium (Mg)	1	.0001
Manganese (Mn)	2	.001
Silver (Ag)	5	.018
Sodium (Na)	60	.048
Zinc (Zn)	2	.002

Detection limits for the analytes required in the Statement of Work are listed for each set of samples. These instrument detection limits vary according to the analyte and instrument and were generated in accordance with the Request for Special Analysis (RSA), the internal memo, "Recommendations for Tank Farm Waste Analysis" by T. D. Blankenship, dated November 26, 1990, and references the document, "Detection Limit Package, Appendix B" for the 241-U-110 Single Shell Tank Waste Characterization data package, dated August 9, 1991. The detection limit study performed for Core 5 followed recommended EPA protocol.

J. H. Tillman 9/5/92

J. H. Tillman, Manager
Inorganic Chemistry PAL

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Hanford Company

P.O. Box 1970 Richland, WA 99352

242-EVAPORATOR FEED CHARACTERIZATION

INORGANICS CASE NARRATIVE

TANK: 106AW

Problems encountered:

The samples taken from the 106AW tank appeared to be aqueous with no visible organic layout. These samples also had a yellow tint. The laboratory check standards for the specific batch of samples were within the control limits for the Ion Chromatographic analytes and the conventional tests run. The Inductively Coupled Plasma (ICP) metals which rendered questionable results in the check standards were aluminum, iron, lead, magnesium, sodium, and zinc. The results for these metals were outside of the control limits of 100% ± 25%:

FOR SAMPLES R318-R322

Analyte	% Recovery		
	Initial Check Standard	Ending Check Standard	Spike Recovery
Aluminum (Al)	134.0	130.0	-
Iron (Fe)	159.0	-	-
Lead (Pb)	-	-	149.4
Magnesium (Mg)	568.0	467.2	-
Sodium (Na)	157.0	162.0	-
Zinc (Zn)	230.0	243.3	-

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FOR SAMPLE R326-R330

Analyte	% Recovery		
	Initial Check Standard	Ending Check Standard	Spike Recovery
Aluminum (Al)	59.9	128.6	-
Chromium (Cr)	-	-	17.2
Iron (Fe)	-	161.0	-
Lead (Pb)	-	-	162.7
Magnesium (Mg)	-	419.0	67.5
Sodium (Na)	-	127.0	-
Zinc (Zn)	-	157.9	48.2

The changes on page 229.3 are corrected to reflect actual numbers from the raw data for Sample R318.

Reference is directed to the Internal Memos dated September 9 and 10, 1991, describing "Shipping Anomalies Noted in Samples from TK-106-AW". The recommendations presented appear to have been incorporated into the system to ensure sample integrity and minimal exposure to the laboratory staff.

The percent recovery for uranium was outside the control limits. No rerun was performed on this sample for no apparent reason.

Data Packaging did not receive a printout for Selenium 79 Analysis Sample No. R348-5789. We contacted Stan Catlow, the chemist, and were informed that the missing information is not retrievable.

Method LA-220-102 was approved according to the SOW but method LA-220-101 was used for the analysis of samples for Sr 90. Method LA-220-101 is specific to liquid samples and was applicable to the samples within this project. Method LA-220-102 is specific to Sr 90 analysis of solid samples. Both methods should have been identified and approved for use in the analysis of these samples.

John H. Tillman 9/21/92

J. H. Tillman, Manager
Inorganic Chemistry PAL

Westinghouse Hanford Company

Internal Memo

From: Office of Sample Management
Phone: 3-3869 MO-346/200W T6-08
Date: November 26, 1990
Subject: RECOMMENDATIONS FOR TANK FARM WASTE ANALYSES

16500-90-090

To: T. D. Blankenship R1-62

cc: J. D. Briggs T6-14
J. A. Eacker R1-51
D. L. Halgren R1-51
J. H. Kessner T6-08
E. J. Kosiancic SO-61
C. R. Stroup T6-07
RLW File/LB

Reference: Internal Memo, T. D. Blankenship to E. J. Kosiancic, "Tank Farm Waste Analysis Requirements," dated September 10, 1990.

The referenced Internal Memo requests information regarding laboratory analytical capacity for a variety of analytes to support Tank Farm and Evaporator operations. Specific comments and suggestions for each have been prepared along with information on suggested minimum quantitation limits (MQLs) for the needed analyses and recommended reporting formats. With the exception of Nb^{94}, all requested analyses are currently performed on-site. Laboratory capacity exists to support these programs if sufficient prescheduling of activities is done to coordinate with times of high sample throughput in the laboratory (e.g., single shell tank sampling).

The discussions that follow are based on the assumption that the laboratory will be performing "standard" regulatory type analysis. Analysis MQLs are based on proven laboratory experience, turnaround times are based on requirements in the Tri-Party agreement, and reporting/validation formats based on WHC-CM-5-3, Section 2.0, "Data Validation for RCRA Analyses." This information is summarized in the following attached tables:

Table 1	MQLs for Inorganic Analysis
Table 2	MQLs for Radionuclide Analysis
Table 3	MQLs for Organic Analysis (these are CLP requirements but will form the basis for all organic analysis)
Table 4	Sample Turnaround Times
Table 5	Result Reporting/Validation
Table 6	Validation Criteria - Generic Data Quality Objectives (DQOs)

If specific needs different from this standard are required for a given program, these needs must be defined in the program's Waste Analysis Plan (WAP) or equivalent documentation and negotiated with the laboratory to assure

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compliance. While it is expected that in most cases specific needs will be more stringent, if less stringent requirements are appropriate, these should also be defined in the WAP. This could significantly reduce analytical costs and turnaround times.

Characterization of Waste Streams Discharged to Double Shell Tanks (DSTs):

These streams are from ongoing operations of the site and will need analysis for two requirements; verification of compliance to tank farm storage specifications (processing parameters), and determination of composition for regulatory based designation of the waste (hazardous waste designation). Processing parameter based analysis will be equivalent to current practice and should be predefined using laboratory "routine set" analysis. The analysis will be performed under the quality assurance requirements of NQA-1 with typical result turnarounds of 1 to 5 days. Results will be available via the laboratory reporting system (LCCS).

Analysis of the samples to meet the needs for hazardous waste designation will require more stringent quality assurance than for processing parameters. Those components that fall under both needs will likely be required to be analyzed by both protocols. Unfortunately, analysis turnaround times for designation will likely exceed needs for normal processing parameters. If processing parameter analysis results show a component to significantly exceed a hazardous waste designation limit (e.g., a sample is sufficiently caustic to qualify as a extremely hazardous waste based on corrosiveness) reanalysis of the sample under the more stringent protocols would not be necessary. In no case will analysis performed to processing parameter protocols be suitable for designation as an intermediate level or as nonhazardous waste.

DST Characterization Analysis:

All of these analyses will be required to be performed to hazardous waste designation protocols. Currently, no analytical capacity exists to perform Nb^{94} analysis. This long lived ($2x10^4$ y) beta emitter is not expected to be present in significant quantities and will require development efforts to analyze for. Addition of total beta (TB) analysis to the analysis request should allow for screening for significant levels of unaccounted for beta activity and assessment of the needs for additional specific beta emitting radionuclide component quantification.

Analysis for Pu^{238} at the 222-S Laboratory is complicated by the presence of this isotope in the spike (Pu^{236}) added to the analysis to allow correction for overall yield in the procedure. For most expected samples, Pu^{238} activity will be only a small fraction of the $Pu^{239/240}$ activity and may be approximated using isotopic ratios based on historical irradiated uranium processing.

Samples having greater than normal Pu^{238} (e.g., associated with previous irradiated thorium processing) activity will be detectable using the current procedures. In these cases, Pu^{238} activity can be quantified either using a special analysis or through determination of isotopic ratios based on mass spectral analysis.

Analysis of Samples for the 242-A Evaporator:

All analyses identified in the Internal Memo appear to be for hazardous waste designation needs. It should be noted that analysis of the vent stack will require the installation of specialized gas sampling equipment.

General Comments:

Analysis of two major hazardous waste designation groups were not requested for any of the streams; semivolatile organics and Toxicity Characteristic Leaching Procedure (TCLP). If these analyses have not been assessed for inclusion in the requested analysis, it is recommended that they are reviewed for inclusion.

The current schedule for implementation of organic analysis capacity at 222-S Laboratory is for early in 1991, most probably after March 1, 1991. Until capacity becomes available at 222-S Laboratory, organic analyses (VOA and TOX) will be performed by the Pacific Northwest Laboratories (PNL). This will require transhipping of samples sent to 222-S Laboratory, but should not seriously affect result turnaround or quality.

Estimated cost information for the requested analyses is shown in Table 7. These costs are based on analysis of organic components at PNL. When organic capability is available at 222-S Laboratory, costs will be reduced slightly. Addition of semivolatile organic analysis to the lists would increase costs $2000 per analysis. Addition of TCLP to the list would increase analysis costs $1500 for those samples containing greater than 1% solids. For liquid only samples, no additional preparation is required for TCLP and the analytes of concern are already included in the analysis requests.

If you need any additional information or have any questions, please call me on 3-3869.

Richard L. Weiss

R. L. Weiss, Principal Scientist
Office of Sample Management

jmd

Attachments - 7

CONCURRENCE:

Curtis R. Stroup Date 11/28/90
C. R. Stroup, Manager
Analytical Laboratories

J. D. Briggs for Date 11/29/90
J. D. Briggs, Manager
222-S Analytical Laboratory Complex

TABLE 1
RECOMMENDED ANALYSIS MINIMUM QUANTITATION LEVELS
for TANK FARM WASTE ANALYSES

Analyte	High Salt Liquid or Solid/Slurry	Low Salt Liquid	Analyte	High Salt Liquid or Solid/Slurry	Low Salt Liquid
Analyzed by Inductively Coupled Plasma Spectroscopy (ICP)					
Al	50	0.5	As	20	0.2
Ba	2	0.02	Bi	100	0.5
B	20	0.05	Cd	2	0.02
Ca	0.2	0.002	Ce	100	1
Cr	5	0.05	Co	20	0.2
Cu	20	0.2	Eu	2	0.02
Fe	10	0.01	La	20	0.2
Pb	30	0.3	Li	3	0.03
Mg	0.1	0.001	Mn	2	0.02
Hg	5	0.05	Mo	5	0.05
Nd	250	2.5	Ni	20	0.2
P	50	0.5	K	250	2.5
Sm	200	2	Se	100	1
Si	100	0.5	Ag	30	0.3
Na	60	0.6	Sr	2	0.02
S	60	0.6	Ta	50	0.5
Th	20	0.2	Sn	2	0.02
Ti	30	0.06	W	200	0.5
U	1500	15	Zn	2	0.02
Zr	80	0.1			
Analyzed by Specific Atomic Absorption Techniques					
As	5	0.05	Hg	3	0.03
Se	5	0.05			
Anion Analysis by DIONEX					
F	6000	10	Cl	4000	5
NO_3	20000	10	NO_2	20000	10
PO_4	10000	10	SO_4	10000	10
Specific Analysis					
CO_3	5000	50	TOC(carbon)	5000	50
CN	0.1	0.01	NH_4	5000	50
U	100	1	TOX(chlorine)	100	10
OH	0.2	0.002	DSC	*	*

Values for solids are as ug/g
Values for liquids are as ug/ml
*DSC will be used to screen for the presence of exothermic reactions.
Specific quantitation limits are not required for this screening

TABLE 2
RECOMMENDED ANALYSIS MINIMUM QUANTITATION LEVELS for TANK FARM WASTE ANALYSES

Analyte	Solid/Slurry	High Salt Liquid	Low Salt Liquid
Alpha Total	100	1	0.01
Beta Total	350	3.5	0.035
Radionuclides Analyzed by Gamma Energy Analysis			
Co^{60}	4	4	0.04
Cs^{137}	5	5	0.05
$RuRh^{106}$	50	50	0.5
Radionuclides Analyzed by Separation with Beta Counting			
H^{3}	75	1.5	1.5
C^{14}	50	0.5	0.25
Nb^{94}	*	*	*
Se^{79}	50	0.5	0.25
Sr^{90}	150	1.5	0.015
Tc^{99}	250	2.5	0.025
I^{129}	900	9	0.09
Radionuclides Analyzed by Separation with Alpha Counting/Alpha Energy Analysis			
Pu^{238}	200[1]	2[1]	0.02[1]
$Pu^{239/240}$	50	0.5	0.005
Am^{241}	100	1	0.01
Cm^{244}	100	1	0.01

Values for solids are as pCi/g
Values for liquids are as pCi/ml

* No current analysis capacity for Nb^{94}
[1]Potential interferrence on Pu^{238} analysis from contamination in Pu^{236} spike added to the analysis

TABLE 3

TARGET COMPOUND LIST (TCL) AND CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)

Pesticides/Aroclors	CAS Number	Quantitation Limits* Water ug/L	Soil ug/Kg	On Column (pg)
98. alpha-BHC	319-84-6	0.05	1.7	5
99. beta-BHC	319-85-7	0.05	1.7	5
100. delta-BHC	319-86-8	0.05	1.7	5
101. gamma-BHC (Lindane)	58-89-9	0.05	1.7	5
102. Heptachlor	76-44-8	0.05	1.7	5
103. Aldrin	309-00-2	0.05	1.7	5
104. Heptachlor epoxide	1024-57-3	0.05	1.7	5
105. Endosulfan I	959-98-8	0.05	1.7	5
106. Dieldrin	60-57-1	0.10	3.3	10
107. 4,4'-DDE	72-55-9	0.10	3.3	10
108. Endrin	72-20-8	0.10	3.3	10
109. Endosulfan II	33213-65-9	0.10	3.3	10
110. 4,4'-DDD	72-54-8	0.10	3.3	10
111. Endosulfan sulfate	1031-07-8	0.10	3.3	10
112. 4,4'-DDT	50-29-3	0.10	3.3	10
113. Methoxychlor	72-43-5	0.50	17.0	50
114. Endrin ketone	53494-70-5	0.10	3.3	10
115. Endrin aldehyde	7421-36-3	0.10	3.3	10
116. alpha-Chlordane	5103-71-9	0.05	1.7	5
117. gamma-Chlordane	5103-74-2	0.05	1.7	5
118. Toxaphene	8001-35-2	5.0	170.0	500
119. Aroclor-1016	12674-11-2	1.0	33.0	100
120. Aroclor-1221	11104-28-2	1.0	33.0	100
121. Aroclor-1232	11141-16-5	2.0	67.0	200
122. Aroclor-1242	53469-21-9	1.0	33.0	100
123. Aroclor-1248	12672-29-6	1.0	33.0	100
124. Aroclor-1254	11097-69-1	1.0	33.0	100
125. Aroclor-1260	11096-82-5	1.0	33.0	100

* Quantitation limits listed for soil/sediment are based on wet weight. The quantitation limits calculated by the laboratory for soil/sediment, calculated on dry weight basis as required by the contract, will be higher.

There is no differentiation between the preparation of low and medium soil samples in this method for the analysis of Pesticides/Aroclors.

TABLE 3 (cont)

(continued)

Semivolatiles	CAS Number	Quantitation Limits* Water ug/L	Low Soil ug/Kg	Med. Soil ug/Kg	On Column (ng)
69. Dibenzofuran	132-64-9	10	330	10000	(20)
70. 2,4-Dinitrotoluene	121-14-2	10	330	10000	(20)
71. Diethylphthalate	84-66-2	10	330	10000	(20)
72. 4-Chlorophenyl-phenyl ether	7005-72-3	10	330	10000	(20)
73. Fluorene	86-73-7	10	330	10000	(20)
74. 4-Nitroaniline	100-01-6	50	1700	50000	(100)
75. 4,6-Dinitro-2-methylphenol	534-52-1	50	1700	50000	(100)
76. N-nitrosodiphenylamine	86-30-6	10	330	10000	(20)
77. 4-Bromophenyl-phenylether	101-55-3	10	330	10000	(20)
78. Hexachlorobenzene	118-74-1	10	330	10000	(20)
79. Pentachlorophenol	87-86-5	50	1700	50000	(100)
80. Phenanthrene	85-01-8	10	330	10000	(20)
81. Anthracene	120-12-7	10	330	10000	(20)
82. Carbazole	86-74-8	10	330	10000	(20)
83. Di-n-butylphthalate	84-74-2	10	330	10000	(20)
84. Fluoranthene	206-44-0	10	330	10000	(20)
85. Pyrene	129-00-0	10	330	10000	(20)
86. Butylbenzylphthalate	85-68-7	10	330	10000	(20)
87. 3,3'-Dichlorobenzidine	91-94-1	10	330	10000	(20)
88. Benzo(a)anthracene	56-55-3	10	330	10000	(20)
89. Chrysene	218-01-9	10	330	10000	(20)
90. bis(2-Ethylhexyl)phthalate	117-81-7	10	330	10000	(20)
91. Di-n-octylphthalate	117-84-0	10	330	10000	(20)
92. Benzo(b)fluoranthene	205-99-2	10	330	10000	(20)
93. Benzo(k)fluoranthene	207-08-9	10	330	10000	(20)
94. Benzo(a)pyrene	50-32-8	10	330	10000	(20)
95. Indeno(1,2,3-cd)pyrene	193-39-5	10	330	10000	(20)
96. Dibenz(a,h)anthracene	53-70-3	10	330	10000	(20)
97. Benzo(g,h,i)perylene	191-24-2	10	330	10000	(20)

* Quantitation limits listed for soil/sediment are based on wet weight. The quantitation limits calculated by the laboratory for soil/sediment, calculated on dry weight basis as required by the contract, will be higher.

TABLE 3 (cont)

TARGET COMPOUND LIST (TCL) AND CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)

Semivolatiles	CAS Number	Quantitation Limits* Water ug/L	Low Soil ug/Kg	Med. Soil ug/Kg	On Column (ng)
34. Phenol	108-95-2	10	330	10000	(20)
35. bis(2-Chloroethyl) ether	111-44-4	10	330	10000	(20)
36. 2-Chlorophenol	95-57-8	10	330	10000	(20)
37. 1,3-Dichlorobenzene	541-73-1	10	330	10000	(20)
38. 1,4-Dichlorobenzene	106-46-7	10	330	10000	(20)
39. 1,2-Dichlorobenzene	95-50-1	10	330	10000	(20)
40. 2-Methylphenol	95-48-7	10	330	10000	(20)
41. 2,2'-oxybis (1-Chloropropane)#	108-60-1	10	330	10000	(20)
42. 4-Methylphenol	106-44-5	10	330	10000	(20)
43. N-Nitroso-di-n-dipropylamine	621-64-7	10	330	10000	(20)
44. Hexachloroethane	67-72-1	10	330	10000	(20)
45. Nitrobenzene	98-95-3	10	330	10000	(20)
46. Isophorone	78-59-1	10	330	10000	(20)
47. 2-Nitrophenol	88-75-5	10	330	10000	(20)
48. 2,4-Dimethylphenol	105-67-9	10	330	10000	(20)
49. bis(2-Chloroethoxy) methane	111-91-1	10	330	10000	(20)
50 2,4-Dichlorophenol	120-83-2	10	330	10000	(20)
51. 1,2,4-Trichlorobenzene	120-82-1	10	330	10000	(20)
52. Naphthalene	91-20-3	10	330	10000	(20)
53. 4-Chloroaniline	106-47-8	10	330	10000	(20)
54. Hexachlorobutadiene	87-68-3	10	330	10000	(20)
55. 4-Chloro-3-methylphenol	59-50-7	10	330	10000	(20)
56. 2-Methylnaphthalene	91-57-6	10	330	10000	(20)
57. Hexachlorocyclopentadiene	77-47-4	10	330	10000	(20)
58. 2,4,6-Trichlorophenol	88-06-2	10	330	10000	(20)
59. 2,4,5-Trichlorophenol	95-95-4	50	1700	50000	(100)
60. 2-Chloronaphthalene	91-58-7	10	330	10000	(20)
61. 2-Nitroaniline	88-74-4	50	1700	50000	(100)
62. Dimethylphthalate	131-11-3	10	330	10000	(20)
63. Acenaphthylene	208-96-8	10	330	10000	(20)
64. 2,6-Dinitrotoluene	606-20-2	10	330	10000	(20)
65. 3-Nitroaniline	99-09-2	50	1700	50000	(100)
66. Acenaphthene	83-32-9	10	330	10000	(20)
67. 2,4-Dinitrophenol	51-28-5	50	1700	50000	(100)
68. 4-Nitrophenol	100-02-7	50	1700	50000	(100)

Previously known by the name bis(2-Chloroisopropyl) ether

TABLE 3 (cont)

TARGET COMPOUND LIST (TCL) AND CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)

Volatiles	CAS Number	Quantitation Limits* Water ug/L	Low Soil ug/Kg	Med. Soil ug/Kg	On Column (ng)
1. Chloromethane	74-87-3	10	10	1200	(50)
2. Bromomethane	74-83-9	10	10	1200	(50)
3. Vinyl Chloride	75-01-4	10	10	1200	(50)
4. Chloroethane	75-00-3	10	10	1200	(50)
5. Methylene Chloride	75-09-2	10	10	1200	(50)
6. Acetone	67-64-1	10	10	1200	(50)
7. Carbon Disulfide	75-15-0	10	10	1200	(50)
8. 1,1-Dichloroethene	75-35-4	10	10	1200	(50)
9. 1,1-Dichloroethane	75-34-3	10	10	1200	(50)
10. 1,2-Dichloroethene (total)	540-59-0	10	10	1200	(50)
11. Chloroform	67-66-3	10	10	1200	(50)
12. 1,2-Dichloroethane	107-06-2	10	10	1200	(50)
13. 2-Butanone	78-93-3	10	10	1200	(50)
14. 1,1,1-Trichloroethane	71-55-6	10	10	1200	(50)
15. Carbon Tetrachloride	56-23-5	10	10	1200	(50)
16. Bromodichloromethane	75-27-4	10	10	1200	(50)
17. 1,2-Dichloropropane	78-87-5	10	10	1200	(50)
18. cis-1,3-Dichloropropene	10061-01-5	10	10	1200	(50)
19. Trichloroethene	79-01-6	10	10	1200	(50)
20. Dibromochloromethane	124-48-1	10	10	1200	(50)
21. 1,1,2-Trichloroethane	79-00-5	10	10	1200	(50)
22. Benzene	71-43-2	10	10	1200	(50)
23. trans-1,3-Dichloropropene	10061-02-6	10	10	1200	(50)
24. Bromoform	75-25-2	10	10	1200	(50)
25. 4-Methyl-2-pentanone	108-10-1	10	10	1200	(50)
26. 2-Hexanone	591-78-6	10	10	1200	(50)
27. Tetrachloroethene	127-18-4	10	10	1200	(50)
28. Toluene	108-88-3	10	10	1200	(50)
29. 1,1,2,2-Tetrachloroethane	79-34-5	10	10	1200	(50)
30. Chlorobenzene	108-90-7	10	10	1200	(50)
31. Ethyl Benzene	100-41-4	10	10	1200	(50)
32. Styrene	100-42-5	10	10	1200	(50)
33. Xylenes (Total)	1330-20-7	10	10	1200	(50)

* Quantitation limits listed for soil/sediment are based on wet weight. The quantitation limits calculated by the laboratory for soil/sediment, calculated on dry weight basis as required by the contract, will be higher.

TABLE 4
SAMPLE RESULT TURNAROUND TIMES

Laboratory analysis and quality assurance documentation, excluding validation, shall be limited to the following schedule:

Transuranic and hot cell analyses - 100 days annual average, but not to exceed 140 days

Low-level and mixed waste (up to 100 mr/hr) analyses - 75 days annual average, but not to exceed 90 days

Nonradioactive waste analyses - 50 days

Validated data packages will be issued within 21 days of receipt of the results by the Office of Sample Management.

TABLE 5
RESULT REPORTING/VALIDATION

The RCRA validation documentation package consists of the Office of Sample Management Data Validation cover sheet (different sheets for Level A, B, or C validation), supplemental Quality Control (QC) attachment pages, a copy of the Chain of Custody, and all sample data. One documentation package is completed for each sample or delivery group.

Three levels of validation are offered:

Level A The minimum requirement for all RCRA data. The primary application is for data used in waste designation/disposal. The additional QC required by SW-846 will be assessed through laboratory audits and Performance Evaluation (PE) samples.

Review Requirements:

- o Requested Versus Reported Analyses
- o Analysis Holding Times

Level B Provides a more in-depth review for programs whose data are compiled for use in later reports.

Review Requirements in Addition to Those Listed for Level A:

- o Matrix Spike/Matrix Spike Duplicate Analysis
- o Surrogate Recoveries
- o Duplicate Analysis
- o Analytical Blank Analysis

Level C Requires that the data be reported in Sample Delivery Group (SDG) data packages and is applicable to RCRA governed programs requiring Contract Laboratory Program (CLP) quality data from analytical work done in non-CLP laboratories

Review Requirements in Addition to Those Above:

- o Initial and Continuing Instrument Calibrations
- o Gas Chromatography - Mass Spectrograph (GC/MS) Tune Criteria
- o Internal Standards for Gas Chromatograph Analysis
- o Laboratory Control Samples
- o Interference Check Samples (for ICP analysis)
- o Any Other QC Checks Performed or Required by the Methods of Analysis

TABLE 6
VALIDATION CRITERIA - GENERIC DATA QUALITY OBJECTIVES

1. REQUESTED VERSUS REPORTED ANALYSES

   All requested analyses shall be reported of accounted for.

2. HOLDING TIMES

   Holding times shall be equivalent to RCRA defined times. If no RCRA holding time exists, holding times will be 6 months unless specifically defined in project specific documentation.

3. SURROGATE RECOVERY

   Sample and blank surrogate recoveries must be between 80 and 120%.

4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

   A matrix spike or matrix spike duplicate must be analyzed with every analytical batch of every 20 samples, whichever is more frequent. Control limits will be between 75 and 125% with ±20% relative percent differences.

5. DUPLICATE ANALYSIS

   Duplicate analysis must be performed with every analytical batch or every 20 samples, whichever is more frequent. Control limits will be ±20%. If both sample and duplicate results are below the method detection limit of sample quantitation limit, then no control limit applies.

6. ANALYTICAL BLANKS

   A minimum of one analytical blank must be analyzed for every batch or every 20 samples, whichever is more frequent. No contaminants should be detected in the blanks.

7. INITIAL AND CONTINUING CALIBRATION

   Analytical instrumentation shall be calibrated in accordance with requirements specific to the instrumentation and methods of procedures employed.

8. GC/MS TUNE

   Ion abundance results and tuning frequency requirements must be as specified in the method employed for analysis.

9. INTERNAL STANDARDS

   Internal Standard area counts and retention time differences from the associated calibration standard must be within the control limits specified by the methods or procedure used.

TABLE 6 (cont)

10. LABORATORY CONTROL SAMPLE

All Laboratory Control Sample recoveries must be within 80-120% for all sample matrices.

11. INTERFERENCE CHECK SAMPLE

Frequency of analysis and all Interference Check Sample solution results must meet the requirements specified in the procedure used.

12. OTHER QUALITY CONTROL CHECKS

As specified in project specific documentation.

TABLE 7
ESTIMATED COSTS

CHARACTERIZATION OF WASTE STREAMS DICHSRGED TO DOUBLE SHELL TANKS	
Analysis for processing parameters	$500/sample
Analysis for hazwaste designation	$5000/sample
DOUBLE SHELL TANK CHARACTERIZATION	
Analysis for hazewaste designation	$10000/sample
ANALYSIS OF SAMPLES FROM 242-A EVAPORTOR	
Analysis of feed tank	$5000/sample
Analysis of Process Condensate	$2500/sample
Analysis of Slurry Product	$5000/sample
Analysis of Steam Condensate	$4000/sample
Analysis of Cooling Water	$4000/sample
Analysis of Vent Gases	$2000/sample

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Westinghouse Hanford Company — **Internal Memo**

From: Office of Sample Management — 28600-91-121
Phone: 3-4369 MO-346/200W T6-08
Date: September 10, 1991
Subject: SHIPPING ANOMALIES NOTED IN SAMPLES FROM TK-106-AW

To: P. G. Haigh R1-51
D. L. Halgren R1-51

cc: J. D. Briggs T6-14
J. G. Field G2-02
V. V. Johansen T6-20
J. H. Kessner T6-08
R. J. Smith G2-02
W. A. McCormick G2-02
DYB File/LB

The 222-S Sample Custodian, V. V. Johansen, informed the Office of Sample Management that there have been two problem areas identified with samples from Double Shell Tank 241-AW-106.

The custody seals were one area. Some of the custody seals were placed across the pin on the shipping container (pig), so that the normal torque applied by the crane in lifting the container in and out of the B-Plant truck caused strain on the seals. Also, the custody seals were inscribed in pencil or ballpoint pen. This made the seals hard to read because they are silver colored and shiny. In the future, it is recommended that the seals be placed on the side of the pig, across the seam of the lid. It is also recommended that a "Sharpie" marker be used to write on the custody seals.

The second problem was liquid inside the pig or the plastic bag, outside of the bottle of liquid waste. It appeared that the sample bottles were intact, with tight lids, and that no liquid had leaked from them. There was also an instance of a sandy substance mixed in with the liquid that had smearable radioactive contamination over 10,000 disintegrations per minute. This problem poses a contamination hazard to 222-S Laboratory staff and is an As Low As Reasonably Achievable concern.

11.20

The Tank Farms procedure for sampling and shipping, "Sample Non-Aging Waste Storage Tanks," (TO-080-030) and the Safety Analysis Report for Packaging, "N-55 Overpack," (WHC-SD-RE-SAP-015) were scrutinized for possible procedure violations. Though none were found, this matter needs to be addressed to prevent another occurrence.

If you have any questions or need additional information, please contact me on 3-4369.

Deborah Y. Bisenius 9/5/92
Deborah Y. Bisenius, Technical Representative
Office of Sample Management

tjn

Westinghouse Hanford Company — **Internal Memo**

From: Office of Sample Management
Phone: 3-4369
Date: September 9, 1991
Subject: SHIPPING ANOMALIES NOTED IN SAMPLES FROM TK-106-AW

To:	P. G. Haigh	R1-51
	D. L. Halgren	R1-51
cc:	J. D. Briggs	T6-14
	J. G. Field	G2-02
	V. V. Johansen	T6-20
	J. H. Kessner	T6-08
	R. J. Smith	G2-02
	W. A. McCormick	G2-02

The 222-S Sample Custodian, V. V. Johansen, informed the Office of Sample Management(OSM) that there have been two problem areas identified with samples from Double Shell Tank 241-AW-106.

The custody seals were one area. Some of the custody seals were placed across the pin on the shipping container (pig), so that the normal torque applied by the crane in lifting the container in and out of the B-Plant truck caused strain on the seals. Also, the custody seals were inscribed in pencil or ballpoint pen. This made the seals hard to read because they are silver colored and shiny. In future, it is recommended that the seals be placed on the side of the pig, across the seam of the lid. It is also recommended that a "Sharpie" marker be used to write on the custody seals.

The second problem was liquid inside the shipping container (pig) or the plastic bag, outside of the bottle of liquid waste. It appeared that the sample bottles were intact, with tight lids, and that no liquid had leaked from them. There was also an instance of a sandy substance mixed in with the liquid that had smearable radioactive contamination over 10,000 DPM. This problem poses a contamination hazard to 222-S Laboratory staff and is an ALARA concern.

The Tank Farms procedure for sampling and shipping, "Sample Non-Aging Waste Storage Tanks,"(TO-080-030) and the Safety Analysis Report for Packaging(SARP), "N-55 Overpack,"(WHC-SD-RE-SAP-015) were scrutinized for possible procedure violations. Though none were found, this matter needs to be addressed to prevent another occurrence.

John W. Tilley for Deborah Bisenius
9/9/91

Deborah Y. Bisenius
Technical Representative
Office of Sample Management

tjn

11.22

[22] From: Vida V Johansen at -WHC32 9/4/91 8:13AM (1088 bytes: 15 ln)
To: Paul G Haigh at -WHC216, Deborah Y Bisenius at -WHC169
Receipt Requested
Subject: 106-AW Tank samples
---------- Message Contents ----------

Two of the 106-AW samples we received on 8/01/91 and 8/02/91 were found to have liquid in their shipping container (Pig). The second sample had moisture inside the plastic bag. There was sand(?) mixed in with the liquid and when smeared by the HPT the mixture was found to be over 10,000 DPM. The lids were on tight and the bottles were intact.

The sample numbers are: 6AW791-7A--R9765
6AW791-7B--R9766
6AW791-8A--R9767

We have discontinued removing these samples from their shipping containers until we hear from you. Please contact me at 373-2271 or 373-2435.

Thank you
Vida Johansen
Sample Custodian-222s lab.

SINGLE SHELL TANK PROJECT
Analytical Detection Limits
October 12, 1990

The following detection limits are derived on ideal matrices. These values were derived by using either calibration standards or pure matrix standards. Detection limits on actual single shell tank samples are likely to be much higher. No information regarding procedure detection limits is available for procedures not listed in this report.

Procedure LA-355-131
Arsenic Analysis by Hydride Generation Atomic Absorption

Detection Limit = 0.005 ppm in solution
Typical sample dilution for the Fusion Dissolution was 0.0025g/mL.
Typical sample dilution for the Water Digestion was 0.010g/mL.
Typical sample dilution for the acid Digestion was 0.010g/mL.

Procedure LA-325-102
Mercury Analysis by Atomic Absorption Manual Cold Vapor Technique

Detection Limit = 0.002 ppm in solution
Typical sample dilution for the Fusion Dissolution was 0.0025g/mL.
Typical sample dilution for the Water Digestion was 0.010g/mL.
Typical sample dilution for the acid Digestion was 0.010g/mL.
Solids were analyzed directly.

Procedure LA-362-131
Selenium Analysis by Hydride Generation Atomic Absorption

Detection Limit = 0.005 ppm in solution
Typical sample dilution for the Fusion Dissolution was 0.0025g/mL.
Typical sample dilution for the Water Digestion was 0.010g/mL.
Typical sample dilution for the acid Digestion was 0.010g/mL.

Procedure LA-533-105
Anion Analysis on Dionex Model 40001

Typical sample dilution was 0.000099g/mL

Fluoride
Detection Limit in solution = 0.09 ppm.

Chloride
Detection Limit in solution = 0.04 ppm.

Nitrate
Detection Limit in solution = 0.24 ppm.

Phosphate
Detection Limit in solution = 0.13 ppm.

Sulfate
Detection Limit in solution = 0.13 ppm.

Procedure LA-622-102
Determination of Carbonate in Solutions by Coulometry

Detection Limit = 5 ppm in solution
Typical sample dilution was 0.01g/mL

Procedure LA-344-105
Total Organic Carbon
Determination of Carbon Insolation by Combustion and Coulometry

Detection Limit = 5.5 ppm in solution
Typical sample dilution was 0.01 g/mL

Procedure LA-695-101
Cyanide = 0.1 ppm CN in solution
Spectrophotometric Determination of Cyanide

Procedure LA-634-102
Ammonia = 0.1 ppm NH_4^+ in solution
Ammonia by Kjeldahl

Procedure LA-645-001
Nitrite = 0.184 ppm NO_2 in solution
Spectrophotometric Determination of Nitrite

Procedure LA-265-101
Chromium VI = 0.1004 ppm Cr^{6+} in solution
Spectrophotometric Determination of Hexavalent Chromium

Procedure: LA-505-151 (Nominal Detection Limits)

Inductively Coupled Plasma (ICP) Emission Spectrometer Operations and Analysis.

Typical sample dilution for the Fusion Dissolution was 0.00019 g/mL.

Typical sample dilution for the Water Digestion was 0.000476 g/mL.

Typical sample dilution for the Acid Digestion was 0.000476 g/mL

Instrument Detection Limit ppm.

Aluminum	0.0745	Antimony	0.1424
Arsenic	0.0223	Barium	0.0026
Beryllium	0.0006	Bismuth	0.0839
Boron	0.0083	Cadmium	0.0039
Calcium	0.0002	Cerium	0.1359
Chromium	0.0039	Cobalt	0.0246
Copper	0.0158	Europium	0.0024
Iron	0.0073	Lanthanum	0.0141
Lead	0.0273	Lithium	0.0032
Magnesium	0.0001	Manganese	0.0011
Mercury	0.0036	Molybdenum	0.0049
Neodymium	0.2130	Nickel	0.0147
Phosphorous	0.0308	Potassium	0.2122
Samarium	0.1525	Selenium	0.0631
Silicon	0.0314	Silver	0.0183
Sodium	0.0483	Strontium	0.0010
Sulfur	0.0163	Tantalum	0.0273
Thallium	0.0646	Thorium	0.0122
Tin	0.0144	Titanium	0.0035
Tungsten	0.0273	Uranium	1.1405
Vanadium	0.0186	Zinc	0.0017
Zirconium	0.0141		

SAMPLING AND CUSTODY DATA

Copy

TANK FARM PLANT OPERATING PROCEDURE

CHAIN OF CUSTODY

Company Contact	Paul Haigh	Telephone	373-4655		
Bill of Lading No.	N/A	Offsite Property No.	N/A		
Method of Shipment	B-Plant Sample Truck				
Shipped to	222-S Lab				
SAMPLING INFORMATION					
Sample Collected by	SCOTT DABLING	Date 8-21-91	8-21-91	Time	0515
Sample Locations	241-AW Tank Farm, Tank 106-AW, Riser # 13A, Suspension Line Length = 46 ± .5 ft				
Remarks	Seal 4233				
Ice Chest or Sample Pig No.	TF-6	Field Logbook and Page No.	N/A		

SAMPLE IDENTIFICATION

Sample Number
Sample No. 6AW791-1A
(Shipping No. R9589)

Sample Schedule Number
FD-A Pt. No. 54, Set No. 2
FSS-T-630-00001 (Draft)

R318

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
R. Haigh	Brent Myers	8-27-91 0930
Relinquished by: Brent Myers	Received by:	Date/Time:
Dawn Lee	Vida Johansen	8/27/91 1055
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Document No.	Rev/Mod	Page
TO-080-030	C-2	15

SAMPLE CHECK IN LIST

Date/Time Received 8/27/91 1055 Sample ID 6AW791-1A

Project 106 AW Client 241 - AW Tank farm

Shipping Container ID# ~~R9588~~ TF-6 VJ Shipping # R9588

1. Condition of Shipping container? Good
2. Custody Seals on container intact? Yes [X] No [ ] (shipping attached)
3. Custody Seals dated and signed? Yes [X] No [ ] (not legible)
4. Custody Seals ID # 4233
5. Condition of Samples: X in good condition
   ____ broken
   ____ leaking
6. Samples have: ____ custody seals
   X appropriate sample labels
7. The following paperwork should be accounted for (N/A if not applicable):
   Chain of Custody #(s) yes
   Request for Special Analysis #(s) no
8. Have any anomalies been identified? Yes [X] No [ ]
9. Memos have been initiated for all anomalies identified? Yes [X]

Printed Name VINA JOHANSEN

Signature Vina Johansen

Date/Time 8/28/91 0800

Please send copy to Office of Sample Management Data Administrator, T6-08

Figure 1 (Cont)

SAMPLE CHECK-IN LIST
SAMPLE NUMBER MATRIX

WHC ID NUMBER	SAMPLE LABEL NUMBER	PNL ID NUMBER	AGREEMENT OF INFORMATION?
R318	(R9589)-1A		

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Copy

TANK FARM PLANT OPERATING PROCEDURE

CHAIN OF CUSTODY

Company Contact	Paul Haigh	Telephone	373-4655
Bill of Lading No.	N/A	Offsite Property No.	N/A
Method of Shipment	B-Plant Sample Truck		
Shipped to	222-S Lab		

SAMPLING INFORMATION

Sample Collected by	JOE RODRIQUEZ	Date	8-21-91	Time	0600
Sample Locations	241-AW Tank Farm, Tank 106-AW, Riser # 13A, Suspension Line Length = 44 ± .5 ft				
Remarks	Seal #4219				
Ice Chest or Sample Pig No.	G-10	Field Logbook and Page No.	N/A		

SAMPLE IDENTIFICATION

Sample Number	Sample Schedule Number
Sample No. 6AW791-2A (Shipping No. R9591) R319	FD-A Pt. No. 54, Set No. 2 FSS-T-630-00001 (Draft)

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
A. Will	B. A. Stoehle	8-27-91 / 0530
B. Stoehle	Raymond Akita	8-27-91 / 0635
Raymond Akita	Vida Johansen	8/27/91 0730

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SAMPLE CHECK IN LIST

Date/Time Received 8/27/91 0635 Sample ID 6AW791-2A

Project TANK 106 AW Client 241-AW TANK FARM

Shipping Container ID# G-10 Shipping # R 9591

1. Condition of Shipping container? Good
2. Custody Seals on container intact? Yes [X] No [ ] (not applied properly) see at
3. Custody Seals dated and signed? Yes [X] No [ ] (not legible) see attached
4. Custody Seals ID # 4219
5. Condition of Samples: X in good condition
   ____ broken
   ____ leaking
6. Samples have: ____ custody seals
   X appropriate sample labels
7. The following paperwork should be accounted for (N/A if not applicable):
   Chain of Custody #(s) yes
   Request for Special Analysis #(s) no
8. Have any anomalies been identified? Yes [X] No [ ]
9. Memos have been initiated for all anomalies identified? Yes [X]

Printed Name VIDA JOHANSEN

Signature Vida Johansen

Date/Time 8/28/91 1500

Please send copy to Office of Sample Management Data Administrator, T6-08.

SAMPLE CHECK-IN LIST
SAMPLE NUMBER MATRIX

WHC ID NUMBER	SAMPLE LABEL NUMBER	PNL ID NUMBER	AGREEMENT OF INFORMATION?
R 319	(R9591) 2A		

9 5 1 2 1 5 3 7 7 0

Copy

TANK FARM PLANT OPERATING PROCEDURE

CHAIN OF CUSTODY

Company Contact	Paul Haigh	Telephone	373-4655		
Bill of Lading No.	N/A	Offsite Property No.	N/A		
Method of Shipment	B-Plant Sample Truck				
Shipped to	222-S Lab				
SAMPLING INFORMATION					
Sample Collected by	V. Miller	Date 8-21-91	8-21-91	Time	0630
Sample Locations	241-AW Tank Farm, Tank 106-AW, Riser # 13A, Suspension Line Length = 41 ± .5 ft				
Remarks	Seal #4218				
Ice Chest or Sample Pig No.	G-6	Field Logbook and Page No.	N/A		

SAMPLE IDENTIFICATION

Sample Number
Sample No. 6AW791-3A
(Shipping No. R9593)
R320

Sample Schedule Number
FD-A Pt. No. 54, Set No. 2
FSS-T-630-00001 (Draft)

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
[illegible]	B. A. Moehle	8-27-91 / 0245
B. A. Moehle	Raymond Akita	8-27-91 / 0350
Raymond Akita	Vicki Johansen	8-27-91 0730

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SAMPLE CHECK IN LIST

Date/Time Received 8/27/91 0350 Sample ID 6AW791-3A

Project TANK 106-AW Client 241-AW TANK FARMS

Shipping Container ID# G-6 Shipping # R9593

1. Condition of Shipping container? Good
2. Custody Seals on container intact? Yes [X] No [ ] see attached
3. Custody Seals dated and signed? Yes [X] No [ ] see attached
4. Custody Seals ID # 4218
5. Condition of Samples: X in good condition
   ____ broken
   ____ leaking
6. Samples have: ____ custody seals
   + appropriate sample labels
7. The following paperwork should be accounted for (N/A if not applicable):
   Chain of Custody #(s) Yes
   Request for Special Analysis #(s) no
8. Have any anomalies been identified? Yes [X] No [ ]
9. Memos have been initiated for all anomalies identified? Yes [X]

Printed Name VICKI JOHANSEN

Signature Vicki Johansen

Date/Time 8/30/91 1150

Please send copy to Office of Sample Management Data Administrator, T6-08.

SAMPLE CHECK-IN LIST
SAMPLE NUMBER MATRIX

WHC ID NUMBER	SAMPLE LABEL NUMBER	PNL ID NUMBER	AGREEMENT OF INFORMATION?
R320	(R9593)-3A		

Copy

TANK FARM PLANT OPERATING PROCEDURE

CHAIN OF CUSTODY

Company Contact	Paul Haigh	Telephone	373-4655
Bill of Lading No.	N/A	Offsite Property No.	N/A
Method of Shipment	B-Plant Sample Truck		
Shipped to	222-S Lab		

SAMPLING INFORMATION

Sample Collected by	[illegible]	Date 8/12/91	8/12/91	Time	0620
Sample Location	241-AW Tank Farm, Tank 106-AW, Riser # 1C, Suspension Line Length = 49 ± .5 ft				
Remarks					
Ice Chest or Sample Pig No.	G-6	Field Logbook and Page No.	N/A		

SAMPLE IDENTIFICATION

Sample Number	Sample Schedule Number
Sample No. 6AW791-4A (Shipping No. R9595)	FD-A Pt. No. 54, Set No. 2 FSS-T-630-00001 (Draft)

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
[illegible]	[illegible]	8-12-91
[illegible]	[illegible]	8/12/91/1750
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

9 3 1 2 3 5 3 7 7 4

SAMPLE CHECK IN LIST

Date/Time Received 8.12.91 / 1750 Sample ID 6AW791-4A

Project 106 AW Client Hank Jarvis

Shipping Container ID# G-6 Shipping # R9595

1. Condition of Shipping container? Good
2. Custody Seals on container intact? Yes [X] No [ ]
3. Custody Seals dated and signed? Yes [ ] No [ ]
4. Custody Seals ID # _____
5. Condition of Samples: [X] in good condition
   [ ] broken
   [ ] leaking
6. Samples have: [ ] custody seals
   [X] appropriate sample labels
7. The following paperwork should be accounted for (N/A if not applicable):
   Chain of Custody #(s) Yes
   Request for Special Analysis #(s) No
8. Have any anomalies been identified? Yes [X] No ~~[X]~~
9. Memos have been initiated for all anomalies identified? Yes [X]

Printed Name VIDA JOHANSEN

Signature Vida Johansen

Date/Time 8/30/91 1145

Please send copy to Office of Sample Management Data Administrator, T6-08.

Figure 1 (Cont)

SAMPLE CHECK-IN LIST
SAMPLE NUMBER MATRIX

WHC ID NUMBER	SAMPLE LABEL NUMBER	PNL ID NUMBER	AGREEMENT OF INFORMATION?
R321	(R9595) -44		

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TANK FARM PLANT OPERATING PROCEDURE

CHAIN OF CUSTODY

Company Contact	Paul Haigh	Telephone	373-4655
Bill of Lading No.	N/A	Offsite Property No.	N/A
Method of Shipment	B-Plant Sample Truck		
Shipped to	222-S Lab		

SAMPLING INFORMATION

Sample Collected by	[signature]	Date	8/12/91	Time	0550
Sample Locations	241-AW Tank Farm, Tank 106-AW, Riser # 1C, Suspension Line Length = 46 ± .5 ft				
Remarks					
Ice Chest or Sample Pig No.	B-23	Field Logbook and Page No.	N/A		

SAMPLE IDENTIFICATION

Sample Number
Sample No. 6AW791-5A
(Shipping No. R9597)

Sample Schedule Number
FD-A Pt. No. 54, Set No. 2
FSS-T-630-00001 (Draft)

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
[signature]	[signature]	8-12-91 / 1000
[signature]	[signature]	8-13-91 / 1047

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SAMPLE CHECK IN LIST

Date/Time Received 8-13-91 / 1042 Sample ID 6AW791-51

Project Tank 106-AW Client Tank Farm 241-AW

Shipping Container ID# B-23 Shipping # R9597

1. Condition of Shipping container? Good
2. Custody Seals on container intact? Yes [X] No [ ]
3. Custody Seals dated and signed? Yes ~~[X]~~ VJ ? No [ ]
4. Custody Seals ID #
5. Condition of Samples: X in good condition
   broken
   leaking
6. Samples have: custody seals
   X appropriate sample labels
7. The following paperwork should be accounted for (N/A if not applicable):
   Chain of Custody #(s) Yes
   Request for Special Analysis #(s) NA
8. Have any anomalies been identified? Yes [X] No ~~[X]~~ VJ
9. Memos have been initiated for all anomalies identified? Yes [X]

Printed Name Vida Johansen

Signature Vida Johansen

Date/Time 8/30/91 11:30

Please send copy to Office of Sample Management Data Administrator, T6-08.

Figure 1 (Cont)

SAMPLE CHECK-IN LIST
SAMPLE NUMBER MATRIX

WHC ID NUMBER	SAMPLE LABEL NUMBER	PNL ID NUMBER	AGREEMENT OF INFORMATION?
R 322	(K9597)-5A		

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TANK FARM PLANT OPERATING PROCEDURE

CHAIN OF CUSTODY

Company Contact	Paul Haigh	Telephone	373-4655
Bill of Lading No.	N/A	Offsite Property No.	N/A
Method of Shipment	B-Plant Sample Truck		
Shipped to	222-S Lab		

SAMPLING INFORMATION

Sample Collected by	[signature]	Date	8/12/91	Time	~~G-8~~ 0655 DJS
Sample Locations	241-AW Tank Farm, Tank 106-AW, Riser # 1C, Suspension Line Length = 42 ± .5 ft				
Remarks					
Ice Chest or Sample Pig No.	G-8	Field Logbook and Page No.	N/A		

SAMPLE IDENTIFICATION

Sample Number
Sample No. 6AW791-6A
(Shipping No. R9763)

Sample Schedule Number
FD-A Pt. No. 54, Set No. 2
FSS-T-630-00001 (Draft)

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
[signature]	[signature]	8-13-91/1000
Relinquished by: [signature]	Received by: [signature]	Date/Time: 8/13/91 1047
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Document No.	Rev/Mod	Page
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SAMPLE CHECK IN LIST

Date/Time Received 8.13.91 10:47 Sample ID 6AW291-6A

Project tank 106-AW Client Vank farm 241-AW

Shipping Container ID# G-8 Shipping # R9763

1. Condition of Shipping container? Good
2. Custody Seals on container intact? Yes [X] No [ ]
3. Custody Seals dated and signed? Yes ~~[X]~~ VJ ? No [ ]
4. Custody Seals ID #
5. Condition of Samples: [X] in good condition
   [ ] broken
   [ ] leaking
6. Samples have: [ ] custody seals
   [X] appropriate sample labels
7. The following paperwork should be accounted for (N/A if not applicable):
   Chain of Custody #(s) yes
   Request for Special Analysis #(s) no
8. Have any anomalies been identified? Yes [X] No ~~[X]~~ VJ
9. Memos have been initiated for all anomalies identified? Yes [X]

Printed Name VIDA JOHANSEN

Signature Vida Johansen

Date/Time 8/30/91 11:15

Please send copy to Office of Sample Management Data Administrator, T6-08.

Figure 1 (Cont)

SAMPLE CHECK-IN LIST
SAMPLE NUMBER MATRIX

WHC ID NUMBER	SAMPLE LABEL NUMBER	PNL ID NUMBER	AGREEMENT OF INFORMATION?
R 926	(R9763) -6A		

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9 3 1 2 3 5 3 3 6 7 3 2

Copy

TANK FARM PLANT OPERATING PROCEDURE

CHAIN OF CUSTODY

Company Contact	Paul Haigh	Telephone	373-4655
Bill of Lading No.	N/A	Offsite Property No.	N/A
Method of Shipment	B-Plant Sample Truck		
Shipped to	222-S Lab		

SAMPLING INFORMATION

Sample Collected by	MIKE HERMAN VJ	Date	7/31/91 VJ	Time	0555 VJ
Sample Location:	241-AW Tank Farm, Tank 106-AW, Riser # 22A, Suspension Line Length = 51 ± .5 ft				
Remarks					
Ice Chest or Sample Pig No.	G-3	Field Logbook and Page No.	N/A		

SAMPLE IDENTIFICATION

Sample Number	Sample Schedule Number
Sample No. 6AW791-7A (Shipping No. R9765)	FD-A Pt. No. 54, Set No. 2 FSS-T-630-00001 (Draft)

CHAIN OF POSSESSION

Relinquished by: [signature]	Received by: C. De Boise	Date/Time: 8-1-91 1230
Relinquished by: C. DeBoise [signature]	Received by: [signature]	Date/Time: 8-1-91 - 1808
Relinquished by: [signature]	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

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SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 8.1.91 1808 Client Name TANK FARM

Project/Client # 241-AW tank Farm Batch or Case # 106 AW
Riser 22A

Cooler ID (if noted on outside of cooler) G-3

1. Condition of shipping container? Good
2. Custody Seals on cooler intact? Yes [X] No [ ]
3. Custody Seals dated and signed? Yes [X] No [ ]
4. Chain of Custody record is taped on inside of cooler lid? Yes [X] No [ ]
5. Vermiculite/packing material is: Wet [ ] Dry [ ] N/A
6. Each sample is in a plastic bag? Yes [ ] No [ ] N/A
7. Number of sample containers in cooler: N/A
8. Samples have:
   - ____ clips (in cans)
   - ____ custody seals
   - ____ hazard labels
   - ____ tape
   - ____ appropriate sample labels
   - N/A
9. Samples are:
   - N/A in good condition
   - ____ broken
   - ____ other
   - ____ leaking
   - ____ have air bubbles
10. Samples received at N/A °C. Coolant type N/A
11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #(s) yes Sample # 6AW791-7A Shipping # R9765
    Request for Analysis #(s) no
    Airbill # N/A Carrier hand carried - B plant truck
12. Have any anomalies been identified above? Yes [ ] No [ ]
13. Memos have been initiated for all anomalies identified above? Yes [ ]

Printed Name/Signature Vida Johansen / Vida Johansen Date/Time 8.2.91 1310

Page 1 of 2

Figure 1 (Cont)

SAMPLE CHECK-IN LIST
SAMPLE NUMBER MATRIX

WHC ID NUMBER	SAMPLE LABEL NUMBER	PNL ID NUMBER	AGREEMENT OF INFORMATION?
R327	(R9765) -78		

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TANK FARM PLANT OPERATING PROCEDURE

CHAIN OF CUSTODY

Company Contact	Paul Haigh	Telephone	373-4655
Bill of Lading No.	N/A	Offsite Property No.	N/A
Method of Shipment	B-Plant Sample Truck		
Shipped to	222-S Lab		

SAMPLING INFORMATION

Sample Collected by	MIKE HERMAN VJ	Date	7/31/91 VJ	Time	6: VJ
Sample Locations	241-AW Tank Farm, Tank 106-AW, Riser # 22A, Suspension Line Length = 48 ± .5 ft				
Remarks	SEAL # 4229				
Ice Chest or Sample Pig No.	G-2	Field Logbook and Page No.	N/A		

SAMPLE IDENTIFICATION

Sample Number	Sample Schedule Number
Sample No. 6AW791-8A (Shipping No. R9767)	FD-A Pt. No. 54, Set No. 2 FSS-T-630-00001 (Draft)

CHAIN OF POSSESSION

Relinquished by: R. [signature]	Received by: [signature]	Date/Time: 8-2-91 / 0940
Relinquished by: [signature]	Received by: Vida Johansen	Date/Time: 8-2-91 1040
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Document No.	Rev/Mod	Page
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SAMPLE CHECK-IN LIST

Shipping # R9767

(1 Per Shipping Container)

Date/Time Received 8.2.91 1040 Client Name TANK FARM

Project/Client # 241-AW TANK FARM Batch or Case # TANK 101-AW RISER 22-A

~~Cooler~~ PIG ID (if noted on outside of cooler) G-2

1. Condition of shipping container? Good Seal # 4229
2. Custody Seals on cooler intact? Yes [X] No [ ]
3. Custody Seals dated and signed? Yes [X] No [ ]
4. Chain of Custody record is taped on inside of cooler lid? Yes [X] No [ ] N/A
5. Vermiculite/packing material is: Wet [ ] Dry [ ] NA
6. Each sample is in a plastic bag? Yes [ ] No [ ] NA
7. Number of sample containers in cooler: NA
8. Samples have: ____ clips (in cans) ____ tape
   ____ custody seals ____ appropriate sample labels
   NA ____ hazard labels NA
9. Samples are: NA ____ in good condition ____ leaking
   ____ broken ____ have air bubbles
   ____ other
10. Samples received at NA °C. Coolant type NA
11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #(s) yes Sample # 6AW791-8A Shipping # R9767
    Request for Analysis #(s) NO
    Airbill # NO Carrier hand carried - R truck
12. Have any anomalies been identified above? Yes [ ] No [X]
13. Memos have been initiated for all anomalies identified above? Yes [ ]

Printed Name/Signature Vicki Johansen / Vicki Johansen Date/Time 8.2.91 1200

Page 1 of 2

Figure 1 (Cont)

SAMPLE CHECK-IN LIST
SAMPLE NUMBER MATRIX

WHC ID NUMBER	SAMPLE LABEL NUMBER	PNL ID NUMBER	AGREEMENT OF INFORMATION?
R 328	(9767) -8A		

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TANK FARM PLANT OPERATING PROCEDURE

CHAIN OF CUSTODY

Company Contact	Paul Haigh	Telephone	373-4655
Bill of Lading No.	N/A	Offsite Property No.	N/A
Method of Shipment	B-Plant Sample Truck		
Shipped to	222-S Lab		

SAMPLING INFORMATION

Sample Collected by	MIKE HERMAN VJ	Date	7/31/91 VJ	Time	0620 VJ
Sample Location:	241-AW Tank Farm, Tank 106-AW, Riser # 22A, Suspension Line Length = 48 ± .5 ft				
Remarks:					
Ice Chest or Sample Pig No.	B-18	Field Logbook and Page No.	N/A		

SAMPLE IDENTIFICATION

Sample Number
Sample No. 6AW791-9A
(Shipping No. R9769)

Sample Schedule Number
FD-A Pt. No. 54, Set No. 2
FSS-T-630-00001 (Draft)

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
[illegible]	[illegible]	8-2-91/0115
[illegible]	Raymond [illegible]	8-2-91/0235
Raymond [illegible]	Vida Johansen	8.2.91 0720
Relinquished by:	Received by:	Date/Time:

Document No.	Rev/Mod	Page
TO-080-030	C-2	15

R9769

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 8-1-91 0835 Client Name TANK FARM

Project/Client # 241-AW TANK FARM Batch or Case # 106-AW

Cooler ID (if noted on outside of cooler) B-18

1. Condition of shipping container? Good
2. Custody Seals on cooler intact? Yes [X] No [ ]
3. Custody Seals dated and signed? Yes [X] No [ ]
4. Chain of Custody record is taped on inside of cooler lid? Yes [N/A] No [ ]
5. Vermiculite/packing material is: Wet [ ] Dry [ ] NA
6. Each sample is in a plastic bag? Yes [ ] No [ ] NA
7. Number of sample containers in cooler: NA
8. Samples have: ____ clips (in cans) ____ tape
   ____ custody seals ____ appropriate sample labels
   NA hazard labels
9. Samples are: NA in good condition NA leaking
   ____ broken ____ have air bubbles
   ____ other
10. Samples received at NA °C. Coolant type NA
11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #(s) Yes Sample # 6AW791-9A Shipping # R9769
    Request for Analysis #(s) NO
    Airbill # NA Carrier hand carried - Bplant truck
12. Have any anomalies been identified above? Yes [ ] No [X]
13. Memos have been initiated for all anomalies identified above? Yes [ ]

Printed Name/Signature VIDA JOHANSEN Date/Time 8-2-91 1215

Page 1 of 2

Figure 1 (Cont)

SAMPLE CHECK-IN LIST
SAMPLE NUMBER MATRIX

WHC ID NUMBER	SAMPLE LABEL NUMBER	PNL ID NUMBER	AGREEMENT OF INFORMATION?
R329	(R9769)-9A		

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TANK FARM PLANT OPERATING PROCEDURE

CHAIN OF CUSTODY

Company Contact	Paul Haigh	Telephone	373-4655
Bill of Lading No.	N/A	Offsite Property No.	N/A
Method of Shipment	B-Plant Sample Truck		
Shipped to	222-S Lab		

SAMPLING INFORMATION

Sample Collected by	MIKE HERMAN VS	Date	7/31/91 VS	Time	0614 VS
Sample Location:	241-AW Tank Farm, Tank 106-AW, Riser # 22A, Suspension Line Length = 41 ± .5 ft				
Remarks					
Ice Chest or Sample Pkg No.	G-4	Field Logbook and Page No.	N/A		

SAMPLE IDENTIFICATION

Sample Number
Sample No. 6AW791-10A
(Shipping No. R9771)

Sample Schedule Number
FD-A Pt. No. 54, Set No. 2
FSS-T-630-00001 (Draft)

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
[illegible]	[illegible]	8-2-91/0320
[illegible]	Raymond Okita	8-2-91/0555
Raymond Okita	Vida Johansen	8-2-91 0720
Relinquished by:	Received by:	Date/Time:

Document No.	Rev/Mod	Page
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9 3 1 2 3 3 7 9 2

R9771

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 8-2-91 0555 Client Name Tank farm

Project/Client # 241-AW Tank farm Batch or Case # 106-AW Riser 22A

Cooler ID (if noted on outside of cooler) G-4

1. Condition of shipping container? Good
2. Custody Seals on cooler intact? Yes [X] No [ ]
3. Custody Seals dated and signed? Yes [X] No [ ]
4. Chain of Custody record is taped on inside of cooler lid? NA Yes [ ] No [ ]
5. Vermiculite/packing material is: Wet [ ] Dry [ ] NA
6. Each sample is in a plastic bag? Yes [ ] No [ ] NA
7. Number of sample containers in cooler: NA
8. Samples have:
   - ____ clips (in cans)
   - ____ tape
   - ____ custody seals
   - ____ appropriate sample labels
   - ____ hazard labels
9. Samples are:
   - NA in good condition
   - NA leaking
   - ____ broken
   - ____ have air bubbles
   - ____ other
10. Samples received at NA °C. Coolant type NA
11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #(s) Yes Sample # 6AW791-10A Shipping # R9771
    Request for Analysis #(s) NO
    Airbill # NA Carrier hand carried - B plant truck
12. Have any anomalies been identified above? Yes [ ] No [X]
13. Memos have been initiated for all anomalies identified above? Yes [ ]

Printed Name/Signature Koa Johansen / Vila Johansen Date/Time 8-2-91 1225

Page 1 of 2

Figure 1 (Cont)

SAMPLE CHECK-IN LIST
SAMPLE NUMBER MATRIX

WHC ID NUMBER	SAMPLE LABEL NUMBER	PNL ID NUMBER	AGREEMENT OF INFORMATION?
R330	(R9721) -10A		

Page 2 of 2

REQUEST FOR SPECIAL ANALYSIS (RSA)

(1) Sample Point	(2) Date/Time Issued	(3) Date/Time Required	(4) [illegible]
FD-A 54 Set No. 2	9/11/91 0900	11/20/91	(5) Work Package: 1WIT6CØE

(6) Number of Samples	Dose Rate mRad/Hr	(7) Customer I.D.	(8) [illegible]	(9) Requester Name/Phone
10		6AW791-1A, 6AW791-8A, 6AW791-2A, 6AW791-9A, 6AW791-3A, 6AW791-10A, 6AW791-4A, 6AW791-5A, 6AW791-6A, 6AW791-7A		P.G. Haigh 3-4655

(10) Release	(11) Volume of Sample
____ RPT	100 mL

(12) Determination	(13) Expected Range	(14) Minimum Detection Level	(15) Method
Aluminum		50 mg/L	
Total Inorganic Carbon		5,000 mg/L	
Total Ammonia		500 mg/L	
Fluoride by IC		6,000 mg/L	
Nitrite by IC		5,000 mg/L	
Nitrate by IC		5,000 mg/L	
Phosphate by IC		10,000 mg/L	
Sulfate by IC		10,000 mg/L	
Hydroxide		0.1 M	
Total Organic Carbon		500 mg/L	
Volatile Organic Analysis		Exhibit C, CLP-SOW organics 3/90	
Semi-Volatile (A/B/N)		Exhibit C, CLP-SOW organics 3/90	

(16) Matrix (Other Metals or Anions Present) Liquid mixed waste. Radioactive contamination: natural, activation products and reactor fission products. Possible detectable halogenated and non-halogenated organic compounds. Hydroxide - pH=12.5 or greater. Anions - sodium salts of nitrate, nitrite, phosphate, carbonate and sulfate. Metals - Calcium and potassium salts, lead, chromium and cadmium.

(17) Radioactivity Level (Actual ☐ Estimated ☐)

Total Alpha _____ µ Ci/L

Total Beta _____ µ Ci/L

Total Gamma _____ µ Ci/L

(18) Additional Information (Measurement Uncertainty or Other Pertinent Information) ±25% Accuracy and precision Sample Breakdown: 50 mL for Organic Analyses, 50 mL for Inorganic and Radiochemical Analyses - composite from 10 samples

(19) [illegible]

(20) Samples Received

From

(21) Distribution of Final Results/Sample Disposal Instructions: Minimum storage time - until April, 1992 Customer will direct OSM re: sample disposal

BC 6200-181 (1/87)

REQUEST FOR SPECIAL ANALYSIS (RSA)

(1) Sample Point	(2) Date/Time Issued	(3) Date/Time Required	(4) [illegible]
FD-A 54 Set No. 2	9/11/91 0900	11/20/91	(5) Work Package: 1WIT6CØE

(6) Number of Samples	Dose Rate mRad/Hr	(7) Customer I.D.	(8) [illegible]	(9) Requester Name/Phone
10		6AW791-1A, 6AW791-8A 6AW791-2A, 6AW791-9A 6AW791-3A, 6AW791-10A 6AW791-4A 6AW791-5A 6AW791-6A 6AW791-7A	[illegible]	P.G. Haigh 3-4655

(10) Release: _____ RPT

(11) Volume of Sample: 100 mL

(12) Determination	(13) Expected Range	(14) Minimum Detection Level	(15) Method
Silver (Ag)		5 mg/L	
Barium (Ba)		2 mg/L	
Cadmium (Cd)		1 mg/L	
Chromium (Cr)		5 mg/L	
Iron (Fe)		10 mg/L	
Magnesium (Mg)		1 mg/L	
Manganese (Mn)		2 mg/L	
Sodium (Na)		60 mg/L	
Lead (Pb)		5 mg/L	
Zinc (Zn)		2 mg/L	
Chloride (Cl)		4,000 mg/L	
Arsenic (As)		5 mg/L	

(16) Matrix (Other Metals or Anions Present)
Liquid mixed waste. Radioactive contamination: natural, activation products and reactor fission products. Possible detectable halogenated and non-halogenated organic compounds. Hydroxide - pH = 12.5 or greater. Anions - sodium salts of nitrate, nitrite, phosphate, carbonate and sulfate. Metals - calcium and potassium salts, lead, chromium, cadmium.

(17) Radioactivity Level (Actual ☐ Estimated ☐)
Total Alpha _____ µCi/L
Total Beta _____ µCi/L
Total Gamma _____ µCi/L

(18) Additional Information (Measurement Uncertainty or Other Pertinent Information) ±25% Accuracy and precision
Lead may be analyzed by ICP or Graphite Furnace A.A.

(20) Samples Received

(19) [illegible] From [illegible]

(21) Distribution of Final Results/Sample Disposal Instructions
Minimum storage time - until April, 1992
Customer will direct OSM re: sample disposal

BC-6700-T81 (1/87)

REQUEST FOR SPECIAL ANALYSIS (RSA)

(1) Sample Point	(2) Date/Time Issued	(3) Date/Time Required	(4) [illegible]
FD-A 54 Set No. 2	9/11/91 0900	11/20/91	(5) Work Package: 1WIT6CØE

(6) Number of Samples	Dose Rate mRad/Hr	(7) Customer I.D.	(8) Laboratory I.D.	(9) Requester Name/Phone
10		6AW791-1A, 6AW791-8A, 6AW791-2A, 6AW791-9A, ~~6AW791-3A~~, 6AW791-10A, 6AW791-4A, 6AW791-5A, 6AW791-6A, 6AW791-7A	[illegible]	P.G. Haigh 3-4655

(10) Release: _____ RPT

(11) Volume of Sample: 100 mL

(12) Determination	(13) Expected Range	(14) Minimum Detection Level	(15) Method
Eu-154/155		32 pCi/sample	
Sn-113		15 pCi/sample	
Ru-106		11 pCi/sample	
C-14		260,000 pCi/mL	
Co-60		1,200,000 pCi/mL	
Se-79		78,000 pCi/mL	
Nb-94		98,000 pCi/mL	
Tc-99		2,000,000 pCi/mL	
Ce-144		850,000 pCi/mL	
Cm-243/244		13,000 pCi/mL	
Ra-226		33,000 pCi/mL	

(16) Matrix (Other Metals or Anions Present)
Liquid mixed waste. Radioactive contamination: natural activation products and reactor fission products. Possible detectable halogenated and non-halogenated organic compounds. Hydroxide - pH = 12.5 or greater. Anions - sodium salts of nitrate, nitrite, phosphate, carbonate and sulfate. Metals - calcium and potassium salts, lead, chromium, cadmium.

(17) Radioactivity Level (Actual ☐ Estimated ☐)

Total Alpha _____ µCi/L

Total Beta _____ µCi/L

Total Gamma _____ µCi/L

(18) Additional Information (Measurement Uncertainty or Other Pertinent Information) ± 25% Accuracy and precision
Radiochemical analyses to be performed on a composite from 10 samples.

(20) Samples Received

(19) [illegible] From [illegible]

(21) Distribution of Final Results/Sample Disposal Instructions
Minimum storage time - until April, 1992
Customer will direct OSM re: sample disposal.

BC-6700-181 (1/87)

REQUEST FOR SPECIAL ANALYSIS (RSA)

Sample Point TD-A 54 Set No. 2	(2) Date/Time Issued 9/11/91 0900	(3) Date/Time Required 11/20/91	(4) [illegible] (5) Work Package IWIT6CØE
(6) Number of Samples 10 Dose Rate mRad/hr	(7) Customer I.D. 6AW791-1A, 6AW791-8A 6AW791-2A, 6AW791-9A 6AW791-3A, 6AW791-10A 6AW791-4A, 6AW791-5A, 6AW791-6A, 6AW791-7A	(8) [illegible] Radioactive Contaminated Rad-Level	(9) Requester Name/Phone P.G. Haigh 3-4655
(10) Release RPT			(11) Volume of Sample 100 mL

(12) Determination	(13) Expected Range	(14) Minimum Detection Level	(15) Method
Cyanide (CN^-)		0.01 mg/L	
Selenium (Se)		1 mg/L	
Mercury (Hg)		0.2 mg/L	
Differential Scanning Calorimetry (DSC)		Exotherm	
Specific Gravity		0.1 pH units	
Tritium (H-3)		1.5 pCi/mL	
Total Uranium		100 mg/L	
Sr-90		1.5 pCi/mL	
Am-241		1 pCi/mL	
Pu-239/240		0.5 pCi/mL	
I-129		9 pCi/mL	
Cs-134/137		5 pCi/mL	

(16) Matrix (Other Metals or Anions Present)
Liquid mixed waste. Radioactive contamination: natural, activation products and reactor fission products. Possible detectable halogenated and non-halogenated organic compounds. Hydroxide - pH = 12.5 or greater. Anions - sodium salts of nitrate, nitrite, phosphate, carbonate and sulfate. Metals - calcium and potassium salts, lead, chromium, cadmium.

(17) Radioactivity Level (Actual ☐ Estimated ☐)
Total Alpha _____ µ Ci/L
Total Beta _____ µ Ci/L
Total Gamma _____ µ Ci/L

(18) Additional Information (Measurement Uncertainty or Other Pertinent Information) ± 25% Accuracy and Precision
Radiochemical Analyses to be performed on a composite from 10 samples.

(19) [illegible]

(20) Samples Received
From

(21) Distribution of Final Results/Sample Disposal Instructions
Minimum storage time - until April 1992
Customer will direct OSM re: sample disposal

BC-6700-181 (1/87)

SAMPLE DATA SUMMARY

SUMMARY DATA REPORT

Project: 242-A EVAPORATOR FEED CHARACTERIZATION
Tank: 106AW
Customer ID: 791-1A

Undigested Sample Results

		Sample R318		Sample Duplicate R318	
As	(10-01-91)	2.37E+0	ppm	2.54E+0	ppm
CN	(09-26-91)	3.39E+0	ppm	3.42E+0	ppm
DSC	(10-09-91)	NO EXOTHERM		NO EXOTHERM	
Hg	(10-17-91)	4.15E-2	ppm	4.77E-2	ppm
NH4	(09-26-91)	5.90E+1	ppm	6.08E+1	ppm
OH	(09-25-91)	9.78E+3	ppm	9.59E+3	ppm
Se	(09-23-91)	<1.00E-2	ppm	<1.00E-2	ppm
SpG	(10-18-91)	1.0902		1.0902	
TIC	(09-25-91)	2.08E+3	ppm	2.08E+3	ppm
TOC	(10-28-91)	9.40E+2	ppm	1.00E+3	ppm
Ion Chromatographic					
F	(09-30-91)	8.32E+3	ppm	8.30E+3	ppm
NO3	(09-30-91)	3.36E+4	ppm	3.33E+4	ppm
Cl	(10-04-91)	5.65E+2	ppm	5.50E+2	ppm
NO2	(10-02-91)	9.01E+3	ppm	9.09E+3	ppm
PO4	(10-02-91)	6.46E+2	ppm	6.70E+2	ppm
SO4	(10-02-91)	3.89E+3	ppm	3.88E+3	ppm

SUMMARY DATA REPORT

Project: 242-A EVAPORATOR FEED CHARACTERIZATION
Tank: 106AW
Customer ID: 791-2A

Undigested Sample Results

		Sample R319		Sample Duplicate NA
As	(10-01-91)	2.33E+0	ppm	NA
CN	(09-26-91)	2.49E+0	ppm	NA
DSC	(10-09-91)	NO EXOTHERM		NA
Hg	(10-17-91)	<5.00E-3	ppm	NA
NH4	(09-26-91)	2.68E+1	ppm	NA
OH	(09-25-91)	8.81E+3	ppm	NA
Se	(09-23-91)	<1.00E-2	ppm	NA
SpG	(10-18-91)	1.0077		NA
TIC	(09-25-91)	2.47E+3	ppm	NA
TOC	(10-28-91)	8.86E+2	ppm	NA
Ion Chromatographic				
F	(09-30-91)	5.90E+3	ppm	NA
NO3	(09-30-91)	3.16E+4	ppm	NA
PO4	(10-02-91)	5.89E+2	ppm	NA
SO4	(10-02-91)	2.48E+3	ppm	NA
NO2	(10-02-91)	8.14E+3	ppm	NA
Cl	(10-04-91)	4.31E+2	ppm	NA

SUMMARY DATA REPORT

Project: 242-A EVAPORATOR FEED CHARACTERIZATION
Tank: 106AW
Customer ID: 791-3A

Undigested Sample Results

		Sample R320		Sample Duplicate NA
As	(10-01-91)	2.37E+0	ppm	NA
CN	(09-26-91)	2.43E+0	ppm	NA
DSC	(10-09-91)	NO EXOTHERM		NA
Hg	(10-17-91)	<5.00E-3	ppm	NA
NH4	(09-26-91)	2.68E+1	ppm	NA
OH	(09-25-91)	8.69E+3	ppm	NA
Se	(09-23-91)	<1.00E-3	ppm	NA
SpG	(10-18-91)	1.0757		NA
TIC	(09-25-91)	2.27E+3	ppm	NA
TOC	(10-28-91)	8.80E+2	ppm	NA
Ion Chromatographic				
F	(09-30-91)	6.68E+3	ppm	NA
NO3	(09-30-91)	3.68E+4	ppm	NA
PO4	(10-02-91)	5.86E+2	ppm	NA
SO4	(10-02-91)	2.56E+3	ppm	NA
NO2	(10-02-91)	7.35E+3	ppm	NA
Cl	(10-04-91)	4.47E+2	ppm	NA

SUMMARY DATA REPORT

Project: 242-A EVAPORATOR FEED CHARACTERIZATION
Tank: 106AW
Customer ID: 791-4A

Undigested Sample Results

		Sample R321		Sample Duplicate NA
As	(10-01-91)	2.59E+0	ppm	NA
CN	(09-26-91)	2.49E+0	ppm	NA
DSC	(10-09-91)	NO EXOTHERM		NA
Hg	(10-17-91)	<5.00E-3	ppm	NA
NH4	(10-03-91)	2.68E+1	ppm	NA
OH	(09-25-91)	9.01E+3	ppm	NA
Se	(09-23-91)	<1.00E-2	ppm	NA
SpG	(10-18-91)	1.0790		NA
TIC	(09-25-91)	2.16E+3	ppm	NA
TOC	(10-28-91)	7.76E+2	ppm	NA
Ion Chromatographic				
F	(09-30-91)	5.84E+3	ppm	NA
NO3	(09-30-91)	3.14E+4	ppm	NA
PO4	(10-02-91)	6.11E+2	ppm	NA
SO4	(10-02-91)	2.58E+3	ppm	NA
NO2	(10-02-91)	7.47E+3	ppm	NA
Cl	(10-04-91)	4.70E+2	ppm	NA

SUMMARY DATA REPORT

Project: 242-A EVAPORATOR FEED CHARACTERIZATION
Tank: 106AW
Customer ID: 791-5A

Undigested Sample Results

		Sample R322		Sample Duplicate NA
As	(10-01-91)	2.62E+0	ppm	NA
CN	(09-26-91)	2.57E+0	ppm	NA
DSC	(10-09-91)	NO EXOTHERM		NA
Hg	(10-17-91)	<5.00E-3	ppm	NA
NH4	(10-03-91)	2.50E+1	ppm	NA
OH	(09-25-91)	1.00E+4	ppm	NA
Se	(09-23-91)	<1.00E-3	ppm	NA
SpG	(10-18-91)	1.0795		NA
TIC	(09-25-91)	2.30E+3	ppm	NA
TOC	(10-28-91)	9.18E+2	ppm	NA
Ion Chromatographic				
F	(09-30-91)	5.83E+3	ppm	NA
NO3	(09-30-91)	3.25E+4	ppm	NA
PO4	(10-02-91)	5.95E+2	ppm	NA
SO4	(10-02-91)	2.49E+3	ppm	NA
NO2	(10-02-91)	7.45E+3	ppm	NA
Cl	(10-04-91)	4.89E+2	ppm	NA

SUMMARY DATA REPORT

Project: 242-A EVAPORATOR FEED CHARACTERIZATION
Tank: 106AW
Customer ID: 791-6A

Undigested Sample Results

		Sample R326		Sample Duplicate R326	
As	(10-01-91)	2.61E+0	ppm	2.35E+0	ppm
CN	(09-27-91)	8.27E-1	ppm	8.44E-1	ppm
DSC	(10-14-91)	NO EXOTHERM		NO EXOTHERM	
Hg	(10-17-91)	<5.00E-3	ppm	<5.00E-3	ppm
NH4	(10-03-91)	2.86E+1	ppm	3.04E+1	ppm
OH	(09-26-91)	8.19E+3	ppm	7.70E+3	ppm
Se	(09-24-91)	<1.00E-2	ppm	1.00E-2	ppm
SpG	(10-24-91)	1.0842		1.0842	
TIC	(09-26-91)	2.01E+3	ppm	1.98E+3	ppm
TOC	(09-26-91)	8.86E+2	ppm	8.80E+2	ppm
Ion Chromatographic					
Cl	(10-04-91)	4.35E+2	ppm	4.30E+2	ppm
PO4	(10-04-91)	5.83E+2	ppm	5.94E+2	ppm
SO4	(10-04-91)	2.35E+3	ppm	2.32E+3	ppm
NO3	(10-08-91)	3.14E+4	ppm	3.08E+4	ppm
F	(10-07-91)	ORGANIC INTERFERENCE		ORGANIC INTERFERENCE	
NO2	(10-07-91)	8.06E+3	ppm	8.06E+3	ppm

SUMMARY DATA REPORT

Project: 242-A EVAPORATOR FEED CHARACTERIZATION
Tank: 106AW
Customer ID: 791-7A

Undigested Sample Results

		Sample R327		Sample Duplicate NA
As	(10-01-91)	4.14E+0	ppm	NA
CN	(09-27-91)	7.61E-1	ppm	NA
DSC	(10-14-91)	NO EXOTHERM		NA
Hg	(10-17-91)	<5.00E-3	ppm	NA
NH4	(10-03-91)	3.19E+2	ppm	NA
OH	(09-26-91)	2.21E+4	ppm	NA
Se	(09-24-91)	<1.00E-2	ppm	NA
SpG	(10-24-91)	1.1876		NA
TIC	(09-26-91)	3.97E+3	ppm	NA
TOC	(09-26-91)	2.39E+3	ppm	NA
ION CHROMATOGRAPHIC				
Cl	(10-04-91)	1.18E+3	ppm	NA
PO4	(10-04-91)	1.82E+3	ppm	NA
SO4	(10-04-91)	1.06E+4	ppm	NA
NO3	(10-08-91)	7.59E+4	ppm	NA
F	(10-07-91)	ORGANIC INTERFERENCE		NA
NO2	(10-07-91)	2.40E+4	ppm	NA

SUMMARY DATA REPORT

Project: 242-A EVAPORATOR FEED CHARACTERIZATION
Tank: 106AW
Customer ID: 791-8A

Undigested Sample Results

		Sample R328		Sample Duplicate NA
As	(10-01-91)	2.49E+0	ppm	NA
CN	(09-27-91)	2.40E+0	ppm	NA
DSC	(10-14-91)	NO EXOTHERM		NA
Hg	(10-17-91)	<5.00E-3	ppm	NA
NH4	(10-03-91)	2.14E+1	ppm	NA
OH	(10-15-91)	8.94E+3	ppm	NA
Se	(09-24-91)	<1.00E-2	ppm	NA
SpG	(10-24-91)	1.0790		NA
TIC	(09-26-91)	2.17E+3	ppm	NA
TOC	(09-26-91)	9.52E+2	ppm	NA
Ion Chromatographic				
Cl	(10-04-91)	4.55E+2	ppm	NA
PO4	(10-04-91)	6.05E+2	ppm	NA
SO4	(10-04-91)	2.55E+3	ppm	NA
NO3	(10-08-91)	3.19E+4	ppm	NA
F	(10-07-91)	ORGANIC INTERFERENCE		NA
NO2	(10-07-91)	8.27E+3	ppm	NA

SUMMARY DATA REPORT

Project: 242-A EVAPORATOR FEED CHARACTERIZATION
Tank: 106AW
Customer ID: 791-9A

Undigested Sample Results

		Sample R329		Sample Duplicate R329	
As	(10-01-91)	2.35E+0	ppm	NA	
CN	(09-27-91)	3.70E-1	ppm	NA	
DSC	(10-14-91)	NO EXOTHERM		NA	
Hg	(10-17-91)	<5.00E-3	ppm	NA	
Hg	(07-01-92)	<2.00E-2	ug/mL	<2.00E-2	ug/mL
NH4	(10-03-91)	3.94E+1	ppm	NA	
OH	(10-15-91)	9.03E+3	ppm	NA	
Se	(09-24-91)	<1.00E-2	ppm	NA	
SpG	(10-24-91)	1.0747		NA	
TIC	(09-26-91)	2.15E+3	ppm	NA	
TOC	(09-26-91)	9.46E+2	ppm	NA	
Ion Chromatographic					
SO4	(10-04-91)	2.35E+3	ppm	NA	
PO4	(10-04-91)	5.84E+2	ppm	NA	
Cl	(10-04-91)	4.50E+2	ppm	NA	
NO3	(10-08-91)	3.01E+4	ppm	NA	
F	(10-07-91)	ORGANIC INTERFERENCE		NA	
NO2	(10-07-91)	8.06E+3	ppm	NA	

SUMMARY DATA REPORT

Project: 242-A EVAPORATOR FEED CHARACTERIZATION
Tank: 106AW
Customer ID: 791-10A

Undigested Sample Results

		Sample R330		Sample Duplicate NA
As	(10-01-91)	2.41E+0	ppm	NA
CN	(09-27-91)	2.10E+0	ppm	NA
DSC	(10-14-91)	NO EXOTHERM		NA
Hg	(10-17-91)	<5.00E-3	ppm	NA
NH4	(10-03-91)	1.96E+1	ppm	NA
OH	(10-15-91)	5.41E+3	ppm	NA
Se	(09-24-91)	<1.00E-2	ppm	NA
SpG	(10-24-91)	1.1019		NA
TIC	(09-26-91)	2.03E+3	g/L	NA
TOC	(09-26-91)	8.75E+2	g/L	NA
Ion Chromatographic				
SO4	(10-04-91)	2.35E+3	ppm	NA
PO4	(10-04-91)	6.53E+2	ppm	NA
Cl	(10-04-91)	4.41E+2	ppm	NA
F	(10-07-91)	ORGANIC INTERFERENCE		NA
NO2	(10-07-91)	7.90E+3	ppm	NA
NO3	(10-08-91)	2.98E+4	ppm	NA

SUMMARY DATA REPORT

Project: 242-A EVAPORATOR FEED CHARACTERIZATION
Tank: 106AW
Customer ID: 791-1A

Acid Digestion Sample Results

	Sample R318		Sample Duplicate R318	
Acid Digestion (09-24-91)	Complete		Complete	
ICP (11-19-91)				
Al	1.63E+6	ppb	1.27E+6	ppb
Ba	1.07E+3	ppb	<1.80E+3	ppb
Cd	1.57E+3	ppb	<2.40E+3	ppb
Cr	2.60E+4	ppb	2.26E+4	ppb
Fe	1.35E+5	ppb	1.17E+5	ppb
Pb	1.10E+4	ppb	<4.80E+4	ppb
Mg	<1.11E+3	ppb	<6.60E+3	ppb
Mn	2.46E+4	ppb	2.46E+4	ppb
Ag	2.28E+3	ppb	<4.80E+3	ppb
Na	4.30E+7	ppb	3.28E+7	ppb
Zn	8.20E+3	ppb	1.55E+5	ppb

SUMMARY DATA REPORT

Project: 242-A EVAPORATOR FEED CHARACTERIZATION
Tank: 106AW
Customer ID: 791-2A

Acid Digestion Sample Results

	Sample R319		Sample Duplicate NA
Acid Digestion (09-24-91)	Complete		NA
ICP (11-19-91)			
Al	1.06E+6	ppb	NA
Ba	<1.80E+3	ppb	NA
Cd	<2.40E+3	ppb	NA
Cr	2.08E+4	ppb	NA
Fe	<5.22E+4	ppb	NA
Pb	4.86E+4	ppb	NA
Mg	<6.60E+3	ppb	NA
Mn	5.58E+3	ppb	NA
Ag	7.44E+3	ppb	NA
Na	2.64E+7	ppb	NA
Zn	1.38E+5	ppb	NA

SUMMARY DATA REPORT

Project: 242-A EVAPORATOR FEED CHARACTERIZATION
Tank: 106AW
Customer ID: 791-3A

Acid Digestion Sample Results

	Sample R320		Sample Duplicate NA
Acid Digestion (09-24-91)	Complete		NA
ICP (11-19-91)			
Al	1.35E+6	ppb	NA
Ba	<1.80E+3	ppb	NA
Cd	<2.40E+3	ppb	NA
Cr	1.48E+4	ppb	NA
Fe	<5.22E+4	ppb	NA
Pb	<4.80E+4	ppb	NA
Mg	<6.60E+3	ppb	NA
Mn	5.22E+3	ppb	NA
Ag	<4.80E+3	ppb	NA
Na	3.62E+7	ppb	NA
Zn	1.21E+5	ppb	NA

SUMMARY DATA REPORT

Project: 242-A EVAPORATOR FEED CHARACTERIZATION
Tank: 106AW
Customer ID: 791-4A

Acid Digestion Sample Results

	Sample R321		Sample Duplicate NA
Acid Digestion (09-24-91)	Complete		NA
ICP (11-19-91)			
Al	1.38E+6	ppb	NA
Ba	<1.80E+3	ppb	NA
Cd	<2.40E+3	ppb	NA
Cr	2.29E+4	ppb	NA
Fe	<5.22E+4	ppb	NA
Pb	<4.08E+4	ppb	NA
Mg	<6.60E+3	ppb	NA
Mn	4.08E+3	ppb	NA
Ag	<4.80E+3	ppb	NA
Na	3.60E+7	ppb	NA
Zn	7.80E+4	ppb	NA

SUMMARY DATA REPORT

Project: 242-A EVAPORATOR FEED CHARACTERIZATION
Tank: 106AW
Customer ID: 791-5A

Acid Digestion Sample Results

	Sample R322		Sample Duplicate NA
Acid Digestion (09-24-91)	Complete		NA
ICP (11-19-91)			
Al	9.72E+5	ppb	NA
Ba	<1.80E+3	ppb	NA
Cd	<2.40E+3	ppb	NA
Cr	1.53E+4	ppb	NA
Fe	<5.22E+4	ppb	NA
Pb	<4.80E+4	ppb	NA
Mg	<6.60E+3	ppb	NA
Mn	5.46E+3	ppb	NA
Ag	<4.80E+3	ppb	NA
Na	2.66E+7	ppb	NA
Zn	1.28E+5	ppb	NA

SUMMARY DATA REPORT

Project: 242-A EVAPORATOR FEED CHARACTERIZATION
Tank: 106AW
Customer ID: 791-6A

Acid Digestion Sample Results

	Sample R326		Sample Duplicate R326	
Acid Digestion (09-25-91)	Complete		Complete	
ICP (11-19-91)				
Al	1.37E+6	ppb	1.42E+6	ppb
Ba	<1.80E+3	ppb	<1.80E+3	ppb
Cd	3.29E+3	ppb	<2.40E+3	ppb
Cr	2.57E+4	ppb	2.42E+4	ppb
Fe	5.22E+4	ppb	5.22E+4	ppb
Pb	<4.80E+4	ppb	<4.08E+4	ppb
Mg	1.63E+4	ppb	<6.60E+3	ppb
Mn	3.41E+3	ppb	3.08E+3	ppb
Ag	<4.80E+3	ppb	<4.80E+3	ppb
Na	3.74E+7	ppb	3.88E+7	ppb
Zn	1.04E+5	ppb	5.10E+4	ppb

SUMMARY DATA REPORT

Project: 242-A EVAPORATOR FEED CHARACTERIZATION
Tank: 106AW
Customer ID: 791-7A

Acid Digestion Sample Results

	Sample R327		Sample Duplicate NA
Acid Digestion (09-25-91)	Complete		NA
ICP (11-19-91)			
Al	4.97E+6	ppb	NA
Ba	<1.80E+3	ppb	NA
Cd	4.20E+3	ppb	NA
Cr	3.67E+4	ppb	NA
Fe	<5.22E+4	ppb	NA
Pb	<4.80E+4	ppb	NA
Mg	3.49E+4	ppb	NA
Mn	7.62E+3	ppb	NA
Ag	<4.80E+3	ppb	NA
Na	8.52E+7	ppb	NA
Zn	1.94E+5	ppb	NA

SUMMARY DATA REPORT

Project: 242-A EVAPORATOR FEED CHARACTERIZATION
Tank: 106AW
Customer ID: 791-8A

Acid Digestion Sample Results

	Sample R328		Sample Duplicate NA
Acid Digestion (09-25-91)	Complete		NA
ICP (11-19-91)			
Al	1.40E+6	ppb	NA
Ba	<1.80E+3	ppb	NA
Cd	4.38E+3	ppb	NA
Cr	2.12E+4	ppb	NA
Fe	<5.22E+4	ppb	NA
Pb	<4.80E+4	ppb	NA
Mg	<6.60E+3	ppb	NA
Mn	3.36E+3	ppb	NA
Ag	<4.80E+3	ppb	NA
Na	3.71E+7	ppb	NA
Zn	4.14E+4	ppb	NA

SUMMARY DATA REPORT

Project: 242-A EVAPORATOR FEED CHARACTERIZATION
Tank: 106AW
Customer ID: 791-9A

Acid Digestion Sample Results

	Sample R329		Sample Duplicate NA
Acid Digestion (09-25-91)	Complete		NA
ICP (11-19-91)			
Al	1.38E+6	ppb	NA
Ba	<1.80E+3	ppb	NA
Cd	3.36E+3	ppb	NA
Cr	2.54E+4	ppb	NA
Fe	2.02E+5	ppb	NA
Pb	4.80E+4	ppb	NA
Mg	1.08E+4	ppb	NA
Mn	4.56E+3	ppb	NA
Ag	<4.80E+3	ppb	NA
Na	3.71E+7	ppb	NA
Zn	1.05E+5	ppb	NA

SUMMARY DATA REPORT

Project: 242-A EVAPORATOR FEED CHARACTERIZATION
Tank: 106AW
Customer ID: 791-10A

Acid Digestion Sample Results

	Sample R330		Sample Duplicate NA
Acid Digestion (09-25-91)	Complete		NA
ICP (11-19-91)			
Al	1.40E+6	ppb	NA
Ba	<1.80E+3	ppb	NA
Cd	3.33E+3	ppb	NA
Cr	2.28E+4	ppb	NA
Fe	<5.22E+4	ppb	NA
Pb	<4.80E+4	ppb	NA
Mg	9.78E+3	ppb	NA
Mn	3.51E+3	ppb	NA
Ag	<4.80E+3	ppb	NA
Na	3.71E+7	ppb	NA
Zn	7.32E+4	ppb	NA

UNDIGESTED SAMPLE ANALYSIS RESULTS

UNDIGESTED SAMPLE RESULTS

Tank: 106AW
Sample No.: R318
Customer ID: 791-1A

	Check Standard		Blank		Sample		Duplicate Sample		Spike of Sample		Check Standard	
Lab ID:	R318		R317		R318		R318		R318		R323	
Lab ID: Arsenic (10-01-91)	102	%	<5.00E-4	ppm	R318-5795 2.37E+0	ppm	R318-5895 2.54E+0	ppm	R318-5995 108	%	99.8	%
Lab ID: Cyanide (09-26-91)	102.5	%	<5.0 E-1	ppm	R318-5778 3.39E+0	ppm	R318-5878 3.42E+0	ppm	R318-5978 101.8	%	101.3	%
Lab ID: Differential Thermal (10-09-91)	100	%	No Exotherm		R318-5711 No Exotherm		R318-5811 No Exotherm		NA		100	%
Lab ID: Mercury (10-17-91)	105	%	<5.00E-4	ppm	R318-5797 4.15E-2	ppm	R318-5897 4.77E-2	ppm	R318-5997 *69.1	%	100	%
Lab ID: Ammonia (09-26-91)	95.4	%	1.79E+1	ppm	R318-5728 5.90E+1	ppm	R318-5828 6.08E+1	ppm	R318-5928 114	%	97	%
Lab ID: Determination of Hydroxide Ion (09-25-91)	98.3	%	Complete		R318-5729 9.78E+3	ppm	R318-5829 9.59E+3	ppm	NA		99.7	%
Lab ID: Selenium (09-23-91)	101.1	%	<5.00E-3	ppm	R318-5796 <1.00E-2	ppm	R318-5896 <1.00E-2	ppm	R318-5996 *134	%	91	%
Lab ID: Specific Gravity (10-18-91)	99.15	%	0.9871		R318-5706 1.090		R318-5806 1.090		R318-5906 NA		99.1	%
Lab ID: Total Inorganic Carbon (09-25-91)	99.75	%	5.70E+0	ug	R318-5727 2.08E+3	ppm	R318-5827 2.08E+3	ppm	R318-5927 103.7	%	102	%
Lab ID: Total Organic Carbon (10-28-91)	102.5	%	4.80E+0	ug	R318-5726 9.40E+2	ppm	R318-5826 1.00E+3	ppm	R318-5926 97	%	100.5	%
Ion Chromatographic												
Lab ID: Fluoride (09-30-91)	95.8	%	<1.00E-1	ppm	R318-5771 8.32E+3	ppm	R318-5871 8.30E+3	ppm	R318-5971 81.8	%	96.1	%
Lab ID: Nitrate (09-30-91)	93.9	%	<1.00E+0	ppm	R318-5773 3.36E+4	ppm	R318-5873 3.33E+4	ppm	R318-5973 94.9	%	97.7	%
Lab ID: Chloride (10-04-91)	98.7	%	<1.00E-1	ppm	R318-5772 5.65E+2	ppm	R318-5872 5.50E+2	ppm	R318-5972 74.9	%	95.2	%
Lab ID: Nitrite (10-02-91)	96.9	%	<1.00E+0	ppm	R318-5776 9.01E+3	ppm	R318-5876 9.09E+3	ppm	R318-5976 89.4	%	98.4	%
Lab ID: Phosphate (10-02-91)	101.1	%	<1.00E+0	ppm	R318-5774 6.46E+2	ppm	R318-5874 6.70E+2	ppm	R318-5974 105.6	%	98	%
Lab ID: Sulfate (10-02-91)	95.3	%	<1.00E+0	ppm	R318-5775 3.89E+3	ppm	R318-5875 3.88E+3	ppm	R318-5975 110.7	%	95.5	%

*Matrix Interference.

UNDIGESTED SAMPLE RESULTS

Tank: 106AW
Sample No.: R319
Customer ID: 791-2A

	Check Standard		Blank		Sample		Duplicate Sample		Spike of Sample		Check Standard	
Lab ID:	R316		R317		R319		NA		NA		R323	
Arsenic (10-01-91)	102	%	<5.00E-4	ppm	2.33E+0	ppm	NA		NA		99.8	%
Cyanide (09-26-91)	102.5	%	<5.0E-1	ppm	2.49E+0	ppm	NA		NA		101.3	%
Differential Thermal (10-09-91)	100	%	No Exotherm		No Exotherm		NA		NA		100	%
Mercury (10-17-91)	105	%	<5.00E-4	ppm	<5.00E-3	ppm	NA		NA		100	%
Ammonia (09-26-91)	95.4	%	<1.79E+1	ppm	2.68E+1	ppm	NA		NA		97	%
Determination of Hydroxide Ion (09-25-91)	98.3	%	Complete		8.81E+3	ppm	NA		NA		99.7	
Selenium (09-23-91)	101.1	%	<5.00E-3	ppm	<1.00E-2	ppm	NA		NA		91	%
Specific Gravity (10-16-91)	99.15	%	0.9871		1.0077		NA		NA		99.08	%
Total Inorganic Carbon (09-25-91)	99.75	%	5.70E+0	ug	2.47E+3	ppm	NA		NA		102	%
Total Organic Carbon (10-28-91)	102.5	%	4.80E+0	ug	8.86E+2	ppm	NA		NA		100.5	%
Ion Chromatographic							NA		NA			
Fluoride (09-30-91)	95.8	%	<1.00E-1	ppm	5.90E+3	ppm	NA		NA		96.1	%
Nitrate (09-30-91)	93.9	%	<1.00E+0	ppm	3.16E+4	ppm	NA		NA		97.7	%
Phosphate (10-02-91)	101.1	%	<1.00E+0	ppm	5.89E+2	ppm	NA		NA		98	%
Sulfate (10-02-91)	95.3	%	<1.00E+0	ppm	2.46E+3	ppm	NA		NA		95.5	%
Nitrite (10-02-91)	96.9	%	<1.00E+0	ppm	8.14E+3	ppm	NA		NA		98.4	%
Chloride (10-04-91)	98.7	%	<1.00E-1	ppm	4.31E+2	ppm	NA		NA		95.2	%

UNDIGESTED SAMPLE RESULTS

Tank: 106AW
Sample No.: R320
Customer ID: 791-3A

	Check Standard		Blank		Sample		Duplicate Sample		Spike of Sample		Check Standard	
Lab ID:	R316		R317		R320		NA		NA		R323	
Arsenic (10-01-91)	102	%	<5.00E-4	ppm	2.37E+0	ppm	NA		NA		99.8	%
Cyanide (09-26-91)	102.5	%	<5.0 E-1	ppm	2.43E+0	ppm	NA		NA		101.3	%
Differential Thermal (10-09-91)	100	%	No Exotherm		No Exotherm		NA		NA		100	%
Mercury (10-17-91)	105	%	<5.00E-4	ppm	<5.00E-3	ppm	NA		NA		100	%
Ammonia (09-26-91)	95.4	%	<1.79E+1	ppm	2.86E+1	ppm	NA		NA		97	%
Determination of Hydroxide Ion (09-25-91)	98.3	%	Complete		8.69E+3	ppm	NA		NA		99.7	
Selenium (09-23-91)	101.1	%	<5.00E-3	ppm	<1.00E-3	ppm	NA		NA		91	%
Specific Gravity (10-18-91)	99.15	%	0.9871		1.076		NA		NA		99.08	%
Total Inorganic Carbon (09-25-91)	99.75	%	5.70E+0	ug	2.27E+3	ppm	NA		NA		102	%
Total Organic Carbon (10-28-91)	102.5	%	4.80E+0	ug	8.80E+2	ppm	NA		NA		100.5	%
Ion Chromatographic							NA		NA			
Fluoride (09-30-91)	95.8	%	<1.00E-1	ppm	6.68E+3	ppm	NA		NA		96.1	%
Nitrate (09-30-91)	93.9	%	<1.00E+0	ppm	3.68E+4	ppm	NA		NA		97.7	%
Phosphate (10-02-91)	101.1	%	<1.00E+0	ppm	5.86E+2	ppm	NA		NA		98	%
Sulfate (10-02-91)	95.3	%	<1.00E+0	ppm	2.56E+3	ppm	NA		NA		95.5	%
Nitrite (10-02-91)	96.9	%	<1.00E+0	ppm	7.35E+3	ppm	NA		NA		98.4	%
Chloride (10-04-91)	98.7	%	<1.00E-1	ppm	4.47E+2	ppm	NA		NA		95.2	%

UNDIGESTED SAMPLE RESULTS

Tank: 106AW
Sample No.: R321
Customer ID: 791-4A

	Check Standard		Blank		Sample		Duplicate Sample		Spike of Sample		Check Standard	
Lab ID:	R316		R317		R321		NA		NA		R323	
Arsenic (10-01-91)	102	%	<5.00E-4	ppm	2.59E+0	ppm	NA		NA		99.8	%
Cyanide (09-26-91)	102.5	%	<5.0 E-1	ppm	2.49E+0	ppm	NA		NA		101.3	%
Differential Thermal (10-09-91)	100	%	No Exotherm		No Exotherm		NA		NA		100	%
Mercury (10-17-91)	105	%	<5.00E-4	ppm	<5.00E-3	ppm	NA		NA		100	%
Lab ID:	R324		R325		R321		NA		NA		R331	
Ammonia (10-03-91)	96.08	%	<9.94E-4	M	2.66E+1	ppm	NA		NA		98.67	%
Lab ID:	R316		R317		R321		NA		NA		R323	
Determination of Hydroxide Ion (09-25-91)	98.3	%	Complete		9.01E+3	ppm	NA		NA		99.7	%
Selenium (09-23-91)	101.1	%	<5.00E-3	ppm	<1.00E-2	ppm	NA		NA		91	%
Specific Gravity (10-18-91)	99.15	%	0.9871		1.0790		NA		NA		99.06	%
Total Inorganic Carbon (09-25-91)	99.75	%	5.70E+0	ug	2.16E+3	ppm	NA		NA		102	%
Total Organic Carbon (10-28-91)	102.5	%	4.80E+0	ug	7.76E+2	ppm	NA		NA		100.5	%
Ion Chromatographic												
Fluoride (09-30-91)	95.8	%	<1.00E-1	ppm	5.84E+3	ppm	NA		NA		96.1	%
Nitrate (09-30-91)	93.9	%	<1.00E+0	ppm	3.14E+4	ppm	NA		NA		97.7	%
Phosphate (10-02-91)	101.1	%	<1.00E+0	ppm	6.11E+2	ppm	NA		NA		98	%
Sulfate (10-02-91)	95.3	%	<1.00E+0	ppm	2.58E+3	ppm	NA		NA		95.5	%
Nitrite (10-02-91)	96.9	%	<1.00E+0	ppm	7.47E+3	ppm	NA		NA		98.4	%
Chloride (10-04-91)	98.7	%	<1.00E-1	ppm	4.70E+2	ppm	NA		NA		95.2	%

UNDIGESTED SAMPLE RESULTS

Tank: 106AW
Sample No.: R322
Customer ID: 791-5A

	Check Standard		Blank		Sample		Duplicate Sample		Spike of Sample		Check Standard	
Lab ID:	R316		R317		R322		NA		NA		R323	
Arsenic (10-01-91)	102	%	<5.00E-4	ppm	2.62E+0	ppm	NA		NA		99.8	%
Cyanide (09-26-91)	102.5	%	<5.0E-1	ppm	2.57E+0	ppm	NA		NA		101.3	%
Differential Thermal (10-09-91)	100	%	No Exotherm		No Exotherm		NA		NA		100	%
Mercury (10-17-91)	105	%	<5.00E-4	ppm	<5.00E-3	ppm	NA		NA		100	%
Lab ID:	R324		R325		R322		NA		NA		R331	
Ammonia (10-03-91)	96.08	%	<1.79E+1	ppm	2.50E+1	ppm	NA		NA		96.67	%
Determination of Hydroxide Ion (09-26-91)	100.7	%	Complete		1.00E+4	ppm	NA		NA		99.5	%
Lab ID:	R316		R317		R322		NA		NA		R323	
Selenium (09-23-91)	101.1	%	<5.00E-3	ppm	<1.00E-3	ppm	NA		NA		91	%
Specific Gravity (10-18-91)	99.15	%	0.9971		1.080		NA		NA		99.08	%
Total Inorganic Carbon (09-25-91)	99.75	%	5.70E+0	ug	2.30E+3	ppm	NA		NA		102	%
Total Organic Carbon (10-28-91)	102.5	%	4.80E+0	ug	9.18E+2	ppm	NA		NA		100.5	%
Ion Chromatographic							NA		NA			
Fluoride (09-30-91)	95.8	%	<1.00E-1	ppm	5.83E+3	ppm	NA		NA		96.1	%
Nitrate (09-30-91)	93.9	%	<1.00E+0	ppm	3.25E+4	ppm	NA		NA		97.7	%
Phosphate (10-02-91)	101.1	%	<1.00E+0	ppm	5.95E+2	ppm	NA		NA		98	%
Sulfate (10-02-91)	95.3	%	<1.00E+0	ppm	2.49E+3	ppm	NA		NA		95.5	%
Nitrite (10-02-91)	96.9	%	<1.00E+0	ppm	7.45E+3	ppm	NA		NA		98.4	%
Chloride (10-04-91)	98.7	%	<1.00E-1	ppm	4.89E+2	ppm	NA		NA		95.2	%

UNDIGESTED SAMPLE RESULTS

Tank: 106AW
Sample No.: R326
Customer ID: 791-6A

	Check Standard		Blank		Sample		Duplicate Sample		Spike of Sample		Check Standard	
Lab ID:	R324		R325		R326		R326		R326		R331	
Lab ID: Arsenic (10-01-91)	109	%	<5.00E-4	ppm	R326-5795 2.61E+0	ppm	R326-5895 2.35E+0	ppm	R326-5995 76.8	%	95.2	%
Lab ID: Cyanide (9-27-91)	100.9	%	<5.00E-1	ppm	R326-5778 8.27E-1	ppm	R326-5878 8.44E-1	ppm	R326-5978 103.5	%	100.4	%
Lab ID: Differential Thermal (10-14-91)	100	%	NO EXOTHERM		R326-5711 NO EXOTHERM		R326-5811 NO EXOTHERM		NA		100	%
Lab ID: Mercury (10-17-91)	117	%	<5.00E-4	ppm	R326-5797 <5.00E-3	ppm	R326-5897 <5.00E-3	ppm	R326-5997 88.4	%	92.4	%
Lab ID: Ammonia (10-03-91)	96.08	%	<1.79E+1	ppm	R326-5728 2.86E+1	ppm	R326-5828 3.04E+1	ppm	R326-5928 90.4	%	96.6	%
Lab ID: Determination of Hydroxide Ions (9-26-91)	100.7	%	COMPLETE		R326-5729 8.19E+3	ppm	R326-5829 7.70E+3	ppm	NA		98.5	%
Lab ID: Selenium (9-24-91)	108	%	<5.00E-3	ppm	R326-5796 <1.0 E-2	ppm	R326-5896 1.00E-2	ppm	R326-5996 80.3	%	94	%
Lab ID: Specific Gravity (10-24-91)	97.5	%	1.0123		R326-5706 1.0842		R326-5806 1.0842		NA		98.3	%
Lab ID: Total Inorganic Carbon (9-26-91)	100	%	5.60E+0	ug	R326-5727 2.01E+3	ppm	R326-5826 1.98E+3	ppm	R326-5926 88.46	%	102.5	%
Lab ID: Total Organic Carbon (9-26-91)	98.3	%	3.10E+0	ug	R326-5726 8.86E+2	ppm	R326-5826 8.80E+2	ppm	R326-5926 93.9	%	100.1	%
Ion Chromatographic												
Lab ID: Chloride (10-04-91)	95.2	%	<1.00E-1	ppm	R326-5772 4.35E+2	ppm	R326-5872 4.30E+2	ppm	R326-5972 103.4	%	94.6	%
Lab ID: Phosphate (10-04-91)	98.8	%	<1.00E+0	ppm	R326-5774 5.83E+2	ppm	R326-5874 5.94E+2	ppm	R326-5974 104.8	%	98.9	%
Lab ID: Sulfate (10-04-91)	92.7	%	<1.00E+0	ppm	R326-5775 2.35E+3	ppm	R326-5875 2.32E+3	ppm	R326-5975 120.9	%	93.4	%
Lab ID: Nitrate (10-08-91)	99.1	%	<1.00E+0	ppm	R326-5773 3.14E+4	ppm	R326-5873 3.08E+4	ppm	R326-5973 89.5	%	97.2	%
Lab ID: Fluoride (10-07-91)	101.4	%	<1.00E-1	ppm	R326-5771 ORGANIC INTERFERENCE		R326-5871 ORGANIC INTERFERENCE		R326-5971 ORGANIC INTERFERENCE		97.7	%
Lab ID: Nitrite (10-07-91)	102.2	%	<1.00E+0	ppm	R326-5776 8.06E+3	ppm	R326-5876 8.06E+3	ppm	R326-5976 92.5	%	102.1	%

*Matrix [illegible]rence.

UNDIGESTED SAMPLE RESULTS

Tank: 106AW
Sample No.: R327
Customer ID: 791-7A

	Check Standard		Blank		Sample		Duplicate Sample		Spike of Sample		Check Standard	
Lab ID:	R324		R325		R327		NA		NA		R331	
Arsenic (10-01-91)	109	%	<5.00E-4	ppm	4.14E+0	ppm	NA		NA		95.2	%
Cyanide (9-27-91)	100.9	%	<5.00E-1	ppm	7.61E-1	ppm	NA		NA		100.4	%
Differential Thermal (10-14-91)	100	%	NO EXOTHERM		NO EXOTHERM		NA		NA		100	%
Mercury (10-17-91)	117	%	<5.00E-4	ppm	<5.00E-3	ppm	NA		NA		92.4	%
Ammonia (10-03-91)	96.08	%	<1.79E+1	ppm	3.19E+2	ppm	NA		NA		96.6	%
Determination of Hydroxide Ions (9-26-91)	100.7	%	COMPLETE		2.21E+4	ppm	NA		NA		98.5	%
Selenium (9-24-91)	108	%	<5.00E-3	ppm	<1.00E-2	ppm	NA		NA		94	%
Specific Gravity (10-24-91)	97.5	%	1.0123		1.1876		NA		NA		98.3	%
Total Inorganic Carbon (9-26-91)	100	%	5.60E+0	ug	3.97E+3	ppm	NA		NA		102.5	%
Total Organic Carbon (9-26-91)	98.3	%	3.10E+0	ug	2.39E+3	ppm	NA		NA		100.1	%
Ion Chromatographic												
Chloride (10-04-91)	95.2	%	<1.00E-1	ppm	1.18E+3	ppm	NA		NA		94.6	%
Phosphate (10-04-91)	98.8	%	<1.00E+0	ppm	1.62E+3	ppm	NA		NA		98.9	%
Sulfate (10-04-91)	92.7	%	<1.00E+0	ppm	1.06E+4	ppm	NA		NA		93.4	%
Nitrate (10-08-91)	99.1	%	<1.00E+0	ppm	7.59E+4	ppm	NA		NA		97.2	%
Fluoride (10-07-91)	101.4	%	<1.00E-1	ppm	ORGANIC INTERFERENCE		NA		NA		97.7	%
Nitrite (10-07-91)	102.2	%	<1.00E+0	ppm	2.40E+4	ppm	NA		NA		102.1	%

UNDIGESTED SAMPLE RESULTS

Tank: 106AW
Sample No.: R328
Customer ID: 791-8A

	Check Standard		Blank		Sample		Duplicate Sample		Spike of Sample		Check Standard	
Lab ID:	R324		R325		R328		NA		NA		R331	
Arsenic (10-01-91)	109	%	<5.00E-4	ppm	2.49E+0	ppm	NA		NA		95.2	%
Cyanide (9-27-91)	100.9	%	<5.00E-1	ppm	2.40E+0	ppm	NA		NA		100.4	%
Differential Thermal (10-14-91)	100	%	NO EXOTHERM		NO EXOTHERM		NA		NA		100	%
Mercury (10-17-91)	117	%	<5.00E-4	ppm	<5.00E-3	ppm	NA		NA		92.4	%
Ammonia (10-03-91)	96.08	%	<1.79E+1	ppm	2.14E+1	ppm	NA		NA		98.8	%
Determination of Hydroxide Ions (10-15-91)	104.6	%	COMPLETE		R328-5729 8.94E+3	ppm	R328-5829 9.03E+3	ppm	NA		99.7	%
Selenium (9-24-91)	108	%	<5.00E-3	ppm	<1.00E-2	ppm	NA		NA		94	%
Specific Gravity (10-24-91)	97.5	%	1.012		1.079		NA		NA		98.3	%
Total Inorganic Carbon (9-26-91)	100	%	5.60E+0	ug	2.17E+3	ppm	NA		NA		102.5	%
Total Organic Carbon (9-26-91)	98.3	%	3.10E+0	ug	9.62E+2	ppm	NA		NA		100.1	%
Ion Chromatographic												
Chloride (10-04-91)	95.2	%	<1.00E-1	ppm	4.55E+2	ppm	NA		NA		94.8	%
Fluoride (10-07-91)	101.4	%	<1.00E-1	ppm	ORGANIC INTERFERENCE		NA		NA		97.7	%
Nitrite (10-07-91)	102.2	%	<1.00E+0	ppm	8.27E+3	ppm	NA		NA		102.1	%
Nitrate (10-08-91)	99.1	%	<1.00E+0	ppm	3.19E+4	ppm	NA		NA		97.2	%
Phosphate (10-04-91)	98.8	%	<1.00E+0	ppm	6.05E+2	ppm	NA		NA		98.9	%
Sulfate (10-04-91)	92.7	%	<1.00E+0	ppm	2.55E+3	ppm	NA		NA		93.4	%

UNDIGESTED SAMPLE RESULTS

Tank: 106AW
Sample No.: R329
Customer ID: 791-9A

	Check Standard		Blank		Sample		Duplicate Sample		Spike of Sample		Check Standard	
Lab ID:	R324		R325		R329		R329		R329		R331	
Arsenic (10-01-91)	109	%	<5.00E-4	ppm	2.35E+0	ppm	NA		NA		95.2	%
Cyanide (9-27-91)	100.9	%	<5.00E-1	ppm	3.70E-1	ppm	NA		NA		100.4	%
Differential Thermal (10-14-91)	100	%	NO EXOTHERM		NO EXOTHERM		NA		NA		100	%
Mercury (10-17-91)	117	%	<5.00E-4	ppm	<5.00E-3	ppm	NA		NA		92.4	%
Lab ID:					R329-5797		R329-5807		R329-5807			
Mercury (7-01-92)	109.1	%	<3.00E-4	ppm	<2.00E-2	ug/mL	<2.00E-2	ug/mL	97.9	%	NA	
Ammonia (10-03-91)	96.08	%	<1.79E+1	ppm	3.94E+1	ppm	NA		NA		96.6	%
Determination of Hydroxide Ions (10-15-91)	104.6	%	COMPLETE		9.03E+3	ppm	NA		NA		99.7	%
Selenium (9-24-91)	108	%	<5.00E-3	ppm	<1.00E-2	ppm	NA		NA		94	%
Specific Gravity (10-24-91)	97.5	%	1.012		1.075		NA		NA		96.3	%
Total Inorganic Carbon (9-26-91)	100	%	5.60E+0	ug	2.15E+3	ppm	NA		NA		102.5	%
Total Organic Carbon (9-26-91)	98.3	%	3.10E+0	ug	9.46E+2	ppm	NA		NA		100.1	%
Ion Chromatographic												
Chloride (10-04-91)	95.2	%	<1.00E-1	ppm	4.50E+2	ppm	NA		NA		94.6	%
Phosphate (10-04-91)	96.8	%	<1.00E+0	ppm	5.84E+2	ppm	NA		NA		96.9	%
Sulfate (10-04-91)	92.7	%	<1.00E+0	ppm	2.35E+3	ppm	NA		NA		93.4	%
Nitrate (10-08-91)	99.1	%	<1.00E+0	ppm	3.01E+4	ppm	NA		NA		97.2	%
Fluoride (10-07-91)	101.4	%	<1.00E-1	ppm	ORGANIC INTERFERENCE		NA		NA		97.7	%
Nitrite (10-07-91)	102.2	%	<1.00E+0	ppm	8.06E+3	ppm	NA		NA		102.1	%

UNDIGESTED SAMPLE RESULTS

Tank: 106AW
Sample No.: R330
Customer ID: 791-10A

	Check Standard		Blank		Sample		Duplicate Sample		Spike of Sample		Check Standard	
Lab ID:	R324		R325		R330		NA		NA		R331	
Arsenic (10-01-91)	109	%	<5.00E-4	ppm	2.41E+0	ppm	NA		NA		95.2	%
Cyanide (9-27-91)	100.9	%	<5.00E-1	ppm	2.10E+0	ppm	NA		NA		100.4	%
Differential Thermal (10-14-91)	100	%	NO EXOTHERM		NO EXOTHERM		NA		NA		100	%
Mercury (10-17-91)	117	%	<5.00E-4	ppm	<5.00E-3	ppm	NA		NA		92.4	%
Ammonia (10-03-91)	96.08	%	<1.79E+1	ppm	1.96E+1	ppm	NA		NA		96.6	%
Determination of Hydroxide Ions (10-15-91)	104.6	%	COMPLETE		5.41E+3	ppm	NA		NA		99.7	%
Selenium (9-24-91)	108	%	<5.00E-3	ppm	<1.00E-2	ppm	NA		NA		94	%
Specific Gravity (10-24-91)	97.5	%	1.012		1.102		NA		NA		98.3	%
Total Inorganic Carbon (9-26-91)	100	%	5.60E+0	ug	2.03E+3	ppm	NA		NA		102.5	%
Total Organic Carbon (9-26-91)	98.3	%	3.10E+0	ug	8.75E+2	ppm	NA		NA		100.1	%
Ion Chromatographic Sulfate (10-04-91)	92.7	%	<1.00E+0	ppm	2.35E+3	ppm	NA		NA		93.4	%
Phosphate (10-04-91)	98.8	%	<1.00E+0	ppm	6.53E+2	ppm	NA		NA		98.9	%
Chloride (10-04-91)	95.2	%	<1.00E-1	ppm	4.41E+2	ppm	NA		NA		94.6	%
Fluoride (10-07-91)	101.4	%	<1.00E-1	ppm	ORGANIC INTERFERENCE		NA		NA		97.7	%
Nitrite (10-07-91)	102.2	%	<1.00E+0	ppm	7.90E+3	ppm	NA		NA		102.1	%
Nitrate (10-08-91)	99.1	%	<1.00E+0	ppm	2.98E+4	ppm	NA		NA		97.2	%

ACID DIGESTION ANALYSIS RESULTS

ACID DIGESTION
SAMPLE RESULTS

Tank: 106AW
Sample No: R318
Customer ID: 791-1A

	Check Standard		Blank		Sample		Duplicate Sample		Spike of Sample		Check Standard	
Lab ID:	R316		R317		R318-8705		R318-8805		R318-8905		R323	
Acid Digestion (09-24-91)	Complete		Complete		Complete		Complete		Complete		Complete	
Lab ID:	R316		R317		R318-8750		R318-8850		R318-8950		R323	
ICP (11-19-91)												
Al	134	%	1.01E-1	ppm	1.63E+6	ppb	1.27E+6	ppb	**	%	130	%
Ba	101.5	%	<3.00E-3	ppm	1.07E+3	ppb	<1.80E+3	ppb	98.19	%	99.8	%
Cd	102.6	%	<4.00E-3	ppm	1.57E+3	ppb	<2.40E+3	ppb	99.4	%	101.6	%
Cr	108	%	1.02E-2	ppm	2.60E+4	ppb	2.26E+4	ppb	109.28	%	120	%
Fe	159	%	7.59E-2	ppm	1.35E+5	ppb	1.17E+5	ppb	119.28	%	111	%
Pb	120	%	<8.00E-2	ppm	1.10E+4	ppb	<4.80E+4	ppb	149.4	%	113.6	%
Mg	568	%	4.02E-1	ppm	<1.11E+3	ppb	<6.60E+3	ppb	0	%	467.2	%
Mn	112.6	%	1.70E-2	ppm	2.46E+4	ppb	2.46E+4	ppb	100	%	112.6	%
Ag	96.6	%	<6.00E-3	ppm	2.28E+3	ppb	<4.80E+3	ppb	102.41	%	97.4	%
Na	157	%	4.09E-1	ppm	4.30E+7	ppb	3.28E+7	ppb	**		162	%
Zn	230	%	4.30E-1	ppm	8.20E+3	ppb	1.55E+5	ppb	89.76	%	243.3	%

**NOT CALCULATED, SAMPLE LESS THAN 4 TIMES SPIKE VALUE.

ACID DIGESTION
SAMPLE RESULTS

Tank: 106AW
Sample No.: R319
Customer ID: 791-2A

	Check Standard		Blank		Sample		Duplicate Sample		Spike of Sample		Check Standard	
Lab ID:	R316		R317		R319-8705		NA		NA		R323	
Acid Digestion (09-24-91)	Complete		Complete		Complete		NA		NA		Complete	
Lab ID:	R316		R317		R319-8750		NA		NA		R323	
ICP (11-19-91)												
Al	134	%	1.01E-1	ppm	1.06E+6	ppb	NA		NA		130	%
Ba	101.5	%	<3.00E-3	ppm	<1.80E+3	ppb	NA		NA		99.8	%
Cd	102.6	%	<4.00E-3	ppm	<2.40E+3	ppb	NA		NA		101.8	%
Cr	108	%	1.02E-2	ppm	2.08E+4	ppb	NA		NA		120	%
Fe	159	%	7.59E-2	ppm	<5.22E+4	ppb	NA		NA		111	%
Pb	120	%	<8.00E-2	ppm	4.86E+4	ppb	NA		NA		113.6	%
Mg	588	%	4.02E-1	ppm	<6.60E+3	ppb	NA		NA		467.2	%
Mn	112.6	%	1.70E-2	ppm	5.58E+3	ppb	NA		NA		112.6	%
Ag	96.6	%	<8.00E-3	ppm	7.44E+3	ppb	NA		NA		97.4	%
Ni	157	%	4.09E-1	ppm	2.64E+7	ppb	NA		NA		162	%
Zn	230	%	4.30E-1	ppm	1.38E+5	ppb	NA		NA		243.3	%

ACID DIGESTION
SAMPLE RESULTS

Tank: 106AW
Sample No.: R320
Customer ID: 791-3A

	Check Standard		Blank		Sample		Duplicate Sample		Spike of Sample		Check Standard	
Lab ID:	R316		R317		R320-8705		NA		NA		R323	
Acid Digestion (09-24-91)	Complete		Complete		Complete		NA		NA		Complete	
Lab ID:	R316		R317		R320-8750		NA		NA		R323	
ICP (11-19-91)												
Al	134	%	1.01E-1	ppm	1.35E+6	ppb	NA		NA		130	%
Ba	101.5	%	<3.00E-3	ppm	<1.80E+3	ppb	NA		NA		99.8	%
Cd	102.6	%	<4.00E-3	ppm	<2.40E+3	ppb	NA		NA		101.6	%
Cr	108	%	1.02E-2	ppm	1.48E+4	ppb	NA		NA		120	%
Fe	159	%	7.59E-2	ppm	<5.22E+4	ppb	NA		NA		111	%
Pb	120	%	<8.00E-2	ppm	<4.80E+4	ppb	NA		NA		113.6	%
Mg	568	%	4.02E-1	ppm	<6.60E+3	ppb	NA		NA		467.2	%
Mn	112.6	%	1.70E-2	ppm	5.22E+3	ppb	NA		NA		112.6	%
Ag	96.6	%	<8.00E-3	ppm	<4.80E+3	ppb	NA		NA		97.4	%
Na	157	%	4.09E-1	ppm	3.62E+7	ppb	NA		NA		162	%
Zn	230	%	4.30E-1	ppm	1.21E+5	ppb	NA		NA		243.3	%

ACID DIGESTION
SAMPLE RESULTS

Tank: 106AW
Sample No.: R321
Customer ID: 791-4A

	Check Standard		Blank		Sample		Duplicate Sample		Spike of Sample		Check Standard	
Lab ID:	R316		R317		R321-8705		NA		NA		R323	
Acid Digestion (09-24-91)	Complete		Complete		Complete		NA		NA		Complete	
Lab ID:	R316		R317		R321-8750		NA		NA		R323	
ICP (11-19-91)												
Aluminum	134	%	1.01E-1	ppm	1.38E+6	ppb	NA		NA		130	%
Barium	101.5	%	<3.00E-3	ppm	<1.80E+3	ppb	NA		NA		99.8	%
Cadmium	102.6	%	<4.00E-3	ppm	<2.40E+3	ppb	NA		NA		101.6	%
Chromium	108	%	1.02E-2	ppm	2.29E+4	ppb	NA		NA		120	%
Iron	159	%	7.59E-2	ppm	<5.22E+4	ppb	NA		NA		111	%
Lead	120	%	<8.00E-2	ppm	<4.08E+4	ppb	NA		NA		113.6	%
Magnesium	568	%	4.02E-1	ppm	<6.60E+3	ppb	NA		NA		467.2	%
Manganese	112.6	%	1.70E-2	ppm	4.08E+3	ppb	NA		NA		112.6	%
Silver	96.6	%	<8.00E-3	ppm	<4.80E+3	ppb	NA		NA		97.4	%
Sodium	157	%	4.09E-1	ppm	3.60E+7	ppb	NA		NA		162	%
Zinc	230	%	4.30E-1	ppm	7.80E+4	ppb	NA		NA		243.3	%

ACID DIGESTION
SAMPLE RESULTS

Tank: 106AW
Sample No.: R322
Customer ID: 791-5A

	Check Standard		Blank		Sample		Duplicate Sample		Spike of Sample		Check Standard	
Lab ID:	R316		R317		R322-8705		NA		NA		R323	
Acid Digestion (09-24-91)	Complete		Complete		Complete		NA		NA		Complete	
Lab ID:	R316		R317		R322-8750		NA		NA		R323	
ICP (11-19-91)												
Al	134	%	1.01E-1	ppm	9.72E+5	ppb	NA		NA		130	%
Ba	101.5	%	<3.00E-3	ppm	<1.80E+3	ppb	NA		NA		99.8	%
Cd	102.6	%	<4.00E-3	ppm	<2.40E+3	ppb	NA		NA		101.6	%
Cr	108	%	1.02E-2	ppm	1.53E+4	ppb	NA		NA		120	%
Fe	159	%	7.59E-2	ppm	<5.22E+4	ppb	NA		NA		111	%
Pb	120	%	<8.00E-2	ppm	<4.80E+4	ppb	NA		NA		113.6	%
Mg	568	%	4.02E-1	ppm	<6.60E+3	ppb	NA		NA		467.2	%
Mn	112.6	%	1.70E-2	ppm	5.46E+3	ppb	NA		NA		112.6	%
Ag	96.6	%	<8.00E-3	ppm	<4.80E+3	ppb	NA		NA		97.4	%
Na	157	%	4.09E-1	ppm	2.66E+7	ppb	NA		NA		162	%
Zn	230	%	4.30E-1	ppm	1.28E+5	ppb	NA		NA		243.3	%

ACID DIGESTION
SAMPLE RESULTS

Tank: 106AW
Sample No: R328
Customer ID: 791-6A

	Check Standard		Blank		Sample		Duplicate Sample		Spike of Sample		Check Standard	
Lab ID:	R324		R325		R326-8705		R326-8805		R326-8905		R331	
Acid Digestion (09-25-91)	Complete		Complete		Complete		Complete		Complete		Complete	
Lab ID:	R324		R325		R326-8750		R326-8850		R326-8950		R331	
ICP (11-19-91)												
Al	59.6	%	<5.50E-2	ppm	1.37E+6	ppb	1.42E+6	ppb	100.26	%	128.6	%
Ba	93.2	%	<3.00E-3	ppm	<1.80E+3	ppb	<1.80E+3	ppb	96.99	%	100.5	%
Cd	92.5	%	<4.00E+3	ppm	3.29E+3	ppb	<2.40E+3	ppb	99.4	%	99	%
Cr	90.6	%	1.66E-2	ppm	2.57E+4	ppb	2.42E+4	ppb	17.2	%	103	%
Fe	102	%	8.70E-2	ppm	5.22E+4	ppb	5.22E+4	ppb	121.69	%	161	%
Pb	101.4	%	<6.00E-2	ppm	<4.80E+4	ppb	<4.80E+4	ppb	162.65	%	101.6	%
Mg	97.6	%	4.08E-1	ppm	1.63E+4	ppb	<6.60E+3	ppb	87.47	%	419	%
Mn	95.8	%	1.38E-2	ppm	3.41E+3	ppb	3.08E+3	ppb	100	%	106.6	%
Ag	90.2	%	<8.00E-3	ppm	<4.80E+3	ppb	<4.80E+3	ppb	93.98	%	99.4	%
Na	90.6	%	1.09E-1	ppm	3.74E+7	ppb	3.88E+7	ppb	**		127	%
Zn	96.9	%	2.91E-1	ppm	1.04E+5	ppb	5.10E+4	ppb	48.19	%	157.9	%

**NOT CALCULATED. SAMPLE VALUE GREATER THAN SPIKE VALUE.

ACID DIGESTION
SAMPLE RESULTS

Task: 106AW
Sample No: R327
Customer ID: 791-7A

	Check Standard		Blank		Sample		Duplicate Sample		Spike of Sample		Check Standard	
Lab ID:	R324		R325		R327-8705		NA		NA		R331	
Acid Digestion (09-25-91)	Complete		Complete		Complete		NA		NA		Complete	
Lab ID:	R324		R325		R327-8750		NA		NA		R331	
ICP (11-19-91)												
Al	59.6	%	<5.50E-2	ppm	4.97E+6	ppb	NA		NA		126.6	%
Ba	93.2	%	<3.00E-3	ppm	<1.80E+3	ppb	NA		NA		100.5	%
Cd	92.5	%	<4.00E+3	ppm	4.20E+3	ppb	NA		NA		99	%
Cr	90.8	%	1.66E-2	ppm	3.67E+4	ppb	NA		NA		103	%
Fe	102	%	8.70E-2	ppm	<5.22E+4	ppb	NA		NA		161	%
Pb	101.4	%	<8.00E-2	ppm	<4.80E+4	ppb	NA		NA		101.6	%
Mg	97.6	%	4.08E-1	ppm	3.49E+4	ppb	NA		NA		419	%
Mn	95.8	%	1.38E-2	ppm	7.62E+3	ppb	NA		NA		106.6	%
Ag	90.2	%	<8.00E-3	ppm	<4.80E+3	ppb	NA		NA		99.4	%
Na	90.6	%	1.09E-1	ppm	8.52E+7	ppb	NA		NA		127	%
Zn	96.9	%	2.91E-1	ppm	1.94E+5	ppb	NA		NA		157.9	%

ACID DIGESTION
SAMPLE RESULTS

Tank: 106AW
Sample No: R328
Customer ID: 791-8A

	Check Standard		Blank		Sample		Duplicate Sample		Spike of Sample		Check Standard	
Lab ID:	R324		R325		R328-8765		NA		NA		R331	
Acid Digestion (09-25-91)	Complete		Complete		Complete		NA		NA		Complete	
Lab ID:	R324		R325		R328-8750		NA		NA		R331	
ICP (11-19-91)												
Al	59.6	%	<5.50E-2	ppm	1.40E+6	ppb	NA		NA		128.6	%
Ba	93.2	%	<3.00E-3	ppm	<1.80E+3	ppb	NA		NA		100.5	%
Cd	92.5	%	<4.00E+3	ppm	4.36E+3	ppb	NA		NA		99	%
Cr	90.8	%	1.66E-2	ppm	2.12E+4	ppb	NA		NA		103	%
Fe	102	%	8.70E-2	ppm	<5.22E+4	ppb	NA		NA		161	%
Pb	101.4	%	<8.00E-2	ppm	<4.80E+4	ppb	NA		NA		101.6	%
Mg	97.6	%	4.08E-1	ppm	<6.60E+3	ppb	NA		NA		419	%
Mn	95.8	%	1.38E-2	ppm	3.36E+3	ppb	NA		NA		108.6	%
Ag	90.2	%	<8.00E-3	ppm	<4.80E+3	ppb	NA		NA		99.4	%
Na	90.6	%	1.09E-1	ppm	3.71E+7	ppb	NA		NA		127	%
Zn	96.9	%	2.91E-1	ppm	4.14E+4	ppb	NA		NA		157.9	%

ACID DIGESTION
SAMPLE RESULTS

Tank: 106AW
Sample No: R329
Customer ID: 791-9A

	Check Standard		Blank		Sample		Duplicate Sample		Spike of Sample		Check Standard	
Lab ID:	R324		R325		R329-8705		NA		NA		R331	
Acid Digestion (09-25-91)	Complete		Complete		Complete		NA		NA		Complete	
Lab ID:	R324		R325		R329-8750		NA		NA		R331	
ICP (11-19-91)												
Al	59.6	%	<5.50E-2	ppm	1.38E+6	ppb	NA		NA		126.6	%
Ba	93.2	%	<3.00E-3	ppm	<1.80E+3	ppb	NA		NA		100.5	%
Cd	92.5	%	<4.00E+3	ppm	3.36E+3	ppb	NA		NA		99	%
Cr	90.8	%	1.66E-2	ppm	2.54E+4	ppb	NA		NA		103	%
Fe	102	%	8.70E-2	ppm	2.02E+5	ppb	NA		NA		181	%
Pb	101.4	%	<8.00E-2	ppm	4.80E+4	ppb	NA		NA		101.6	%
Mg	97.6	%	4.08E-1	ppm	1.08E+4	ppb	NA		NA		419	%
Mn	95.8	%	1.38E-2	ppm	4.56E+3	ppb	NA		NA		106.6	%
Ag	90.2	%	<6.00E-3	ppm	<4.60E+3	ppb	NA		NA		99.4	%
Na	90.6	%	1.09E-1	ppm	3.71E+7	ppb	NA		NA		127	%
Zn	96.9	%	2.91E-1	ppm	1.05E+5	ppb	NA		NA		157.9	%

ACID DIGESTION
SAMPLE RESULTS

Tank: 108AW
Sample No: R330
Customer ID: 791-10A

	Check Standard		Blank		Sample		Duplicate Sample		Spike of Sample		Check Standard	
Lab ID:	R324		R325		R330-8705		NA		NA		R331	
Acid Digestion (09-25-91)	Complete		Complete		Complete		NA		NA		Complete	
Lab ID:	R324		R325		R330-8750		NA		NA		R331	
ICP (11-19-91)												
Al	59.6	%	<5.50E-2	ppm	1.40E+6	ppb	NA		NA		128.6	%
Ba	93.2	%	<3.00E-3	ppm	<1.80E+3	ppb	NA		NA		100.5	%
Cd	92.5	%	<4.00E+3	ppm	3.33E+3	ppb	NA		NA		99	%
Cr	90.8	%	1.66E-2	ppm	2.28E+4	ppb	NA		NA		103	%
Fe	102	%	8.70E-2	ppm	<5.22E+4	ppb	NA		NA		161	%
Pb	101.4	%	<8.00E-2	ppm	<4.80E+4	ppb	NA		NA		101.6	%
Mg	97.6	%	4.08E-1	ppm	9.78E+3	ppb	NA		NA		419	%
Mn	95.8	%	1.38E-2	ppm	3.51E+3	ppb	NA		NA		108.6	%
Ag	90.2	%	<8.00E-3	ppm	<4.80E+3	ppb	NA		NA		99.4	%
Na	90.8	%	1.09E-1	ppm	3.71E+7	ppb	NA		NA		127	%
Zn	96.9	%	2.91E-1	ppm	7.32E+4	ppb	NA		NA		157.9	%

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WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R318	Customer ID: 791-1A
Analysis: ARSENIC	Sample Prep: UNDIGESTED

Instrument: PERKIN ELMER - WA77479	Procedure/Rev: LA-355-131/B-0
Technologist: D. R. JACKSON	Date: 10-01-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: K. FULLER

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5595	11		
2	REAGENT BLANK	R317-5695	12		
3	SAMPLE 791-1A	R318-5795	13		
4	SAM DUP 791-1A	R318-5895	14		
5	SPIKE OF 791-1A	R318-5995	15		
6	FINAL LMCS CHECK STD	R323-5595	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 CHECK STD	125B38B/0.5 mL			N/A
SPIKE	125B38B/.250 mL			N/A

A-6000-881 (03/92)

ARSENIC ANALYSIS - UNDIGESTED SAMPLE

R 314.-5595 | 104AW | 9-19-91 | 13:35 | 26
As | LA-355-131 | % RECOVERY | WITE2 | 0
? .500 ml | STD
EDP R741 AS/HYDRD 0.766
STDN 125838 B RESULT
STD VAL 1.0E-1 %REC 102.0%
50.76/500 = 1.02E-1
6C275
10-1-91

R 317.-5695 | 104AW | 9-19-91 | 13:45 | 26
As | LA-355-131 | PPM | WITE2 | C
? 10.0 ml | REG DI.
REAGENT BLANK 0.013
<5/10000 = <5.00E-4
6C275
10-1-91

R 318.-5795 | 104AW | 9-19-91 | 15:7 | 25
As | LA-355-131 | PPM | WITE2 | 0
.025 ml | 791-1A
10-1-91
0.891 59.15/25 = 2.37
6C275
10-1-91

R 318.-5895 | 104AW | 9-19-91 | 15:10 | 25
As | LA-355-131 | PPM | WITE2 | C
.025 ml | 791-1A
Duplicate Sample
0.956 63.5/25 = 2.54
6C275
10-1-91

R 318.-5995 | 104AW | 9-19-91 | 15:11 | 25
As | LA-355-131 | % RECOVERY | WITE2 | 0
.025 ml | 791-1A
SAMPLE SPIKED ID
SPIKE ID 125838B
SPIKE VOLUME .250 ml
1.303 26.99/250 = 1.08E-1 / 1.00E-1 = 108.0%
6C275
10-1-91

R 323.-5595 | 104AW | 9-19-91 | 15:45 | 25
As | LA-355-131 | % RECOVERY | WITE2 | 0
? .500 ml | STD
EDP R741 AS/HYDRD
STDN 125838B RESULT 9.98E-2
STD VAL 1.0E-1 %REC 99.8%
0.753 49.88/500 =
6C275
10-1-91

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY
CALIBRATION RECORD

Analyte: As

Procedure: LA-355-131 | Revision: B-0

Instrument: PERKIN ELMER | Property No.: WA77479

Technologist: D. R. JACKSON | Payroll No.: 6C275 | Date: 10-01-91

Calibration Standard: 128B38C

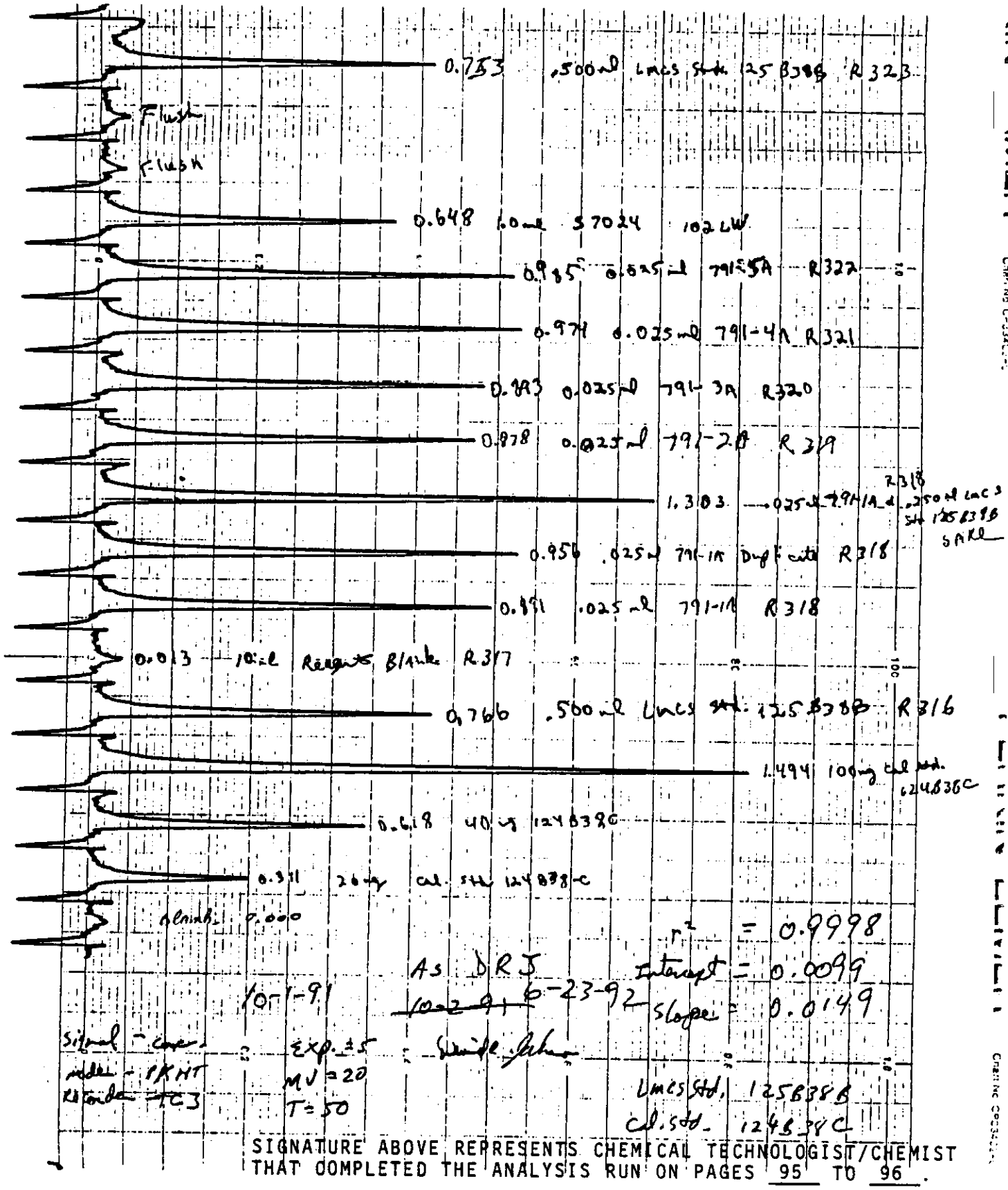
Analyte Concentration: 0.1000 ppm

Type of Calibration: LINEAR

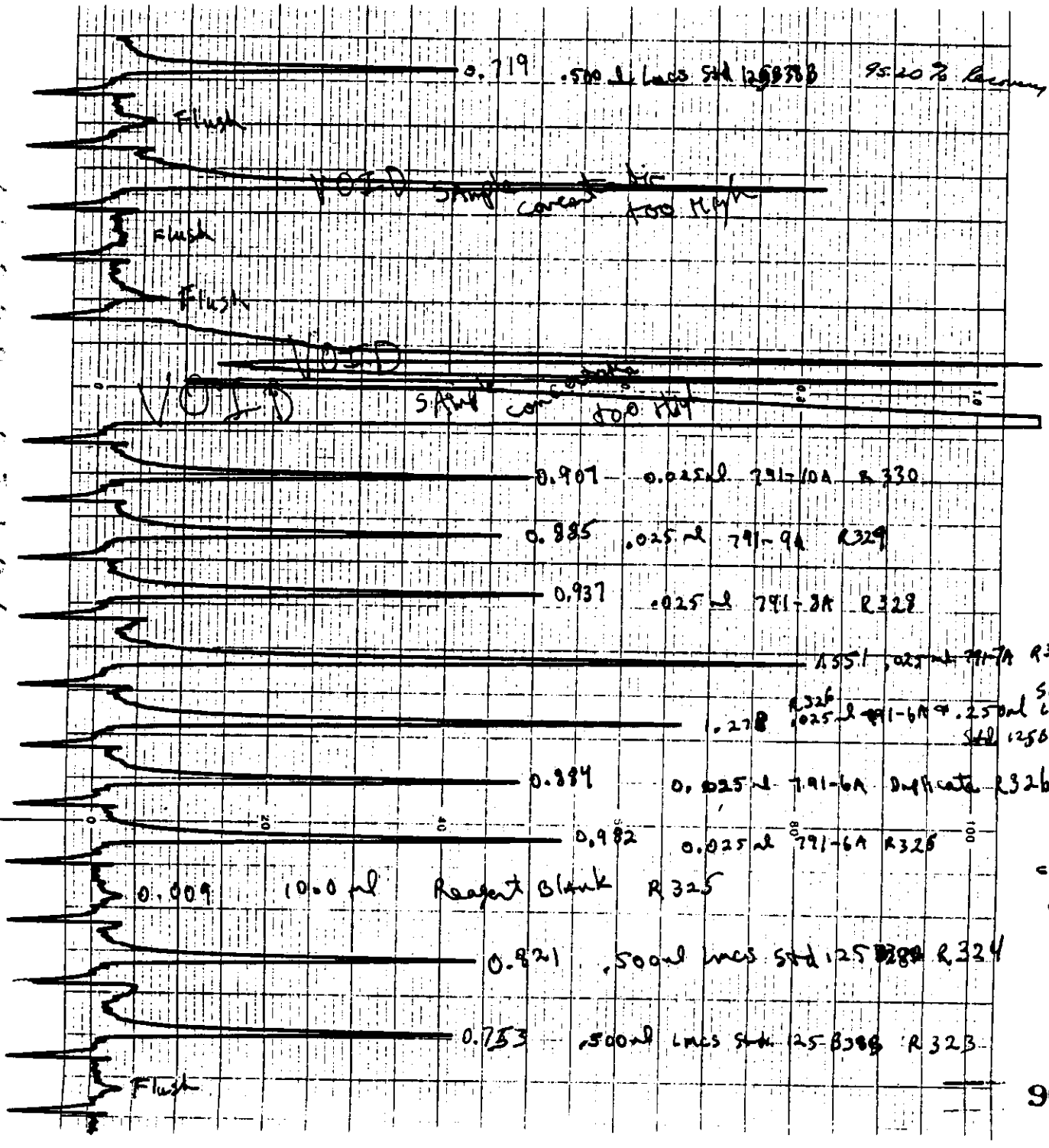
	Dilution	Concentration	Instrument Reading Unit
1	0.000 mL	0.0 ng	0.000
2	0.200 mL	20.0 ng	0.311
3	0.400 mL	40.0 ng	0.618
4	1.000 mL	100.0 ng	1.494
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			

Comments:

A-6000-882 (03/92)



SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED THE ANALYSIS RUN ON PAGES 95 TO 96.


0.719 .500 ml LMCS Std 125B38B 95.20% Recovery
Flush
VOID Sample concentration too high
Flush
Flush
VOID
VOID Sample concentration too high
0.907 0.025ml 791-10A R330
0.885 .025 ml 791-9A R329
0.937 .025 ml 791-8A R328
1.551 .025 ml 791-7A R327
1.278 R326 .025 ml 791-6A + .250 ml Spike LMCS Std 125B38B
0.884 0.025 ml 791-6A Duplicate R326
0.982 0.025 ml 791-6A R326
0.009 10.0 ml Reagent Blank R325
0.821 .500 ml LMCS Std 125B38B R324
0.753 .500 ml LMCS Std 125B38B R323
Flush
PERKIN-ELMER
Chart No. CP33402-0
PERKIN-ELMER

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R318	Customer ID: 791-1A
Analysis: CYANIDE	Sample Prep: UNDIGESTED

Instrument: MILTON ROY SPEC 301 - AL10724	Procedure/Rev: LA-695-102/A-4
Technologist: E. COLVIN	Date: 09-26-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: D. BISENIUS

	Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5578
2	REAGENT BLANK	R317-5678
3	SAMPLE 791-1A	R318-5778
4	SAM DUP 791-1A	R318-5878
5	SPIKE OF 791-1A	R318-5978
6	FINAL LMCS CHECK STD	R323-5578
7		
8		
9		
10		

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

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS CHECK STD	75C11-5/0.1 mL			N/A
SPIKE	75C11-5/0.1 mL			N/A

A-6000-881 (03/92)

CYANIDE ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5578	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
CN	LA-695-102	% RECOVERY	W1TE2	0

Sample Size: ? .100-10ml - .500ml
Customer ID: STD

Remarks, Calculations, Results:
8284 KCN
STD# 75C11S , RESULT
STD VAL 890E² %REC 102.5%
9/27/91

$\frac{(.748-.011)(.006547)}{.160252} / .500 \times 100 = 9.12E2$

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
80028				
Ed Cohn				
Date: 9-26-91	Time Completed	Lab Unit Mgr		

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5678	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
CN	LA-695-102	PPM	W1TE2	0

Sample Size: ?
Customer ID: REG BL

Remarks, Calculations, Results:
REAGENT BLANK
ABS .011

$\frac{(.011)-.006547}{.160252}$ <5.0E-1 ppm

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
80028				
Ed Cohn				
Date: 9-26-91	Time Completed	Lab Unit Mgr		

Serial No.	Sample Point	Date	Time Issued	Priority
R 318.-5778	106AW	9-19-91	15: 7	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
CN	LA-695-102	PPM	W1TE2	0

Sample Size: ? 750uL
Customer ID: 791-1A

Remarks, Calculations, Results:
ABS .425

$\frac{(.425-.011)-.006547}{.160252} / .750 = 3.39$ ppm

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
80028				
Ed Cohn				
Date: 9-26-91	Time Completed	Lab Unit Mgr		

Serial No.	Sample Point	Date	Time Issued	Priority
R 318.-5878	106AW	9-19-91	15:10	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
CN	LA-695-102	PPM	W1TE2	0

Sample Size: ? 750uL
Customer ID: 791-1A

Remarks, Calculations, Results:
DUPLICATE SAMPLE
ABS .428

$\frac{(.428-.011)-.006547}{.160252} / .750 = 3.42$ ppm

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
80028				
Ed Cohn				
Date: 9-26-91	Time Completed	Lab Unit Mgr		

Serial No.	Sample Point	Date	Time Issued	Priority
R 318.-5978	106AW	9-19-91	15:11	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
CN	LA-695-102	% RECOVERY	W1TE2	0

Sample Size: ? 750uL
Customer ID: 791-1A

Remarks, Calculations, Results:
SAMPLE SPIKED ID
SPIKE ID 75C11-S
SPIKE VOLUME
100uL-10mL-500uL
ABS 1.150

101.8%

(mm)

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
80028				
Ed Cohn				
Date: 9-26-91	Time Completed	Lab Unit Mgr		

R 318-5978

$\frac{(1.150-.011)-.006547}{.160252} =$

$\frac{(.425-.011)-.006547}{.160252} =$

$\frac{890}{100} = 8.9$

$\frac{(7.07-2.54)}{8.90} / .5 \times 100 = \frac{9.06}{8.90} = 101.8\%$

CYANIDE ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5578	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Range
CN	LA-695-102	% RECOVERY	W11E2	0

Sample Size	Container ID
? 100ul-10ml-500ul	STD

Remarks, Calculations, Results

S244 KCN ABS .740
STD# 75C115 RESULT
STD VAL 8.90E² %REC 101.3%

$$\frac{(.740-.011)-.006547}{.160252} \times 100 = 9.02E2$$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
70027				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Use Only	
9-26-91			

TODAYS DATE: 09-26-1991

PAYROLL NO.: 80028

Y-INTERCEPT= .006547
SLOPE= .160252

SAMPLE ID#: R-317 BLANK
SAMPLE SIZE: 0
WVL AND ABS= 580NM 0.011 A

SAMPLE ID#: R-316 75C11-S STD
SAMPLE SIZE: 100UL-10ML-500UL
WVL AND ABS= 580NM 0.748 A

SAMPLE ID#: R-318
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.424 A

SAMPLE ID#: R-318 DUPLICATE
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.428 A

SAMPLE ID#: R-318 + SPIKE
SAMPLE SIZE: 750UL + 100UL-10ML-500UL 75C11-S SPIKE
WVL AND ABS= 580NM 1.150 A

SAMPLE ID#: R-319
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.317 A

SAMPLE ID#: R-320
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.310 A

SAMPLE ID#: R-321
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.317 A

SAMPLE ID#: R-322
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.327 A

SAMPLE ID#: R-323 75C11-S STD
SAMPLE SIZE: 100UL-10ML-500UL
WVL AND ABS= 580NM 0.740 A

CALIBRATION CURVE LACHAT NON-DISTILLED 25ML

CYANIDE DATE: 8-28-1991

CALIBRATION STANDARD # 351-M, 1006 MG/ML CYANIDE

DILUTION FACTOR = 10/.1 = 100, WORKING STANDARD = 1006 /100 = 10.060

PIPET SIZE	MICROGRAMS CYANIDE	TOTAL ABS	NET ABS
BLANK	0	.006	0
50UL	.503	.0930	.0870
500UL	5.030	.8320	.8260
1000UL	10.060	1.6180	1.6120

Y INTERCEPT = .006547
SLOPE = .160252
C C = .999921

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R318	Customer ID: 791-1A
Analysis: DIFFERENTIAL THERMAL	Sample Prep: UNDIGESTED

Instrument: WC16134,WC16129	Procedure/Rev: LA-514-113/A-0
Technologist: M. MYERS	Date: 10-09-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: D. HERT

	Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5511
2	REAGENT BLANK	R317-5611
3	SAMPLE 791-1A	R318-5711
4	SAM DUP 791-1A	R318-5811
5	FINAL LMCS CHECK STD	R323-5511
6		
7		
8		
9		
10		

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

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS CHECK STD	27C11AY/0.02 mL			N/A

A-6000-881 (03/92)

DIFFERENTIAL THERMAL ANALYSIS - UNDIGESTED SAMPLE

Event No.	Sample Point	Date	Time Issued	Priority
R 316. -5511	100AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Reagent
DSC	LA-514-113	EXOTHERMS .	WITE2	0

Sample Size: ? .020mL
Customer ID: STD 27C11AY

Results, Calculations, Results:
1.00=100%

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
Melanie Hayes			Wyma Smith	
Hrs	Hrs	Hrs	Hrs	Hrs
6C823				
Date	Time Completed	Lab Unit Mgr		
10-9-91		DM Thornton	Wyma Smith	

Event No.	Sample Point	Date	Time Issued	Priority
R 317. -5411	104AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Reagent
DSC	LA-514-113	EXOTHERMS .	WITE2	C

Sample Size: ? .010mL
Customer ID: REG BL

Results, Calculations, Results:
REAGENT BLANK

No exotherm

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
Melanie Hayes				
Hrs	Hrs	Hrs	Hrs	Hrs
6C823				
Date	Time Completed	Lab Unit Mgr		
10-9-91		DM Thornton	Wyma Smith	

Event No.	Sample Point	Date	Time Issued	Priority
R 318. -5211	106AW	9-19-91	15: 4	25

Determination	Method/Standard	Result Units	Charge Code	Reagent
DSC	LA-514-113	EXOTHERMS .	WITE2	0

Sample Size: ? .010mL
Customer ID: 791-1A

Results, Calculations, Results:
No exotherm

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
Melanie Hayes				
Hrs	Hrs	Hrs	Hrs	Hrs
6C823				
Date	Time Completed	Lab Unit Mgr		
10-9-91		DM Thornton	Wyma Smith	

Event No.	Sample Point	Date	Time Issued	Priority
R 318. -5611	106AW	9-19-91	15: 9	25

Determination	Method/Standard	Result Units	Charge Code	Reagent
DSC	LA-514-113	EXOTHERMS .	WITE2	0

Sample Size: ? .010mL
Customer ID: 791-1A

Results, Calculations, Results:
DUPLICATE SAMPLE

No exotherm

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
Melanie Hayes				
Hrs	Hrs	Hrs	Hrs	Hrs
6C823				
Date	Time Completed	Lab Unit Mgr		
10-9-91		DM Thornton	Wyma Smith	

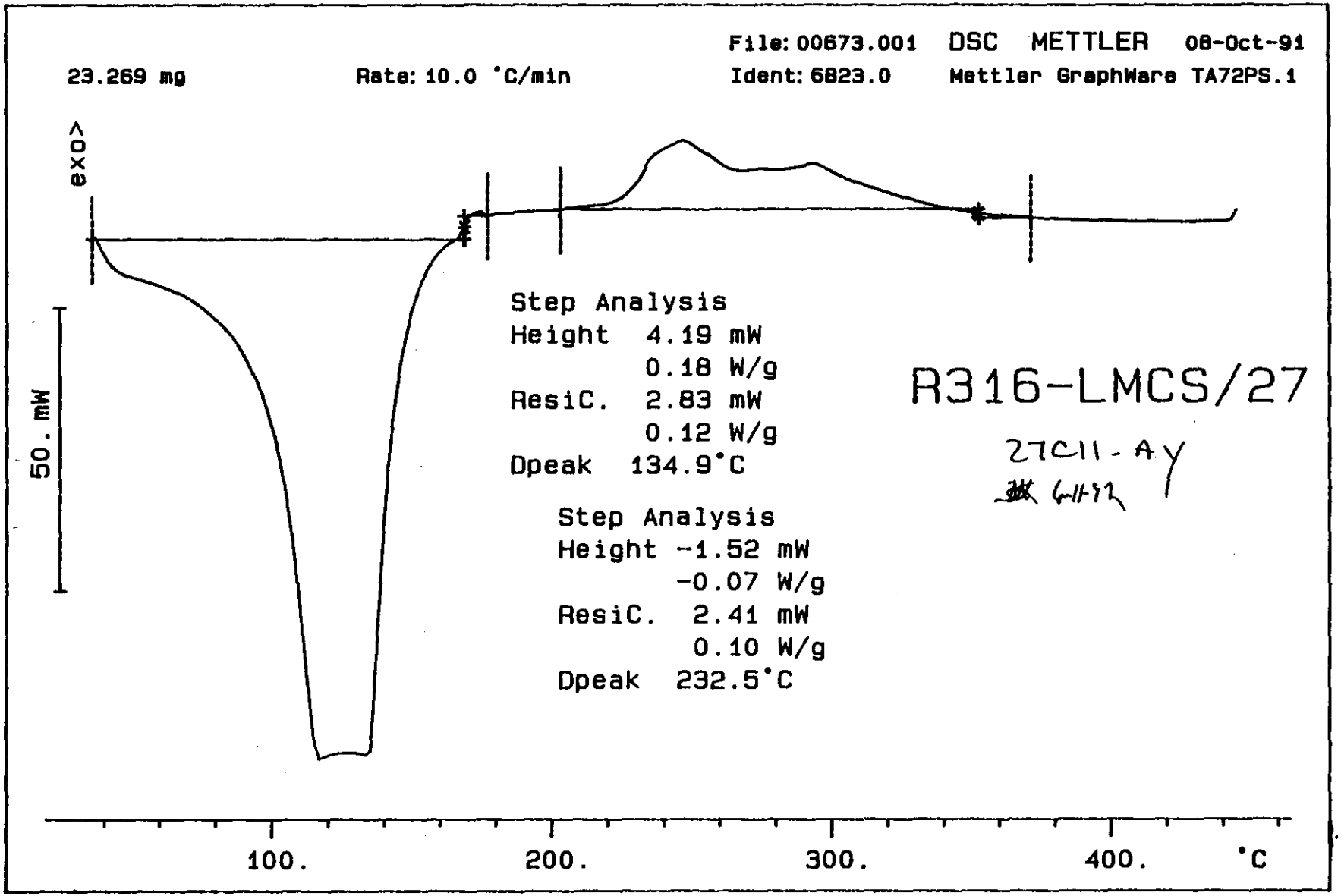
Event No.	Sample Point	Date	Time Issued	Priority
R 323. -5511	104AW	9-19-91	15:43	25

Determination	Method/Standard	Result Units	Charge Code	Reagent
DSC	LA-514-113	EXOTHERMS .	WITE2	0

Sample Size: ? .020mL
Customer ID: STD 27411AY

Results, Calculations, Results:
1.00 = 100%

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
Melanie Hayes				
Hrs	Hrs	Hrs	Hrs	Hrs
6C823			Wyma Smith	
Date	Time Completed	Lab Unit Mgr		
10-9-91		DM Thornton	Wyma Smith	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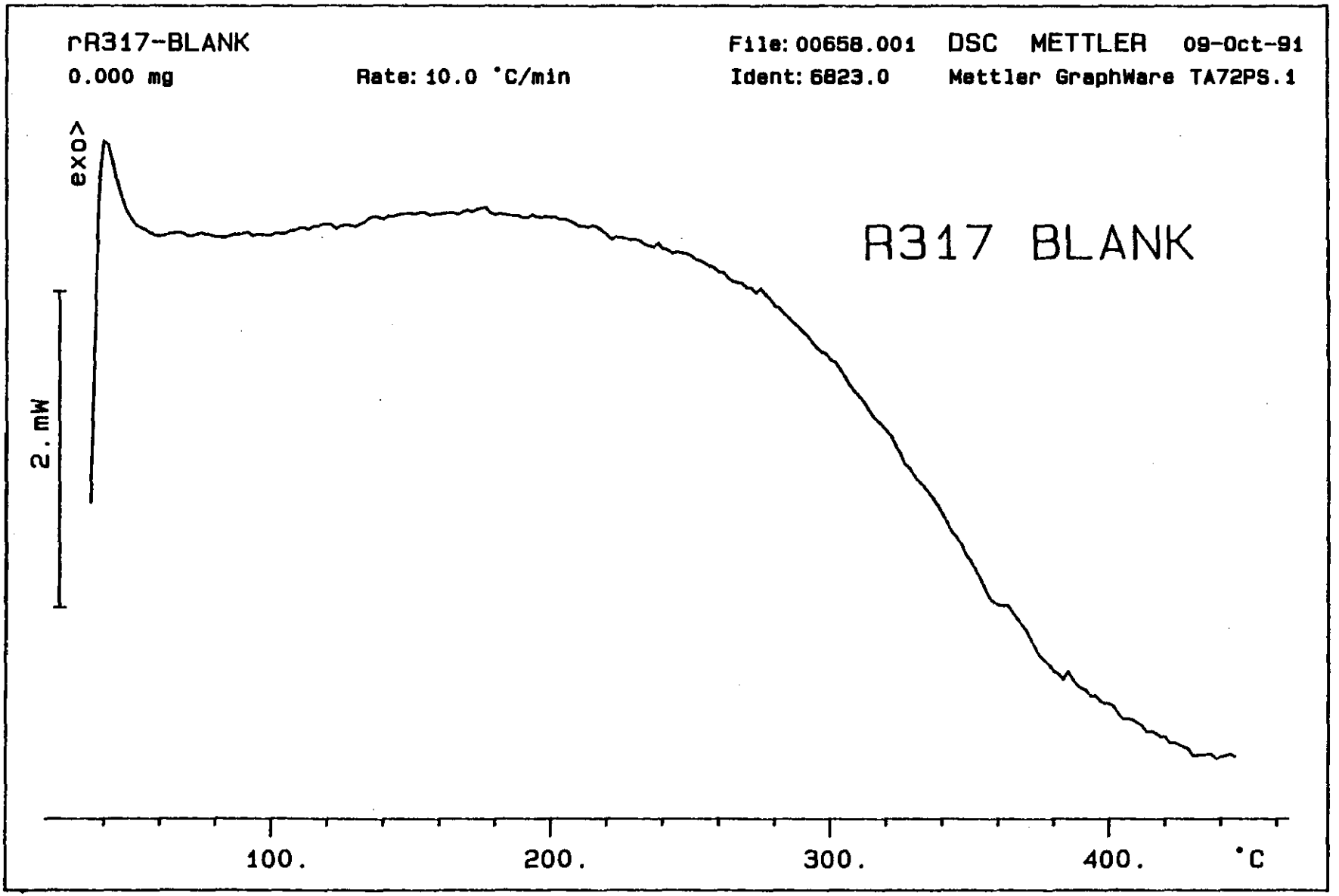
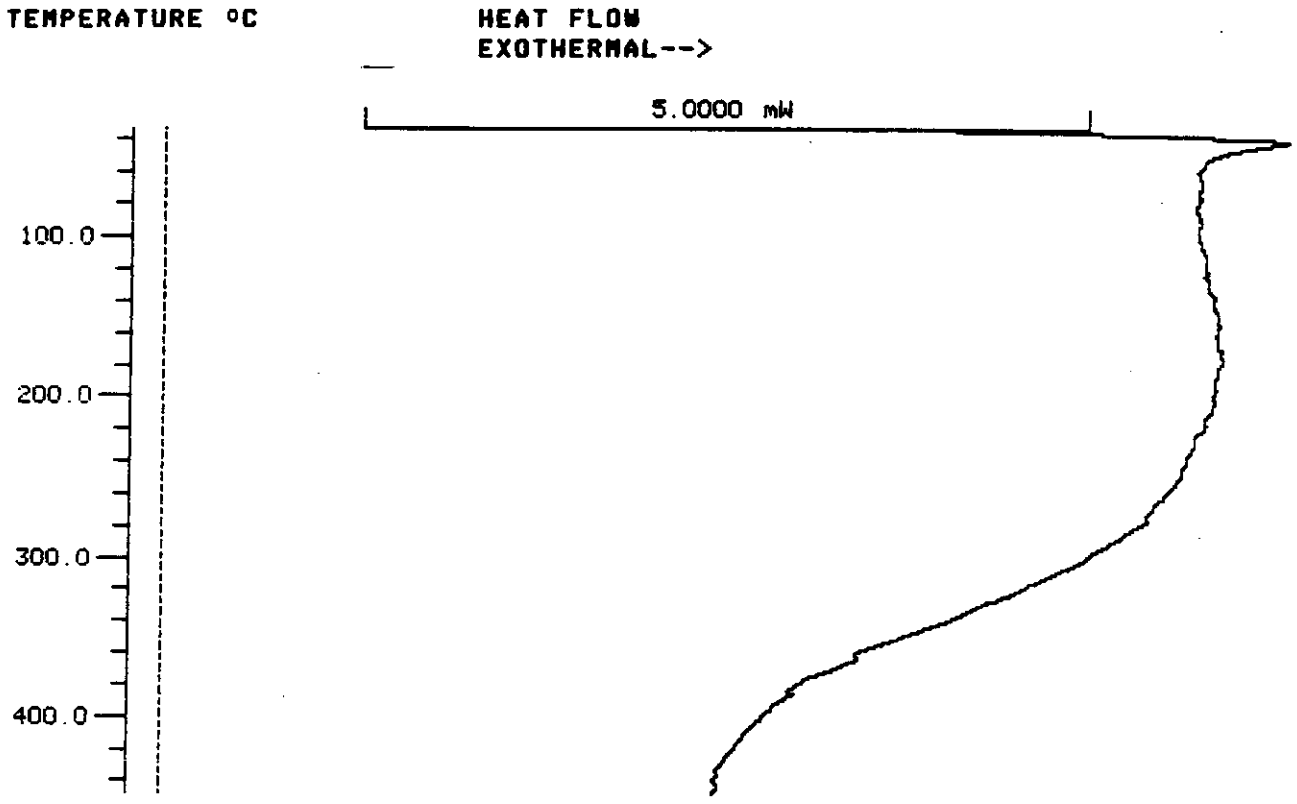
23.269 mg
Rate: 10.0 °C/min
Ident: 6823.0
Mettler GraphWare TA72PS.1
<exo
50. mW
Step Analysis
Height 4.19 mW
0.18 W/g
ResiC. 2.83 mW
0.12 W/g
Dpeak 134.9°C
Step Analysis
Height -1.52 mW
-0.07 W/g
ResiC. 2.41 mW
0.10 W/g
Dpeak 232.5°C
R316-LMCS/27
27C11-AY
100.
200.
300.
400.
°C


rR317-BLANK
0.000 mg
Rate: 10.0 °C/min
File: 00658.001
Ident: 6823.0
DSC METTLER 09-Oct-91
Mettler GraphWare TA72PS.1
R317 BLANK
exo>
2. mW
100.
200.
300.
400.
°C

R317
6-11-92

END SCREEN °C 447.8



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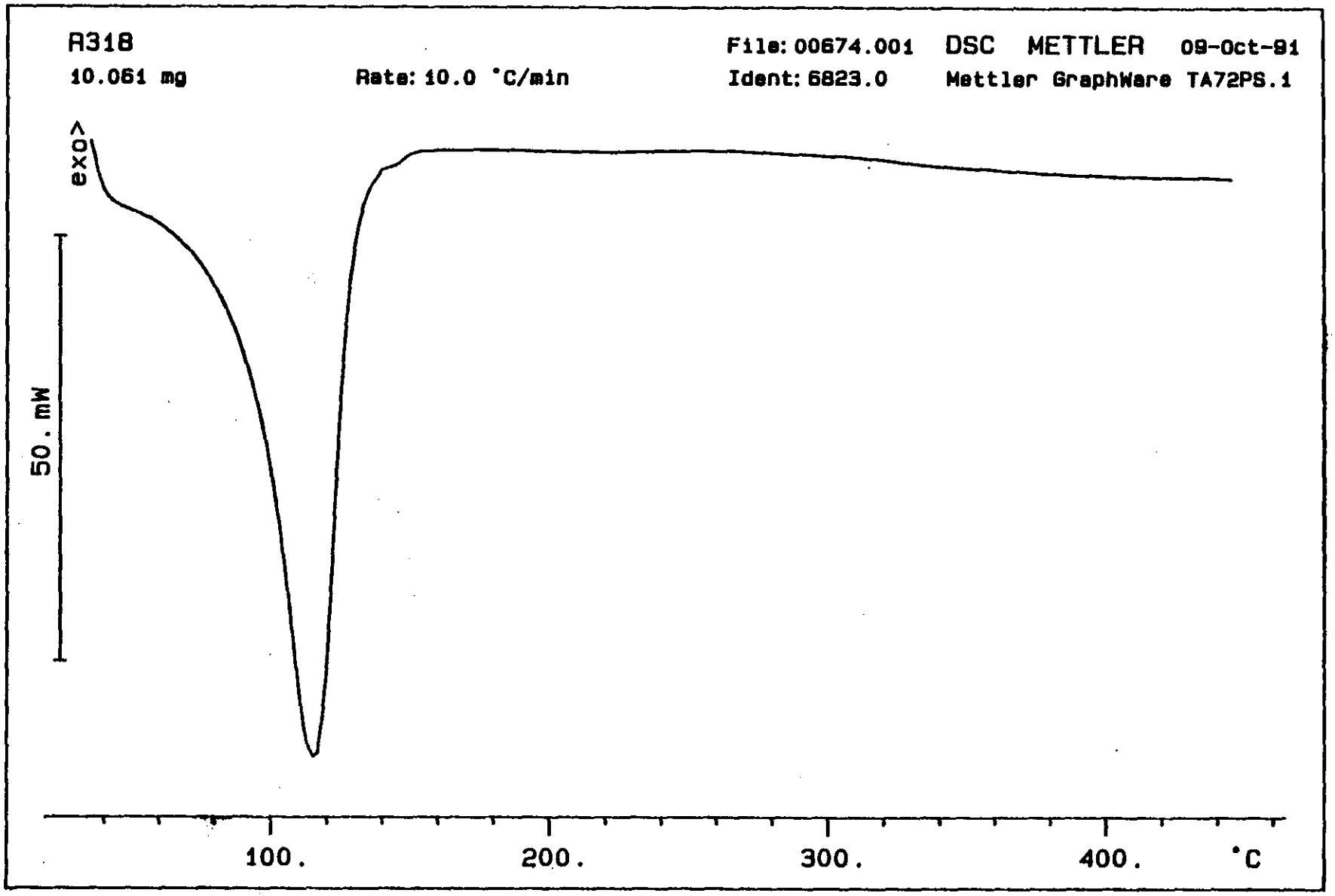
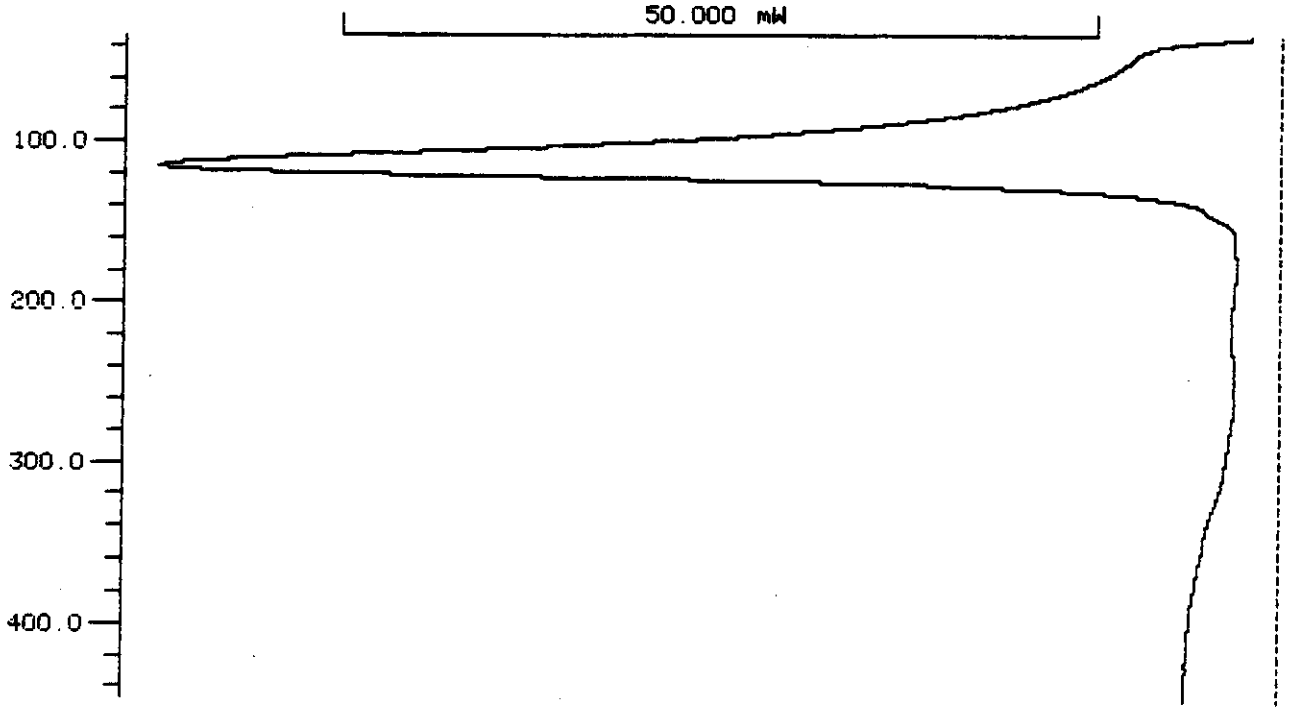

R318
10.061 mg
Rate: 10.0 °C/min
File: 00674.001
Ident: 6823.0
DSC METTLER 09-Oct-91
Mettler GraphWare TA72PS.1
exo>
50. mW
100.
200.
300.
400.
°C

END SCREEN °C 448.0

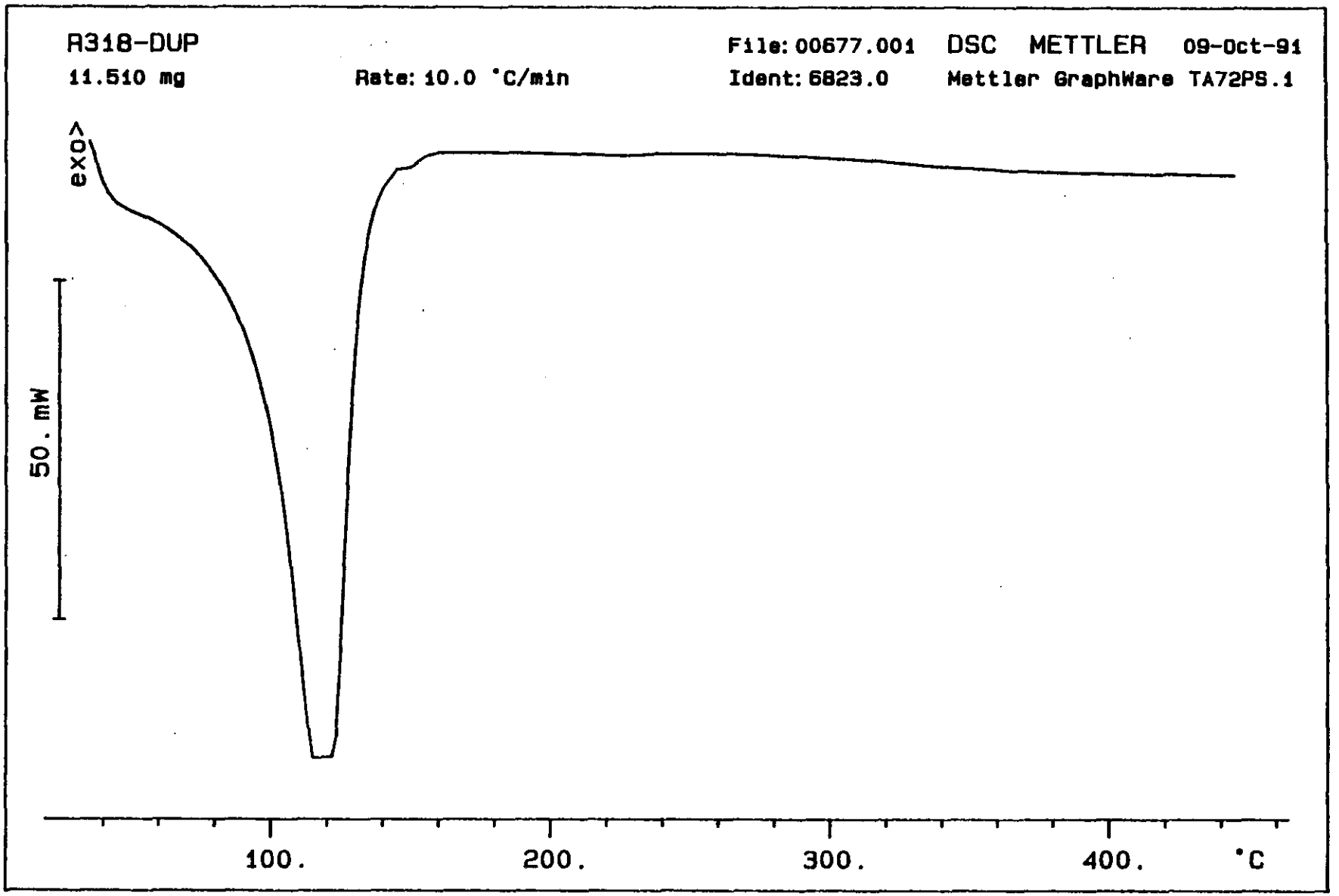
R318
6-11-92

TEMPERATURE °C

HEAT FLOW
EXOTHERMAL-->



******** METTLER TA4000 SYSTEM *********

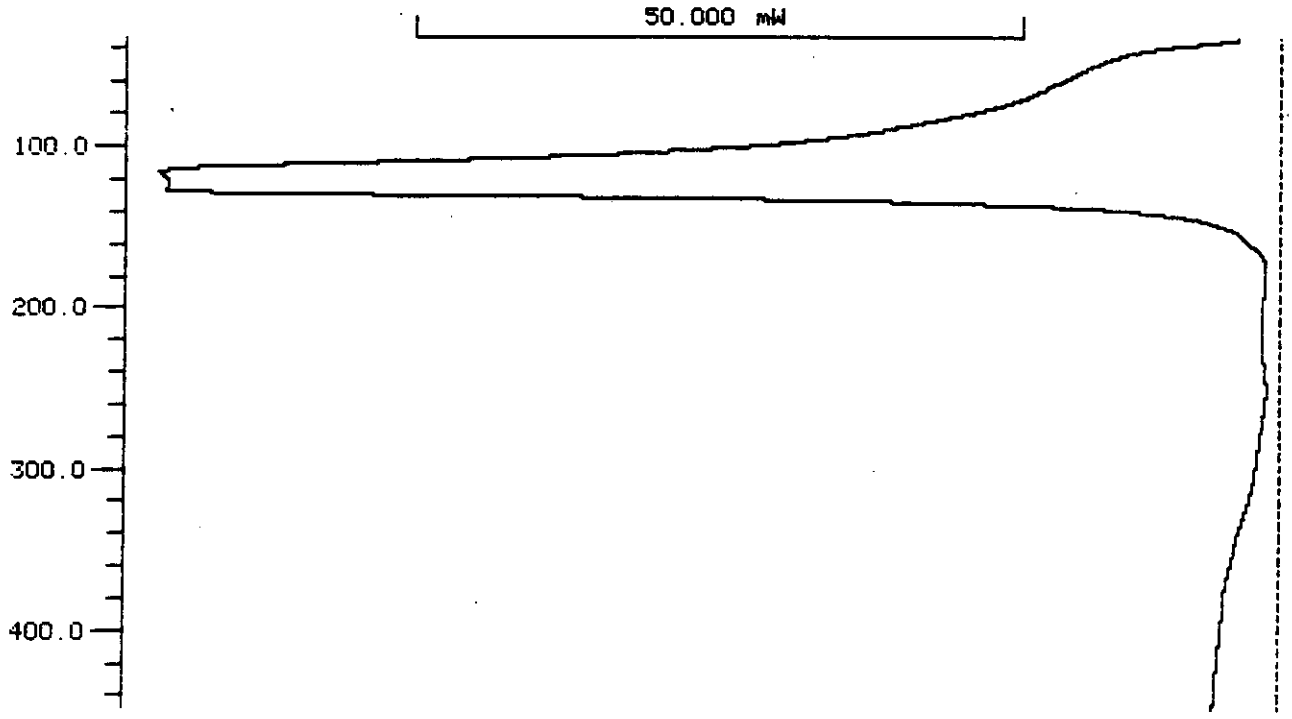

R318-DUP
11.510 mg
Rate: 10.0 °C/min
File: 00677.001
Ident: 6823.0
DSC METTLER 09-Oct-91
Mettler GraphWare TA72PS.1
exo>
50. mW
100.
200.
300.
400.
°C

END SCREEN °C 447.8

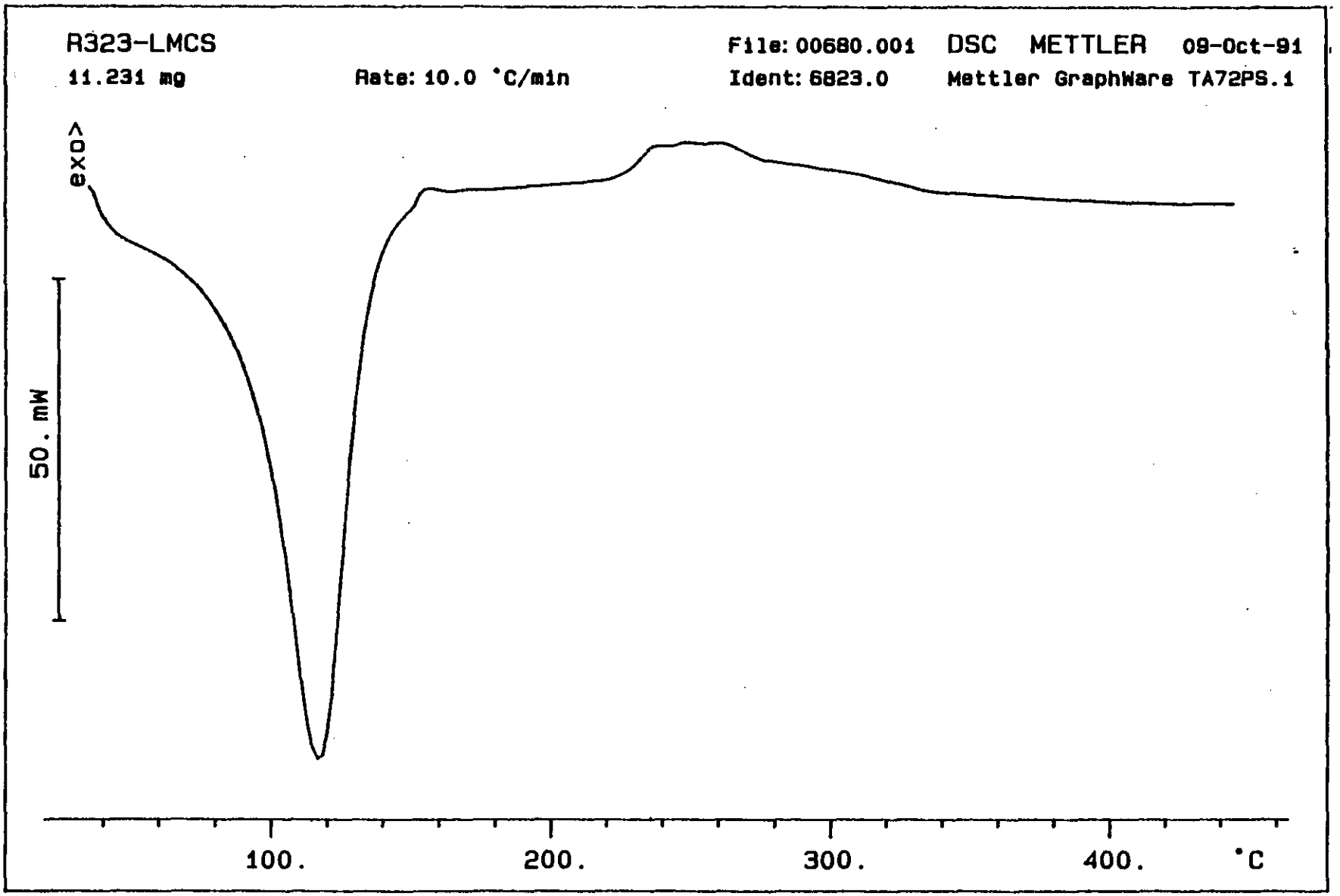
R318 DUP
6-11-92

TEMPERATURE °C

HEAT FLOW
EXOTHERMAL-->



******** METTLER TA4000 SYSTEM *********

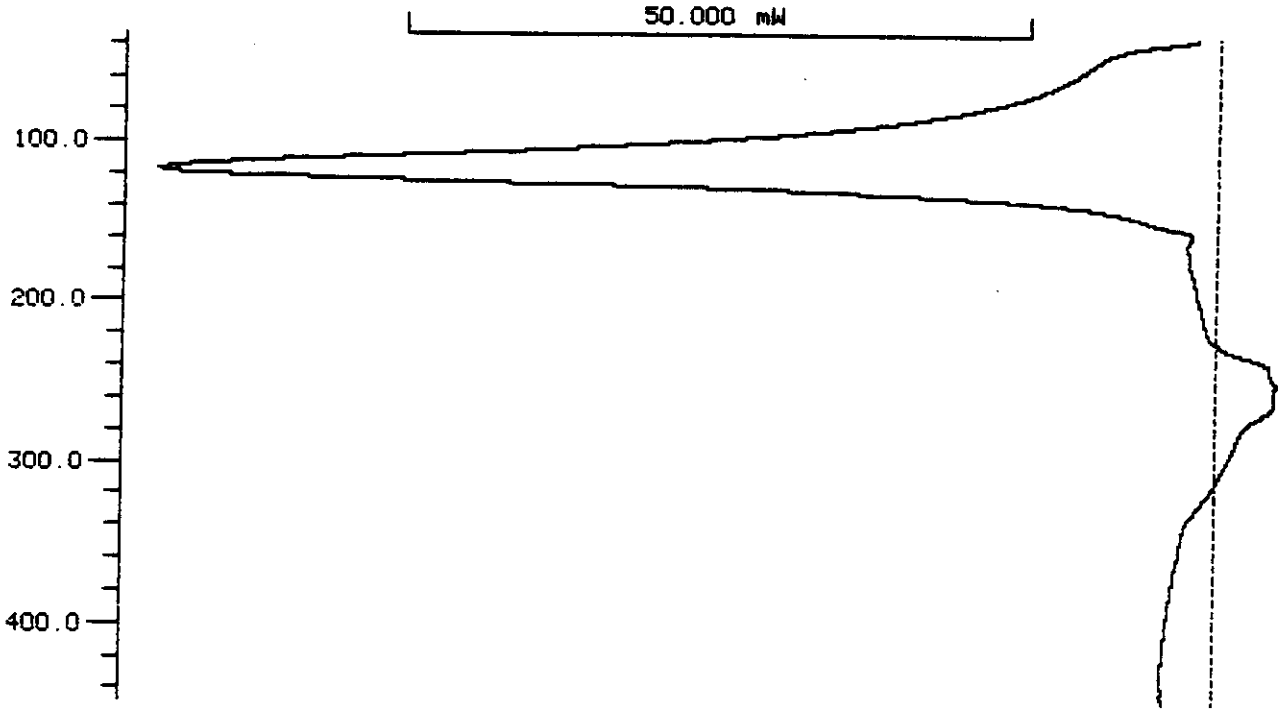

R323-LMCS
11.231 mg
Rate: 10.0 °C/min
File: 00680.001
Ident: 6823.0
DSC METTLER 09-Oct-91
Mettler GraphWare TA72PS.1
exo>
50. mW
100.
200.
300.
400.
°C

R323
6-11-92

END SCREEN °C 447.8

TEMPERATURE °C

HEAT FLOW
EXOTHERMAL-->



******** METTLER TA4000 SYSTEM *********

DSC

Configuration used from 8-8-91 to Nov 25, 1991

Denise L Hart

Heat flow calibration began July 20, 1991. Used until Nov 25, 1991

FIGURATION

26-NOV-91 8:14

E INDIUM	255
DSC SIGN ICTA	1
TAU LAG	12
TAU SIGNAL	0
E DIMIN. FACT.	.93
S	2400
TAU LAG 2	16
TAU SIGNAL 2	0
E DIMIN. F. 2	.93
S 2	1850
MAX. TEMP.	600.
MIN. TEMP.	-50.
A PT100	.21610
B PT100	.74150
C PT100	-.10116
HEAT P	3000
HEAT I	250
HEAT D	30
COOL 1	0
COOL 2	0
COOL 3	0
A1	10773
[illegible]	58.121
C1	.14689
T1	-100
A2	8940
B2	17.884
C2	-.072
T2	363
A3	9360.3
B3	-15.043
C3	.01538

******** METTLER TA4000 SYSTEM *********

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R318	Customer ID: 791-1A
Analysis: MERCURY	Sample Prep: UNDIGESTED

Instrument: PERKIN ELMER WA77479	Procedure/Rev: LA-325-102/B-0
Technologist: D. R. JACKSON	Date: 10-17-91
Starting Time: 8:00	Temperature: N/A
Ending Time: 2:00	Chemist: R. K. FULLER

	Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5597
2	REAGENT BLANK	R317-5697
3	SAMPLE 791-1A	R318-5797
4	SAM DUP 791-1A	R318-5897
5	SPIKE OF 791-1A	R318-5997
6	FINAL LMCS CHECK STD	R323-5597
7		
8		
9		
10		

	Description	Lab ID
11		
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 CHECK STD	125B38D/1.50 mL			1.500 mL
SPIKE	125B38D/1.50 mL			N/A

A-6000-881 (03/92)

MERCURY ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5597	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
Hg	LA-325-102	% RECOVERY	W1TE2	0

Sample Size: ? 1.50 ml — Customer ID: STD

Remarks, Calculations, Results:
EDP R716 HG/HYDRD
STD# 125B38D RESULT 1.05E-1
STD VAL 1.00E-1 %REC 105.0%
157.57/1500 =
10-17-91 DRJ 0.504

Analyst-1: 6C225 — Analyst-2: — Analyst-3: — Analyst-4: — Analyst-5: —
Date: 10-17-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5697	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
Hg	LA-325-102	PPM	W1TE2	0

Sample Size: ? 10.0 ml — Customer ID: REG BL

Remarks, Calculations, Results:
REAGENT BLANK
DRJ 10-17-91
0.000
<5/10,000 = <5.00E-4 ppm

Analyst-1: 6C225 — Analyst-2: — Analyst-3: — Analyst-4: — Analyst-5: —
Date: 10-17-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 318.-5797	106AW	9-19-91	15:08	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
Hg	LA-325-102	PPM	W1TE2	0

Sample Size: ? 1.0 ml — Customer ID: 791-1A

Remarks, Calculations, Results:
0.148
41.52/1000 = 4.15E-2 ppm

Analyst-1: 6C225 — Analyst-2: — Analyst-3: — Analyst-4: — Analyst-5: —
Date: 10-16-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 318.-5897	106AW	9-19-91	15:10	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
Hg	LA-325-102	PPM	W1TE2	0

Sample Size: ? 1.0 ml — Customer ID: 791-1A

Remarks, Calculations, Results:
DUPLICATE SAMPLE
DRJ 10-17-91
0.167
47.72/1000 = 4.77E-2 ppm

Analyst-1: 6C225 — Analyst-2: — Analyst-3: — Analyst-4: — Analyst-5: —
Date: 10-16-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 318.-5997	106AW	9-19-91	15:12	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
Hg	LA-325-102	% RECOVERY	W1TE2	0

Sample Size: ? 1.0 ml — Customer ID: 791-1A

Remarks, Calculations, Results:
SAMPLE SPIKED ID
SPIKE ID 125B38D DRJ
SPIKE VOLUME 1.50 ml
145.19 - 41.52 = 6.91E-2/1.00E-1 =
69.1%
0.466
FINAL MATRIX INTERFERENCE CHECK OK

Analyst-1: 6C225 — Analyst-2: — Analyst-3: — Analyst-4: — Analyst-5: —
Date: 10-16-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5597	106AW	9-19-91	15:45	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
Hg	LA-325-102	% RECOVERY	W1TE2	0

Sample Size: ? 1.50 ml — Customer ID: STD

Remarks, Calculations, Results:
EDP R716 HG/HYDRD
STD# 125B38D RESULT 1.00E-1
STD VAL 1.00E-1 %REC 100.0%
DRJ 0.483 150.73/1500 =

Analyst-1: 6C225 — Analyst-2: — Analyst-3: — Analyst-4: — Analyst-5: —
Date: 10-17-91 — Time Completed: — Lab Unit Mgr: [signature]

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY
CALIBRATION RECORD

Analyte:	Hg				
Procedure:	LA-325-102	Revision:	B-0		
Instrument:	PERKIN ELMER	Property No.:	WA77479		
Technologist:	D. R. JACKSON	Payroll No.:	6C275	Date:	10-17-91

Calibration Standard: 124B38D
Analyte Concentration: 0.1000 ppm
Type of Calibration: LINEAR

	Dilution	Concentration	Instrument Reading Unit
1	0.000 mL	0 ng	0.000
2	0.750 mL	75 ng	0.278
3	1.500 mL	150 ng	0.481
4	3.000 mL	300 ng	0.934
5			
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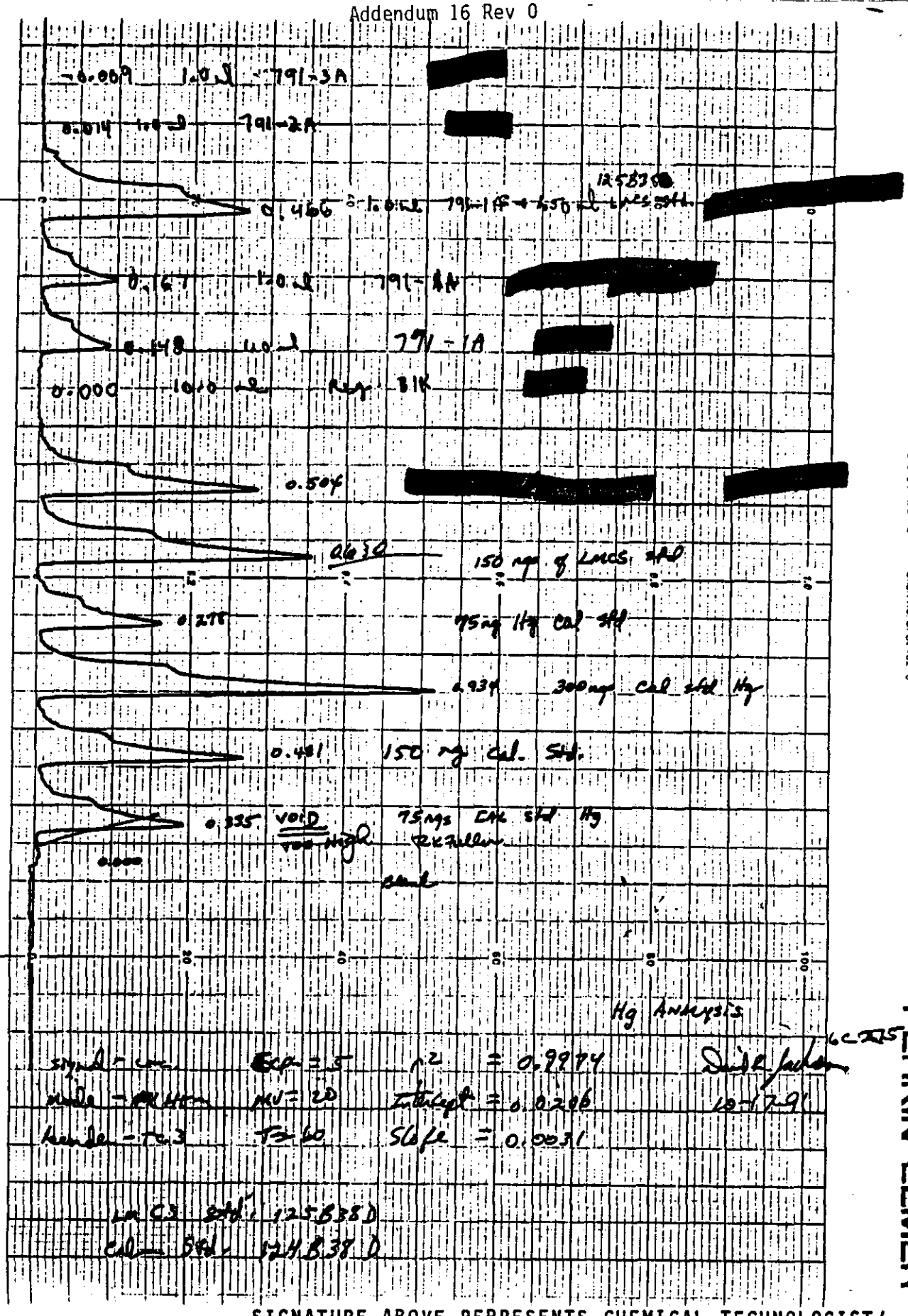
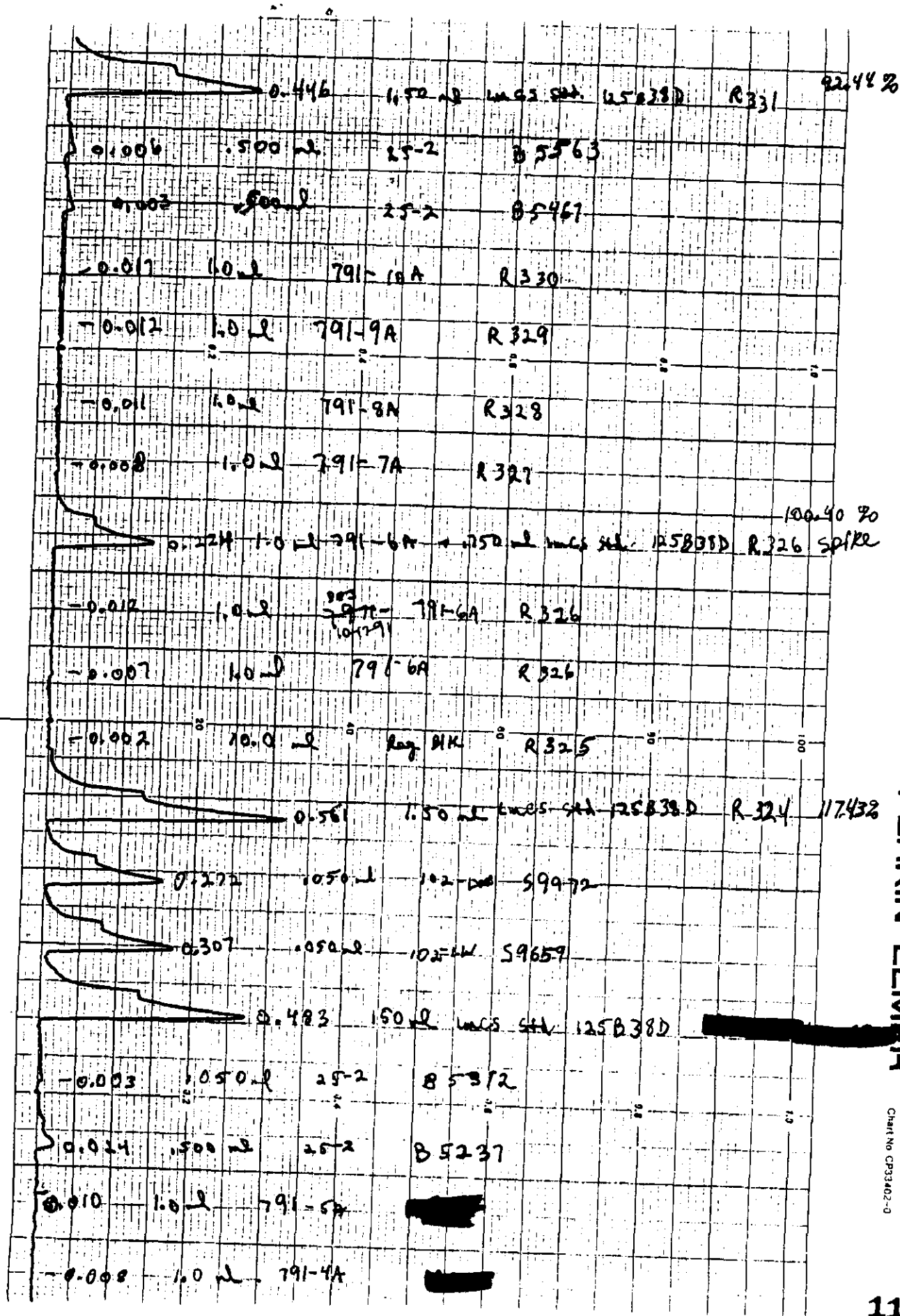
21			

Comments:

A-6000-882 (03/92)



SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/
CHEMIST THAT COMPLETED THE ANALYSIS RUN ON PAGES 117 TO 118


0.446 1.50 ml LMCS Std. 125B38D R331 92.44 %
0.006 .500 ml 25-2 B5563
0.003 .500 ml 25-2 B5467
-0.017 1.0 ml 791-10A R330
-0.012 1.0 ml 791-9A R329
-0.011 1.0 ml 791-8A R328
-0.008 1.0 ml 791-7A R327
100.40 %
0.224 1.0 ml 791-6A + .750 ml LMCS Std. 125B38D R326 Spike
-0.012 1.0 ml 791-6A R326
-0.007 1.0 ml 791-6A R326
-0.002 10.0 ml Reg Blk R325
0.561 1.50 ml LMCS Std 125B38D R324 117.43%
0.272 .050 ml 102-LW S9972
0.307 .050 ml 102-LW S9659
0.483 150 ml LMCS Std 125B38D [redacted]
-0.003 .050 ml 25-2 B5312
0.024 .500 ml 25-2 B5237
0.010 1.0 ml 791-5A [redacted]
-0.008 1.0 ml 791-4A [redacted]
PERKIN-ELMER
Chart No. CP33402-0
PERKIN-ELMER
Chart No. CP33402-0

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R318	Customer ID: 791-1A
Analysis: AMMONIA	Sample Prep: UNDIGESTED

Instrument: AL10665,AL10696	Procedure/Rev: LA-634-102/D-0
Technologist: S. LAI	Date: 09-26-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: D. BISENIUS

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5528	11		
2	REAGENT BLANK	R317-5628	12		
3	SAMPLE 791-1A	R318-5728	13		
4	SAM DUP 791-1A	R318-5828	14		
5	SPIKE OF 791-1A	R318-5928	15		
6	FINAL LMCS CHECK STD	R323-5528	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 CHECK STD	4C11-QP/.250 mL			N/A
SPIKE	4C11-QP/.250 mL			N/A

A-6000-881 (03/92)

AMMONIA ANALYSIS - UNDIGESTED SAMPLE

Sample No.	Sample Point	Date	Time Issued	Priority
R 316.-5528	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Reps
NH4	LA-434-102	% RECOVERY	W1TE2	0

Sample Size: ? 250 λ — 0.09941 M HCl — Customer ID: STD

Remarks, Calculations, Results:
5235 NH4CL
STDN 4c11-8P RESULT 4.77E-2 Blank: 28 λ
STD VAL 5.00E-2 %REC 95.470
(148-28)(.09941)/250 = STD: 148 λ

Analyst-1: [illegible] Analyst-2: Analyst-3: Analyst-4: Analyst-5:
Reg: 16916
Date: 9-26-91 Time Completed: Time Verified:
DK 4-15-92

Sample No.	Sample Point	Date	Time Issued	Priority
R 317.-5628	106AW	9-19-91	13:45	25

Determination	Method/Standard	Result Units	Charge Code	Reps
NH4	LA-434-102	PPM	W1TE2	0

Sample Size: ? 1 ml — 0.09941 M HCl — Customer ID: REG W.

Remarks, Calculations, Results:
REAGENT BLANK
(<10)(.09941)/1000 = Blank: 28 λ
<9.94E-4 M Blank: 28 λ

Analyst-1: [illegible] Analyst-2: Analyst-3: Analyst-4: Analyst-5:
Reg: 16916
Date: 9-26-91 Time Completed: Time Verified:
DK 4-15-92

Sample No.	Sample Point	Date	Time Issued	Priority
R 318.-5728	106AW	9-19-91	13: 4	25

Determination	Method/Standard	Result Units	Charge Code	Reps
NH4	LA-434-102	PPM	W1TE2	0

Sample Size: ? 1 ml — 0.09941 M HCl — Customer ID: 791-1A

Remarks, Calculations, Results:
(61-28)(.09941)/1000 = Blank: 28 λ
3.28E-3 M Sample: 61 λ

Analyst-1: [illegible] Analyst-2: Analyst-3: Analyst-4: Analyst-5:
Reg: 16916
Date: 9-26-91 Time Completed: Time Verified:
DK 4-24-91

Sample No.	Sample Point	Date	Time Issued	Priority
R 318.-5828	106AW	9-19-91	13: 9	25

Determination	Method/Standard	Result Units	Charge Code	Reps
NH4	LA-434-102	PPM	W1TE2	0

Sample Size: ? 1 ml — Customer ID: 791-1A

Remarks, Calculations, Results:
DUPLICATE SAMPLE
(62-28)(.09941)/1000 = Blank: 28 λ
2.38E-3 M Sample: 62 λ

Analyst-1: [illegible] Analyst-2: Analyst-3: Analyst-4: Analyst-5:
Reg: 16916
Date: 9-26-91 Time Completed: Time Verified:

Sample No.	Sample Point	Date	Time Issued	Priority
R 319.-5928	106AW	9-19-91	13:10	25

Determination	Method/Standard	Result Units	Charge Code	Reps
NH4	LA-434-102	% RECOVERY	W1TE2	0

Sample Size: ? 1 ml — 0.09941 M HCl — Customer ID: 791-1A

Remarks, Calculations, Results:
SAMPLE SPIKED ID
SPIKE ID 4c11-8P (250 λ)
SPIKE VOLUME
Blank: 28 λ
(172-28)(.09941)/1000 = Sample: 172 λ
1.43E-2 M (1.43E-2 M)(3.38E-2) / (5.06E-2 M)(.250) = 114%

Analyst-1: [illegible] Analyst-2: Analyst-3: Analyst-4: Analyst-5:
Reg: 16916
Date: 9-26-91 Time Completed: Time Verified:

Sample No.	Sample Point	Date	Time Issued	Priority
R 323.-5528	106AW	9-19-91	13:43	25

Determination	Method/Standard	Result Units	Charge Code	Reps
NH4	LA-434-102	% RECOVERY	W1TE2	0

Sample Size: ? 250 λ — 0.09941 M HCl — Customer ID: STD

Remarks, Calculations, Results:
5235 NH4CL
STDN 4c11-8P RESULT 4.85E-2 Blank: 28 λ
STD VAL 5.00E-2 %REC 97.090
(150-28)(.09941)/250 = STD: 150 λ

Analyst-1: [illegible] Analyst-2: Analyst-3: Analyst-4: Analyst-5:
Reg: 16916
Date: 9-26-91 Time Completed: Time Verified:

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R318	Customer ID: 791-1A
Analysis: DETERMINATION OF HYDROXIDE ION IN SOLUTION	Sample Prep: UNDIGESTED

Instrument: FISHER - WA77509	Procedure/Rev: LA-661-102/F-1
Technologist: M. BIERMAN	Date: 09-25-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: S. ISAACSON

	Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5529
2	REAGENT BLANK	R317-5629
3	SAMPLE 791-1A	R318-5729
4	SAM DUP 791-1A	R318-5829
5	FINAL LMCS CHECK STD	R323-5529
6		
7		
8		
9		
10		

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

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS CHECK STD	9C11AF/0.1 mL			0.100 mL

A-6000-881 (03/92)

DETERMINATION OF HYDROXIDE ION IN SOLUTION - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5529	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Reason
OH	LA-661-102	% RECOVERY	WITE2	0

Sample Size: ? 100 ml — Customer ID: STD

Remarks, Calculations, Results:
S273 ITS-OH
STDN 9611AF RESULT 9.96E-1
STD VAL 1.0136 %REC 98.5%
1 ml BaCl
.1905 ⊃ HNO3 (531-8)(.1905)/100

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
6559				
MB				

Date: 9/25/91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5629	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Reason
OH	LA-661-102	M	WITE2	0

Sample Size: ? 3 ml Q-H2O — Customer ID: REG BL

Remarks, Calculations, Results:
REAGENT BLANK
.1905 ⊃ HNO3 complete

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
6559				
MB				

Date: 9/25/91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 318.-5729	106AW	9-19-91	15: 4	25

Determination	Method/Standard	Result Units	Charge Code	Reason
OH	LA-661-102	M	WITE2	0

Sample Size: ? .050 ml — Customer ID: 791-1A

Remarks, Calculations, Results:
1 ml BaCl
10 ml Q-H2O
Ins-OH (9611AF) .100 ml
.1905 ⊃ HNO3 (682-531)(.1905)/50 = 5.75E-1 ~

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
6559				
MB				

Date: 9/25/91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 318.-5829	106AW	9-19-91	15: 9	25

Determination	Method/Standard	Result Units	Charge Code	Reason
OH	LA-661-102	M	WITE2	0

Sample Size: ? .050 ml — Customer ID: 791-1A

Remarks, Calculations, Results:
DUPLICATE SAMPLE
1 ml BaCl
10 ml Q-H2O
Ins-OH (9611AF) .100 ml
.1905 ⊃ HNO3 (679-531)(.1905)/50 = 5.64E-1 ~

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
6559				
MB				

Date: 9/25/91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5529	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Reason
OH	LA-661-102	% RECOVERY	WITE2	0

Sample Size: ? .100 ml — Customer ID: STD

Remarks, Calculations, Results:
S273 ITS-OH
STDN 9611AF RESULT
STD VAL 1.013 %REC 99.7%
1 ml BaCl
.1905 ⊃ HNO3 (537-8)(.1905)/100 = 1.01 ~

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
6559				
MB				

Date: 9/25/91 — Time Completed: — Lab Unit Mgr: [signature]

DOCUMENTATION SEP 25 1991 9:54 AM

ANALYST: 6C559 LOCATION: 222-S 200 West

TITRANT: .1905 M NaOH

INDICATING ELECTRODE:

REFERENCE ELECTRODE: 98% efficiency

SAMPLE:

SETUP PARAMETERS

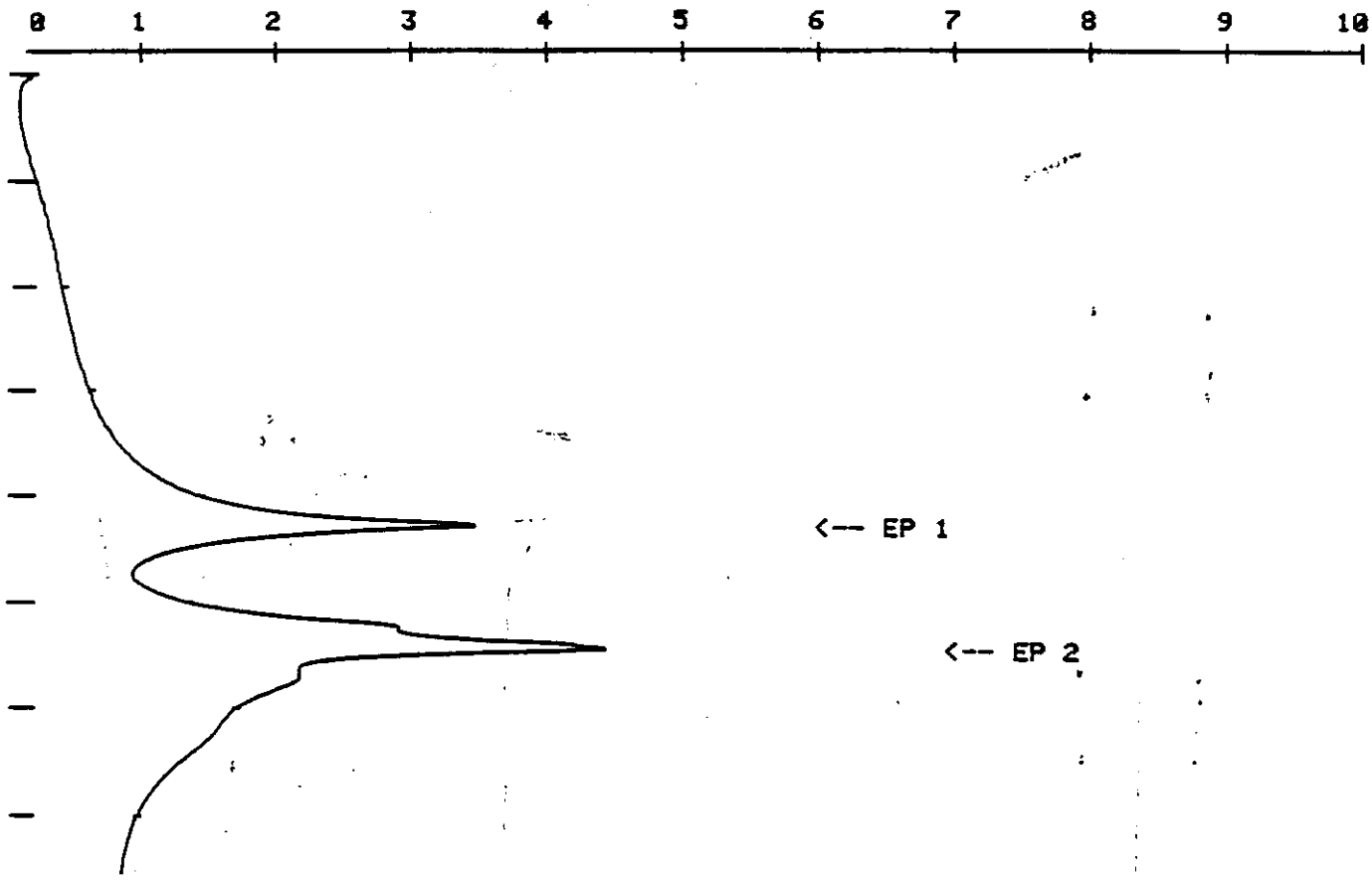
MODE:	DIRECT READ PH
ELECTRODE STDZ:	PH
EQUILIBRATION TIME, SEC:	15

MODE:	DRV TITRATION
ELECTRODE STDZ:	PH
dE/dV SIGN:	+
ML LIMIT:	2.50
PH LIMIT:	3.
TITRATION RATE:	10
SENSITIVITY:	1
DISPENSE, ML:	0.
PLOT GAIN:	5
COMPUTATION:	CONCENTRATION
TITRANT NORMALITY:	0.1900
SOLVENT BLANK:	0.
MULTIPLIER:	0.

LAST ELECTRODE STANDARDIZATION: SEP 25 1991 12:37 AM

SAMPLE NUMBER: 1
SAMPLE DATA: 316.
DIRECT READ PH: 12.035

DERIVATIVE OUTPUT, dE/dV



DRV TITRATION:

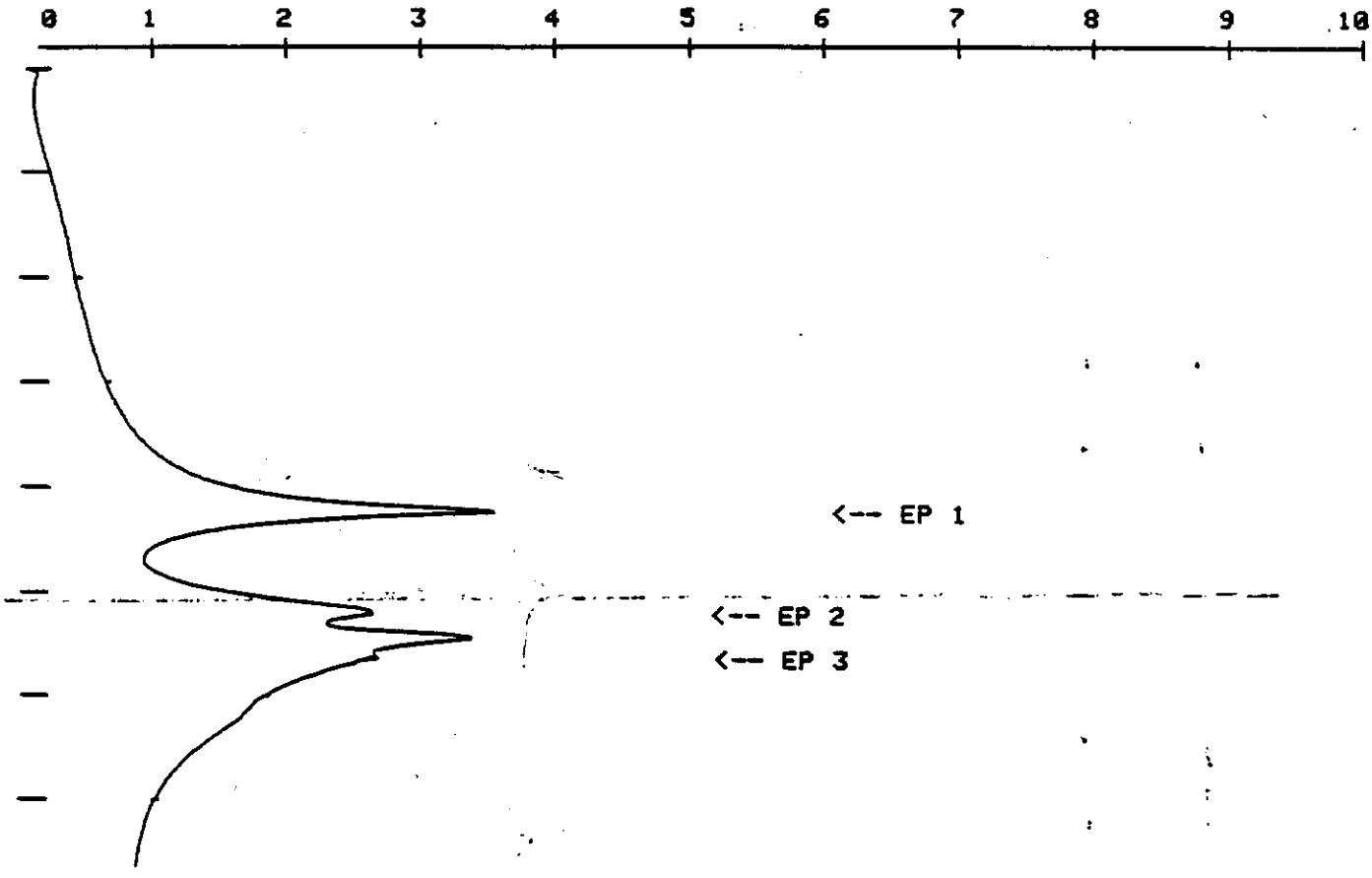
EQUIVALENCE PH	TITRANT VOLUME	COMPUTATION
9.65	0.534	0.0000
6.00	0.680	0.0000

TITRATION TERMINATED BY PH LIMIT.

SEP 25 1991 10:14 AM

SAMPLE NUMBER: 2
SAMPLE DATA: 316.
DIRECT READ PH: 12.043

DERIVATIVE OUTPUT, dE/dV



DRV TITRATION:

EQUIVALENCE PH	TITRANT VOLUME	COMPUTATION
9.63	0.528	0.0000
8.03	0.649	0.0000
5.44	0.702	0.0000

TITRATION TERMINATED BY PH LIMIT.

SEP 25 1991 10:23 AM

SAMPLE NUMBER: 1
SAMPLE DATA: 317.
DIRECT READ PH: 5.058

DERIVATIVE OUTPUT, dE/dV

0 1 2 3 4 5 6 7 8 9 10

.008

DRV TITRATION:

TITRATION TERMINATED BY PH LIMIT.

SEP 25 1991 10:25 AM

SAMPLE NUMBER: 2
SAMPLE DATA: 317.
DIRECT READ PH: 5.748

DERIVATIVE OUTPUT, dE/dV

0 1 2 3 4 5 6 7 8 9 10

DRV TITRATION: .009

TITRATION TERMINATED BY PH LIMIT.

SEP 25 1991 10:27 AM

SAMPLE NUMBER: 3
SAMPLE DATA: 317.
DIRECT READ PH: 5.237

DERIVATIVE OUTPUT, dE/dV

0 1 2 3 4 5 6 7 8 9 10

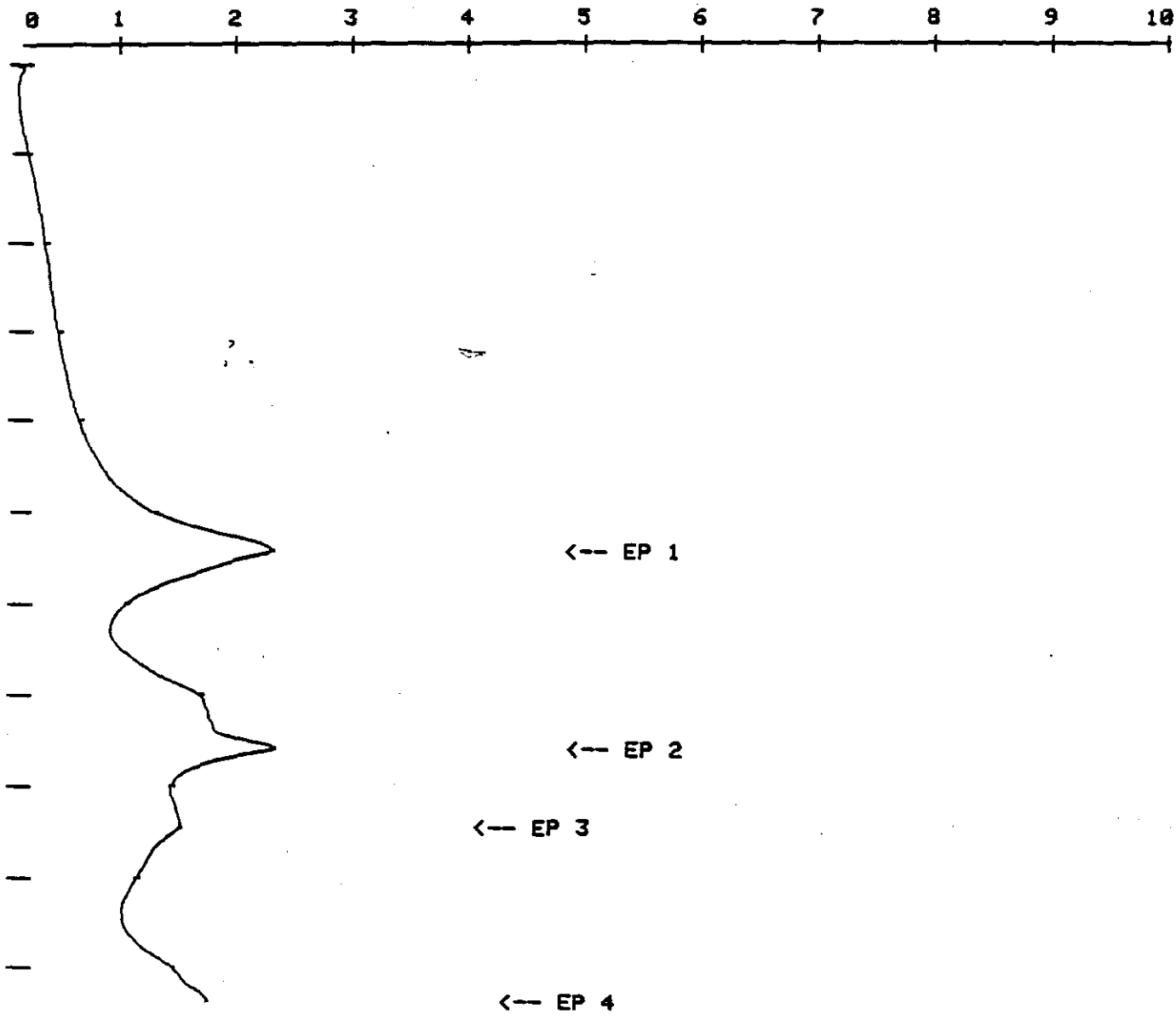
DRV TITRATION: .007

TITRATION TERMINATED BY PH LIMIT.

SEP 25 1991 10:29 AM

SAMPLE NUMBER: 2
SAMPLE DATA: 318.
DIRECT READ PH: 11.844

DERIVATIVE OUTPUT, dE/dV



DRV TITRATION:

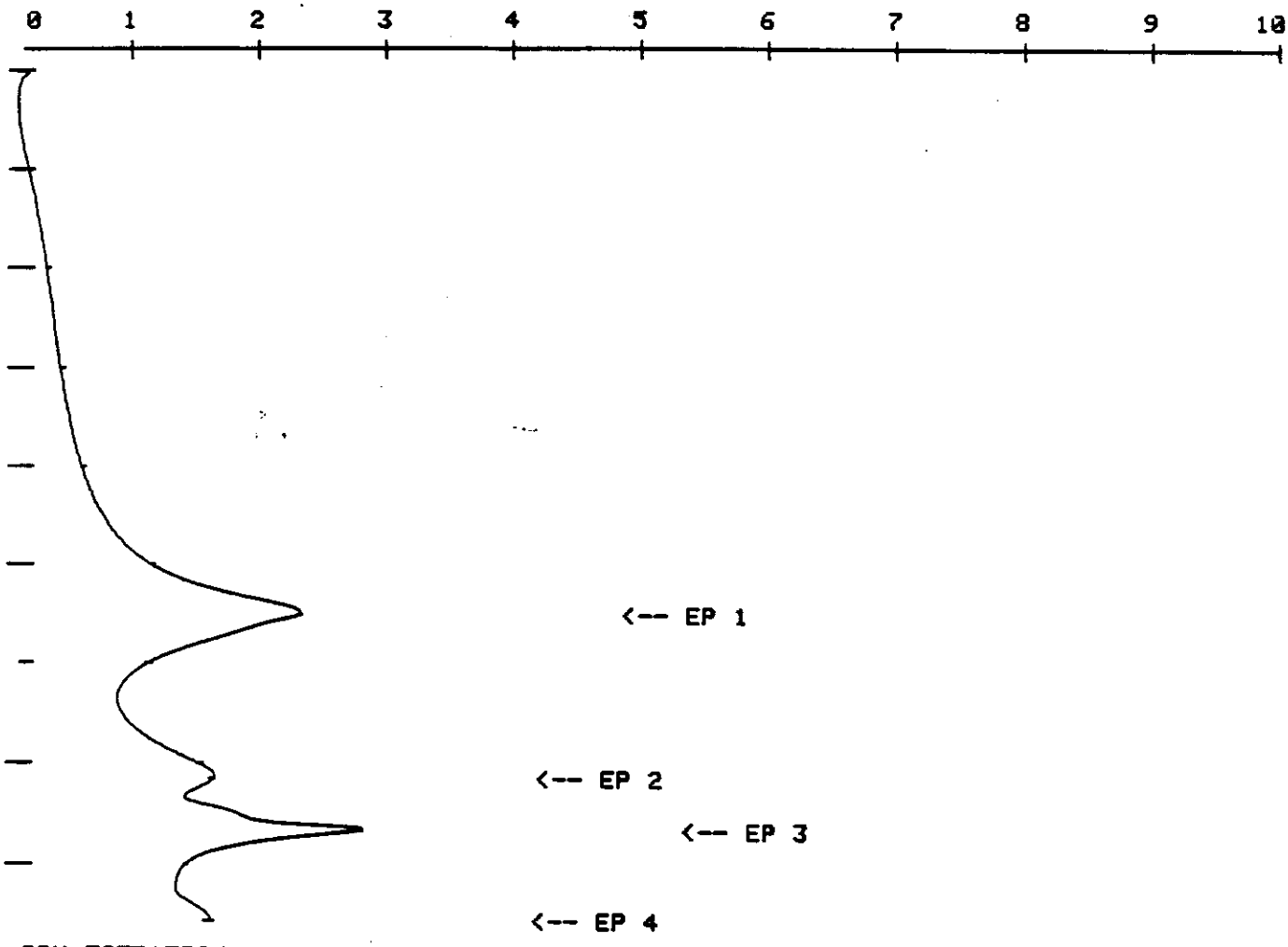
EQUIVALENCE PH	TITRANT VOLUME	COMPUTATION
9.67	0.677	0.0000
6.81	0.948	0.0000
5.62	1.054	0.0000
3.76	1.295	0.0000

TITRATION TERMINATED BY LIMIT ON NUMBER OF EQUIVALENCES PERMISSIBLE.

SEP 25 1991 1:30 PM

SAMPLE NUMBER: 1
SAMPLE DATA: 318.
DIRECT READ PH: 11.838

DERIVATIVE OUTPUT, dE/dV



DRV TITRATION:

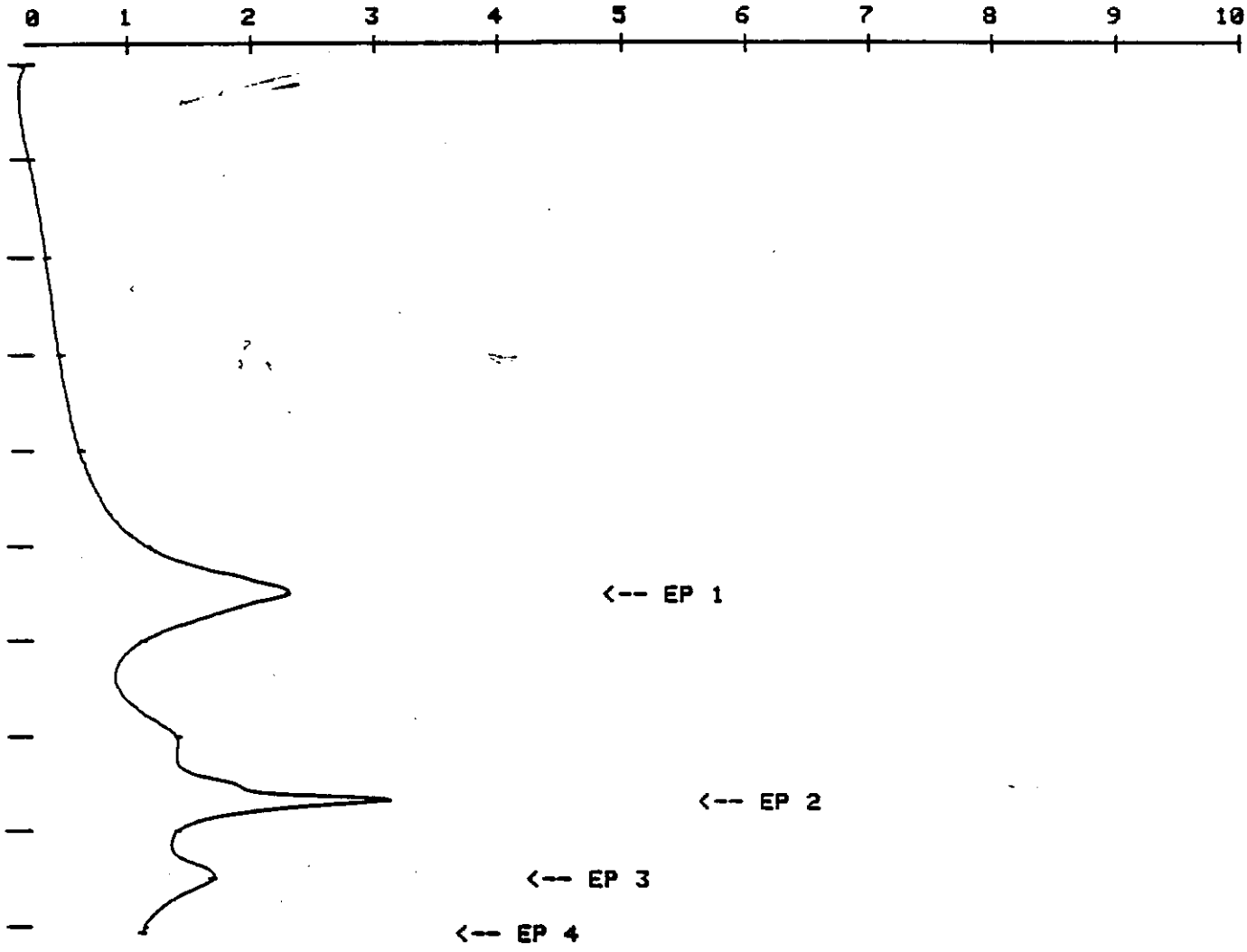
EQUIVALENCE PH	TITRANT VOLUME	COMPUTATION
9.67	0.688	0.0000
8.12	0.893	0.0000
6.84	0.957	0.0000
5.54	1.069	0.0000

TITRATION TERMINATED BY LIMIT ON NUMBER OF EQUIVALENCES PERMISSIBLE.

SEP 25 1991 1:37 PM

SAMPLE NUMBER: 1
SAMPLE DATA: 318.
DIRECT READ PH: 11.845

DERIVATIVE OUTPUT, dE/dV



DRV TITRATION:

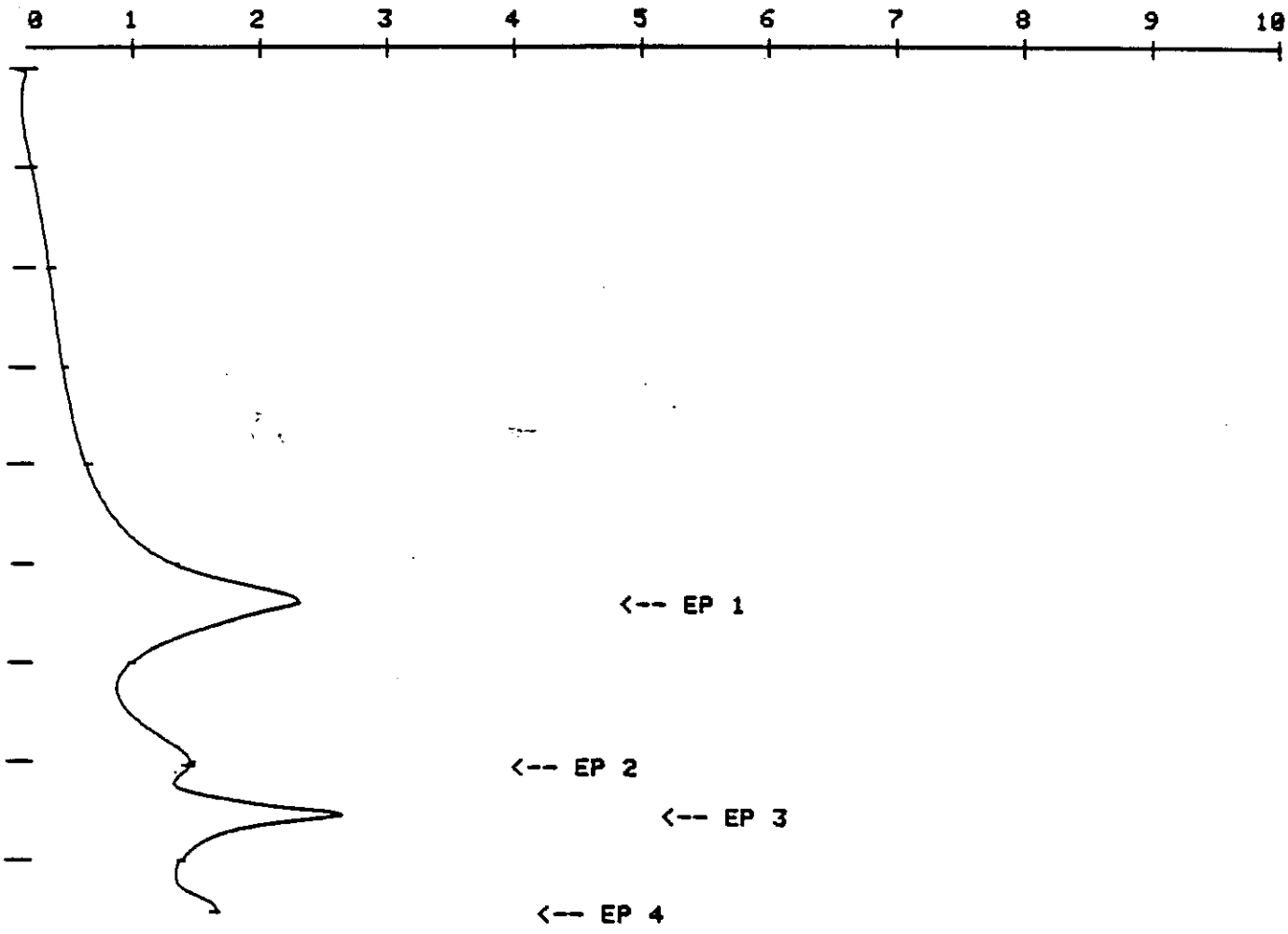
EQUIVALENCE PH	TITRANT VOLUME	COMPUTATION
9.67	0.687	0.0000
6.85	0.959	0.0000
5.59	1.060	0.0000
5.12	1.131	0.0000

TITRATION TERMINATED BY LIMIT ON NUMBER OF EQUIVALENCES PERMISSIBLE.

SEP 25 1991 1:47 PM

SAMPLE NUMBER: 2.
SAMPLE DATA: 318.
DIRECT READ PH: 11.821

DERIVATIVE OUTPUT, dE/dV



DRV TITRATION:

EQUIVALENCE PH	TITRANT VOLUME	COMPUTATION
9.68	0.672	0.0000
8.24	0.879	0.0000
7.09	0.941	0.0000
5.67	1.063	0.0000

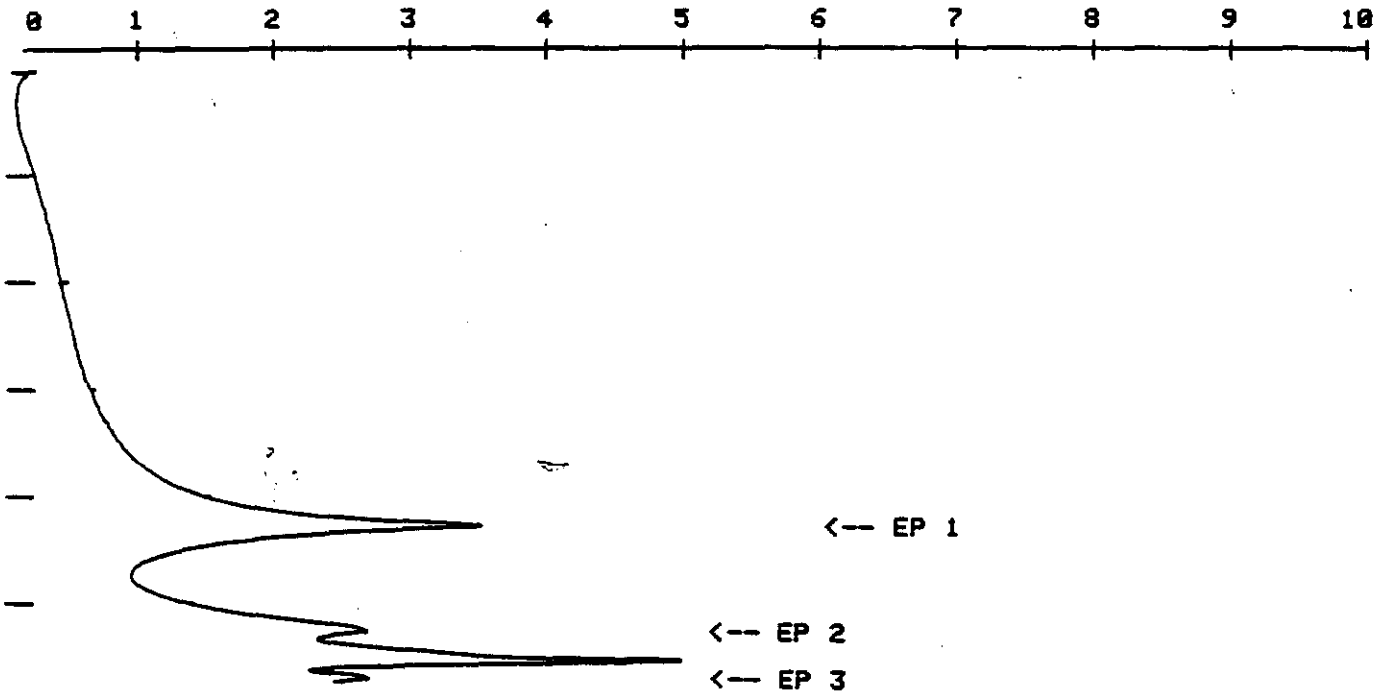
TITRATION TERMINATED BY LIMIT ON NUMBER OF EQUIVALENCES PERMISSIBLE.

SEP 25 1991 1:55 PM

SAMPLE NUMBER: 10
SAMPLE DATA: 323.
DIRECT READ PH: 12.021

WHC-SD-WM-DP-025
Addendum 16 Rev 0

DERIVATIVE OUTPUT, dE/dV



DRV TITRATION:

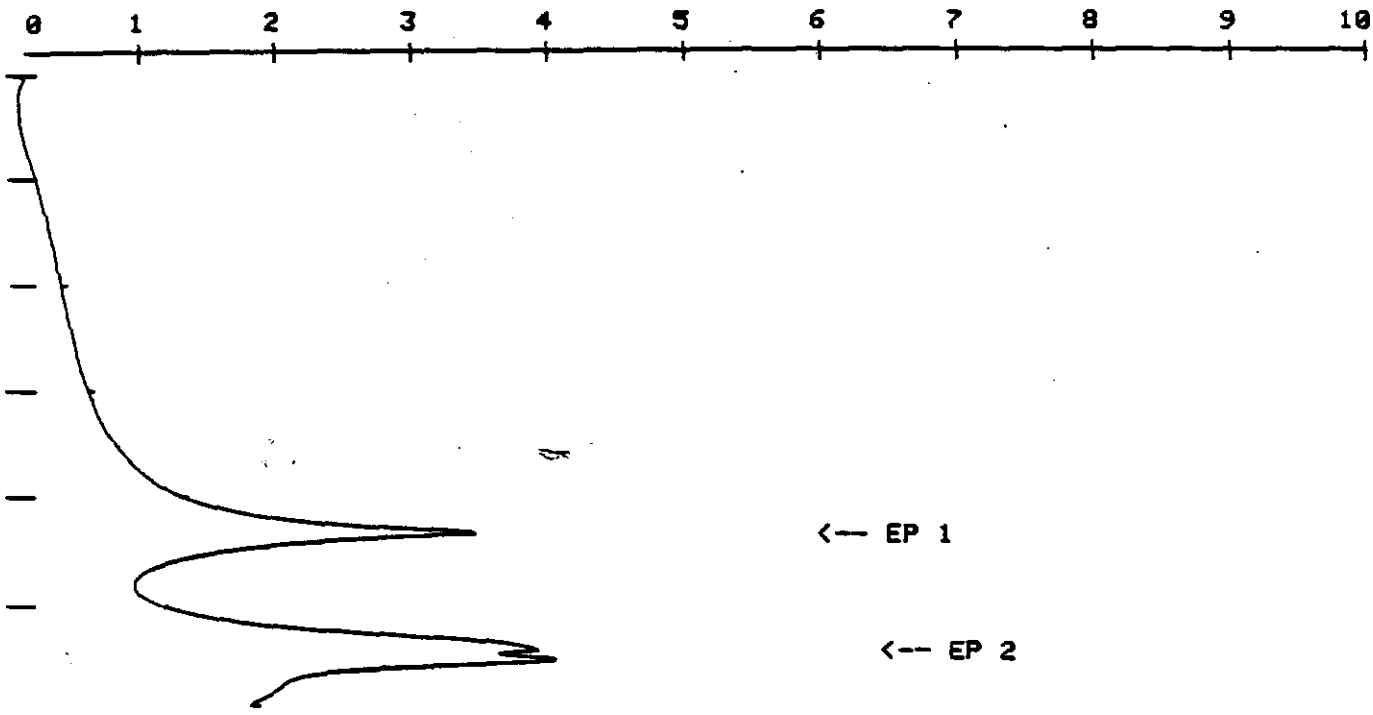
EQUIVALENCE PH	TITRANT VOLUME	COMPUTATION
9.60	0.533	0.0000
7.98	0.656	0.0000
5.06	0.711	0.0000

TITRATION TERMINATED BY PH LIMIT.

SEP 25 1991 3:11 PM

SAMPLE NUMBER: 2
SAMPLE DATA: 32[illegible]
DIRECT READ PH: 12.000

DERIVATIVE OUTPUT, dE/dV



DRV TITRATION:

EQUIVALENCE PH	TITRANT VOLUME	COMPUTATION
9.60	0.542	0.0000
6.69	0.676	0.0000

TITRATION TERMINATED BY PH LIMIT.

SEP 25 1991 3:24 PM

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R318	Customer ID: 791-1A
Analysis: SELENIUM	Sample Prep: UNDIGESTED

Instrument: PERKIN ELMER - WA77479	Procedure/Rev: LA-365-131/B-1
Technologist: M. MYERS	Date: 09-23-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: K. FULLER

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5596	11		
2	REAGENT BLANK	R317-5696	12		
3	SAMPLE 791-1A	R318-5796	13		
4	SAM DUP 791-1A	R318-5896	14		
5	SPIKE OF 791-1A	R318-5996	15		
6	FINAL LMCS CHECK STD	R323-5596	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 CHECK STD	125B38A/0.5 mL			N/A
SPIKE	125B38A/0.25 mL			N/A

A-6000-881 (03/92)

SELENIUM ANALYSIS - UNDIGESTED SAMPLE

Sample No.	Sample Point	Date	Time Issued	Priority
R 316.-5596	106AW	9-19-91	13:35	26

Contaminant	Matrix/Standard	Result Units	Charge Code	Remarks
Se	LA-365-131	% RECOVERY	WITE2	0

Sample Size: ? .500 ml
Customer ID: STD

EDP R743 SE/HYDRD 9/24/91
STDN 125838A RESULT 1.011E-1
STD VAL 1.00E-1 %REC 101.0
1.087 50.573 / 500 = 101.1%

Analyst: Indrawan Ingan
Date: 9-23-91

Sample No.	Sample Point	Date	Time Issued	Priority
R 317.-5696	106AW	9-19-91	13:45	26

Contaminant	Matrix/Standard	Result Units	Charge Code	Remarks
Se	LA-365-131	PPM	WITE2	

Sample Size: ? 1.0 ml
Customer ID: REG BL

REAGENT BLANK
0.013
25/1000 = <5.00E-3

Analyst: Indrawan Ingan
Date: 9-23-91

Sample No.	Sample Point	Date	Time Issued	Priority
R 318.-5796	106AW	9-19-91	15: 8	25

Contaminant	Matrix/Standard	Result Units	Charge Code	Remarks
Se	LA-365-131	PPM	WITE2	0

Sample Size: ? 0.500 ml
Customer ID: 791-1A

0.091
25/500 = <1.00E-2

Analyst: Indrawan Ingan
Date: 9-23-91

Sample No.	Sample Point	Date	Time Issued	Priority
R 318.-5896	106AW	9-19-91	15:10	25

Contaminant	Matrix/Standard	Result Units	Charge Code	Remarks
Se	LA-365-131	PPM	WITE2	0

Sample Size: ? .500 ml
Customer ID: 791-1A

DUPLICATE SAMPLE
0.104
25/500 = <1.00E-2

Analyst: Indrawan Ingan
Date: 9-23-91

Sample No.	Sample Point	Date	Time Issued	Priority
R 318.-5996	106AW	9-19-91	15:11	25

Contaminant	Matrix/Standard	Result Units	Charge Code	Remarks
Se	LA-365-131	% RECOVERY	WITE2	0

Sample Size: ? .500 ml
Customer ID: 791-1A

SAMPLE SPIKED ID
SPIKE ID 125838A
SPIKE VOLUME 0.250 ml 33.416 / 25 = 1.34E
0.730
51.796 / 500 = 0.05E
25 9/24/91
134%
FLAG: OK BY CHEMIST

Analyst: Indrawan Ingan
Date: 9-23-91

Sample No.	Sample Point	Date	Time Issued	Priority
R 323.-5596	106AW	9-19-91	15:45	25

Contaminant	Matrix/Standard	Result Units	Charge Code	Remarks
Se	LA-365-131	% RECOVERY	WITE2	0

Sample Size: ? .500 ml
Customer ID: STD

EDP R743 SE/HYDRD 9/24/91
STDN 125838A RESULT 9.12E-2
STD VAL 1.00E-1 %REC 91.0%
.983 74.263 / 500 45.575 / 500

Analyst: Indrawan Ingan
Date: 9-23-91

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY
CALIBRATION RECORD

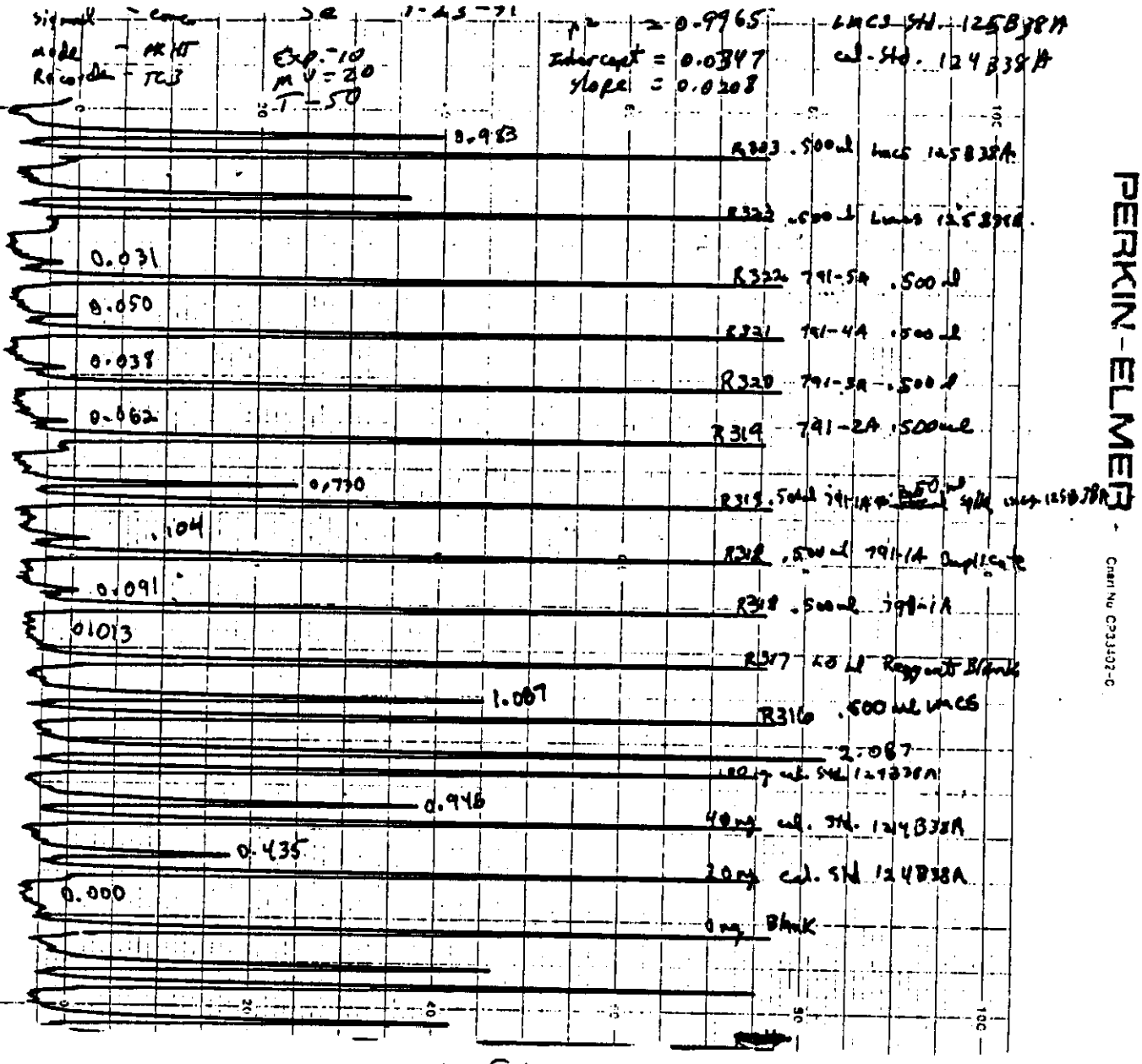
Analyte: Se
Procedure: LA-365-131 | Revision: B-1
Instrument: HYDRIDE 44 | Property No.: WA77479
Technologist: M. MYERS | Payroll No.: 6C823 | Date: 09-23-91

Calibration Standard: 124B38A
Analyte Concentration: 0.1000 ppm
Type of Calibration: LINEAR

	Dilution	Concentration	Instrument Reading Unit
1	0.000 mL	0.0 ng	0.000
2	0.200 mL	20.0 ng	0.435
3	0.400 mL	40.0 ng	0.946
4	1.000 mL	100.0 ng	2.087
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			

Comments:

A-6000-882 (03/92)



Se 9-23-91

David R. Jackson

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R318	Customer ID: 791-1A
Analysis: SPECIFIC GRAVITY	Sample Prep: UNDIGESTED

Instrument: WA90787	Procedure/Rev: LA-510-112/C-2
Technologist: J. SOLBRACK	Date: 10-18-91
Starting Time: 00:30	Temperature: N/A
Ending Time: 04:30	Chemist: R. K. FULLER

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5506	11		
2	REAGENT BLANK	R317-5606	12		
3	SAMPLE 791-1A	R318-5706	13		
4	SAM DUP OF 791-1A	R318-5806	14		
5	FINAL LMCS CHECK STD	R323-5506	15		
6			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 CHECK STD	15C11-BJ/0.20019 mL			N/A

A-6000-881 (03/92)

SPECIFIC GRAVITY ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5506	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
SPG	LA-510-112	% RECOVERY	W1TE2	0

Sample Size: ~~100~~ 200.19 g — Customer ID: STD

Remarks, Calculations, Results:
S332 ZNCL2
STD#ISCH-83 RESULT 1.4264
STD VAL 1.4386 %REC 99.15%

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				
Hrs 82020	Hrs	Hrs	Hrs	Hrs

Date: 10-18-91 — Time Completed: — Lab Use Only: [signature]

R 316-5506

A. 2.2171
1.9316
.2855 — .2855 / .20019 = 1.4261 ÷ 1.4386 × 100 = 99.15

B. 2.2037
1.9181
.2856 — .2856 / .20019 = 1.4266 ÷ 1.4386 × 100 = 99.16

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5606	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
SPG	LA-510-112		W1TE2	0

Sample Size: ? 200.19 g — Customer ID: REG BL

Remarks, Calculations, Results:
REAGENT BLANK
.9871

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				
Hrs 82020	Hrs	Hrs	Hrs	Hrs

Date: 10 18 91 — Time Completed: — Lab Use Only: [signature]

R 317-5606

A. 2.1434
1.9458
.1976 ÷ .20019 = .9871

B. 2.0895
1.8919
.1976 — .1976 / .20019 = .9871

Serial No.	Sample Point	Date	Time Issued	Priority
R 318.-5706	106AW	9-19-91	15: 4	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
SPG	LA-510-112		W1TE2	0

Sample Size: ? 200.19 g — Customer ID: 791-1A

Remarks, Calculations, Results:
1.0902

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				
Hrs 82020	Hrs	Hrs	Hrs	Hrs

Date: 10 18 91 — Time Completed: — Lab Use Only: [signature]

R 318-5706

318 1
2.1567
1.9385
.2182 — .2182 / .20019 = 1.0900

318 2
2.1294
1.9111
.2183 — .2183 / .20019 = 1.0905 / 1.0900 = 1.0902

SPECIFIC GRAVITY ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 318.-5806	106AW	9-19-91	15: 7	25

Determination	Method/Standard	Result Units	Charge Code	Return
SPG	LA 510-112		W1TE2	0

Sample Size	Customer ID
? 200.19 ?	791 1A

Remarks, Calculations, Results:
DUPLICATE SAMPLE

1.0902

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				
82020				

Date	Time Completed	Lab Unit Mgr
10 18 91		[signature]

A. R 318-5806

2.1016
1.8833
.2183

ave = .2183 / .20019 = 1.0902

B. 2.1521
1.9339
.2182

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5506	106AW	9-19-91	15:43	25

Determination	Method/Standard	Result Units	Charge Code	Return
SPG	LA-510-112	% RECOVERY	W1TE2	0

Sample Size	Customer ID
? .20019	STD

Remarks, Calculations, Results:
S332 ZNCL2 ~~9-15-92~~
STD# 15CH-65 RESULT ~~1.4254~~ 1.4256
STD VAL 1.4886 %REC ~~99.0%~~ 99.1%

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				
82020				

Date	Time Completed	Lab Unit Mgr
10 18 91		[signature]

A. R 323-5506

2.1738
1.8885
.2853

ave = .2854 / .20019 = 1.4256 ~~1.4256~~ ~~9-15-92~~

B. 2.1808
1.8954
.2854

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R318	Customer ID: 791-1A
Analysis: TOTAL INORGANIC CARBON	Sample Prep: UNDIGESTED

Instrument: WB39927	Procedure/Rev: LA-622-102/B-0
Technologist: M. MYERS	Date: 09-25-91
Starting Time: 00:29	Temperature: NA
Ending Time: 04:18	Chemist: D. BISENIUS

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5527	11		
2	REAGENT BLANK	R317-5627	12		
3	SAMPLE 791-1A	R318-5727	13		
4	SAM DUP 791-1A	R318-5827	14		
5	SPIKE OF 791-1A	R318-5927	15		
6	FINAL LMCS CHECK STD	R323-5527	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 CHECK STD	69C11K/0.05 mL			N/A
SPIKE	69C11K/0.10 mL			N/A

A-6000-881 (03/92)

TOTAL INORGANIC CARBON ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5527	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Results
TIC	LA-622 102	% RECOVERY	WITE2	C

Sample Size: ? .050 ml — Customer ID: STD

Remarks, Calculations, Results:
S223 CO3
STD# LACIK RESULT ~~2.08E-1~~ 1.995E-1 M DYBrienius 6/30/92
STD VAL 2.00E-1 % REC ~~104.0%~~ 99.75% DYB 6/30/92

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				DYBrienius
60823			[signature]	

Date: 9-25-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5627	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Results
TIC	LA-622 102	G/L	WITE2	0

Sample Size: ? .050 ml — Customer ID: REG BL

Remarks, Calculations, Results:
REAGENT BLANK
~~5.10 ug C~~ DYB 6/30/92 5.70 ug C
~~1.14E-1 g/l C~~ / minute / ~~[illegible]~~ = 2.69
DYB 6-11-92

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				DYBrienius
60823				

Date: 9-25-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 318.-5727	106AW	9-19-91	15: 4	25

Determination	Method/Standard	Result Units	Charge Code	Results
TIC	LA-622-102	G/L	WITE2	0

Sample Size: ? .050 ml — Customer ID: 791-1A

Remarks, Calculations, Results:
2.08 g/l C

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				
60823				

Date: 9-25-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 318.-5827	106AW	9-19-91	15: 4	25

Determination	Method/Standard	Result Units	Charge Code	Results
TIC	LA-622-102	G/L	WITE2	0

Sample Size: ? .050 ml — Customer ID: 791-1A

Remarks, Calculations, Results:
DUPLICATE SAMPLE
2.08 g/l C

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				
60823				

Date: 9-25-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 318.-5927	106AW	9-19-91	15: 4	25

Determination	Method/Standard	Result Units	Charge Code	Results
TIC	LA-622-102	% RECOVERY	WITE2	0

Sample Size: ? .050 ml + .100 ml spike + .050 ml — Customer ID: 791-1A

Remarks, Calculations, Results:
SAMPLE SPIKED ID
SPIKE ID LACIK
SPIKE VOLUME .100 ml

$$\frac{(118.4-.77)(3)-(10.8-.77)(1)}{(.100)(1.00)(2)} = \frac{248.86}{2.00} = 99.8\%$$

103.7%
DYB 9/27/91

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				
60823				

Date: 9-25-91 — Time Completed: — Lab Unit Mgr: [signature]

DF=D

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5527	106AW	9-19-91	15:43	25

Determination	Method/Standard	Result Units	Charge Code	Results
TIC	LA-622-102	% RECOVERY	WITE2	C

Sample Size: ? .050 ml — Customer ID: STD

Remarks, Calculations, Results:
S223 CO3
STD# LACIK RESULT ~~2.1E-1~~ DYB 6/30/92 2.04E-1 M
STD VAL ~~2.00E-1~~ DYB 6/30/92 2.00E-1 % REC ~~106.0%~~ 102% DYB 6/30/92

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				DYBrienius
60823			[signature]	

Date: 9-25-91 — Time Completed: — Lab Unit Mgr: [signature]

TVC

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: STD R3/4 Date: 09-25-1991 Time: 00:45:11

Blank = 0 Sample Size = 50 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	104.80	100.00
3	3.01	117.60	10.88
4	4.01	121.40	3.13
5	5.01	123.00	1.30
6	6.01	124.00	0.81
7	7.01	124.80	0.64

(124.8 - 0)(1)/(50) = 2.496 g/L Carbon

(124.8 - 0)(1)/(50)(12) = .208 Molar Carbon

Sample Run By: 6C823 _____

TIC

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: BLANK Date: 09-25-1991 Time: 00:29:30

Blank = 0 Sample Size = 50 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.80	-525.00
2	2.01	1.60	50.00
3	3.01	2.30	30.43
4	4.01	3.00	23.33
5	5.01	3.60	16.67
6	6.01	4.50	20.00
7	7.01	5.10	11.76

(5.1 - 0)(1)/(50) = .102 g/L Carbon

(5.1 - 0)(1)/(50)(12) = 8.499999E-03 Molar Carbon

Sample Run By: 80028_____

T\C

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: R317 Date: 09-25-1991 Time: 00:54:43

Blank = 0 Sample Size = 50 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	2.10	100.00
3	3.01	3.10	32.26
4	4.00	3.60	13.89
5	5.01	4.30	16.28
6	6.01	5.00	14.00
7	7.01	5.70	12.28

(5.7 - 0)(1)/(50) = .114 g/L Carbon

(5.7 - 0)(1)/(50)(12) = .0095 Molar Carbon

Sample Run By: 6C823 _____

TIC

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: R318 Date: 09-25-1991 Time: 01:04:58

Blank = .11 Sample Size = 50 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	90.90	100.00
3	3.01	98.60	7.81
4	4.01	101.60	2.95
5	5.01	103.00	1.36
6	6.01	104.00	0.96
7	7.01	104.80	0.76

(104.8 - .7706411)(1)/(50) = 2.080587 g/L Carbon

(104.8 - .7706411)(1)/(50)(12) = .1733823 Molar Carbon

Sample Run By: 6C823 _____

TIC

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: R318DUP Date: 09-25-1991 Time: 01:15:59

Blank = .11 Sample Size = 50 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	69.10	-50.51
2	2.01	95.40	27.57
3	3.01	99.90	4.50
4	4.01	101.90	1.96
5	5.01	103.30	1.36
6	6.01	104.10	0.77
7	7.00	104.80	0.67

(104.8 - .7705321)(1)/(50) = 2.08059 g/L Carbon

(104.8 - .7705321)(1)/(50)(12) = .1733825 Molar Carbon

Sample Run By: 6C823 _____

TIC

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: R318SP Date: 09-25-1991 Time: 01:31:59

Blank = .11 Sample Size = 50 Dilution Factor = 3
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	97.70	100.00
3	3.01	110.60	11.66
4	4.01	114.30	3.24
5	5.01	116.30	1.72
6	6.01	117.60	1.11
7	7.01	118.40	0.68

(118.4 - .7706228)(3)/(50) = 7.057763 g/L Carbon

(118.4 - .7706228)(3)/(50)(12) = .5881469 Molar Carbon

Sample Run By: 6C823 _____

TIC

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: R318SP Date: 09-25-1991 Time: 02:01:48

Blank = .11 Sample Size = 50 Dilution Factor = 3
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	100.80	100.00
3	3.01	109.60	8.03
4	4.00	113.70	3.61
5	5.01	115.90	1.90
6	6.01	117.20	1.11
7	7.00	118.30	0.93

(118.3 - .7705304)(3)/(50) = 7.051769 g/L Carbon

(118.3 - .7705304)(3)/(50)(12) = .5876474 Molar Carbon

Sample Run By: 6C823 _____

TIC

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: R323 Date: 09-25-1991 Time: 04:18:14

Blank = .11 Sample Size = 50 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	112.90	100.00
3	3.01	123.20	8.36
4	4.01	125.50	1.83
5	5.01	126.50	0.79
6	6.01	127.30	0.63
7	7.00	128.10	0.62

(128.1 - .7705304)(1)/(50) = 2.54659 g/L Carbon

(128.1 - .7705304)(1)/(50)(12) = .2122158 Molar Carbon

Sample Run By: 6C823 _____

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R318	Customer ID: 791-1A
Analysis: TOTAL ORGANIC CARBON	Sample Prep: UNDIGESTED

Instrument: MODEL 5011 - WC16130	Procedure/Rev: LA-344-105/B-0
Technologist: M. MYERS	Date: 10-28-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: D. BISENIUS

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5526	11		
2	REAGENT BLANK	R317-5626	12		
3	SAMPLE 791-1A	R318-5726	13		
4	SAM DUP 791-1A	R318-5826	14		
5	SPIKE OF 791-1A	R318-5926	15		
6	FINAL LMCS CHECK STD	R323-5526	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 CHECK STD	70C11I/0.2 mL			N/A
SPIKE	80C11I/0.2 mL			N/A
SAMPLES RERUN.				

A-6000-881 (03/92)

TOTAL ORGANIC CARBON ANALYSIS - UNDIGESTED SAMPLE

Sample No.	Sample Point	Date	Time Sampled	Priority
R 316.-5826	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
TOC	LA-344-105	% RECOVERY		1

RERUN

Sample Size: 7 .200ml - 2ml - .200ml
Customer ID: STD

Remarks, Calculations, Results:
S356 COSTOC
STD# 70CH1I RESULT 3.0745
STD VAL 3.0 %REC 102.5%6

Analyst: LaBarre Hayes
File: LC823
Date: 10-28-91

Sample No.	Sample Point	Date	Time Sampled	Priority
R 317.-5824	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
TOC	LA-344-105	G/L	WIIE2	1

RERUN

Sample Size: 7 .200ml
Customer ID: REG BL

Remarks, Calculations, Results:
REAGENT BLANK

4.80 ug C
~~8.00E-3 g/l~~ DHB 6/30/92

Analyst: LaBarre Hayes
File: LC823
Date: 10-28-91

Sample No.	Sample Point	Date	Time Sampled	Priority
R 318.-5926	106AW	9-19-91	15:4	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
TOC	LA-344-105	G/L		1

RERUN

Sample Size: 7 .200ml - 2ml - .200ml
Customer ID: 791-1A

Remarks, Calculations, Results:

9.40E-1 g/l

Analyst: LaBarre Hayes
File: LC823
Date: 10-28-91

Sample No.	Sample Point	Date	Time Sampled	Priority
R 318.-5926	106AW	9-19-91	15:4	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
TOC	LA-344-105	G/L	WIIE2	1

Sample Size: 7 .200ml - 2ml - .200ml
Customer ID: 791-1A

Remarks, Calculations, Results:
DUPLICATE SAMPLE

RERUN

1.00 g/l C.

Analyst: LaBarre Hayes
File: LC823
Date: 10-28-91

Sample No.	Sample Point	Date	Time Sampled	Priority
R 318.-5926	106AW	9-19-91	15:4	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
TOC	LA-344-105	% RECOVERY	WIIE2	1

RERUN

Sample Size: 7 .200ml - 2ml - .200ml
Customer ID: 791-1A

Remarks, Calculations, Results:
SAMPLE SPIKED ID
SPIKE ID
SPIKE VOLUME .200 - 2ml - .200

97.0% Rec.

(2)(18.2)
(47.9 - 3.2)(1.01)(2.0) - (20.3 - 3.2)(1.01) over
(75)(1.01) x100 = 97.0%

Analyst: Hayes
File: LC823
Date: 10-28-91

R 318-5926

$$\frac{(47.9-3.2)(1.01)(2.0)-(20.3-3.2)(1.01)}{(75)(1.01)} \times 100 = 97.0\%$$

TOTAL ORGANIC CARBON ANALYSIS - UNDIGESTED SAMPLE

Sheet No.	Sample Point	Date	Time Issued	Priority
R 323.-5526	106AW	9-19-91	15:43	25

Determination	Method/Standard	Result Units	Charge Code	Returns
TOC	LA-344-105	% RERUN	W1TE2	1

Sample Size	Customer ID
? .200ml - 2ml - .200ml	STD

Remarks, Calculations, Results

S356 CO3TOC 3.014 g/LC

STD# 70C11I RESULT ~~3.102g/LC~~ DHB 6/30/92

STD VAL 300gl %REC ~~102.4%~~ DHB 6/30/92

100.5%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[illegible]				DHBiering
Hrs	Hrs	Hrs	Hrs	Hrs
60823				[illegible]

Date	Time Completed	Time Verified
1028-9		[illegible]

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: STD R3/4 Date: 10-27-1991 Time: 01:10:43

Blank = .4567049 Sample Size = 200 Dilution Factor = 11
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	42.40	100.00
3	3.01	51.00	16.86
4	4.01	55.00	7.27
5	5.01	57.10	3.68
6	6.01	58.30	2.06
7	7.01	59.10	1.35

(59.1 - 3.1996)(11)/(200) = 3.074522 g/L Carbon

(59.1 - 3.1996)(11)/(200)(12) = .2562102 Molar Carbon

Sample Run By: 6C823_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: BLANK Date: 10-26-1991 Time: 21:52:10

Blank = N/A Sample Size = 200 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	0.30	100.00
3	3.01	1.00	70.00
4	4.01	1.80	44.44
5	5.01	2.40	25.00
6	6.01	2.80	14.29
7	7.01	3.20	12.50

BLANK VALUE = 3.2 / 7.006714 = .4567049 g/L/minute

Sample Run By: 6C823_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: R317 BLANK Date: 10-27-1991 Time: 01:29:09

Blank = .4567049 Sample Size = 200 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	1.70	100.00
3	3.01	2.80	39.29
4	4.01	3.40	17.65
5	5.01	3.90	12.82
6	6.01	4.40	11.36
7	7.01	4.80	8.33

(4.8 - 3.1996)(1)/(200) = 8.002001E-03 g/L Carbon

(4.8 - 3.1996)(1)/(200)(12) = 6.668334E-04 Molar Carbon

Sample Run By: 6C823_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: R318 Date: 10-27-1991 Time: 01:46:25

Blank = .4567049 Sample Size = 200 Dilution Factor = 11
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	7.00	100.00
3	3.01	14.90	53.02
4	4.01	17.20	13.37
5	5.01	18.70	8.02
6	6.01	19.60	4.59
7	7.01	20.30	3.45

(20.3 - 3.19998)(11)/(200) = .9405011 g/L Carbon

(20.3 - 3.19998)(11)/(200)(12) = .0783751 Molar Carbon

Sample Run By: 6C823_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: R318 Date: 10-27-1991 Time: 02:04:22

Blank = .4567049 Sample Size = 200 Dilution Factor = 11
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	16.30	100.00
3	3.01	18.10	9.94
4	4.01	19.30	6.22
5	5.01	20.30	4.93
6	6.01	20.90	2.87
7	7.01	21.40	2.34

(21.4 - 3.199597)(11)/(200) = 1.001022 g/L Carbon

(21.4 - 3.199597)(11)/(200)(12) = 8.341852E-02 Molar Carbon

Sample Run By: 6C823_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: R318SPIKE Date: 10-27-1991 Time: 02:34:24

Blank = .4567049 Sample Size = 200 Dilution Factor = 12
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	21.50	100.00
3	3.01	35.90	40.11
4	4.01	41.30	13.08
5	5.01	44.70	7.61
6	6.01	46.60	4.08
7	7.01	47.90	2.71

(47.9 - 3.199604)(12)/(200) = 2.682024 g/L Carbon

(47.9 - 3.199604)(12)/(200)(12) = .223502 Molar Carbon

Sample Run By: 6C823_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: ~~R322~~ R323 Date: 10-27-1991 Time: 05:22:10
m— 10-28-91

Blank = .4567049 Sample Size = 200 Dilution Factor = 11
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	25.90	100.00
3	3.01	47.20	45.13
4	4.01	53.80	12.27
5	5.01	56.90	5.45
6	6.01	58.60	2.90
7	7.01	59.60	1.68

(59.6 - 3.199987)(11)/(200) = 3.102001 g/L Carbon

(59.6 - 3.199987)(11)/(200)(12) = .2585001 Molar Carbon

Sample Run By: 6C823_____

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R318	Customer ID: 791-1A
Analysis: ION CHROMATOGRAPHIC - NITRATE	Sample Prep: UNDIGESTED

Instrument: DIONEX 4000 - WB54428	Procedure/Rev: LA-533-105/B-0
Technologist: M. MYERS	Date: 09-30-91
Starting Time: 22:35 - 09-30-91	Temperature: 24-25degC
Ending Time: 00:32 - 10-01-91	Chemist: D. HERT

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5573	11		
2	REAGENT BLANK	R317-5673	12		
3	SAMPLE 791-1A	R318-5773	13		
4	SAM DUP 791-1A	R318-5873	14		
5	SPIKE OF 791-1A	R318-5973	15		
6	FINAL LMCS CHECK STD	R323-5573	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 CHECK STD	73C11CO/0.1 mL			NA
SPIKE	73C11CO/0.05 mL			NA

A-6000-881 (03/92)

ION CHROMATOGRAPHIC ANALYSIS (NITRATE) - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5573	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
NO3	LA-533-105	% RECOVERY	W1TE2	0

Sample Size: ? .100ml - 10ml — Customer ID: STD

Remarks, Calculations, Results:
EDP R978 DIONEX
STD # 73C11CO RESULT 529.531
STD VAL 564.0 %REC 93.9%

Analyst-1: [signature] — Analyst-2: — Analyst-3: — Analyst-4: — Analyst-5: [signature]
Hrs: 6C823 — Hrs: — Hrs: — Hrs: [signature]
Date: 9-30-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5673	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
NO3	LA-533-105	PPM	W1TE2	0

Sample Size: ? 5ml — Customer ID: REG TIL

Remarks, Calculations, Results:
REAGENT BLANK
<1.00 ppm

Analyst-1: [signature] — Analyst-2: — Analyst-3: — Analyst-4: — Analyst-5: [signature]
Hrs: 6C823 — Hrs: — Hrs: — Hrs: — Hrs:
Date: 9-30-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 318.-5773	106AW	9-19-91	15:5	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
NO3	LA-533-105	PPM	W1TE2	0

Sample Size: ? .100ml - 10ml - .250ml - 10ml — Customer ID: 791-1A

Remarks, Calculations, Results:
3.36E4

Analyst-1: [signature] — Analyst-2: — Analyst-3: — Analyst-4: — Analyst-5: [signature]
Hrs: 6C823 — Hrs: — Hrs: — Hrs: — Hrs:
Date: 9-30-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 318.-5873	106AW	9-19-91	15:10	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
NO3	LA-533-105	PPM	W1TE2	0

Sample Size: ? .100ml - 10ml - .250ml - 10ml — Customer ID: 791-1A

Remarks, Calculations, Results:
DUPLICATE SAMPLE
3.33E4 ppm
3.~~33E5~~ 9-30-91

Analyst-1: [signature] — Analyst-2: — Analyst-3: — Analyst-4: — Analyst-5: [signature]
Hrs: 6C823 — Hrs: — Hrs: — Hrs: — Hrs:
Date: 9-30-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 318.-5973	106AW	9-19-91	15:11	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
NO3	LA-533-105	% RECOVERY	W1TE2	0

Sample Size: ? .100ml - 10ml - .100ml - 10ml + .050ml spike — Customer ID: 791-1A

Remarks, Calculations, Results:
SAMPLE SPIKED ID
SPIKE ID 73C11CO
SPIKE VOLUME .050ml

$$\frac{60888.202 - 33602.049}{(.05)(10201)(564.0)} \times 100 = 94.9\%$$

Analyst-1: [signature] — Analyst-2: — Analyst-3: — Analyst-4: — Analyst-5: [signature]
Hrs: 6C823 — Hrs: — Hrs: — Hrs: — Hrs:
Date: 9-30-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5573	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
NO3	LA-533-105	% RECOVERY	W1TE2	0

Sample Size: ? .100ml - 10ml — Customer ID: STD

Remarks, Calculations, Results:
EDP R978 DIONEX
STD # 73C11CO RESULT 551.166
STD VAL 564.0 %REC 97.7%

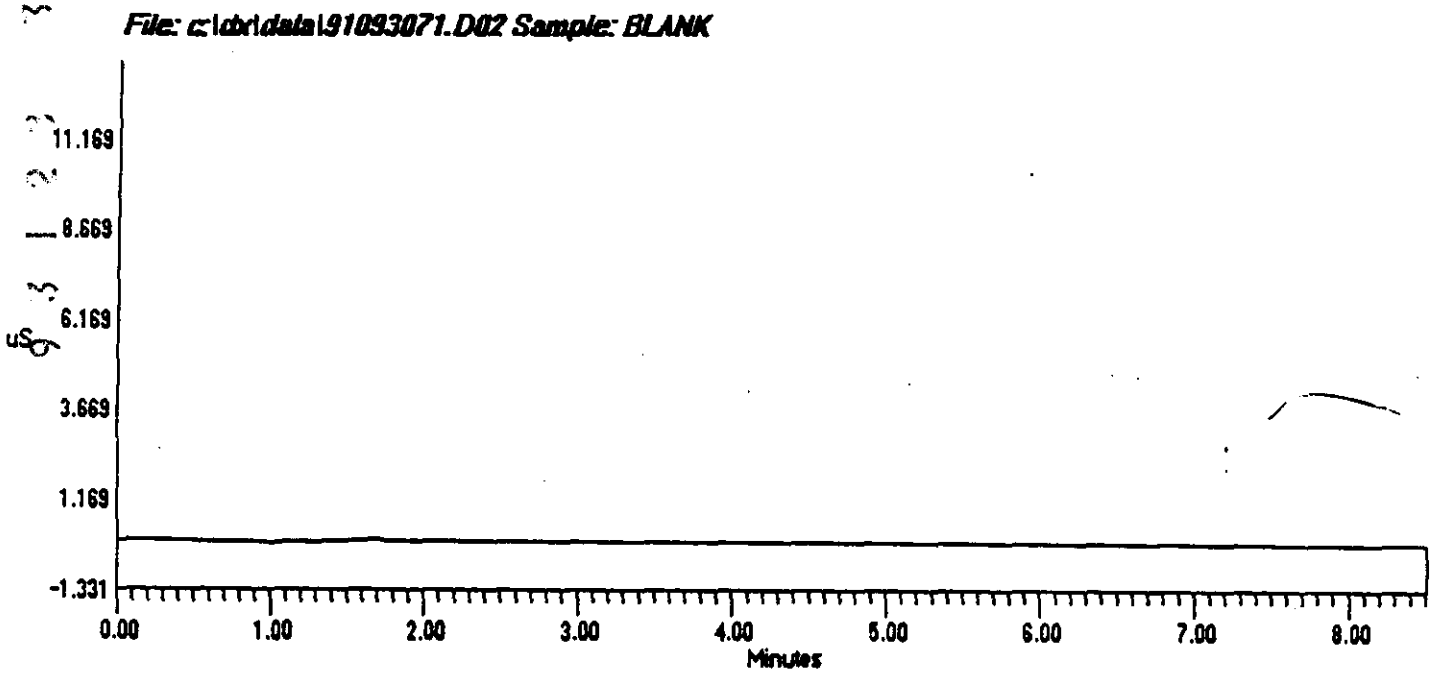
Analyst-1: [signature] — Analyst-2: — Analyst-3: — Analyst-4: — Analyst-5: [signature]
Hrs: 6C823 — Hrs: — Hrs: — Hrs: [signature]
Date: 9-30-91 — Time Completed: — Lab Unit Mgr: [signature]

9312353912

```
==================================================================================
: Sample Name: BLANK                                  Date: Mon Sep 30 22:35:47 1991:
: Data File  : c:\dx\data\91093071.D02                                            :
: Method     : c:\dx\method\SYSTEM1.met                                           :
: ACI Address: 1        System : 1        Inject#:   2  Detector: CDM-1          :
==================================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA	REJ
External	1	1	2555	5Hz	0.00	8.52	1000	

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta

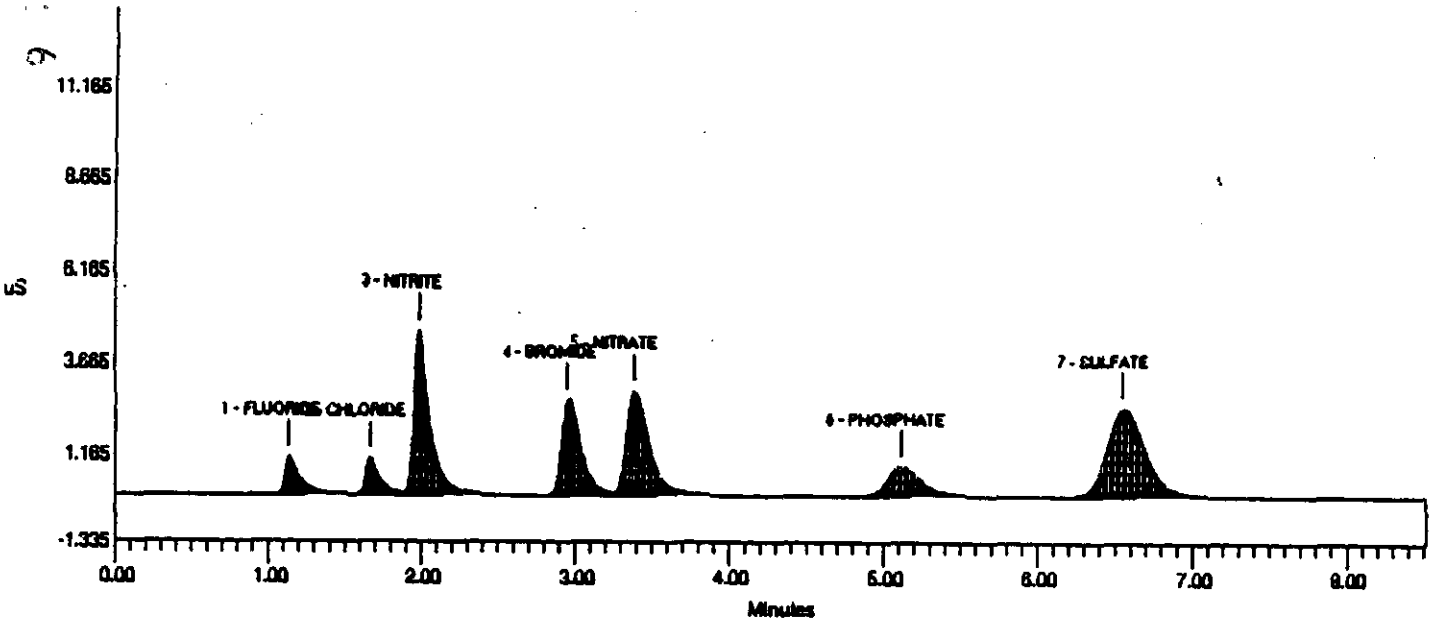


Sample Name: LMCS/73C11C0 R316 JK 7-16-92		Date: Mon Sep 30 22:45:24 1991	
Data File : c:\dx\data\91093071.D03			
Method : c:\dx\method\SYSTEM1.met			
ACI Address: 1	System : 1	Inject#: 3	Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2555	5Hz	0.00	8.52	1000

Pk. Num	Ret Time	Component Name		Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	95.8	53.664	1073	7411	1	0.00
2	1.67	CHLORIDE	95.6	71.733	1049	6666	2	-1.96
3	1.98	NITRITE	98.4	501.700	4572	33387	2	-2.30
4	2.95	BROMIDE JK 7-16-92		487.695	2681	24180	2	-3.28
5	3.38	NITRATE	93.9	529.531	2918	30880	2	2.53
6	5.12	PHOSPHATE	102.0	527.513	869	13397	1	-3.76
7	6.55	SULFATE	96.2	586.801	2510	43340	1	-4.38

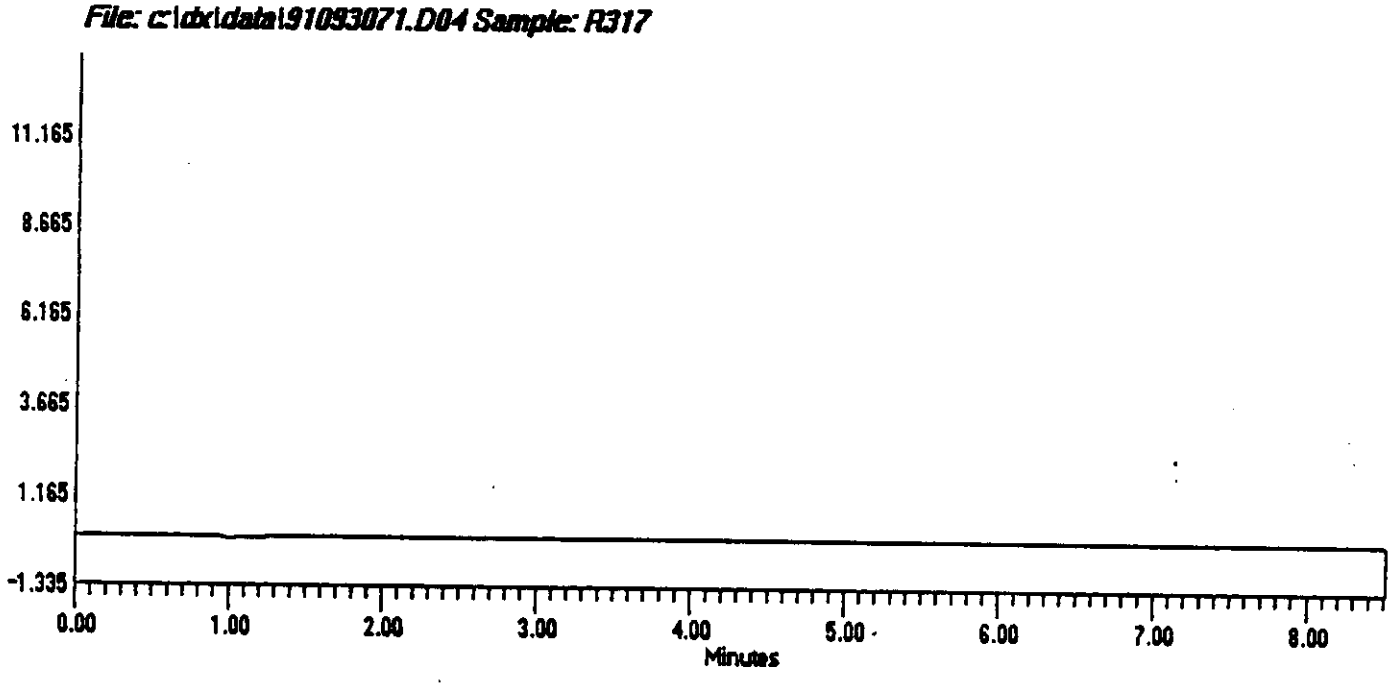
File: c:\dx\data\91093071.D03 Sample: LMCS/73C11C0



```
==================================================================================
: Sample Name: R317                                  Date: Mon Sep 30 22:55:18 1991:
: Data File   : c:\dx\data\91093071.D04                                            :
: Method      : c:\dx\method\SYSTEM1.met                                           :
: ACI Address: 1        System : 1        Inject#:   4  Detector: CDM-1           :
==================================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2555	5Hz	0.00	8.52	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta

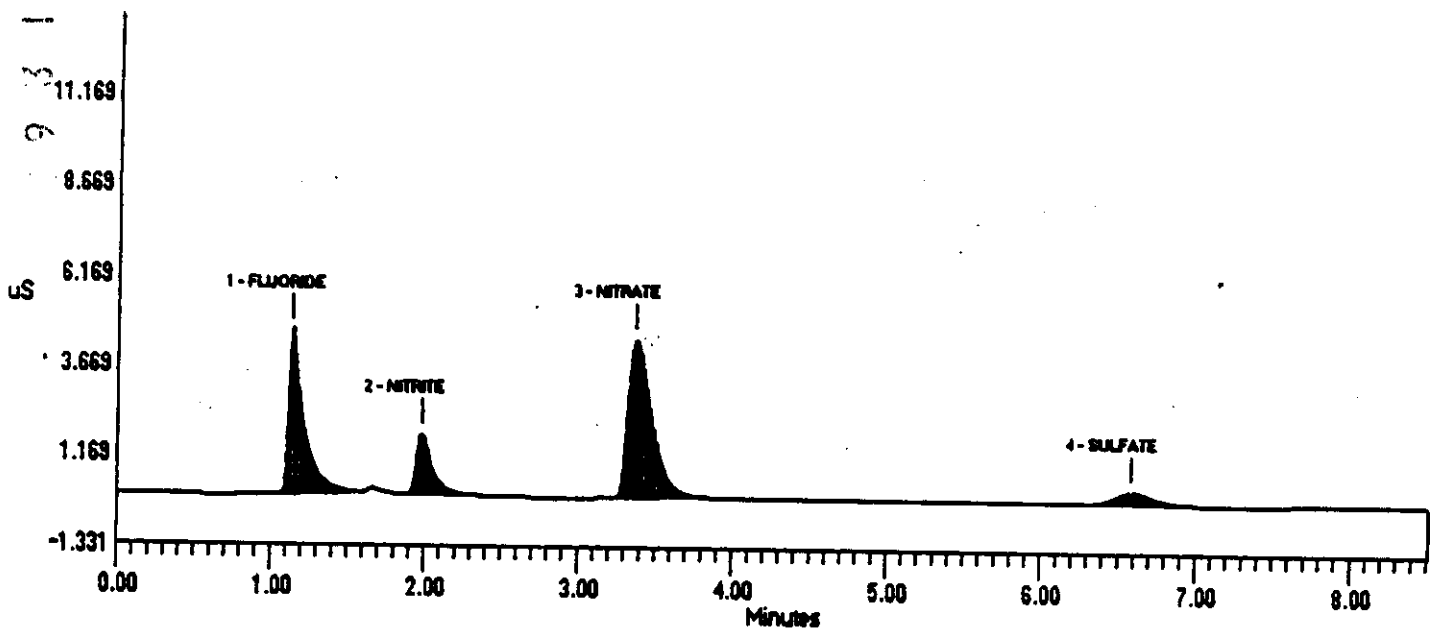


```
: Sample Name: R318                                  Date: Mon Sep 30 23:24:32 1991:
: Data File   : c:\dx\data\91093071.D07                                            :
: Method      : c:\dx\method\SYSTEM1.met                                           :
: ACI Address: 1        System : 1        Inject#:    7  Detector: CDM-1          :
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	4141	2555	5Hz	0.00	8.52	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	8323.021	4583	32834	1	0.00
2	1.98	NITRITE	9006.213	1715	12581	1	-2.30
3	3.37	NITRATE	33602.049	4464	49157	1	2.02
4	6.58	SULFATE	4790.788	375	6296	1	-3.89

File: c:\dx\data\91093071.D07 Sample: R318

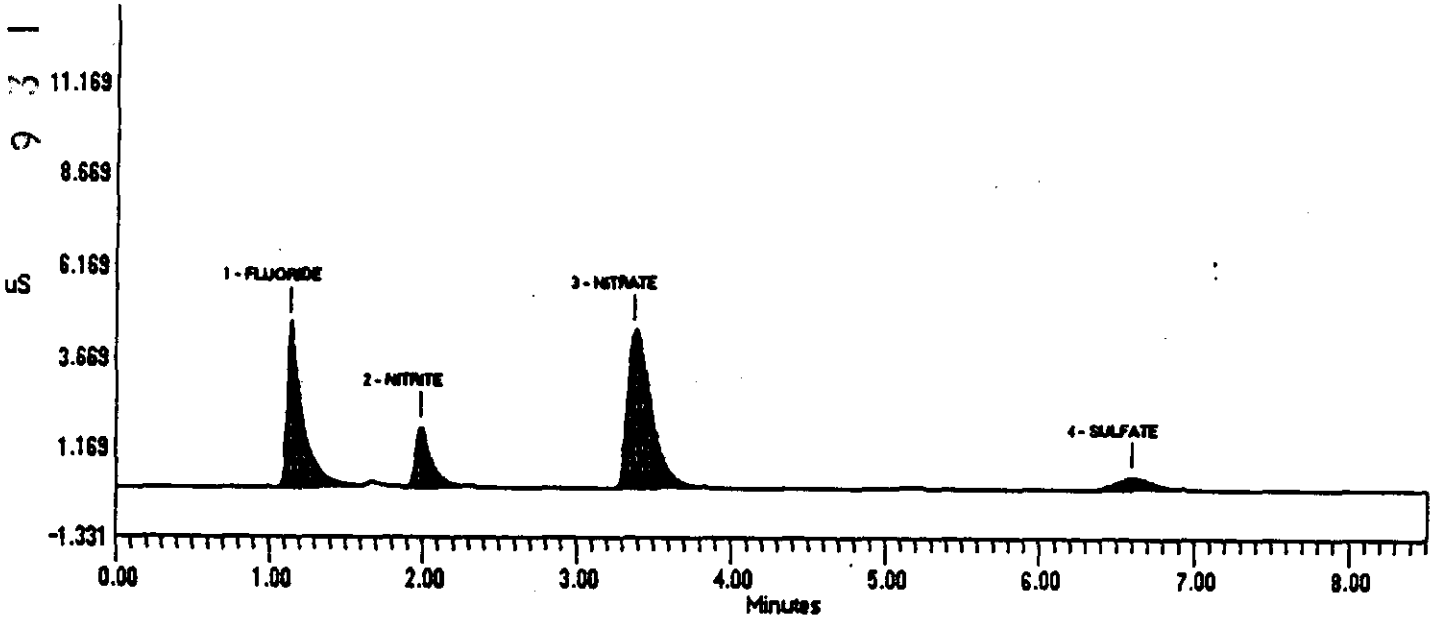


```
==========================================================================
: Sample Name: R318DUP                          Date: Mon Sep 30 23:34:20 1991:
: Data File   : c:\dx\data\91093061.D08                                   :
: Method      : c:\dx\method\SYSTEM1.met                                  :
: ACI Address: 1        System : 1        Inject#:   8  Detector: CDM-1   :
==========================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	4141	2555	5Hz	0.00	8.52	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	8295.997	4554	32718	1	0.00
2	1.98	NITRITE	8983.501	1680	12540	1	-2.30
3	3.37	NITRATE	33346.891	4394	48762	1	2.02
4	6.60	SULFATE	4470.734	357	5688	1	-3.65

File: c:\dx\data\91093061.D08 Sample: R318DUP

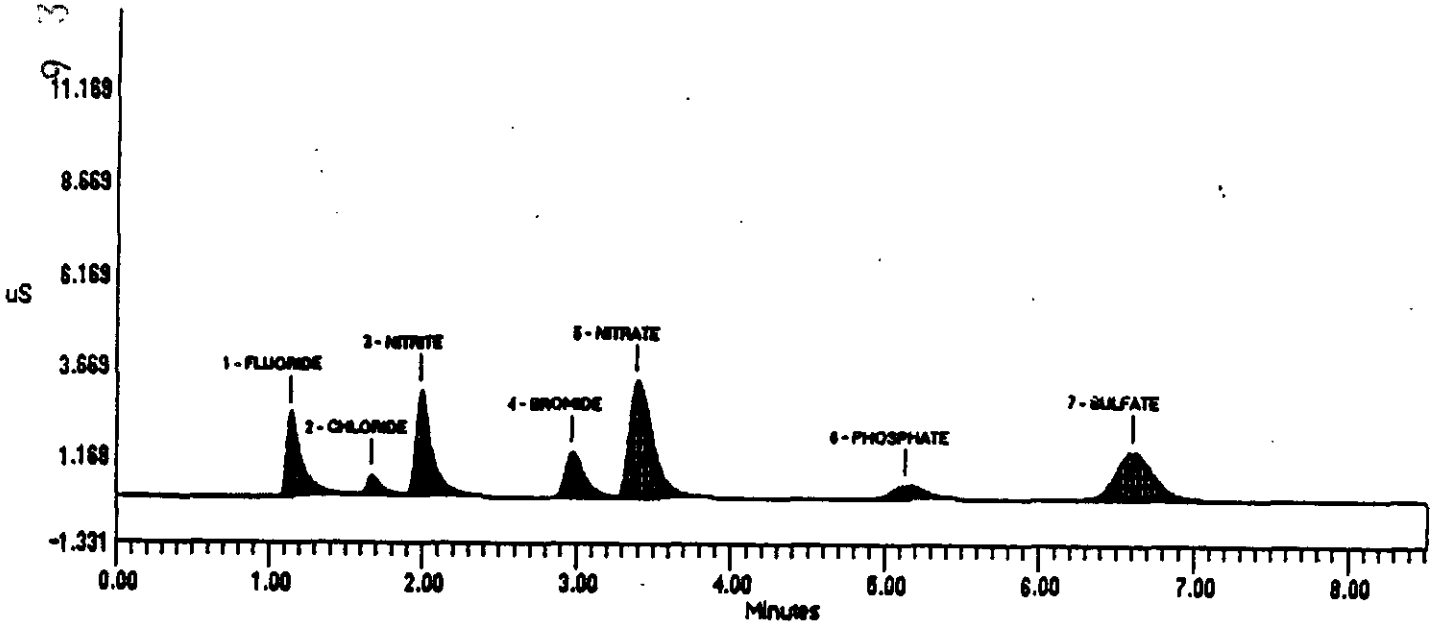


```
==================================================================================
: Sample Name: R318SPIKE                          Date: Mon Sep 30 23:44:07 1991:
: Data File  : c:\dx\data\91093061.D09                                          :
: Method     : c:\dx\method\SYSTEM1.met                                         :
: ACI Address: 1        System : 1        Inject#:   9  Detector: CDM-1        :
==================================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	10201	2555	5Hz	0.00	8.52	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	10660.456	2342	16090	1	0.00
2	1.67	CHLORIDE	4157.957	572	3649	2	-1.96
3	1.98	NITRITE	34501.597	2929	21580	2	-2.30
4	2.97	BROMIDE	23975.755	1309	11592	2	-2.73
5	3.38	NITRATE	60888.202	3260	35477	2	2.53
6	5.13	PHOSPHATE	28182.461	419	6294	1	-3.45
7	6.60	SULFATE	34254.252	1382	23716	1	-3.65

File: c:\dx\data\91093061.D09 Sample: R318SPIKE

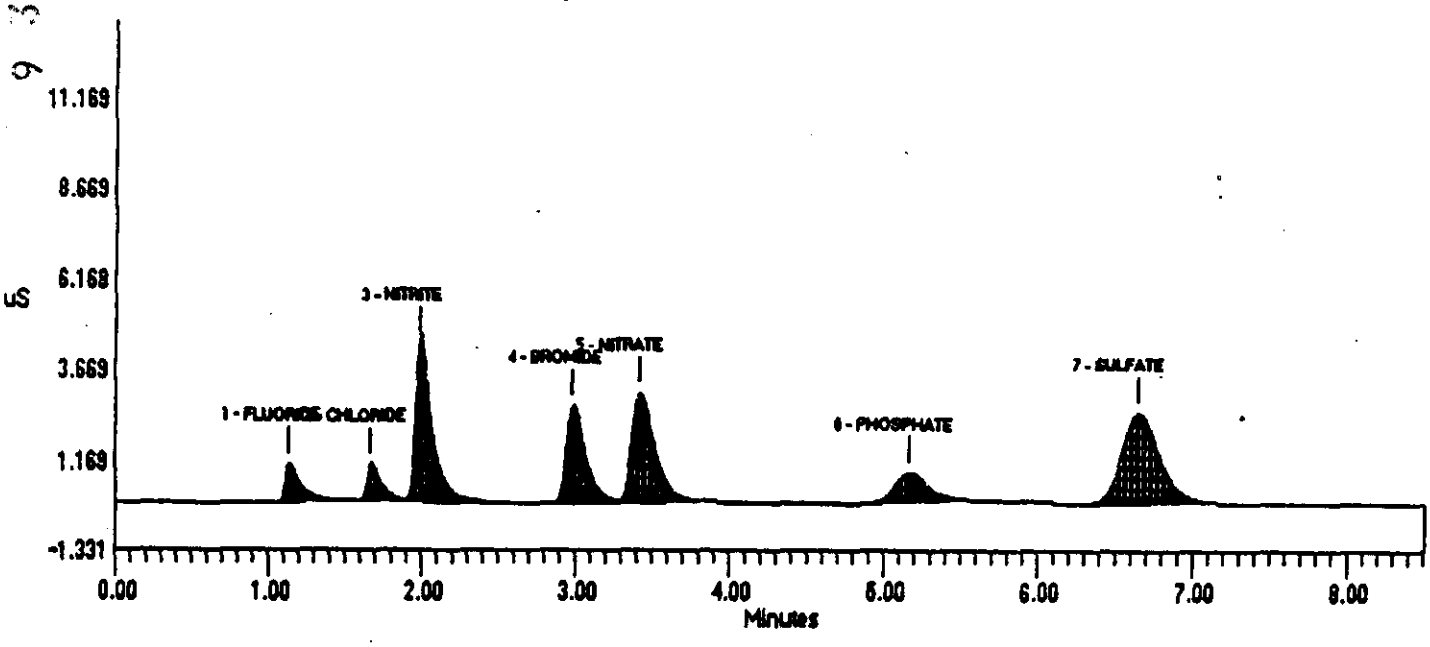


```
==========================================================================
: Sample Name: LMCS/73C11C0 R3L3 JK 7-14-92        Date: Tue Oct 01 00:32:59 1991:
: Data File   : c:\dx\data\91093061.D14                                   :
: Method      : c:\dx\method\SYSTEM1.met                                  :
: ACI Address: 1        System : 1        Inject#:  14  Detector: CDM-1   :
==========================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2555	5Hz	0.00	8.52	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	53.790	1068	7432	1	0.00
2	1.67	CHLORIDE	73.065	1011	6797	2	-1.96
3	1.98	NITRITE	511.009	4382	34073	2	-2.30
4	2.98	BROMIDE	495.249	2689	24562	2	-2.19
5	3.42	NITRATE	551.166	2999	32234	2	3.54
6	5.17	PHOSPHATE	513.595	854	12997	1	-2.82
7	6.65	SULFATE	585.022	2491	43198	1	-2.92

File: c:\dx\data\91093061.D14 Sample: LMCS/73C11C0



WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R318	Customer ID: 791-1A
Analysis: ION CHROMATOGRAPHIC - FLUORIDE	Sample Prep: UNDIGESTED

Instrument: DIONEX 4000 - WB54428	Procedure/Rev: LA-533-105/B-0
Technologist: M. MYERS	Date: 09-30-91
Starting Time: 22:35 - 09-30-91	Temperature: 24 - 25 deg C
Ending Time: 00:32 - 10-01-91	Chemist: D. HERT

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5571	11		
2	REAGENT BLANK	R317-5671	12		
3	SAMPLE 791-1A	R318-5771	13		
4	SAM DUP 791-1A	R318-5871	14		
5	SPIKE OF 791-1A	R318-5971	15		
6	FINAL LMCS CHECK STD	R323-5571	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 CHECK STD	73C11CO/0.1 mL			N/A
SPIKE	73C11CO/0.1 mL			N/A

A-6000-881 (03/92)

ION CHROMATOGRAPHIC ANALYSIS (FLUORIDE) - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5571	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
F	LA-533-105	% RECOVERY	W1TE2	0

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

Remarks, Calculations, Results:
EDP R974 DIONEX
STD# 73C11CO RESULT 53.664
STD VAL 56.0 %REC 95.8%

Analyst-1: [signature] 60823 9-30-91
Analyst-2: [signature]
Analyst-3: [signature]
Analyst-4: [signature]
Analyst-5: [signature]
Date: 9-30-91
Time Completed:
Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5671	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
F	LA-533-105	PPM	W1TE2	0

Sample Size: ? 5 ml ~~.100ml - 10ml~~ 5/29/92
Customer ID: REG DL

Remarks, Calculations, Results:
REAGENT BLANK
<1.00E-1ppm

Analyst-1: [signature] 60823
Analyst-2: [signature]
Analyst-3: [signature]
Analyst-4: [signature]
Analyst-5: [signature]
Date: 9-30-91
Time Completed:
Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 318.-5771	106AW	9-19-91	15: 4	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
F	LA-533-105	G/G	W1TE2	0

Sample Size: ? .100ml - 10ml - .250ml - 10ml
Customer ID: 791-1A

Remarks, Calculations, Results:
8.32E3

Analyst-1: [signature] 60823
Analyst-2: [signature]
Analyst-3: [signature]
Analyst-4: [signature]
Analyst-5: [signature]
Date: 9-30-91
Time Completed:
Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 318.-5871	106AW	9-19-91	15: 9	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
F	LA-533-105	PPM	W1TE2	0

Sample Size: ? .100ml - 10ml - .250ml - 10ml
Customer ID: 791-1A

Remarks, Calculations, Results:
DUPLICATE SAMPLE
8.30E3

Analyst-1: [signature] 60823
Analyst-2: [signature]
Analyst-3: [signature]
Analyst-4: [signature]
Analyst-5: [signature]
Date: 9-30-91
Time Completed:
Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 310.-5971	106AW	9-19-91	15:10	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
F	LA-533-105	% RECOVERY	W1TE2	0

Sample Size: ? .100-10ml - .100ml - 10ml + .050ml spike
Customer ID: 791-1A

Remarks, Calculations, Results:
SAMPLE SPIKED ID
SPIKE ID 73C11CO
SPIKE VOLUME .050ml

$$\frac{10660.456 - 8323.021}{(.05)(10201)(56)} \times 100 = 81.8\%$$

Analyst-1: [signature] 60823
Analyst-2: [signature]
Analyst-3: [signature]
Analyst-4: [signature]
Analyst-5: [signature]
Date: 9-30-91
Time Completed:
Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 323. 5571	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
F	LA-533-105	% RECOVERY	W1TE2	0

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

Remarks, Calculations, Results:
EDP R974 DIONEX
STD# 73C11CO RESULT 53.790
STD VAL 56.0 %REC 96.1%

Analyst-1: [signature] 60823
Analyst-2: [signature]
Analyst-3: [signature]
Analyst-4: [signature]
Analyst-5: [signature]
Date: 9-30-91
Time Completed:
Lab Unit Mgr: [signature]

9-22-91

4409-AC

DIONEX METHOD PARAMETERS - SYSTEM1.MET

System Parameters

System Name : system1/gpm
Number of Detectors..... 1
Detector 1 Type..... CDM-1
Detector 1 real time plot scale (uS)..... 20.00
Run Time (minutes)..... 8.50
Sampling Rate (seconds)..... 0.20

-- DETECTOR 1 PARAMETERS --

Report Options

Save Data File..... Yes
Data File Name: c:\dx\data\91092201.D08
Create ASCII Report File..... No
Print Report..... Yes
List Peaks Not Found in this run..... No
Report Unknowns Found in this run..... Yes
Print Chromatogram..... Yes
AutoScale Chromatogram to Highest Peak..... Yes
Fill Peaks with Color ..... Yes
Draw Grid Lines on Chromatogram..... No
Label with Peak Number..... Yes
Label with Retention Times on Chromatogram..... No
Label with Component Name..... Yes
Format File Name: c:\dx\method\default.prf

Integration Parameters

Starting Peak Width (seconds)..... 10.0
Peak Threshold (mV or uS/data pt interval)..... 0.500
Peak Area Reject..... 1000
Area Reject for Reference Peaks..... 1000
Percent Retention Time Window for Reference Peaks..... 5.0

Integration Timed Events

Time	Description
1.32	Start peak detection
1.44	Start peak detection
1.46	Start peak detection
1.77	
1.77	Enable end of peak detection

Calibration Parameters

Number Of Levels for Calibration	6
Calibration Fit Type	Quadratic
Replace Or Average Calibrations	Replace
External or Internal Calibration	External
Calibrate by Area or Height	Area
Default Injection Volume	1.0
Default Dilution Factor	1.0
Response Factor for Unknown Peaks	1.0
Calibration Standard Volume	1.0
Internal Standard Volume	1.0
Sample Unit	PPM

9 3 1 2 3 3 3 9 2 3

Component # 1 FLUORIDE Retention Time 1.13
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 8.52797E-002
K1 = 6.06440E-005
K2 = -6.17180E-011

Level	Amount	Area	Height
1	1.20000E-001	1439	225
2	3.00000E-001	4035	566
3	6.00000E-001	8217	1141
4	1.20000E+000	16507	2218
5	2.30000E+000	39534	4812
6	4.40000E+000	76890	9371

Component # 2 CHLORIDE Retention Time 1.70
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.93335E-002
K1 = 1.01273E-004
K2 = -9.35560E-011

Level	Amount	Area	Height
1	1.60000E-001	1319	217
2	3.90000E-001	3754	568
3	7.80000E-001	6742	1045
4	1.50000E+000	14461	1975
5	3.00000E+000	30287	3987
6	5.90000E+000	61305	8710

Component # 3 NITRITE Retention Time 2.03
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 4.88691E-001
K1 = 1.33960E-004
K2 = 5.52630E-012

Level	Amount	Area	Height
1	1.08000E+000	6239	874
2	2.69000E+000	17299	2252
3	5.37000E+000	34328	4729
4	1.06200E+001	72787	9300
5	2.08500E+001	153501	19401
6	4.01500E+001	292053	34439

Component # 4 BROMIDE Retention Time 2.80
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 4.01960E-002
K1 = 2.00453E-004
K2 = -1.00008E-010

Level	Amount	Area	Height
1	1.56000E+000	7660	753
2	3.90000E+000	20706	1880
3	7.80000E+000	38868	3455
4	1.54000E+001	78061	6644
5	3.02000E+001	165133	12632
6	5.81000E+001	350930	24386

Component # 5 NITRATE Retention Time 3.30
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.02611E-001
K1 = 1.61787E-004
K2 = -5.83501E-011

Level	Amount	Area	Height
1	1.37000E+000	7543	727
2	3.43000E+000	19321	1803
3	6.83000E+000	40244	3563
4	1.35000E+001	83386	7010
5	2.65000E+001	173503	13640
6	5.11000E+001	360809	25639

Component # 6 PHOSPHATE Retention Time 5.32
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 5.53452E-001
K1 = 3.53243E-004
K2 = -3.51156E-010

Level	Amount	Area	Height
1	1.19000E+000	2277	162
2	2.98000E+000	7242	453
3	5.93000E+000	15025	935
4	1.17400E+001	31660	1933
5	2.30300E+001	69135	4130
6	4.43700E+001	144749	8447

Component # 7 SULFATE Retention Time 6.85
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.55734E-001
K1 = 1.27491E-004
K2 = -3.79358E-011

Level	Amount	Area	Height
1	1.40000E+000	9418	543
2	3.50000E+000	24499	1382
3	6.96000E+000	52303	2890
4	1.37800E+001	107173	5909
5	2.70400E+001	225632	12225
6	5.20700E+001	471630	24686

IC Control File: C:\DX\METHOD\SYSTEM1.TE

Step	Time	Description
Init		CDM-1 AutoOffset Off
Init		CDM-1 Recorder Mark OFF
Init		CDM-1 Temp. Comp. = 1.7 / Deg C
Init		CDM-1 Recorder Range = 1.0 uS
Init		CDM-1 Cell ON
Init		CHA Heater = 25 Deg. C
Init		Valve A ON
Init		Valve B ON
Init		Inject Valve OFF
Init		ACI Autosmp OFF
Init		ACI RLY 2 OFF
Init		ACI TTL 1 OFF
Init		ACI TTL 2 OFF
Init		ACI AC 1 ON
Init		GPM Start
Init		GPM Hold Gradient Clock
Init		GPM Reset ON
1	0.0	CDM-1 AutoOffset ON
1	0.0	Start Sampling
1	0.0	GPM Reset OFF
2	0.1	CDM-1 Recorder Range = 10.0 uS
2	0.1	Inject Valve ON
2	0.1	GPM Run Gradient Clock
3	3.0	Inject Valve OFF
4	3.5	ACI Autosmp ON
5	8.0	ACI Autosmp OFF

GpmFile: C:\DX\METHOD\SYSTEM1.GPM
Lo Pressure Limit = 200
Hi Pressure Limit = 2000
Eluant 1 - DI WATER
Eluant 2 - SODIUM CARBONATE
Eluant 3 - SODIUM BICARBONATE
Eluant 4 - Eluant 4

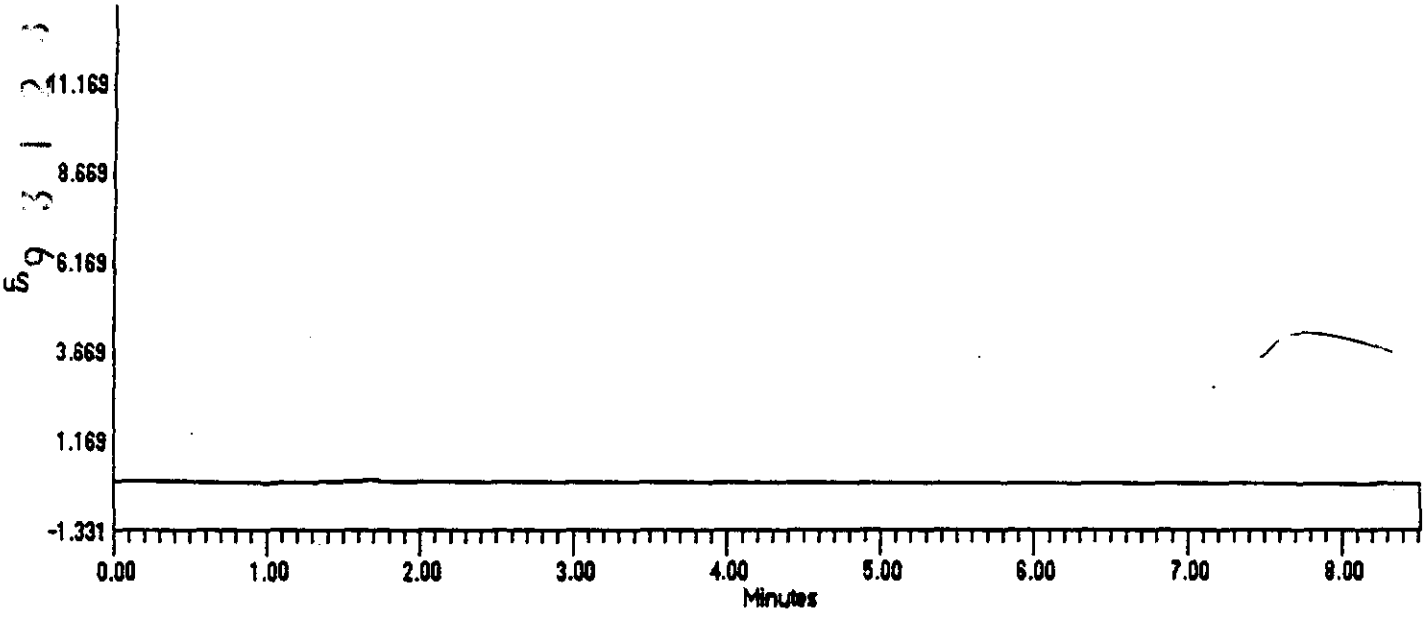
Time	Flow	%1	%2	%3	%4	V5	V6	Comment
0.0	2.0	84	8	8	0	0	0	

```
==============================================================================
: Sample Name: BLANK                          Date: Mon Sep 30 22:35:47 1991:
: Data File  : c:\dx\data\91093071.D02                                      :
: Method     : c:\dx\method\SYSTEM1.met                                     :
: ACI Address: 1        System : 1        Inject#:   2  Detector: CDM-1     :
==============================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2555	5Hz	0.00	8.52	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta

File: c:\dx\data\91093071.D02 Sample: BLANK

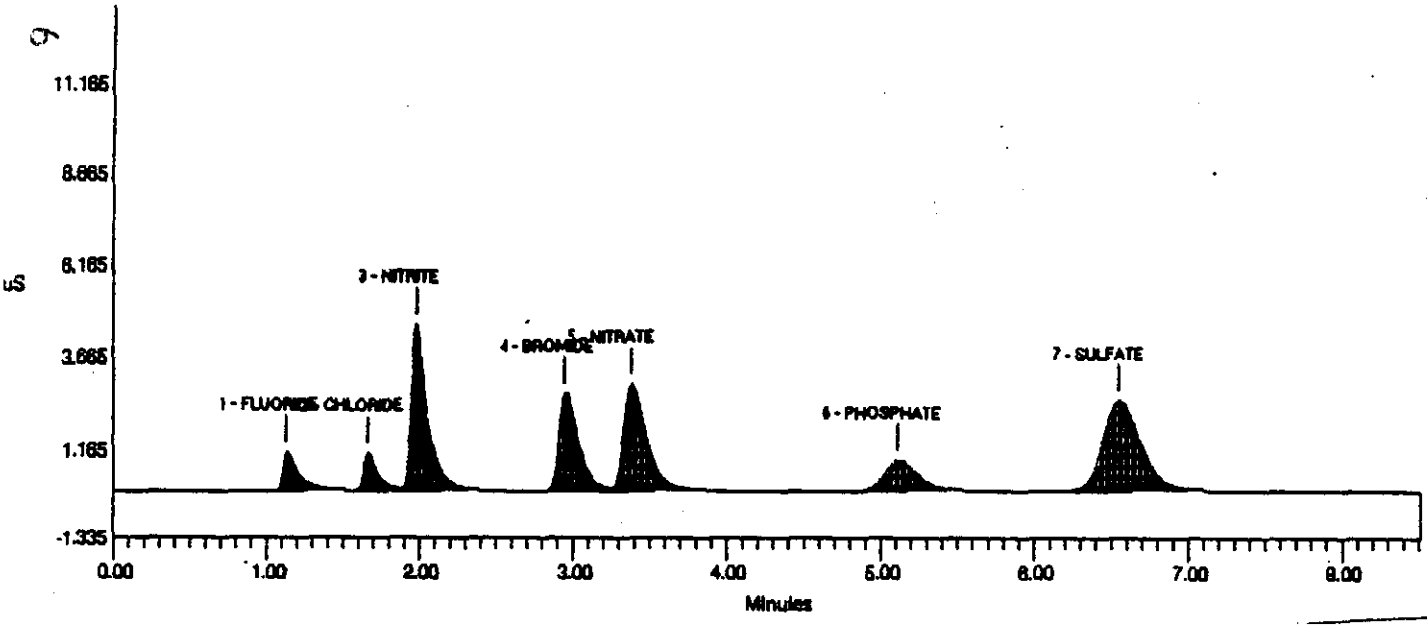


```
==========================================================================
| Sample Name: LMCS/73C11C0 R3/6 JK 7-16-92      Date: Mon Sep 30 22:45:24 1991|
| Data File   : c:\dx\data\91093071.D03                                    |
| Method      : c:\dx\method\SYSTEM1.met                                   |
| ACI Address: 1        System : 1        Inject#:   3  Detector: CDM-1    |
==========================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2555	5Hz	0.00	8.52	1000

Pk. Num	Ret Time	Component Name		Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	95.8	53.664	1073	7411	1	0.00
2	1.67	CHLORIDE	95.6	71.733	1049	6666	2	-1.96
3	1.98	NITRITE	98.4	501.700	4572	33387	2	-2.30
4	2.95	BROMIDE	JK 7-16-92	487.695	2681	24180	2	-3.28
5	3.38	NITRATE	93.9	529.531	2918	30880	2	2.53
6	5.12	PHOSPHATE	102.0	527.513	869	13397	1	-3.76
7	6.55	SULFATE	96.2	586.801	2510	43340	1	-4.38

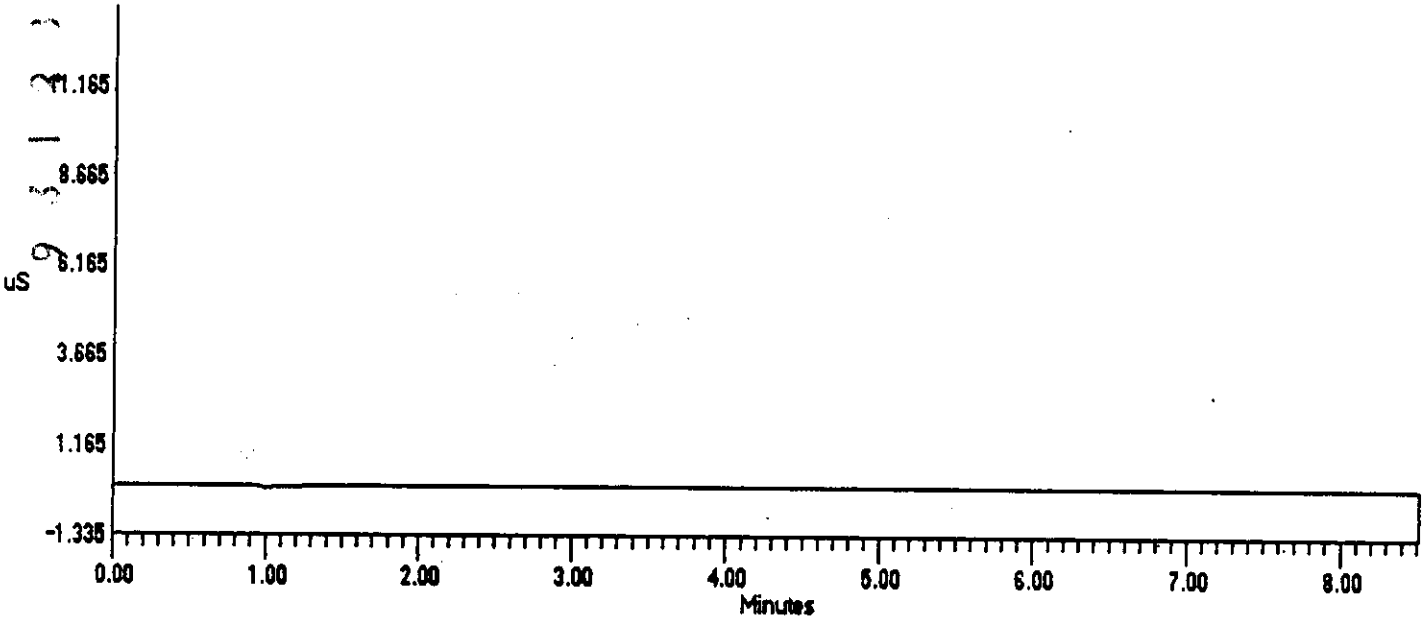
File: c:\dx\data\91093071.D03 Sample: LMCS/73C11C0



```
==========================================================================
: Sample Name: R317                                Date: Mon Sep 30 22:55:18 1991:
: Data File   : c:\dx\data\91093071.D04                                   :
: Method      : c:\dx\method\SYSTEM1.met                                  :
: ACI Address: 1        System : 1        Inject#:   4  Detector: CDM-1   :
==========================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2555	5Hz	0.00	8.52	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta

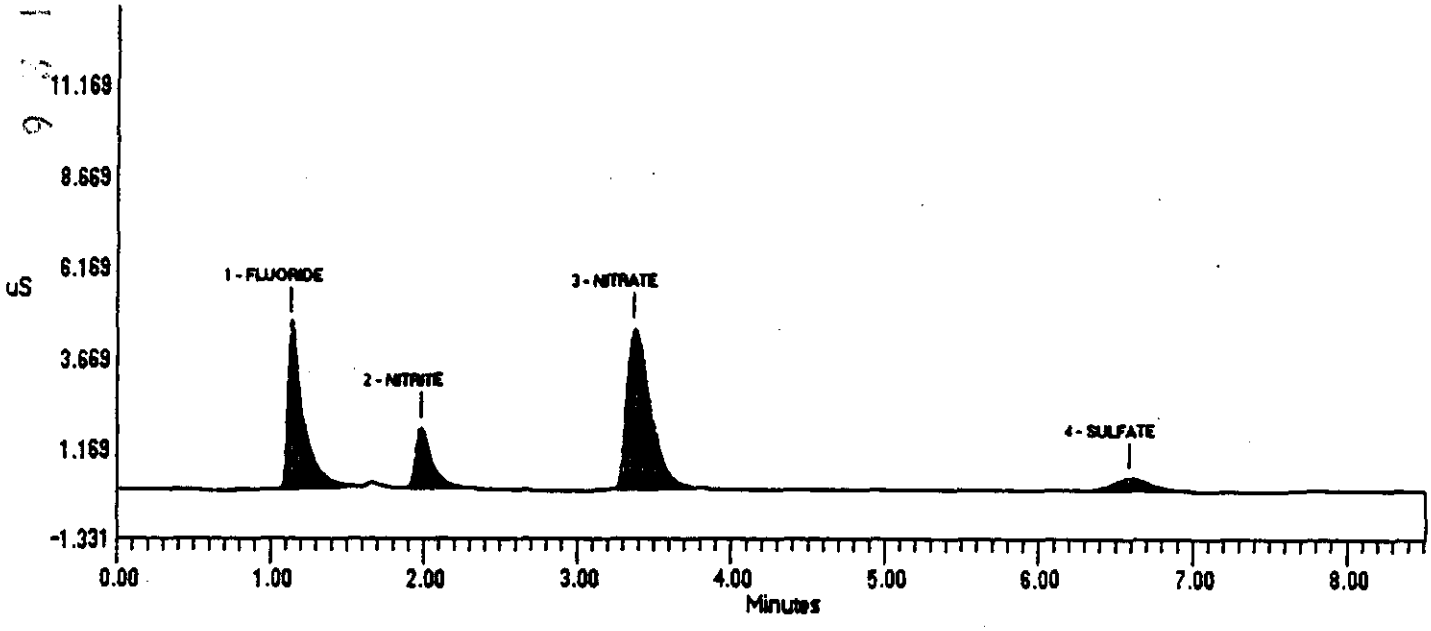


```
==========================================================================
: Sample Name: R318                          Date: Mon Sep 30 23:24:32 1991:
: Data File   : c:\dx\data\91093071.D07                                   :
: Method      : c:\dx\method\SYSTEM1.met                                  :
: ACI Address: 1        System : 1        Inject#:   7  Detector: CDM-1   :
==========================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	4141	2555	5Hz	0.00	8.52	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	8323.021	4583	32834	1	0.00
2	1.98	NITRITE	9006.213	1715	12581	1	-2.30
3	3.37	NITRATE	33602.049	4464	49157	1	2.02
4	6.58	SULFATE	4790.788	375	6296	1	-3.89

File: c:\dx\data\91093071.D07 Sample: R318

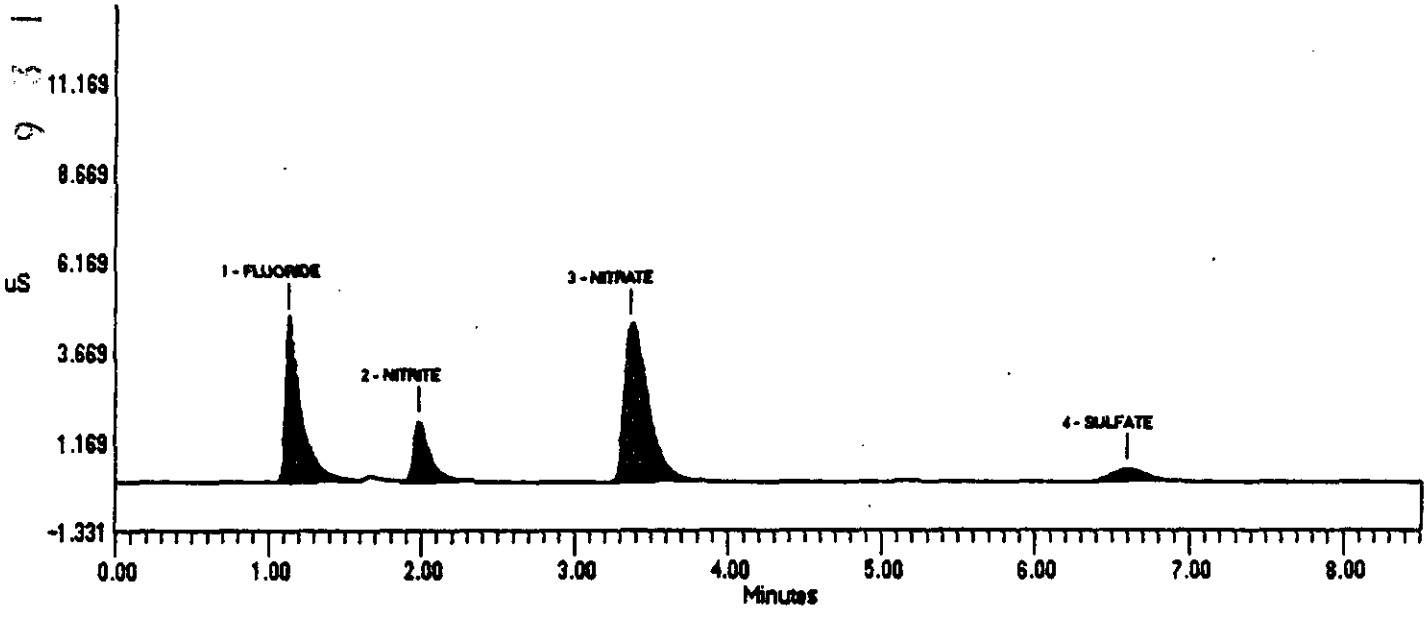


```
==========================================================================
| Sample Name: R318DUP                          Date: Mon Sep 30 23:34:20 1991|
| Data File   : c:\dx\data\91093061.D08                                    |
| Method      : c:\dx\method\SYSTEM1.met                                   |
| ACI Address: 1        System : 1        Inject#:   8  Detector: CDM-1    |
==========================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	4141	2555	5Hz	0.00	8.52	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	8295.997	4554	32718	1	0.00
2	1.98	NITRITE	8983.501	1680	12540	1	-2.30
3	3.37	NITRATE	33346.891	4394	48762	1	2.02
4	6.60	SULFATE	4470.734	357	5688	1	-3.65

File: c:\dx\data\91093061.D08 Sample: R318DUP

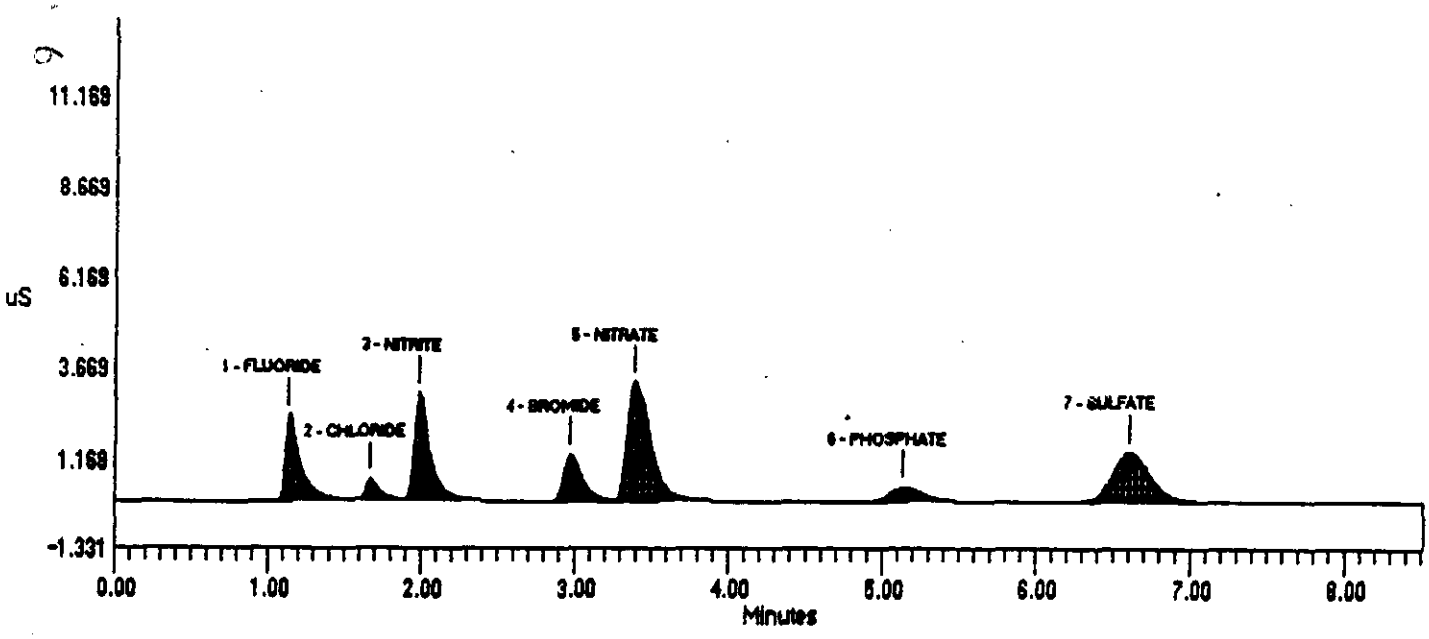


Sample Name: R318SPIKE Date: Mon Sep 30 23:44:07 1991
Data File : c:\dx\data\91093061.D09
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1 System : 1 Inject#: 9 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	10201	2555	5Hz	0.00	8.52	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	10660.456	2342	16090	1	0.00
2	1.67	CHLORIDE	4157.957	572	3649	2	-1.96
3	1.98	NITRITE	34501.597	2929	21580	2	-2.30
4	2.97	BROMIDE	23975.755	1309	11592	2	-2.73
5	3.38	NITRATE	60888.202	3260	35477	2	2.53
6	5.13	PHOSPHATE	28182.461	419	6294	1	-3.45
7	6.60	SULFATE	34254.252	1382	23716	1	-3.65

File: c:\dx\data\91093061.D09 Sample: R318SPIKE

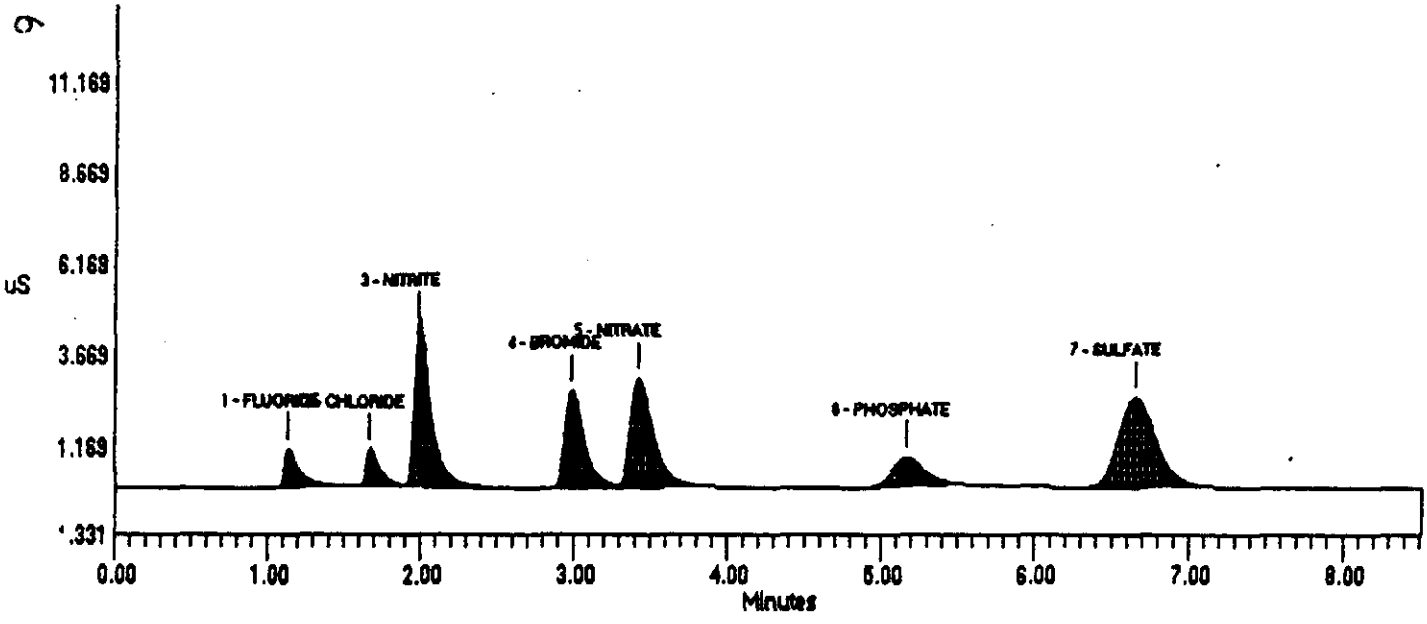


```
==========================================================================
: Sample Name: LMCS/73C11C0 R3L3 JR 7-14-92        Date: Tue Oct 01 00:32:59 1991:
: Data File  : c:\dx\data\91093061.D14                                    :
: Method     : c:\dx\method\SYSTEM1.met                                   :
: ACI Address: 1        System : 1        Inject#:  14  Detector: CDM-1   :
==========================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2555	5Hz	0.00	8.52	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	53.790	1068	7432	1	0.00
2	1.67	CHLORIDE	73.065	1011	6797	2	-1.96
3	1.98	NITRITE	511.009	4382	34073	2	-2.30
4	2.98	BROMIDE	495.249	2689	24562	2	-2.19
5	3.42	NITRATE	551.166	2999	32234	2	3.54
6	5.17	PHOSPHATE	513.595	854	12997	1	-2.82
7	6.65	SULFATE	585.022	2491	43198	1	-2.92

File: c:\dx\data\91093061.D14 Sample: LMCS/73C11C0



WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R318	Customer ID: 791-1A
Analysis: ION CHROMATOGRAPHIC - NITRITE	Sample Prep: UNDIGESTED

Instrument: DIONEX 4000 - WB54428	Procedure/Rev: LA-533-105/B-0
Technologist: M. MYERS	Date: 10-02-91
Starting Time: 18:55	Temperature: 24-25degC
Ending Time: 21:31	Chemist: D. HERT

	Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5576
2	REAGENT BLANK	R317-5676
3	SAMPLE 791-1A	R318-5776
4	SAM DUP 791-1A	R318-5876
5	SPIKE OF 791-1A	R318-5976
6	FINAL LMCS CHECK STD	R323-5576
7		
8		
9		
10		

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

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS CHECK STD	73C11CO/0.1 mL			NA
SPIKE	73C11CO/0.05 mL			NA

A-6000-881 (03/92)

ION CHROMATOGRAPHIC ANALYSIS (NITRITE) - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5576	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
NO2	LA-533-105	% RECOVERY	WITE2	0

Sample Size: ? .100ml-10ml — Customer ID: STD

Remarks, Calculations, Results:
EDP R968 DIONEX
STD# 73C11C0 RESULT 494.073
STD VAL 510.0 %REC 96.9%

Analyst-1: [signature] — Analyst-2: — Analyst-3: — Analyst-4: [signature] — Analyst-5: [signature]
Hrs: 6CB23 — Hrs: — Hrs: — Hrs: [signature]
Date: 10-2-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5676	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
NO2	LA-533-105	PPM	WITE2	0

Sample Size: ? 1ml — Customer ID: REG BL

Remarks, Calculations, Results:
REAGENT BLANK
<1 ppm

Analyst-1: [signature] — Analyst-2: — Analyst-3: — Analyst-4: — Analyst-5: [signature]
Hrs: 6CB23 — Hrs: — Hrs: — Hrs: — Hrs:
Date: 10-2-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 318.-5776	106AW	9-19-91	15:6	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
NO2	LA-533-105	PPM	WITE2	0

Sample Size: ? .100ml-10ml-.250ml-10ml — Customer ID: 791-1A

Remarks, Calculations, Results:
DMS 10/2/91
~~34110.138~~
9012.710

Analyst-1: [signature] — Analyst-2: — Analyst-3: — Analyst-4: — Analyst-5: [signature]
Hrs: 6CB23 — Hrs: — Hrs: — Hrs: — Hrs:
Date: 10-2-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 318.-5876	106AW	9-19-91	15:10	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
NO2	LA-533-105	PPM	WITE2	0

Sample Size: ? .100ml-10ml-.250ml-10ml — Customer ID: 791-1A

Remarks, Calculations, Results:
DUPLICATE SAMPLE
9090.953

Analyst-1: [signature] — Analyst-2: — Analyst-3: — Analyst-4: — Analyst-5: [signature]
Hrs: 6CB23 — Hrs: — Hrs: — Hrs: — Hrs:
Date: 10-2-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 318.-5976	106AW	9-19-91	15:11	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
NO2	LA-533-105	% RECOVERY	WITE2	0

Sample Size: ? .100ml-10ml-.250ml-10ml — Customer ID: 791-1A

Remarks, Calculations, Results:
SAMPLE SPIKED ID
SPIKE ID 73C11C0
SPIKE VOLUME .050ml
18452.879 - 9012.710
(.050)(4141)(510.0) x100 = 89.4%

Analyst-1: [signature] — Analyst-2: — Analyst-3: — Analyst-4: — Analyst-5: [signature]
Hrs: 6CB23 — Hrs: — Hrs: — Hrs: — Hrs:
Date: 10-2-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5576	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
NO2	LA-533-105	% RECOVERY	WITE2	0

Sample Size: ? .100ml-10ml — Customer ID: STD

Remarks, Calculations, Results:
EDP R968 DIONEX
STD# 73C11C0 RESULT 501.702
STD VAL 510.0 %REC 98.4%

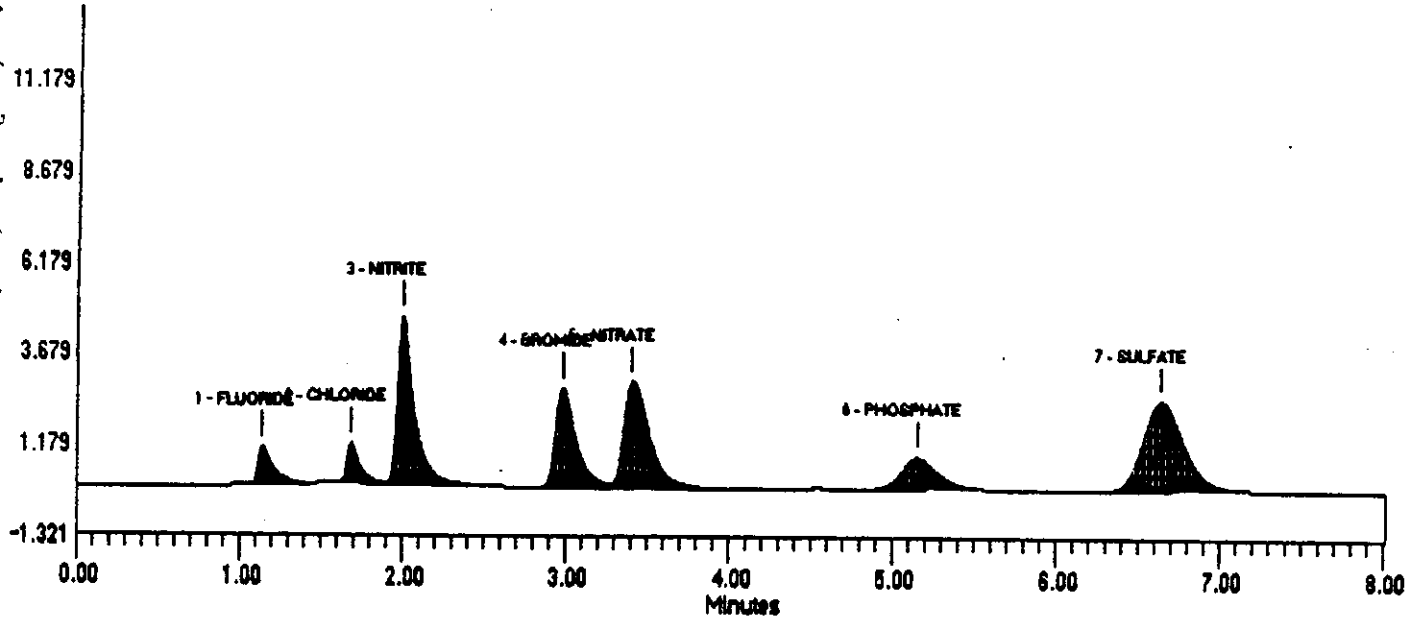
Analyst-1: [signature] — Analyst-2: — Analyst-3: — Analyst-4: [signature] — Analyst-5: [signature]
Hrs: 6CB23 — Hrs: — Hrs: — Hrs: — Hrs:
Date: 10-2-91 — Time Completed: — Lab Unit Mgr: [signature]

Sample Name: LMCS/73C11C0 R3/6 JK 6-19-92		Date: Wed Oct 02 18:55:16 1991	
Data File : c:\dx\data\91100111.D03			
Method : c:\dx\method\SYSTEM1.met			
ACI Address: 1	System : 1	Inject#: 3	Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	51.501	1052	7053	1	0.00
2	1.68	CHLORIDE	67.889	1092	6285	2	-0.98
3	2.00	NITRITE	494.073	4650	32824	2	-1.48
4	2.98	BROMIDE	487.271	2732	24158	2	-2.19
5	3.40	NITRATE	538.528	2889	31443	2	3.03
6	5.15	PHOSPHATE	522.442	861	13251	1	-3.13
7	6.63	SULFATE	581.586	2485	42924	1	-3.16

File: c:\dx\data\91100111.D03 Sample: LMCS/73C11C0



08/29/92

~~193~~

183

DATA REPROCESSED ON Wed Oct 02 19:17:10 1991

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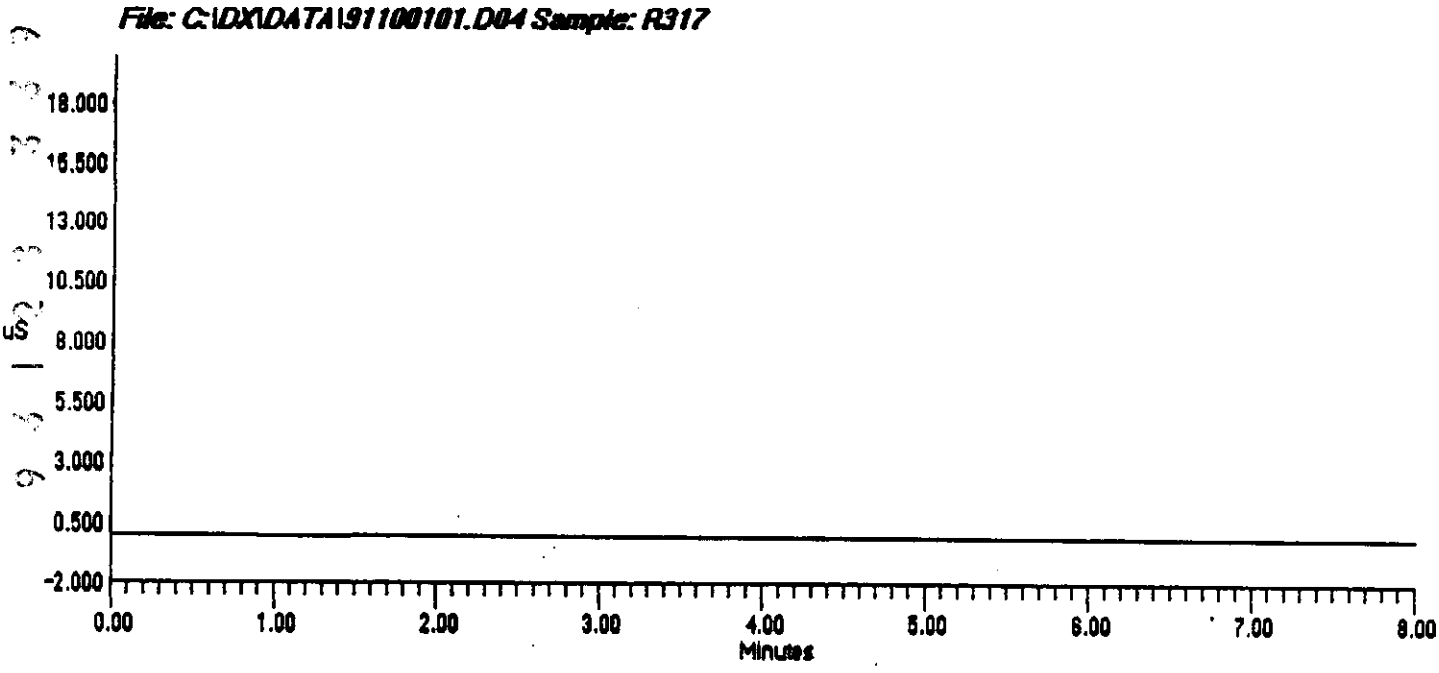
==========================================================================
| Sample Name: R317                          Date: Wed Oct 02 19:04:35 1991|
| Data File   : C:\DX\DATA\91100101.D04                                   |
| Method      : c:\dx\method\SYSTEM1.met                                  |
| ACI Address: 1        System : 1        Inject#:   4  Detector: CDM-1   |
==========================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta



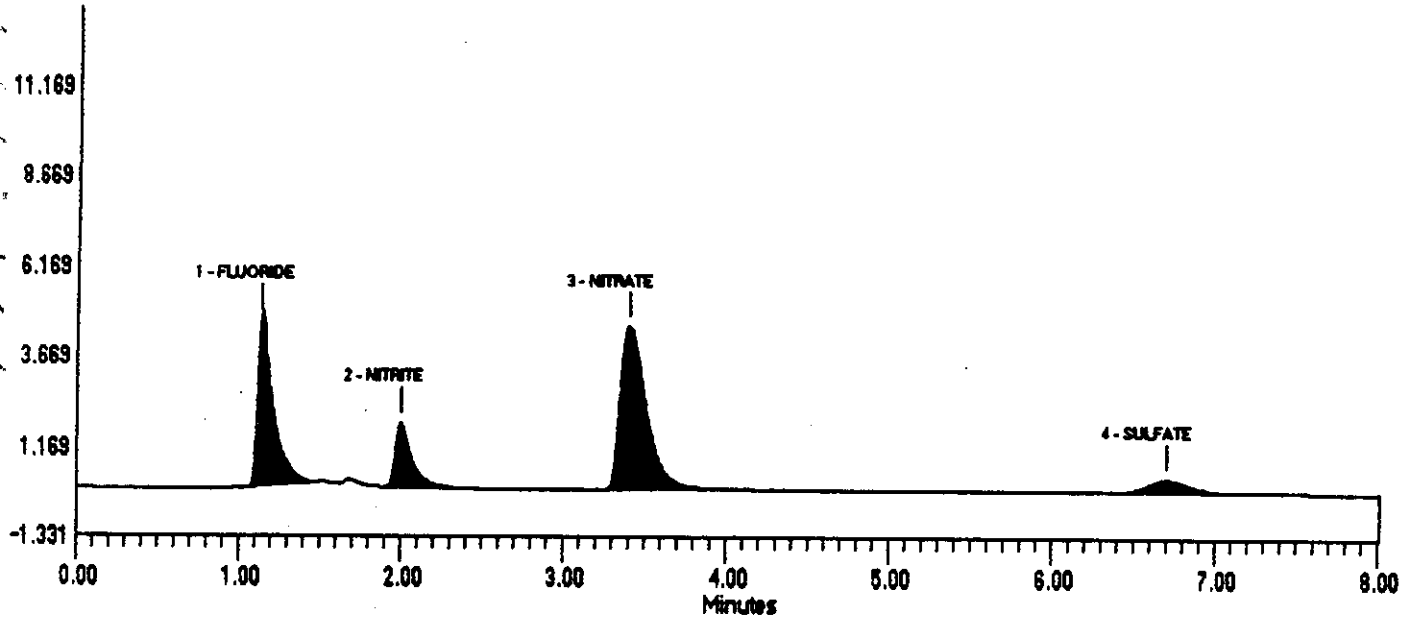
184 ~~195~~ 08/29/92

Sample Name: R318		Date: Wed Oct 02 19:42:31 1991	
Data File : c:\dx\data\91100101.D08			
Method : c:\dx\method\SYSTEM1.met			
ACI Address: 1	System : 1	Inject#: 8	Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	4141	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	8055.771	4626	31695	1	0.00
2	2.00	NITRITE	9012.710	1778	12593	1	-1.48
3	3.40	NITRATE	34110.138	4512	49943	1	3.03
4	6.70	SULFATE	4752.182	377	6223	1	-2.19

File: c:\dx\data\91100101.D08 Sample: R318



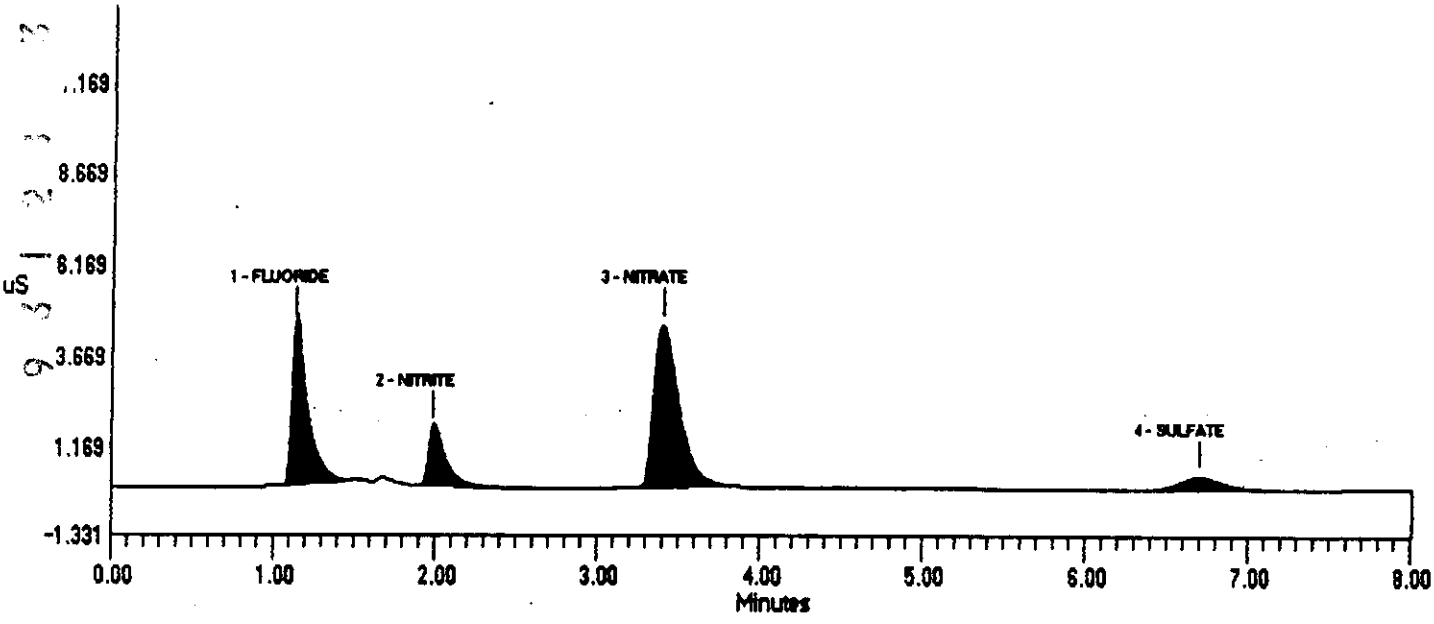
185198

Sample Name: R318DUP	Date: Wed Oct 02 19:51:45 1991
Data File : c:\dx\data\91100101.D09	
Method : c:\dx\method\SYSTEM1.met	
ACI Address: 1 System : 1 Inject#: 9 Detector: CDM-1	

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	4141	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	7878.774	4463	30942	1	0.00
2	1.98	NITRITE	9090.953	1657	12733	1	-2.30
3	3.40	NITRATE	33481.007	4494	48969	1	3.03
4	6.70	SULFATE	4631.723	365	5994	1	-2.19

File: c:\dx\data\91100101.D09 Sample: R318DUP

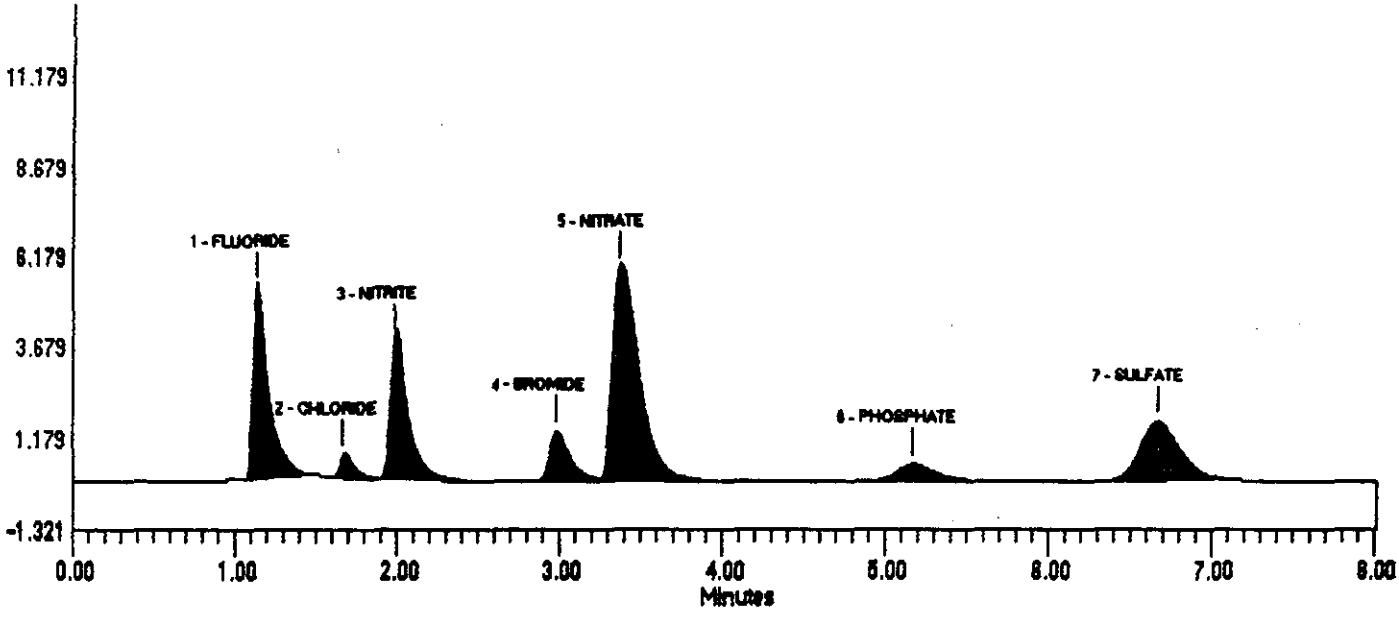


Sample Name: R318SP	Date: Wed Oct 02 20:00:58 1991
Data File : c:\dx\data\91100101.D10	
Method : c:\dx\method\SYSTEM1.met	
ACI Address: 1 System : 1 Inject#: 10 Detector: CDM-1	

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	4141	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	8796.192	5209	34857	1	0.00
2	1.67	CHLORIDE	1842.082	619	4019	1	-1.96
3	1.98	NITRITE	18452.879	3782	29581	1	-2.30
4	2.98	BROMIDE	9870.158	1352	11759	2	-2.19
5	3.37	NITRATE	45020.161	5841	66944	2	2.02
6	5.17	PHOSPHATE	11911.583	440	6620	1	-2.82
7	6.67	SULFATE	15956.756	1609	27662	1	-2.68

File: c:\dx\data\91100101.D10 Sample: R318SP

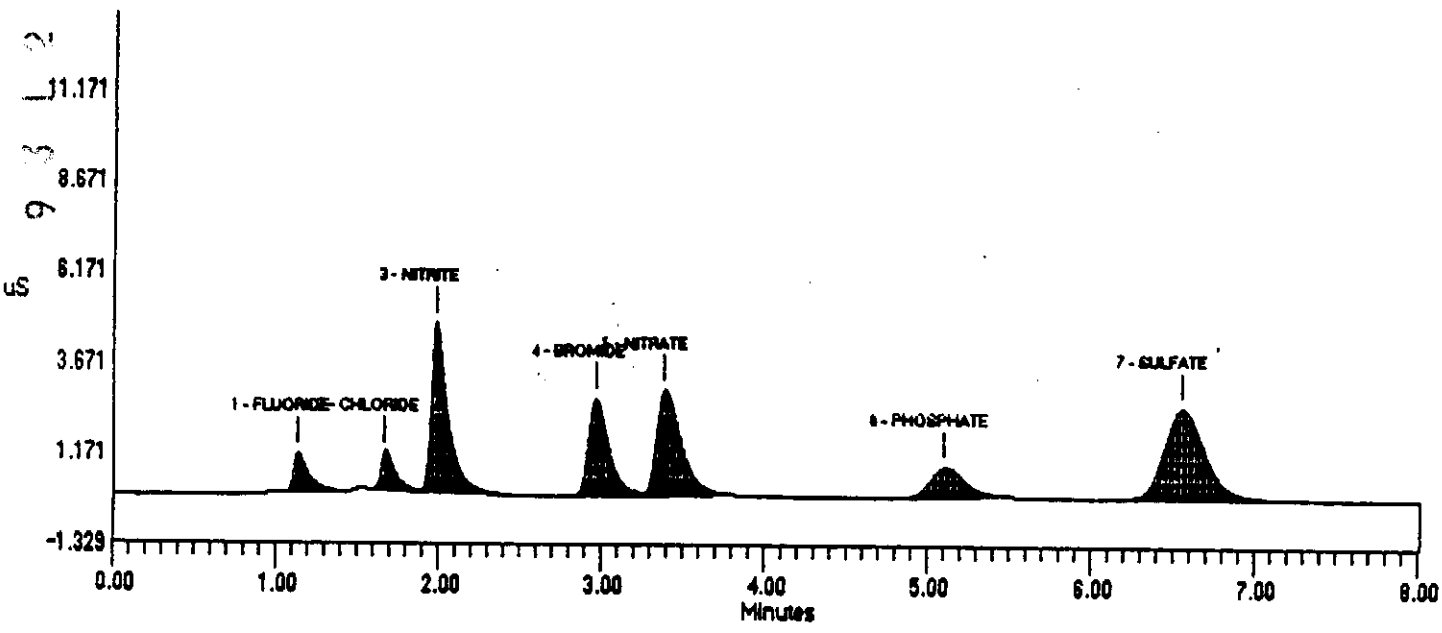


Sample Name: LMCS/73C11C0 R3L3 6-14-92		Date: Wed Oct 02 21:31:01 1991	
Data File : c:\dx\data\91100101.D19			
Method : c:\dx\method\SYSTEM1.met			
ACI Address: 1	System : 1	Inject#: 19	Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	52.789	1086	7266	1	0.00
2	1.67	CHLORIDE	69.288	1038	6424	2	-1.96
3	1.98	NITRITE	501.702	4638	33387	2	-2.30
4	2.97	BROMIDE	485.310	2705	24059	2	-2.73
5	3.38	NITRATE	533.443	2901	31125	2	2.53
6	5.10	PHOSPHATE	506.601	836	12795	1	-4.08
7	6.55	SULFATE	582.554	2497	43001	1	-4.38

File: c:\dx\data\91100101.D19 Sample: LMCS/73C11C0



LLNewb 08/28/91

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WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R318	Customer ID: 791-1A
Analysis: ION CHROMATOGRAPHIC - SULFATE	Sample Prep: UNDIGESTED

Instrument: DIONEX 4000 - WB54428	Procedure/Rev: LA-533-105/B-0
Technologist: M. MYERS	Date: 10-02-91
Starting Time: 18:55	Temperature: 24-25degC
Ending Time: 21:31	Chemist: D. HERT

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5575	11		
2	REAGENT BLANK	R317-5675	12		
3	SAMPLE 791-1A	R318-5775	13		
4	SAM DUP 791-1A	R318-5875	14		
5	SPIKE OF 791-1A	R318-5975	15		
6	FINAL LMCS CHECK STD	R323-5575	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 CHECK STD	73C11CO/0.1 mL			NA
SPIKE	73C11CO/0.05 mL			NA

A-6000-881 (03/92)

ION CHROMATOGRAPHIC ANALYSIS (SULFATE) - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5575	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
SO4	LA-533-105	% RECOVERY	W1TE2	0

Sample Size: ? .100ml - 10ml — Customer ID: STD

Remarks, Calculations, Results:
EDP R970 DIONEX
STD# 73C11CO RESULT 581.586
STD VAL 610.0 %REC 95.3%

Analyst-1: [signature] — Analyst-2: — Analyst-3: — Analyst-4: [signature] — Analyst-5: [signature]
Hrs: 6C823 — Date: 10-2-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5675	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
SO4	LA-533-105	PPM	W1TE2	0

Sample Size: ? 1ml — Customer ID: REG BL

Remarks, Calculations, Results:
REAGENT BLANK
<1ppm

Analyst-1: [signature] — Analyst-2: — Analyst-3: — Analyst-4: — Analyst-5: [signature]
Hrs: 6C823 — Date: 10-2-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 310.-5775	106AW	9-19-91	15: 6	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
SO4	LA-533-105	PPM	W1TE2	0

Sample Size: ? .100ml - 10ml - .250ml - 10ml — Customer ID: 791-1A

Remarks, Calculations, Results:
3887.419

Analyst-1: [signature] — Analyst-2: — Analyst-3: — Analyst-4: — Analyst-5: [signature]
Hrs: 6C823 — Date: 10-2-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 310.-5875	106AW	9-19-91	15:10	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
SO4	LA-533-105	PPM	W1TE2	0

Sample Size: ? .100ml - 10ml - ~~.250ml - 10ml~~ PMS 10/3/91 — Customer ID: 791-1A

Remarks, Calculations, Results:
DUPLICATE SAMPLE
3876.142

Analyst-1: [signature] — Analyst-2: — Analyst-3: — Analyst-4: — Analyst-5: [signature]
Hrs: 6C823 — Date: 10-2-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 318.-5975	106AW	9-19-91	15:11	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
SO4	LA-533-105	% RECOVERY	W1TE2	0

Sample Size: ? .100ml - 10ml - .250ml - 10ml — Customer ID: 791-1A

Remarks, Calculations, Results:
SAMPLE SPIKED ID
SPIKE ID 73C11CO
SPIKE VOLUME .050ml

$$\frac{4228.504 - 3887.419}{(.050)(101)(610)} \times 100 = 110.7\%$$

Analyst-1: [signature] — Analyst-2: — Analyst-3: — Analyst-4: — Analyst-5: [signature]
Hrs: 6C823 — Date: 10-2-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5575	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
SO4	LA-533-105	% RECOVERY	W1TE2	0

Sample Size: ? .100ml - 10ml — Customer ID: STD

Remarks, Calculations, Results:
EDP R970 DIONEX
STD# 73C11CO RESULT 582.554
STD VAL 610.0 %REC 95.5%

Analyst-1: [signature] — Analyst-2: — Analyst-3: — Analyst-4: [signature] — Analyst-5: [signature]
Hrs: 6C823 — Date: 10-2-91 — Time Completed: — Lab Unit Mgr: [signature]

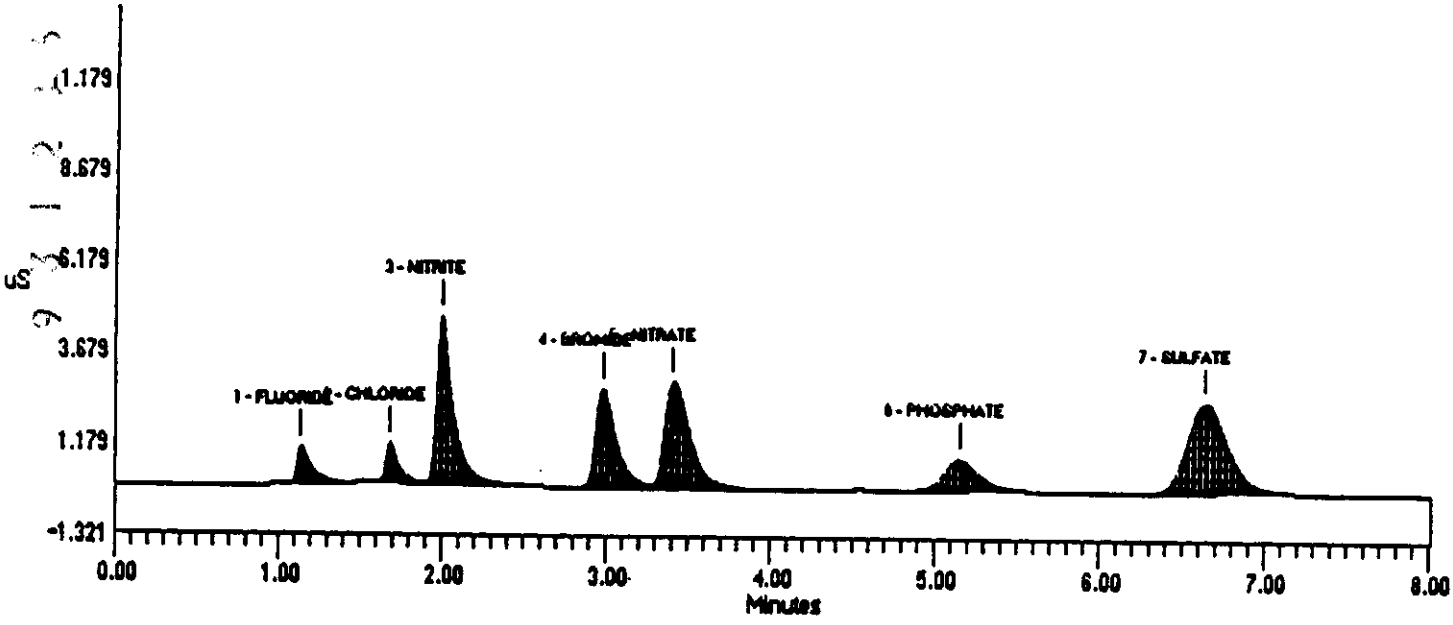
9 3 1 2 3 3 3 9 1 3

```
: Sample Name: LMCS/73C11C0 R316 JR 6-19-92        Date: Wed Oct 02 18:55:16 1991:
: Data File   : c:\dx\data\91100111.D03                                          :
: Method      : c:\dx\method\SYSTEM1.met                                         :
: ACI Address: 1        System : 1        Inject#:   3  Detector: CDM-1          :
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	51.501	1052	7053	1	0.00
2	1.68	CHLORIDE	67.889	1092	6285	2	-0.98
3	2.00	NITRITE	494.073	4650	32824	2	-1.48
4	2.98	BROMIDE	487.271	2732	24158	2	-2.19
5	3.40	NITRATE	538.528	2889	31443	2	3.03
6	5.15	PHOSPHATE	522.442	861	13251	1	-3.13
7	6.63	SULFATE	581.586	2485	42924	1	-3.16

File: c:\dx\data\91100111.D03 Sample: LMCS/73C11C0



DATA REPROCESSED ON Wed Oct 02 19:17:10 1991

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==========================================================================
: Sample Name: R317                          Date: Wed Oct 02 19:04:35 1991:
: Data File   : C:\DX\DATA\91100101.D04                                    :
: Method      : c:\dx\method\SYSTEM1.met                                   :
: ACI Address: 1        System : 1        Inject#:   4  Detector: CDM-1    :
==========================================================================
```
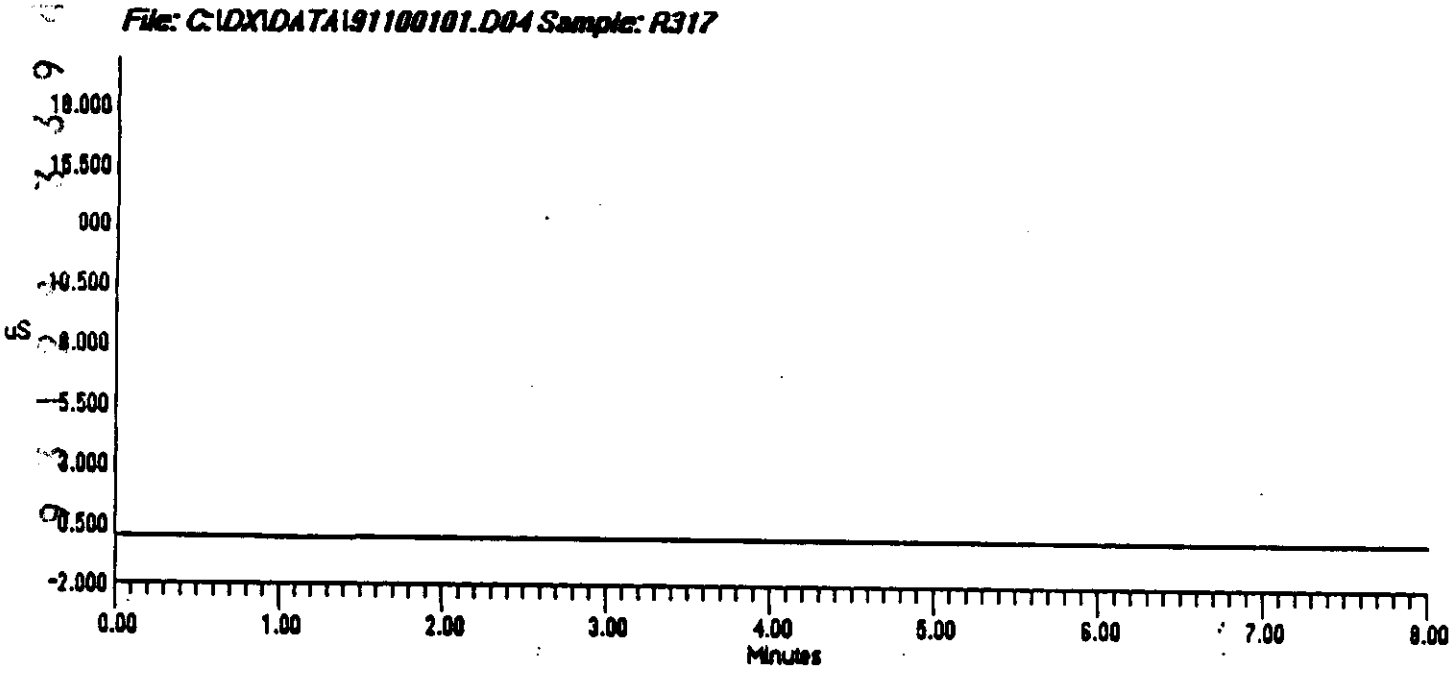

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta



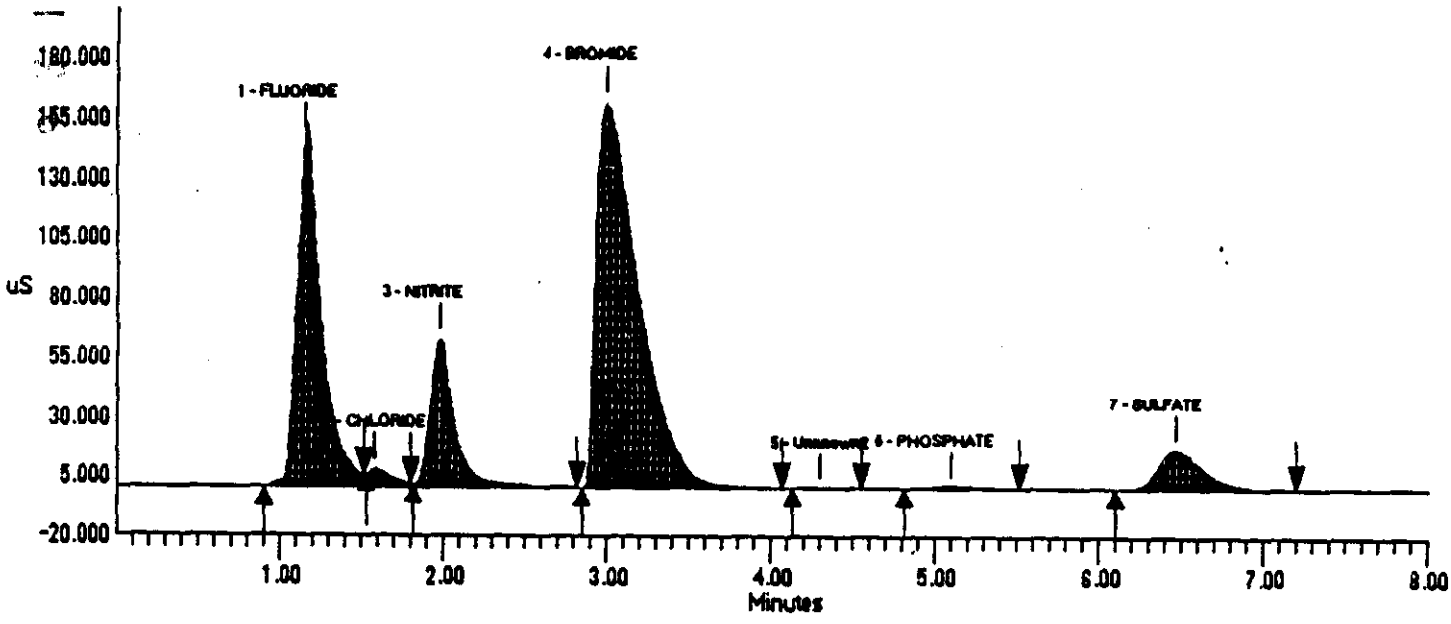
DATA REPROCESSED ON Wed Oct 02 21:50:50 1991

Sample Name: R318	Date: Wed Oct 02 19:13:52 1991
Data File : C:\DX\DATA\91100101.D05	
Method : c:\dx\method\SYSTEM1.met	
ACI Address: 1 System : 1	Inject#: 5 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.15	FLUORIDE	-6339.341	145923	1613678	3	0.00
2	1.58	CHLORIDE	6070022.593	5849	60099	4	-1.24
3	1.98	NITRITE	9105.753	63021	651831	2	-3.71
4	3.00	BROMIDE	-27349.655	161852	2928951	2	-3.06
5	4.30	Unknown2	229370.354	167	2271	2	-1.45
6	5.10	PHOSPHATE	646.027	1061	16822	1	-5.47
7	6.47	SULFATE	3887.419	17354	331882	1	-6.96

File: C:\DX\DATA\91100101.D05 Sample: R318



DATA REPROCESSED ON Wed Oct 02 21:58:56 1991

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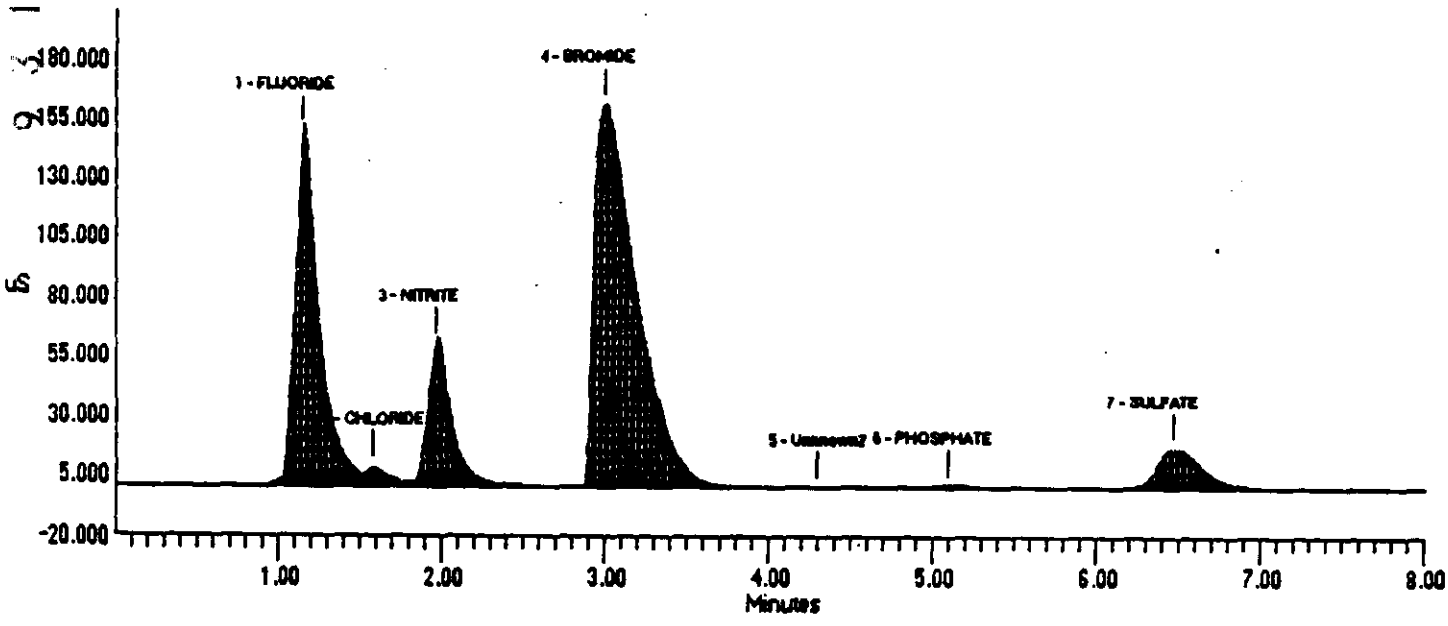
==================================================================================
: Sample Name: R318DUP                          Date: Wed Oct 02 19:23:33 1991:
: Data File  : C:\DX\DATA\91100101.D06                                         :
: Method     : c:\dx\method\SYSTEM1.met                                        :
: ACI Address: 1        System : 1        Inject#:   6  Detector: CDM-1        :
==================================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.15	FLUORIDE	-6305.037	149479	1611224	3	0.00
2	1.58	CHLORIDE	6130670.892	5932	60700	4	-1.24
3	1.97	NITRITE	8963.805	60477	641871	2	-4.52
4	3.00	BROMIDE	-27424.411	161452	2930871	3	-3.06
5	4.30	Unknown2	241834.187	171	2394	4	-1.45
6	5.10	PHOSPHATE	670.211	1086	17524	1	-5.47
7	6.47	SULFATE	3876.142	17073	330791	1	-6.96

File: C:\DX\DATA\91100101.D06 Sample: R318DUP



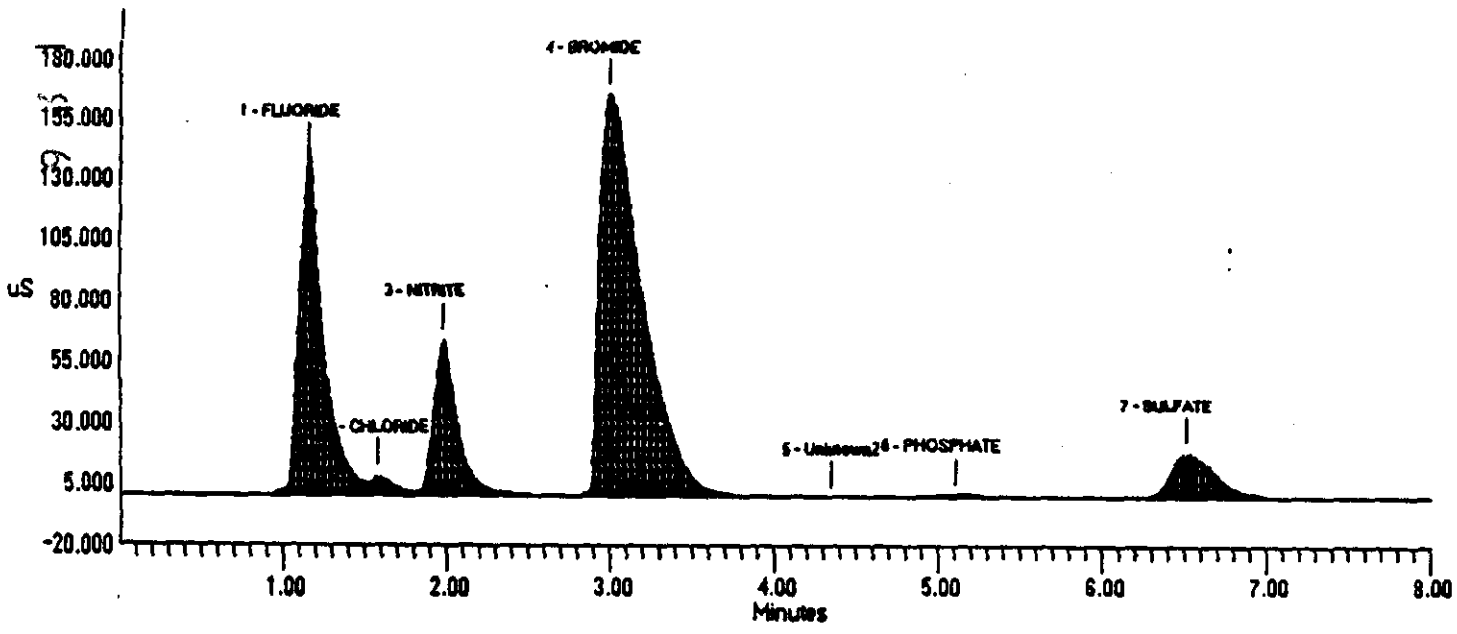
DATA REPROCESSED ON Wed Oct 02 22:45:18 1991

Sample Name: R318SP Date: Wed Oct 02 19:33:03 1991
Data File : C:\DX\DATA\91100101.D07
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1 System : 1 Inject#: 7 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.15	FLUORIDE	-4794.612	137692	1497244	3	0.00
2	1.58	CHLORIDE	6227066.150	6306	61654	4	-1.24
3	1.98	NITRITE	9390.079	64268	671758	2	-3.71
4	3.00	BROMIDE	-30467.020	165460	3007441	2	-3.06
5	4.35	Unknown2	250550.636	176	2481	2	-1.45
6	5.12	PHOSPHATE	921.786	1542	24885	1	-5.16
7	6.52	SULFATE	4228.504	18597	365304	1	-5.24

File: C:\DX\DATA\91100101.D07 Sample: R318SP

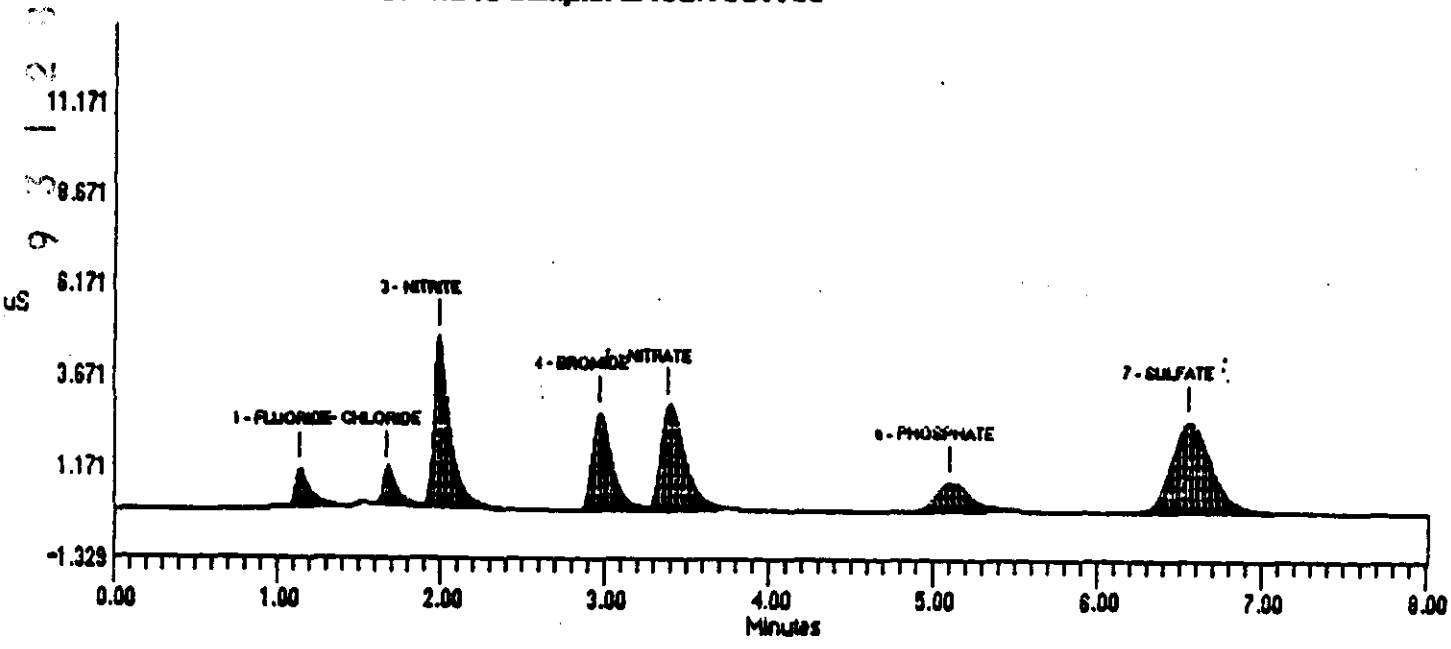


```
: Sample Name: LMCS/73C11C0 R3L3 6-14-92          Date: Wed Oct 02 21:31:01 1991:
: Data File   : c:\dx\data\91100101.D19                                          :
: Method      : c:\dx\method\SYSTEM1.met                                         :
: ACI Address: 1        System : 1        Inject#:  19  Detector: CDM-1          :
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	52.789	1086	7266	1	0.00
2	1.67	CHLORIDE	69.280	1038	6424	2	-1.96
3	1.98	NITRITE	501.702	4638	33387	2	-2.30
4	2.97	BROMIDE	485.310	2705	24059	2	-2.73
5	3.38	NITRATE	533.443	2901	31125	2	2.53
6	5.10	PHOSPHATE	506.601	836	12795	1	-4.08
7	6.55	SULFATE	582.554	2497	43001	1	-4.38

File: c:\dx\data\91100101.D19 Sample: LMCS/73C11C0



WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R318	Customer ID: 791-1A
Analysis: ION CHROMATOGRAPHIC - CHLORIDE	Sample Prep: UNDIGESTED

Instrument: DIONEX 4000 - WB54428	Procedure/Rev: LA-533-105/B-0
Technologist: M. MYERS	Date: 10-04-91
Starting Time: 20:46	Temperature: 24-25degC
Ending Time: 23:36	Chemist: D. HERT

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5572	11		
2	REAGENT BLANK	R317-5672	12		
3	SAMPLE 791-1A	R318-5772	13		
4	SAM DUP 791-1A	R318-5872	14		
5	SPIKE OF 791-1A	R318-5972	15		
6	FINAL LMCS CHECK STD	R323-5572	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 CHECK STD	73C11CO/0.1 mL			N/A
SPIKE	73C11CO/0.05 mL			N/A

A-6000-881 (03/92)

ION CHROMATOGRAPHIC ANALYSIS (CHLORIDE) - UNDIGESTED SAMPLE

R 316.-5572	106AW	9-19-91	13:35	26
CL	LA-533-105	% RECOVERY	W1TE2	C
? .100ml - 10ml			STD	

EDP R972 DIONEX
STDN 73GN CD RESULT 74.035 ppm
STD VAL 75.00 ppm %REC 98.7%

R 317.-5672	106AW	9-19-91	13:45	26
CL	LA-533-105	PPM	W1TE2	
? 1ml			REG BL.	

REAGENT BLANK

<1.00E-1 ppm

R 318.-5772	106AW	9-19-91	15:5	25
CL	LA-533-105	PPM	W1TE2	0
? .100ml - 10ml - .500ml - 10ml			791-1A	

5.65E2 ppm

R 318.-5872	106AW	9-19-91	15:10	25
CL	LA-533-105	PPM	W1TE2	0
? .100ml - 10ml - .500ml - 10ml			791-1A	

DUPLICATE SAMPLE

5.50E2 ppm

R 318.-5972	106AW	9-19-91	15:11	25
CL	LA-533-105	% RECOVERY	W1TE2	G
? .100ml - 10ml - .1500ml - 10ml			791-1A	

SAMPLE SPIKED ID
SPIKE ID
SPIKE VOLUME .050ml

$$\frac{1.193E^3 - 5.65E^2}{(.05)(75)(2121)/10.55} \times 100 = 74.9\%$$

R 323.-5372	106AW	9-19-91	15:44	25
CL	LA-533-105	% RECOVERY	W1TE2	0
? .100ml - 10ml			STD	

EDP R972 DIONEX
STDN 73GN/CD RESULT 71.429 ppm
STD VAL 75 ppm %REC 95.2%

9-22-91 JKL 6-19-92
4469-AC

DIONEX METHOD PARAMETERS - SYSTEM1.MET

System Parameters

System Name : system1/gpm

Number of Detectors	1
Detector 1 Type	CDM-1
Detector 1 real time plot scale (uS)	20.00
Run Time (minutes)	8.50
Sampling Rate (seconds)	0.20

-- DETECTOR 1 PARAMETERS --
Report Options

Save Data File	Yes
Data File Name: c:\d:\data\91092201.D08	
Create ASCII Report File	No
Print Report	Yes
List Peaks Not Found in this run	No
Report Unknowns Found in this run	Yes
Print Chromatogram	Yes
AutoScale Chromatogram to Highest Peak	Yes
Fill Peaks with Color	Yes
Draw Grid Lines on Chromatogram	No
Label with Peak Number	Yes
Label with Retention Times on Chromatogram	No
Label with Component Name	Yes
Format File Name: c:\d:\method\default.prf	

Integration Parameters

Starting Peak Width (seconds)	10.0
Peak Threshold (mV or uS/data pt interval)	0.500
Peak Area Reject	1000
Area Reject for Reference Peaks	1000
Percent Retention Time Window for Reference Peaks	5.0

Integration Timed Events

Time	Description
1.32	Start peak detection
1.44	Start peak detection
1.46	Start peak detection
1.77	
1.77	Enable end of peak detection

Calibration Parameters

Number Of Levels for Calibration	6
Calibration Fit Type	Quadratic
Replace Or Average Calibrations	Replace
External or Internal Calibration	External
Calibrate by Area or Height	Area
Default Injection Volume	1.0
Default Dilution Factor	1.0
Response Factor for Unknown Peaks	1.0
Calibration Standard Volume	1.0
Internal Standard Volume	1.0
Sample Unit	PPM

Component # 1 FLUORIDE Retention Time 1.13
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 8.52797E-002
K1 = 6.06440E-005
K2 = -6.17180E-011

Level	Amount	Area	Height
1	1.20000E-001	1439	225
2	3.00000E-001	4035	566
3	6.00000E-001	8217	1141
4	1.20000E+000	16507	2218
5	2.30000E+000	39534	4812
6	4.40000E+000	76890	9371

Component # 2 CHLORIDE Retention Time 1.70
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.93335E-002
K1 = 1.01273E-004
K2 = -9.35560E-011

Level	Amount	Area	Height
1	1.60000E-001	1319	217
2	3.90000E-001	3754	568
3	7.80000E-001	6942	1045
4	1.50000E+000	14461	1975
5	3.00000E+000	30287	3987
6	5.90000E+000	61305	8910

Component # 3 NITRITE Retention Time 2.03
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 4.88691E-001
K1 = 1.33960E-004
K2 = 5.52630E-012

Level	Amount	Area	Height
1	1.08000E+000	6239	874
2	2.69000E+000	17299	2252
3	5.37000E+000	34328	4729
4	1.06200E+001	72787	9300
5	2.08500E+001	153501	19401
6	4.01500E+001	292053	34439

Component # 4 BROMIDE Retention Time 2.80
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 4.01960E-002
K1 = 2.00453E-004
K2 = -1.00008E-010

Level	Amount	Area	Height
1	1.56000E+000	7660	753
2	3.90000E+000	20706	1880
3	7.80000E+000	38868	3455
4	1.54000E+001	78061	6644
5	3.02000E+001	165133	12632
6	5.81000E+001	350930	24386

Component # 5 NITRATE Retention Time 3.30
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.02611E-001
K1 = 1.61787E-004
K2 = -5.83501E-011

Level	Amount	Area	Height
1	1.37000E+000	7543	727
2	3.43000E+000	19321	1803
3	6.83000E+000	40244	3563
4	1.35000E+001	83386	7010
5	2.65000E+001	173503	13640
6	5.11000E+001	360809	25639

Component # 6 PHOSPHATE Retention Time 5.32
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 5.53452E-001
K1 = 3.53243E-004
K2 = -3.51156E-010

Level	Amount	Area	Height
1	1.19000E+000	2277	162
2	2.98000E+000	7242	453
3	5.93000E+000	15025	935
4	1.17400E+001	31660	1933
5	2.30300E+001	69135	4130
6	4.43700E+001	144749	8447

Component # 7 SULFATE Retention Time 6.85
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.55734E-001
K1 = 1.27491E-004
K2 = -3.79358E-011

Level	Amount	Area	Height
1	1.40000E+000	9418	543
2	3.50000E+000	24499	1382
3	6.96000E+000	52303	2890
4	1.37800E+001	107173	5909
5	2.70400E+001	225632	12225
6	5.20700E+001	471630	24686

IC Control File: C:\DX\METHOD\SYSTEM1.TE

Step	Time	Description
Init		CDM-1 AutoOffset Off
Init		CDM-1 Recorder Mark OFF
Init		CDM-1 Temp. Comp. = 1.7 / Deg C
Init		CDM-1 Recorder Range = 1.0 uS
Init		CDM-1 Cell ON
Init		CHA Heater = 25 Deg. C
Init		Valve A ON
Init		Valve B ON
Init		Inject Valve OFF
Init		ACI Autosmp OFF
Init		ACI RLY 2 OFF
Init		ACI TTL 1 OFF
Init		ACI TTL 2 OFF
Init		ACI AC 1 ON
Init		GPM Start
Init		GPM Hold Gradient Clock
Init		GPM Reset ON
1	0.0	CDM-1 AutoOffset ON
1	0.0	Start Sampling
1	0.0	GPM Reset OFF
2	0.1	CDM-1 Recorder Range = 10.0 uS
2	0.1	Inject Valve ON
2	0.1	GPM Run Gradient Clock
3	3.0	Inject Valve OFF
4	3.5	ACI Autosmp ON
5	8.0	ACI Autosmp OFF

GpmFile: C:\DX\METHOD\SYSTEM1.GPM
Lo Pressure Limit = 200
Hi Pressure Limit = 2000
Eluant 1 - DI WATER
Eluant 2 - SODIUM CARBONATE
Eluant 3 - SODIUM BICARBONATE
Eluant 4 - Eluant 4

Time	Flow	%1	%2	%3	%4	V5	V6	Comment
0.0	2.0	84	8	8	0	0	0	

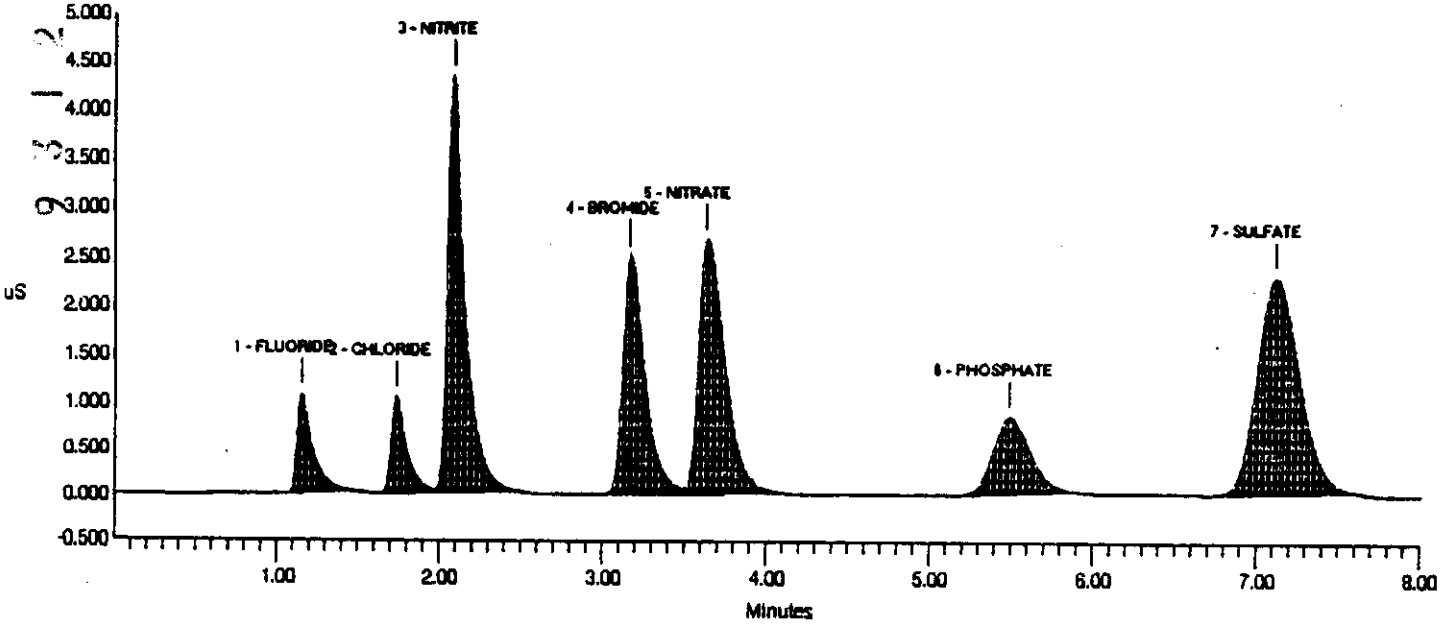
DATA REPROCESSED ON Fri Oct 04 21:38:52 1991

Sample Name: LMCS/73C11C0 R3/6 [illegible] 6-19-92		Date: Fri Oct 04 20:46:06 1991	
Data File : C:\DX\DATA\91100421.D03			
Method : c:\dx\method\SYSTEM1.met			
ACI Address: 1	System : 1	Inject#: 3	Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.15	FLUORIDE	52.136	1058	7158	1	0.00
2	1.73	CHLORIDE	74.035	1030	6894	2	0.48
3	2.08	NITRITE	489.305	4334	32473	2	1.14
4	3.17	BROMIDE	458.041	2492	22680	2	2.32
5	3.63	NITRATE	530.820	2668	30960	2	8.51
6	5.48	PHOSPHATE	505.944	805	12777	1	1.64
7	7.12	SULFATE	558.013	2281	41046	1	2.39

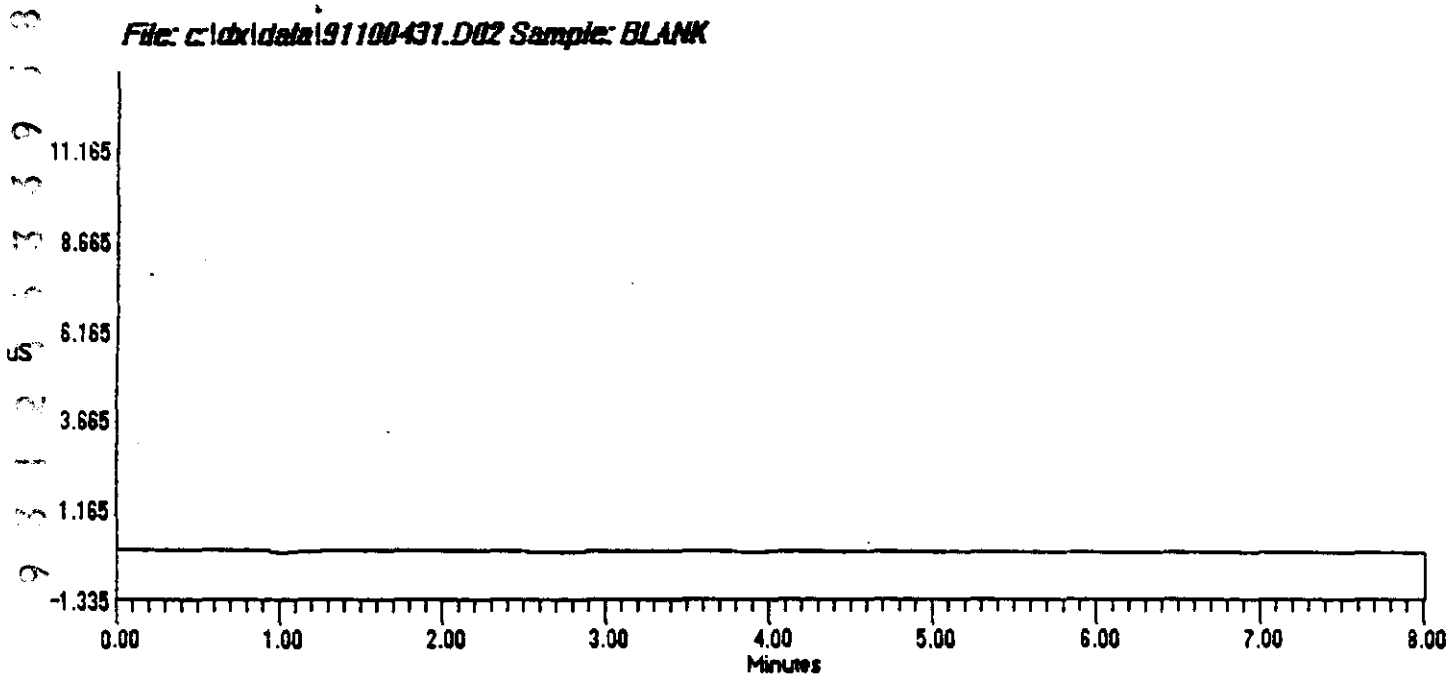
File: C:\DX\DATA\91100421.D03 Sample: LMCS/73C11C0



```
==========================================================================
: Sample Name: BLANK                          Date: Fri Oct 04 20:37:01 1991:
: Data File   : c:\dx\data\91100431.D02                                  :
: Method      : c:\dx\method\SYSTEM1.met                                 :
: ACI Address: 1        System : 1      Inject#:   2  Detector: CDM-1    :
==========================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2405	5Hz	0.00	8.02	1000

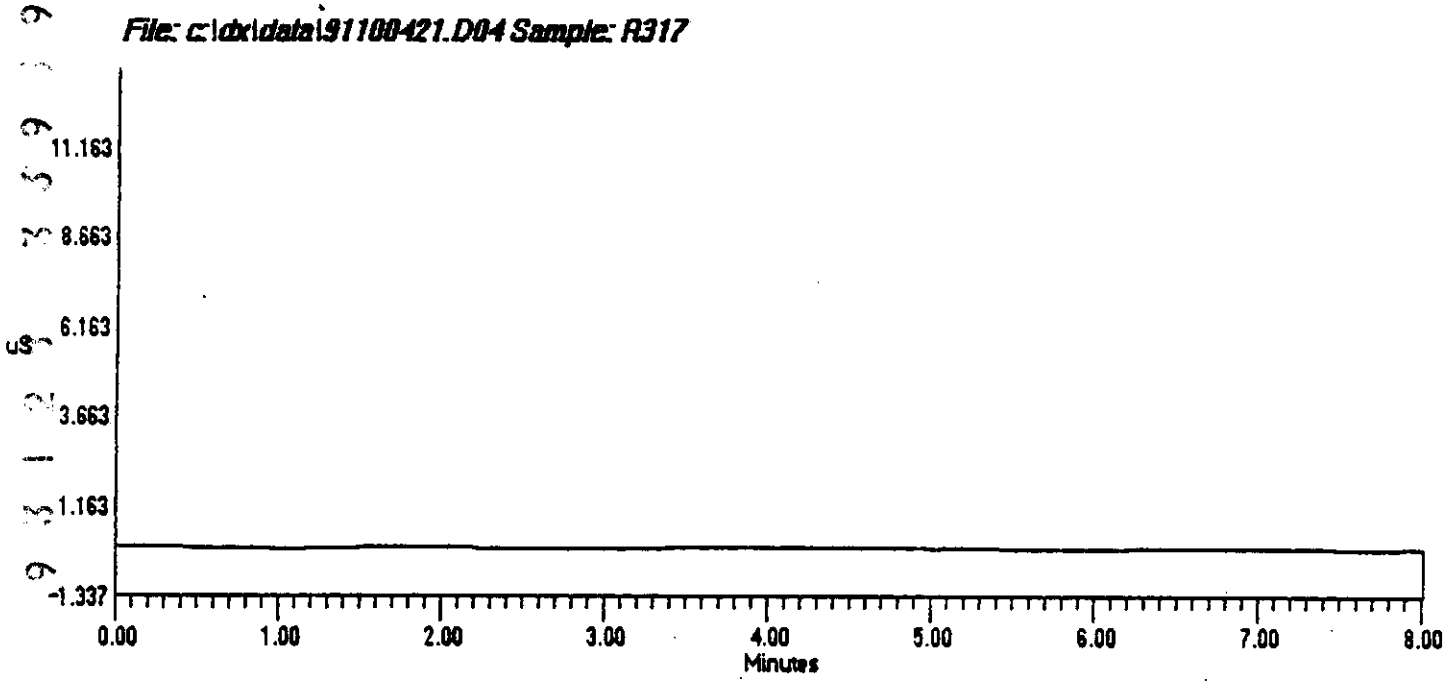
Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta



```
==================================================================================
: Sample Name: R317                                  Date: Fri Oct 04 20:55:27 1991:
: Data File  : c:\dx\data\91100421.D04                                             :
: Method     : c:\dx\method\SYSTEM1.met                                            :
: ACI Address: 1        System : 1        Inject#:   4  Detector: CDM-1           :
==================================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta

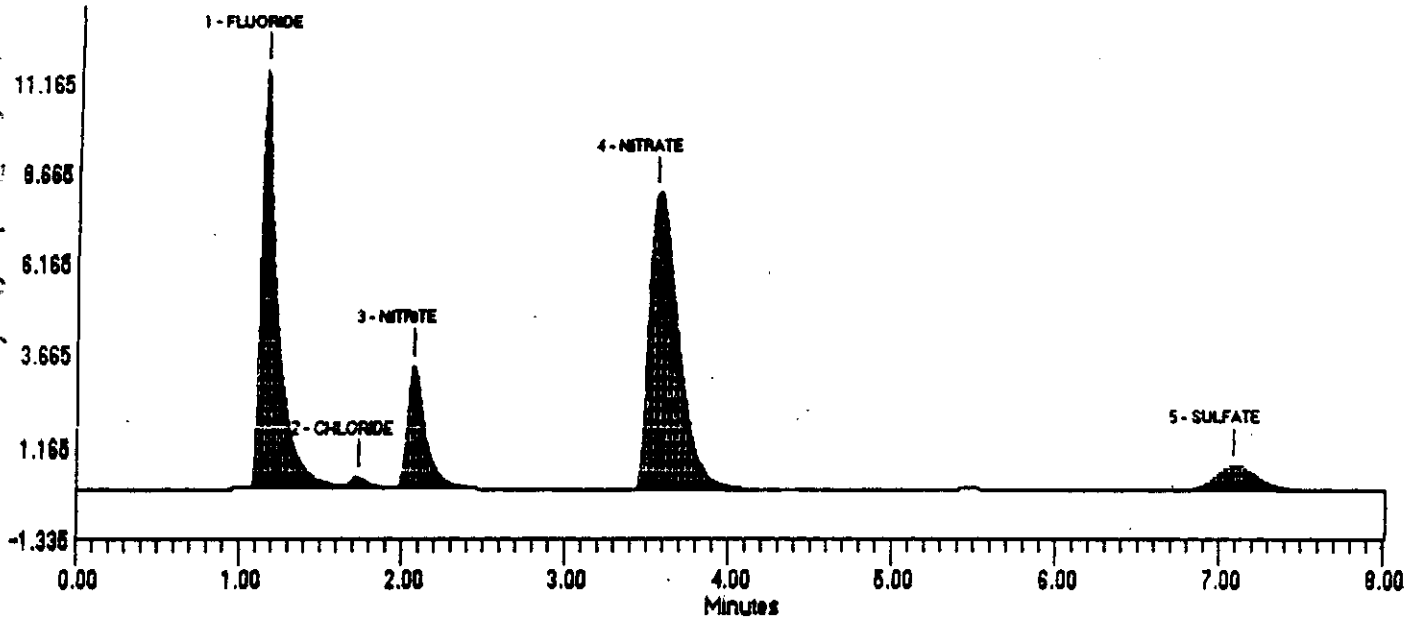


Sample Name: R318 Date: Fri Oct 04 21:04:32 1991
Data File : c:\dx\data\91100421.D05
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1 System : 1 Inject#: 5 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	2121	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.15	FLUORIDE	9846.930	11530	81990	2	0.00
2	1.73	CHLORIDE	564.667	308	2245	2	0.48
3	2.07	NITRITE	8197.202	3333	25176	1	0.33
4	3.55	NITRATE	33781.498	8113	100196	1	6.02
5	7.08	SULFATE	3901.645	670	11679	1	1.91

File: c:\dx\data\91100421.D05 Sample: R318

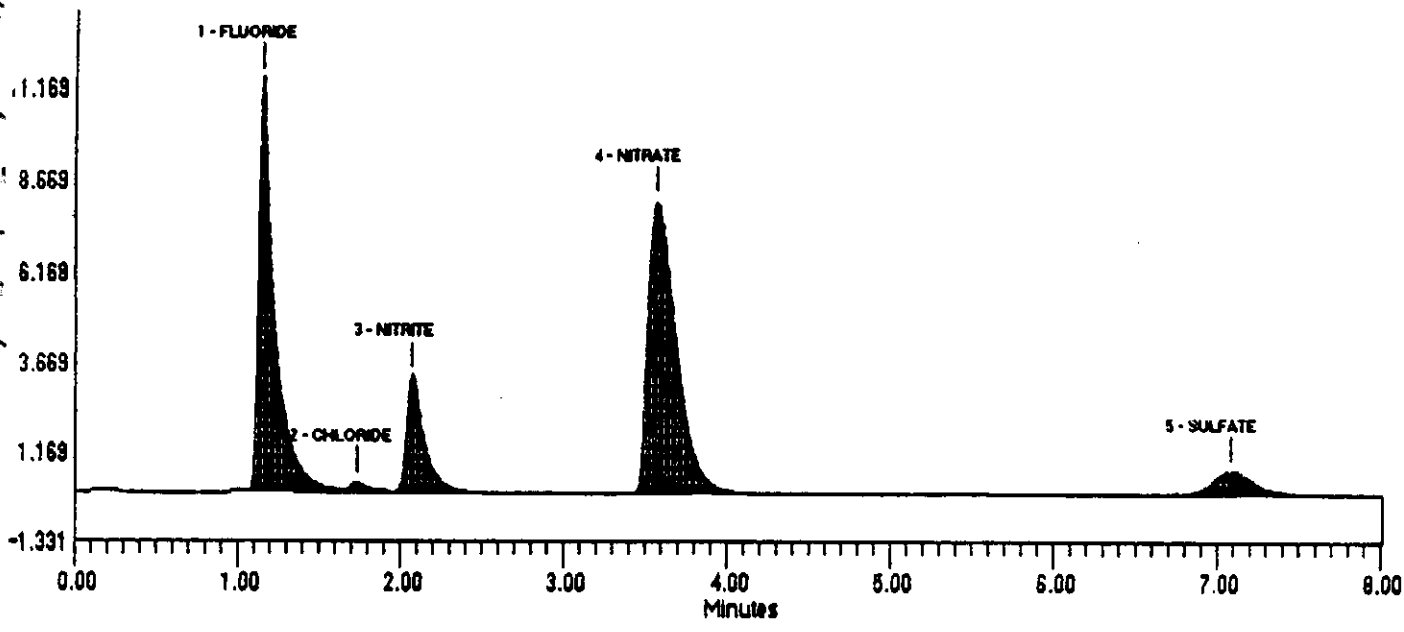


```
==================================================================================
: Sample Name: R318DUP                          Date: Fri Oct 04 21:13:51 1991:
: Data File  : c:\dx\data\91100421.D06                                         :
: Method     : c:\dx\method\SYSTEM1.met                                        :
: ACI Address: 1        System : 1        Inject#:   6  Detector: CDM-1        :
==================================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	2121	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.15	FLUORIDE	9723.156	11401	80837	2	0.00
2	1.73	CHLORIDE	549.812	294	2176	2	0.48
3	2.07	NITRITE	8230.087	3275	25292	2	0.33
4	3.57	NITRATE	33373.171	8120	98914	1	6.51
5	7.08	SULFATE	3964.664	679	11914	1	1.91

File: c:\dx\data\91100421.D06 Sample: R318DUP

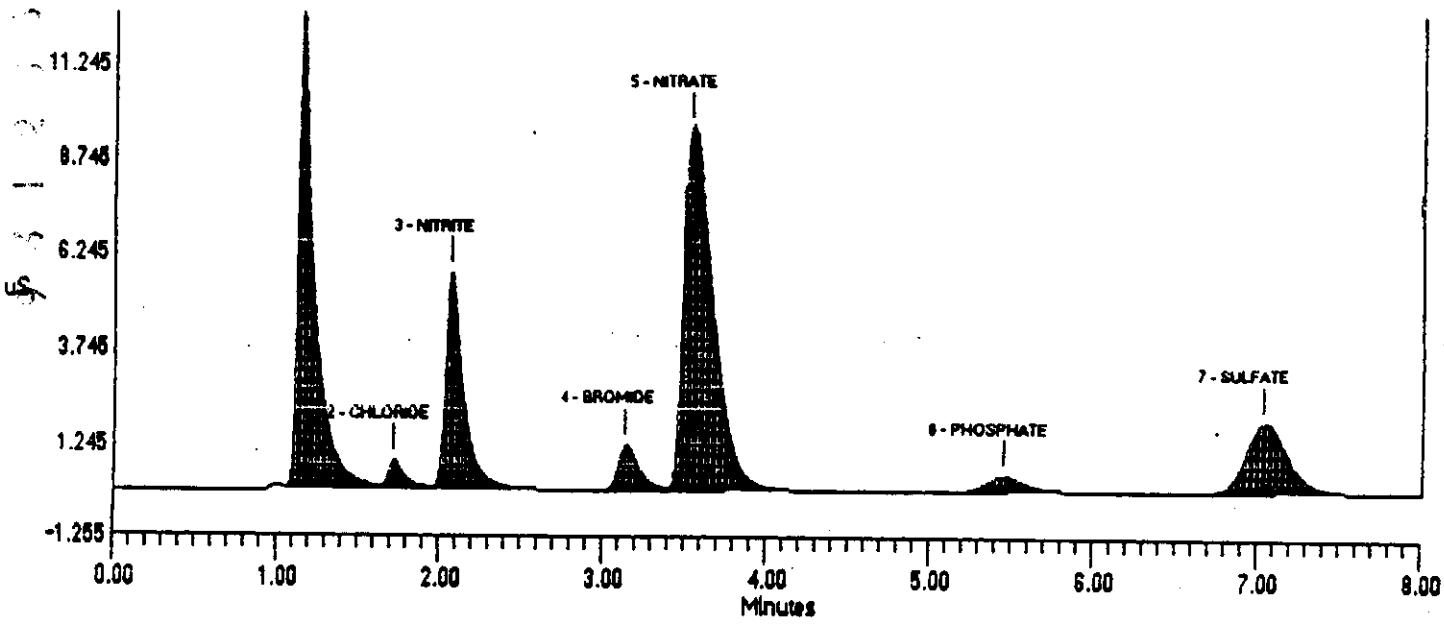


Sample Name: R318SP Date: Fri Oct 04 21:23:51 1991
Data File : c:\dx\data\91100421.D07
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1 System : 1 Inject#: 7 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	2121	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.15	FLUORIDE	10383.409	12430	87027	2	0.00
2	1.72	CHLORIDE	1193.368	753	5192	2	-0.48
3	2.07	NITRITE	13117.912	5663	42447	2	0.33
4	3.13	BROMIDE	4685.599	1195	10879	2	1.24
5	3.53	NITRATE	39992.286	9542	119855	2	5.52
6	5.45	PHOSPHATE	5921.270	420	6377	1	1.02
7	7.03	SULFATE	9535.297	1828	32792	1	1.19

File: c:\dx\data\91100421.D07 Sample: R318SP



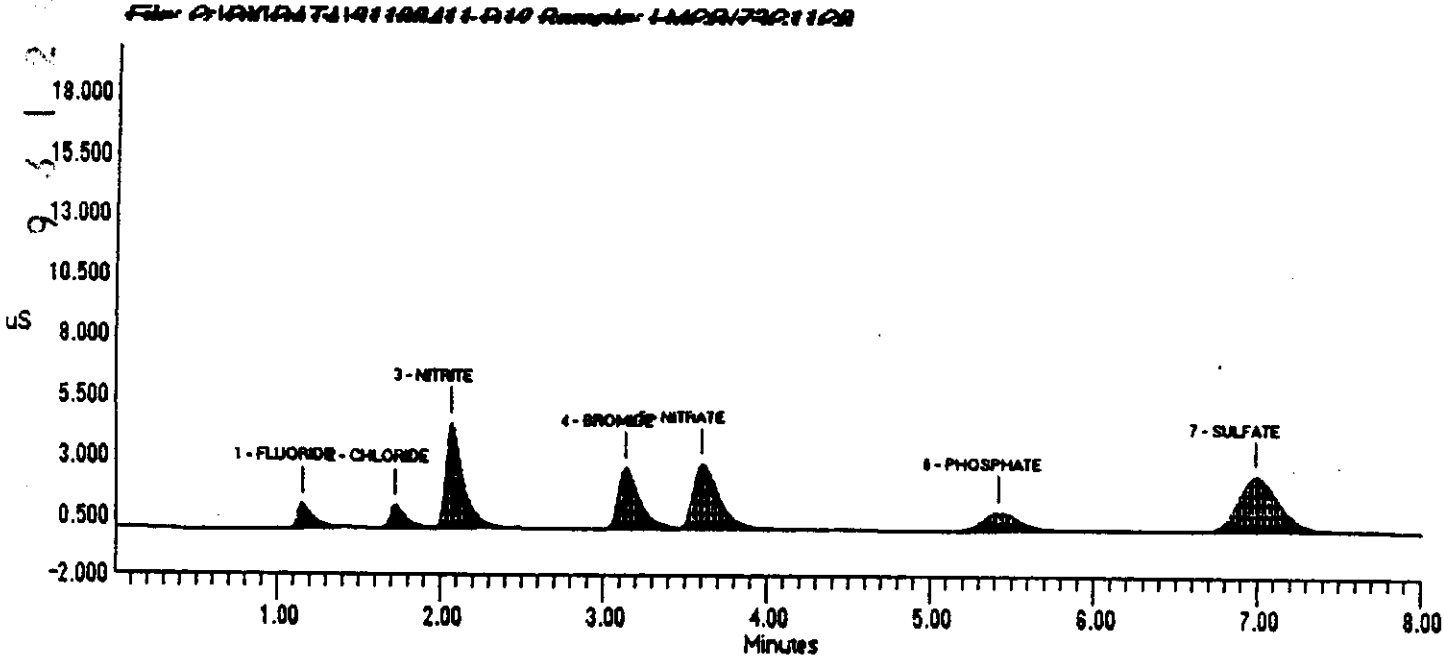
R323 → BATCH LMCS
R324 JK 6-19-92

DATA REPROCESSED ON Fri Oct 04 22:45:26 1991

Sample Name: LMCS/73C11CO R323 JK 6-19-92 Date: Fri Oct 04 22:10:28 1991
Data File : C:\DX\DATA\91100411.D12
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1 System : 1 Inject#: 12 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.15	FLUORIDE	52.102	1076	7152	1	0.00
2	1.72	CHLORIDE	71.429	993	6636	2	-0.48
3	2.07	NITRITE	487.247	4387	32321	2	0.33
4	3.13	BROMIDE	475.164	2556	23546	2	1.24
5	3.60	NITRATE	524.183	2723	30545	2	7.51
6	5.42	PHOSPHATE	510.540	821	12909	1	0.40
7	6.98	SULFATE	565.442	2341	41638	1	0.47



WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R318	Customer ID: 791-1A
Analysis: ION CHROMATOGRAPHIC - PHOSPHATE	Sample Prep: UNDIGESTED

Instrument: DIONEX 4000 - WB54428	Procedure/Rev: LA-533-105/B-0
Technologist: M. MYERS	Date: 10-04-91
Starting Time: 18:46	Temperature: 24-25degC
Ending Time: 21:31	Chemist: D. HERT

	Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5574
2	REAGENT BLANK	R317-5674
3	SAMPLE 791-1A	R318-5774
4	SAM DUP 791-1A	R318-5874
5	SPIKE OF 791-1A	R318-5974
6	FINAL LMCS CHECK STD	R323-5574
7		
8		
9		
10		

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

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS CHECK STD	73C11CO/0.1 mL			N/A
SPIKE	73C11CO/0.05 mL			N/A

A-6000-881 (03/92)

ION CHROMATOGRAPHIC ANALYSIS (PHOSPHATE) - UNDIGESTED SAMPLE

Event No.	Sample Point	Date	Time Issued	Priority
R 316.-5574	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Reps
PO4	LA-533-105	% RECOVERY	W1TE2	0

Sample Size: ? 100ml - 10ml
Customer ID: STD

Remarks, Calculations, Results:
EDP R976 DIONEX
STD# 73C1160 RESULT 522.442
STD VAL 517.0 %REC 101.1%

Analyst: 10-2-91

Event No.	Sample Point	Date	Time Issued	Priority
R 317.-5674	106AW	9-19-91	13:45	20

Determination	Method/Standard	Result Units	Charge Code	Reps
PO4	LA-533-105	PPM	W1TE2	0

Sample Size: ? 1dl
Customer ID: REG BL.

Remarks, Calculations, Results:
REAGENT BLANK
<1 ppm

Analyst: 10-2-91

Event No.	Sample Point	Date	Time Issued	Priority
R 318.-5774	106AW	9-19-91	15:[illegible]	25

Determination	Method/Standard	Result Units	Charge Code	Reps
PO4	LA-533-105	PPM	W1TE2	0

Sample Size: ? 100ml - 10ml
Customer ID: 791-1A

Remarks, Calculations, Results:
646.027

Analyst: 10-2-91

Event No.	Sample Point	Date	Time Issued	Priority
R 318.-5874	106AW	9-19-91	15:10	25

Determination	Method/Standard	Result Units	Charge Code	Reps
PO4	LA-533-105	PPM	W1TE2	0

Sample Size: ? 100ml - 10ml
Customer ID: 791-1A

Remarks, Calculations, Results:
DUPLICATE SAMPLE
670.211

Analyst: 10-2-91

Event No.	Sample Point	Date	Time Issued	Priority
R 318.-5974	106AW	9-19-91	15:11	25

Determination	Method/Standard	Result Units	Charge Code	Reps
PO4	LA-533-105	% RECOVERY	W1TE2	0

Sample Size: ? 100ml - 10ml
Customer ID: 791-1A

Remarks, Calculations, Results:
SAMPLE SPIKED ID
SPIKE ID 1050ml
SPIKE VOLUME 73C1160

$$\frac{921.786 - 646.027}{(.050)(101)(517)} \times 100 = 105.6\%$$

Analyst: 10-2-91

Event No.	Sample Point	Date	Time Issued	Priority
R 323.-5574	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Reps
PO4	LA-533-105	% RECOVERY	W1TE2	0

Sample Size: ? 100ml - 10ml
Customer ID: STD

Remarks, Calculations, Results:
EDP R976 DIONEX
STD# 73C1160 RESULT 506.601
STD VAL 517.0 %REC 98.0%

Analyst: 10-2-91

9-22-91 6-19-92
4469-AC

DIONEX METHOD PARAMETERS - SYSTEM1.MET

System Parameters

System Name : system1/gpm
Number of Detectors..... 1
Detector 1 Type..... CDM-1
Detector 1 real time plot scale (uS)..... 20.00
Run Time (minutes)..... 8.50
Sampling Rate (seconds)..... 0.20

-- DETECTOR 1 PARAMETERS --

Report Options

Save Data File..... Yes
Data File Name: c:\d#\data\91092201.D08
Create ASCII Report File..... No
Print Report..... Yes
List Peaks Not Found in this run..... No
Report Unknowns Found in this run..... Yes
Print Chromatogram..... Yes
AutoScale Chromatogram to Highest Peak..... Yes
Fill Peaks with Color ..... Yes
Draw Grid Lines on Chromatogram..... No
Label with Peak Number..... Yes
Label with Retention Times on Chromatogram..... No
Label with Component Name..... Yes
Format File Name: c:\d#\method\default.prf

Integration Parameters

Starting Peak Width (seconds)..... 10.0
Peak Threshold (mV or uS/data pt interval)..... 0.500
Peak Area Reject..... 1000
Area Reject for Reference Peaks..... 1000
Percent Retention Time Window for Reference Peaks..... 5.0

Integration Timed Events

Time	Description
1.32	Start peak detection
1.44	Start peak detection
1.46	Start peak detection
1.77	
1.77	Enable end of peak detection

Calibration Parameters

Number Of Levels for Calibration	6
Calibration Fit Type	Quadratic
Replace Or Average Calibrations	Replace
External or Internal Calibration	External
Calibrate by Area or Height	Area
Default Injection Volume	1.0
Default Dilution Factor	1.0
Response Factor for Unknown Peaks	1.0
Calibration Standard Volume	1.0
Internal Standard Volume	1.0
Sample Unit	PPM

9 3 1 2 3 3 3 9 5 7

Component # 1 FLUORIDE Retention Time 1.13
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 8.52797E-002
K1 = 6.06440E-005
K2 = -6.17180E-011

Level	Amount	Area	Height
1	1.20000E-001	1439	225
2	3.00000E-001	4035	566
3	6.00000E-001	8217	1141
4	1.20000E+000	16507	2218
5	2.30000E+000	39534	4812
6	4.40000E+000	76890	9371

Component # 2 CHLORIDE Retention Time 1.70
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.93335E-002
K1 = 1.01273E-004
K2 = -9.35560E-011

Level	Amount	Area	Height
1	1.60000E-001	1319	217
2	3.90000E-001	3754	568
3	7.80000E-001	6942	1045
4	1.50000E+000	14461	1975
5	3.00000E+000	30287	3987
6	5.90000E+000	61305	8910

Component # 3 NITRITE Retention Time 2.03
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 4.88691E-001
K1 = 1.33960E-004
K2 = 5.52630E-012

Level	Amount	Area	Height
1	1.08000E+000	6239	874
2	2.69000E+000	17299	2252
3	5.37000E+000	34328	4729
4	1.06200E+001	72787	9300
5	2.08500E+001	153501	19401
6	4.01500E+001	292053	34439

Component # 4 BROMIDE Retention Time 2.80
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 4.01960E-002
K1 = 2.00453E-004
K2 = -1.00008E-010

Level	Amount	Area	Height
1	1.56000E+000	7660	753
2	3.90000E+000	20706	1880
3	7.80000E+000	38868	3455
4	1.54000E+001	78061	6644
5	3.02000E+001	165133	12632
6	5.81000E+001	350930	24386

Component # 5 NITRATE Retention Time 3.30
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.02611E-001
K1 = 1.61787E-004
K2 = -5.83501E-011

Level	Amount	Area	Height
1	1.37000E+000	7543	727
2	3.43000E+000	19321	1803
3	6.83000E+000	40244	3563
4	1.35000E+001	83386	7010
5	2.65000E+001	173503	13640
6	5.11000E+001	360809	25639

Component # 6 PHOSPHATE Retention Time 5.32
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 5.53452E-001
K1 = 3.53243E-004
K2 = -3.51156E-010

Level	Amount	Area	Height
1	1.19000E+000	2277	162
2	2.98000E+000	7242	453
3	5.93000E+000	15025	935
4	1.17400E+001	31660	1933
5	2.30300E+001	69135	4130
6	4.43700E+001	144749	8447

Component # 7 SULFATE Retention Time 6.85
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.35734E-001
K1 = 1.27491E-004
K2 = -3.79358E-011

Level	Amount	Area	Height
1	1.40000E+000	9418	543
2	3.50000E+000	24499	1382
3	6.96000E+000	52303	2890
4	1.37800E+001	107173	5909
5	2.70400E+001	225632	12225
6	5.20700E+001	471630	24686

IC Control File: C:\DX\METHOD\SYSTEM1.TE

Step	Time	Description
Init		CDM-1 AutoOffset Off
Init		CDM-1 Recorder Mark OFF
Init		CDM-1 Temp. Comp. = 1.7 / Deg C
Init		CDM-1 Recorder Range = 1.0 uS
Init		CDM-1 Cell ON
Init		CHA Heater = 25 Deg. C
Init		Valve A ON
Init		Valve B ON
Init		Inject Valve OFF
Init		ACI Autosmp OFF
Init		ACI RLY 2 OFF
Init		ACI TTL 1 OFF
Init		ACI TTL 2 OFF
Init		ACI AC 1 ON
Init		GPM Start
Init		GPM Hold Gradient Clock
Init		GPM Reset ON
1	0.0	CDM-1 AutoOffset ON
1	0.0	Start Sampling
1	0.0	GPM Reset OFF
2	0.1	CDM-1 Recorder Range = 10.0 uS
2	0.1	Inject Valve ON
2	0.1	GPM Run Gradient Clock
3	3.0	Inject Valve OFF
4	3.5	ACI Autosmp ON
5	8.0	ACI Autosmp OFF

GpmFile: C:\DX\METHOD\SYSTEM1.GPM
Lo Pressure Limit = 200
Hi Pressure Limit = 2000
Eluant 1 - DI WATER
Eluant 2 - SODIUM CARBONATE
Eluant 3 - SODIUM BICARBONATE
Eluant 4 - Eluant 4

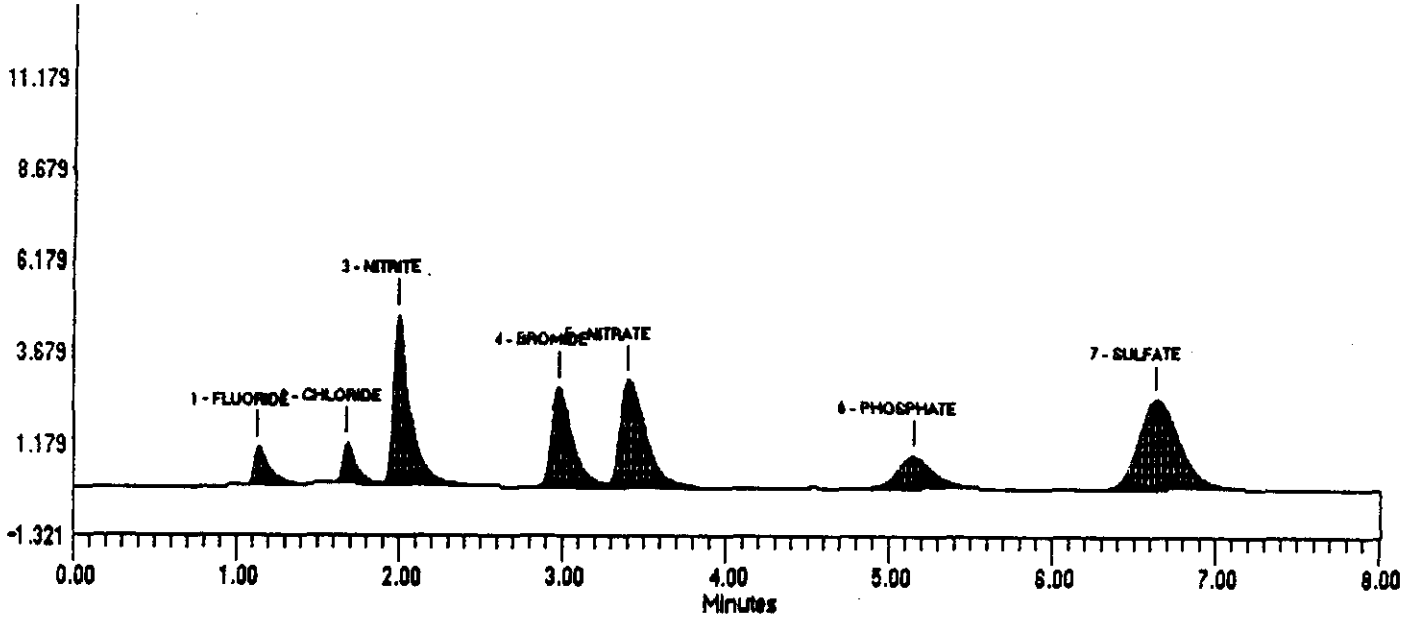
Time	Flow	%1	%2	%3	%4	V5	V6	Comment
0.0	2.0	84	8	8	0	0	0	

Sample Name: LMCS/73C11C0 A316 JK 6-19-92 Date: Wed Oct 02 18:55:16 1991
Data File : c:\dx\data\91100111.D03
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1 System : 1 Inject#: 3 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	51.501	1052	7053	1	0.00
2	1.68	CHLORIDE	67.889	1092	6285	2	-0.98
3	2.00	NITRITE	494.073	4650	32824	2	-1.48
4	2.98	BROMIDE	487.271	2732	24156	2	-2.19
5	3.40	NITRATE	538.528	2889	31443	2	3.03
6	5.15	PHOSPHATE	522.442	861	13251	1	-3.13
7	6.63	SULFATE	581.586	2485	42924	1	-3.16

File: c:\dx\data\91100111.D03 Sample: LMCS/73C11C0



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==========================================================================
| Sample Name: BLANK                          Date: Wed Oct 02 18:46:10 1991|
| Data File   : c:\dx\data\91100121.D02                                    |
| Method      : c:\dx\method\SYSTEM1.met                                   |
| ACI Address: 1        System : 1        Inject#:   2  Detector: CDM-1    |
==========================================================================
```
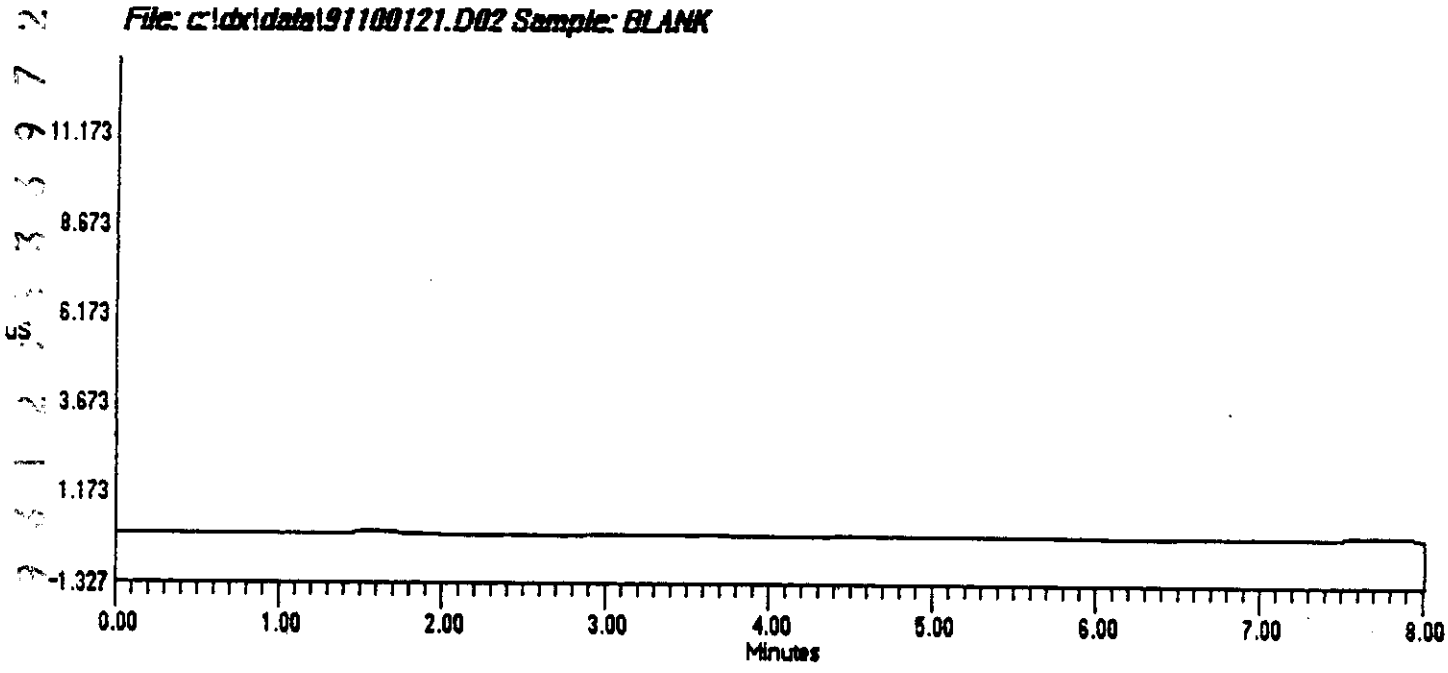

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta

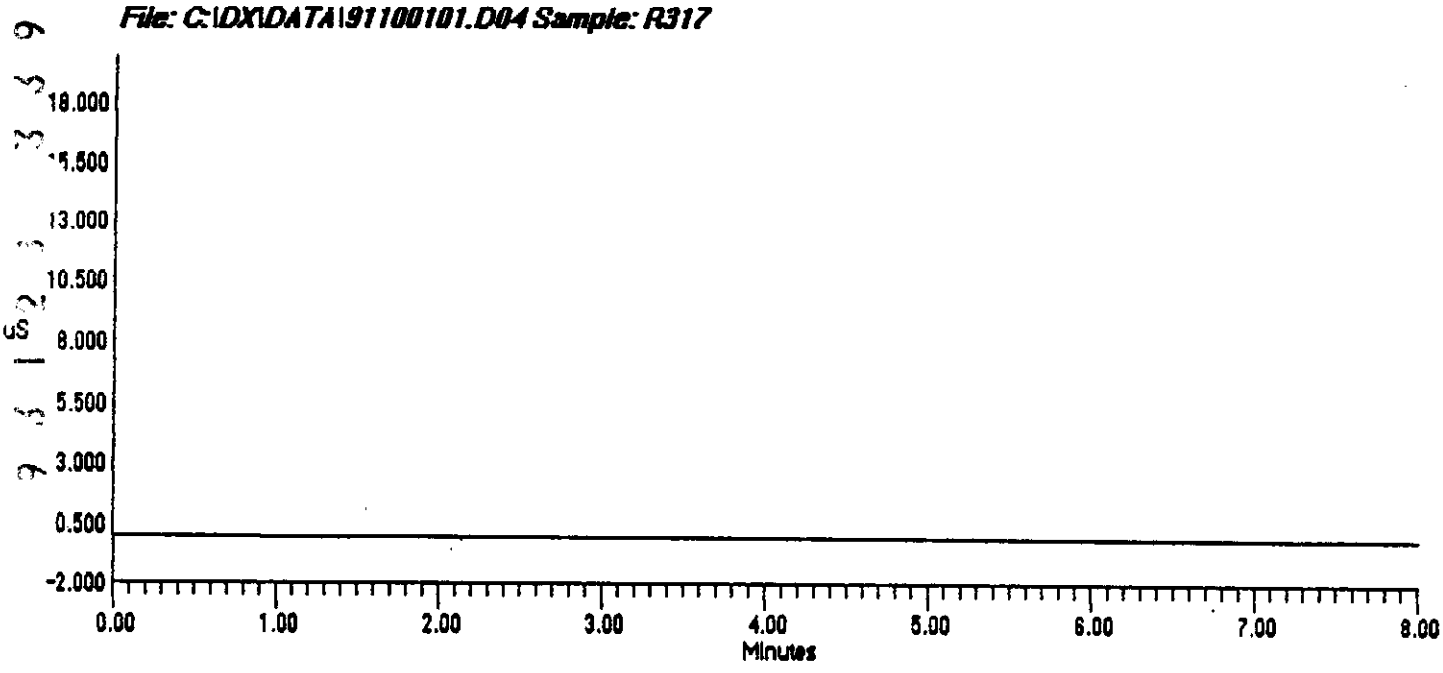


DATA REPROCESSED ON Wed Oct 02 19:17:10 1991

```
=================================================================================
| Sample Name: R317                                Date: Wed Oct 02 19:04:35 1991|
| Data File  : C:\DX\DATA\91100101.D04                                          |
| Method     : c:\dx\method\SYSTEM1.met                                         |
| ACI Address: 1        System : 1        Inject#:   4  Detector: CDM-1        |
=================================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name*	Concentration	Height	Area	Bl. Code	%Delta



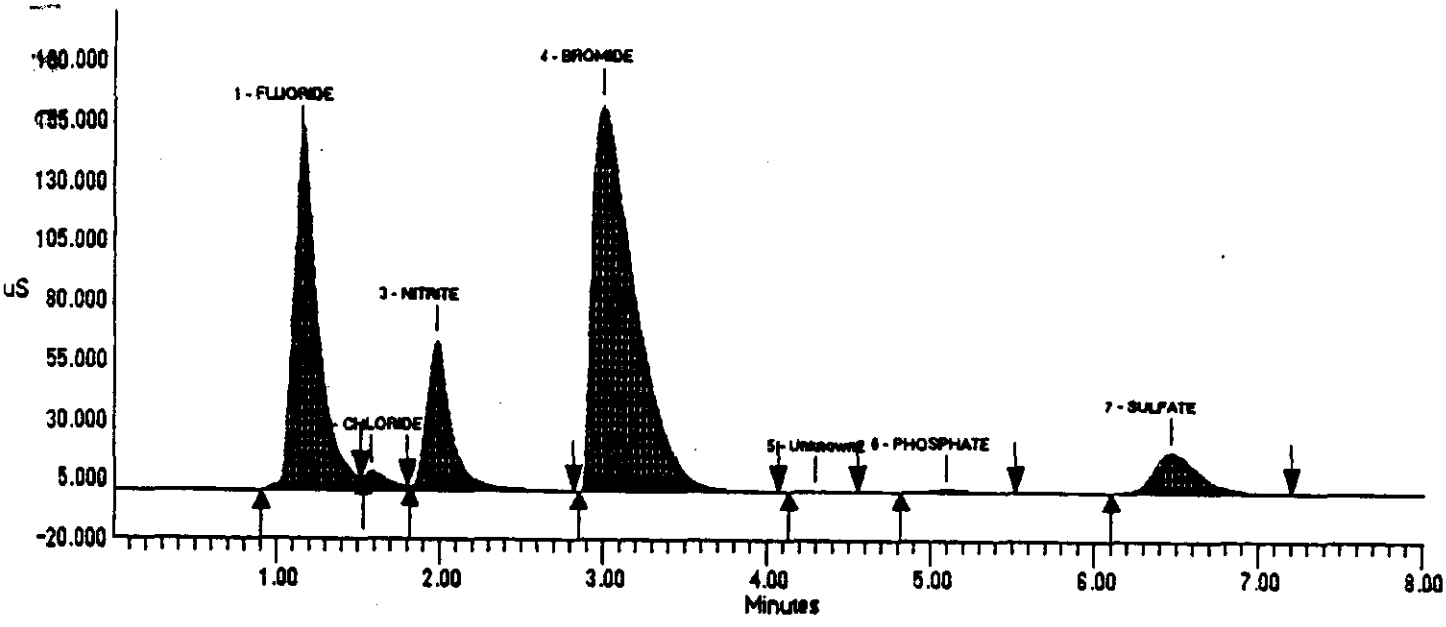
DATA REPROCESSED ON Wed Oct 02 21:50:50 1991

```
==========================================================================
: Samole Name: R318                          Date: Wed Oct 02 19:13:52 1991:
: Data File  : C:\DX\DATA\91100101.D05                                    :
: Method     : c:\dx\method\SYSTEM1.met                                   :
: ACI Address: 1        System : 1        Inject#:   5  Detector: CDM-1   :
==========================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.15	FLUORIDE	-6339.341	145923	1613678	3	0.00
2	1.58	CHLORIDE	6070022.593	5849	60099	4	-1.24
3	1.98	NITRITE	9105.753	63021	651831	2	-3.71
4	3.00	BROMIDE	-27349.655	161852	2928951	2	-3.06
5	4.30	Unknown2	229370.354	167	2271	2	-1.45
6	5.10	PHOSPHATE	646.027	1061	16822	1	-5.47
7	6.47	SULFATE	3887.419	17354	331882	1	-6.96

File: C:\DX\DATA\91100101.D05 Sample: R318



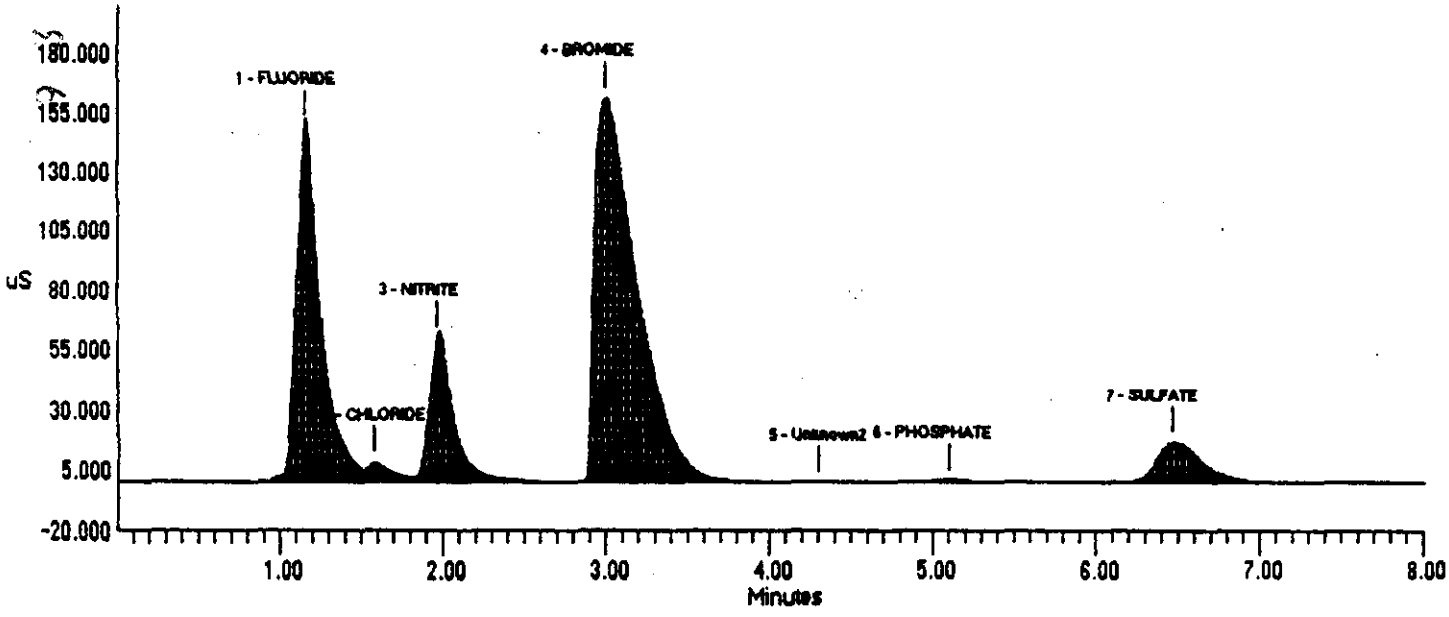
DATA REPROCESSED ON Wed Oct 02 21:58:56 1991

Sample Name: R318DUP		Date: Wed Oct 02 19:23:33 1991	
Data File : C:\DX\DATA\91100101.D06			
Method : c:\dx\method\SYSTEM1.met			
ACI Address: 1	System : 1	Inject#: 6	Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.15	FLUORIDE	-6305.037	149479	1611224	3	0.00
2	1.58	CHLORIDE	6130670.892	5932	60700	4	-1.24
3	1.97	NITRITE	8963.805	60477	641871	2	-4.52
4	3.00	BROMIDE	-27424.411	161452	2930871	3	-3.06
5	4.30	Unknown2	241834.187	171	2394	4	-1.45
6	5.10	PHOSPHATE	670.211	1086	17524	1	-5.47
7	6.47	SULFATE	3876.142	17073	330791	1	-6.96

File: C:\DX\DATA\91100101.D06 Sample: R318DUP



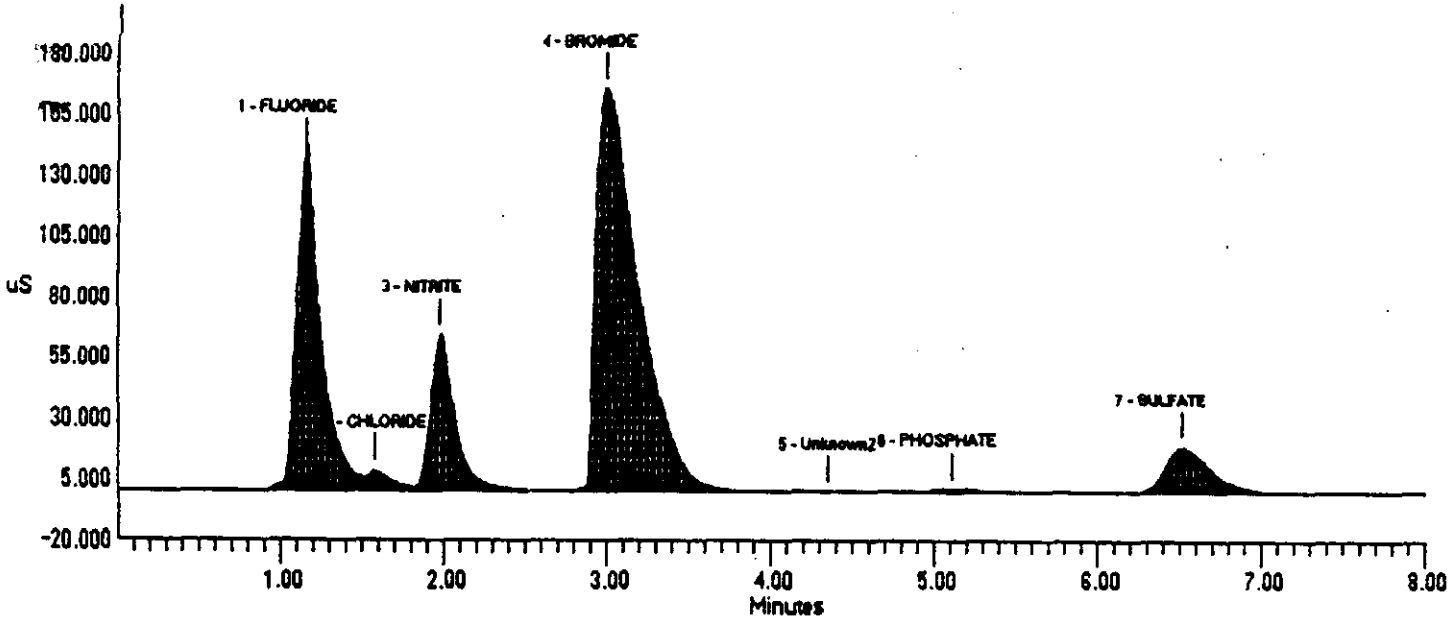
DATA REPROCESSED ON Wed Oct 02 22:45:18 1991

Sample Name: R318SP Date: Wed Oct 02 19:33:03 1991
Data File : C:\DX\DATA\91100101.D07
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1 System : 1 Inject#: 7 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.15	FLUORIDE	-4794.612	137692	1497244	3	0.00
2	1.58	CHLORIDE	6227066.150	6306	61654	4	-1.24
3	1.98	NITRITE	9390.079	64268	671758	2	-3.71
4	3.00	BROMIDE	-30467.020	165460	3007441	2	-3.06
5	4.35	Unknown2	250550.636	176	2481	2	-1.45
6	5.12	PHOSPHATE	921.786	1542	24885	1	-5.16
7	6.52	SULFATE	4228.504	18597	365304	1	-5.24

File: C:\DX\DATA\91100101.D07 Sample: R318SP

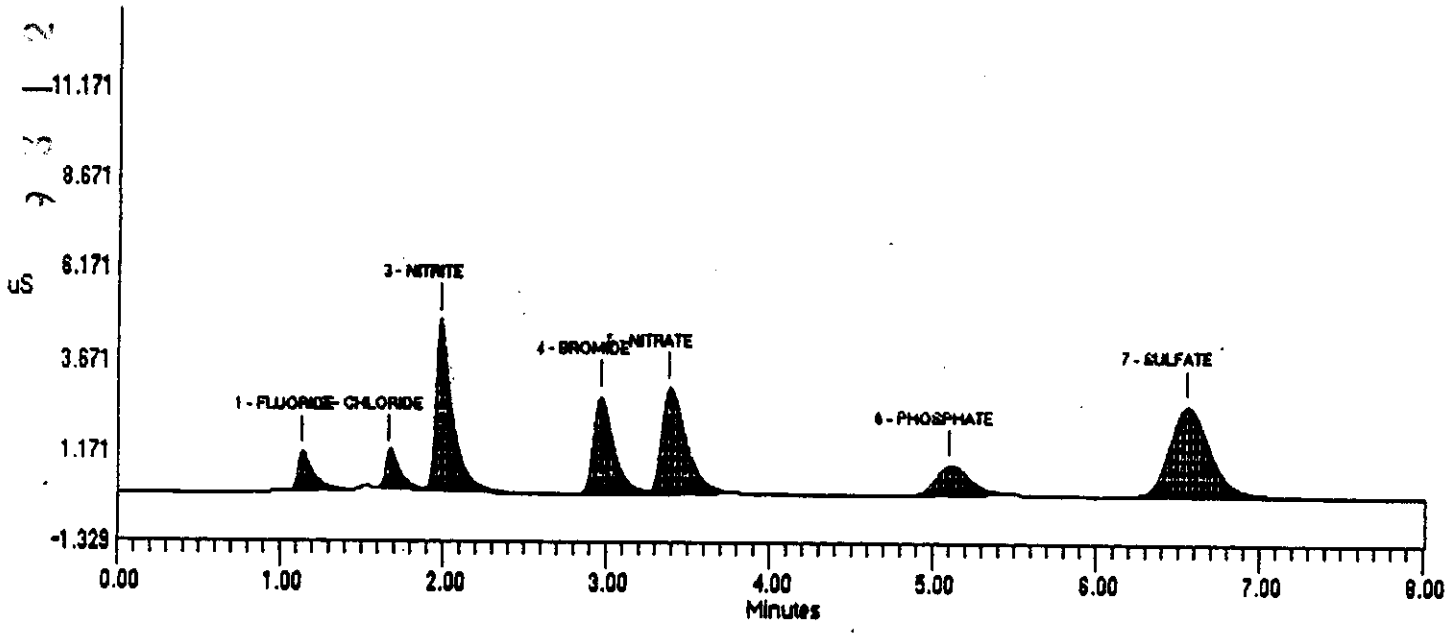


Sample Name: LMCS/73C11C0 R343 6-14-92 Date: Wed Oct 02 21:31:01 1991
Data File : c:\dx\data\91100101.D19
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1 System : 1 Inject#: 19 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name*	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	52.789	1086	7266	1	0.00
2	1.67	CHLORIDE	69.288	1038	6424	2	-1.96
3	1.98	NITRITE	501.702	4638	33387	2	-2.30
4	2.97	BROMIDE	485.310	2705	24059	2	-2.73
5	3.38	NITRATE	533.443	2901	31125	2	2.53
6	5.10	PHOSPHATE	506.601	836	12795	1	-4.08
7	6.55	SULFATE	582.554	2497	43001	1	-4.38

File: c:\dx\data\91100101.D19 Sample: LMCS/73C11C0



WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R318	Customer ID: 791-1A
Analysis: ACID DIGESTION	Sample Prep: ACID DIGESTION

Instrument: METTLER BAL SNF04495	Procedure/Rev: LA-508-158/A-2
Technologist: L. MORRISON	Date: 9-24-91
Starting Time: N/A	Temperature: N/A
Ending Time: N/A	Chemist: L. OTTMAR

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-8505	11		
2	REAGENT BLANK	R317-8605	12		
3	SAMPLE 791-1A	R318-8705	13		
4	SAM DUP OF 791-1A	R318-8805	14		
5	SPIKE OF SAMPLE 791-1A	R318-8905	15		
6	FINAL LMCS CHECK STD	R323-8505	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 CHECK STD	ICP1-9S4/10 mL	ICP2-6S4/10 mL	ICP3-8S4/10 mL	N/A
SPIKE	ICP1-9S4/10 mL	ICP2-6S4/10 mL	ICP3-8S4/10 mL	N/A

A-6000-881 (03/92)

ACID DIGESTION ANALYSIS

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-8505	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
ACD-DIG	LA-505-158	% RECOVERY	W1TE2	0

Sample Size: ? 10 mL ea in 100 mL
Customer ID: STD

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID_____
1aP-SST1 - 984
1aP-SST2 - 684
1aP-SST3 - 584

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731				
Hrs	Hrs	Hrs	Hrs	Hrs

Date: 9-24-91 | Time Completed | Lab Unit Mgr: [signature] | SK M Garland

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-8605	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
ACD-DIG	LA-505-158	G/G	W1TE2	0

Sample Size: ?
Customer ID: RED BL

Remarks, Calculations, Results:
REAGENT BLANK
VOLUME ON
COMPLETION_____

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731				
Hrs	Hrs	Hrs	Hrs	Hrs

Date: 9-24-91 | Time Completed | Lab Unit Mgr: [signature] | SK M Garland

Serial No.	Sample Point	Date	Time Issued	Priority
R 318.-8705	106AW	9-19-91	15:12	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
ACD-DIG	LA-505-158	G/G	W1TE2	0

Sample Size: ? 1 mL in 100 mL
Customer ID: 791-1A

Remarks, Calculations, Results:

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731				
Hrs	Hrs	Hrs	Hrs	Hrs

Date: 9-24-91 | Time Completed | Lab Unit Mgr: [signature] | SK M Garland

Serial No.	Sample Point	Date	Time Issued	Priority
R 318.-8805	106AW	9-19-91	15:1[illegible]	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
ACD-DIG	LA-505-158	G/G	W1TE2	0

Sample Size: ? 1 mL in 100 mL
Customer ID: 791-1A

Remarks, Calculations, Results:
DUPLICATE SAMPLE

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731				
Hrs	Hrs	Hrs	Hrs	Hrs

Date: 9-24-91 | Time Completed | Lab Unit Mgr: [signature] | SK M Garland

Serial No.	Sample Point	Date	Time Issued	Priority
R 318.-8905	106AW	9-19-91	15:14	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
ACD-DIG	LA-505-158	G/G	W1TE2	0

Sample Size: ? 1 mL in 100 mL
Customer ID: 791-1A

Remarks, Calculations, Results:
SAMPLE SPIKED ID
SPIKE ID
SPIKE VOLUME
1aP-SST1 - 984
1aP-SST2 - 684 } 10 mL ea
1aP-SST3 - 584

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731				
Hrs	Hrs	Hrs	Hrs	Hrs

Date: 9-24-91 | Time Completed | Lab Unit Mgr: [signature] | SK M Garland

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-8505	106AW	9-19-91	15:45	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
ACD-DIG	LA-505-158	% RECOVERY	W1TE2	0

Sample Size: ? 10 mL ea in 100 mL
Customer ID: STD

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID_____
1aPSST1 - 984
1aPSST2 - 684
1aPSST3 - 584

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731				
Hrs	Hrs	Hrs	Hrs	Hrs

Date: 9-24-91 | Time Completed | Lab Unit Mgr: [signature] | SK M Garland

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R318	Customer ID: 791-1A
Analysis: INDUCTIVELY COUPLED PLASMA	Sample Prep: ACID DIGESTION

Instrument: WB39939	Procedure/Rev: LA-505-151/B-0
Technologist: L. MORRISON	Date: 11-19-91
Starting Time: 13:14	Temperature: N/A
Ending Time: 14:23	Chemist: L. OTTMAR

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-8550	11		
2	REAGENT BLANK	R317-8650	12		
3	SAMPLE 791-1A	R318-8750	13		
4	SAM DUP OF 791-1A	R318-8850	14		
5	SPIKE OF SAMPLE 791-1A	R318-8950	15		
6	FINAL LMCS CHECK STD	R323-8550	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 CHECK STD	9S4/ 10 mL	6S4/ 10 mL	8S4/ 10 mL	N/A
SPIKE	9S4/ 10 mL	6S4/ 10 mL	8S4/ 10 mL	N/A

A-6000-881 (03/92)

ICP ANALYSIS - ACID DIGESTION

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-8550	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	% RECOVERY	W11E2	0

Sample Size	Customer ID
DP=10 ? 10 mL ea in 100 mL DIGESTED STDS	SID

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID
934,634,834

Al 6.72E2ppb (10/1000) = 6.72ppm = 134%
Ca 1.80E4 (.01) = 1.80E2ppm = 1800%
Cr 5.41E2 (.01) = 5.41ppm = 108%
Fe 7.97E2 (.01) = 7.97ppm = 159%
Na 1.57E3 (.01) = 15.70ppm = 157%

← OVER

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731	82768			
Hrs	Hrs	Hrs	Hrs	Hrs
[signature]	Laurine J. Ottman			

Date	Time Completed	Lab Unit Mgr
11/19/91	11/20/91	[signature]

54-6600-061 (R-10-83)

DIGESTED
Ag (483)(.01) = 96.6%
Ba (1015)(.01) = 101.5%
Cd (1026)(.01) = 102.6%
Mg (2840)(.01) = 568%
Mn (563)(.01) = 112.6%
Pb (560)(.01) = 120.0%
Zn (2300)(.01) = 230.0%

Al	4.80	96.0%
Ca	10.57	105.7%
Cr	4.75	95.0%
Fe	4.97	99.4%
Na	9.45	94.5%

LMCS ✓ [signature] 11/22/91

Undigested

Ba	9.79	97.9%	Zn	9.90	99.0%
Cd	9.85	98.5%			
Mg	4.97	99.4%	Ag	4.88	97.6%
Mn	4.88	97.6%	Pb	5.17	103.4%

R316-8550
~~[illegible]~~ KS

ICP ANALYSIS - ACID DIGESTION

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-8650	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	PPM	W1TE2	0

Sample Size	Customer ID
? Direct	REG BL

Remarks, Calculations, Results:

REAGENT BLANK

AL 1.01E2/1000 = 1.01E-1 ppm
CA 5.15E3/1000 = 5.15 ppm
Cr 1.02E1/1000 = 1.02E-2 ppm
Fe 7.59E1/1000 = 7.59E-2 ppm
Na 4.09E2/1000 = 4.09E-1 ppm

Ag <8.0/1000 = <8.0E-3 ppm
Ba <3.0/1000 = <3.0E-3 ppm
Cd <4.0/1000 = <4.0E-3 ppm
Mg 402/1000 = 4.02E-1 ppm
Mn 17/1000 = 1.70E-2 ppm
Pb <80/1000 = <8.0E-2 ppm
Zn 430/1000 = 4.30E-1 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65231	82768			
Hrs	Hrs	Hrs	Hrs	Hrs
[signature]	Laurine J. Ottman			

Date	Time Completed	Lab Unit Mgr
11/19/91	11/20/91	[signature]

[illegible] (R-18-83)

ICP ANALYSIS - ACID DIGESTION

Serial No.	Sample Point	Date	Time Issued	Priority
R 318-8750	106AW	9-19-91	15:13	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	ug/g rec	W1E2	0

Sample Size	Customer ID
DF=100 DF=600 2 ml to 100 ml, 2 ml to 10 ml	/91-1A

Remarks, Calculations, Results:

Al 2.7183(600) = 1.6356 ppb
Ca 9.7183(600) = 5.8326 ppb
Cr 4.3381(600) = 2.6024 ppb
Fe 2.3582(600) = 1.2565 ppb
Na 7.1764(600) = 4.3087 ppb

Ag (2.281)(600) = 1.3764 ppb
Ba (10.7)(600) = 6.4263 ppb
Cd (15.7)(600) = 9.4263 ppb
Mg (<11)(600) = <6.6063 ppb
Mn (246)(600) = 1.485 ppb
Pb (110)(600) = 6.604 ppb
Zn (82)(600) = 4.924 ppb

11/28/92

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731	82768			
Hrs	Hrs	Hrs	Hrs	Hrs
Date 11/19/91	Time Completed 11/20/91	Lab Unit Mgr		

54-6080-081 (R-10-83)

R 318-8750

Ag (22.8)(100) = 2.283 ppb
Ba (10.7)(100) = 1.07 E3 ppb
Cd (15.7)(100) = 1.57 E3 ppb
Mg (<11)(100) = <1.11 E3 ppb
Mn (246)(100) = 2.46 E4 ppb
Pb (110)(100) = 1.10 E4 ppb
Zn (82)(100) = 8.20 E3 ppb

ICP ANALYSIS - ACID DIGESTION

Serial No.	Sample Point	Date	Time Issued	Priority
R 318.-8850	106AW	9-19-91	15:13	25

Determination	Method/Standard	Result Units	Charge Code	Returns
ICP	LA-505-151	ug/g rec	W1TE2	0

Sample Size	Customer ID
? 1ml in 100ml, 2ml to 10ml	791-1A

Remarks, Calculations, Results:

DUPLICATE SAMPLE

Al 2.1183(600) = 1.3726ppb

Ca 2.1783(600) = 1.3026ppb *

Cr 3.7781(600) = 2.2689ppb

Fe 1.9582(600) = 1.1765ppb

Na 5.4664(600) = 3.2887ppb *

*FLAG SAMPLE DUP > 20%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65231	82768			
Hrs.	Hrs.	Hrs.	Hrs	Hrs
Date	Time Completed	Lab Supervisor		
11/19/91	11/20/91			

Al $\frac{2.7183 - 2.1183}{2.7183 + 2.1183} \times 100 = 24.9\%$

Ca $\frac{2.7183 - 2.1783}{2.7183 + 2.1783} \times 100 = 12.7\%$

Cr $\frac{4.2881 - 3.7781}{4.2881 + 3.7781} \times 100 = 15.1\%$

Fe $\frac{2.2582 - 1.9582}{2.2582 + 1.9582} \times 100 = 14.3\%$

Na $\frac{7.1784 - 5.4664}{7.1784 + 5.4664} \times 100 = 27.1\%$

Ag (<8.0)(600) = <4.3063 ppb

Ba (<2)(600) = <1.8063 ppb

Cd (<4.0)(600) = <2.4063 ppb

Mg (<11)(600) = <6.6063 ppb

Mn (41)(600) = 2.4684 ppb

Pb (<80)(600) = <4.8064 ppb

Zn (258)(600) = 15.5565 ppb

R 318-8850

ICP ANALYSIS - ACID DIGESTION

Serial No.	Sample Point	Date	Time Issued	Priority
R 318.-8950	106AW	9-19-91	15:14	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	% RECOVERY	W1TE2	0

Sample Size	Customer ID
? 1mL in 100mL, 2mL To 10mL	791-1A

Remarks, Calculations, Results:

SPIKE SAMPLE
SPIKE ID
SPIKE VOLUME 10mL ea
ICP-EST1 = 989
ICP-EST2 = 604
ICP-EST3 = 859

Spike $\frac{(10mL)(5ppm)}{100mL} \times 10^3 = 5ppm$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65231	82768			
Hrs	Hrs	Hrs	Hrs	Hrs
[signature]	Laurine J. Altman			

Date	Time Completed	Lab Unit Mgr
11/13/91	11/20/91	[signature]

84-6800-081 (R-10-83)

~~Al 1.63E6 - 2.71E3~~

tab 4/30/92

R318-8950

Al $\frac{2.84E3 - 2.71E3}{500} \times 100 = 26\%$

Ca $\frac{1.09E3 - 9.71E3}{1000} \times 100 =$ NOT CAL. SAM > 4 TIME SPIKE LJO 4/20/91

Cr $\frac{1.34E2 - 4.33E1}{500} \times 100 = 18.1\%$

Fe $\frac{3.24E2 - 2.25E2}{500} \times 100 = 19.8\%$

Na $\frac{7.24E4 - 7.17E4}{1000} \times 100 = 70\%$

Ag 85 - 0 / 83 x100 = 102.41%

Ba 163 - 0 / 166 x100 = 98.19%

Mg 0 —

Mn 132 - 49 / 83 x100 = 100.0%

Pb 124 - 0 / 83 x100 = 149.4%

Zn 267 - 118 / 166 x100 = 89.76%

Cd 165 - 0 / 166 x100 = 49.4%

BW 9-16-92

~~AT~~ <4 X Spk Conc. for Al, Ca, Na

Cr (134-43.3)/83 x100 = 109.28%

Fe (324-225)/83 x100 = 119.28%

ICP ANALYSIS - ACID DIGESTION

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-8550	106AW	9-19-91	15:45	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	% RECOVERY	W1TE2	0

Sample Size	Customer ID
? 10 ml ea in 100 ml	STD

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID _____

ICP-SET1 - 984
ICP-SET2 - 684
ICP-SET3 - 884

LMCS STDS

AL 6.51E2 (10/1E2) = 6.51 ppm = 130%
Ca 1.88E4 (.01) = 1.88E2 ppm = 1,880%
Cr 5.99E2 (.01) = 5.99 ppm 120%
Fe 1.11E3 (.01) = 11.10 ppm 111%
Na 1.62E3 (.01) = 16.20 ppm 162%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731	82768			
Hrs	Hrs		Hrs	Hrs
Date 11/19/91	Time Completed 11/20/91	Lab Unit Mgr		

54-6800-081 (R-10-83)

DIGESTED

R 323-8550

Al 4.72 94.4%
Ca 9.84 98.4%
Cr 4.75 95.0%
Fe ~~9.40~~ 4.97 99.4%
Na 9.40 94.0%

Ag (487)(.01) = 97.4%
Ba (998)(.01) = 99.8%
Cd (1016)(.01) = 101.6%
Mg (2336)(.01) = 467.2%
Mn (563)(.01) = 112.6%
Pb (568)(.01) = 113.6%
Zn (2433)(.01) = 243.3%

LMCS ✓ Teresa L. Frazier 11/22/91

Ag 4.74 94.8%
Ba 9.80 98.0%
Cd 9.88 98.8%
Mg 4.95 99.0%
Mn 4.88 97.6%
Pb 5.12 102.4%
Zn 9.82 98.2%

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R319	Customer ID: 791-2A
Analysis: ARSENIC	Sample Prep: UNDIGESTED

Instrument: PERKIN ELMER - WA77479	Procedure/Rev: LA-355-131/B-0
Technologist: D. R. JACKSON	Date: 10-01-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: K. FULLER

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5595	11		
2	REAGENT BLANK	R317-5695	12		
3	SAMPLE 791-2A	R319-5795	13		
4	FINAL LMCS CHECK STD	R323-5595	14		
5			15		
6			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 CHECK STD	125B38B/0.5 mL			N/A

A-6000-881 (03/92)

ARSENIC ANALYSIS - UNDIGESTED SAMPLE

Sample No.	Sample Point	Date	Time Issued	Priority
R 316.-5595	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
As	LA-355-131	% RECOVERY	W11E2	0

Sample Size: ? .500 ml — Customer ID: STD

Remarks, Calculations, Results:
EDP R741 AS/HYDRD 0.766
STDN 125838B RESULT
STD VAL 1.00E-1 %REC 102.0%
~~0.744~~ 10-1-91 DRJ 10-1-91 ~~0.744~~ DRJ
50.76/500 = 1.02E-1

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
6C275				

Date: 10-1-91 — Time Completed: — Lab Use Only:

Sample No.	Sample Point	Date	Time Issued	Priority
R 317.-5695	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
As	LA-355-131	PPM	W11E2	C

Sample Size: ? 10.0 ml — Customer ID: REG DL

Remarks, Calculations, Results:
REAGENT BLANK 0.013
~~0.004~~ DRJ 10-1-91 10-1-91 ~~0.009~~ ARJ
<5/10000 = <5.00E-4

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
6C275				

Date: 10-1-91 — Time Completed: — Lab Use Only:

Sample No.	Sample Point	Date	Time Issued	Priority
R 319.-5795	106AW	9-19-91	15:19	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
As	LA-355-131	PPM	W11E2	0

Sample Size: ? DRJ .025 ml ~~[illegible]~~ — Customer ID: 791-2A

Remarks, Calculations, Results: 10-1-91 10-1-91
0.878 58.28/25 = 2.33

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
6C275				

Date: 10-1-91 — Time Completed: — Lab Use Only:

Sample No.	Sample Point	Date	Time Issued	Priority
R 323.-5595	106AW	9-19-91	15:45	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
As	LA-355-131	% RECOVERY	W11E2	C

Sample Size: ? .500 ml — Customer ID: STD

Remarks, Calculations, Results:
EDP R741 AS/HYDRD
STDN 125838B RESULT 9.98E-2
STD VAL 1.00E-1 %REC 99.8%
0.753 49.88/500 =

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
6C275				

Date: 10-1-91 — Time Completed: — Lab Use Only:

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY
CALIBRATION RECORD

Analyte: As

Procedure: LA-355-131 | Revision: B-0

Instrument: PERKIN ELMER | Property No.: WA77479

Technologist: D. R. JACKSON | Payroll No.: 6C275 | Date: 10-01-91

Calibration Standard: 128B38C

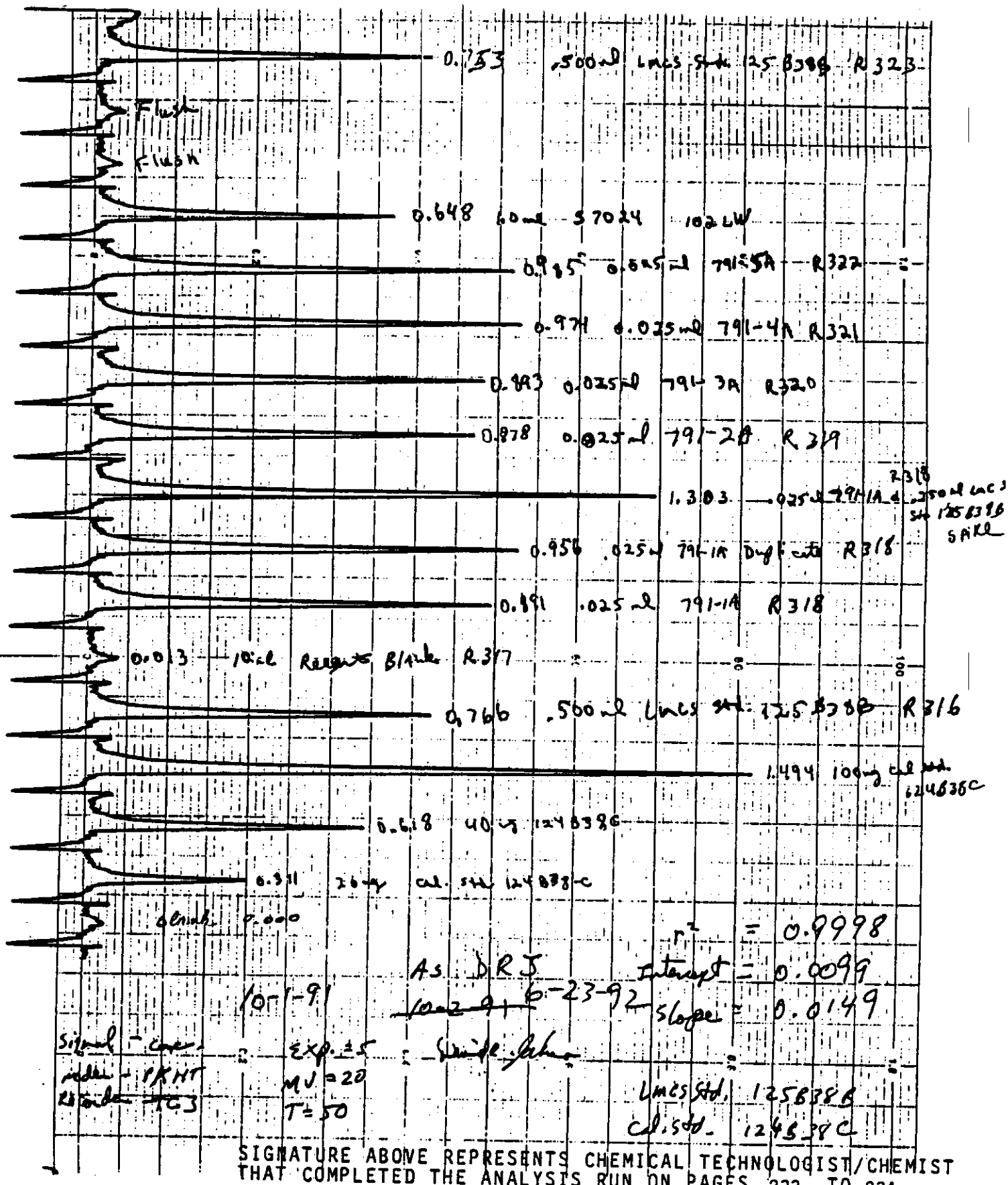
Analyte Concentration: 0.1000 ppm

Type of Calibration: LINEAR

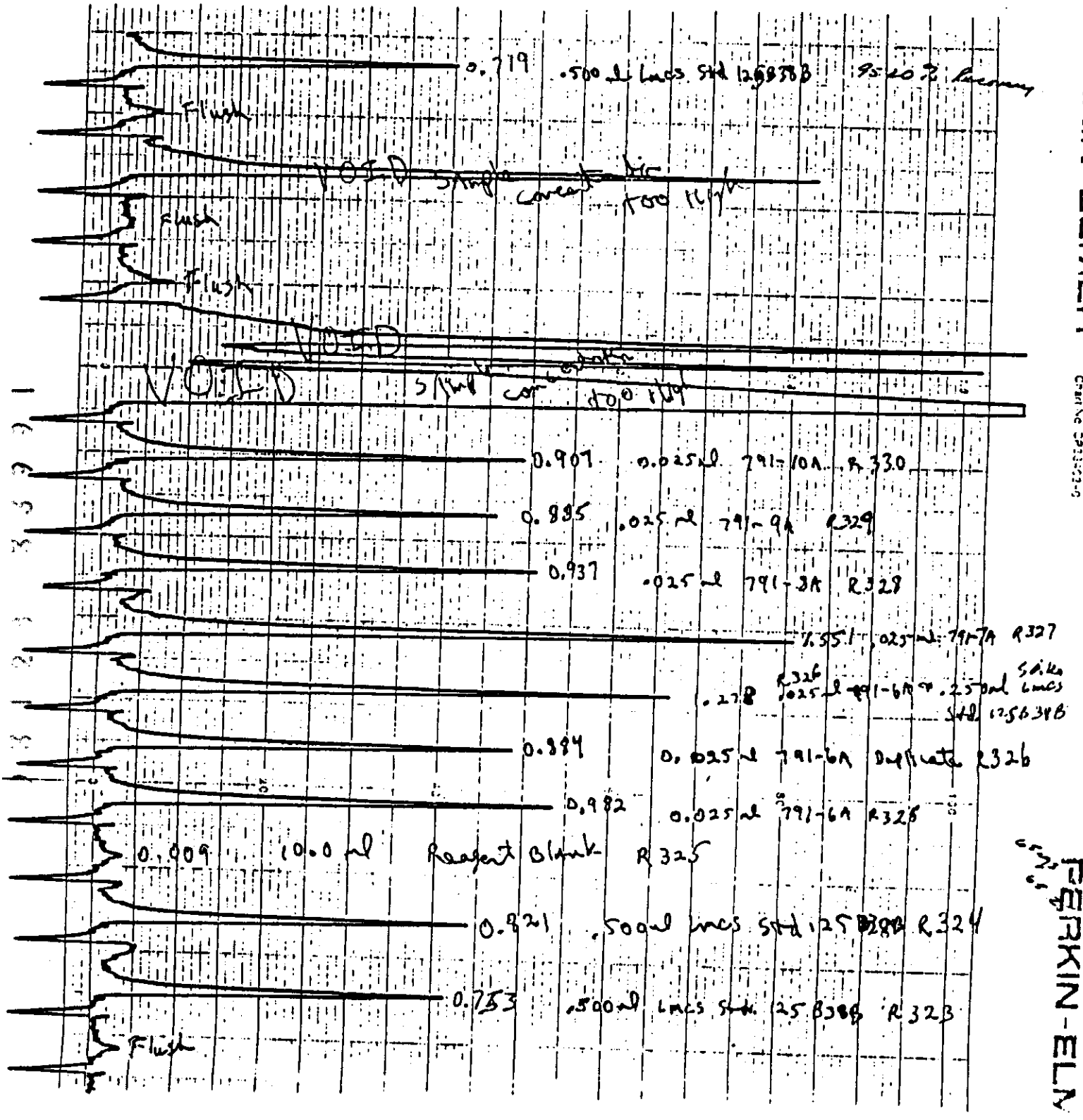
	Dilution	Concentration	Instrument Reading Unit
1	0.000 mL	0.0 ng	0.000
2	0.200 mL	20.0 ng	0.311
3	0.400 mL	40.0 ng	0.618
4	1.000 mL	100.0 ng	1.494
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			

Comments:

A-6000-882 (03/92)



SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED THE ANALYSIS RUN ON PAGES 233 TO 234


0.719 .500 ml Lmcs Std 125B38B 95.20 % Recovery
Flush
VOID Sample concentration too high
Flush
Flush
VOID
VOID Sample concentration too high
0.907 0.025 ml 791-10A R330
0.885 .025 ml 791-9A R329
0.937 .025 ml 791-8A R328
1.551 .025 ml 791-7A R327
.278 R326 .025 ml 791-6A + .250 ml Lmcs Std 125B38B
0.884 0.025 ml 791-6A Duplicate R326
0.982 0.025 ml 791-6A R325
0.009 10.0 ml Reagent Blank R325
0.821 .500 ml Lmcs Std 125B38B R324
0.753 .500 ml Lmcs Std 125B38B R323
Flush
PERKIN-ELMER
PERKIN-ELM

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R319	Customer ID: 791-2A
Analysis: CYANIDE	Sample Prep: UNDIGESTED

Instrument: MILTON ROY SPEC 301 - AL10724	Procedure/Rev: LA-695-102/A4
Technologist: E. COLVIN	Date: 09-26-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: D. BISENIUS

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5578	11		
2	REAGENT BLANK	R317-5678	12		
3	SAMPLE 791-2A	R319-5778	13		
4	FINAL LMCS CHECK STD	R323-5578	14		
5			15		
6			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 CHECK STD	75C11-5/0.1 mL			N/A

A-6000-881 (03/92)

CYANIDE ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5578	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
CN	LA-695-102	% RECOVERY	W1TE2	0

Sample Size: ? .100-10ml-.500 — Customer ID: STD

Remarks, Calculations, Results:
S244 KCN
STD# 75C115 RESULT
STD VAL 8.90E² %REC 102.5%
9/27/91

$$\frac{(.748-.011)(.006547)}{.160252} / .500 \times 100 = \cancel{8.28E2}\ 9.12E2$$

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
80028				
Ed Cohn				

Date: 9-26-91 — Time Completed: — Lab Unit Mgr: [signature]
JK 6-9-92

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5678	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
CN	LA-695-102	PPM	W1TE2	0

Sample Size: ? — Customer ID: REG BL

Remarks, Calculations, Results:
REAGENT BLANK ABS .011

$$\frac{(.011)-.006547}{.160252} < 5.0E-1\ ppm$$

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
80028				
Ed Cohn				

Date: 9-26-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 319.-5778	106AW	9-19-91	15:19	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
CN	LA-695-102	PPM	W1TE2	0

Sample Size: ? 750uL — Customer ID: 791-2A

Remarks, Calculations, Results:
ABS .317

$$\frac{(.317-.011)-.006547}{.160252} / .750 = 2.49\ ppm$$

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
80028				
Ed Cohn				

Date: 9-26-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5578	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
CN	LA-695-102	% RECOVERY	W1TE2	0

Sample Size: ? 100uL-10mL-500uL — Customer ID: STD

Remarks, Calculations, Results:
S244 KCN
STD# 75C115 RESULT
STD VAL 8.90E² %REC 101.3%
ABS .740

$$\frac{(.740-.011)-.006547}{.160252} / .5 \times 100 = 9.02E2$$

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
80028				
Ed Cohn				

Date: 9-26-91 — Time Completed: — Lab Unit Mgr: [signature]

TODAYS DATE: 09-26-1991

PAYROLL NO.: 80028

Y-INTERCEPT= .006547
SLOPE= .160252

SAMPLE ID#: R-317 BLANK
SAMPLE SIZE: 0
WVL AND ABS= 580NM 0.011 A

SAMPLE ID#: R-316 75C11-S STD
SAMPLE SIZE: 100UL-10ML-500UL
WVL AND ABS= 580NM 0.748 A

SAMPLE ID#: R-318
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.424 A

SAMPLE ID#: R-318 DUPLICATE
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.428 A

SAMPLE ID#: R-318 + SPIKE
SAMPLE SIZE: 750UL + 100UL-10ML-500UL 75C11-S SPIKE
WVL AND ABS= 580NM 1.150 A

SAMPLE ID#: R-319
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.317 A

SAMPLE ID#: R-320
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.310 A

SAMPLE ID#: R-321
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.317 A

SAMPLE ID#: R-322
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.327 A

SAMPLE ID#: R-323 75C11-S STD
SAMPLE SIZE: 100UL-10ML-500UL
WVL AND ABS= 580NM 0.740 A

CALIBRATION CURVE LACHAT NON-DISTILLED 25ML

CYANIDE DATE: 8-28-1991

CALIBRATION STANDARD # 351-M, 1006 MG/ML CYANIDE

DILUTION FACTOR = 10/.1 = 100, WORKING STANDARD = 1006 /100 = 10.060

PIPET SIZE	MICROGRAMS CYANIDE	TOTAL ABS	NET ABS
BLANK	0	.006	0
50UL	.503	.0930	.0870
500UL	5.030	.8320	.8260
1000UL	10.060	1.6180	1.6120

Y INTERCEPT = .006547
SLOPE = .160252
C C = .999921

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R319	Customer ID: 791-2A
Analysis: DIFFERENTIAL THERMAL	Sample Prep: UNDIGESTED

Instrument: WC16134,WC16129	Procedure/Rev: LA-514-113/A-0
Technologist: M. MYERS	Date: 10-09-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: D. HERT

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5511	11		
2	REAGENT BLANK	R317-5611	12		
3	SAMPLE 791-2A	R319-5711	13		
4	FINAL LMCS CHECK STD	R323-5511	14		
5			15		
6			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 CHECK STD	27C11AY/0.02 mL			N/A

A-6000-881 (03/92)

DIFFERENTIAL THERMAL ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5511	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
DSC	LA-514-113	EXOTHERMS	W1TE2	0

Sample Size: ? .020 ml
Customer ID: STD 27C11AY

Remarks, Calculations, Results:

1.00=100%

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				
6C823			[signature]	

Date	Time Completed	Lab Unit Mgr
10-9-91		DM Thornton [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5611	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
DSC	LA-514-113	EXOTHERMS	W1TE2	0

Sample Size: ? ~~[illegible]~~ .010 ml
Customer ID: REO BL

Remarks, Calculations, Results:
REAGENT BLANK

No exotherm

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				
6C823				

Date	Time Completed	Lab Unit Mgr
10-9-91		DM Thornton [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 319.-5711	106AW	9-19-91	15:16	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
DSC	LA-514-113	EXOTHERMS	W1TE2	0

Sample Size: ? .010 ml
Customer ID: 791-2A

Remarks, Calculations, Results:

No exotherm

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				
6C823				

Date	Time Completed	Lab Unit Mgr
10-9-91		DM Thornton [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5511	106AW	9-19-91	15:43	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
DSC	LA-514-113	EXOTHERMS	W1TE2	0

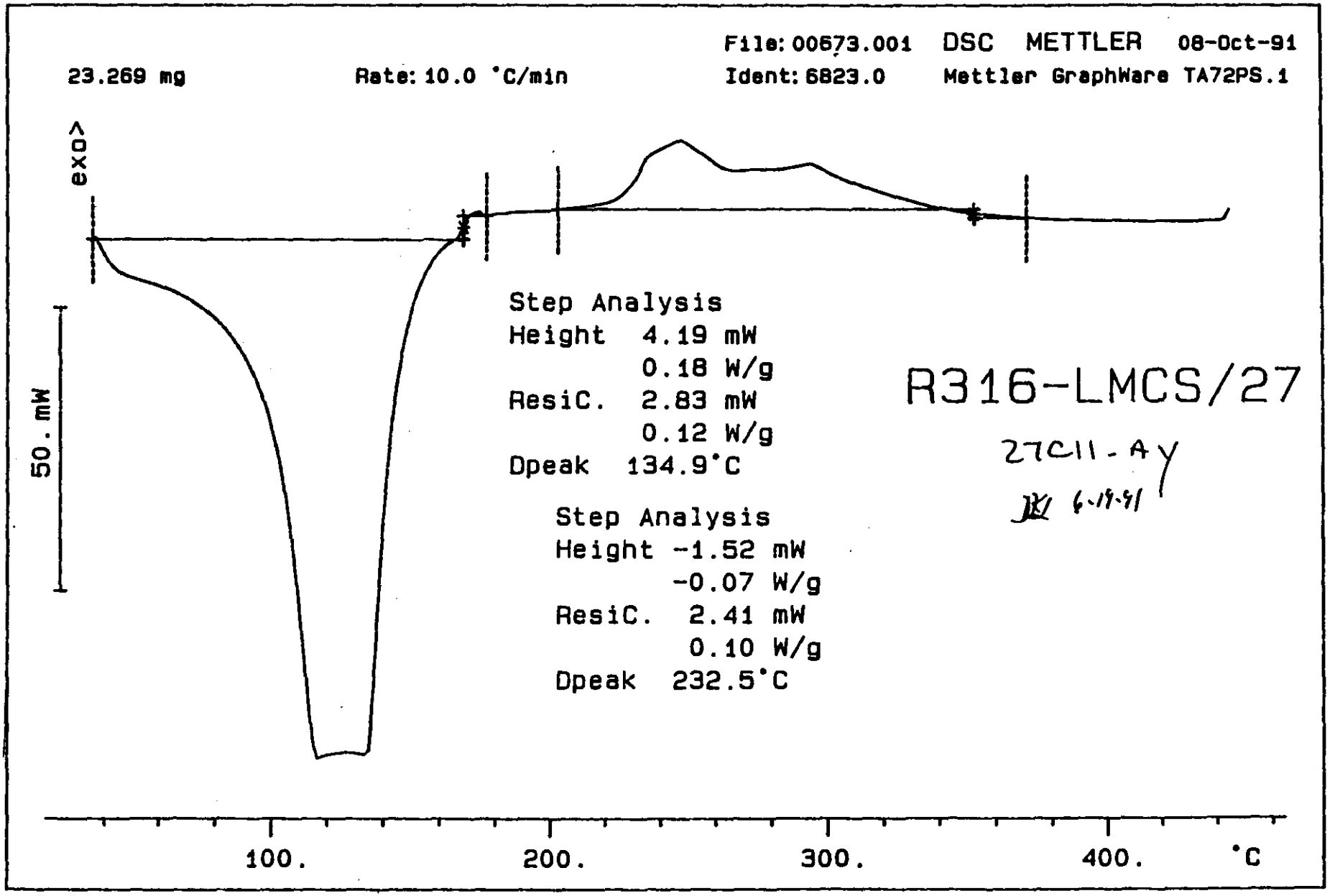
Sample Size: ? .020 ml
Customer ID: STD 27C11AY

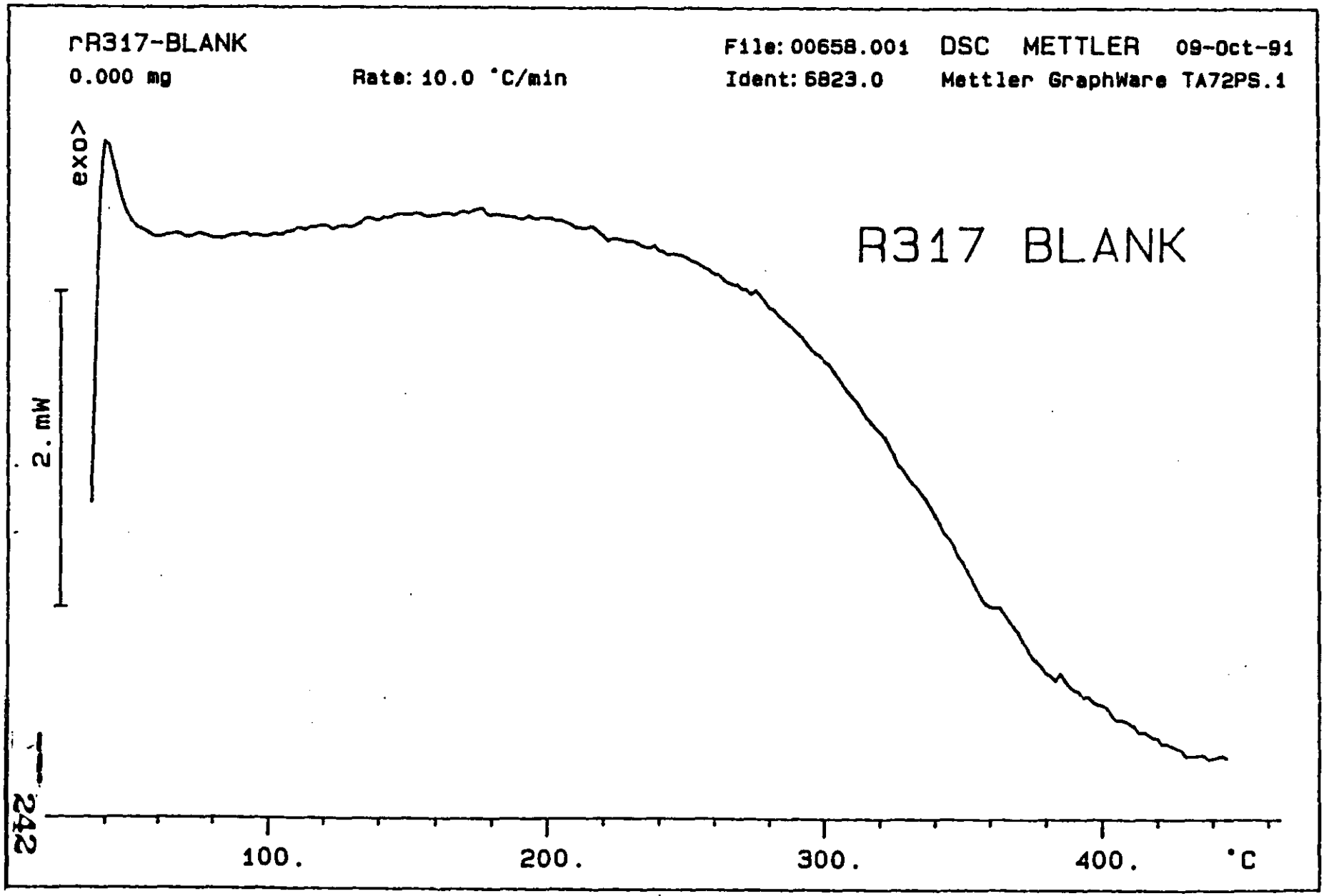
Remarks, Calculations, Results:

1.00=100%

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				
6C823			[signature]	

Date	Time Completed	Lab Unit Mgr
10-9-91		DM Thornton [signature]

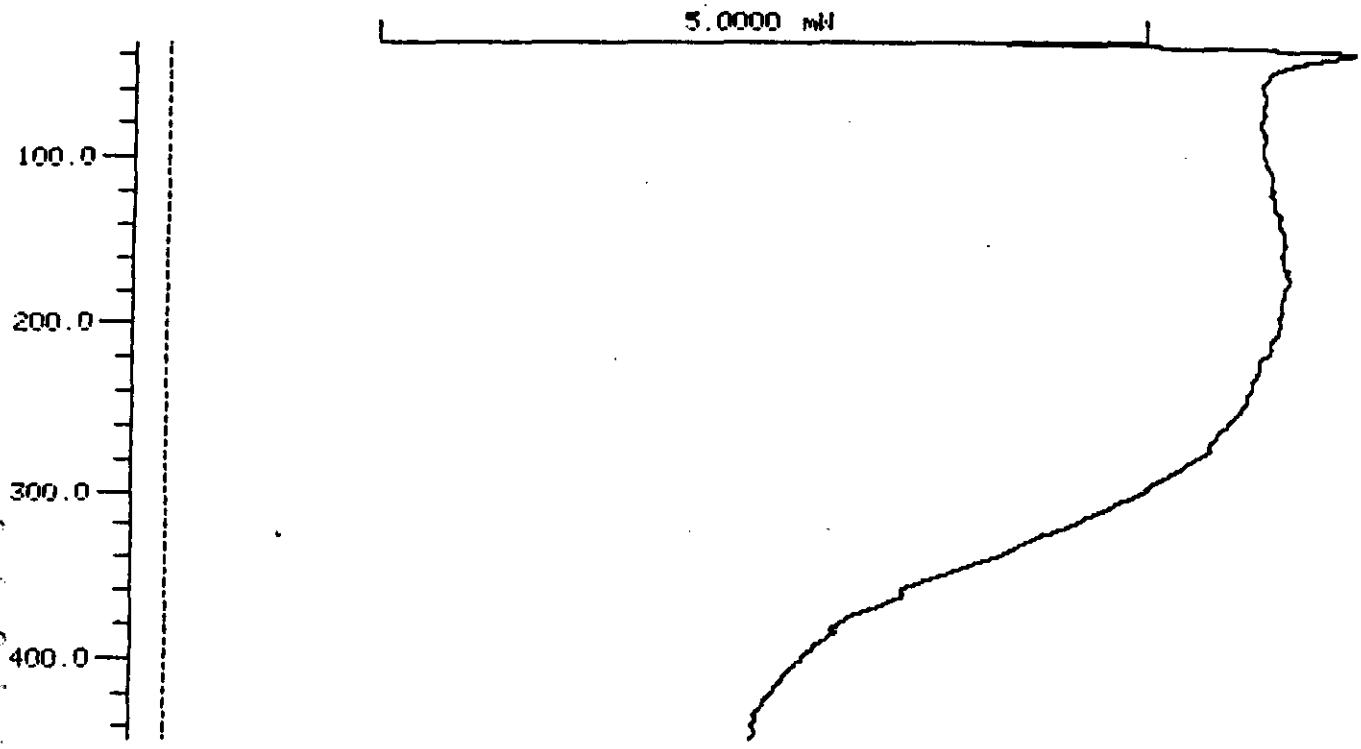

File: 00673.001 DSC METTLER 08-Oct-91
23.269 mg
Rate: 10.0 °C/min
Ident: 6823.0
Mettler GraphWare TA72PS.1
<exo
50. mW
Step Analysis
Height 4.19 mW
0.18 W/g
ResiC. 2.83 mW
0.12 W/g
Dpeak 134.9°C
Step Analysis
Height -1.52 mW
-0.07 W/g
ResiC. 2.41 mW
0.10 W/g
Dpeak 232.5°C
R316-LMCS/27
27C11-AY
6-19-91
100.
200.
300.
400.
°C


rR317-BLANK
0.000 mg
Rate: 10.0 °C/min
File: 00658.001
Ident: 6823.0
DSC METTLER 09-Oct-91
Mettler GraphWare TA72PS.1
R317 BLANK
exo>
2. mW
100.
200.
300.
400.
°C

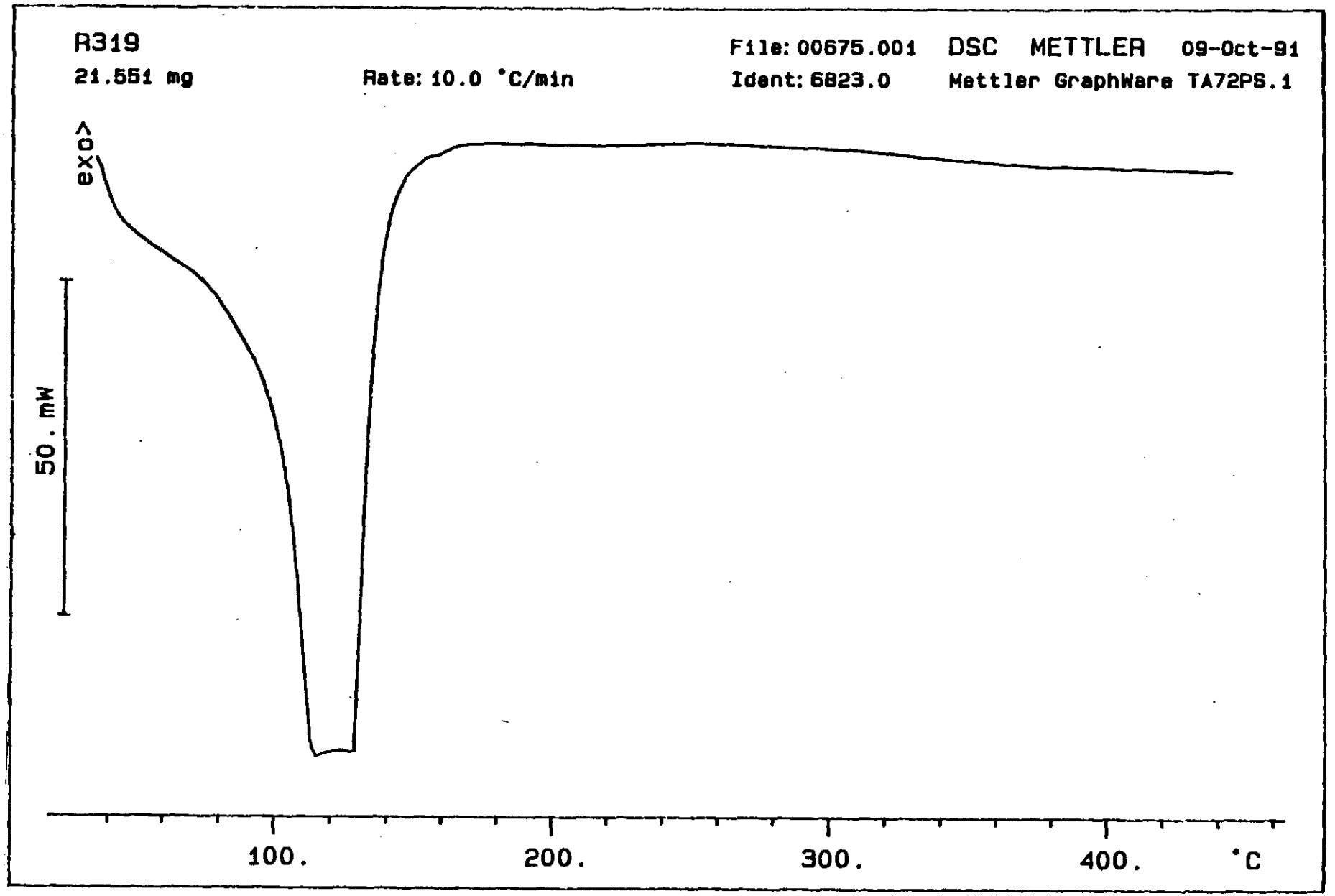
END SCREEN °C 447.8

TEMPERATURE °C

HEAT FLOW
EXOTHERMAL-->



******** METTLER TA4000 SYSTEM *********


R319
21.551 mg
Rate: 10.0 °C/min
File: 00675.001
Ident: 6823.0
DSC METTLER 09-Oct-91
Mettler GraphWare TA72PS.1
exo>
50. mW
100.
200.
300.
400.
°C

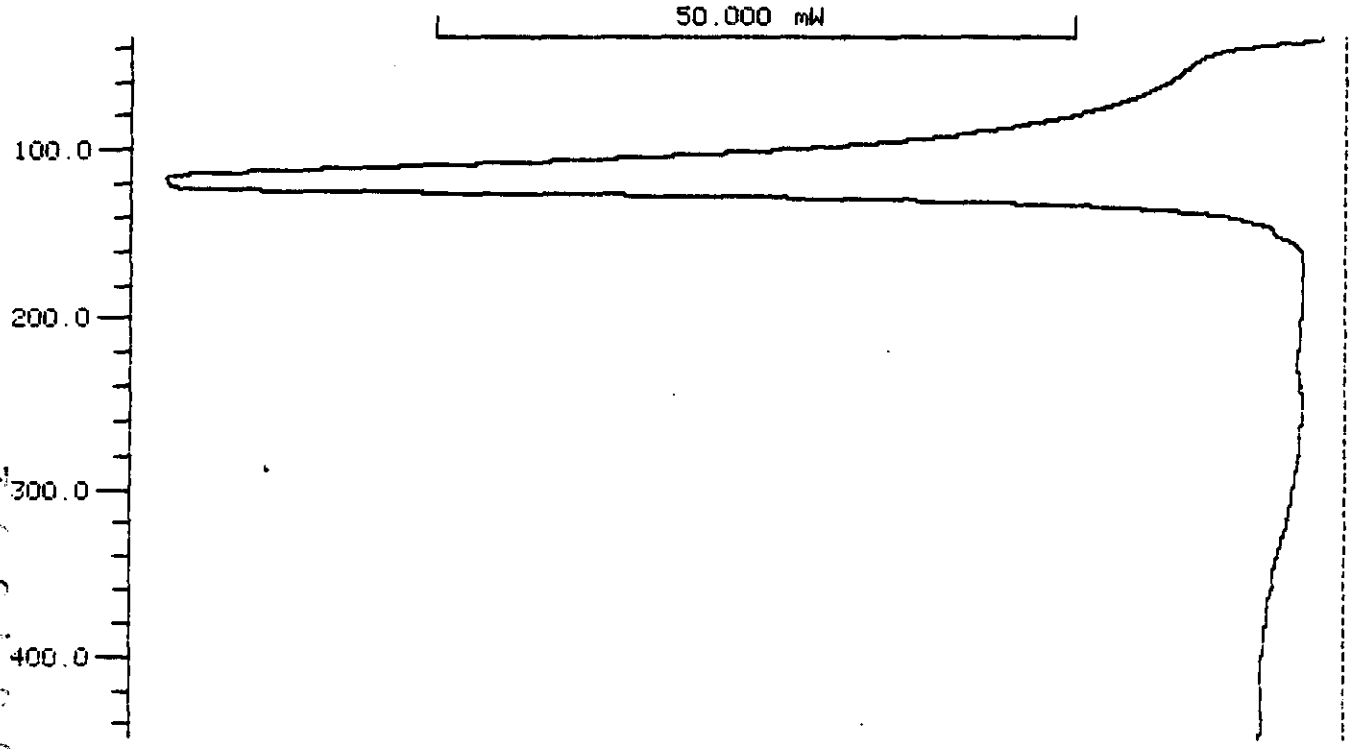
R319
6-19-92

Δ

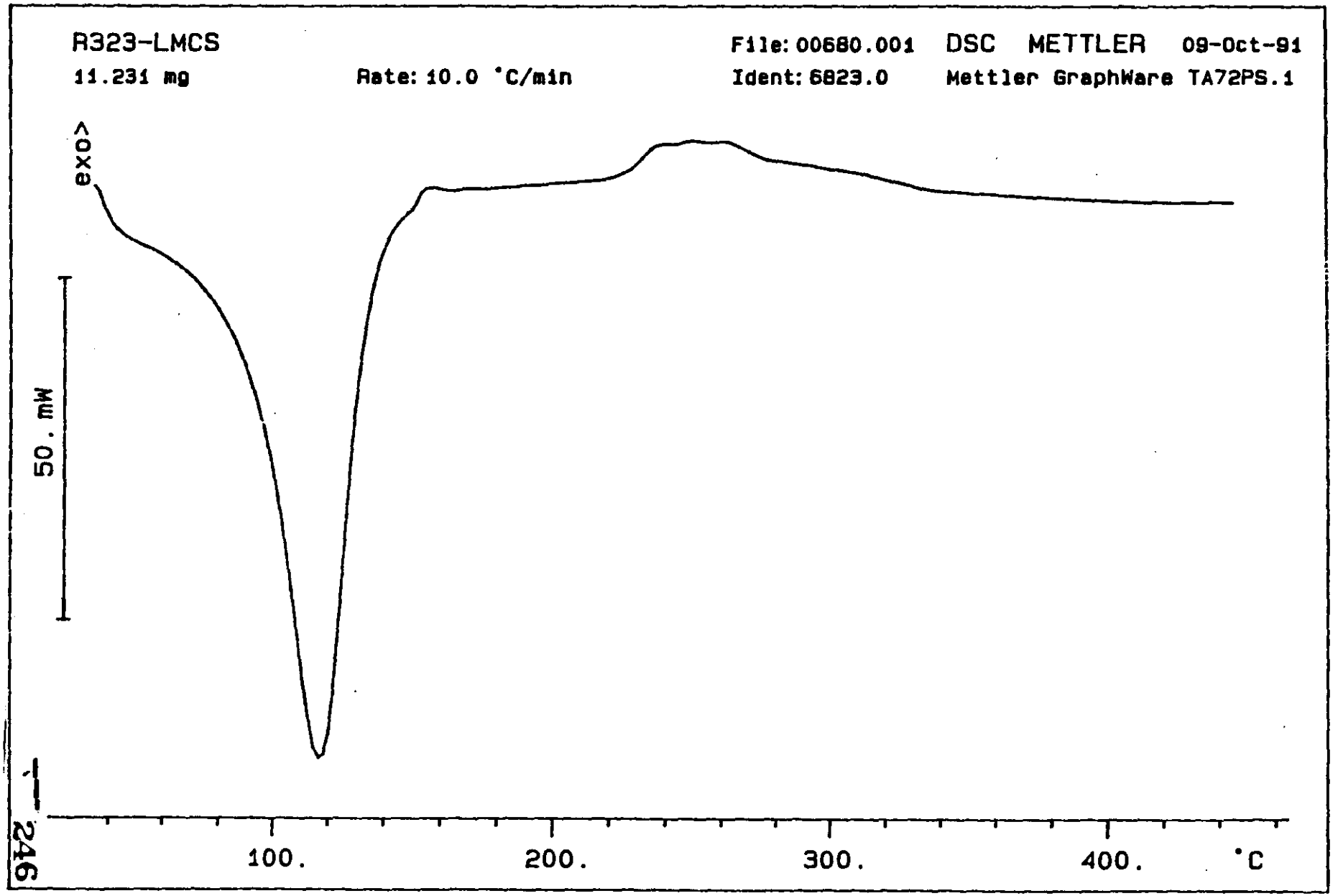
END SCREEN °C 447.8

TEMPERATURE °C

HEAT FLOW
EXOTHERMAL-->



******** METTLER TA4000 SYSTEM *********

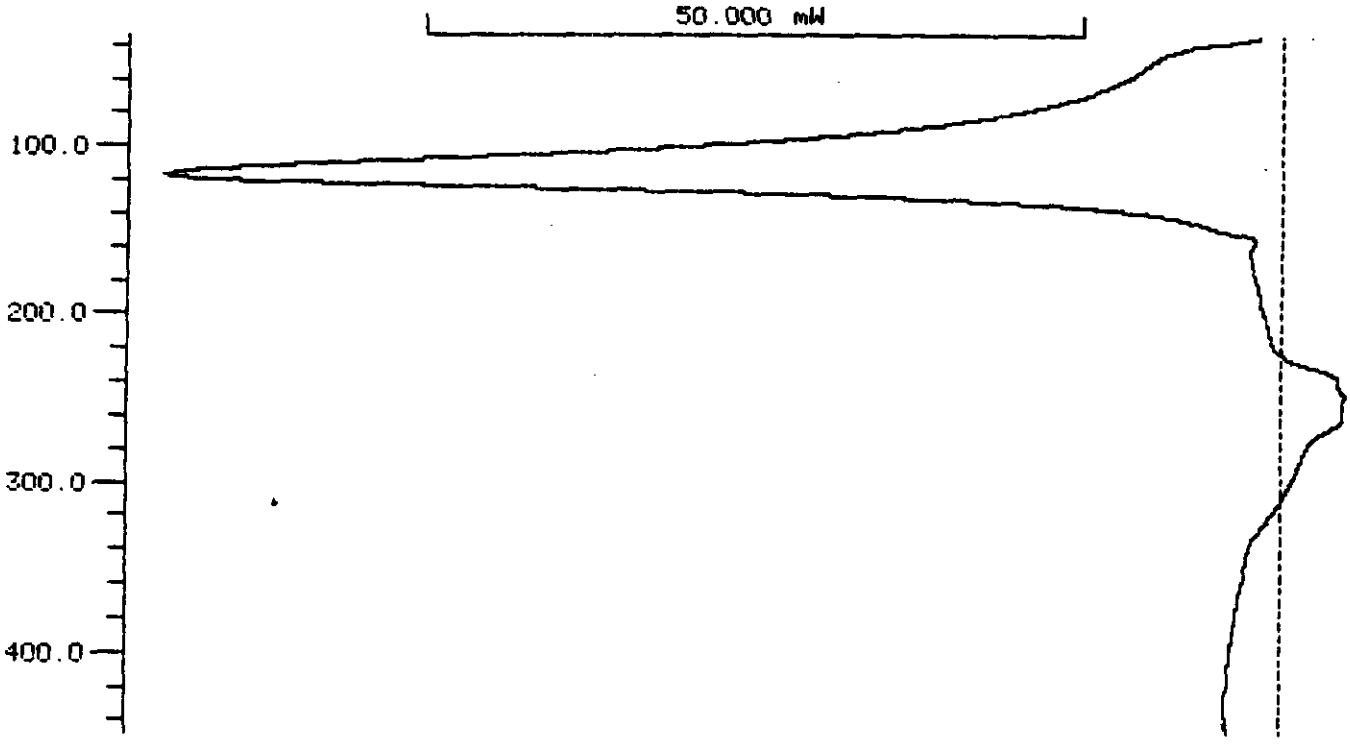

R323-LMCS
11.231 mg
Rate: 10.0 °C/min
File: 00680.001
Ident: 6823.0
DSC METTLER 09-Oct-91
Mettler GraphWare TA72PS.1
exo>
50. mW
100.
200.
300.
400.
°C

KS23
6-19-92

END SCREEN °C 447.8

TEMPERATURE °C

HEAT FLOW
EXOTHERMAL-->



******** METTLER TA4000 SYSTEM *********

DSC

Configuration used from 8-8-91 to Nov 25, 1991

Denise Hebert

Heat flow calibration began July 20, 1991. Used until Nov 25, 1991

FIGURATION

26-NOV-91 8:14

E INDIUM	255
DSC SIGN ICTA	1
TAU LAG	12
TAU SIGNAL	0
E DIMIN. FACT.	.93
S	2400
TAU LAG 2	16
TAU SIGNAL 2	0
E DIMIN. F. 2	.93
S 2	1850
MAX. TEMP.	600.
MIN. TEMP.	-50.
A PT100	.21610
B PT100	.74150
C PT100	-.10116
HEAT P	3000
HEAT I	250
HEAT D	30
COOL 1	0
COOL 2	0
COOL 3	0
	10773
	58.121
A1	.14689
T1	-100
A2	8940
B2	17.884
C2	-.072
T2	363
A3	9360.3
B3	-15.043
C3	.01538

******** METTLER TA4000 SYSTEM *********

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R319	Customer ID: 791-2A
Analysis: MERCURY	Sample Prep: UNDIGESTED

Instrument: PERKIN ELMER WA77479	Procedure/Rev: LA-325-102/B-0
Technologist: D. R. JACKSON	Date: 10-17-91
Starting Time: 8:00	Temperature: N/A
Ending Time: 2:00	Chemist: R. K. FULLER

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5597	11		
2	REAGENT BLANK	R317-5697	12		
3	SAMPLE 791-2A	R319-5797	13		
4	FINAL LMCS CHECK STD	R323-5597	14		
5			15		
6			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 CHECK STD	125B38D/1.50 mL			1.500 mL

A-6000-881 (03/92)

MERCURY ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5597	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
Hg	LA-325-102	% RECOVERY	W1TE2	0

Sample Size: ? 1.50 ml — Customer ID: STD

Remarks, Calculations, Results:
EDP R716 HG/HYDRD
STDN 125B38D RESULT 1.05E-1
STD VAL 1.00E-1 %REC 105.0%
157.57/1500 =
DRY 0.504

Analyst-1: 6C225 — Date: 10-17-91 — Time Completed: — Lab Unit Mgr:

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5697	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
Hg	LA-325-102	PPM	W1TE2	0

Sample Size: ? 10.0 ml — Customer ID: REG DL

Remarks, Calculations, Results:
REAGENT BLANK
DRY 10-17-91
0.000
<5/10,000 = <5.00E-4 ppm

Analyst-1: 6C225 — Date: 10-17-91 — Time Completed: — Lab Unit Mgr:

Serial No.	Sample Point	Date	Time Issued	Priority
R 319.-5797	106AW	9-19-91	15:20	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
Hg	LA-325-102	PPM	W1TE2	0

Sample Size: ? 1.0 ml — Customer ID: 791-2A

Remarks, Calculations, Results:
0.014
<5/1000 = <5.00E-3 ppm

Analyst-1: 6C225 — Date: 10-16-91 — Time Completed: — Lab Unit Mgr:

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5597	106AW	9-19-91	15:45	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
Hg	LA-325-102	% RECOVERY	W1TE2	0

Sample Size: ? 1.50 ml — Customer ID: STD

Remarks, Calculations, Results:
EDP R716 HG/HYDRD
STDN 125B38D RESULT 1.00E-1
STD VAL 1.00E-1 %REC 100.0%
DRY 0.483 150.73/1500 =

Analyst-1: 6C225 — Date: 10-17-91 — Time Completed: — Lab Unit Mgr:

93125 34007

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY
CALIBRATION RECORD

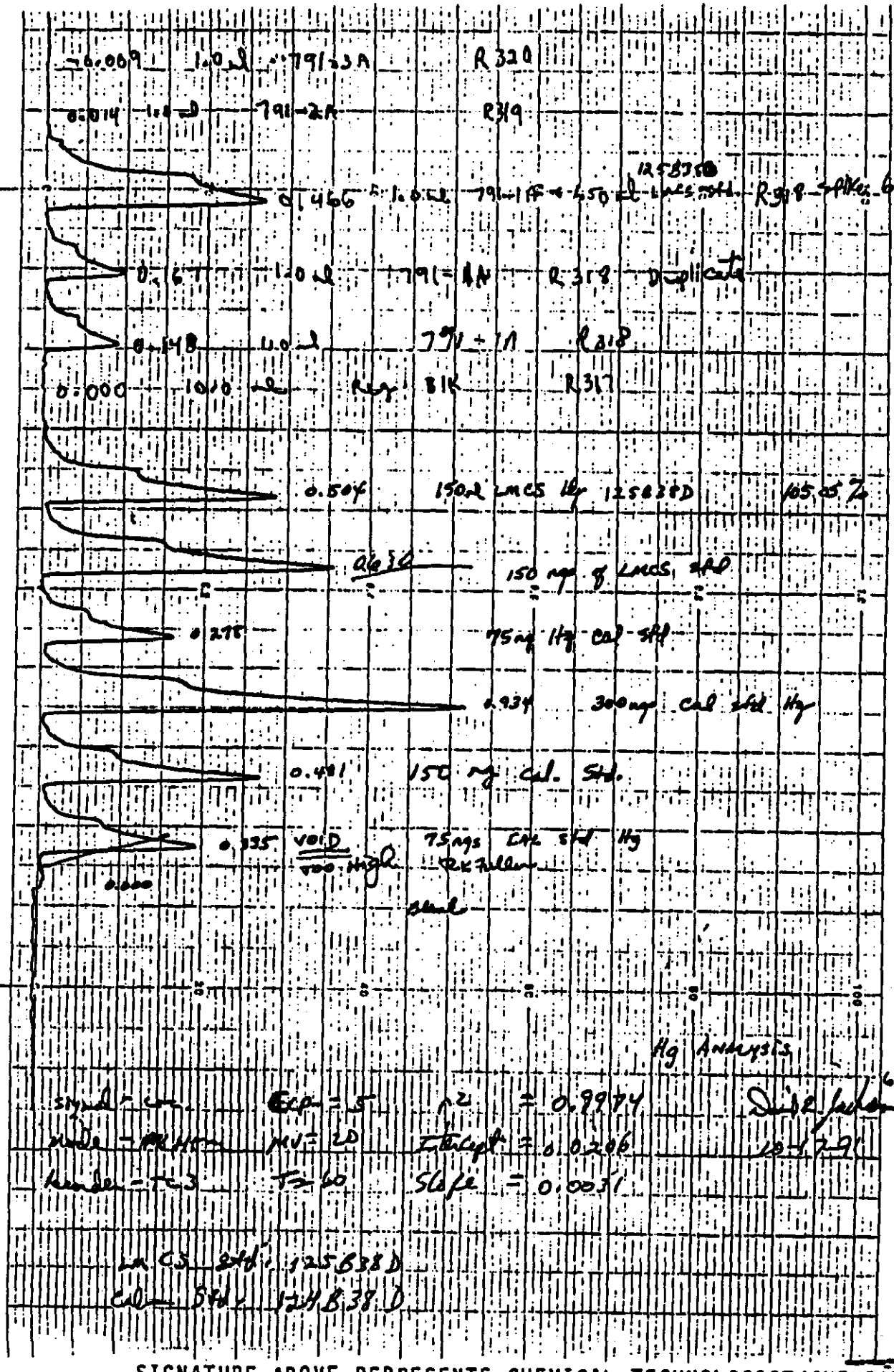
Analyte: Hg
Procedure: LA-325-102 | Revision: B-0
Instrument: PERKIN ELMER | Property No.: WA77479
Technologist: D. R. JACKSON | Payroll No.: 6C275 | Date: 10-17-91

Calibration Standard: 124B38D
Analyte Concentration: 0.1000 ppm
Type of Calibration: LINEAR

	Dilution	Concentration	Instrument Reading Unit
1	0.000 mL	0 ng	0.000
2	0.750 mL	75 ng	0.278
3	1.500 mL	150 ng	0.481
4	3.000 mL	300 ng	0.934
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			

Comments:

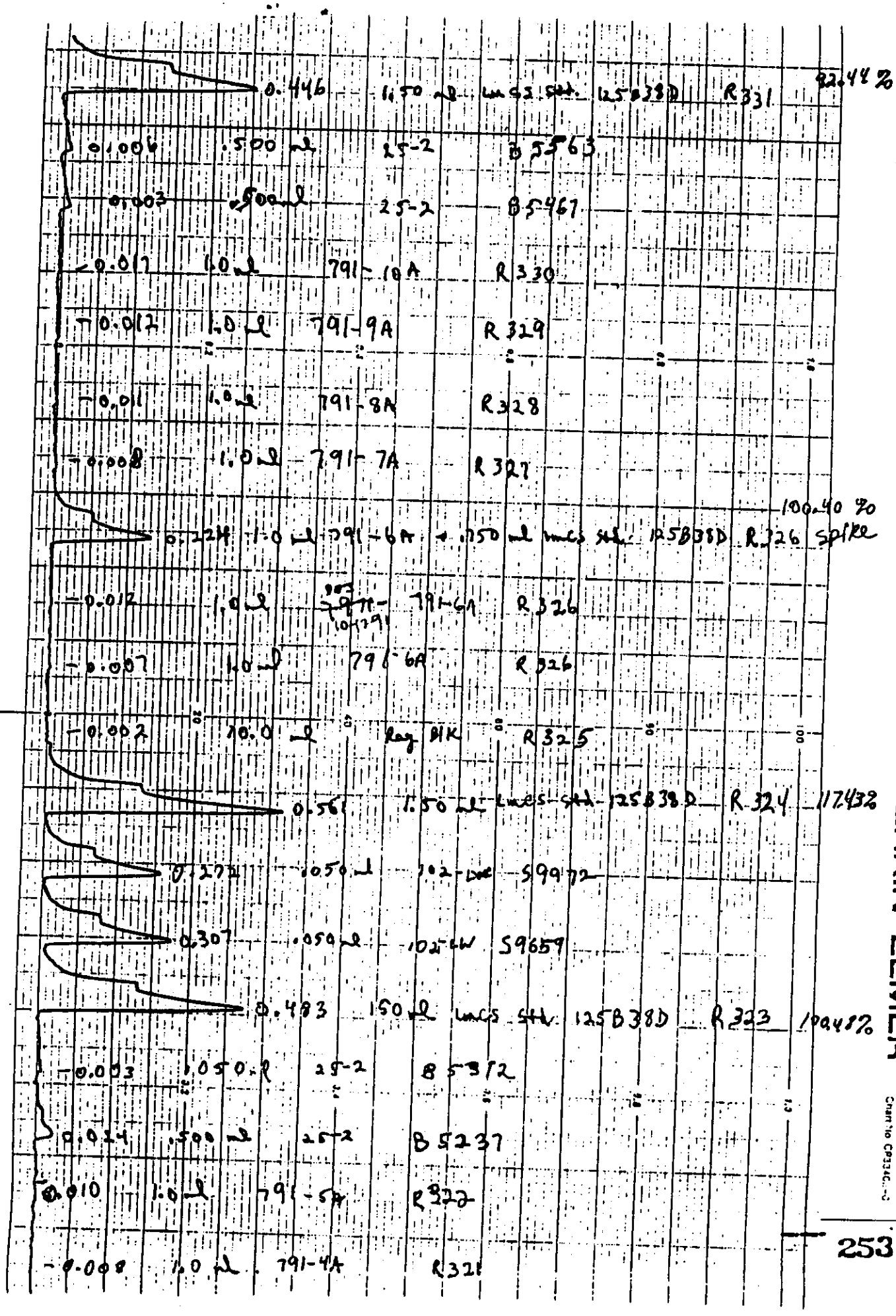
A-6000-882 (03



PERKIN-ELMER

PERKIN-ELMER

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED THE ANALYSIS RUN ON PAGES 252 TO 253.


0.446 1.50 ml LMCS Std. 125B38D R331 92.44%
0.006 .500 ml 25-2 B5563
0.003 .500 ml 25-2 B5467
-0.017 1.0 ml 791-10A R330
-0.012 1.0 ml 791-9A R329
-0.011 1.0 ml 791-8A R328
-0.008 1.0 ml 791-7A R327
100.40%
0.224 1.0 ml 791-6A + .750 ml LMCS Std. 125B38D R326 Spike
-0.012 1.0 ml 791-6A R326
-0.007 1.0 ml 791-6A R326
-0.002 10.0 ml Reg BLK R325
0.561 1.50 ml LMCS Std. 125B38D R324 117.43%
0.272 .050 ml 102-LW S9972
0.307 .050 ml 102-LW S9659
0.483 150 ml LMCS Std. 125B38D R323 100.48%
-0.003 .050 ml 25-2 B5312
0.024 .500 ml 25-2 B5237
-0.010 1.0 ml 791-5A R322
-0.008 1.0 ml 791-4A R321
PERKIN-ELMER
Chart No. CP33402-0
PERKIN-ELMER
Chart No. CP33402-0

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R319	Customer ID: 791-2A
Analysis: AMMONIA	Sample Prep: UNDIGESTED

Instrument: AL10665,AL10696	Procedure/Rev: LA-634-102/D-0
Technologist: S. LAI	Date: 09-26-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: D. BISENIUS

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5528	11		
2	REAGENT BLANK	R317-5628	12		
3	SAMPLE 791-2A	R319-5728	13		
4	FINAL LMCS CHECK STD	R323-5528	14		
5			15		
6			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 CHECK STD	4C11-QP			N/A

A-6000-881 (03/92)

AMMONIA ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5528	106AW	9-19-91	13:35	26

Determination	Method Standard	Result Units	Charge Code	Results
NH4	LA-634-102	% RECOVERY	W1TE2	0

Sample Size	Customer ID
? 250 λ 0.09941 M	STD

Remarks, Calculations, Results
S235 NH4CL HCL
STD# 4C11-BP RESULT 4.77E-2 Blank: 28 λ
STD VAL 5.00E-2 %REC 95.4%
(148-28)(.09941)/250 = STD: 148 λ

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
Sue Lin				
16916				
Date 9-26-91	Time Completed			

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5628	106AW	9-19-91	13:45	26

Determination	Method Standard	Result Units	Charge Code	Results
NH4	LA-634-102	PPM	W1TE2	0

Sample Size	Customer ID
? 1 ml 0.09941 M	REG BL

Remarks, Calculations, Results
REAGENT BLANK HCL
Blank: 28 λ
(<10)(.09941)/1000 =
<9.94E-4 M Reg Blank: 28 λ

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
Sue Lin				
16916				
Date 9-26-91	Time Completed			

Serial No.	Sample Point	Date	Time Issued	Priority
R 319.-5728	106AW	9-19-91	15:17	25

Determination	Method Standard	Result Units	Charge Code	Results
NH4	LA-634-102	PPM	W1TE2	0

Sample Size	Customer ID
? 1 ml 0.09941 M	791-2A

Remarks, Calculations, Results
(43-28)(.09941)/1000 = Blank: 28 λ
1.49E-3 M Sample: 43 λ

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
Sue Lin				
16916				
Date 9-26-91	Time Completed			

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5520	106AW	9-19-91	15:43	25

Determination	Method Standard	Result Units	Charge Code	Results
NH4	LA-634-102	% RECOVERY	W1TE2	0

Sample Size	Customer ID
? 250 λ 0.09941 M	STD

Remarks, Calculations, Results
S235 NH4CL HCL
STD# 4C11-BP RESULT 4.85E-2 Blank: 28 λ
STD VAL 5.00E-2 %REC 97.0%
(150-28)(.09941)/250 = STD: 150 λ

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
Sue Lin				
16916				
Date 9-26-91	Time Completed			

9 3 1 2 3 5 3 1 0 1 2

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R319	Customer ID: 791-2A
Analysis: DETERMINATION OF HYDROXIDE ION IN SOLUTION	Sample Prep: UNDIGESTED

Instrument: FISHER - WA77509	Procedure/Rev: LA-661-102/F-1
Technologist: M. BIERMAN	Date: 09-25-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: S. ISAACSON

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5529	11		
2	REAGENT BLANK	R317-5629	12		
3	SAMPLE 791-2A	R319-5729	13		
4	FINAL LMCS CHECK STD	R323-5529	14		
5			15		
6			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 CHECK STD	9C11AF/0.1 mL			0.100 mL

A-6000-881 (03/92)

9 3 1 2 3 3 1 0 1 3

DETERMINATION OF HYDROXIDE ION IN SOLUTION - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5529	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Reason
OH	LA-661-102	% RECOVERY	WITE2	0

Sample Size: ? 100 ml — Customer ID: STD

Remarks, Calculations, Results:
S273 ITS-OH
STDN 9611AF RESULT 9.96E-1
STD VAL 1.0136 %REC 98.5%
1 ml BaCl
.1905 ⌀ HNO3 (531-8)(.1905)/100

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
LL559				
MLB				

Date: 9/25/91 — Time Completed: — Lab Unit Dept: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5629	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Reason
OH	LA-661-102	M	WITE2	C

Sample Size: ? 3 ml Q-H2O — Customer ID: REG DI

Remarks, Calculations, Results:
REAGENT BLANK
.1905 ⌀ HNO3 complete

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
LL559				
MLB				

Date: 9/25/91 — Time Completed: — Lab Unit Dept: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 319.-5727	106AW	9-19-91	15:17	25

Determination	Method/Standard	Result Units	Charge Code	Reason
OH	LA-661-102	M	WITE2	C

Sample Size: ? .050 ml — Customer ID: 791-2A

Remarks, Calculations, Results:
1 ml BaCl
10 ml Q-H2O (447-531)(.1905)/50 = 5.18E-1 ~
ITS-OH (9611AF) 100 ml
.1905 ⌀ HNO3

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
LL559				
MLB				

Date: 9/25/91 — Time Completed: — Lab Unit Dept: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 320.-5529	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Reason
OH	LA-661-102	% RECOVERY	WITE2	0

Sample Size: ? .100 ml — Customer ID: STD

Remarks, Calculations, Results:
S273 ITS-OH
STDN 9611AF RESULT
STD VAL 1.013 %REC 99.7%
1 ml BaCl
.1905 ⌀ HNO3 (537-8)(.1905)/100 = 1.01 ~

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
LL559				
MLB				

Date: 9/25/91 — Time Completed: — Lab Unit Dept: [signature]

DOCUMENTATION SEP 25 1991 9:54 AM

ANALYST: 6C559 LOCATION: 222-S 200 West

TITRANT: .1905 N HNO3

INDICATING ELECTRODE:

REFERENCE ELECTRODE: 98% efficiency

SAMPLE:

SETUP PARAMETERS

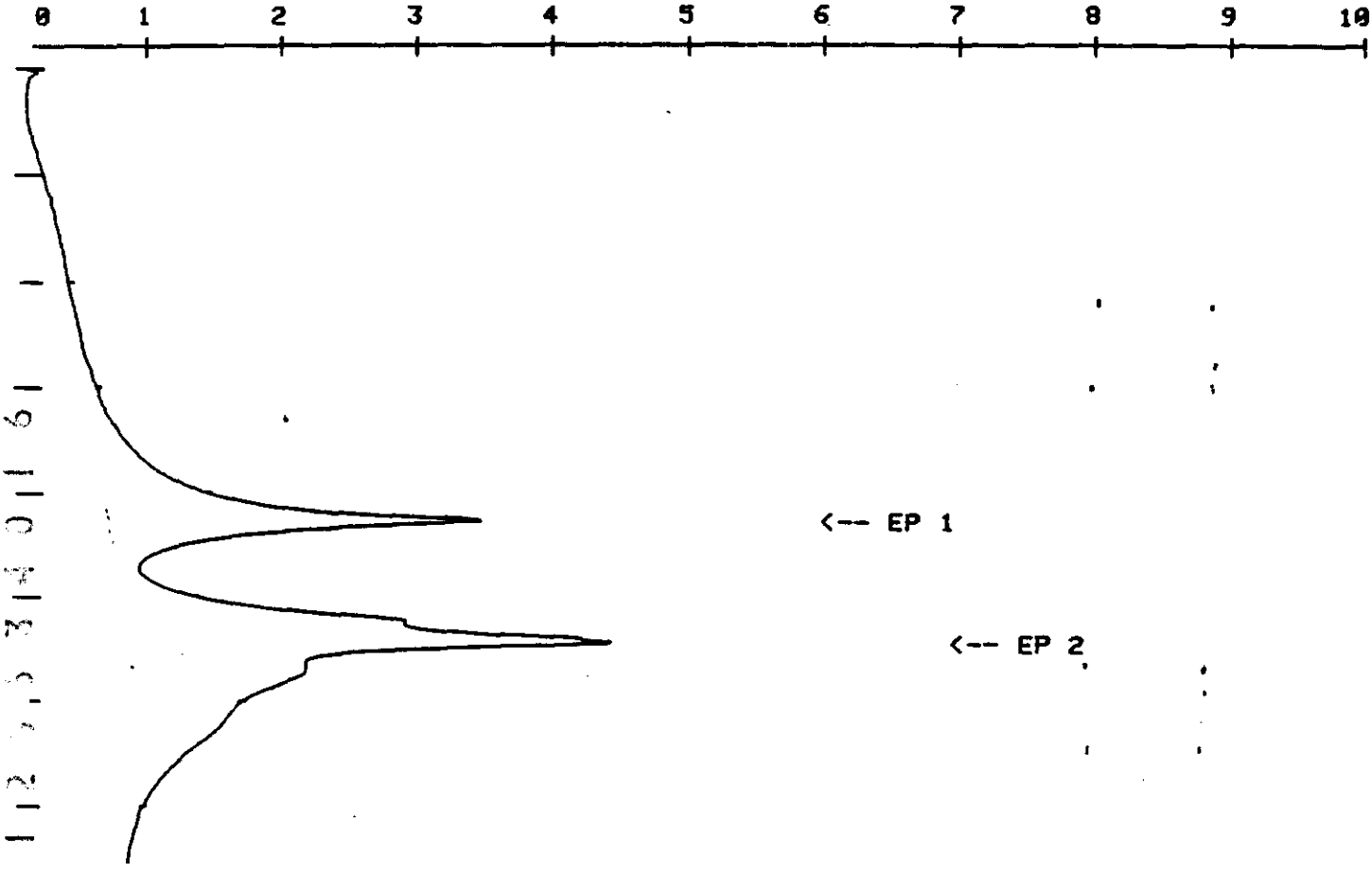
MODE:	DIRECT READ PH
ELECTRODE STDZ:	PH
EQUILIBRATION TIME, SEC:	15

MODE:	DRV TITRATION
ELECTRODE STDZ:	PH
dE/dV SIGN:	+
ML LIMIT:	2.50
PH LIMIT:	3.
TITRATION RATE:	10
SENSITIVITY:	1
DISPENSE, ML:	0.
PLOT GAIN:	5
COMPUTATION:	CONCENTRATION
TITRANT NORMALITY:	0.1900
SOLVENT BLANK:	0.
MULTIPLIER:	0.

LAST ELECTRODE STANDARDIZATION: SEP 25 1991 12:37 AM

SAMPLE NUMBER: 1
SAMPLE DATA: 316.
DIRECT READ PH: 12.035

DERIVATIVE OUTPUT, dE/dV



DRV TITRATION:

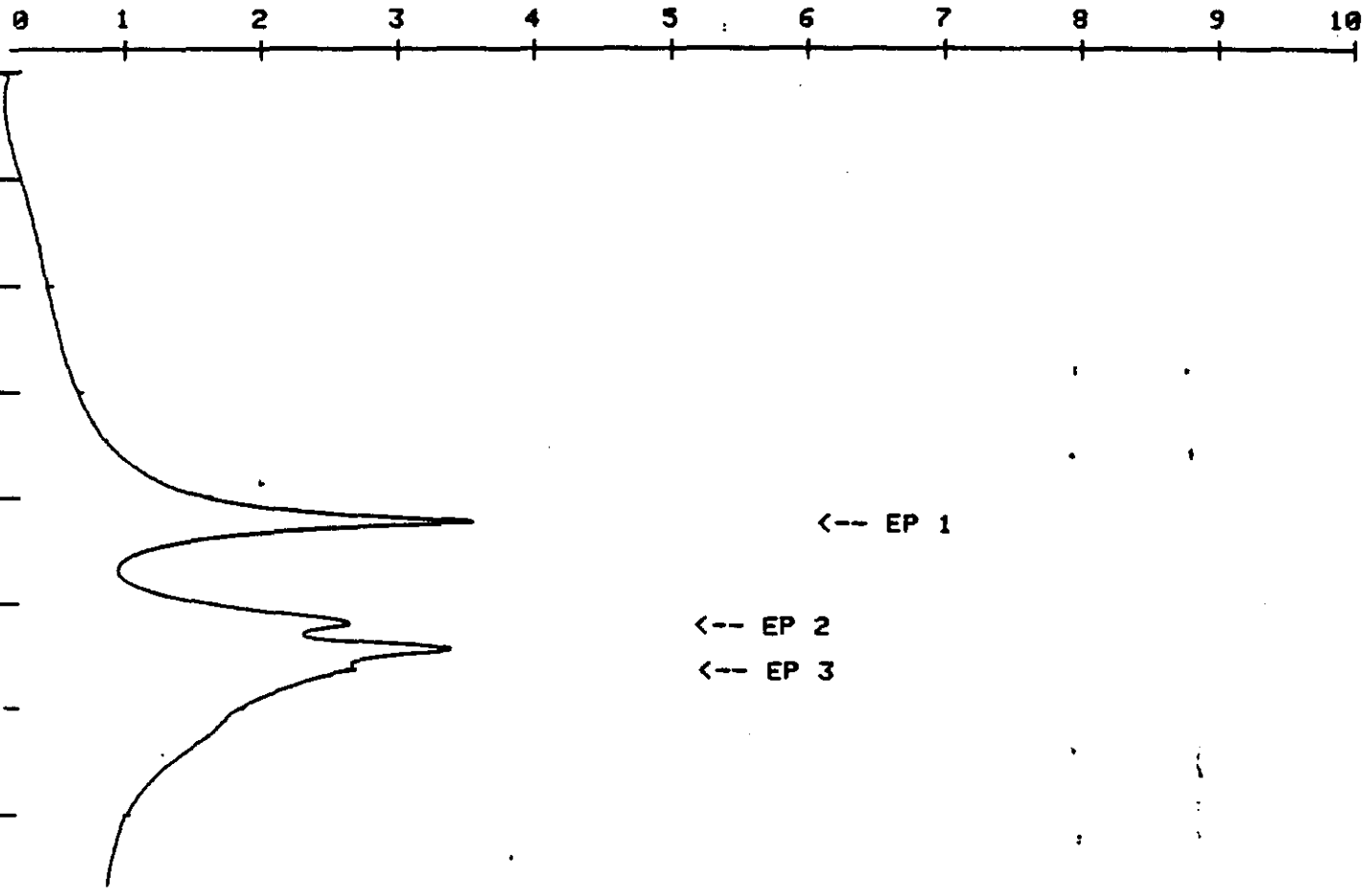
EQUIVALENCE PH	TITRANT VOLUME	COMPUTATION
9.65	0.534	0.0000
6.00	0.680	0.0000

TITRATION TERMINATED BY PH LIMIT.

SEP 25 1991 10:14 AM

SAMPLE NUMBER: 2
SAMPLE DATA: 316.
DIRECT READ PH: 12.043

DERIVATIVE OUTPUT, dE/dV



DRV TITRATION:

EQUIVALENCE PH	TITRANT VOLUME	COMPUTATION
9.63	0.528	0.0000
8.03	0.649	0.0000
5.44	0.702	0.0000

TITRATION TERMINATED BY PH LIMIT.

SEP 25 1991 10:23 AM

SAMPLE NUMBER: 1
SAMPLE DATA: 317.
DIRECT READ PH: 5.058

DERIVATIVE OUTPUT, dE/dV

0 1 2 3 4 5 6 7 8 9 10

DRV TITRATION: .008

TITRATION TERMINATED BY PH LIMIT.

SEP 25 1991 10:25 AM

SAMPLE NUMBER: 2
SAMPLE DATA: 317.
DIRECT READ PH: 5.748

DERIVATIVE OUTPUT, dE/dV

0 1 2 3 4 5 6 7 8 9 10

DRV TITRATION: .009

TITRATION TERMINATED BY PH LIMIT.

SEP 25 1991 10:27 AM

SAMPLE NUMBER: 3
SAMPLE DATA: 317.
DIRECT READ PH: 5.237

DERIVATIVE OUTPUT, dE/dV

0 1 2 3 4 5 6 7 8 9 10

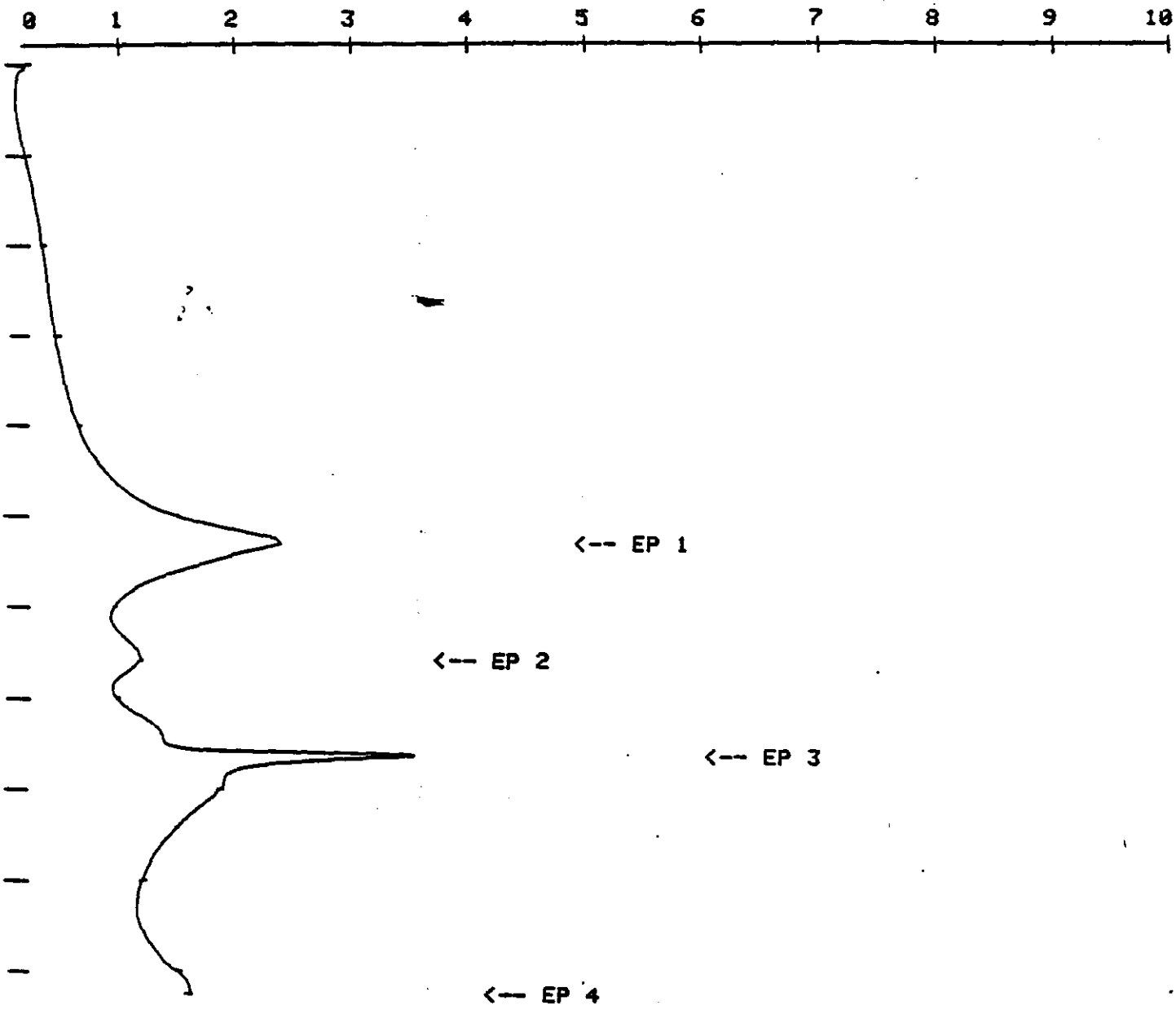
DRV TITRATION: .007

TITRATION TERMINATED BY PH LIMIT.

SEP 25 1991 10:29 AM

SAMPLE NUMBER: 2
SAMPLE DATA: 319.
DIRECT READ PH: 11.823

DERIVATIVE OUTPUT, dE/dV



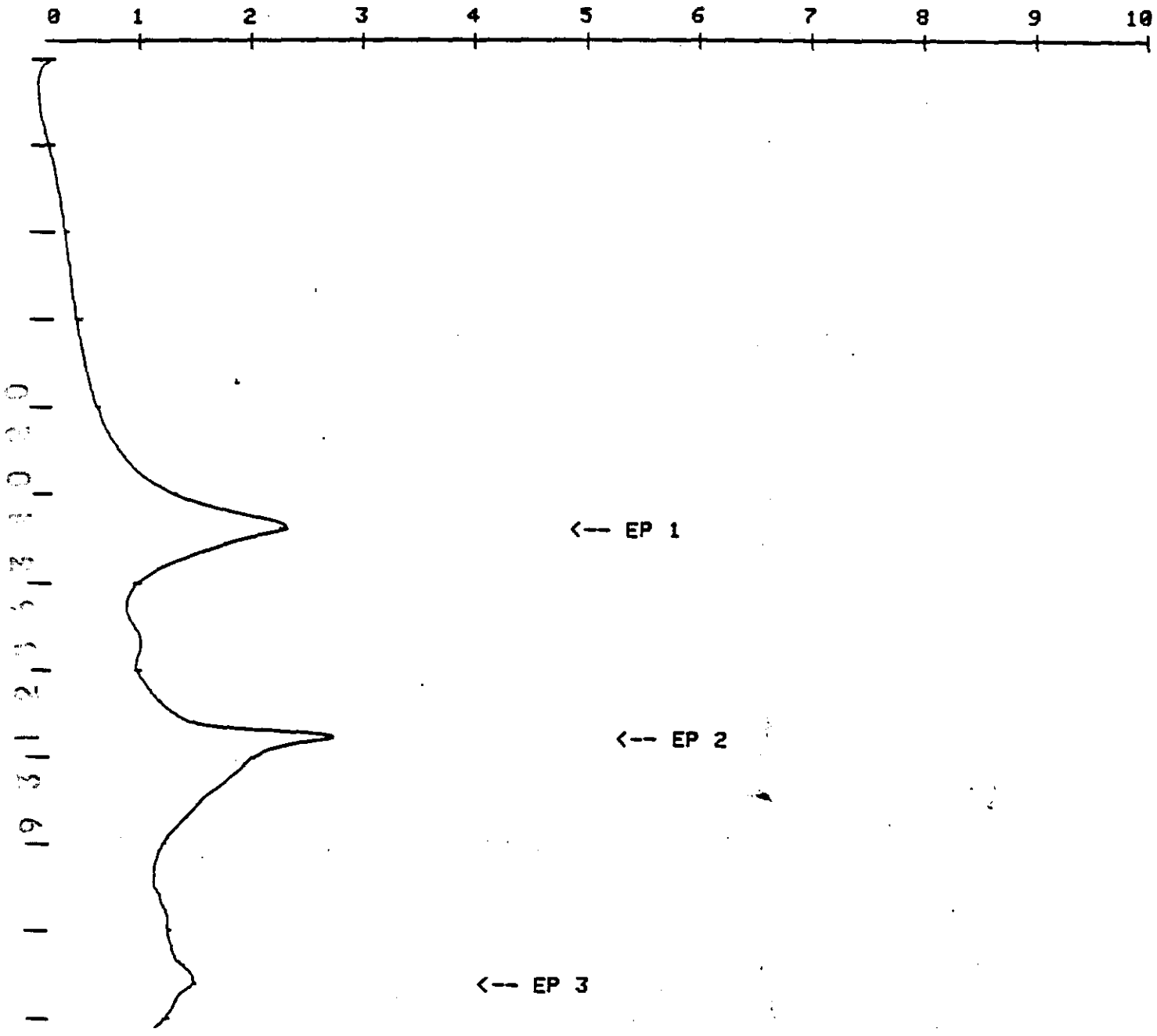
DRV TITRATION:

EQUIVALENCE PH	TITRANT VOLUME	COMPUTATION
9.64	0.662	0.0000
8.57	0.821	0.0000
7.06	0.953	0.0000
3.61	1.279	0.0000

TITRATION TERMINATED BY LIMIT ON NUMBER OF EQUIVALENCES PERMISSIBLE.

SAMPLE NUMBER: 1
SAMPLE DATA: 319.
DIRECT READ PH: 11.835

DERIVATIVE OUTPUT, dE/dV



DRV TITRATION:

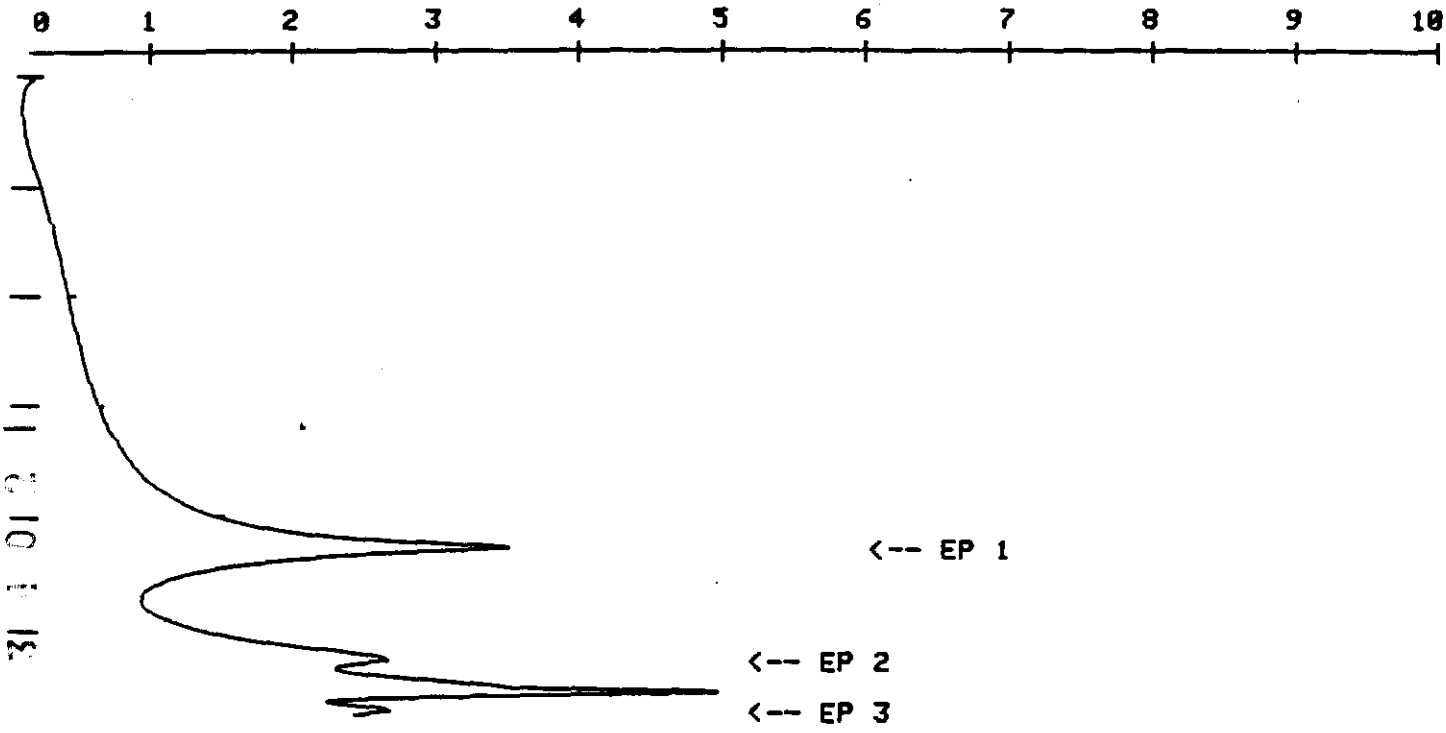
EQUIVALENCE PH	TITRANT VOLUME	COMPUTATION
9.68	0.672	0.0000
7.16	0.970	0.0000
3.43	1.323	0.0000

TITRATION-TERMINATED BY PH LIMIT.

SEP 25 1991 2:16 PM

SAMPLE NUMBER: 1
SAMPLE DATA: 323.
DIRECT READ PH: 12.021

DERIVATIVE OUTPUT, dE/dV



BRV TITRATION:

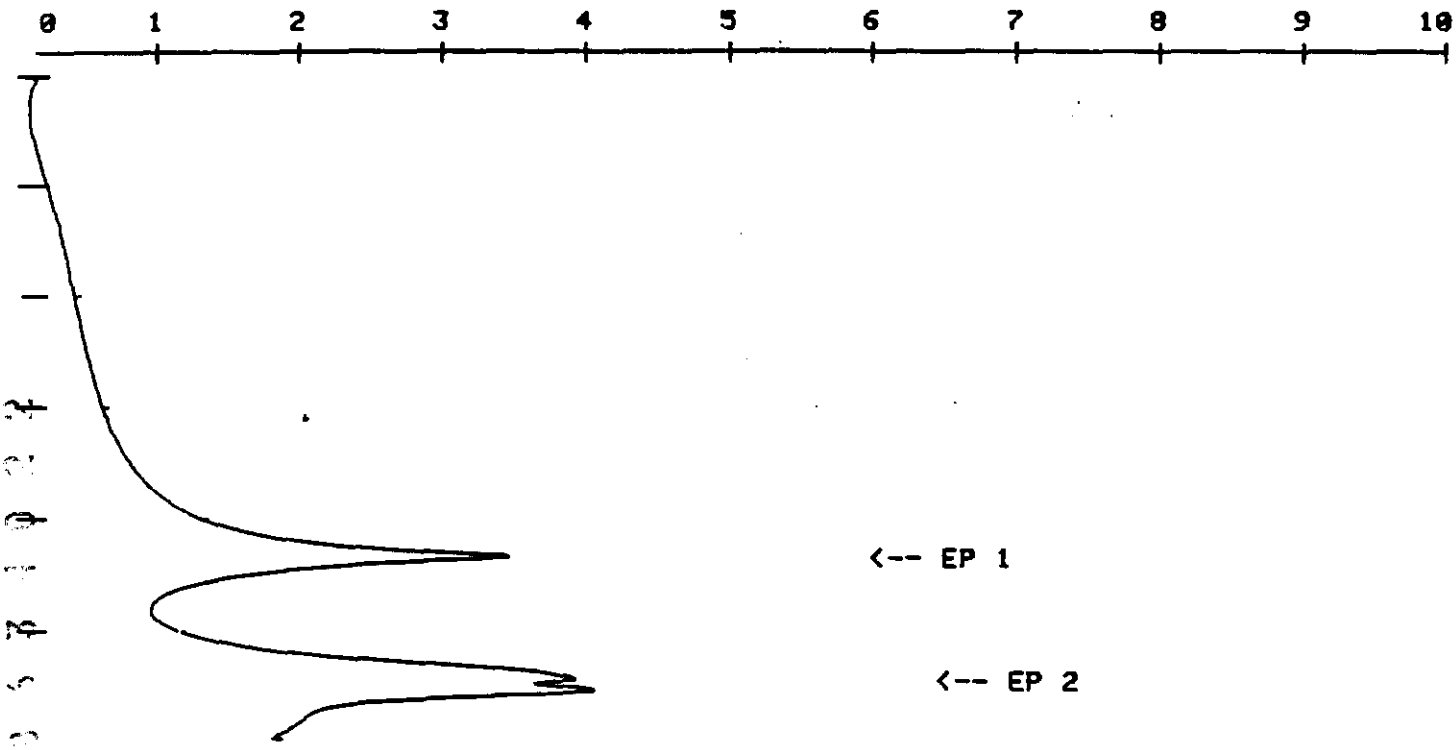
EQUIVALENCE PH	TITRANT VOLUME	COMPUTATION
9.60	0.533	0.0000
7.98	0.656	0.0000
5.06	0.711	0.0000

TITRATION TERMINATED BY PH LIMIT.

SEP 25 1991 3:11 PM

SAMPLE NUMBER: 2
SAMPLE DATA: 327.
DIRECT READ PH: 12.000

DERIVATIVE OUTPUT, dE/dV



DRV TITRATION:

EQUIVALENCE PH	TITRANT VOLUME	COMPUTATION
9.60	0.542	0.0000
6.69	0.676	0.0000

TITRATION TERMINATED BY PH LIMIT.

SEP 25 1991 3:24 PM

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R319	Customer ID: 791-2A
Analysis: SELENIUM	Sample Prep: UNDIGESTED

Instrument: PERKIN ELMER - WA77479	Procedure/Rev: LA-365-131/B-1
Technologist: M. MYERS	Date: 09-23-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: K. FULLER

	Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5596
2	REAGENT BLANK	R317-5696
3	SAMPLE 791-2A	R319-5796
4	FINAL LMCS CHECK STD	R323-5596
5		
6		
7		
8		
9		
10		

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

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS CHECK STD	125B38A/0.5 mL			N/A

A-6000-881 (03/92)

9 3 1 2 3 3 1 0 2 3

SELENIUM ANALYSIS - UNDIGESTED SAMPLE

Sample No.	Sample Point	Date	Time Issued	Priority
R 316.-5596	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
Se	LA-365-131	% RECOVERY	W1TE2	0

Sample Size: ? .500 g
Container ID: STD

Remarks, Calculations, Results:
EDP R743 SE/HYDRD 9/24/91
STDN 125838A RESULT ~~1.731E-1~~ 1.011E-1
STD VAL 1.00E-1 %REC ~~98.140~~
9/24/91 1.087 ~~81.517~~ / ~~500~~ 9/24/91 50.573 / 500 101.1%

Analyst: Indranee Inglee
Date: 9-23-91

Sample No.	Sample Point	Date	Time Issued	Priority
R 317.-5696	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
Se	LA-365-131	PPM	W1TE2	

Sample Size: ? 1.0 g
Container ID: REG BL

Remarks, Calculations, Results:
REAGENT BLANK
0.013
$\frac{<5}{1000} = <5.00E^{-3}$

Analyst: Indranee Inglee
Date: 9-23-91

Sample No.	Sample Point	Date	Time Issued	Priority
R 319.-5796	106AW	9-19-91	15:20	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
Se	LA-365-131	PPM	W1TE2	0

Sample Size: ? .500 g
Container ID: 791-2A

Remarks, Calculations, Results:
0.062
$\frac{<5}{500} = <1.00E^{-2}$

Analyst: Indranee Inglee
Date: 9-23-91

Sample No.	Sample Point	Date	Time Issued	Priority
R 323.-5596	106AW	9-19-91	15:45	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
Se	LA-365-131	% RECOVERY	W1TE2	C

Sample Size: ? .500 g
Container ID: STD

Remarks, Calculations, Results:
EDP R743 SE/HYDRD 9/24/91
STDN 125838A RESULT ~~1.236E-1~~ 9.12E-2
STD VAL 1.00E-1 %REC 91.070
.983 9/24/91 ~~74.263~~ / 500 45.575 / 500

Analyst: Indranee Inglee
Date: 9-23-91

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY
CALIBRATION RECORD

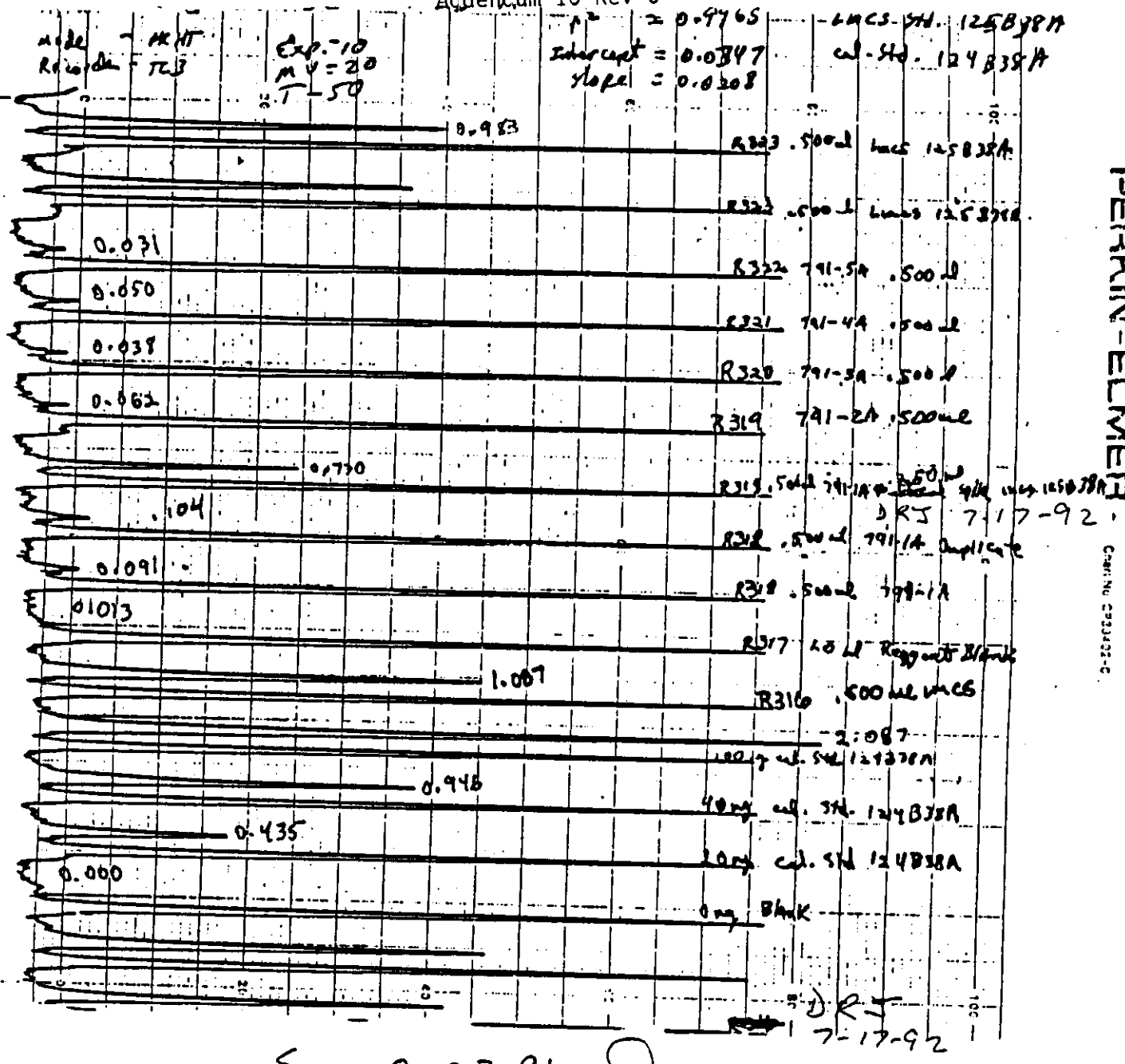
Analyte:	Se				
Procedure:	LA-365-131	Revision:	B-1		
Instrument:	HYDRIDE 44	Property No.:	WA77479		
Technologist:	M. MYERS	Payroll No.:	6C823	Date:	09-23-91

Calibration Standard: 124B38A
Analyte Concentration: 0.100 ppm
Type of Calibration: LINEAR

	Dilution	Concentration	Instrument Reading Unit
1	0.000 mL	0.0 ng	0.000
2	0.200 mL	20.0 ng	0.435
3	0.400 mL	40.0 ng	0.946
4	1.000 mL	100.0 ng	2.087
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			

Comments:

A-6000-882 (03/92)



Se 9-23-91 David R. Jackson

PERKIN-ELMER

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R319	Customer ID: 791-2A
Analysis: SPECIFIC GRAVITY	Sample Prep: UNDIGESTED

Instrument: WA90787	Procedure/Rev: LA-510-112/C-2
Technologist: J. SOLBRACK	Date: 10-18-91
Starting Time: 00:30	Temperature: NA
Ending Time: 04:30	Chemist: K. FULLER

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5506	11		
2	REAGENT BLANK	R317-5606	12		
3	SAMPLE 791-2A	R319-5706	13		
4	FINAL LMCS CHECK STD	R323-5506	14		
5			15		
6			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 CHECK STD	15C11BJ/.20019 mL			N/A

A-6000-881 (03/92)

9312331027

SPECIFIC GRAVITY ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.5506	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
SPG	LA-510-112	% RECOVERY	W1TE2	0

Sample Size: 200.19 g — Customer ID: STD

Remarks, Calculations, Results:
S332 ZNCL2
STD#ISCE-43 RESULT 1.4264
STD VAL 1.4386 %REC 99.15%

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				
82020				

Date: 10-18-91 — Time Completed — Lab Use Only: [signature]

A. 2.2171
1.9316
.2855 — $\frac{.2855}{.20019}$ = 1.4261 + 1.4386 × 100 = 99.15

R 316-5506

B. 2.2037
1.9181
.2856 — $\frac{.2856}{.20019}$ = 1.4266 + 1.4386 × 100 = 99.16

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5606	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
SPG	LA-510-112		W1TE2	0

Sample Size: ? 200.19 g — Customer ID: REG BL

Remarks, Calculations, Results:
REAGENT BLANK
.9871

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				
82020				

Date: 10 18 91 — Time Completed — Lab Use Only: [signature]

A. 2.1434
1.9458
.1976 ÷ .20019 = .9871

R 317-5606

B. 2.0895
1.8919
.1976 — $\frac{.1976}{.20019}$ .9871

Serial No.	Sample Point	Date	Time Issued	Priority
R 319.-5706	106AW	9-19-91	13:15	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
SPG	LA-510-112		W1TE2	0

Sample Size: ? .20019 — Customer ID: 791-2A

Remarks, Calculations, Results:
1.0077

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				
82020				

Date: 10 18 91 — Time Completed — Lab Use Only: [signature]

A. 2.1536
1.9385
.2151 — AVG = $\frac{.2156}{.20019}$ = 1.0770

R319-5706

B. 2.0764
1.8603
.2161

SPECIFIC GRAVITY ANALYSIS - UNDIGESTED SAMPLE

Sample No.	Sample Point	Date	Time Issued	Priority
R 323-5506	106AW	7-19-91	15:43	25

Description	Method/Standard	Result Units	Charge Code	Results
SPG	LA-510-112	% RECOVERY	W1TE2	0

Sample Size	Comment ID
? .20019	STD

Remarks, Calculations, Results:

S332 ZNCL2

STDN 15CH-65 RESULT 1.4254

STD VAL 1.4886 %REC 99.08%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				
Hrs	Hrs	Hrs	Hrs	Hrs
82020			[signature]	[signature]

Date	Time Completed	Lab Unit Lab
10 18 91		[signature]

A. 2.1738
1.8885
.2853

R 323-5506

ave = .2854 / .20019 = 1.4258

B. 2.1806
1.8954
.2854

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R319	Customer ID: 791-2A
Analysis: TOTAL INORGANIC CARBON	Sample Prep: UNDIGESTED

Instrument: WB39927	Procedure/Rev: LA-622-102/B-0
Technologist: M. MYERS	Date: 09-25-91
Starting Time: 00:29	Temperature: NA
Ending Time: 04:18	Chemist: D. BISENIUS

	Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5527
2	REAGENT BLANK	R317-5627
3	SAMPLE 791-2A	R319-5727
4	FINAL LMCS CHECK STD	R323-5527
5		
6		
7		
8		
9		
10		

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

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS CHECK STD	69C11K/0.05 mL			N/A

A-6000-881 (03/92)

9 3 1 2 3 5 3 1 0 3 0

TOTAL INORGANIC CARBON ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5527	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Reason
TIC	LA-622-102	% RECOVERY	WITE2	C

Sample Size	Customer ID
? .050 ml	STD

Remarks, Calculations, Results

S223 CO3

STD# 6ACIIK RESULT ~~[illegible]~~ 1.995E-1M DYBrisenius 6/30/92

STD VAL 200E 7% REC ~~[illegible]~~ 99.75% DYB 6/30/92

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				DYBrisenius
60823			[signature]	

Date	Time Completed	Lab Unit Mgr
9-25-91		[signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5627	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Reason
TIC	LA-622-102	O/L	WITE2	C

Sample Size	Customer ID
? .050 ml	REG 10

Remarks, Calculations, Results

READING BLANK

~~5.10 ug C~~ DYB 6/30/92 5.70 ug C

~~[illegible]~~ DYB 6-11-92

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				DYBrisenius
60823				

Date	Time Completed	Lab Unit Mgr
9-25-91		[signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 319.-5727	106AW	9-19-91	15:16	25

Determination	Method/Standard	Result Units	Charge Code	Reason
TIC	LA-622-102	O/L	WITE2	C

Sample Size	Customer ID
? .050 ml	291-2A

Remarks, Calculations, Results

2.47 g/L C

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				
60823				

Date	Time Completed	Lab Unit Mgr
9-25-91		[signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5527	106AW	9-19-91	15:43	25

Determination	Method/Standard	Result Units	Charge Code	Reason
TIC	LA-622-102	% RECOVERY	WITE2	C

Sample Size	Customer ID
? .050 ml	STD

Remarks, Calculations, Results

S223 CO3

STD# 6ACIIK RESULT ~~[illegible]~~ DYB 6/30/92 2.04E-1M

STD VAL ~~[illegible]~~ DYB 6/30/92 2.00E-1 % REC ~~[illegible]~~ 102% DYB 6/30/92

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				DYBrisenius
60823			[signature]	

Date	Time Completed	Lab Unit Mgr
9-25-91		[signature]

TIC

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: STD R3/4 Date: 09-25-1991 Time: 00:45:11

Blank = 0 Sample Size = 50 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	104.90	100.00
3	3.01	117.60	10.88
4	4.01	121.40	3.13
5	5.01	123.00	1.30
6	6.01	124.00	0.81
7	7.01	124.80	0.64

(124.8 - 0)(1)/(50) = 2.496 g/L Carbon

(124.8 - 0)(1)/(50)(12) = .208 Molar Carbon

Sample Run By: 6C823 _____

TIC

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: BLANK Date: 09-25-1991 Time: 00:29:30

Blank = 0 Sample Size = 50 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.80	-525.00
2	2.01	1.60	50.00
3	3.01	2.30	30.43
4	4.01	3.00	23.33
5	5.01	3.60	16.67
6	6.01	4.50	20.00
7	7.01	5.10	11.76

(5.1 - 0)(1)/(50) = .102 g/L Carbon

(5.1 - 0)(1)/(50)(12) = 8.499999E-03 Molar Carbon

Sample Run By: 80028_____

93123103

TIG

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: R319 Date: 09-25-1991 Time: 01:53:53

Blank = .11 Sample Size = 50 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	111.70	100.00
3	3.01	118.30	5.58
4	4.01	121.00	2.23
5	5.01	122.70	1.39
6	6.01	123.80	0.89
7	7.01	124.50	0.56

(124.5 - .7706236)(1)/(50) = 2.474588 g/L Carbon

(124.5 - .7706236)(1)/(50)(12) = .2062156 Molar Carbon

Sample Run By: 6C823 _____

TFZ 8-30-92

TIC

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: R323 Date: 09-25-1991 Time: 04:18:14

Blank = .11 Sample Size = 50 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	112.90	100.00
3	3.01	123.20	8.36
4	4.01	125.50	1.83
5	5.01	126.50	0.79
6	6.01	127.30	0.63
7	7.00	128.10	0.62

(128.1 - .7705304)(1)/(50) = 2.54659 g/L Carbon

(128.1 - .7705304)(1)/(50)(12) = .2122158 Molar Carbon

Sample Run By: 6C823 _____

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R319	Customer ID: 791-2A
Analysis: TOTAL ORGANIC CARBON	Sample Prep: UNDIGESTED

Instrument: MODEL 5011 - WC16130	Procedure/Rev: LA-344-105/B-0
Technologist: M. MYERS	Date: 10-28-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: D. BISENIUS

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5526	11		
2	REAGENT BLANK	R317-5626	12		
3	SAMPLE 791-2A	R319-5726	13		
4	FINAL LMCS CHECK STD	R323-5526	14		
5			15		
6			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 CHECK STD	70C11I/0.2 mL			N/A
SAMPLES RERUN.				

A-6000-881 (03/92)

TOTAL ORGANIC CARBON ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5526	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
TOC	LA-344-105	% RECOVERY	[illegible]	1

RERUN

Sample Size: ? .200ml - 2ml - .200ml
Customer ID: STD

Remarks, Calculations, Results:
S356 CO3TOC
STDN 70C11I RESULT 3.0745
STD VAL 3.0 %REC 102.5%

Analyst-1: [illegible]
Analyst-2:
Analyst-3:
Analyst-4:
Analyst-5:
Date: 10-28-91
Time Completed:

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5626	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
TOC	LA-344-105	U/L	[illegible]	1

RERUN

Sample Size: ? .200ml
Customer ID: RED BL

Remarks, Calculations, Results:
REAGENT BLANK
4.80 ug C
~~8.06E-3 g/L~~ DHB 6/30/92

Analyst-1: [illegible]
Analyst-2:
Analyst-3:
Analyst-4:
Analyst-5: DY Bisenius
Date: 10-28-91
Time Completed:

Serial No.	Sample Point	Date	Time Issued	Priority
R 319.-5726	106AW	9-19-91	15:16	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
TOC	LA-344-105	U/L	W1TE2	1

RERUN

Sample Size: ? .200ml - 2ml - .200ml
Customer ID: 791-2A

Remarks, Calculations, Results:
8.86E-1 g/L

Analyst-1: [illegible]
Analyst-2:
Analyst-3:
Analyst-4:
Analyst-5:
Date: 10-28-91
Time Completed:

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5526	106AW	9-19-91	15:43	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
TOC	LA-344-105	% [illegible]	W1TE2	1

RERUN

Sample Size: ? .200ml - 2ml - .200ml
Customer ID: STD

Remarks, Calculations, Results:
S356 CO3TOC 3.014 g/L C
STDN 70C11I RESULT ~~3.102 g/L~~ DHB 6/30/92
STD VAL 3.00 g/L %REC ~~102.1%~~ DHB 6/30/92
100.5%

Analyst-1: [illegible]
Analyst-2:
Analyst-3:
Analyst-4:
Analyst-5: DY Bisenius
Date: 10-28-91
Time Completed:

9312834037

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: STD R316 JK 6-19-92 Date: 10-27-1991 Time: 01:10:43

Blank = .4567049 Sample Size = 200 Dilution Factor = 11
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	42.40	100.00
3	3.01	51.00	16.86
4	4.01	55.00	7.27
5	5.01	57.10	3.68
6	6.01	58.30	2.06
7	7.01	59.10	1.35

(59.1 - 3.1996)(11)/(200) = 3.074522 g/L Carbon

(59.1 - 3.1996)(11)/(200)(12) = .2562102 Molar Carbon

Sample Run By: 6C823_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: R317 BLANK Date: 10-27-1991 Time: 01:29:09

Blank = .4567049 Sample Size = 200 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	1.70	100.00
3	3.01	2.80	39.29
4	4.01	3.40	17.65
5	5.01	3.90	12.82
6	6.01	4.40	11.36
7	7.01	4.80	8.33

(4.8 - 3.1996)(1)/(200) = 8.002001E-03 g/L Carbon

(4.8 - 3.1996)(1)/(200)(12) = 6.668334E-04 Molar Carbon

Sample Run By: 6C823_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: R319 Date: 10-27-1991 Time: 04:34:57

Blank = .4567049 Sample Size = 200 Dilution Factor = 11
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	6.70	100.00
3	3.01	13.80	51.45
4	4.01	16.10	14.29
5	5.01	17.50	8.00
6	6.01	18.40	4.89
7	7.01	19.30	4.66

(19.3 - 3.199513)(11)/(200) = .8855267 g/L Carbon

(19.3 - 3.199513)(11)/(200)(12) = .0737939 Molar Carbon

Sample Run By: 6C823_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: ~~R322~~ R323 Date: 10-27-1991 Time: 05:22:10
M-10-28-91

Blank = .4567049 Sample Size = 200 Dilution Factor = 11
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	25.90	100.00
3	3.01	47.20	45.13
4	4.01	53.80	12.27
5	5.01	56.90	5.45
6	6.01	58.60	2.90
7	7.01	59.60	1.68

(59.6 - 3.199987)(11)/(200) = 3.102001 g/L Carbon

(59.6 - 3.199987)(11)/(200)(12) = .2585001 Molar Carbon

Sample Run By: 6C823_____

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R319	Customer ID: 791-2A
Analysis: ION CHROMATOGRAPHIC - FLUORIDE	Sample Prep: UNDIGESTED

Instrument: DIONEX 4000 - WB54428	Procedure/Rev: LA-533-105/B-0
Technologist: M. MYERS	Date: 09-30-91
Starting Time: 22:35 - 09-30-91	Temperature: 24-25degC
Ending Time: 00:32 - 10-01-91	Chemist: D. HERT

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5571	11		
2	REAGENT BLANK	R317-5671	12		
3	SAMPLE 791-2A	R319-5771	13		
4	FINAL LMCS CHECK STD	R323-5571	14		
5			15		
6			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 CHECK STD	73C11CO/0.1 mL			N/A

A-6000-881 (03/92)

ION CHROMATOGRAPHIC ANALYSIS (FLUORIDE) - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5571	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Return
F	LA-533-105	% RECOVERY	W1TE2	0

Sample Size: ? 100ml - 10ml
Customer ID: STD

Remarks, Calculations, Results:
EDP R974 DIONEX
STD# 73C11CO RESULT 53.664
STD VAL 56.0 %REC 95.8%

Analyst-1: [signature] Analyst-2: Analyst-3: Analyst-4: Analyst-5: [signature]
Date: 6C823 9-30-91
Time Completed: Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5671	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Return
F	LA-533-105	PPM	W1TE2	0

Sample Size: ? 5ml ~~100ml - 10ml~~ 5/29/92
Customer ID: REG DI

Remarks, Calculations, Results:
REAGENT BLANK
<1.00E-1 ppm

Analyst-1: [signature] Analyst-2: Analyst-3: Analyst-4: Analyst-5: [signature]
Date: 6C823 9-30-91
Time Completed: Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 319.-5771	106AW	9-19-91	15:17	25

Determination	Method/Standard	Result Units	Charge Code	Return
F	LA-533-105	O/O	W1TE2	0

Sample Size: ? 100ml - 10ml - 100ml - 10ml
Customer ID: 791-2A

Remarks, Calculations, Results:
5.90E3 ppm

Analyst-1: [signature] Analyst-2: Analyst-3: Analyst-4: Analyst-5: [signature]
Date: 6C823 9-30-91
Time Completed: Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5571	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Return
F	LA-533-105	% RECOVERY	W1TE2	0

Sample Size: ? 100ml - 10ml
Customer ID: STD

Remarks, Calculations, Results:
EDP R974 DIONEX
STD# 73C11CO RESULT 53.790
STD VAL 56.0 %REC 96.1%

Analyst-1: [signature] Analyst-2: Analyst-3: Analyst-4: Analyst-5: [signature]
Date: 6C823 9-30-91
Time Completed: Lab Unit Mgr: [signature]

9312 3 10 7

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R319	Customer ID: 791-2A
Analysis: ION CHROMATOGRAPHIC - NITRATE	Sample Prep: UNDIGESTED

Instrument: DIONEX 4000 - WB54428	Procedure/Rev: LA-533-105/B-0
Technologist: M. MYERS	Date: 09-30-91
Starting Time: 22:35 - 09-30-91	Temperature: 24-25degC
Ending Time: 00:32 - 10-01-91	Chemist: D. HERT

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5573	11		
2	REAGENT BLANK	R317-5673	12		
3	SAMPLE 791-2A	R319-5773	13		
4	FINAL LMCS CHECK STD	R323-5573	14		
5			15		
6			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 CHECK STD	73C11CO/0.1 mL			N/A

A-6000-881 (03/92)

ION CHROMATOGRAPHIC ANALYSIS (NITRATE) - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5573	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Return
NO3	LA-533-105	% RECOVERY	W11E2	0

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

Remarks, Calculations, Results:
EDP R978 DIONEX
STD #73C11C0 RESULT 529.531
STD VAL 564.0 %REC 93.9%

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				[signature]
6C823				[signature]

Date: 9-30-91
Time Completed:
Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5673	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Return
NO3	LA-533-105	PPM	W11E2	0

Sample Size: ? 5ml
Customer ID: REG DL

Remarks, Calculations, Results:
REAGENT BLANK
<1.00 ppm

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				[signature]
6C823				

Date: 9-30-91
Time Completed:
Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 319.-5773	106AW	9-19-91	15:18	25

Determination	Method/Standard	Result Units	Charge Code	Return
NO3	LA-533-105	PPM	W11E2	0

Sample Size: ? .100ml - 10ml - .100ml - 10ml
Customer ID: 791-2A

Remarks, Calculations, Results:
3.16E4

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				[signature]
6C823				

Date: 9-30-91
Time Completed:
Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5573	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Return
NO3	LA-533-105	% RECOVERY	W11E2	0

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

Remarks, Calculations, Results:
EDP R978 DIONEX
STD #73C11C0 RESULT 551.166
STD VAL 564.0 %REC 97.7%

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				[signature]
6C822				[signature]

Date: 9-30-91
Time Completed:
Lab Unit Mgr: [signature]

9 3 1 2 3 3 4 0 4 5

9-22-91

4469-AC #1 6-23-92

DIONEX METHOD PARAMETERS - SYSTEM1.MET

System Parameters

System Name : system1/gpm
Number of Detectors..... 1
Detector 1 Type..... CDM-1
Detector 1 real time plot scale (uS)..... 20.00
Run Time (minutes)..... 8.50
Sampling Rate (seconds)..... 0.20

-- DETECTOR 1 PARAMETERS --

Report Options

Save Data File..... Yes
Data File Name: c:\dx\data\91092201.D08
Create ASCII Report File..... No
Print Report..... Yes
List Peaks Not Found in this run..... No
Report Unknowns Found in this run..... Yes
Print Chromatogram..... Yes
AutoScale Chromatogram to Highest Peak..... Yes
Fill Peaks with Color ..... Yes
Draw Grid Lines on Chromatogram..... No
Label with Peak Number..... Yes
Label with Retention Times on Chromatogram..... No
Label with Component Name..... Yes
Format File Name: c:\dx\method\default.prf

Integration Parameters

Starting Peak Width (seconds)..... 10.0
Peak Threshold (mV or uS/data pt interval)..... 0.500
Peak Area Reject..... 1000
Area Reject for Reference Peaks..... 1000
Percent Retention Time Window for Reference Peaks..... 5.0

Integration Timed Events

Time	Description
1.32	Start peak detection
1.44	Start peak detection
1.46	Start peak detection
1.77	
1.77	Enable end of peak detection

Calibration Parameters

Number Of Levels for Calibration	6
Calibration Fit Type	Quadratic
Replace Or Average Calibrations	Replace
External or Internal Calibration	External
Calibrate by Area or Height	Area
Default Injection Volume	1.0
Default Dilution Factor	1.0
Response Factor for Unknown Peaks	1.0
Calibration Standard Volume	1.0
Internal Standard Volume	1.0
Sample Unit	PPM

9 3 1 2 3 3 1 0 4 1 7

Component # 1 FLUORIDE Retention Time 1.13
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 8.52797E-002
K1 = 6.06440E-005
K2 = -6.17180E-011

Level	Amount	Area	Height
1	1.20000E-001	1437	225
2	3.00000E-001	4035	566
3	6.00000E-001	8217	1141
4	1.20000E+000	16507	2218
5	2.30000E+000	39534	4812
6	4.40000E+000	76890	9371

Component # 2 CHLORIDE Retention Time 1.70
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.93335E-002
K1 = 1.01273E-004
K2 = -9.35560E-011

Level	Amount	Area	Height
1	1.60000E-001	1319	217
2	3.90000E-001	3754	568
3	7.80000E-001	6742	1045
4	1.50000E+000	14461	1975
5	3.00000E+000	30287	3987
6	5.90000E+000	61305	8710

Component # 3 NITRITE Retention Time 2.03
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 4.88691E-001
K1 = 1.33960E-004
K2 = 5.52630E-012

Level	Amount	Area	Height
1	1.08000E+000	6239	874
2	2.69000E+000	17299	2252
3	5.37000E+000	34328	4729
4	1.06200E+001	72787	9300
5	2.08500E+001	153501	19401
6	4.01500E+001	292053	34439

Component # 4 BROMIDE Retention Time 2.80
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 4.01960E-002
K1 = 2.00453E-004
K2 = -1.00008E-010

Level	Amount	Area	Height
1	1.56000E+000	7660	753
2	3.90000E+000	20706	1880
3	7.80000E+000	38868	3455
4	1.54000E+001	78061	6644
5	3.02000E+001	165133	12632
6	5.81000E+001	350930	24386

Component # 5 NITRATE Retention Time 3.30
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.02611E-001
K1 = 1.61787E-004
K2 = -5.83501E-011

Level	Amount	Area	Height
1	1.37000E+000	7543	727
2	3.43000E+000	19321	1803
3	6.83000E+000	40244	3563
4	1.35000E+001	83386	7010
5	2.65000E+001	173503	13640
6	5.11000E+001	360809	25639

Component # 6 PHOSPHATE Retention Time 5.32
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 5.53452E-001
K1 = 3.53243E-004
K2 = -3.51156E-010

Level	Amount	Area	Height
1	1.19000E+000	2277	162
2	2.98000E+000	7242	453
3	5.93000E+000	15025	935
4	1.17400E+001	31660	1933
5	2.30300E+001	69135	4130
6	4.43700E+001	144749	8447

Component # 7 SULFATE Retention Time 6.85
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.55734E-001
K1 = 1.27491E-004
K2 = -3.79358E-011

Level	Amount	Area	Height
1	1.40000E+000	9418	543
2	3.50000E+000	24499	1382
3	6.96000E+000	52303	2890
4	1.37800E+001	107173	5909
5	2.70400E+001	225632	12225
6	5.20700E+001	471630	24686

IC Control File: C:\DX\METHOD\SYSTEM1.TE

Step	Time	Description
Init		CDM-1 AutoOffset Off
Init		CDM-1 Recorder Mark OFF
Init		CDM-1 Temp. Comp. = 1.7 / Deg C
Init		CDM-1 Recorder Range = 1.0 uS
Init		CDM-1 Cell ON
Init		CHA Heater = 25 Deg. C
Init		Valve A ON
Init		Valve B ON
Init		Inject Valve OFF
Init		ACI Autosmp OFF
Init		ACI RLY 2 OFF
Init		ACI TTL 1 OFF
Init		ACI TTL 2 OFF
Init		ACI AC 1 ON
Init		GPM Start
Init		GPM Hold Gradient Clock
Init		GPM Reset ON
1	0.0	CDM-1 AutoOffset ON
1	0.0	Start Sampling
1	0.0	GPM Reset OFF
2	0.1	CDM-1 Recorder Range = 10.0 uS
2	0.1	Inject Valve ON
2	0.1	GPM Run Gradient Clock
3	3.0	Inject Valve OFF
4	3.5	ACI Autosmp ON
5	8.0	ACI Autosmp OFF

GpmFile: C:\DX\METHOD\SYSTEM1.GPM
Lo Pressure Limit = 200
Hi Pressure Limit = 2000
Eluant 1 - DI WATER
Eluant 2 - SODIUM CARBONATE
Eluant 3 - SODIUM BICARBONATE
Eluant 4 - Eluant 4

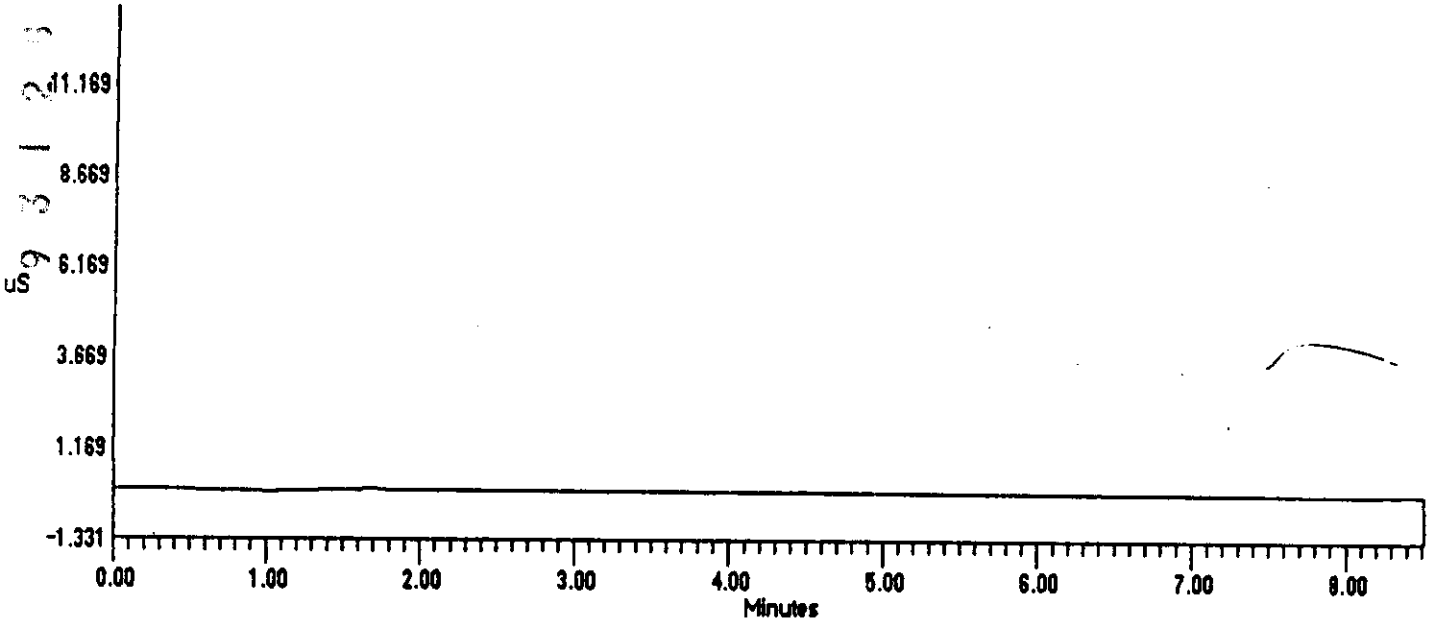
Time	Flow	%1	%2	%3	%4	V5	V6	Comment
0.0	2.0	84	8	8	0	0	0	

```
==========================================================================
| Sample Name: BLANK                          Date: Mon Sep 30 22:35:47 1991|
| Data File   : c:\dx\data\91093071.D02                                    |
| Method      : c:\dx\method\SYSTEM1.met                                   |
| ACI Address: 1        System : 1        Inject#:   2  Detector: CDM-1    |
==========================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2555	5Hz	0.00	8.52	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta

File: c:\dx\data\91093071.D02 Sample: BLANK

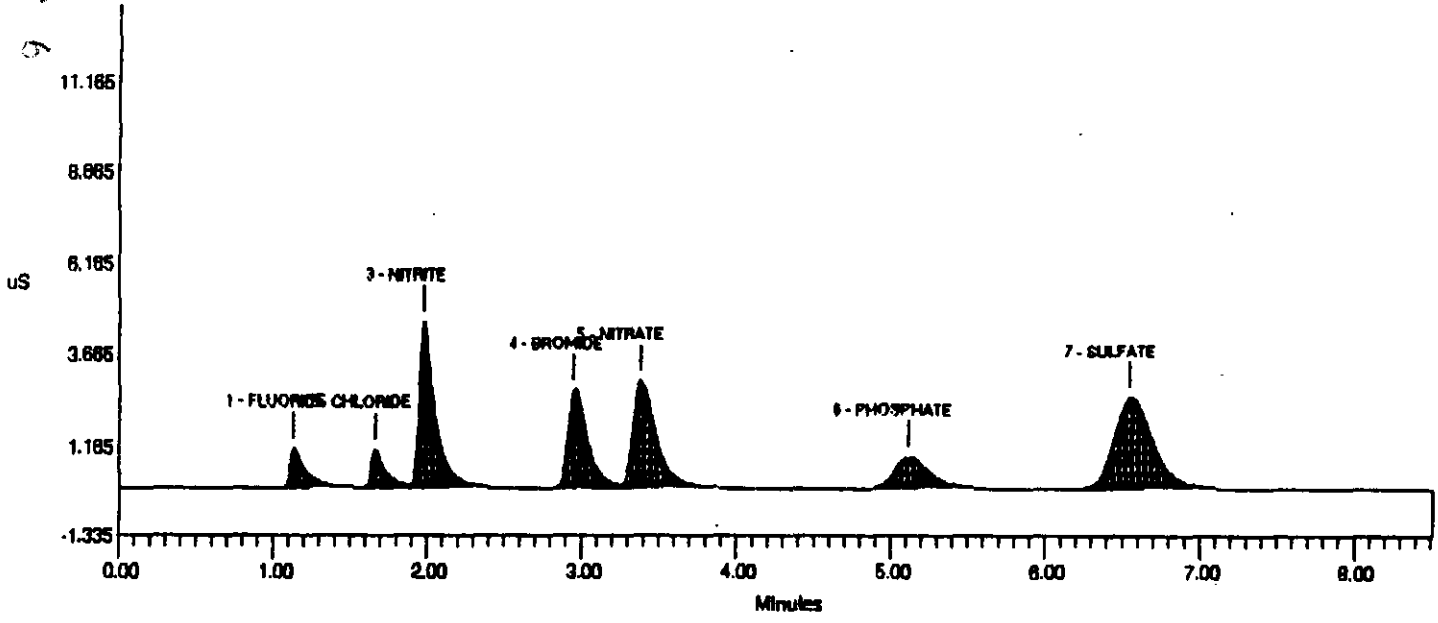


Sample Name: LMCS/73C11C0 R314 JDL 6-23-92		Date: Mon Sep 30 22:45:24 1991	
Data File : c:\dx\data\91093071.D03			
Method : c:\dx\method\SYSTEM1.met			
ACI Address: 1	System : 1	Inject#: 3	Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2555	5Hz	0.00	8.52	1000

Pk. Num	Ret Time	Component Name		Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	95.8	53.664	1073	7411	1	0.00
2	1.67	CHLORIDE	95.6	71.733	1049	6666	2	-1.96
3	1.98	NITRITE	98.4	501.700	4572	33387	2	-2.30
4	2.95	BROMIDE	JDL 6-23-92	487.695	2681	24180	2	-3.28
5	3.38	NITRATE	93.9	529.531	2918	30880	2	2.53
6	5.12	PHOSPHATE	102.0	527.513	869	13397	1	-3.76
7	6.55	SULFATE	96.2	586.801	2510	43340	1	-4.38

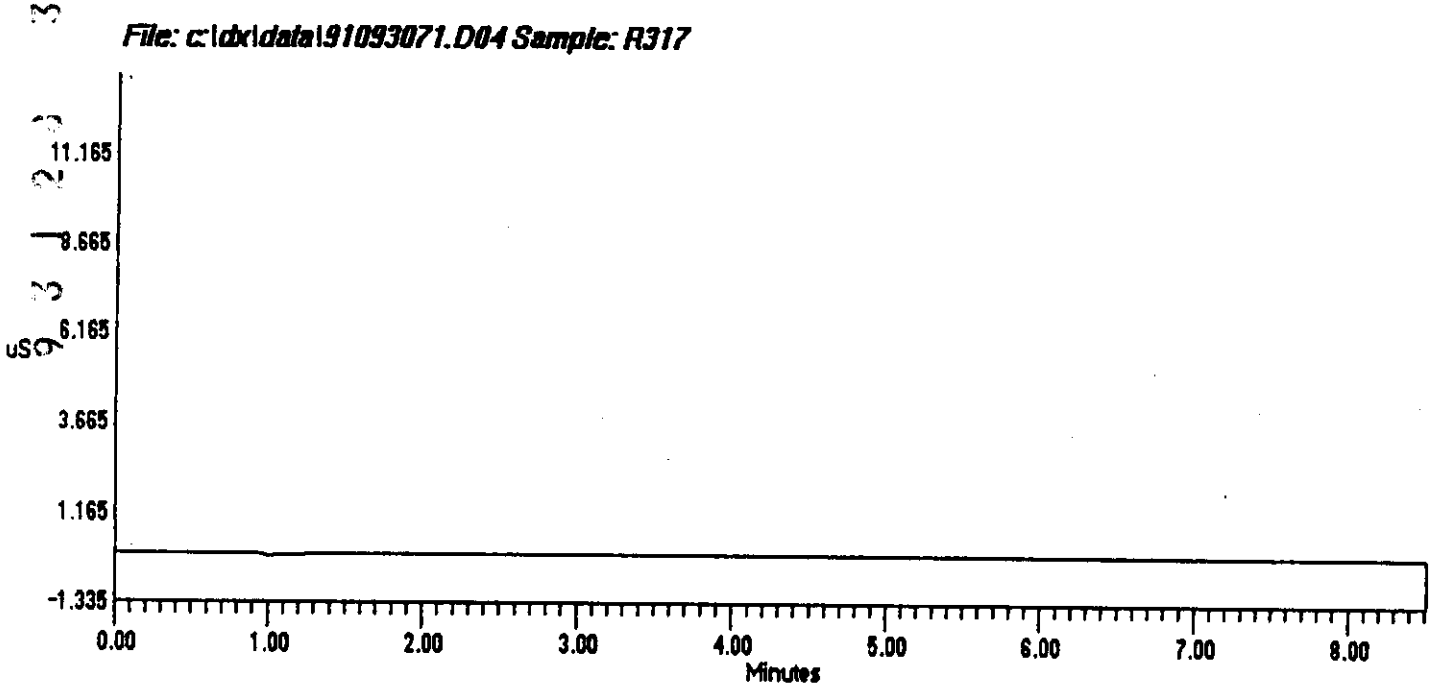
File: c:\dx\data\91093071.D03 Sample: LMCS/73C11C0



```
==========================================================================
| Sample Name: R317                                Date: Mon Sep 30 22:55:18 1991|
| Data File   : c:\dx\data\91093071.D04                                    |
| Method      : c:\dx\method\SYSTEM1.met                                   |
| ACI Address: 1        System : 1        Inject#:    4  Detector: CDM-1   |
==========================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2555	5Hz	0.00	8.52	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta

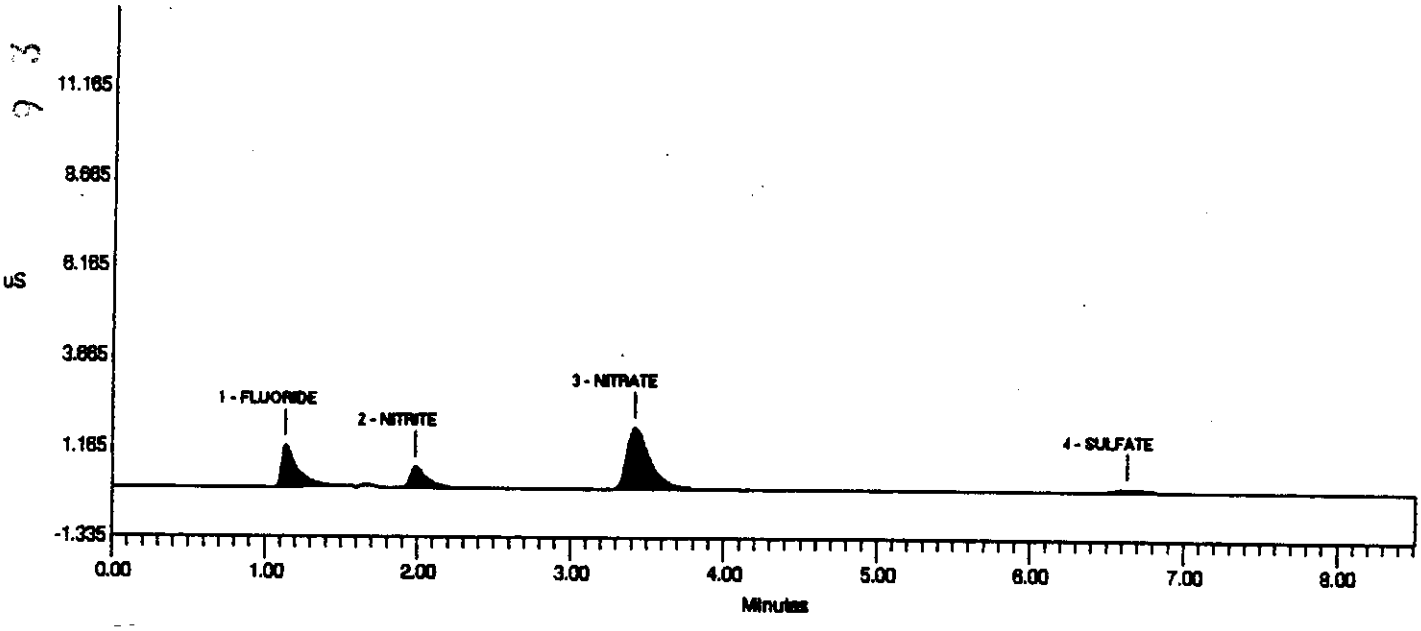


Sample Name: R319 Date: Mon Sep 30 23:54:00 1991
Data File : c:\dx\data\91093061.D10
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1 System : 1 Inject#: 10 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	10201	2555	5Hz	0.00	8.52	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	5903.774	1173	8206	1	0.00
2	1.98	NITRITE	10513.380	585	4045	1	-2.30
3	3.42	NITRATE	31626.026	1697	17402	1	3.54
4	6.63	SULFATE	5195.433	83	1205	1	-3.16

File: c:\dx\data\91093061.D10 Sample: R319



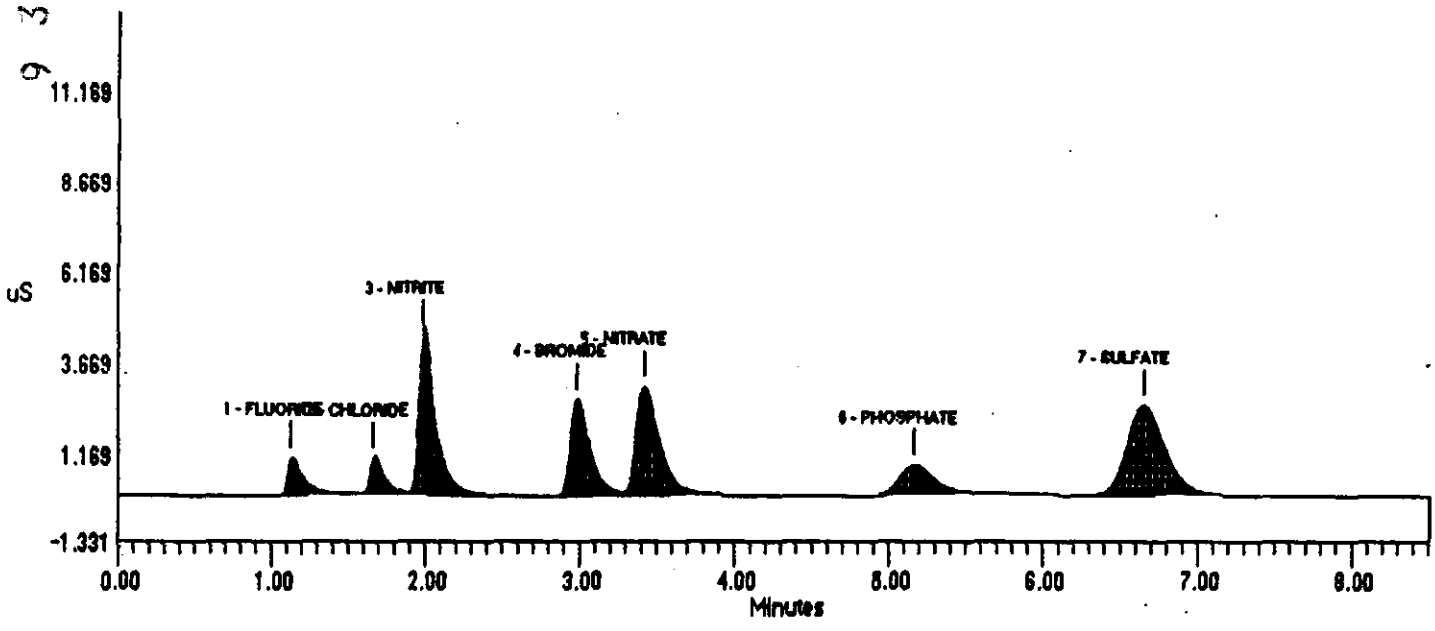
TPZ 9-30-92
297 ~~277~~

Sample Name: LMCS/73C11C0 R323 [illegible] 6-23-92 Date: Tue Oct 01 00:32:59 1991
Data File : c:\dx\data\91093061.D14
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1 System : 1 Inject#: 14 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA	REJ
External	1	101	2555	5Hz	0.00	8.52	1000	

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	53.790	1068	7432	1	0.00
2	1.67	CHLORIDE	73.065	1011	6797	2	-1.96
3	1.98	NITRITE	511.009	4382	34073	2	-2.30
4	2.98	BROMIDE	495.249	2689	24562	2	-2.19
5	3.42	NITRATE	551.166	2999	32234	2	3.54
6	5.17	PHOSPHATE	513.595	854	12997	1	-2.82
7	6.65	SULFATE	585.022	2491	43198	1	-2.92

File: c:\dx\data\91093061.D14 Sample: LMCS/73C11C0



WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R319	Customer ID: 791-2A
Analysis: ION CHROMATOGRAPHIC - PHOSPHATE	Sample Prep: UNDIGESTED

Instrument: DIONEX 4000 - WB54428	Procedure/Rev: LA-533-105/B-0
Technologist: M. MYERS	Date: 10-02-91
Starting Time: 18:46	Temperature: 24-25degC
Ending Time: 21:31	Chemist: D. HERT

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5574	11		
2	REAGENT BLANK	R317-5674	12		
3	SAMPLE 791-2A	R319-5774	13		
4	FINAL LMCS CHECK STD	R323-5574	14		
5			15		
6			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 CHECK STD	73C11CO/0.1 mL			N/A

A-6000-881 (03/92)

ION CHROMATOGRAPHIC ANALYSIS (PHOSPHATE) - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5574	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
PO4	LA-533-105	% RECOVERY	W1TE2	0

Sample Size: ? 1100ml - 10ml
Customer ID: STD

Remarks, Calculations, Results:
EDP R976 DIONEX
STDN 73C11C0 RESULT 522.442
STD VAL 517.0 %REC 101.1%

Analyst-1: [signature] Analyst-2: Analyst-3: Analyst-4: Analyst-5: [signature]
Hrs: 6C823
Date: 10-2-91
Time Completed: Lab Use Only: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5674	106AW	9-19-91	13:45	20

Determination	Method/Standard	Result Units	Charge Code	Rerun
PO4	LA-533-105	PPM	W1TE2	0

Sample Size: ? 1ml
Customer ID: REG BL.

Remarks, Calculations, Results:
REAGENT BLANK
<1 ppm

Analyst-1: [signature] Analyst-2: Analyst-3: Analyst-4: Analyst-5: [signature]
Hrs: 6C823
Date: 10-2-91
Time Completed: Lab Use Only: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 319.-5774	106AW	9-19-91	15:18	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
PO4	LA-533-105	PPM	W1TE2	0

Sample Size: ? 1100ml - 10ml
Customer ID: 791-2A

Remarks, Calculations, Results:
589.281

Analyst-1: [signature] Analyst-2: Analyst-3: Analyst-4: Analyst-5: [signature]
Hrs: 6C823
Date: 10-2-91
Time Completed: Lab Use Only: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5574	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
PO4	LA-533-105	% RECOVERY	W1TE2	0

Sample Size: ? 1100ml - 10ml
Customer ID: STD

Remarks, Calculations, Results:
EDP R976 DIONEX
STDN 73C11C0 RESULT 506.601
STD VAL 517.0 %REC 98.0%

Analyst-1: [signature] Analyst-2: Analyst-3: Analyst-4: Analyst-5: [signature]
Hrs: 6C823
Date: 10-2-91
Time Completed: Lab Use Only: [signature]

9 3 1 2 3 3 4 0 5 7

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R319	Customer ID: 791-2A
Analysis: ION CHROMATOGRAPHIC - SULFATE	Sample Prep: UNDIGESTED

Instrument: DIONEX 4000 - WB54428	Procedure/Rev: LA-533-105/B-0
Technologist: M. MYERS	Date: 10-02-91
Starting Time: 18:46	Temperature: 24-25degC
Ending Time: 21:31	Chemist: D. HERT

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5575	11		
2	REAGENT BLANK	R317-5675	12		
3	SAMPLE 791-2A	R319-5775	13		
4	FINAL LMCS CHECK STD	R323-5575	14		
5			15		
6			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 CHECK STD	73C11CO/0.1 mL			N/A

A-6000-881 (03/92)

ION CHROMATOGRAPHIC ANALYSIS (SULFATE) - UNDIGESTED SAMPLE

Event No.	Sample Point	Date	Time Issued	Priority
R 316.-5575	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Range
SO4	LA-533-105	% RECOVERY	WITE2	0

Sample Size: ? .100ml = 10ml
Customer ID: STD

EDP R970 DIONEX
STDN 73611CO RESULT 581.586
STD VAL 610.0 %REC 95.3%

Analyst-1: [signature] Analyst-2: Analyst-3: Analyst-4: Analyst-5: [signature]
Date: 10-2-91

Event No.	Sample Point	Date	Time Issued	Priority
R 317.-5675	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Range
SO4	LA-533-105	PPM	WITE2	0

Sample Size: ? 1ml
Customer ID: REG BL

REAGENT BLANK

<1ppm

Analyst-1: [signature] Analyst-2: Analyst-3: Analyst-4: Analyst-5: [signature]
Date: 10-2-91

Event No.	Sample Point	Date	Time Issued	Priority
R 319.-5775	106AW	9-19-91	15:18	25

Determination	Method/Standard	Result Units	Charge Code	Range
SO4	LA-533-105	PPM	WITE2	0

Sample Size: ? .100ml = 10ml
Customer ID: 791-2A

2479.782

Analyst-1: [signature] Analyst-2: Analyst-3: Analyst-4: Analyst-5: [signature]
Date: 10-2-91

Event No.	Sample Point	Date	Time Issued	Priority
R 323.-5575	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Range
SO4	LA-533-105	% RECOVERY	WITE2	0

Sample Size: ? .100ml = 10ml
Customer ID: STD

EDP R970 DIONEX
STDN 73611CO RESULT 582.554
STD VAL 610.0 %REC 95.5%

Analyst-1: [signature] Analyst-2: Analyst-3: Analyst-4: Analyst-5: [signature]
Date: 10-2-91

93123340039

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R319	Customer ID: 791-2A
Analysis: ION CHROMATOGRAPHIC - NITRITE	Sample Prep: UNDIGESTED

Instrument: DIONEX 4000 - WB54428	Procedure/Rev: LA-533-105/B-0
Technologist: M. MYERS	Date: 10-02-91
Starting Time: 18:46	Temperature: 24-25degC
Ending Time: 21:31	Chemist: D. HERT

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5576	11		
2	REAGENT BLANK	R317-5676	12		
3	SAMPLE 791-2A	R319-5776	13		
4	FINAL LMCS CHECK STD	R323-5576	14		
5			15		
6			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 CHECK STD	73C11CO/0.1 mL			N/A

A-6000-881 (03/92)

ION CHROMATOGRAPHIC ANALYSIS (NITRITE) - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5576	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Results
NO2	LA-533-105	% RECOVERY	W1TE2	0

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

Remarks, Calculations, Results:
EDP R968 DIONEX
STD# 73C11C0 RESULT 494.073
STD VAL 510.0 %REC 96.9%

Analyst-1: [signature] Analyst-2: Analyst-3: Analyst-4: Analyst-5: [signature]
Hrs: 6C823
Date: 10-2-91
Time Completed: Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5676	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Results
NO2	LA-533-105	PPM	W1TE2	0

Sample Size: ? 1ml
Customer ID: REG BL

Remarks, Calculations, Results:
REAGENT BLANK

<1 ppm

Analyst-1: [signature] Analyst-2: Analyst-3: Analyst-4: Analyst-5: [signature]
Hrs: 6C823
Date: 10-2-91
Time Completed: Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 319.-5776	106AW	9-19-91	15:19	25

Determination	Method/Standard	Result Units	Charge Code	Results
NO2	LA-533-105	PPM	W1TE2	0

Sample Size: ? .100ml-10ml-.250ml-10ml
Customer ID: 791-2A

Remarks, Calculations, Results:
8145.214

Analyst-1: [signature] Analyst-2: Analyst-3: Analyst-4: Analyst-5: [signature]
Hrs: 6C823
Date: 10-2-91
Time Completed: Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5576	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Results
NO2	LA-533-105	% RECOVERY	W1TE2	0

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

Remarks, Calculations, Results:
EDP R968 DIONEX
STD# 73C11C0 RESULT 501.702
STD VAL 510.0 %REC 98.4%

Analyst-1: [signature] Analyst-2: Analyst-3: Analyst-4: Analyst-5: [signature]
Hrs: 6C823
Date: 10-2-91
Time Completed: Lab Unit Mgr: [signature]

9312334051

9-22-91
4409-AC

DIONEX METHOD PARAMETERS - SYSTEM1.MET

System Parameters

System Name : system1/gpm
Number of Detectors..... 1
Detector 1 Type..... CDM-1
Detector 1 real time plot scale (uS)..... 20.00
Run Time (minutes)..... 8.50
Sampling Rate (seconds)..... 0.20

-- DETECTOR 1 PARAMETERS --

Report Options

Save Data File..... Yes
Data File Name: c:\dx\data\91092201.D08
Create ASCII Report File..... No
Print Report..... Yes
List Peaks Not Found in this run..... No
Report Unknowns Found in this run..... Yes
Print Chromatogram..... Yes
AutoScale Chromatogram to Highest Peak..... Yes
Fill Peaks with Color ..... Yes
Draw Grid Lines on Chromatogram..... No
Label with Peak Number..... Yes
Label with Retention Times on Chromatogram..... No
Label with Component Name..... Yes
Format File Name: c:\dx\method\default.prf

Integration Parameters

Starting Peak Width (seconds)..... 10.0
Peak Threshold (mV or uS/data pt interval)..... 0.500
Peak Area Reject..... 1000
Area Reject for Reference Peaks..... 1000
Percent Retention Time Window for Reference Peaks..... 5.0

Integration Timed Events

Time	Description
1.32	Start peak detection
1.44	Start peak detection
1.46	Start peak detection
1.77	
1.77	Enable end of peak detection

Calibration Parameters

Number Of Levels for Calibration	6
Calibration Fit Type	Quadratic
Replace Or Average Calibrations	Replace
External or Internal Calibration	External
Calibrate by Area or Height	Area
Default Injection Volume	1.0
Default Dilution Factor	1.0
Response Factor for Unknown Peaks	1.0
Calibration Standard Volume	1.0
Internal Standard Volume	1.0
Sample Unit	PPM

9 3 1 2 3 3 1 0 6 3

Component # 1 FLUORIDE Retention Time 1.13
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 8.52797E-002
K1 = 6.06440E-005
K2 = -6.17180E-011

Level	Amount	Area	Height
1	1.20000E-001	1439	225
2	3.00000E-001	4035	566
3	6.00000E-001	8217	1141
4	1.20000E+000	16507	2218
5	2.30000E+000	39534	4812
6	4.40000E+000	76890	9371

Component # 2 CHLORIDE Retention Time 1.70
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.93335E-002
K1 = 1.01273E-004
K2 = -9.35560E-011

Level	Amount	Area	Height
1	1.60000E-001	1319	217
2	3.90000E-001	3754	568
3	7.80000E-001	6942	1045
4	1.50000E+000	14461	1975
5	3.00000E+000	30287	3987
6	5.90000E+000	61305	8910

Component # 3 NITRITE Retention Time 2.03
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 4.88691E-001
K1 = 1.33960E-004
K2 = 5.52630E-012

Level	Amount	Area	Height
1	1.08000E+000	6239	874
2	2.69000E+000	17299	2252
3	5.37000E+000	34328	4729
4	1.06200E+001	72787	9300
5	2.08500E+001	153501	19401
6	4.01500E+001	292053	34439

Component # 4 BROMIDE Retention Time 2.80
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 4.01960E-002
K1 = 2.00453E-004
K2 = -1.00008E-010

Level	Amount	Area	Height
1	1.56000E+000	7660	753
2	3.90000E+000	20706	1880
3	7.80000E+000	38868	3455
4	1.54000E+001	78061	6644
5	3.02000E+001	165133	12632
6	5.81000E+001	350930	24386

Component # 5 NITRATE Retention Time 3.30
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.02611E-001
K1 = 1.61787E-004
K2 = -5.83501E-011

Level	Amount	Area	Height
1	1.37000E+000	7543	727
2	3.43000E+000	17321	1803
3	6.83000E+000	40244	3563
4	1.35000E+001	83386	7010
5	2.65000E+001	173503	13640
6	5.11000E+001	360809	25639

Component # 6 PHOSPHATE Retention Time 5.32
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 5.53452E-001
K1 = 3.53243E-004
K2 = -3.51156E-010

Level	Amount	Area	Height
1	1.19000E+000	2277	162
2	2.98000E+000	7242	453
3	5.93000E+000	15025	935
4	1.17400E+001	31660	1933
5	2.30300E+001	69135	4130
6	4.43700E+001	144747	8447

Component # 7 SULFATE Retention Time 6.85
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.55734E-001
K1 = 1.27491E-004
K2 = -3.79358E-011

Level	Amount	Area	Height
1	1.40000E+000	9418	543
2	3.50000E+000	24499	1382
3	6.96000E+000	52303	2890
4	1.37800E+001	107173	5909
5	2.70400E+001	225632	12225
6	5.20700E+001	471630	24686

IC Control File: C:\DX\METHOD\SYSTEM1.TE

Step	Time	Description
Init		CDM-1 AutoOffset Off
Init		CDM-1 Recorder Mark OFF
Init		CDM-1 Temp. Comp. = 1.7 / Deg C
Init		CDM-1 Recorder Range = 1.0 uS
Init		CDM-1 Cell ON
Init		CHA Heater = 25 Deg. C
Init		Valve A ON
Init		Valve B ON
Init		Inject Valve OFF
Init		ACI Autosmp OFF
Init		ACI RLY 2 OFF
Init		ACI TTL 1 OFF
Init		ACI TTL 2 OFF
Init		ACI AC 1 ON
Init		GPM Start
Init		GPM Hold Gradient Clock
Init		GPM Reset ON
1	0.0	CDM-1 AutoOffset ON
1	0.0	Start Sampling
1	0.0	GPM Reset OFF
2	0.1	CDM-1 Recorder Range = 10.0 uS
2	0.1	Inject Valve ON
2	0.1	GPM Run Gradient Clock
3	3.0	Inject Valve OFF
4	3.5	ACI Autosmp ON
5	8.0	ACI Autosmp OFF

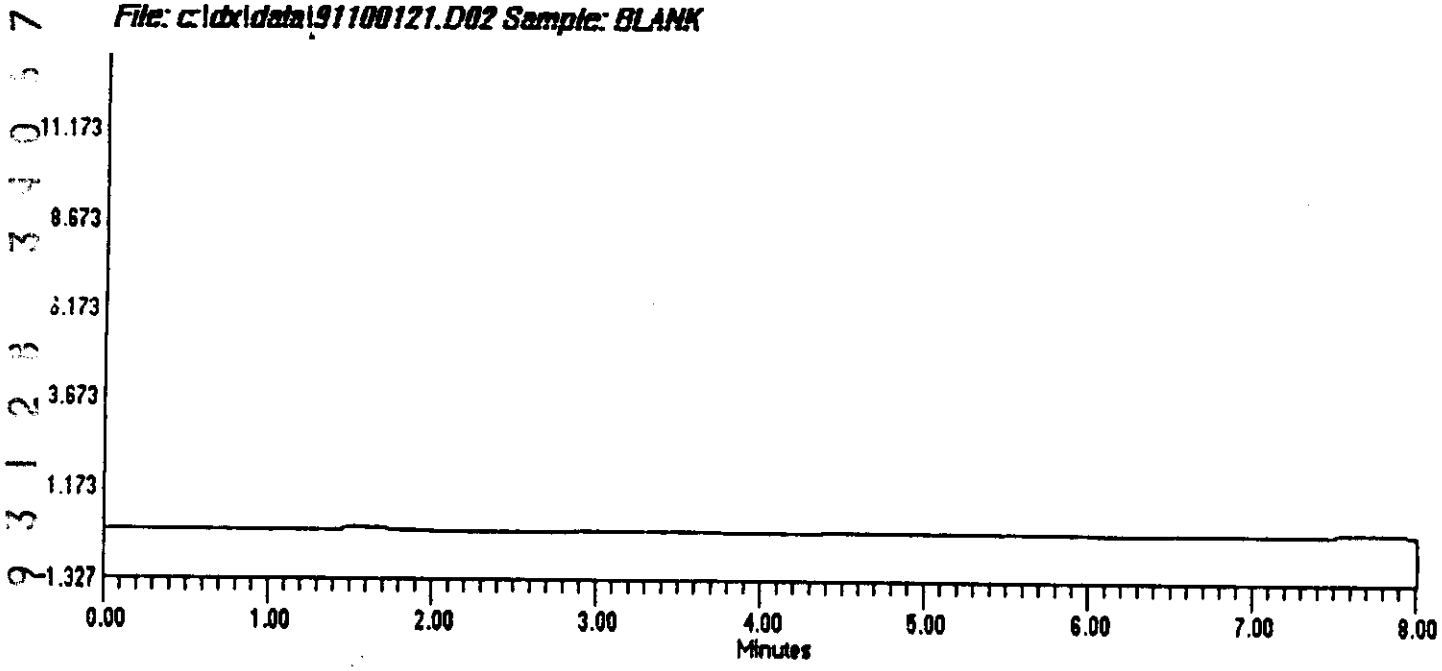
GpmFile: C:\DX\METHOD\SYSTEM1.GPM
Lo Pressure Limit = 200
Hi Pressure Limit = 2000
Eluant 1 - DI WATER
Eluant 2 - SODIUM CARBONATE
Eluant 3 - SODIUM BICARBONATE
Eluant 4 - Eluant 4

Time	Flow	%1	%2	%3	%4	V5	V6	Comment
0.0	2.0	84	8	8	0	0	0	

```
==========================================================================
| Sample Name: BLANK                          Date: Wed Oct 02 18:46:10 1991|
| Data File   : c:\dx\data\91100121.D02                                    |
| Method      : c:\dx\method\SYSTEM1.met                                   |
| ACI Address: 1        System : 1        Inject#:    2  Detector: CDM-1   |
==========================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta

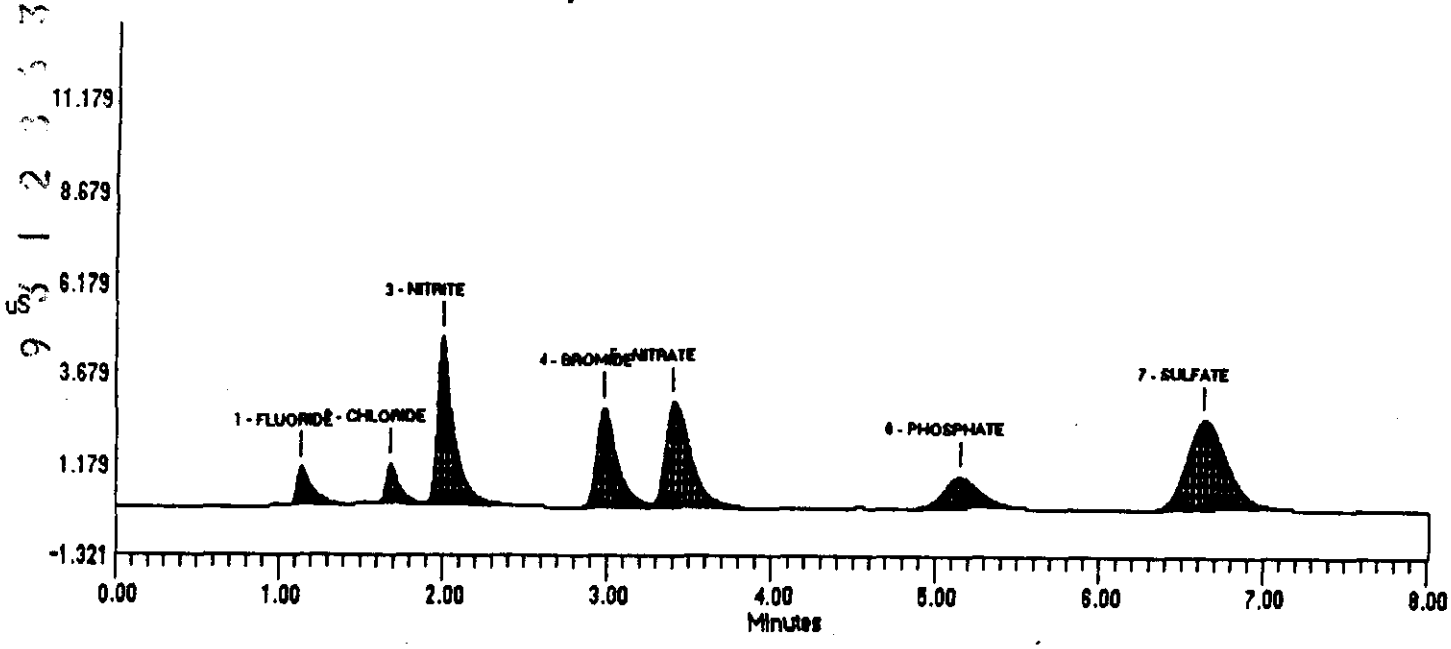


Sample Name: LMCS/73C11C0 R3/6 [illegible] 6-23-92	Date: Wed Oct 02 18:55:16 1991
Data File : c:\dx\data\91100111.D03	
Method : c:\dx\method\SYSTEM1.met	
ACI Address: 1 System : 1 Inject#: 3 Detector: CDM-1	

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	51.501	1052	7053	1	0.00
2	1.68	CHLORIDE	67.889	1092	6285	2	-0.98
3	2.00	NITRITE	494.073	4650	32824	2	-1.48
4	2.98	BROMIDE	487.271	2732	24158	2	-2.19
5	3.40	NITRATE	538.528	2889	31443	2	3.03
6	5.15	PHOSPHATE	522.442	861	13251	1	-3.13
7	6.63	SULFATE	581.586	2485	42924	1	-3.16

File: c:\dx\data\91100111.D03 Sample: LMCS/73C11C0

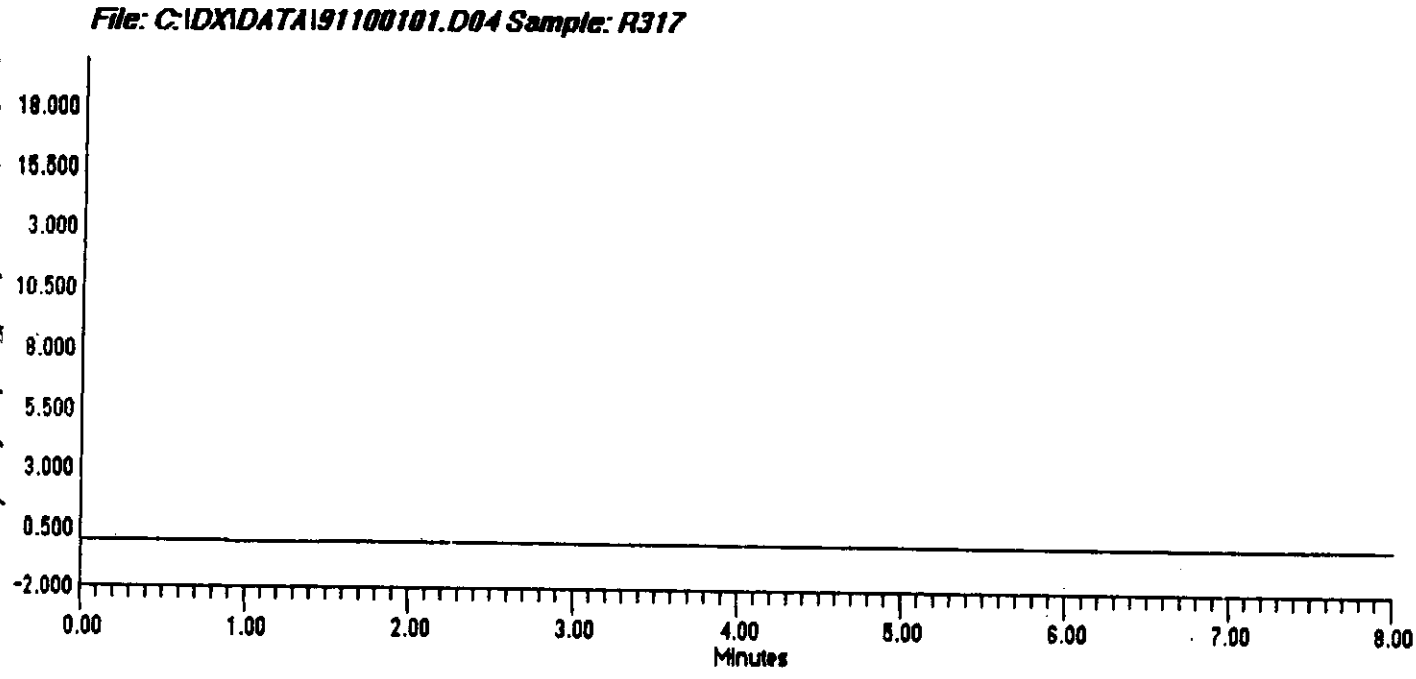


DATA REPROCESSED ON Wed Oct 02 19:17:10 1991

Sample Name: R317	Date: Wed Oct 02 19:04:35 1991
Data File : C:\DX\DATA\91100101.D04	
Method : c:\dx\method\SYSTEM1.met	
ACI Address: 1 System : 1	Inject#: 4 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2405	5Hz	0.00	8.02	1000

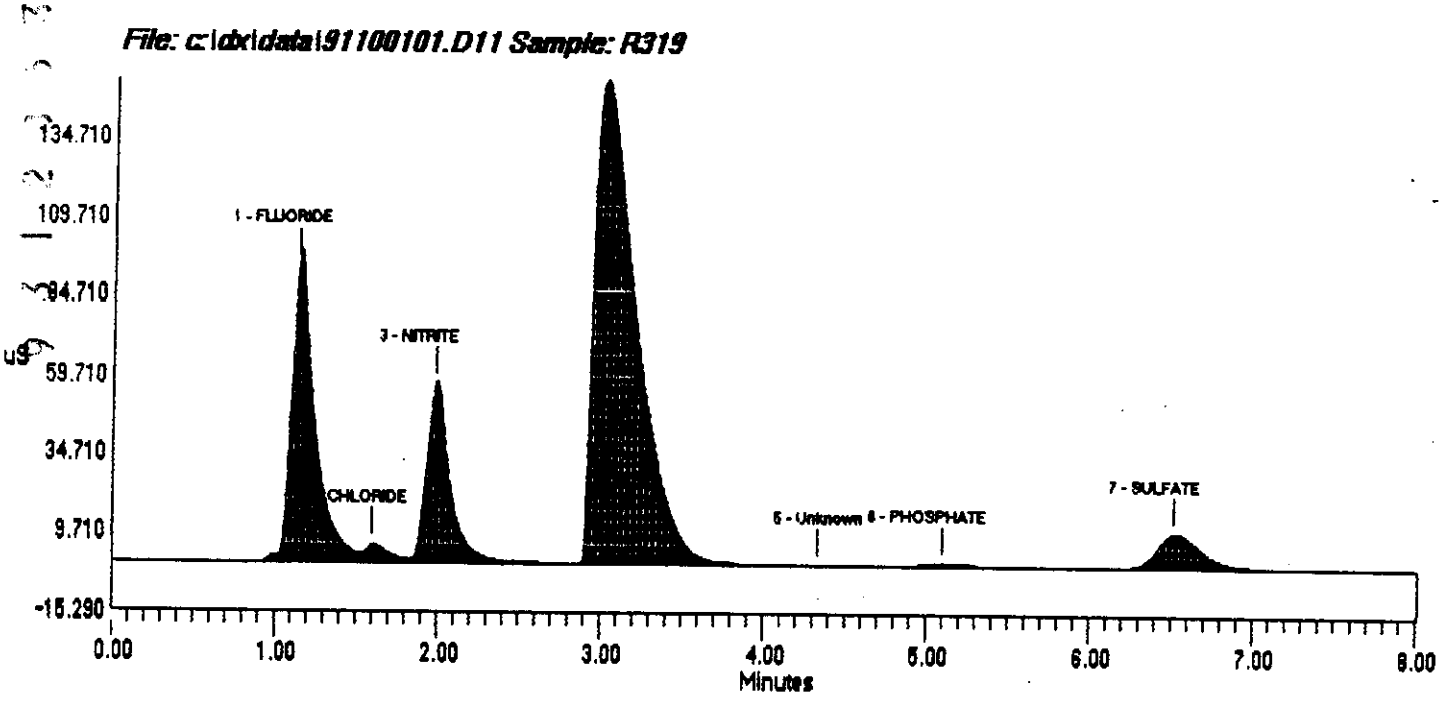
Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta



Sample Name: R319 Date: Wed Oct 02 20:10:16 1991
Data File : c:\dx\data\91100101.D11
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1 System : 1 Inject#: 11 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2405	5Hz	0.00	8.02	1000

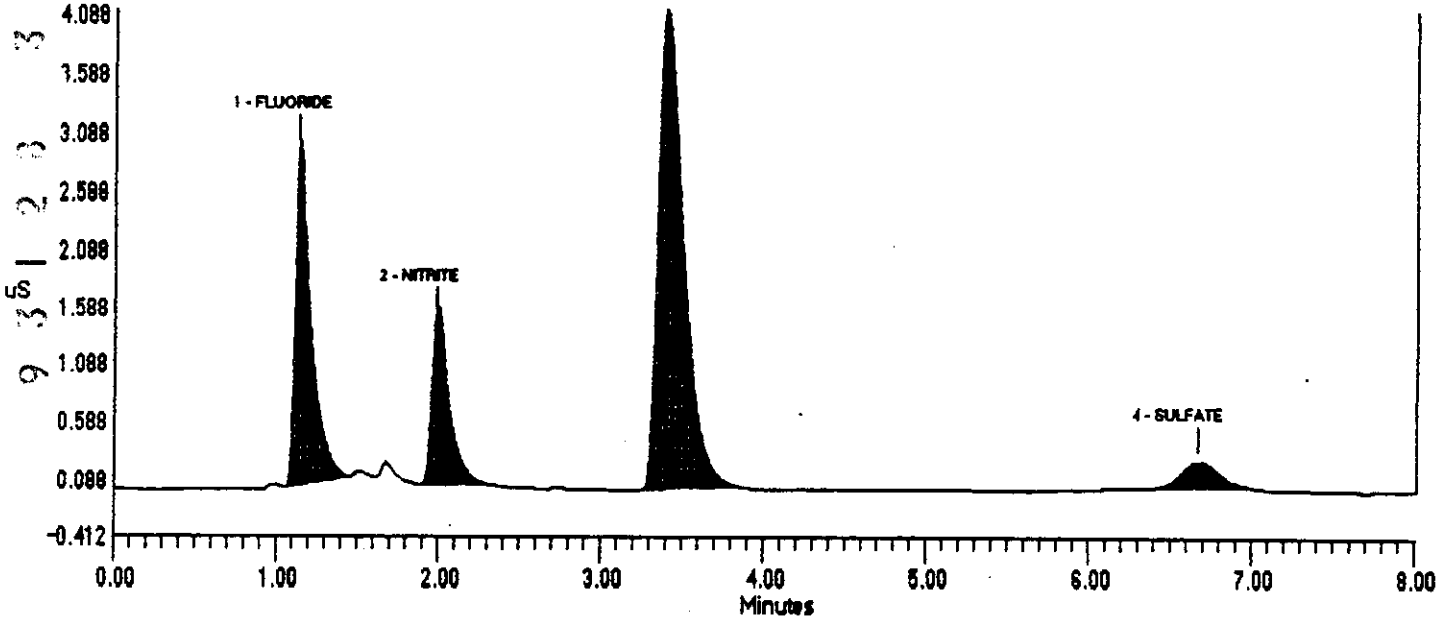
Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	28.791	93963	979294	3	0.00
2	1.60	CHLORIDE	468.875	4721	47539	4	-5.88
3	1.98	NITRITE	7973.173	56883	572146	2	-2.30
4	3.02	BROMIDE	-20602.678	152249	2747025	2	-1.09
5	4.33		113641.942	101	1125	2	
6	5.10	PHOSPHATE	589.281	946	15179	1	-4.08
7	6.52	SULFATE	2479.782	10822	201922	1	-4.87



Sample Name: R319		Date: Wed Oct 02 20:19:43 1991	
Data File : c:\dx\data\91100101.D12			
Method : c:\dx\method\SYSTEM1.met			
ACI Address: 1	System : 1	Inject#: 12	Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	4141	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	5170.972	2885	19575	1	0.00
2	1.98	NITRITE	8145.214	1409	11030	1	-2.30
3	3.40	NITRATE	30717.188	4126	44700	1	3.03
4	6.67	SULFATE	3443.556	232	3737	1	-2.68



9 3 1 2 3 3 0 7 1

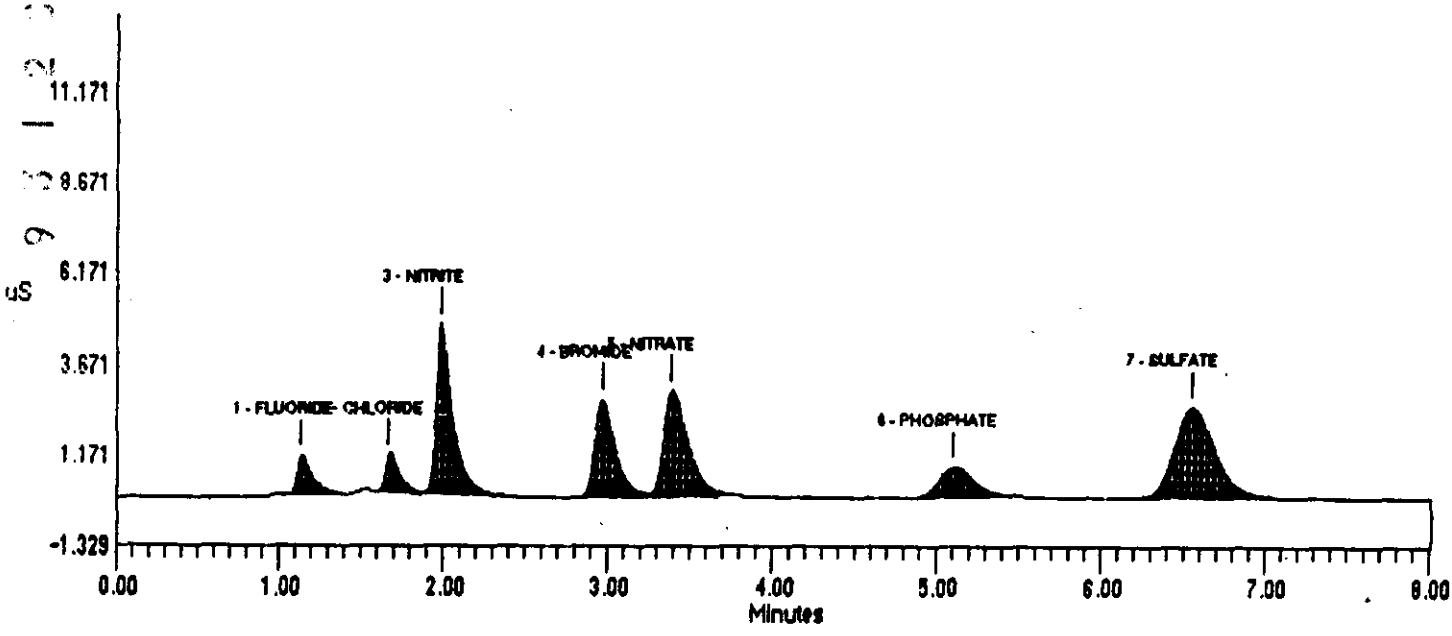
TF2 8-30-92
314 ~~294~~

```
==================================================================================
: Sample Name: LMCS/73C11C0 R343 6-9-92          Date: Wed Oct 02 21:31:01 1991 :
: Data File  : c:\dx\data\91100101.D19                                          :
: Method     : c:\dx\method\SYSTEM1.met                                         :
: ACI Address: 1        System : 1        Inject#:  19  Detector: CDM-1         :
==================================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	52.789	1086	7266	1	0.00
2	1.67	CHLORIDE	69.288	1038	6424	2	-1.96
3	1.98	NITRITE	501.702	4638	33387	2	-2.30
4	2.97	BROMIDE	485.310	2705	24059	2	-2.73
5	3.38	NITRATE	533.443	2901	31125	2	2.53
6	5.10	PHOSPHATE	506.601	836	12795	1	-4.08
7	6.55	SULFATE	582.554	2497	43001	1	-4.38

File: c:\dx\data\91100101.D19 Sample: LMCS/73C11C0



WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R319	Customer ID: 791-2A
Analysis: ION CHROMATOGRAPHIC - CHLORIDE	Sample Prep: UNDIGESTED

Instrument: DIONEX 4000 - WB54428	Procedure/Rev: LA-533-105/B-0
Technologist: M. MYERS	Date: 10-04-91
Starting Time: 20:40	Temperature: 24-25degC
Ending Time: 23:36	Chemist: D. HERT

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5572	11		
2	REAGENT BLANK	R317-5672	12		
3	SAMPLE 791-2A	R319-5772	13		
4	FINAL LMCS CHECK STD	R323-5572	14		
5			15		
6			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 CHECK STD	73C11CO/0.1 mL			N/A

A-6000-881 (03/92)

9 3 1 2 3 3 1 0 7 3

ION CHROMATOGRAPHIC ANALYSIS (CHLORIDE) - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5572	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
CL	LA-533-105	% RECOVERY	W11E2	C

Sample Size: ? .100ml - 10ml — Customer ID: STD

Remarks, Calculations, Results:
EDP R972 DIONEX
STDN 73CHCO RESULT 74.035 ppm
STD VAL 75.00 ppm %REC 98.7%

Analyst-1: [signature] — Analyst-2: — Analyst-3: — Analyst-4: — Analyst-5: [signature]
Date: 10-4-91 — Time Completed: [signature] — Lab Unit Date: [signature]
JK 6-5-92

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5672	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
CL	LA-533-105	PPM	W11E2	C

Sample Size: ? 1ml — Customer ID: REG NL

Remarks, Calculations, Results:
REAGENT BLANK
<1.00E-1 ppm

Analyst-1: [signature] — Analyst-2: — Analyst-3: — Analyst-4: — Analyst-5: [signature]
Date: 10-4-91 — Time Completed: [signature] — Lab Unit Date: [signature]
JK 6-5-92

Serial No.	Sample Point	Date	Time Issued	Priority
R 319.-5772	106AW	9-19-91	15:18	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
CL	LA-533-105	PPM	W11E2	0

Sample Size: ? .100ml - 10ml - .500ml - 10ml — Customer ID: 791-2A

Remarks, Calculations, Results:
~~7.43E3~~ ppm
431 E+2
JK 8-15-92

Analyst-1: [signature] — Analyst-2: — Analyst-3: — Analyst-4: — Analyst-5: [signature]
Date: 10-4-91 — Time Completed: [signature] — Lab Unit Date: [signature]
JK 6-5-92

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5572	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
CL	LA-533-105	% RECOVERY	W11E2	0

Sample Size: ? .100ml - 10ml — Customer ID: STD

Remarks, Calculations, Results:
EDP R972 DIONEX
STDN 73CHCO RESULT 71.429 ppm
STD VAL 75 ppm %REC 95.2%

Analyst-1: [signature] — Analyst-2: — Analyst-3: — Analyst-4: — Analyst-5: [signature]
Date: 10-4-91 — Time Completed: [signature] — Lab Unit Date: [signature]
JK 6-5-92

9-22-91
4409-AC

DIONEX METHOD PARAMETERS - SYSTEM1.MET

System Parameters

System Name : system1/gpm
Number of Detectors..... 1
Detector 1 Type..... CDM-1
Detector 1 real time plot scale (uS)..... 20.00
Run Time (minutes)..... 8.50
Sampling Rate (seconds)..... 0.20

-- DETECTOR 1 PARAMETERS --
Report Options

Save Data File..... Yes
Data File Name: c:\dx\data\91092201.D08
Create ASCII Report File..... No
Print Report..... Yes
List Peaks Not Found in this run..... No
Report Unknowns Found in this run..... Yes
Print Chromatogram..... Yes
AutoScale Chromatogram to Highest Peak..... Yes
Fill Peaks with Color ..... Yes
Draw Grid Lines on Chromatogram..... No
Label with Peak Number..... Yes
Label with Retention Times on Chromatogram..... No
Label with Component Name..... Yes
Format File Name: c:\dx\method\default.prf

Integration Parameters

Starting Peak Width (seconds)..... 10.0
Peak Threshold (mV or uS/data pt interval)..... 0.500
Peak Area Reject..... 1000
Area Reject for Reference Peaks..... 1000
Percent Retention Time Window for Reference Peaks..... 5.0

Integration Timed Events

Time	Description
1.32	Start peak detection
1.44	Start peak detection
1.46	Start peak detection
1.77	
1.77	Enable end of peak detection

Calibration Parameters

Number Of Levels for Calibration	6
Calibration Fit Type	Quadratic
Replace Or Average Calibrations	Replace
External or Internal Calibration	External
Calibrate by Area or Height	Area
Default Injection Volume	1.0
Default Dilution Factor	1.0
Response Factor for Unknown Peaks	1.0
Calibration Standard Volume	1.0
Internal Standard Volume	1.0
Sample Unit	PPM

Component # 1 FLUORIDE Retention Time 1.13
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 8.52797E-002
K1 = 6.06440E-005
K2 = -6.17180E-011

Level	Amount	Area	Height
1	1.20000E-001	1439	225
2	3.00000E-001	4035	566
3	6.00000E-001	8217	1141
4	1.20000E+000	16507	2218
5	2.30000E+000	39534	4812
6	4.40000E+000	76890	9371

Component # 2 CHLORIDE Retention Time 1.70
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.93335E-002
K1 = 1.01273E-004
K2 = -9.35560E-011

Level	Amount	Area	Height
1	1.60000E-001	1319	217
2	3.90000E-001	3754	568
3	7.80000E-001	6942	1045
4	1.50000E+000	14461	1975
5	3.00000E+000	30287	3987
6	5.90000E+000	61305	8910

Component # 3 NITRITE Retention Time 2.03
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 4.88691E-001
K1 = 1.33960E-004
K2 = 5.52630E-012

Level	Amount	Area	Height
1	1.08000E+000	6239	874
2	2.69000E+000	17299	2252
3	5.37000E+000	34328	4729
4	1.06200E+001	72787	9300
5	2.08500E+001	153501	19401
6	4.01500E+001	292053	34439

Component # 4 BROMIDE Retention Time 2.80
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 4.01960E-002
K1 = 2.00453E-004
K2 = -1.00008E-010

Level	Amount	Area	Height
1	1.56000E+000	7660	753
2	3.90000E+000	20706	1880
3	7.80000E+000	38868	3455
4	1.54000E+001	78061	6644
5	3.02000E+001	165133	12632
6	5.81000E+001	350930	24386

9 3 1 2 3 3 4 0 7 7

Component # 5 NITRATE Retention Time 3.30
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.02611E-001
K1 = 1.61787E-004
K2 = -5.83501E-011

Level	Amount	Area	Height
1	1.37000E+000	7543	727
2	3.43000E+000	19321	1803
3	6.83000E+000	40244	3563
4	1.35000E+001	83386	7010
5	2.65000E+001	173503	13640
6	5.11000E+001	360809	25639

Component # 6 PHOSPHATE Retention Time 5.32
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 5.53452E-001
K1 = 3.53243E-004
K2 = -3.51156E-010

Level	Amount	Area	Height
1	1.19000E+000	2277	162
2	2.98000E+000	7242	453
3	5.93000E+000	15025	935
4	1.17400E+001	31660	1933
5	2.30300E+001	69135	4130
6	4.43700E+001	144749	8447

Component # 7 SULFATE Retention Time 6.85
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.55734E-001
K1 = 1.27491E-004
K2 = -3.79358E-011

Level	Amount	Area	Height
1	1.40000E+000	9418	543
2	3.50000E+000	24499	1382
3	6.96000E+000	52303	2890
4	1.37800E+001	107173	5909
5	2.70400E+001	225632	12225
6	5.20700E+001	471630	24686

IC Control File: C:\DX\METHOD\SYSTEM1.TE

Step	Time	Description
Init		CDM-1 AutoOffset Off
Init		CDM-1 Recorder Mark OFF
Init		CDM-1 Temp. Comp. = 1.7 / Deg C
Init		CDM-1 Recorder Range = 1.0 uS
Init		CDM-1 Cell ON
Init		CHA Heater = 25 Deg. C
Init		Valve A ON
Init		Valve B ON
Init		Inject Valve OFF
Init		ACI Autosmp OFF
Init		ACI RLY 2 OFF
Init		ACI TTL 1 OFF
Init		ACI TTL 2 OFF
Init		ACI AC 1 ON
Init		GPM Start
Init		GPM Hold Gradient Clock
Init		GPM Reset ON
1	0.0	CDM-1 AutoOffset ON
1	0.0	Start Sampling
1	0.0	GPM Reset OFF
2	0.1	CDM-1 Recorder Range = 10.0 uS
2	0.1	Inject Valve ON
2	0.1	GPM Run Gradient Clock
3	3.0	Inject Valve OFF
4	3.5	ACI Autosmp ON
5	8.0	ACI Autosmp OFF

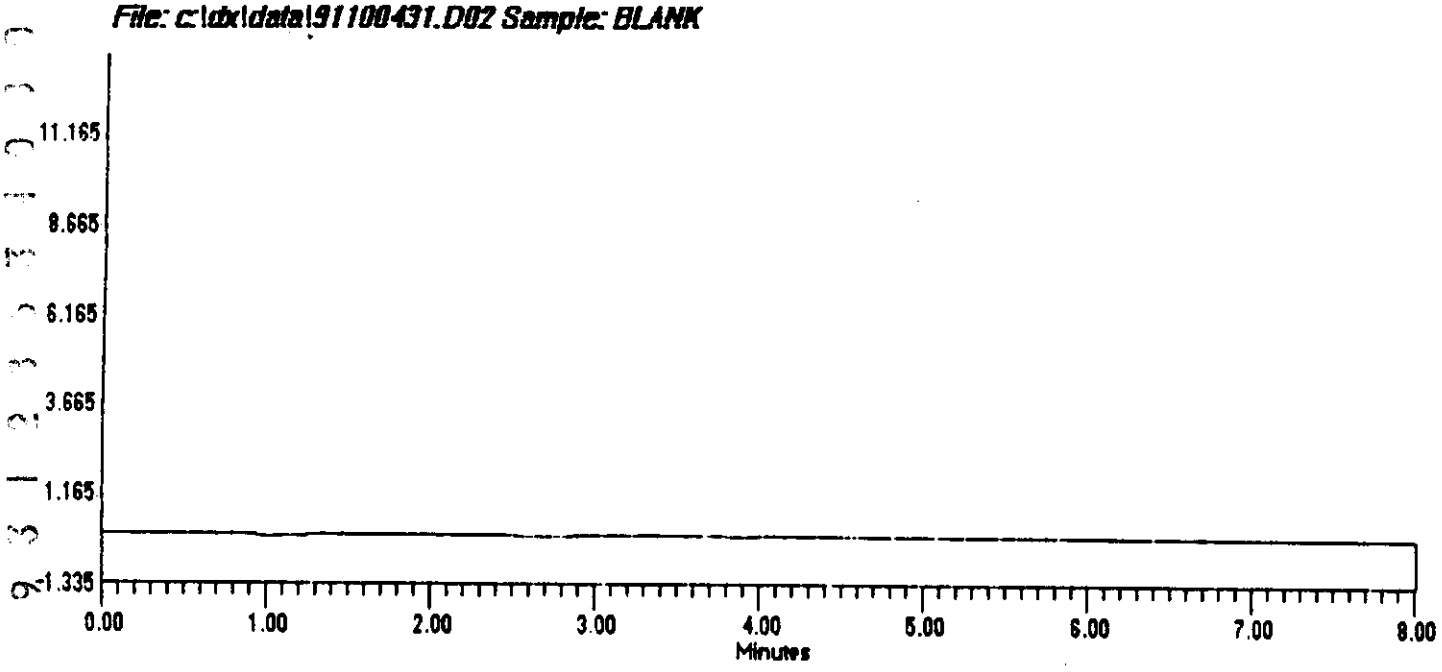
GpmFile: C:\DX\METHOD\SYSTEM1.GPM
Lo Pressure Limit = 200
Hi Pressure Limit = 2000
Eluant 1 - DI WATER
Eluant 2 - SODIUM CARBONATE
Eluant 3 - SODIUM BICARBONATE
Eluant 4 - Eluant 4

Time	Flow	%1	%2	%3	%4	V5	V6	Comment
0.0	2.0	84	8	8	0	0	0	

```
Sample Name: BLANK                                   Date: Fri Oct 04 20:37:01 1991
Data File   : c:\dx\data\91100431.D02
Method      : c:\dx\method\SYSTEM1.met
ACI Address: 1        System : 1        Inject#:   2  Detector: CDM-1
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta



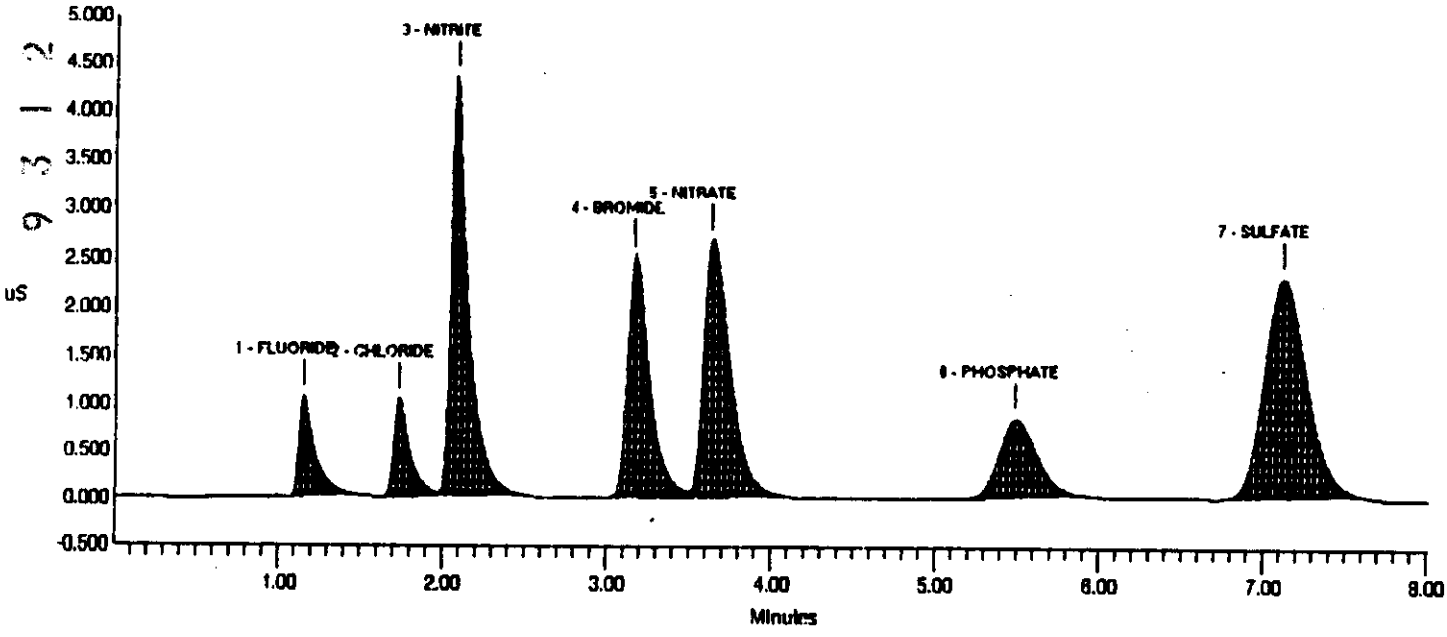
DATA REPROCESSED ON Fri Oct 04 21:38:52 1991

Sample Name: LMCS/73C11C0 R3/4 JK 6-23-92		Date: Fri Oct 04 20:46:06 1991	
Data File : C:\DX\DATA\91100421.D03			
Method : c:\dx\method\SYSTEM1.met			
ACI Address: 1	System : 1	Inject#: 3	Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.15	FLUORIDE	52.136	1058	7158	1	0.00
2	1.73	CHLORIDE	74.035	1030	6894	2	0.48
3	2.08	NITRITE	489.305	4334	32473	2	1.14
4	3.17	BROMIDE	458.041	2492	22680	2	2.32
5	3.63	NITRATE	530.820	2668	30960	2	8.51
6	5.48	PHOSPHATE	505.944	805	12777	1	1.64
7	7.12	SULFATE	558.013	2281	41046	1	2.39

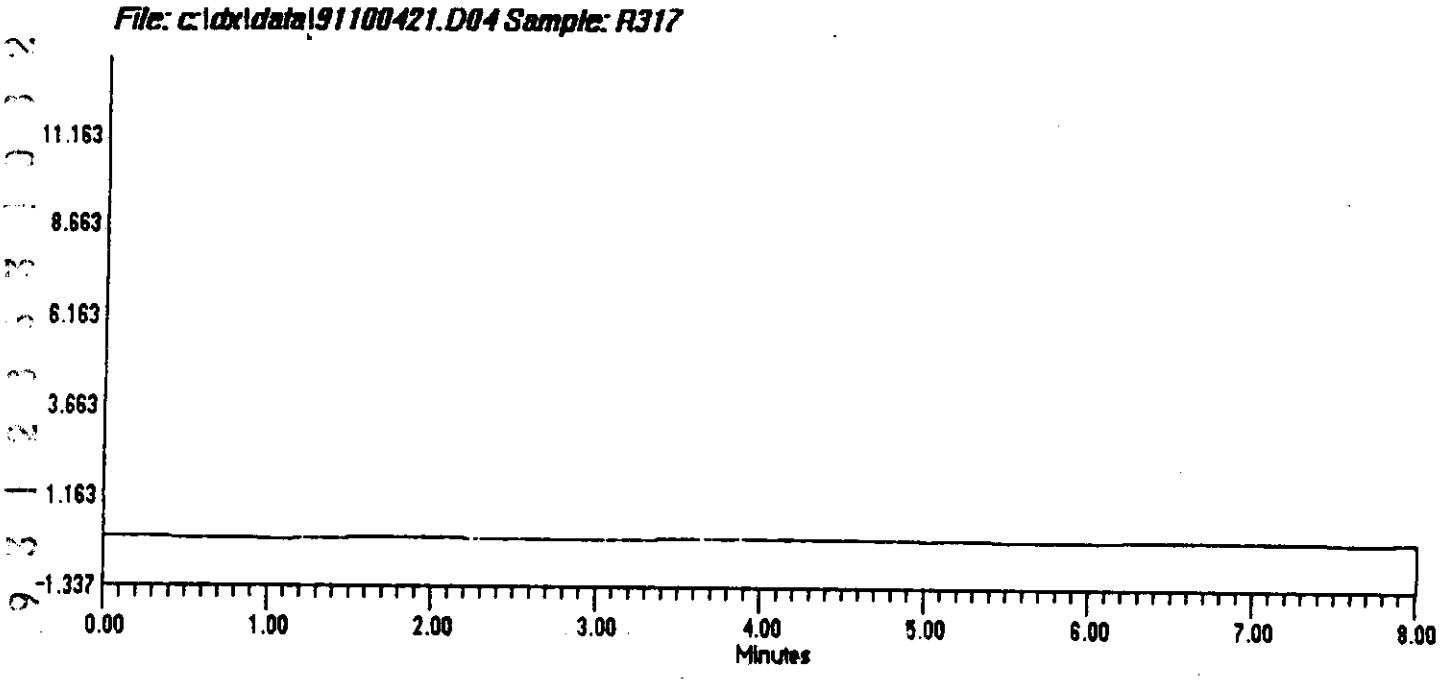
File: C:\DX\DATA\91100421.D03 Sample: LMCS/73C11C0



```
Sample Name: R317                                  Date: Fri Oct 04 20:55:27 1991
Data File   : c:\dx\data\91100421.D04
Method      : c:\dx\method\SYSTEM1.met
ACI Address: 1        System : 1        Inject#:    4  Detector: CDN-1
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta



R323 7
R324 6-23-92

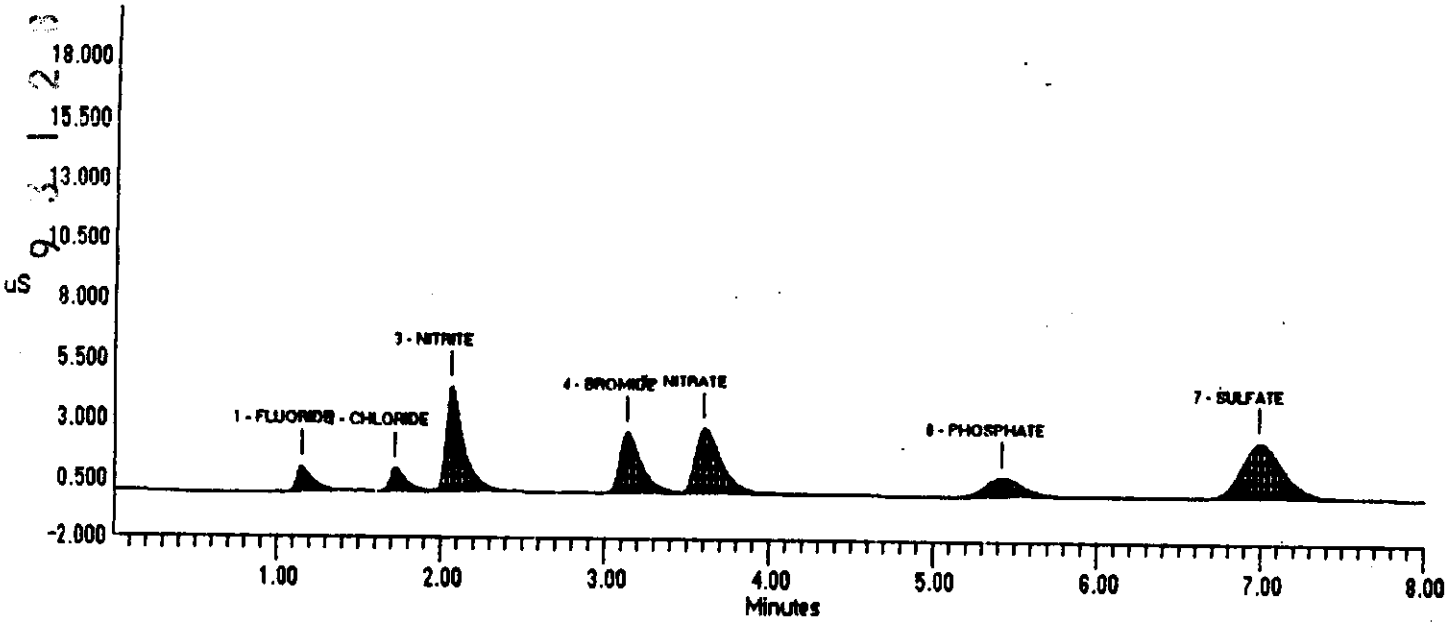
DATA REPROCESSED ON Fri Oct 04 22:45:26 1991

Sample Name: LMCS/73C1100 R323 6-23-92 Date: Fri Oct 04 22:10:28 1991
Data File : C:\DX\DATA\91100411.D12
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1 System : 1 Inject#: 12 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.15	FLUORIDE	52.102	1076	7152	1	0.00
2	1.72	CHLORIDE	71.429	993	6636	2	-0.48
3	2.07	NITRITE	487.247	4387	32321	2	0.33
4	3.13	BROMIDE	475.164	2556	23546	2	1.24
5	3.60	NITRATE	524.183	2723	30545	2	7.51
6	5.42	PHOSPHATE	510.540	821	12909	1	0.40
7	6.98	SULFATE	565.442	2341	41638	1	0.47

File: C:\DX\DATA\91100411.D10 Sample: LMCS/73C1100

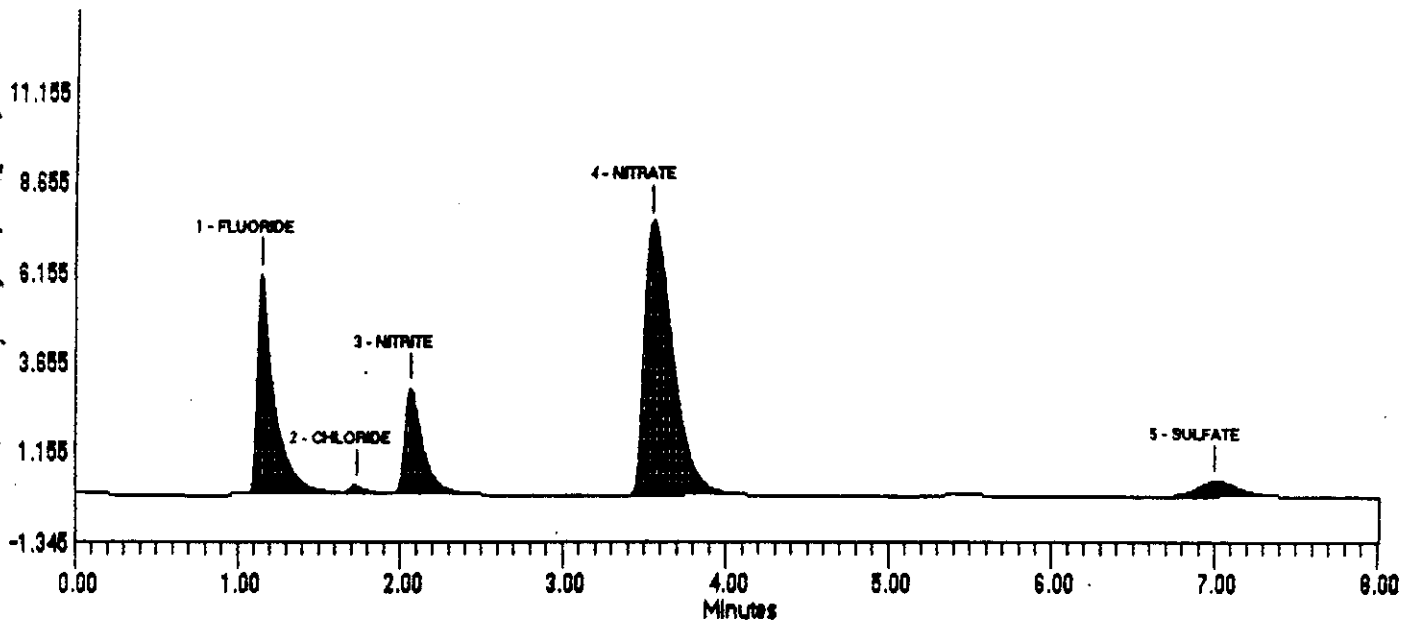


```
==========================================================================
| Sample Name: R319                          Date: Fri Oct 04 21:33:22 1991|
| Data File  : c:\dx\data\91100421.D08                                    |
| Method     : c:\dx\method\SYSTEM1.met                                   |
| ACI Address: 1       System : 1       Inject#:   8  Detector: CDM-1     |
==========================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	2121	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.15	FLUORIDE	5627.971	6132	44350	2	0.00
2	1.73	CHLORIDE	431.361	234	1622	2	0.48
3	2.07	NITRITE	7433.442	2962	22493	1	0.33
4	3.55	NITRATE	31480.795	7647	92989	1	6.02
5	7.00	SULFATE	2725.530	429	7305	1	0.71

File: c:\dx\data\91100421.D08 Sample: R319



TFZ 8-30-92

~~307~~ 327

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R319	Customer ID: 791-2A
Analysis: ACID DIGESTION	Sample Prep: ACID DIGESTION

Instrument: METTLER BAL. SNF04495	Procedure/Rev: LA-508-158/A-2
Technologist: L. MORRISON	Date: 9-24-91
Starting Time: N/A	Temperature: N/A
Ending Time: N/A	Chemist: L. OTTMAR

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-8505	11		
2	REAGENT BLANK	R317-8605	12		
3	SAMPLE 791-2A	R319-8705	13		
4	FINAL LMCS CHECK STD	R323-8505	14		
5			15		
6			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 CHECK STD	ICP1-9S4/10 mL	ICP2-6S4/10 mL	ICP3-8S4/10 mL	N/A

A-6000-881 (03/92)

ACID DIGESTION ANALYSIS

Serial No	Sample Point	Date	Time Issued	Priority
R [illegible] 8505	106AW	9-19-91	13:35	26

Determination	Method Standard	Result Units	Charge Code	Return
[illegible]	[illegible]	% RECOVERY	[illegible]	

Sample Size	Customer ID
10 mL on in 100 mL	SID

Remarks Calculations Results
LMCS CHECK SAMPLE
LMCS ID
1cP-ESTI - 954
1cP-ESTZ - 654
1cP-ESTS - 554

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731				
[signature]				

Date	Time Completed	Lab Unit Mgr	
9-24-91	[signature]	[signature]	JK McGarland

Serial No	Sample Point	Date	Time Issued	Priority
R 317. 8505	106AW	9-19-91	13:45	26

Determination	Method Standard	Result Units	Charge Code	Return
[illegible]	[illegible]	G G	[illegible]	

Sample Size	Customer ID
	[illegible]

Remarks Calculations Results
[illegible]
VOLUME [illegible]
COMPLETION

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731				
[signature]				

Date	Time Completed	Lab Unit Mgr	
9-24-91	[signature]	[signature]	JK McGarland

Serial No	Sample Point	Date	Time Issued	Priority
R 319. 8505	106AW	9-19-91	15:22	25

Determination	Method Standard	Result Units	Charge Code	Return
[illegible]	[illegible]	[illegible]	[illegible]	

Sample Size	Customer ID
1 mL in 100 mL	[illegible]

Remarks Calculations Results

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731				
[signature]				

Date	Time Completed	Lab Unit Mgr	
9-24-91	[signature]	[signature]	JK McGarland

Serial No	Sample Point	Date	Time Issued	Priority
R 323. 8505	106AW	9-19-91	15:45	25

Determination	Method Standard	Result Units	Charge Code	Return
[illegible]	[illegible]	% RECOVERY	[illegible]	

Sample Size	Customer ID
10 mL on in 100 mL	SID

Remarks Calculations Results
LMCS CHECK SAMPLE
LMCS ID
1cP-ESTI - 954
1cP-ESTZ - 654
1cP-ESTS - 554

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731				
[signature]				

Date	Time Completed	Lab Unit Mgr	
9-24-91	[signature]	[signature]	JK McGarland

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R319	Customer ID: 791-2A
Analysis: INDUCTIVELY COUPLED PLASMA	Sample Prep: ACID DIGESTION

Instrument: WB39939	Procedure/Rev: LA-505-151/B-0
Technologist: L. MORRISON	Date: 11-19-91
Starting Time: 13:14	Temperature: N/A
Ending Time: 14:23	Chemist: L. OTTMAR

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-8550	11		
2	REAGENT BLANK	R317-8650	12		
3	SAMPLE 791-2A	R319-8750	13		
4	FINAL LMCS CHECK STD	R323-8550	14		
5			15		
6			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 CHECK STD	9S4/ 10 mL	6S4/ 10 mL	8S4/ 10 mL	N/A

A-6000-881 (03/92)

9312034037

ICP ANALYSIS - ACID DIGESTION

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-8550	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	% RECOVERY	W11E2	0

Sample Size	Customer ID
DF=10 ? 10 mL gm in 100 mL DIGESTED STDS	SID

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID
984, 634, 884

Al 6.72E2ppb (10/1000) = 6.72ppm = 134%
Ca 1.80E4 (.01) = 1.80E2ppm = 1800%
Cr 5.41E2 (.01) = 5.41ppm = 108%
Fe 7.97E2 (.01) = 7.97ppm = 159%
Na 1.57E3 (.01) = 15.70ppm = 157%

← OVER

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
65731	82768			
Hrs	Hrs	Hrs	Hrs	Hrs
[signature]	Laurine J. Ottman			

Date	Time Completed	Lab Unit Mgr
11/19/91	11/20/91	[signature]

54-8800-061 (R-10-83)

Al	4.80	96.0%
Ca	10.57	105.7%
Cr	4.75	95.0%
Fe	4.97	99.4%
Na	9.45	94.5%

DIGESTED
Ag (483)(.01) = 96.6%
Ba (1015)(.01) = 101.5%
Cd (1026)(.01) = 102.6%
Mg (2840)(.01) = 568%
Mn (563)(.01) = 112.6%
Pb (560)(.01) = 120.0%
Zn (2300)(.01) = 230.0%

LMCS ✓ [signature] 11/22/91

Undigested

Ba	9.79	97.9%	Zn	9.90	99.0%
Cd	9.85	98.5%	Ag	4.88	97.6%
Mg	4.97	99.4%	Pb	5.17	103.4%
Mn	4.88	97.6%			

R316-8550
~~[illegible]~~ KS

ICP ANALYSIS - ACID DIGESTION

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-8650	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	PPM	W1TE2	0

Sample Size	Customer ID
? Direct	REG BL

Remarks, Calculations, Results:

REAGENT BLANK

Al 1.01E2/1000 = 1.01E-1 ppm
Ca 5.15E3/1000 = 5.15 ppm
Cr 1.02E1/1000 = 1.02E-2 ppm
Fe 7.59E1/1000 = 7.59E-2 ppm
Na 4.09E2/1000 = 4.09E-1 ppm

Ag <8.0/1000 = <8.0E-3 ppm
Ba <3.0/1000 = <3.0E-3 ppm
Cd <4.0/1000 = <4.0E-3 ppm
Mg 402/1000 = 4.02E-1 ppm
Mn 17/1000 = 1.70E-2 ppm
Pb <80/1000 = <8.0E-2 ppm
Zn 430/1000 = 4.30E-1 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731	82768			
Hrs	Hrs	Hrs	Hrs	Hrs
[signature]	Laurine J. Ottman			

Date	Time Completed	Lab Unit Mgr
11/19/91	11/20/91	[signature]

[illegible] (R-10-83)

9 3 1 2 3 3 1 0 0 9

ICP ANALYSIS - ACID DIGESTION

Serial No.	Sample Point	Date	Time Issued	Priority
R 319-8750	106AW	9-19-91	15:23	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	ug/g rec	W1TE2	0

Sample Size	Customer ID
? 1mL in 100mL 2mL to 10mL 0.250mL to 10mL DF=600	791-2A

Remarks, Calculations, Results:

AL 1.77E3 (600) = 1.06E6 ppb

CA 1.51E3 (600) = 9.06E5 ppb

Cr 3.46E1 (600) = 2.08E4 ppb

NA 4.40E4 (600) = 2.64E7 ppb

Fe < 87 (600) = < 5.22E4 ppb

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731	82768			
[signature]	Hrs Laurene J. Ottman		Hrs	Hrs
Date 11/19/91	Time Completed 11/20/91	Lab Unit Mgr [signature]		

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

AL $\frac{1.77E3 - (2.93E2 \times 6.83)}{1.77E3}$ = 13.1%

CA $\frac{1.51E3 - (1.39E3 \times 6.83)}{1.51E3}$ = 529%

Cr $\frac{3.46E1 - (1.03E1 \times 6.83)}{3.46E1}$ = 103%

Fe < VALUE

NA $\frac{4.40E4 - (6.52E3 \times 6.83)}{4.40E4}$ 121%

6.83

Ag (12.4)(600) = 7.44E3 ppb

Ba (<3)(600) = <1.80E3 ppb

Cd (<4)(600) = <2.40E3 ppb

Mg (<11)(600) = ~~<6.60~~ <6.60E3 ppb

Mn (9.3)(600) = 5.58E3 ppb

Pb (81)(600) = 4.86E4 ppb

Zn (230)(600) = 1.38E5 ppb

R319-8750

9 3 1 2 1 5 3 1 0 9 0

ICP ANALYSIS - ACID DIGESTION

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-8550	106AW	9-19-91	15:45	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	% RECOVERY	W1TE2	0

Sample Size	Customer ID
? 10 mL ea in 100 mL	STD

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID _____
ICP-SET1 - 954
ICP-SET2 - 654
ICP-SET3 - 854

LMCS STDS

AL 6.51E2 (10/10²) = 6.51 ppm = 130%
Ca 1.88E4 (.01) = 1.88E2 ppm = 1,880%
Cr 5.99E2 (.01) = 5.99 ppm 120%
Fe 1.11E3 (.01) = 11.10 ppm 111%
Na 1.62E3 (.01) = 16.20 ppm 162%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731	82768			
Hrs	Hrs	Hrs	Hrs	Hrs

Date 11/19/91 Time Completed 11/20/91 Lab Unit Mgr

54-6609-061 (R-10-83)

DIGESTED R 323-8550

Al 4.72 94.4%
Ca 9.84 98.4%
Cr 4.75 95.0%
Fe ~~9.40~~ 4.97 99.4%
Na 9.40 94.0%

Ag (487)(.01) = 97.4%
Ba (998)(.01) = 99.8%
Cd (1016)(.01) = 101.6%
Mg (2336)(.01) = 467.2%
Mn (563)(.01) = 112.6%
Pb (568)(.01) = 113.6%
Zn (2433)(.01) = 243.3%

LMCS ✓ Teresa L. Frazier 11/22/91

Ag 4.74 94.8%
Ba 9.80 98.0%
Cd 9.88 98.8%
Mg 4.95 99.0%
Mn 4.88 97.6%
Pb 5.12 102.4%
Zn 9.82 98.2%

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R320	Customer ID: 791-3A
Analysis: ARSENIC	Sample Prep: UNDIGESTED

Instrument: PERKIN ELMER - WA77479	Procedure/Rev: LA-355-131/B-0
Technologist: D. R. JACKSON	Date: 10-01-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: K. FULLER

	Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5595
2	REAGENT BLANK	R317-5695
3	SAMPLE 791-3A	R320-5795
4	FINAL LMCS CHECK STD	R323-5595
5		
6		
7		
8		
9		
10		

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

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS CHECK STD	125B38B/0.5 mL			N/A

A-6000-881 (03/92)

ARSENIC ANALYSIS - UNDIGESTED SAMPLE

K 316.-5595 | 104AW | 9-19-91 | 13:35 | 26
As | LA-355-131 | % RECOVERY | WITEZ | 0
? .500 ml | SID
EDP R741 AS/HYDRD 0.766
STDN 125838 B RESULT
STD VAL 1.0E-1 %REC 102.0%
50.76/500 = 1.02E-1
6C275
10-1-91

K 317.-5695 | 104AW | 9-19-91 | 13:45 | 26
As | LA-355-131 | PPM | WITEZ | 0
? 10.0 ml | REU BL
REAGENT BLANK 0.013
DRS 10-1-91
10-1-91
AR
<5/10000 = <5.00E-4
6C275
10-1-91

K 320.-5795 | 104AW | 9-19-91 | 13:31 | 25
As | LA-355-131 | PPM | WITEZ | 0
? .025 ml | 791-3A
10-1-91
0.893 59.28/25 = 2.37
6C275
10-1-91

R 323.-5595 | 104AW | 9-19-91 | 13:45 | 25
As | LA-355-131 | % RECOVERY | WITEZ | 0
? .500 ml | SID
EDP R741 AS/HYDRD
STDN 125838B REBULT 9.98E-2
STD VAL 1.0E-1 %REC 99.8%
0.753 49.88/500 =
6C275
10-1-91

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY
CALIBRATION RECORD

Analyte: As

Procedure: LA-355-131 | Revision: B-0

Instrument: PERKIN ELMER | Property No.: WA77479

Technologist: D. R. JACKSON | Payroll No.: 6C275 | Date: 10-01-91

Calibration Standard: 124B38C

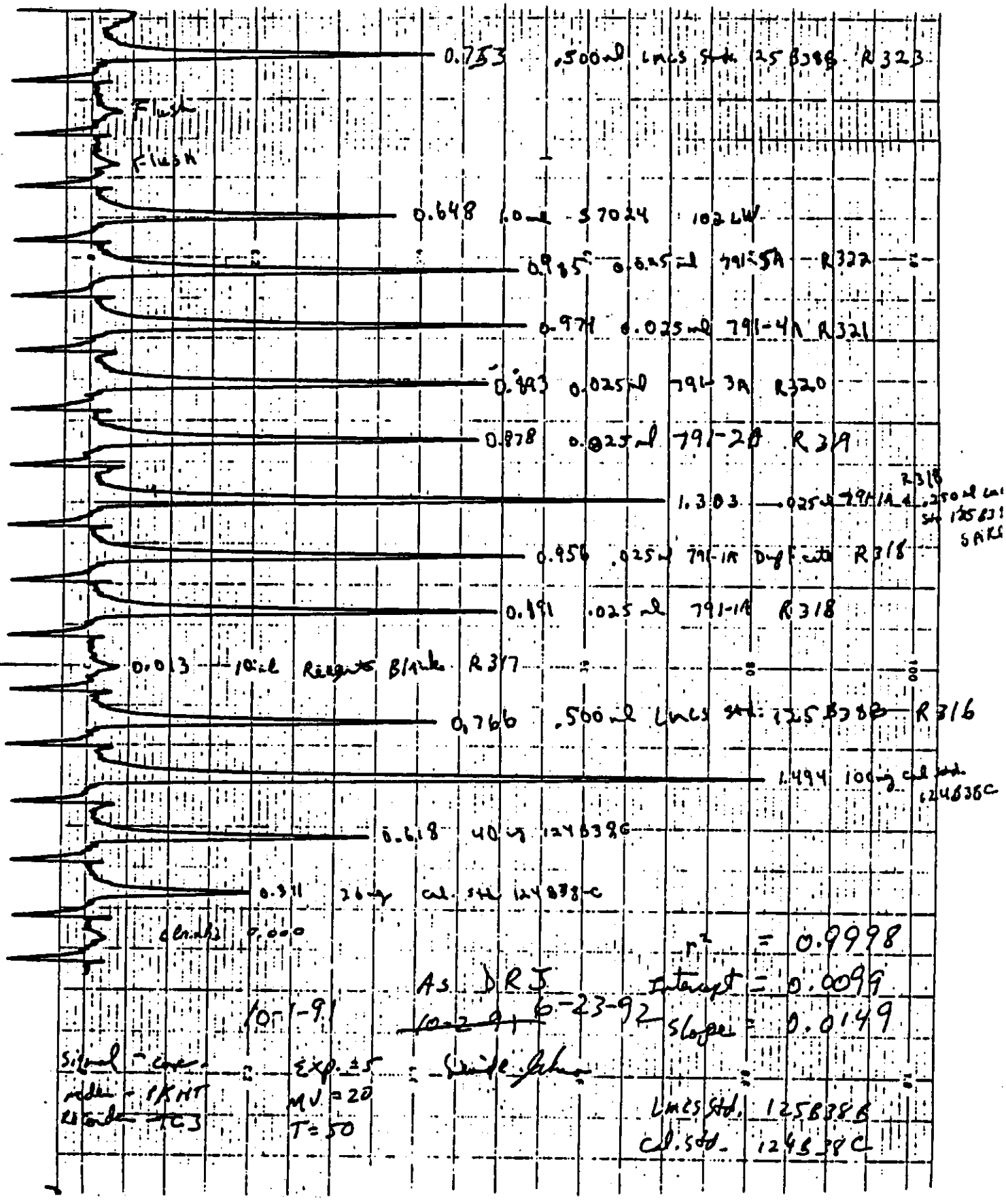
Analyte Concentration: 0.1000 ppm

Type of Calibration: LINEAR

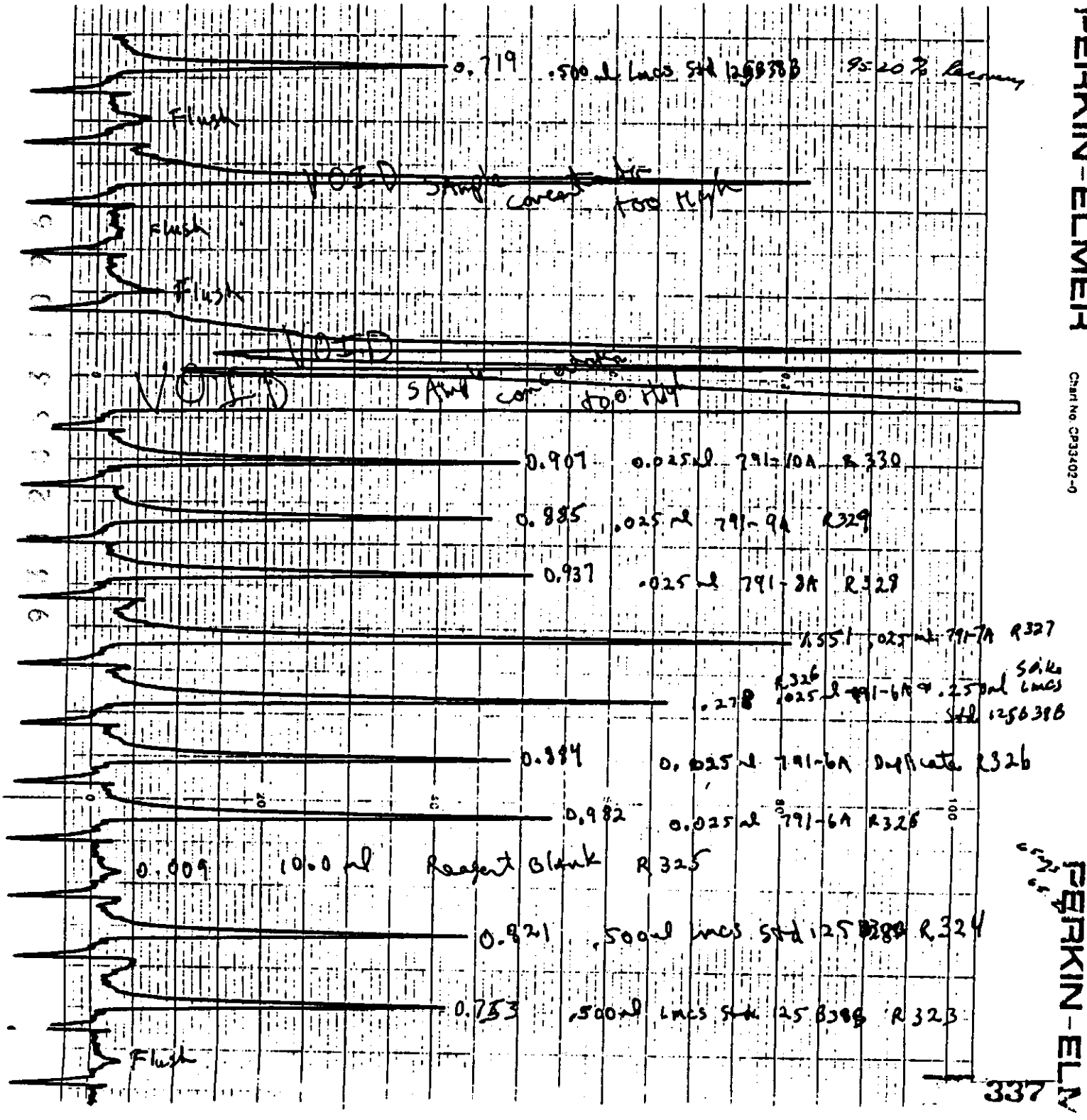
	Dilution	Concentration	Instrument Reading Unit
1	0.000 mL	0.0 ng	0.000
2	0.200 mL	20.0 ng	0.311
3	0.400 mL	40.0 ng	0.618
4	1.000 mL	100.0 ng	1.494
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			

Comments:

A-6000-882 (03



SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED THE ANALYSIS RUN ON PAGES 336 TO 337 .


PERKIN-ELMER
Chart No. CP33402-0
0.719 .500 ml LMCS Std 1258388 95-20% Recovery
Flush
VOID Sample concentration too High
Flush
Flush
VOID
VOID Spike concentration too High
0.907 0.025 ml 791-10A R330
0.885 .025 ml 791-9A R329
0.937 .025 ml 791-8A R328
0.551 .025 ml 791-7A R327
.278 R326 .025 ml 791-6A + .250 ml LMCS Spike Std 1256388
0.884 0.025 ml 791-6A Duplicate R326
0.982 0.025 ml 791-6A R326
0.009 10.0 ml Reagent Blank R325
0.821 .500 ml LMCS Std 1258388 R324
0.753 .500 ml LMCS Std 1258388 R323
Flush
PERKIN-ELMER

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R320	Customer ID: 791-3A
Analysis: CYANIDE	Sample Prep: UNDIGESTED

Instrument: MILTON ROY SPEC 301 - AL10724	Procedure/Rev: LA-695-102/A-4
Technologist: E. COLVIN	Date: 09-26-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: D. BISENIUS

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5578	11		
2	REAGENT BLANK	R317-5678	12		
3	SAMPLE 791-3A	R320-5778	13		
4	FINAL LMCS CHECK STD	R323-5578	14		
5			15		
6			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 CHECK STD	75C11-5/0.1 mL			N/A

A-6000-881 (03/92)

9 3 1 2 3 3 1 0 7 7

CYANIDE ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5578	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
CN	LA-695-102	% RECOVERY	W1TE2	0

Sample Size: ? .100-10ml-.500 — Customer ID: STD

Remarks, Calculations, Results:
S244 KCN
STDN 75C115 RESULT
STD VAL 8.90E² %REC 102570 9/27/91

$\frac{(.748-.011)(.006547)}{.160252} / .500 \times 100 = 9.12E2$

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
80028				
Ed Cohn				

Date: 9-26-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5678	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
CN	LA-695-102	PPM	W1TE2	0

Sample Size: ? — Customer ID: REG BL.

Remarks, Calculations, Results:
REAGENT BLANK ABS .011

$\frac{(.011)-.006547}{.160252}$ <5.0E-1 ppm

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
80028				
Ed Cohn				

Date: 9-26-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 320.-5778	106AW	9-19-91	15:30	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
CN	LA-695-102	PPM	W1TE2	0

Sample Size: ? 750 uL — Customer ID: 791-3A

Remarks, Calculations, Results: ABS .310

$\frac{(.310-.011)-.006547}{.160252} / .750 = 243 ppm$

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
80028				
Ed Cohn				

Date: 9-26-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5578	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
CN	LA-695-102	% RECOVERY	W1TE2	0

Sample Size: ? 100uL-10mL-500uL — Customer ID: STD

Remarks, Calculations, Results:
S244 KCN ABS .740
STDN 75C115 RESULT
STD VAL 8.90E² %REC 101.3%

$\frac{(.740-.011)-.006547}{.160252} / .5 \times 100 = 9.02E2$

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
80028				
Ed Cohn				

Date: 9-26-91 — Time Completed: — Lab Unit Mgr: [signature]

TODAYS DATE: 09-26-1991

PAYROLL NO.: 80028

/-INTERCEPT= .006547
SLOPE= .160252

SAMPLE ID#: R-317 BLANK
SAMPLE SIZE: 0
WVL AND ABS= 580NM 0.011 A

SAMPLE ID#: R-316 75C11-S STD
SAMPLE SIZE: 100UL-10ML-500UL
WVL AND ABS= 580NM 0.748 A

SAMPLE ID#: R-318
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.424 A

SAMPLE ID#: R-318 DUPLICATE
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.428 A

SAMPLE ID#: R-318 + SPIKE
SAMPLE SIZE: 750UL + 100UL-10ML-500UL 75C11-S SPIKE
WVL AND ABS= 580NM 1.150 A

SAMPLE ID#: R-319
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.317 A

SAMPLE ID#: R-320
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.310 A

SAMPLE ID#: R-321
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.317 A

SAMPLE ID#: R-322
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.327 A

SAMPLE ID#: R-323 75C11-S STD
SAMPLE SIZE: 100UL-10ML-500UL
WVL AND ABS= 580NM 0.740 A

CALIBRATION CURVE LACHAT NON-DISTILLED 25ML

CYANIDE DATE: 8-28-1991

CALIBRATION STANDARD # 351-M, 1006 MG/ML CYANIDE

DILUTION FACTOR = 10/.1 = 100, WORKING STANDARD = 1006 /100 = 10.060

PIPET SIZE	MICROGRAMS CYANIDE	TOTAL ABS	NET ABS
BLANK	0	.006	0
50UL	.503	.0930	.0870
500UL	5.030	.8320	.8260
1000UL	10.060	1.6180	1.6120

Y INTERCEPT = .006547
SLOPE = .160252
C C = .999921

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R320	Customer ID: 791-3A
Analysis: DIFFERENTIAL THERMAL	Sample Prep: UNDIGESTED

Instrument: WC16134,WC16129	Procedure/Rev: LA-514-113/A-0
Technologist: M. MYERS	Date: 10-09-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: D. HERT

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5511	11		
2	REAGENT BLANK	R317-5611	12		
3	SAMPLE 791-3A	R320-5711	13		
4	FINAL LMCS CHECK STD	R323-5511	14		
5			15		
6			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 CHECK STD	27C11AY/0.02 mL			N/A

A-6000-881 (03/92)

DIFFERENTIAL THERMAL ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5511	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Results
DSC	LA-514-113	EXOTHERMS	W1TE2	0

Sample Size: ? .020 ml — Customer ID: STD 27C11AY

Remarks, Calculations, Results: 1.00=100%

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[illegible]				
Hrs: 6C823	Hrs:	Hrs:	Hrs: [illegible]	Hrs:
Date: 10-9-91	Time Completed:	Lab Unit Mgr: D M Thornton	[illegible]	

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5611	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Results
DSC	LA-514-113	EXOTHERMS	W1TE2	0

Sample Size: ? .010 ml — Customer ID: REO DL

Remarks, Calculations, Results: REAGENT BLANK

No exotherm

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[illegible]				
Hrs: 6C823	Hrs:	Hrs:	Hrs:	Hrs:
Date: 10-9-91	Time Completed:	Lab Unit Mgr: D M Thornton	[illegible]	

Serial No.	Sample Point	Date	Time Issued	Priority
R 320.-5711	106AW	9-19-91	15:25	25

Determination	Method/Standard	Result Units	Charge Code	Results
DSC	LA-514-113	EXOTHERMS	W1TE2	0

Sample Size: ? .010 ml — Customer ID: 791-3A

Remarks, Calculations, Results: No exotherm

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[illegible]				
Hrs: 6C823	Hrs:	Hrs:	Hrs:	Hrs:
Date: 10-9-91	Time Completed:	Lab Unit Mgr: D M Thornton	[illegible]	

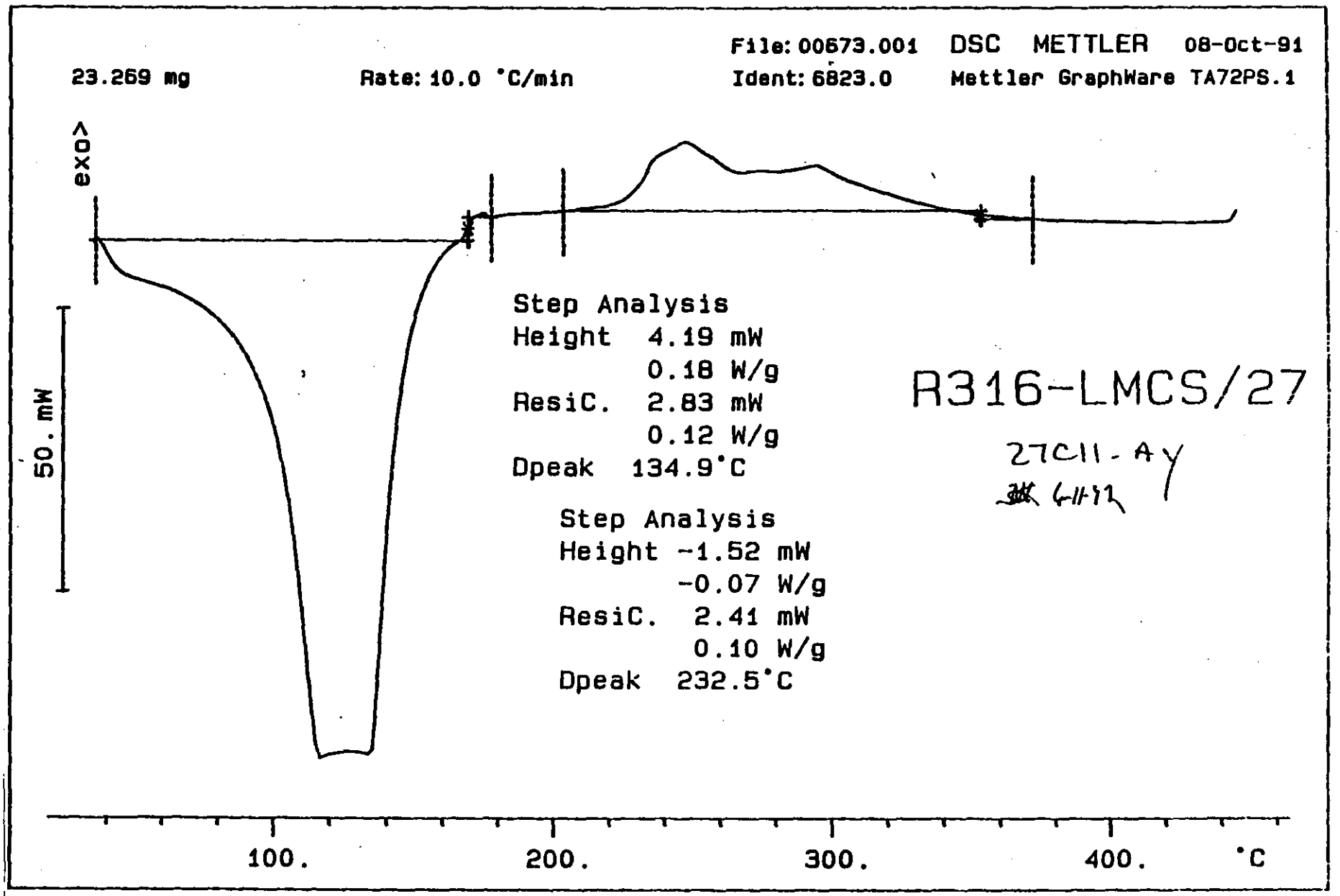
Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5511	106AW	9-19-91	15:43	25

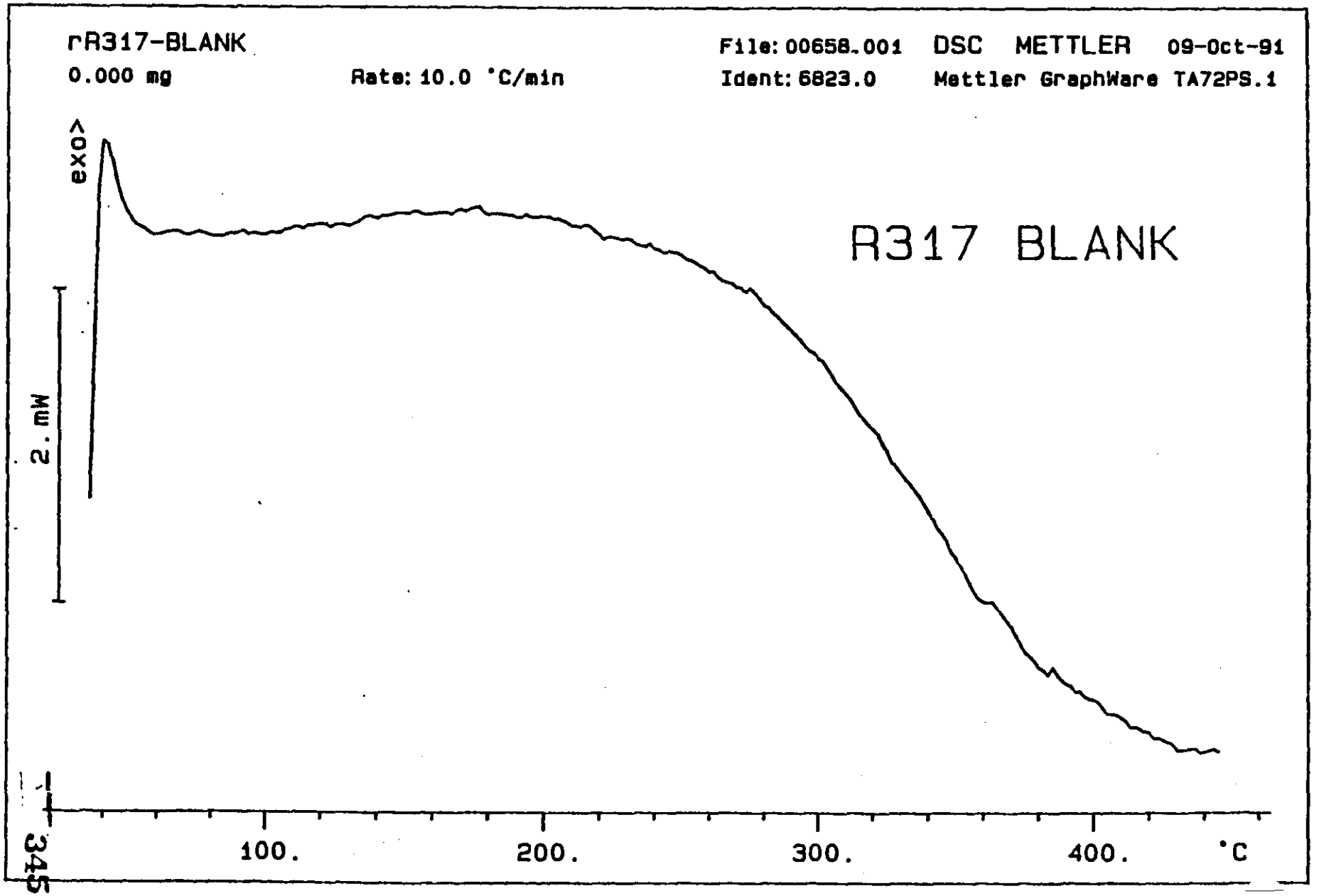
Determination	Method/Standard	Result Units	Charge Code	Results
DSC	LA-514-113	EXOTHERMS	W1TE2	0

Sample Size: ? .020 ml — Customer ID: STD 27C11AY

Remarks, Calculations, Results: 1.00 = 100%

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[illegible]				
Hrs: 6C823	Hrs:	Hrs:	Hrs: [illegible]	Hrs:
Date: 10-9-91	Time Completed:	Lab Unit Mgr: D M Thornton	[illegible]	

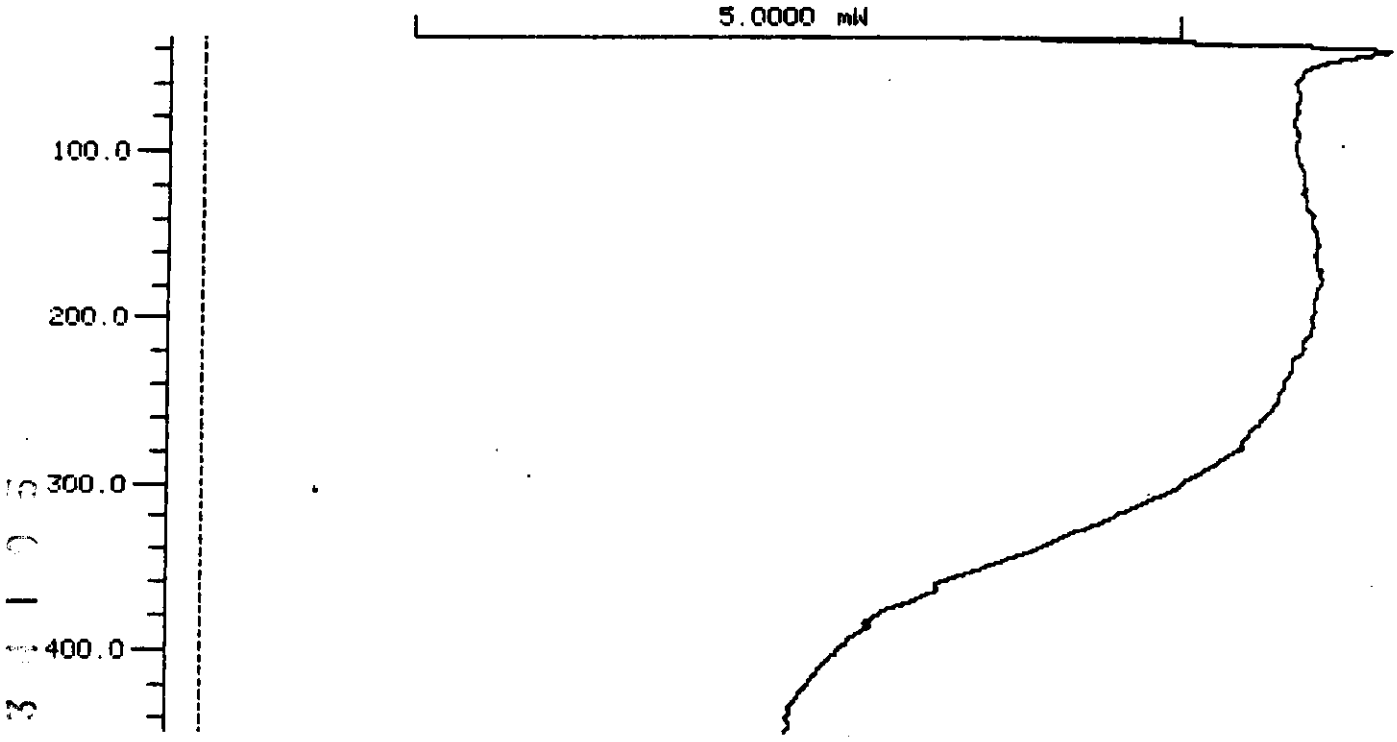

File: 00673.001 DSC METTLER 08-Oct-91
23.269 mg
Rate: 10.0 °C/min
Ident: 6823.0
Mettler GraphWare TA72PS.1
exo>
50. mW
Step Analysis
Height 4.19 mW
0.18 W/g
ResiC. 2.83 mW
0.12 W/g
Dpeak 134.9°C
Step Analysis
Height -1.52 mW
-0.07 W/g
ResiC. 2.41 mW
0.10 W/g
Dpeak 232.5°C
R316-LMCS/27
27C11-AY
100.
200.
300.
400.
°C


rR317-BLANK
0.000 mg
Rate: 10.0 °C/min
File: 00658.001
Ident: 6823.0
DSC METTLER 09-Oct-91
Mettler GraphWare TA72PS.1
R317 BLANK
exo>
2. mW
100.
200.
300.
400.
°C

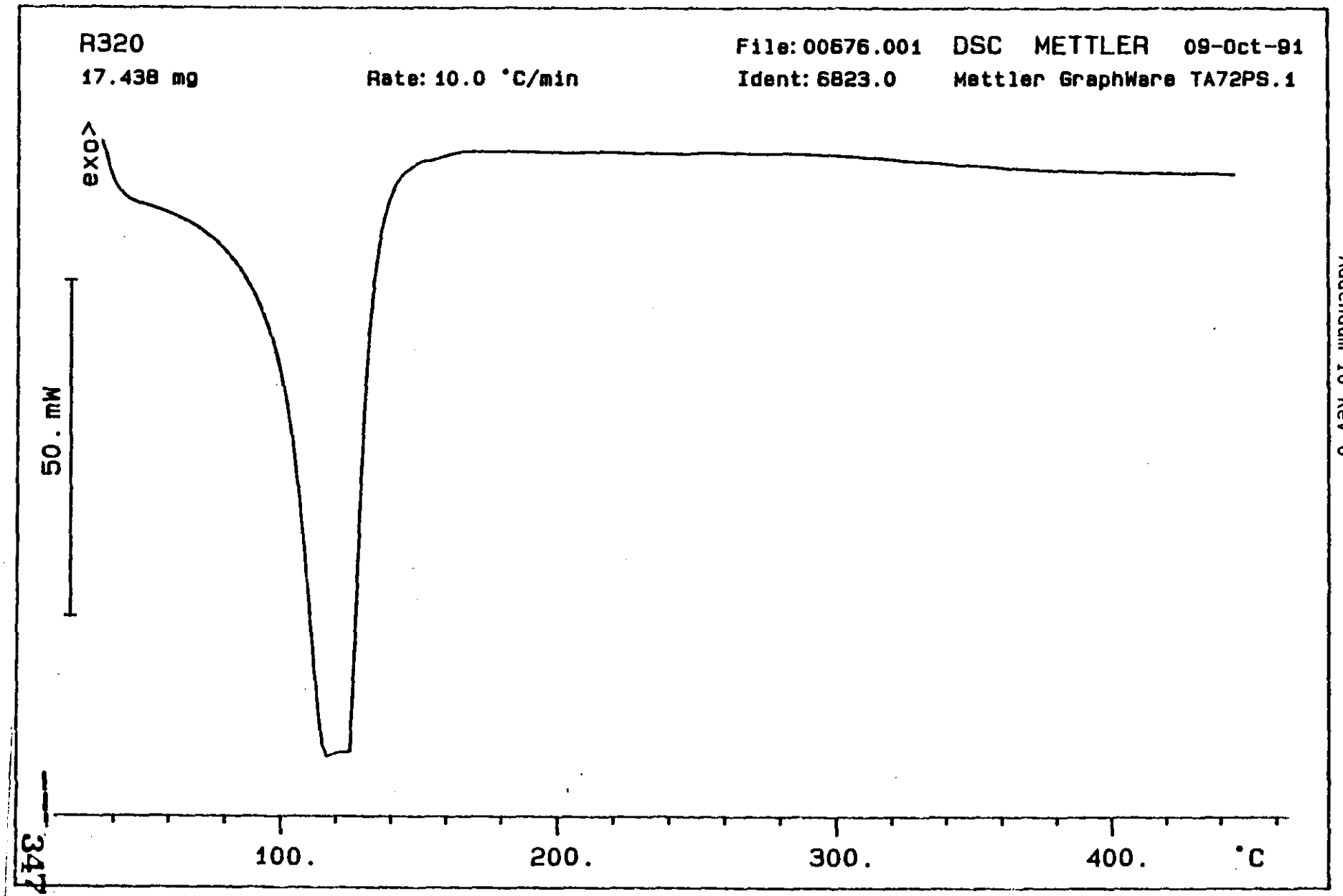
END SCREEN °C 447.8

TEMPERATURE °C

HEAT FLOW
EXOTHERMAL-->



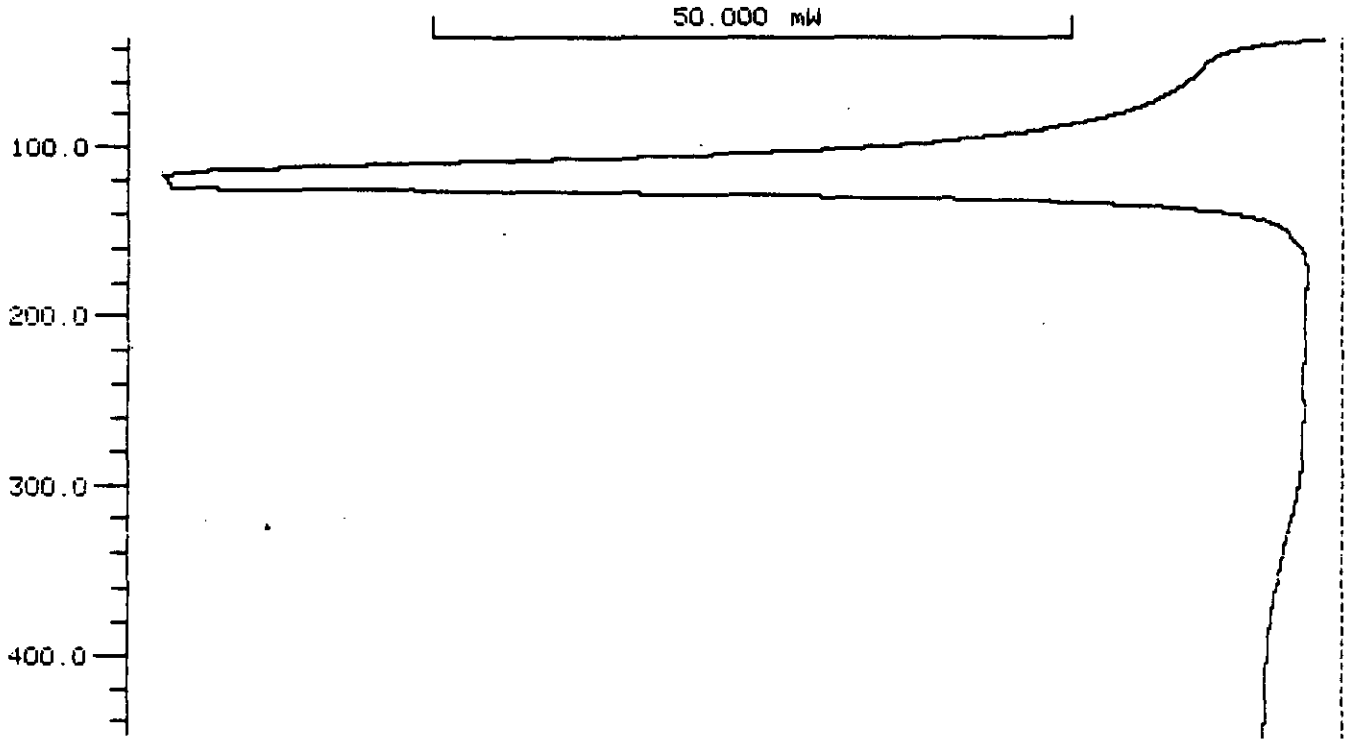
******** METTLER TA4000 SYSTEM *********


R320
17.438 mg
Rate: 10.0 °C/min
File: 00676.001
Ident: 6823.0
DSC METTLER 09-Oct-91
Mettler GraphWare TA72PS.1
exo>
50. mW
100.
200.
300.
400.
°C

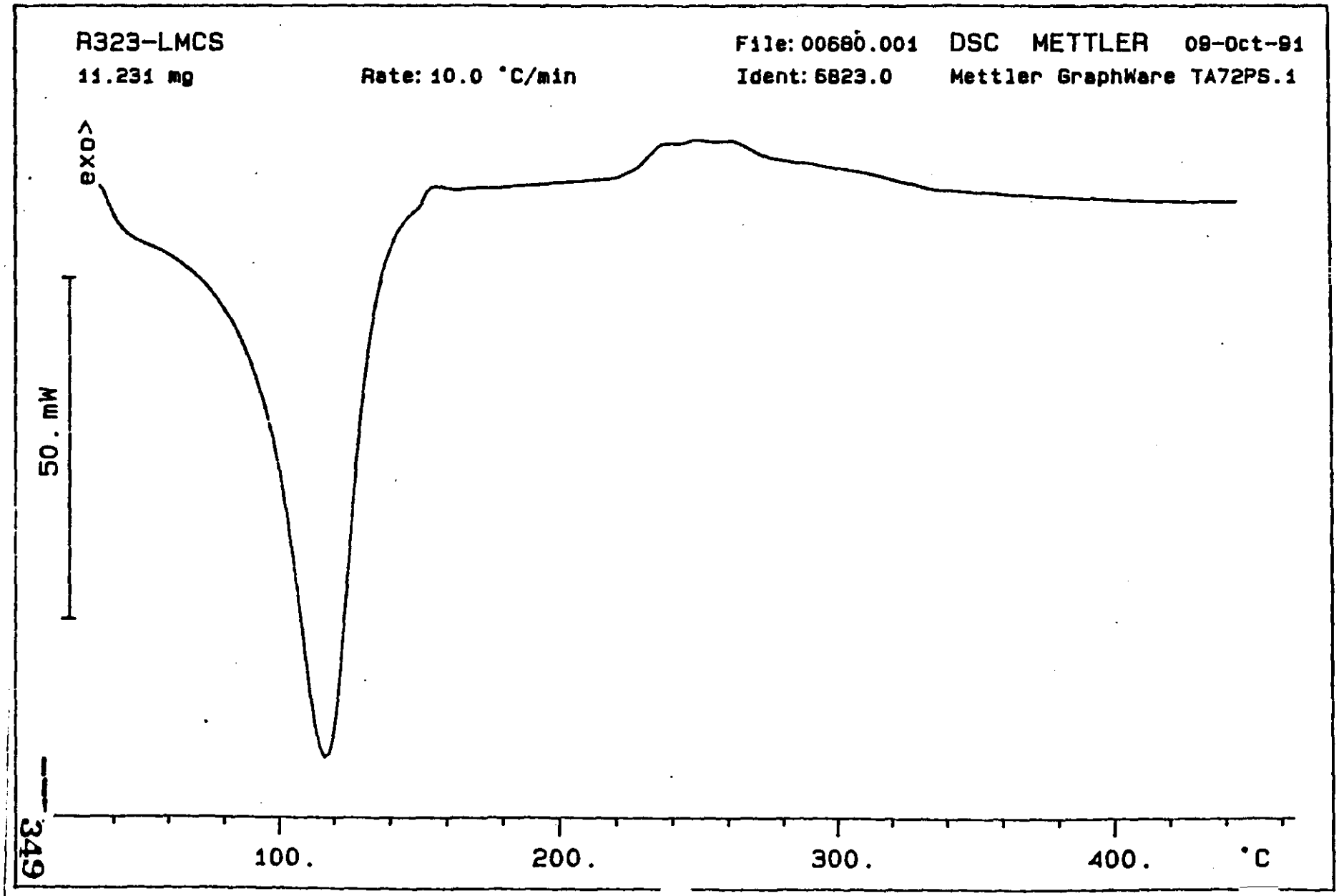
END SCREEN °C 447.8

TEMPERATURE °C

HEAT FLOW
EXOTHERMAL-->



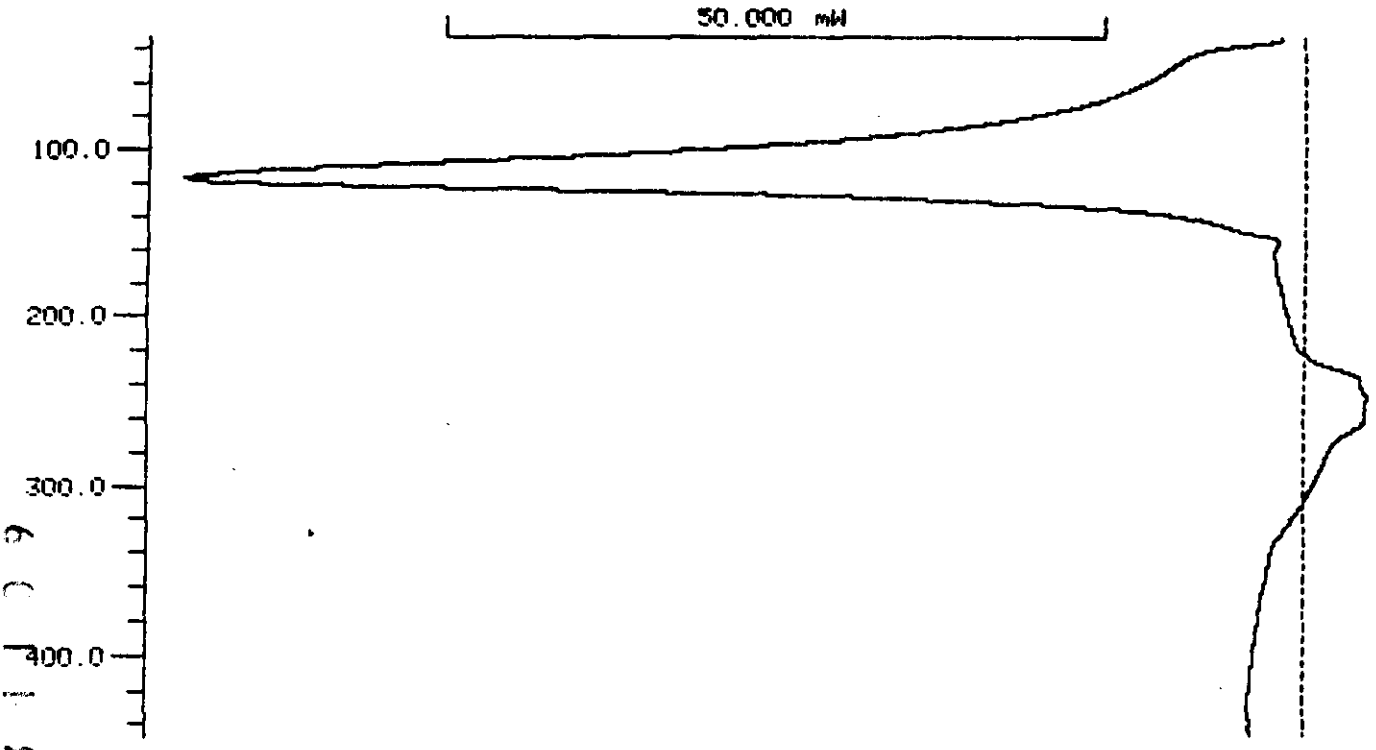
******** METTLER TA4000 SYSTEM *********


R323-LMCS
11.231 mg
Rate: 10.0 °C/min
File: 00680.001
Ident: 6823.0
DSC METTLER 09-Oct-91
Mettler GraphWare TA72PS.1
<exo
50. mW
349
100.
200.
300.
400.
°C

END SCREEN °C 447.8

TEMPERATURE °C

HEAT FLOW
EXOTHERMAL-->



******** METTLER TA4000 SYSTEM *********

DSC

Configuration used from 8-8-91 to Nov 25, 1991

Denise Hebert

Heat flow calibration began July 20, 1991. Used until Nov 25, 1991

NFIGURATION

26-NOV-91 8:14

E INDIUM	255
DSC SIGN ICTA	1
TAU LAG	12
TAU SIGNAL	0
E DIMIN. FACT.	.93
S	2400
TAU LAG 2	16
TAU SIGNAL 2	0
E DIMIN. F. 2	.93
S 2	1850
MAX. TEMP.	600.
MIN. TEMP.	-50.
A PT100	.21610
B PT100	.74150
C PT100	-.10116
HEAT P	3000
HEAT I	250
HEAT D	30
COOL 1	0
COOL 2	0
COOL 3	0
4T	10773
	58.121
	.14689
T1	-100
A2	8940
B2	17.884
C2	-.072
T2	363
A3	9360.3
B3	-15.043
C3	.01538

******** METTLER TA4000 SYSTEM *********

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R320	Customer ID: 791-3A
Analysis: MERCURY	Sample Prep: UNDIGESTED

Instrument: PERKIN ELMER WA77479	Procedure/Rev: LA-325-102/B-0
Technologist: D. R. JACKSON	Date: 10-17-91
Starting Time: 8:00	Temperature: N/A
Ending Time: 2:00	Chemist: R. K. FULLER

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5597	11		
2	REAGENT BLANK	R317-5697	12		
3	SAMPLE 791-3A	R320-5797	13		
4	FINAL LMCS CHECK STD	R323-5597	14		
5			15		
6			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 CHECK STD	125B38D/1.50 mL			1.500 mL

A-6000-881 (03/92)

MERCURY ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5597	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
Hg	LA-325-102	% RECOVERY	W1TE2	0

Sample Size: ? 1.50 ml — Customer ID: STD

Remarks, Calculations, Results:
EDP R716 HG/HYDRD
STD# 125B38D RESULT 1.05E-1
STD VAL 1.00E-1 %REC 105.0%
10-17-91 ~~0.685~~ DRJ 0.504
157.57/1500 =

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
6C275				

Date: ~~10-18-91~~ 10-17-91 DRJ 6-5-92 — Time Completed — Lab Unit Mgr

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5697	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
Hg	LA-325-102	PPM	W1TE2	0

Sample Size: ? 10.0 ml — Customer ID: REC BL

Remarks, Calculations, Results:
REAGENT BLANK
~~0.012~~ 10-17-91 DRJ 0.000
<5/10,000 = <5.00E-4 ppm

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
6C275				

Date: ~~10-16-91~~ 10-17-91 DRJ 6-5-92 — Time Completed — Lab Unit Mgr

Serial No.	Sample Point	Date	Time Issued	Priority
R 320.-5797	106AW	9-19-91	15:31	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
Hg	LA-325-102	PPM	W1TE2	0

Sample Size: ? 1.0 ml — Customer ID: 791-3A

Remarks, Calculations, Results:
~~0.017~~ 10-17-91
-0.009
<5/1000 = <5.00E-3 ppm

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
6C275				

Date: 10-17-91 10-17-91 — Time Completed — Lab Unit Mgr

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5597	106AW	9-19-91	15:45	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
Hg	LA-325-102	% RECOVERY	W1TE2	0

Sample Size: ? 1.50 ml — Customer ID: STD

Remarks, Calculations, Results:
EDP R716 HG/HYDRD
STD# 125B38D RESULT 1.00E-1
STD VAL 1.00E-1 %REC 100.0%
DRJ 0.483 ~~0.515~~ 10-17-91
150.73/1500 =

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
6C275				

Date: 10-16-91 DRJ 6-5-92 — Time Completed — Lab Unit Mgr

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY
CALIBRATION RECORD

Analyte: Hg
Procedure: LA-325-102 | Revision: B-0
Instrument: PERKIN ELMER | Property No.: WA77479
Technologist: D. R. JACKSON | Payroll No.: 6C275 | Date: 10-17-91

Calibration Standard: 124B38D
Analyte Concentration: 0.1000 ppm
Type of Calibration: LINEAR

	Dilution	Concentration	Instrument Reading Unit
1	0.000 mL	0 ng	0.000
2	0.750 mL	75 ng	0.278
3	1.500 mL	150 ng	0.481
4	3.000 mL	300 ng	0.934
5			
6			
7			
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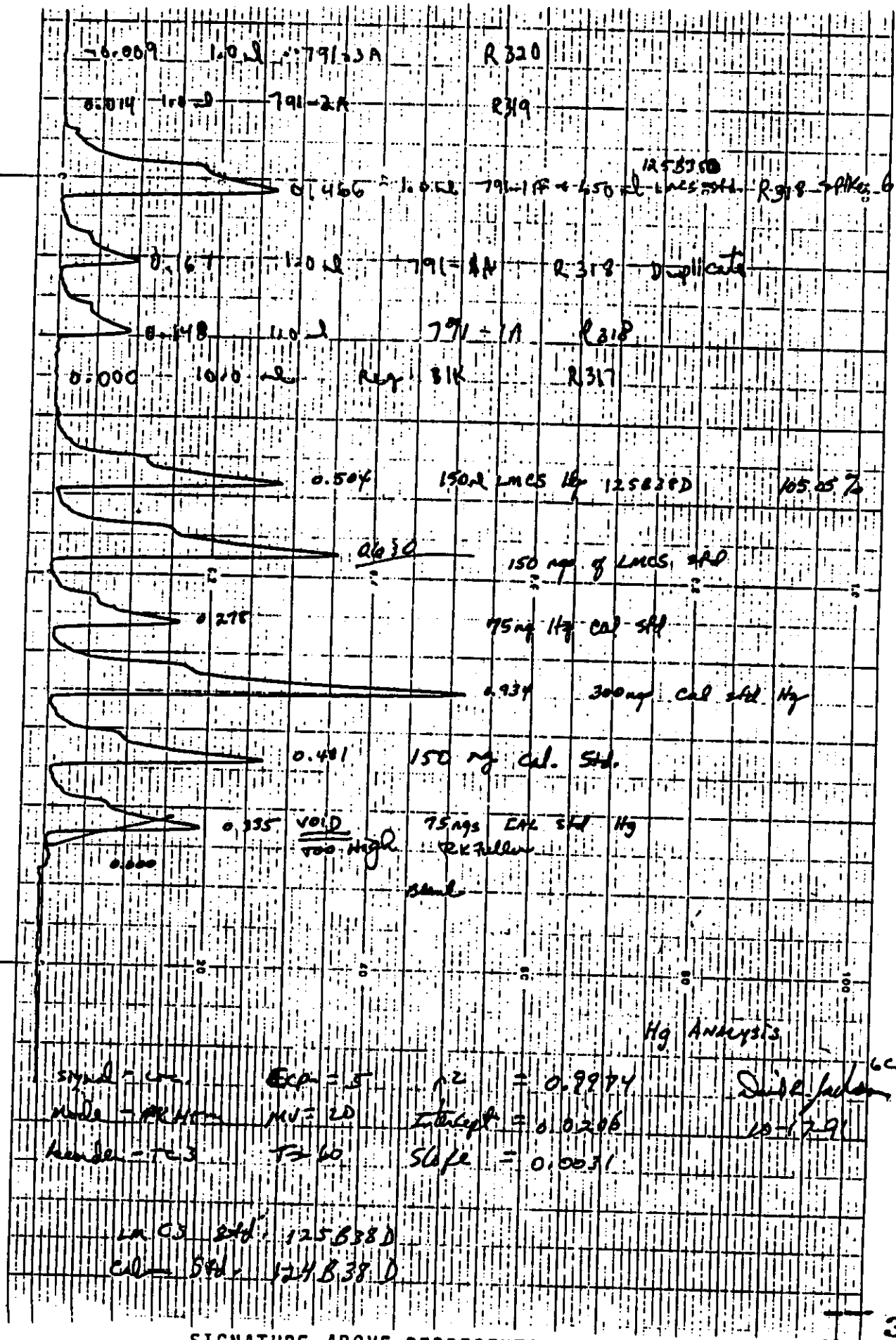
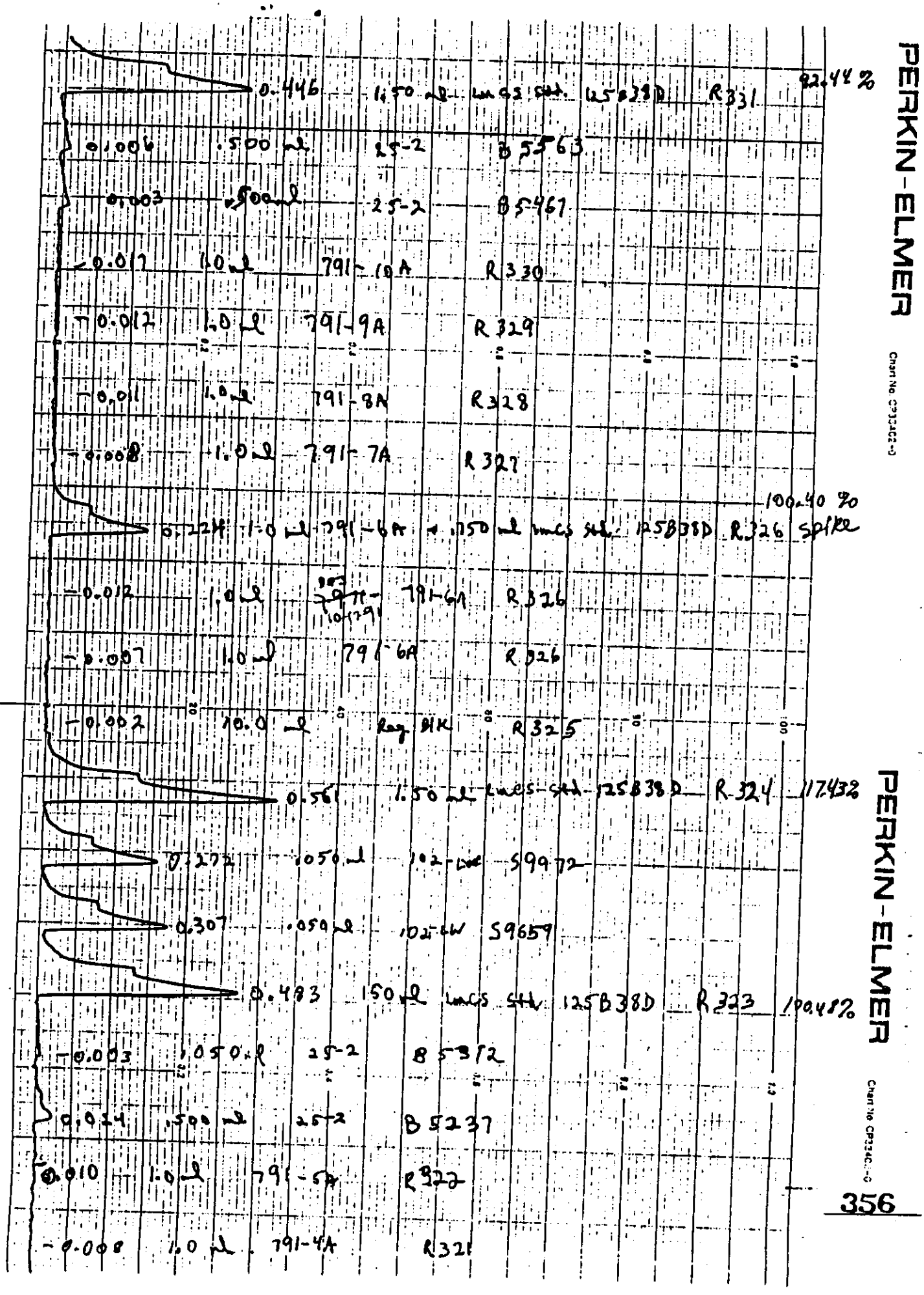
20			
21			

Comments:

A-6000-882 (03/92)



SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/ CHEMIST THAT COMPLETED THE ANALYSIS RUN ON PAGES 355 TO 356 .


PERKIN-ELMER
0.446 1.50 ml LMCS Std. 125B38D R331 82.44 %
0.006 .500 ml 25-2 B5563
0.003 .500 ml 25-2 B5467
-0.017 1.0 ml 791-10A R330
-0.012 1.0 ml 791-9A R329
-0.011 1.0 ml 791-8A R328
-0.008 1.0 ml 791-7A R327
100.40 %
0.224 1.0 ml 791-6A + .750 ml LMCS Std. 125B38D R326 Spike
-0.012 1.0 ml 791-6A R326
-0.007 1.0 ml 791-6A R326
-0.002 10.0 ml Reg. Blk R325
0.561 1.50 ml LMCS Std. 125B38D R324 117.43%
0.272 .050 ml 102-LW S9972
0.307 .050 ml 102-LW S9659
0.483 150 ml LMCS Std. 125B38D R323 100.48%
-0.003 .050 ml 25-2 B5312
0.024 .500 ml 25-2 B5237
-0.010 1.0 ml 791-5A R322
-0.008 1.0 ml 791-4A R321
PERKIN-ELMER

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R320	Customer ID: 791-3A
Analysis: AMMONIA	Sample Prep: UNDIGESTED

Instrument: AL10665,AL10696	Procedure/Rev: LA-634-102/D-0
Technologist: S. LAI	Date: 09-26-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: D. BISENIUS

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5528	11		
2	REAGENT BLANK	R317-5628	12		
3	SAMPLE 791-3A	R320-5728	13		
4	FINAL LMCS CHECK STD	R323-5528	14		
5			15		
6			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 CHECK STD	4C11-QP/.250 mL			NA

A-6000-881 (03/92)

AMMONIA ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5528	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
NH4	LA-634-102	% RECOVERY	W1TE2	0

Sample Size: ? 250 λ 0.09941M — Customer ID: STD

Remarks, Calculations, Results: S235 NH4CL HCL
STD# 4C11-QP RESULT 4.77E-2 Blank: 28 λ
STD VAL 5.00E-2 %REC 95.4%
(148-28)(.09941)/250 = STD: 148 λ

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
Sue Lai				
Hrs: 6.916	Hrs:	Hrs:	Hrs:	Hrs:

Date: 9-26-91 — Time Completed: — Job Unit No.: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5628	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
NH4	LA-634-102	PPM	W1TE2	0

Sample Size: ? 1 ml 0.09941M — Customer ID: REO BL

Remarks, Calculations, Results: REAGENT BLANK HCL
(<10)(.09941)/1000 = Blank: 28 λ
<9.94E-4 M Reg Blank: 28 λ

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
Sue Lai				
Hrs: 6.916	Hrs:	Hrs:	Hrs:	Hrs:

Date: 9-26-91 — Time Completed: — Job Unit No.: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 320.-5728	106AW	9-19-91	15:26	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
NH4	LA-634-102	PPM	W1TE2	0

Sample Size: ? 1 ml 0.09941M — Customer ID: 791-3A

Remarks, Calculations, Results: HCL
(44-28)(.09941)/1000 = Blank: 28 λ
1.59E-3 M Sample: 44 λ

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
Sue Lai				
Hrs: 6.916	Hrs:	Hrs:	Hrs:	Hrs:

Date: 9-26-91 — Time Completed: — Job Unit No.: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5528	106AW	9-19-91	15:43	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
NH4	LA-634-102	% RECOVERY	W1TE2	0

Sample Size: ? 250 λ 0.09941M — Customer ID: STD

Remarks, Calculations, Results: S235 NH4CL HCL
STD# 4C11-QP RESULT 4.85E-2 Blank: 28 λ
STD VAL 5.00E-2 %REC 97.0%
(150-28)(.09941)/250 = STD: 150 λ

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
Sue Lai				
Hrs: 6.916	Hrs:	Hrs:	Hrs:	Hrs:

Date: 9-26-91 — Time Completed: — Job Unit No.: [signature]

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R320	Customer ID: 791-3A
Analysis: DETERMINATION OF HYDROXIDE ION IN SOLUTION	Sample Prep: UNDIGESTED

Instrument: FISHER - WA77509	Procedure/Rev: LA-661-102/F-1
Technologist: M. BIERMAN	Date: 09-25-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: S. ISAACSON

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5529	11		
2	REAGENT BLANK	R317-5629	12		
3	SAMPLE 791-3A	R320-5729	13		
4	FINAL LMCS CHECK STD	R323-5529	14		
5			15		
6			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 CHECK STD	9C11AF/0.1 mL			0.100 mL

A-6000-881 (03/92)

DETERMINATION OF HYDROXIDE ION IN SOLUTION - UNDIGESTED SAMPLE

Sample No.	Sample Point	Date	Time Issued	Priority
R 316.-5529	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
OH	LA-661-102	% RECOVERY	W1TE2	0

Sample Size: ? 100 ml
Container ID: STD

Remarks, Calculations, Results:
S273 ITS-OH
STDN 9611AF RESULT 9.96E-1
STD VAL .0136 %REC 99.5%
1 ml B.C.
.1905 ⇒ HNO3 (531-8)(.1905)/100

Analyst 1: LCS59
Analyst 2: Analyst 3: Analyst 4: Analyst 5:
Date: 9/25/91
Time Completed: Lab Use Only:

Sample No.	Sample Point	Date	Time Issued	Priority
R 317.-5629	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
OH	LA-661-102	M	W1TE2	0

Sample Size: ? 3 ml D-H2O
Container ID: REG BL

Remarks, Calculations, Results:
REAGENT BLANK
.1905 ⇒ HNO3 complete

Analyst 1: LCS59
Analyst 2: Analyst 3: Analyst 4: Analyst 5:
Date: 9/26/91
Time Completed: Lab Use Only:

Sample No.	Sample Point	Date	Time Issued	Priority
R 320.-5729	106AW	9-19-91	15:27	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
OH	LA-661-102	M	W1TE2	0

Sample Size: ? 50 ml
Container ID: 791-3A

Remarks, Calculations, Results:
1 ml B.C.
10 ml D-H2O
ITS-OH L9611AF) 100 ml
.1905 ⇒ HNO3 (465-531)(.1905)/50 = 5.11E-1 M

Analyst 1: LCS59
Analyst 2: Analyst 3: Analyst 4: Analyst 5:
Date: 9/25/91
Time Completed: Lab Use Only:

Sample No.	Sample Point	Date	Time Issued	Priority
R 323.-5529	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
OH	LA-661-102	% RECOVERY	W1TE2	0

Sample Size: ? 100 ml
Container ID: STD

Remarks, Calculations, Results:
S273 ITS-OH
STDN 9611AF RESULT
STD VAL .015 %REC 99.7%
1 ml B.C.
.1905 ⇒ HNO3 (537-8)(.1905)/100 = 1.01 M

Analyst 1: LCS59
Analyst 2: Analyst 3: Analyst 4: Analyst 5:
Date: 9/26/91
Time Completed: Lab Use Only:

DOCUMENTATION SEP 25 1991 9:54 AM

ANALYST: 6C559 LOCATION: 222-S 200 West

TITRANT: .1905 N HNO3

INDICATING ELECTRODE:

REFERENCE ELECTRODE: 98% efficiency

SAMPLE:

SETUP PARAMETERS

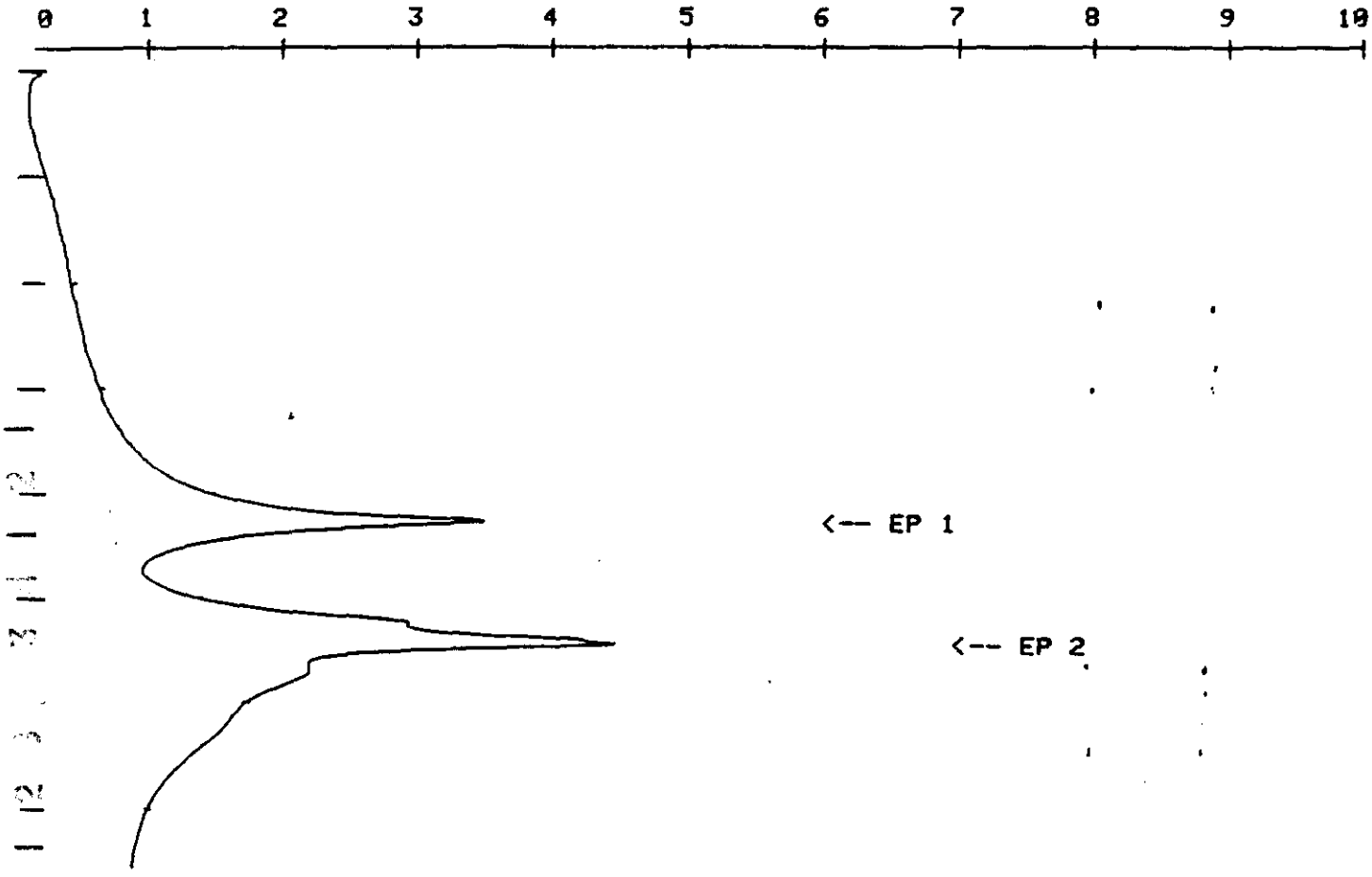
MODE:	DIRECT READ PH
ELECTRODE STDZ:	PH
EQUILIBRATION TIME, SEC:	15

MODE:	DRV TITRATION
ELECTRODE STDZ:	PH
dE/dV SIGN:	+
ML LIMIT:	2.50
PH LIMIT:	3.
TITRATION RATE:	10
SENSITIVITY:	1
DISPENSE, ML:	0.
PLOT GAIN:	5
COMPUTATION:	CONCENTRATION
TITRANT NORMALITY:	0.1900
SOLVENT BLANK:	0.
MULTIPLIER:	0.

LAST ELECTRODE STANDARDIZATION: SEP 25 1991 12:37 AM

SAMPLE NUMBER: 1
SAMPLE DATA: 316.
DIRECT READ PH: 12.035

DERIVATIVE OUTPUT, dE/dV



DRV TITRATION:

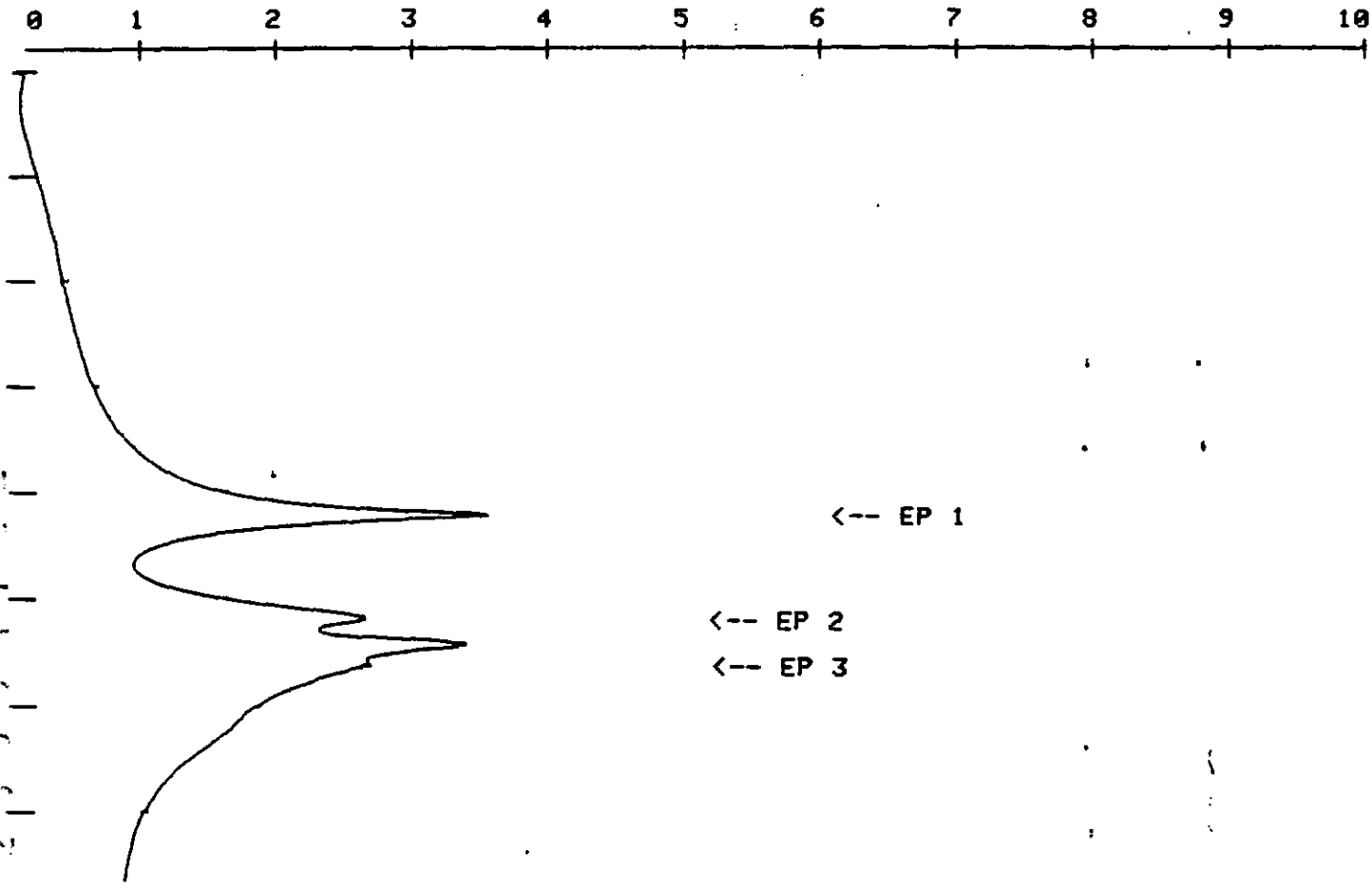
EQUIVALENCE PH	TITRANT VOLUME	COMPUTATION
9.65	0.534	0.0000
6.00	0.680	0.0000

TITRATION TERMINATED BY PH LIMIT.

SEP 25 1991 10:14 AM

SAMPLE NUMBER: 2
SAMPLE DATA: 316.
DIRECT READ PH: 12.043

DERIVATIVE OUTPUT, dE/dV



DRV TITRATION:

EQUIVALENCE PH	TITRANT VOLUME	COMPUTATION
9.63	0.528	0.0000
8.03	0.649	0.0000
5.44	0.702	0.0000

TITRATION TERMINATED BY PH LIMIT.

SEP 25 1991 10:23 AM

SAMPLE NUMBER: 1
SAMPLE DATA: 317.
DIRECT READ. PH: 5.058

DERIVATIVE OUTPUT, dE/dV

0 1 2 3 4 5 6 7 8 9 10

.008

DRV TITRATION:

TITRATION TERMINATED BY PH LIMIT.

SEP 25 1991 10:25 AM

SAMPLE NUMBER: 2
SAMPLE DATA: 317.
DIRECT READ PH: 5.748

DERIVATIVE OUTPUT, dE/dV

0 1 2 3 4 5 6 7 8 9 10

.009

DRV TITRATION:

TITRATION TERMINATED BY PH LIMIT.

SEP 25 1991 10:27 AM

SAMPLE NUMBER: 3
SAMPLE DATA: 317.
DIRECT READ PH: 5.237

DERIVATIVE OUTPUT, dE/dV

0 1 2 3 4 5 6 7 8 9 10

.007

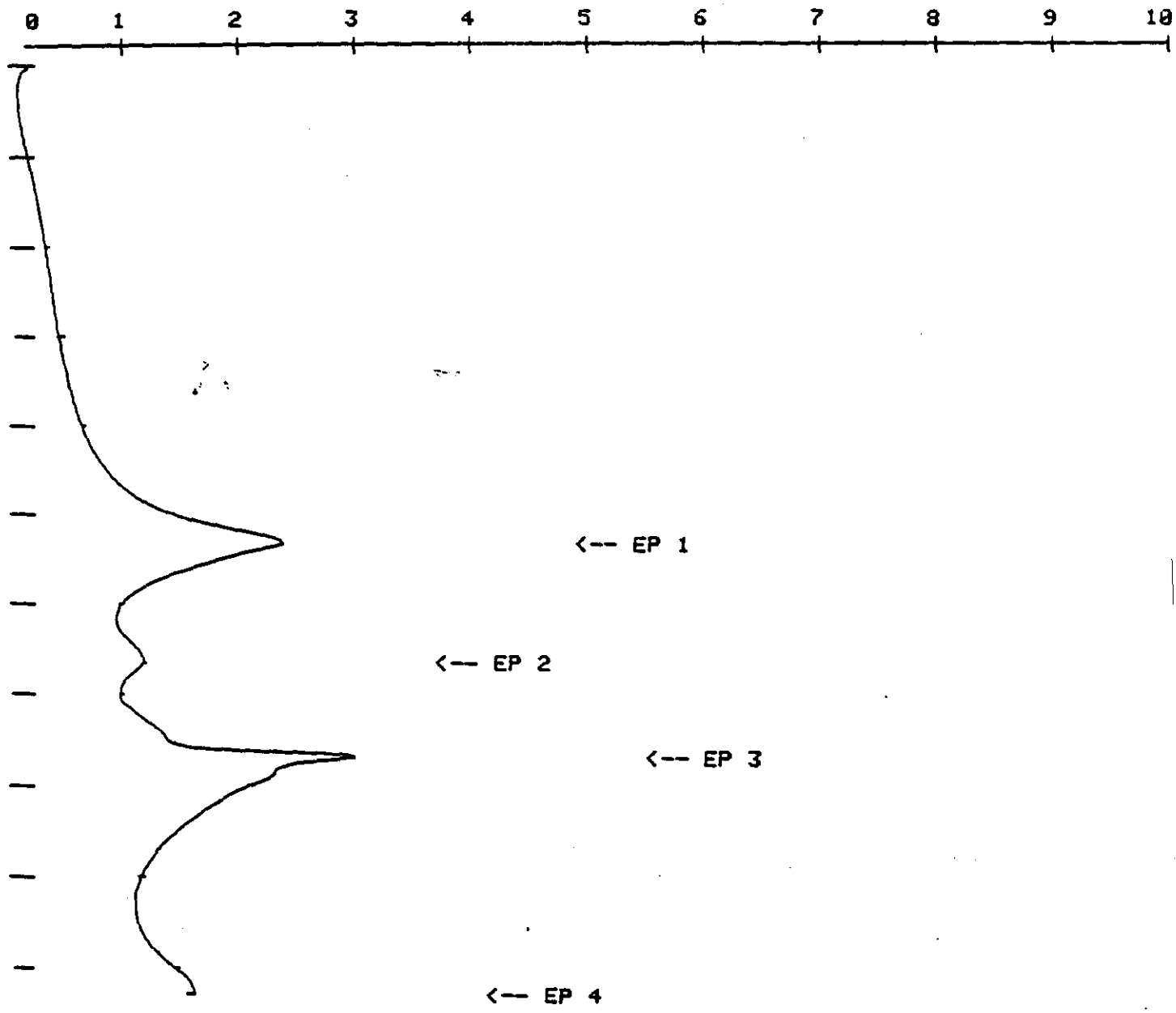
DRV TITRATION:

TITRATION TERMINATED BY PH LIMIT.

EP 25 1991 10:29 AM

SAMPLE NUMBER: 1
SAMPLE DATA: 320.
DIRECT READ PH: 11.818

DERIVATIVE OUTPUT, dE/dV



DRV TITRATION:

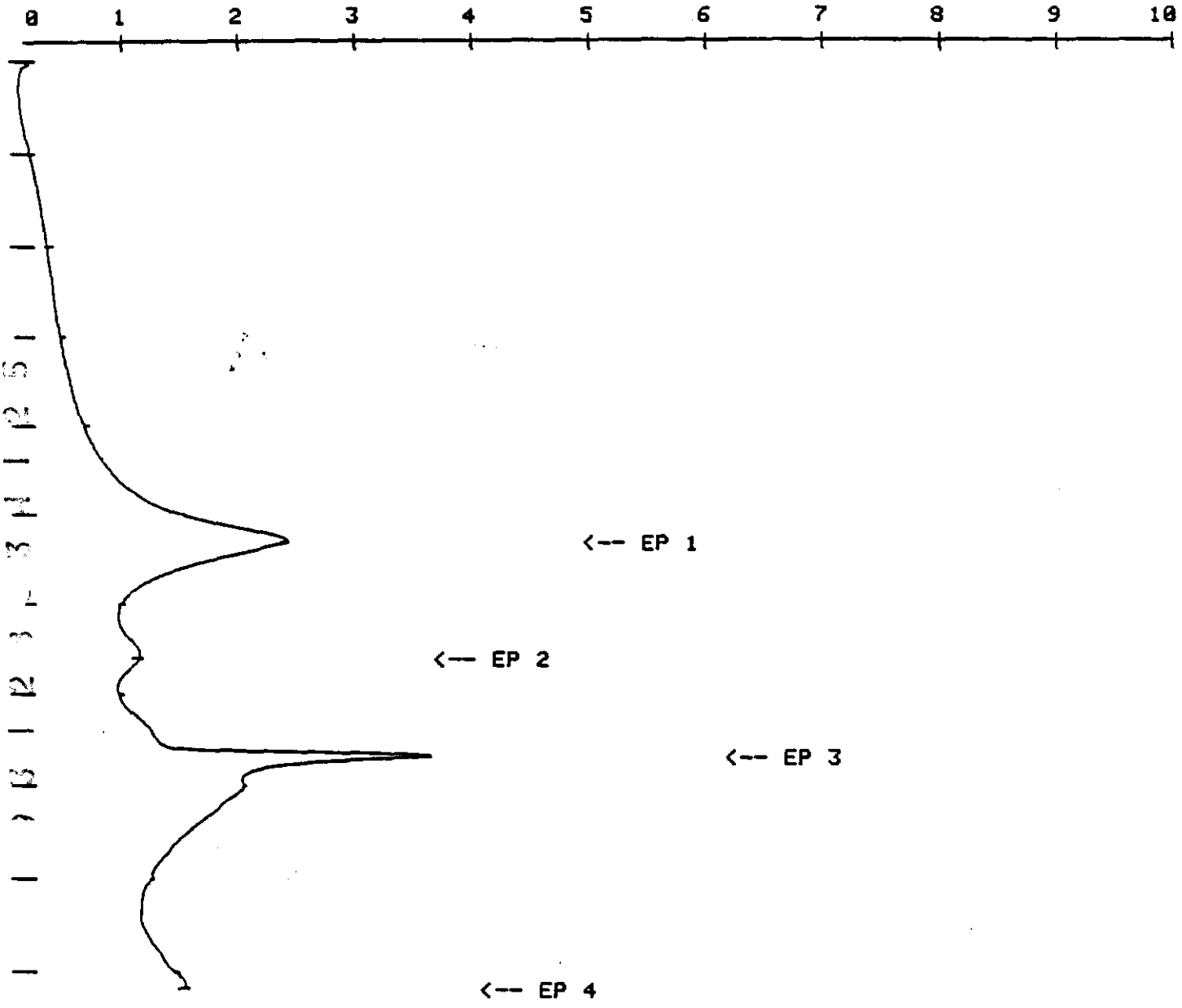
EQUIVALENCE PH	TITRANT VOLUME	COMPUTATION
9.65	0.667	0.0000
8.54	0.831	0.0000
7.12	0.960	0.0000
3.52	1.285	0.0000

TITRATION TERMINATED BY LIMIT ON NUMBER OF EQUIVALENCES PERMISSIBLE.

SEP 25 1991 2:38 PM

SAMPLE NUMBER: 2
SAMPLE DATA: 320.
DIRECT READ PH: 11.830

DERIVATIVE OUTPUT, dE/dV



DRV TITRATION:

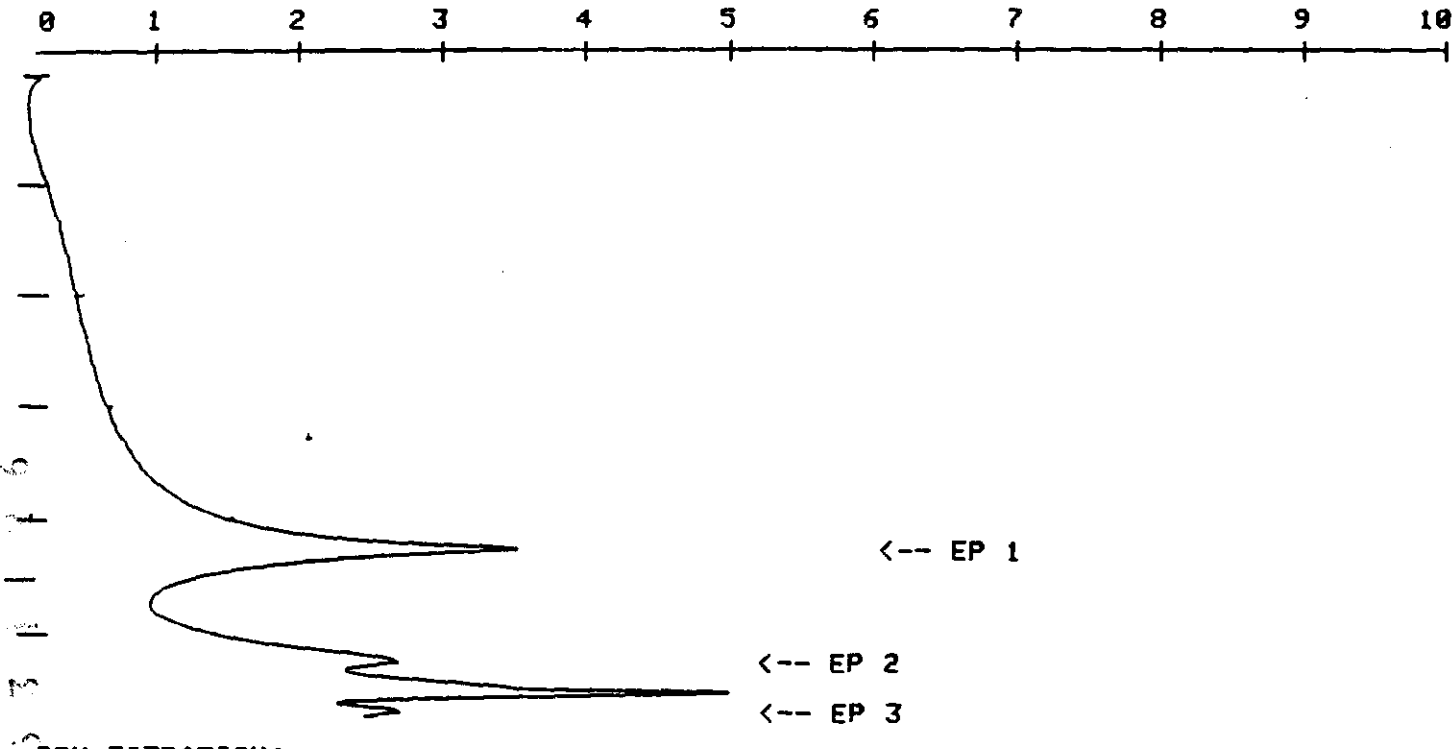
EQUIVALENCE PH	TITRANT VOLUME	COMPUTATION
9.63	0.664	0.0000
8.58	0.824	0.0000
7.14	0.959	0.0000
3.72	1.272	0.0000

TITRATION TERMINATED BY LIMIT ON NUMBER OF EQUIVALENCES PERMISSIBLE.

SEP 25 1991 2:47 PM

SAMPLE NUMBER: 1
SAMPLE DATA: 323.
DIRECT READ PH: 12.021

DERIVATIVE OUTPUT, dE/dV



DRV TITRATION:

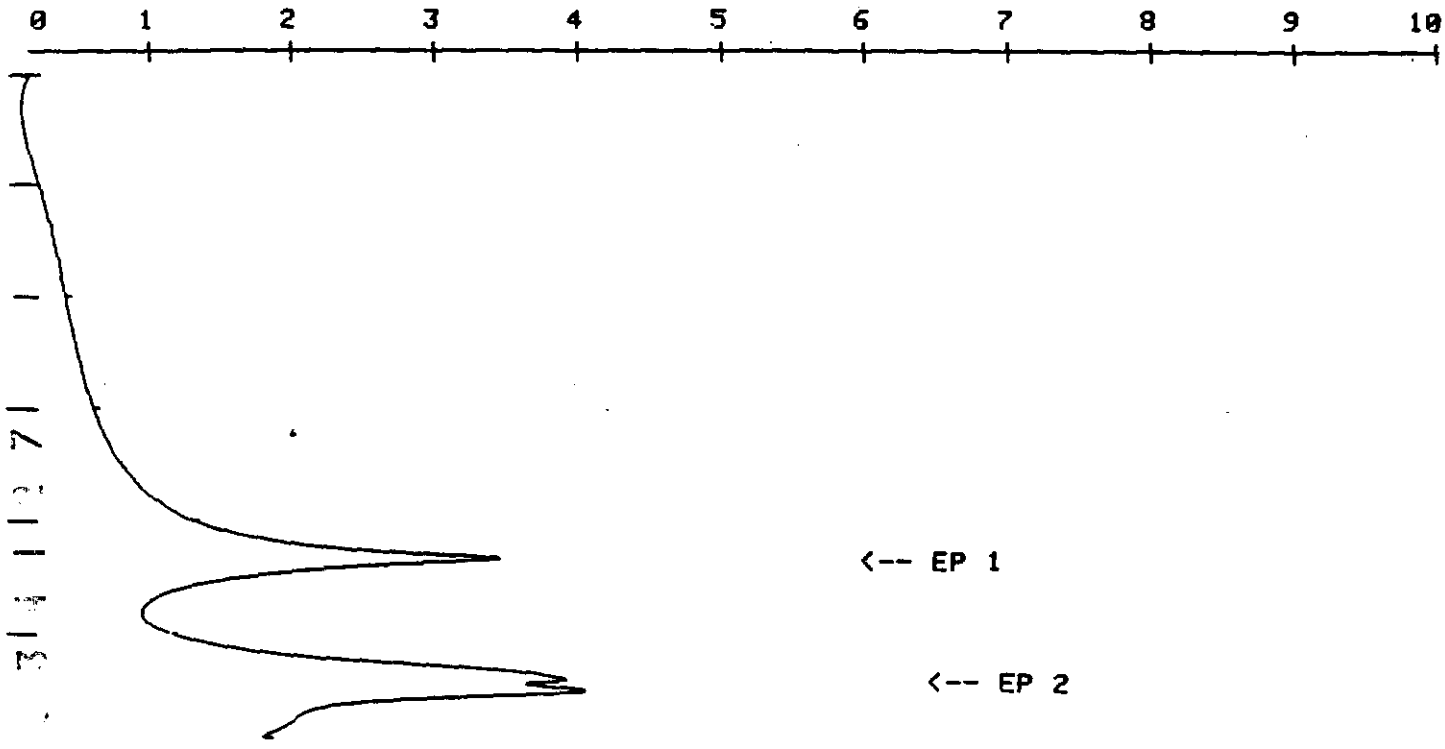
EQUIVALENCE PH	TITRANT VOLUME	COMPUTATION
9.60	0.533	0.0000
7.98	0.656	0.0000
5.06	0.711	0.0000

TITRATION TERMINATED BY PH LIMIT.

SEP 25 1991 3:11 PM

SAMPLE NUMBER: 2
SAMPLE DATA: 327.
DIRECT READ PH: 12.000

DERIVATIVE OUTPUT, dE/dV



DRV TITRATION:

EQUIVALENCE PH	TITRANT VOLUME	COMPUTATION
9.60	0.542	0.0000
6.69	0.676	0.0000

TITRATION TERMINATED BY PH LIMIT.

SEP 25 1991 3:24 PM

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R320	Customer ID: 791-3A
Analysis: SELENIUM	Sample Prep: UNDIGESTED

Instrument: PERKIN ELMER - WA77479	Procedure/Rev: LA-365-131/B-1
Technologist: M. MYERS	Date: 09-23-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: K. FULLER

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5596	11		
2	REAGENT BLANK	R317-5696	12		
3	SAMPLE 791-3A	R320-5796	13		
4	FINAL LMCS CHECK STD	R323-5596	14		
5			15		
6			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 CHECK STD	125B38A/0.5 mL			NA

A-6000-881 (03/92)

SELENIUM ANALYSIS - UNDIGESTED SAMPLE

Sample No.	Sample Point	Date	Time Issued	Priority
R 316.-5596	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Retests
Se	LA-365-131	% RECOVERY	W1TE2	0

Sample Size: ? .500 ml
Customer ID: STD

Remarks, Calculations, Results:
EDP R743 SE/HYDRD 9/24/91
STDN 125828A RESULT ~~1.731E-1~~ 1.011E-1
STD VAL 1.00E-1 %REC ~~172.140~~
1.087 ~~84.514~~ / 600 9/24/91 50.373 / 500
101.1%

Analyst-1: Indramani Singh
Hrs: 6/8323
Date: 9-23-91
Time Completed / Lab Unit Mgr: [signature]

Sample No.	Sample Point	Date	Time Issued	Priority
R 317.-5696	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Retests
Se	LA-365-131	PPM	W1TE2	0

Sample Size: ? 1.0 ml
Customer ID: REG DL

Remarks, Calculations, Results:
REAGENT BLANK
0.013
$\frac{<5}{1000} = <5.00E^{-3}$

Analyst-1: Indramani Singh
Hrs: 6/8323
Date: 9-23-91
Time Completed / Lab Unit Mgr: [signature]

Sample No.	Sample Point	Date	Time Issued	Priority
R 320.-5796	106AW	9-19-91	15:31	25

Determination	Method/Standard	Result Units	Charge Code	Retests
Se	LA-365-131	PPM	W1TE2	0

Sample Size: ? .500 ml
Customer ID: 791-3A

Remarks, Calculations, Results:
0.038
$\frac{<5}{5000} = <1.00E^{-3}$

Analyst-1: Indramani Singh
Hrs: 6/8323
Date: 9-23-91
Time Completed / Lab Unit Mgr: [signature]

Sample No.	Sample Point	Date	Time Issued	Priority
R 323.-5596	106AW	9-19-91	15:45	25

Determination	Method/Standard	Result Units	Charge Code	Retests
Se	LA-365-131	% RECOVERY	W1TE2	0

Sample Size: ? .500 ml
Customer ID: STD

Remarks, Calculations, Results:
EDP R743 SE/HYDRD 9/24/91
STDN 125838A RESULT ~~1.238E-1~~ 9.12E-2
STD VAL 1.00E-1 %REC 91.070
.983 9/24/91 ~~74.263~~ / 500 45.575 / 500

Analyst-1: Indramani Singh
Hrs: 6/8323
Date: 9-23-91
Time Completed / Lab Unit Mgr: [signature]

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY
CALIBRATION RECORD

Analyte: Se

Procedure: LA-365-131 | Revision: B-1

Instrument: HYDRIDE 44 | Property No.: WA77479

Technologist: M. MYERS | Payroll No.: 6C823 | Date: 09-23-91

Calibration Standard: 124B38A

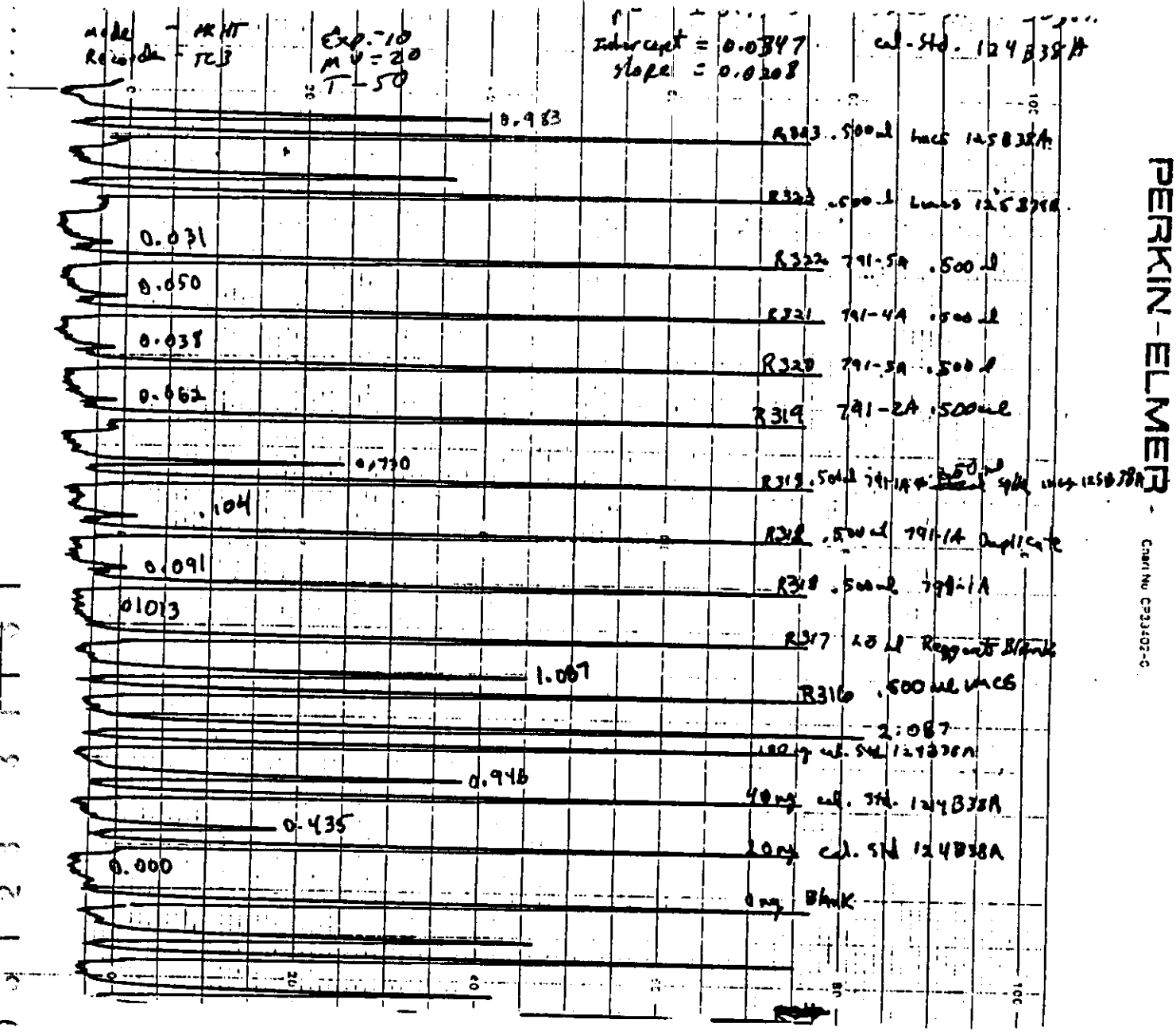
Analyte Concentration: 0.100 ppm

Type of Calibration: LINEAR

	Dilution	Concentration	Instrument Reading Unit
1	0.000 mL	0.0 ng	0.000
2	0.200 mL	20.0 ng	0.435
3	0.400 mL	40.0 ng	0.946
4	1.000 mL	100.0 ng	2.087
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			

Comments:

A-6000-882 (03/



Se 9-23-91

David R. Jackson

PERKIN-ELMER

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R320	Customer ID: 791-3A
Analysis: SPECIFIC GRAVITY	Sample Prep: UNDIGESTED

Instrument: WA90787	Procedure/Rev: LA-510-112/C-2
Technologist: J. SOLBRACK	Date: 10-18-91
Starting Time: 00:30	Temperature: N/A
Ending Time: 04:30	Chemist: R. K. FULLER

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5506	11		
2	REAGENT BLANK	R317-5606	12		
3	SAMPLE 791-3A	R320-5706	13		
4	FINAL LMCS CHECK STD	R323-5506	14		
5			15		
6			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 CHECK STD	15C11BJ/.20019 mL			N/A

A-6000-881 (03/92)

SPECIFIC GRAVITY ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5506	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
SPG	LA-510-112	% RECOVERY	W1TE2	0

Sample Size	Customer ID
~~100~~ 200.19 g	STD

Remarks, Calculations, Results:
S332 ZNCL2
STDN ISCR-43 RESULT 1.4264
STD VAL 1.4386 %REC 99.15%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
82020				
Date	Time Completed	Lab Use Only		
10-18-91				

A. 2.2171
1.9316
.2855 $\frac{.2855}{.20019}$ = 1.4261 ÷ 1.4386 x 100 = 99.15

R 316-5506

B. 2.2037
1.9181
.2856 $\frac{.2856}{.20019}$ = 1.4266 ÷ 1.4386 x 100 = 99.16

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5606	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
SPG	LA-510-112		W1TE2	0

Sample Size	Customer ID
200.19 g	REG BL

Remarks, Calculations, Results:
REAGENT BLANK

.9871

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
82020				
Date	Time Completed	Lab Use Only		
10 18 91				

A. 2.1434
1.9458
.1976 ÷ .20019 = .9871

R 317-5606

B. 2.0895
1.8919
.1976 $\frac{.1976}{.20019}$ .9871

Serial No.	Sample Point	Date	Time Issued	Priority
R 320.-5706	106AW	9-19-91	15:25	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
SPG	LA-510-112		W1TE2	0

Sample Size	Customer ID
.20019	791-3A

Remarks, Calculations, Results:

1.0757

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
82020				
Date	Time Completed	Lab Use Only		
10 18-91				

A. 2.0979
1.8825
.2154

R 320-5706

ave = $\frac{.2154}{.20019}$ = 1.0757

B. 2.1448
1.9295
.2153

SPECIFIC GRAVITY ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5506	106AW	7-19-91	15:43	25

Determinance	Method/Standard	Result Units	Charge Code	Rerun
SPG	LA-510-112	% RECOVERY	WITE2	0

Sample Size	Customer ID
? .20019	STD

Remarks, Calculations, Results:

S332 ZNCL2

STDN 15CN-85 RESULT 1.4254

STD VAL 1.4886 %REC 99.08%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				
Hrs	Hrs	Hrs	Hrs	Hrs
82020			[signature]	
Date	Time Completed	Lab Unit Mgr		
10 18 91		[signature]		

A. 2.1738
1.8885
.2853

R. 323-5506

ave = .2854 / .20019 = 1.4258

B. 2.1808
1.8954
.2854

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R320	Customer ID: 791-3A
Analysis: TOTAL INORGANIC CARBON	Sample Prep: UNDIGESTED

Instrument: WB39927	Procedure/Rev: LA-622-102/B-0
Technologist: M. MYERS	Date: 09-25-91
Starting Time: 00:29	Temperature: NA
Ending Time: 04:18	Chemist: D. BISENIUS

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5527	11		
2	REAGENT BLANK	R317-5627	12		
3	SAMPLE 791-3A	R320-5727	13		
4	FINAL LMCS CHECK STD	R323-5527	14		
5			15		
6			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 CHECK STD	69C11K/0.05 mL			N/A

A-6000-881 (03/92)

TOTAL INORGANIC CARBON ANALYSIS - UNDIGESTED SAMPLE

Sample No	Sample Point	Date	Time Sampled	Priority
K 316.-5527	106AW	9-19-91	13:35	26

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

Sample Size: .050 ml

Customer ID: STD

Remarks, Calculations, Results: 5223 TIC

STDN LACHK RESULT ~~[illegible]~~ 1.995E-1 M DYBisaiso 6/30/92

STD VAL 200 E-1 % REC ~~[illegible]~~ 99.75% DYB 6/30/92

Analyst-1: [illegible] Analyst-2: Analyst-3: Analyst-4: Analyst-5: DYBisaiso

Title: LCB23

Date: 9-25-91 Time Completed: Lab Verified By:

Sample No	Sample Point	Date	Time Sampled	Priority
K 317.-5527	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Report
TIC	LA-622 102	G/L	WITEF	0

Sample Size: .050 ml

Customer ID: [illegible]

Remarks, Calculations, Results: REAGENT BLANK

~~5.10 µg/C~~ DYB 6/30/92 5.70 µgC

~~[illegible]~~ DYB 6-11-92

Analyst-1: [illegible] Analyst-2: Analyst-3: Analyst-4: Analyst-5: DYBisaiso

Title: LCB23

Date: 9-25-91 Time Completed: Lab Verified By:

Sample No	Sample Point	Date	Time Sampled	Priority
K 320.-5727	106AW	9-19-91	15:26	25

Determination	Method/Standard	Result Units	Charge Code	Report
TIC	LA-622 102	G/L	WITEF	0

Sample Size: .050 ml

Customer ID: [illegible]

Remarks, Calculations, Results:

~~2.76 g/LC~~ DYB 6/30/92

2.266 g/LC

Analyst-1: [illegible] Analyst-2: Analyst-3: Analyst-4: Analyst-5: DYBisaiso

Title: LCB23

Date: 9-25-91 Time Completed: Lab Verified By:

Sample No	Sample Point	Date	Time Sampled	Priority
K 323.-5527	106AW	9-19-91	15:43	25

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

Sample Size: .050 ml

Customer ID: STD

Remarks, Calculations, Results: 5223 TIC

STDN LACHK RESULT ~~[illegible]~~ DYB 6/30/92 2.04E-1 M

STD VAL ~~[illegible]~~ DYB 6/30/92 2.00E-1 % REC ~~[illegible]~~ 102% DYB 6/30/92

Analyst-1: [illegible] Analyst-2: Analyst-3: Analyst-4: Analyst-5: DYBisaiso

Title: LCB23

Date: 9-25-91 Time Completed: Lab Verified By:

TVC

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: STD R3/4 Date: 09-25-1991 Time: 00:45:11

Blank = 0 Sample Size = 50 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	104.80	100.00
3	3.01	117.60	10.88
4	4.01	121.40	3.13
5	5.01	123.00	1.30
6	6.01	124.00	0.81
7	7.01	124.80	0.64

(124.8 - ~~0~~ 5.10 DH Bisenius 6/30/92) (1)/(50) = ~~2.498~~ 2.394 g/L Carbon DH Bisenius 6/30/92

(124.8 - ~~0~~ 5.10 DH Bisenius 6/30/92) (1)/(50)(12) = ~~.208~~ .1995 Molar Carbon DH Bisenius 6/30/92

Sample Run By: 6C823

TF2 8-30-92

378 ~~360~~

TIC

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: BLANK Date: 09-25-1991 Time: 00:29:30

Blank = 0 Sample Size = 50 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.80	-525.00
2	2.01	1.60	50.00
3	3.01	2.30	30.43
4	4.01	3.00	23.33
5	5.01	3.60	16.67
6	6.01	4.50	20.00
7	7.01	5.10	11.76

Blank value = 5.10 ug Carbon D4 Bisenius 6/30/92

(5.1 - 0)(1)/(50) = .102 g/L Carbon

(5.1 - 0)(1)/(50)(12) = 8.499999E-03 Molar Carbon

Sample Run By: 80028

T\C

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: R317 Date: 09-25-1991 Time: 00:54:43

Blank = 0 Sample Size = 50 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	2.10	100.00
3	3.01	3.10	32.26
4	4.00	3.60	13.89
5	5.01	4.30	16.28
6	6.01	5.00	14.00
7	7.01	5.70	12.28

Blank value = 5.70 ug C Dy Bisenius 6/30/92

(5.7 - 0)(1)/(50) = .114 g/L Carbon

(5.7 - 0)(1)/(50)(12) = .0095 Molar Carbon

Sample Run By: 6C823

TIC

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: R320 Date: 09-25-1991 Time: 03:42:55

Blank = .11 Sample Size = 50 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	94.30	100.00
3	3.01	106.30	11.29
4	4.00	112.40	5.43
5	5.01	115.70	2.85
6	6.01	117.70	1.70
7	7.00	119.00	1.09

(119 - ~~.7705304~~ 5.70)(1)/(50) = ~~2.38459~~ 2.266 g/L C g/L Carbon
D4 Bisenius 6/30/92 D4 Bisenius 6/30/92
(119 - .7705304)(1)/(50)(12) = .1970491 Molar Carbon

Sample Run By: 6C823 _____

TIC

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: R323 Date: 09-25-1991 Time: 04:18:14

Blank = .11 Sample Size = 50 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	112.90	100.00
3	3.01	123.20	8.36
4	4.01	125.50	1.83
5	5.01	126.50	0.79
6	6.01	127.30	0.63
7	7.00	128.10	0.62

(128.1 - ~~.7705304~~ 5.70)(1)/(50) = ~~2.54659~~ 2.448 g/L C o/L Carbon
DY Bisenius 6/30/92 DY Bisenius 6/30/92

(128.1 - ~~.7705304~~ 5.70)(1)/(50)(12) = ~~.2122158~~ .1204 Molar Carbon DY Bisenius 6/30/92

Sample Run By: 6C823

TPZ 8-30-92

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R320	Customer ID: 791-3A
Analysis: TOTAL ORGANIC CARBON	Sample Prep: UNDIGESTED

Instrument: MODEL 5011 - WC16130	Procedure/Rev: LA-344-105/B-0
Technologist: M. MYERS	Date: 10-28-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: D. BISENIUS

	Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5526
2	REAGENT BLANK	R317-5626
3	SAMPLE 791-3A	R320-5726
4	FINAL LMCS CHECK STD	R323-5526
5		
6		
7		
8		
9		
10		

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

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS CHECK STD	70C11I/0.2 mL			NA
SAMPLES RERUN.				

A-6000-881 (03/92)

TOTAL ORGANIC CARBON ANALYSIS - UNDIGESTED SAMPLE

Sample No.	Sample Point	Date	Time Issued	Priority
R 316.-5520	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
TOC	LA-344-105	% RECOVERY	WITE2	1

RERUN

Sample Size: ? 200ml - 2nd - 200ml
Customer ID: STD

Remarks, Calculations, Results:
S356 COSTOC
STDN 70C11I RESULT 3.0745
STD VAL 3.0 %REC 102.5%

Analyst: Lorlene Langer
Date: 10-28-91

Sample No.	Sample Point	Date	Time Issued	Priority
R 317.-5626	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
TOC	LA-344-105	G/L	WITE2	1

RERUN

Sample Size: ? .200ml
Customer ID: RED BL

Remarks, Calculations, Results:
REAGENT BLANK
4.80 ug C
~~8.06E-3 g/l~~ DAB 6/30/92

Analyst: Lorlene Langer; D H Chiamino
Date: 10-28-91

Sample No.	Sample Point	Date	Time Issued	Priority
R 320.-5726	106AW	9-19-91	15:25	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
TOC	LA-344-105	G/L	WITE2	1

RERUN

Sample Size: ? .200ml - 2nd - 200ml
Customer ID: 791-3A

Remarks, Calculations, Results:
8.80 E-1 g/l

Analyst: Lorlene Langer
Date: 10-28-91

Sample No.	Sample Point	Date	Time Issued	Priority
R 323.-5924	106AW	9-19-91	15:43	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
TOC	LA-344-105	% RECOVERY	WITE2	1

RERUN

Sample Size: ? .200ml - 2nd - 200ml
Customer ID: STD

Remarks, Calculations, Results:
S356 COSTOC 3.014 g/l C
STDN 70C11I RESULT ~~3.102 g/l~~ DAB 6/30/92
STD VAL 3.00 g/l %REC ~~102.4%~~ DAB 6/30/92
100.5%

Analyst: Lorlene Langer; D H Chiamino
Date: 10-28-91

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: STD R316 Date: 10-27-1991 Time: 01:10:43

Blank = .4567049 Sample Size = 200 Dilution Factor = 11
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	42.40	100.00
3	3.01	51.00	16.86
4	4.01	55.00	7.27
5	5.01	57.10	3.68
6	6.01	58.30	2.06
7	7.01	59.10	1.35

(59.1 - 3.1996)(11)/(200) = 3.074522 g/L Carbon

(59.1 - 3.1996)(11)/(200)(12) = .2562102 Molar Carbon

Sample Run By: 6C823_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: BLANK Date: 10-26-1991 Time: 21:52:10

Blank = N/A Sample Size = 200 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	0.30	100.00
3	3.01	1.00	70.00
4	4.01	1.80	44.44
5	5.01	2.40	25.00
6	6.01	2.80	14.29
7	7.01	3.20	12.50

BLANK VALUE = 3.2 / 7.006714 = .4567049 g/L/minute

Sample Run By: 6C823_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: R317 BLANK Date: 10-27-1991 Time: 01:29:09

Blank = .4567049 Sample Size = 200 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	1.70	100.00
3	3.01	2.80	39.29
4	4.01	3.40	17.65
5	5.01	3.90	12.82
6	6.01	4.40	11.36
7	7.01	4.80	8.33

Blank value = 4.80 ug Carbon D4 Bisonius 6/30/92

(4.8 - 3.1996)(1)/(200) = 8.002001E-03 g/L Carbon

(4.8 - 3.1996)(1)/(200)(12) = 6.668334E-04 Molar Carbon

Sample Run By: 6C823_____

TR 8-30-92

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: R320 Date: 10-27-1991 Time: 04:46:17

Blank = .4567049 Sample Size = 200 Dilution Factor = 11
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	8.00	100.00
3	3.01	13.70	41.61
4	4.01	16.10	14.91
5	5.01	17.40	7.47
6	6.01	18.40	5.43
7	7.01	19.20	4.17

(19.2 - ~~3.199513~~ 4.80)(11)/(200) = ~~.8000269~~ .792 g/L C g/L Carbon
DY Bisenius 6/30/92 DY Bisenius 6/30/92
(19.2 - 3.199513)(11)/(200)(12) = 7.333558E-02 Molar Carbon

Sample Run By: 6C823_____

TFZ 8-30-92

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: ~~R322~~ R323 Date: 10-27-1991 Time: 05:22:10
m-10-28-91

Blank = .4567049 Sample Size = 200 Dilution Factor = 11
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	25.90	100.00
3	3.01	47.20	45.13
4	4.01	53.80	12.27
5	5.01	56.90	5.45
6	6.01	58.60	2.90
7	7.01	59.60	1.68

4.80
(59.6 - ~~3.199987~~)(11)/(200) = 3.014 g/LC ~~3.102001~~ g/L Carbon
D4 Bräenius 6/30/92 D4 Bräenius 6/30/92
(59.6 - 3.199987)(11)/(200)(12) = .2585001 Molar Carbon

Sample Run By: 6C823_____

TFZ 8-30-92

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R320	Customer ID: 791-3A
Analysis: ION CHROMATOGRAPHIC - FLUORIDE	Sample Prep: UNDIGESTED

Instrument: DIONEX 4000 - WB54428	Procedure/Rev: LA-533-105/B-0
Technologist: M. MYERS	Date: 09-30-91
Starting Time: 22:35 09-30-91	Temperature: 24-25degC
Ending Time: 00:32 10-01-91	Chemist: D. HERT

	Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5571
2	REAGENT BLANK	R317-5671
3	SAMPLE 791-3A	R320-5771
4	FINAL LMCS CHECK STD	R323-5571
5		
6		
7		
8		
9		
10		

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

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS CHECK STD	73C11CO/0.1 mL			N/A

A-6000-881 (03/92)

ION CHROMATOGRAPHIC ANALYSIS (FLUORIDE) - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5571	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Reason
F	LA-533-105	% RECOVERY	WITE2	0

Sample Size: ? 100ml - 10ml
Customer ID: STD

Remarks, Calculations, Results:
EDP R974 DIONEX
STD# 73CUCO RESULT 53.664
STD VAL 56.0 %REC 95.8%

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				[signature]
6C823 9-30-91				[signature]

Date: 9-30-91 Time Completed: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5671	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Reason
F	LA-533-105	PPM	WITE2	0

Sample Size: ? 5ml ~~100ml - 10ml~~ 5/29/91
Customer ID: REG BL

Remarks, Calculations, Results:
REAGENT BLANK
<1.00E-1ppm

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				[signature]
6C822				

Date: 9-30-91 Time Completed: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 320.-5771	106AW	9-19-91	15:27	25

Determination	Method/Standard	Result Units	Charge Code	Reason
F	LA-533-105	G/O	WITE2	0

Sample Size: ? 100ml - 10ml - 100ml - 10ml
Customer ID: 791-3A

Remarks, Calculations, Results:
6.68E3

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				[signature]
6C823				

Date: 9-30-91 Time Completed: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5571	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Reason
F	LA-533-105	% RECOVERY	WITE2	0

Sample Size: ? 100ml - 10ml
Customer ID: STD

Remarks, Calculations, Results:
EDP R974 DIONEX
STD# 73CUCO RESULT 53.790
STD VAL 56.0 %REC 96.1%

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				[signature]
6C822				[signature]

Date: 9-30-91 Time Completed: [signature]

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R320	Customer ID: 791-3A
Analysis: ION CHROMATOGRAPHIC - NITRATE	Sample Prep: UNDIGESTED

Instrument: DIONEX 4000 - WB54428	Procedure/Rev: LA-533-105/B-0
Technologist: M. MYERS	Date: 09-30-91
Starting Time: 22:35 09-30-91	Temperature: 24-25degC
Ending Time: 00:32 10-01-91	Chemist: D. HERT

	Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5573
2	REAGENT BLANK	R317-5673
3	SAMPLE 791-3A	R320-5773
4	FINAL LMCS CHECK STD	R323-5573
5		
6		
7		
8		
9		
10		

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

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS CHECK STD	73C11CO/0.1 mL			N/A

A-6000-881 (03/92)

ION CHROMATOGRAPHIC ANALYSIS (NITRATE) - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5573	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
NO3	LA-533-105	% RECOVERY	W1TE2	0

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

Remarks, Calculations, Results:
EDP R978 DIONEX
STD #73C11CO RESULT 529.531
STD VAL 564.0 %REC 93.9%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				[signature]
Hrs	Hrs	Hrs	Hrs	Hrs
6C823				[signature]

Date: 9-30-91
Time Completed:
Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5673	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
NO3	LA-533-105	PPM	W1TE2	0

Sample Size: ? 5ml
Customer ID: REO BL

Remarks, Calculations, Results:
REAGENT BLANK
<1.00 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				[signature]
Hrs	Hrs	Hrs	Hrs	Hrs
6C823				

Date: 9-30-91
Time Completed:
Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 320.-5773	106AW	9-19-91	15:28	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
NO3	LA-533-105	PPM	W1TE2	0

Sample Size: ? .100ml - 10ml - .100ml - 10ml
Customer ID: 791-3A

Remarks, Calculations, Results:
3.68E4

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C823				[signature]
Hrs	Hrs	Hrs	Hrs	Hrs
[signature]				

Date: 9-30-91
Time Completed:
Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5573	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
NO3	LA-533-105	% RECOVERY	W1TE2	0

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

Remarks, Calculations, Results:
EDP R978 DIONEX
STD #73C11CO RESULT 551.166
STD VAL 564.0 %REC 97.2%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				[signature]
Hrs	Hrs	Hrs	Hrs	Hrs
6C823				[signature]

Date: 9-30-91
Time Completed:
Lab Unit Mgr: [signature]

9-22-91
4469-AC 4-23-92

DIONEX METHOD PARAMETERS - SYSTEM1.MET

System Parameters

System Name : system1/gpm
Number of Detectors..... 1
Detector 1 Type..... CDM-1
Detector 1 real time plot scale (uS)..... 20.00
Run Time (minutes)..... 8.50
Sampling Rate (seconds)..... 0.20

-- DETECTOR 1 PARAMETERS --

Report Options

Save Data File..... Yes
Data File Name: c:\dx\data\91092201.D08
Create ASCII Report File..... No
Print Report..... Yes
List Peaks Not Found in this run..... No
Report Unknowns Found in this run..... Yes
Print Chromatogram..... Yes
AutoScale Chromatogram to Highest Peak..... Yes
Fill Peaks with Color ..... Yes
Draw Grid Lines on Chromatogram..... No
Label with Peak Number..... Yes
Label with Retention Times on Chromatogram..... No
Label with Component Name..... Yes
Format File Name: c:\dx\method\default.prf

Integration Parameters

Starting Peak Width (seconds)..... 10.0
Peak Threshold (mV or uS/data pt interval)..... 0.500
Peak Area Reject..... 1000
Area Reject for Reference Peaks..... 1000
Percent Retention Time Window for Reference Peaks..... 5.0

Integration Timed Events

Time	Description
1.32	Start peak detection
1.44	Start peak detection
1.46	Start peak detection
1.77	
1.77	Enable end of peak detection

Calibration Parameters

Number Of Levels for Calibration	6
Calibration Fit Type	Quadratic
Replace Or Average Calibrations	Replace
External or Internal Calibration	External
Calibrate by Area or Height	Area
Default Injection Volume	1.0
Default Dilution Factor	1.0
Response Factor for Unknown Peaks	1.0
Calibration Standard Volume	1.0
Internal Standard Volume	1.0
Sample Unit	PPM

Component # 1 FLUORIDE Retention Time 1.13
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 8.52797E-002
K1 = 6.06440E-005
K2 = -6.17180E-011

Level	Amount	Area	Height
1	1.20000E-001	1439	225
2	3.00000E-001	4035	566
3	6.00000E-001	8217	1141
4	1.20000E+000	16507	2218
5	2.30000E+000	39534	4812
6	4.40000E+000	76890	9371

Component # 2 CHLORIDE Retention Time 1.70
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.93335E-002
K1 = 1.01273E-004
K2 = -9.35560E-011

Level	Amount	Area	Height
1	1.60000E-001	1319	217
2	3.90000E-001	3754	568
3	7.80000E-001	6942	1045
4	1.50000E+000	14461	1975
5	3.00000E+000	30287	3987
6	5.90000E+000	61305	8710

Component # 3 NITRITE Retention Time 2.03
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 4.88691E-001
K1 = 1.33960E-004
K2 = 5.52630E-012

Level	Amount	Area	Height
1	1.08000E+000	6239	874
2	2.69000E+000	17299	2252
3	5.37000E+000	34328	4729
4	1.06200E+001	72787	9300
5	2.08500E+001	153501	19401
6	4.01500E+001	292053	34439

Component # 4 BROMIDE Retention Time 2.80
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 4.01960E-002
K1 = 2.00453E-004
K2 = -1.00008E-010

Level	Amount	Area	Height
1	1.56000E+000	7660	753
2	3.90000E+000	20706	1880
3	7.80000E+000	38868	3455
4	1.54000E+001	78061	6644
5	3.02000E+001	165133	12632
6	5.81000E+001	350930	24386

Component # 5 NITRATE Retention Time 3.30
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.02611E-001
K1 = 1.61787E-004
K2 = -5.83501E-011

Level	Amount	Area	Height
1	1.37000E+000	7543	727
2	3.43000E+000	19321	1803
3	6.83000E+000	40244	3563
4	1.35000E+001	83386	7010
5	2.65000E+001	173503	13640
6	5.11000E+001	360809	25639

Component # 6 PHOSPHATE Retention Time 5.32
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 5.53452E-001
K1 = 3.53243E-004
K2 = -3.51156E-010

Level	Amount	Area	Height
1	1.19000E+000	2277	162
2	2.98000E+000	7242	453
3	5.93000E+000	15025	935
4	1.17400E+001	31660	1933
5	2.30300E+001	69135	4130
6	4.43700E+001	144749	8447

Component # 7 SULFATE Retention Time 6.85
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.55734E-001
K1 = 1.27491E-004
K2 = -3.79358E-011

Level	Amount	Area	Height
1	1.40000E+000	9418	543
2	3.50000E+000	24499	1382
3	6.96000E+000	52303	2890
4	1.37800E+001	107173	5909
5	2.70400E+001	225632	12225
6	5.20700E+001	471630	24686

IC Control File: C:\DX\METHOD\SYSTEM1.TE

Step	Time	Description
Init		CDM-1 AutoOffset Off
Init		CDM-1 Recorder Mark OFF
Init		CDM-1 Temp. Comp. = 1.7 / Deg C
Init		CDM-1 Recorder Range = 1.0 uS
Init		CDM-1 Cell ON
Init		CHA Heater = 25 Deg. C
Init		Valve A ON
Init		Valve B ON
Init		Inject Valve OFF
Init		ACI Autosmp OFF
Init		ACI RLY 2 OFF
Init		ACI TTL 1 OFF
Init		ACI TTL 2 OFF
Init		ACI AC 1 ON
Init		GPM Start
Init		GPM Hold Gradient Clock
Init		GPM Reset ON
1	0.0	CDM-1 AutoOffset ON
1	0.0	Start Sampling
1	0.0	GPM Reset OFF
2	0.1	CDM-1 Recorder Range = 10.0 uS
2	0.1	Inject Valve ON
2	0.1	GPM Run Gradient Clock
3	3.0	Inject Valve OFF
4	3.5	ACI Autosmp ON
5	8.0	ACI Autosmp OFF

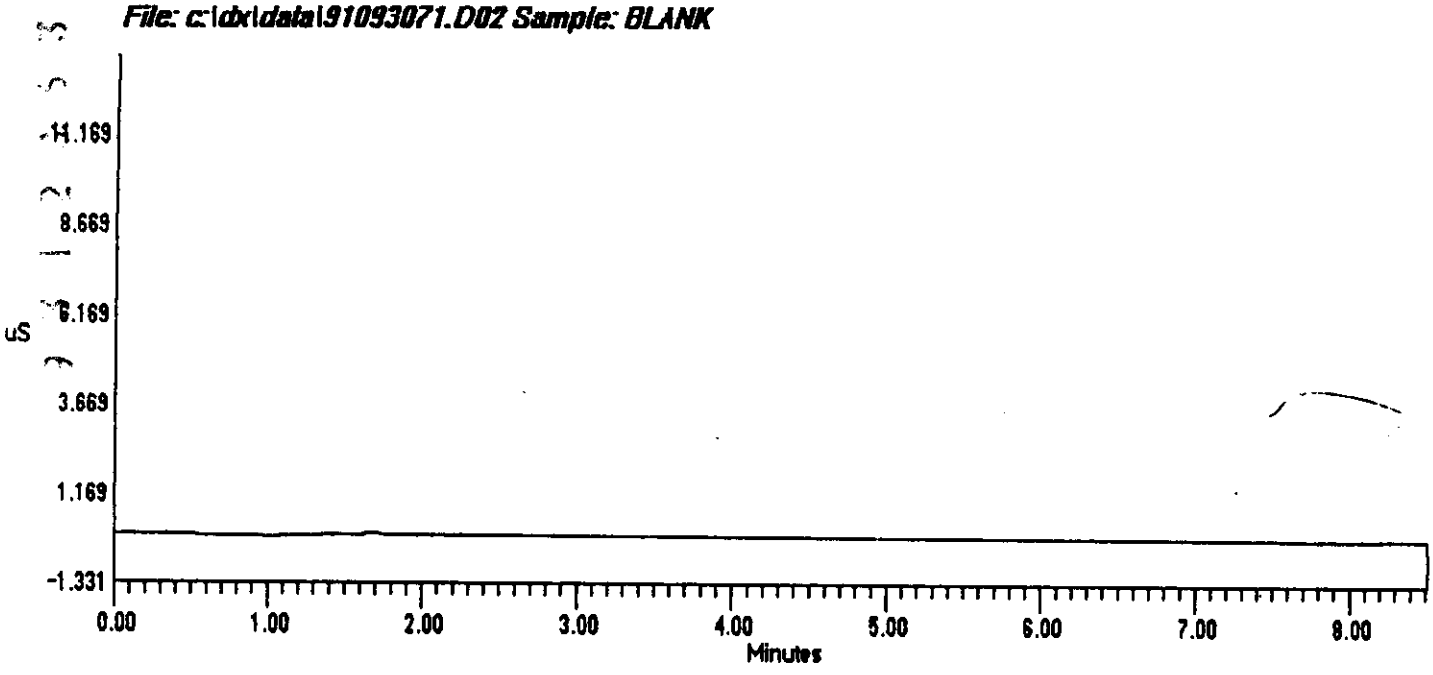
GpmFile: C:\DX\METHOD\SYSTEM1.GPM
Lo Pressure Limit = 200
Hi Pressure Limit = 2000
Eluant 1 - DI WATER
Eluant 2 - SODIUM CARBONATE
Eluant 3 - SODIUM BICARBONATE
Eluant 4 - Eluant 4

Time	Flow	%1	%2	%3	%4	V5	V6	Comment
0.0	2.0	84	8	8	0	0	0	

```
==========================================================================
| Sample Name: BLANK                          Date: Mon Sep 30 22:35:47 1991|
| Data File   : c:\dx\data\91093071.D02                                    |
| Method      : c:\dx\method\SYSTEM1.met                                   |
| ACI Address: 1        System : 1        Inject#:    2  Detector: CDM-1   |
==========================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2555	5Hz	0.00	8.52	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta

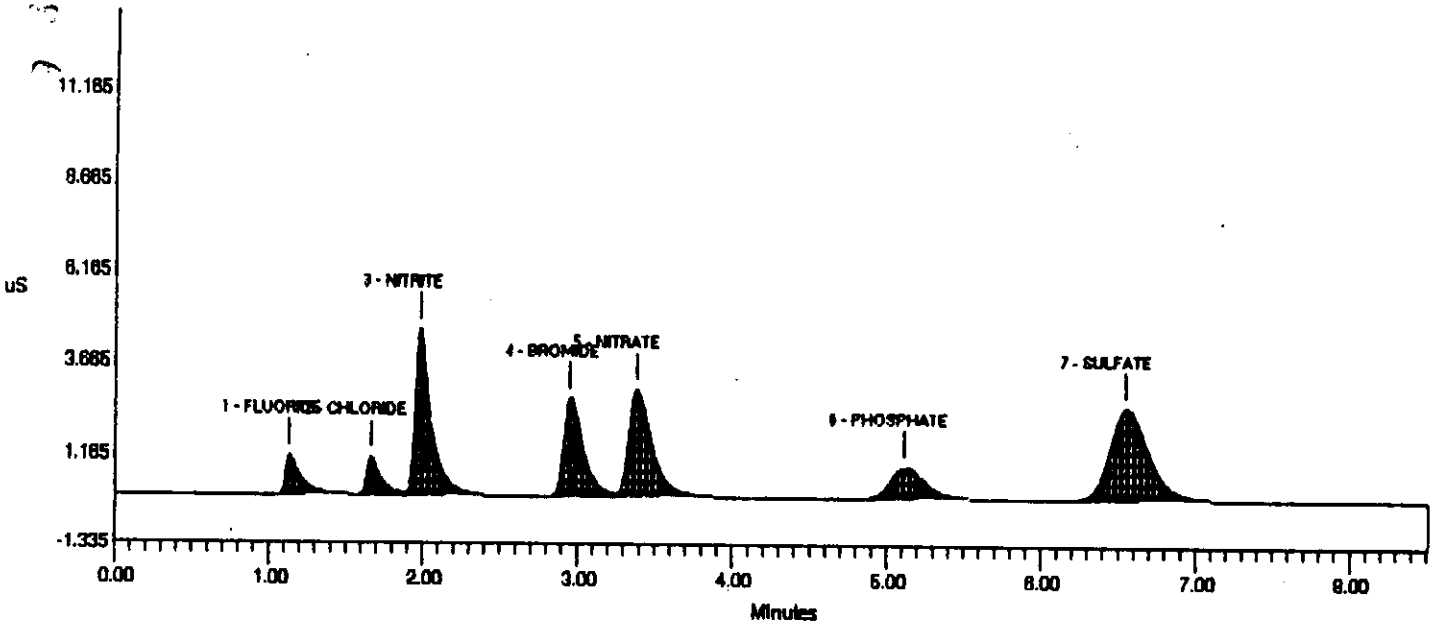


Samole Name: LMCS/73C11C0 R914 6-28-92 Date: Mon Sep 30 22:45:24 1991
Data File : c:\dx\data\91093071.D03
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1 System : 1 Inject#: 3 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2555	5Hz	0.00	8.52	1000

Pk. Num	Ret Time	Component Name	Concentration		Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	95.8	53.664	1073	7411	1	0.00
2	1.67	CHLORIDE	95.6	71.733	1049	6666	2	-1.96
3	1.98	NITRITE	98.4	501.700	4572	33387	2	-2.30
4	2.95	BROMIDE		487.695	2681	24180	2	-3.28
5	3.38	NITRATE	93.9	527.531	2918	30880	2	2.53
6	5.12	PHOSPHATE	102.0	527.513	869	13397	1	-3.75
7	6.55	SULFATE	96.2	586.801	2510	43340	1	-4.38

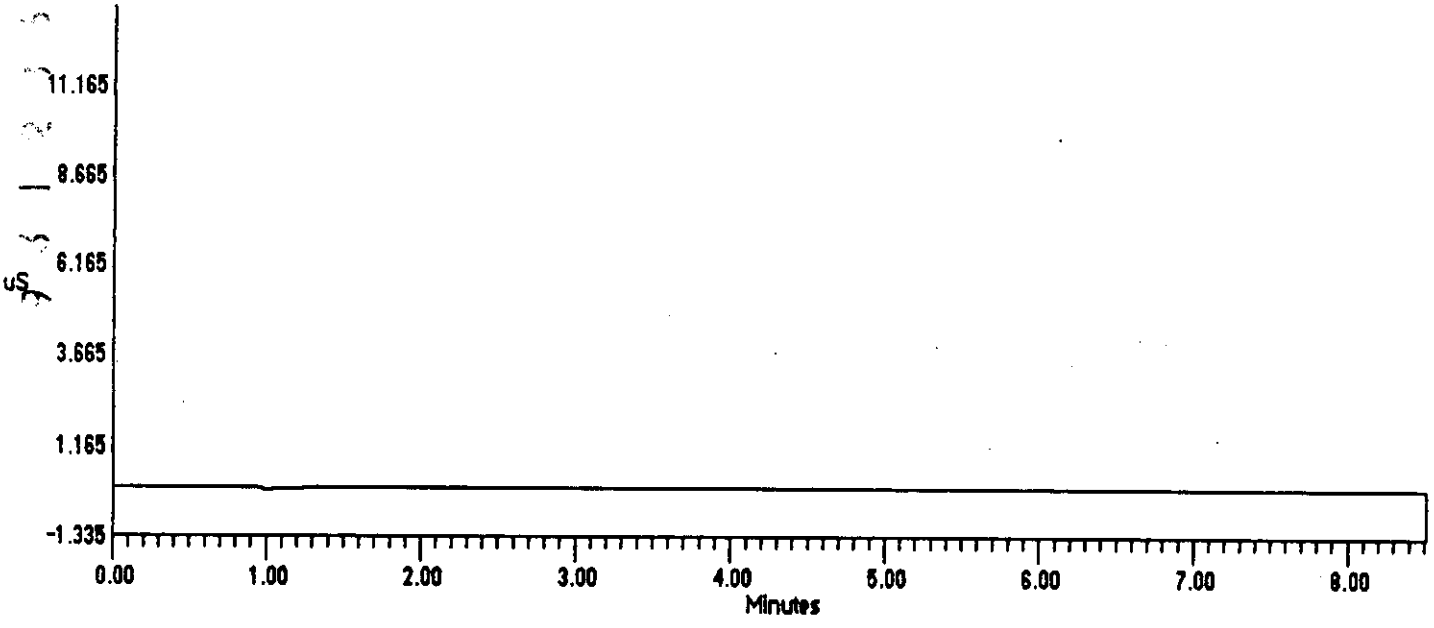
File: c:\dx\data\91093071.D03 Sample: LMCS/73C11C0



```
==========================================================================
| Sample Name: R317                          Date: Mon Sep 30 22:55:18 1991|
| Data File  : c:\dx\data\91093071.D04                                    |
| Method     : c:\dx\method\SYSTEM1.met                                   |
| ACI Address: 1       System : 1       Inject#:   4  Detector: CDM-1    |
==========================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2555	5Hz	0.00	8.52	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta

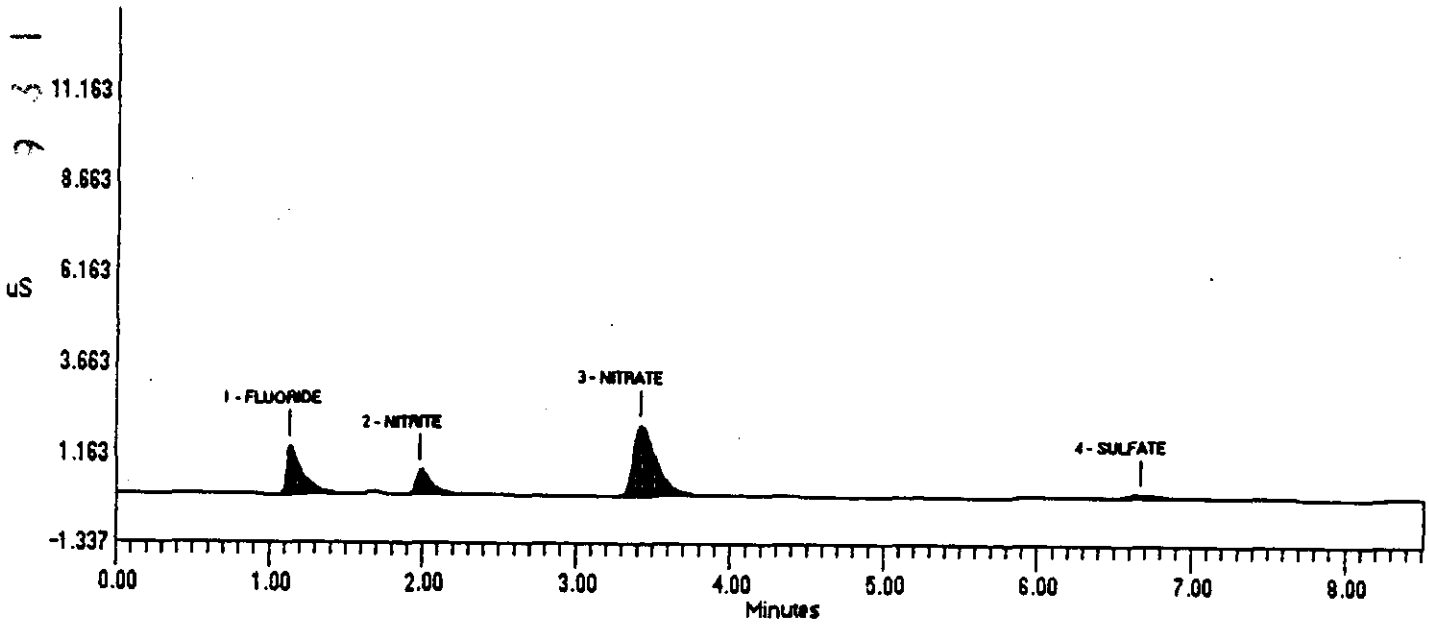


```
==========================================================================
: Sample Name: R320                                Date: Tue Oct 01 00:03:45 1991:
: Data File   : c:\dx\data\91093061.D11                                   :
: Method      : c:\dx\method\SYSTEM1.met                                  :
: ACI Address: 1        System : 1        Inject#:  11  Detector: CDM-1   :
==========================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	10200	2555	5Hz	0.00	8.52	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	6684.954	1352	9493	1	0.00
2	1.98	NITRITE	11761.558	683	4959	1	-2.30
3	3.42	NITRATE	36837.925	1974	20606	1	3.54
4	6.67	SULFATE	5351.765	95	1326	1	-2.68

File: c:\dx\data\91093061.D11 Sample: R320

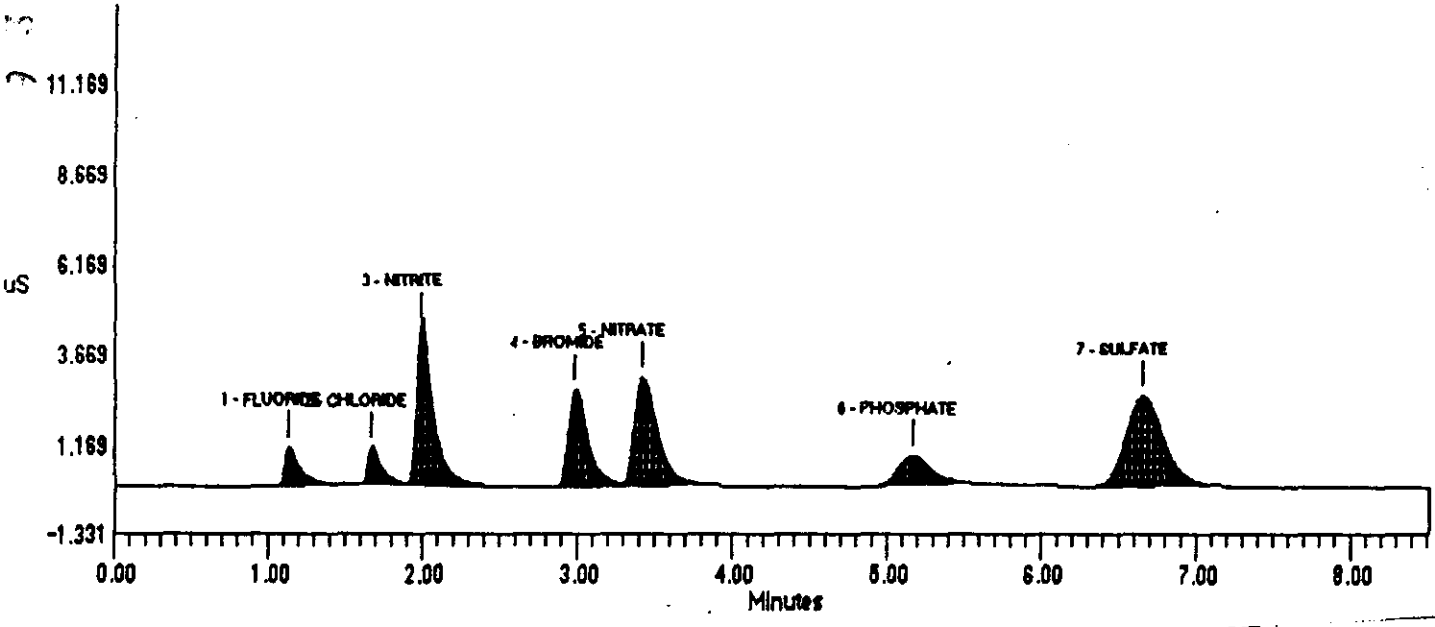


```
==========================================================================
: Sample Name: LMCS/73C11C0 R323 [illegible] 4-23-92        Date: Tue Oct 01 00:32:59 1991:
: Data File   : c:\dx\data\91093061.D14                                  :
: Method      : c:\dx\method\SYSTEM1.met                                 :
: ACI Address: 1        System : 1        Inject#:  14  Detector: CDM-1  :
==========================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2555	5Hz	0.00	8.52	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	53.790	1068	7432	1	0.00
2	1.67	CHLORIDE	73.065	1011	6797	2	-1.96
3	1.98	NITRITE	511.009	4382	34073	2	-2.30
4	2.98	BROMIDE	495.249	2689	24562	2	-2.19
5	3.42	NITRATE	551.166	2999	32234	2	3.54
6	5.17	PHOSPHATE	513.595	854	12997	1	-2.82
7	6.65	SULFATE	585.022	2491	43198	1	-2.92

File: c:\dx\data\91093061.D14 Sample: LMCS/73C11C0



WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R320	Customer ID: 791-3A
Analysis: ION CHROMATOGRAPHIC - PHOSPHATE	Sample Prep: UNDIGESTED

Instrument: DIONEX 4000 - WB54428	Procedure/Rev: LA-533-105/B-0
Technologist: M. MYERS	Date: 10-02-91
Starting Time: 18:46	Temperature: 24-25degC
Ending Time: 21:31	Chemist: D. HERT

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5574	11		
2	REAGENT BLANK	R317-5674	12		
3	SAMPLE 791-3A	R320-5774	13		
4	FINAL LMCS CHECK STD	R323-5574	14		
5			15		
6			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 CHECK STD	73C11CO/0.1 mL			N/A

A-6000-881 (03/92)

9 6 1 2 3 3 1 1 5 3

ION CHROMATOGRAPHIC ANALYSIS (PHOSPHATE) - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5574	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
PO4	LA-533-105	% RECOVERY	W1TE2	0

Sample Size: ? 100ml - 10ml
Customer ID: STD

Remarks, Calculations, Results:
EDP R976 DIONEX
STD# 73C11C0 RESULT 522.442
STD VAL 517.0 %REC 101.1%

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				[signature]
6C823				[signature]

Date: 10-2-91
Time Completed:
Lab Use Only: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5674	106AW	9-19-91	13:45	20

Determination	Method/Standard	Result Units	Charge Code	Rerun
PO4	LA-533-105	PPM	W1TE2	0

Sample Size: ? 1ml
Customer ID: REG DL

Remarks, Calculations, Results:
REAGENT BLANK
<1 ppm

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				[signature]
6C823				

Date: 10-2-91
Time Completed:
Lab Use Only: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 320.-5774	106AW	9-19-91	15:29	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
PO4	LA-533-105	PPM	W1TE2	0

Sample Size: ? 100ml - 10ml
Customer ID: 791-3A

Remarks, Calculations, Results:
586.447

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				[signature]
6C823				

Date: 10-2-91
Time Completed:
Lab Use Only: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5574	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
PO4	LA-533-105	% RECOVERY	W1TE2	0

Sample Size: ? 100ml - 10ml
Customer ID: STD

Remarks, Calculations, Results:
EDP R976 DIONEX
STD# 73C11C0 RESULT 506.607
STD VAL 517.0 %REC 98.0%

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				[signature]
6C823				[signature]

Date: 10-2-91
Time Completed:
Lab Use Only: [signature]

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R320	Customer ID: 791-3A
Analysis: ION CHROMATOGRAPHIC - SULFATE	Sample Prep: UNDIGESTED

Instrument: DIONEX 4000 - WB54428	Procedure/Rev: LA-533-105/B-0
Technologist: M. MYERS	Date: 10-02-91
Starting Time: 18:46	Temperature: 24-25degC
Ending Time: 21:31	Chemist: D. HERT

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5575	11		
2	REAGENT BLANK	R317-5675	12		
3	SAMPLE 791-3A	R320-5775	13		
4	FINAL LMCS CHECK STD	R323-5575	14		
5			15		
6			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 CHECK STD	73C11CO/0.1 mL			N/A

A-6000-881 (03/92)

ION CHROMATOGRAPHIC ANALYSIS (SULFATE) - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5575	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
SO4	LA-533-105	% RECOVERY	W1TE2	0

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

Remarks, Calculations, Results:
EDP R970 DIONEX
STD# 73C11CO RESULT 581.586
STD VAL 610.0 %REC 95.3%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				[signature]
6C823				

Date: 10-2-91
Time Completed:
Lab Use Only: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5675	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
SO4	LA-533-105	PPM	W1TE2	0

Sample Size: ? 1ml
Customer ID: REO DL

Remarks, Calculations, Results:
REAGENT BLANK

<1ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				[signature]
6C823				

Date: 10-2-91
Time Completed:
Lab Use Only: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 320.-5775	106AW	9-19-91	15:29	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
SO4	LA-533-105	PPM	W1TE2	0

Sample Size: ? .100ml - 10ml
Customer ID: 791-3A

Remarks, Calculations, Results:
2562.483

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				[signature]
6C823				

Date: 10-2-91
Time Completed:
Lab Use Only: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5575	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
SO4	LA-533-105	% RECOVERY	W1TE2	0

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

Remarks, Calculations, Results:
EDP R970 DIONEX
STD# 73C11CO RESULT 582.554
STD VAL 610.0 %REC 95.5%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				[signature]
6C823				

Date: 10-2-91
Time Completed:
Lab Use Only: [signature]

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R320	Customer ID: 791-3A
Analysis: ION CHROMATOGRAPHIC - NITRITE	Sample Prep: UNDIGESTED

Instrument: DIONEX 4000 - WB54428	Procedure/Rev: LA-533-105/B-0
Technologist: M. MYERS	Date: 10-02-91
Starting Time: 18:46	Temperature: 24-25degC
Ending Time: 21:31	Chemist: D. HERT

	Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5576
2	REAGENT BLANK	R317-5676
3	SAMPLE 791-3A	R320-5776
4	FINAL LMCS CHECK STD	R323-5576
5		
6		
7		
8		
9		
10		

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

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS CHECK STD	73C11CO/0.1 mL			N/A

A-6000-881 (03/92)

9 3 1 2 3 3 4 1 6 7

ION CHROMATOGRAPHIC ANALYSIS (NITRITE) - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5576	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO2	LA-533-105	% RECOVERY	W1TE2	0

Sample Size: ? .100ml-10ml — Customer ID: STD

Remarks, Calculations, Results:
EDP R968 DIONEX
STD# 73C11C0 RESULT 494.073
STD VAL 510.0 %REC 96.9%

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				[signature]
6C823			[signature]	

Date: 10-2-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5676	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO2	LA-533-105	PPM	W1TE2	0

Sample Size: ? 1ml — Customer ID: REG BL

Remarks, Calculations, Results:
REAGENT BLANK
<1 ppm

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				[signature]
6C823				

Date: 10-2-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 320.-5776	106AW	9-19-91	15:30	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO2	LA-533-105	PPM	W1TE2	0

Sample Size: ? .100ml-10ml-.500ml-10ml — Customer ID: 791-3A

Remarks, Calculations, Results:
7354.934

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				[signature]
6C823				

Date: 10-2-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5576	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO2	LA-533-105	% RECOVERY	W1TE2	0

Sample Size: ? .100ml-10ml — Customer ID: STD

Remarks, Calculations, Results:
EDP R968 DIONEX
STD# 73C11C0 RESULT 501.702
STD VAL 510.0 %REC 98.4%

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				[signature]
6C823			[signature]	

Date: 10-2-91 — Time Completed: — Lab Unit Mgr: [signature]

9-22-91 6-13-92
4469-AC

DIONEX METHOD PARAMETERS - SYSTEM1.MET

System Parameters

System Name : system1/gpm
Number of Detectors..... 1
Detector 1 Type..... CDM-1
Detector 1 real time plot scale (uS)..... 20.00
Run Time (minutes)..... 8.50
Sampling Rate (seconds)..... 0.20

-- DETECTOR 1 PARAMETERS --

Report Options

Save Data File..... Yes
Data File Name: c:\dx\data\91092201.D08
Create ASCII Report File..... No
Print Report..... Yes
List Peaks Not Found in this run..... No
Report Unknowns Found in this run..... Yes
Print Chromatogram..... Yes
AutoScale Chromatogram to Highest Peak..... Yes
Fill Peaks with Color ..... Yes
Draw Grid Lines on Chromatogram..... No
Label with Peak Number..... Yes
Label with Retention Times on Chromatogram..... No
Label with Component Name..... Yes
Format File Name: c:\dx\method\default.prf

Integration Parameters

Starting Peak Width (seconds)..... 10.0
Peak Threshold (mV or uS/data pt interval)..... 0.500
Peak Area Reject..... 1000
Area Reject for Reference Peaks..... 1000
Percent Retention Time Window for Reference Peaks..... 5.0

Integration Timed Events

Time	Description
1.32	Start peak detection
1.44	Start peak detection
1.46	Start peak detection
1.77	
1.77	Enable end of peak detection

Calibration Parameters

Number Of Levels for Calibration	6
Calibration Fit Type	Quadratic
Replace Or Average Calibrations	Replace
External or Internal Calibration	External
Calibrate by Area or Height	Area
Default Injection Volume	1.0
Default Dilution Factor	1.0
Response Factor for Unknown Peaks	1.0
Calibration Standard Volume	1.0
Internal Standard Volume	1.0
Sample Unit	PPM

Component # 1 FLUORIDE Retention Time 1.13
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 8.52797E-002
K1 = 6.06440E-005
K2 = -6.17180E-011

Level	Amount	Area	Height
1	1.20000E-001	1439	225
2	3.00000E-001	4035	566
3	6.00000E-001	8217	1141
4	1.20000E+000	16507	2218
5	2.30000E+000	39534	4812
6	4.40000E+000	76890	9371

Component # 2 CHLORIDE Retention Time 1.70
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.93335E-002
K1 = 1.01273E-004
K2 = -9.35560E-011

Level	Amount	Area	Height
1	1.60000E-001	1319	217
2	3.90000E-001	3754	568
3	7.80000E-001	6942	1045
4	1.50000E+000	14461	1975
5	3.00000E+000	30287	3987
6	5.90000E+000	61305	8710

Component # 3 NITRITE Retention Time 2.03
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 4.88691E-001
K1 = 1.33960E-004
K2 = 5.52630E-012

Level	Amount	Area	Height
1	1.08000E+000	6239	874
2	2.69000E+000	17299	2252
3	5.37000E+000	34328	4729
4	1.06200E+001	72787	9300
5	2.08500E+001	153501	19401
6	4.01500E+001	272053	34439

Component # 4 BROMIDE Retention Time 2.80
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 4.01960E-002
K1 = 2.00453E-004
K2 = -1.00008E-010

Level	Amount	Area	Height
1	1.56000E+000	7660	753
2	3.90000E+000	20706	1880
3	7.80000E+000	38868	3455
4	1.54000E+001	78061	6644
5	3.02000E+001	165133	12632
6	5.81000E+001	350930	24386

Component # 5 NITRATE Retention Time 3.30
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.02611E-001
K1 = 1.61787E-004
K2 = -5.83501E-011

Level	Amount	Area	Height
1	1.37000E+000	7543	727
2	3.43000E+000	17321	1803
3	6.83000E+000	40244	3563
4	1.35000E+001	83386	7010
5	2.65000E+001	173503	13640
6	5.11000E+001	360809	25639

Component # 6 PHOSPHATE Retention Time 5.32
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 5.53452E-001
K1 = 3.53243E-004
K2 = -3.51136E-010

Level	Amount	Area	Height
1	1.19000E+000	2277	162
2	2.98000E+000	7242	453
3	5.93000E+000	15025	935
4	1.17400E+001	31660	1933
5	2.30300E+001	69135	4130
6	4.43700E+001	144747	8447

Component # 7 SULFATE Retention Time 6.85
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.55734E-001
K1 = 1.27491E-004
K2 = -3.79338E-011

Level	Amount	Area	Height
1	1.40000E+000	9418	543
2	3.50000E+000	24499	1382
3	6.96000E+000	52303	2890
4	1.37800E+001	107173	5909
5	2.70400E+001	225632	12225
6	5.20700E+001	471630	24686

IC Control File: C:\DX\METHOD\SYSTEM1.TE

Step	Time	Description
Init		CDM-1 AutoOffset Off
Init		CDM-1 Recorder Mark OFF
Init		CDM-1 Temp. Comp. = 1.7 / Deg C
Init		CDM-1 Recorder Range = 1.0 uS
Init		CDM-1 Cell ON
Init		CHA Heater = 25 Deg. C
Init		Valve A ON
Init		Valve B ON
Init		Inject Valve OFF
Init		ACI Autosmp OFF
Init		ACI RLY 2 OFF
Init		ACI TTL 1 OFF
Init		ACI TTL 2 OFF
Init		ACI AC 1 ON
Init		GPM Start
Init		GPM Hold Gradient Clock
Init		GPM Reset ON
1	0.0	CDM-1 AutoOffset ON
1	0.0	Start Sampling
1	0.0	GPM Reset OFF
2	0.1	CDM-1 Recorder Range = 10.0 uS
2	0.1	Inject Valve ON
2	0.1	GPM Run Gradient Clock
3	3.0	Inject Valve OFF
4	3.5	ACI Autosmp ON
5	8.0	ACI Autosmp OFF

GpmFile: C:\DX\METHOD\SYSTEM1.GPM
Lo Pressure Limit = 200
Hi Pressure Limit = 2000
Eluant 1 - DI WATER
Eluant 2 - SODIUM CARBONATE
Eluant 3 - SODIUM BICARBONATE
Eluant 4 - Eluant 4

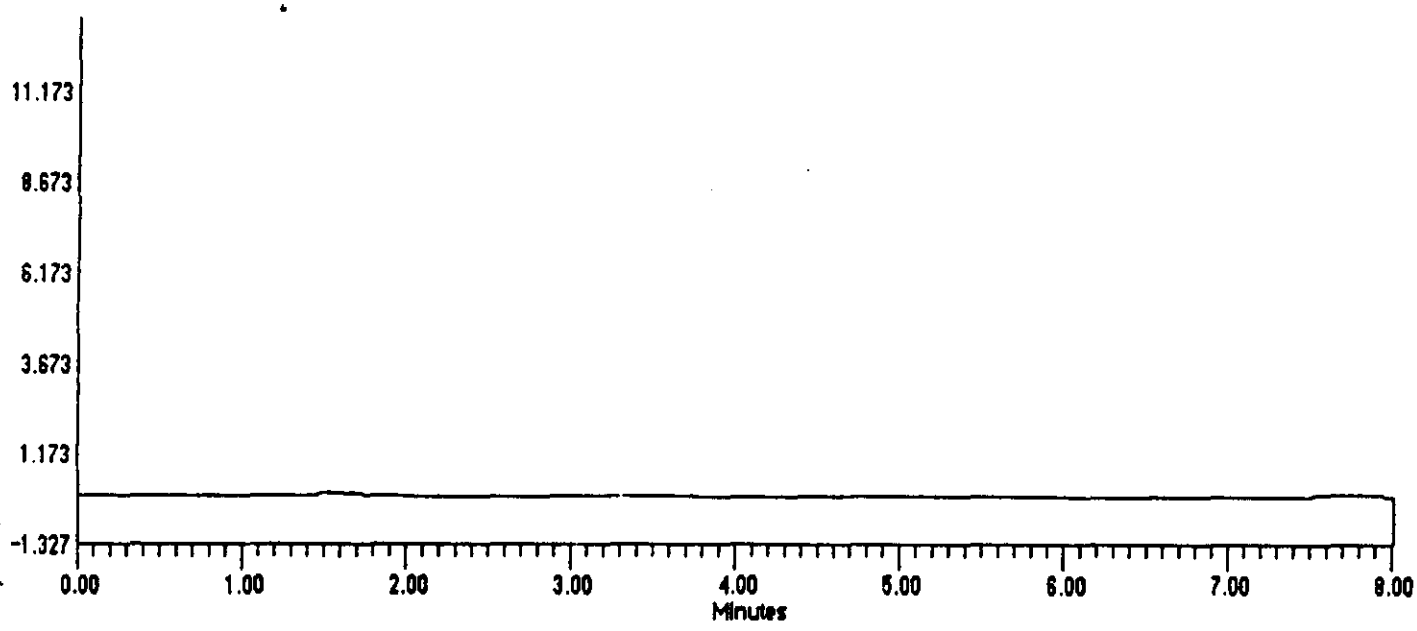
Time	Flow	%1	%2	%3	%4	V5	V6	Comment
0.0	2.0	84	8	8	0	0	0	

```
==========================================================================
| Sample Name: BLANK                          Date: Wed Oct 02 18:46:10 1991|
| Data File   : c:\dx\data\91100121.D02                                    |
| Method      : c:\dx\method\SYSTEM1.met                                   |
| ACI Address: 1        System : 1        Inject#:    2  Detector: CDM-1   |
==========================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta

File: c:\dx\data\91100121.D02 Sample: BLANK

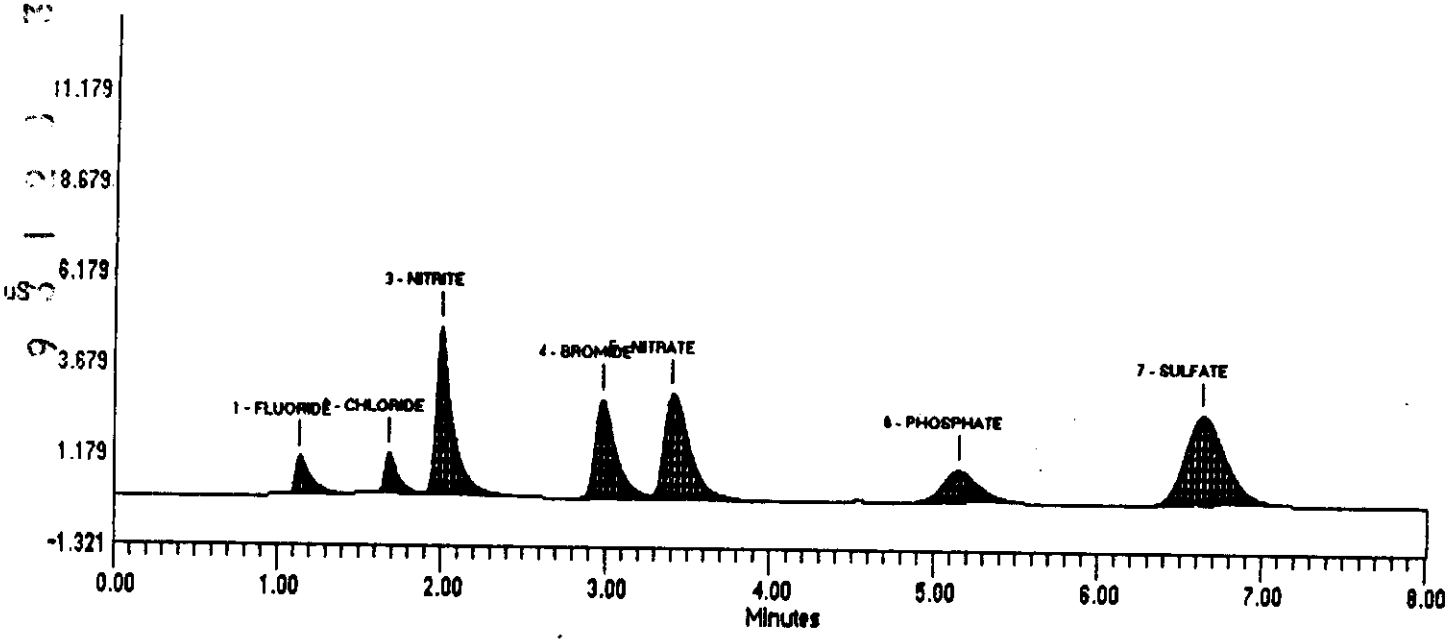


Sample Name: LMCS/73C11C0 R316 JK 6-23-92		Date: Wed Oct 02 18:55:16 1991	
Data File : c:\dx\data\91100111.D03			
Method : c:\dx\method\SYSTEM1.met			
ACI Address: 1	System : 1	Inject#: 3	Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	51.501	1052	7053	1	0.00
2	1.68	CHLORIDE	67.889	1092	6285	2	-0.98
3	2.00	NITRITE	494.073	4650	32824	2	-1.48
4	2.98	BROMIDE	487.271	2732	24158	2	-2.19
5	3.40	NITRATE	538.528	2889	31443	2	3.03
6	5.15	PHOSPHATE	522.442	861	13251	1	-3.13
7	6.63	SULFATE	581.586	2485	42924	1	-3.16

File: c:\dx\data\91100111.D03 Sample: LMCS/73C11C0

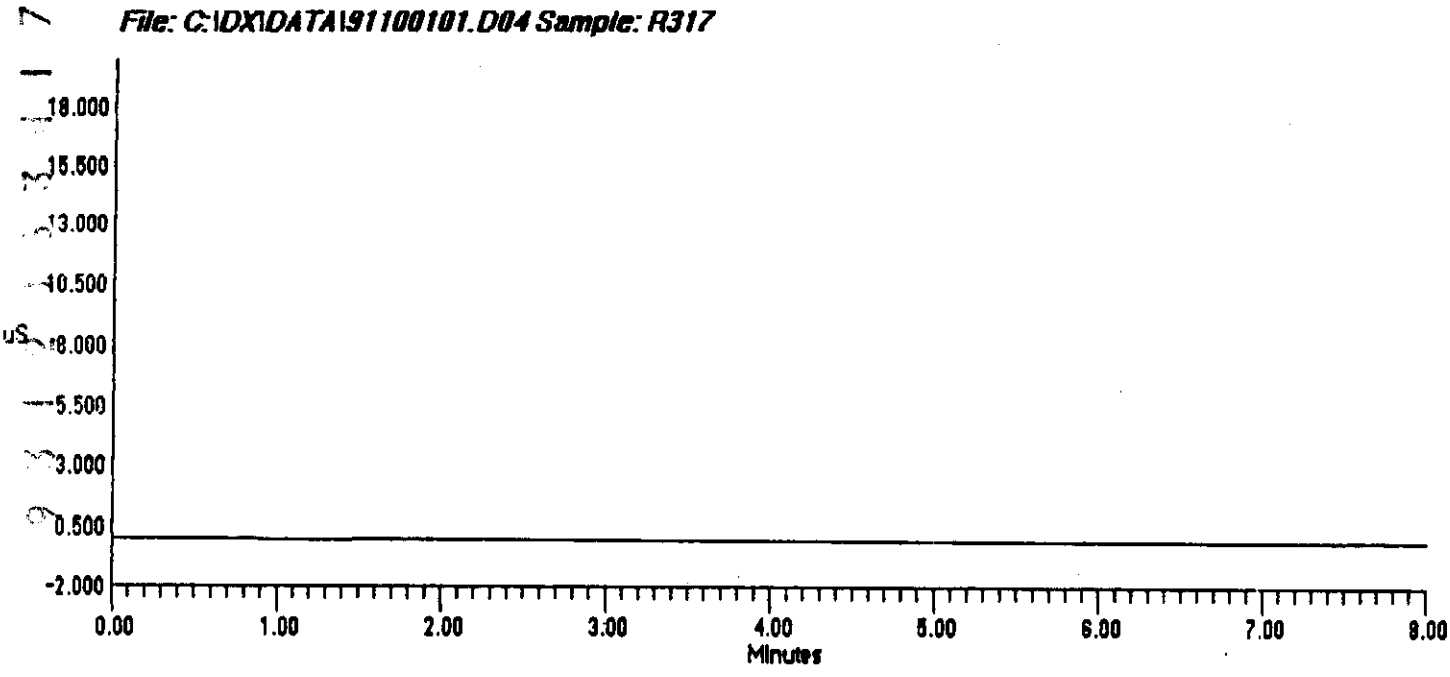


DATA REPROCESSED ON Wed Oct 02 19:17:10 1991

```
==========================================================================
: Sample Name: R317                          Date: Wed Oct 02 19:04:35 1991:
: Data File  : C:\DX\DATA\91100101.D04                                    :
: Method     : c:\dx\method\SYSTEM1.met                                   :
: ACI Address: 1        System : 1        Inject#:   4  Detector: CDM-1   :
==========================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta



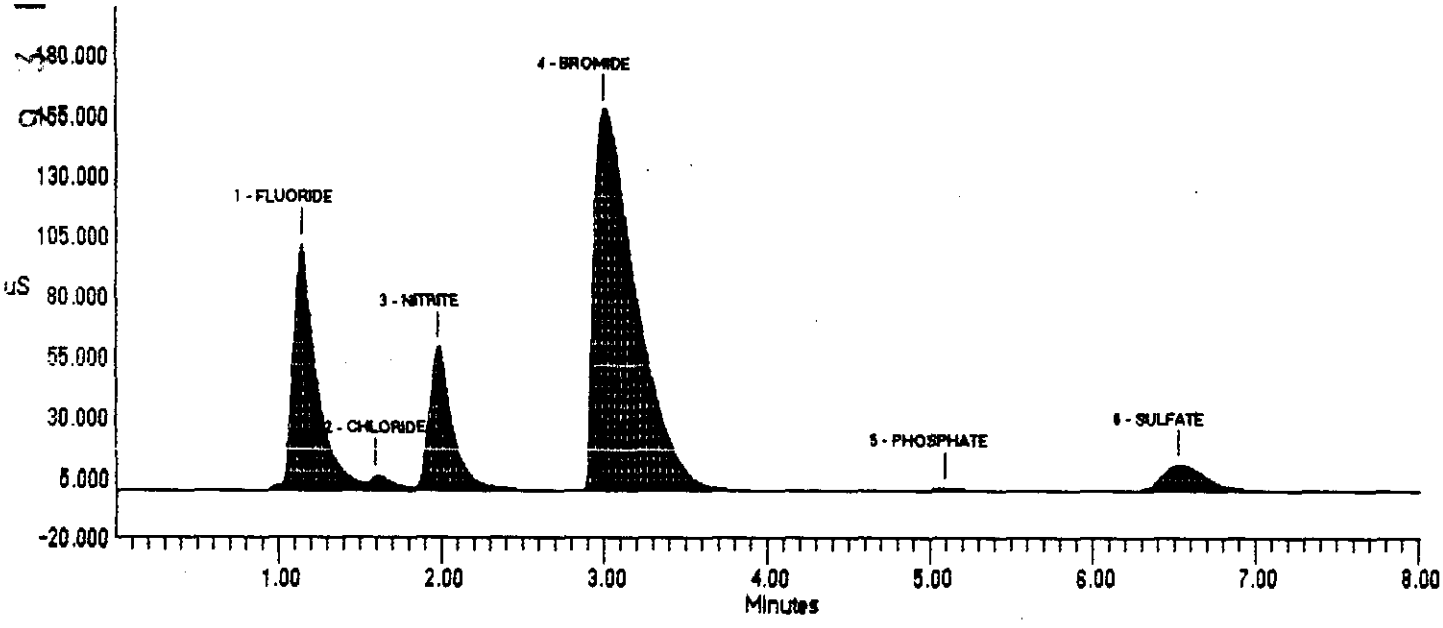
DATA REPROCESSED ON Wed Oct 02 22:32:46 1991

Sample Name: R320	Date: Wed Oct 02 20:28:57 1991
Data File : C:\DX\DATA\91100101.D13	
Method : c:\dx\method\SYSTEM1.met	
ACI Address: 1 System : 1	Inject#: 13 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.15	FLUORIDE	-202.712	101504	1015968	3	0.00
2	1.60	CHLORIDE	4968719.490	4919	49195	4	-1.45
3	1.98	NITRITE	8142.779	58422	584111	2	-3.71
4	3.00	BROMIDE	-23663.095	157233	2831789	2	-3.06
5	5.10	PHOSPHATE	586.447	943	15097	1	-5.47
6	6.53	SULFATE	2562.483	11273	209240	1	-6.01

File: C:\DX\DATA\91100101.D13 Sample: R320



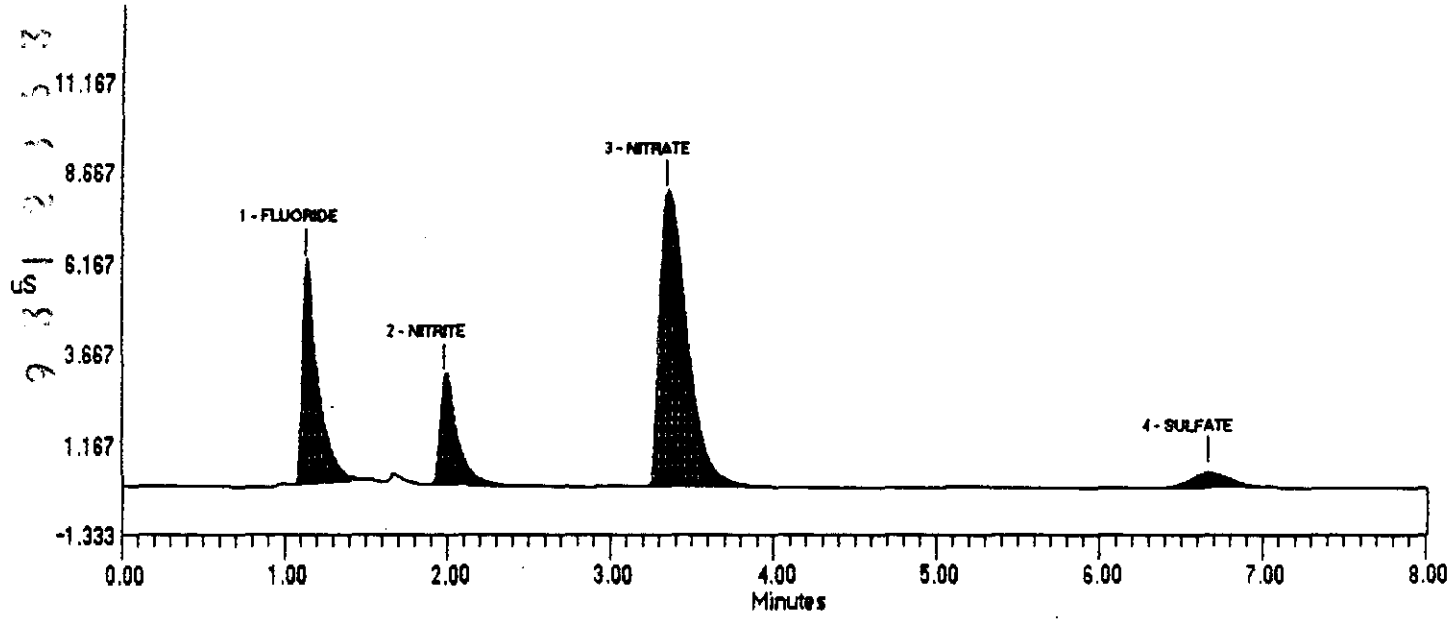
TFZ 9-30-92

```
==========================================================================
| Sample Name: R320                                Date: Wed Oct 02 20:38:22 1991|
| Data File   : c:\dx\data\91100101.D14                                    |
| Method      : c:\dx\method\SYSTEM1.met                                   |
| ACI Address: 1        System : 1        Inject#:  14  Detector: CDM-1    |
==========================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	2121	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	5226.157	6064	40929	1	0.00
2	1.98	NITRITE	7354.934	2931	22218	1	-2.30
3	3.35	NITRATE	32286.231	8077	95507	1	1.52
4	6.67	SULFATE	2751.268	456	7401	1	-2.68

File: c:\dx\data\91100101.D14 Sample: R320



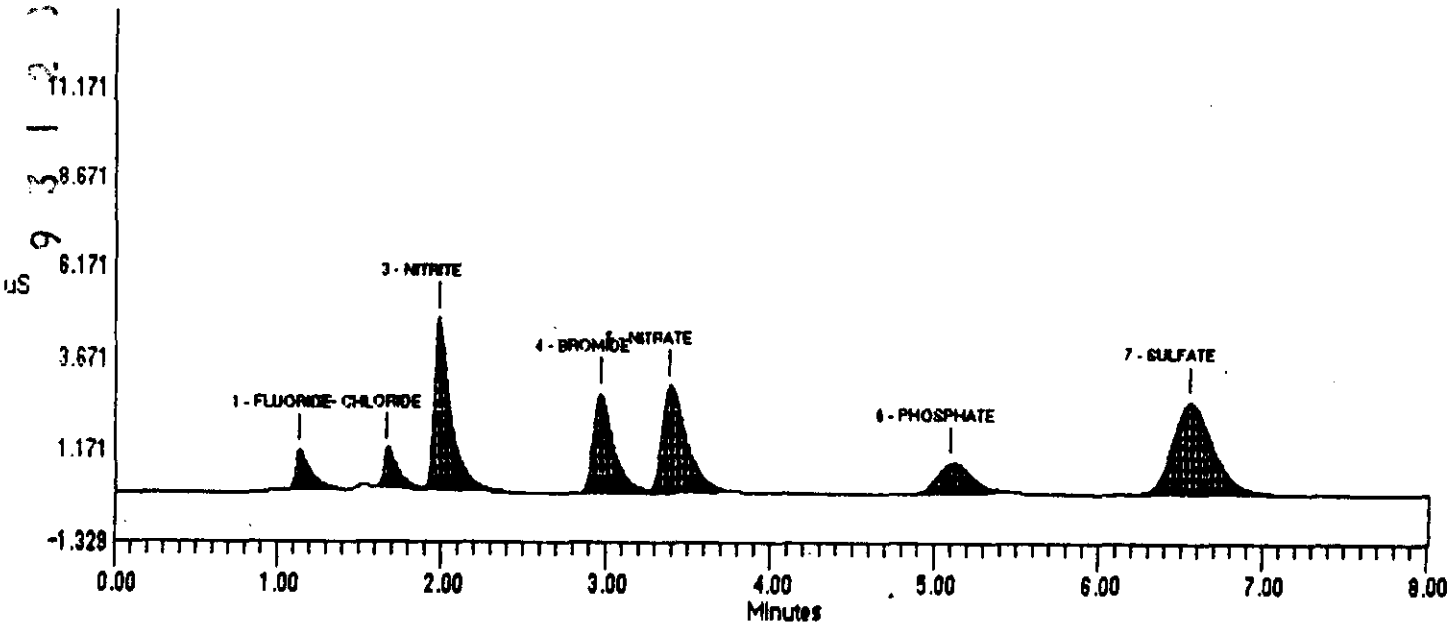
TPZ
9-30-92

Sample Name: LMCS/73C11C0 R3L3 [illegible] 6-23-92		Date: Wed Oct 02 21:31:01 1991	
Data File : c:\dx\data\91100101.D19			
Method : c:\dx\method\SYSTEM1.met			
ACI Address: 1	System : 1	Inject#: 19	Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	52.789	1086	7266	1	0.00
2	1.67	CHLORIDE	69.288	1038	6424	2	-1.96
3	1.98	NITRITE	501.702	4638	33387	2	-2.30
4	2.97	BROMIDE	485.310	2705	24059	2	-2.73
5	3.38	NITRATE	533.443	2901	31125	2	2.53
6	5.10	PHOSPHATE	506.601	836	12795	1	-4.08
7	6.55	SULFATE	582.554	2497	43001	1	-4.38

File: c:\dx\data\91100101.D19 Sample: LMCS/73C11C0



WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R320	Customer ID: 791-3A
Analysis: ION CHROMATOGRAPHIC - CHLORIDE	Sample Prep: UNDIGESTED

Instrument: DIONEX 4000 - WB54428	Procedure/Rev: LA-533-105/B-0
Technologist: M. MYERS	Date: 10-04-91
Starting Time: 20:46	Temperature: 24-25degC
Ending Time: 23:36	Chemist: D. HERT

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5572	11		
2	REAGENT BLANK	R317-5672	12		
3	SAMPLE 791-3A	R320-5772	13		
4	FINAL LMCS CHECK STD	R323-5572	14		
5			15		
6			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 CHECK STD	73C11CO/0.1 mL			N/A

A-6000-881 (03/92)

ION CHROMATOGRAPHIC ANALYSIS (CHLORIDE) - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5572	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
CL	LA-533-105	% RECOVERY	W1TE2	0

Sample Size: ? .100ml - 10ml — Customer ID: STD

Remarks, Calculations, Results:
EDP R972 DIONEX
STDN 73C11CD RESULT 74.035 ppm
STD VAL 75.00 ppm %REC 98.7%

Analyst-1: [signature] — Analyst-2: — Analyst-3: — Analyst-4: — Analyst-5: [signature]
Hrs: 6C823 — Hrs: — Hrs: — Hrs: — Hrs: [signature]
Date: 10-4-91 — Time Completed: [signature] — Lab Unit Mgr: [signature]
JK 6-5-92

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5672	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
CL	LA-533-105	PPM	W1TE2	0

Sample Size: ? 1ml — Customer ID: REG BL

Remarks, Calculations, Results:
REAGENT BLANK
<1.00E-1 ppm

Analyst-1: [signature] — Analyst-2: — Analyst-3: — Analyst-4: — Analyst-5: [signature]
Hrs: 6C823 — Hrs: — Hrs: — Hrs: — Hrs: — Hrs: [signature]
Date: 10-4-91 — Time Completed: [signature] — Lab Unit Mgr: [signature]
JK 6-5-92

Serial No.	Sample Point	Date	Time Issued	Priority
R 320. 5772	106AW	9-19-91	15:28	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
CL	LA-533-105	PPM	W1TE2	0

Sample Size: ? .100ml - 10ml - .500ml - 10ml — Customer ID: 791-3A

Remarks, Calculations, Results:
4.47E2 ppm

Analyst-1: [signature] — Analyst-2: — Analyst-3: — Analyst-4: — Analyst-5: [signature]
Hrs: 6C823 — Hrs: — Hrs: — Hrs: — Hrs: — Hrs: [signature]
Date: 10-4-91 — Time Completed: [signature] — Lab Unit Mgr: [signature]
JK 6-15-92

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5572	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
CL	LA-533-105	% RECOVERY	W1TE2	0

Sample Size: ? .100ml - 10ml — Customer ID: STD

Remarks, Calculations, Results:
EDP R972 DIONEX
STDN 73C11CD RESULT 71.429 ppm
STD VAL 75 ppm %REC 95.2%

Analyst-1: [signature] — Analyst-2: — Analyst-3: — Analyst-4: — Analyst-5: [signature]
Hrs: 6C823 — Hrs: — Hrs: — Hrs: — Hrs: [signature]
Date: 10-4-91 — Time Completed: [signature] — Lab Unit Mgr: [signature]
JK 6-5-92

9-22-91 6-23-92
4409-AC

DIONEX METHOD PARAMETERS - SYSTEM1.MET

System Parameters

System Name : system1/gpm
Number of Detectors..... 1
Detector 1 Type..... CDM-1
Detector 1 real time plot scale (uS)..... 20.00
Run Time (minutes)..... 8.50
Sampling Rate (seconds)..... 0.20

-- DETECTOR 1 PARAMETERS --
Report Options

Save Data File..... Yes
Data File Name: c:\dx\data\91092201.D08
Create ASCII Report File..... No
Print Report..... Yes
List Peaks Not Found in this run..... No
Report Unknowns Found in this run..... Yes
Print Chromatogram..... Yes
AutoScale Chromatogram to Highest Peak..... Yes
Fill Peaks with Color ..... Yes
Draw Grid Lines on Chromatogram..... No
Label with Peak Number..... Yes
Label with Retention Times on Chromatogram..... No
Label with Component Name..... Yes
Format File Name: c:\dx\method\default.prf

Integration Parameters

Starting Peak Width (seconds)..... 10.0
Peak Threshold (mV or uS/data pt interval)..... 0.500
Peak Area Reject..... 1000
Area Reject for Reference Peaks..... 1000
Percent Retention Time Window for Reference Peaks..... 5.0

Integration Timed Events

Time	Description
1.32	Start peak detection
1.44	Start peak detection
1.46	Start peak detection
1.77	
1.77	Enable end of peak detection

Calibration Parameters

Number Of Levels for Calibration	6
Calibration Fit Type	Quadratic
Replace Or Average Calibrations	Replace
External or Internal Calibration	External
Calibrate by Area or Height	Area
Default Injection Volume	1.0
Default Dilution Factor	1.0
Response Factor for Unknown Peaks	1.0
Calibration Standard Volume	1.0
Internal Standard Volume	1.0
Sample Unit	PPM

Component # 1 FLUORIDE Retention Time 1.13
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 8.52797E-002
K1 = 6.06440E-005
K2 = -6.17180E-011

Level	Amount	Area	Height
1	1.20000E-001	1439	225
2	3.00000E-001	4035	566
3	6.00000E-001	8217	1141
4	1.20000E+000	16507	2218
5	2.30000E+000	39534	4812
6	4.40000E+000	76890	9371

Component # 2 CHLORIDE Retention Time 1.70
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.93335E-002
K1 = 1.01273E-004
K2 = -9.35560E-011

Level	Amount	Area	Height
1	1.60000E-001	1319	217
2	3.90000E-001	3754	568
3	7.80000E-001	6942	1045
4	1.50000E+000	14461	1975
5	3.00000E+000	30287	3987
6	5.90000E+000	61305	8910

Component # 3 NITRITE Retention Time 2.03
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 4.88691E-001
K1 = 1.33960E-004
K2 = 5.52630E-012

Level	Amount	Area	Height
1	1.08000E+000	6239	874
2	2.69000E+000	17299	2252
3	5.37000E+000	34328	4729
4	1.06200E+001	72787	9300
5	2.08500E+001	153501	19401
6	4.01500E+001	292053	34439

Component # 4 BROMIDE Retention Time 2.80
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 4.01960E-002
K1 = 2.00453E-004
K2 = -1.00008E-010

Level	Amount	Area	Height
1	1.56000E+000	7660	753
2	3.90000E+000	20706	1880
3	7.80000E+000	38868	3455
4	1.54000E+001	78061	6644
5	3.02000E+001	165133	12632
6	5.81000E+001	350930	24386

Component # 5 NITRATE Retention Time 3.30
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.02611E-001
K1 = 1.61787E-004
K2 = -5.83501E-011

Level	Amount	Area	Height
1	1.37000E+000	7543	727
2	3.43000E+000	19321	1803
3	6.83000E+000	40244	3563
4	1.35000E+001	83386	7010
5	2.65000E+001	173503	13640
6	5.11000E+001	360809	25639

Component # 6 PHOSPHATE Retention Time 5.32
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 5.53452E-001
K1 = 3.53243E-004
K2 = -3.51156E-010

Level	Amount	Area	Height
1	1.19000E+000	2277	162
2	2.98000E+000	7242	453
3	5.93000E+000	15025	935
4	1.17400E+001	31660	1933
5	2.30300E+001	69135	4130
6	4.43700E+001	144749	8447

Component # 7 SULFATE Retention Time 6.85
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.55734E-001
K1 = 1.27491E-004
K2 = -3.79358E-011

Level	Amount	Area	Height
1	1.40000E+000	9418	543
2	3.50000E+000	24499	1382
3	6.96000E+000	52303	2890
4	1.37800E+001	107173	5909
5	2.70400E+001	225632	12225
6	5.20700E+001	471630	24686

IC Control File: C:\DX\METHOD\SYSTEM1.TE

Step	Time	Description
Init		CDM-1 AutoOffset Off
Init		CDM-1 Recorder Mark OFF
Init		CDM-1 Temp. Comp. = 1.7 / Deg C
Init		CDM-1 Recorder Range = 1.0 uS
Init		CDM-1 Cell ON
Init		CHA Heater = 25 Deg. C
Init		Valve A ON
Init		Valve B ON
Init		Inject Valve OFF
Init		ACI Autosmp OFF
Init		ACI RLY 2 OFF
Init		ACI TTL 1 OFF
Init		ACI TTL 2 OFF
Init		ACI AC 1 ON
Init		GPM Start
Init		GPM Hold Gradient Clock
Init		GPM Reset ON
1	0.0	CDM-1 AutoOffset ON
1	0.0	Start Sampling
1	0.0	GPM Reset OFF
2	0.1	CDM-1 Recorder Range = 10.0 uS
2	0.1	Inject Valve ON
2	0.1	GPM Run Gradient Clock
3	3.0	Inject Valve OFF
4	3.5	ACI Autosmp ON
5	8.0	ACI Autosmp OFF

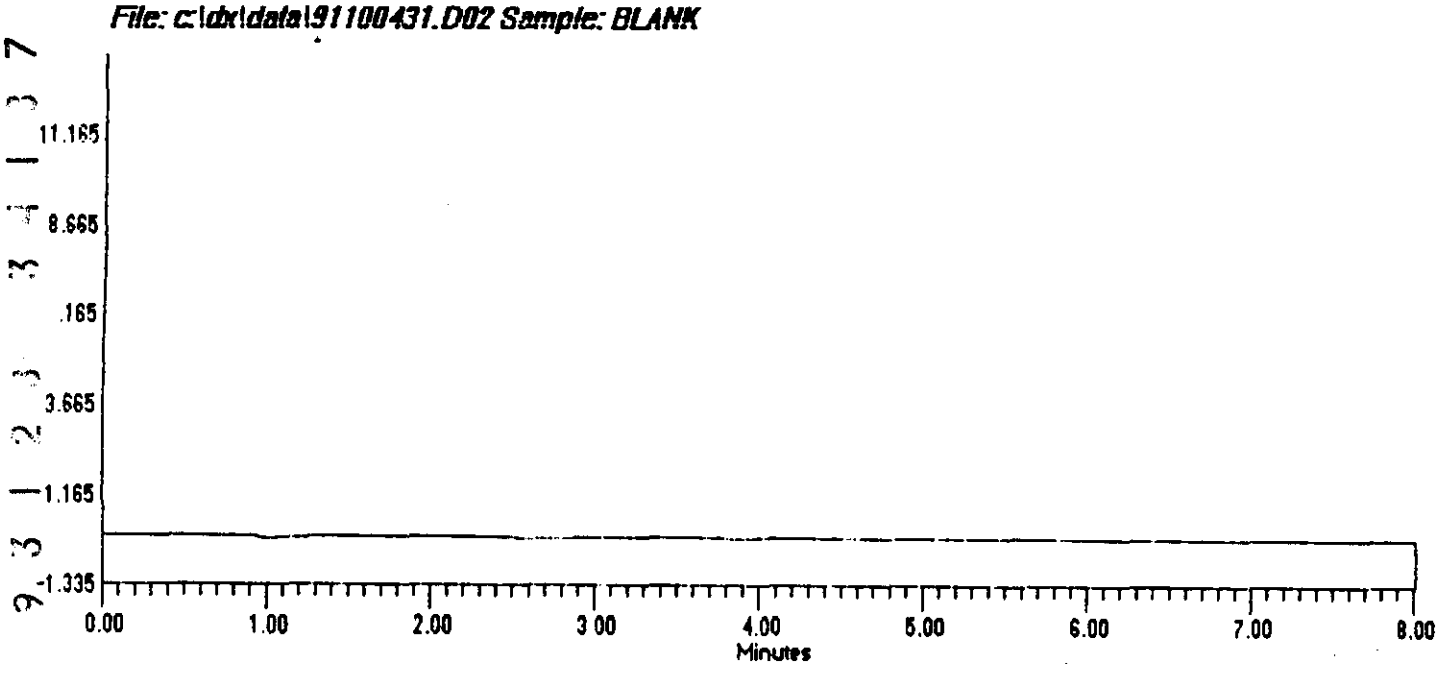
GpmFile: C:\DX\METHOD\SYSTEM1.GPM
Lo Pressure Limit = 200
Hi Pressure Limit = 2000
Eluant 1 - DI WATER
Eluant 2 - SODIUM CARBONATE
Eluant 3 - SODIUM BICARBONATE
Eluant 4 - Eluant 4

Time	Flow	%1	%2	%3	%4	V5	V6	Comment
0.0	2.0	84	8	8	0	0	0	

```
| Sample Name: BLANK                                  Date: Fri Oct 04 20:37:01 1991|
| Data File   : c:\dx\data\91100431.D02                                             |
| Method      : c:\dx\method\SYSTEM1.met                                            |
| ACI Address: 1        System : 1        Inject#:    2  Detector: CDM-1          |
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta



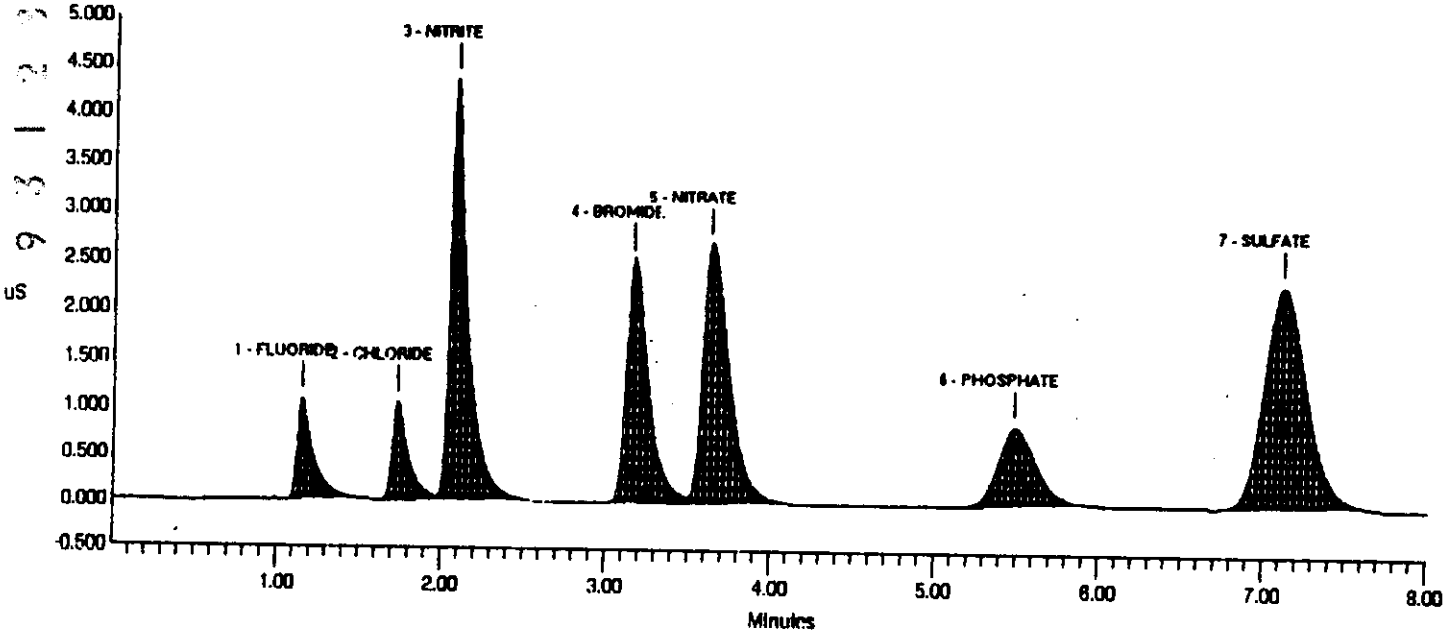
DATA REPROCESSED ON Fri Oct 04 21:38:52 1991

Sample Name: LMCS/73C11C0 R3/4 SR 6-23-92 Date: Fri Oct 04 20:46:06 1991
Data File : C:\DX\DATA\91100421.D03
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1 System : 1 Inject#: 3 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.15	FLUORIDE	52.136	1058	7158	1	0.00
2	1.73	CHLORIDE	74.035	1030	6894	2	0.48
3	2.08	NITRITE	489.305	4334	32473	2	1.11
4	3.17	BROMIDE	458.041	2492	22630	2	2.32
5	3.63	NITRATE	530.820	2668	30960	2	8.51
6	5.48	PHOSPHATE	505.944	805	12777	1	1.64
7	7.12	SULFATE	558.013	2281	41046	1	2.39

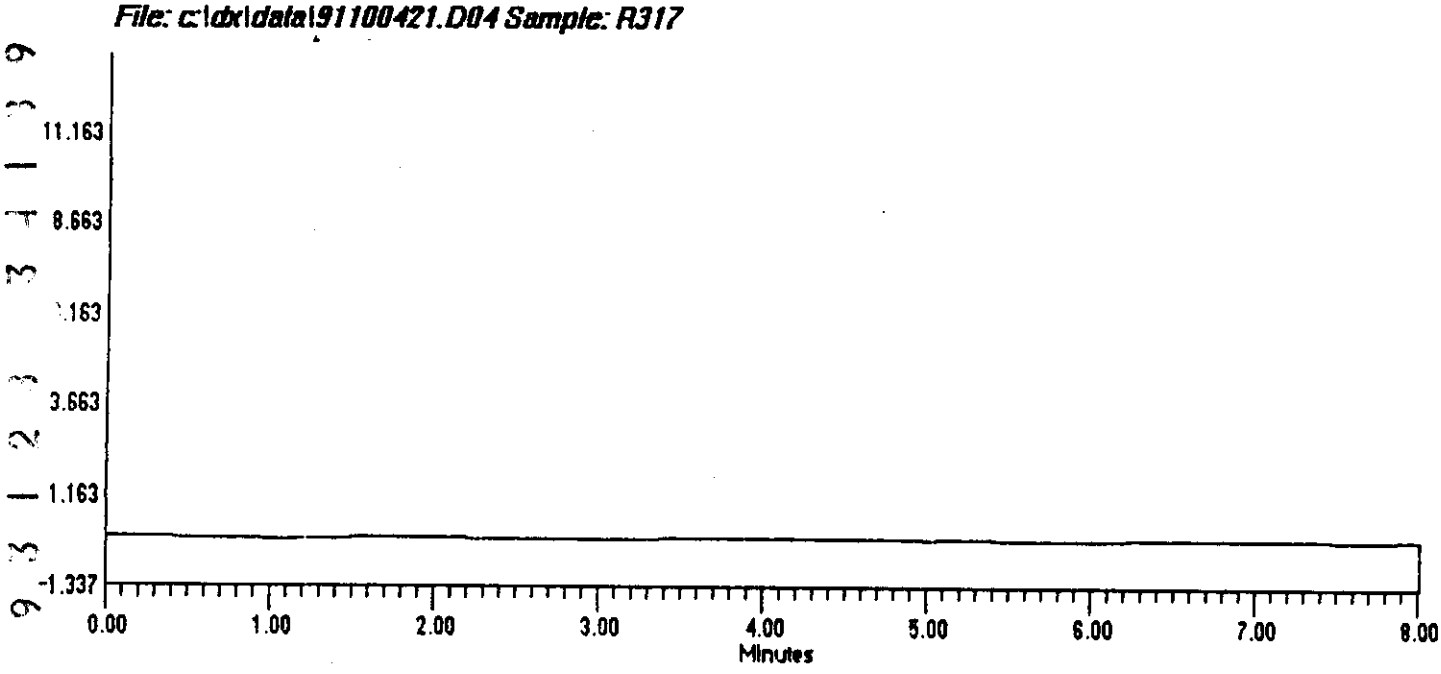
File: C:\DX\DATA\91100421.D03 Sample: LMCS/73C11C0



```
: Sample Name: R317                                  Date: Fri Oct 04 20:55:27 1991:
: Data File   : c:\dx\data\91100421.D04                                            :
: Method      : c:\dx\method\SYSTEM1.met                                           :
: ACI Address: 1        System : 1        Inject#:    4  Detector: CDM-1          :
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta

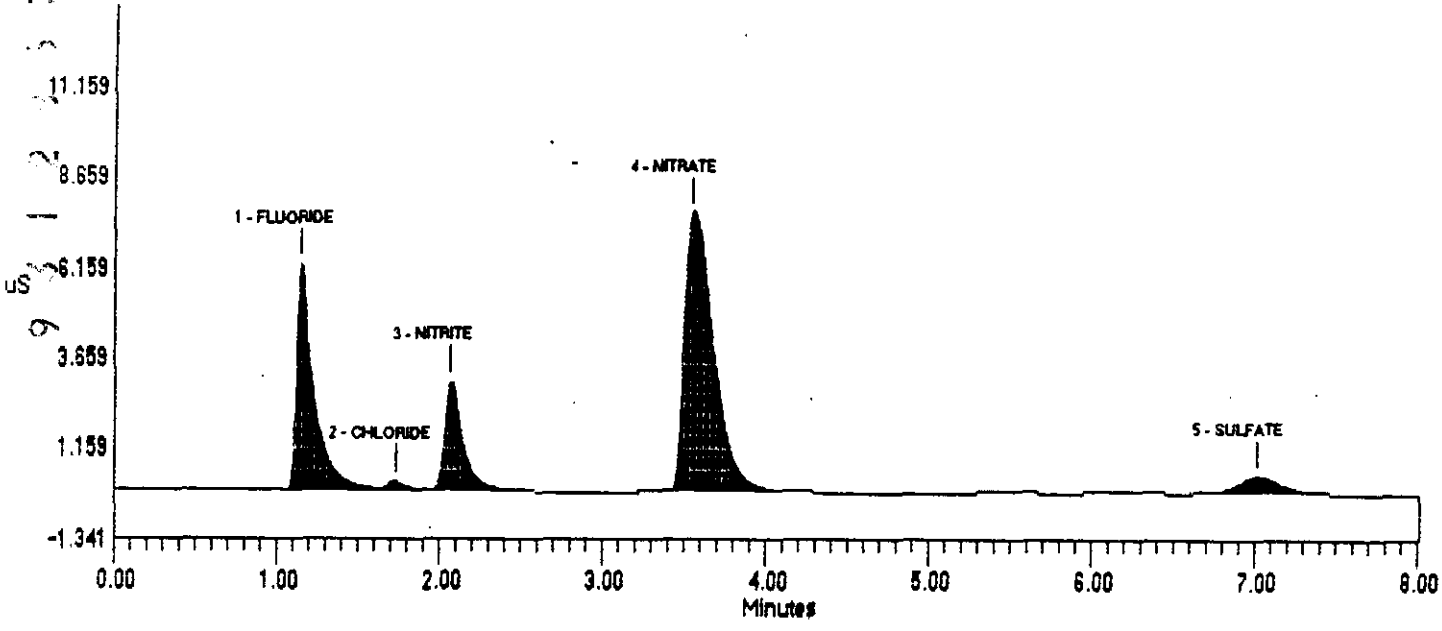


Sample Name: R320 Date: Fri Oct 04 21:42:38 1991
Data File : c:\dx\data\91100411.D09
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1 System : 1 Inject#: 9 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	2121	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.15	FLUORIDE	5638.796	6198	44443	2	0.00
2	1.73	CHLORIDE	447.034	248	1695	2	0.48
3	2.07	NITRITE	7403.069	2980	22337	1	0.33
4	3.55	NITRATE	31900.499	7692	94301	1	6.02
5	7.02	SULFATE	2827.800	446	7685	1	0.95

File: c:\dx\data\91100411.D09 Sample: R320



TF2
8-30-12

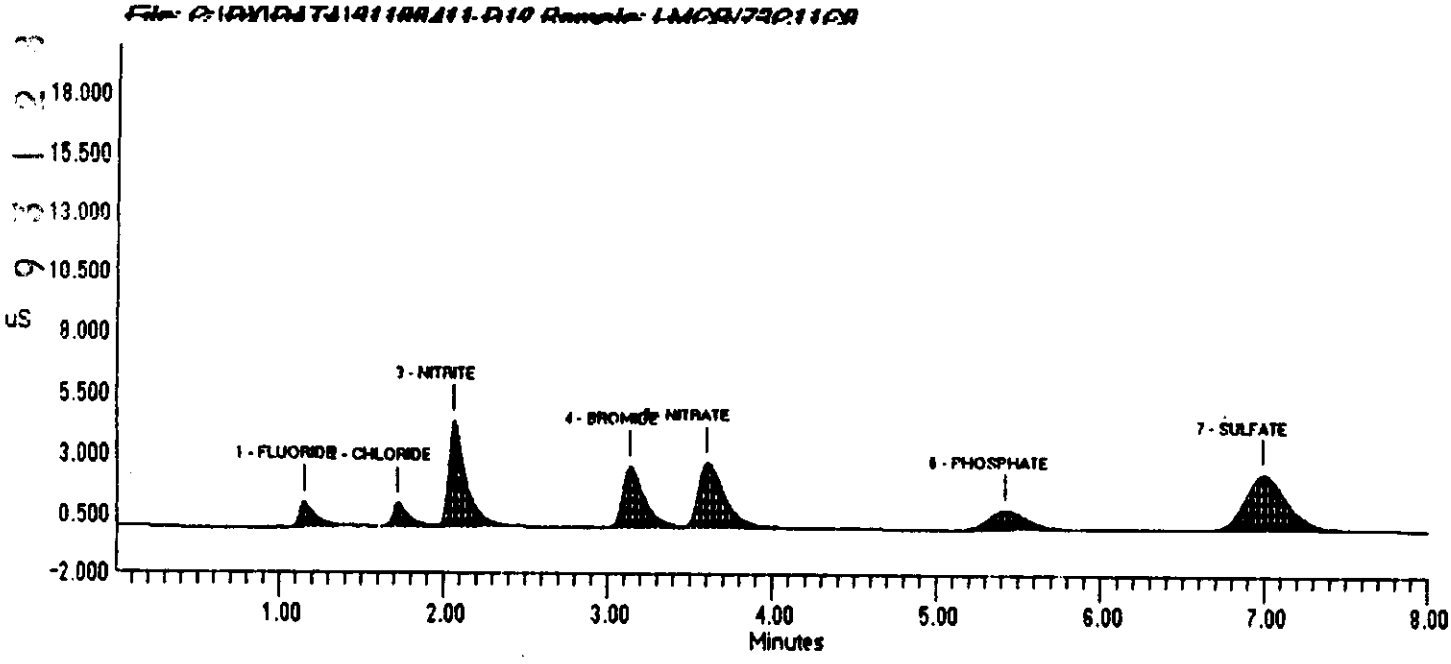
R323 7 D
R324 6-23-92

DATA REPROCESSED ON Fri Oct 04 22:45:26 1991

Sample Name: LMCS/73C1100 R323 6-23-92 Date: Fri Oct 04 22:10:28 1991
Data File : C:\DX\DATA\91100411.D12
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1 System : 1 Inject#: 12 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.15	FLUORIDE	52.107	1076	7152	1	0.00
2	1.72	CHLORIDE	21.429	993	6636	2	-0.48
3	2.07	NITRITE	487.247	4387	32321	2	0.33
4	3.13	BROMIDE	475.164	2556	23546	2	1.24
5	3.60	NITRATE	524.183	2723	30545	2	7.51
6	5.42	PHOSPHATE	510.540	821	12909	1	0.40
7	6.98	SULFATE	565.442	2341	41638	1	0.47



WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R320	Customer ID: 791-3A
Analysis: ACID DIGESTION	Sample Prep: ACID DIGESTION

Instrument: METTLER BAL. SNF04495	Procedure/Rev: LA-508-158/A-2
Technologist: L. MORRISON	Date: 9-24-91
Starting Time: N/A	Temperature: N/A
Ending Time: N/A	Chemist: L. OTTMAR

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-8505	11		
2	REAGENT BLANK	R317-8605	12		
3	SAMPLE 791-3A	R320-8705	13		
4	FINAL LMCS CHECK STD	R323-8505	14		
5			15		
6			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 CHECK STD	ICP1-9S4/10 mL	ICP2-6S4/10 mL	ICP3-8S4/10 mL	N/A

A-6000-881 (03/92)

ACID DIGESTION ANALYSIS

Sample No.	Sample Point	Date	Time Issued	Priority
[illegible]	[illegible]	9-19-91	[illegible]	[illegible]

Determination	Method/Standard	Result Units	Charge Code	Results
[illegible]	[illegible]	% RECOVERY	[illegible]	

Sample Size	Customer ID
10 mL on in 100 mL	[illegible]

Remarks, Calculations, Results
[illegible]
[illegible]
1aP-EST1 - 934
1aP-EST2 - 604
1aP-EST3 - 584

Complete

Analyst 1	Analyst 2	Analyst 3	Analyst 4	Analyst 5
65731				
[illegible]				

Date	Time Completed	Lab Unit Mgr	
9-24-91		[illegible]	DK McFarland

Sample No.	Sample Point	Date	Time Issued	Priority
[illegible]	[illegible]	9-19-91	[illegible]	[illegible]

Determination	Method/Standard	Result Units	Charge Code	Results
[illegible]	[illegible]	[illegible]	[illegible]	

Sample Size	Customer ID
	[illegible]

Remarks, Calculations, Results
[illegible]
[illegible]
[illegible]

Complete

Analyst 1	Analyst 2	Analyst 3	Analyst 4	Analyst 5
65731				
[illegible]				

Date	Time Completed	Lab Unit Mgr	
9-24-91		[illegible]	DK McFarland

Sample No.	Sample Point	Date	Time Issued	Priority
[illegible]	[illegible]	9-19-91	[illegible]	[illegible]

Determination	Method/Standard	Result Units	Charge Code	Results
[illegible]	[illegible]	[illegible]	[illegible]	

Sample Size	Customer ID
1 mL in 100 mL	[illegible]

Remarks, Calculations, Results

Complete

Analyst 1	Analyst 2	Analyst 3	Analyst 4	Analyst 5
65731				
[illegible]				

Date	Time Completed	Lab Unit Mgr	
9-24-91		[illegible]	DK McFarland

Sample No.	Sample Point	Date	Time Issued	Priority
[illegible]	[illegible]	9-19-91	[illegible]	[illegible]

Determination	Method/Standard	Result Units	Charge Code	Results
[illegible]	[illegible]	% RECOVERY	[illegible]	

Sample Size	Customer ID
10 mL on in 100 mL	[illegible]

Remarks, Calculations, Results
[illegible]
[illegible]
1aPEST1 - 964
1aPEST2 - 654
1aPEST3 - 554

Complete

Analyst 1	Analyst 2	Analyst 3	Analyst 4	Analyst 5
65731				
[illegible]				

Date	Time Completed	Lab Unit Mgr	
9-24-91		[illegible]	DK McFarland

9 3 1 2 3 . 3 4 1 9 3

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R320	Customer ID: 791-3A
Analysis: INDUCTIVELY COUPLED PLASMA	Sample Prep: ACID DIGESTION

Instrument: WB39939	Procedure/Rev: LA-505-151/B-0
Technologist: L. MORRISON	Date: 11-19-91
Starting Time: 13:14	Temperature: N/A
Ending Time: 14:23	Chemist: L. OTTMAR

	Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-8550
2	REAGENT BLANK	R317-8650
3	SAMPLE 791-3A	R320-8750
4	FINAL LMCS CHECK STD	R323-8550
5		
6		
7		
8		
9		
10		

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

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS CHECK STD	9S4/ 10 mL	6S4/ 10 mL	8S4/ 10 mL	N/A

A-6000-881 (03/92)

9 3 1 2 3 3 1 1 3 4

ICP ANALYSIS - ACID DIGESTION

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-8550	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	% RECOVERY	W11E2	0

Sample Size	Customer ID
? 10 mL ea in 100 mL DIGESTED STDS	SID

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID
984, 634, 884

Al 6.72E2 ppb (10/1000) = 6.72 ppm = 134%
Ca 1.80E4 (.01) = 1.80E2 ppm = 1800%
Cr 5.41E2 (.01) = 5.41 ppm = 108%
Fe 7.97E2 (.01) = 7.97 ppm = 159%
Na 1.57E3 (.01) = 15.70 ppm = 157%

← OVER

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731	82768			
Hrs	Hrs	Hrs	Hrs	Hrs

Date 11/19/91 | Time Completed 11/20/91 | Lab Unit Mgr

54-6800-081 (R-10-83)

DIGESTED
Ag (483)(.01) = 96.6%
Ba (1015)(.01) = 101.5%
Cd (1026)(.01) = 102.6%
Mg (2840)(.01) = 568%
Mn (563)(.01) = 112.6%
Pb (560)(.01) = 120.0%
Zn (2300)(.01) = 230.0%

Al	4.80	96.0%
Ca	10.57	105.7%
Cr	4.75	95.0%
Fe	4.97	99.4%
Na	9.45	94.5%

LMCS ✓ 11/22/91

Undigested

Ba	9.79	97.9%	Zn	9.90	99.0%
Cd	9.85	98.5%			
Mg	4.97	99.4%	Ag	4.88	97.6%
Mn	4.88	97.6%	Pb	5.17	103.4%

R316-8550
~~931~~ KS

9 3 1 2 3 3 4 1 7 5

ICP ANALYSIS - ACID DIGESTION

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-8650	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	PPM	W1TE2	0

Sample Size	Customer ID
? DIRECT	REG BL

Remarks, Calculations, Results:

REAGENT BLANK

AL 1.01E2/1000 = 1.01E-1 ppm
CA 5.15E3/1000 = 5.15 ppm
Cr 1.02E1/1000 = 1.02E-2 ppm
Fe 7.59E1/1000 = 7.59E-2 ppm
NA 4.09E2/1000 = 4.09E-1 ppm

Ag <8.0/1000 = <8.0E-3 ppm
Ba <3.0/1000 = <3.0E-3 ppm
Cd <4.0/1000 = <4.0E-3 ppm
Mg 402/1000 = 4.02E-1 ppm
Mn 17/1000 = 1.70E-2 ppm
Pb <80/1000 = <8.0E-2 ppm
Zn 430/1000 = 4.30E-1 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731	82768			
Hrs	Hrs	Hrs	Hrs	Hrs
[signature]	Laurine J. Ottman			

Date	Time Completed	Lab Unit Mgr
11/19/91	11/20/91	[signature]

[illegible] (R-10-83)

ICP ANALYSIS - ACID DIGESTION

Serial No.	Sample Point	Date	Time Issued	Priority
R 320.-8750	106AW	9-19-91	15:34	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	ug/g rec	W1TE2	0

Sample Size	Customer ID
? DF=100 DF=600 1mL w/ 100mL, 2mL To 10mL	791-3A

Remarks, Calculations, Results:

AL 2.2523(600) = 1.3586 ppb
CA 1.7523(600) = 1.0586 ppb
Cr 2.9781(600) = 1.9824 ppb
Fe <87(600) = < 5.2264 ppb
NA 6.0484(600) = 3.6287 ppb

Ag (<8.0)(600) = <4.80E3 ppb
Ba (<3.0)(600) = <1.80 E3 ppb
Mg (<11.0)(600) = <6.60 E3 ppb
Mn (8.7)(600) = 5.22E3 ppb
Pb (<80)(600) = <4.80E4 ppb
Zn (202)(600) = 1.21 E5 ppb

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731	52768			
Hrs	Hrs	Hrs	Hrs	Hrs
[signature]	Laurine J. Ottman			

Date	Time Completed	Lab Unit Mgr
11/19/91	11/20/91	[signature]

84-6800-081 (R-10-83)

R 320-8750

Cd (<4.0)(600) = < 2400 ppb BW 6-26-92

ICP ANALYSIS - ACID DIGESTION

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-8550	106AW	9-19-91	15:45	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	% RECOVERY	W1TE2	0

Sample Size	Customer ID
? 10 mL ea in 100 mL	STD

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID _____

ICP-SET1 - 954
ICP-SET2 - 654
ICP-SET3 - 854

LMCS STDS

AL 6.51E2 (10/10²) = 6.51ppm = 130%
Ca 1.88E4 (.01) = 1.88E2ppm = 1,880%
Cr 5.99E2 (.01) = 5.99ppm 120%
Fe 1.11E3 (.01) = 11.10ppm 111%
Na 1.62E3 (.01) = 16.20ppm 162%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731	82768			
Hrs	Hrs	Hrs	Hrs	Hrs
[signature]	Laurine J. Ottman			

Date	Time Completed	Lab Unit Mgr
11/19/91	11/20/91	[signature]

64-6800-061 (R-10-83)

DIGESTED

R 323-8550

Al 4.72 94.4%
Ca 9.84 98.4%
Cr 4.75 95.0%
Fe ~~9.40~~ 4.97 99.4%
Na 9.40 94.0%

Ag (487)(.01) = 97.4%
Ba (998)(.01) = 99.8%
Cd (1016)(.01) = 101.6%
Mg (2336)(.01) = 467.2%
Mn (563)(.01) = 112.6%
Pb (568)(.01) = 113.6%
Zn (2433)(.01) = 243.3%

LMCS ✓ [signature] 11/22/91

Ag 4.74 94.8%
Ba 9.80 98.0%
Cd 9.88 98.8%
Mg 4.95 99.0%
Mn 4.88 97.6%
Pb 5.12 102.4%
Zn 9.82 98.2%

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R321	Customer ID: 791-4A
Analysis: ARSENIC	Sample Prep: UNDIGESTED

Instrument: PERKIN ELMER - WA77479	Procedure/Rev: LA-355-131/B-0
Technologist: D. R. JACKSON	Date: 10-01-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: K. FULLER

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5595	11		
2	REAGENT BLANK	R317-5695	12		
3	SAMPLE 791-4A	R321-5795	13		
4	FINAL LMCS CHECK STD	R323-5595	14		
5			15		
6			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 CHECK STD	125B38B/0.5 mL			N/A

A-6000-881 (03/92)

ARSENIC ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5595	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
As	LA-355-131	% RECOVERY	WIIE2	0

Sample Size: ? .500 ml
Container ID: STD

Formula, Calculations, Results:
EDP R741 AS/HYDRD 0.766
STD# 125838B RESULT
STD VAL 1.0E-1 %REC 102.0%
~~0.744~~ 10-1-91 DRJ 10-1-91 ~~0.744~~ ~~0.744~~ DRJ
50.76/500 = 1.02E-1

Analyst-1: 6C275
Date: 10-1-91

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5695	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
As	LA-355-131	PPM	WIIE2	0

Sample Size: ? 10.0 ml
Container ID: NED BL.

Formula, Calculations, Results:
REAGENT BLANK 0.013
~~0.004~~ DRJ 10-1-91 10-1-91 ~~0.009~~ DRJ
<5/10000 = <5.00E-4

Analyst-1: 6C275
Date: 10-1-91

Serial No.	Sample Point	Date	Time Issued	Priority
R 321.-5795	106AW	9-19-91	15:38	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
As	LA-355-131	PPM	WIIE2	0

Sample Size: 10-1-91 ~~.500 ml~~ .025 ml
Container ID: 791-9A

Formula, Calculations, Results: DRJ
0.974 64.72/25 = 2.59

Analyst-1: 6C275
Date: 10-1-91

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5595	106AW	9-19-91	15:45	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
As	LA-355-131	% RECOVERY	WIIE2	0

Sample Size: ? .500 ml
Container ID: STD

Formula, Calculations, Results:
EDP R741 AS/HYDRD
STD# 125838B RESULT 9.98E-2
STD VAL 1.0E-1 %REC 99.8%
0.753 49.88/500 =

Analyst-1: 6C275
Date: 10-1-91

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY
CALIBRATION RECORD

Analyte: As

Procedure: LA-355-131 | Revision: B-0

Instrument: PERKIN ELMER | Property No.: WA77479

Technologist: D. R. JACKSON | Payroll No.: 6C275 | Date: 10-01-91

Calibration Standard: 128B38C

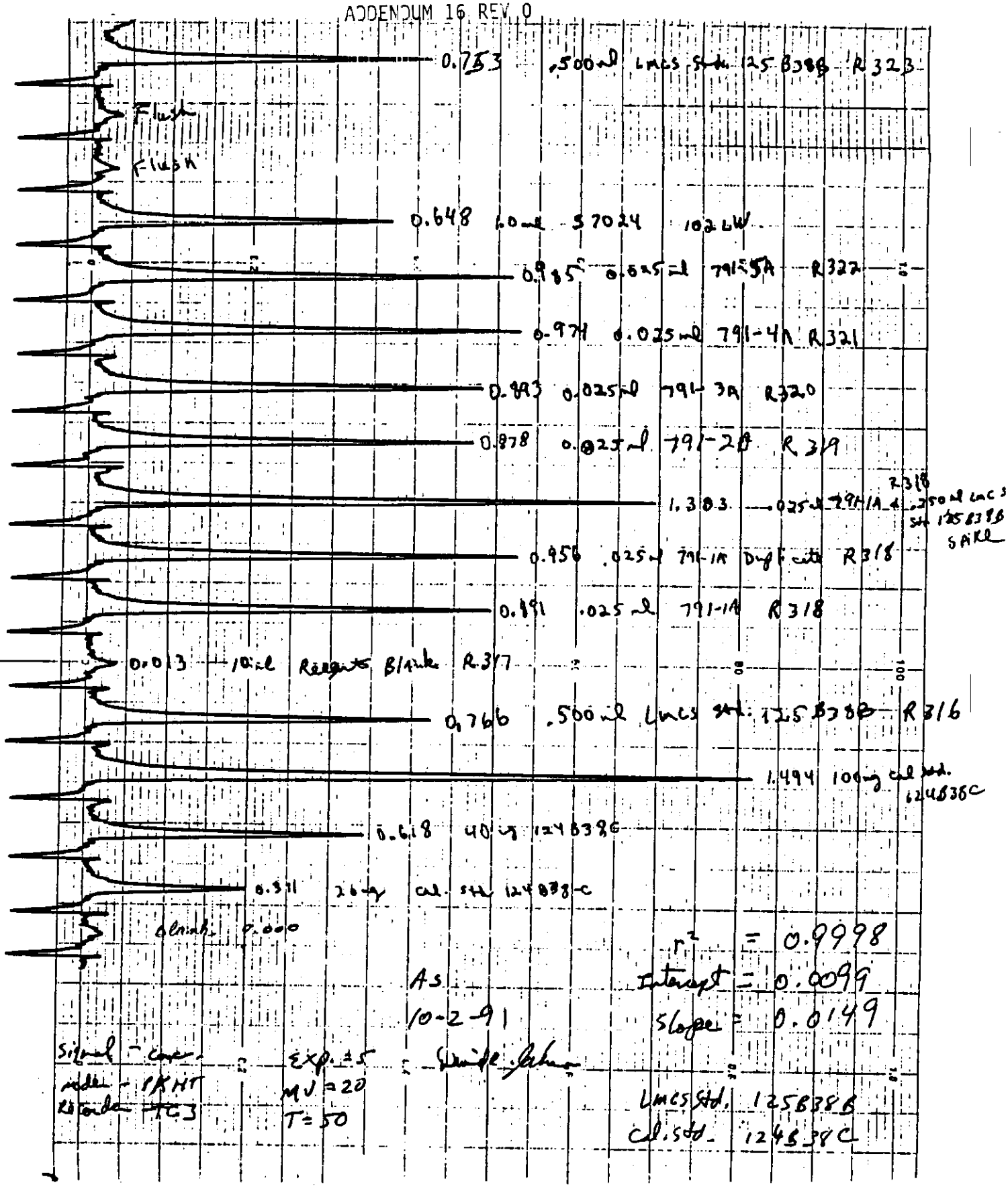
Analyte Concentration: 0.1000 ppm

Type of Calibration: LINEAR

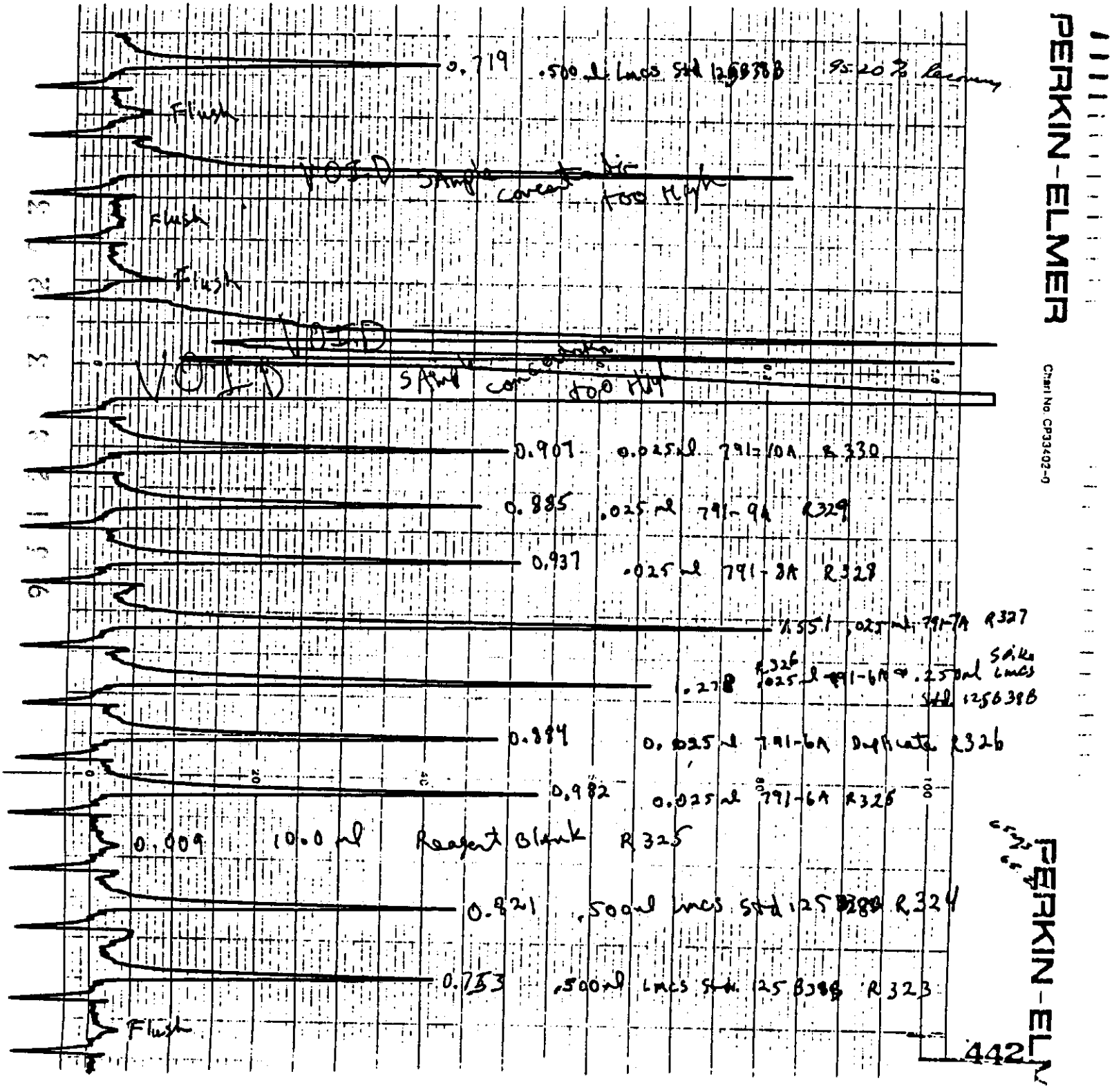
	Dilution	Concentration	Instrument Reading Unit
1	0.000 mL	0.0 ng	0.000
2	0.200 mL	20.0 ng	0.311
3	0.400 mL	40.0 ng	0.618
4	1.000 mL	100.0 ng	1.494
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			

Comments:

A-6000-882 (03/92)



SIGNATURE ABOVE REPRESENTS TECHNOLOGIST/CHEMIST THAT COMPLETED THE ANALYSIS RUN ON PAGES 441 TO 442.


PERKIN-ELMER
Chart No. CP33402-0
0.719 .500 ml Lmcs Std 125B38B 95.20% Recovery
Flush
VOID Sample concentration too High
Flush
Flush
VOID
VOID Sample concentration too High
0.907 0.025 ml 791-10A R330
0.885 .025 ml 791-9A R329
0.937 .025 ml 791-8A R328
1.551 .025 ml 791-7A R327
1.278 R326 .025 ml 791-6A + .250 ml Spike Lmcs Std 125B38B
0.884 0.025 ml 791-6A Duplicate R326
0.982 0.025 ml 791-6A R326
0.009 10.0 ml Reagent Blank R325
0.821 .500 ml Lmcs Std 125B38B R324
0.753 .500 ml Lmcs Std 125B38B R323
Flush
PERKIN-EL
442

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R321	Customer ID: 791-4A
Analysis: CYANIDE	Sample Prep: UNDIGESTED

Instrument: MILTON ROY SPEC 301 - AL10724	Procedure/Rev: LA-695-102/A-4
Technologist: E. COLVIN	Date: 09-26-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: D. BISENIUS

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5578	11		
2	REAGENT BLANK	R317-5678	12		
3	SAMPLE 791-4A	R321-5778	13		
4	FINAL LMCS CHECK STD	R323-5578	14		
5			15		
6			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 CHECK STD	75C11-5/0.1 mL			N/A

A-6000-881 (03/92)

CYANIDE ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5578	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
CN	LA-695-102	% RECOVERY	W1TE2	0

Sample Size: ? .100-10ml-.500 — Customer ID: STD

Remarks, Calculations, Results:
S244 KCN
STD# 75C11S RESULT
STD VAL 8.90E² %REC 102.5%
9/27/91
$\frac{(.748-.011)(.006547)}{.160252} / .500 \times 100 = 9.12E2$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cohn				

Date: 9-26-91 — Time Completed: — Lab Unit Mgr: [signature]
JK 6-9-92

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5678	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
CN	LA-695-102	PPM	W1TE2	0

Sample Size: ? — Customer ID: REG BL

Remarks, Calculations, Results:
REAGENT BLANK ABS .011
$\frac{(.011)-.006547}{.160252}$ <5.0E-1 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cohn				

Date: 9-26-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 321.-5778	106AW	9-19-91	15:30	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
CN	LA-695-102	PPM	W1TE2	0

Sample Size: ? 750uL — Customer ID: 791-4A

Remarks, Calculations, Results:
ABS .317
$\frac{(.317-.011)-.006547}{.160252} / .750 = 2.49$ ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cohn				

Date: 9-26-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5578	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
CN	LA-695-102	% RECOVERY	W1TE2	0

Sample Size: ? 100uL-10mL-500uL — Customer ID: STD

Remarks, Calculations, Results:
S244 KCN
STD# 75C11S RESULT
STD VAL 8.90E² %REC 101.3%
ABS .740
$\frac{(.740-.011)-.006547}{.160252} / .5 \times 100 = 9.02E2$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cohn				

Date: 9-26-91 — Time Completed: — Lab Unit Mgr: [signature]

TODAYS DATE: 09-26-1991

PAYROLL NO.: 80028

Y-INTERCEPT= .006547
SLOPE= .160252

SAMPLE ID#: R-317 BLANK
SAMPLE SIZE: 0
WVL AND ABS= 580NM 0.011 A

SAMPLE ID#: R-316 75C11-S STD
SAMPLE SIZE: 100UL-10ML-500UL
WVL AND ABS= 580NM 0.748 A

SAMPLE ID#: R-318
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.424 A

SAMPLE ID#: R-318 DUPLICATE
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.428 A

SAMPLE ID#: R-318 + SPIKE
SAMPLE SIZE: 750UL + 100UL-10ML-500UL 75C11-S SPIKE
WVL AND ABS= 580NM 1.150 A

SAMPLE ID#: R-319
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.317 A

SAMPLE ID#: R-320
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.310 A

SAMPLE ID#: R-321
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.317 A

SAMPLE ID#: R-322
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.327 A

SAMPLE ID#: R-323 75C11-S STD
SAMPLE SIZE: 100UL-10ML-500UL
WVL AND ABS= 580NM 0.740 A

CALIBRATION CURVE LACHAT NON-DISTILLED 25ML

CYANIDE DATE: 8-28-1991

CALIBRATION STANDARD # 351-M, 1006 MG/ML CYANIDE

DILUTION FACTOR = 10/.1 = 100, WORKING STANDARD = 1006 /100 = 10.060

PIPET SIZE	MICROGRAMS CYANIDE	TOTAL ABS	NET ABS
BLANK	0	.006	0
50UL	.503	.0930	.0870
500UL	5.030	.8320	.8260
1000UL	10.060	1.6180	1.6120

Y INTERCEPT = .006547
SLOPE = .160252
C C = .999921

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R321	Customer ID: 791-4A
Analysis: DIFFERENTIAL THERMAL	Sample Prep: UNDIGESTED

Instrument: WC16134,WC16129	Procedure/Rev: LA-514-113/A-0
Technologist: M. MYERS	Date: 10-09-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: D. HERT

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5511	11		
2	REAGENT BLANK	R317-5611	12		
3	SAMPLE 791-4A	R321-5711	13		
4	FINAL LMCS CHECK STD	R323-5511	14		
5			15		
6			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 CHECK STD	27C11AY/0.02 mL			N/A

A-6000-881 (03/92)

DIFFERENTIAL THERMAL ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316. 5511	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
DSC	LA-514-113	EXOTHERMS	W1TE2	0

Sample Size: ? .020 ml — Customer ID: STD 27C11AY

Remarks, Calculations, Results:

1.00=100%

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				
Hrs: 6C823	Hrs:	Hrs:	Hrs: [signature]	Hrs:

Date: 10-9-91 — Time Completed: — Lab Unit Mgr: D M Thornton [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5611	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
DSC	LA-514-113	EXOTHERMS	W1TE2	0

Sample Size: ? .010 ml — Customer ID: REG BL

Remarks, Calculations, Results:

REAGENT BLANK

No exotherm

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				
Hrs: 6C823	Hrs:	Hrs:	Hrs:	Hrs:

Date: 10-9-91 — Time Completed: — Lab Unit Mgr: D M Thornton [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 321.-5711	106AW	9-19-91	15:36	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
DSC	LA-514-113	EXOTHERMS	W1TE2	0

Sample Size: ? .010 ml — Customer ID: 791-4A

Remarks, Calculations, Results:

No exotherm

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				
Hrs: 6C823	Hrs:	Hrs:	Hrs:	Hrs:

Date: 10-9-91 — Time Completed: — Lab Unit Mgr: D M Thornton [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5511	106AW	9-19-91	15:43	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
DSC	LA-514-113	EXOTHERMS	W1TE2	0

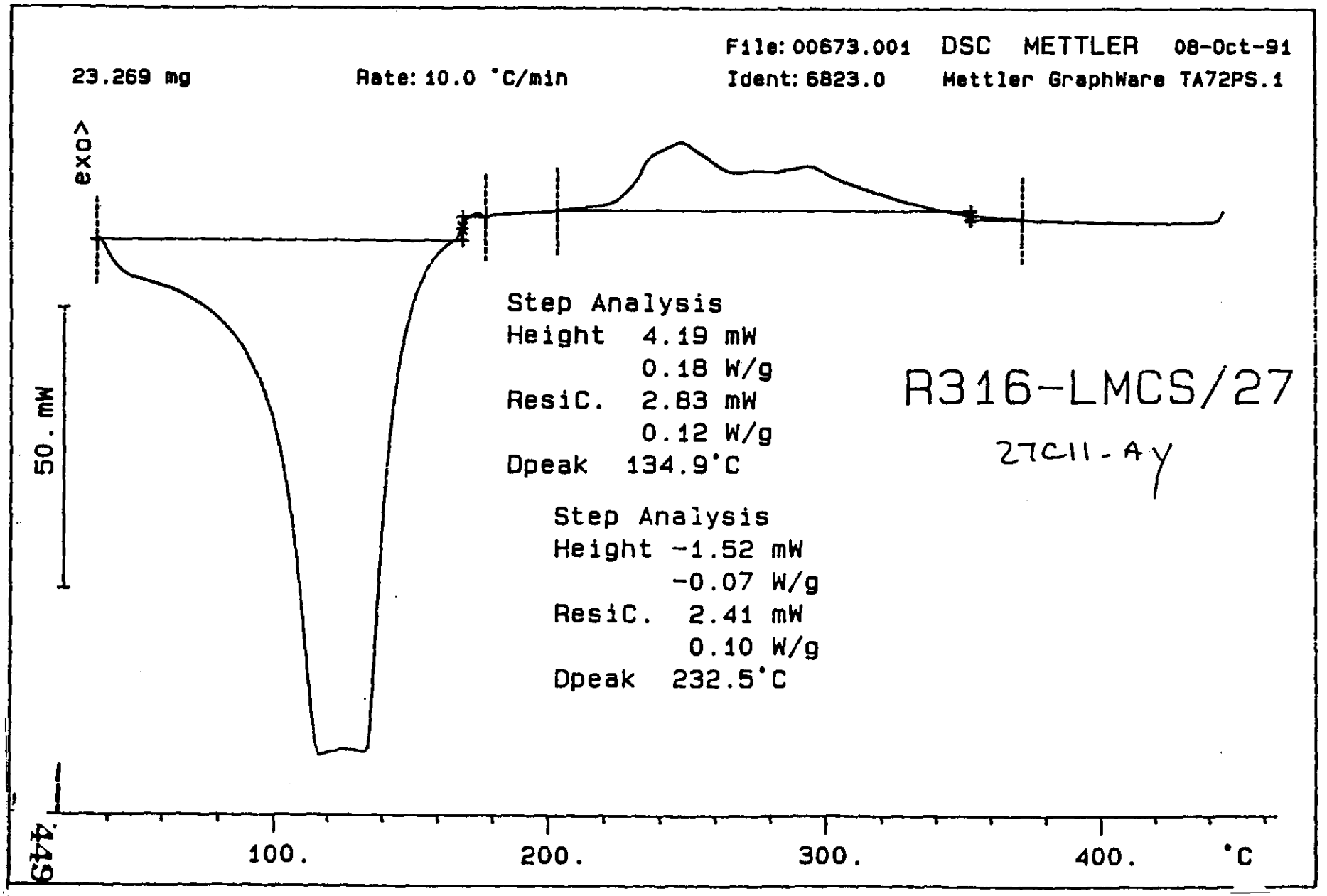
Sample Size: ? .020 ml — Customer ID: STD 27C11AY

Remarks, Calculations, Results:

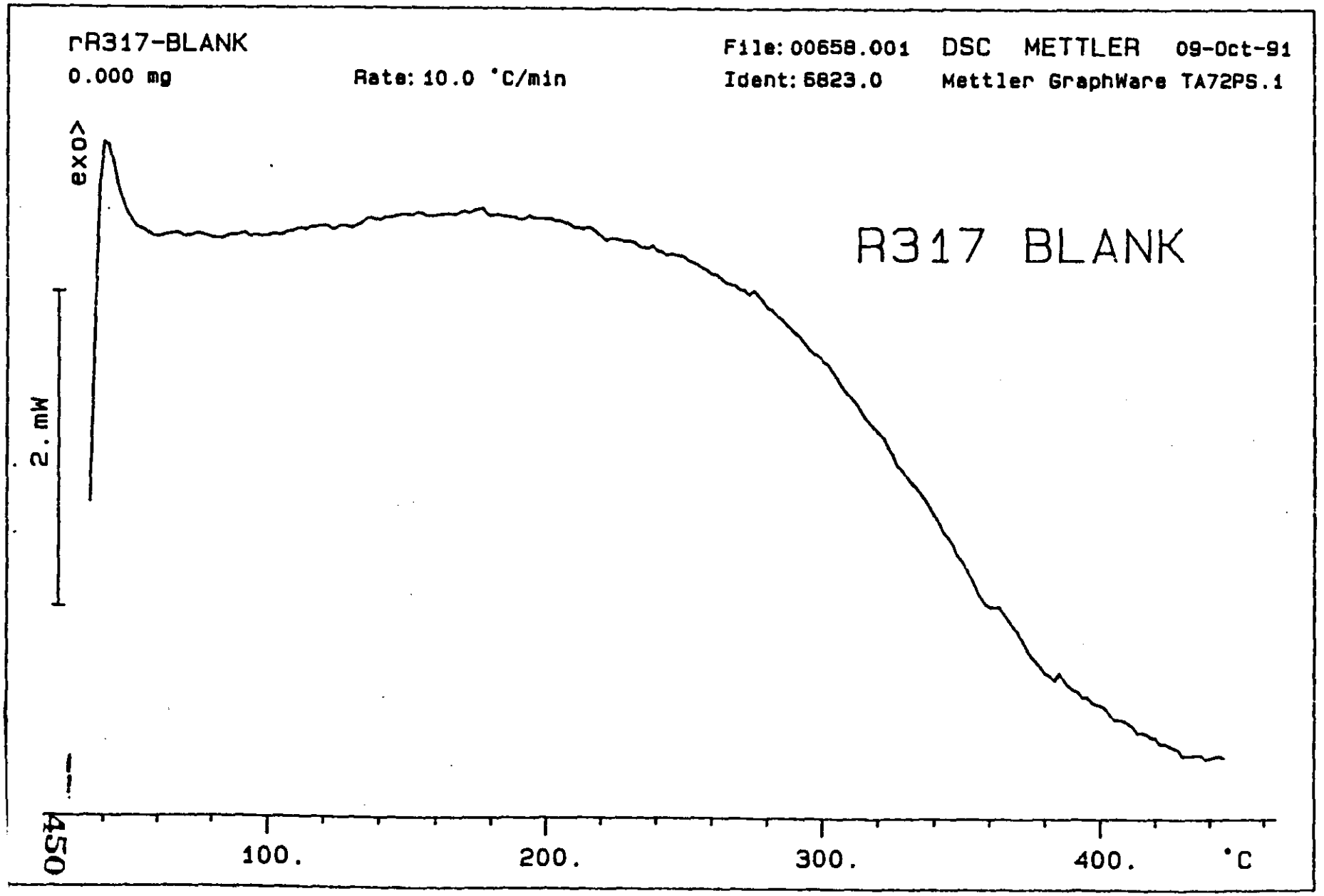
1.00 = 100%

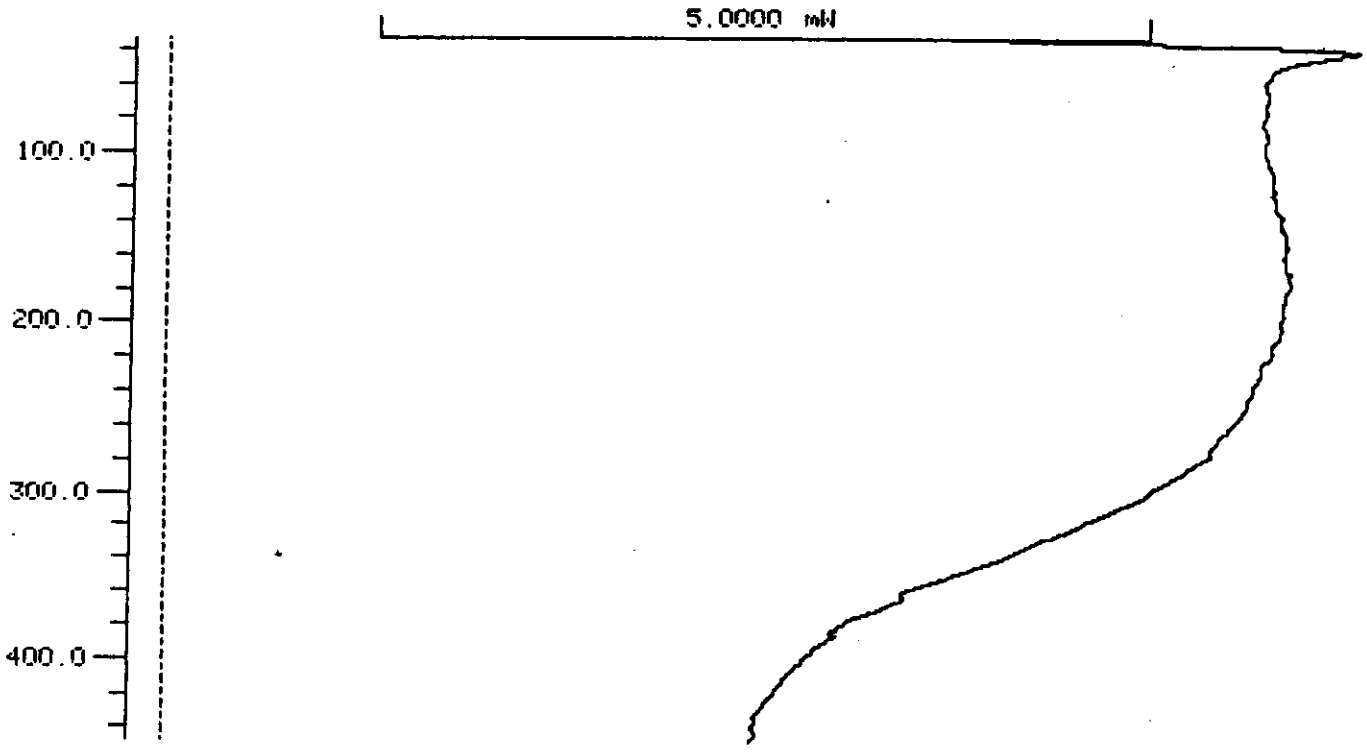
Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				
Hrs: 6C823	Hrs:	Hrs:	Hrs: [signature]	Hrs:

Date: 10-9-91 — Time Completed: — Lab Unit Mgr: D M Thornton [signature]

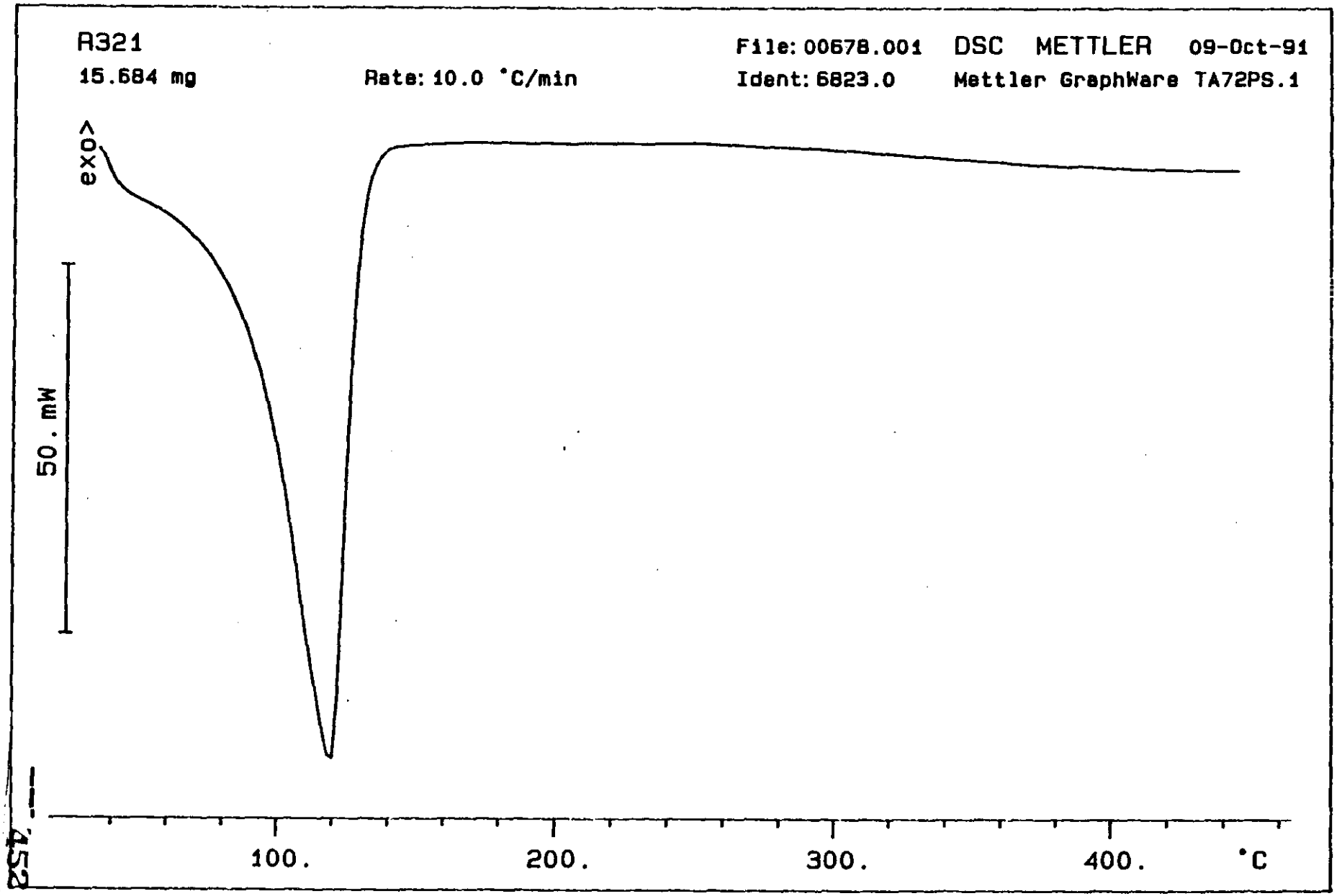


WSG-SD-WM-DP-025
ADDENDUM 16 REV 0


rR317-BLANK
0.000 mg
Rate: 10.0 °C/min
File: 00658.001
Ident: 6823.0
DSC METTLER 09-Oct-91
Mettler GraphWare TA72PS.1
R317 BLANK
<exo
2. mW
450
100.
200.
300.
400.
°C



******** METTLER TA4000 SYSTEM *********

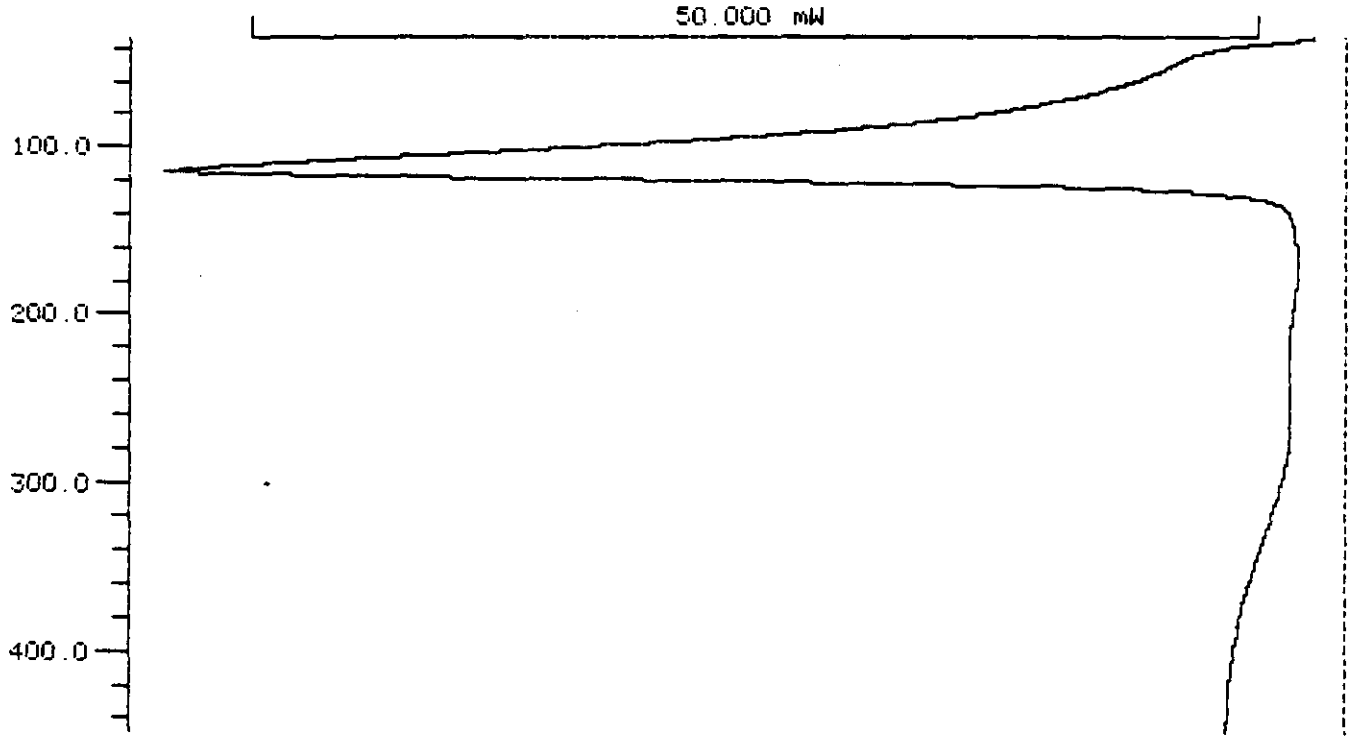

R321
15.684 mg
Rate: 10.0 °C/min
File: 00678.001
Ident: 6823.0
DSC METTLER 09-Oct-91
Mettler GraphWare TA72PS.1
exo>
50. mW
100.
200.
300.
400.
°C

R321

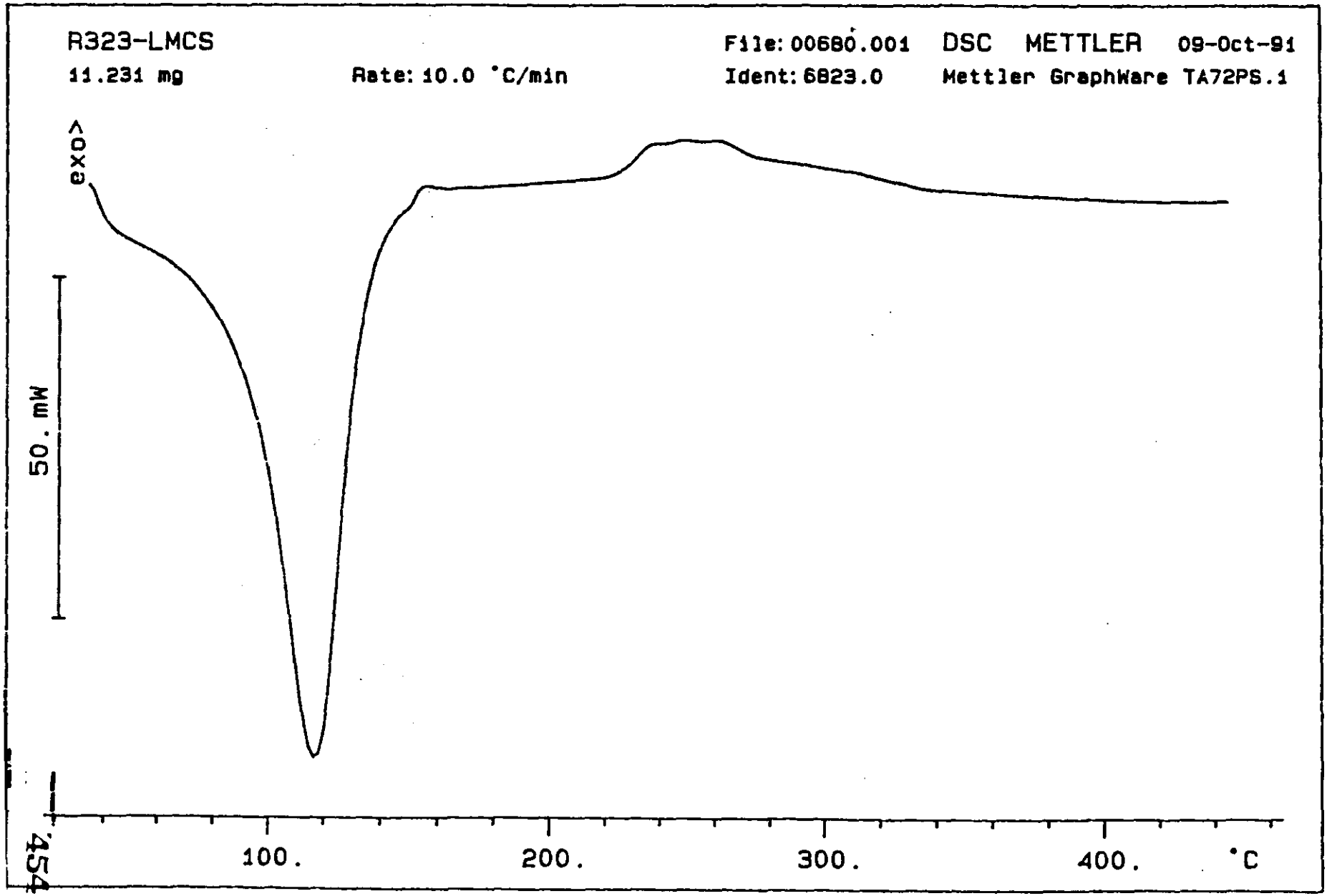
END SCREEN °C 447.8

TEMPERATURE °C

HEAT FLOW
EXOTHERMAL-->



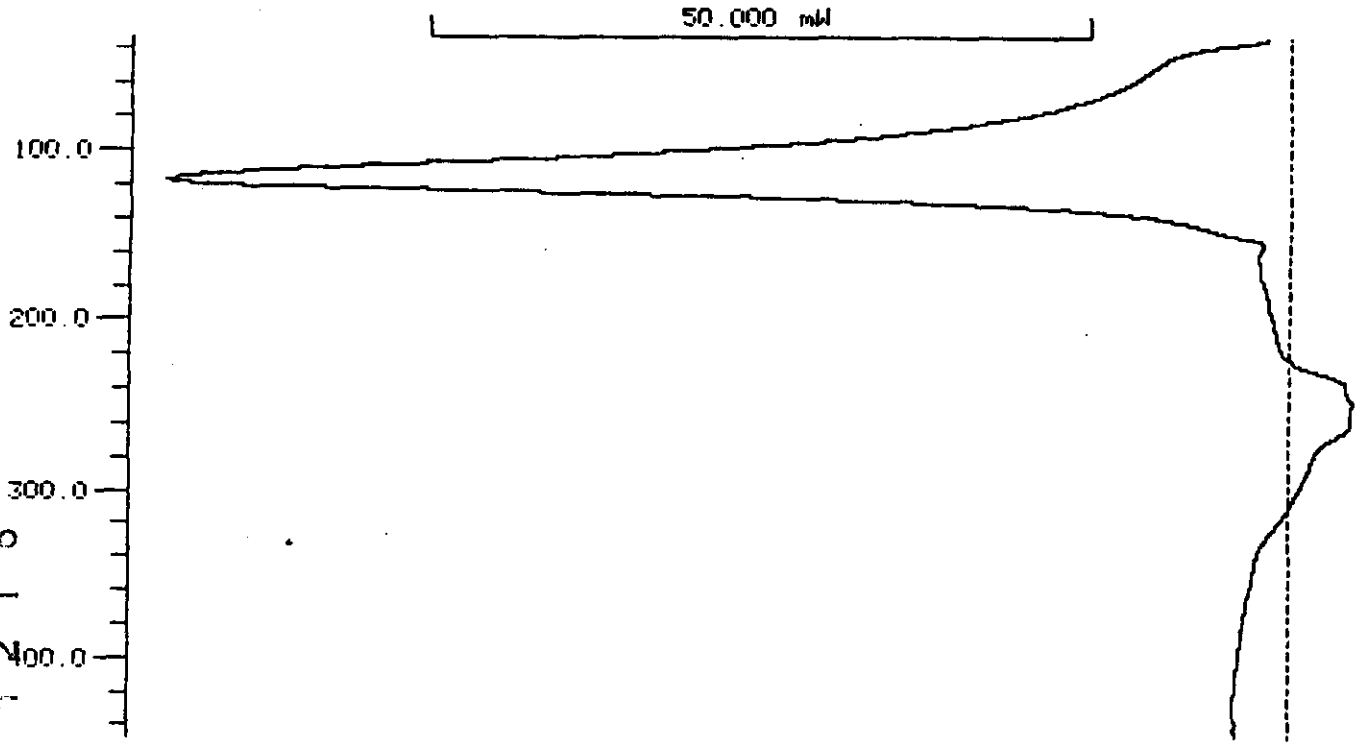
******** METTLER TA4000 SYSTEM *********


R323-LMCS
11.231 mg
Rate: 10.0 °C/min
File: 00680.001
Ident: 6823.0
DSC METTLER 09-Oct-91
Mettler GraphWare TA72PS.1
exo>
50. mW
100.
200.
300.
400.
°C

END SCREEN °C 447.8

TEMPERATURE °C

HEAT FLOW
EXOTHERMAL-->



******** METTLER TA4000 SYSTEM *********

DSC

Configuration used from 8-8-91 to Nov 25, 1991

Denise Hebert

Heat flow calibration began July 20, 1991. Used until Nov 25, 1991

CONFIGURATION

26-NOV-91 8:14

E INDIUM	255
DSC SIGN ICTA	1
TAU LAG	12
TAU SIGNAL	0
E DIMIN. FACT.	.93
S	2400
TAU LAG 2	16
TAU SIGNAL 2	0
E DIMIN. F. 2	.93
S 2	1850
MAX. TEMP.	600.
MIN. TEMP.	-50.
A PT100	.21610
B PT100	.74150
C PT100	-.10116
HEAT P	3000
HEAT I	250
HEAT D	30
COOL 1	0
COOL 2	0
COOL 3	0
A1	10773
	58.121
	.14689
T1	-100
A2	8940
B2	17.884
C2	-.072
T2	363
A3	9360.3
B3	-15.043
C3	.01538

******** METTLER TA4000 SYSTEM *********

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R321	Customer ID: 791-4A
Analysis: MERCURY	Sample Prep: UNDIGESTED

Instrument: PERKIN ELMER WA77479	Procedure/Rev: LA-325-102/B-0
Technologist: D. R. JACKSON	Date: 10-17-91
Starting Time: 8:00	Temperature: N/A
Ending Time: 2:00	Chemist: R. K. FULLER

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5597	11		
2	REAGENT BLANK	R317-5697	12		
3	SAMPLE 791-4A	R321-5797	13		
4	FINAL LMCS CHECK STD	R323-5597	14		
5			15		
6			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 CHECK STD	125B38D/1.50 mL			1.500 mL

A-6000-881 (03/92)

MERCURY ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5597	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
Hg	LA-325-102	% RECOVERY	W1TE2	0

Sample Size: ? 1.50 ml — Customer ID: STD

Remarks, Calculations, Results:
EDP R716 HG/HYDRD
STDN 125B38D RESULT 1.05E-1
STD VAL 1.00E-1 %REC 105.0%
10-17-91 ~~0.685~~ DRJ 0.504
157.57/1500 =

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
6C225				

Date: ~~10-18-91~~ 10-17-91 JAL 6-15-92 — Time Completed — Lab Unit Mgr

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5697	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
Hg	LA-325-102	PPM	W1TE2	0

Sample Size: ? 10.0 ml — Customer ID: REG BL

Remarks, Calculations, Results:
REAGENT BLANK
~~0.012~~ DRJ 10-17-91
0.000
<5/10,000 = <5.00E-4 ppm

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
6C225				

Date: ~~10-16-91~~ 10-17-91 JAL 6-15-92 — Time Completed — Lab Unit Mgr

Serial No.	Sample Point	Date	Time Issued	Priority
R 321.-5797	106AW	9-19-91	15:39	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
Hg	LA-325-102	PPM	W1TE2	0

Sample Size: ? 1.0 ml — Customer ID: 791-4A

Remarks, Calculations, Results:
~~0.011~~ DRJ 10-17-91
-0.008
<5/1000 = <5.00E-3 ppm

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
6C225				

Date: ~~10-16-91~~ 10-17-91 JAL 6-15-92 — Time Completed — Lab Unit Mgr

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5597	106AW	9-19-91	15:45	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
Hg	LA-325-102	% RECOVERY	W1TE2	0

Sample Size: ? 1.50 ml — Customer ID: STD

Remarks, Calculations, Results:
EDP R716 HG/HYDRD
STDN 125B38D RESULT 1.00E-1
STD VAL 1.00E-1 %REC 100.0%
DRJ 0.483 ~~0.514~~ 10-17-91
150.73/1500 =

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
6C225				

Date: ~~10-16-91~~ 10-17-91 JAL 6-15-92 — Time Completed — Lab Unit Mgr

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY
CALIBRATION RECORD

Analyte: Hg
Procedure: LA-325-102 | Revision: B-0
Instrument: PERKIN ELMER | Property No.: WA77479
Technologist: D. R. JACKSON | Payroll No.: 6C275 | Date: 10-17-91

Calibration Standard: 124B38D
Analyte Concentration: 0.1000 ppm
Type of Calibration: LINEAR

	Dilution	Concentration	Instrument Reading Unit
1	0.000 mL	0 ng	0.000
2	0.750 mL	75 ng	0.278
3	1.500 mL	150 ng	0.481
4	3.000 mL	300 ng	0.934
5			
6			
7			
8			
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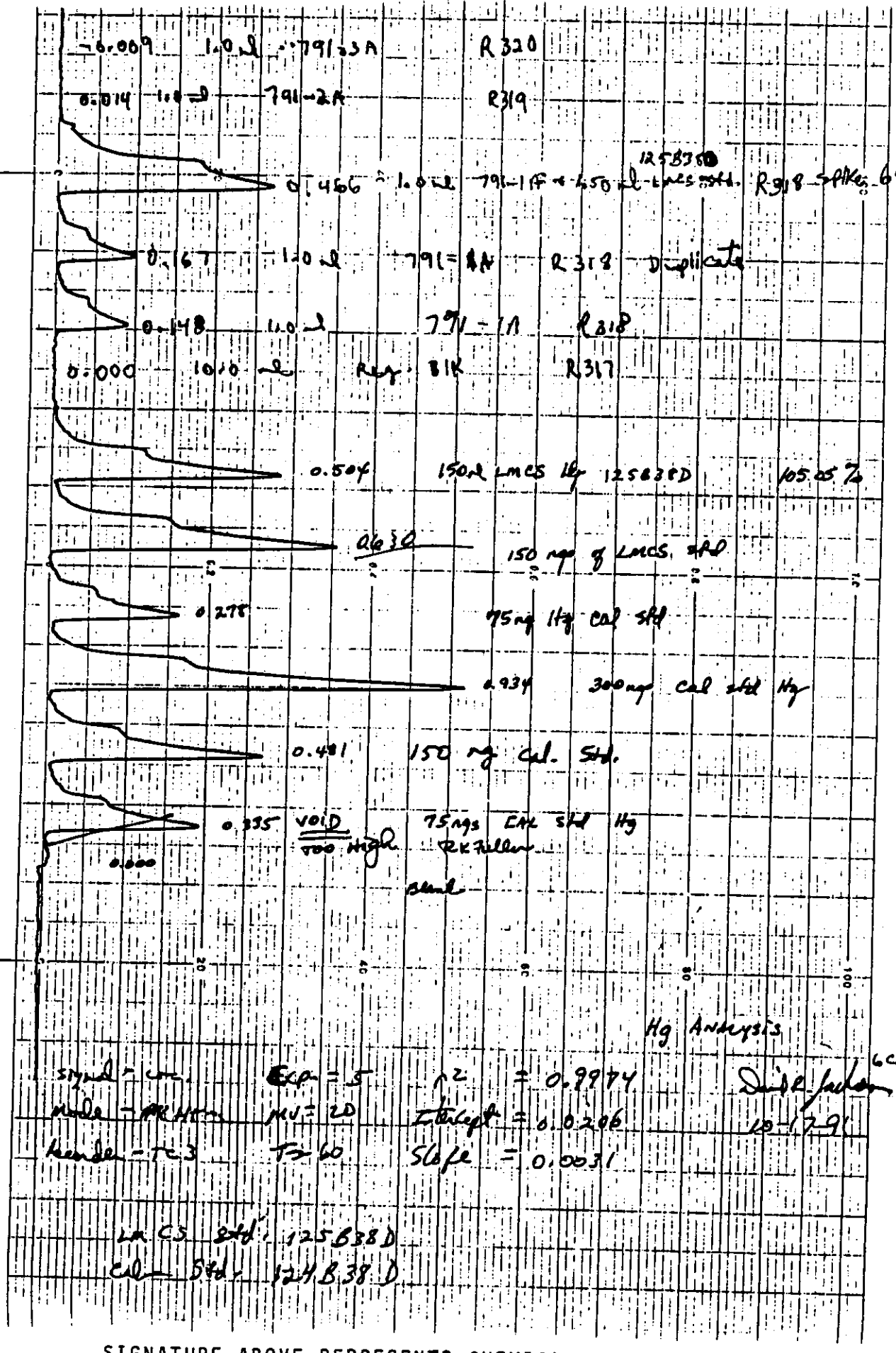
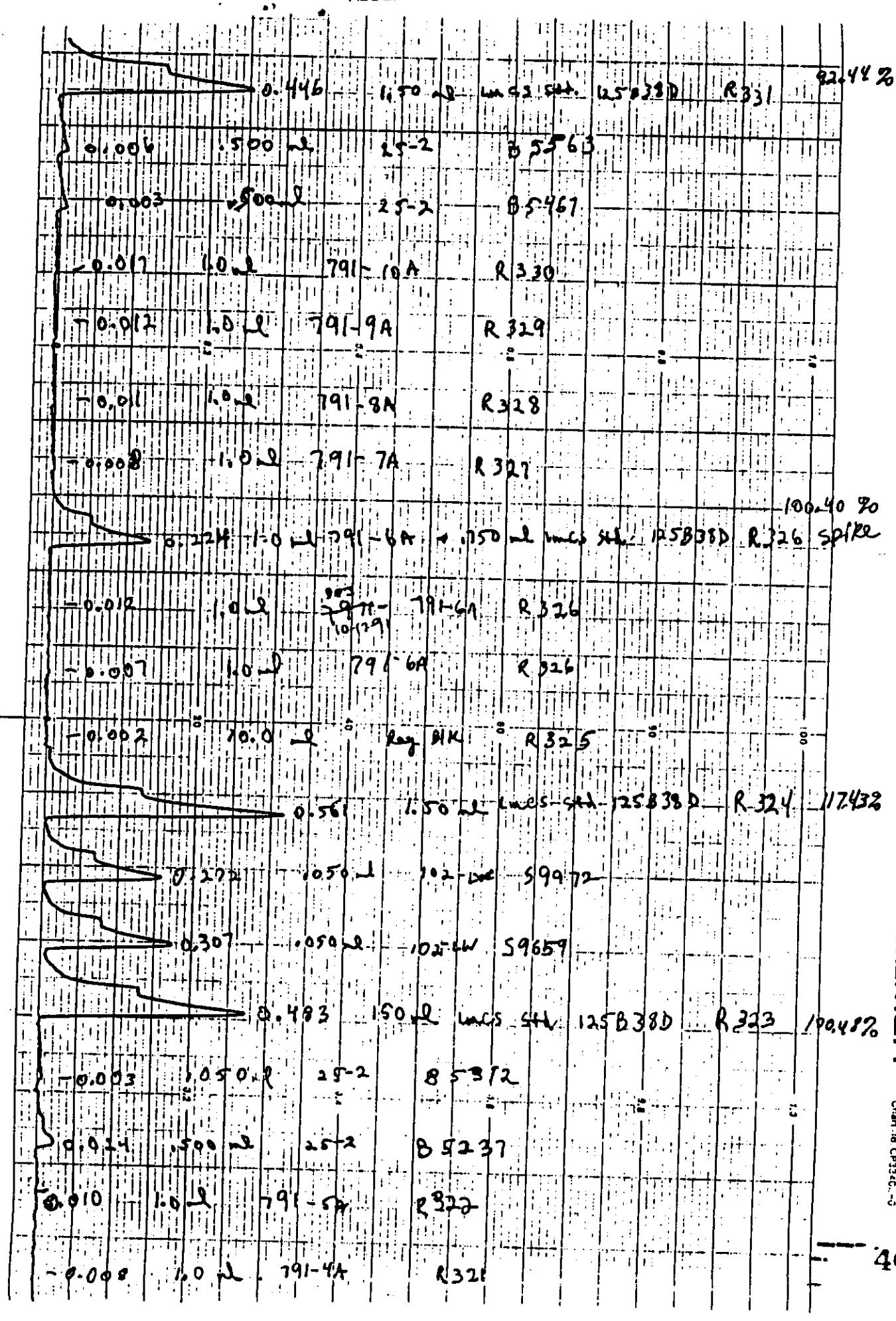
20			
21			

Comments:

A-6000-882 (03/9[illegible])



SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST THAT COMPLETED THE ANALYSIS RUN ON PAGES 460 TO 461.



PERKIN-ELMER

Chart No. CP33402-0

PERKIN-ELMER

Chart No. CP33402-0

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R321	Customer ID: 791-4A
Analysis: AMMONIA	Sample Prep: UNDIGESTED

Instrument: AL10665,AL10696	Procedure/Rev: LA-634-102/D-0
Technologist: S. LAI	Date: 10-03-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: D. BISENIUS

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R324-5528	11		
2	REAGENT BLANK	R325-5628	12		
3	SAMPLE 791-4A	R321-5728*	13		
4	FINAL LMCS CHECK STD	R331-5528	14		
5			15		
6			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 CHECK STD	4C11-QQ/.250 mL			NA
* SAMPLE RERUN.				

A-6000-881 (03/92)

9 3 1 2 1 3 3 4 2 2 3

AMMONIA ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 324.-5528	106AW	9-20-91	10: 5	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
NH4	LA-634-102	% RECOVERY	W1TE2	0

Sample Size: ? 250 λ — 0.09941 M — Customer ID: STD

Remarks, Calculations, Results: HCl

S235 NH4CL

STD# 4C11-AA RESULT 8.90 x 10^-2 — Blank: 28 λ

STD VAL 5.10 x 10^-2 %REC 96.08%

(.150 - .028)(.09941) / .250 = .049 — STD: 150 λ

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
Sue Lai				
Hrs: 6 C 916	Hrs:	Hrs:	Hrs:	Hrs:

Date: 10-3-91 — Time Completed: — Lab Unit Mgr: D M Thornton — Dayne Smith

Serial No.	Sample Point	Date	Time Issued	Priority
R 325.-5628	106AW	9-20-91	10: 7	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
NH4	LA-634-102	PPM	W1TE2	0

Sample Size: ? 1 ml — 0.09941 M — Customer ID: REG BL

Remarks, Calculations, Results: HCl

REAGENT BLANK

< (.010)(.09941) / 1 = < 9.94 x 10^-4 M (kg) — Blank: 28 λ

Blank: 28 λ

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
Sue Lai				
Hrs: 6 C 916	Hrs:	Hrs:	Hrs:	Hrs:

Date: 10-3-91 — Time Completed: — Lab Unit Mgr: D M Thornton — Dayne Smith

Serial No.	Sample Point	Date	Time Issued	Priority
R 321.-5728	106AW	9-19-91	15:37	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
NH4	LA-634-102	PPM RERUN	W1TE2	1

Sample Size: ? 1 ml — 0.09941 M — Customer ID: 791-4A

Remarks, Calculations, Results: HCl

(.043 - .028)(.09941) / 1 = 1.49 x 10^-3 M — Blank: 28 λ

Sample: 43 (FA) ~~43 λ~~ 10.34 V

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
Sue Lai				
Hrs: 6 C 916	Hrs:	Hrs:	Hrs:	Hrs:

Date: 10-3-91 — Time Completed: — Lab Unit Mgr: D M Thornton — Dayne Smith

Serial No.	Sample Point	Date	Time Issued	Priority
R 331.-5528	106AW	9-20-91	10:25	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
NH4	LA-634-102	% RECOVERY	W1TE2	0

Sample Size: ? 250 λ — 0.09941 M — Customer ID: STD

Remarks, Calculations, Results: HCl

S235 NH4CL

STD# 4C11-AA RESULT 4.93 x 10^-2 — Blank: 28 λ

STD VAL 5.10 x 10^-2 %REC 96.67%

(.152 - .028)(.09941) / .250 — STD: 152 λ

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
Sue Lai				
Hrs: 6 C 916	Hrs:	Hrs:	Hrs:	Hrs:

Date: 10-3-91 — Time Completed: — Lab Unit Mgr: D M Thornton — Dayne Smith

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R321	Customer ID: 791-4A
Analysis: DETERMINATION OF HYDROXIDE ION IN SOLUTION	Sample Prep: UNDIGESTED

Instrument: FISHER - WA77509	Procedure/Rev: LA-661-102/F-1
Technologist: M. BIERMAN	Date: 09-25-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: S. ISAACSON

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5529	11		
2	REAGENT BLANK	R317-5629	12		
3	SAMPLE 791-4A	R321-5729	13		
4	FINAL LMCS CHECK STD	R323-5529	14		
5			15		
6			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 CHECK STD	9C11AF/0.1 mL			0.100 mL

A-6000-881 (03/92)

9 3 1 2 3 3 4 2 2 5

DETERMINATION OF HYDROXIDE ION IN SOLUTION - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
R 316.-5529	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Rerunn
OH	LA-661-102	% RECOVERY	W1TE2	0

Sample Size: ? 100 ml — Customer ID: STD

Remarks, Calculations, Results:
S273 TTS-OH
STDN 9611AF RESULT 9.96E-1
STD VAL 1.0136 %REC 98.3%
1 ml BaCl
.1905 ⌀ HNO3 (531-8)(.1905)/100

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
6C559				
[signature]				

Date: 9/25/91 — Time Completed: [signature] — Lab Unit Mgr: [signature]

Serial No	Sample Point	Date	Time Issued	Priority
R 317.-5529	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Rerunn
OH	LA-661-102	M	W1TE2	0

Sample Size: ? 3 ml Q-H2O — Customer ID: REG IN

Remarks, Calculations, Results:
REAGENT BLANK
.1905 ⌀ HNO3 complete

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
6C559				
[signature]				

Date: 9/25/91 — Time Completed: [signature] — Lab Unit Mgr: [signature]

Serial No	Sample Point	Date	Time Issued	Priority
R 321.-5729	106AW	9-19-91	15:37	25

Determination	Method/Standard	Result Units	Charge Code	Rerunn
OH	LA-661-102	M	W1TE2	0

Sample Size: ? .050 ml — Customer ID: 791-4A

Remarks, Calculations, Results:
1 ml BaCl
10 ml Q-H2O
Ins-OH(9611AF) .100 ml
.1905 ⌀ HNO3 (670-531)(.1905)/50 = 5.20E-1

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
6C559				
[signature]				

Date: 9/25/91 — Time Completed: [signature] — Lab Unit Mgr: [signature]

Serial No	Sample Point	Date	Time Issued	Priority
R 323.-5529	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Rerunn
OH	LA-661-102	% RECOVERY	W1TE2	0

Sample Size: ? .100 ml — Customer ID: STD

Remarks, Calculations, Results:
S273 TTS-OH
STDN 9611AF RESULT
STD VAL 1.013 %REC 99.7%
1 ml BaCl
.1905 ⌀ HNO3 (537-8)(.1905)/100 = 1.01 ~

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
6C559				
[signature]				

Date: 9/25/91 — Time Completed: [signature] — Lab Unit Mgr: [signature]

DOCUMENTATION SEP 25 1991 9:54 AM

ANALYST: 6C559 LOCATION: 222-S 200 West

TITRANT: .1905 N HNO3

INDICATING ELECTRODE:

REFERENCE ELECTRODE: 98% efficiency

SAMPLE:

SETUP PARAMETERS

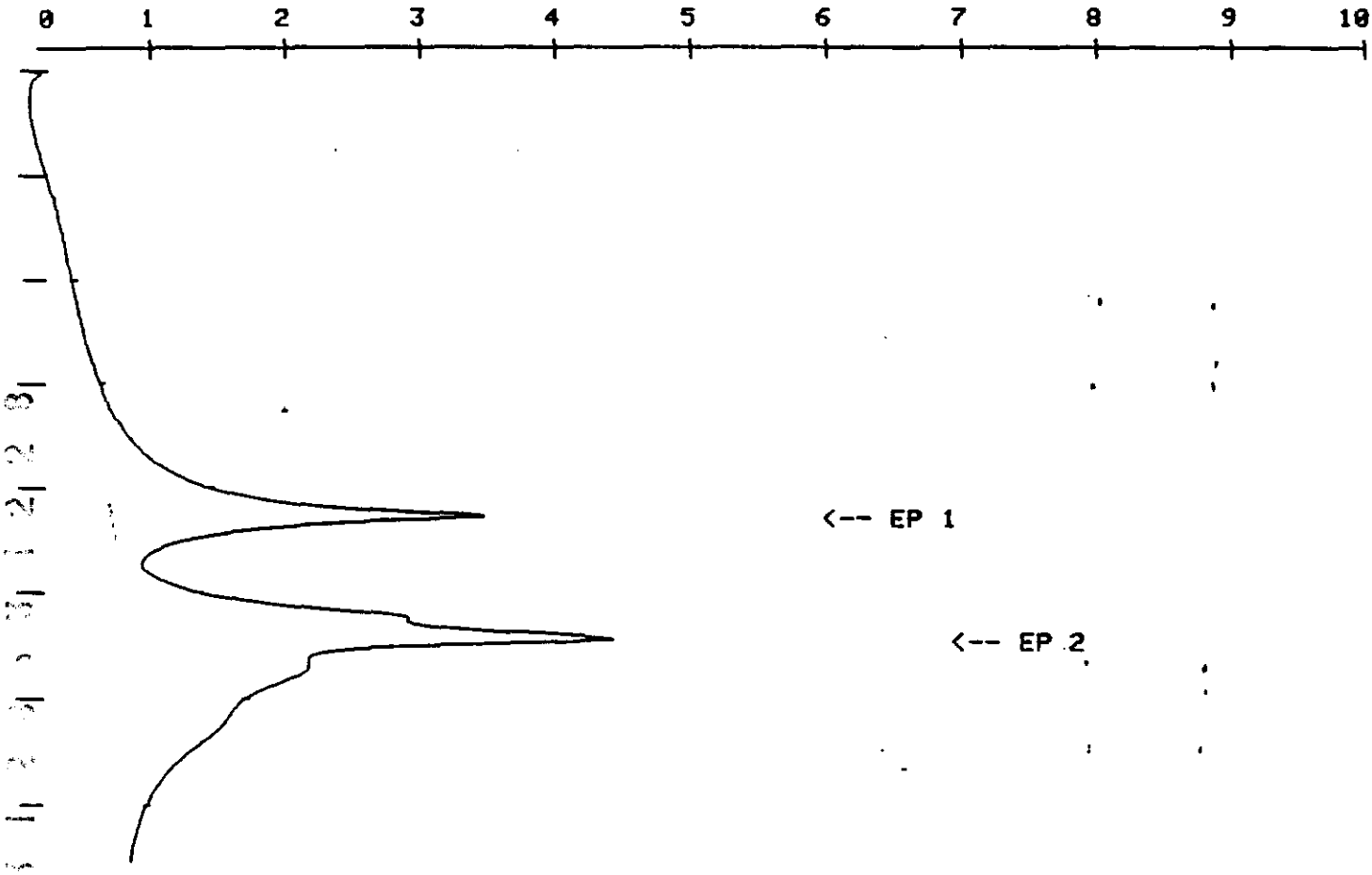
MODE:	DIRECT READ PH
ELECTRODE STDZ:	PH
EQUILIBRATION TIME, SEC:	15

MODE:	DRV TITRATION
ELECTRODE STDZ:	PH
dE/dV SIGN:	+
ML LIMIT:	2.50
PH LIMIT:	3.
TITRATION RATE:	10
SENSITIVITY:	1
DISPENSE, ML:	0.
PLOT GAIN:	5
COMPUTATION:	CONCENTRATION
TITRANT NORMALITY:	0.1900
SOLVENT BLANK:	0.
MULTIPLIER:	0.

LAST ELECTRODE STANDARDIZATION: SEP 25 1991 12:37 AM

SAMPLE NUMBER: 1
SAMPLE DATA: 316.
DIRECT READ PH: 12.035

DERIVATIVE OUTPUT, dE/dV



ORV TITRATION:

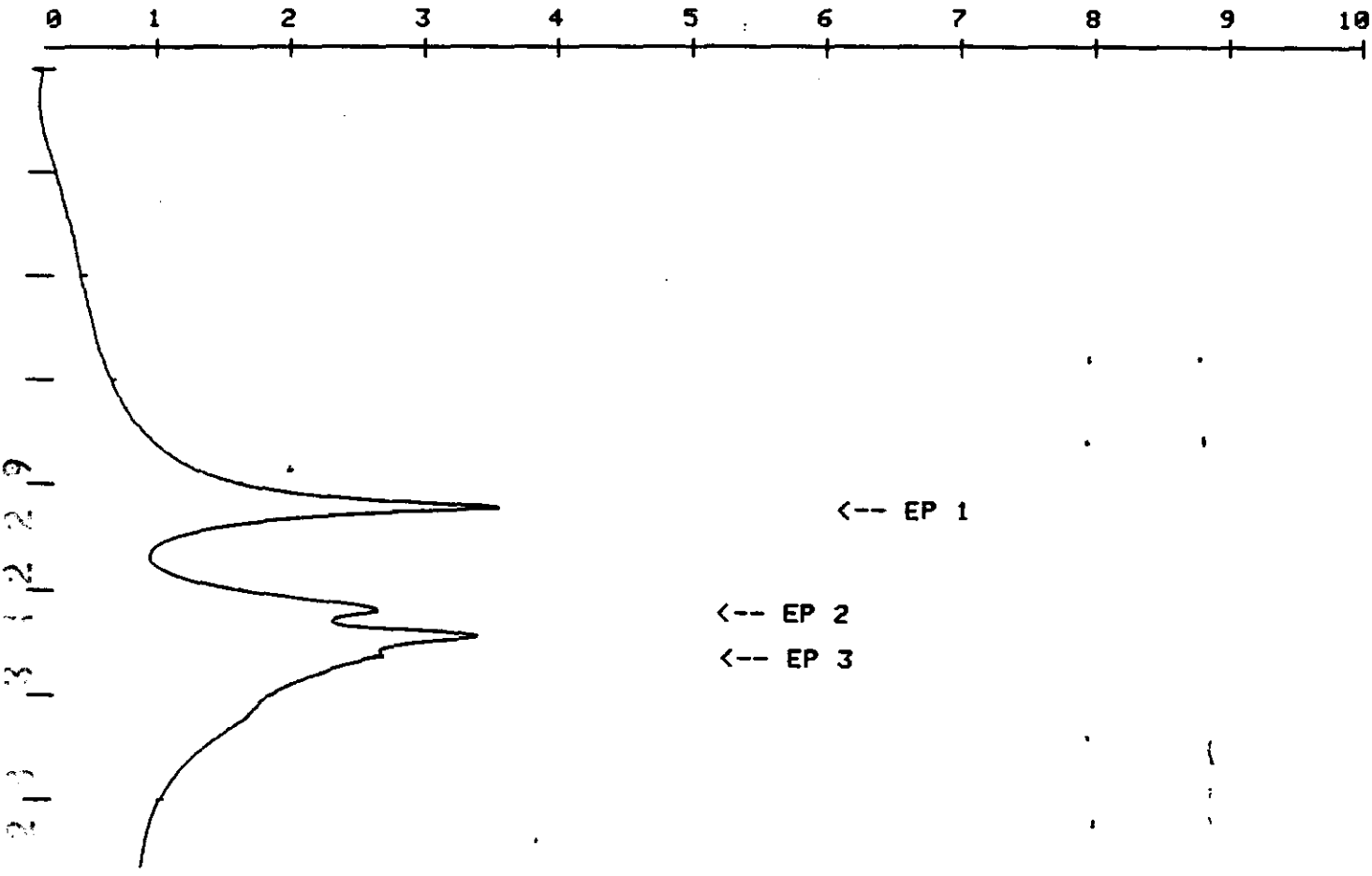
EQUIVALENCE PH	TITRANT VOLUME	COMPUTATION
9.65	0.534	0.0000
6.00	0.680	0.0000

TITRATION TERMINATED BY PH LIMIT.

SEP 25 1991 10:14 AM

SAMPLE NUMBER: 2
SAMPLE DATA: 316.
DIRECT READ PH: 12.043

DERIVATIVE OUTPUT, dE/dV



DRV TITRATION:

EQUIVALENCE PH	TITRANT VOLUME	COMPUTATION
9.63	0.528	0.0000
8.03	0.649	0.0000
5.44	0.702	0.0000

TITRATION TERMINATED BY PH LIMIT.

SEP 25 1991 10:23 AM

SAMPLE NUMBER: 1
SAMPLE DATA: 317.
DIRECT READ PH: 5.058

DERIVATIVE OUTPUT, dE/dV

0 1 2 3 4 5 6 7 8 9 10

.008

DRV TITRATION:

TITRATION TERMINATED BY PH LIMIT.

SEP 25 1991 10:25 AM

SAMPLE NUMBER: 2
SAMPLE DATA: 317.
DIRECT READ PH: 5.748

DERIVATIVE OUTPUT, dE/dV

0 1 2 3 4 5 6 7 8 9 10

DRV TITRATION: .009

TITRATION TERMINATED BY PH LIMIT.

SEP 25 1991 10:27 AM

SAMPLE NUMBER: 3
SAMPLE DATA: 317.
DIRECT READ PH: 5.237

DERIVATIVE OUTPUT, dE/dV

0 1 2 3 4 5 6 7 8 9 10

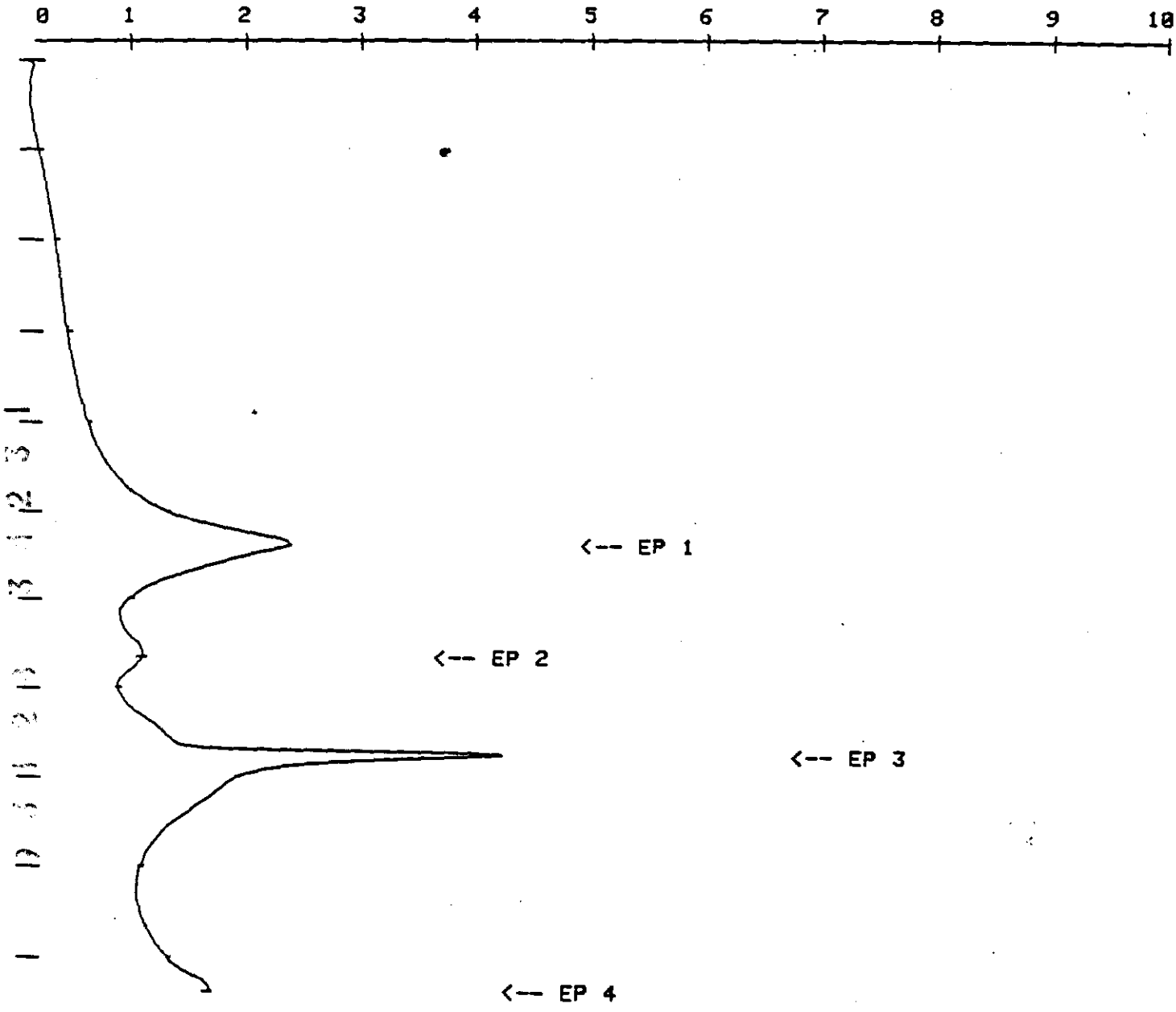
DRV TITRATION: .007

TITRATION TERMINATED BY PH LIMIT.

SEP 25 1991 10:29 AM

SAMPLE NUMBER: 1
SAMPLE DATA: 321.
DIRECT READ PH: 11.831

DERIVATIVE OUTPUT, dE/dV



DRV TITRATION:

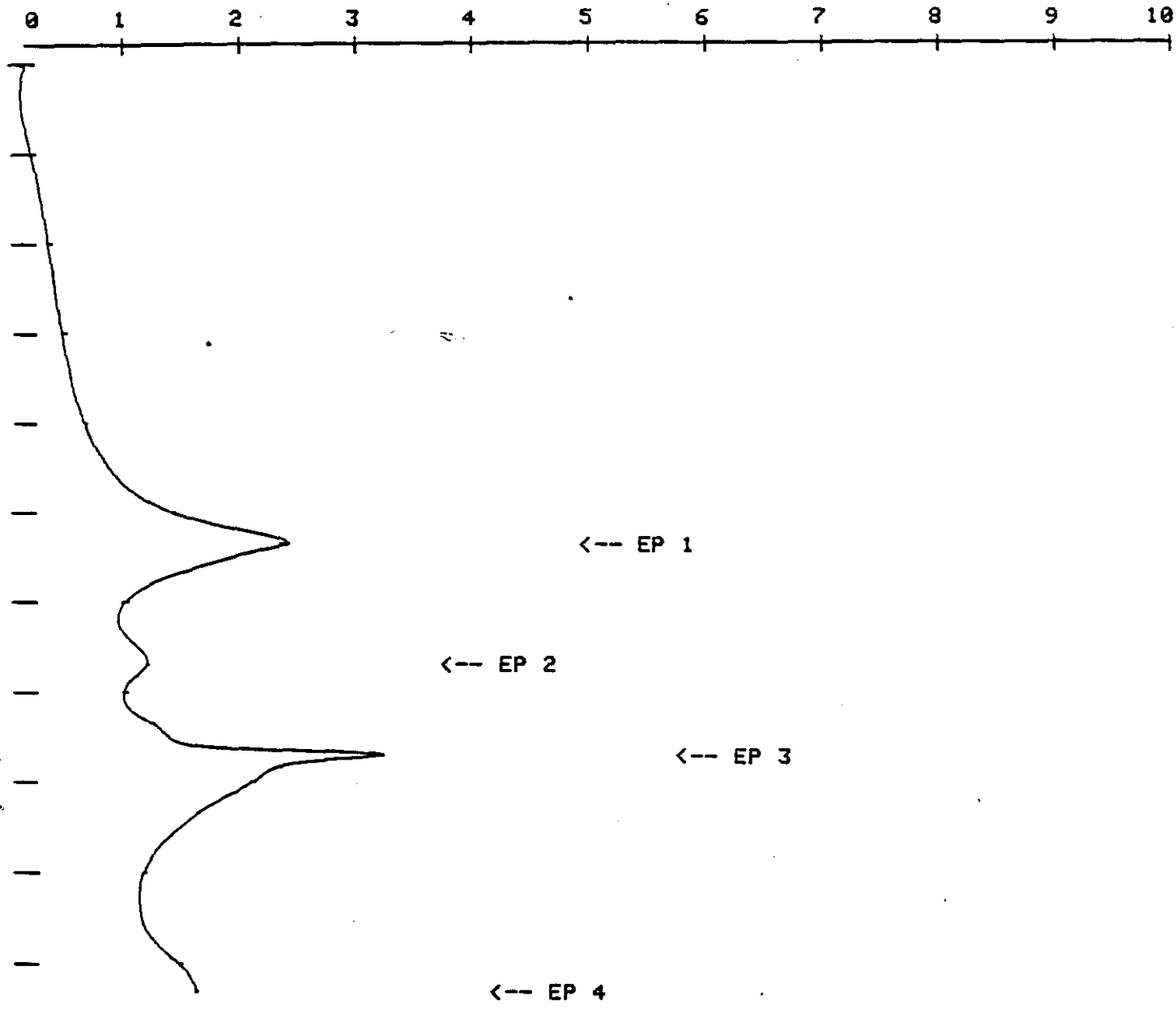
EQUIVALENCE PH	TITRANT VOLUME	COMPUTATION
9.64	0.672	0.0000
8.59	0.831	0.0000
6.87	0.967	0.0000
3.52	1.291	0.0000

TRATION TERMINATED BY LIMIT ON NUMBER OF EQUIVALENCES PERMISSIBLE.

SEP 25 1991 2:56 PM

SAMPLE NUMBER: 2
SAMPLE DATA: 321.
DIRECT READ PH: 11.835

DERIVATIVE OUTPUT, dE/dV



DRV TITRATION:

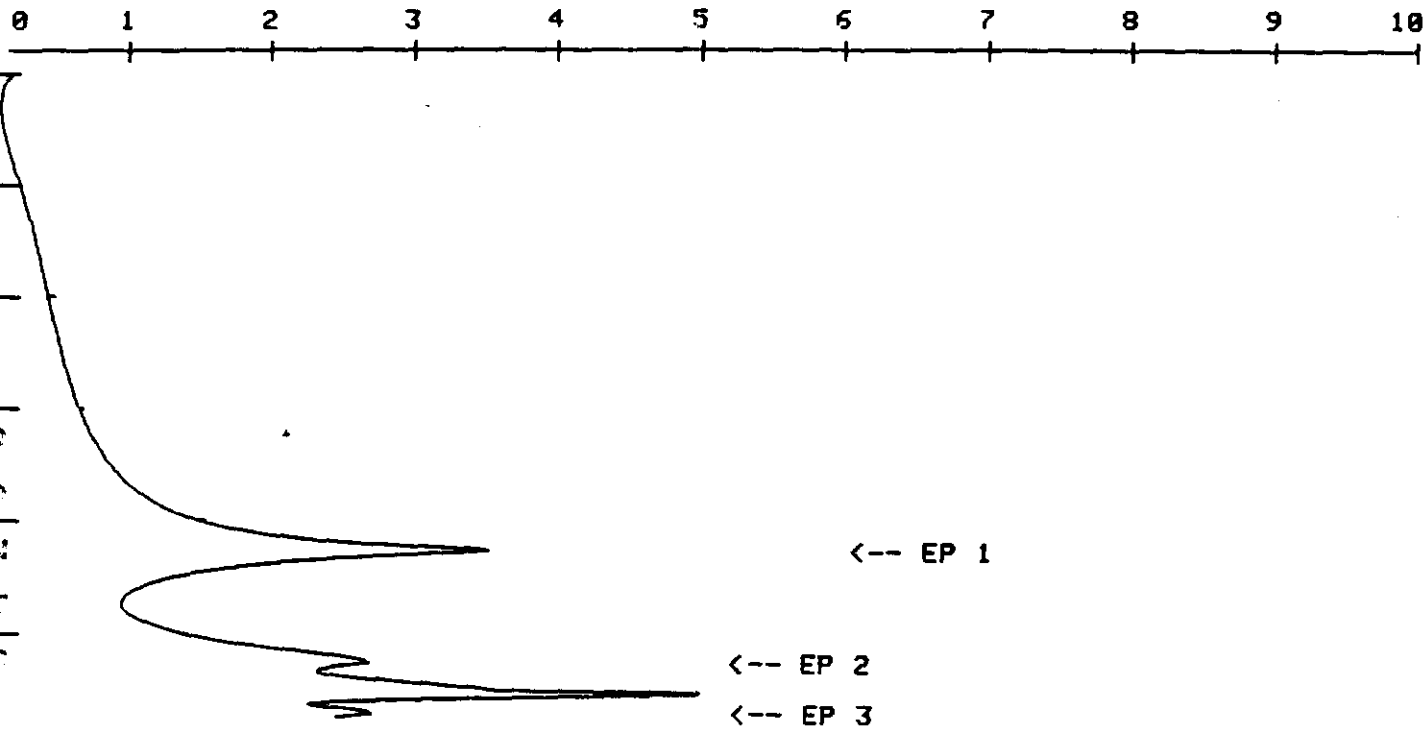
EQUIVALENCE PH	TITRANT VOLUME	COMPUTATION
9.64	0.669	0.0000
8.53	0.836	0.0000
7.05	0.962	0.0000
3.60	1.285	0.0000

TITRATION TERMINATED BY LIMIT ON NUMBER OF EQUIVALENCES PERMISSIBLE.

SEP 25 1991 3:04 PM

SAMPLE NUMBER: 1
SAMPLE DATA: 323.
DIRECT READ PH: 12.021

DERIVATIVE OUTPUT, dE/dV



DRV TITRATION:

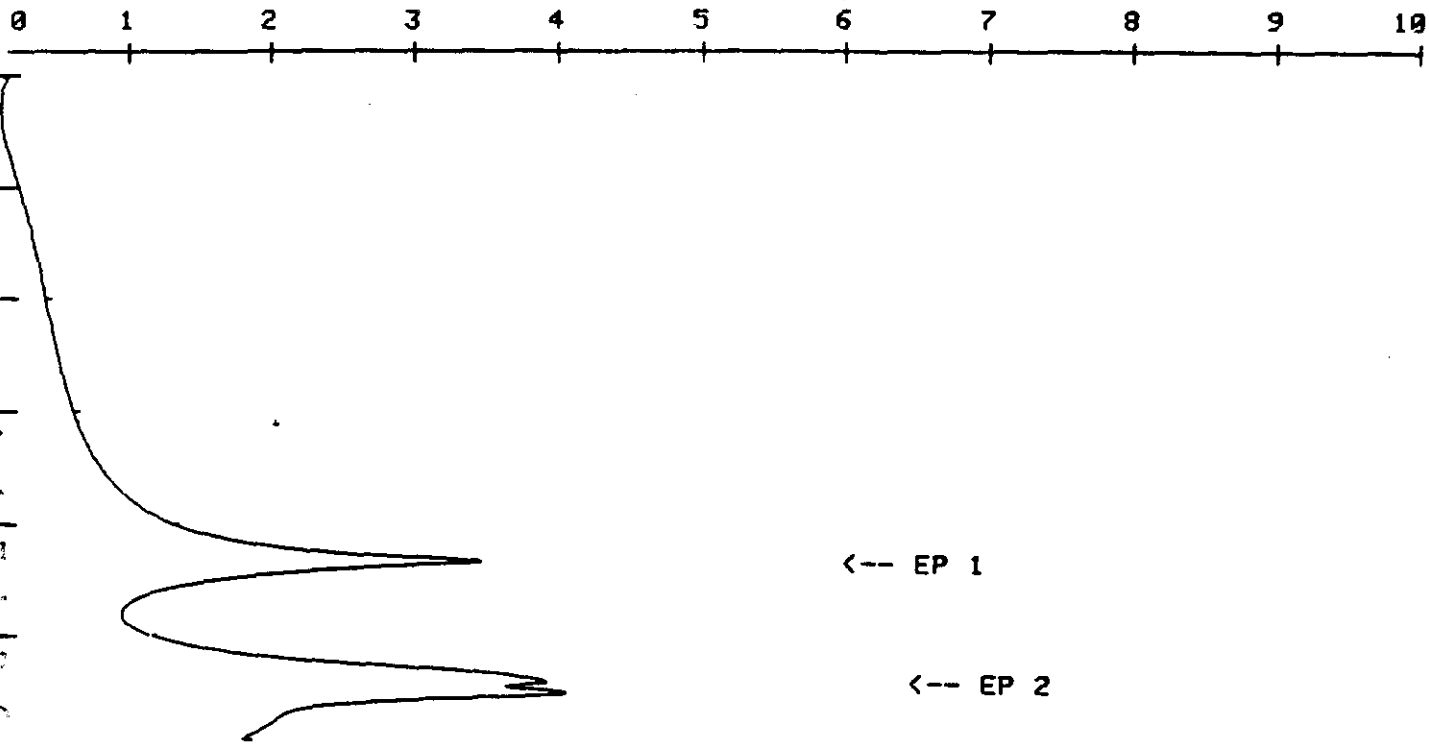
EQUIVALENCE PH	TITRANT VOLUME	COMPUTATION
9.60	0.533	0.0000
7.98	0.656	0.0000
5.06	0.711	0.0000

TITRATION TERMINATED BY PH LIMIT.

SEP 25 1991 3:11 PM

SAMPLE NUMBER: 2
SAMPLE DATA: 32.
DIRECT READ PH: 12.000

DERIVATIVE OUTPUT, dE/dV



DRV TITRATION:

EQUIVALENCE PH	TITRANT VOLUME	COMPUTATION
9.60	0.542	0.0000
6.69	0.676	0.0000

TITRATION TERMINATED BY PH LIMIT.

SEP 25 1991 3:24 PM

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R321	Customer ID: 791-4A
Analysis: SELENIUM	Sample Prep: UNDIGESTED

Instrument: PERKIN ELMER - WA77479	Procedure/Rev: LA-365-131/B-1
Technologist: M. MYERS	Date: 09-23-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: K. FULLER

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5596	11		
2	REAGENT BLANK	R317-5696	12		
3	SAMPLE 791-4A	R321-5796	13		
4	FINAL LMCS CHECK STD	R323-5596	14		
5			15		
6			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 CHECK STD	125B38A/0.5 mL			NA

A-6000-881 (03/92)

SELENIUM ANALYSIS - UNDIGESTED SAMPLE

Sample No.	Sample Point	Date	Time Issued	Priority
R 316.-5594	106AW	9-19-91	13:33	26

Determination	Method/Standard	Result Units	Charge Code	Results
Se	LA-365-131	% RECOVERY	W1TE2	0

Sample Size: ? .500 ml
Customer ID: STD

Remarks, Calculations, Results:
EDP R743 SE/HYDRD 9/24/91
STD# 125808A RESULT ~~1.731E-1~~ 1.011E-1
STD VAL 1.00E-1 %REC ~~173.1%~~
9/24/91 1.0 ml 1.087 ~~86.5174~~ / ~~500~~ 9/24/91 50.573 / 500 101.1%

Analyst-1: [illegible] Analyst-2 Analyst-3 Analyst-4 Analyst-5
Date: 9-23-91 Time Completed: Lab Unit Mgr: [illegible]

Sample No.	Sample Point	Date	Time Issued	Priority
R 317.-5696	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Results
Se	LA-365-131	PPM	W1TE2	0

Sample Size: ? 1.0 ml
Customer ID: REG BL

Remarks, Calculations, Results:
REAGENT BLANK
0.013
$\frac{<5}{1000} = <5.00E^{-3}$

Analyst-1: [illegible] Analyst-2 Analyst-3 Analyst-4 Analyst-5
Date: 9-23-91 Time Completed: Lab Unit Mgr: [illegible]

Sample No.	Sample Point	Date	Time Issued	Priority
R 321.-5796	106AW	9-19-91	15:37	25

Determination	Method/Standard	Result Units	Charge Code	Results
Se	LA-365-131	PPM	W1TE2	0

Sample Size: ? .500
Customer ID: 791-4A

Remarks, Calculations, Results:
0.050
$\frac{<5}{500} = <1.00E^{-2}$

Analyst-1: [illegible] Analyst-2 Analyst-3 Analyst-4 Analyst-5
Date: 9-23-91 Time Completed: Lab Unit Mgr: [illegible]

Sample No.	Sample Point	Date	Time Issued	Priority
R 323.-5596	106AW	9-19-91	15:45	25

Determination	Method/Standard	Result Units	Charge Code	Results
Se	LA-365-131	% RECOVERY	W1TE2	0

Sample Size: ? .500 ml
Customer ID: STD

Remarks, Calculations, Results:
EDP R743 SE/HYDRD 9/24/91
STD# 125808A RESULT ~~1.236E-1~~ 9.12E-2
STD VAL 1.00E-1 %REC 91.07%
.983 9/24/91 ~~74.263~~ / 500 45.575 / 500

Analyst-1: [illegible] Analyst-2 Analyst-3 Analyst-4 Analyst-5
Date: 9-23-91 Time Completed: Lab Unit Mgr: [illegible]

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY
CALIBRATION RECORD

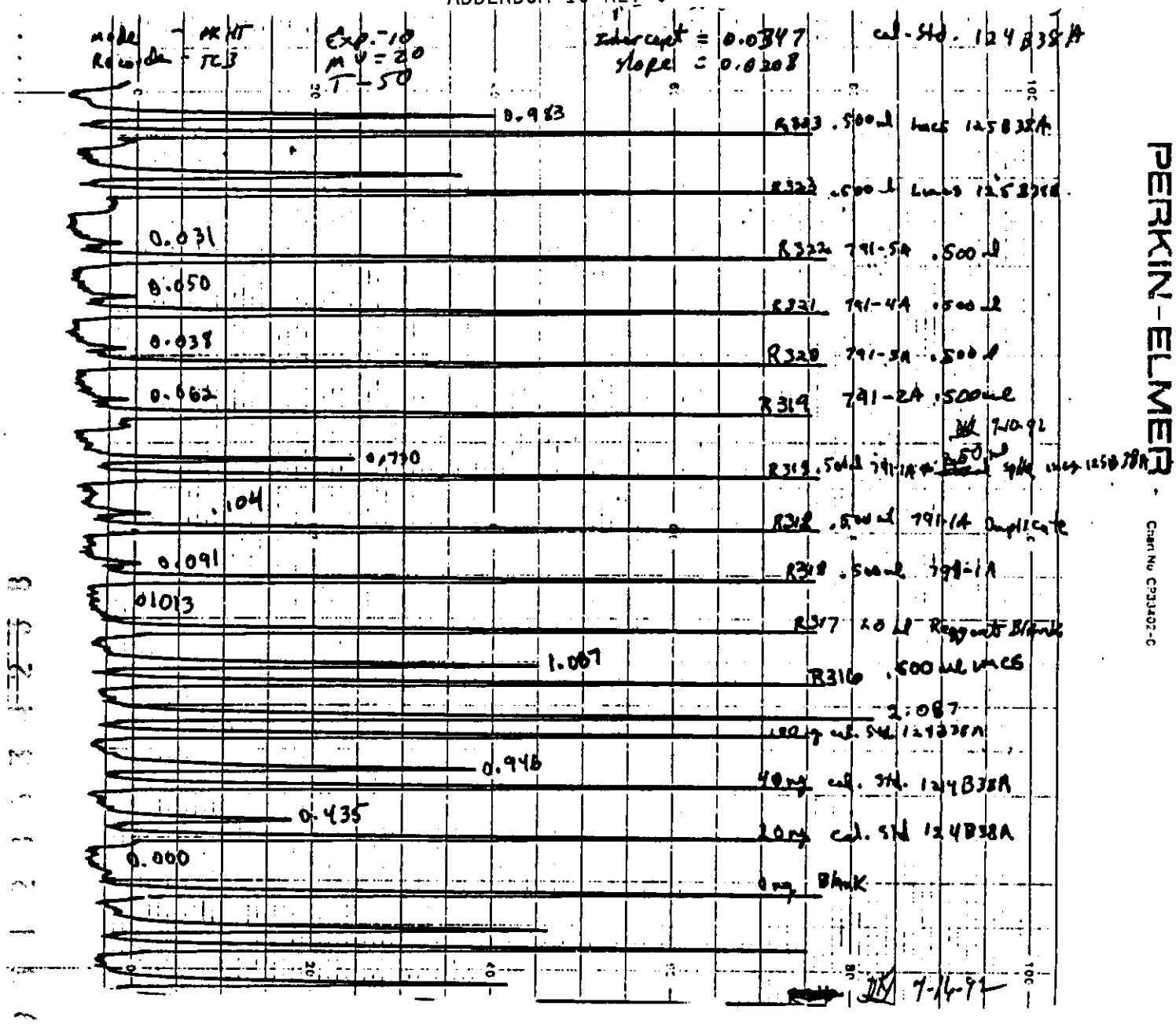
Analyte:	Se				
Procedure:	LA-365-131	Revision:	B-1		
Instrument:	HYDRIDE 44	Property No.:	WA77479		
Technologist:	M. MYERS	Payroll No.:	6C823	Date:	09-23-91

Calibration Standard: 124B38A
Analyte Concentration: 0.1000 ppm
Type of Calibration: LINEAR

	Dilution	Concentration	Instrument Reading Unit
1	0.000 mL	0.0 ng	0.000
2	0.200 mL	20.0 ng	0.435
3	0.400 mL	40.0 ng	0.946
4	1.000 mL	100.0 ng	2.087
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			

Comments:

A-6000-882 (03/92)


Exp. -10
MV = 20
T - 50
Intercept = 0.0347
slope = 0.0208
cal. Std. 124B38A
0.983
R323 .500 ul lmcs 125B38A
R323 .500 ul Lmcs 125B38A
0.031
R322 791-5A .500 ul
0.050
R321 791-4A .500 ul
0.038
R320 791-3A .500 ul
0.062
R319 791-2A .500 ul
7-10-92
0.770
R318 .500 ul 791-1A
.104
R318 .500 ul 791-1A Duplicate
0.091
R318 .500 ul 791-1A
01013
R317 20 ul Reagent Blank
1.067
R316 .500 ul lmcs
2.087
100 ng cal. Std. 124B38A
0.946
40 ng cal. Std. 124B38A
0.435
20 ng cal. Std 124B38A
0.000
0 ng Blank
7-16-92
PERKIN-ELMER
Chart No CP33402-C

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R321	Customer ID: 791-4A
Analysis: SPECIFIC GRAVITY	Sample Prep: UNDIGESTED

Instrument: WA90787	Procedure/Rev: LA-510-112/C-2
Technologist: J. SOLBRACK	Date: 10-18-91
Starting Time: 00:30	Temperature: N/A
Ending Time: 04:30	Chemist: R. K. FULLER

	Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5506
2	REAGENT BLANK	R317-5606
3	SAMPLE 791-4A	R321-5706
4	FINAL LMCS CHECK STD	R323-5506
5		
6		
7		
8		
9		
10		

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

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS CHECK STD	15C11BJ/.20019 mL			N/A

A-6000-881 (03/92)

SPECIFIC GRAVITY ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316. 5506	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
SPG	LA-510-112	% RECOVERY	W1TE2	0

Sample Size: ~~100~~ 200.19 g — Customer ID: STD

Remarks, Calculations, Results:
6332 ZHCL2
STDN ISCH-43 RESULT 1.4264
STD VAL 1.4386 %REC 99.15%

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				
82020				

Date: 10-18-91 — Time Completed — Lab Unit Mgr: [signature]

A. 2.2171
1.9316
.2855

R 316-5506

$\frac{.2855}{.20019} = 1.4261 + 1.4386 \times 100 = 99.15$

B. 2.2037
1.9181
.2856

$\frac{.2856}{.20019} = 1.4266 + 1.4386 \times 100 = 99.16$

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5606	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
SPG	LA-510-112		W1TE2	0

Sample Size: ? 200.19 g — Customer ID: REG BL

Remarks, Calculations, Results:
REAGENT BLANK

.9871

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				
82020				

Date: 10 18 91 — Time Completed — Lab Unit Mgr: [signature]

A. 2.1434
1.9458
.1976 ÷ .20019 = .9871

R 317-5606

B. 2.0895
1.8919
.1976

$\frac{.1976}{.20019}$ .9871

Serial No.	Sample Point	Date	Time Issued	Priority
R 321. 5706	106AW	9-19-91	15:36	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
SPG	LA-510-112		W1TE2	0

Sample Size: ? .20019 — Customer ID: 791-46

Remarks, Calculations, Results:

1.0790

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				
82020				

Date: 10 18 91 — Time Completed — Lab Unit Mgr: [signature]

A. 2.0883
1.8717
.2166

R 321-5706

ave = $\frac{.2160}{.20019} = 1.0790$

B. 2.1188
1.9034
.2154

SPECIFIC GRAVITY ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5506	106AW	7-19-91	15:43	25

Determination	Method/Standard	Result Units	Charge Code	Results
SPG	LA-510-112	% RECOVERY	W1TE2	0

Sample Size	Customer ID
? .20019	STD

Remarks, Calculations, Results

S332 ZNCL2

STD# 15CH-85 RESULT 1.4254

STD VAL 1.4886 %REC 99.08%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				
Hrs	Hrs	Hrs	Hrs	Hrs
82020			[signature]	

Date	Time Completed	Lab Unit Hrs
10 18 91		[signature]

A. 2.1738
1.8885
.2853

R. 323-5506

ave = .2854 / .20019 = 1.4258

B. 2.1808
1.8954
.2854

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R321	Customer ID: 791-4A
Analysis: TOTAL INORGANIC CARBON	Sample Prep: UNDIGESTED

Instrument: WB39927	Procedure/Rev: LA-622-102/B-0
Technologist: M. MYERS	Date: 09-25-91
Starting Time: 00:29	Temperature: NA
Ending Time: 04:18	Chemist: D. BISENIUS

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5527	11		
2	REAGENT BLANK	R317-5627	12		
3	SAMPLE 791-4A	R321-5727	13		
4	FINAL LMCS CHECK STD	R323-5527	14		
5			15		
6			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 CHECK STD	69C11K/0.05 mL			N/A

A-6000-881 (03/92)

TOTAL INORGANIC CARBON ANALYSIS - UNDIGESTED SAMPLE

Event No	Sample Point	Date	Time Issued	Priority
K 316.-5527	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Results
TIC	LA-622-102	% RECOVERY	WTIF2	0

Sample Size	Container ID
.050 ml	STD

Remarks, Calculations, Results

SPIKE CO2

STDN LACHK RESULT ~~2.68E-1~~ DHB 6/30/92 1.995E-1M

STD VAL 200E-1 % REC ~~104.0%~~ 99.75% DHB 6/30/92

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[illegible]				DHBirmingham
Hrs	Hrs	Hrs	Hrs	Hrs
LC823				
Date	Time Completed	Lab Manager		
9-25-91		[illegible]		

Event No	Sample Point	Date	Time Issued	Priority
K 317.-5527	106AW	9-19-91	13:47	26

Determination	Method/Standard	Result Units	Charge Code	Results
TIC	LA-622-102	G/L	WTIF2	0

Sample Size	Container ID
.050 ml	[illegible]

Remarks, Calculations, Results

SPIKE CO2 ~~5.10 mg/L C~~ DHB 6/30/92 5.70 mgC

~~7.14 mg/L C~~ DHB 6-11-92

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[illegible]				DHBirmingham
Hrs	Hrs	Hrs	Hrs	Hrs
LC823				
Date	Time Completed	Lab Manager		
9-25-91		[illegible]		

Event No	Sample Point	Date	Time Issued	Priority
K 321.-5727	106AW	9-19-91	15:57	25

Determination	Method/Standard	Result Units	Charge Code	Results
TIC	LA-622-102	G/L	WTIF2	0

Sample Size	Container ID
.050 ml	[illegible]

Remarks, Calculations, Results

~~2.20 g/L C~~ DHB 6/30/92

2.156 g/L C

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[illegible]				DHBirmingham
Hrs	Hrs	Hrs	Hrs	Hrs
LC822				
Date	Time Completed	Lab Manager		
9-25-91		[illegible]		

Event No	Sample Point	Date	Time Issued	Priority
K 323.-5527	106AW	9-19-91	15:43	25

Determination	Method/Standard	Result Units	Charge Code	Results
TIC	LA-622-102	% RECOVERY	WTIF2	0

Sample Size	Container ID
.050 ml	STD

Remarks, Calculations, Results

SPIKE CO2

STDN LACHK RESULT ~~2.08E-1~~ DHB 6/30/92 2.04E-1M

STD VAL ~~2.00E-1~~ DHB 6/30/92 2.00E-1 % REC ~~104.0%~~ 102% DHB 6/30/92

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[illegible]				DHBirmingham
Hrs	Hrs	Hrs	Hrs	Hrs
LC823				
Date	Time Completed	Lab Manager		
9-25-91		[illegible]		

TVC

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: STD R3/4 Date: 09-25-1991 Time: 00:45:11

Blank = 0 Sample Size = 50 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	104.80	100.00
3	3.01	117.60	10.88
4	4.01	121.40	3.13
5	5.01	123.00	1.30
6	6.01	124.00	0.81
7	7.01	124.80	0.64

(124.8 ~~0~~ 5.10)(1)/(50) = ~~2.496~~ 2.394 g/L Carbon
DyB 6/30/92 DyBisenius 6/30/92

(124.8 ~~0~~ 5.10)(1)/(50)(12) = ~~.1208~~ .1995 Molar Carbon
DyBisenius 6/30/92 DyB 6/30/92

Sample Run By: 6C823 _____

TIC

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: BLANK Date: 09-25-1991 Time: 00:29:30

Blank = 0 Sample Size = 50 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.80	-525.00
2	2.01	1.60	50.00
3	3.01	2.30	30.43
4	4.01	3.00	23.33
5	5.01	3.60	16.67
6	6.01	4.50	20.00
7	7.01	5.10	11.76

Blank value = 5.10 ug C DY Bisenius 6/30/92

(5.1 - 0)(1)/(50) = .102 g/L Carbon

(5.1 - 0)(1)/(50)(12) = 8.499999E-03 Molar Carbon

Sample Run By: 80028

TPL 8-30-92

TIC

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: R317 Date: 09-25-1991 Time: 00:54:43

Blank = 0 Sample Size = 50 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	2.10	100.00
3	3.01	3.10	32.26
4	4.00	3.60	13.89
5	5.01	4.30	16.28
6	6.01	5.00	14.00
7	7.01	5.70	12.28

Blank value = 5.70 ug Carbon DU Bisenius 6/30/92

(5.7 - 0)(1)/(50) = .114 g/L Carbon

(5.7 - 0)(1)/(50)(12) = .0095 Molar Carbon

Sample Run By: 6C823

TP2
8-28-92

TIC

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: R321 Date: 09-25-1991 Time: 03:50:14

Blank = .11 Sample Size = 50 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	95.00	100.00
3	3.01	103.60	8.30
4	4.01	108.10	4.16
5	5.01	110.80	2.44
6	6.01	112.40	1.42
7	7.01	113.50	0.97

(113.5 - ~~.7706429~~ 5.70)(1)/(50) = ~~2.254587~~ 2.156 g/L Carbon
DYB 6/30/92 DYB 6/30/92

(113.5 - ~~.7706429~~ 5.70)(1)/(50)(12) = ~~.1878823~~ .1797 Molar Carbon
DYBisenius 6/30/92 DYB 6/30/92

Sample Run By: 6C823 _____

TIC

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: R323 Date: 09-25-1991 Time: 04:18:14

Blank = .11 Sample Size = 50 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	112.90	100.00
3	3.01	123.20	8.36
4	4.01	125.50	1.83
5	5.01	126.50	0.79
6	6.01	127.30	0.63
7	7.00	128.10	0.62

(128.1 - ~~.7705704~~ 5.7)(1)/(50) = 2.54659 g/L Carbon
5.7 DYB 6/30/92

(128.1 - ~~.7705704~~)(1)/(50)(12) = ~~.2122158~~ Molar Carbon
DYB 6/30/92 .204 DY Bisenius 6/30/92

Sample Run By: 6C823

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R321	Customer ID: 791-4A
Analysis: TOTAL ORGANIC CARBON	Sample Prep: UNDIGESTED

Instrument: MODEL 5011 - WC16130	Procedure/Rev: LA-344-105/B-0
Technologist: M. MYERS	Date: 10-28-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: D. BISENIUS

	Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5526
2	REAGENT BLANK	R317-5626
3	SAMPLE 791-4A	R321-5726
4	FINAL LMCS CHECK STD	R323-5526
5		
6		
7		
8		
9		
10		

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

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS CHECK STD	70C11I/0.2 mL			NA
SAMPLES RERUN.				

A-6000-881 (03/92)

TOTAL ORGANIC CARBON ANALYSIS - UNDIGESTED SAMPLE

Sample No: R 316.-5526 | Sample Point: 106AW | Date: 9-19-91 | Time Issued: 13:35 | Priority: 26
Determination: TOC | Method Number: LA-344-105 | Result Units: % RECOVERY | Charge Code: | Rerun: 1
RERUN
Sample Size: 7 .200ml - 2nd .200ml | Customer ID: STD
Remarks, Calculations, Results:
8356 CO3TOC
STDN 70C11I REBULT 3.0745
STD VAL 3.0 %REC 102.5%
Analyst: Lulana Lungu | Analyst 2: | Analyst 3: | Analyst 4: | Analyst 5:
Date: 10-28-91

Sample No: R 317.-5626 | Sample Point: 106AW | Date: 9-19-91 | Time Issued: 13:45 | Priority: 26
Determination: TOC | Method Number: LA-344-105 | Result Units: G/L | Charge Code: | Rerun: 1
RERUN
Sample Size: 7 .200ml | Customer ID: REU BL
Remarks, Calculations, Results:
REAGENT BLANK
4.80 ug C
~~8.06 E-3 g/l~~ DAB 6/30/92
Analyst: Lulana Lungu | Analyst 2: | Analyst 3: | Analyst 4: | Analyst 5: D4 Biscoine
Date: 10-28-91

Sample No: R 321.-5726 | Sample Point: 106AW | Date: 9-19-91 | Time Issued: 13:17 | Priority: 25
Determination: TOC | Method Number: LA-344-105 | Result Units: | Charge Code: WITE2 | Rerun: 1
RERUN
Sample Size: 7 .200ml - 2nd - .200ml | Customer ID: /91-NA
Remarks, Calculations, Results:
~~8.63 E-1 g/l~~ DAB 6/30/92
7.755 E-1 g/LC
Analyst: Lulana Lungu | Analyst 2: | Analyst 3: | Analyst 4: | Analyst 5: D4 Biscoine
Date: 10-28-91

Sample No: R 323.-5826 | Sample Point: 106AW | Date: 9-19-91 | Time Issued: 13:43 | Priority: 25
Determination: TOC | Method Number: LA-344-105 | Result Units: | Charge Code: WITE2 | Rerun: 1
RERUN
Sample Size: 7 .200ml - 2nd - .200ml | Customer ID: STD
Remarks, Calculations, Results:
8356 CO3TOC 3.014 g/LC
STDN 70C11I REBULT ~~3.102 g/L~~ DAB 6/30/92
STD VAL 3.00 g/L %REC ~~102.4%~~ DAB 6/30/92
100.5%
Analyst: Lulana Lungu | Analyst 2: | Analyst 3: | Analyst 4: | Analyst 5: D4 Biscoine
Date: 10-28-91

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: BLANK Date: 10-26-1991 Time: 21:52:10

Blank = N/A Sample Size = 200 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	0.30	100.00
3	3.01	1.00	70.00
4	4.01	1.80	44.44
5	5.01	2.40	25.00
6	6.01	2.80	14.29
7	7.01	3.20	12.50

BLANK VALUE = 3.2 / 7.006714 = .4567049 g/L/minute

Sample Run By: 6C823_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: STD R316 Date: 10-27-1991 Time: 01:10:43

Blank = .4567049 Sample Size = 200 Dilution Factor = 11
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	42.40	100.00
3	3.01	51.00	16.86
4	4.01	55.00	7.27
5	5.01	57.10	3.68
6	6.01	58.30	2.06
7	7.01	59.10	1.35

(59.1 - 3.1996)(11)/(200) = 3.074522 g/L Carbon

(59.1 - 3.1996)(11)/(200)(12) = .2562102 Molar Carbon

Sample Run By: 6C823_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: R317 BLANK Date: 10-27-1991 Time: 01:29:09

Blank = .4567049 Sample Size = 200 Dilution Factor = 1
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	1.70	100.00
3	3.01	2.80	39.29
4	4.01	3.40	17.65
5	5.01	3.90	12.82
6	6.01	4.40	11.36
7	7.01	4.80	8.33

Blank value = 4.80 ug Carbon DU Bisenius 6/30/92

(4.8 - 3.1996)(1)/(200) = 8.002001E-03 g/L Carbon

(4.8 - 3.1996)(1)/(200)(12) = 6.668334E-04 Molar Carbon

Sample Run By: 6C823_____

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: R321 Date: 10-27-1991 Time: 04:58:54

Blank = .4567049 Sample Size = 200 Dilution Factor = 11
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	5.10	100.00
3	3.01	13.10	61.07
4	4.01	15.80	17.09
5	5.01	17.20	8.14
6	6.01	18.20	5.49
7	7.01	18.90	3.70

(18.9 - ~~3.199597~~ 4.80)(11)/(200) = ~~.8635222~~ .7755 g/L Carbon
DY Bisenius 6/30/92 DYB 6/30/92

(18.9 - 3.199597)(11)/(200)(12) = 7.196018E-02 Molar Carbon

Sample Run By: 6C823_____

TPZ 9-30-92

COULOMETER ANALYSIS REPORT
TICTOC Rev. 0

Sample: ~~R322~~ R323 Date: 10-27-1991 Time: 05:22:10
mm-10-28-91

Blank = .4567049 Sample Size = 200 Dilution Factor = 11
% Difference = 10 Min Readings = 7 Max Readings = 7

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	1.01	0.00	0.00
2	2.01	25.90	100.00
3	3.01	47.20	45.13
4	4.01	53.80	12.27
5	5.01	56.90	5.45
6	6.01	58.60	2.90
7	7.01	59.60	1.68

(59.6 - ~~3.199987~~ 4.80)(11)/(200) = ~~3.102001~~ 3.014 g/L C g/L Carbon
DY Bisenius 6/30/92 DYB 6/30/92
(59.6 - 3.199987)(11)/(200)(12) = .2585001 Molar Carbon

Sample Run By: 6C823_____

TFZ 8-30-92

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R321	Customer ID: 791-4A
Analysis: ION CHROMATOGRAPHIC - FLUORIDE	Sample Prep: UNDIGESTED

Instrument: DIONEX 4000 - WB54428	Procedure/Rev: LA-533-105/B-0
Technologist: M. MYERS	Date: 09-30-91
Starting Time: 22:35	Temperature: 24-25degC
Ending Time: 00:32	Chemist: D. HERT

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5571	11		
2	REAGENT BLANK	R317-5671	12		
3	SAMPLE 791-4A	R321-5771	13		
4	FINAL LMCS CHECK STD	R323-5571	14		
5			15		
6			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 CHECK STD	73C11CO/0.1 mL			N/A

A-6000-881 (03/92)

ION CHROMATOGRAPHIC ANALYSIS (FLUORIDE) - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5571	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
F	LA-533-105	% RECOVERY	W1TE2	0

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

Remarks, Calculations, Results:
EDP R974 DIONEX
STDN 73C11C0 RESULT 53.664
STD VAL 56.0 %REC 95.8%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				[signature]
6C823 9-30-91				[signature]

Date: | Time Completed: | Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5671	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
F	LA-533-105	PPM	W1TE2	0

Sample Size: ? 5 ml ~~.100ml - 10ml~~ mm 5/29/92
Customer ID: REG DL

Remarks, Calculations, Results:
REAGENT BLANK
<1.00E-1ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				[signature]
6C822				

Date: 9-30-91 | Time Completed: | Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 321.-5771	106AW	9-19-91	15:37	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
F	LA-533-105	D/B	W1TE2	0

Sample Size: ? .100ml - 10ml - .100ml - 10ml
Customer ID: 791-4A

Remarks, Calculations, Results:
5.84E3

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				[signature]
6C823				

Date: 9-30-91 | Time Completed: | Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5571	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
F	LA-533-105	% RECOVERY	W1TE2	0

Sample Size: ? 100ml - 10ml
Customer ID: STD

Remarks, Calculations, Results:
EDP R974 DIONEX
STDN 73C11C0 RESULT 53.790
STD VAL 56.0 %REC 96.1%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				[signature]
6C822				[signature]

Date: 9-30-91 | Time Completed: | Lab Unit Mgr: [signature]

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R321	Customer ID: 791-4A
Analysis: ION CHROMATOGRAPHIC - NITRATE	Sample Prep: UNDIGESTED

Instrument: DIONEX 4000 - WB54428	Procedure/Rev: LA-533-105/B-0
Technologist: M. MYERS	Date: 09-30-91
Starting Time: 22:35	Temperature: 24-25degC
Ending Time: 00:32	Chemist: D. HERT

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5573	11		
2	REAGENT BLANK	R317-5673	12		
3	SAMPLE 791-4A	R321-5773	13		
4	FINAL LMCS CHECK STD	R323-5573	14		
5			15		
6			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 CHECK STD	73C11CO/0.1 mL			N/A

A-6000-881 (03/92)

ION CHROMATOGRAPHIC ANALYSIS (NITRATE) - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5573	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	% RECOVERY	W1TE2	0

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

Remarks, Calculations, Results:
EDP R978 DIONEX
STD #73C11CO RESULT 529.531
STD VAL 564.0 %REC 93.9%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				[signature]
Hrs: 6C823	Hrs:	Hrs:	Hrs:	Hrs: [signature]

Date: 9-30-91
Time Completed:
Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5673	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	PPM	W1TE2	0

Sample Size: ? 5ml
Customer ID: REG DL

Remarks, Calculations, Results:
REAGENT BLANK
<1.00 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				[signature]
Hrs: 6C823	Hrs:	Hrs:	Hrs:	Hrs:

Date: 9-30-91
Time Completed:
Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 321.-5773	106AW	9-19-91	15:38	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	PPM	W1TE2	0

Sample Size: ? .100ml - 10ml - .100ml - 10ml
Customer ID: 791-4A

Remarks, Calculations, Results:
3.14E4

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				[signature]
Hrs: 6C823	Hrs:	Hrs:	Hrs:	Hrs:

Date: 9-30-91
Time Completed:
Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5573	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	% RECOVERY	W1TE2	0

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

Remarks, Calculations, Results:
EDP R978 DIONEX
STD #73C11CO RESULT 551.166
STD VAL 564.0 %REC 97.7%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				[signature]
Hrs: 6C822	Hrs:	Hrs:	Hrs:	Hrs: [signature]

Date: 9-30-91
Time Completed:
Lab Unit Mgr: [signature]

9-22-91

4409-AC

DIONEX METHOD PARAMETERS - SYSTEM1.MET

System Parameters

System Name : system1/gpm
Number of Detectors..... 1
Detector 1 Type..... CDM-1
Detector 1 real time plot scale (uS)..... 20.00
Run Time (minutes)..... 8.50
Sampling Rate (seconds)..... 0.20

-- DETECTOR 1 PARAMETERS --

Report Options

Save Data File..... Yes
Data File Name: c:\dx\data\91092201.D08
Create ASCII Report File..... No
Print Report..... Yes
List Peaks Not Found in this run..... No
Report Unknowns Found in this run..... Yes
Print Chromatogram..... Yes
AutoScale Chromatogram to Highest Peak..... Yes
Fill Peaks with Color ..... Yes
Draw Grid Lines on Chromatogram..... No
Label with Peak Number..... Yes
Label with Retention Times on Chromatogram..... No
Label with Component Name..... Yes
Format File Name: c:\dx\method\default.prf

Integration Parameters

Starting Peak Width (seconds)..... 10.0
Peak Threshold (mV or uS/data pt interval)..... 0.500
Peak Area Reject..... 1000
Area Reject for Reference Peaks..... 1000
Percent Retention Time Window for Reference Peaks..... 5.0

Integration Timed Events

Time	Description
1.32	Start peak detection
1.44	Start peak detection
1.46	Start peak detection
1.77	
1.77	Enable end of peak detection

Calibration Parameters

Number Of Levels for Calibration	6
Calibration Fit Type	Quadratic
Replace Or Average Calibrations	Replace
External or Internal Calibration	External
Calibrate by Area or Height	Area
Default Injection Volume	1.0
Default Dilution Factor	1.0
Response Factor for Unknown Peaks	1.0
Calibration Standard Volume	1.0
Internal Standard Volume	1.0
Sample Unit	PPM

Component # 1 FLUORIDE Retention Time 1.13
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 8.52797E-002
K1 = 6.06440E-005
K2 = -6.17180E-011

Level	Amount	Area	Height
1	1.20000E-001	1439	225
2	3.00000E-001	4035	566
3	6.00000E-001	8217	1141
4	1.20000E+000	16507	2218
5	2.30000E+000	39534	4812
6	4.40000E+000	76890	9371

Component # 2 CHLORIDE Retention Time 1.70
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.93335E-002
K1 = 1.01273E-004
K2 = -9.35560E-011

Level	Amount	Area	Height
1	1.60000E-001	1319	217
2	3.90000E-001	3754	568
3	7.80000E-001	6942	1045
4	1.50000E+000	14461	1975
5	3.00000E+000	30287	3987
6	5.90000E+000	61305	8910

Component # 3 NITRITE Retention Time 2.03
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 4.88691E-001
K1 = 1.33960E-004
K2 = 5.52630E-012

Level	Amount	Area	Height
1	1.08000E+000	6239	874
2	2.69000E+000	17299	2252
3	5.37000E+000	34328	4729
4	1.06200E+001	72787	9300
5	2.08500E+001	153501	19401
6	4.01500E+001	292053	34439

Component # 4 BROMIDE Retention Time 2.80
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 4.01960E-002
K1 = 2.00453E-004
K2 = -1.00008E-010

Level	Amount	Area	Height
1	1.56000E+000	7660	753
2	3.90000E+000	20706	1880
3	7.80000E+000	38868	3455
4	1.54000E+001	78061	6644
5	3.02000E+001	165133	12632
6	5.81000E+001	350930	24386

Component # 5 NITRATE Retention Time 3.30
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.02611E-001
K1 = 1.61787E-004
K2 = -5.83501E-011

Level	Amount	Area	Height
1	1.37000E+000	7543	727
2	3.43000E+000	17321	1803
3	6.83000E+000	40244	3563
4	1.35000E+001	83386	7010
5	2.65000E+001	173503	13640
6	5.11000E+001	360809	25639

Component # 6 PHOSPHATE Retention Time 5.32
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 5.53452E-001
K1 = 3.53243E-004
K2 = -3.31156E-010

Level	Amount	Area	Height
1	1.19000E+000	2277	162
2	2.98000E+000	7242	453
3	5.93000E+000	15025	935
4	1.17400E+001	31660	1933
5	2.30300E+001	69135	4130
6	4.43700E+001	144749	8447

Component # 7 SULFATE Retention Time 6.85
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.55734E-001
K1 = 1.27491E-004
K2 = -3.79358E-011

Level	Amount	Area	Height
1	1.40000E+000	9418	543
2	3.50000E+000	24499	1382
3	6.96000E+000	52303	2890
4	1.37800E+001	107173	5909
5	2.70400E+001	225632	12225
6	5.20700E+001	471630	24686

IC Control File: C:\DX\METHOD\SYSTEM1.TE

Step	Time	Description
Init		CDM-1 AutoOffset Off
Init		CDM-1 Recorder Mark OFF
Init		CDM-1 Temp. Comp. = 1.7 / Deg C
Init		CDM-1 Recorder Range = 1.0 uS
Init		CDM-1 Cell ON
Init		CHA Heater = 25 Deg. C
Init		Valve A ON
Init		Valve B ON
Init		Inject Valve OFF
Init		ACI Autosmp OFF
Init		ACI RLY 2 OFF
Init		ACI TTL 1 OFF
Init		ACI TTL 2 OFF
Init		ACI AC 1 ON
Init		GPM Start
Init		GPM Hold Gradient Clock
Init		GPM Reset ON
1	0.0	CDM-1 AutoOffset ON
1	0.0	Start Sampling
1	0.0	GPM Reset OFF
2	0.1	CDM-1 Recorder Range = 10.0 uS
2	0.1	Inject Valve ON
2	0.1	GPM Run Gradient Clock
3	3.0	Inject Valve OFF
4	3.5	ACI Autosmp ON
5	8.0	ACI Autosmp OFF

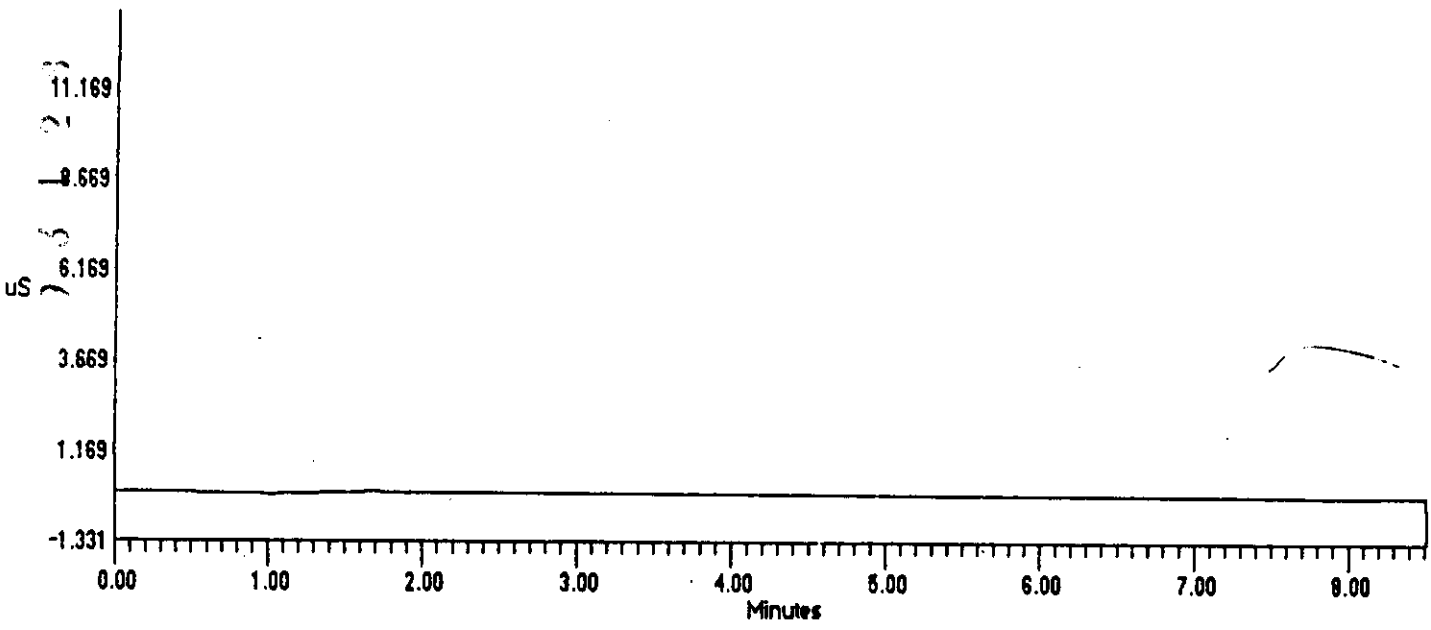
GpmFile: C:\DX\METHOD\SYSTEM1.GPM
Lo Pressure Limit = 200
Hi Pressure Limit = 2000
Eluant 1 - DI WATER
Eluant 2 - SODIUM CARBONATE
Eluant 3 - SODIUM BICARBONATE
Eluant 4 - Eluant 4

Time	Flow	%1	%2	%3	%4	V5	V6	Comment
0.0	2.0	84	8	8	0	0	0	

```
==========================================================================
| Sample Name: BLANK                          Date: Mon Sep 30 22:35:47 1991|
| Data File   : c:\dx\data\91093071.D02                                   |
| Method      : c:\dx\method\SYSTEM1.met                                  |
| ACI Address: 1        System : 1        Inject#:   2  Detector: CDM-1   |
==========================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2555	5Hz	0.00	8.52	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta

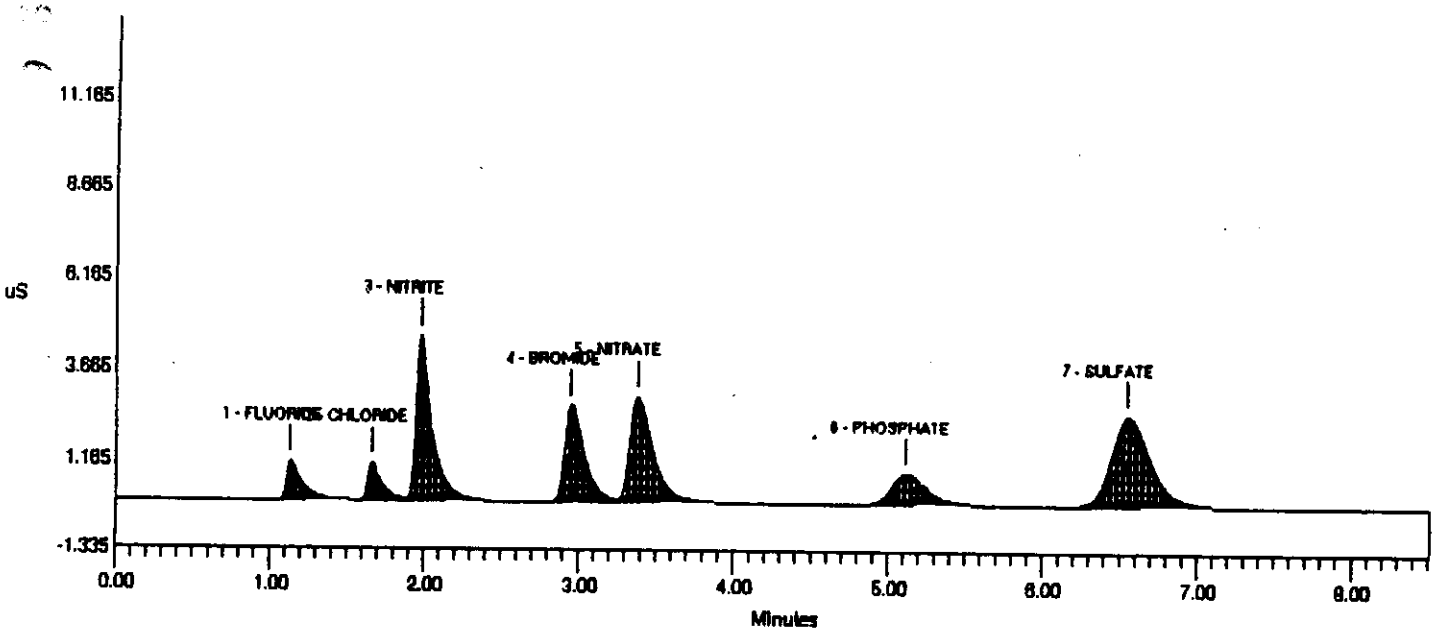


Sample Name: LMCS/73C11C0 R3/4 7-14-92 Date: Mon Sep 30 22:45:24 1991
Data File : c:\dx\data\91093071.D03
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1 System : 1 Inject#: 3 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2555	5Hz	0.00	8.52	1000

Pk. Num	Ret Time	Component Name	Concentration		Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	95.8	53.664	1073	7411	1	0.00
2	1.67	CHLORIDE	95.6	71.733	1049	6666	2	-1.96
3	1.98	NITRITE	98.4	501.700	4572	33387	2	-2.30
4	2.95	BROMIDE	7-14-92	487.695	2681	24180	2	-3.28
5	3.38	NITRATE	92.9	529.531	3918	30880	2	2.53
6	5.12	PHOSPHATE	102.0	527.513	869	13397	1	-3.76
7	6.55	SULFATE	96.2	586.801	2510	43340	1	-4.38

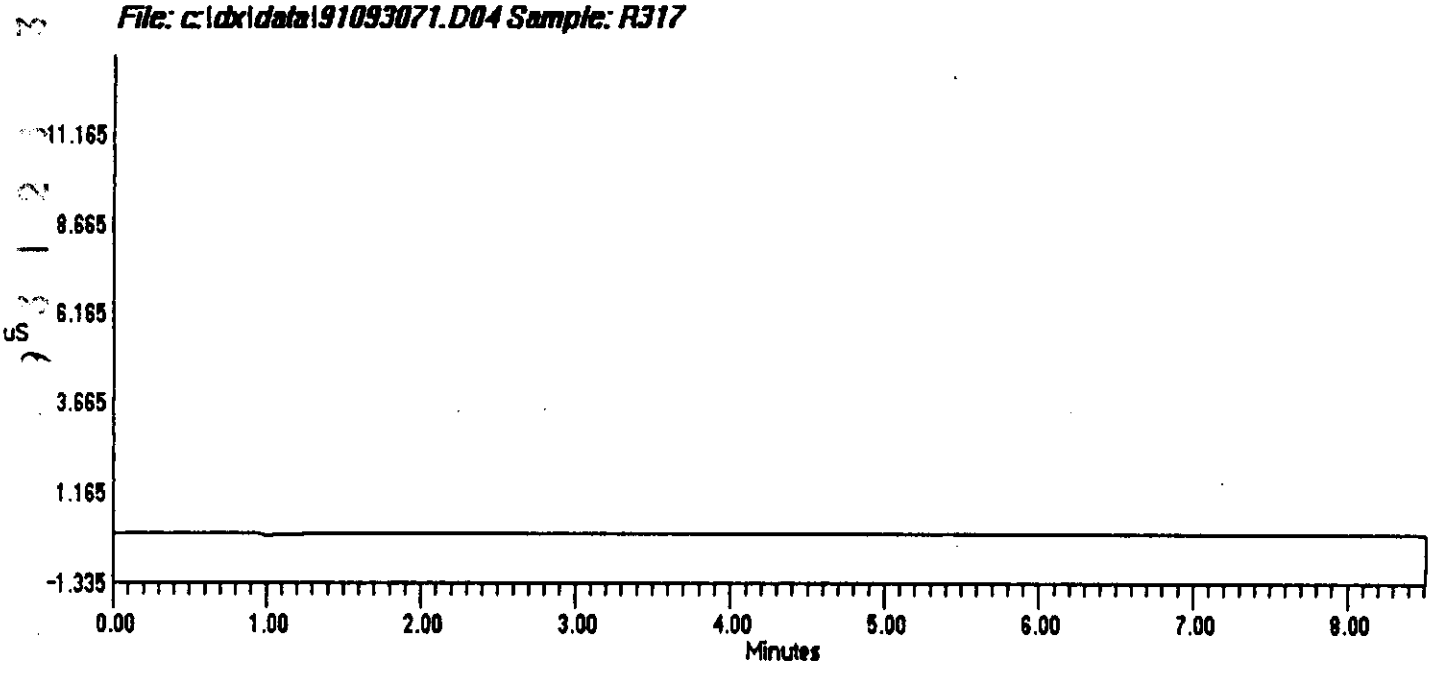
File: c:\dx\data\91093071.D03 Sample: LMCS/73C11C0



```
==========================================================================
| Sample Name: R317                          Date: Mon Sep 30 22:55:18 1991|
| Data File  : c:\dx\data\91093071.D04                                    |
| Method     : c:\dx\method\SYSTEM1.met                                   |
| ACI Address: 1       System : 1       Inject#:   4  Detector: CDM-1    |
==========================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2555	5Hz	0.00	8.52	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta

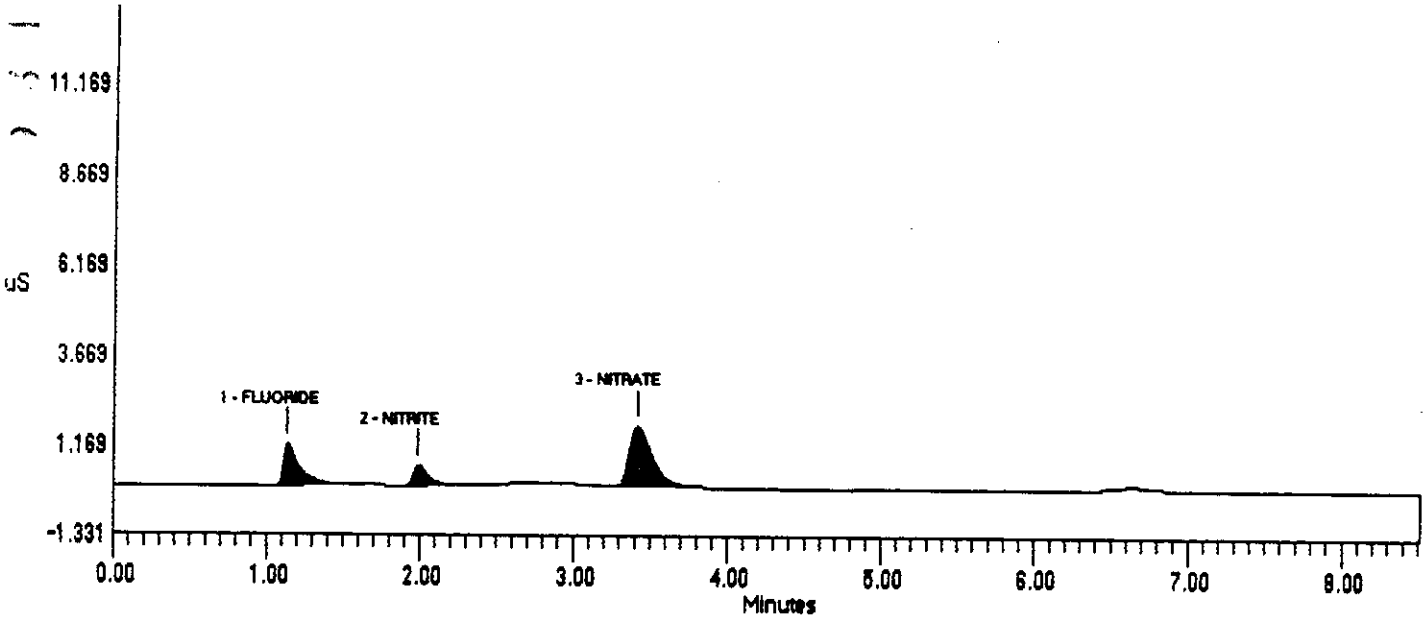


Sample Name: R321 Date: Tue Oct 01 00:13:31 1991
Data File : c:\dx\data\91093061.D12
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1 System : 1 Inject#: 12 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	10200	2555	5Hz	0.00	8.52	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	5854.775	1154	8126	1	0.00
2	1.98	NITRITE	10419.404	572	3977	1	-2.30
3	3.42	NITRATE	31366.752	1675	17244	1	3.54

File: c:\dx\data\91093061.D12 Sample: R321

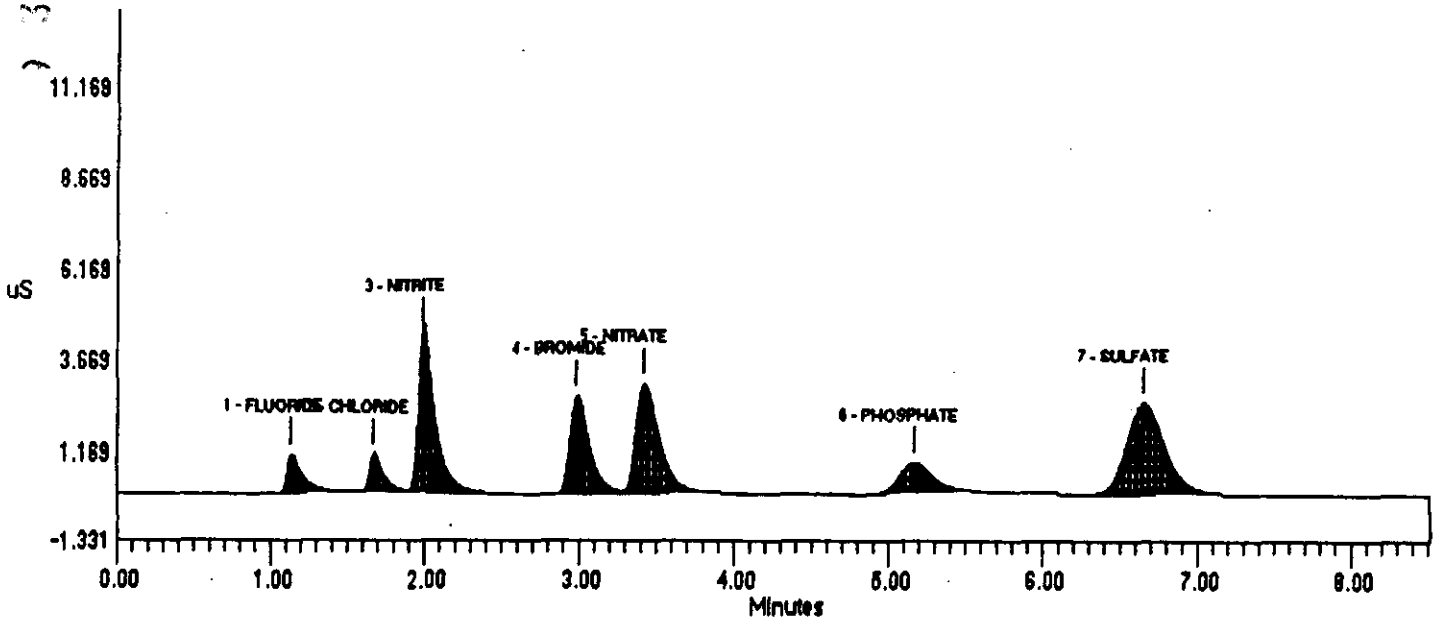


Sample Name: LMCS/73C11C0 R323 7-14-92		Date: Tue Oct 01 00:32:59 1991	
Data File : c:\dx\data\91093061.D14			
Method : c:\dx\method\SYSTEM1.met			
ACI Address: 1	System : 1	Inject#: 14	Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2555	5Hz	0.00	8.52	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	53.790	1068	7432	1	0.00
2	1.67	CHLORIDE	73.065	1011	6797	2	-1.96
3	1.98	NITRITE	511.009	4382	34073	2	-2.30
4	2.98	BROMIDE	495.249	2689	24562	2	-2.19
5	3.42	NITRATE	551.166	2999	32234	2	3.54
6	5.17	PHOSPHATE	513.595	854	12997	1	-2.82
7	6.65	SULFATE	585.022	2491	43198	1	-2.92

File: c:\dx\data\91093061.D14 Sample: LMCS/73C11C0



WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R321	Customer ID: 791-4A
Analysis: ION CHROMATOGRAPHIC - PHOSPHATE	Sample Prep: UNDIGESTED

Instrument: DIONEX 4000 - WB54428	Procedure/Rev: LA-533-105/B-0
Technologist: M. MYERS	Date: 10-02-91
Starting Time: 18:46	Temperature: 24-25degC
Ending Time: 21:31	Chemist: D. HERT

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5574	11		
2	REAGENT BLANK	R317-5674	12		
3	SAMPLE 791-4A	R321-5774	13		
4	FINAL LMCS CHECK STD	R323-5574	14		
5			15		
6			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 CHECK STD	73C11CO/0.1 mL			N/A

A-6000-881 (03/92)

ION CHROMATOGRAPHIC ANALYSIS (PHOSPHATE) - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5574	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
PO4	LA-533-105	% RECOVERY	W1TE2	0

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

Remarks, Calculations, Results:
EDP R976 DIONEX
STDH 73C11C0 RESULT 522.442
STD VAL 517.0 %REC 101.1%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				[signature]
Hrs 6C823	Hrs	Hrs	Hrs	Hrs

Date: 10-2-91
Time Completed:
Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5674	106AW	9-19-91	13:45	20

Determination	Method/Standard	Result Units	Charge Code	Rerun
PO4	LA-533-105	PPM	W1TE2	0

Sample Size: ? 1dl
Customer ID: REO DL

Remarks, Calculations, Results:
REAGENT BLANK
<1 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				[signature]
Hrs 6C823	Hrs	Hrs	Hrs	Hrs

Date: 10-2-91
Time Completed:
Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 321.-5774	106AW	9-19-91	15:38	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
PO4	LA-533-105	PPM	W1TE2	0

Sample Size: ? .100ml - 10ml
Customer ID: 791-4A

Remarks, Calculations, Results:
611.238

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				[signature]
Hrs 6C823	Hrs	Hrs	Hrs	Hrs

Date: 10-2-91
Time Completed:
Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5574	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
PO4	LA-533-105	% RECOVERY	W1TE2	0

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

Remarks, Calculations, Results:
EDP R976 DIONEX
STDH 73C11C0 RESULT 506.601
STD VAL 517.0 %REC 98.0%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				[signature]
Hrs 6C823	Hrs	Hrs	Hrs	Hrs

Date: 10-2-91
Time Completed:
Lab Unit Mgr: [signature]

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R321	Customer ID: 791-4A
Analysis: ION CHROMATOGRAPHIC - SULFATE	Sample Prep: UNDIGESTED

Instrument: DIONEX 4000 - WB54428	Procedure/Rev: LA-533-105/B-0
Technologist: M. MYERS	Date: 10-02-91
Starting Time: 18:46	Temperature: 24-25degC
Ending Time: 21:31	Chemist: D. HERT

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5575	11		
2	REAGENT BLANK	R317-5675	12		
3	SAMPLE 791-4A	R321-5775	13		
4	FINAL LMCS CHECK STD	R323-5575	14		
5			15		
6			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 CHECK STD	73C11CO/0.1 mL			N/A

A-6000-881 (03/92)

ION CHROMATOGRAPHIC ANALYSIS (SULFATE) - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5575	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
SO4	LA-533-105	% RECOVERY	W1TE2	0

Sample Size: ? 100ml - 10ml
Customer ID: STD

Remarks, Calculations, Results:
EDP R970 DIONEX
STDN 73C11CO RESULT 581.586
STD VAL 610.0 %REC 95.3%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				[signature]
Hrs 6C823	Hrs	Hrs	Hrs	Hrs

Date: 10-2-91
Time Completed:
Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5675	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
SO4	LA-533-105	PPM	W1TE2	0

Sample Size: ? 1ml
Customer ID: REO DL

Remarks, Calculations, Results:
REAGENT BLANK

<1ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				[signature]
Hrs 6C823	Hrs	Hrs	Hrs	Hrs

Date: 10-2-91
Time Completed:
Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 321.-5775	106AW	9-19-91	15:38	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
SO4	LA-533-105	PPM	W1TE2	0

Sample Size: ? 100ml - 10ml
Customer ID: 791-4A

Remarks, Calculations, Results:
2578.446

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				[signature]
Hrs 6C823	Hrs	Hrs	Hrs	Hrs

Date: 10-2-91
Time Completed:
Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5575	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
SO4	LA-533-105	% RECOVERY	W1TE2	0

Sample Size: ? 100ml - 10ml
Customer ID: STD

Remarks, Calculations, Results:
EDP R970 DIONEX
STDN 73C11CO RESULT 582.554
STD VAL 610.0 %REC 95.5%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[signature]				[signature]
Hrs 6C823	Hrs	Hrs	Hrs	Hrs

Date: 10-2-91
Time Completed:
Lab Unit Mgr: [signature]

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R321	Customer ID: 791-4A
Analysis: ION CHROMATOGRAPHIC - NITRITE	Sample Prep: UNDIGESTED

Instrument: DIONEX 4000 - WB54428	Procedure/Rev: LA-533-105/B-0
Technologist: M. MYERS	Date: 10-02-91
Starting Time: 18:46	Temperature: 24-25degC
Ending Time: 21:31	Chemist: D. HERT

	Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5576
2	REAGENT BLANK	R317-5676
3	SAMPLE 791-4A	R321-5776
4	FINAL LMCS CHECK STD	R323-5576
5		
6		
7		
8		
9		
10		

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

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS CHECK STD	73C11CO/0.1 mL			N/A

A-6000-881 (03/92)

ION CHROMATOGRAPHIC ANALYSIS (NITRITE) - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5576	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
NO2	LA-533-105	% RECOVERY	W1TE2	0

Sample Size: ? .100ml-10ml — Customer ID: STD

Remarks, Calculations, Results:
EDP R968 DIONEX
STDN 73C1160 RESULT 494.073
STD VAL 510.0 %REC 96.9%

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				[signature]
6C823			[signature]	

Date: 10-2-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5676	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
NO2	LA-533-105	PPM	W1TE2	0

Sample Size: ? 1ml — Customer ID: REG DL

Remarks, Calculations, Results:
REAGENT BLANK
<1 ppm

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				[signature]
6C823				

Date: 10-2-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 321.-5776	106AW	9-19-91	15:38	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
NO2	LA-533-105	PPM	W1TE2	0

Sample Size: ? .100ml-10ml - .500ml [illegible] -10ml — Customer ID: 791-4A

Remarks, Calculations, Results:
7472.070

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				[signature]
6C823				

Date: 10-2-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5576	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
NO2	LA-533-105	% RECOVERY	W1TE2	0

Sample Size: ? .100ml-10ml — Customer ID: STD

Remarks, Calculations, Results:
EDP R968 DIONEX
STDN 73C1160 RESULT 501.702
STD VAL 510.0 %REC 98.4%

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				[signature]
6C823			[signature]	

Date: 10-2-91 — Time Completed: — Lab Unit Mgr: [signature]

9-22-91

4469-AC

DIONEX METHOD PARAMETERS - SYSTEM1.MET

System Parameters

System Name : system1/gpm
Number of Detectors..... 1
Detector 1 Type..... CDM-1
Detector 1 real time plot scale (uS)..... 20.00
Run Time (minutes)..... 8.50
Sampling Rate (seconds)..... 0.20

-- DETECTOR 1 PARAMETERS --
Report Options

Save Data File..... Yes
Data File Name: c:\dx\data\91092201.D08
Create ASCII Report File..... No
Print Report..... Yes
List Peaks Not Found in this run..... No
Report Unknowns Found in this run..... Yes
Print Chromatogram..... Yes
AutoScale Chromatogram to Highest Peak..... Yes
Fill Peaks with Color ..... Yes
Draw Grid Lines on Chromatogram..... No
Label with Peak Number..... Yes
Label with Retention Times on Chromatogram..... No
Label with Component Name..... Yes
Format File Name: c:\dx\method\default.prf

Integration Parameters

Starting Peak Width (seconds)..... 10.0
Peak Threshold (mV or uS/data pt interval)..... 0.500
Peak Area Reject..... 1000
Area Reject for Reference Peaks..... 1000
Percent Retention Time Window for Reference Peaks..... 5.0

Integration Timed Events

Time	Description
1.32	Start peak detection
1.44	Start peak detection
1.46	Start peak detection
1.77	
1.77	Enable end of peak detection

Calibration Parameters

Number Of Levels for Calibration	6
Calibration Fit Type	Quadratic
Replace Or Average Calibrations	Replace
External or Internal Calibration	External
Calibrate by Area or Height	Area
Default Injection Volume	1.0
Default Dilution Factor	1.0
Response Factor for Unknown Peaks	1.0
Calibration Standard Volume	1.0
Internal Standard Volume	1.0
Sample Unit	PPM

Component # 1 FLUORIDE Retention Time 1.13
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 8.32797E-002
K1 = 6.06440E-005
K2 = -6.17180E-011

Level	Amount	Area	Height
1	1.20000E-001	1439	225
2	3.00000E-001	4035	566
3	6.00000E-001	8217	1141
4	1.20000E+000	16507	2218
5	2.30000E+000	39534	4812
6	4.40000E+000	76890	9371

Component # 2 CHLORIDE Retention Time 1.70
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.93335E-002
K1 = 1.01273E-004
K2 = -9.35560E-011

Level	Amount	Area	Height
1	1.60000E-001	1319	217
2	3.90000E-001	3754	568
3	7.80000E-001	6942	1045
4	1.50000E+000	14461	1975
5	3.00000E+000	30287	3987
6	5.90000E+000	61305	8910

Component # 3 NITRITE Retention Time 2.03
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 4.88691E-001
K1 = 1.33960E-004
K2 = 5.52630E-012

Level	Amount	Area	Height
1	1.08000E+000	6239	874
2	2.69000E+000	17299	2252
3	5.37000E+000	34328	4729
4	1.06200E+001	72787	9300
5	2.08500E+001	153501	19401
6	4.01500E+001	292053	34439

Component # 4 BROMIDE Retention Time 2.80
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 4.01960E-002
K1 = 2.00453E-004
K2 = -1.00008E-010

Level	Amount	Area	Height
1	1.56000E+000	7660	753
2	3.90000E+000	20706	1880
3	7.80000E+000	38868	3455
4	1.54000E+001	78061	6644
5	3.02000E+001	165133	12632
6	5.81000E+001	350930	24386

Component # 5 NITRATE Retention Time 3.30
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.02611E-001
K1 = 1.61787E-004
K2 = -5.83501E-011

Level	Amount	Area	Height
1	1.37000E+000	7543	727
2	3.43000E+000	19321	1803
3	6.83000E+000	40244	3563
4	1.35000E+001	83386	7010
5	2.65000E+001	173503	13640
6	5.11000E+001	360809	25639

Component # 6 PHOSPHATE Retention Time 5.32
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 5.53452E-001
K1 = 3.53243E-004
K2 = -3.51156E-010

Level	Amount	Area	Height
1	1.19000E+000	2277	162
2	2.98000E+000	7242	453
3	5.93000E+000	15025	935
4	1.17400E+001	31660	1933
5	2.30300E+001	69135	4130
6	4.43700E+001	144749	8447

Component # 7 SULFATE Retention Time 6.85
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.55734E-001
K1 = 1.27491E-004
K2 = -3.79338E-011

Level	Amount	Area	Height
1	1.40000E+000	9418	543
2	3.50000E+000	24499	1382
3	6.96000E+000	52303	2870
4	1.37800E+001	107173	5909
5	2.70400E+001	225632	12225
6	5.20700E+001	471630	24686

IC Control File: C:\DX\METHOD\SYSTEM1.TE

Step	Time	Description
Init		CDM-1 AutoOffset Off
Init		CDM-1 Recorder Mark OFF
Init		CDM-1 Temp. Comp. = 1.7 / Deg C
Init		CDM-1 Recorder Range = 1.0 uS
Init		CDM-1 Cell ON
Init		CHA Heater = 25 Deg. C
Init		Valve A ON
Init		Valve B ON
Init		Inject Valve OFF
Init		ACI Autosmp OFF
Init		ACI RLY 2 OFF
Init		ACI TTL 1 OFF
Init		ACI TTL 2 OFF
Init		ACI AC 1 ON
Init		GPM Start
Init		GPM Hold Gradient Clock
Init		GPM Reset ON
1.	0.0	CDM-1 AutoOffset ON
1	0.0	Start Sampling
1	0.0	GPM Reset OFF
2	0.1	CDM-1 Recorder Range = 10.0 uS
2	0.1	Inject Valve ON
2	0.1	GPM Run Gradient Clock
3	3.0	Inject Valve OFF
4	3.5	ACI Autosmp ON
5	8.0	ACI Autosmp OFF

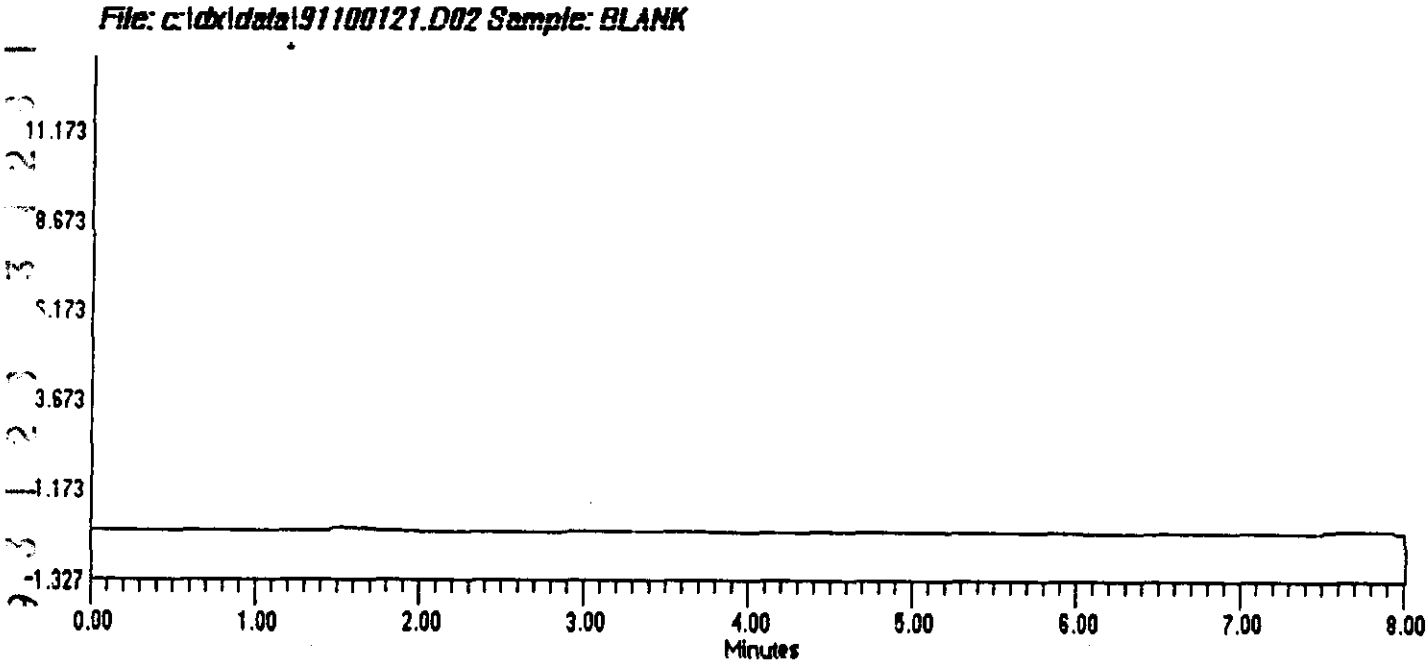
GpmFile: C:\DX\METHOD\SYSTEM1.GPM
Lo Pressure Limit = 200
Hi Pressure Limit = 2000
Eluant 1 - DI WATER
Eluant 2 - SODIUM CARBONATE
Eluant 3 - SODIUM BICARBONATE
Eluant 4 - Eluant 4

Time	Flow	%1	%2	%3	%4	V5	V6	Comment
0.0	2.0	84	8	8	0	0	0	

```
==============================================================================
! Sample Name: BLANK                          Date: Wed Oct 02 18:46:10 1991!
! Data File  : c:\dx\data\91100121.D02                                      !
! Method     : c:\dx\method\SYSTEM1.met                                     !
! ACI Address: 1        System : 1        Inject#:   2  Detector: CDM-1     !
==============================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta

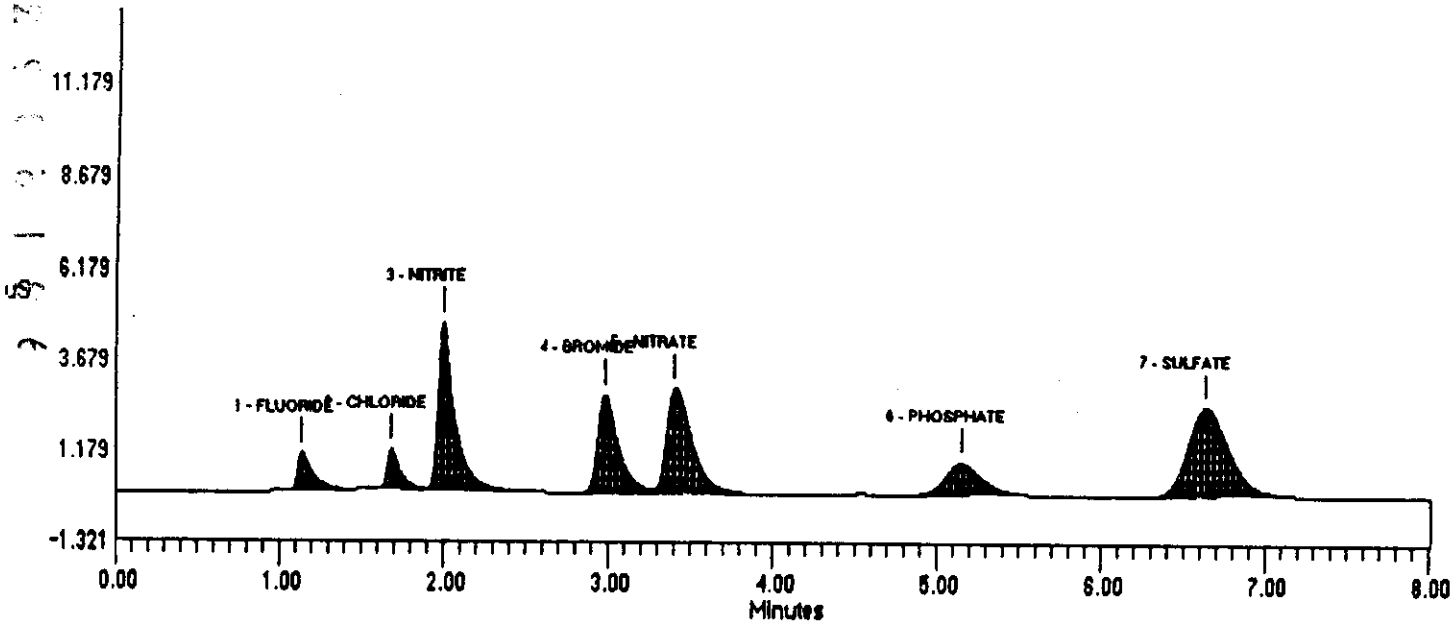


Sample Name: LMCS/73C11C0 R3/6 JB 9-14-92 Date: Wed Oct 02 18:55:16 1991
Data File : c:\dx\data\91100111.D03
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1 System : 1 Inject#: 3 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	51.501	1052	7053	1	0.00
2	1.68	CHLORIDE	67.889	1092	6285	2	-0.98
3	2.00	NITRITE	494.073	4650	32824	2	-1.48
4	2.98	BROMIDE	487.271	2732	24158	2	-2.19
5	3.40	NITRATE	538.528	2889	31443	2	3.03
6	5.15	PHOSPHATE	522.442	861	13251	1	-3.13
7	6.63	SULFATE	581.586	2485	42924	1	-3.16

File: c:\dx\data\91100111.D03 Sample: LMCS/73C11C0

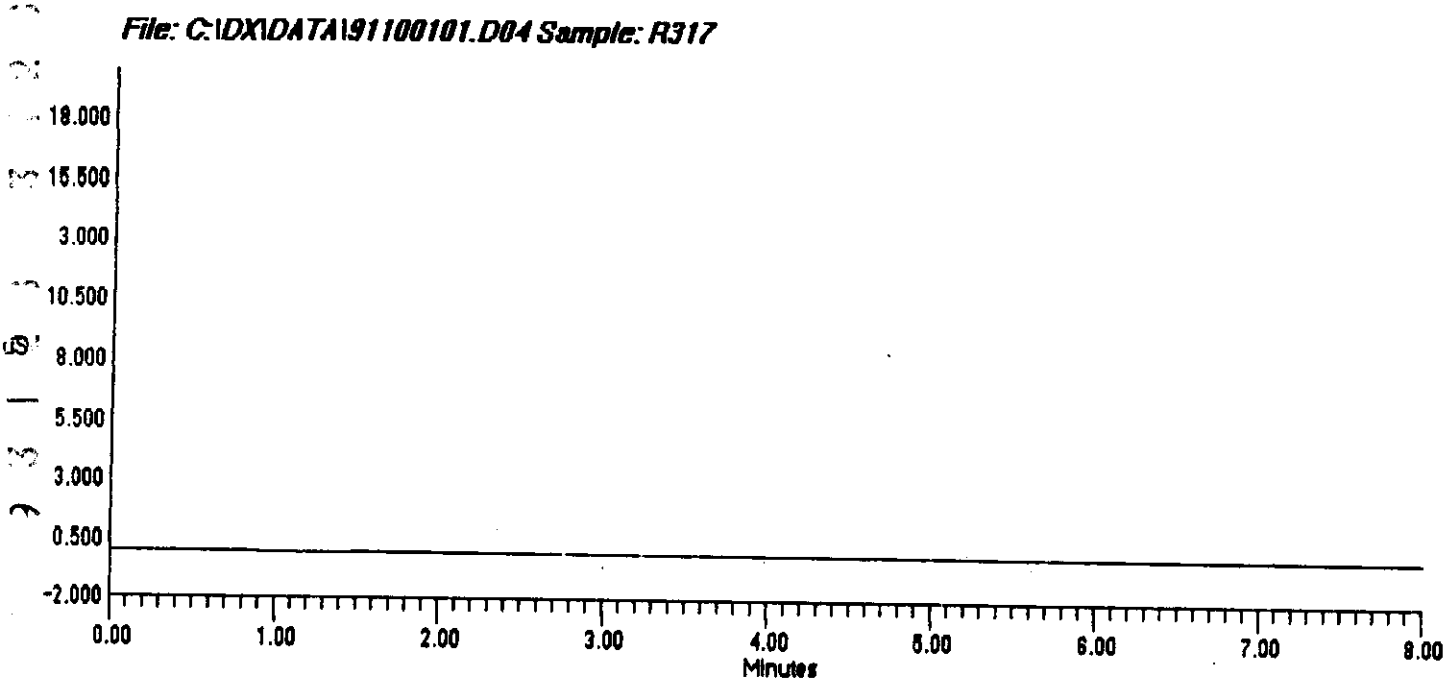


DATA REPROCESSED ON Wed Oct 02 19:17:10 1991

```
==========================================================================
| Sample Name: R317                                Date: Wed Oct 02 19:04:35 1991|
| Data File   : C:\DX\DATA\91100101.D04                                    |
| Method      : c:\dx\method\SYSTEM1.met                                   |
| ACI Address: 1        System : 1        Inject#:    4  Detector: CDM-1   |
==========================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta

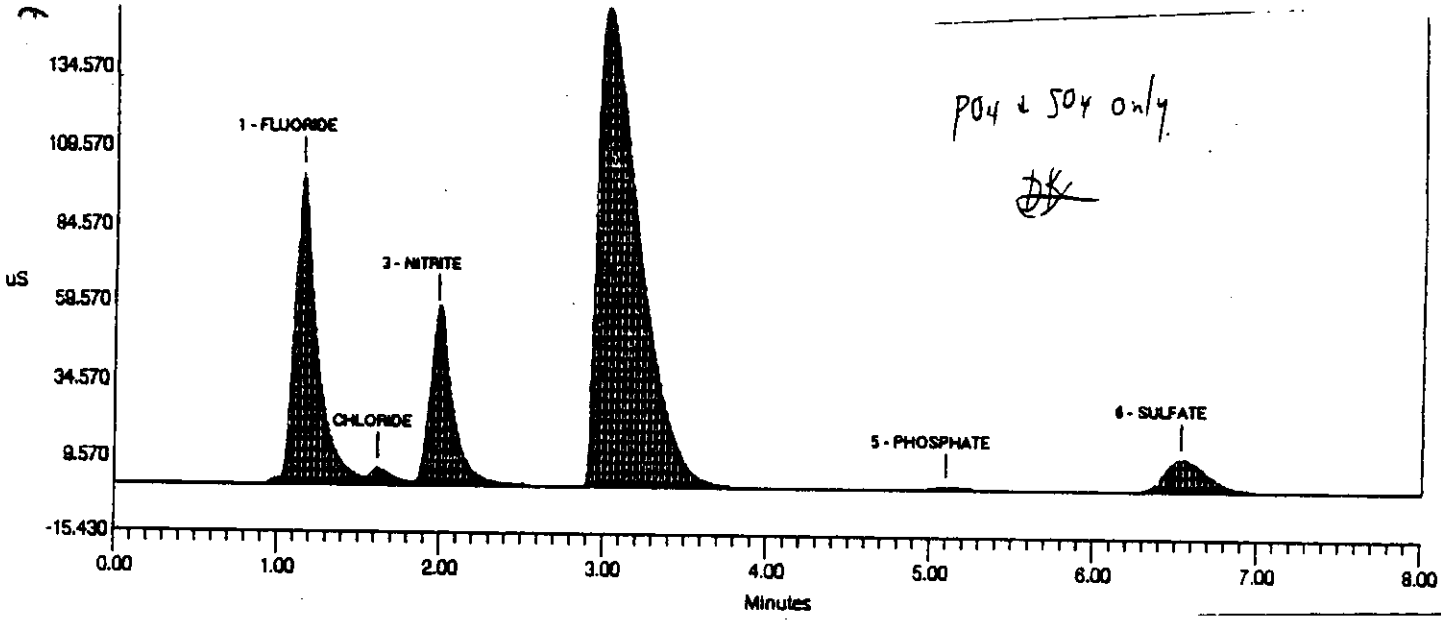


```
Sample Name: R321                                    Date: Wed Oct 02 20:47:36 1991
Data File   : c:\dx\data\91100101.D15
Method      : c:\dx\method\SYSTEM1.met
ACI Address: 1        System : 1        Inject#:  15  Detector: CDM-1
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2405	5Hz	0.00	3.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.15	FLUORIDE	-129.413	100889	1004483	3	0.00
2	1.62	CHLORIDE	476.738	5143	48382	4	-6.28
3	1.98	NITRITE	8003.118	56347	574259	2	-3.71
4	3.02	BROMIDE	-21106.964	154218	2761273	2	-2.53
5	5.10	PHOSPHATE	611.238	970	15814	1	-5.47
6	6.53	SULFATE	2578.446	11318	210657	1	-6.01

File: c:\dx\data\91100101.D15 Sample: R321



PO4 & SO4 only

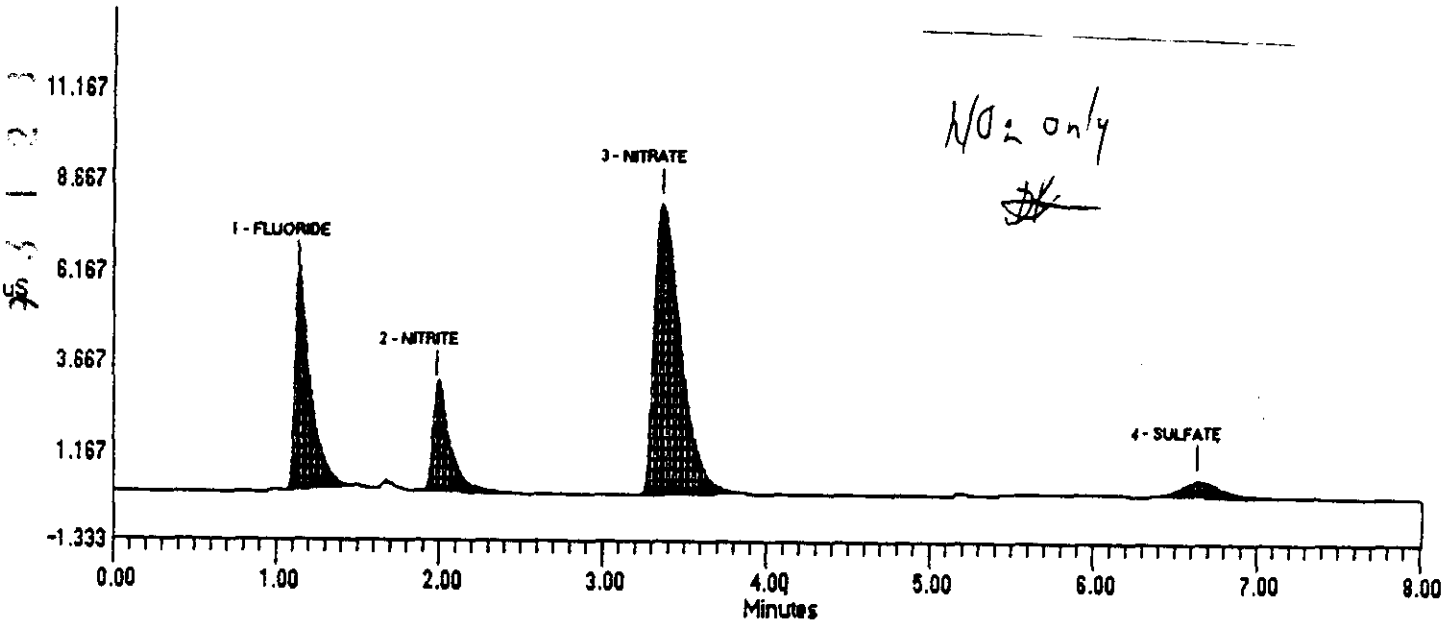
DK

Sample Name: R321		Date: Wed Oct 02 21:03:08 1991	
Data File : c:\dx\data\91100101.D16			
Method : c:\dx\method\SYSTEM1.met			
ACI Address: 1	System : 1	Inject#: 16	Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	2121	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	5296.773	5891	41529	1	0.00
2	1.98	NITRITE	7472.070	2916	22629	1	-2.30
3	3.37	NITRATE	31409.143	8072	92765	1	2.02
4	6.63	SULFATE	2912.474	480	7999	1	-3.16

File: c:\dx\data\91100101.D16 Sample: R321



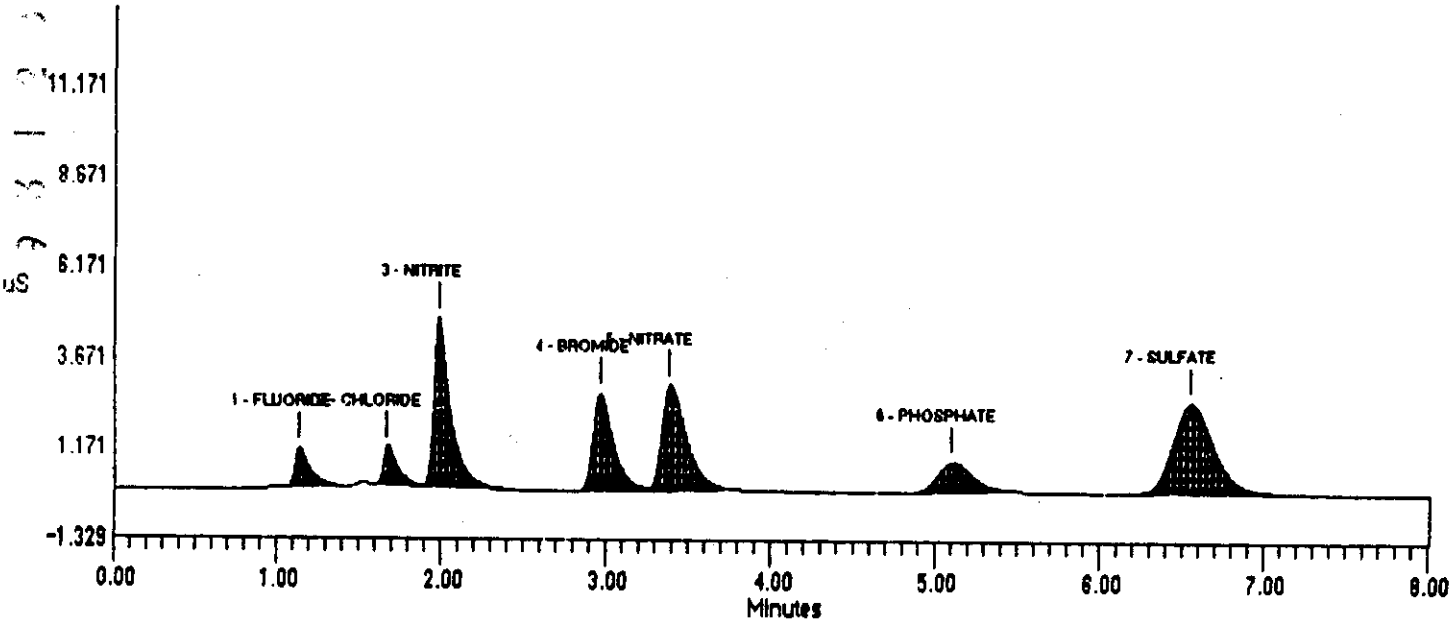
NO2 only

Sample Name: LMCS/73C11C0 R3L3 JM 9-14-92 Date: Wed Oct 02 21:31:01 1991
Data File : c:\dx\data\91100101.D19
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1 System : 1 Inject#: 19 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	52.789	1086	7266	1	0.00
2	1.67	CHLORIDE	69.288	1038	6424	2	-1.96
3	1.98	NITRITE	501.702	4638	33387	2	-2.30
4	2.97	BROMIDE	485.310	2705	24059	2	-2.73
5	3.38	NITRATE	533.443	2901	31125	2	2.53
6	5.10	PHOSPHATE	506.601	836	12795	1	-4.08
7	6.55	SULFATE	582.554	2497	43001	1	-4.38

File: c:\dx\data\91100101.D19 Sample: LMCS/73C11C0



WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R321	Customer ID: 791-4A
Analysis: ION CHROMATOGRAPHIC - CHLORIDE	Sample Prep: UNDIGESTED

Instrument: DIONEX 4000 - WB54428	Procedure/Rev: LA-533-105/B-0
Technologist: M. MYERS	Date: 10-04-91
Starting Time: 20:46	Temperature: 24-25degC
Ending Time: 23:36	Chemist: D. HERT

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5572	11		
2	REAGENT BLANK	R317-5672	12		
3	SAMPLE 791-4A	R321-5772	13		
4	FINAL LMCS CHECK STD	R323-5572	14		
5			15		
6			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 CHECK STD	73C11CO/0.1 mL			N/A

A-6000-881 (03/92)

ION CHROMATOGRAPHIC ANALYSIS (CHLORIDE) - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5572	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
CL	LA-533-105	% RECOVERY	W1TE2	C

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

Remarks, Calculations, Results:
EDP R972 DIONEX
STD# 73C11CD RESULT 74.035 ppm
STD VAL 75.00 ppm %REC 98.7%

Analyst - 1: [signature] Analyst - 2: Analyst - 3: Analyst - 4: Analyst - 5: [signature]
Date: 10-04-91 Time Completed: [signature] Lab Unit Mgr: [signature]
JK 6-5-92

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5672	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
CL	LA-533-105	PPM	W1TE2	C

Sample Size: ? 1ml
Customer ID: REG BL

Remarks, Calculations, Results:
REAGENT BLANK

<1.00 E^{-1} ppm

Analyst - 1: [signature] Analyst - 2: Analyst - 3: Analyst - 4: Analyst - 5: [signature]
Date: 10-4-91 Time Completed: [signature] Lab Unit Mgr: [signature]
JK 6-5-92

Serial No.	Sample Point	Date	Time Issued	Priority
R 321.-5772	106AW	9-19-91	15:38	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
CL	LA-533-105	PPM	W1TE2	0

Sample Size: ? .100ml - 10ml - .500ml - 10ml
Customer ID: 791-4A

Remarks, Calculations, Results:

4.70 E^{2} ppm
JK 5-19-92

Analyst - 1: [signature] Analyst - 2: Analyst - 3: Analyst - 4: Analyst - 5: [signature]
Date: 10-4-91 Time Completed: [signature] Lab Unit Mgr: [signature]
JK 6-5-92

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5572	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
CL	LA-533-105	% RECOVERY	W1TE2	0

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

Remarks, Calculations, Results:
EDP R972 DIONEX
STD# 73C11CD RESULT 71.429 ppm
STD VAL 75 ppm %REC 95.2%

Analyst - 1: [signature] Analyst - 2: Analyst - 3: Analyst - 4: Analyst - 5: [signature]
Date: 10-4-91 Time Completed: [signature] Lab Unit Mgr: [signature]
JK 6-5-92

9-22-91

4469-AC

DIONEX METHOD PARAMETERS - SYSTEM1.MET

System Parameters

System Name : system1/gpm
Number of Detectors..... 1
Detector 1 Type..... CDM-1
Detector 1 real time plot scale (uS)..... 20.00
Run Time (minutes)..... 8.50
Sampling Rate (seconds)..... 0.20

-- DETECTOR 1 PARAMETERS --

Report Options

Save Data File..... Yes
Data File Name: c:\dx\data\91092201.D08
Create ASCII Report File..... No
Print Report..... Yes
List Peaks Not Found in this run..... No
Report Unknowns Found in this run..... Yes
Print Chromatogram..... Yes
AutoScale Chromatogram to Highest Peak..... Yes
Fill Peaks with Color ..... Yes
Draw Grid Lines on Chromatogram..... No
Label with Peak Number..... Yes
Label with Retention Times on Chromatogram..... No
Label with Component Name..... Yes
Format File Name: c:\dx\method\default.prf

Integration Parameters

Starting Peak Width (seconds)..... 10.0
Peak Threshold (mV or uS/data pt interval)..... 0.500
Peak Area Reject..... 1000
Area Reject for Reference Peaks..... 1000
Percent Retention Time Window for Reference Peaks..... 5.0

Integration Timed Events

Time	Description
1.32	Start peak detection
1.44	Start peak detection
1.46	Start peak detection
1.77	
1.77	Enable end of peak detection

Calibration Parameters

Number Of Levels for Calibration	6
Calibration Fit Type	Quadratic
Replace Or Average Calibrations	Replace
External or Internal Calibration	External
Calibrate by Area or Height	Area
Default Injection Volume	1.0
Default Dilution Factor	1.0
Response Factor for Unknown Peaks	1.0
Calibration Standard Volume	1.0
Internal Standard Volume	1.0
Sample Unit	PPM

Component # 1 FLUORIDE Retention Time 1.13
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 8.52797E-002
K1 = 6.06440E-005
K2 = -6.17180E-011

Level	Amount	Area	Height
1	1.20000E-001	1439	225
2	3.00000E-001	4035	566
3	6.00000E-001	8217	1141
4	1.20000E+000	16507	2218
5	2.30000E+000	39534	4812
6	4.40000E+000	76890	9371

Component # 2 CHLORIDE Retention Time 1.70
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.93335E-002
K1 = 1.01273E-004
K2 = -9.35560E-011

Level	Amount	Area	Height
1	1.60000E-001	1319	217
2	3.90000E-001	3754	568
3	7.80000E-001	6942	1045
4	1.50000E+000	14461	1975
5	3.00000E+000	30287	3987
6	5.90000E+000	61305	8910

Component # 3 NITRITE Retention Time 2.03
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 4.88691E-001
K1 = 1.33960E-004
K2 = 5.52630E-012

Level	Amount	Area	Height
1	1.08000E+000	6239	874
2	2.69000E+000	17299	2252
3	5.37000E+000	34328	4729
4	1.06200E+001	72787	9300
5	2.08500E+001	153501	19401
6	4.01500E+001	292053	34439

Component # 4 BROMIDE Retention Time 2.80
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 4.01960E-002
K1 = 2.00453E-004
K2 = -1.00008E-010

Level	Amount	Area	Height
1	1.56000E+000	7660	753
2	3.90000E+000	20706	1880
3	7.80000E+000	38868	3455
4	1.54000E+001	78061	6644
5	3.02000E+001	165133	12632
6	5.81000E+001	350930	24386

Component # 5 NITRATE Retention Time 3.30
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.02611E-001
K1 = 1.61787E-004
K2 = -5.83501E-011

Level	Amount	Area	Height
1	1.37000E+000	7543	727
2	3.43000E+000	19321	1803
3	6.83000E+000	40244	3563
4	1.35000E+001	83386	7010
5	2.65000E+001	173503	13640
6	5.11000E+001	360809	25639

Component # 6 PHOSPHATE Retention Time 5.32
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 5.53452E-001
K1 = 3.53243E-004
K2 = -3.51156E-010

Level	Amount	Area	Height
1	1.19000E+000	2277	162
2	2.98000E+000	7242	453
3	5.93000E+000	15025	935
4	1.17400E+001	31660	1933
5	2.30300E+001	69135	4130
6	4.43700E+001	144749	8447

Component # 7 SULFATE Retention Time 6.85
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.55734E-001
K1 = 1.27491E-004
K2 = -3.79358E-011

Level	Amount	Area	Height
1	1.40000E+000	9418	543
2	3.50000E+000	24499	1382
3	6.96000E+000	52303	2890
4	1.37800E+001	107173	5909
5	2.70400E+001	225632	12225
6	5.20700E+001	471630	24686

IC Control File: C:\DX\METHOD\SYSTEM1.TE

Step	Time	Description
Init		CDM-1 AutoOffset Off
Init		CDM-1 Recorder Mark OFF
Init		CDM-1 Temp. Comp. = 1.7 / Deg C
Init		CDM-1 Recorder Range = 1.0 uS
Init		CDM-1 Cell ON
Init		CHA Heater = 25 Deg. C
Init		Valve A ON
Init		Valve B ON
Init		Inject Valve OFF
Init		ACI Autosmp OFF
Init		ACI RLY 2 OFF
Init		ACI TTL 1 OFF
Init		ACI TTL 2 OFF
Init		ACI AC 1 ON
Init		GPM Start
Init		GPM Hold Gradient Clock
Init		GPM Reset ON
1	0.0	CDM-1 AutoOffset ON
1	0.0	Start Sampling
1	0.0	GPM Reset OFF
2	0.1	CDM-1 Recorder Range = 10.0 uS
2	0.1	Inject Valve ON
2	0.1	GPM Run Gradient Clock
3	3.0	Inject Valve OFF
4	3.5	ACI Autosmp ON
5	8.0	ACI Autosmp OFF

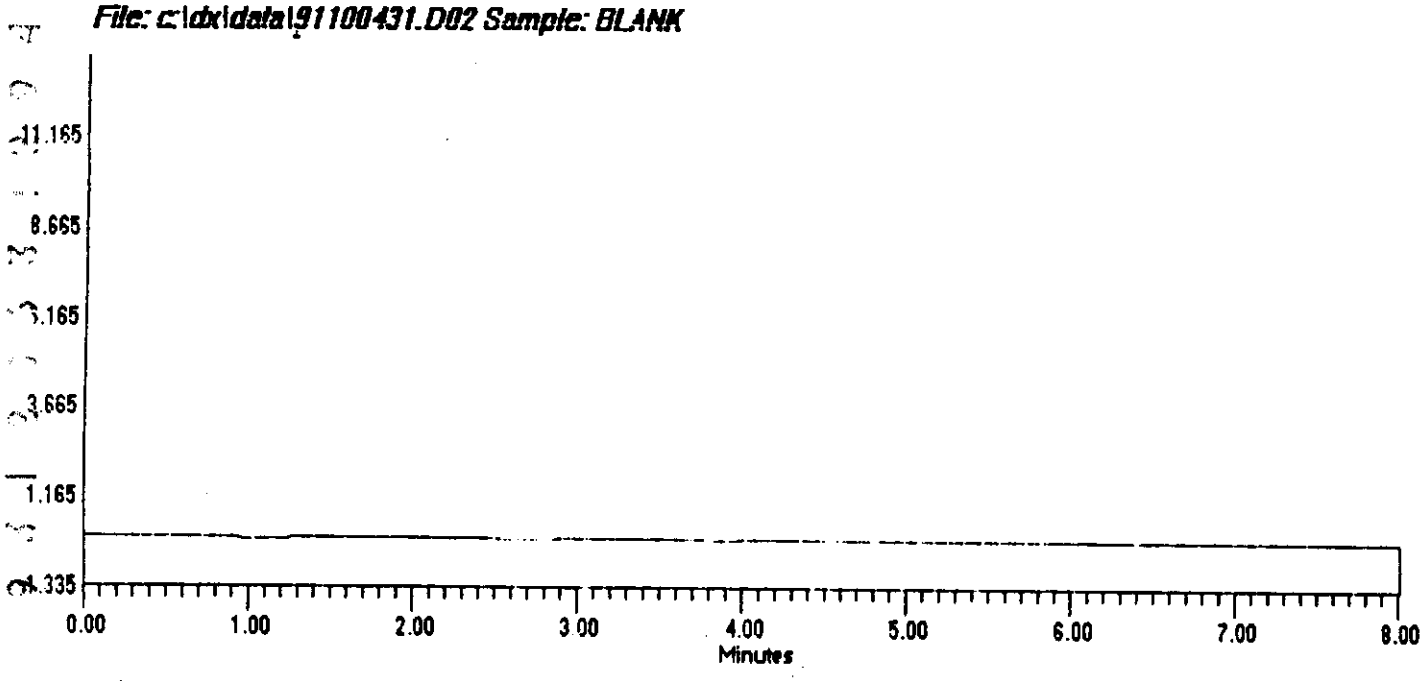
GpmFile: C:\DX\METHOD\SYSTEM1.GPM
Lo Pressure Limit = 200
Hi Pressure Limit = 2000
Eluant 1 - DI WATER
Eluant 2 - SODIUM CARBONATE
Eluant 3 - SODIUM BICARBONATE
Eluant 4 - Eluant 4

Time	Flow	%1	%2	%3	%4	V5	V6	Comment
0.0	2.0	84	8	8	0	0	0	

Sample Name: BLANK Date: Fri Oct 04 20:37:01 1991
Data File : c:\dx\data\91100431.D02
Method : c:\dx\method\SYSTEM.met
DCI Address: 1 System : 1 Inject#: 2 Detector: COM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2405	5Hz	0.00	8.02	1000

Pk. Hgt	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta



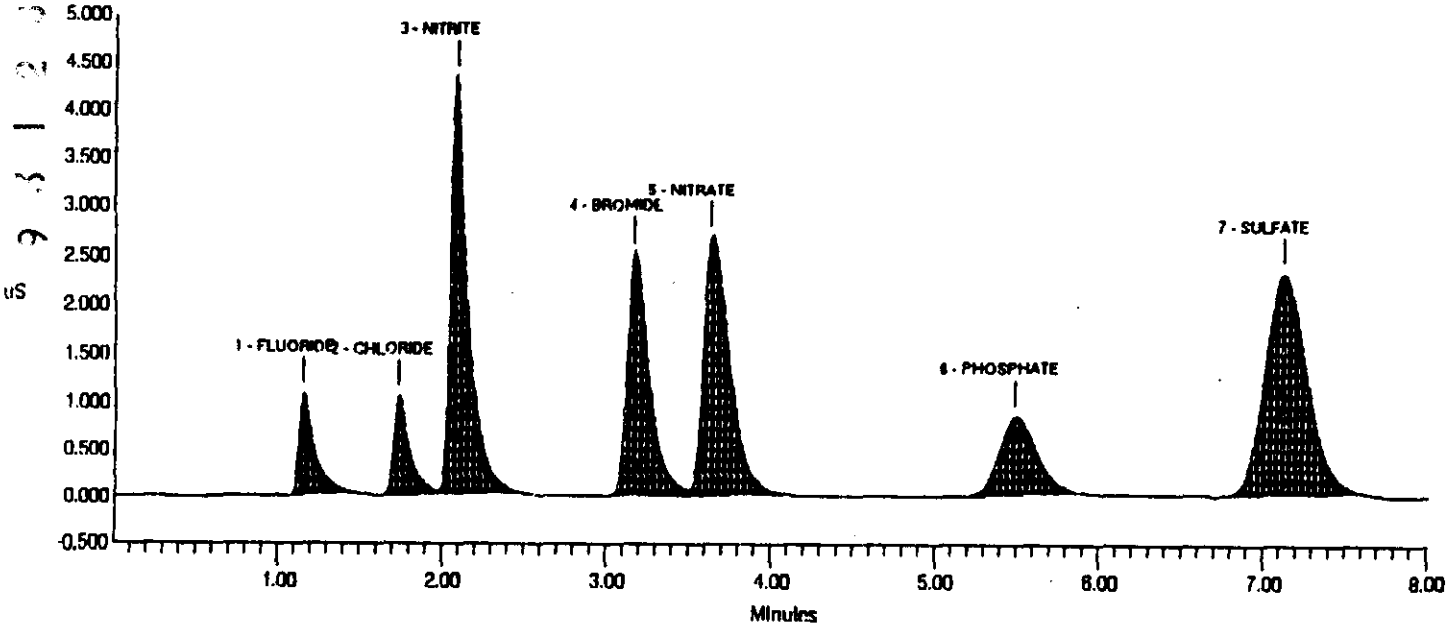
DATA REPROCESSED ON Fri Oct 04 21:38:52 1991

Sample Name: LMCS/73C11C0 R3/4 JK 9-4-91 Date: Fri Oct 04 20:46:06 1991
Data File : C:\DX\DATA\91100421.D03
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1 System : 1 Inject#: 3 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.15	FLUORIDE	52.136	1038	7158	1	0.00
2	1.73	CHLORIDE	74.035	1030	6894	2	0.48
3	2.08	NITRITE	489.305	4334	32473	2	1.14
4	3.17	BROMIDE	458.041	2492	22680	2	2.32
5	3.63	NITRATE	530.820	2668	30960	2	8.51
6	5.48	PHOSPHATE	505.944	805	12777	1	1.64
7	7.12	SULFATE	558.013	2231	41046	1	2.39

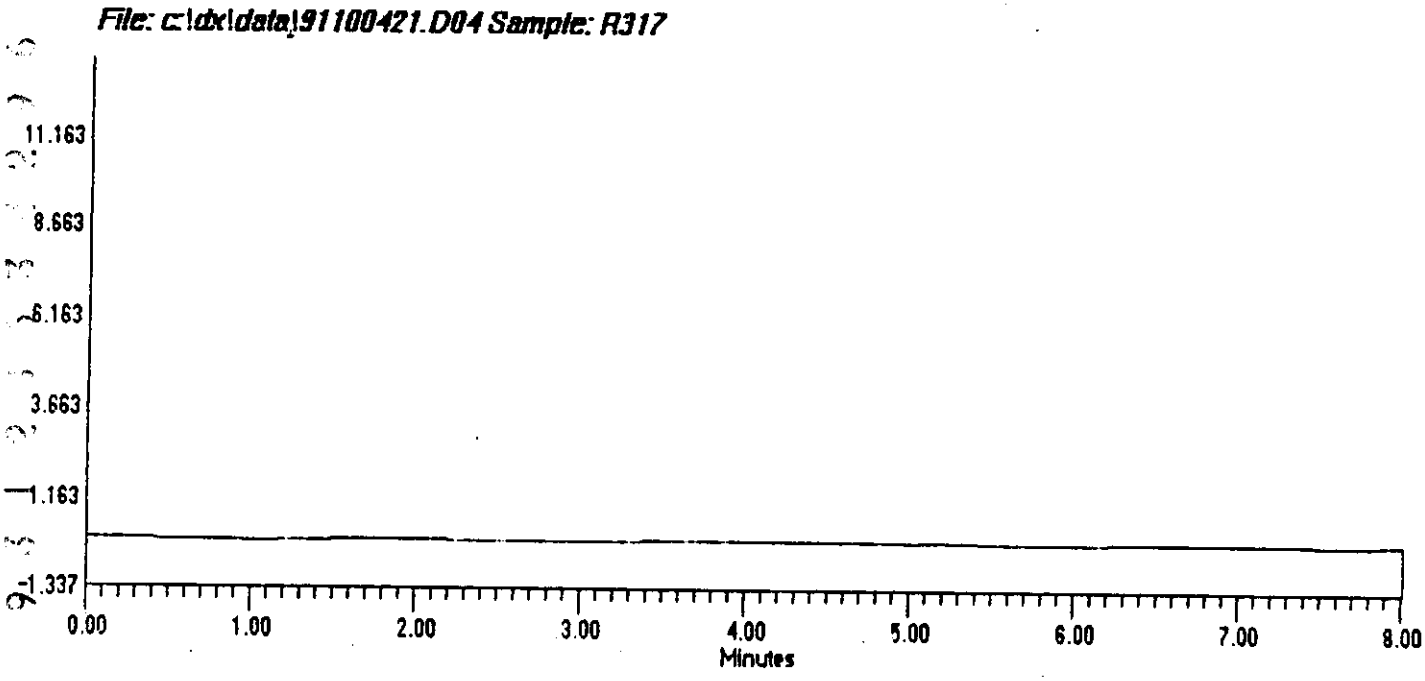
File: C:\DX\DATA\91100421.D03 Sample: LMCS/73C11C0



```
Sample Name: R317                                    Date: Fri Oct 04 20:55:27 1991
Data File   : c:\dx\data\91100421.D04
Method      : c:\dx\method\SYSTEM1.met
ACI Address: 1        System : 1        Inject#:   4  Detector: CDN-1
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta



R323 → 8A
R324
9-14-92

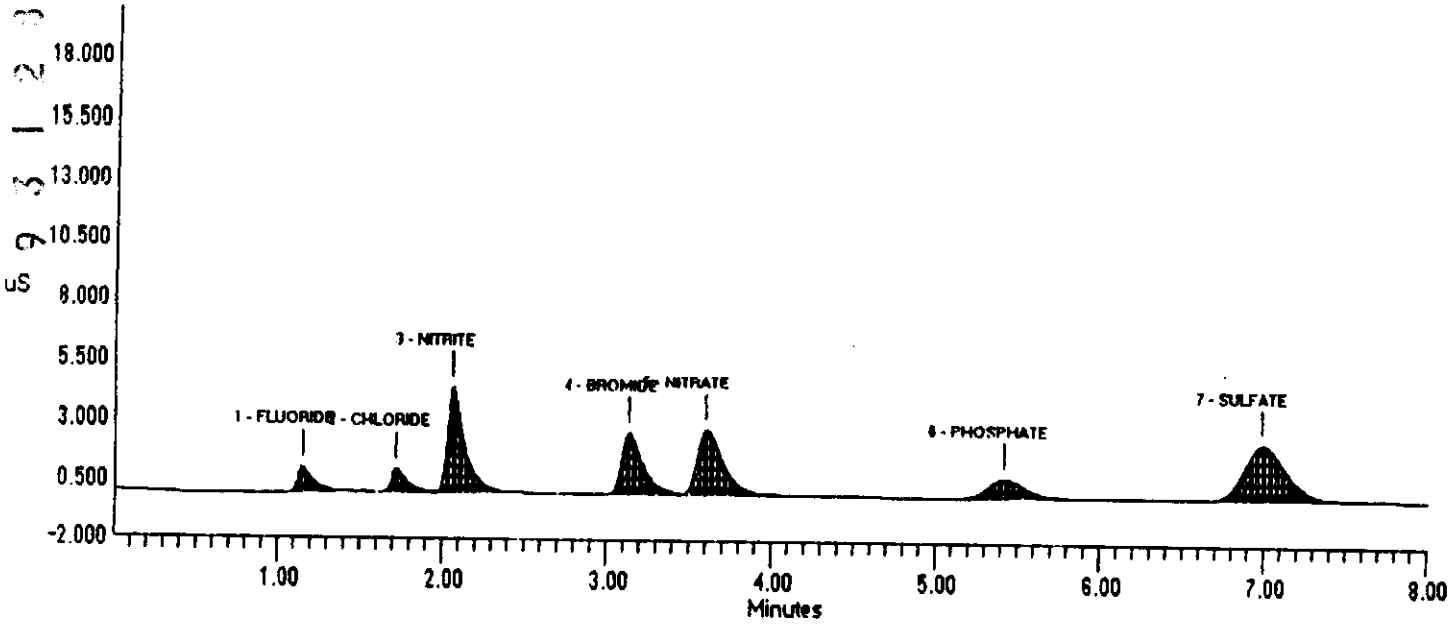
DATA REPROCESSED ON Fri Oct 04 22:45:26 1991

Sample Name: LNCS/73C11C0 R323 9-14-92 Date: Fri Oct 04 22:10:28 1991
Data File : C:\DX\DATA\91100411.D12
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1 System : 1 Inject#: 12 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	101	2405	5Hz	0.00	8.02	100u

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Pl. Code	%Delta
1	1.15	FLUORIDE	52.107	1076	7152	1	0.00
2	1.72	CHLORIDE	71.427	992	6636	2	-0.40
3	2.07	NITRITE	487.247	4387	32321	2	0.33
4	3.13	BROMIDE	475.164	2556	23546	2	1.24
5	3.60	NITRATE	521.183	2723	30545	2	7.51
6	5.42	PHOSPHATE	510.540	821	12909	1	0.40
7	6.98	SULFATE	565.442	2341	41638	1	0.47

File: C:\DATA\91100411.D10 Sample: LNCS/73C11C0



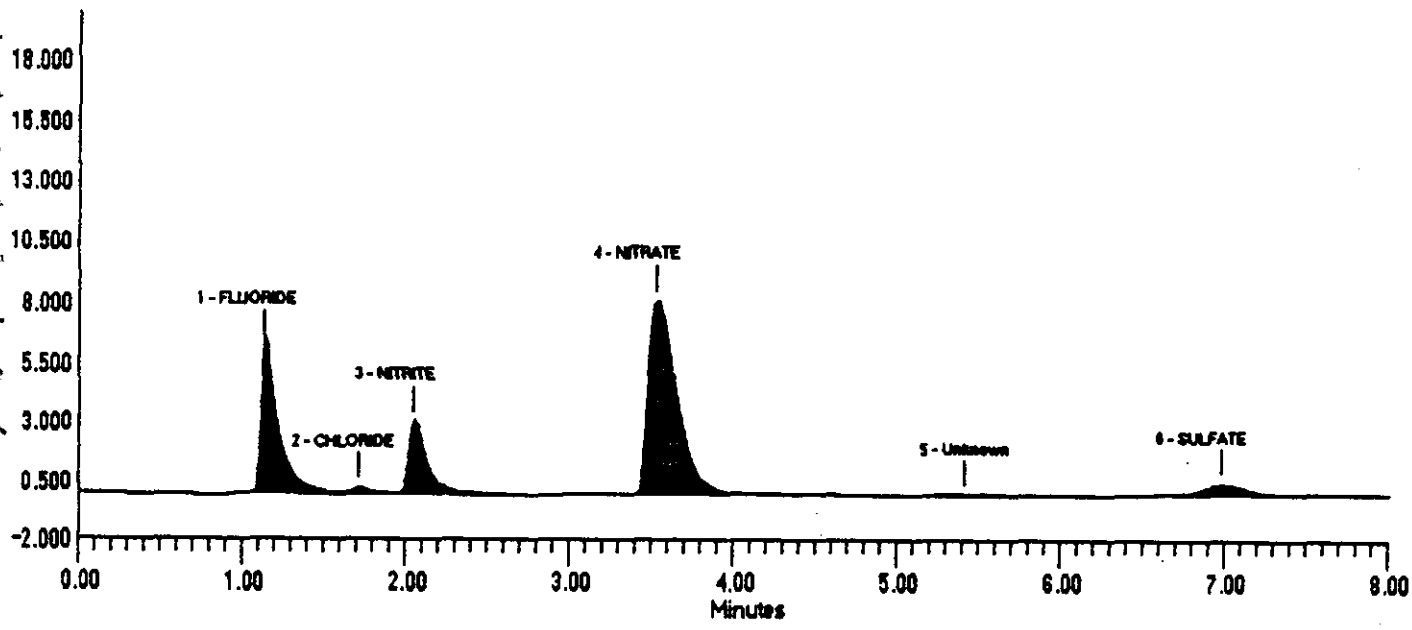
DATA REPROCESSED ON Mon Oct 07 12:57:06 1991

Sample Name: R321 Date: Fri Oct 04 21:51:56 1991
Data File : C:\DX\DATA\91100411.D10
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1 System : 1 Inject#: 10 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	2121	2405	5Hz	0.00	8.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	1.13	FLUORIDE	6046.813	6156	47944	2	0.00
2	1.72	CHLORIDE	469.768	265	1802	2	0.98
3	2.05	NITRITE	8076.389	3088	24752	2	0.99
4	3.53	NITRATE	33888.290	8157	100531	1	7.07
6	6.98	SULFATE	3132.562	498	8817	1	1.95

File: C:\DX\DATA\91100411.D10 Sample: R321



WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R321	Customer ID: 791-4A
Analysis: ACID DIGESTION	Sample Prep: ACID DIGESTION

Instrument: METTLER BAL. SNF04495	Procedure/Rev: LA-508-158/A-2
Technologist: L. MORRISON	Date: 9-24-91
Starting Time: N/A	Temperature: N/A
Ending Time: N/A	Chemist: L. OTTMAR

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-8505	11		
2	REAGENT BLANK	R317-8605	12		
3	SAMPLE 791-4A	R321-8705	13		
4	FINAL LMCS CHECK STD	R323-8505	14		
5			15		
6			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 CHECK STD	ICP1-9S4/10 mL	ICP2-6S4/10 mL	ICP3-8S4/10 mL	N/A

A-6000-881 (03/92)

ACID DIGESTION ANALYSIS

Sample No	Sample Point	Date	Time Sampled	Priority
R 316.-8505	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
ACD-DIG	LA-505-158	% RECOVERY	WITE2	0

Sample Size: ? 10mL QA in 100mL
Customer ID: STD

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID _____
1ASPCM - 984
1ASPCTL - 664
1ASPCTU - 684

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731				
Hrs	Hrs	Hrs	Hrs	Hrs

Date: 9-24-91 | Time Completed | Lab Unit Mgr: Julian Rich | OK M Stevens

Sample No	Sample Point	Date	Time Sampled	Priority
R 317.-8605	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
ACD-DIG	LA-505-158	G/D	WITE2	0

Sample Size: ?
Customer ID: RED DL

Remarks, Calculations, Results:
REAGENT BLANK
VOLUME ON
COMPLETION_____

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731				
Hrs	Hrs	Hrs	Hrs	Hrs

Date: 9-24-91 | Time Completed | Lab Unit Mgr: Julian Rich | OK M Stevens

Sample No	Sample Point	Date	Time Sampled	Priority
R 321.-8705	106AW	9-19-91	15:39	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
ACD DIG	LA-505-158	G/D	WITE2	0

Sample Size: ? 1mL in 100mL
Customer ID: 791 QA

Remarks, Calculations, Results:

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731				
Hrs	Hrs	Hrs	Hrs	Hrs

Date: 9-24-91 | Time Completed | Lab Unit Mgr: Julian Rich | OK M Stevens

Sample No	Sample Point	Date	Time Sampled	Priority
R 323.-8805	106AW	9-19-91	15:45	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
ACD-DIG	LA-505-158	%RECOVERY	WITE2	0

Sample Size: ? 10mL QA in 100mL
Customer ID: STD

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID_____
1ASPCM - 964
1ASPCTL - 664
1ASPCTU - 684

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731				
Hrs	Hrs	Hrs	Hrs	Hrs

Date: 9-24-91 | Time Completed | Lab Unit Mgr: Julian Rich | OK M Stevens

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R321	Customer ID: 791-4A
Analysis: INDUCTIVELY COUPLED PLASMA	Sample Prep: ACID DIGESTION

Instrument: WB39939	Procedure/Rev: LA-505-151/B-0
Technologist: L. MORRISON	Date: 11-19-91
Starting Time: 13:14	Temperature: N/A
Ending Time: 14:23	Chemist: L. OTTMAR

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-8550	11		
2	REAGENT BLANK	R317-8650	12		
3	SAMPLE 791-4A	R321-8750	13		
4	FINAL LMCS CHECK STD	R323-8550	14		
5			15		
6			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 CHECK STD	9S4/ 10 mL	6S4/ 10 mL	8S4/ 10 mL	N/A

A-6000-881 (03/92)

ICP ANALYSIS - ACID DIGESTION

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-8550	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	% RECOVERY	W11E2	0

Sample Size	Customer ID
? 10 mL ea in 100 mL DIGESTED STDS	STD

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID
934, 634, 834

Al 6.72E2ppb (10/1000) = 6.72ppm = 134%
Ca 1.80E4 (.01) = 1.80E2ppm = 1800%
Cr 5.41E2 (.01) = 5.41ppm = 108%
Fe 7.97E2 (.01) = 7.97ppm = 159%
Na 1.57E3 (.01) = 15.70ppm = 157%

← OVER

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731	82768			
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
11/19/91	11/20/91	[signature]

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

DIGESTED
Ag (483)(.01) = 96.6%
Ba (1015)(.01) = 101.5%
Cd (1026)(.01) = 102.6%
Mg (2840)(.01) = 568%
Mn (563)(.01) = 112.6%
Pb (560)(.01) = 120.0%
Zn (2300)(.01) = 230.0%

Al	4.80	96.0%
Ca	10.57	105.7%
Cr	4.75	95.0%
Fe	4.97	99.4%
Na	9.45	94.5%

LMCS ✓ [signature] 11/22/91

Undigested

Ba	9.79	97.9%	Zn	9.90	99.0%
Cd	9.85	98.5%	Ag	4.88	97.6%
Mg	4.97	99.4%	Pb	5.17	103.4%
Mn	4.88	97.6%			

R316-8550
~~934~~ KS

ICP ANALYSIS - ACID DIGESTION

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-8650	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	PPM	WITE2	0

Sample Size	Customer ID
? DIRECT	REG BL

Remarks, Calculations, Results:

REAGENT BLANK

Al 1.0162/1000 = 1.01E-1 ppm
Ca 5.1563/1000 = 5.15 ppm
Cr 1.0261/1000 = 1.02E-2 ppm
Fe 7.5961/1000 = 7.59E-2 ppm
Na 4.0982/1000 = 4.09E-1 ppm

Ag <8.0/1000 = <8.0E-3 ppm
Ba <3.0/1000 = <3.0E-3 ppm
Cd <4.0/1000 = <4.0E-3 ppm
Mg 4.02/1000 = 4.02E-4 ppm
Mn 17/1000 = 1.70E-2 ppm
Pb <80/1000 = <8.0E-2 ppm
Zn 430/1000 = 4.30E-1 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731	82768			
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		
11/19/91	11/20/91			

24-6809-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
R 321.-8750	106AW	9-19-91	15:39	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	ug/g rec	WITE2	0

Sample Size	Customer ID
? DF=100 DF=600 1mL to 100mL, 2mL to 10mL	791-4A

Remarks, Calculations, Results:

Al 2.3023 (600) = 1.38E6 ppb
Ca 8.8382 (600) = 5.30E5 ppb
Cr 3.9221 (600) = 2.29E4 ppb
Fe <87 (600) = <5.22E4 ppb
Na 6.084 (600) = 3.60E7 ppb

Ag (<8.0)(600) = <4.80E3 ppb
Ba (<3.0)(600) = <1.80E3 ppb
Cd (<4.0)(600) = <2.40E3 ppb
Mg (<11.0)(600) = <6.60E3 ppb
Mn (6.80)(600) = 4.08E3 ppb
Pb (<80.0)(600) = <4.80E4 ppb
Zn (130)(600) = 7.80E4 ppb

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731	82768			
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		
11/19/91	11/20/91			

24-6809-061 (R-10-83)

ICP ANALYSIS - ACID DIGESTION

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-8550	106AW	9-19-91	15:45	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
ICP	LA-505-151	% RECOVERY	W1TE2	0

Sample Size	Customer ID
? 10 mL ea in 100 mL	STD

Remarks, Calculations, Results:

LMCS CHECK SAMPLE
LMCS ID _____

ICP-SET1 - 954
ICP-SET2 - 654
ICP-SET3 - 854

LMCS STDS

AL 6.51E2 (10/10²) = 6.51 ppm = 130%
Ca 1.88E4 (.01) = 1.88E2 ppm = 1,880%
Cr 5.99E2 (.01) = 5.99 ppm 120%
Fe ~~[illegible]~~ 1.11E3 (.01) = 11.10 ppm 111%
Na 1.62E3 (.01) = 16.20 ppm 162%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731	82768			
Hrs	Hrs	Hrs	Hrs	Hrs

Date 11/19/91 | Time Completed 11/20/91 | Lab Unit Mgr [signature]

54-6800-081 (R-10-83)

DIGESTED

R 323-8550

Al 4.72 94.4%
Ca 9.84 98.4%
Cr 4.75 95.0%
Fe ~~9.40~~ 4.97 99.4%
Na 9.40 94.0%

Ag (487)(.01) = 97.4%
Ba (998)(.01) = 99.8%
Cd (1016)(.01) = 101.6%
Mg (2336)(.01) = 467.2%
Mn (563)(.01) = 112.6%
Pb (568)(.01) = 113.6%
Zn (2433)(.01) = 243.3%

LMCS ✓ [signature] 11/22/91

Ag 4.74 94.8%
Ba 9.80 98.0%
Cd 9.88 98.8%
Mg 4.95 99.0%
Mn 4.88 97.6%
Pb 5.12 102.4%
Zn 9.82 98.2%

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R322	Customer ID: 791-5A
Analysis: ARSENIC	Sample Prep: UNDIGESTED

Instrument: PERKIN ELMER - WA77479	Procedure/Rev: LA-355-131/B-0
Technologist: D. R. JACKSON	Date: 10-01-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: K. FULLER

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5595	11		
2	REAGENT BLANK	R317-5695	12		
3	SAMPLE 791-5A	R322-5795	13		
4	FINAL LMCS CHECK STD	R323-5595	14		
5			15		
6			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 CHECK STD	125B38B/0.5 mL			N/A

A-6000-881 (03/92)

ARSENIC ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5595	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
As	LA-355-131	% RECOVERY	W1TE2	O

Sample Size: ? .500 ml
Customer ID: STD

Remarks, Calculations, Results:
EDP R741 AS/HYDRD 0.766
STDN 125838 B RESULT
STD VAL 1.0E-1 %REC 102.0%
~~0.744~~ DRJ 10-1-91 ~~0.744~~ DRJ 10-1-91
50.76/500 = 1.02E-1

Analyst-1: 6C275
Date: 10-1-91

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5695	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
As	LA-355-131	PPM	W1TE2	C

Sample Size: ? 10.0 ml
Customer ID: REC DI.

Remarks, Calculations, Results:
REAGENT BLANK 0.013
~~0.0E-4~~ DRJ 10-1-91 ~~0.009~~ DRJ
<5/10000 = <5.00E-4

Analyst-1: 6C275
Date: 10-1-91

Serial No.	Sample Point	Date	Time Issued	Priority
R 322.-5795	106AW	9-19-91	13:42	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
AS	LA-355-131	PPM	W1TE2	O

Sample Size: ? ~~100 ml~~ DRJ .025 ml
Customer ID: 791-5A

Remarks, Calculations, Results:
10-1-91
0.985 65.46/25 = 2.62

Analyst-1: 6C275
Date: 10-1-91

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5595	106AW	9-19-91	13:45	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
As	LA-355-131	% RECOVERY	W1TE2	C

Sample Size: ? .500 ml
Customer ID: STD

Remarks, Calculations, Results:
EDP R741 AS/HYDRD
STDN 125838 B RESULT 9.98E-2
STD VAL 1.0E-1 %REC 99.8%
0.753 49.88/500 =

Analyst-1: 6C275
Date: 10-1-91

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY
CALIBRATION RECORD

Analyte: As

Procedure: LA-355-131 | Revision: B-0

Instrument: PERKIN ELMER | Property No.: WA77479

Technologist: D. R. JACKSON | Payroll No.: 6C275 | Date: 10-01-91

Calibration Standard: 124B38C

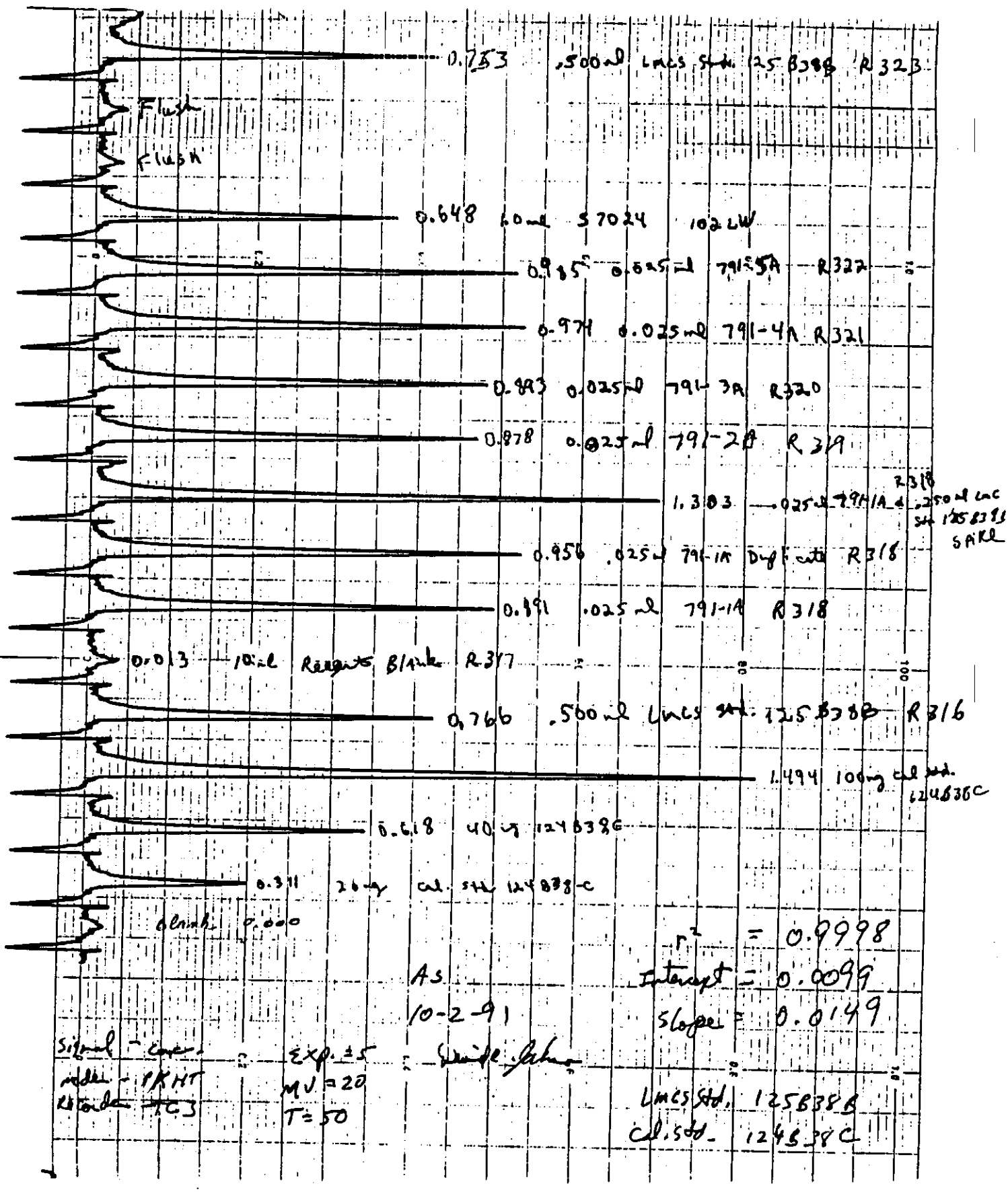
Analyte Concentration: 0.1000 ppm

Type of Calibration: LINEAR

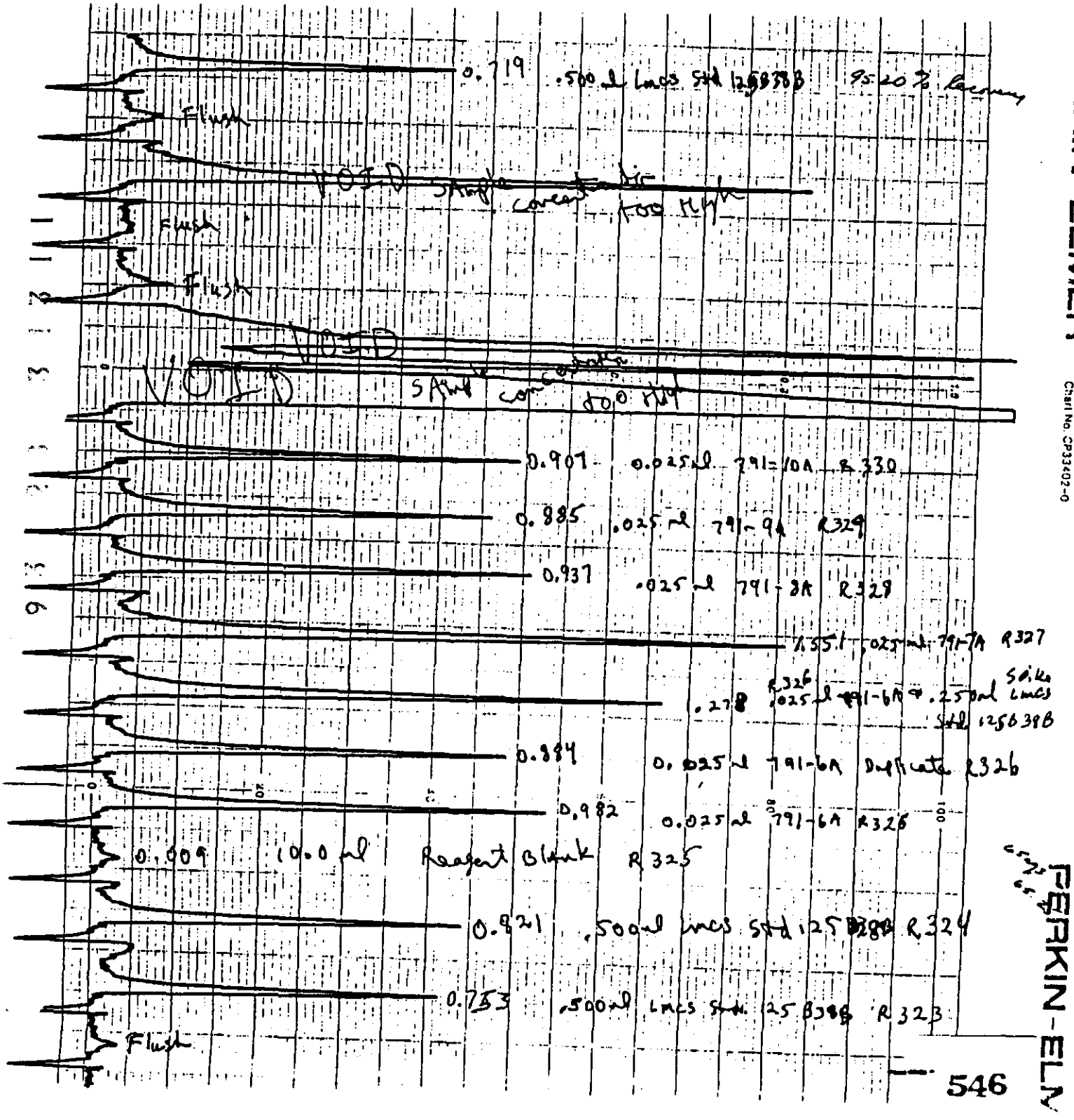
	Dilution	Concentration	Instrument Reading Unit
1	0.000 mL	0.0 ng	0.000
2	0.200 mL	20.0 ng	0.311
3	0.400 mL	40.0 ng	0.618
4	1.000 mL	100.0 ng	1.494
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			

Comments:

A-6000-882 (03/92)



SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED THE ANALYSIS ON PAGES 545 TO 546.



PERKIN-ELMER

Chart No. CP33402-0

PERKIN-ELMER

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R322	Customer ID: 791-5A
Analysis: CYANIDE	Sample Prep: UNDIGESTED

Instrument: MILTON ROY SPEC 301 - AL10724	Procedure/Rev: LA-695-102/A-4
Technologist: E. COLVIN	Date: 09-26-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: D. BISENIUS

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5578	11		
2	REAGENT BLANK	R317-5678	12		
3	SAMPLE 791-5A	R322-5778	13		
4	FINAL LMCS CHECK STD	R323-5578	14		
5			15		
6			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 CHECK STD	75C11-5/0.1 mL			N/A

A-6000-881 (03/92)

CYANIDE ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5578	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
CN	LA-695-102	% RECOVERY	W1TE2	0

Sample Size: ? .100-10ml-.500 — Customer ID: STD

Remarks, Calculations, Results:
S244 KCN
STD# 75C115 RESULT
STD VAL 8.90E² %REC 102.5%
9/27/91
$\frac{(.748-.011)(.006547)}{.160252} / .500 \times 100 = \cancel{6.28E2}$ 9.12E2

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
80028				
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cohn				

Date: 9-26-91 — Time Completed: — Lab Unit Mgr: [signature]
JK 6-9-92

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5678	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Rerun
CN	LA-695-102	PPM	W1TE2	0

Sample Size: ? — Customer ID: RED DL

Remarks, Calculations, Results:
REAGENT BLANK ABS .011
$\frac{(.011)-.006547}{.160252}$ <5.0E-1 ppm

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
80028				
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cohn				

Date: 9-26-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 322.-5778	106AW	9-19-91	15:42	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
CN	LA-695-102	PPM	W1TE2	0

Sample Size: ? 750uL — Customer ID: 791-5A

Remarks, Calculations, Results:
ABS .327
$\frac{(.327-.011)-.006547}{.160252} / .750 = 2.57$ ppm

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
80028				
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cohn				

Date: 9-26-91 — Time Completed: — Lab Unit Mgr: [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5578	106AW	9-19-91	15:44	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
CN	LA-695-102	% RECOVERY	W1TE2	0

Sample Size: ? 100uL-10mL-500uL — Customer ID: STD

Remarks, Calculations, Results:
S244 KCN
STD# 75C115 RESULT
STD VAL 8.90E² %REC 101.3%
ABS .740
$\frac{(.740-.011)-.006547}{.160252} / .5 \times 100 = 9.02E2$

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
80027				
Hrs	Hrs	Hrs	Hrs	Hrs
Ed Cohn				

Date: 9-26-91 — Time Completed: — Lab Unit Mgr: [signature]

TODAYS DATE: 09-26-1991

PAYROLL NO.: 80028

Y-INTERCEPT= .006547
SLOPE= .160252

SAMPLE ID#: R-317 BLANK
SAMPLE SIZE: 0
WVL AND ABS= 580NM 0.011 A

SAMPLE ID#: R-316 75C11-S STD
SAMPLE SIZE: 100UL-10ML-500UL
WVL AND ABS= 580NM 0.748 A

SAMPLE ID#: R-318
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.424 A

SAMPLE ID#: R-318 DUPLICATE
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.428 A

SAMPLE ID#: R-318 + SPIKE
SAMPLE SIZE: 750UL + 100UL-10ML-500UL 75C11-S SPIKE
WVL AND ABS= 580NM 1.150 A

SAMPLE ID#: R-319
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.317 A

SAMPLE ID#: R-320
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.310 A

SAMPLE ID#: R-321
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.317 A

SAMPLE ID#: R-322
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.327 A

SAMPLE ID#: R-323 75C11-S STD
SAMPLE SIZE: 100UL-10ML-500UL
WVL AND ABS= 580NM 0.740 A

CALIBRATION CURVE LACHAT NON-DISTILLED 25ML

CYANIDE DATE: 8-28-1991

CALIBRATION STANDARD # 351-M, 1006 MG/ML CYANIDE

DILUTION FACTOR = 10/.1 = 100, WORKING STANDARD = 1006 /100 = 10.060

PIPET SIZE	MICROGRAMS CYANIDE	TOTAL ABS	NET ABS
BLANK	0	.006	0
50UL	.503	.0930	.0870
500UL	5.030	.8320	.8260
1000UL	10.060	1.6180	1.6120

Y INTERCEPT = .006547
SLOPE = .160252
C C = .999921

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R322	Customer ID: 791-5A
Analysis: DIFFERENTIAL THERMAL	Sample Prep: UNDIGESTED

Instrument: WC16134,WC16129	Procedure/Rev: LA-514-113/A-0
Technologist: M. MYERS	Date: 10-09-91
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: D. HERT

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5511	11		
2	REAGENT BLANK	R317-5611	12		
3	SAMPLE 791-5A	R322-5711	13		
4	FINAL LMCS CHECK STD	R323-5511	14		
5			15		
6			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 CHECK STD	27C11AY/0.02 mL			N/A

A-6000-881 (03/92)

DIFFERENTIAL THERMAL ANALYSIS - UNDIGESTED SAMPLE

Serial No.	Sample Point	Date	Time Issued	Priority
R 316.-5511	106AW	9-19-91	13:35	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
DSC	LA-514-113	EXOTHERMS	W1TE2	0

Sample Size: ? .020 ml
Customer ID: STD 27C11AY
Remarks, Calculations, Results: 1.00=100%

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				
Hrs: 6C823	Hrs:	Hrs:	Hrs: [signature]	Hrs:

Date: 10-9-91 | Time Completed: | Lab Unit Mgr: D M Thornton [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 317.-5611	106AW	9-19-91	13:45	26

Determination	Method/Standard	Result Units	Charge Code	Remarks
DSC	LA-514-113	EXOTHERMS	W1TE2	C

Sample Size: ? ~~[illegible]~~ .010 ml
Customer ID: REO DL
Remarks, Calculations, Results: REAGENT BLANK
No exotherm

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				
Hrs: 6C823	Hrs:	Hrs:	Hrs:	Hrs:

Date: 10-9-91 | Time Completed: | Lab Unit Mgr: D M Thornton [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 322.-5711	106AW	9-19-91	15:40	25

Determination	Method/Standard	Result Units	Charge Code	Remarks
DSC	LA-514-113	EXOTHERMS	W1TE2	0

Sample Size: ? .010 ml
Customer ID: 791-5A
Remarks, Calculations, Results: No exotherm

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				
Hrs: 6C823	Hrs:	Hrs:	Hrs:	Hrs:

Date: 10-9-91 | Time Completed: | Lab Unit Mgr: D M Thornton [signature]

Serial No.	Sample Point	Date	Time Issued	Priority
R 323.-5511	106AW	9-19-91	15:43	25

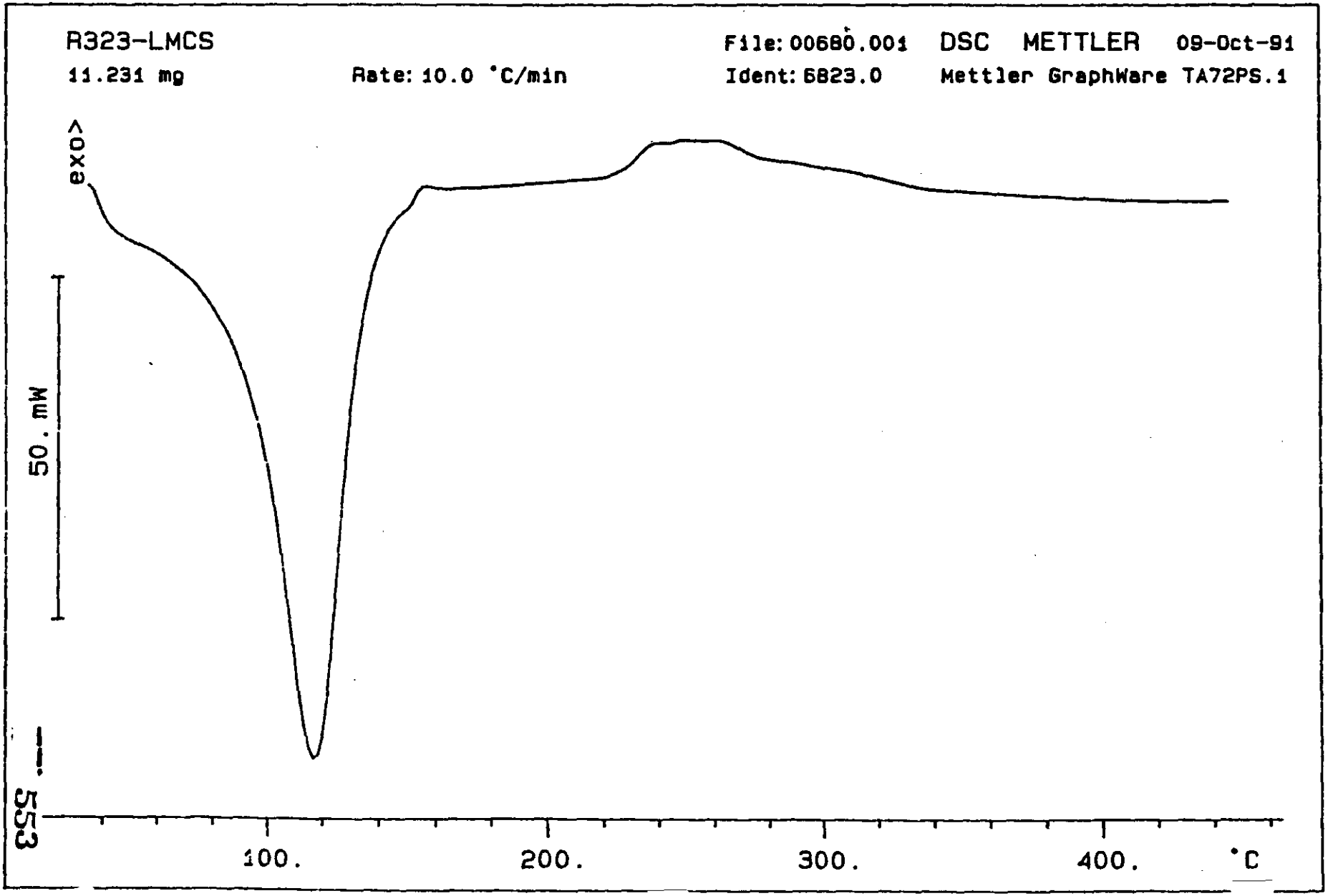
Determination	Method/Standard	Result Units	Charge Code	Remarks
DSC	LA-514-113	EXOTHERMS	W1TE2	C

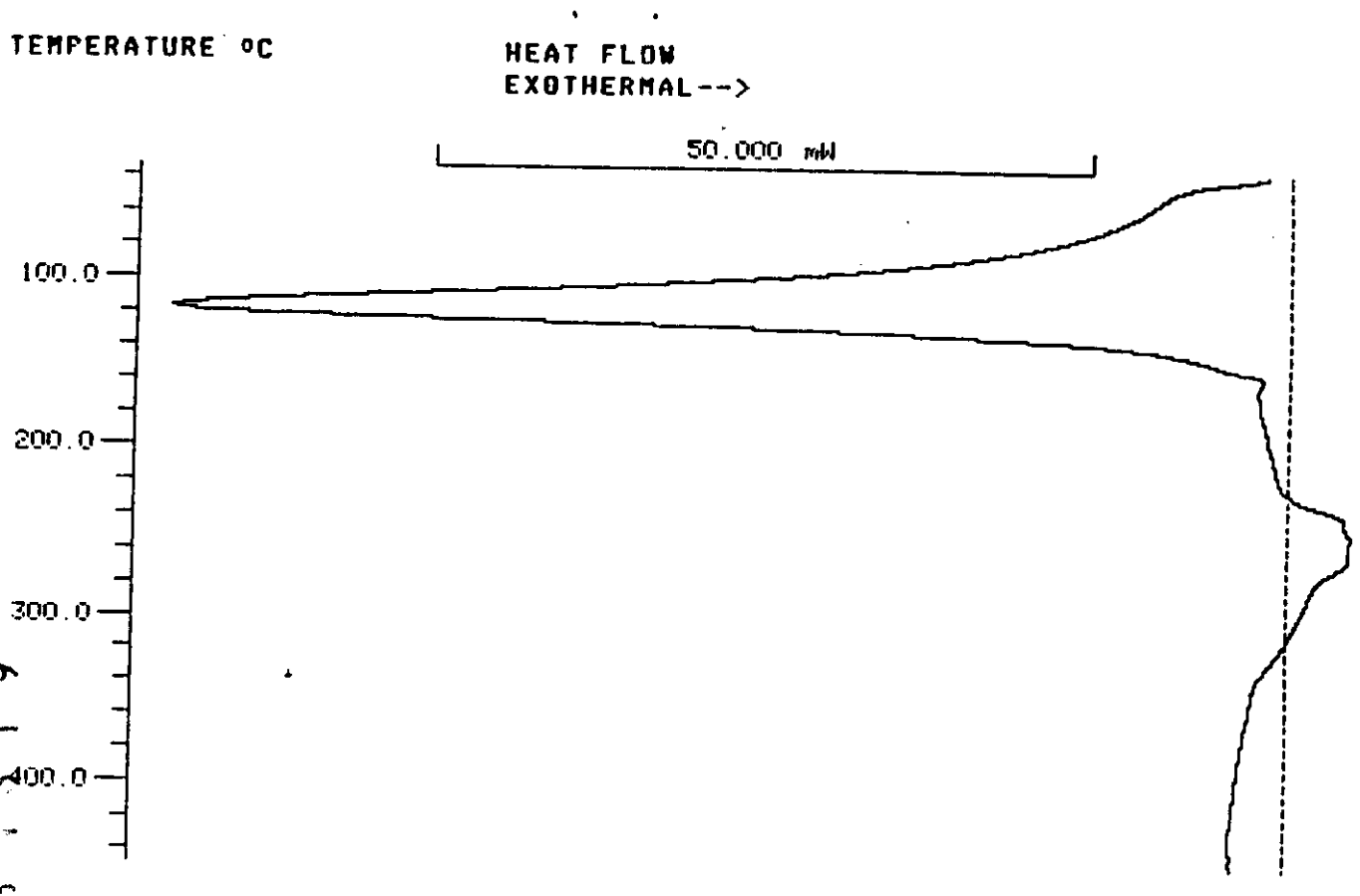
Sample Size: ? .020 ml
Customer ID: STD 27C11AY
Remarks, Calculations, Results: 1.00 = 100%

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
[signature]				
Hrs: 6C823	Hrs:	Hrs:	Hrs: [signature]	Hrs:

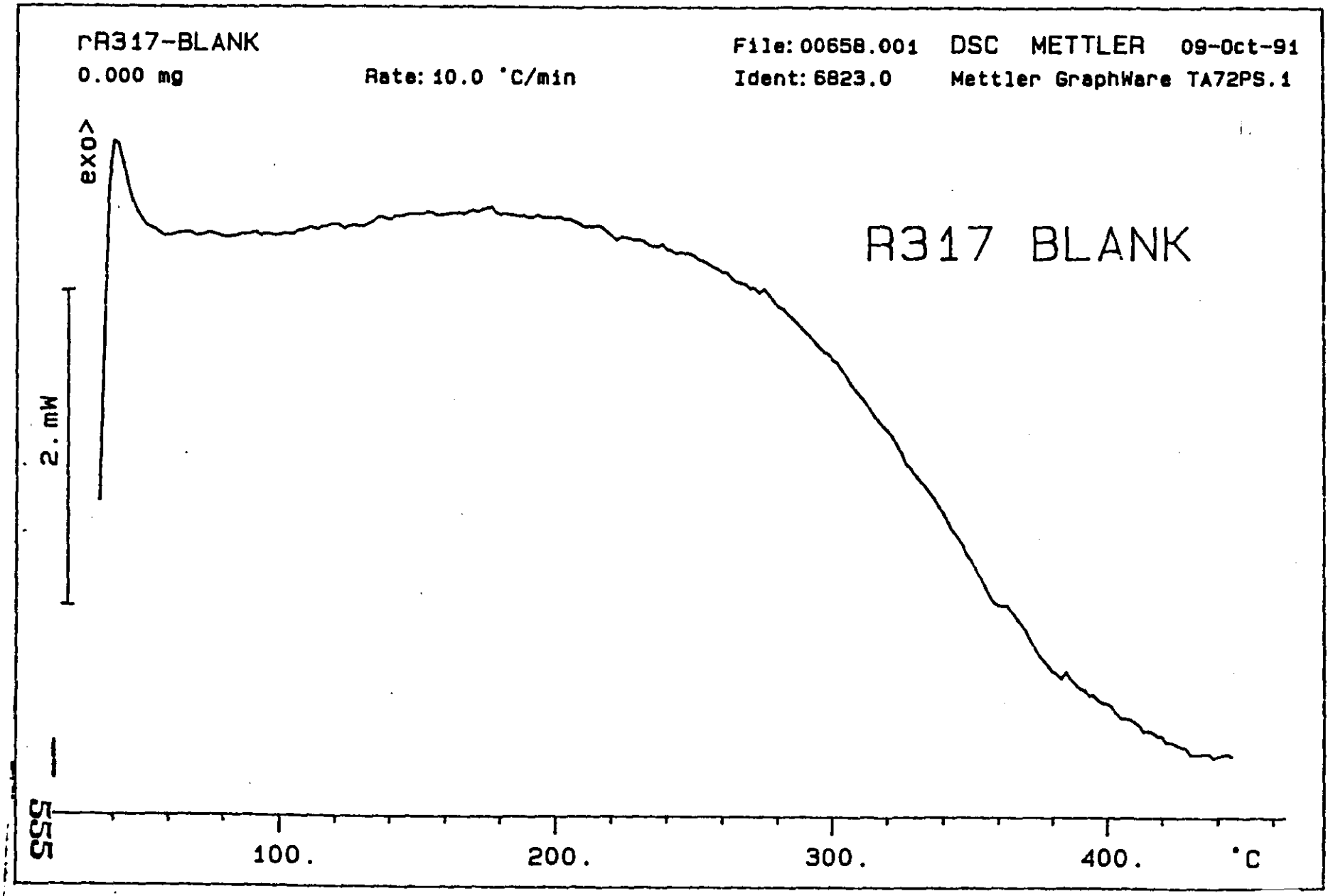
Date: 10-9-91 | Time Completed: | Lab Unit Mgr: D M Thornton [signature]

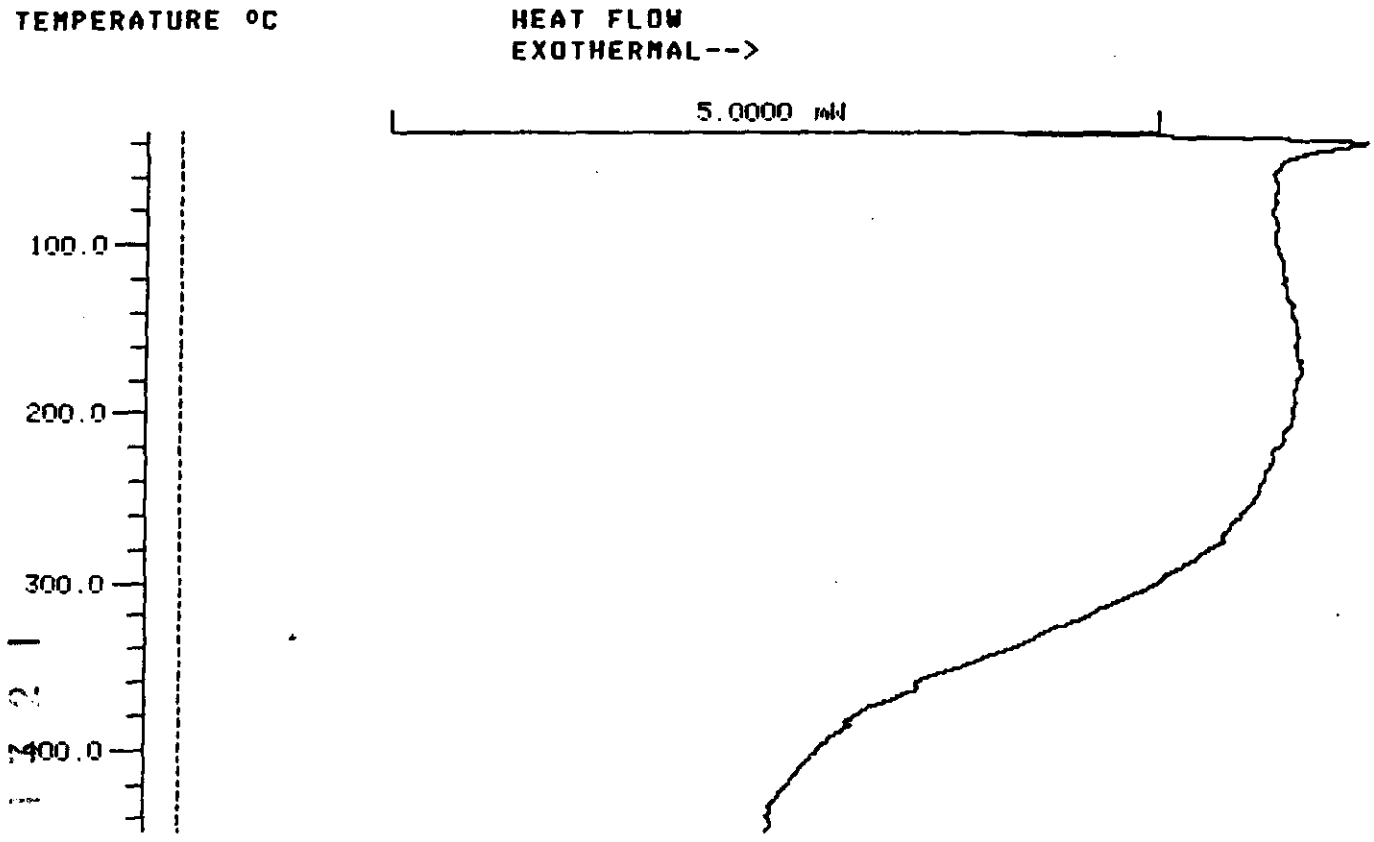
9 3 1 2 1 3 1 3 1 7


R323-LMCS
11.231 mg
Rate: 10.0 °C/min
File: 00680.001
Ident: 6823.0
DSC METTLER 09-Oct-91
Mettler GraphWare TA72PS.1
exo>
50. mW
100.
200.
300.
400.
°C

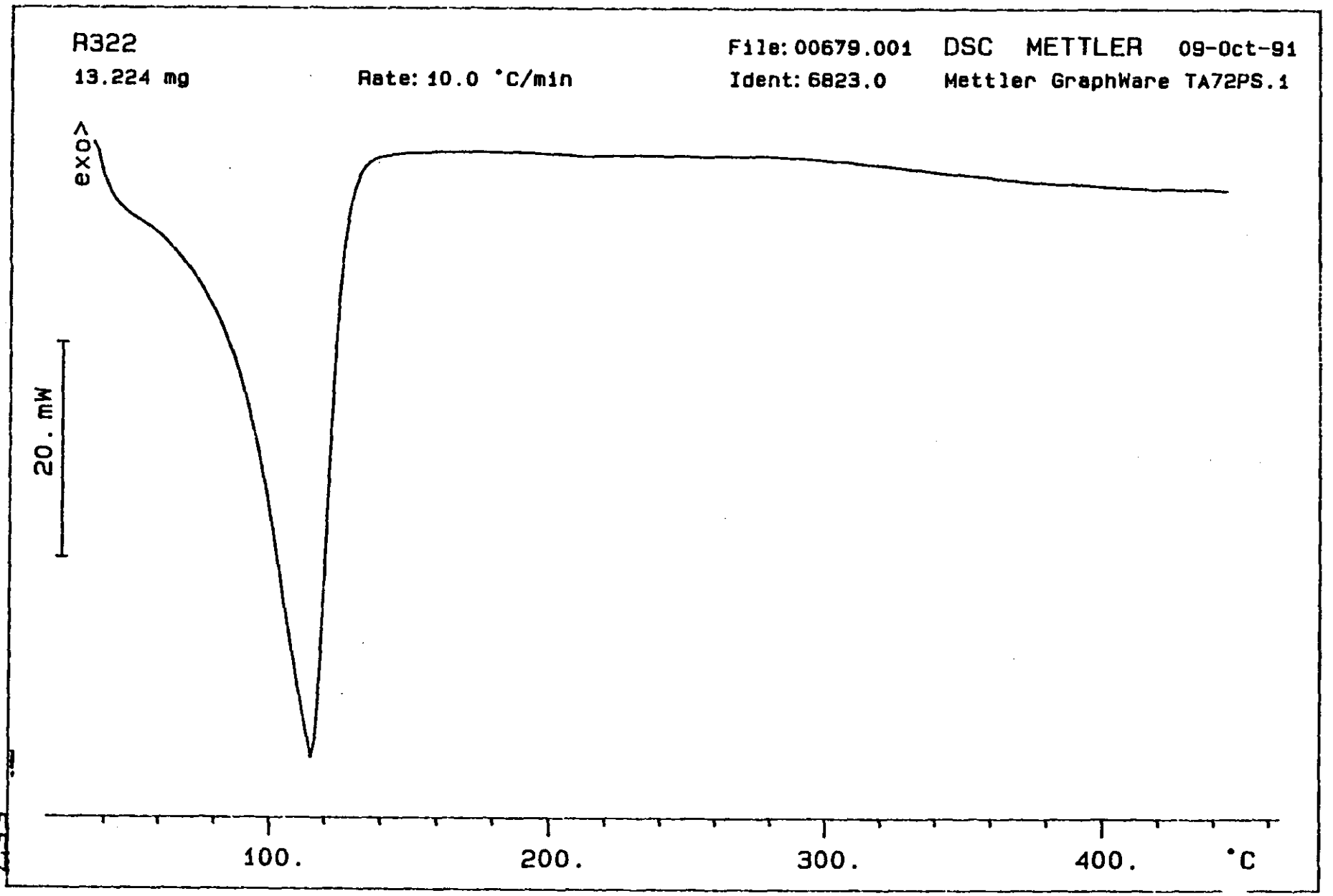


******** METTLER TA4000 SYSTEM *********


rR317-BLANK
0.000 mg
Rate: 10.0 °C/min
File: 00658.001
Ident: 6823.0
DSC METTLER 09-Oct-91
Mettler GraphWare TA72PS.1
R317 BLANK
<exo
2. mW
555
100.
200.
300.
400.
°C



******** METTLER TA4000 SYSTEM *********

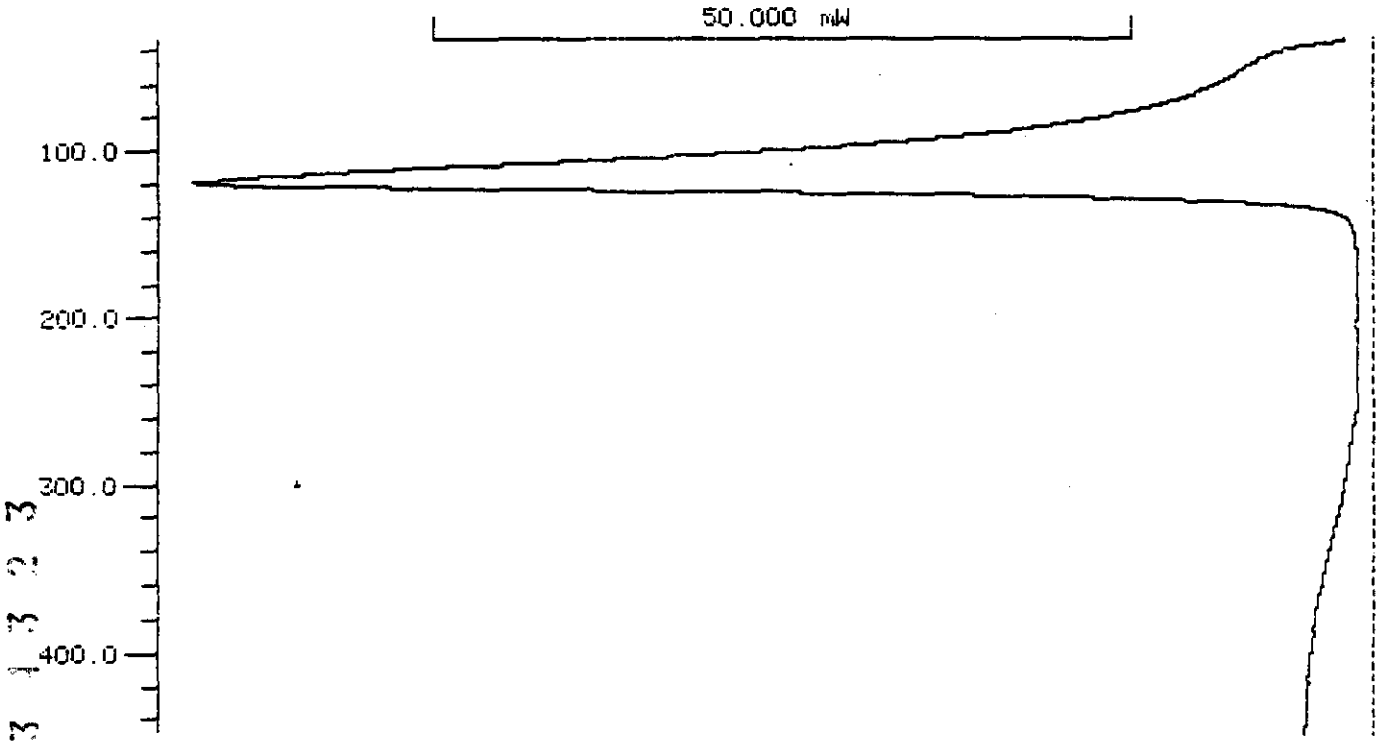

R322
13.224 mg
Rate: 10.0 °C/min
File: 00679.001
Ident: 6823.0
DSC METTLER 09-Oct-91
Mettler GraphWare TA72PS.1
exo>
20. mW
100.
200.
300.
400.
°C

K32

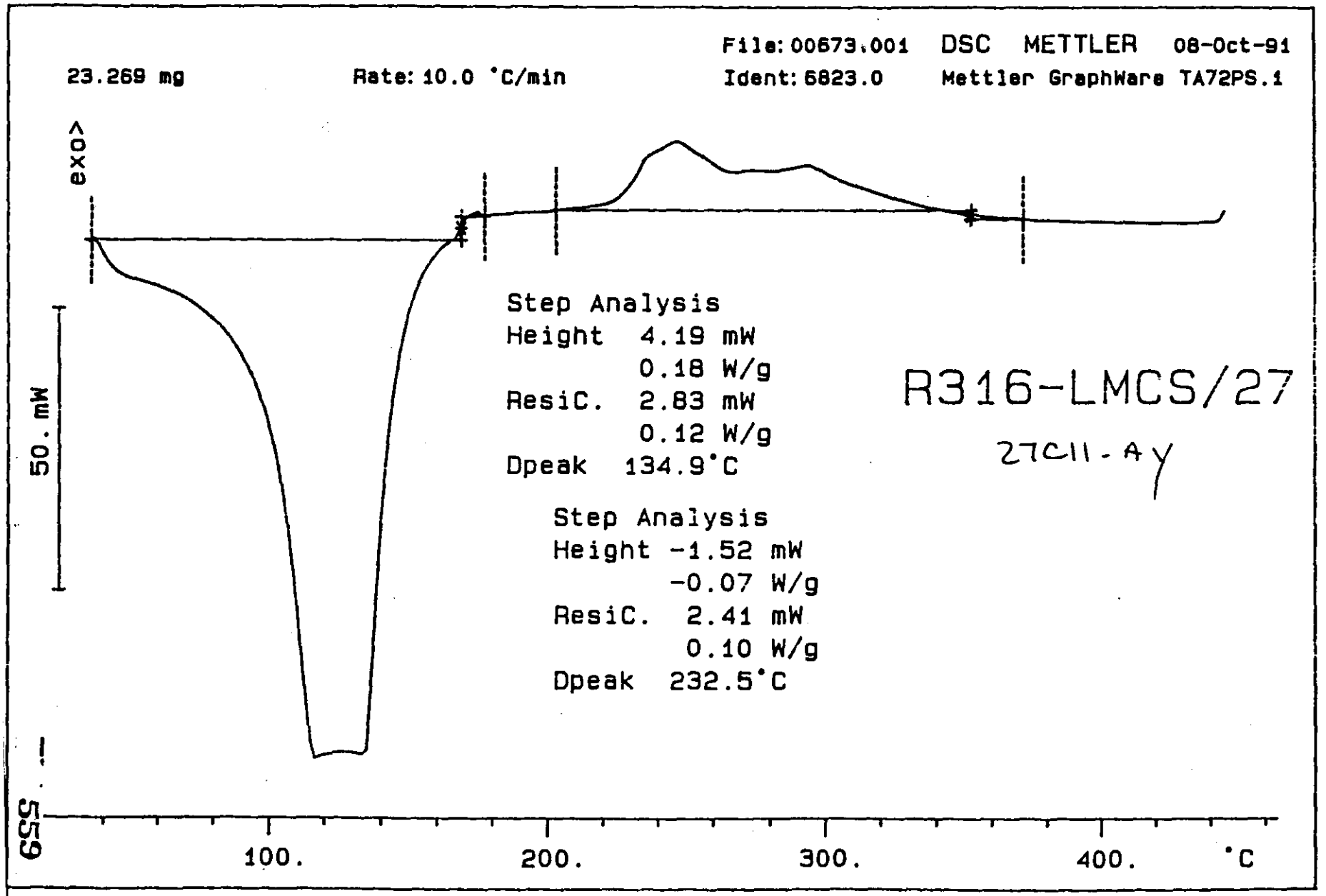
END SCREEN °C 448.0

TEMPERATURE °C

HEAT FLOW
EXOTHERMAL-->



******** METTLER TA4000 SYSTEM *********


23.269 mg
Rate: 10.0 °C/min
File: 00673.001
Ident: 6823.0
DSC METTLER 08-Oct-91
Mettler GraphWare TA72PS.1
exo>
50. mW
Step Analysis
Height 4.19 mW
0.18 W/g
ResiC. 2.83 mW
0.12 W/g
Dpeak 134.9°C
Step Analysis
Height -1.52 mW
-0.07 W/g
ResiC. 2.41 mW
0.10 W/g
Dpeak 232.5°C
R316-LMCS/27
27C11-AY
559
100.
200.
300.
400.
°C

DSC

Configuration used from 8-8-91 to Nov 25, 1991

Denise Hebert

Heat flow calibration began July 20, 1991. Used until Nov 25, 1991

NFIGURATION

-NOV-91 8:14

E INDIUM	255
DSC SIGN ICTA	1
TAU LAG	12
TAU SIGNAL	0
E DIMIN. FACT.	.93
S	2400
TAU LAG 2	16
TAU SIGNAL 2	0
E DIMIN. F. 2	.93
S 2	1850
MAX. TEMP.	600.
MIN. TEMP.	-50.
A PT100	.21610
B PT100	.74150
C PT100	-.10116
HEAT P	3000
HEAT I	250
HEAT D	30
COOL 1	0
COOL 2	0
COOL 3	0
A1	10773
B1	58.121
C1	.14689
D1	-100
A2	8940
B2	17.884
C2	-.072
D2	363
A3	9360.3
B3	-15.043
C3	.01538

******** METTLER TA4000 SYSTEM *********

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R322	Customer ID: 791-5A
Analysis: MERCURY	Sample Prep: UNDIGESTED

Instrument: PERKIN ELMER WA77479	Procedure/Rev: LA-325-102/B-0
Technologist: D. R. JACKSON	Date: 10-17-91
Starting Time: 8:00	Temperature: N/A
Ending Time: 2:00	Chemist: R. K. FULLER

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R316-5597	11		
2	REAGENT BLANK	R317-5697	12		
3	SAMPLE 791-5A	R322-5797	13		
4	FINAL LMCS CHECK STD	R323-5597	14		
5			15		
6			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 CHECK STD	125B38D/1.50 mL			1.500 mL

A-6000-881 (03/92)